



ADVANCE MITIGATION PROGRAM
Lower Klamath, Smith, Trinity, and Chetco
Sub-basins
Regional Advance Mitigation
Needs Assessment

Version 1.0 – FINAL

**Establishing Caltrans' Need for Advance Mitigation
for the Lower Klamath, Smith, Trinity, and Chetco Sub-basins
forecast fiscal years 2023/24 to 2032/33**

California Department of Transportation – District 1

August 2026

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LIST OF ACRONYMS

Acronym	Definition
ACE	Areas of Conservation Emphasis
ADC	Area of Deferred Certification
AMA	Advance Mitigation Account
AMP	Advance Mitigation Program
AMP Guidelines	<i>Advance Mitigation Program Final Formal Guidelines</i>
Basin Plan	water quality control plan
BCDC	Bay Conservation and Development Commission
Bd	chytrid fungus
BEI	Bank Enabling Instrument
BLM	Bureau of Land Management
Cal-IPC	California Invasive Plant Council
Caltrans	California Department of Transportation
CCA	Critical Coastal Area
CCC	California Coastal Commission
CDFW	California Department of Fish and Wildlife
CDP	Coastal Development Permit
CEHC	California Essential Habitat Connectivity Project
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CNRA	California Natural Resources Agency
CO ₂	carbon dioxide
Corps	U.S. Army Corps of Engineers
CWA	Clean Water Act
CWHR	California Wildlife Habitat Relationships
DPS	distinct population segment
EFH	essential fish habitat
EPA	U.S. Environmental Protection Agency

ESU	evolutionarily significant unit
FESA	federal Endangered Species Act
FGC	California Fish and Game Code
FHWA	Federal Highway Administration
FishPAC	Fish Passage Advisory Committee
FWS	U.S. Fish and Wildlife Service
GAI	geographic area of interest
GAP	Gap Analysis Program
GIS	geographic information system
HCP	habitat conservation plan
HU	hydrologic unit
HUC	hydrologic unit code
HUC-8	eight-digit hydrologic unit code
LCP	Local Coastal Program
LUP	land use plan
Master Process Agreement	<i>Master Process Agreement for Planning and Developing Advance Mitigation throughout California for the California Department of Transportation Advance Mitigation Program</i>
MCA	mitigation credit agreement
MPO	metropolitan planning organization
NCCP	natural community conservation plan
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
OPC	Ocean Protection Council
RAMNA	Regional Advance Mitigation Needs Assessment
RCIS	regional conservation investment strategy
RTPA	regional transportation planning agency
RWQCB	Regional Water Quality Control Board
SAMNA	Statewide Advance Mitigation Needs Assessment

SAMNA Reporting Tool	Statewide Advance Mitigation Needs Assessment Reporting Tool
SFD	Snake Fungal Disease
SHC	Streets and Highways Code
SHOPP	State Highway Operation and Protection Program
SHOPP Ten-Year Book	<i>State Highway Operation and Protection Program Ten-Year Project Book Fiscal Years 2022/23–2032/33</i>
SHS	State Highway System
STIP	State Transportation Improvement Program
SWAP	State Wildlife Action Plan
SWRCB	State Water Resources Control Board
TMDL	total maximum daily load
USC	U.S. Code
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USGS	U.S. Geological Survey
Water Boards	SWRCB and RWQCB
WOTUS	waters of the U.S.

EXECUTIVE SUMMARY

This *Lower Klamath, Smith, Trinity, and Chetco Sub-basins Regional Advance Mitigation Needs Assessment* (“RAMNA”) was developed with the goal of realizing the benefits of long-range planning to help manage the risks and priorities of the California Department of Transportation (“Caltrans”) Advance Mitigation Program (“AMP”). It was developed in accordance with the AMP Final Formal Guidelines (“AMP Guidelines”)¹ and incorporates information and feedback received from outreach to the natural resource regulatory agencies,² the Federal Highway Administration, other transportation agencies, Native American tribes, interested parties, and the public. Caltrans District 1 is the lead district for this planning-level effort.

Background. In 2017, the California Streets and Highways Code (“SHC”) § 800 et seq. was amended to create the AMP within Caltrans and to provide the seed capital for an Advance Mitigation Account (“AMA”), to be operated by Caltrans as a revolving account. The stated intent of the legislation was for Caltrans, through the AMP, to realize the potential of advance mitigation to “accelerate transportation project delivery” and to “protect natural resources through transportation project [compensatory] mitigation” [SHC § 800(a)]. To this end, SHC § 800.6(a) identifies 11 specific activities as authorized allowable expenditures under the AMA and provides for the AMA to be replenished under specific conditions. The 11 activities authorized by SHC § 800 et seq. consist of purchasing or establishing compensatory mitigation credits^{3,4} developed through an authorized regulatory mechanism.⁵ Upon delivery, the credits are expected to be both available and at hand for Caltrans and natural resource regulatory agencies to use as offsets to transportation project impacts. The actual finding, however, of a specific credit’s adequacy and/or suitability to offset an impact, as well as the placement of natural resource regulatory agency compensatory mitigation conditions on transportation

¹ <https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/amp-final-formal-guidelines-a11y.pdf>

² For the AMP, “natural resource regulatory agencies” refers specifically to the signatories to the 2020 *Master Process Agreement for Planning and Developing Advance Mitigation throughout California for the California Department of Transportation Advance Mitigation Program*. The signatories are California Department of Fish and Wildlife (“CDFW”); State Water Resources Control Board; U.S. Army Corps of Engineers Los Angeles, Sacramento, and San Francisco districts; U.S. Environmental Protection Agency; U.S. Fish and Wildlife Service; National Marine Fisheries Service; and California Coastal Commission.

³ Compensatory mitigation is a mitigation strategy that is preferentially applied only after it has been determined that there will be unavoidable adverse impacts on natural resources and other efforts to minimize, rectify, and reduce the impact have been incorporated into a transportation project’s design. Traditionally, this determination occurs late in a transportation project’s development process, at which time the compensatory mitigation action is both funded and implemented concurrently with the transportation project.

⁴ Credits are the usual currency of mitigation established through an advance mitigation project; however, other values may also be established.

⁵ Authorized regulatory mechanisms include the regulatory processes to establish mitigation banks and in-lieu fee programs.

projects, is conducted in the future through each transportation project's environmental studies and permits.

Purpose. Described in the AMP Guidelines, advance mitigation planning is the AMP's process for justifying, proposing, scoping, and securing internal Caltrans AMA funding approval for advance mitigation projects. Advance mitigation planning consists of five steps. Steps 1 and 2 serve to focus the assessment (see Section ES.1, below). Step 3 is this RAMNA. Steps 4 and 5 of the AMP's advance mitigation planning process further narrow down the suite of potential advance mitigation projects to a few that have a high probability of meeting the AMP's goals (see Section ES.9, below).

A RAMNA is a desktop study that consists of the best readily available information for Caltrans Districts to refer to when scoping and proposing advance mitigation projects to be funded by the AMA. The information was sensibility checked by other Caltrans functional units, natural resource regulatory agencies, and others before it was finalized. When the Caltrans AMP invests in advance mitigation projects to purchase compensatory mitigation credits, Caltrans assumes that the credits are aligned with existing natural resource regulatory agency goals and objectives. When the Caltrans AMP invests in advance mitigation projects to establish compensatory mitigation, it will aim to establish credits approved by multiple natural resource regulatory agencies. Whether purchased or established, Caltrans intends for credits to be delivered on a schedule that will revolve the AMA.

Through the RAMNA's review process, the conservation goals and objectives provided in the RAMNA were vetted with the natural resource regulatory agencies. Caltrans thinks incorporating natural resource regulatory agency goals and objectives into advance mitigation project scopes improves the chances that the compensatory mitigation credits will be (1) usable as transportation project impact offsets and (2) "protect natural resources through transportation project [compensatory] mitigation" [SHC § 800(a)]. Each chapter is briefly summarized below.

Figure ES-1 shows the geographic area of interest ("GAI") road infrastructure.

ES.1 Geographic Area of Interest and Resource Focus

Focusing this assessment improves the probability that advance mitigation projects undertaken by Caltrans will yield credits (or similar) that will be usable and comply with an appropriate established regulatory framework. Focusing the assessment also improves the chances that resultant credits will be available on a timeframe that will revolve the AMA. Hence, for advance mitigation planning, Caltrans focused the RAMNA on a specific time period, a specific area, and typical compensatory mitigation needs.

The time period assessed in this RAMNA is for fiscal years 2023/24 through 2032/33, a planning period consistent with Caltrans:

- Long-term transportation plans conceptualized in the *State Highway Operation and Protection Program Ten-Year Project Book Fiscal Years 2023/24—2032/33* (“SHOPP Ten-Year Book”; Caltrans 2024a). Transportation projects in the SHOPP Ten-Year Book have not undergone the environmental and permitting process.
- Modeled compensatory mitigation needs published in the *Statewide Advance Mitigation Needs Assessment⁶ Report Fourth Quarter 2024/25 Fiscal Year* (“SAMNA Report”; Caltrans 2025a). Compensatory mitigation needs in the SAMNA Report are modeled and do not reflect an environmental and permitting process.

The GAI assessed in this RAMNA consists of the Lower Klamath (eight-digit hydrological unit code [“HUC-8”] 18010209), Smith (HUC-8 18010101), Trinity (HUC-8 18010211), and Chetco (HUC-8 17100312) sub-basins. GAIs are established at an ecoregion or HUC-8 scale to define appropriate planning areas for mitigation implementation and anticipated use areas that align with natural resource regulatory agency practices (Caltrans 2019). Caltrans District 1 selected the GAI because implementing landscape-scale mitigation in the sub-basins is likely to maximize State Highway Operation and Protection Program (“SHOPP”) and State Transportation Improvement Program (“STIP”) funded transportation project acceleration while maximizing environmental benefits.

Because the SAMNA model forecast impacts on hundreds of species’ habitats, to further focus the planning effort, Caltrans District 1 identified species for which natural resource regulatory agencies condition transportation projects and those transportation projects that would most likely benefit if compensatory mitigation credits were available. These “species of mitigation need” include the federally proposed threatened, federally sensitive, and California species of special concern northwestern pond turtle (*Actinemys marmorata*), the federally and state threatened southern Oregon/northern California coast evolutionarily significant unit (“ESU”) coho salmon (*Oncorhynchus kisutch*) and federally threatened and California species of special concern southern distinct population segment (“DPS”) of eulachon (*Thaleichthys pacificus*).

Compensatory mitigation for wetlands, non-wetland waters, and riparian habitat within the GAI was also identified as both a historical transportation project compensatory mitigation need and an anticipated future transportation project compensatory mitigation need within the GAI.

ES.2 Environmental Setting

Information on the GAI’s environmental setting is provided in Chapter 2, Environmental Setting, and its associated appendices. To develop an understanding of the GAI that is

⁶ The SAMNA Reporting Tool is a geographic information system (“GIS”) overlay model developed by Caltrans to support advance mitigation planning (Caltrans 2019a).

consistent with natural resource regulatory agency tools and references, geospatial data from the SAMNA Reporting Tool, CDFW's BIOS, and other readily available information are summarized and presented. Climate change resiliency, wildlife connectivity, biodiversity, and conserved lands are among the information presented. A critical habitat map is provided.

The GAI consists of approximately 2.7 million acres within the Chetco, Trinity, Lower Klamath, and Smith sub-basins (HUC-8s), which are overlapped by portions of the Klamath Mountains, Northern California Coast, and Northern California Coast Ranges Ecoregion Sections.

ES.3 Relevant Plans, Policies, and Regulations

Compensatory mitigation is informed by regulatory requirements, regulatory mechanisms for credit establishment, and conservation. Laws, regulations, comprehensive plans, conservation plans, and land management plans that are applicable and relevant to the GAI will be consulted by Caltrans to inform both regional understanding and advance mitigation project scoping.

Caltrans identified 115 documents that may be relevant to advance mitigation planning and advance mitigation project delivery: 40 state and federal laws, guidelines, and regulations; 33 statewide and regional resource management plans; 12 plans and permits and other documents focused on species of mitigation need; 15 state agency, federal agency, Native American tribal, and local government land management plans; 3 water resources plans and documents; 5 county, city, and local government general plans; and 7 nongovernmental organization conservation and management documents. A summary and links to these documents can be found in Chapter 3, Relevant Plans, Policies, and Regulations.

ES.4 Existing Mitigation Opportunities

For the purposes of the RAMNA, existing mitigation opportunities are potential opportunities for Caltrans to use AMA funds to purchase compensatory mitigation that was previously approved by one or more natural resource regulatory agencies. In accordance with SHC § 800.6(a), the approved credits or values eligible for purchase may have been established through a conservation bank, mitigation bank, natural community conservation plan ("NCCP"), habitat conservation plan ("HCP"), in-lieu fee program, or mitigation credit agreement ("MCA") developed in accordance with a CDFW-approved regional conservation investment strategy ("RCIS").

Chapter 4, Existing Mitigation Opportunities, presents readily available information regarding existing mitigation opportunities for the GAI. In brief, Caltrans identified no HCPs/NCCPs where Caltrans may be eligible to participate, one pending or active conservation and/or mitigation bank, no active in-lieu fee programs, no approved RCISs, and no MCAs.

Existing mitigation opportunities can also inform both regional understanding and advance mitigation project scoping because they may be expressions of resource agency conservation goals and objectives⁷ and may be suitable for concurrent transportation project mitigation.

ES.5 Estimated Impacts

Prior to developing a focused advance mitigation project scope to purchase or establish mitigation credits or values, as authorized by SHC § 800.6(a), Caltrans must determine whether it needs advance mitigation credits. Since environmental and permitting processes have not yet taken place, Caltrans must rely on estimating future SHOPP transportation project⁸ impacts through the SAMNA model, as well as qualitative assessments of STIP-eligible transportation project needs,⁹ to define the range of its potential advance mitigation needs.

Chapter 5, Modeled Estimated Impacts, provides transportation project impact estimates for fiscal years 2023/24 to 2032/33. In the GAI, 25 SHOPP transportation projects and no non-SHOPP STIP-eligible transportation projects are in their conceptualization phase for the planning period. Many of these planned transportation improvements are not forecast to affect terrestrial or aquatic resources and many forecast impacts may be avoided during transportation project delivery. Nevertheless, the compensatory mitigation estimates presented reflect the best available information about compensatory mitigation needs at this time.

Impact estimates for wetlands, non-wetland waters, and riparian habitat from SHOPP transportation projects included in the SAMNA are summarized in Tables ES-1 through ES-3. Since natural resource regulatory agencies routinely place wetland, non-wetland water, and riparian habitat conditions on transportation projects, it is likely that Caltrans transportation project schedules would benefit from available credits for these resources. Similarly, impact estimates for terrestrial species of mitigation need and fish species of mitigation need are summarized in Tables ES-4 and ES-5.

⁷ For the purposes of this RAMNA, conservation goals and objectives are a broad set of regional natural resource sustainability goals and objectives that are consistent with both regulatory requirements and conservation science.

⁸ Caltrans undertakes SHOPP transportation projects to address maintenance, safety, operation, and rehabilitation of the SHS; such projects do not add new capacity to the system.
<https://catc.ca.gov/programs/state-highway-operation-and-protection-program>

⁹ Metropolitan planning organizations, regional transportation planning agencies, and other public agencies also undertake transportation projects to address non-SHOPP STIP-funded transportation improvements.

Table ES-1. Summary of Estimated SHOPP Impacts on Wetlands in the GAI (acres)^a

Sub-basin (HUC-8)	Sub-basin Number	Number of Transportation Projects ^b	Total Estimated Wetlands Impacts ^c
Chetco	17100312	0	0.0
Lower Klamath	18010209	2	<0.1
Smith	18010101	0	0.0
Trinity	18010211	1	<0.1
Total^{c, d}	Not applicable	3	<0.1

Source: Caltrans 2025c

^a Transportation projects are listed in Appendix B.

^b Totals may not reflect numbers presented in the rows above. Some SHOPP transportation projects cross more than one ecoregion section.

Table ES-2. Summary of Estimated SHOPP Impacts on Non-wetland Waters in the GAI (acres)^a

Sub-basin (HUC-8)	Sub-basin Number	Number of Transportation Projects ^b	Estimated Non-Wetland Waters Impact (acres)
Chetco	17100312	1	<0.1
Lower Klamath	18010209	0	0.0
Smith	18010101	3	0.2
Trinity	18010211	0	0.0
Total	Not applicable	4	0.3

Source: Caltrans 2025c

^a Transportation projects are listed in Appendix B.

^b Totals may not reflect numbers presented in the rows above. Some SHOPP transportation projects cross more than one ecoregion section.

Table ES-3. Summary of Estimated SHOPP Impacts on Riparian Function in the GAI (acres)^a

Sub-basin (HUC-8)	Sub-basin Number	Number of Transportation Projects ^b	Estimated Riparian Function Impact (acres)
Chetco	17100312	0	0.0
Lower Klamath	18010209	2	0.1
Smith	18010101	2	2.6
Trinity	18010211	0	0.0
Total	Not applicable	3	2.7

Source: Caltrans 2025c

^a Transportation projects are listed in Appendix B.

^b Totals may not reflect numbers presented in the rows above. Some SHOPP transportation projects cross more than one ecoregion section.

Table ES-4. Summary of Estimated SHOPP Impacts on Terrestrial Species of Mitigation Need within the GAI (acres)

Ecoregion Section	Northwestern Pond Turtle: Number of Caltrans SHOPP Projects ^a	Northwestern Pond Turtle: Estimated Habitat Impact (acres)
Klamath Mountains	13	16.7
Northern California Coast	10	8.8
Northern California Coast Ranges	1	0.9
Oregon and Washington Coast Ranges	0	0.0
Total^b	22	26.4

Source: Caltrans 2025b

^a Transportation projects are listed in Appendix B.

^b Totals may not reflect numbers presented in the rows above. Some SHOPP transportation projects cross more than one ecoregion section.

Table ES-5. Summary of Estimated SHOPP Impacts on Fish Species of Mitigation Need within the GAI (acres)

Sub-basin (HUC-8)	Sub-basin Number	Number of Transportation Projects	Coho Salmon – Northern OR Southern CA	Eulachon	Tidewater Goby	Chinook Salmon – Upper Klamath and Trinity Rivers	Total ^d
Chetco	17100312	0	0.0	0.0	0.0	0.0	0.0
Lower Klamath	18010209	4	0.1	0.0	<0.1	0.1	0.3
Smith	18010101	5	0.7	0.0	0.6	0.0	1.3
Trinity	18010211	6	0.2	0.0	0.0	0.2	0.4
Total	Not applicable	15	1.0	0.0	0.6	0.4	2.0

Source: Caltrans 2025c

^a Threatened and endangered fish species habitat impacts are forecast by the SAMNA Reporting Tool.

^b The SAMNA forecasts impacts on threatened and endangered fish habitat for 3 of the 4 HUC-8s within the GAI.

^c Stream/river habitat impacts are provided. Stream/river habitat impacts are assumed to be representative of fish habitat impacts.

^d For sub-basins with more than one species, co-occurrence of impacts is assumed. Acreage for the total impact across all habitat types is provided.

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ES.6 Benefiting Transportation Project Considerations

One intent of the AMP's founding legislation is for Caltrans to realize the potential of advance mitigation to accelerate transportation project delivery. At this time (August of fiscal year 2026/27), Caltrans is 3 years into the SHOPP Ten-Year Book planning period. Hence, for the time period under consideration, fiscal years 2023/24 to 2032/33, Caltrans District 1 intends to prioritize purchasing or developing mitigation credits or values that are planned for the middle to the end of the 10-year planning period.

Organized by aquatic resources, riparian habitat, and species of mitigation need, a temporal analysis of Caltrans needs is provided in Chapter 6, Benefiting Transportation Project Considerations. Prior to proposing advance mitigation projects, Caltrans District 1 will consult the most recent SHS Management Plan to obtain an up-to-date estimate of the timing of transportation projects that may need credits established or purchased through the AMA.

It should be noted that at this time, several transportation projects have been delayed or eliminated and the timing of Caltrans needs may change. Caltrans will consider the updated transportation schedule when scoping and funding advance mitigation projects. The feasibility of addressing the needs through the SHC § 800.6(a) authorized activities is discussed in Chapter 9, Assessment of Authorized Activities.

ES.7 Conservation Goals and Objectives

To increase the probability that advance mitigation project scopes promoted within and/or undertaken by Caltrans will successfully meet natural resource regulatory agency goals and objectives, this RAMNA was reviewed by these agencies and their comments and suggestions were incorporated.

Wildlife Resources Goals and Objectives

When establishing wildlife resources compensatory mitigation credits in accordance with SHC § 800.6(a), Caltrans will seek to align advance mitigation project scopes with the conservation goals and objectives of the multiple natural resource regulatory agencies with the authority to approve wildlife resource-related credit establishment and with the authority to approve their application to offset transportation project-related impacts. At a broad scale, Caltrans' understanding of the wildlife resources goals and objectives presented in this RAMNA encompasses protecting, preserving, and enhancing large-scale ecological processes, environmental gradients, biological diversity, and regional linkages.

Informed by relevant plans, policies, and regulations, the goals and objectives presented summarize how state and federal natural resource regulatory agencies, land managers, and other interested parties have prioritized regional conservation that preserves intact habitat and provides habitat linkages and connectivity. In recognition of transportation project acceleration needs, wildlife goals and objectives place an emphasis on species of mitigation need habitats in the GAI; however, advance mitigation for the benefit of species of mitigation need is anticipated to have broader benefits for multiple special-status

species that rely on the same habitats. Caltrans' understanding of natural resource regulatory agency wildlife goals gathered for this RAMNA include:

- Conserving and expanding habitat for species of mitigation need in the GAI to support ecosystem functions that are essential to recovery of the species.
- Preserving, enhancing, and increasing connectivity between blocks of habitat supporting species of mitigation need to allow for dispersal that will maintain resilience and variability of populations.
- Supporting resiliency of the landscape to climate change.
- Decreasing mortality and competition and protecting population health for species of mitigation need.
- Providing multi-species and multi-resource benefits.

Objectives and sub-objectives are provided under each of the above goals in Chapter 7, Wildlife Resources Conservation Goals and Objectives, to guide Caltrans advance mitigation project scoping toward those actions that would create the greatest functional lift for wildlife resources in the GAI. Sub-objectives capture more specific measures from conservation and land management plans that address threats to the aforementioned resources.

Aquatic Resources Goals and Objectives

When establishing aquatic resources compensatory mitigation credits in accordance with SHC § 800.6(a), Caltrans will seek to align advance mitigation project scopes with the conservation goals and objectives of the multiple natural resource regulatory agencies that have the authority to approve aquatic resource-related credit establishment and have the authority to approve their application to satisfy conditions on transportation projects. At a broad scale, Caltrans' understanding of aquatic resources goals and objectives presented in the RAMNA encompasses restoring, maintaining, and enhancing large-scale ecological processes, environmental gradients, biological diversity, and regional linkages. Aquatic resources goals developed for this RAMNA prioritize:

- Providing for no net loss to area, functions, values, and condition of wetland and non-wetland water resources.
- Restoring and/or enhancing the chemical, physical, and biological integrity of wetlands and non-wetland waters.
- Restoring and/or enhancing and expanding habitat for fish species of mitigation need.
- Supporting resiliency of aquatic resources to climate change and sea-level rise.
- Providing multi-resource benefits.

Sub-objectives are included for each goal in Chapter 8, Aquatic Resources Conservation Goals and Objectives, to guide Caltrans project scoping toward those actions that would create the greatest functional lift for aquatic resources in the GAI. Sub-objectives also capture more specific measures from conservation and land management plans that address threats to the aforementioned resources.

ES.8 Authorized Activity Summary

A summary of Caltrans' need for compensatory mitigation credits in the GAI and the feasibility of each SHC § 800.6(a) authorized activity to address is provided in Chapter 9, Assessment of Authorized Activities. As pointed out in Chapter 6, Benefiting Transportation Project Considerations, given the expected timing of mitigation need, at this time (August of fiscal year 2026/27) mitigation that can be purchased or established by 2027/28 (within the next 2 years) could potentially address mitigation for impacts on aquatic resources on approximately:

- 0.1 acre of threatened and endangered fish habitat, <0.1 acre of wetlands, <0.1 acre of non-wetland waters, and 1.3 acres of riparian habitat in the Lower Klamath sub-basin, potentially contributing to the acceleration of 1, 1, 1, and 2 transportation projects, respectively (Table 6-2)
- 0.7 acre of threatened and endangered fish habitat, 0.3 acre of non-wetland waters, and 3.9 acres of riparian habitat in the Smith sub-basin, potentially contributing to the acceleration of 3, 3, and 3 transportation projects, respectively (Table 6-3)
- 0.2 acre of threatened and endangered fish habitat, 0.2 acre of non-wetland waters, and 2.8 acres of riparian habitat in the Trinity sub-basin, potentially contributing to the acceleration of 3, 3, and 3 transportation projects, respectively (Table 6-4)
- 6.4 acres of western pond turtle habitat in the Klamath Mountains Ecoregion Section, potentially contributing to the acceleration of 5 transportation projects (Table 6-5)
- 3.4 acres of western pond turtle habitat in the Northern California Coast Ecoregion Section, potentially contributing to the acceleration of 5 transportation projects (Table 6-6).

All or some of these needs could form the basis for Caltrans District 1 to develop an advance mitigation project scope.

Broadly speaking, SHC § 800.6(a) authorized activities can be divided into two groups: (1) purchasing compensatory mitigation that has been previously established and approved by the natural resource regulatory agencies through a conservation/mitigation bank, HCP/NCCP, in-lieu fee program, or MCA; or (2) establishing and receiving approval of compensatory mitigation credits, such as establishing a mitigation bank in accordance with existing laws, policies, procedures, templates, and guidance. The time it takes to perform each authorized activity varies; however, purchasing or paying fees for compensatory mitigation credits would likely take less time than establishing compensatory mitigation credits.

Caltrans Districts will consider all feasible options when developing advance mitigation project scopes. At this time (August of fiscal year 2026/27), purchasing credits approved through a bank or establishing new credits through a bank or in-lieu fee instrument is likely feasible. The feasibility of each authorized activity to meet the forecast mitigation

need in time to accelerate transportation projects will depend on the availability of a regulatory and administrative pathway and other conditions.

As pointed out above, when Caltrans scopes advance mitigation projects to establish mitigation, Caltrans intends to center the advance mitigation projects on the species of mitigation need and aquatic resources, as well as address conservation benefits and values for other special-status terrestrial species and resources. Caltrans also intends to scope credit establishment projects that align with conservation goals and objectives, address multi-resource benefits, and address overlapping jurisdictions.

ES.9 Next Steps

Caltrans Districts will use the advance mitigation options identified in the RAMNA to inform advance mitigation project scoping, which will consider needs; conservation data and plans; input received from natural resource regulatory agencies, the Federal Highway Administration, metropolitan planning organizations, regional transportation planning agencies, other public agencies that implement transportation improvements, Native American tribes, interested parties, and the public; feasibility in consideration of mitigation need and timing; and other information presented here and that is publicly available to develop a high-level advance mitigation project scope to be included in an advance mitigation project's nomination materials. Once a nominated advance mitigation project is approved by the Caltrans Director, the Caltrans District will begin advance mitigation project delivery, which includes stakeholder engagement, project alternative analysis, coordination with natural resource regulatory agencies with the authority to approve compensatory mitigation, contracting with third parties and/or credit sponsors, and developing an agency-approved instrument and/or one or more advance mitigation project-specific interagency agreement.

As with all compensatory mitigation established through any advance mitigation process, the mitigation's suitability to address a specific transportation project's impact is determined in the future, on a case-by-case basis, when transportation project mitigation requirements are known.

1. INTRODUCTION

California's State Highway System ("SHS") relies on long-range planning documents to guide its operation and maintenance. In this *Lower Klamath, Smith, Trinity, and Chetco Sub-basins Regional Advance Mitigation Needs Assessment* ("RAMNA"), the California Department of Transportation ("Caltrans") District 1 presents its forecast of natural resource compensatory mitigation¹ needs for the Lower Klamath, Smith, Trinity, and Chetco sub-basins for a 10-year planning horizon. Sources used for this RAMNA are cited throughout this document, and links to geographic information system ("GIS") sources are provided in Appendix A, *GIS Sources*.

The RAMNA was developed with the goal of realizing the benefits of advance mitigation, which:

- anticipates that unavoidable impacts will be identified in the future; and
- consists of having compensatory mitigation available that has already been vetted and agreed upon by natural resource regulatory agencies as representing mitigation actions before transportation projects are completely designed and funded.

When compensatory mitigation actions are independent of transportation project delivery timelines, there is an opportunity to (1) improve the schedule and cost predictability of complying with natural resource regulatory agency compensatory mitigation conditions on transportation projects, and (2) consolidate the anticipated compensatory mitigation from multiple transportation projects into fewer and larger mitigation actions, establishing mitigation credits that provide a greater ecological value than implementing multiple small project-by-project actions. Credits are the usual currency of advance mitigation actions.

This document is intended to be both an internal communication tool between Caltrans' functional units² and an external communication tool for Caltrans to communicate with the Federal Highway Administration ("FHWA"), natural resource regulatory agencies, other transportation agencies (that is, metropolitan planning organizations ["MPOs"], regional transportation planning agencies ["RTPAs"], and other public agencies that implement transportation improvements), Native American tribes, interested parties, and the public. It will be posted on the Advance Mitigation Program ("AMP") website: <https://dot.ca.gov/programs/environmental-analysis/biology/advancemitigation>.

¹ Compensatory mitigation is a mitigation strategy that is preferentially applied only after it has been determined that there will be unavoidable adverse impacts on natural resources and other efforts to minimize, rectify, and reduce the impact have been incorporated into a transportation project's design. Traditionally, this determination occurs late in a transportation project's development process, at which time, the compensatory mitigation action is both funded and implemented concurrently with the transportation project.

² "Functional unit" is a general term used by Caltrans to describe its organizational structure. Caltrans functional units include, but are not limited to, transportation planning, environmental, surveys, right-of-way, real property asset management, materials, traffic, structure design, hydraulics, construction, maintenance, landscape architecture, utilities, and engineering.

1.1 AMP Overview

In 2017, the California Streets and Highways Code (“SHC”) § 800 et seq. was amended to create the AMP within Caltrans and to provide the seed capital for an Advance Mitigation Account (“AMA”), to be operated by Caltrans as a revolving account. The stated intent of the legislation is for Caltrans, through the AMP, to realize the potential of advance mitigation to both “accelerate transportation project delivery” and “protect natural resources through transportation project [compensatory] mitigation” [SHC § 800(a)]. To this end, the legislation identifies specific activities as authorized allowable expenditures under the AMA and provides for the AMA to be replenished under specific conditions. Generally speaking, the 11 activities authorized in SHC § 800.6(a) consist of purchasing or establishing compensatory mitigation credits developed through an appropriate regulatory mechanism, which are then available for use by transportation projects to offset adverse impacts (Table 1-1). Natural resource regulatory agencies and Caltrans will determine the appropriateness of a credit’s use on a case-by-case basis, when Caltrans proposes use of the credit to satisfy a specific condition placed on a transportation project.

Table 1-1. Advance Mitigation Project Types^a

Advance Mitigation Project Type	Authorization
Caltrans pays mitigation fees or other costs or payments associated with coverage of transportation projects under an approved natural community conservation plan (“NCCP”) ^b and/or an approved habitat conservation plan (“HCP”).	SHC § 800.6(a)(2)
Caltrans purchases credits from an existing conservation bank.	SHC § 800.6(a)(1)
Caltrans purchases credits from an existing mitigation bank.	SHC § 800.6(a)(1)
Caltrans purchases credits from an existing in-lieu fee program.	SHC § 800.6(a)(1)
Caltrans purchases credits developed through a mitigation credit agreement (“MCA”), established under a California Department of Fish and Wildlife (“CDFW”)-approved regional conservation investment strategy (“RCIS”). ^c	SHC § 800.6(a)(3)(A)
Caltrans funds the establishment of a Caltrans or third-party sponsored and operated conservation bank, in accordance with applicable state and federal standards.	SHC § 800.6(a)(1)
Caltrans funds the establishment of a Caltrans or third-party sponsored and operated mitigation bank in accordance with applicable state and federal standards.	SHC § 800.6(a)(1)
Caltrans funds the establishment of a Caltrans or third-party sponsored and operated in-lieu fee program in accordance with applicable state and federal standards.	SHC § 800.6(a)(1)
Caltrans funds the implementation of conservation actions and habitat enhancement actions ^{c,d} to generate mitigation credits pursuant to an MCA ^b established under a CDFW-approved RCIS. ^c The scope may include Caltrans first entering into or funding the preparation of an MCA. ^c The scope may also include Caltrans first entering into or funding the preparation of an RCIS. ^c	SHC § 800.6(a)(3) SHC § 800.6(a)(3)(A)

Advance Mitigation Project Type	Authorization
Caltrans acquires, restores, manages, monitors, enhances, and preserves lands, waterways, aquatic resources, or fisheries, or funds the acquisition, restoration, management, monitoring, enhancement, and preservation of lands, waterways, aquatic resources, or fisheries, that would measurably advance a conservation objective specified in an RCIS if the department concludes that the action or actions could conserve or create environmental values that are appropriate to mitigate the anticipated potential impacts of planned transportation improvements.	SHC § 800.6(a)(3)(B)
When the other mitigation options (above) are not practicable, Caltrans may perform mitigation in accordance with a programmatic mitigation plan ^e pursuant to SHC § 800.9. The programmatic mitigation plan shall include, to the maximum extent practicable, the information required for an RCIS. ^c	SHC § 800.6(a)(4) SHC § 800.9

^a Caltrans intends to contract or subcontract implementation tasks when appropriate and as required.

^b When Caltrans is a permittee under the NCCP, or if Caltrans qualifies as a Participating Special Entity and the project is a covered activity in the NCCP

^c See: <https://www.wildlife.ca.gov/Conservation/Planning/Regional-Conservation>

^d Under specific conditions, fish passage and wildlife crossing structures may qualify as enhancement actions under an RCIS in accordance with California Fish and Game Code ("FGC") § 1850–1861.

^e Programmatic mitigation plans are defined in 23 U.S. Code ("USC") § 169(a) (SHC § 800.9). No more than 25 percent of the funds in the AMA may be allocated for this purpose over a 4-year period [SHC § 800.6(a)(4)].

1.1.1. AMP Guidelines

Approved at the end of 2019, the *Advance Mitigation Program Final Formal Guidelines* ("AMP Guidelines") describe how—through advance mitigation planning and advance mitigation project delivery—the Caltrans AMP will fulfill its intended purpose (Caltrans 2019). As shown on Figures 1-1 and 1-2, the AMP Guidelines present a 10-step process, the first 5 of which are the advance mitigation planning phase and the next 5 of which are the advance mitigation project delivery phase. Implementation of each step of the planning phase improves the probability that advance mitigation projects undertaken by Caltrans in the project delivery phase will yield credits (or similar) that will be usable and comply with an appropriate established regulatory framework. The AMP Guidelines also describe how State Highway Operation and Protection Program ("SHOPP") and State Transportation Improvement Program ("STIP")³ transportation projects will reimburse the AMA for advance mitigation project investments, thereby making the funds available to undertake the next advance mitigation project.

³ Only SHOPP- and STIP-funded transportation projects are eligible to use the AMA-funded pre-transfer credits (SHC §800.7).

Figure 1-1. Advance Mitigation Planning Phase



Source: Caltrans (2019)

Figure 1-2. Advance Mitigation Project Delivery Phase



Source: Caltrans (2019)

1.1.2. Advance Mitigation Planning Phase

Caltrans' advance mitigation planning starts with modeled estimates of potential impacts on more than 600 wildlife and aquatic resources and, through successive steps, focuses and refines Caltrans' need for advance mitigation to inform advance mitigation project scopes that will be approved by the Caltrans Director. At this time, Steps 1 and 2 of the AMP's 5-step advance mitigation planning phase are complete.

The RAMNA satisfies Step 3 (Figure 1-1; Caltrans 2019) and provides the results of a regional assessment of Caltrans' advance mitigation needs in the Lower Klamath, Smith, Trinity, and Chetco sub-basins.⁴

Caltrans District 1 will first use the information and analyses presented in this RAMNA to inform Step 4 of the advance mitigation planning phase. Step 4 is the point when Caltrans justifies, proposes, and scopes an advance mitigation project based on its needs (Figure 1-1; Caltrans 2019). Advance mitigation project scopes informed by this RAMNA

⁴ Pursuant to SHC § 800.9, to the maximum extent practicable, the information required for an RCIS is presented in this RAMNA. During CDFW's review of an RCIS, CDFW determines whether the goals and objectives presented in the RCIS are consistent with FGC § 1852, subdivision (c)(8).

will provide enough information, at the appropriate level of detail, for an advance mitigation project to be nominated to the Caltrans Director for funding approval. The advance mitigation planning phase will conclude when the Caltrans Director approves a specific nominated Caltrans District 1 advance mitigation project for funding (Step 5; Figure 1-1; Caltrans 2019). Thereafter, Caltrans District 1 will use the RAMNA as a reference (Caltrans 2019).

1.1.3. Advance Mitigation Project Delivery Phase

Steps 6 through 10 consist of the AMP's advance mitigation project delivery phase (Figure 1-2; Caltrans 2019). Advance mitigation project delivery is undertaken after an advance mitigation project has been approved by the Caltrans Director and programmed⁵ (Figure 1-2; Caltrans 2019). This phase consists of implementing one or more of the 11 authorized advance mitigation activities (Table 1-1).

1.1.4. Program Constraints

Implicit to the AMP, the AMP Guidelines, advance mitigation planning, and advance mitigation project delivery are a number of established laws, policies, and processes including, but not limited to, the following:

- Gas tax-derived funds may be used to develop only those mitigation credits or values anticipated to be needed to fulfill the mitigation requirements of transportation improvements [California Constitution, Article XIX § 2(a)].
- AMA funds are likely not sufficient to address all of Caltrans' anticipated compensatory mitigation needs.
- Long-term transportation planning is dynamic, and compensatory mitigation needs may change over a 10-year planning horizon as funding sources and transportation project lists are refined and updated.
- Advance mitigation planning does not imply an endorsement of a transportation project alternative.
- Establishing compensatory mitigation in advance of transportation project impacts does not create any presumption or guarantee that a future transportation project impact will be authorized by a natural resource regulatory agency. Avoidance and minimization considerations continue to be required.
- Establishing compensatory mitigation in advance of transportation project impacts does not create any presumption or guarantee that the advance compensatory mitigation will be considered adequate and/or suitable by a natural resource regulatory agency for a specific transportation project's impact. Appropriateness of use of advance mitigation credits developed will be assessed on a case-by-case basis. For example, using mitigation credits from a conservation bank where only

⁵ Programming refers to the process Caltrans employs to set priorities for funding advance mitigation projects at the Caltrans District and project level. Through programming, Caltrans commits revenues over a multiyear period to a specific advance mitigation project.

preservation exists would not qualify for wetland or riparian impacts for some regulatory agencies.

- Natural resource regulatory agency approvals are discretionary and often conditional; well-executed advance mitigation does not necessarily increase the likelihood of obtaining agency approval for any particular transportation project.
- The 2008 Mitigation Rule, 2023 U.S. Fish and Wildlife Service (“FWS”) Mitigation Policy, FWS Endangered Species Act Compensatory Mitigation Policy, and 2022 National Oceanic and Atmospheric Administration (“NOAA”) Mitigation Policy for Trust Resources express a preference for advance mitigation (in several forms) but also provide flexibility for off-site and out-of-kind mitigation where important aquatic resources within a watershed area have been identified as priority areas because of the importance of such resources, widespread loss of such resources, and/or the likelihood of successful execution of mitigation at priority sites.
- Advance mitigation projects should optimize their conservation benefit in such a way that the number and types of mitigation credits (or similar) are maximized.
- Advance mitigation projects, like transportation projects and conservation projects, have financial, technical, and strategic risks and require a scope, schedule, and budget.
- Advance mitigation projects to establish credits should allow for longer timelines for plant establishment, which is crucial to success.
- Transportation projects must include mitigation costs in the scoping and programming of their budgets because they are required by law to reimburse the AMA for use of mitigation produced by the AMP [SHC § 800.6(b)].
- The AMA is a revolving account. With a revolving account, reimbursed funds are reinvested into new advance mitigation projects.

The above list is not presented in any order or priority.

1.2 Caltrans District 1 Transportation Infrastructure⁶

Headquartered in Eureka, Caltrans District 1 manages the SHS infrastructure and transportation planning in Del Norte, Humboldt, Lake, and Mendocino Counties. Caltrans District 1 headquarters maintains and operates 941 centerline miles in a mostly rural area. Roadways in District 1 range from scenic two-lane highways to controlled-access freeways. State Route 1 and US Highway 101, two major north and south routes connecting northern and southern California, traverse Caltrans District 1. There are no interstate highways in District 1, so the major state roads are the designated principal arterials—US 101, US 199, and the principal arterial corridor of SR 20, 29, and 53 in Lake County are the most-trafficked major state highways. The iconic SR 1 corridor is the primary north-south route in the coastal parts of the district, and it features abundant trails and pedestrian accommodations. SR 101 and 299 also are part of the Strategic Highway Network (STRAHNET), which serves military bases. Part of Caltrans District 2 within

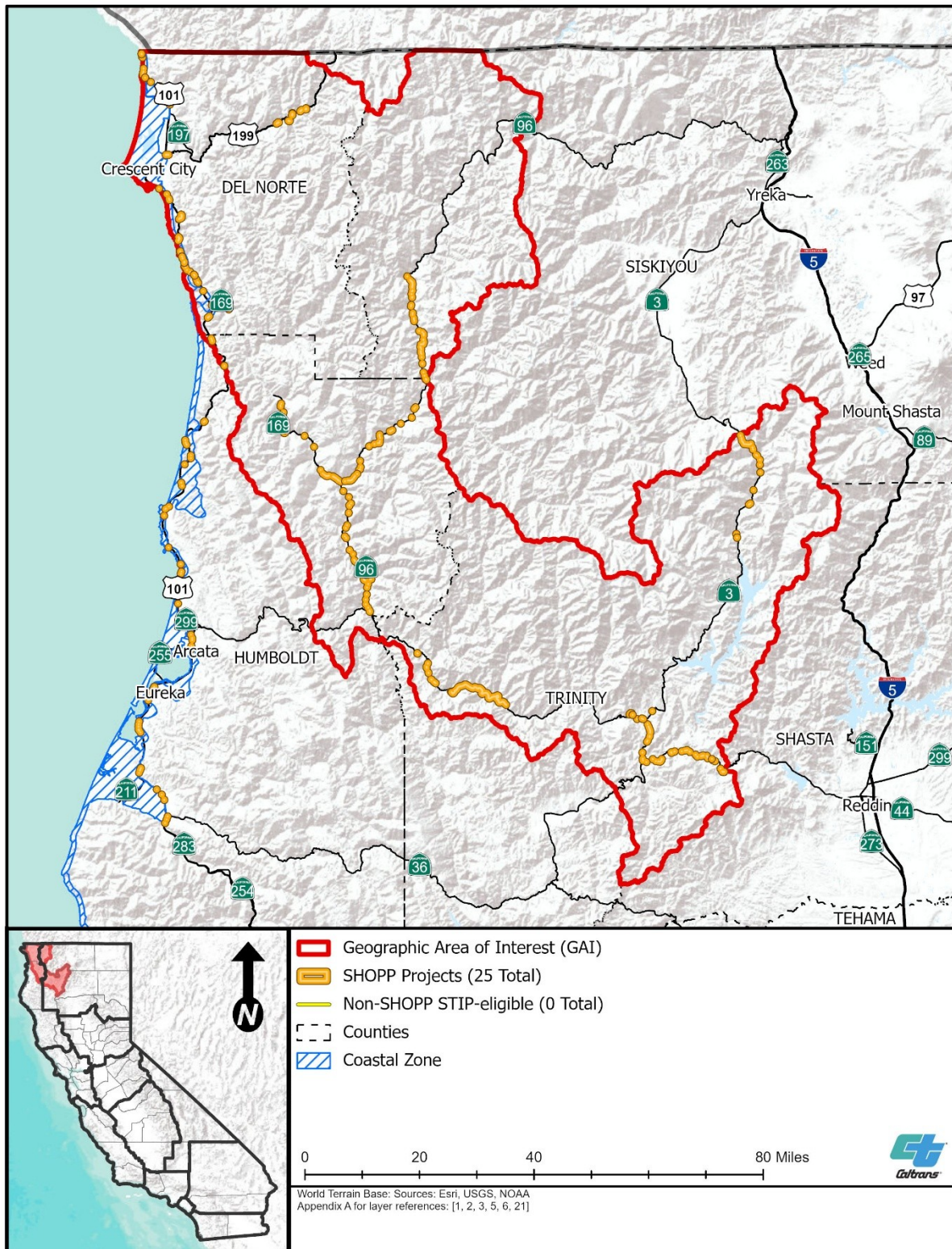
⁶ Source: Caltrans 2021

Siskiyou, Trinity, Shasta, and Tehama Counties occur within the other transportation agencies that implement transportation improvements within the geographic area of interest (“GAI”) evaluated for this RAMNA (Figure 1-3). The highways within Caltrans Districts 1 and 2 that occur within the GAI include SR 3 and SR 96.

Other transportation agencies that implement transportation improvements within Caltrans District 1 and 2’s boundaries (MPOs, RTPAs, and other public agencies) in this RAMNA’s GAI are the Del Norte Local Transportation Commission, Humboldt County Association of Governments, Siskiyou County Local Transportation Commission, and Trinity County Local Transportation Commission. The aforementioned transportation agencies are eligible for STIP funding.

Figure 1-3 shows the road infrastructure within the GAI for this RAMNA.

Figure 1-3. GAI Road Infrastructure



1.3 Regulatory Framework Summary

Unavoidable adverse natural resource impacts that could result from transportation projects are defined under environmental policies, laws, and regulations including, but not limited to:

- California Coastal Act (Public Resources Code § 30000 et seq.)
- California Endangered Species Act (“CESA”) (FGC § 2050 et seq.)
- California Environmental Quality Act (“CEQA”) (Public Resources Code § 21000 et seq.)
- Clean Water Act (“CWA”), Sections 401 and 404 (33 USC § 1251–1376)
- Endangered Species Act of 1973 (“FESA”) (16 USC § 1531–1543), as amended
- Lake and Streambed Alteration Program (FGC § 1600 et seq.)
- National Environmental Policy Act (“NEPA”) (42 USC § 4321 et seq.)
- Porter-Cologne Water Quality Control Act (California Water Code § 13000 et seq.)
- Rivers and Harbors Act of 1800, Section 10 (33 USC § 403)

Natural resource regulatory agencies that may need to be engaged for transportation projects that may adversely impact natural resources within the GAI are listed in Table 1-2.

Table 1-2. Natural Resource Regulatory Agencies with Oversight over Natural Resources within the GAI

Partner	Web Address
California Coastal Commission (“CCC”), North Coast	https://www.coastal.ca.gov/
CDFW, Northern Region	https://wildlife.ca.gov/Regions/1
CDFW, Marine Region	https://wildlife.ca.gov/Regions/Marine
State Water Resources Control Board (“SWRCB”)	https://www.waterboards.ca.gov/
California Regional Water Quality Control Board (“RWQCB”), North Coast Region	http://www.waterboards.ca.gov/northcoast/
National Marine Fisheries Service (“NMFS”), West Coast Region	https://www.fisheries.noaa.gov/about/west-coast-region
U.S. Army Corps of Engineers (“Corps”), South Pacific Division, Sacramento District	http://www.spk.usace.army.mil/
Corps, San Francisco District	https://www.spn.usace.army.mil/
U.S. Environmental Protection Agency (“EPA”), Region 9	http://www.epa.gov/region9/
FWS, Arcata Field Office	https://www.fws.gov/arcata/
FWS, Yreka Field Office	https://www.fws.gov/office/yreka-fish-and-wildlife

Each of the natural resource regulatory agencies listed in Table 1-2 may include compensatory mitigation as a transportation project condition after it has been determined that there will be unavoidable permanent, adverse impacts and that other efforts to

minimize, rectify, and reduce the impact have been incorporated in the transportation project's design and delivery. These natural resource regulatory agencies may also recognize the use or application of a compensatory mitigation credit that was established through an instrument⁷ or other formal interagency agreement as satisfying a transportation project's compensatory mitigation conditions. As a lead agency under CEQA and NEPA, Caltrans may also determine compensatory mitigation is required.

Some natural resource regulatory agencies also have established regulatory frameworks for establishing compensatory mitigation. These are defined under environmental laws, regulations, policies, and guidelines including, but not limited to:

- *Memorandum of Understanding Concerning Mitigation and Conservation Banking and In-Lieu Fee Programs in California* (California Natural Resources Agency ["CNRA"] et al. 2011)
- *Conservation Bank and Mitigation Bank Applications and Fees* (FGC § 1797 et seq.)
- *Compensatory Mitigation for Losses of Aquatic Resources, Final Rule* (33 Code of Federal Regulations ["CFR"] Parts 230, 325, and 332 and 40 CFR Part 230)
- *Advance Mitigation and Regional Conservation Investment Strategies*, mitigation credit agreements (FGC § 1856)
- *Final Regional Compensatory Mitigation and Monitoring Guidelines for South Pacific Division* (Corps 2015)

As discussed previously, credits are the usual currency of mitigation established through an advance mitigation project; however, other values may also be established. Establishing conservation banks, mitigation banks,⁸ and in-lieu fee programs requires an instrument. Existing policies and regulations prescribe what an instrument must contain and address, as well as the terms of use for the credits generated by the mitigation bank, conservation bank, or in-lieu fee program. Similarly, establishing HCPs and NCCPs requires an agreement.

1.4 SAMNA

Predicting likely future transportation project effects on natural resources takes place at the intersection of transportation planning and conservation planning. Consistent with Step 1 of the advance mitigation planning process (Figure 1-1), the AMP forecast Caltrans' statewide compensatory mitigation needs for the transportation improvements conceptualized in the State Highway Operation and Protection Program Ten-Year Project

⁷ A mitigation bank instrument is the formal, legally binding agreement between a bank sponsor and regulatory agencies that describes in detail the physical and legal characteristics of the bank, and how the bank will be established and operated (EPA 1995).

⁸ The goal of conservation banks is typically to offset adverse impacts on a species, while the goal of mitigation banking is to replace the functions and values of specific wetland and other aquatic habitats that will be adversely affected.

Book Fiscal Years 2023/24–2032/33 (“SHOPP Ten-Year Book”, Caltrans 2024) for fiscal years 2023 to 2033 (Caltrans 2025a).

Previous RAMNA documents were prepared with the Caltrans Statewide Advance Mitigation Needs Assessment Reporting Tool (“SAMNA Reporting Tool”) 1.0 model, a geographic information system (“GIS”) overlay model developed by Caltrans to support advance mitigation planning. Potential impacts for all 12 Caltrans Districts were estimated. Statewide, almost 1,000 transportation projects and over 600 wildlife and aquatic resources were evaluated through the SAMNA Reporting Tool, yielding thousands of results. A forthcoming report from Caltrans AMP introduces the SAMNA 2.0 model. SAMNA 2.0 includes updated sources for terrestrial and aquatic resource inputs, including a statewide riparian dataset prepared for Caltrans by the San Francisco Estuary Institute. Aquatic resources have been reclassified based on spatial verification, and, in collaboration with CDFW, the model has been programmed to rapidly incorporate new species and sub-species naming and ranges. Finally, the list of transportation project activity details and their associated buffer assignments has been modified. SAMNA 2.0 results have been compiled into two datasets: vegetation and aquatic resources (wetland, non-wetland waters, and riparian). The unit of measurement for impacts is acres.

The SAMNA 2.0 transportation project activity details and buffer assignments were not finalized in time to prepare fiscal year 2025/2026 RAMNA documents. So, the forecast for this RAMNA document was performed using “SAMNA 1.5”, a hybrid of the SAMNA 1.0 and 2.0 models. The SAMNA 1.5 model implements the SAMNA 2.0 terrestrial and aquatic inputs but maintains the SAMNA 1.0 activity details and buffer assignments. The subset of the Caltrans District 2 transportation projects that are planned within the GAI during the planning period covered by this RAMNA, as well as the eight-digit hydrologic unit code (“HUC” or “HUC-8”), ecoregion section, advertised year, and planned activities for each planned transportation project, are included in Appendix B, Transportation Projects Planned for the GAI during the Planning Period, of this RAMNA. For consistency and as appropriate, tables, figures, and information presented throughout this document, including in Chapter 2, *Environmental Setting*, are consistent with the geospatial data within the SAMNA Reporting Tool.

SAMNA Caveats: The SAMNA is strictly and specifically intended to be used by Caltrans to justify, propose, and scope advance mitigation projects (Caltrans 2026 [*report in progress*]). The SAMNA results:

- are not to be used to substitute for or preempt any requirements to conduct detailed transportation project-level environmental scoping and analysis to inform the programming of individual transportation projects;
- do not relieve Caltrans project planners from first avoiding and then minimizing impacts;
- do not preclude the requirements under CEQA and NEPA for environmental analysis of and permitting for individual transportation projects; and

- do not constitute a commitment on the part of an individual transportation project to implement the estimated compensatory mitigation. A transportation project's actual impacts and compensatory mitigation commitments will be determined during its environmental and permitting processes.

Use of the SAMNA methods shall not support the endorsement of or any other conclusion concerning any transportation project or transportation project alternative. Use or misuse of these methods and results for any purpose other than that which is intended shall be the sole responsibility of the individuals or entities conducting or supporting that use or misuse, who shall be fully liable, therefore.

1.5 GAI and Resource Focus

Given the quantity of resources evaluated through the SAMNA, limited AMA funding, and the need for the AMP to revolve the account, Caltrans focused this analysis on a geographic area with wildlife habitats and aquatic resources where planned transportation project schedules would likely benefit from (1) having compensatory mitigation credit purchase transactions completed and/or (2) having compensatory mitigation credit supplies increased.

Focusing this analysis improves the probability that advance mitigation projects undertaken by Caltrans will yield credits (or similar) that will be usable and comply with an appropriate established regulatory framework. Caltrans intends for any mitigation-related measures to support these environmental resources within the GAI to also benefit other environmental resources.

1.5.1. GAI

As pointed out in Section 1.4, the RAMNA is consistent with SAMNA Reporting Tool geospatial data and model assumptions. In consultation with the natural resource regulatory agencies, it was determined that presenting SAMNA results by HUC-8 sub-basin and ecoregion section, and not political boundaries, would steer advance mitigation planning toward better ecological outcomes. The 2008 Mitigation Rule specifies the HUC-8 as the basis of service areas for mitigation banks, and CDFW's State Wildlife Action Plan ("SWAP") is organized by ecoregion section. To identify a focus area, consistent with Step 2 of the advance mitigation planning process (Figure 1-1), in 2025, Caltrans District 1 subject matter specialists:

- Reviewed the entirety of Caltrans District 1's SAMNA results by HUC-8 sub-basin and ecoregion (Caltrans 2025a; available on: www.dot.ca.gov/programs/environmental-analysis/biology/advancemitigation);
- Reviewed the SAMNA results' associated potential future transportation project locations and activities anticipated for the SHOPP (Caltrans 2024a);
- Reviewed non-SHOPP, STIP-eligible transportation improvement plans for the next 10 years;
- Noted that advance mitigation planning for the Upper Cache and Upper Putah sub-basins was performed in 2024 (Caltrans 2024b);

- Noted that advance mitigation planning for the Big Navarro – Garcia, Upper Eel, Russian sub-basins was performed in 2023 (Caltrans 2023a);
- Noted that advance mitigation planning for the Mad-Redwood, Lower Eel, and South Fork Eel sub-basins was performed in 2021 (Caltrans 2021c);
- Observed that the portions of Caltrans District 1 located within the Lower Klamath, Smith, Trinity, and Chetco sub-basins have forecast compensatory mitigation needs during the planning period; and
- Identified the Lower Klamath, Smith, Trinity, and Chetco sub-basins as locations where Caltrans District 1 and other public agencies that implement transportation improvements could benefit from advance mitigation planning—hereafter called the “GAI” (Figure 1-3).

Because the Lower Klamath, Smith, Trinity, and Chetco sub-basins form an ecological boundary and not a political boundary, some portions of the GAI overlap Caltrans District 2. In addition to Caltrans District 1, Caltrans District 2 may choose to take the lead on an advance mitigation project that would address its needs within the GAI.

1.5.2. Terrestrial Species of Mitigation Need

Compensatory mitigation for species within the GAI was identified as both a historical and anticipated future transportation project compensatory mitigation need within Caltrans District 1. SHOPP transportation projects have historically been conditioned by natural resource regulatory agencies for some species more routinely than others and have benefited from mitigation credits, when available.

Caltrans does not typically need compensatory mitigation credits for species where impacts can be avoided or minimized. Therefore, to further focus the planning effort, Caltrans District 1 identified one terrestrial species that, if compensatory mitigation credits were available, transportation project schedules could potentially benefit. This terrestrial “species of mitigation need” is northwestern pond turtle (*Actinemys marmorata*), which is federally proposed threatened, federally sensitive, and California species of special concern.

This species informs the analysis of estimated impacts provided in Chapter 5, *Modeled Estimated Impacts*, and Chapter 6, *Benefiting Transportation Project Considerations*, as well as the discussion in Chapter 7, *Wildlife Resources Conservation Goals and Objectives*, and Chapter 8, *Aquatic Resources Conservation Goals and Objectives*.

1.5.3. Aquatic Resources, Fish Species of Mitigation Need, and Riparian Habitat

For the purposes of this document, aquatic resources include all wetlands and non-wetland waters that may be subject to CCC, Corps, EPA, SWRCB and RWQCB (or “Water Boards”), and/or CDFW regulations, as well as threatened and endangered fish that may be subject to CCC, CDFW, FWS, and/or NMFS regulations. Fish species of mitigation need identified for this RAMNA include the federally and state threatened southern Oregon/northern California coast evolutionarily significant unit (“ESU”) coho

salmon (*Oncorhynchus kisutch*) and federally threatened and California species of special concern southern distinct population segment (“DPS”) of eulachon (*Thaleichthys pacificus*). Riparian habitat is described in Section 2.19.

Compensatory mitigation needs for aquatic resources and riparian habitat within the GAI were identified as both historical transportation project compensatory mitigation needs and anticipated future transportation project compensatory mitigation needs within Caltrans District 1. SHOPP transportation projects have historically been conditioned by natural resource regulatory agencies for these resources and have benefited from mitigation credits, when available.

The Chetco (HUC-8 17100312), Trinity (HUC-8 18010211), Lower Klamath (HUC-8 18010209), and Smith (HUC-8 18010101) sub-basins inform the analysis of estimated aquatic resources impacts provided in Chapter 5, *Modeled Estimated Impacts*, and Chapter 6, *Benefiting Transportation Project Considerations*, as well as the discussion in Chapter 8, *Aquatic Resources Conservation Goals and Objectives*.

1.6 RAMNA

This RAMNA is a planning-level document that:

- Provides a desktop analysis of relevant available information pertaining to the Lower Klamath, Smith, Trinity, and Chetco sub-basins, referred to as the GAI;
- Applies to fiscal years 2023/24 to 2032/33 (planning period) based on Fiscal Year 2024/25 Q1 Project Book data, as none of the projects with an advertised year of 2033/34 that have been included in the SHOPP Ten-Year Book (Caltrans 2024a) occur within the GAI;
- Discusses potential compensatory mitigation conditions that may be placed on future transportation projects by the seven resource and regulatory agency signatories⁹ to the *Master Process Agreement for Planning and Developing Advance Mitigation throughout California for the California Department of Transportation Advance Mitigation Program* (“Master Process Agreement”; Caltrans et al. 2020);
- Focuses on wildlife habitats and aquatic resources that have a high probability of requiring transportation project-related compensatory mitigation within the GAI and planning period;
- Documents Caltrans’ forecast of potential wildlife and aquatic resource compensatory mitigation needs for the GAI and planning period, as reported by the SAMNA (Caltrans 2025b, 2025c);
- Identifies information that will be important to Caltrans when scoping any of the AMP’s authorized activities within the GAI, in accordance with SHC § 800.6(a), including documenting the existing compensatory mitigation supply;

⁹ Natural resource regulatory signatories are CDFW; SWRCB; Corps Los Angeles, Sacramento, and San Francisco Districts; EPA; FWS; National Marine Fisheries Service (NMFS); and California Coastal Commission (“CCC”).

- Incorporates information and feedback received from outreach to the natural resource regulatory agencies, FHWA, MPOs, RTPAs, other public agencies that implement transportation projects, Native American tribes, interested parties, and the public; and
- Analyzes Caltrans' options to meet its compensatory mitigation needs within the GAI through the AMP's authorized activities.

Because early technical assistance and communication may increase the probability that advance mitigation projects promoted within and/or undertaken by Caltrans will successfully meet the AMP's purpose, in accordance with the AMP Guidelines, Caltrans has requested that this RAMNA be reviewed by FHWA, natural resource regulatory agencies, other transportation agencies (MPOs, RTPAs, and other public agencies that implement transportation improvements), Native American tribes, interested parties, and the public. Their reviews and any information they provide will also be consulted by Caltrans when it promotes and approves specific advance mitigation projects for development and funding (Caltrans 2019).

1.7 Coordination History

With respect to external communications, the AMP Guidelines describe communication milestones within the advance mitigation project planning process (Caltrans 2019). Each is summarized in the following sections.

1.7.1. MPOs, RTPAs, and Other Transportation Agencies that Implement Transportation Improvements

Caltrans is authorized to provide AMA-funded mitigation credits to MPOs, RTPAs, and other public agencies that implement transportation projects, upon reimbursement, for their use to satisfy STIP-funded transportation project mitigation. Transportation projects eligible for STIP funding may increase the potential demand for compensatory mitigation in an area. Caltrans District 1 Transportation Planning has regularly scheduled meetings with the Del Norte Local Transportation Commission and Humboldt County Association of Governments. At this time (August 2026) no STIP transportation projects in their planning phase and located within the GAI were identified for the planning period.

1.7.2. RAMNA Review

The AMP Guidelines (Caltrans 2019) state:

Before the RAMNA will be used to support advance mitigation project planning, Caltrans will, per 23 USC 169(a): consult with each natural resource regulatory agency with jurisdiction over the environmental resources considered in the RAMNA; make a draft of the RAMNA available for review and comment by applicable natural resource regulatory agencies, FHWA, Native American Tribes, local transportation agencies, local advance mitigation programs, local interested parties, and the public; request that, along with their review, natural resource regulatory agencies, Native American Tribes, FHWA, local transportation agencies, local advance mitigation programs, interested parties, and the public

provide Caltrans any additional information relevant to and appropriate for the RAMNA; consider any comments and information received from natural resource regulatory agencies, FHWA, Native American Tribes, local transportation agencies, local advance mitigation programs, local interested parties, and the public on the draft RAMNA; and incorporate information and address such comments in the final RAMNA as appropriate.

In April 2026, Caltrans distributed this RAMNA for review by FHWA, natural resource regulatory agencies, other transportation agencies (MPOs, RTPAs, and other public agencies that implement transportation improvements), Native American tribes, interested parties, and the public. Table 1-3 lists the commenters and the date of their communication. All comments received were considered, addressed, and incorporated into the document, as appropriate.

Table 1-3. Comments Received by Caltrans on the RAMNA

Commenter	Date of Comment(s)
CDFW ^a	July 1, 2026
CCC	June 25, 2026
FWS	June 17, 2026
SWB	June 22, 2026

^a SHC § 800 et seq. specifically directs Caltrans to consult with CDFW on all activities pursuant to the AMP.

1.7.3. Interagency Meeting and Coordination

The Master Process Agreement states that prior to finalizing the RAMNA, “Caltrans will arrange and facilitate at least one ... meeting [with natural resource regulatory agencies] to discuss the RAMNA, conservation goals and objectives, overlapping agency statutory and regulatory requirements, and other relevant topics” (Section IV, Subsection A, Provision 6). In accordance with the Master Process Agreement, a meeting between Caltrans and the natural resource regulatory agencies was held within 60 days of distribution of the RAMNA. The meeting participants and meeting dates are presented in Table 1-4. The discussion has informed this document.

Table 1-4. Interagency Meetings

Meeting Participants	Meeting Date
Caltrans AMP and Caltrans D1	April 29, 2026
Caltrans, CDFW, CCC, EPA, SWB, FWS, HDR	June 23, 2026

1.8 Document Organization

This document is organized as shown in Table 1-5.

Table 1-5. Document Organization

Chapter	Title	Content
Chapter 1	Introduction	This chapter introduces the RAMNA, placing it in the context of the AMP Guidelines, transportation network, and regulatory framework.
Chapter 2	Environmental Setting	This chapter describes the GAI analyzed in the RAMNA. It relies on geospatial data from the SAMNA Reporting Tool and other readily available information.
Chapter 3	Relevant Plans, Policies, and Regulations	This chapter briefly describes laws, regulations, comprehensive plans, conservation plans, and land management plans that are applicable and relevant to the GAI, and informs both regional understanding and advance mitigation scoping.
Chapter 4	Existing Mitigation Opportunities	This chapter summarizes the mitigation credits (or similar) currently available to Caltrans and/or pending that are applicable to the environmental resources discussed in the RAMNA and located within or near the GAI.
Chapter 5	Modeled Estimated Impacts	This chapter summarizes the SAMNA forecast and regional estimates of compensatory mitigation need for the GAI.
Chapter 6	Benefiting Transportation Project Considerations	This chapter summarizes relevant information about potentially benefiting transportation projects, including scheduling considerations and constraints. A time frame for the need for forecast mitigation is provided and analyzed. The potentially benefiting transportation projects' acceleration priorities are documented in this chapter.
Chapter 7	Wildlife Resources Conservation Goals and Objectives	This chapter presents Caltrans' understanding of the GAI's wildlife conservation goals and objectives, with which Caltrans seeks to align its advance mitigation projects.
Chapter 8	Aquatic Resources Conservation Goals and Objectives	This chapter presents Caltrans' understanding of the GAI's aquatic, wetland, and water resources conservation goals and objectives, with which Caltrans seeks to align its advance mitigation projects.
Chapter 9	Assessment of Authorized Activities	This chapter describes options and analyzes the feasibility of purchasing and/or establishing mitigation credits (or similar) within the GAI that have a high probability of successfully accelerating transportation project delivery and protecting natural resources through transportation project mitigation.
Chapter 10	References	This chapter lists references cited in the RAMNA.

Chapter	Title	Content
Appendices	Various	Appendices supporting this document: Appendix A – GIS Sources Appendix B – Transportation Projects Planned for the GAI during the Planning Period Appendix C – Local Coastal Programs Appendix D – Land Cover Types Appendix E – Complete SAMNA Species Results Appendix F – Hydrologic Units Appendix G – List of 303(d) Impaired Waters Appendix H – Aquatic Resource Locations

2. ENVIRONMENTAL SETTING

In this chapter, Caltrans describes the GAI in terms of ecoregion sections, land ownership, topography, coastal zone, climate, land cover types, invasive species, special-status species, critical habitat, connectivity, sub-basins, hydrology, flood hazard areas, water quality, wild and scenic rivers, aquatic resources,¹ riparian habitat, and fire hazard severity zones. Intended to inform advance mitigation project scoping, this assessment relied on readily available literature and GIS sources, including the vegetation and other geospatial data layers developed for the SAMNA Reporting Tool (Caltrans 2025a). Sources used for this assessment are cited throughout the chapter, and links to GIS sources are provided in Appendix A, *GIS Sources*.

On each figure, Caltrans has provided the general location of planned SHOPP transportation projects that, during the 10-year planning period addressed by this document, natural resource regulatory agencies may condition with compensatory mitigation.² The GAI's road infrastructure is described in Chapter 1, *Introduction*, and additional information about planned transportation projects is provided in Chapter 5, *Modeled Estimated Impacts*, and Appendix B, *Transportation Projects Planned for the GAI during the Planning Period*.

2.1 Ecoregion Sections

The GAI consists of approximately 2.7 million acres within the Chetco, Trinity, Lower Klamath, and Smith sub-basins (HUC-8s), which are overlapped by portions of the Klamath Mountains, Northern California Coast, and Northern California Coast Ranges Ecoregion Sections (Table 2-1, Figure 2-1). Ecoregion sections are defined as the largest ecological unit of the U.S. Department of Agriculture ("USDA"), U.S. Forest Service ("USFS") National Hierarchical Framework of Ecological Units, which are nested within larger provinces (Cleland et al. 1997). Each ecoregion section is part of a larger province (McNab et al. 2007; Table 2-1).

¹ For the purposes of advance mitigation planning, aquatic resources consist of wetlands and non-wetland waters that may be subject to CCC, Corps, EPA, Water Boards, and/or CDFW regulations, and special-status fish that may be subject to management by CCC, CDFW, FWS, and/or NMFS regulations.

² Since no STIP-eligible transportation projects are anticipated, no STIP-eligible transportation projects are mapped.

Figure 2-1. Ecoregion Sections in the GAI

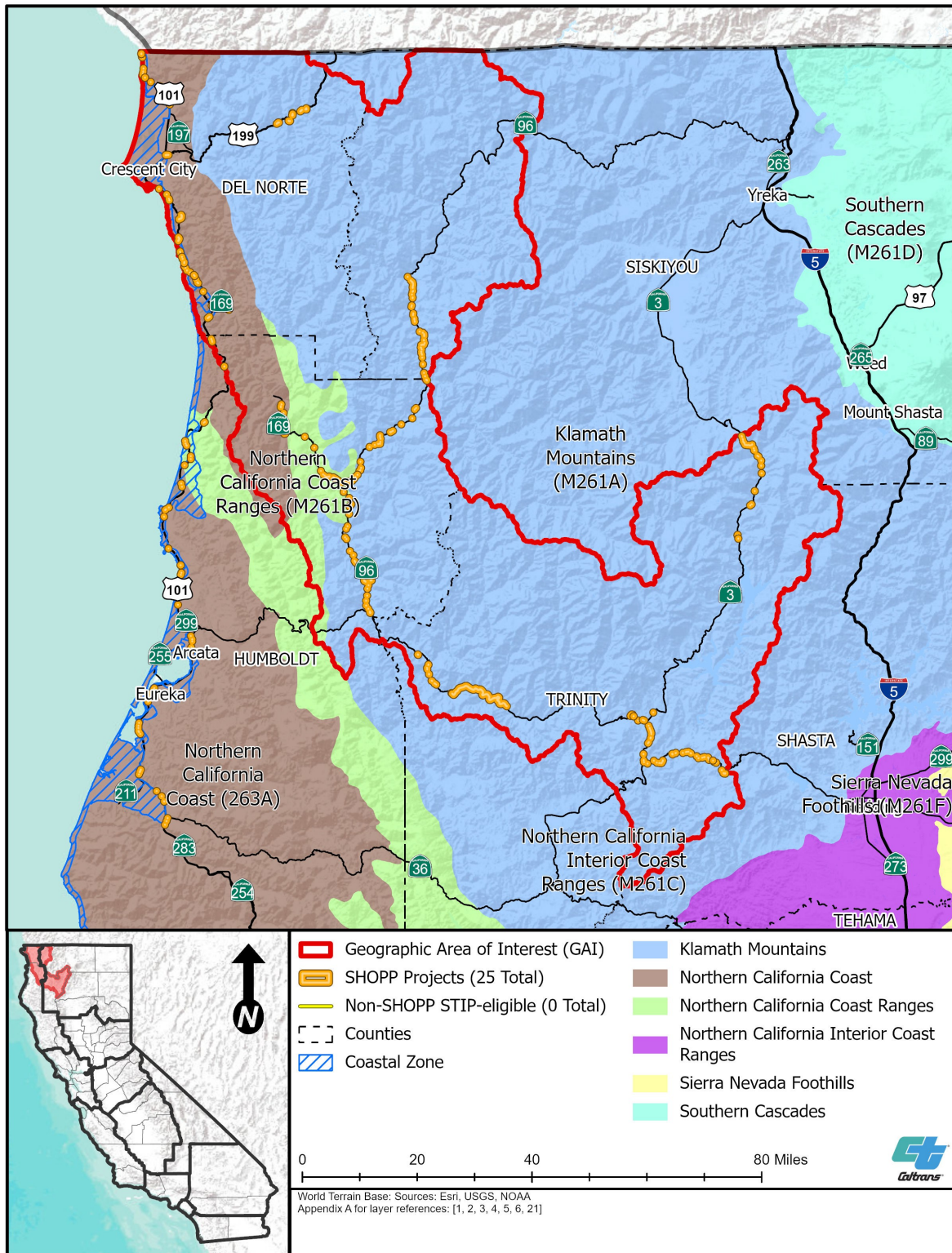


Table 2-1. Ecoregion Sections within the GAI

Section	Province ^a	Acreage ^b	Ecoregion Section as Percentage of GAI
Klamath Mountains	Sierran Steppe-Mixed Forest-Coniferous Forest-Alpine Meadow	2,342,905	85.7
Northern California Coast	California Coastal Steppe, Mixed Forest, and Redwood Forest	282,820	10.3
Northern California Coast Ranges	Sierran Steppe-Mixed Forest-Coniferous Forest-Alpine Meadow	109,489	4.0
Total		2,735,215	100.0

Source: Caltrans 2025a

^a McNab et al. 2007

^b Numbers were rounded to the nearest whole number.

2.2 Land Ownership

The GAI spans parts of Del Norte, Humboldt, Siskiyou, and Trinity counties (Figure 1-3). Federal lands account for most of the land within the GAI (72.0 percent) and are administered and managed by the U.S. Forest Service (“USFS”), U.S. Department of Interior’s Bureau of Land Management (“BLM”), Bureau of Reclamation, and National Park Service (“NPS”) (Table 2-2, Figure 2-2). NPS land includes Redwood National Park and Whiskeytown-Shasta Trinity National Recreation Area. Privately owned and managed lands account for 20.0 percent of land within the GAI. Native American tribes own or manage 5.4 percent of land within the GAI. State lands, which account for 2.0 percent of land within the GAI, include lands owned and managed by the CDFW, California Department of Forestry and Fire Protection, California Department of Parks and Recreation, and California State Lands Commission. Lands managed by nonprofit conservancies and land trusts account for 0.5 percent of the GAI. Cities, counties, and special districts own or govern less than 0.1 percent of land within the GAI (Table 2-2, Figure 2-2).

Figure 2-2. Land Ownership in the GAI

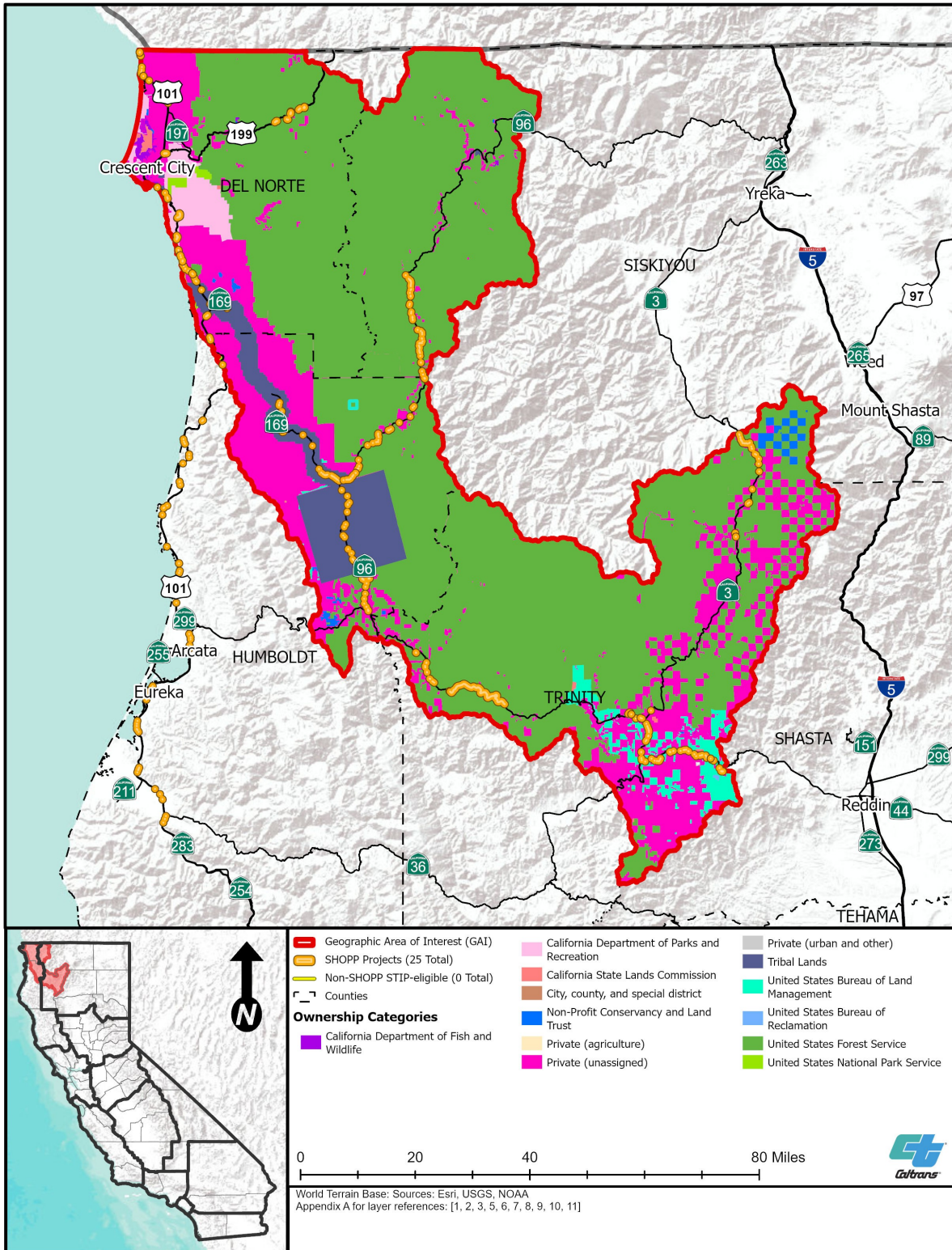


Table 2-2. Land Ownership in the GAI

Land Owner or Land Use	Number of Parcels	Total Acreage per Agency/ Owner ^a	Ownership as Percentage of GAI ^b
CDFW	43	4655.1	0.2
California Department of Forestry and Fire Protection	1	156.8	<0.1
California Department of Parks and Recreation	328	48,931.3	1.7
California State Lands Commission	8	3,421.0	0.1
City, county, and special district	27	429.4	<0.1
Non-profit conservancy and land trust	44	739.0	<0.1
Private (agriculture)	1	5.1	<0.1
Private (unassigned)	5	18,187.88	0.6
Private (urban and other)	2	25.9	<0.1
Tribal Lands	6	261,316.3	9.0
BLM	83	64,387.1	2.2
Bureau of Reclamation	6	344.5	<0.1
U.S. Forest Service	2,749	2,484,244.1	85.5
NPS	60	17,508.7	0.6
Total^c	3,363	2,904,352.1	100.0

Sources: U.S. Bureau of Indian Affairs, California Protected Lands Database, California Conservation Easement Database, Caltrans 2025a, U.S. Census Bureau, USDA, and California Department of Technology for land parcels

^a Numbers were rounded to the nearest whole number.

^b Totals may be different due to rounding.

^c The GAI total includes the water areas, whereas the ecoregion section GAI total does not.

2.2.1. Protected Lands

The California Protected Areas Database, developed by GreenInfo Network, provides an inventory of lands that are owned in fee or protected for open space purposes throughout California by more than 1,000 public agencies and nonprofit organizations. These protected lands are managed for the preservation of biological diversity and other natural, recreational, and cultural uses. It is important to note, however, that these data are based on best available public information at the time of development and, as such, may not represent all protected lands in California.

In the California Protected Areas Database, lands are assigned U.S. Geological Survey (“USGS”) Gap Analysis Program (“GAP”) status ranks that define the degree of protection for biodiversity conservation using a 1 to 4 coding system. Areas with a GAP status of 1 are managed for biodiversity; areas with a GAP status of 2 are managed for biodiversity with disturbance events suppressed; areas with a GAP status of 3 are managed for

multiple uses, potentially including mining or off-road vehicle use; and areas with a GAP status of 4 have no known mandate for biodiversity protection. The method of applying these California Protected Areas Database ranks is done in collaboration with the USGS's Protected Areas Database of the U.S.

Not all California Protected Areas Database lands have GAP status ranks, and some may be out of date. Nevertheless, available protected lands and their associated GAP status ranks are indicated on Figure 2-3. As Figure 2-3 shows, most of the planned SHOPP transportation projects are within unassigned lands or within areas with a GAP status of 1 or 2.

2.3 Topography

The GAI is bounded on the west by the Northern California Coast, on the south by the Northern California Coast Ranges and Trinity National Forest, on the east by Klamath National Forest, and on the north by Six Rivers National Forest. The GAI includes low to moderate elevation parallel ranges with rounded crests of unequal heights, steep slopes, and valleys. Elevations within the GAI range from -4 to 9,024 feet above mean sea level (Figure 2-4).

Figure 2-3. Protected Lands

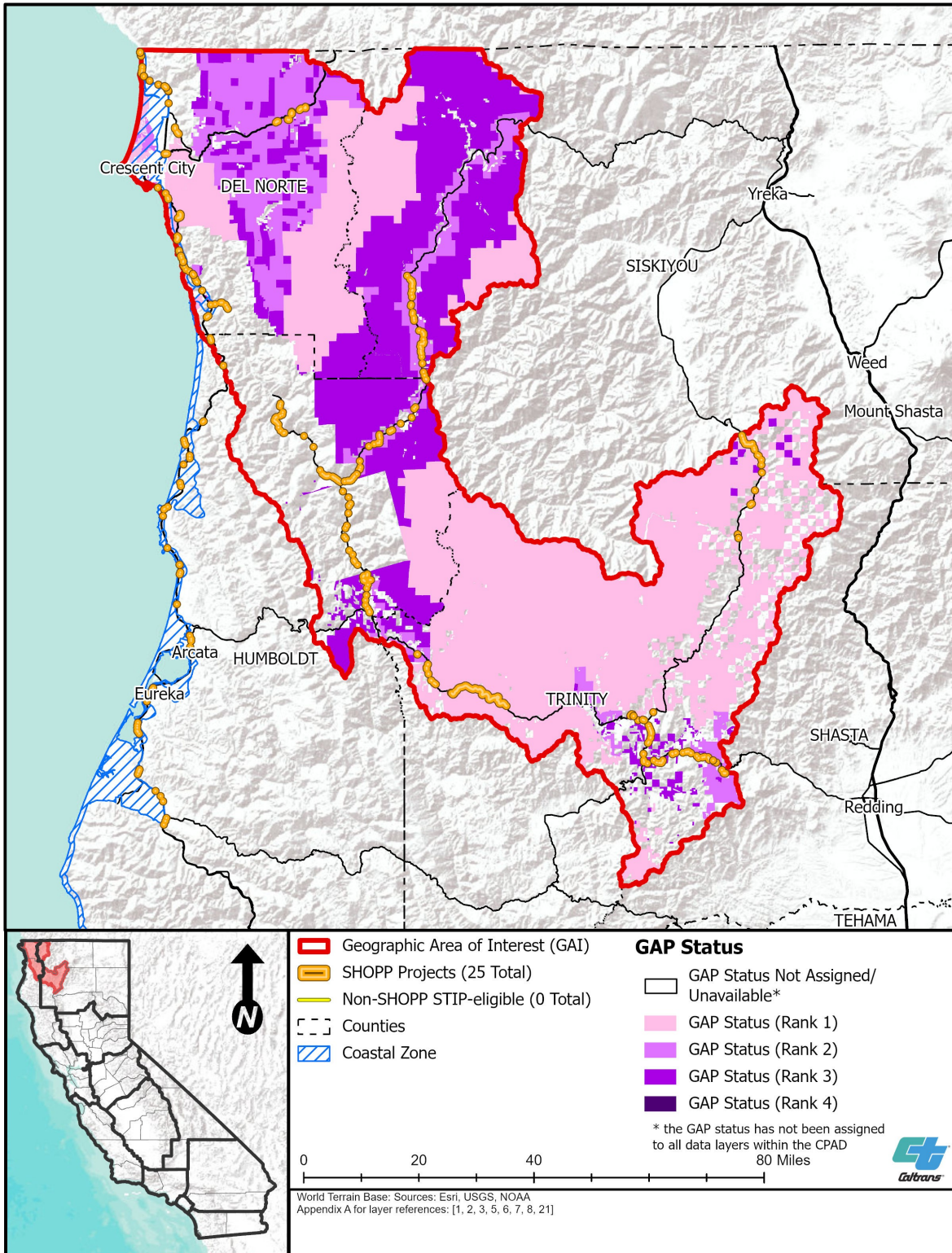
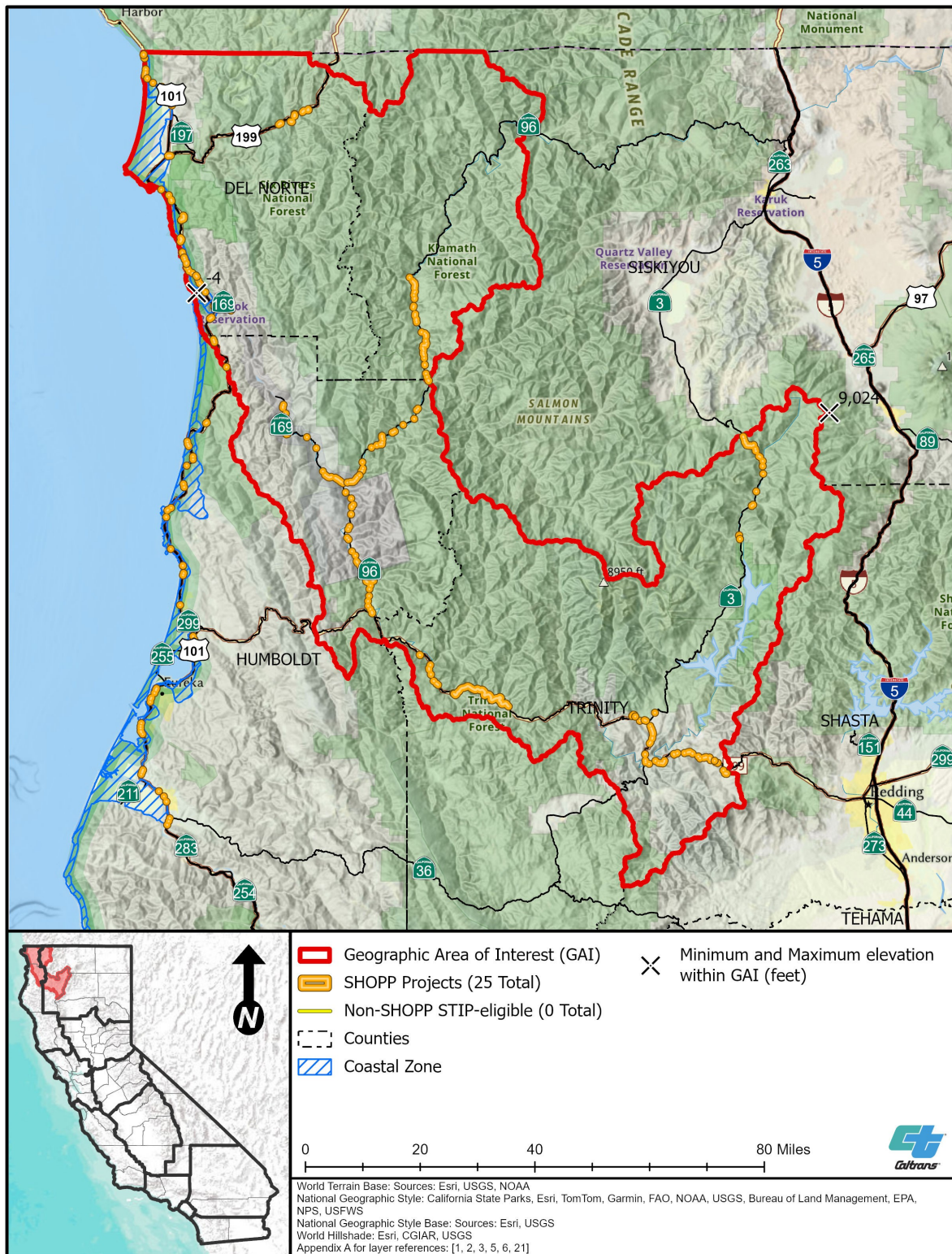


Figure 2-4. Topography



2.4 Coastal Zone

Public Resources Code § 30103(a) of the California Coastal Act defines California's coastal zone as the land and water area of the State of California from the Oregon border to the border with the Republic of Mexico, as depicted on maps identified and set forth in the Coastal Act of 1976 and represents the jurisdiction of the CCC. The coastal zone extends seaward to the state's outer limit of jurisdiction, including all offshore islands, and extends inland generally 1,000 yards from the mean high tide line of the sea. In significant coastal estuarine, habitat, and recreational areas, the coastal zone extends inland to the first major ridgeline paralleling the sea or 5 miles from the mean high tide line of the sea, whichever is less, and in developed urban areas the zone generally extends inland less than 1,000 yards. As indicated on Figure 2-4, the coastal zone overlaps the extreme western part of the GAI; even so, several planned SHOPP transportation projects intersect with the coastal zone.

2.4.1. Local Coastal Programs

The Coastal Act requires mitigation for impacts on coastal habitats, which are within the scope of this document, and other types of coastal resource impacts (for example, visual impacts), which are outside the scope of this document. The CCC regulates potentially impactful projects in the coastal zone primarily through the issuance of Coastal Development Permits ("CDPs"). Local coastal programs ("LCPs") are planning tools used to guide development in the coastal zone through preparation of land use plans ("LUPs") and implementation of zoning ordinances. In coastal local jurisdictions where the CCC has reviewed an LCP for consistency with Coastal Act requirements and certified the LCP, the local government assumes CDP authority within its jurisdiction, with certain exceptions. For example, the CCC retains jurisdiction on tidelands—including former tidelands—submerged land, and land subject to the public trust. In addition, for projects within the jurisdiction of both the CCC, regulated by the Coastal Act, and a local government, regulated by the certified LCP, a consolidated coastal permit may be pursued with the approval of the CCC, local government, and the applicant. The consolidated coastal permit would be subject to review and approval only by the CCC because the Coastal Act would be the regulating mechanism for the entire project, with the LCP providing guidance for review.

Mapped in Appendix C, *Local Coastal Programs*, three LCPs are used by local governments to guide development in the coastal zone in coordination with the CCC. Of these, there is one uncertified LCP segment in the Del Norte LCP: The Point St. George segment. Additionally, there is one uncertified area in the GAI: the Pacific Shores Subdivision Area of Deferred Certification ("ADC"). An uncertified area may be an area that was created through annexation, an area that was subsequently identified but may not have been included in an LCP segment, or an area that has applied for certification but has not yet been accepted by the CCC. A type of uncertified area, an ADC is a geographic area that has not been officially segmented for purposes of LCP preparation and was not certified during review of the LCP. The CCC retains permitting authority until an LCP is effectively certified for these areas.

2.4.2. Environmentally Sensitive Habitat Areas

The California Coastal Act defines an environmentally sensitive habitat area (“ESHA”) as “any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments” (§ 30107.5). Under the Coastal Act § 30240, an ESHA will be protected against any significant disruption of habitat values and only uses dependent on those resources (for example, nature study) are allowed within those areas. Furthermore, development within areas adjacent to an ESHA must be sited and designed to prevent significant degradation of the ESHA. Whether a habitat or location is considered an ESHA is determined by evaluating on-the-ground resources and the surrounding ecological context.

Although maps or descriptions of ESHAs are included in some of the LCPs covering the GAI, there may be ESHAs that have been added or mapping of ESHAs may have changed since the LCPs were certified. Specific ESHA definitions and policies vary among the three CCC-certified LCPs within the GAI (Appendix C). LCPs may list specific species’ habitats or specific natural communities as ESHAs or may designate geographic areas as ESHAs because of the presence of rare or valuable plant or animal species, natural communities, or habitat. Designation of ESHAs is not limited to habitat for federally or state listed species or designated critical habitat. SWRCB-designated ocean areas of special biological significance (“ASBSs”) (see Section 2.11), coastal wetlands and lagoons, tidepools, wilderness and primitive areas, and more may also be considered ESHAs.

ESHAs are often threatened by habitat fragmentation, disturbance, degradation, or other anthropogenic factors; however, while a type of ESHA may be determined to be sensitive because of demonstrated effects of such threats as those listed, it does not necessitate that a particular location must be so threatened itself to qualify as an ESHA.

Areas identified as ESHAs in the LCPs within the GAI include, but are not limited to offshore rocks and islands; intertidal zones; tidepools; coastal estuaries; coastal wetlands; riparian vegetation systems; rare or especially valuable animal habitat; sea cliffs and bluffs; coastal sand dunes; the Redwood National Park of Special Biological Significance including all the offshore waters from the County line to Guyn Bluffs; seabird roosting areas including Mussel Point and Wedding Rock; rivers, creeks, and associated riparian habitats including Redwood Creek, MacDonald Creek, and Maple Creek, and other streams and natural drainages; Wetlands, lagoons, and estuaries including Espa Lagoon, the mouth of Redwood Creek, Freshwater Lagoon, Stone Lagoon, Dry Lagoon, Big Lagoon, and the Big Lagoon Bog; and Azalea habitats at Kane Road (Crescent City Planning Department 2011, Del Norte County 1983, Humboldt County 2014).

2.4.3. Critical Coastal Areas

California’s Critical Coastal Areas (“CCAs”) program fosters collaboration among local stakeholders and government agencies to coordinate efforts to protect high resource value coastal waters from polluted runoff. This nonregulatory program, which is part of

California's Nonpoint Source Pollution Program, is coordinated by CCC staff through a multi-agency statewide committee. The committee includes, but is not limited to, the CCC, Caltrans (stormwater), CDFW, Water Boards, and EPA.

The criteria for identifying CCAs reflect the CCA program's dual goals of improving degraded coastal water quality and providing extra protection from polluted runoff to coastal waters with a recognized high resource value. To be a CCA, an area must meet one or more of the following criteria:

- Coastal watershed areas where an impaired waterway on the 1994 303(d) list is, or flows into, a bay or estuary;
- Coastal watershed areas where an impaired waterway on the 1998 303(d) list flows into a state or federal Marine Managed Area;
- Shoreline areas within San Francisco Bay where an impaired waterway on the 1998 303(d) list flows into wildlife refuges, waterfront parks, and beaches, as specified in the San Francisco Bay Plan;
- Coastal watershed areas that flow into an ASBS;
- Coastal watershed areas where an impaired waterway on the 2010 303(d) list is, or flows into, a Principal Bay or Estuary, as identified in CDFW (2001); and
- Coastal watershed areas where an impaired waterway on the 2010 303(d) list is adjacent to a state Marine Protected Area, as defined in 14 Code of California Regulations § 632(a)(1)(A–C).

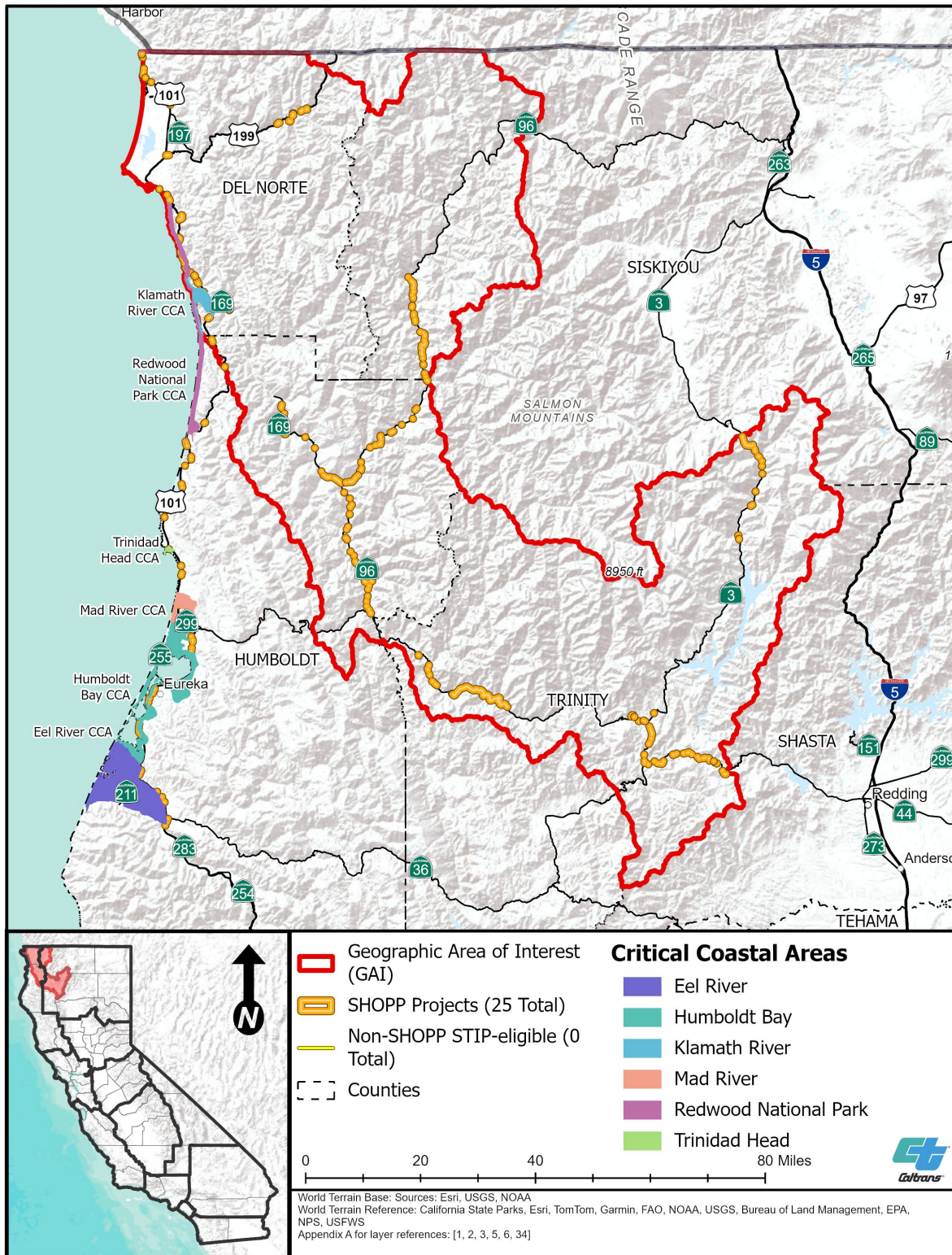
For more information on water quality and the 303(d) list, see Appendix G, *List of 303(d) Impaired Waters*. ASBSs are discussed in Section 2.11.

Statewide, 119 CCAs have been identified, two of which occur within the GAI (Figure 2-5). These include:

- Redwood National Park
- Klamath River

The inland boundary of a CCA is the coastal zone boundary, as defined in the California Coastal Act. The shoreline boundary is determined on a case-by-case basis.

Figure 2-5. Critical Coastal Areas



2.5 Climate

The GAI is generally characterized by a Mediterranean climate with wet, cool winters and dry, warm summers. Average temperatures range from 39 to 73 degrees Fahrenheit. Average annual precipitation ranges from 42 to 125 inches, with most precipitation falling between October and April generally declining with distance from the coast (Caltrans 2018a and 2018b; North Coast RWQCB 2018; Skinner et al. 2006).

In the next 30 years, the climate is expected to change. Sea-level rise predictions used in California for planning purposes are summarized in Section 2.5.1. Results of Caltrans' climate vulnerability assessment are summarized in Section 2.5.2. The predicted resilience of the GAI to effects resulting from climate change is summarized in Section 2.5.3.

2.5.1. State of California Sea-level Rise Guidance

CNRA and the Ocean Protection Council ("OPC") *State of California Sea-Level Rise Guidance: 2024 Science and Policy Update* provides guidance to California state agencies for incorporating sea-level rise projections into planning, permitting, investment, and other decisions (California Sea Level Rise Science Task Force, California Ocean Protection Council, California Ocean Science Trust 2024).

The stepwise approach provides guidance on how to select sea-level rise projections by evaluating risk and vulnerability. The following recommendations provide guidance on preferred sea-level rise planning and adaptation approaches, with an understanding that the diversity of communities, uses, and natural resources along California's coastline, as well as planning for new development versus existing structures, may merit different approaches to building resilience. Adaptation planning and strategies should:

1. Prioritize social equity, environmental justice and the needs of underserved and vulnerable communities;
2. Prioritize protection of coastal habitats and public access;
3. Consider the unique characteristics, constraints, and values of existing water-dependent infrastructure, ports, and public trust uses;
4. Consider episodic increases in sea-level rise caused by storms and other weather-related events;
5. Coordinate and collaborate with local, state, and federal agencies when selecting sea-level rise projections; where feasible, use consistent sea-level rise projections across multiagency planning and regulatory decisions;
6. Consider local conditions to inform decision making;
7. Be conducted at community and regional levels, when possible.

The report replaces 2018 guidance provided in the *State of California: Sea-Level Rise Guidance* report (CNRA and OPC 2018), which reflects the most current understanding of sea-level rise science and modeling of global sea-level rise. Projections in the report show that sea levels could rise nearly a foot by 2050 and potentially up to twelve feet by 2150. Based on the guidance in the 2024 report, the 2050 sea-level rise projections for the Crescent City NOAA tide gauge location, which is located in the GAI, range from 0.1

to 0.8 foot. Sea-level rise near Crescent City is projected to reach between 0.2 and 10.3 feet by 2150 (California Sea Level Rise Science Task Force, California Ocean Protection Council, California Ocean Science Trust 2024).

2.5.2. Climate Vulnerability Assessment

From 2017 through 2019, Caltrans performed a statewide climate change vulnerability assessment for the SHS (Caltrans 2019b). The analysis provided in the *Caltrans Climate Change Vulnerability Assessments: District 1 Technical Report* (Caltrans 2019b) is based on global climate change data compiled by the Intergovernmental Panel on Climate Change. Caltrans applies three future emissions scenarios for greenhouse gas emission concentrations in the technical report—(1) representative concentration pathway 2.6, which assumes global annual greenhouse gas emissions will peak in the next few years, then begin to decline substantially; (2) representative concentration pathway 4.5, which assumes emissions will peak around 2040 and then begin to decline; and (3) representative concentration pathway 8.5, which assumes that high emission trends continue to the end of the century—for three future 30-year periods centered on the years 2025 (2010 to 2039), 2055 (2040 to 2069), and 2085 (2070 to 2099).

The effects of climate change within the GAI pose risks for transportation infrastructure, reliability, and capacity. Transportation systems were designed for historical climate conditions; changing climatic conditions, including an increased frequency of extreme weather events, are expected to disrupt and damage the SHS. Predicted climate change effects consist of increased summer temperatures and extreme heat events; increased heavy precipitation events, with dry years becoming drier and wet years becoming wetter; and an increased risk of wildfire and flooding over the three time periods analyzed in the technical report (Caltrans 2019b). Climate change effects during the three future 30-year periods are expected to exacerbate coastal hazards, including storm surges that increase tidal bay flooding in coastal areas, erosion, scour, and washouts underneath the SHS, damaging highways, drainage infrastructure, and rock slope shore protection; increase flooding, landslide, and mudslide frequency; and worsen the severity of wildfires, which can destabilize slopes, destroy roadside infrastructure, and cause debris to collect in drainage infrastructure (Caltrans 2019b).

Based on the NOAA model for estimated sea-level rise presented in the *Caltrans Climate Change Vulnerability Assessments: District 1 Technical Report*, portions of Highway 101 in Del Norte County are vulnerable to sea-level rise and storm surge events, with areas of exposed roadway identified in all sea level rise scenarios (Caltrans 2019b).

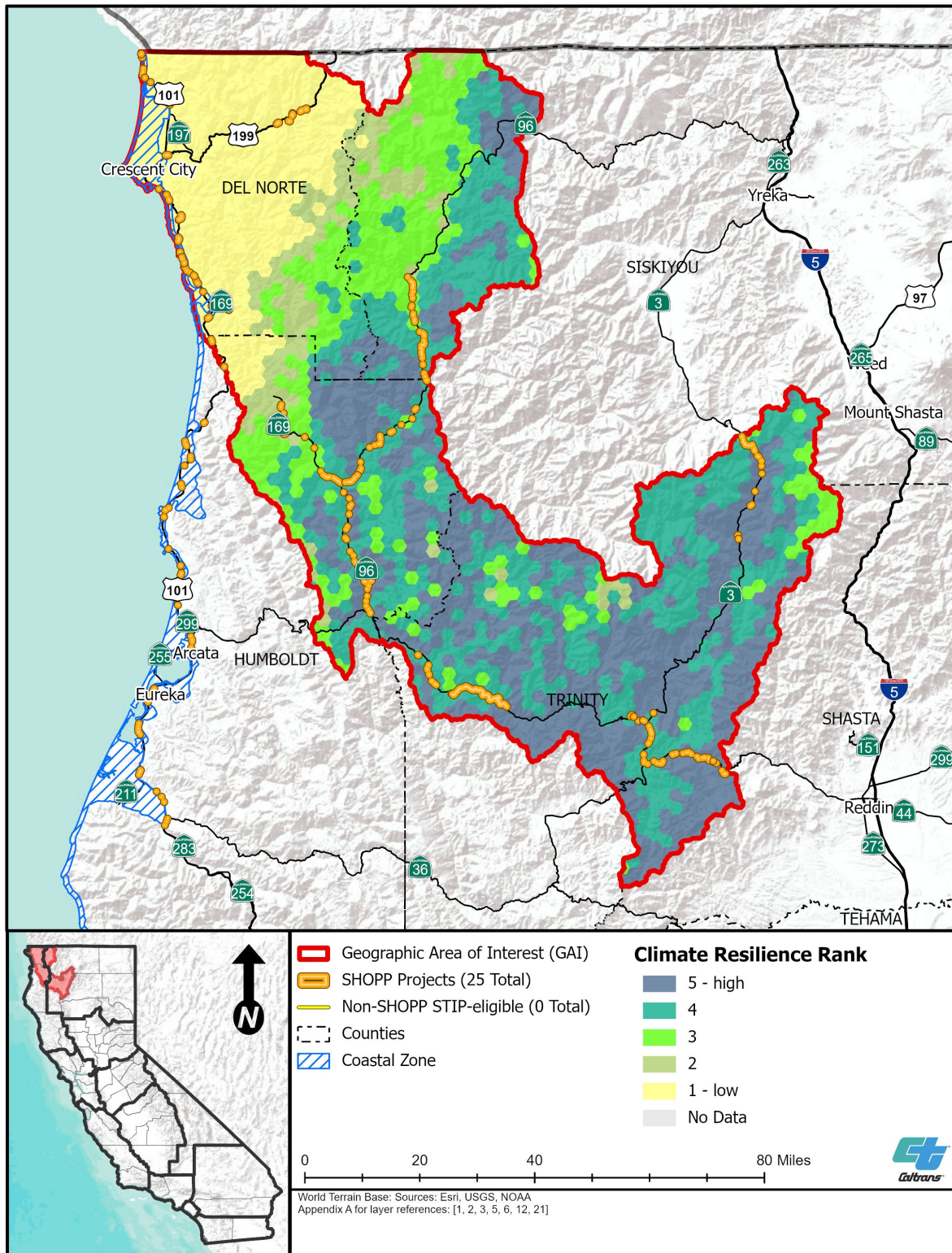
2.5.3. Climate Resiliency

A climate change-resilient natural community area is a terrestrial location expected to remain stable in the face of climate change (CDFW 2018). The predicted resilience of the GAI to effects resulting from climate change was acquired from CDFW's Areas of Conservation Emphasis ("ACE," version 3) terrestrial climate change resilience dataset. This dataset consists of the modeled probability that a given terrestrial location may function as a plant or wildlife refugium from climate change, meaning that it would be

relatively buffered from the effects of climate change, conditions would likely remain suitable for plants and wildlife currently residing in the area, and ecological functions would be more likely to remain intact. The ACE dataset combines climate refugia model results from eight future climate scenarios based on different combinations of global climate models, emissions scenarios, and time horizons. The eight scenarios assessed included (1) two potential future climates—a hotter and drier future, and a warmer and wetter future; (2) two future carbon dioxide (“CO₂”) scenarios—one with no reductions in CO₂ emissions and one with a peak in 2040 followed by a significant decline in CO₂ emissions; and (3) two 29-year time intervals—2040 to 2069 and 2070 to 2099. Terrestrial locations were assigned climate resilience ranks ranging from 1 (low resilience, or low probability that the terrestrial location will contain climate refugia) to 5 (high resilience, or high probability that the terrestrial location will contain climate refugia) (CDFW 2018).

Resiliency is an important consideration when establishing compensatory mitigation. The terrestrial climate change resilience rank from the ACE dataset (CDFW 2018) is presented on Figure 2-6. Resilience in the GAI is associated with elevation, with higher elevation areas having higher resistance. Resilience within the eastern and southern parts of the GAI at higher elevation in the Klamath Mountains ranges from 3 to 5. Resilience within the northwestern part of the GAI ranges from 1 to 3 (Figure 2-6).

Figure 2-6. Terrestrial Climate Resilience Rankings



2.6 Land Cover Types

General land cover types are depicted on the maps provided in Appendix E, *Land Cover Types*. Land cover types within the GAI were extracted from the SAMNA, which developed its vegetation data layer by merging CDFW's California Wildlife Habitat Relationships ("CWHR") Vegetation Classification and Mapping Program GIS database, the USFS Classification and Assessment with Landsat of Visible Ecological Groupings, and the California Department of Forestry and Fire Protection vegetation layer (Caltrans 2025b). Based on these data, tree-dominated habitats account for the largest habitat type, encompassing over 84.3 percent of the GAI, with Douglas fir the most common. Shrub-dominated habitats account for 11.1 percent of the GAI, with montane chaparral the most common. Herbaceous-dominated habitats account for 2.1 percent of the GAI, with annual grassland the most common. Developed and non-vegetated habitat types (barren areas) combined account for 1.7 percent of the GAI, with urban the most common. Aquatic habitats account for 0.9 percent of the GAI, with lacustrine the most common (Table 2-3, Appendix E). Land cover is generally shown on Figure 2-7.

Table 2-3. Land Cover Types

CWHR Habitat Type	Acres^a	Cover as Percentage of GAI^b
Tree-dominated Habitats	2,304,595	84.3
Blue Oak-Foothill Pine	6,115	0.2
Closed-Cone Pine-Cypress	7,275	0.3
Coastal Oak Woodland	10,281	0.4
Douglas Fir	945,892	34.6
Eastside Pine	363	<0.1
Jeffrey Pine	16,333	0.6
Klamath Mixed Conifer	106,994	3.9
Lodgepole Pine	339	<0.1
Montane Hardwood	180,360	6.6
Montane Hardwood-Conifer	289,353	10.6
Montane Riparian	36,493	1.3
Ponderosa Pine	8,368	0.3
Red Fir	58,609	2.1
Redwood	72,719	2.7
Sierran Mixed Conifer	404,277	14.8
Subalpine Conifer	44,225	1.6
White Fir	116,598.07	4.262

CWHR Habitat Type	Acres^a	Cover as Percentage of GAI^b
Shrub-dominated Habitats	303,561.32	11.1
Alpine Dwarf-Shrub	0.84	<0.001
Coastal Scrub	7,752.95	0.238
Low Sage	0.59	<0.001
Mixed Chaparral	72,520.33	2.65
Montane Chaparral	223,206.71	8.16
Sagebrush	79.90	<0.001
Herbaceous-dominated Habitats	58,454.08	2.1
Annual Grassland	35,840.60	1.31
Pasture	9,621.64	0.35
Perennial Grassland	8,154.92	0.298
Saline Emergent Wetland	2,901.09	0.106
Wet Meadow	1,935.84	<0.001
Aquatic Habitats	23,163.66	0.9
Lacustrine	17,641.73	0.644
Marine	0.24	<0.001
Riverine	5,521.69	0.202
Developed Habitats	7,770.85	0.3
Cropland	2,524.22	0.092
Deciduous Orchard	46.77	0.001
Evergreen Orchard	7.06	0.002
Rice	12.66	0.005
Urban	5,040.67	0.184
Vineyard	139.48	0.005
Non-vegetated Habitats	37,663.95	1.4
Barren	37,663.95	1.377
Total	2,735,216.54	100

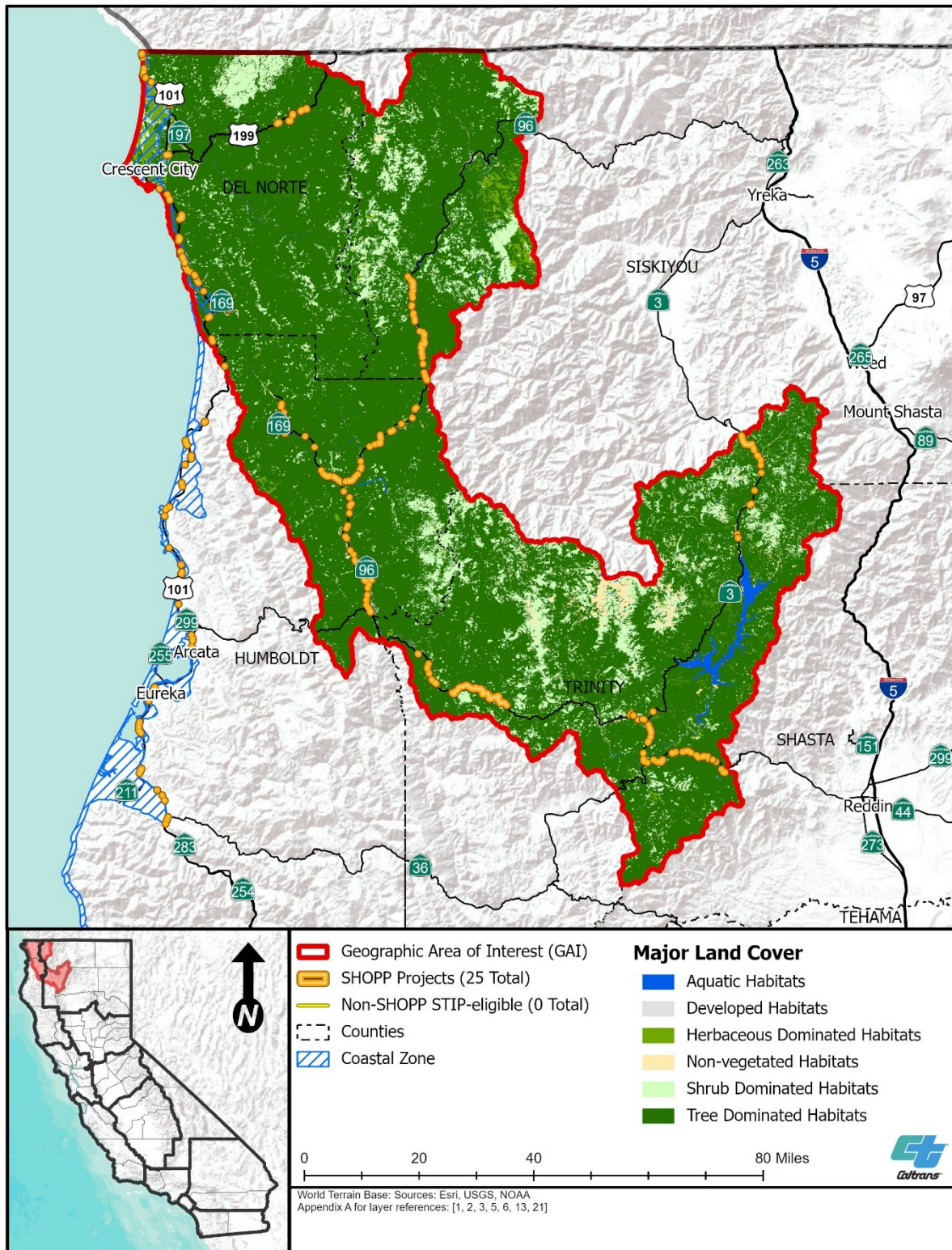
Source: Caltrans 2025b

^a Numbers were rounded to the nearest whole number.

^b Numbers were rounded to the hundredths.

^c Totals may be different due rounding.

Figure 2-7. Major Land Cover^a



^a For greater detail, see Appendix E.

2.7 Invasive Species

Both invasive plant and animal species are known to occur within the GAI. Invasive species include plants and animals that are not native to an area, typically have high growth and reproductive rates, and are able to outcompete native plants and animals, often because of a lack of natural predators or controls (National Wildlife Federation n.d.). Invasive species may affect native species, including special-status species, by directly competing for resources, preying on native species, introducing or spreading diseases, reducing the complexity and biodiversity of ecosystems, altering soil chemistry and water availability, and increasing wildfire potential (CDFW 2024b; FWS 2022a).

Three organizations maintain invasive species databases for California. The Invasive Species Council of California maintains a list of invasive plant and animal species throughout the State of California (California Invasive Species Advisory Committee 2010). The California Department of Food and Agriculture also maintains a list of noxious weeds for California (USDA Natural Resources Conservation Service 2026). The California Invasive Plant Council (“Cal-IPC”) maintains a California invasive plant inventory that categorizes nonnative plant species based on the severity of their potential ecological impacts (Cal-IPC 2026b).

Nonnative invasive plant pathogens occur within the GAI. The pathogen that causes sudden oak death (*Phytophthora ramorum*), a water mold, is particularly problematic in northern coast redwood forests, and has killed millions of oaks and tanoaks (*Lithocarpus densiflorus*) along the California coast (California Oak Mortality Task Force 2021; CDFW 2025). This pathogen infests a range of shrub and tree host species, causing branch and shoot dieback and leaf spots. It spreads aerially by wind and can survive in infested plant material, litter, soil, and water (Goheen et al. 2006).

Within the GAI, invasive plant species have been specifically identified as threats or stressors to terrestrial and aquatic biological resources (CDFW 2023a). Nonnative, invasive plant species with a high ranking by Cal-IPC are those that have the most severe ecological effects and are the most widely distributed geographically, although species with a moderate or limited ranking can also have negative local ecological effects.

Invasive plant species within the GAI that are identified as problematic in the California SWAP or the Cal-IPC inventory include, but are not limited to, tree-of-heaven (*Ailanthus altissima*), sweet vernal grass (*Anthoxanthum odoratum*), giant reed (*Arundo donax*), wild oat (*Avena barbata* and *A. fatua*), black mustard (*Brassica nigra*), false brome (*Brachypodium distachyon*), ripgut brome (*Bromus diandrus*), red brome (*Bromus rubens*), woolly distaff thistle (*Carthamus lanatus*), cheatgrass (*Bromus tectorum*), purple starthistle (*Centaurea calcitrapa*), tocalote (*Centaurea melitensis*), yellow starthistle (*Centaurea solstitialis*), bull thistle (*Cirsium vulgare*), spotted knapweed (*Centaurea stoebe* ssp. *micranthos*), Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), poison hemlock (*Conium maculatum*), pampas grass (*Cortaderia jubata*), hedgehog dogtailgrass (*Cynosurus echinatus*), Scotch broom (*Cytisus scoparius*), common and Fuller’s teasel (*Dipsacus fullonum* and *D. satibus*), water hyacinth (*Eichhornia crassipes*),

medusahead (*Elymus caput-medusae*), tall fescue (*Festuca arundinacea*), leafy spurge (*Euphorbia virgata*), rattail sixweeks grass (*Festuca myuros*), Italian ryegrass (*Festuca perennis*), fennel (*Foeniculum vulgare*), French broom (*Genista monspessulana*), cutleaf geranium (*Geranium dissectum*), English ivy (*Hedera helix*), common velvet grass (*Holcus lanatus*), Mediterranean barley (*Hordeum marinum*), hare barley (*Hordeum murinum*), shortpod mustard (*Hirschfeldia incana*), rough cat's-ear (*Hypochaeris radicata*), parrotfeather (*Myriophyllum aquaticum*), Eurasian watermilfoil (*Myriophyllum spicatum*), hardinggrass (*Phalaris aquatica*), hydrilla (*Hydrilla verticillata*), dyer's woad (*Isatis tinctoria*), perennial pepperweed (*Lepidium latifolium*), curlyleaf pondweed (*Potamogeton crispus*), Himalayan blackberry (*Rubus armeniacus*), red sorrel (*Rumex acetosella*), Spanish broom (*Spartium junceum*), hedgeparsley (*Torilis arvensis*), common gorse (*Ulex europaea*), and big periwinkle (*Vinca major*) (Cal-IPC 2026; CDFW 2025).

Nonnative animals that are/may be present within the GAI and can negatively affect aquatic species include New Zealand mudsnails (*Potamopyrgus antipodarum*), quagga mussels (*Dreissena bugensis*), zebra mussels (*Dreissena polymorpha*), Asian clams (*Corbicula fluminea*), Chinese mystery snails (*Cipangoludina chinensis malleata*), nutria (*Myocastor coypus*), largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieu*), brown trout (*Salmo trutta*), brook trout (*Salvelinus fontinalis*), Sacramento pikeminnow (*Ptychocheilus grandis*), yellow perch (*Perca flavescens*), sunfish (*Lepomis* sp.), black crappie (*Poxmoxis nigromaculatus*), white crappie (*Poxmoxis annularis*), bullhead (*Ameiurus* spp.), Mississippi silversides (*Menidia audens*), threadfin shad (*Dorosoma petenense*), American bullfrog (*Rana catesbiana*), and red swamp crayfish (*Procambarus clarkia*) (CDFW 2025, 2023a). Introduced nonnative animals such as American bullfrog, red swamp crayfish (*Procambarus clarkii*), signal crayfish (*Pacifastacus leniusculus*), mosquitofish, and other fish species can negatively affect native animals such as foothill yellow-legged frogs (*Rana boylei*) and other aquatic species by competing for food resources, acting as disease vectors, and preying on the native animals (Hayes et al. 2016).

Nonnative animals that are/may be present within the GAI and can negatively affect terrestrial wildlife or habitat through competition, predation, or parasitism include barred owls (*Strix varia*), feral pigs (*Sus scrofa*), European starlings (*Sturnus vulgaris*), wild turkeys (*Meleagris gallopavo*), and brownheaded cowbirds (*Molothrus ater*) (CDFW 2025). Invasive animal species that are/may be associated with urban areas include common ravens (*Corvus corax*), domestic dogs (*Canis lupus familiaris*), domestic cats (*Felis catus*), Argentine ants (*Linepithema humile*), and fire ants (*Solenopsis invicta*) (CDFW 2025; NPS 2017). The common raven is native to California, but is considered a subsidized predator, benefiting from urbanization and human-altered habitats to increase its range.

2.8 Special-status Terrestrial Species

Special-status terrestrial species are discussed below, with additional detail provided in Appendix E, *Complete SAMNA Species Results*. Threatened and endangered fish species with the potential to occur within the GAI are discussed in Section 2.18.2.

Special-status terrestrial species with the potential to occur within the GAI were extracted from the SAMNA Reporting Tool's species-attributed vegetation data layer, which was developed using the CWHR (CDFW 2019), the Jepson Herbarium's floristic province layer, CDFW's RareFind 5 database (CDFW 2023c), and other information (Caltrans 2025b). Special-status terrestrial species included in the SAMNA are those that are considered federally and/or state threatened or endangered species, state candidate threatened or endangered species, state fully protected species, state species of concern, state rare species, and federal sensitive species (which includes species that are USFS sensitive and/or BLM sensitive). Based on a search of the SAMNA Reporting Tool's species-attributed vegetation layer, 66 non-fish special-status species have the potential to occur within the GAI.

Although it is the best information currently available, the SAMNA Reporting Tool's species list is uncertain (Appendix E). The species-attributed list developed for the SAMNA Reporting Tool depends on a species having a defined geographic range within the CWHR or having occurrences documented in the California Natural Diversity Database (Caltrans 2025b). When CWHR home range and/or California Natural Diversity Database occurrence information is incorrect or out-of-date, the probability that a species will be misidentified as potentially present increases. Therefore, SAMNA results go through a sensibility evaluation prior to being used to inform advance mitigation scoping (Appendix F). Further, although the SAMNA data layers and results are suitable to assist with advance mitigation project scoping, establishing compensatory mitigation credits approved by one or more natural resource regulatory agencies requires additional analysis and site-specific studies.

2.9 Critical Habitat

FWS regulates impacts on critical habitat under the FESA. The FESA (16 USC § 1531–1544) defines critical habitat for a threatened or endangered species as (i) “specific areas within the geographical area occupied by the species at the time it is listed ... on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection;” and (ii) “specific areas outside the geographical area occupied by the species at the time it is listed ... upon a determination by the Secretary that such areas are essential for the conservation of the species.” Further, the FESA clarifies that critical habitat “shall not include the entire geographical area which can be occupied by the threatened or endangered species.” Critical habitat designations reflect a rigorous process. Before publishing the rule finalizing the critical habitat designation, FWS and NMFS publish proposals to designate critical habitat in the *Federal Register* and consider information received during the public comment period (FWS 2017a).

The GAI includes federally designated final critical habitat for six species (FWS 2025):

- Marbled murrelet (*Brachyramphus marmoratus*)
- Northern spotted owl (*Strix occidentalis caurina*)
- Pacific marten, coastal DPS (*Martes americana humboldtensis*)
- Sand dune phacelia (*Phacelia argentea*)
- Tidewater goby (*Eucyclogobius newberryi*)
- Western snowy plover (*Charadrius nivosus nivosus*)

Critical habitat is an important consideration when establishing compensatory mitigation. Designated critical habitat for these species is indicated on Figure 2-8.

2.10 Essential Fish Habitat

NMFS is responsible for ensuring impacts on essential fish habitat (“EFH”) are addressed. EFH was defined by Congress in 1996 in an amendment to the Magnuson-Stevens Fishery Conservation and Management Act. EFH covers federally managed fish and invertebrate species that are not found strictly in fresh water and includes all aquatic habitat types where fish spawn, breed, feed, or grow to maturity (NMFS 2017). Habitat types include coral reefs, kelp forests, bays, wetlands, rivers that connect to the ocean, and deep ocean habitat. EFH is protected by imposing fishing limitations and requiring consultation with NMFS prior to any federal work with the potential to affect fish habitat. NMFS designates EFH for sharks, tuna, and other migratory species that cross regional boundaries. Habitat for other managed fish species is determined by regional fishery management councils (NMFS 2017). The GAI includes EFH for krill (*Thysanoessa spinifera*, *Euphausia pacifica*, and other krill species) finfish, coastal pelagic species, and groundfish (Figure 2-9).

2.10.1. Habitat Areas of Particular Concern

The Pacific Fishery Management Council identifies habitat areas of particular concern (“HAPCs”) and recommends HAPCs to NOAA Fisheries consistent with the Magnuson-Stevens Fishery Conservation and Management Act. HAPCs are a discrete subset of EFH that consist of areas considered a high priority for conservation, management, or research because they provide important ecosystem functions that can be especially sensitive to degradation as a result of human activities, can be stressed by development, or are notable because of their rarity. An area designated as an HAPC prioritizes and focuses conservation efforts rather than automatically requiring its protection or restrictions. HAPCs may be important for healthy fish populations; however, other EFH areas can also provide ecological functions necessary to support and maintain sustainable fisheries and a healthy ecosystem (NMFS 2025).

Within the GAI, HAPCs include estuaries along or near the coastline. HAPCs that intersect the SHS are shown on Figure 2-10.

2.11 Areas of Special Biological Significance

The California Ocean Plan, originally adopted by the Water Boards in 1972 and updated most recently in 2019, establishes water quality objectives for ocean waters and provides the basis for the regulation of wastes discharged into coastal waters from both point and non-point sources (SWRCB 2019a). It defines ASBSs as “those areas designated by the SWRCB as ocean areas requiring protection of species or biological communities...” and requires that waste be discharged a sufficient distance from an ASBS to ensure “maintenance of natural water quality” (SWRCB 2019a). According to Resolution Numbers. 74-28, 74-32, and 75-61, the SWRCB designated 34 ocean areas along the coast of California as ASBSs (SWRCB 2019a). These areas typically support a variety of aquatic life and often host unique individual species (SWRCB 2017). Figure 2-11 shows ASBSs located in proximity to the GAI. The GAI’s coastline is adjacent to the Redwoods National Park ASBS (SWRCB 2017).

Figure 2-9. Essential Fish Habitat

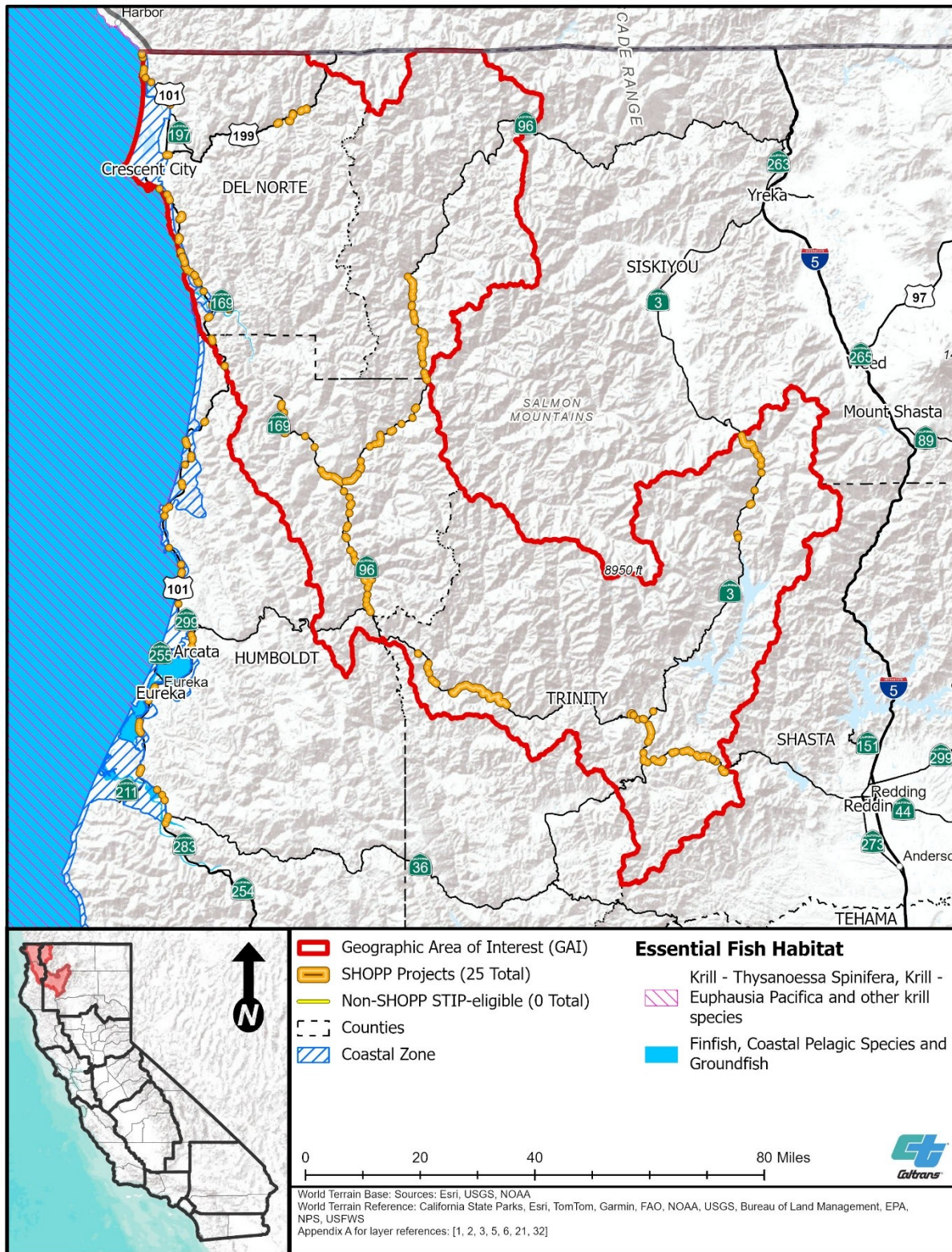


Figure 2-10. Habitat Areas of Particular Concern

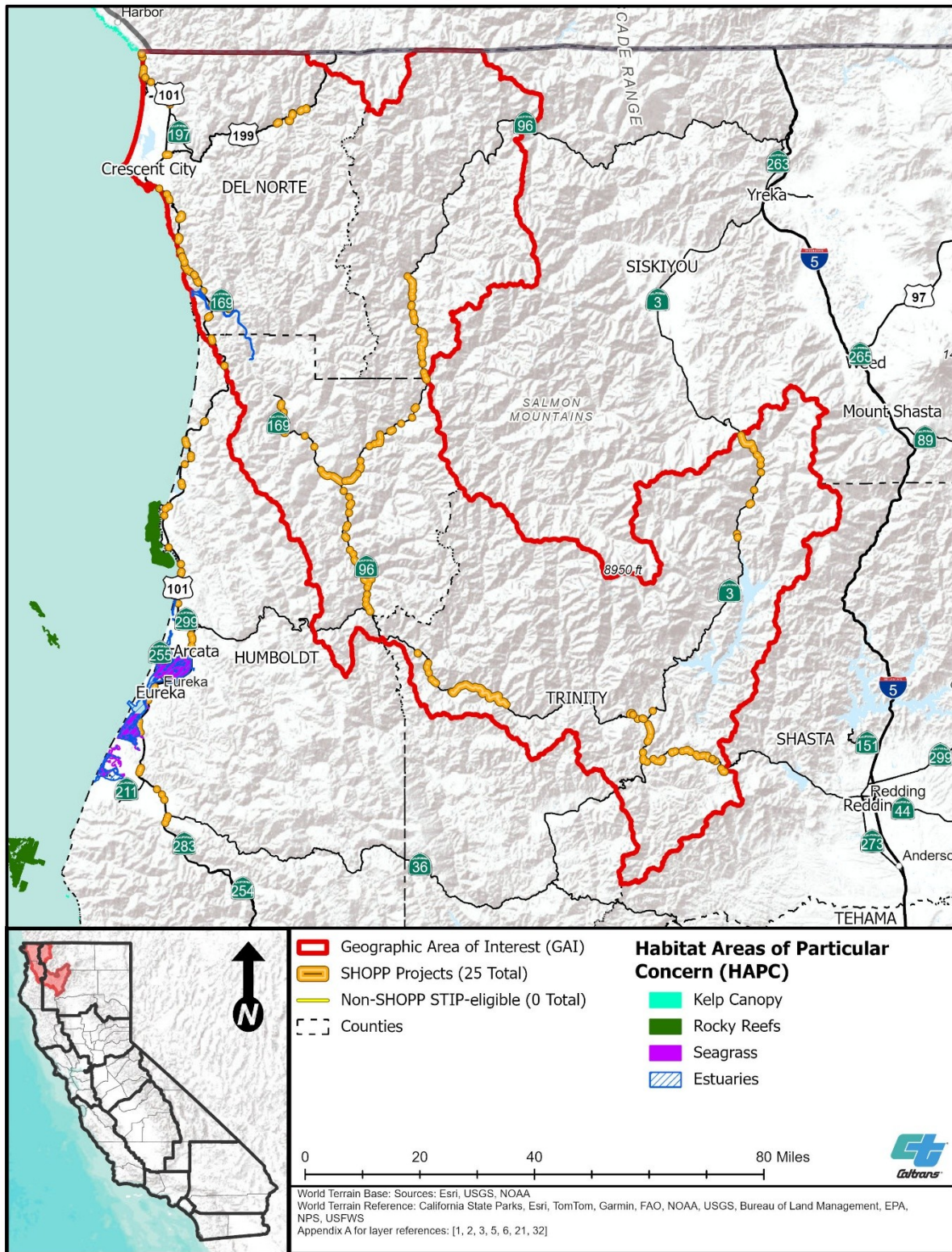
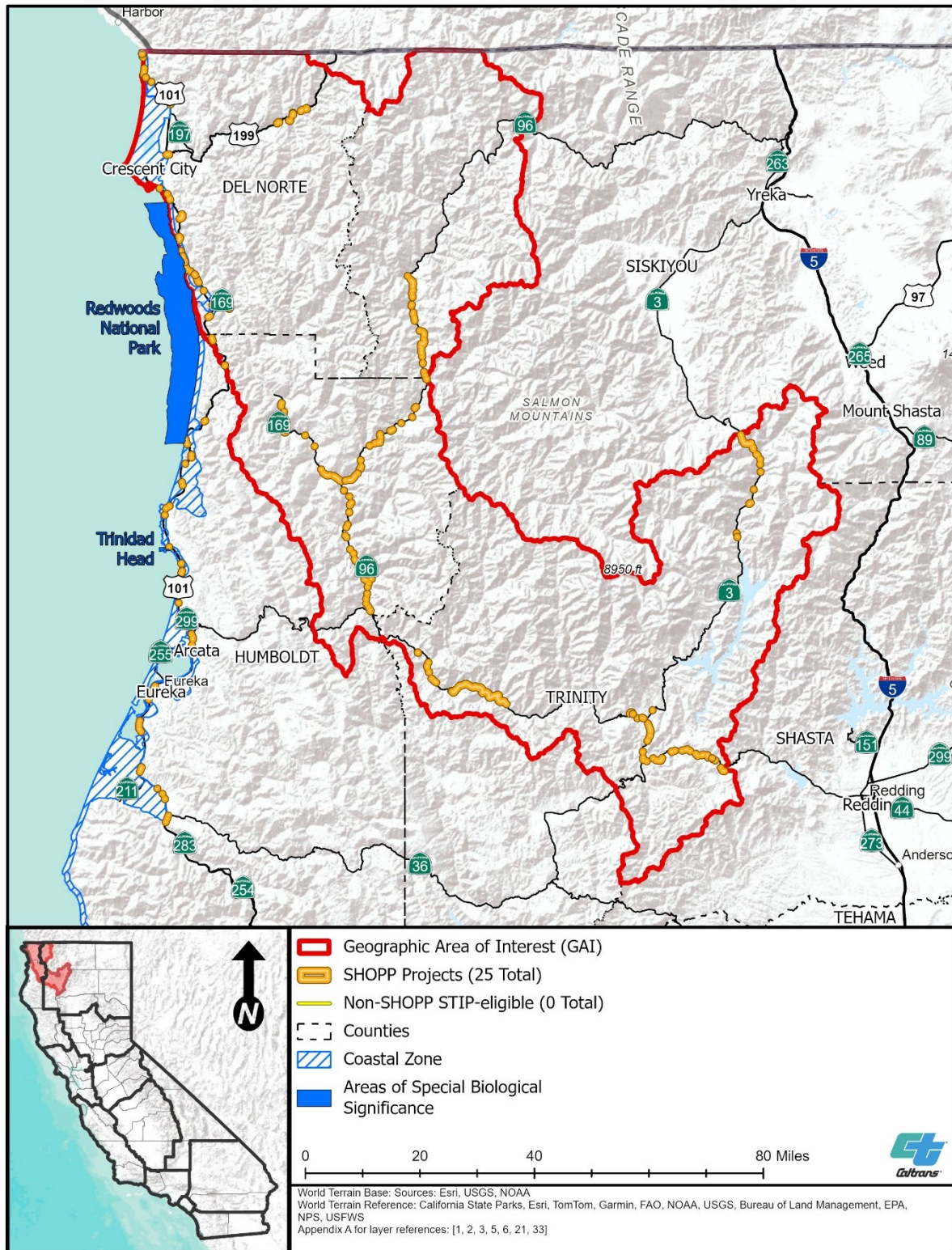


Figure 2-11. Areas of Special Biological Significance



2.12 Connectivity

Roads can be barriers to special-status wildlife species movement, and block migration and access to and from suitable upstream habitat for special-status fish species. Improving habitat connectivity and permeability of the SHS may provide a mechanism for maintaining biodiversity in the face of California's human population growth and climate change (CDFW 2022).

2.12.1. Wildlife Movement

Caltrans identified three connectivity assessments applicable and relevant to the GAI: the California Essential Habitat Connectivity ("CEHC") Project, ACE, and CDFW's *Restoring California's Wildlife Connectivity 2022* report. Each is briefly summarized below.

California Essential Habitat Connectivity

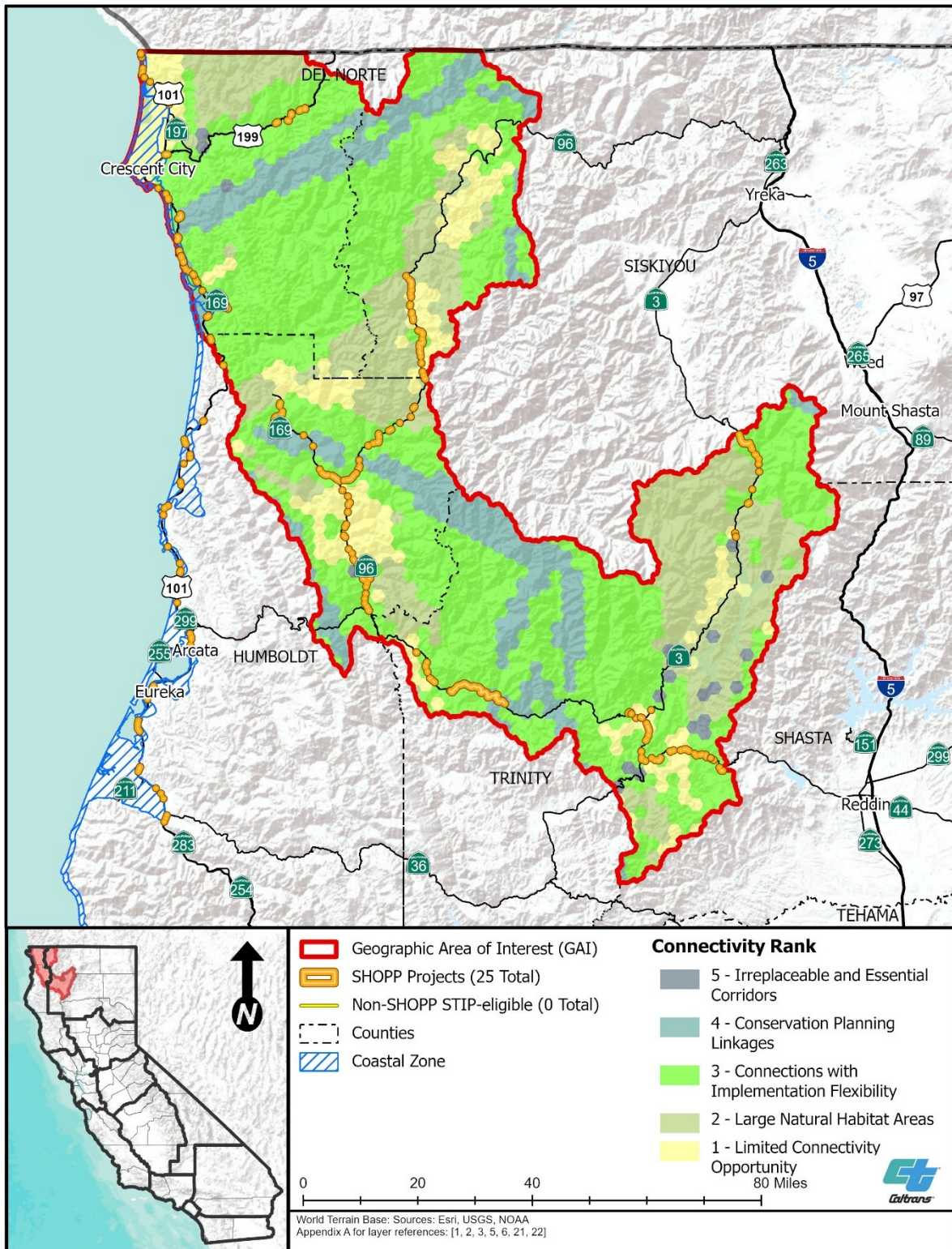
The CEHC Project, a statewide assessment commissioned by CDFW and Caltrans, identified large remaining blocks of intact habitat or natural landscape that support native biodiversity and modeled linkages or essential connectivity areas between them that need to be maintained, particularly as corridors for wildlife (Spencer et al. 2010). These connectivity areas were broadly defined, focusing on ecological integrity rather than species-specific habitat needs, and included potential riparian connections between landscape blocks. For instance, connectivity areas were selected to connect existing reserves across land that has been highly altered and fragmented by agriculture, urbanization, and roads, which typically constrain wildlife movement (Spencer et al. 2010).

CDFW's Areas of Conservation Emphasis

CDFW's ACE version 3 terrestrial connectivity dataset builds on the CEHC Project and includes mapped corridors or linkages and where they occur in relation to large, contiguous natural areas (Figure 2-12). It also incorporates species-specific, fine-scale linkage information developed at a regional scale, where available, and includes areas that were not evaluated by the CEHC Project. Connectivity ranks in the terrestrial connectivity dataset were assigned as follows:

- Rank 5 (irreplaceable and essential corridors) – includes channelized areas and priority species movement corridors
- Rank 4 (conservation planning linkages) – habitat connectivity linkages mapped in the CEHC, and fine-scale regional connectivity studies that are based on species-specific models and represent the best connections between core natural areas

Figure 2-12. Terrestrial Connectivity



- Rank 3 (connections with implementation flexibility) – areas with connectivity importance, including core habitat areas and areas on the periphery of mapped habitat linkages
- Rank 2 (large natural habitat areas) – large blocks of natural habitat (greater than 2,000 acres) with relatively intact connectivity
- Rank 1 (limited connectivity opportunity) – areas where land use limits connectivity, including some lakes

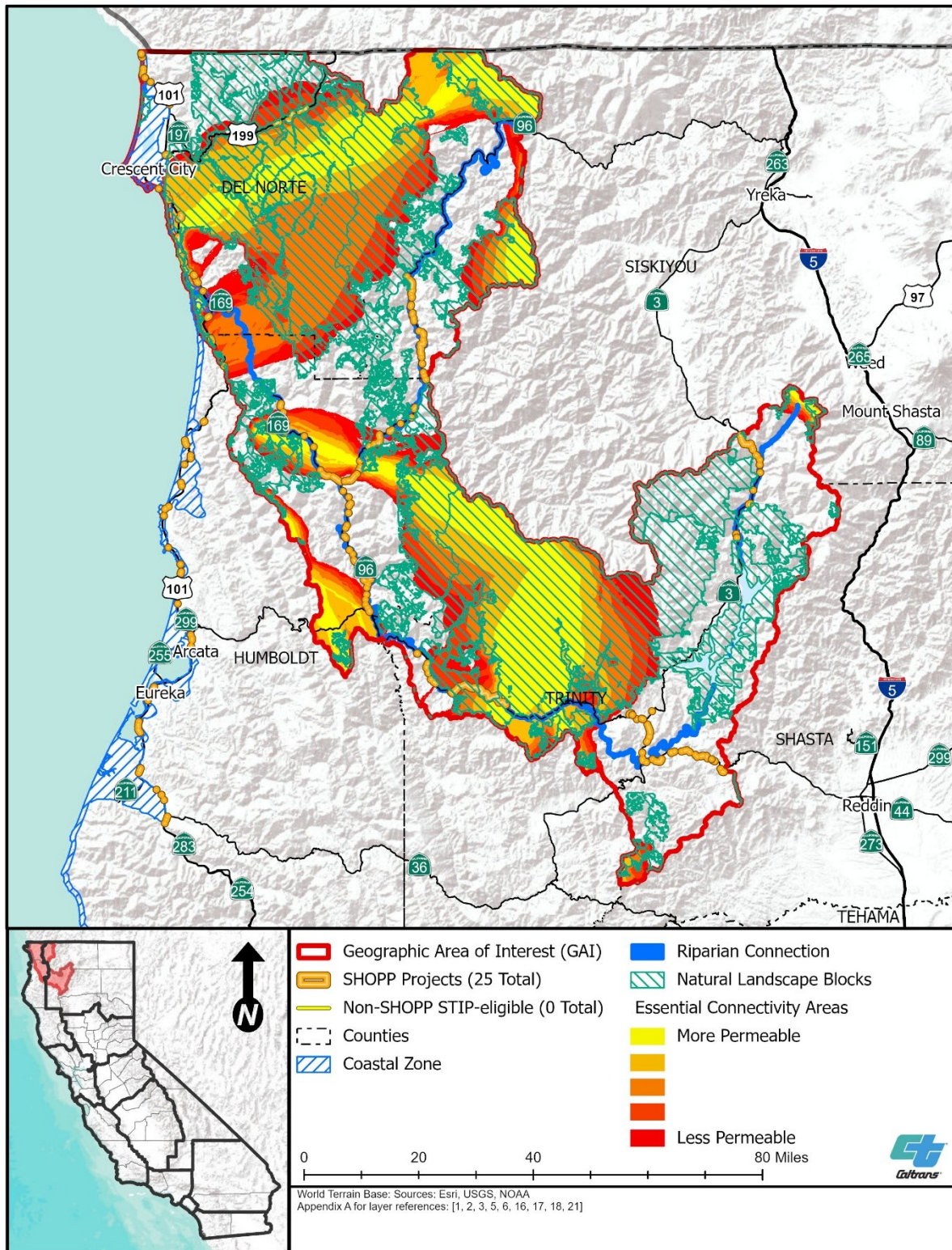
Connectivity is an important consideration when establishing compensatory mitigation. Most of the planned SHOPP transportation projects occur within areas with a connectivity rank of 1 or 3, with fewer planned transportation projects occurring in areas with a connectivity rank of 2 or 5 (Figure 2-12).

CDFW's Restoring California's Wildlife Connectivity 2022 Report

CDFW's *Restoring California's Wildlife Connectivity 2022* report identified priority wildlife connectivity project locations based on barriers created by linear infrastructure across the state, including the SHS, railroads, canals, high-speed rail alignments, and local roads, to help focus financial resources on improving wildlife movement (CDFW 2022, CDFW 2024a). In addition to impeding wildlife movement, these barriers act as sources of mortality and affect population demographics, gene flow, resilience, and persistence of California's wildlife. Barriers were identified using existing connectivity and road crossing studies, collared-animal movement data, roadkill observations, and professional expertise. This report is an update to the 2020 priority barrier dataset; it includes an updated list of priority wildlife barriers within each region, identifies additional wildlife barriers across the state, and identifies two top priority barriers within each region. A total of 150 segments of linear infrastructure was identified as having wildlife barriers, with 62 identified as priority wildlife barriers and 12 on the statewide top-priority list (CDFW 2022).

No priority wildlife movement barriers on the SHS were identified within the GAI. However, there are multiple areas of riparian connection and natural landscape barriers (Figure 2-13) (CDFW 2022).

Figure 2-13. CDFW Priority Wildlife Connectivity Project Locations within the GAI



2.12.2. Fish Passage

Article 3.5 of Chapter 1 of Division 1 of the SHC, also known as “Senate Bill 857” (Kuehl, Chapter 589 and Statute of 2005), prohibits the new construction or continued maintenance upgrades of SHS facilities that prevent or impede the passage of salmon and steelhead. Most salmon and steelhead in California are listed as either threatened or endangered, and barriers on the SHS further block fish from gaining access to upstream habitat.

SHC § 156.1 requires Caltrans to:

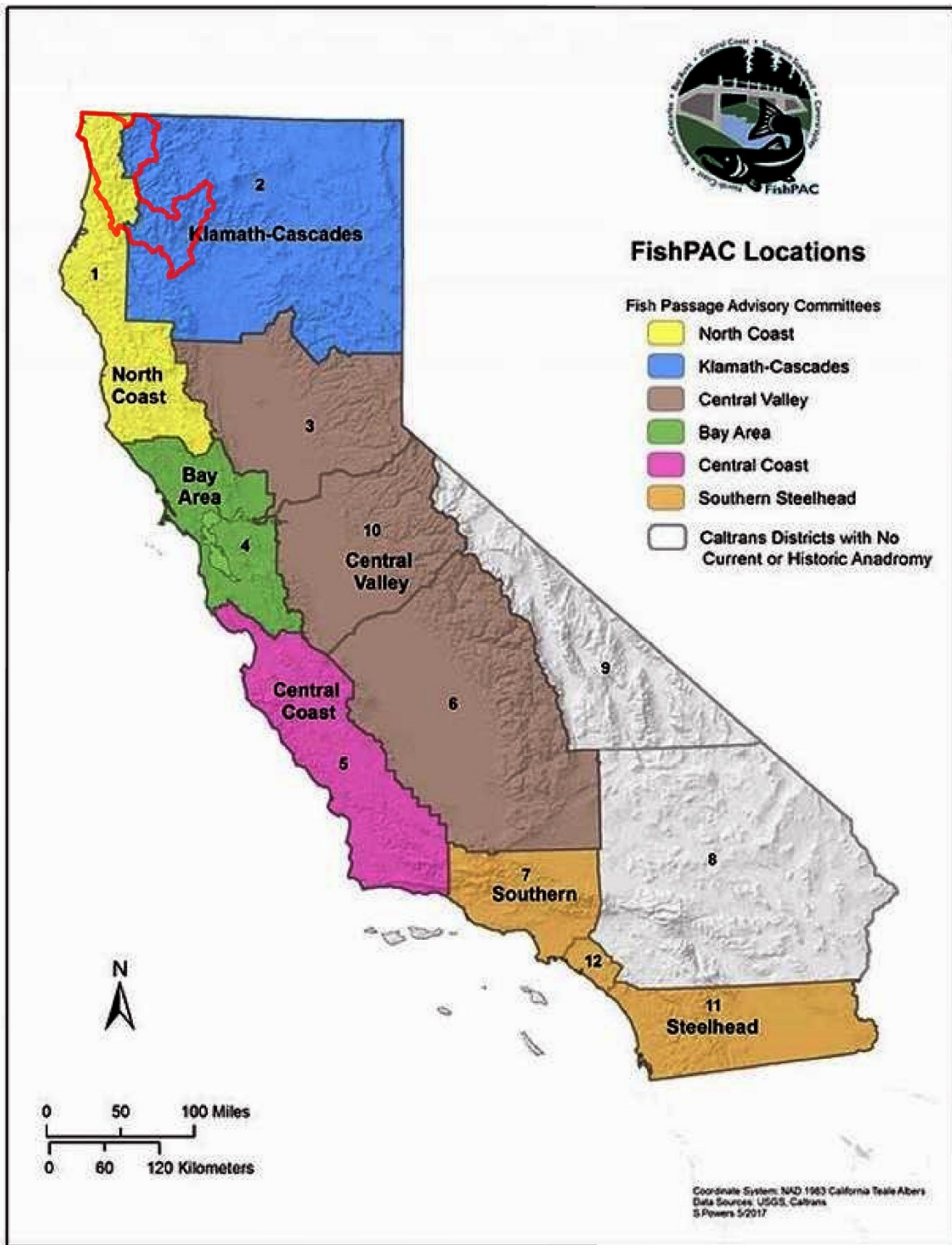
1. Provide an annual list of fish passage priorities for the SHS to the legislature; Fish Passage Annual Reports are available on the Caltrans Legislative Affairs website, and the most recent report (Caltrans 2021a) is available from: <https://dot.ca.gov/programs/legislative-affairs/reports>
2. Complete assessments of potential barriers to anadromous fish prior to commencing any transportation project using state or federal transportation funds
3. Submit assessments to the California Fish Passage Assessment Database
4. Construct all new transportation projects in a way that does not pose or create a barrier to fish passage

The CESA and FESA list 10 ESUs/DPSs of salmon and steelhead as threatened or endangered. Barriers created by the SHS are known to block access to habitat for each of these species’ units. CDFW, in coordination with CalTrout, estimates that without increased intervention, to include habitat remediation and restoration, the following species will become extinct in California in the next 40 years:

- Three identified species’ units currently listed as state and/or federally endangered: central California coast ESU coho salmon, Sacramento River winter-run ESU Chinook salmon, and southern California DPS steelhead
- Seven identified species currently listed as state and/or federally threatened: Southern Oregon/Northern California ESU coho salmon; Central Valley spring-run ESU and California coastal ESU chinook salmon; and Central Valley DPS, northern California DPS, central California coast DPS, and south-central California coast DPS steelhead

Figure 2-14 depicts the six California Fish Passage Advisory Committee (“FishPAC”) locations throughout the state. The FishPAC is a partnership between Caltrans, CalTrout, CCC, CDFW, FWS, NMFS, Pacific States Marine Fisheries Commission, and other local fish passage advocates. The FishPACs share science and data related to known fish barriers, and prioritize SHS locations based on high-value habitat recovery.

Figure 2-14. California Fish Passage Advisory Committee Locations



FishPACs support the implementation of meaningful, long-term fish passage solutions for SHS projects within each FishPAC geographic area. FishPACs recommend technical solutions, explore options for accelerated delivery of transportation projects, and identify potential funding mechanisms for both new barrier removal projects and the long-term maintenance of existing fish passage facilities for the SHS. Stream simulation designs and full-span solutions to fish passage also consider and incorporate benefits for both terrestrial and wildlife species, and can also help to address sediment transport, water temperature, dissolved oxygen, and stream erosion issues.

FishPACs help advance the desired outcomes of legislative guidance included in the SHC and promote collaborative interjurisdictional solutions. Long-term, full-span fish passage solutions are key to enhancing connectivity for both aquatic and terrestrial species in California's watersheds. Providing access to upstream habitats will help ensure fish populations can respond and adapt to climate change stressors such as drought, wildfire, sea-level rise, changes in stream flow, and water temperature. The FishPAC network of more than 200 fish passage experts, advocates, and partners throughout the range of salmon and steelhead work collaboratively to address legacy transportation barriers with long-term solutions that facilitate both fish passage and climate resilience.

The FishPAC helps Caltrans advance the desired outcomes of SHC § 156 (J. Walth, Caltrans, personal communication, 2020). Since 2006, in collaboration with FishPAC, Caltrans has partially or fully remediated 51 barriers on the SHS and identified 556 additional barriers to salmon and steelhead statewide. Results of Caltrans and FishPAC's efforts to locate, assess, prioritize, and remediate fish passage barriers on the SHS are documented in the Fish Passage Annual Reports prepared by Caltrans and submitted to the legislature as required by SHC § 156.1. As specified above, the FishPAC also provides SHS-related information to the Fish Passage Assessment Database, to be incorporated into its periodic updates.³ Information regarding verified SHS fish passage barriers is available through the appropriate FishPAC.

2.13 Sub-basins

The Watershed Boundary Dataset maps the areal extent of surface water drainage in the U.S. It consists of a hierarchical system of nesting hydrologic units ("HUs") of various scales, each with an assigned HUC that is georeferenced to USGS topographic maps (USGS 2014). Each HUC classification consists of 2 to 12 digits. For example, 6-digit HUCs, or "HUC-6s," map to the basin level; 8-digit HUCs, or "HUC-8s," map to the sub-basin level; and 12-digit HUCs, or "HUC-12s," map to the sub-watershed level.

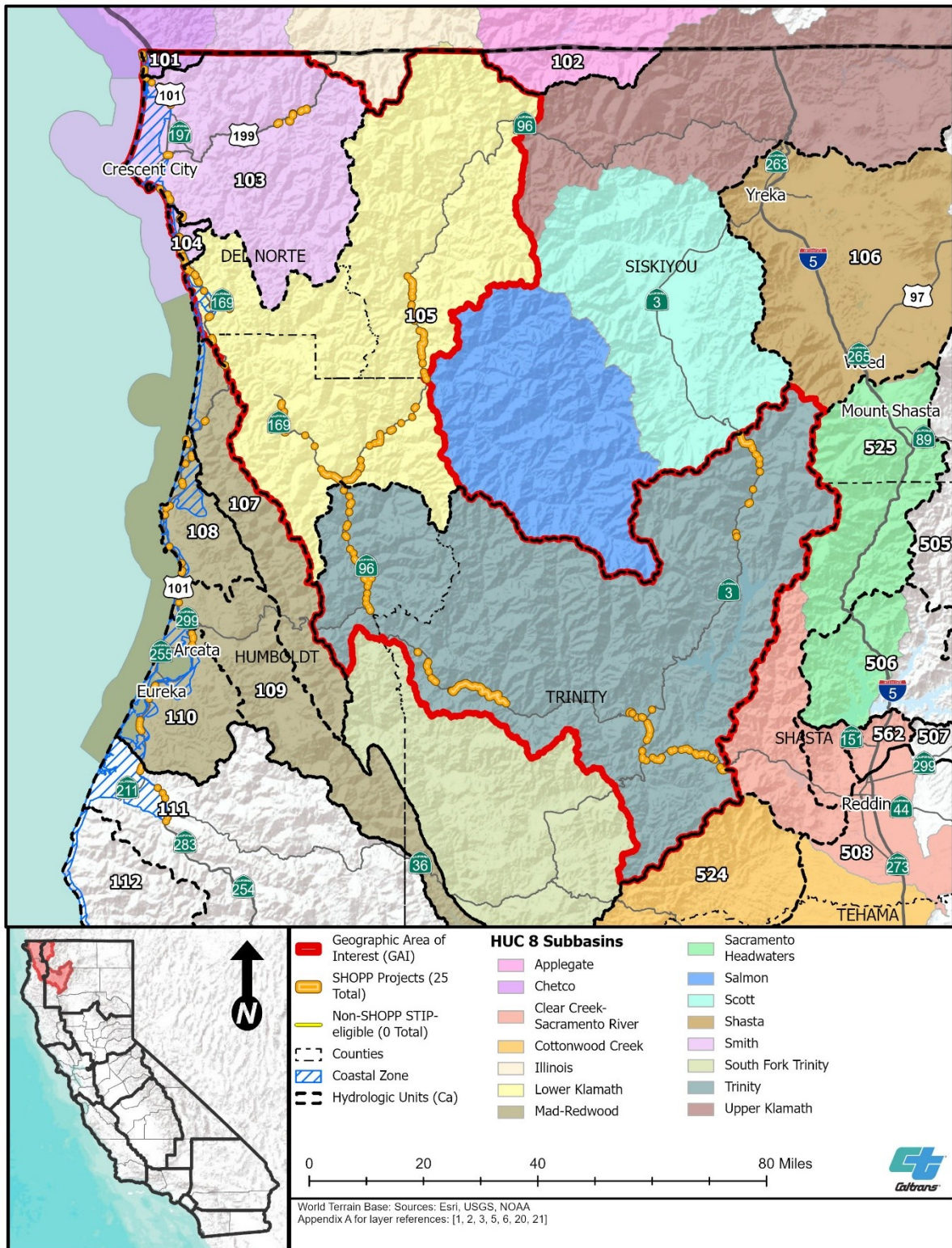
The SAMNA Reporting Tool expresses the landscape in terms of USGS HUC-8 sub-basins; therefore, information in this RAMNA is also presented by HUC-8 (Caltrans 2023b; USGS 2014). However, the California Department of Water Resources and the Water Boards do not necessarily use HUC-8 codes (California Department of

³ More information about the Fish Passage Assessment Database can be found in CalFish (2018).

Water Resources 2016). The Water Boards also use the Calwater system (that is, HUs) for state-level purposes such as assigning beneficial uses to waters. The Calwater system is a hierarchical system similar to USGS HUCs. Calwater levels begin with the division of the state into 10 hydrologic regions. Each hydrologic region is progressively subdivided into five smaller, nested levels: HUs, hydrologic areas, hydrologic sub-areas, super planning watersheds, and planning watersheds.

Appendix F, *Hydrologic Units*, provides a crosswalk between the HUC-8 and HU classification systems for each HUC-8 within the GAI. The GAI overlaps four sub-basins, which loosely correspond to the Klamath River, Redwood Creek, Rogue River, Shasta Bally, Smith River, Trinity River, Upper Sacramento, and Winchuck River HUs (Appendix F). Figure 2-15 shows the overlap between sub-basins and state-level HUs within the GAI.

Figure 2-15. HUC-8 Sub-basins and HUs



2.14 Hydrology

The four sub-basins of the GAI drain an area of 2,744,990 acres (4,289 square miles) (Table 2-4, Figure 2-15). Described individually in Appendix F, *Hydrologic Units*, these sub-basins include 3,897 rivers and streams that traverse 4,785 miles within the North Coast RWQCB boundaries (Table 2-4). Sub-basin acreages shown in Table 2-4 include areas within the GAI, although portions may extend into Oregon outside the GAI. Based on their size and number of tributaries, the Smith River, Winchuck River, Klamath River, Redwood Creek, Shasta Bally, Trinity River, Upper Sacramento, and Rogue River are major stream systems within the GAI.

Table 2-4. Sub-basins

Sub-basin Name	Sub-basin Code (HUC-8)	Drainage Area (acres) ^a	Rivers and Streams (count)	Total Reach Length (miles) ^a
Chetco	17100312	11,585.6	19	21.88
Lower Klamath	18010209	977,271.8	1,413	1,700.03
Smith	18010101	452,000.8	675	843.22
Trinity	18010211	1,304,132.1	1,790	2,219.65
Not applicable	Total	2,744,990	3,897	4,785

Source: California Department of Water Resources

^a Numbers were rounded to the nearest whole number.

2.15 Flood Hazard Areas

As designated by the Federal Emergency Management Agency, a Special Flood Hazard Area is the land area that is covered by the floodwaters of a 100-year base flood (Federal Emergency Management Agency 2020). In accordance with Executive Order 11988, all federally approved projects that encroach into a 100-year base floodplain must try to:

- Avoid support of incompatible floodplain development,
- Minimize the impact of highway actions that adversely affect the base floodplain,
- Restore and preserve natural and beneficial floodplain values, and
- Be consistent with the standards/criteria of the National Flood Insurance Program of the Federal Emergency Management Agency (Caltrans 2015).

Flood hazard areas within the GAI are shown on Figure 2-16. Waterbodies associated with the majority of flood hazard risk within the GAI include the coastal zones throughout the northwestern portions of the GAI. This information is important for scoping advance mitigation and transportation projects undertaken within the GAI, which will need to comply with Executive Order 11988.

2.16 Water Quality

Water quality objectives for surface waters and groundwater within the GAI are provided in the *Water Quality Control Plan for the North Coast Region* (“Basin Plan” North Coast RWQCB 2018). Water quality objectives identified in the Basin Plans can be numerical or narrative. For example, the “chemical constituents” water quality objective for the protection of aquatic life and human health consists of federal water quality criteria for toxic “priority pollutants” under the California Toxics Rule (40 CFR § 131.38) and National Toxics Rule (40 CFR § 131.36). In contrast, the water quality objective for taste and odor is narrative. Undesirable tastes and odors in water are an aesthetic nuisance and can indicate the presence of other pollutants.

Beneficial uses⁴ for surface waters, groundwater, and coastal features are also identified in the Basin Plans (North Coast RWQCB 2018). If it cannot be avoided, a waterbody’s beneficial uses may be affected by the construction, operation, and maintenance of highways and bridges. Impacts on wildlife and aquatic resources can be adverse or beneficial. An example of an adverse impact would be the introduction of a variety of pollutants, including sediments, heavy metals, hydrocarbons, and toxic substances (EPA 2005). An example of a beneficial impact would be repairs or retrofits that improve permeability or flows. Therefore, this RAMNA considers beneficial uses identified for waterbodies located within the GAI relevant to the RAMNA when they support the preservation and enhancement of wildlife habitat and aquatic resources, and are consistent with the AMP’s objective to protect natural resources through transportation project mitigation (Table 2-5).

Table 2-5. Beneficial Uses

Beneficial Use	North Coast Basin Plan	Relevant to RAMNA? ^a
Agricultural Supply	Applicable	No
Aquaculture	Applicable	Yes
Preservation of Areas of Special Biological Significance	Not Applicable	Yes
Cold Freshwater Habitat	Applicable	Yes
Commercial and Sport Fishing	Applicable	No
Native American Culture	Applicable	No
Estuarine Habitat	Applicable	Yes
Subsistence Fishing	Not Applicable	No
Flood Peak Attenuation/Flood Water Storage	Not Applicable	Yes

⁴ RWQCBs may have region-specific definitions of beneficial uses or beneficial uses with no statewide equivalent. These definitions can be consulted in the latest document version, entitled “bu_definitions,” at: https://www.waterboards.ca.gov/about_us/performance_report_1314/plan_assess/docs/.

Beneficial Use	North Coast Basin Plan	Relevant to RAMNA? ^a
Freshwater Replenishment	Applicable	Yes
Groundwater Recharge	Applicable	Yes
Industrial Service Supply	Applicable	No
Marine Habitat	Applicable	Yes
Migration of Aquatic Organisms	Applicable	Yes
Municipal and Domestic Supply	Applicable	No
Navigation	Applicable	No
Hydropower Generation	Applicable	No
Industrial Process Supply	Applicable	No
Rare, Threatened, or Endangered Species	Applicable	Yes
Water Contact Recreation	Applicable	No
Non-Contact Water Recreation	Applicable	No
Inland Saline Water Habitat	Not Applicable	Yes
Shellfish Harvesting	Applicable	No
Spawning, Reproduction, and/or Early Development	Applicable	Yes
Warm Freshwater Habitat	Applicable	Yes
Wetland Habitat	Not Applicable	Yes
Wildlife Habitat	Applicable	Yes
Water Quality Enhancement	Not Applicable	Yes

Source: North Coast RWQCB 2025

^a Beneficial uses are relevant to the RAMNA when they support the preservation and enhancement of wildlife habitat and aquatic resources, and are consistent with the AMP's objective to protect natural resources through transportation project mitigation.

Through habitat and other improvements, advance mitigation projects have the potential to contribute to compliance with the SWRCB CWA Section 303(d) List of Total Maximum Daily Load Priority Schedule. For example, fish passage projects in impaired watersheds that increase road/stream crossing capacity; improve the alignment of the crossing; or implement weirs, baffles, or other grade/velocity-control devices at undersized road/stream crossings will improve sediment transport and/or reduce scour, thereby improving water quality. Similarly, culvert replacement projects that increase flow and capacity would also reduce scour and improve sediment transport, resulting in improved channel function and flow as well as improved water quality.

The CWA Section 303(d) list of impaired waters includes 90 waterbodies within the GAI (SWRCB 2021). This RAMNA considers a waterbody's CWA Section 303(d) impairment

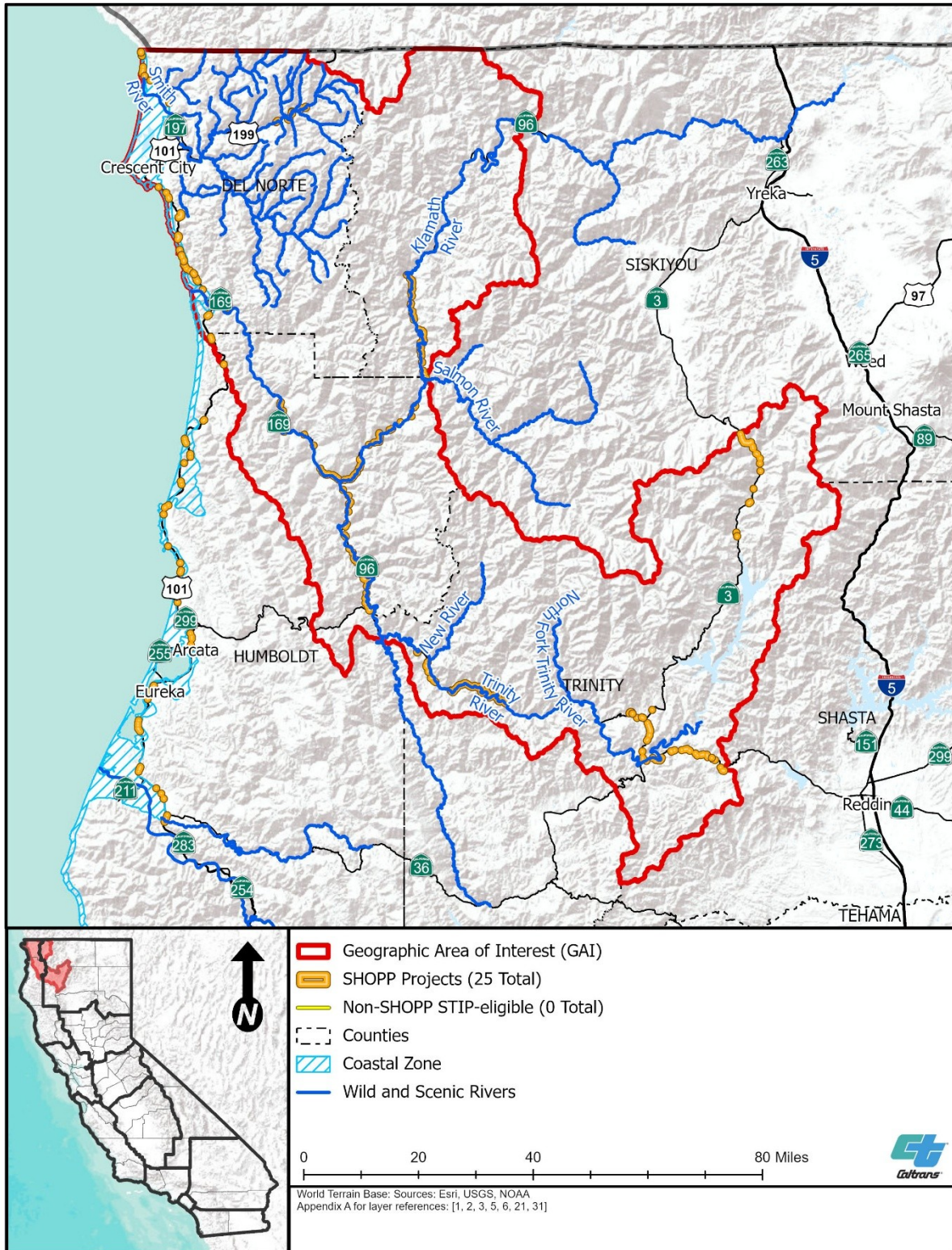
designation as relevant to the RAMNA when it is indicative of a waterbody's loss of a relevant aquatic resource-related beneficial use (Table 2-5). Waterbodies, their impairments, and whether total maximum daily loads have been established are provided in Appendix H, *List of 303(d) Impaired Waters*. A RWQCB may need to consult with the CDFW or other natural resource regulatory agency to determine whether a beneficial use may be affected by a water quality-related decision.

2.17 Wild and Scenic Rivers

The purpose of the federal Wild and Scenic Rivers Act of 1968 (16 USC Chapter 28) and the state Wild and Scenic Rivers Act of 1972 (Public Resources Code § 5093.50) is to protect and enhance the wild, scenic, and recreational values of designated rivers (National Wild and Scenic Rivers System 2026; Water Education Foundation 2026). Rivers designated under the Wild and Scenic Rivers Act are classified as wild, scenic, or recreational. Wild river areas include rivers or sections of rivers that are free of impoundments, inaccessible except by trail, and have unpolluted waters. Scenic river areas include rivers or sections of rivers that are free of impoundments, have relatively undeveloped shorelines, and are accessible in some places by roads. Recreational river areas include rivers or sections of rivers that are readily accessible by road or railroad, have some development along shorelines, and may have impoundments or diversions.

The Klamath, Smith, and Trinity Rivers and their tributaries are nationally and state designated wild and scenic rivers within the GAI (National Wild and Scenic Rivers System 2016; Omnibus Public Land Management Act of 2009). The locations of these nationally and/or state designated wild and scenic rivers are provided on Figure 2-17. On January 1, 1981, Congress designated the Klamath River from the mouth to 3,600 feet below Iron Gate Dam and sections of its principal tributaries, the Salmon and Scott Rivers and Wooley Creek, with 11.7 miles as wild, 23.5 miles as scenic, and 250.8 miles as recreational. On January 19, 1981, and November 16, 1990, Congress designated the Smith River and its tributaries, with 78 miles as wild, 31 miles as scenic, and 216.4 miles as recreational. On January 19, 1981, Congress designated the Trinity River and its tributaries, including the North and South Forks and the New River, with 44 miles as wild, 39 miles as scenic, and 120 miles as recreational (National Wild and Scenic Rivers System 2016). The Klamath, Smith, and Trinity Rivers and their tributaries were included in the state wild and scenic river system in 1972 when the state Act was passed (California Wilderness Coalition 2022a, 2022b, 2022c).

Figure 2-17. Wild and Scenic Rivers in the GAI



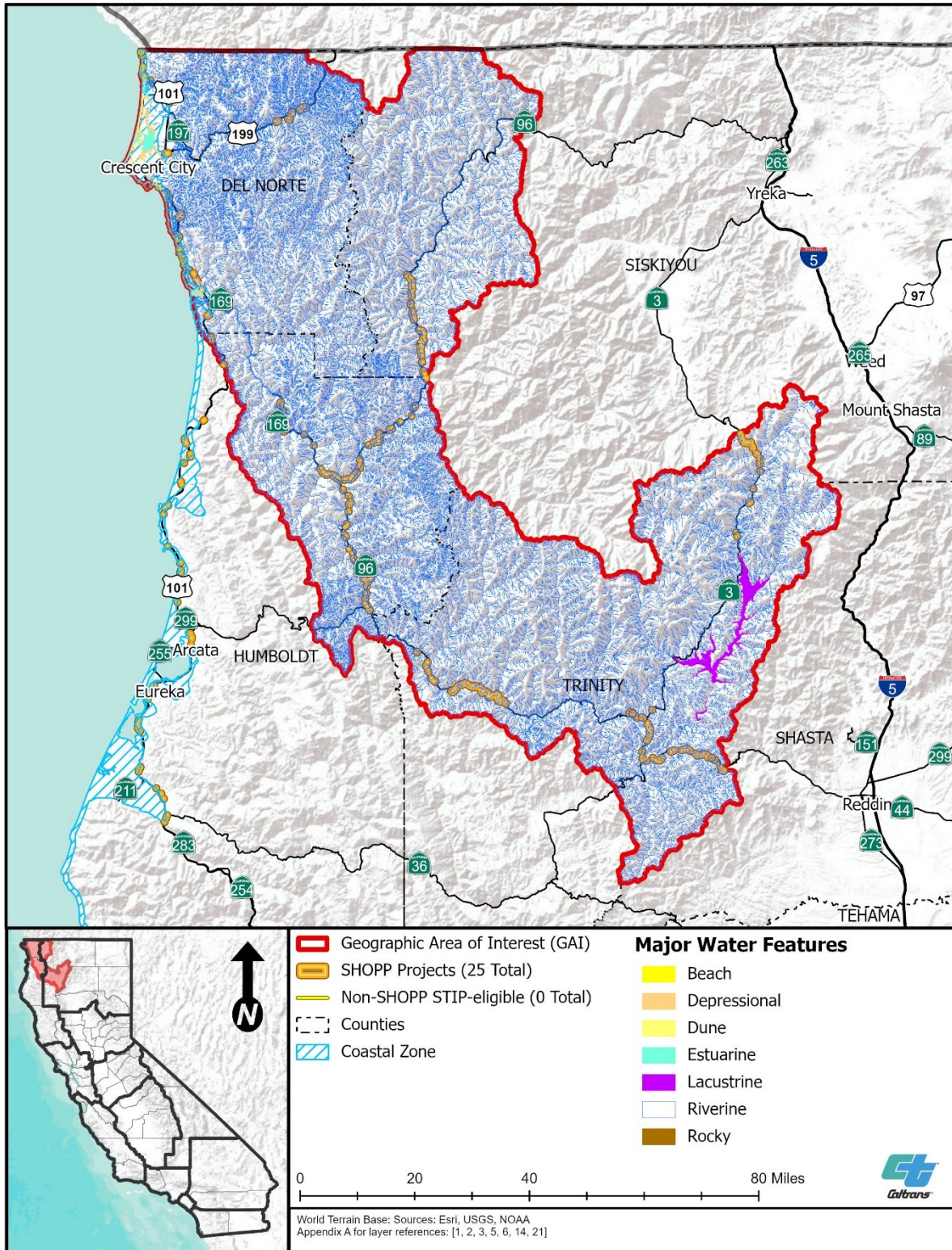
2.18 Aquatic Resources

A high-level view of major aquatic resources within the GAI is provided on Figure 2-18, and detailed maps of aquatic resources are provided in Appendix H, *Aquatic Resource Locations*. For the purposes of advance mitigation planning, aquatic resources within the GAI include wetlands and non-wetland waters that may be subject to CCC, Corps, EPA, Water Boards, and/or CDFW regulations, as well as threatened and endangered fish that may be managed by CCC, CDFW, FWS, or NMFS. Riparian habitat is discussed separately in Section 2.19.

The CCC regulates impacts on coastal wetlands and marine and aquatic resources, and these resources receive special protections under Coastal Act § 30230 et seq. Corps and EPA jurisdiction under Section 404 of the CWA includes any activity that may cause a discharge of dredged or fill material into waters of the U.S. (“WOTUS”), including wetlands. Corps jurisdiction also includes any work or structure affecting navigable WOTUS, pursuant to Section 10 of the Rivers and Harbors Act and 33 CFR § 329, respectively. The Water Boards’ jurisdiction includes any activity that may cause a discharge of waste to waters of the state (as defined under the Porter-Cologne Water Quality Control Act), including WOTUS (as defined under the Clean Water Act section 401) such as rivers, streams, and lakes as well as ephemeral, intermittent, and perennial watercourses and wetlands, seeps, and springs. CDFW regulates any activity that may divert or obstruct the natural flow of a river, stream, or lake; change the bed, channel, or bank of any river, stream, or lake; use material from any river, stream, or lake;⁵ and deposit or dispose material into any river, stream, or lake.

⁵ Rivers, streams, and lakes include ephemeral, intermittent, and perennial watercourses.

Figure 2-18. Aquatic Resource Features and Major Stream Systems^a



^a For greater detail, see Appendix I.

2.18.1. Historical Context

Historically, the GAI is known for its vast river systems and anadromous fish populations flowing unadulterated through mixed hardwood, conifer, and riparian forests. Throughout the past century, dam installation throughout the GAI has resulted in reduced flows, increased water temperature, sediment accumulation, and loss of stream and riparian habitat in the major rivers including the Klamath and Trinity Rivers (Litton 2003), with dams on the Klamath River being removed in 2024 (CDFW 2025). Many upper portions of the watershed of the Klamath River have been converted from grasslands and marshes to support agriculture. The GAI includes a large expanse of rugged, variable elevation mountainous forests, numerous glaciated lakes, and meadows above 5,000 feet (CDFW 2025).

The coastal portion of the GAI includes additional major rivers such as the Smith River and Redwood Creek, as well as smaller coastal streams. Traditionally, these rivers carried high sediment loads to create floodplains that supported riparian forests and wetlands, marshes, and grasslands due to changing soil composition along the coast. These areas currently include sandy beaches, rocky shorelines, estuaries, lagoons, and open water bays (CDFW 2025).

2.18.2. Threatened and Endangered Fish Species

Special-status terrestrial species with the potential to occur within the GAI are discussed in Section 2.8. Threatened and endangered fish species are discussed below.

Threatened and endangered fish species with the potential to occur within the GAI were extracted from the SAMNA Reporting Tool's fish habitat layer, which was developed using the USGS National Hydrography Dataset and other information (Caltrans 2025c). Based on a search of the fish habitat layer, four federally or state listed threatened or endangered fish species have the potential to occur within the GAI:

- Federally endangered tidewater goby (*Eucyclogobius newberryi*)
- Federal candidate and state threatened upper Klamath and Trinity Rivers ESU chinook salmon (*Oncorhynchus tshawytscha*)
- Federally and state threatened southern Oregon/northern California ESU coho salmon (*Oncorhynchus kisutch*)
- Federally threatened eulachon (*Taleichthys pacificus*)

As described previously in Sections 2.9 and 2.10, the GAI includes FWS-designated final critical habitat for tidewater goby, which occurs along the northwestern part of the GAI. Although the SAMNA Reporting Tool's fish habitat layer indicated potential for the following species to occur within the GAI, their ranges occur outside the GAI:

- Central Valley spring-run ESU Chinook salmon
- southcentral California coast DPS steelhead
- California Central Valley DPS steelhead.

Although it is the best information currently available, the SAMNA Reporting Tool's fish species list is uncertain (Caltrans 2025c). Therefore, although the SAMNA data layers and results are suitable to assist with advance mitigation project scoping, establishing compensatory mitigation credits approved by one or more natural resource regulatory agencies requires additional analysis and site-specific studies.

2.18.3. Wetlands

Wetland resources information for the GAI was extracted from the SAMNA Reporting Tool. The SAMNA Aquatic/Riparian Geospatial Data is comprised of data from two special San Francisco Estuary Institute projects, the Caltrans-CARI v2.0 and Caltrans CARIv2.0 RipZET – Statewide Riparian Estimate, which were released in April 2025.

Aquatic resource types outlined here follow the *Classification of Wetlands and Deepwater Habitats of the United States* (Federal Geographic Data Committee 2013). The SAMNA Reporting Tool wetlands data layer is separate from the land cover types discussed previously in Section 2.5; therefore, total acreages of wetland land cover types presented in Table 2-3 may not align with those presented in Table 2-8 (Caltrans 2025a).

Coastal Wetlands

Caltrans did not find any spatial data for the GAI that display “coastal wetlands” as defined by the CCC, in accordance with Public Resources Code § 30121⁶ [14 California Code of Regulations § 13577(b)]⁷. CCC wetlands only need to display one of the parameters typically used to define wetland areas (such as wetland hydrology, soils, or vegetation) and therefore may be more inclusive than Corps-defined wetlands, which require the presence of all three parameters. The SAMNA Reporting Tool's wetland layer does not report on coastal wetlands that meet the CCC's definition. It is likely that, if located in the coastal zone, all of the wetland types identified in Table 2-6 would be classified as coastal wetlands. An unknown additional number may also meet the definition of coastal wetland using CCC's criteria; identification would have to occur in the field.

2.18.4. Non-wetland Waters

Other, non-wetland water resources information for the GAI was extracted from the SAMNA Reporting Tool, which relies on the USGS National Hydrography Dataset (Table 2-6; Appendix I; Caltrans 2025c). Although suitable for advance mitigation project scoping, site-specific studies that result in more detailed mapping and classification of other, non-wetland aquatic resources would be required for advance mitigation projects

⁶ Per Public Resources Code § 30121, “Wetlands mean lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens.”

⁷ Per 14 California Code of Regulations § 13577(b), “Wetland shall be defined as land where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent and drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salts or other substances in the substrate.”

to establish compensatory mitigation credits. Similar to the wetlands data, the waters data layer is separate from the land cover types discussed previously in Section 2.6; therefore, total acreages of water land cover types presented in Table 2-3 may not align with those presented in Table 2-6 (Caltrans 2025c).

Table 2-6. Wetland and Non-wetland Types in the GAI

Type	Chetco 17100312	Lower Klamath 18010209	Smith 18010101	Trinity 18010211	Total (acres) ^a
Depressional Managed Perennial Non-vegetated	Not Mapped	Not Mapped	Not Mapped	0.42	0.42
Depressional Natural Forested	Not Mapped	6.5	Not Mapped	Not Mapped	6.5
Depressional Natural Non-vegetated	Not Mapped	21.3	Not Mapped	17.32	38.62
Depressional Natural Seasonal Emergent	Not Mapped	484.35	2,593.64	2,120.33	5,198.32
Depressional Natural Seasonal Non-vegetated	Not Mapped	21.22	0.74	3.23	25.19
Depressional Natural Shrub-Scrub	Not Mapped	13.47	Not Mapped	Not Mapped	13.47
Depressional Perennial Natural Emergent	Not Mapped	40.13	184.3	69.22	293.64
Depressional Perennial Natural Forested	Not Mapped	20.27	Not Mapped	Not Mapped	20.27
Depressional Perennial Natural Non-vegetated	14.27	909.30	270.42	808.95	2,002.94
Depressional Perennial Natural Shrub-Scrub	Not Mapped	13.07	92.82	Not Mapped	105.89
Depressional Perennial Natural Vegetated	Not Mapped	17.52	13.87	63.67	95.06
Depressional Perennial Unnatural Emergent	Not Mapped	13.70	2.96	25.46	42.12
Depressional Perennial Unnatural Non-vegetated	Not Mapped	14.38	60.03	70.08	144.48
Depressional Perennial Unnatural Shrub-Scrub	Not Mapped	Not Mapped	Not Mapped	7.88	7.88
Depressional Perennial Unnatural Vegetated	Not Mapped	25.67	16.12	145.85	187.65
Depressional Seasonal Natural Forested	Not Mapped	619.66	1,091.75	265.95	1,977.35
Depressional Seasonal Natural Shrub-Scrub	Not Mapped	246.34	861.52	619.44	1,727.30
Depressional Seasonal Unnatural Emergent	Not Mapped	5.46	0.40	62.10	67.96
Depressional Seasonal Unnatural Forested	Not Mapped	Not Mapped	29.09	Not Mapped	29.09
Depressional Seasonal Unnatural Shrub-Scrub	Not Mapped	Not Mapped	Not Mapped	82.13	82.13
Depressional Unnatural Non-vegetated	Not Mapped	Not Mapped	Not Mapped	3.83	3.83
Estuarine Natural Subtidal Eelgrass	Not Mapped	Not Mapped	1.91	Not Mapped	1.91
Estuarine Non-Saline Natural Intertidal Emergent	Not Mapped	6.23	7.06	Not Mapped	13.29
Estuarine Non-Saline Natural Intertidal Non-vegetated	Not Mapped	27.12	43.52	Not Mapped	70.64
Estuarine Non-Saline Natural Intertidal Shrub-scrub	Not Mapped	9.16	Not Mapped	Not Mapped	9.16
Estuarine Non-Saline Natural Subtidal Non-vegetated	Not Mapped	344.70	10.83	Not Mapped	355.53
Estuarine Non-saline Natural Subtidal Vegetated	Not Mapped	Not Mapped	2,382.09	Not Mapped	2,382.09
Estuarine Saline Natural Intertidal Emergent	Not Mapped	26.81	18.78	Not Mapped	45.59
Estuarine Saline Natural Intertidal Forested	Not Mapped	7.61	Not Mapped	Not Mapped	7.61
Estuarine Saline Natural Intertidal Non-vegetated	Not Mapped	48.94	29.10	Not Mapped	78.04

Type	Chetco 17100312	Lower Klamath 18010209	Smith 18010101	Trinity 18010211	Total (acres) ^a
Estuarine Saline Natural Intertidal Shrub-scrub	Not Mapped	22.93	Not Mapped	Not Mapped	22.93
Estuarine Saline Natural Subtidal Non-vegetated	Not Mapped	2.60	389.17	Not Mapped	391.77
Lacustrine Natural Non-vegetated	Not Mapped	116.20	30.37	616.20	762.77
Lacustrine Unnatural Non-vegetated	Not Mapped	Not Mapped	Not Mapped	18,922.63	18,922.63
Lacustrine Unnatural Vegetated	Not Mapped	Not Mapped	Not Mapped	49.91	49.91
Marine Beach Natural Intertidal Non-vegetated	11.62	21.64	238.10	Not Mapped	271.36
Marine Natural Beach-adjacent Dune Non-vegetated	34.80	6.56	514.66	Not Mapped	556.01
Marine Natural Dune Non-vegetated	Not Mapped	Not Mapped	1,274.68	Not Mapped	1,274.68
Marine Rocky Shore Natural Intertidal	0.83	Not Mapped	18.59	Not Mapped	19.42
Marine Rocky Shore Unnatural Intertidal	Not Mapped	Not Mapped	10.63	Not Mapped	10.63
Riverine Manage	Not Mapped	Not Mapped	Not Mapped	0.37	0.37
Riverine Natural	2,017.36	198,038.60	144,499.58	247,247.44	591,802.99
Riverine Natural Emergent	Not Mapped	271.43	109.45	1,144.88	1,525.76
Riverine Natural Forested	Not Mapped	566.75	396.84	628.15	1,591.73
Riverine Natural Intertidal Non-Vegetated	Not Mapped	5.61	14.15	Not Mapped	19.77
Riverine Natural Non-Vegetated	13.29	8,912.37	3,205.37	7,833.42	19,964.46
Riverine Natural Shrub-Scrub	Not Mapped	511.54	280.23	2,363.60	3,155.38
Riverine Natural Subtidal Non-vegetated	Not Mapped	82.89	72.99	Not Mapped	155.88
Riverine Natural Tidal	0.00	17.90	42.62	Not Mapped	60.53
Riverine Natural Tidal Emergent	Not Mapped	7.56	Not Mapped	Not Mapped	7.56
Riverine Natural Tidal Forested	Not Mapped	5.94	Not Mapped	Not Mapped	5.94
Riverine Natural Tidal Shrub-Scrub	Not Mapped	12.41	Not Mapped	Not Mapped	12.41
Riverine Natural Vegetated	Not Mapped	656.34	Not Mapped	290.70	947.04
Riverine Unnatural	Not Mapped	2.58	18.24	54.80	75.63
Riverine Unnatural Emergent	Not Mapped	Not Mapped	0.61	0.25	0.86
Riverine Unnatural Shrub-scrub	Not Mapped	4.16	Not Mapped	17.65	21.81
Total^b	2,092.18	212,208.93	159,053.33	283,520.41	656,874.85

Source: Caltrans 2025c
^a Rounded to the nearest tenth. Numbers may not sum due to rounding.

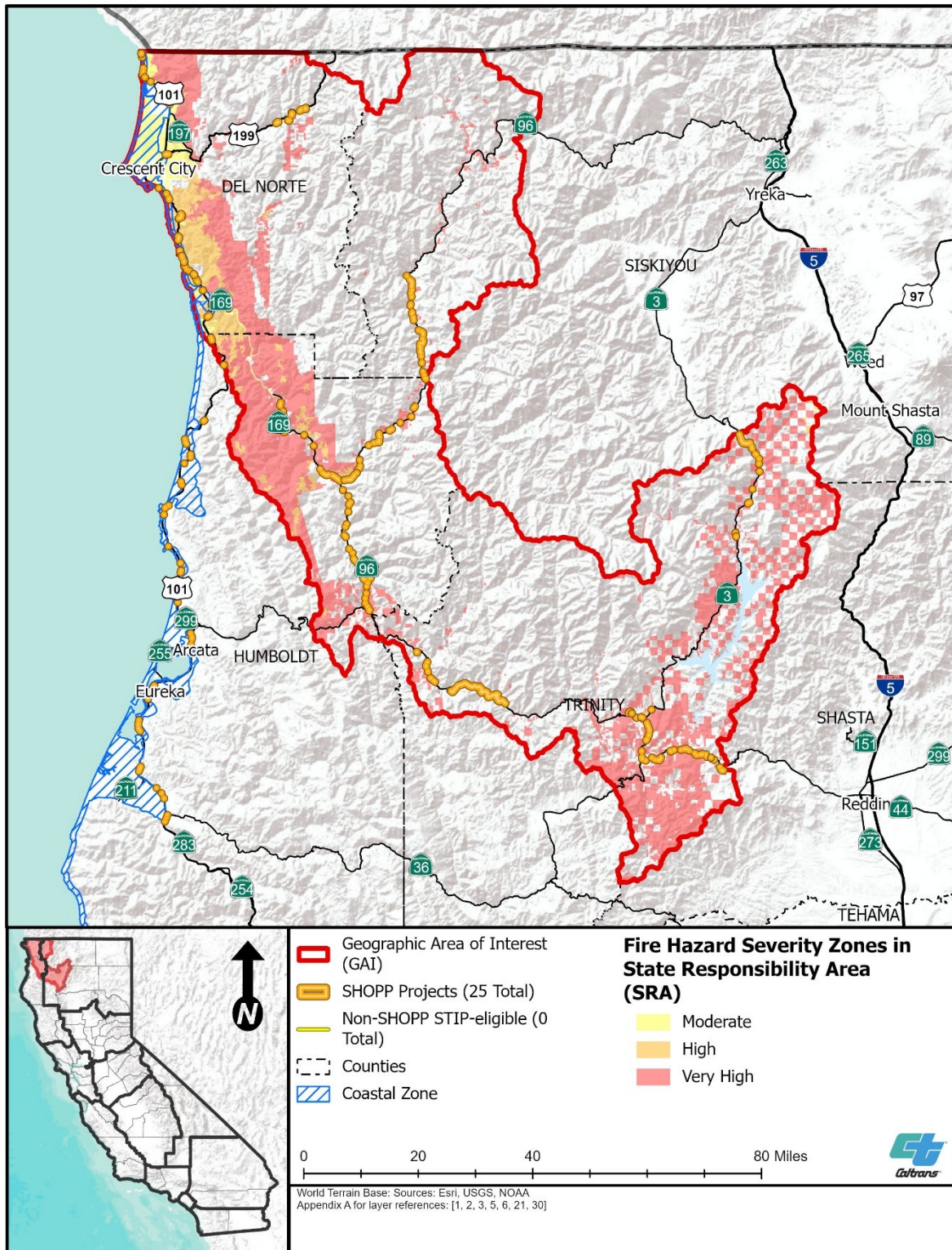
2.19 Riparian Habitat

Riparian habitats may include portions that are wetlands or non-wetland waters, but they also may be outside these categories. California does not have a GIS layer for riparian ecotones and the natural resource regulatory agencies with authority in California do not have a definition for riparian habitat. Riparian areas are water-dependent lands along streams and lakes where transitions occur between terrestrial and aquatic parts of a watershed. As a function of the riparian corridor, riparian area boundaries fluctuate with the flows of their adjacent aquatic feature. Riparian area boundaries are more distinct and separate throughout most of the year, while during periods of high water, topographically lower riparian areas that are typically part of the floodplain become a part of the aquatic feature (Kattlemann and Embury 1996). Although more general, the riparian habitat estimated by the SAMNA's aquatic resources layer is better for planning in the GAI.

2.20 Fire Hazard Severity Zones

The California Department of Forestry and Fire Protection prepares Fire Hazard Severity Zone maps that classify the severity of fire hazards in California (Figure 2-19). These maps are developed by assigning a hazard score based on factors that influence fire likelihood and behavior, including fire history, existing and potential fuel, predicted flame length, blowing embers, terrain, and typical fire weather. Hazard scores are averaged over zone areas to result in a moderate, high, or very high zone class. As indicated on Figure 2-19, moderate to high hazard severity zones occur in the northwestern coastal areas of the GAI, with very high severity zones associated with the Northern California Coast range and throughout the eastern part of the GAI at higher elevations in the Cascade Range. Much of the GAI has no designated fire hazard severity. This information is important for scoping advance mitigation projects and transportation projects undertaken within the GAI, and it may inform the types of materials that can be used within an area based on their fire resistance capabilities.

Figure 2-19. Fire Hazard Severity Zones



3. RELEVANT PLANS, POLICIES, AND REGULATIONS

This chapter summarizes the references applicable to the GAI that, when relevant, Caltrans will consult when conceptualizing advance mitigation project scopes informed by this RAMNA. Table 3-1 is organized by subject: laws and regulations, statewide and regional resource management plans, plans and permits focused on the species of mitigation need, resource agency land management plans (separated by agency), water resources plans and documents, county and city general plans, and other organization conservation and management documents. HCP, NCCP, and RCIS documents are discussed separately in Chapter 4, *Existing Mitigation Opportunities*, because they represent or support current compensatory mitigation credit purchase opportunities for Caltrans. Table 3-1 provides the following information for each reference identified:

- Reference document title
- Status:
 - Final: The reference is completed.
 - Draft: The reference is not complete, and changes may occur when it is finalized.
 - In progress: A formal draft version has not been completed, and the document is being written.
 - In litigation: The reference is subject to at least one lawsuit and is not being revised.
 - Updated periodically: The reference is updated with new information on a somewhat frequent basis.
 - Not publicly available: The reference is known to exist but does not appear to be publicly available.
- Spatial data: whether a map is provided with the document
- Reference purpose: a summary of information relevant to advance mitigation planning and/or a summary of reference intent
- Link: where the reference can be found
- Date: when the reference was published or last updated

The list of relevant documents, policies, and regulations in Table 3-1 is not exhaustive. Caltrans may consult additional relevant resources as advance mitigation planning is conceptualized. When conducting advance mitigation project scoping, Caltrans will check to determine whether it has the most up-to-date version of a particular reference.

3.1 Relationship to Goals and Objectives

As stated in Chapter 1, *Introduction*, the GAI for this RAMNA was selected by Caltrans District 1 based on the SAMNA results and other information. Caltrans District 1 specifically identified compensatory mitigation for eulachon, Southern Oregon/Northern California Coast (“SONCC”) coho salmon, and northwestern Pond Turtle, riparian habitat, wetlands, and non-wetland waters as historical and anticipated mitigation needs.

Therefore, Table 3-1 emphasizes documents related to the specified wildlife and aquatic resources, which, in turn, form the basis for the goals and objectives presented in Chapter 7, *Wildlife Resources Conservation Goals and Objectives*, and Chapter 8, *Aquatic Resources Conservation Goals and Objectives*. As much as practicable, however, Caltrans intends for any compensatory mitigation established within the GAI to support these specific wildlife and aquatic resources and to benefit other wildlife and aquatic resources.

Table 3-1. Comprehensive Plans, Agreements, Resource Management Plans, Policies, and Regulations Relevant to the GAI

Title	Status	Spatial Data	Reference Purpose	Link	Date
State Laws, Guidelines, and Regulations	See below	See below	See below	See below	See below
Barriers to Fish Passage SHC § 156	Final	No	Article 3.5 of Chapter 1 of Division 1 of the SHC, also known as Senate Bill 857 (Kuehl, Chapter 589 and Statute of 2005), prohibits new construction or continued maintenance upgrades of SHS facilities to prevent or impede the passage of salmon and steelhead, the majority of which are listed as either threatened or endangered in California, and requires Caltrans to do the following: • Provide an annual list of fish passage priorities for the SHS to the legislature • Complete assessments of potential barriers to anadromous fish prior to commencing any transportation project using state or federal transportation funds • Submit assessments to the Fish Passage Assessment Database • Construct all new transportation projects in a way that does not pose or create a barrier to fish passage Caltrans collaborates with the FishPAC to identify passage priority locations for the SHS. The FishPAC is a partnership between CDFW, NMFS, FWS, CCC, CalTrout, Pacific States Marine Fisheries Commission, other local fish passage advocates, and Caltrans.	https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=156.&lawCode=SHC	1/1/2006 (effective date)
California Coastal Act of 1976	Updated periodically (by California legislature)	No	The California Coastal Act is the primary law that governs decisions of the CCC. It outlines, among other things, standards for development within the coastal zone. The California Coastal Act requires mitigation for impacts on coastal habitats, as well as other types of coastal resource impacts, for example, visual impacts, that are outside the scope of this document. The CCC regulates potentially impactful projects within the coastal zone, primarily through the issuance of CDPs. In coastal local jurisdictions where the CCC has certified an LCP, the local government assumes CDP authority within its jurisdiction (with certain exceptions, such as some coastal wetlands, where the CCC retains original jurisdiction). LCPs are used by local governments to guide development in the coastal zone in coordination with the CCC. LCPs that overlap the GAI are listed in Appendix D, <i>Local Coastal Programs</i> .	https://www.coastal.ca.gov/coastact.pdf	10/9/2019 (last amended)
California Fish and Game Commission Wetlands Resources Policy	Updated periodically	No	California Fish and Game Commission's policy seeks to provide for the protection, preservation, restoration, enhancement, and expansion of wetland habitat in California.	https://fgc.ca.gov/About/Policies/Miscellaneous#Wetlands	8/18/2005 (last amended)
California Water Boards 2010 Update to Strategic Plan 2008–2012	Final	No	This is an update to the strategic plan from the Water Boards. Goals include implementing strategies to fully support beneficial uses for all waterbodies listed in the 2006 report, improve and protect groundwater quality, increase sustainable local water supplies available for meeting beneficial uses by 1,725,000 acre-feet per year, comprehensively address water quality protection and restoration, improve transparency and accountability within the Water Boards, enhance consistency across the Water Boards, and ensure that the Water Boards have access to information and expertise.	https://www.waterboards.ca.gov/water_issues/hot_topics/strategic_plan/docs/2010/final_strategy_plan_update_report_062310.pdf	6/1/2010 (last updated)
2022 Fish Passage Annual Legislative Report	Updated periodically	No	This report identifies priority fish passage barriers on the SHS. Priorities are determined through FishPAC collaboration and are based on the following: ▪ Species diversity – listed threatened and endangered salmon and steelhead species currently or historically present in the watershed; ▪ Habitat – suitable habitat quality and quantity above each crossing, relative to recovery of threatened and endangered species; and ▪ Best professional knowledge – professional, discretionary value for science-based information known to fisheries and engineering subject matter experts. Subject matter experts include CDFW, NMFS, FWS, CCC, CalTrout, Pacific States Marine Fisheries Commission, other local fish passage advocates, and Caltrans.	https://dot.ca.gov/programs/legislative-affairs/reports	10/1/2022 (most recent)
CCC Regulations	Updated periodically	No	This California Code of Regulations section allows CCC to implement provisions of the Coastal Act.	https://www.law.cornell.edu/regulations/california/title-14/division-5.5	12/24/2021 (last updated)

Title	Status	Spatial Data	Reference Purpose	Link	Date
CCC Sea Level Rise Policy Guidance	Updated periodically	No	This is CCC's policy guidance document for integrating development projects in the coastal zone with sea-level rise projections for LCPs and CDPs.	https://www.coastal.ca.gov/climate/slrguidance.html	11/1/2024 (last updated)
CESA	Updated periodically (by California legislature)	No	CESA prohibits the take of any species of wildlife designated by the California Fish and Game Commission as an endangered, threatened, or candidate species. CDFW may authorize the take of any such species by permit if the conditions set forth in FGC § 2081, subdivisions (b) and (c), are met (see California Code of Regulations, Title 14, § 783.4).	https://www.wildlife.ca.gov/Conservation/CESA	9/10/2018 (last amended)
Definition and Delineation of Wetlands in the Coastal Zone	Final	No	The CCC implemented this definition/delineation document. It serves as a reference guide to help interpret CCC law and regulations, which, in part, define wetlands. It summarizes a wetland definition, set forth in the Coastal Act and California Code of Regulations, Title 14, Division 5.5, that uses a one-parameter approach by which any of the three Corps' indicators constitutes a wetland. This document also includes wetland delineation procedures.	https://documents.coastal.ca.gov/reports/2011/10/W4-10-2011.pdf	10/5/2014
Executive Order W-59-93	Final	No	This is the Governor of California's directive for a no net loss policy on the quantity, quality, and permanence of wetland acreages and values.	https://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/wrapp2008/executive_order_w59_93.pdf	8/23/1993
Fish and Game Code § 1955	Updated periodically (by California legislature)	No	Section 1955 of the Fish and Game Code identifies the impacts of climate change and land use planning on California wildlife habitat connectivity and migratory corridors. Section 1955 states that habitat connectivity is essential for continued survival of California species, and so the Legislature intends to expand programs identified in Section 1797 (mitigation and conservation banking) and Section 1850 (advance mitigation planning) of the Fish and Game Code.	https://california.public.law/codes/fish_and_game_code_section_1955	1/1/2022 (effective date)
Native Plant Protection Act	Final	No	Enacted in 1977, this Act allows the California Fish and Game Commission to designate plants as rare or endangered. There are 64 species, subspecies, and varieties of plants that are protected as rare under the Native Plant Protection Act. The Act prohibits take of endangered or rare native plants but includes some exceptions for agricultural and nursery operations and emergencies, and after properly notifying CDFW for vegetation removal from canals, roads, and other sites; changes in land use; and in certain other situations.	https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?division=2.&chapter=10.&lawCode=FGC	1/1/1977
Porter-Cologne Water Quality Control Act	Updated periodically (by California legislature)	No	This law governs water quality in California, establishing the nine RWQCBs and their jurisdiction to protect California's surface water and groundwater through water quality objectives and the beneficial uses of water as outlined in a project's waste discharge requirements.	https://www.waterboards.ca.gov/laws_regulation/docs/portercologne.pdf	1/1/2026 (last amended)
State Board Resolution No. 68-16	Final	No	This resolution provides the policy for maintaining high water quality.	https://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/1968/rs68_016.pdf	10/28/1968
State of California Sea-Level Rise Guidance: 2018 Update	Final	No	Drafted by the CNRA and OPC, this document provides guidance to state agencies for incorporating sea-level rise projections into planning, permitting, investment, and other decisions.	https://www.opc.ca.gov/updating-californias-sea-level-rise-guidance/	3/14/2018
State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State	Final	No	Created by the SWRCB and implemented by the Water Boards, this document creates a State of California wetland definition, framework for determining jurisdiction of state wetlands, wetland delineation procedures, and application procedures for discharges of dredge and fill material to waters of the state.	https://www.waterboards.ca.gov/water_issues/programs/cwa401/wrapp.html	5/28/2020 (effective date)
Streambed Alteration Program FGC § 1602	Updated periodically (by California legislature)	No	Implemented by CDFW, this program regulates activities that may substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. In general terms, CDFW jurisdiction extends to top-of-bank or the outer extent of riparian habitat, if present. Additionally, CDFW has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species.	https://california.public.law/codes/fish_and_game_code_section_1602	7/12/2021 (last amended)

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Water Quality Control Plan for the North Coast Region	Updated periodically	Yes	Implemented by North Coast Basin RWQCB, this plan establishes general and site-specific water quality standards and objectives in the North Coast Basin.	https://www.waterboards.ca.gov/northcoast/water_issues/programs/basin_plan/	6/13/2025 (last amended)
Federal Laws, Guidelines, and Regulations	See below	See below	See below	See below	See below
2008 Final Compensatory Mitigation Rule	Final	No	This is the Corps' ruling to establish standards and criteria for the use of all types of compensatory mitigation, including on- and off-site permittee-responsible mitigation, mitigation banks, and in-lieu fee mitigation to offset unavoidable impacts on WOTUS.	https://www.govinfo.gov/content/pkg/CFR-2012-title33-vol3/xml/CFR-2012-title33-vol3-part332.xml	7/9/2008
303(d) List of Impaired Water Bodies	Updated periodically	No	This is EPA and SWRCB's listing of regulated impaired waterbodies.	https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/2024-integrated-report.html	2/06/2024 (last updated)
40 CFR § 131.12 California Antidegradation Policy	Final	No	The SWRCB implemented this policy. Required by federal law, the Antidegradation Policy applies to the disposal of waste to high-quality surface water and groundwater.	https://www.ecfr.gov/current/title-40/chapter-I/subchapter-D/part-131/subpart-B/section-131.12	8/21/2015 (last amended)
Corps Regulatory Guidance Letter 18-01	Final	No	This is the Corps' guidance document on determining compensatory mitigation credits for the removal of obsolete dams and other structures from rivers and streams.	https://usace.contentdm.oclc.org/utis/getfile/collection/p16021coll9/id/1473	9/25/2018
Current Implementation of Waters of the United States	Updated periodically	No	This is EPA's website on the implementation and definition of WOTUS, based on the most current agency rulemaking and legal decisions.	https://www.epa.gov/wotus/current-implementation-waters-united-states	11/17/2025 (last updated as currently proposed)
CWA	Updated periodically (by Congress)	No	Authorized by EPA and delegated to the Corps and SWRCB, the CWA establishes the basic structure for regulating discharges of pollutants into WOTUS and regulating quality standards for surface waters.	https://www.law.cornell.edu/uscode/text/33/1344	2/4/1987 (last amended)
CWA § 401	Updated periodically (by Congress)	No	This regulation, implemented by EPA and SWRCB, regulates discharge of pollutants into WOTUS.	https://www.law.cornell.edu/uscode/text/33/1341	12/27/1977 (last amended)
CWA § 402 National Pollutant Discharge Elimination System Municipal Separate Storm Sewer System Permit	Updated periodically (by Congress)	No	Implemented by EPA and SWRCB, this permit regulates discharge of stormwater from municipal sources that are a conveyance or system of conveyances and are: - Owned by a state, city, town, village, or other public entity that discharges to WOTUS; - Designed or used to collect or convey stormwater (for example, storm drains, pipes, ditches); - Not a combined sewer; and - Not part of a sewage treatment plant or publicly owned treatment works.	https://www.epa.gov/npdes/stormwater-discharges-municipal-sources	6/7/2023 (last amended)
CWA § 404	Updated periodically (by Congress)	No	This regulation, implemented by EPA and the Corps, regulates discharge of dredge or fill material into WOTUS.	https://uscode.house.gov/view.xhtml?hl=false&edition=prelim&req=granuleid%3AUSC-2024-title33-section1344&f=treesort&num=0#amendment-note	2/4/1987 (last amended)
Definition of "Waters of the United States"	Updated periodically	No	On November 17, 2025, the EPA and the Department of the Army announced the proposed rule "Updated Definition of Waters of the United States". This proposal implements the Supreme Court's decision in the case of <i>Sackett v. Environmental Protection Agency</i> .	https://www.epa.gov/wotus/revising-definition-waters-united-states	11/17/2025 (last amended)
Executive Order 11990, Protection of Wetlands	Final	No	This order aims to minimize the destruction, loss, or degradation of wetlands, and preserve and enhance the natural and beneficial values of wetlands.	https://www.epa.gov/cwa-404/protection-wetlands-executive-order-11990	3/24/1977
FESA	Updated periodically (by Congress)	No	This Act authorizes FWS and NMFS to protect federally listed threatened and endangered species.	https://www.fws.gov/endangered/laws-policies/	11/24/2003 (last amended)

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Final 2015 Regional Compensatory Mitigation and Monitoring Guidelines for South Pacific Division	Final	No	This provides the Corps' guidelines for mitigation and monitoring in the South Pacific Division, including California.	https://www.spd.usace.army.mil/portals/13/docs/regulatory/mitigation/mitmon.pdf	1/12/2015 (last amended)
FWS Mitigation Policy	Final	No	FWS's policy builds upon the guidance in the 1981 Mitigation Policy for FWS recommendations and requirements for mitigating adverse impacts of land and water developments on fish and wildlife.	https://www.fws.gov/policy-library/A1501fw2	2/13/2026 (last amended)
FWS Endangered Species Act Compensatory Mitigation Policy	Final	No	FWS's policy adopts mitigation principles established in the FWS Mitigation Policy, establishes compensatory mitigation standards, and provides guidance for the application of compensatory mitigation through implementation of the FESA.	https://www.fws.gov/policy-library/a1501fw3	2/13/2026 (last amended)
National Wetlands Mitigation Action Plan	Final	No	EPA and Corps comprehensive, interagency document provides guidance on further achievement of the goal of no net loss of wetlands and sets forth the no-net-loss policy.	https://www.epa.gov/cwa-404/national-wetlands-mitigation-action-plan	12/26/2002
The Navigable Waters Protection Rule	In Progress	No	The navigable waters protection rule, dated August 29, 2023, was amended to conform to the definitional decision from <i>Sackett v. Environmental Protection Agency</i> . Rulemakings to revise the rule are currently in progress.	https://www.epa.gov/nwpr/final-rule-navigable-waters-protection-rule	1/18/2023
NOAA Mitigation Policy for Trust Resources	Final	No	NOAA's comprehensive national policy on mitigation outlines principles it will use to guide decisions about mitigation as it implements its programs and assists public agencies, tribes, and project proponents to avoid, minimize, and compensate for adverse impacts on natural resources under NOAA management or jurisdiction.	https://www.noaa.gov/organization/administrative-orders-chapter-216-program-management/nao-216-123-noaa-mitigation-policy-for-trust-resources	7/22/2022
Rising to the Urgent Challenge: Strategic Plan for Responding to Accelerating Climate Change	Updated periodically	No	FWS's document addresses adaptation, mitigation, and engagement strategies to achieve goals and objectives of minimizing the impact of climate change on fish and wildlife by applying science in managing species and habitats, reducing levels of greenhouse gases, and collaborating with other organizations to determine solutions to challenges and threats to fish and wildlife conservation posed by climate change.	https://www.fws.gov/story/2009-09/rising-challenge-strategic-plan-responding-accelerating-climate-change	9/23/2009
Section 10 of the Rivers and Harbors Appropriation Act of 1899	Updated periodically (by Congress)	No	This Act authorizes the Corps to protect navigable WOTUS by requiring a permit for construction of any structure over a navigable WOTUS. A Section 10 permit is required if the structure or work affects the course, location, or condition of the waterbody. The law applies to any dredging or disposal of dredged materials, excavation, filling, rechannelization, or any other modification of a navigable WOTUS.	https://www.epa.gov/cwa-404/section-10-rivers-and-harbors-appropriation-act-1899	7/26/1947 (last amended)
Section 14 of the Rivers and Harbors Appropriation Act of 1899	Updated periodically (by Congress)	No	This Act is also known as 33 USC Section 408 or, more simply, Section 408. Implemented by the Corps, this Act regulates the temporary occupation or use of any sea wall, bulkhead, jetty, dike, levee, wharf, pier, or other work built by the U.S.	https://www.law.cornell.edu/uscode/text/33/408	10/23/2018 (last amended)
Wild and Scenic Rivers Act	Final	Yes	This Act reserves certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. All federal agencies must seek to avoid or mitigate actions that would adversely affect National River Inventory river segments.	https://www.law.cornell.edu/uscode/text/16/chapter-28	12/19/2014 (last amended)
Statewide and Regional Resource Planning Documents	See below	See below	See below	See below	See below

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2018 Master Plan for Fisheries	Final	No	CDFW's plan implements the Marine Life Management Act. It includes goals to manage priority species, achieve sustainability for commercial fish stocks, conserve ecosystems, integrate marine protected areas into fisheries management, and provide adaptive management for climate change. It provides a framework for specific management plan creation.	https://wildlife.ca.gov/Conservation/Marine/Master-Plan	6/1/2018
A Climate Change Vulnerability Assessment of California's Terrestrial Vegetation	Final	Yes	CDFW's document assesses the climate vulnerability of terrestrial vegetation.	https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=116208&inline	1/1/2016
A Strategy for California @ 50 Million – Supporting California's Climate Change Goals	Final	Yes	This planning report from the California Governor's Office focuses on sustainability efforts across California in response to climate change.	http://opr.ca.gov/docs/EGPR_Nov_2015.pdf	11/1/2015
ACE Connectivity Project Version 3.0	Updated periodically	Yes	This CDFW effort analyzes large amounts of map-based data to inform decisions related to goals such as biodiversity conservation, habitat connectivity, and climate change resiliency.	https://wildlife.ca.gov/Data/Analysis/ACE	12/18/2025 (last updated)
California Biodiversity Initiative	Final	No	This is a CNRA, CDFA, and Governor's Office of Planning and Research high-level planning document. It provides a road map to secure California's biodiversity future.	https://californiabiodiversityinitiative.org/pdf/california-biodiversity-action-plan.pdf	9/1/2018
California Coastal Trail Mapping Viewer	In progress	Yes	This GIS map, created by CCC and the Coastal Conservancy, shows existing segments of the California Coastal Trail. Most of the California Coastal Trail segments are located in public open space or the Caltrans right-of-way, and Caltrans is a statutory partner in maintaining and advancing the trail. Caltrans should be aware of any potential trail alignments when planning and designing mitigation projects.	https://the-california-coastal-trail-1-coastalcomm.hub.arcgis.com/	Updated frequently
California Eelgrass Mitigation Policy and Implementing Guidelines	Final	No	NMFS's document describes its policy for mitigation of impacts on eelgrass habitats, which includes no net loss of eelgrass habitat.	https://www.fisheries.noaa.gov/resource/document/california-eelgrass-mitigation-policy-and-implementing-guidelines	10/1/2014
California Essential Habitat Connectivity Project	Final	Yes	This CDFW and Caltrans assessment identifies large remaining blocks of intact habitat or natural landscape and model linkages between them that need to be maintained, particularly as corridors for wildlife.	https://www.wildlife.ca.gov/conservation/planning/connectivity/CEHC	2/1/2010
California Water Action Plan 2016 Update	Final	No	This plan calls for action to restore key mountain meadow habitat, manage headwaters, restore coastal watersheds, and enhance water flows in streams statewide.	http://resources.ca.gov/docs/california_water_action_plan/Final_California_Water_Action_Plan.pdf	1/1/2016
California Watershed Assessment Manual Volume I	Final	No	This assessment provides guidance for conducting a watershed assessment in California.	https://www.epa.gov/system/files/documents/2022-02/caliwam.pdf	8/1/2004
Caltrans Adaptation Priorities Report: District 1	Final	No	Caltrans initiated a major agency-wide effort to adapt its infrastructure so it can withstand future conditions. The effort began by determining which assets are most likely to be adversely affected by climate change in each Caltrans District.	https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/2020-adaption-priorities-reports/d1-adaptation-priorities-report-2021-a11y.pdf	2/1/2021
Caltrans Climate Change Vulnerability Assessment, District 1 Technical Report	Final	No	This is Caltrans' assessment of climate change vulnerabilities for the District.	https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/2019-climate-change-vulnerability-assessments/d1-technical-report-a11y.pdf	10/1/2019

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CCC Strategic Plan 2020–2025	Final	No	This is CCC's draft plan to guide agency actions from 2020 to 2025. The plan currently contains 9 goals, 49 objectives, and 189 specific actions. Of these, Caltrans is identified in 16 specific actions, including coordination on biodiversity resources and advanced mitigation (3.1.3, 3.2.3, 3.2.4), climate change planning (4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.3.1, 4.4.2), LCP engagement (6.1.3, 6.1.5, 6.2.1), environmental justice (5.2.1, 5.2.3), and information/GIS collaboration (8.1.1, 8.1.7, 9.6.2, 9.6.4).	https://www.coastal.ca.gov/strategicplan/spindex.html	11/6/2020
Coastal Storm Modeling System	Updated periodically	Yes	USGS developed this tool to allow for detailed predictions of coastal flooding attributable to projected sea-level rise and storm systems. It includes projections of storm scenarios under different sea-level rise conditions. This system is integrated with the Our Coast Our Future: Coastal Storm Modeling System, noted below.	https://www.usgs.gov/centers/pcmsc/science/coastal-storm-modeling-system-cosmos?qt-science_center_objects=0#qt-science_center_objects	11/21/2021 (last updated)
Conservation and Mitigation Banking	Active Web Page	No	This is CDFW's main public webpage describing the process for creating and using mitigation banks.	https://wildlife.ca.gov/Conservation/Planning/Banking	Ongoing
Critical Infrastructure at Risk. Sea Level Rise Planning Guidance for California's Coastal Zone	Final	No	This is CCC's guidance document on developing and maintaining coastal resilient infrastructure with a focus on sea level rise.	https://documents.coastal.ca.gov/assets/slr/SLR%20Guidance_Critical%20Infrastructure_12.6.2021.pdf	11/17/2021
Development, Land Use, and Climate Change Impacts on Wetland and Riparian Habitats – A Summary of Scientifically Supported Conservation Strategies, Mitigation Measures, and Best Management Practices	Final	No	A technical memorandum from CDFW, Region 1, describing analysis and summary of recent research on fish and wildlife relationships to land use and development impacts and conservation strategies to minimize impacts. The memo recommends that an appropriate starting place for buffering impacts on sensitive habitats is 50 meters.	https://wildlife.ca.gov/Regions/1	5/21/2014
Roadkill, a Preventable Natural Disaster	Final	Yes	This is University of California, Davis's Road Ecology Center report on the ecological and financial cost of vehicle collisions with wildlife throughout the state, broken down by different regions in the state.	https://roadecology.ucdavis.edu/sites/g/files/dgvnsk8611/files/files/CROS-CHIPs_Hotspots_2024_fin.pdf	6/15/2024
Large Mammal-Vehicle Collision Hot Spot Analyses, California, USA	Final	Yes	Western Transportation Institute's report documents the methods and results of hot-spot analyses of large wild mammal-vehicle collisions in California, with an emphasis on mule deer. These analyses identified the road sections that had the highest concentration of deer-vehicle crashes and mule deer carcasses. Special-status species were not addressed.	https://westerntransportationinstitute.org/wp-content/uploads/2019/09/4W6693_Huijser-and-Begley-FINAL-Report-Caltrans-Statewide-20190913-reduced-image-size.pdf	9/13/2019
Master Plan for Marine Protected Areas	Final	No	This is CDFW's management plan for marine protected areas.	https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Master-Plan	8/24/2016
Our Coast Our Future: Coastal Storm Modeling System	Updated periodically	Yes	This USGS mapping program tracks projected sea-level rise for the California coast. Some pieces of the program are not yet completed; however, the portions covering the GAI are complete.	https://data.pointblue.org/apps/ocof/cms/	5/1/2021 (last piece added)
Pacific Coast Fishery Ecosystem Plan for the U.S. Portion of the California Current Large Marine Ecosystem	Final	Yes	This is the Pacific Fishery Management Council's overarching plan for management of the marine ecosystem and fish population for the California coast.	https://www.pcouncil.org/managed_fishery/ecosystem-based-management/	7/1/2013
Record of Decision for Amendments to Forest Service and BLM Planning Documents within the Range of the Northern Spotted Owl	Final	No	This document, colloquially referred to as The Northwest Forest Plan, is a landscape approach to federal land management designed to protect threatened and endangered species while also contributing to the region's social and economic sustainability. It also includes an Aquatic Conservation Strategy, which aims to restore and maintain the ecological health of watersheds and aquatic ecosystems.	https://www.fs.usda.gov/r6/reo/library/downloads/documents/NWFP-ROD-1994.pdf	4/13/1994
Regional Conservation Investment Strategies	Updated periodically	Yes	CDFW's central location for RCISs that are approved, in draft review, or in development in California. No RCISs occur within the GAI.	https://wildlife.ca.gov/Conservation/Planning/Regional-Conservation/RCIS	10/16/2025 (most recent document)

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Restoring California's Wildlife Connectivity 2022: 2022 Priority Wildlife Connectivity Project Locations by Region	Final	Yes	This document provides CDFW's priority wildlife movement barriers across the state. This document is focused on large wild mammal game species; however, some priorities would benefit special-status species such as bighorn sheep.	https://wildlife.ca.gov/Conservation/Wildlife/Connectivity/Barriers	12/1/2022
Safeguarding California Plan: 2018 Update	Final	No	This is CNRA's conservation plan. It includes goals to strengthen the climate adaptation component of conservation planning efforts, enhance habitat connectivity, protect climate refugia through strategic acquisition and protection activities, increase restoration and enhancement activities to increase climate resiliency of natural and working lands, increase biodiversity monitoring efforts, continue incorporating climate considerations into state investment decision processes, and provide educational opportunities to the public and state agency staff regarding climate impacts and adaptation options.	http://resources.ca.gov/docs/climate/safeguarding/update2018/safeguarding-california-plan-2018-update.pdf	1/1/2018
Sanctuary Integrated Monitoring Network	Updated periodically	Yes	This is a NOAA-administered program to collect original research, gather historical records, and monitor and report on the condition of National Marine Sanctuaries in California.	https://sanctuariesimon.org/	Information updated regularly
Strategic Plan to Protect California's Coast and Ocean 2020–2025	Draft	Yes	This is OPC's plan for coastal and ocean protection. It includes goals and objectives centered on safeguarding coastal and marine ecosystems, advancing equity across ocean and coastal policies and actions, enhancing coastal and marine biodiversity, and improving ocean health with economic factors.	https://www.opc.ca.gov/webmaster/ftp/pdf/2020-2025-strategic-plan/OPC-2020-2025-Strategic-Plan-FINAL-20200228.pdf	2/28/2020
SWAP	Updated periodically (10-year intervals)	Yes	This is CDFW's plan for protection of species of greatest conservation need, in addition to habitats and other wildlife in California. It includes habitat targets for blue-oak foothill pine, closed-cone pine-cypress, coastal oak woodland, lodgepole pine, montane hardwood, montane riparian, red fir, redwood, subalpine conifer, alpine dwarf-shrub, coastal scrub, montane chaparral, annual grassland, perennial grasslands, and wet meadow CWHR habitat types observed in the GAI. It also includes a target for native aquatic species assemblages/communities of coastal watersheds. The strategies associated with these targets includes objectives to: • Reintroduce established self-sustaining and genetically viable populations of native SGCN species and restore species of greatest conservation need to historically occupied habitat. • Remove invasive or problematic species from historical native habitat. • Restore and enhance habitat to recover ecological function of keystone species.	https://wildlife.ca.gov/SWAP	10/1/2025 (last updated)
SWAP Marine Resources Companion Plan	Final	Yes	This is CDFW's companion document to SWAP that assesses the vulnerability and conservation strategies for the California coast and coastal waters.	https://swap.wildlife.ca.gov/conservation-tools/#companion-plans	12/1/2016
SWAP Transportation Companion Plan	Final	Yes	This is CDFW's companion document to SWAP that provides a plan for the protection of species specific to transportation project planning.	https://swap.wildlife.ca.gov/conservation-tools/#companion-plans	12/1/2016
SWAP Water Management Companion Plan	Final	Yes	This is CDFW's companion document to SWAP to recommend water management practices throughout the state of California.	https://cawaterlibrary.net/document/water-management-companion-plan-to-the-statewide-wildlife-action-plan/	12/1/2016

Title	Status	Spatial Data	Reference Purpose	Link	Date
Wildlife Connectivity Advance Mitigation Guidelines	Final	No	The Wildlife Connectivity Advance Mitigation Guidelines create incentives for improving habitat connectivity that will protect and enhance movement and migration for California’s most threatened species. The Guidelines are applicable to the Conservation and Mitigation Banking Program and Mitigation Credit Agreements, as part of the RCIS Program (Fish & Game Code, § 1955, subdivision (f)).	https://wildlife.ca.gov/Conservation/Planning/Connectivity	9/1/2024
Special-status Taxa ^a Documents ^b	See below	See below	See below	See below	See below
Final Recovery Plan for the SONCC Evolutionarily Significant Unit of Coho Salmon (<i>Oncorhynchus kisutch</i>)	Final	Yes	This is NMFS’ recovery plan for the SONCC ESU of coho salmon. The recovery plan objectives conceptually describe protection and enhancement of species heterogeneity, life history, and habitat across the species’ range.	https://www.fisheries.noaa.gov/west-coast/endangered-species-conservation/southern-oregon-northern-california-coast-coho-salmon#species-recovery	1/1/2014
2024 5-Year Review: Summary & Evaluation of SONCC Coho Salmon	Final	Yes	This is FWS’ most recent 5-year formal review of the species’ condition.	https://www.fisheries.noaa.gov/resource/document/2024-5-year-review-summary-evaluation-southern-oregon-northern-california-coast	12/11/2024
Designated Critical Habitat; Central California Coast and SONCC Coho Salmon	Final	No	This is FWS’ designation critical habitat for coho salmon.	https://www.fisheries.noaa.gov/west-coast/endangered-species-conservation/southern-oregon-northern-california-coast-coho-salmon#species-recovery	5/5/1999
Recovery Strategy for California Coho Salmon	Final	Yes	This is CDFW’s recovery plan for coho salmon. Goals focus on increasing habitat and total population size. Recovery criteria include improvements to populations and distribution by increasing quantity of spawning adults, while enhancing and restoring habitat throughout the species’ range. An additional goal includes population recovery to the point of reintroducing tribal and commercial fishing.	https://wildlife.ca.gov/Conservation/Fishes/CohoSalmon	2/1/2004
Recovery Plan for the Southern Distinct Population Segment of Eulachon (<i>Thaleichthys pacificus</i>)	Final	Yes	This is NMFS’ recovery plan for eulachon. The recovery plan objectives conceptually describe protection and enhancement of species heterogeneity, life history, and habitat across the species’ range.	https://www.fisheries.noaa.gov/resource/document/recovery-plan-southern-distinct-population-segment-eulachon-thaleichthys	9/6/2017
2022 5-year Review: Summary & Evaluation of Eulachon, Southern DPS	Final	Yes	This is NMFS’ most recent formal review of the species’ condition.	https://www.fisheries.noaa.gov/resource/document/2022-5-year-review-summary-evaluation-eulachon-southern-dps	7/29/2022
Critical Habitat for the Southern Distinct Population Segment of Eulachon	Final	Yes	This is NOAA’s final biological report and designation of critical habitat for the southern distinct population segment of eulachon.	https://repository.library.noaa.gov/view/noaa/18679	9/1/2011
Southern DPS of Eulachon	NA	NA	No biological opinions at this time.		
Western Pond Turtle Range-wide Management Strategy 2020 (Recovery plan and critical habitat)	Final	Yes	This is FWS’ management plan for the northwestern pond turtle. Northwestern pond turtles are known to occur within the Coast Range regions of the GAI. Invasive aquatic species that pose a threat to northwestern pond turtle include smallmouth bass, crayfish , and largemouth bass.	https://www.fws.gov/node/263209	1/1/2020
Species Status Assessment Report for Northwestern Pond Turtle (<i>Actinemys marmorata</i>) and Southwestern Pond Turtle (<i>Actinemys pallida</i>)	Updated Periodically	Yes	This is FWS’ most recent review of the species condition.	https://iris.fws.gov/APPS/ServCat/Reference/Profile/160047	4/1/2023

Title	Status	Spatial Data	Reference Purpose	Link	Date
Northwestern Pond Turtle Biological Opinions	Updated Periodically	No	This is FWS' list of 33 conference opinions that have been issued for northwestern pond turtle; of these, 9 overlap with counties within the GAI.	https://reports.ecosphere.fws.gov/FWSPublicReports/Reports/Index?reportname=BiologicalOpinionReport	6/23/2025 (latest relevant document)
USGS Western Pond Turtle (<i>Emys marmorata</i>) Visual Survey Protocol for the Southcoast Ecoregion	Draft	No	This is USGS' guidance on site assessment, survey, and reporting requirements for western pond turtle, a CDFW-accepted protocol.	https://wildlife.ca.gov/Conservation/Survey-Protocols#377281283-reptiles	1/1/2006
State Land Management Plans	See below	See below	See below	See below	See below
General Planning Handbook for California State Parks	Final	Yes	This is California State Parks' guidelines for general plan development, which requires an inventory of known natural resources and general guidelines to comply with federal and state laws. State park entities with specific management goals pertinent to Chapters 7 and 8 of this RAMNA are listed below.	http://www.parks.ca.gov/pages/21299/files/planning_handbook_april_2010.pdf	4/1/2010
Redwood National and State Parks General Management Plan	Final	Yes	This is a joint management effort with State and National Parks that comprises of all state and federal units – including Redwood National, Redwood National, Jedediah Smith Redwoods, Prairie Creek Redwoods, and Redwood Heritage State Wilderness state and national parks. Includes specific goals to rehabilitate second-growth forest, and conduct landform restoration actions to remove abandoned, failing, and inaccessible roads. Additional landform restoration includes the improvement and restoration of watershed headwater streams, throughout a watershed's tributaries, estuaries, and to the sea.	https://www.parks.ca.gov/?page_id=24851	11/19/1999
FWS Land Management Plans	See below	See below	See below	See below	See below
Not applicable	Not applicable	Not applicable	There are no National Wildlife Refuges within the GAI.	Not applicable	Not applicable
NOAA Management Plans	See below	See below	See below	See below	See below
Review of 2024 Ocean Salmon Fisheries	Periodically Updated	Yes	This is NMFS' fisheries management plan for salmonids on the west coast. The conservation goal for coho salmon in the GAI is an exploitation rate no more than 16 percent adult for the Trinity River component and 15 percent for all other components of the SONCC coho ESU.	https://www.pcouncil.org/managed_fishery/salmon/	2/1/2025
U.S. Military Land Management Plans	See below	See below	See below	See below	See below
Not applicable	Not applicable	Not applicable	There are no military lands within the GAI.	Not applicable	Not applicable
Native American Tribal Land Management Plans	See below	See below	See below	See below	See below
Elk Valley Indian Rancheria Ordinance No. 01-08	Updated Periodically	No	A zoning and land use ordinance for the Elk Valley Indian Rancheria. Includes a land use designation for open space.	https://narf.org/nill/codes/elkvalleycode/elkvallzonpt1.html	1/1/2002 (last amended)
Hoopa Valley Tribe	Not publicly available	Unknown	The Forest Management Plan is not publicly available but can be requested and issued at the discretion of the Forest Manager.	https://www.hoopansn.gov/departments/natural-resource-departments/fisheries/	1/1/2020
USFS Land Management Plans	See below	See below	See below	See below	See below
Klamath National Forest Land and Resource Management Plan (2010 Update)	Updated Periodically	Yes	This is USFS' management direction for Klamath National Forest, which includes goals, projections, standards and guidelines for forest management areas and the natural resources within. Plan lists northwestern pond turtles as a sensitive target marsh/lake/pond species in the riparian wetland management section.	https://www.fs.usda.gov/r05/klamath/planning	7/29/2010 (last updated)

Title	Status	Spatial Data	Reference Purpose	Link	Date
Rogue River National Forest Land and Resource Management Plan	Final	Yes	This is USFS' management plan for the Rogue River National Forest. It defines riparian zones to be 100 feet out from each side of a stream, or to the edge of the riparian habitat if it is farther than 100 feet.	https://digital.library.unt.edu/ark:/67531/metadc1538486/	9/1/1990
Six Rivers National Forest Land and Resource Management Plan	Final	Yes	This is USFS' management plan for the Six Rivers National Forest. It contains guidelines that prioritize the Smith River, Klamath River tributaries, Trinity River tributaries, Mad River tributaries, and North Fork Eel River for restoration. The plan considers northwestern pond turtle as a management indicator species for marsh/lake/pond assemblages and includes a goal to maintain habitat characteristics consistent with the Habitat Capability Model within 300 feet around occupied pond and stream habitats. It also prioritizes salmonid spawning and rearing habitat for maintenance, restoration of fish habitat, and riparian restoration.	https://www.fs.usda.gov/r05/sixrivers/planning	1/1/1995
Shasta-Trinity National Forest Land Resource Management Plan	Final	No	This is USFS' management plan for the Shasta-Trinity National Forest. It describes a direction to manage inner gorge lands as protective zones for riparian areas. It lists northwestern pond turtle as an aquatic dependent wildlife species with current management direction to manage riparian reserves: • A minimum of 150 feet along perennial streams and lakes; • A minimum of 300 feet along all perennial fish-bearing streams; and, • A minimum 100 feet along all seasonally flowing or intermittent streams and wetlands less than 1 acre.	https://www.fs.usda.gov/r05/shasta-trinity/planning	4/28/1995
BLM Land Management Plans	See below	See below	See below	See below	See below
California Coastal National Monument Resource Management Plan	Final	Yes	This is BLM's management plan for the California Coastal National Monument.	http://www.npshistory.com/publications/blm/california-coastal/rmp-2005.pdf	9/1/2005
Northwest California Integrated Draft Resource Management Plan and Environmental Impact Statement	Updated Periodically	Yes	This is BLM's resource management plan covering the Arcata and Redding Field Offices that is currently in development. Only the Arcata Field Office is within the GAI. The plan requires buffers of 300 feet on either side of the channel in fish-bearing streams, 150 feet on either side of the channel in non-fish-bearing streams, and a 100-foot buffer on either side of the stream channel in intermittent streams and landslide prone areas. It includes goals for the protection and/or enhancement of northwestern pond turtle habitat.	https://eplanning.blm.gov/Documents/?id=008dfbca-a7f2-f011-8407-001dd806295a&spid=7f53757a-a8f2-f011-8406-001dd8008d46	11/1/2024
NPS Land Management Plans	See below	See below	See below	See below	See below
Nationwide Rivers Inventory	Final	Yes	This is a listing of Nationwide River Inventory river segments that are potential candidates for inclusion in the National Wild and Scenic Rivers System. The Klamath, Smith, and Trinity Rivers, along with their tributaries, are located within the GAI.	https://www.nps.gov/subjects/rivers/nationwide-rivers-inventory.htm	11/15/2024 (last updated)
Redwood National Park/Santa Monica Mountains National Recreation Area Invasive Plant Management Plan Environmental Assessment	Final	No	This is NPS' invasive plant management plan for Redwood National Park. It identifies a number of invasive plant targets for removal from the park, including Himalayan blackberry.	https://parkplanning.nps.gov/document.cfm?parkID=341&projectID=44351&documentID=83505	10/16/2017
Whiskeytown National Recreation Area Foundation Document	Final	No	This is NPS' foundation document for Whiskeytown National Recreation Area. It includes goals for ongoing restoration of Whiskeytown Lake and its tributaries.	https://parkplanning.nps.gov/document.cfm?parkID=345&projectID=49437&documentID=61120	12/20/2013
Local Government Land Management Plans	See below	See below	See below	See below	See below

Title	Status	Spatial Data	Reference Purpose	Link	Date
North Coast Resource Partnership Plan	Final	Yes	This is North Coast Resource Partnerships' plan for resource use and conservation planning in northern coastal California. The partnership is between indigenous tribes and county governments. It includes general goals for improving water quality and enhancing and/or restoring aquatic ecosystems, in particular coastal wetlands and streams inhabited by salmonids.	https://northcoastresourcepartnership.org/planning/	1/1/2026
Water Resources Plans and Documents	See below	See below	See below	See below	See below
North Coast Integrated Regional Water Management Plan Phase 3	Updated periodically	Yes	This is North Coast Resource Partnerships' plan for water resources in the plan area, which includes all the coastal areas of the GAI. The North Coast Resource Partnership primarily consists of indigenous nations and county and city governments. The plan includes multiple general goals to improve and restore habitat and water quality in part for the benefit of salmonid species.	https://northcoastresourcepartnership.org/resources/	8/1/2014
North Coast RWQCB Watershed Management Planning Chapter	Final	Yes	This is North Coast RWQCB's document on water quality conditions in its jurisdiction. It includes general goals to enhance beneficial uses in the jurisdictional area.	https://www.waterboards.ca.gov/northcoast/water_issues/programs/watershed_management/watershed_management_initiative/	2/1/2005
North Coast RWQCB TMDL Action Plans	Updated periodically	Yes	This is SWRCB and North Coast RWQCB's list of TMDL action plans for the North Coast Region. In the GAI, TMDL action plans exist for the Klamath River, Redwood Creek and Trinity River.	https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/	1/1/2018 (most recent approval date)
County General Plans	See below	See below	See below	See below	See below
Del Norte County General Plan	Updated Periodically	Yes	This is Del Norte County's general plan. The plan designates the following areas as candidates for restoration and improvement of bluff areas that have experienced excessive vegetation damage: - Pyramid Point to Lopez Creek - Pebble Beach Public Access Points - Pebble Beach at Murphy Street The plan includes an ongoing implementation program to fund replacement habitat and restoration of estuaries, stream corridors, or wetlands. The plan lists multiple named areas to be maintained and protected which include: - Whaler and Battery Islands - Lakes Earl and Talawa and their immediate marshlands - Sand dunes and wet sand areas - Tidal-influenced areas of the Smith and Klamath Rivers - Crescent City Marsh, Elk Creek Wildlife Area, and surrounding wetlands Includes land use designations for resource lands and open space/conservation areas.	https://www.co.del-norte.ca.us/Zoning,GeneralPlan.andDevelopmentStandards	2/24/2023 (last updated)
Humboldt County General Plan	Updated Periodically	Yes	This is Humboldt County's general plan. It includes a priority to restore rivers and ocean areas as well as Humboldt Bay for the recovery of threatened coho salmon. The plan designates Streamside Management Areas, which have 200-foot buffers from development. It requires a 100-foot buffer from non-designated perennial streams and a 50-foot buffer for non-designated intermittent streams. Wetlands that are seasonal have 50-foot buffers and perennial wetlands have 150-foot buffers. Development in these buffers carries additional mitigation requirements. It includes land use designations for forestry recreation, floodplain, and natural resources.	https://humboldt.gov.org/205/General-Plan	8/20/2019 (last updated)
Siskiyou County General Plan 1973	Updated periodically	Yes	This is Siskiyou County's general plan. It includes land use designations for forest land as open space/conservation areas.	https://www.siskiyoucounty.gov/planning/page/general-plan	11/14/2023 (last updated)

Title	Status	Spatial Data	Reference Purpose	Link	Date
Trinity County General Plan	Updated Periodically	Yes	This is Trinity County's general plan. It includes land use designations for forest land as open space/conservation areas.	https://www.trinitycounty.org/276/General-Plan-Community-Plans	4/1/2020 (last updated)
City General Plans	See below	See below	See below	See below	See below
City of Crescent City General Plan	Updated Periodically	Yes	This is the general plan for the City of Crescent City. It includes a policy that requires a minimum 100-foot buffer zone around designated coastal wetlands. It also includes a city policy to reestablish riparian vegetation in selected stream corridors. It includes a goal to enhance the quality and diversity of forest ecosystems and a land use designation for open space.	https://www.crescentcity.org/departments/CommunityDevelopment/GeneralPlanDocuments	9/5/2023
Other Conservation and Management Documents	See below	See below	See below	See below	See below
California Coastkeeper Alliance – Ocean Climate Resiliency Action Plan	Final	No	This is the California Coastkeeper's plan that addresses climate change and rising sea levels. This plan includes preventing ocean wastewater discharges from causing ocean acidification and hypoxia hotspots, preventing agricultural nutrient inputs from causing harmful algal blooms and exacerbating ocean acidification and hypoxia hot spots, improving water quality in Marine Protected Areas, sequestering greenhouse gas emissions, and preventing coastal development in zones at risk from sea-level rise.	https://cacoastkeeper.org/wp-content/uploads/2019/11/CCKA_Ocean-Climate-Resiliency-Campaign_FINAL.pdf	11/19/2019
California EcoAtlas	Updated periodically (nearly daily)	Yes	This statewide database tracks the extent and condition of wetlands in California, managed by the San Francisco Estuary Institute.	https://www.ecoatlas.org/	Updated nearly daily
Coastal Conservancy Strategic Plan 2023-2027	Final	No	Implemented by the CCC, this plan includes a discussion of issues and conservancy-funded efforts within the GAL, including wetland and riparian habitat restoration.	https://scc.ca.gov/about/plan/	12/1/2022
Conserving California's Coastal Habitats – A Legacy and A Future with Sea Level Rise	Final	Yes	The CCC and The Nature Conservancy's statewide coastal conservation plan contains plans to maintain and manage coastal lands to be resilient to sea-level rise. These plans include maintaining existing resilient conservation lands, conserving resilient landscapes, managing in place for resilience, conserving potential future habitat areas, and increasing adaptive capacity.	https://coastalresilience.org/project/conservation-assessment/	2018
Demonstrating the California Wetland Status and Trends Program: A Probabilistic Approach for Estimating Statewide Aquatic Resource Extent, Distribution and Change Over Time	Final	No	The Southern California Coastal Water Research Project's report describes a pilot study that is tracking wetland conditions statewide.	https://www.sccwrp.org/publications/	4/1/2015
Rising to the Urgent Challenge: Strategic Plan for Responding to Accelerating Climate Change	Updated periodically	No	This document addresses adaptation, mitigation, and engagement strategies to achieve goals and objectives of minimizing the impact of climate change on fish and wildlife by applying science in managing species and habitats; reducing levels of greenhouse gases; and collaborating with other organizations to determine solutions to challenges and threats to fish and wildlife conservation posed by climate change.	https://www.fws.gov/story/2009-09/rising-challenge-strategic-plan-responding-accelerating-climate-change	9/23/2009
U.S. Pacific Coastal Wetland Resilience and Vulnerability to Sea-Level Rise	Final	No	This is an original research article describing and comparing climate models and scenarios with respect to coastal wetland resilience and sea-level rise.	https://advances.sciencemag.org/content/4/2/eaao3270	2/21/2018

^a Consistent with the Caltrans SAMNA and Chapter 4, *Existing Mitigation Opportunities*, for the purposes of this document, special-status species are defined as federally and state threatened, endangered, or sensitive species; state fully protected or rare species; or state species of special concern.

^bSONCC Coho does not have any biological opinions at this time

4. EXISTING MITIGATION OPPORTUNITIES

SHC § 800.6(a)-authorized advance mitigation project types include purchasing credits and paying fees associated with existing mitigation sources. This chapter summarizes the mitigation credits and values currently available to Caltrans and/or pending through existing HCPs, NCCPs, mitigation and conservation banks, in-lieu fee programs, and MCAs. RCISs, which are a prerequisite to MCAs, are also discussed.

4.1 SHOPP Advance Mitigation Credits

4.2 HCPs and NCCPs

HCPs¹ and NCCPs² define covered activities that consist of specific projects and actions that may have adverse effects on covered species and natural communities. FWS and/or CDFW estimate adverse effects associated with the covered activities and issue incidental take permits. Once the HCP, NCCP, or HCP/NCCP is adopted and the incidental take permits are issued, signatories and participating special entities, where applicable, can request take authorization for project-related effects on covered species. Participation in an adopted HCP, NCCP, or HCP/NCCP streamlines permit processes by eliminating the need to obtain project-specific incidental take permits from FWS and/or CDFW, and by providing early documentation of compliance with the CESA and FESA.

When Caltrans is not an NCCP permittee, under specific conditions and with signatory agency approval, Caltrans may be able to qualify as a Participating Special Entity under the plan, gaining some of the NCCP permittee's privileges; however, not all NCCPs have a Participating Special Entity clause.

Caltrans identified no active or pending HCPs/NCCPs within the GAI to which Caltrans and/or RTPAs are currently signatories or Participating Special Entities. Other project-specific HCPs may exist in the GAI, but apply only to non-transportation agency single users and are not usable by Caltrans.

4.3 Conservation and Mitigation Banks

A conservation or mitigation bank is privately or publicly owned land managed for its natural resource values and can be for profit or nonprofit. In exchange for permanently protecting, managing, and monitoring the land, the bank sponsor is allowed to sell or transfer habitat and/or aquatic resource credits to permittees who—after all appropriate and practicable avoidance and minimization have been performed—need to satisfy legal requirements and compensate for their project's unavoidable natural resource impacts. Conservation banks generally protect threatened and endangered species habitat, while mitigation banks generally protect, restore, create, and/or enhance aquatic resources and

¹ Pursuant to Section 10 of the FESA or consultations under Section 7 of the FESA.

² Pursuant to FGC § 2835.

sensitive habitats. The legal document for the establishment, operation, and use of a conservation or mitigation bank is a Bank Enabling Instrument (“BEI”).

Caltrans identified one pending conservation and/or mitigation bank with a service area that overlaps all or part of the GAI: the Klamath Lake Mitigation/Conservation Bank. Information on the agency approvals and types of credits available are provided in Table 4-1.

This conservation and mitigation bank does not provide credits for the species of mitigation need identified in this RAMNA; however, credits for other listed species or habitats are available, as listed in Table 4-1. CDFW and RWQCB will not accept conservation bank credits from this bank because it is located outside of California, in the state of Oregon. However, the Klamath Lake Mitigation/Conservation Bank may be applicable on tribal lands where CDFW and the RWQCB do not have jurisdiction. This bank is expected to offer credits for waters of the U.S., which will be applicable to mitigation needs from federal agencies such as the Corps, although USEPA has stated that the potential application of credits from this bank to projects occurring in California will be evaluated on a case-by-case basis. Figure 4-1 shows conservation and mitigation bank service areas that are publicly available within the GAI.

Several additional conservation and/or mitigation banks have service areas that are partially within the GAI but do not overlap any state highways within the GAI. These banks were omitted from Table 4-1 and Figure 4-1 because they would not be usable by Caltrans for fulfilling mitigation requirements.

Table 4-1. Overview of Conservation and Mitigation Banks within the GAI^a

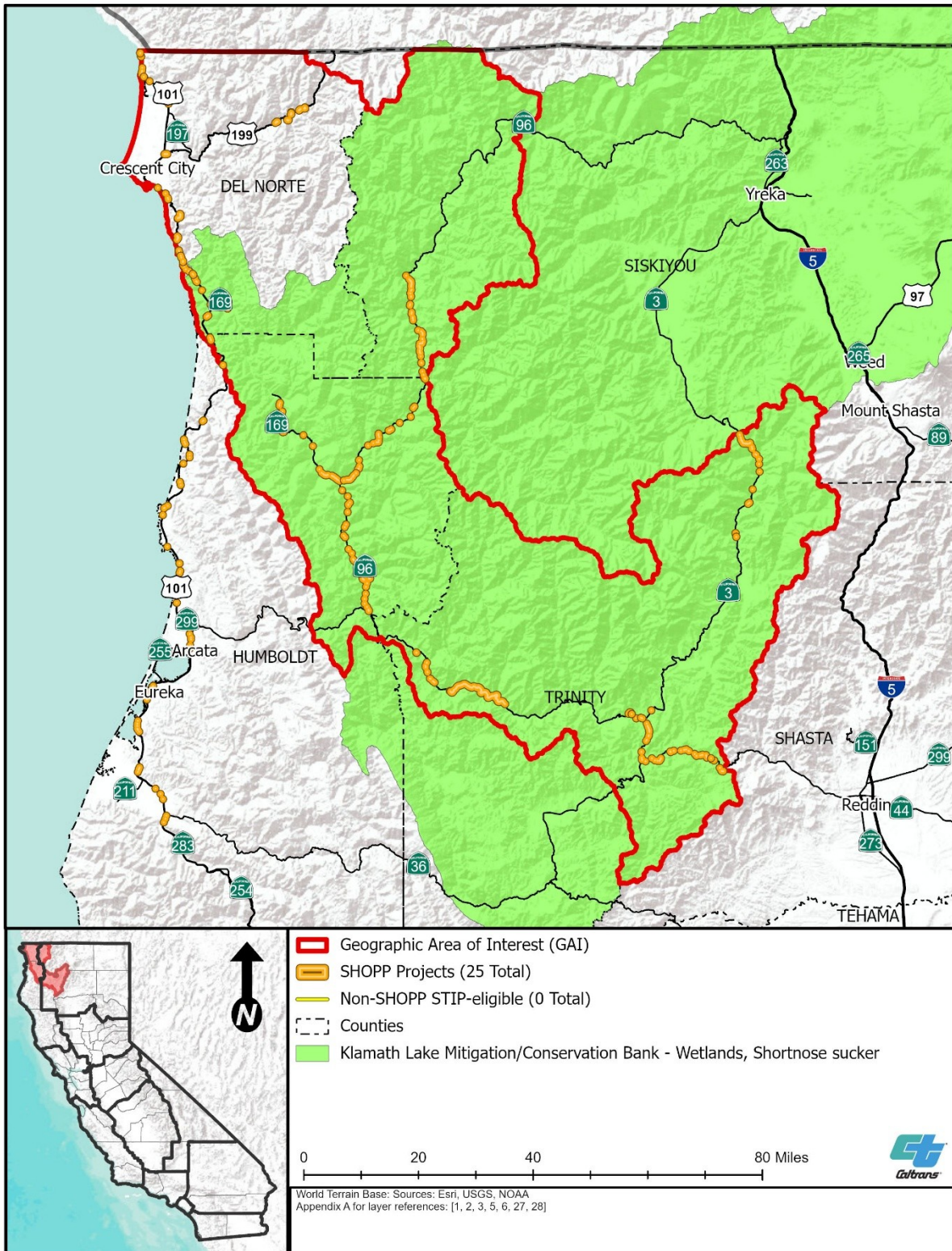
Name	Year Approved	Current Status	Signatories ^b	Bank Location (County) ^c	Instrument Includes Pre-Transfer Credit Sales?	Area (acres)	Credit Types
Klamath Lake Mitigation / Conservation Bank	Pending	Pending	FWS, Corps, and EPA are anticipated	Klamath (Oregon)	Unknown	46.8	Waters of the U.S. (Section 404 and/or 10), Waters of the State of Oregon, shortnose sucker

^a Up-to-date information on approved conservation and mitigation banks, including available credits, can be found at the following websites:
<https://www.wildlife.ca.gov/Conservation/Planning/Banking/Approved-Banks>; <https://ribits.ops.usace.army.mil/ords/f?p=107:2:::>

^b All signatory agencies are also signatories to the *Master Process Agreement for Planning and Developing Advance Mitigation Throughout California for the California Department of Transportation* (Caltrans et al. 2020).

^c Bank service area boundaries may extend well outside of the county where the bank itself is located.

Figure 4-1. Conservation and Mitigation Bank Service Areas



4.4 In-lieu Fee Programs

Compensatory mitigation can also be accomplished through participation in an in-lieu fee program, which is an agreement between a natural resource regulatory agency and a single in-lieu fee sponsor. In-lieu fee mitigation occurs when a permittee provides funds to an in-lieu fee sponsor instead of either completing permittee-responsible mitigation or purchasing credits from a conservation or mitigation bank. An in-lieu fee sponsor can include entities such as public agencies or nonprofit organizations, and the fees are used to plan, build, and maintain a mitigation site. This method is similar to purchasing mitigation credits in that the mitigation is usually conducted “off site.” Often, the mitigation occurs after the permitted impacts. However, when the instrument allows for pre-transfer credit purchases, credits can be purchased prior to permitted impacts.

No in-lieu fee programs are currently established within the GAI.

4.5 RCISs and MCAs

Assembly Bill 2087 established CDFW's RCIS Program in 2016 (FGC Chapter 9, § 1850, et seq.), which created a voluntary framework for governments and other entities to strategically plan for conservation investments in their areas, including investments performed for compensatory mitigation. To promote the conservation quality of compensatory mitigation investments, the RCIS Program provides an advance mitigation tool that can be applied to resources subject to regulations implemented by CDFW. MCAs are developed when and where an RCIS is approved by CDFW and contains the elements described in FGC § 1856(b). Then, with respect to the SHS, a useful MCA would create credits that may be used as compensatory mitigation to offset impacts identified under CESA and the Lake and Streambed Alteration Program.

An MCA has numerous required elements, many of which parallel the requirements of a mitigation bank. These required elements can be found in FGC § 1856, and additional guidance is available in *Regional Conservation Investment Strategies Program Guidelines* (CDFW 2023b). It is important to note that MCAs are not permits such as HCPs and NCCPs (Section 4.2). MCA advance mitigation credits are analogous to conservation and mitigation bank credits (Section 4.3). In other words, unlike an HCP and NCCP, RCISs and MCAs do not result in the issuance of incidental take permits for covered activities.

Caltrans did not identify any active or pending RCISs with service areas that overlap the GAI. Because MCAs are issued once an RCIS has been approved, there are also currently no MCAs within this GAI.

4.6 Wildlife Crossing and Aquatic Corridor Enhancements

In 2022, [FGC § 1955 et seq.](#) authorized CDFW to approve compensatory mitigation credits for a “wildlife connectivity action” through its banking or RCIS programs. Therefore, when wildlife crossings and aquatic corridor enhancements improve the permeability of the SHS, through a BEI or MCA developed under an RCIS, CDFW is authorized to recognize CESA and Lake and Streambed Alteration credits for construction made separate and distinct from a specific transportation project. CDFW has drafted Wildlife Connectivity Advance Mitigation Guidelines (CDFW 2024) that are intended to assist with the process. Connectivity information for the GAI is summarized in Section 2.12.

5. MODELED ESTIMATED IMPACTS

In this chapter, Caltrans documents the potential compensatory mitigation needs within the GAI for fiscal years 2024/25 to 2033/34. Needs were based on estimated potential compensatory mitigation requirements of Caltrans' anticipated SHOPP transportation projects as well as regional and local STIP-eligible transportation projects, as appropriate. Because the assessment is intended to inform advance mitigation project scoping, the impact estimates used to forecast compensatory mitigation needs do not distinguish between permanent or temporary impacts. Actual transportation project impacts, and natural resource regulatory agency compensatory mitigation conditions on transportation projects, will be determined in the future through each transportation project's environmental studies and permits.

In this chapter, Caltrans:

- Describes its approach to, and major assumptions when, estimating transportation-related compensatory mitigation needs within the GAI; and
- Provides its estimate of impacts for the 10-year planning period for aquatic resources, riparian habitat, species of mitigation need, and special-status species potentially co-occurring with the species of mitigation need.

Because Caltrans District 1 chose to focus the analysis on terrestrial and aquatic resources (Section 1.5), the results presented below are presented for aquatic resources for the Chetco, Lower Klamath, Smith, and Trinity sub-basins, which also defines the GAI, and for terrestrial resources for the Klamath Mountains, Northern California Coast, Northern California Coast Ranges, and Oregon and Washington Coast Ranges Ecoregion Sections.

5.1 Approach

Transportation projects eligible to use AMA-funded advance mitigation credits may only be SHOPP or STIP transportation projects (SHC § 800.7; Caltrans 2019). Therefore, the compensatory mitigation needs for aquatic resources and wildlife within the GAI are based on Caltrans' anticipated SHOPP transportation project impacts and Caltrans, regional, and local STIP-eligible transportation project impacts:

- SHOPP transportation project needs are forecast quantitatively through the SAMNA model developed for the AMP.
- STIP-eligible needs are assessed qualitatively, through Caltrans District 1, MPO, RTPA, and other transportation agency coordination.

All estimates assume permanent losses, although it is likely that, in many cases, some of the effects of a transportation project may be avoided, may be temporary, or may not result in a full loss.

5.1.1. SHOPP Needs Assessment: SAMNA Model Results

SHOPP impacts were forecast through the SAMNA. The SAMNA consists of an intersection of assumed transportation project footprints with natural resource layers developed for the SAMNA. Briefly described in Section 1.4, more detailed SAMNA information is provided in the *Advanced Mitigation Needs Assessment GIS Tool Report for California Department of Transportation* (Caltrans 2018c).

To identify the list of SHOPP projects planned for the GAI, Caltrans consulted the SHOPP Ten-Year Book for fiscal years 2024/25 to 2033/34 (Caltrans 2025). The intent of the SHOPP Ten-Year Book is to raise awareness of planned future transportation projects, and detailed transportation project information is not provided. The SHOPP Ten-Year Book includes 25 SHOPP transportation projects within the GAI that are currently in the planning and conceptual phases (Appendix B, *Transportation Projects Planned for the GAI during the Planning Period*). The general locations of all 25 planned transportation projects are shown on most of the maps in this document.

SAMNA estimates are not precise and are not intended to be used for transportation project permitting; however, they are suitable for informing advance mitigation project scopes. The AMP developed the SAMNA strictly and specifically for Caltrans' use in advance mitigation planning—that is, when Caltrans is justifying, proposing, and scoping advance mitigation projects (Caltrans 2025a). The SAMNA model, its foundation, and assumptions are described in the *Statewide Advance Mitigation Needs Assessment Report* (Caltrans 2025), and some of its uncertainties are highlighted in Appendix E, *Complete SAMNA Species Results*. All results are provided in acres. Some species and resources are not forecast to be affected.

Specific to this assessment, forecast impacts on threatened and endangered fish and aquatic resources can be found in Section 5.2 and forecast impacts on terrestrial species of mitigation need can be found in Section 5.3. The SAMNA results for all habitats with at least one special-status species forecast to be affected are provided in Appendix F, *Complete SAMNA Species Results*.

5.1.2. Non-SHOPP STIP-eligible Needs Assessment

At this time, STIP-eligible needs are assessed qualitatively through coordination between the Caltrans District, MPOs, RTPAs, and other public agencies that implement transportation improvements. Obtaining a reliable list of STIP transportation projects within the 10-year planning horizon is problematic. It is never known which transportation projects will be funded through the STIP until the funds are voted on by the California Transportation Commission, at which point the transportation projects are well past their planning and conceptualization phases and entering their delivery phases.

Because of this timing, funded STIP projects will likely need compensatory mitigation before the AMP can deliver the needed mitigation. AMP planning, therefore, must glean a list of transportation projects from the broader set of non-SHOPP transportation projects that may or may not receive STIP funding, such as STIP-eligible transportation projects. Additionally, the STIP is currently receiving very little funding in favor of the “fix-it-first”

philosophy of the Road Repair and Accountability Act of 2017, although there is a backlog of transportation projects that potentially need these funds.

To address the dynamic nature of the non-SHOPP STIP-eligible list, it was necessary to identify transportation projects that will be (1) reasonably certain to occur in the same 10-year timeframe as the SHOPP projects used in the SAMNA and (2) highly likely to receive STIP funding. To that end, the AMP consulted the Caltrans Division of Transportation Planning's Multimodal Operations, Non-SHOPP, Transportation Equity Report database, using the criteria that a transportation project would have to be in a fiscally constrained¹ regional transportation plan, with a Ready to List² year identified as occurring in the 10-year planning horizon. From this evaluation, there are no planned STIP-eligible transportation projects identified within the GAI for fiscal years 2024/25 to 2033/34 that could possibly benefit from AMA-funded advance mitigation projects.

Non-SHOPP STIP-eligible Potential Impacts

Because no planned STIP-eligible transportation projects were identified within the GAI for fiscal years 2024/25 to 2033/34, no STIP-eligible related impacts or mitigation needs are anticipated.

5.2 Estimated Aquatic Resources Impacts

The quantitative impacts presented in this document are estimates, pursuant to the SAMNA model. Specific aquatic resource impacts will be assessed in the future as part of each transportation project's environmental studies.

Below, estimated aquatic resource impacts are presented for the HUC-8 sub-basins that comprise the GAI. Aquatic resources impacts are categorized as potential impacts on threatened and endangered fish, wetlands, and non-wetland waters. Riparian habitat is also discussed. Refer to Appendix H, *Aquatic Resource Locations*, for maps depicting the location and extent of wetlands and non-wetland waters within the GAI. Riparian habitat was also identified using California Statewide Resource Inventory (CARI), a statewide riparian area dataset.

5.2.1. Estimated Impacts on Fish Species of Mitigation Need

Using the methods described in Section 5.1.1, impacts on fish species of mitigation need habitat were estimated for the 25 transportation projects listed in Appendix B, *Transportation Projects Planned for the GAI during the Planning Period*. Of the 25 SHOPP transportation projects evaluated, 15 are forecast to affect 2.0 acre of fish species of mitigation need and other threatened and endangered fish habitat (Table 5-1; Caltrans 2025).

¹ Transportation project funding is reasonably assured.

² Transportation project schedule is reasonably assured. Ready to List is a named milestone within the Caltrans project delivery process. It is the point when a complete package is ready for contractors to bid on and a transportation project has been approved to be advertised to bid for construction.

Coho Salmon – Southern Oregon Northern California ESU

Using the methods described in Section 5.1.1, impacts on coho salmon – southern Oregon northern California ESU and its habitat were estimated for the transportation projects that may affect wildlife (Appendix B). The SAMNA estimated that 1.0 acre of coho salmon – southern Oregon northern California ESU habitat may be affected by 15 Caltrans SHOPP projects in the GAI (Table 5-1; Caltrans 2025a).

Eulachon

Using the methods described in Section 5.1.1, impacts on eulachon and its habitat were estimated for the transportation projects that may affect threatened and endangered fish (Appendix B). The SAMNA estimated that eulachon habitat may not be affected by any of the Caltrans SHOPP projects within the GAI (Table 5-1; Caltrans 2025a).

Estimated Impacts on Fish Species of Mitigation Need Habitat within the Coastal Zone

Using the methods described in Section 5.1.1, impacts on fish species of mitigation need habitat within the coastal zone were estimated for the 25 transportation projects listed in Appendix B. Of the 25 SHOPP transportation projects evaluated, 2 are forecast to affect 0.2 acre of fish species of mitigation need and other threatened and endangered fish habitat within the coastal zone that is under the jurisdiction of CCC (Table 5-2; Caltrans 2025a). These impacts are limited to the Smith sub-basin.

Coho Salmon – Southern Oregon Northern California ESU

Using the methods described in Section 5.1.1, impacts on coho salmon – southern Oregon northern California ESU and its habitat within the coastal zone were estimated for the transportation projects that may affect threatened and endangered fish (Appendix B). The SAMNA estimated that 0.1 acre of coho salmon – southern Oregon northern California ESU habitat may be affected by 2 Caltrans SHOPP projects within the coastal zone that is under the jurisdiction of CCC (Table 5-2; Caltrans 2025a). These impacts are limited to the Smith sub-basin.

Eulachon

Using the methods described in Section 5.1.1, impacts on eulachon and its habitat within the coastal zone were estimated for the transportation projects that may affect wildlife (Appendix B). The SAMNA estimated that eulachon smelt habitat within the coastal zone may not be affected by Caltrans SHOPP projects within the GAI (Table 5-2; Caltrans 2025a).

5.2.2. Estimated Impacts on Aquatic Resources

Using the methods described in Section 5.1.1, impacts on wetlands, non-wetland waters, and riparian habitat were estimated for the 25 transportation projects listed in Appendix B, *Transportation Projects Planned for the GAI during the Planning Period*.

Of the 25 SHOPP transportation projects evaluated, 3 are forecast to affect <0.1 acre of wetlands, 17 are forecast to affect 1.4 acres of non-wetland waters, and 17 are forecast to affect 19.1 acres of riparian habitat within the GAI (Table 5-3; Caltrans 2025a).

5.2.3. Estimated Impacts on Aquatic Resources within the Coastal Zone

Using the methods described in Section 5.1.1, impacts on wetlands, non-wetland waters, and riparian habitat within the coastal zone were estimated for the 25 transportation projects listed in Appendix B, *Transportation Projects Planned for the GAI during the Planning Period*.

Of the 25 SHOPP transportation projects evaluated, none are forecast to affect wetlands, 4 are forecast to affect 0.3 acre of non-wetland waters, and 3 are forecast to affect 2.7 acres of riparian habitat within the coastal zone of the GAI (Table 5-4, Caltrans 2025a).

Table 5-1. Summary of Estimated SHOPP Project Impacts on Threatened and Endangered Fish Habitat within the GAI (acres)^{a,b,c}

Sub-basin (HUC-8)	Sub-basin Number	Number of Transportation Projects	Coho Salmon – Northern OR Southern CA	Eulachon	Tidewater Goby	Chinook Salmon – Upper Klamath and Trinity Rivers	Total ^d
Chetco	17100312	0	0.0	0.0	0.0	0.0	0.0
Lower Klamath	18010209	4	0.1	0.0	<0.1	0.1	0.3
Smith	18010101	5	0.7	0.0	0.6	0.0	1.3
Trinity	18010211	6	0.2	0.0	0.0	0.2	0.4
Total	Not applicable	15	1.0	0.0	0.6	0.4	2.0

^a Threatened and endangered fish species habitat impacts are forecast by the SAMNA Reporting Tool.

^b The SAMNA forecasts impacts on threatened and endangered fish habitat for 3 of the 4 HUC-8s within the GAI.

^c Stream/river habitat impacts are provided. Stream/river habitat impacts are assumed to be representative of fish habitat impacts.

^d For sub-basins with more than one species, co-occurrence of impacts is assumed. Acreage for the total impact across all habitat types is provided.

Table 5-2. Summary of Estimated SHOPP Project Impacts on Threatened and Endangered Fish Habitat within the Coastal Zone of the GAI (acres)^{a, b, c}

Sub-basin (HUC-8)	Sub-basin Number	Number of Transportation Projects	Coho Salmon – Northern OR Southern CA	Eulachon	Tidewater Goby	Chinook Salmon – Upper Klamath and Trinity Rivers	Total ^d
Chetco	17100312	0	0.0	0.0	0.0	0.0	0.0
Lower Klamath	18010209	0	0.0	0.0	0.0	0.0	0.0
Smith	18010101	2	0.1	0.0	0.1	0.0	0.2
Trinity	18010211	0	0.0	0.0	0.0	0.0	0.0
Total	Not applicable	2	0.1	0.0	0.1	0.0	0.2

^a Threatened and endangered fish species habitat impacts are forecast by the SAMNA Reporting Tool.

^b The SAMNA forecasts impacts on threatened and endangered fish habitat for 1 of the 4 HUC-8s within the GAI.

^c Stream/river habitat impacts are provided. Stream/river habitat impacts are assumed to be representative of fish habitat impacts.

^d For sub-basins with more than one species, co-occurrence of impacts is assumed. Acreage for the total impact across all habitat types is provided.

Table 5-3. Summary of Estimated SHOPP Impacts on Aquatic Resources within the GAI (acres)

Sub-basin (HUC-8)	Sub-basin Number	Wetlands: Number of Caltrans SHOPP Projects ^a	Estimated Wetlands Impact (acres)	Non-Wetland Waters: Number of Caltrans SHOPP Projects ^a	Estimated Non- Wetland Waters Impact (acres)	Riparian Function: Number of Caltrans SHOPP Projects ^a	Estimated Riparian Function Impact (acres)
Chetco	17100312	0	0.0	1	<0.1	0	0.0
Lower Klamath	18010209	2	<0.1	4	0.1	6	3.2
Smith	18010101	0	0.0	6	0.8	5	10.3
Trinity	18010211	1	<0.1	7	0.3	8	5.7
Total^b	Not applicable	3	<0.1	17	1.4	17	19.1

^a Transportation projects are listed in Appendix B.

^b Totals may not reflect numbers presented in the rows above. Some SHOPP transportation projects cross more than one ecoregion section.

Table 5-4. Summary of Estimated SHOPP Impacts on Aquatic Resources within the Coastal Zone in the GAI (acres)

Sub-basin (HUC-8)	Sub-basin Number	Wetlands: Number of Caltrans SHOPP Projects ^a	Estimated Wetlands Impact (acres)	Non-Wetland Waters: Number of Caltrans SHOPP Projects ^a	Estimated Non-Wetland Waters Impact (acres)	Riparian Function: Number of Caltrans SHOPP Projects ^a	Estimated Riparian Function Impact (acres)
Chetco	17100312	0	0.0	1	<0.1	0	0.0
Lower Klamath	18010209	0	0.0	0	0.0	2	0.1
Smith	18010101	0	0.0	3	0.2	2	2.6
Trinity	18010211	0	0.0	0	0.0	0	0.0
Total^b	Not applicable	0	0.0	4	0.3	3	2.7

^a Transportation projects are listed in Appendix B.

^b Totals may not reflect numbers presented in the rows above. Some SHOPP transportation projects cross more than one ecoregion section.

5.3 Estimated Plant and Wildlife Impacts

The quantitative results presented in this document are estimates, pursuant to the SAMNA model. Specific plant and wildlife resource impacts will be assessed in the future, as part of each transportation project's environmental studies.

Below, estimated impacts are presented for the ecoregion sections within the GAI for species of mitigation need identified by Caltrans District 1, as well as for species that may co-occur in their habitats. The complete results of the SAMNA—inclusive of the 25 transportation projects planned within the GAI and listed in Appendix B, *Transportation Projects Planned for the GAI during the Planning Period*, that may affect special-status plant and wildlife species—are provided in Appendix E, *Complete SAMNA Species Results*.

The special-status terrestrial plant and wildlife species evaluated through the SAMNA consisted of federal and state threatened, endangered, or sensitive species; state fully protected or rare species; or state species of special concern. Based on a search of the species-attributed vegetation layer, 66 special-status terrestrial species and 2 threatened or endangered fish species have the potential to occur within the GAI (Sections 2.8 and 2.18.2; Appendix E; Caltrans 2025). Using the methods described in Section 5.1.1, the SAMNA analysis determined that 22 SHOPP transportation projects could potentially affect 22 habitat types, which could support up to 66 special-status species within 3 of the ecoregion sections within the GAI (Table 5-5).

Table 5-5. Summary of Estimated SHOPP Impacts on Special-status Species Habitat within the GAI

Ecoregion Section	Number of Caltrans SHOPP Projects ^a	Number of Habitats ^b	Number of Special-status Species ^{c,d}	Estimated Total Habitat Impact (acres)
Klamath Mountains	13	18	42	23.7
Northern California Coast	10	10	32	11.8
Northern California Coast Ranges	1	5	24	1.0
Oregon and Washington Coast Ranges	0	0	0	0.0
Total^e	22	22	66	36.4

^a Transportation projects are listed in Appendix B.

^b Excludes urban areas.

^c Special-status terrestrial plant and wildlife species evaluated through the SAMNA consisted of federal and state threatened, endangered, or sensitive species; state fully protected or rare species; or state species of special concern.

^d Included in the SAMNA. See SAMNA Report (Caltrans 2025).

^e Totals may not reflect numbers presented in the rows above. Some SHOPP transportation projects cross more than one ecoregion section. Some special-status species occur in more than one ecoregion section.

Caltrans identified species of mitigation need from the suite of special-status species anticipated to inhabit the GAI. Species of mitigation need are species for whom a high probability of compensatory mitigation need is anticipated (Section 1.5). The terrestrial species of mitigation need identified in Section 1.5—northwestern pond turtle—was included in the analysis and is discussed briefly in the subsections below.

5.3.1. Northwestern Pond Turtle

Using the methods described in Section 5.1.1, impacts on northwestern pond turtle and its habitat were estimated for the transportation projects that may affect wildlife (Appendix B, *Transportation Projects Planned for the GAI during the Planning Period*). Of the 25 SHOPP transportation projects evaluated, 22 are forecast to affect 26.4 acres of northwestern pond turtle habitat within the GAI (Table 5-5; Caltrans 2025a).

5.3.2. Estimated Impacts on Terrestrial Species of Mitigation Need within the Coastal Zone

Using the methods described in Section 5.1.1, SAMNA forecast impacts on the terrestrial species of mitigation need, northwestern pond turtle, within the coastal zone. Impacts on these species are described below.

Northwestern Pond Turtle

Using the methods described in Section 5.1.1, impacts on northwestern pond turtle and its habitat were estimated for the transportation projects that may affect wildlife (Appendix B, *Transportation Projects Planned for the GAI during the Planning Period*). Of the 25 SHOPP transportation projects evaluated, 4 are forecast to affect 1.9 acres of northwestern pond turtle habitat within the coastal zone that is under the jurisdiction of CCC (Table 5-6; Caltrans 2025a). These impacts are limited to the Northern California Coast Ecoregion Section.

5.3.3. Potential Co-benefiting Species

The species of mitigation need co-occur with other protected plant, invertebrate, amphibian, reptile, bird, and mammal species. By procuring or establishing advance mitigation credits for one or more of the species of mitigation need, Caltrans District 1 will also benefit multiple special-status species that occur and use the same habitats.

Using the methods described in Section 5.1.1, the SAMNA forecasts impacts on:

- An additional 39 special-status terrestrial species that potentially use the same habitats as the species of mitigation need in the Klamath Mountains Ecoregion Section (Table 5-8),
- An additional 29 special-status terrestrial species that potentially use the same habitats as the species of mitigation need in the Northern California Coast Ecoregion Section (Table 5-9), and
 - Of those 29 special-status terrestrial species, 28 are located within the Coastal Zone of the Northern California Coast Ecoregion Section (Table 5-10)

- An additional 22 special-status terrestrial species that potentially use the same habitats as the species of mitigation need in the Northern California Coast Ranges Ecoregion Section (Table 5-10).

Table 5-6. Summary of Estimated SHOPP Impacts on Terrestrial Species of Mitigation Need within the GAI

Ecoregion Section	Northwestern Pond Turtle: Number of Caltrans SHOPP Projects^a	Northwestern Pond Turtle: Estimated Habitat Impact (acres)
Klamath Mountains	13	16.7
Northern California Coast	10	8.8
Northern California Coast Ranges	1	0.9
Oregon and Washington Coast Ranges	0	0.0
Total^b	22	26.4

^a Transportation projects are listed in Appendix B.

^b Totals may not reflect numbers presented in the rows above. Some SHOPP transportation projects cross more than one ecoregion section.

Table 5-7. Summary of Estimated SHOPP Impacts on Terrestrial Species of Mitigation Need within the Coastal Zone within the GAI

Ecoregion Section	Northwestern Pond Turtle: Number of Caltrans SHOPP Projects^a	Northwestern Pond Turtle: Estimated Habitat Impact (acres)
Klamath Mountains	0	0.0
Northern California Coast	4	1.9
Northern California Coast Ranges	0	0.0
Oregon and Washington Coast Ranges	0	0.0
Total	4	1.9

^a Transportation projects are listed in Appendix B.

Table 5-8. Estimated SHOPP Impacts on Species of Mitigation Need and Co-occurring Species Habitat: Klamath Mountains Ecoregion Section (acres)

Common Name	Species Name	Status	Annual Grassland	Blue Oak- Foothill Pine	Coastal Oak Woodland	Klamath Mixed Conifer	Mixed Chaparral	Montane Chaparral	Montane Hardwood	Montane Hardwood- Conifer	Montane Riparian	Perennial Grassland	Ponderosa Pine	Riverine	Sierran Mixed Conifer
Not applicable	Not applicable	Total	0.9	0.0	0.0	0.7	0.5	0.1	4.5	1.8	1.0	0.1	0.1	0.4	2.0
Species of Mitigation Need	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
northwestern pond turtle	<i>Actinemys mamorata</i>	FPT, FS, SSC	0.9	<0.1	<0.1	0.7	0.5	0.1	4.5	1.8	1.0	0.1	0.1	0.4	2.0
Plants	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
Macdonald's rockcress	<i>Arabis mcdonaldiana</i>	FE, SE	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
Vine Hill manzanita	<i>Arctostaphylos densiflora</i>	SE	0.0	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Indian Valley brodiaea	<i>Brodiaea rosea</i>	SE, FS	0.8	<0.1	<0.1	0.0	0.5	0.1	4.1	0.0	0.0	0.0	0.0	0.0	0.0
Siskiyou mariposa lily	<i>Calochortus persistens</i>	SR, FS	0.0	0.0	0.0	0.7	0.0	0.0	0.0	1.3	0.0	0.0	0.1	0.0	2.0
Ashland thistle	<i>Cirsium ciliolatum</i>	SE, FS	0.8	<0.1	<0.1	0.0	0.5	0.0	4.1	0.0	0.0	0.0	0.0	0.0	0.0
Tracy's eriastrum	<i>Eriastrum tracyi</i>	SR, FS	0.8	<0.1	<0.1	0.0	0.5	0.1	4.1	0.0	0.0	0.0	0.0	0.0	0.0
Red Mountain catchfly	<i>Silene greenei</i> ssp. <i>angustifolia</i>	SE, FS	0.0	0.0	0.0	0.7	0.5	0.1	0.0	1.8	0.0	0.0	0.1	0.0	2.0
Invertebrates	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
Franklin's bumble bee	<i>Bombus franklini</i>	FE, SCE	0.6	0.0	0.0	0.7	0.2	0.1	2.0	0.6	0.7	0.1	0.0	0.4	0.7
western bumble bee	<i>Bombus occidentalis</i>	SCE, FS	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Suckley's cuckoo bumble bee	<i>Bombus suckleyi</i>	FPE, SCE	0.7	0.0	<0.1	0.7	0.1	0.0	4.1	1.4	1.0	0.1	0.0	0.4	0.4
vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	FT	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
vernal pool tadpole shrimp	<i>Lepidurus packardii</i>	FE, SCE	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trinity bristle snail	<i>Monadenia infumata setosa</i>	ST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Amphibians	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
southern long-toed salamander	<i>Ambystoma macrodactylum sigillatum</i>	SSC	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
Pacific tailed frog	<i>Ascaphus truei</i>	SSC	0.0	0.0	0.0	0.7	0.0	0.0	0.0	1.8	1.0	0.0	0.1	0.4	0.0
northern red-legged frog	<i>Rana aurora</i>	FS, SSC	0.0	0.0	0.0	0.3	0.0	0.0	1.1	0.1	<0.1	0.1	0.0	0.4	0.0
foothill yellow-legged frog - North Coast DPS	<i>Rana boylei</i>	FS, SSC	0.9	<0.1	<0.1	0.7	0.5	0.1	4.5	1.8	1.0	0.0	0.1	0.4	2.0
Cascades frog	<i>Rana cascadae</i>	SCE, SSC, FS	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
southern torrent salamander	<i>Rhyacotriton variegatus</i>	FS, SSC	0.0	0.0	0.0	0.3	0.0	0.0	0.0	1.5	1.0	0.0	0.0	0.4	0.1

Common Name	Species Name	Status	Annual Grassland	Blue Oak- Foothill Pine	Coastal Oak Woodland	Klamath Mixed Conifer	Mixed Chaparral	Montane Chaparral	Montane Hardwood	Montane Hardwood- Conifer	Montane Riparian	Perennial Grassland	Ponderosa Pine	Riverine	Sierran Mixed Conifer
Birds	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
golden eagle	<i>Aquila chrysaetos</i>	FS, SFS, SFP	0.9	<0.1	<0.1	0.7	0.5	0.1	4.5	1.8	1.0	0.1	0.1	0.0	2.0
long-eared owl	<i>Asio otus</i>	SSC	0.9	<0.1	<0.1	0.7	0.5	0.1	4.5	1.8	1.0	0.1	0.1	0.0	2.0
American goshawk	<i>Astur atricapillus</i>	FS, SFS, SSC	0.0	<0.1	<0.1	0.7	0.5	0.1	4.5	1.8	1.0	0.0	0.1	0.0	2.0
Vaux's swift	<i>Chaetura vauxi</i>	SSC	0.0	<0.1	<0.1	0.7	0.5	0.1	4.5	1.8	1.0	0.1	0.1	0.4	2.0
olive-sided flycatcher	<i>Contopus cooperi</i>	SSC	0.0	<0.1	0.0	0.7	0.5	0.0	4.5	1.8	1.0	0.0	0.1	0.0	2.0
willow flycatcher	<i>Empidonax traillii</i>	FE, FS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
American peregrine falcon	<i>Falco peregrinus anatum</i>	SFS	0.9	<0.1	<0.1	0.7	0.5	0.1	4.5	1.8	1.0	0.1	0.1	0.4	2.0
bald eagle	<i>Haliaeetus leucocephalus</i>	SE, FS, SFS, SFP	0.4	<0.1	0.0	0.4	0.5	0.1	0.4	0.5	0.0	0.0	0.1	0.0	2.0
yellow-breasted chat	<i>Icteria virens</i>	SSC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
loggerhead shrike	<i>Lanius ludovicianus</i>	SSC	0.3	0.0	0.0	0.0	0.2	0.0	0.3	0.1	0.0	0.0	0.1	0.0	0.0
purple martin	<i>Progne subis</i>	SSC	0.9	<0.1	<0.1	0.7	0.0	0.0	4.5	1.8	1.0	0.1	0.1	0.4	2.0
yellow warbler	<i>Setophaga petechia</i>	SSC	0.0	<0.1	<0.1	0.7	0.5	0.1	4.5	1.8	1.0	0.0	0.1	0.0	2.0
northern spotted owl	<i>Strix occidentalis caurina</i>	FT, ST, SFS	0.0	<0.1	<0.1	0.7	0.0	0.0	4.5	1.8	1.0	0.0	0.1	0.0	2.0
Mammals	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
pallid bat	<i>Antrozous pallidus</i>	FS, SSC	0.9	<0.1	<0.1	0.0	0.5	0.1	4.5	1.8	1.0	0.1	0.1	0.4	2.0
Sonoma tree vole	<i>Arborimus pomo</i>	SSC	0.0	0.0	0.0	0.3	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	FS, SSC	0.9	<0.1	<0.1	0.7	0.5	0.1	4.5	1.8	1.0	0.1	0.1	0.4	2.0
Oregon snowshoe hare	<i>Lepus americanus klamathensis</i>	SSC	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	2.0
Humboldt marten	<i>Martes caurina humboldtensis</i>	FT, SE, FS, SSC	0.0	0.0	0.0	0.3	0.0	0.0	0.0	1.4	1.0	0.1	0.0	0.0	0.0
fisher	<i>Pekania pennanti</i>	FS, SSC	0.0	0.0	0.0	0.7	0.0	0.0	0.0	1.8	1.0	0.0	0.1	0.0	2.0
American badger	<i>Taxidea taxus</i>	SSC	0.9	<0.1	<0.1	0.7	0.5	0.1	4.5	1.8	1.0	0.1	0.1	0.0	2.0

Notes: FE = federal endangered, FS = federal sensitive (USFS and/or BLM sensitive), FT = federal threatened, FPT = federal proposed threatened; FPE = federal proposed endangered; SE = state endangered, SFP = state fully protected, SFS = state fire sensitive, SSC = species of special concern (CDFW), ST = state threatened; SR = state rare; SCE = state candidate endangered

Table 5-9. Estimated SHOPP Impacts on Species of Mitigation Need and Co-occurring Species Habitat: Northern California Coast Ecoregion Section

Common Name	Species Name	Status	Annual Grassland	Coastal Scrub	Montane Hardwood	Montane Hardwood-Conifer	Montane Riparian	Pasture	Redwood	Wet Meadow
Not applicable	Not applicable	Total	0.4	0.2	0.1	1.1	1.2	0.1	5.2	<0.1
Species of Mitigation Need	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
northwestern pond turtle	<i>Actinemys mamorata</i>	FPT, FS, SSC	0.4	0.2	0.1	1.1	1.2	0.1	5.2	<0.1
Plants	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
Humboldt County milk-vetch	<i>Astragalus agnicidus</i>	SE, FS	0.0	0.0	0.0	0.2	0.0	0.0	0.4	0.0
bensoniella	<i>Bensoniella oregona</i>	SR, FS	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0
leafy reed grass	<i>Calamagrostis foliosa</i>	SR	0.0	0.2	0.0	0.0	0.0	0.0	5.2	0.0
western lily	<i>Lilium occidentale</i>	FE, SE	0.0	0.2	0.0	0.0	0.0	0.0	4.8	0.0
sand dune phacelia	<i>Phacelia argentea</i>	FT	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Red Mountain catchfly	<i>Silene greenei</i> ssp. <i>angustifolia</i>	SE, FS	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0
Amphibians	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
southern long-toed salamander	<i>Ambystoma macrodactylum sigillatum</i>	SSC	0.0	0.2	0.0	1.1	1.2	0.0	5.2	0.0
northern red-legged frog	<i>Rana aurora</i>	FS, SSC	0.4	0.2	0.1	1.1	1.2	0.0	5.2	<0.1
foothill yellow-legged frog - North Coast DPS	<i>Rana boylei</i>	FS, SSC	0.4	0.2	0.1	1.1	1.2	0.0	5.2	<0.1
southern torrent salamander	<i>Rhyacotriton variegatus</i>	FS, SSC	0.0	0.0	0.0	1.1	1.2	0.0	5.2	0.0
Birds	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
grasshopper sparrow	<i>Ammodramus savannarum</i>	SSC	0.1	0.0	0.0	0.0	0.0	0.0	0.0	<0.1
Vaux's swift	<i>Chaetura vauxi</i>	SSC	0.0	0.0	0.1	1.1	1.2	0.0	5.2	<0.1
northern harrier	<i>Circus hudsonius</i>	SSC	0.4	0.2	0.1	1.1	1.2	0.0	5.2	<0.1
olive-sided flycatcher	<i>Contopus cooperi</i>	SSC	0.0	0.0	0.1	1.1	1.2	0.0	5.2	0.0
white-tailed kite	<i>Elanus leucurus</i>	FS, SSC, SFP	0.4	0.2	0.0	0.0	0.0	0.0	5.2	<0.1
willow flycatcher	<i>Empidonax traillii</i>	FE, FS	0.0	0.0	0.0	0.0	1.2	0.0	0.0	<0.1
American peregrine falcon	<i>Falco peregrinus anatum</i>	SFS	0.4	0.2	0.1	1.1	1.2	0.0	5.2	<0.1
yellow-breasted chat	<i>Icteria virens</i>	SSC	0.0	0.2	0.0	0.0	1.2	0.0	0.0	0.0
Bryant's savannah sparrow	<i>Passerculus sandwichensis alaudinus</i>	SSC	0.4	0.2	0.0	0.0	0.0	0.1	0.0	<0.1
purple martin	<i>Progne subis</i>	SSC	0.4	0.0	0.1	1.1	1.2	0.0	5.2	<0.1
bank swallow	<i>Riparia riparia</i>	ST, FS	0.2	0.0	0.0	0.0	0.3	0.0	0.0	0.0
yellow warbler	<i>Setophaga petechia</i>	SSC	0.0	0.2	0.1	1.1	1.2	0.0	5.2	0.0
northern spotted owl	<i>Strix occidentalis caurina</i>	FT, ST, SFS	0.0	0.0	0.1	1.1	1.2	0.0	5.2	0.0
Mammals	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
pallid bat	<i>Antrozous pallidus</i>	FS, SSC	0.4	0.2	0.1	1.1	1.2	0.1	5.2	<0.1

Common Name	Species Name	Status	Annual Grassland	Coastal Scrub	Montane Hardwood	Montane Hardwood- Conifer	Montane Riparian	Pasture	Redwood	Wet Meadow
white-footed vole	<i>Arborimus albipes</i>	SSC	0.0	0.0	0.0	0.0	1.2	0.0	5.2	0.0
Sonoma tree vole	<i>Arborimus pomo</i>	SSC	0.0	0.0	0.0	1.1	0.0	0.0	5.2	0.0
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	FS, SSC	0.4	0.2	0.1	1.1	1.2	0.1	5.2	<0.1
Humboldt marten	<i>Martes caurina humboldtensis</i>	FT, SE, FS, SSC	0.0	0.0	0.0	1.1	1.2	0.1	0.0	<0.1
fisher	<i>Pekania pennanti</i>	FS, SSC	0.0	0.0	0.0	1.1	1.2	0.0	5.2	0.0

Notes: FE = federal endangered, FS = federal sensitive (USFS and/or BLM sensitive), FT = federal threatened, FPT = federal proposed threatened; FPE = federal proposed endangered; SE = state endangered, SFP = state fully protected, SFS = state fire sensitive, SSC = species of special concern (CDFW), ST = state threatened; SR = state rare; SCE = state candidate endangered

Table 5-10. Estimated SHOPP Impacts on Species of Mitigation Need and Co-occurring Species Habitat: Northern California Coast Ecoregion Section within the Coastal Zone

Common Name	Species Name	Status	Annual Grassland	Coastal Scrub	Montane Hardwood- Conifer	Montane Riparian	Pasture	Redwood
Not applicable	Not applicable	Total	0.1	0.2	0.3	0.4	<0.1	0.7
Species of Mitigation Need	See below	See below	See below	See below	See below	See below	See below	See below
northwestern pond turtle	<i>Actinemys mamorata</i>	FPT, FS, SSC	0.1	0.2	0.3	0.4	<0.1	0.7
Plants	See below	See below	See below	See below	See below	See below	See below	See below
bensoniella	<i>Bensoniella oregona</i>	SR, FS	0.0	0.0	<0.1	0.0	0.0	0.0
leafy reed grass	<i>Calamagrostis foliosa</i>	SR	0.0	0.2	0.0	0.0	0.0	0.7
western lily	<i>Lilium occidentale</i>	FE, SE	0.0	0.2	0.0	0.0	0.0	0.7
sand dune phacelia	<i>Phacelia argentea</i>	FT	0.0	0.2	0.0	0.0	0.0	0.0
Red Mountain catchfly	<i>Silene greenei</i> ssp. <i>angustifolia</i>	SE, FS	0.0	0.0	<0.1	0.0	0.0	0.0
Amphibians	See below	See below	See below	See below	See below	See below	See below	See below
northern red-legged frog	<i>Rana aurora</i>	FS, SSC	0.1	0.2	0.3	0.4	0.0	0.7
foothill yellow-legged frog - North Coast DPS	<i>Rana boylei</i>	FS, SSC	0.1	0.2	0.3	0.4	0.0	0.7
southern torrent salamander	<i>Rhyacotriton variegatus</i>	FS, SSC	0.0	0.0	0.3	0.4	0.0	0.7
Birds	See below	See below	See below	See below	See below	See below	See below	See below
grasshopper sparrow	<i>Ammodramus savannarum</i>	SSC	<0.1	0.0	0.0	0.0	0.0	0.0
Vaux's swift	<i>Chaetura vauxi</i>	SSC	0.0	0.0	0.3	0.4	0.0	0.7
northern harrier	<i>Circus hudsonius</i>	SSC	0.1	0.2	0.3	0.4	0.0	0.7
olive-sided flycatcher	<i>Contopus cooperi</i>	SSC	0.0	0.0	0.3	0.4	0.0	0.7
white-tailed kite	<i>Elanus leucurus</i>	FS, SSC, SFP	0.1	0.2	0.0	0.0	0.0	0.7
willow flycatcher	<i>Empidonax traillii</i>	FE, FS	0.0	0.0	0.0	0.4	0.0	0.0
American peregrine falcon	<i>Falco peregrinus anatum</i>	SFS	0.1	0.2	0.3	0.4	0.0	0.7

Common Name	Species Name	Status	Annual Grassland	Coastal Scrub	Montane Hardwood- Conifer	Montane Riparian	Pasture	Redwood
yellow-breasted chat	<i>Icteria virens</i>	SSC	0.0	0.2	0.0	0.4	0.0	0.0
Bryant's savannah sparrow	<i>Passerculus sandwichensis alaudinus</i>	SSC	0.1	0.2	0.0	0.0	<0.1	0.0
purple martin	<i>Progne subis</i>	SSC	0.1	0.0	0.3	0.4	0.0	0.7
bank swallow	<i>Riparia riparia</i>	ST, FS	0.0	0.0	0.0	0.3	0.0	0.0
yellow warbler	<i>Setophaga petechia</i>	SSC	0.0	0.2	0.3	0.4	0.0	0.7
northern spotted owl	<i>Strix occidentalis caurina</i>	FT, ST, SFS	0.0	0.0	0.3	0.4	0.0	0.7
Mammals	See below	See below	See below	See below	See below	See below	See below	See below
pallid bat	<i>Antrozous pallidus</i>	FS, SSC	0.1	0.2	0.3	0.4	<0.1	0.7
white-footed vole	<i>Arborimus albipes</i>	SSC	0.0	0.0	0.0	0.4	0.0	0.7
Sonoma tree vole	<i>Arborimus pomo</i>	SSC	0.0	0.0	0.3	0.0	0.0	0.7
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	FS, SSC	0.1	0.2	0.3	0.4	<0.1	0.7
Humboldt marten	<i>Martes caurina humboldtensis</i>	FT, SE, FS, SSC	0.0	0.0	0.3	0.4	<0.1	0.0
fisher	<i>Pekania pennanti</i>	FS, SSC	0.0	0.0	0.3	0.4	0.0	0.7

Notes: FE = federal endangered, FS = federal sensitive (USFS and/or BLM sensitive), FT = federal threatened, FPT = federal proposed threatened; FPE = federal proposed endangered; SE = state endangered, SFP = state fully protected, SFS = state fire sensitive, SSC = species of special concern (CDFW), ST = state threatened; SR = state rare; SCE = state candidate endangered

Table 5-11. Estimated SHOPP Impacts on Species of Mitigation Need and Co-occurring Species Habitat: Northern California Coast Ranges Ecoregion Section

Common Name	Species Name	Status	Coastal Scrub	Montane Hardwood	Montane Hardwood-Conifer
Not applicable	Not applicable	Total	0.2	0.2	<0.1
Species of Mitigation Need	See below	See below	See below	See below	See below
northwestern pond turtle	<i>Actinemys mamorata</i>	FPT, FS, SSC	0.2	0.2	<0.1
Plants	See below	See below	See below	See below	See below
bensoniella	<i>Bensoniella oregona</i>	SR, FS	0.0	0.0	<0.1
Red Mountain catchfly	<i>Silene greenei</i> ssp. <i>angustifolia</i>	SE, FS	0.0	0.0	<0.1
Invertebrates	See below	See below	See below	See below	See below
western bumble bee	<i>Bombus occidentalis</i>	SCE, FS	0.2	0.2	<0.1
Amphibians	See below	See below	See below	See below	See below
Pacific tailed frog	<i>Ascaphus truei</i>	SSC	0.0	0.0	<0.1
foothill yellow-legged frog - North Coast DPS	<i>Rana boylei</i>	FS, SSC	0.2	0.2	<0.1
southern torrent salamander	<i>Rhyacotriton variegatus</i>	FS, SSC	0.0	0.0	<0.1
Birds	See below	See below	See below	See below	See below
golden eagle	<i>Aquila chrysaetos</i>	FS, SFS, SFP	0.2	0.2	<0.1
long-eared owl	<i>Asio otus</i>	SSC	0.2	0.2	<0.1
American goshawk	<i>Astur atricapillus</i>	FS, SFS, SSC	0.2	0.2	<0.1
Vaux's swift	<i>Chaetura vauxi</i>	SSC	0.2	0.2	<0.1
olive-sided flycatcher	<i>Contopus cooperi</i>	SSC	0.0	0.2	<0.1
American peregrine falcon	<i>Falco peregrinus anatum</i>	SFS	0.2	0.2	<0.1
bald eagle	<i>Haliaeetus leucocephalus</i>	SE, FS, SFS, SFP	0.2	0.0	0.0
purple martin	<i>Progne subis</i>	SSC	0.2	0.2	<0.1
yellow warbler	<i>Setophaga petechia</i>	SSC	0.2	0.2	<0.1
northern spotted owl	<i>Strix occidentalis caurina</i>	FT, ST, SFS	0.2	0.2	<0.1
Mammals	See below	See below	See below	See below	See below

Common Name	Species Name	Status	Coastal Scrub	Montane Hardwood	Montane Hardwood-Conifer
pallid bat	<i>Antrozous pallidus</i>	FS, SSC	0.2	0.2	<0.1
Sonoma tree vole	<i>Arborimus pomo</i>	SSC	0.0	0.0	<0.1
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	FS, SSC	0.2	0.2	<0.1
Humboldt marten	<i>Martes caurina humboldtensis</i>	FT, SE, FS, SSC	0.0	0.0	<0.1
fisher	<i>Pekania pennanti</i>	FS, SSC	0.0	0.0	<0.1
American badger	<i>Taxidea taxus</i>	SSC	0.2	0.2	<0.1

Notes: FE = federal endangered, FS = federal sensitive (USFS and/or BLM sensitive), FT = federal threatened, FPT = federal proposed threatened; FPE = federal proposed endangered; SE = state endangered, SFP = state fully protected, SFS = state fire sensitive, SSC = species of special concern (CDFW), ST = state threatened; SR = state rare; SCE = state candidate endangered

6. BENEFITING TRANSPORTATION PROJECT CONSIDERATIONS

Benefiting transportation projects have delivery schedules that would likely benefit from advance mitigation credits. Potentially benefiting transportation projects are identified in Appendix B, *Transportation Projects Planned for the GAI during the Planning Period*, for advance mitigation planning to guide advance mitigation project scoping. Actual benefiting transportation projects will be determined in the future. Caltrans and relevant natural resource regulatory agencies will evaluate the appropriateness of using advance mitigation credits on a case-by-case basis as part of each future transportation project's permitting and technical assistance processes.

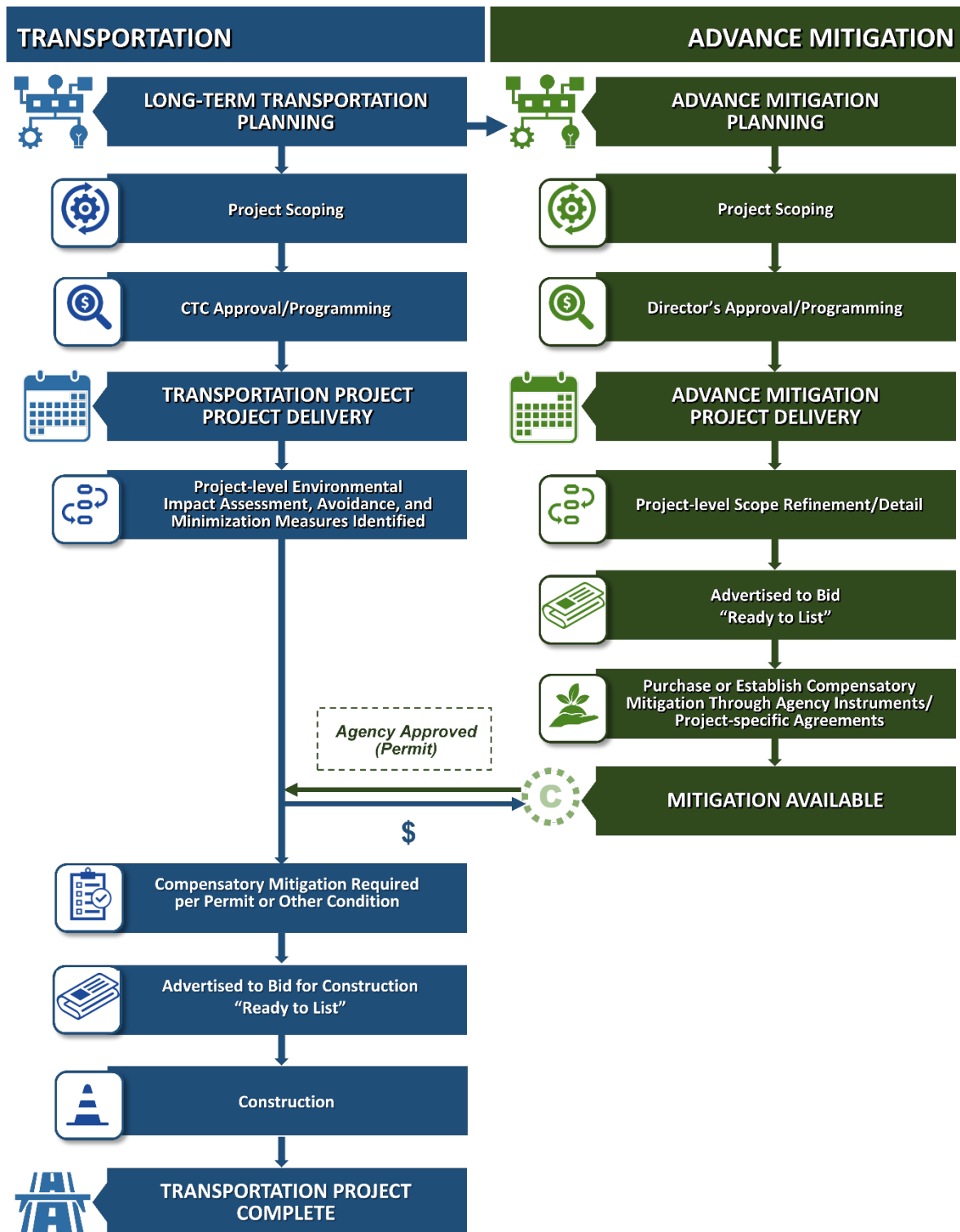
In this chapter, Caltrans summarizes the scheduling considerations and constraints of potential benefiting transportation projects in order to inform advance mitigation project schedules. A timeframe for the forecast advance mitigation needs is provided and analyzed. The potentially benefiting transportation projects' acceleration priorities are documented in this chapter.

6.1 Why Timing is Important

Broadly speaking, an advance mitigation project is an SHC § 800.6(a)-authorized activity that consists of (1) purchasing compensatory mitigation that has been previously approved by the natural resource regulatory agencies through a conservation bank, mitigation bank, HCP/NCCP, or in-lieu fee program; or (2) establishing and receiving approval of compensatory mitigation credits, such as establishing a mitigation bank in accordance with existing laws, policies, procedures, templates, and guidance (see Table 1-1). Elaborated upon in Chapter 9, *Assessment of Authorized Activities*, the time it takes to deliver each authorized activity varies; however, purchasing compensatory mitigation credits would likely take less time than establishing compensatory mitigation credits.

Caltrans transportation projects must have permits and compensatory mitigation lined up before advertising and selecting a contractor to bid upon and construct a transportation project (Figure 6-1). Therefore, for advance mitigation project scoping, the Caltrans District's nomination of a specific advance mitigation project type will be contingent, in part, on the anticipated timing of the potentially benefiting transportation project impacts. This is because, to benefit transportation projects as intended, the compensatory mitigation purchased or established through an advance mitigation project will need to be available to meet actual transportation project permit conditions established through an environmental study and document process undertaken prior to the transportation project incurring impacts (Figure 6-1).

Figure 6-1. Timing Advance Mitigation with Transportation Project Delivery



Key: CTC = California Transportation Commission

The date when a Caltrans potential transportation project is expected to be Ready to List¹ is an appropriate estimate for identifying when a Caltrans advance mitigation project will need to deliver compensatory mitigation to a potential benefiting transportation project. Approved credits must be in-hand before their offset value, with natural resource regulatory agency approval, may be applied to a transportation project.

6.2 Patterns of Estimated Potential Impacts

Given that the planning horizon for this assessment covers the 2023/24 through 2032/33 fiscal years, and that some of the transportation projects may have already gone to bid, it is necessary to consider which of the transportation projects:

- Would need to acquire compensatory mitigation before the AMP can deliver, and therefore the AMP cannot feasibly supply compensatory mitigation credits on the required schedule;
- Would need compensatory mitigation delivered in a nearer timeframe, which may favor seeking already existing credits as an AMP advance mitigation project scope; or
- Would need compensatory mitigation later and, if so, whether time exists to establish new compensatory mitigation.

Initial estimated impact patterns are based on the SHOPP transportation project information provided in Appendix B, *Transportation Projects Planned for the GAI during the Planning Period*.

- As shown in Tables 6-1 through 6-4 and on Figures 6-2 through 6-5, when the SHOPP transportation projects identified previously have their aquatic resource impacts examined relative to their expected advertising date, the compensatory mitigation needs for three of the four HUC-8 sub-basins are spread throughout the 10-year planning horizon, as described below:
 - Compensatory mitigation needs within the Chetco sub-basin are limited to non-wetland waters in fiscal year 2030/31 (Table 6-1; Figure 6-2).
 - Compensatory mitigation needs within the Lower Klamath sub-basin are concentrated on riparian habitat in fiscal years 2024/25, 2025/26, 2030/31, and 2032/33 with lesser impacts to riparian habitat in fiscal year 2027/28; lesser impacts to fish habitat and minor impacts to non-wetland waters in fiscal years 2024/25, 2025/26, and 2032/33; and minor impacts to wetlands in fiscal years 2027/28 and 2032/33 (Table 6-2; Figure 6-3).
 - Compensatory mitigation needs within the Smith sub-basin are focused riparian habitat in fiscal years 2024/25, 2026/27, and 2027/28; with minor impacts to fish and non-wetland waters in fiscal years 2024/25, 2026/27, and

¹ Ready to List is a named milestone within the Caltrans project delivery process. It is the point when a complete package is ready for contractors to bid on and a transportation project has been approved to be advertised to bid for construction.

- 2027/28; and minor impacts to non-wetland waters in fiscal year 2032/33 (Table 6-3; Figure 6-4).
- Compensatory mitigation needs within the Trinity sub-basin are focused on riparian habitat in fiscal years 2024/25, 2025/26, 2027/28, 2028/29, 2030/31, and 2031/32; with lesser impacts to non-wetland waters in fiscal years 2024/25 and to fish habitat and non-wetland waters in fiscal years 2024/25, 2025/26, 2027/28, 2028/29, 2031/31, and 2031/32; and minor impacts to wetlands in fiscal year 2031/32 (Table 6-4; Figure 6-5).
 - As shown in Tables 6-5 through 6-7 and on Figures 6-6 through 6-8, when the SHOPP transportation projects identified previously have their forecast terrestrial species of mitigation need impacts examined relative to their expected advertising date, the compensatory mitigation needs are spread throughout the 10-year planning period, as described below:
 - Compensatory mitigation needs within the Klamath Mountains Ecoregion Section are limited to northwestern pond turtle habitat throughout the 10-year period, with the greatest impacts in fiscal years 2024/25, 2025/26, 2031/32, and 2032/33, lesser impacts in the other years, and no impacts in fiscal year 2033/34 (Table 6-1; Figure 6-2).
 - Compensatory mitigation needs within the Northern California Coast Ecoregion Section are limited to northwestern pond turtle habitat in fiscal years 2024/25, 2025/26, 2026/27, 2027/28, 2030/31, and 2032/33 (Table 6-6; Figure 6-7).
 - Compensatory mitigation needs within the Northern California Coast Ranges Ecoregion Section are limited to northwestern pond turtle habitat in fiscal year 2030/31 (Table 6-7; Figure 6-8).
 - No terrestrial species of mitigation need compensatory needs exist within the Oregon and Washington Coast Ranges Ecoregion Section.

Spatially, these transportation projects are distributed throughout the GAI (Figure 6-9).

Table 6-1. Chetco Sub-basin: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

Expected Advertisement Year	Fish: Number of Transportation Projects	Fish: Estimated Potential Impacts (acres)	Wetlands: Number of Transportation Projects	Wetlands: Estimated Potential Impacts (acres)	Non-wetland Waters: Number of Transportation Projects	Non-wetland Waters: Estimated Potential Impacts (acres)	Riparian: Number of Transportation Projects	Riparian: Estimated Potential Impacts (acres)
2024/25	0	0.0	0	0.0	0	0.0	0	0.0
2025/26	0	0.0	0	0.0	0	0.0	0	0.0
2026/27	0	0.0	0	0.0	0	0.0	0	0.0
2027/28	0	0.0	0	0.0	0	0.0	0	0.0
2028/29	0	0.0	0	0.0	0	0.0	0	0.0
2029/30	0	0.0	0	0.0	0	0.0	0	0.0
2030/31	0	0.0	0	0.0	1	<0.1	0	0.0
2031/32	0	0.0	0	0.0	0	0.0	0	0.0
2032/33	0	0.0	0	0.0	0	0.0	0	0.0
2033/34	0	0.0	0	0.0	0	0.0	0	0.0
Total	0	0.0	0	0.0	1	<0.1	0	0.0

Figure 6-2. Chetco Sub-basin: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

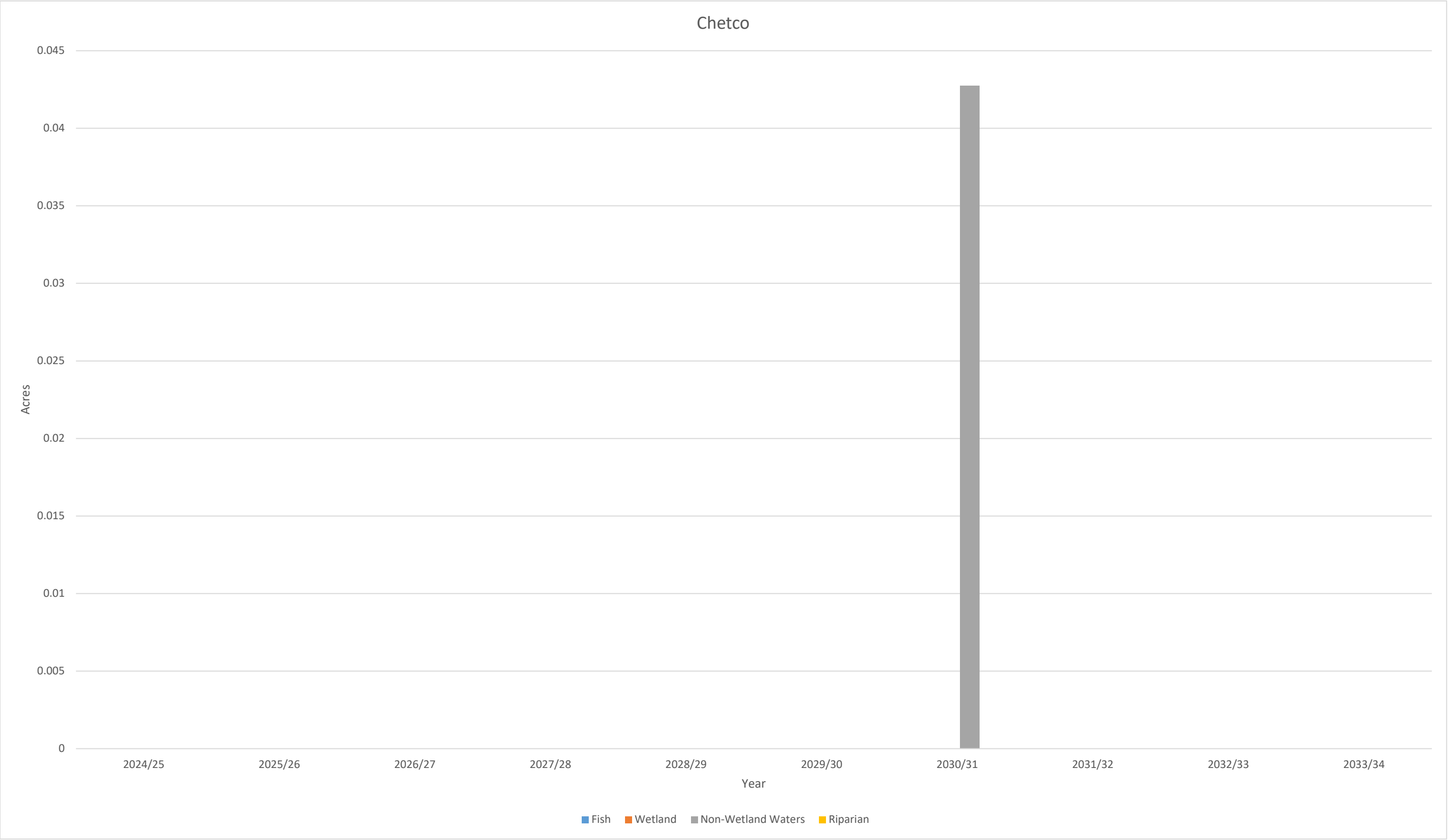


Table 6-2. Lower Klamath Sub-basin: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

Expected Advertisement Year	Fish: Number of Transportation Projects	Fish: Estimated Potential Impacts (acres)	Wetlands: Number of Transportation Projects	Wetlands: Estimated Potential Impacts (acres)	Non-wetland Waters: Number of Transportation Projects	Non-wetland Waters: Estimated Potential Impacts (acres)	Riparian: Number of Transportation Projects	Riparian: Estimated Potential Impacts (acres)
2024/25	1	0.1	0	0.0	1	<0.1	1	0.2
2025/26	1	0.1	0	0.0	1	<0.1	1	1.2
2026/27	0	0.0	0	0.0	0	0.0	0	0.0
2027/28	0	0.0	1	<0.1	0	0.0	1	0.1
2028/29	0	0.0	0	0.0	0	0.0	0	0.0
2029/30	0	0.0	0	0.0	0	0.0	0	0.0
2030/31	0	0.0	0	0.0	0	0.0	1	0.5
2031/32	0	0.0	0	0.0	0	0.0	0	0.0
2032/33	2	0.1	1	<0.1	2	0.1	2	1.2
2033/34	0	0.0	0	0.0	0	0.0	0	0.0
Total ^a	4	0.3	2	<0.1	4	0.2	6	3.2

^a Total may be different due to rounding.

Figure 6-3. Lower Klamath Sub-basin: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

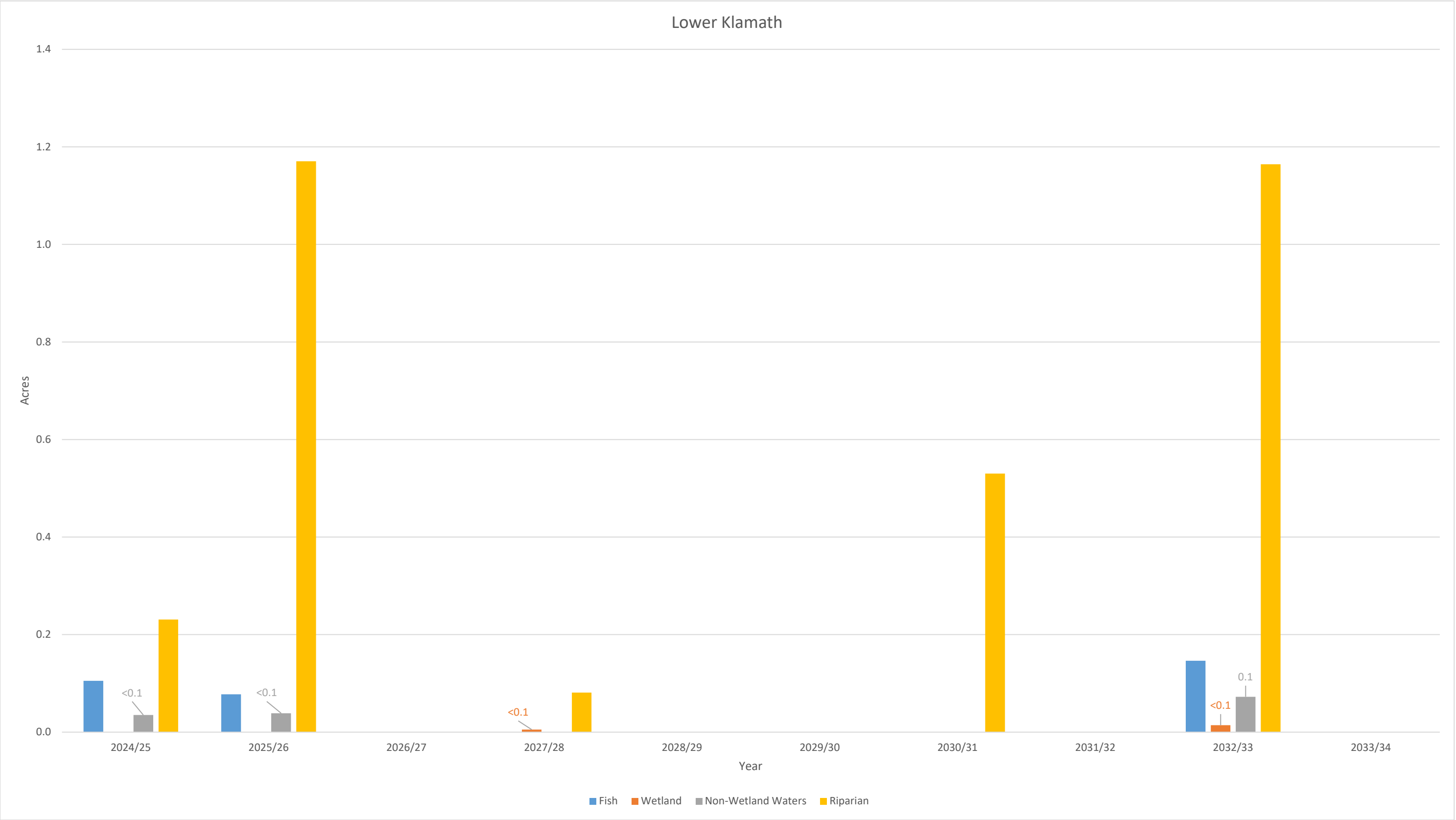


Table 6-3. Smith Sub-basin: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

Expected Adver- tisement Year	Fish: Number of Transportation Projects	Fish: Estimated Potential Impacts (acres)	Wetlands: Number of Transportation Projects	Wetlands: Estimated Potential Impacts (acres)	Non-wetland Waters: Number of Transpor- tation Projects	Non-wetland Waters: Estimated Potential Impacts (acres)	Riparian: Number of Transportation Projects	Riparian: Estimated Potential Impacts (acres)
2024/25	2	0.6	0	0.0	2	0.3	2	6.5
2025/26	0	0.0	0	0.0	0	0.0	0	0.0
2026/27	2	0.5	0	0.0	2	0.2	2	3.0
2027/28	1	0.2	0	0.0	1	0.1	1	0.9
2028/29	0	0.0	0	0.0	0	0.0	0	0.0
2029/30	0	0.0	0	0.0	0	0.0	0	0.0
2030/31	0	0.0	0	0.0	0	0.0	0	0.0
2031/32	0	0.0	0	0.0	0	0.0	0	0.0
2032/33	0	0.0	0	0.0	1	0.1	0	0.0
2033/34	0	0.0	0	0.0	0	0.0	0	0.0
Total ^a	5	1.3	0	0.0	6	0.8	5	10.3

^a Total may be different due to rounding.

Figure 6-4. Smith Sub-basin: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

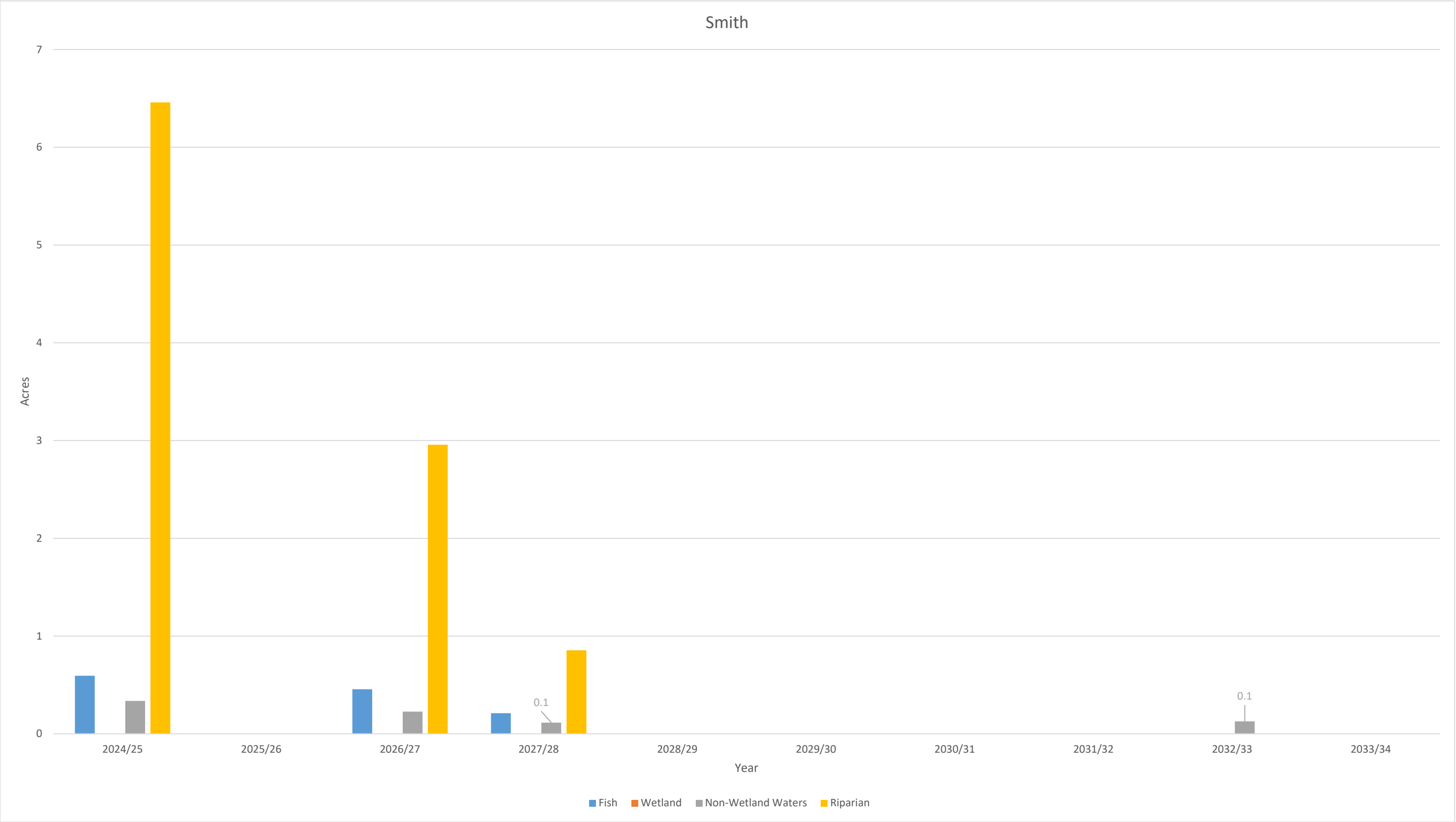


Table 6-4. Trinity Sub-basin: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

Expected Adver- tisement Year	Fish: Number of Transportation Projects	Fish: Estimated Potential Impacts (acres)	Wetlands: Number of Transportation Projects	Wetlands: Estimated Potential Impacts (acres)	Non-wetland Waters: Number of Transportation Projects	Non-wetland Waters: Estimated Potential Impacts (acres)	Riparian: Number of Transportation Projects	Riparian: Estimated Potential Impacts (acres)
2024/25	0	0.0	0	0.0	1	<0.1	1	0.6
2025/26	2	0.1	0	0.0	2	0.1	2	2.6
2026/27	0	0.0	0	0.0	0	0.0	0	0.0
2027/28	1	0.1	0	0.0	1	<0.1	1	0.2
2028/29	1	0.1	0	0.0	1	<0.1	1	0.6
2029/30	0	0.0	0	0.0	0	0.0	0	0.0
2030/31	1	<0.1	0	0.0	1	<0.1	2	0.3
2031/32	1	0.2	1	<0.1	1	0.1	1	1.5
2032/33	0	0.0	0	0.0	0	0.0	0	0.0
2033/34	0	0.0	0	0.0	0	0.0	0	0.0
Total ^a	6	0.4	1	<0.1	7	0.3	8	5.7

^a Total may be different due to rounding.

Figure 6-5. Trinity Sub-basin: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

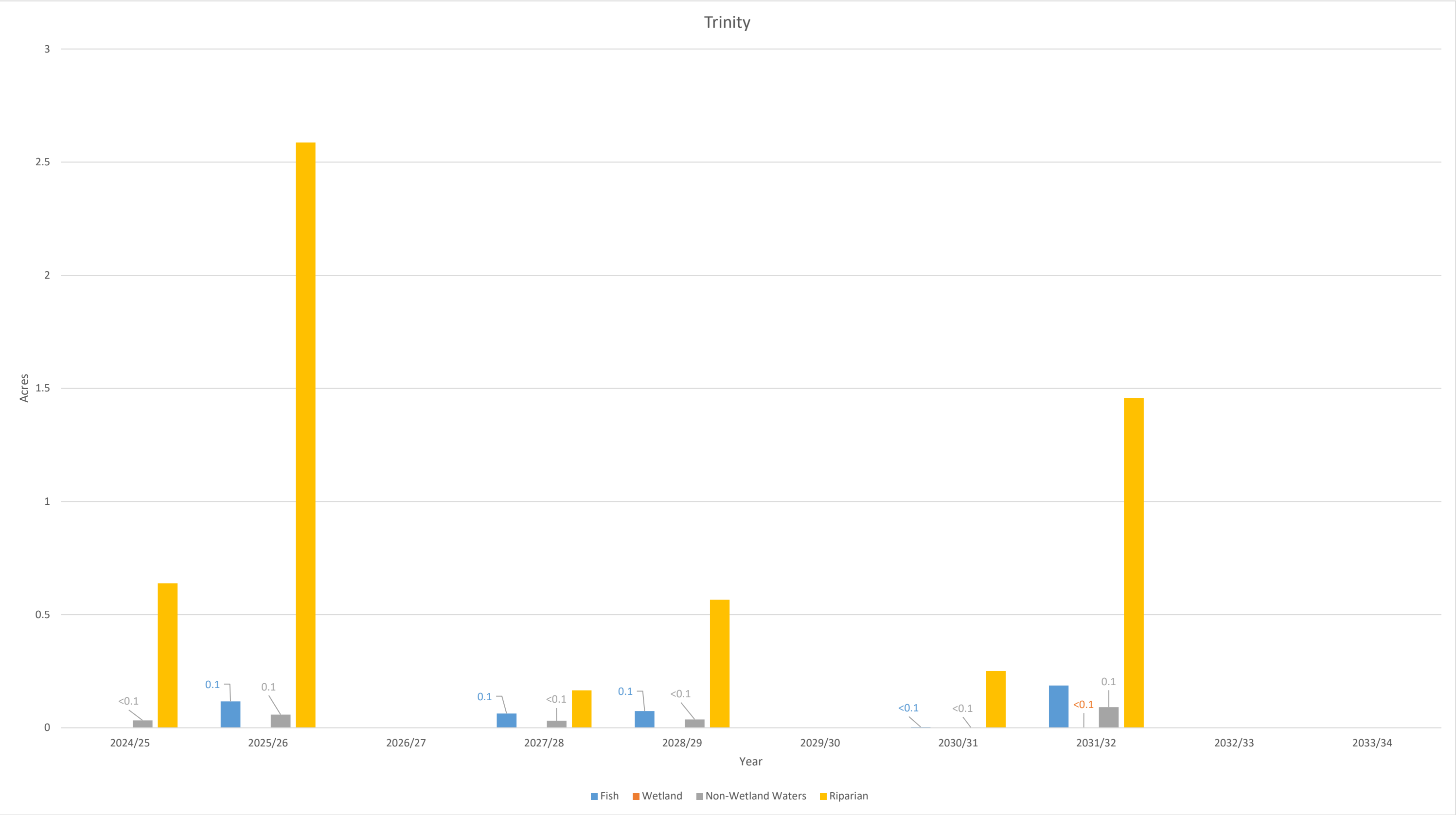


Table 6-5. Klamath Mountains Ecoregion Section: Estimated Impacts on Terrestrial Species of Mitigation Need within the GAI, by Transportation Project Delivery Year

Expected Advertisement Year	Northwestern Pond Turtle: Number of Transportation Projects	Northwestern Pond Turtle: Estimated Potential Impacts (acres)
2024/25	2	4.3
2025/26	3	6.2
2026/27	1	<0.1
2027/28	1	0.2
2028/29	1	0.8
2029/30	1	0.1
2030/31	2	0.6
2031/32	1	2.6
2032/33	1	2.0
2033/34	0	0.0
Total^a	13	16.7

^a Total may be different due to rounding.

Figure 6-6. Klamath Mountains Ecoregion Section: Estimated Impacts on Terrestrial Species of Mitigation Need within the GAI, by Transportation Project Delivery Year

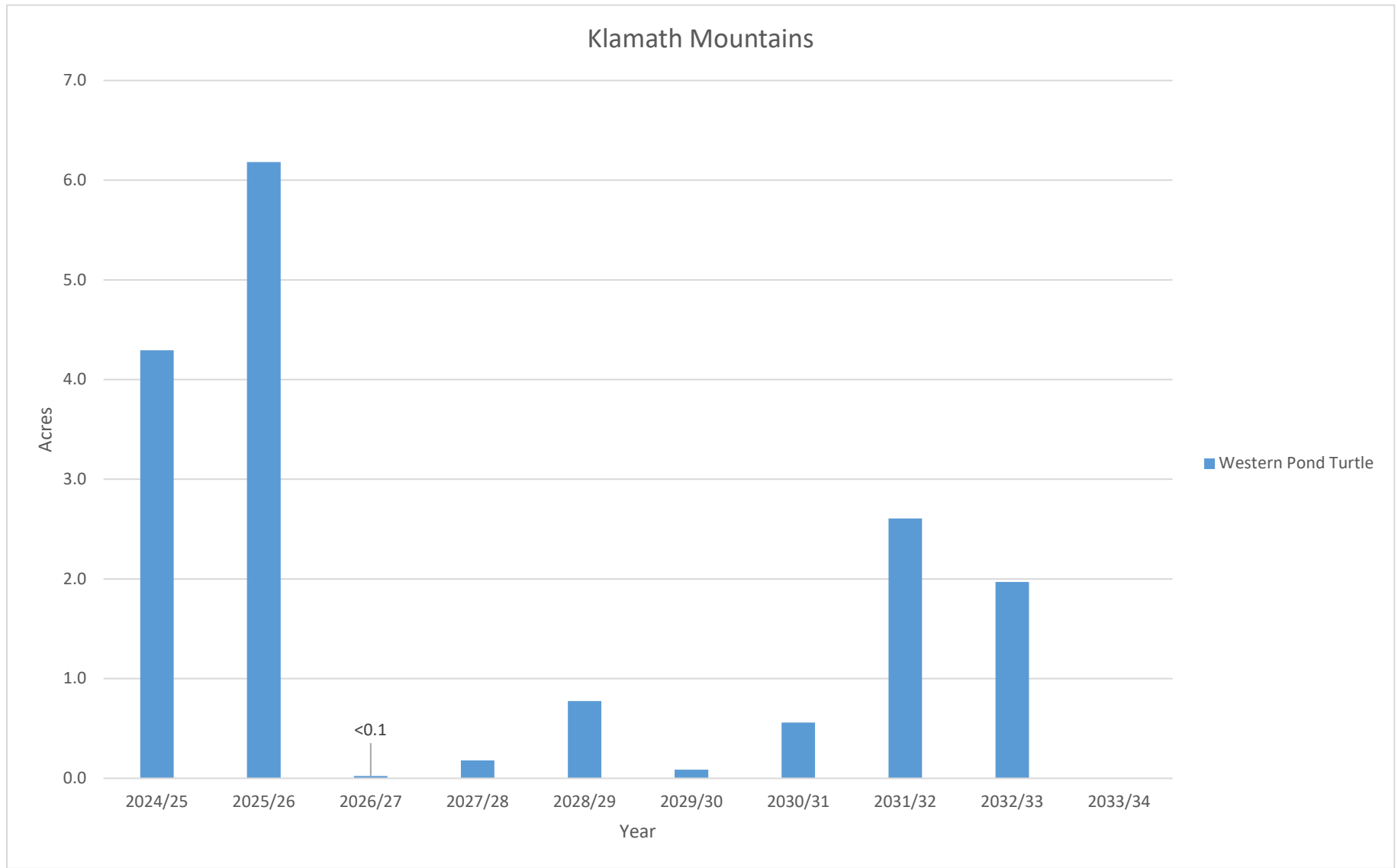


Table 6-6. Northern California Coast Ecoregion Section: Estimated Impacts on Terrestrial Species of Mitigation Need within the GAI, by Transportation Project Delivery Year

Expected Advertisement Year	Northwestern Pond Turtle: Number of Transportation Projects	Northwestern Pond Turtle: Estimated Potential Impacts (acres)
2024/25	3	3.9
2025/26	2	1.0
2026/27	2	1.4
2027/28	1	1.0
2028/29	0	0.0
2029/30	0	0.0
2030/31	1	0.3
2031/32	0	0.0
2032/33	1	1.2
2033/34	0	0.0
Total	10	8.8

Figure 6-7. Northern California Coast Ecoregion Section: Estimated Impacts on Terrestrial Species of Mitigation Need within the GAI, by Transportation Project Delivery Year

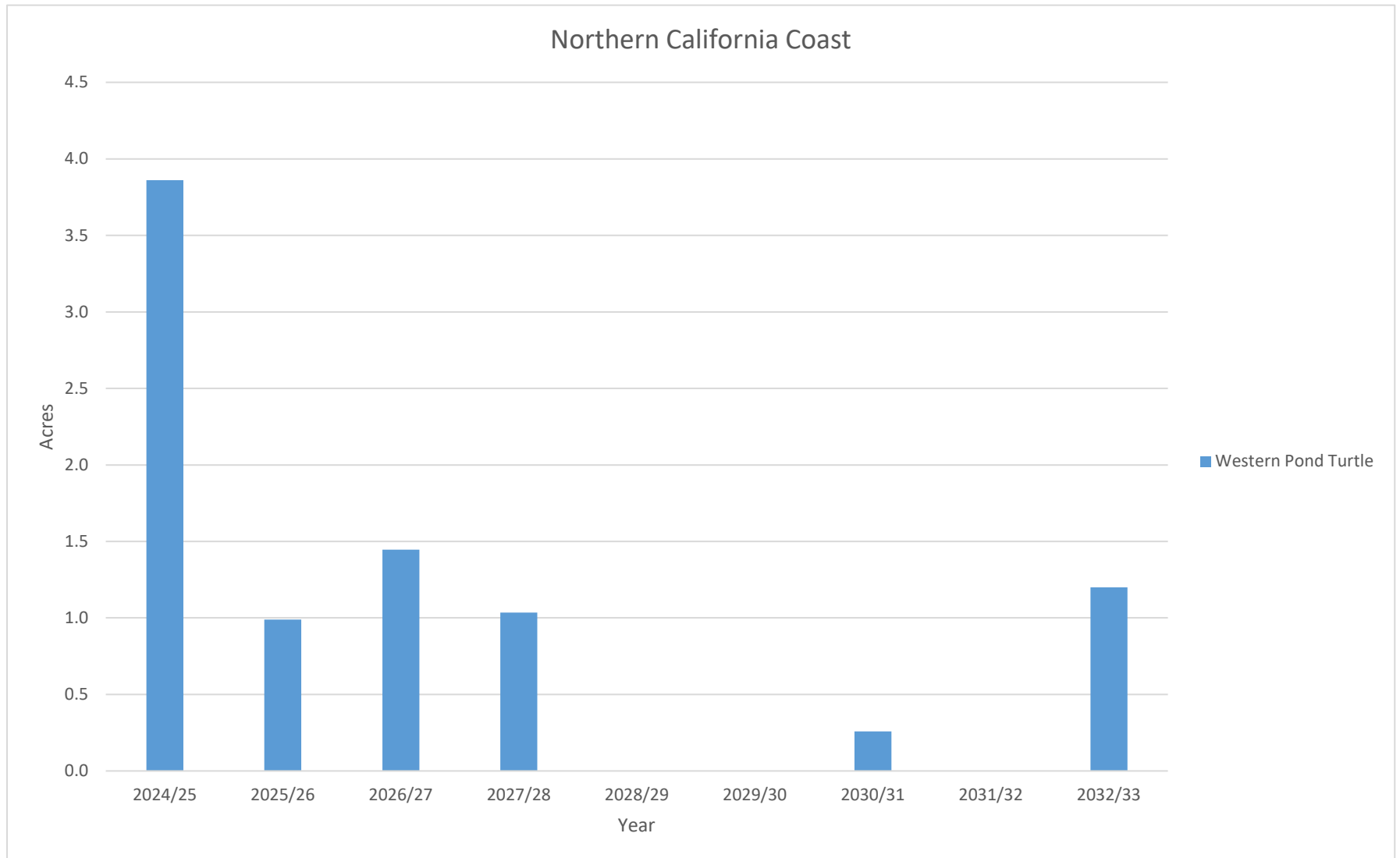


Table 6-7. Northern California Coast Ranges Ecoregion Section: Estimated Impacts on Terrestrial Species of Mitigation Need within the GAI, by Transportation Project Delivery Year

Expected Advertisement Year	Northwestern Pond Turtle: Number of Transportation Projects	Northwestern Pond Turtle: Estimated Potential Impacts (acres)
2024/25	0	0.0
2025/26	0	0.0
2026/27	0	0.0
2027/28	0	0.0
2028/29	0	0.0
2029/30	0	0.0
2030/31	1	0.9
2031/32	0	0.0
2032/33	0	0.0
2033/34	0	0.0
Total	1	0.9

Figure 6-8. Northern California Coast Ranges Ecoregion Section: Estimated Impacts on Terrestrial Species of Mitigation Need within the GAI, by Transportation Project Delivery Year

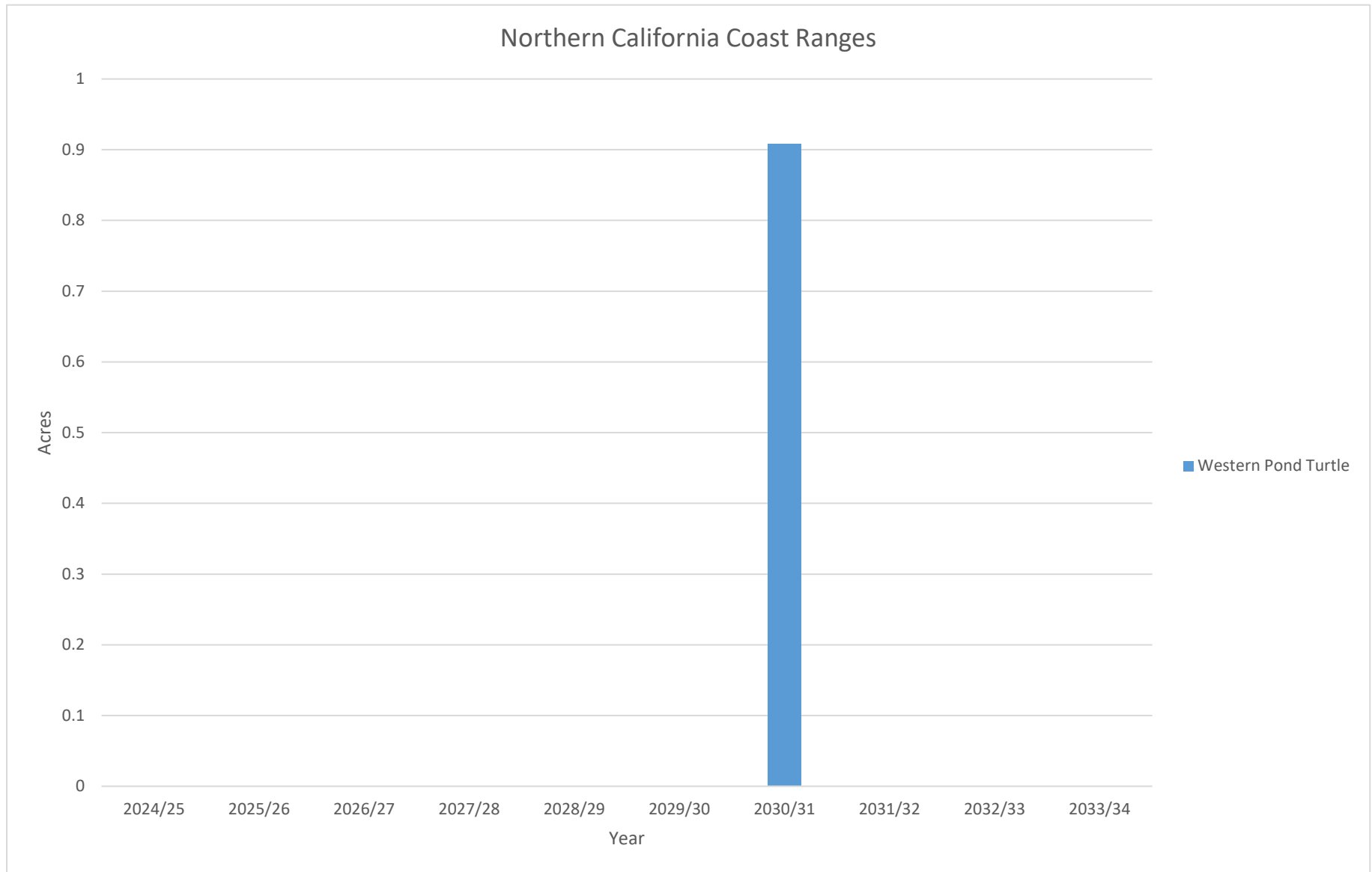
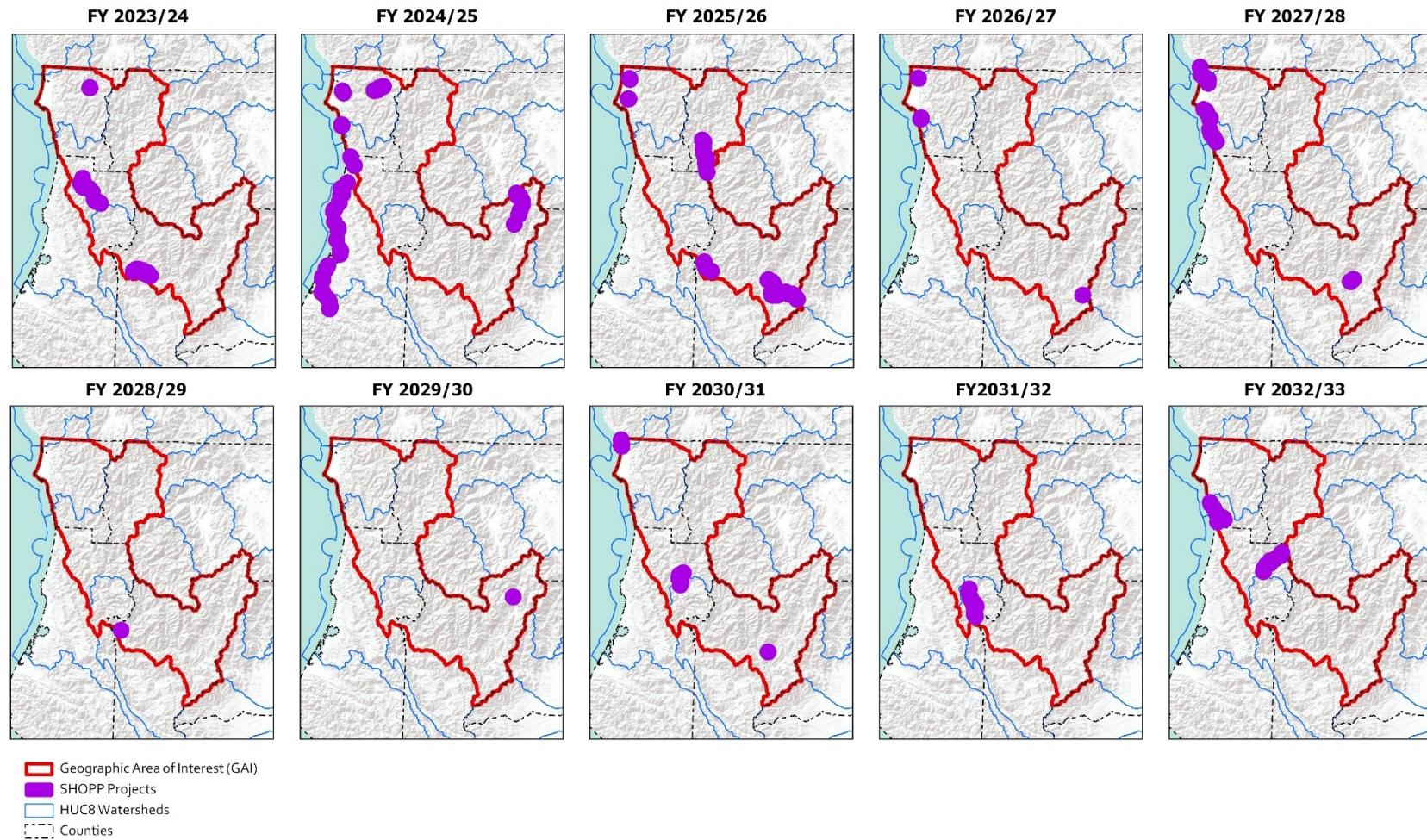


Figure 6-9. Location of SHOPP Estimated Impacts, by Transportation Project Delivery Year



Sources: Esri, USGS, NOAA, USGS

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6.3 Acceleration Priorities

At the time of an advance mitigation project proposal, Caltrans' transportation project sequence prioritization will reflect the updated information provided in the most current SHOPP Ten-Year Book, and will be based on meeting the Caltrans District's needs and performance targets while financially balancing the Caltrans District's and AMA accounts.

- As shown in Tables 6-1 through 6-4 and on Figures 6-2 through 6-5, which are based on Quarter 1 of the Ten-Year Book, most impacts on aquatic resources within the GAI are concentrated in fiscal years 2024/25, 2025/26, 2026/27, 2027/28, 2028/29, 2030/31, and 2031/32, with minimal impacts in the remainder of the fiscal years.
- As shown in Tables 6-5 through 6-7 and on Figures 6-6 through 6-8, which are based on Quarter 1 of the Ten-Year Book, most impacts on terrestrial species of mitigation need within the GAI are concentrated in fiscal years 2024/25, 2025/26, 2026/27, 2027/28, 2031/32, and 2032/33 with lesser impacts in fiscal years 2028/29, 2029/30, and 2030/31.
- Most of the projects that are anticipated to advertise in or before fiscal year 2024/25 have already required specific project mitigation when they obtained their permits in fiscal year 2024/25 (July 1, 2022, to June 30, 2023) (Figure 6-10).

Therefore, most transportation projects that could benefit from an advance mitigation project initiated post-RAMNA would need to be advertised in or after fiscal year 2025/2026.

Caltrans District 1's transportation project priorities are expressed in the State Highway System Management Plan, which identifies transportation projects that generally fall in the second 5 years of the 10-year project portfolio (Caltrans 2023b). These priorities can change, however. Transportation planning is dynamic, and delivery schedules associated with many transportation projects provided in the 2023/24 to 2032/33 (Quarter 1) SHOPP Ten-Year Book, which informed this RAMNA, may change. Prior to proposing advance mitigation projects, Caltrans District 1 will consult the most recent State Highway System Management Plan to obtain an up-to-date estimate of the timing of transportation projects that may need credits established or purchased through the AMA.

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7. WILDLIFE RESOURCES CONSERVATION GOALS AND OBJECTIVES

Caltrans' primary objective for natural resources is to avoid and minimize all impacts on special-status species from Caltrans transportation projects within the GAI. However, when avoidance and minimization are insufficient or infeasible, compensatory mitigation may be used to offset impacts. Credits or values established through SHC § 800.6(a)-authorized advance mitigation projects offer the unique opportunity to consolidate needed compensatory mitigation. This consolidation helps to provide strategically placed and environmentally sound compensatory mitigation options, including enhanced, restored, or created habitat and an improved environmental outcome that may not be available through the usual transportation project-by-project approach to compensatory mitigation.

Caltrans seeks to align its advance mitigation projects with natural resource regulatory agencies' goals and objectives, thus contributing to an improved environmental outcome within the GAI. With this in mind, this chapter presents Caltrans' understanding of natural resource regulatory agencies' regional conservation goals and objectives and how they could be applied to advance mitigation projects undertaken within the GAI to offset forecast impacts on natural resources from SHOPP and STIP-eligible transportation projects.

The goals and objectives assembled for this chapter are intended to guide Caltrans' advance mitigation project scoping decisions toward those choices that provide the greatest environmental benefit available through the advance mitigation planning and delivery processes. Such projects undertaken by Caltrans should contribute to natural resource protection and enhancement, and should yield compensatory mitigation usable by future transportation projects, as specified in SHC § 800.¹ Compensatory mitigation usable by future transportation projects should be expressed in standard units or terms recognized by the natural resource regulatory agencies.

Information presented in this chapter is for advance mitigation project scoping purposes only. Transportation projects must still go through environmental and permitting processes, and must demonstrate avoidance and minimization efforts prior to compensation.

7.1 Approach

For the purposes of this RAMNA, conservation goals and objectives are a broad set of regional natural resource sustainability goals and objectives that are consistent with both regulatory requirements and conservation science.

¹ Pursuant to SHC § 800.9, to the maximum extent practicable, the information required for an RCIS is presented in this RAMNA. During CDFW's review of an RCIS, CDFW determines whether the goals and objectives presented in the RCIS are consistent with FGC § 1852, subdivision (c)(8).

To determine the natural resource conservation goals and objectives applicable to the GAI:

- First, in Section 7.2, Caltrans identifies the natural resource regulatory agencies with the authority to condition transportation projects with natural resource-related compensatory mitigation within the GAI.
- Then, in Section 7.3, Caltrans summarizes the life history information for the three wildlife species of mitigation need chosen to focus the assessment, as identified in Section 1.5.
- Next, in Sections 7.4, 7.5, and 7.6, for the species of mitigation need, Caltrans identifies:
 - Federal and state binding and non-binding regional conservation and land management plans;
 - Current and projected pressures and stressors for which a potential transportation nexus exists;
 - Opportunities to enhance the conservation benefits through advance mitigation projects; and
 - Opportunities to benefit other special-status species as well as native plant and wildlife species through advance mitigation.
- Last, Caltrans analyzes the aforementioned information in relation to the transportation-related activities that could affect the species of mitigation need, and the potential range of compensatory mitigation that could satisfy a future transportation project condition associated with the activities.

The result of this analysis is a framework of conservation goals and objectives for use in advance mitigation project scoping (Section 7.7).

7.2 Natural Resource Regulatory Agencies with Wildlife Resources Oversight

Table 7-1 lists the natural resource regulatory agencies with the authority to condition transportation projects delivered within the GAI with wildlife resource-related compensatory mitigation. The aquatic resources used by wildlife, such as streams, wetlands, and non-wetland waters, are also regulated by other natural resource regulatory agencies. This RAMNA identifies goals and objectives for aquatic resources, including threatened and endangered fish species, separately in Chapter 8, *Aquatic Resources Conservation Goals and Objectives*.

Table 7-1. Natural Resource Regulatory Agencies with the Authority to Approve Natural Resource Compensatory Mitigation Credits (or Values)

Agency ^a	Summary
CCC	CCC protects the coast by planning for and regulating new development within the coastal zone pursuant to the policies of the Coastal Act. Through the issuance of CDPs, CCC implements the policies of the Coastal Act, including protecting sensitive resources (for example, wetlands, waters, ESHAs), water quality, public access to the coast, and more, and requires mitigation for unavoidable impacts on these resources. CCC also coordinates with local governments in developing and certifying LCPs, which allow local governments to assume the authority to issue CDPs within their jurisdiction. The agency also provides comprehensive guidance to local governments and project applicants regarding planning for and adapting to climate change and sea-level rise. The CCC, agency, or authorized local government with a certified LCP also determines how an ESHA is defined.
CDFW	CDFW oversees the conservation, protection, and management of fish, wildlife, native plants, and the habitats necessary for biologically sustainable populations of those species in California. CDFW's Environmental Review and Permitting, Conservation and Mitigation Banking, NCCP, and RCIS programs implement sections of the FGC, Title 14 of the California Code of Regulations, and Public Resources Code § 21000, et seq. These programs help fulfill CDFW's mission to manage California's diverse fish, wildlife, and plant resources as well as the habitats upon which they depend for their ecological values. CDFW issues permits and agreements to project proponents under its authorities, including incidental take permits and consistency determinations under the CESA, Lake and Streambed Alteration Agreements, approvals of conservation and mitigation banks, approvals of MCAs and RCISs, and NCCP permits. NCCP permits can authorize the take of fully protected species.
FWS	FWS has jurisdiction over a broad range of fish and wildlife resources. FWS authorities related to these resources are codified under multiple statutes, including, but not limited to, the FESA. Most statutes give FWS an advisory role in mitigation. However, if a non-federal entity applies for an incidental take permit for a listed animal species, Section 10(a)(1)(b) of the FESA requires that the impact of any incidental take be minimized and mitigated to the maximum extent practicable. Section 7(a)(1) of the FESA also requires all federal agencies to use their authorities to conserve listed species. Many federal agencies have developed programs to include mitigation as part of the Section 7(a)(2) consultation on their proposed actions to partially fulfill this Congressional mandate. In May 2023, FWS issued a Mitigation Policy that builds upon the guidance in the 1981 Mitigation Policy for recommendations and requirements on mitigating adverse impacts of land and water developments on fish and wildlife, and a FESA Compensatory Mitigation Policy that adopts mitigation principles established in the FWS Mitigation Policy, establishes compensatory mitigation standards, and provides guidance for the application of compensatory mitigation through implementation of the FESA. Conservation banking can assist federal and non-federal participants in the Sections 7 and 10 processes. In May 2003, FWS issued comprehensive federal guidelines designed to promote conservation banks as a tool for mitigating adverse impacts on species; the guidelines foster national consistency by standardizing establishment and operational criteria. Many activities conducted under Sections 7 and 10 of the FESA result in adverse effects on listed species, including habitat loss or modification. One way to offset these types of impacts is to include in the project design a plan that involves the restoration and/or protection of similar habitat on and/or off site. Purchasing credits in conservation banks is one method of protecting habitat on or off site.

Agency ^a	Summary
NMFS	NMFS has jurisdiction over marine species listed as threatened or endangered under the FESA. Federal agencies must consult with NMFS to ensure that their actions do not jeopardize the continued existence of FESA-listed species or result in the destruction or adverse modification of designated critical habitat. NMFS also manages and conserves wildlife and fisheries resources in the marine and estuarine environment under the Magnuson-Stevens Fishery Conservation and Management Act. Federal agencies must consult with NMFS on any action that might adversely affect EFH. NMFS will advise federal agencies to avoid, minimize, mitigate, or otherwise offset adverse effects on EFH. Magnuson-Stevens Fishery Conservation and Management Act EFH consultation can be done in tandem with FESA consultation. NMFS protects marine mammals under the Marine Mammal Protection Act, with the exception of sea otters, walruses, manatees, and polar bears, which are managed by FWS. With some exceptions, the Marine Mammal Protection Act prohibits the take of marine mammals, including harassment, hunting, capturing, collecting, or killing, in U.S. waters and by U.S. citizens on the high seas.

^a In addition to the agencies listed above, the RWQCBs may exert jurisdiction over species to the extent that aquaculture; cold freshwater habitat; estuarine habitat; fish spawning; flood peak attenuation/flood water storage; freshwater replenishment; groundwater recharge; inland saline water habitat; marine habitat; migration of aquatic organisms; preservation of areas of biological significance; rare, threatened, or endangered species; spawning, reproduction, and/or early development; warm freshwater habitat; wildlife habitat; and water quality enhancement beneficial uses exist and would be affected by a project.

7.3 Species of Mitigation Need

An overview of wildlife resources is provided in Chapter 2, *Environmental Setting*. As described in Section 1.5, one terrestrial and two aquatic species of mitigation need were selected to focus the planning effort and to improve the probability that advance mitigation projects undertaken by Caltrans will yield credits (or similar) that will be usable during the planning period. To this end, the terrestrial species of mitigation need identified for the GAI is northwestern pond turtle. This species is briefly described below.

7.3.1. Northwestern Pond Turtle

Northwestern pond turtle is the only native freshwater turtle in California (WPTRCC 2020). Northwestern pond turtle is a medium sized, omnivorous turtle that appears olive to dark brown with a network of brown or black spots, lines, or dashes (Hays et al. 1999). The species requires aquatic habitats such as ponds, lakes, or streams for breeding, feeding, overwintering, and dispersal, basking sites for thermoregulation, and upland areas adjacent to aquatic habitats for nesting and overwintering (FWS 2023). Preferred aquatic habitats consist of standing or slow-moving water that contains underwater shelter sites such as undercut banks, submerged vegetation, mud, rocks, and logs with abundant basking areas (Holland 1994). Suitable nesting habitat has sparse vegetation and little to no canopy cover that allows for sunlight exposure. Overwintering habitat generally occurs outside of the riparian zone in open areas where leaf litter is present (Reese et al. 1997). Nest sites are often within 100 to 500 meters of water (Thomson et al. 2016). Northwestern pond turtle spend up to seven months out of the water during the winter months and typically only travel 200 meters from aquatic habitats but have been

documented to travel up to 1.4 km to overwinter refugia. Mating typically occurs between April and November with nesting and oviposition following from May through July (Bury et al. 2012).

7.4 Regional Conservation Efforts

Caltrans' understanding of natural resource regulatory agency conservation goals and objectives is that they are generally designed to protect existing populations and habitat, and include acquiring, protecting, restoring, and/or enhancing habitat and linkages. Several conservation and land management plans listed in Table 3-1, relevant to the species of mitigation need, identify key habitats or designate specific lands or areas to protect for conservation of the species of mitigation need within the GAI. For example, several LCPs listed in Appendix C, *Local Coastal Programs*, include ESHAs with species attributes. These conservation and land management plans are presented in Table 7-2.

The conservation and land management plans include measures to address specific known, ongoing threats to individuals and populations, which are incorporated into and/or inform the advance mitigation conservation goals and objectives compiled below. Caltrans may also use this information during advance mitigation project scoping to help compensatory mitigation efforts within the GAI align with the goals and objectives of natural resource regulatory agencies that approve mitigation.

Table 7-2. Documents Identifying Areas for Species of Mitigation Need Conservation within the GAI

Document	Reference	Areas of Important Habitat
<i>Special-status Species and Sensitive Habitat Documents</i>	<i>See below</i>	<i>See below</i>
Western Pond Turtle Range-wide Management Strategy 2020	Western Pond Turtle Range-wide Conservation Coalition 2020	This is FWS' management plan for the northwestern pond turtle. Northwestern pond turtles are known to occur within the Coast Range regions of the GAI. Invasive aquatic species that pose a threat to northwestern pond turtle include smallmouth bass (<i>Micropterus dolomieu</i>), crayfish (e.g, <i>Procambarus clarkii</i>), and largemouth bass (<i>Micropterus salmoides</i>).
USGS Western Pond Turtle (<i>Emys marmorata</i>) Visual Survey Protocol for the Southcoast Ecoregion	USGS 2006	This is USGS' guidance on site assessment, survey, and reporting requirements for northwestern pond turtle. This is a CDFW-accepted protocol.
<i>Conservation and Land Management Documents</i>	<i>See below</i>	<i>See below</i>
<i>California Essential Habitat Connectivity Project (CEHC)</i>	Spencer et al. 2010	This identifies Natural Landscape Blocks and Essential Connectivity Areas within the North Coast Ecoregion Sections, which overlap the GAI. There are 24 within the North Coast Ecoregion Section.
<i>California State Wildlife Action Plan (SWAP)</i>	CDFW 2025	The GAI overlaps one of the SWAP's defined geographic provinces: North Coast and Klamath Province: In this province, northwestern pond turtle is considered a Species of Greatest Conservation Need.
Redwood National and State Parks General Management Plan	USDOI 2000	This is a join management effort with State and National parks that comprises of all state and federal units – including Redwood National, Jedediah Smith Redwoods, Prairie Creek Redwoods, and Redwood Heritage State Wilderness state and national parks. It includes restoration initiatives for state and national units, rehabilitation for second-growth forest, and landform restoration and improvements of watershed headwater streams throughout tributaries, estuaries, and the sea.
Klamath National Forest Land and Resource Management Plan (2010 Update)	USDA 1995	This is USFS' management direction for Klamath National Forest, which includes goals, projections, standards, and guidelines for forest management areas and the natural resources within.

Document	Reference	Areas of Important Habitat
Rogue River National Forest Land and Resource Management Plan	USFS 1990	This is USFS' management plan for the Rogue River National Forest. It defines riparian zones to be 100 feet out from each side of a stream.
Six Rivers National Forest Land and Resource Management Plan	USFS 1995a	This is USFS' management plan for the Six Rivers National Forest. It contains guidelines that prioritize the Smith River, Klamath River tributaries, Trinity River tributaries, Mad River tributaries, and North Fork Eel River for restoration. The plan considers northwestern pond turtle as a management indicator species for marsh/lake/pond assemblages and includes a goal to maintain habitat characteristics consistent with their Habitat Capability Model within 300 feet around occupied pond and stream habitats.
Shasta-Trinity National Forest Land Resource Management Plan	USFS 1995b	This is USFS' management plan for the Shasta-Trinity National Forest.
Northwest California Integrated Draft Resource Management Plan and Environmental Impact Statement	USDOI 2024	This is BLM's resource management plan covering the Arcata and Redding Field Offices that is currently in development. Only the Arcata Field Office is within the GAI. The plan requires buffers of 300 feet on either side of the channel in fish-bearing streams, 150 feet on either side of the channel in non-fish-bearing streams, and a 100-foot buffer on either side of the stream channel in intermittent streams and landslide prone areas. It includes goals for the protection and/or enhancement of northwestern pond turtle habitat.
Whiskeytown National Recreation Area Foundation Document	USDOI 2014	This is NPS' foundation document for Whiskeytown National Recreation Area. It includes goals for ongoing restoration of Whiskeytown Lake and its tributaries.
City and County General Plans	<i>See below</i>	<i>See below</i>
City of Crescent City General Plan	City of Crescent City 2001	This is the general plan for the City of Crescent City. It includes a policy that requires a minimum 100-foot buffer zone around designated coastal wetlands. It also includes a city policy to reestablish riparian vegetation in selected stream corridors, a goal to enhance the quality and diversity of forest ecosystems, and a land use designation for open space.

Document	Reference	Areas of Important Habitat
Del Norte County General Plan	Del Norte County 2003	This is the general plan for Del Norte County. It includes an ongoing implementation program to fund replacement habitat and restoration of estuaries, stream corridors, or wetlands. The plan lists several named areas to be maintained and protected which include: • Whaler and Battery Islands • Lakes Earl and Talawa and their immediate marshlands • Sand dunes and wet sand areas • Tidally influenced areas of the Smith and Klamath Rivers • Crescent City Marsh, Elk Creek Wildlife Area, and surrounding wetlands The plan includes land use designations for resource lands and open space/conservation areas.
Humboldt County General Plan	Humboldt County 2017	This is Humboldt County's general plan. It includes a priority to restore rivers and ocean areas as well as Humboldt Bay for the recovery of the threatened coho salmon. The plan designates Streamside Management Areas, which have 200-foot buffers from development. It requires a 100-foot buffer from non-designated perennial streams and a 50-foot buffer for non-designated intermittent streams. Wetlands that are seasonal have 50-foot buffers and perennial wetlands have 150-foot buffers. Development in these buffers carries additional mitigation requirements. The plan includes land use designations for forestry recreation, floodplain, and natural resources.
Siskiyou County General Plan 1973	Siskiyou County 1973	This is Siskiyou County's general plan. It includes land use designations for forest land as open space/conservation areas.
Trinity County General Plan	Trinity County	This is Trinity County's general plan. It includes land use designations for resource lands and open space/conservation areas.
Other Conservation and Management Documents	<i>See below</i>	<i>See below</i>
<i>Conserving California's Coastal Habitats – A Legacy and A Future with Sea Level Rise</i>	Coastal Conservancy and The Nature Conservancy 2018	This is the CCC's and The Nature Conservancy's statewide coastal conservation plan. It contains plans to maintain and manage coastal lands to be resilient to sea-level rise. Plans include maintaining existing resilient conservation lands, conserving resilient landscapes, managing in place for resilience, conserving potential future habitat areas, and increasing adaptive capacity.

7.5 Pressures and Stressors

Pressures and stressors refer to environmental trends or physical, chemical, or biological factors or conditions that affect the species of mitigation need or its habitat. According to the SWAP (CDFW 2025), a pressure is defined as “an anthropogenic (human-induced) or natural driver that could result in changing the ecological conditions of the target. Pressures can be positive or negative depending on intensity, timing, and duration. Negative or positive, the influence of a pressure to the target is likely to be significant.” Additionally, stress is defined in the SWAP as “[a] degraded ecological condition of a target that resulted directly or indirectly from negative impacts of pressures (e.g., habitat fragmentation)” (CDFW 2025). The special status assessment report for northwestern pond turtle (*Actinemys marmorata*) (FWS 2023) refers to these pressures and stressors as threats.

7.5.1. Habitat Loss, Fragmentation, and Degradation

Urbanization and other anthropogenic factors such as roads, poor grazing practices, and habitat invasion by nonnative species have led to the loss and degradation of existing habitat for the species of mitigation need. Additionally, roads and urbanization have resulted in habitat fragmentation and a decrease in connectivity between habitats that support wildlife species of mitigation need populations, as well as increased mortality of wildlife species from vehicle strikes.

Riparian habitat loss, fragmentation, and degradation due to urban development and the installation of associated infrastructure (such as roads, trails, and more), as well as agriculture, were identified as the biggest and most continuous threat to northwestern pond turtles (Western Pond Turtle Range-wide Conservation Coalition 2020). Culverts under roads may provide some connectivity for various species; however, if not constructed properly, they can impede dispersal and trap some species such as northwestern pond turtles. In some instances, culverts may result in deep scoured pools that can support predatory fish and frogs or provide habitat where premature drying is a threat. In addition, corrugated metal culverts have uneven surfaces that may prevent easy passage for smaller wildlife or may have temperatures that vary from the surrounding air temperature and that may be harmful to wildlife (Caltrans 2021b).

7.5.2. Invasive Species

Transportation projects and associated ongoing maintenance activities have the potential to introduce and/or spread nonnative, invasive species. The entry of invasive, nonnative species into an ecosystem may reduce biodiversity, degrade habitats, alter genetic diversity, shift habitat types, and further threaten already endangered or threatened natural resources.

Northwestern pond turtles are susceptible to predation throughout their life history but primarily during their hatchling phase in areas where introduced American bullfrogs (*Rana catesbeiana*), smallmouth bass (*Micropterus dolomieu*), crayfish (e.g., *Procambarus clarkii*) and largemouth bass (*Micropterus salmoides*) predation is significant. Additionally, the release of pet red-eared sliders (*Trachemys scripta elegans*) into the wild could result

in an increase of competition and disease transmission for northwestern pond turtles (Western Pond Turtle Range-wide Conservation Coalition 2020).

7.5.3. Disease and Predation

Disease and predation rates can be affected by habitat loss, fragmentation, and degradation described in Section 7.5.1. The impacts of diseases on northwestern pond turtles are not well understood, although shell diseases and upper respiratory infections could be a large threat across their range. Predation poses a significant threat in some areas, especially urban and human-altered landscapes. The threat of predation from invasive species is described in Section 7.5.2, and in addition threats from native predators, such as raccoons (*Procyon lotor*), coyotes (*Canis latrans*), river otters (*Lontra canadensis*), and great blue herons (*Ardea herodias*) can also drastically affect northwestern pond turtle population size (Western Pond Turtle Range-wide Conservation Coalition 2020).

7.5.4. Climate Change, Drought, Wildfire, and Sea-level Rise

Section 2.5 provides a brief overview of the GAI's climate and available planning-level predictions for climate change within the region. In the next 30 years, the climate is expected to change. Predicted climate change effects consist of projected extended periods of higher temperatures in the summer; large fluctuations in precipitation, with dry years becoming drier and wet years becoming wetter; and an increased risk of drought, wildfires, and landslides (Caltrans 2018b).

The lower permeability of roads can exacerbate the risks associated with flooding and erosion. Terrestrial connectivity within the GAI, including irreplaceable and essential corridors, connections with implementation flexibility, and large remaining blocks of intact habitat or natural landscapes, is shown on Figure 2-12. These areas are expected to provide opportunities for the species of mitigation need to respond to climate change stress by preserving large blocks of habitat and linkage areas that will allow migration of the wildlife species toward more suitable habitat as the climate changes, and by providing protection for the ecological processes that support key habitats for northwestern pond turtle. The terrestrial climate change resilience rank from the ACE dataset (CDFW 2018) is presented on Figure 2-6. Resilience is highest within the eastern and southern parts of the GAI in the Klamath Mountains ecoregion between the northeastern region of Trinity National Forest and the eastern range of the Salmon Mountains, as well as around Clair Engle Lake. Resilience within these areas ranges from 4 to 5. Additional areas of mid-high resilience are associated with rising elevations inland from the coast, ranging from 3 to 5. Resilience within the remainder of the GAI ranges from 1 to 3 and is generally lowest along the coast and bay shores.

Increasing temperatures and increased frequency, duration, and severity of extreme events such as droughts, heat waves, and wildfires are all anticipated consequences of climate change that are expected to affect northwestern pond turtle. Changing atmospheric conditions through climate change additionally provide an unintentional consequence of expanding predator and invasive species ranges that can negatively

impact northwestern pond turtle (Lovich et al. 2017). Water availability and delivery is a complex issue in the west, exacerbated by cycles of drought and flood. These events are expected to increase in frequency and intensity due to climate change. Droughts can lead to landslides, flooding, and erosion, drastically modifying streambeds and fully terraforming aquatic systems that may take years to recover (CDFW 2004, Spence et al. 1996). Drought-related conditions can increase the probability and severity of wildfire, which paired together can quickly destroy northwestern pond turtle habitat and decimate populations due to the destruction of aquatic habitat directly from natural disaster impacts and indirectly through wildfire firefighting emergency response (Lovich et al. 2017). Another consequence of climate change, drought, and wildfire increasing in severity and frequency for northwestern pond turtle is the impact they could have on turtle sex ratios resulting in further population declines and genetic fragmentation that could rapidly diminish healthy and viable populations (Western Pond Turtle Range-wide Conservation Coalition 2020).

7.5.5. Contaminants

Pollutants have been associated with roads and industrial activity. Petroleum products from roadside runoff, pesticides, herbicides, mineral fertilizers, industrial chemicals, and airborne pollutants are known to have negative effects on wildlife and habitat. Aquatic and semi-aquatic wildlife and habitats are especially susceptible to contaminants, and determining the effects and how they impact northwestern pond turtles is an important gap in current scientific knowledge (Western Pond Turtle Range-wide Conservation Coalition 2020).

7.6 Multi-species Benefits

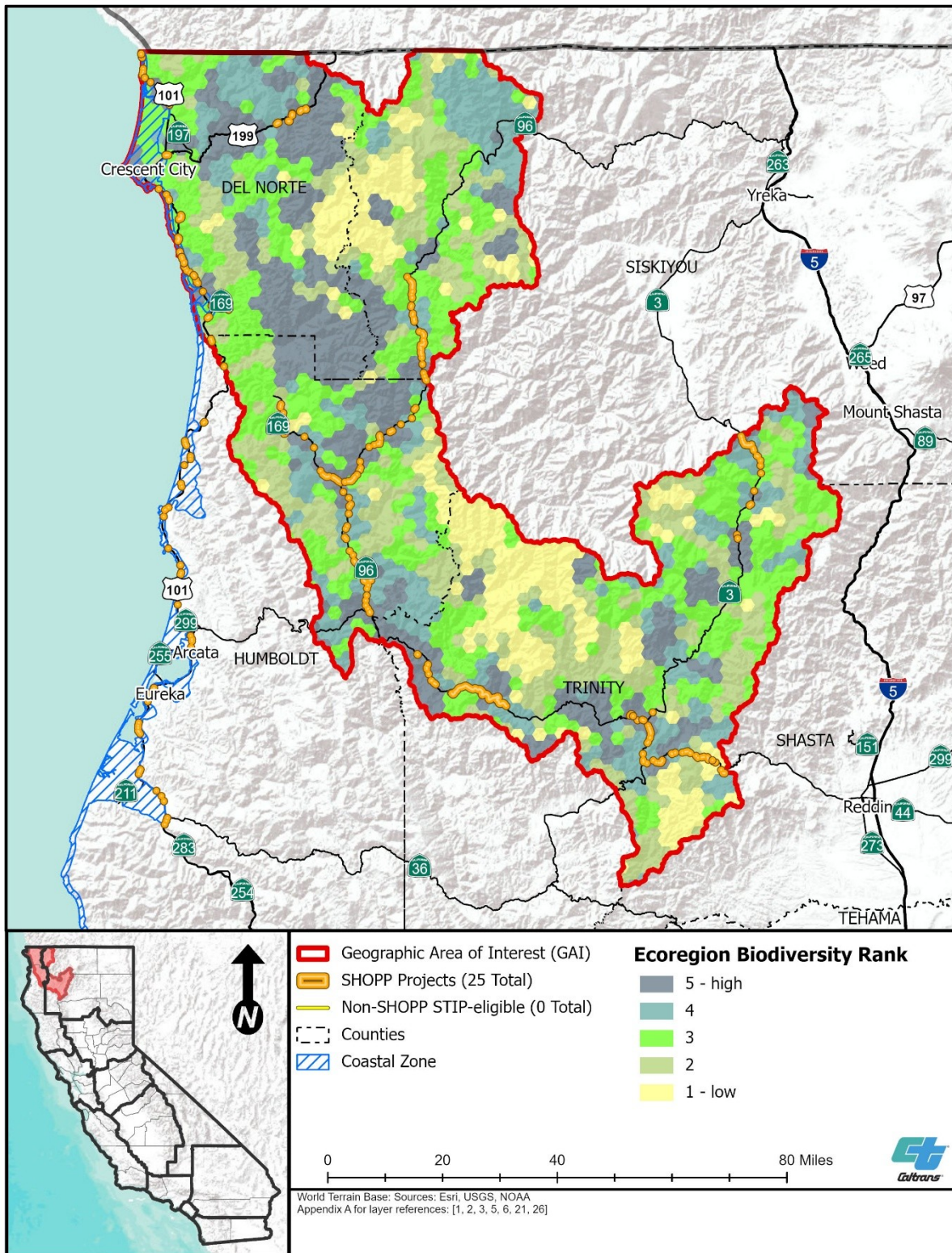
While the terrestrial wildlife species of mitigation need identified for this GAI is northwestern pond turtle, several other special-status species share habitat with this species, which may be addressed under CDFW's Lake and Streambed Alteration Agreement program. These species include, but are not limited to:

- Northern red-legged frog (*Rana aurora*)
- Cascades frog (*Rana cascadae*)
- Southern torrent salamander (*Rhyacotriton variegatus*)

A complete list of co-benefiting species based on forecast impacts from the SAMNA model is included in Tables 5-7 to 5-9.

Advance mitigation planning provides Caltrans an opportunity to prioritize multi-species and multi-resource benefits through acquisition, protection, restoration, and/or enhancement of habitat that provides the most multi-species benefits within the GAI. Figure 7-1 illustrates the regional terrestrial biodiversity within the GAI, according to CDFW's ACE GIS dataset. According to these data, high to moderate terrestrial biodiversity is present along much of the SHS with SHOPP projects, while other portions of the SHS within the GAI with SHOPP projects show low biodiversity. Habitats are mapped in Appendix D, *Land Cover Types*, and the other special-status species that may occur in these habitats are provided in Appendix E, *Complete SAMNA Species Results*.

Figure 7-1. Terrestrial Biodiversity within the GAI



The installation of culvert escape ramps, undercrossings, and fence jump-outs to facilitate safe movement across and away from highways would also benefit numerous terrestrial wildlife species. Advance mitigation purchased or established to address anticipated impacts on terrestrial species of mitigation need or on fish species of mitigation need (addressed in Chapter 8, *Aquatic Resources Conservation Goals and Objectives*) may also provide mitigation to compensate for impacts on these other species. Caltrans will consider the special-status species with the potential to co-occur in habitats with species of mitigation need in order to inform advance mitigation scoping and thereby improve the conservation benefits of mitigation within the GAI.

7.7 Advance Mitigation Conservation Goals and Objectives

The conservation goals and objectives compiled in Table 7-3 were intended to be relevant to anticipated future SHOPP and STIP transportation project mitigation needs, be consistent with the goals and objectives of natural resource regulatory agencies for the species of mitigation need, address pressures and stressors, and support species of mitigation need population recovery and success within the GAI. Each conservation goal is supported by one or more conservation objectives and is meant to further guide Caltrans District 1 toward scoping advance mitigation projects to achieve the desired result specified by the goal. Project-specific objectives will be developed for advance mitigation projects in the future, during their project delivery phase, in accordance with an instrument, MCA, or other project-specific agreement (Figure 1-2). Project-specific advance mitigation project objectives will be specific, measurable, achievable, relevant, and time-bound.

At the broad scale, these wildlife goals and objectives encompass large-scale ecological processes, environmental gradients, biological diversity, and regional wildlife linkages. These goals and objectives prioritize regional conservation that preserves intact habitat and provides habitat linkages and connectivity. Sub-objectives are included for each objective to guide Caltrans advance mitigation and project scoping toward those authorized actions that would create the greatest functional lift² or conservation benefit for the species of mitigation need within the GAI. Sub-objectives also capture specific measures from conservation and land management plans that address threats to the species of mitigation need.³ Several of the goals are interrelated, and many objectives could apply to more than one goal; objectives were grouped with the goal to which they most specifically aligned. Goals and objectives are generally presented in order from general to more specific. They are not presented in order of importance.

² For the purposes of this document, “functional lift” means the difference between an existing degraded condition and a restored or enhanced condition.

³ In accordance with both law and Caltrans policy, standard best management practices are followed on all Caltrans transportation projects. Therefore, they are presumed and they are not itemized as goals and objectives for the AMP.

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Table 7-3. Advance Mitigation Conservation Goals and Objectives for the Species of Mitigation Need

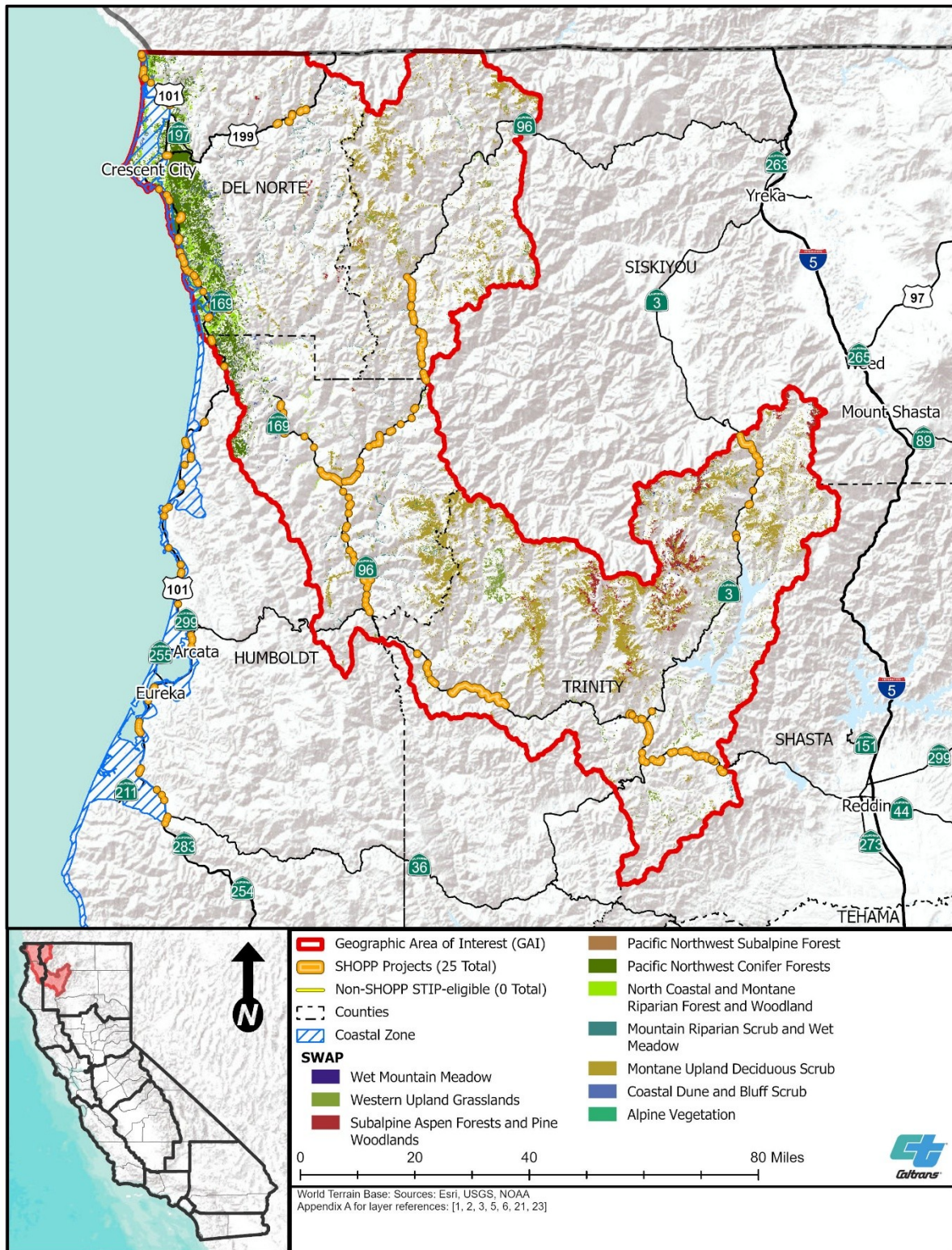
Objective	Sub-Objective	Affected Species ^a	Alignment with Conservation and Management Plans ^b
<i>Goal WILD-1: Conserve and expand habitat for species of mitigation need within the GAI to support ecosystem functions that are essential to recovery of the species.</i>	<i>See below</i>	<i>See below</i>	<i>See below</i>
Objective WILD-1.1: Acquire, protect, restore, and/or enhance habitat of sufficient quantity to offset estimated impacts on species of mitigation need within the GAI in advance of transportation project impacts.	Sub-Objective WILD-1.1.1: Identify habitat for species of mitigation need within the GAI and acquire, protect, restore, and/or enhance this habitat such that the greatest functional lift to the species of mitigation need is provided, including consolidating compensatory mitigation. Sub-Objective WILD-1.1.2: Prioritize key areas, such as designated critical habitat, movement corridors, and buffer zones. Sub-Objective WILD-1.1.3: Prioritize acquisition and/or protection of large blocks of suitable, occupied habitat for the species of mitigation need; lands adjacent to occupied habitat; and/or land that expands or buffers existing occupied protected habitats. Sub-Objective WILD-1.1.4: Prioritize land acquisition and/or protection that supports key populations.^c Sub-Objective WILD-1.1.5: Prioritize acquisition, protection, and/or enhancement of SWAP (CDFW 2025) conservation targets: wet mountain meadow, western upland grasslands, subalpine aspen forests and pine woodlands, Pacific Northwest subalpine forest, Pacific Northwest conifer forests, north coastal and montane riparian forest and woodland, mountain riparian scrub and west meadow, montane upland deciduous scrub, coastal dune and bluff scrub, and alpine vegetation (Figure 7-2) that coincide with the species of mitigation need range, as well as other locally or regionally important habitat types. Sub-Objective WILD-1.1.6: Create, enhance, or restore breeding habitat in protected areas where it is limited.^c	▪ northwestern pond turtle	▪ <i>CEHC</i> (Spencer et al. 2010) ▪ <i>SWAP</i> (CDFW 2025) and companion plans ▪ <i>Restoring California’s Wildlife Connectivity 2022: 2022 Priority Wildlife Connectivity Project Locations by Region</i> (CDFW 2022) ▪ <i>Caltrans Wildlife Connectivity Program Report</i> (Caltrans 2024c)

Objective	Sub-Objective	Affected Species ^a	Alignment with Conservation and Management Plans ^b
Goal WILD-2: Preserve, enhance, and increase connectivity between blocks of habitat supporting species of mitigation need to allow for dispersal that will maintain resilience and variability of populations.	See below	See below	See below
Objective WILD- 2.1: Acquire, protect, restore, and/or enhance movement corridors within the GAI in advance of transportation project impacts.	Sub-Objective WILD-2.1.1: Identify movement corridors for the wildlife species of mitigation need within the GAI and acquire, protect, restore, and/or enhance corridors such that the greatest functional lift for the wildlife species of mitigation need is provided. Sub-Objective WILD-2.1.2: Prioritize habitat in key linkage areas, between habitat areas, and/or areas that provide a buffer to key or existing corridors. ^c Sub-Objective WILD-2.1.3: Identify areas that will enhance connectivity between existing protected breeding locations and create new breeding habitat for the wildlife species of mitigation need. ^c	northwestern pond turtle	Same references as listed with Objective WILD-1.1.
Goal WILD-3: Support resiliency of the landscape to climate change and sea-level rise.	See below	See below	See below
Objective WILD-3.1: Acquire, protect, restore, and/or enhance habitat that supports resilience to climate change and sea-level rise within the GAI in advance of transportation project impacts.	Sub-Objective WILD-3.1.1: Identify, acquire, protect, restore, and/or enhance habitat critical to climate resilience for the species of mitigation need within the GAI (Figure 2-6). Sub-Objective WILD-3.1.2: Prioritize management of invasive species in key areas, such as movement corridors and ESHAs, that may be exacerbated by climate change and sea-level rise and that would provide functional lift for the species of mitigation need and ESHAs.	northwestern pond turtle	Same references as listed with Objective WILD-1.1.
Goal WILD-4: Decrease mortality and competition and protect population health for species of mitigation need.	See below	See below	See below
Objective WILD-4.1: Reduce impacts of invasive species on populations of species of mitigation need within the GAI in advance of transportation project impacts.	Sub-Objective WILD-4.1.1: Reduce invasive species in key habitat locations and/or in areas that provide a buffer to high-value habitat for the species of mitigation need. Prioritize areas where invasive species reduction would provide the greatest functional lift to species of mitigation need and their habitat. Sub-Objective WILD-4.1.2: Prioritize restoration of native plant species in key areas, such as critical habitat, movement corridors, and buffer zones.	northwestern pond turtle	Same references as listed with Objective WILD-1.1.
Objective WILD-4.2: Reduce impacts from nonnative predators within the GAI in advance of transportation project impacts.	Sub-Objective WILD-4.2.1: Identify and implement measures to reduce predation.	northwestern pond turtle	Same references as listed with Objective WILD-1.1.

Objective	Sub-Objective	Affected Species ^a	Alignment with Conservation and Management Plans ^b
Objective WILD-4.3: Reduce road-associated mortality within the GAI in advance of transportation project impacts.	Sub-Objective WILD-4.3.1: Identify locations to develop safe SHS wildlife crossing areas within the GAI and direct the species of mitigation need to such crossing areas.	▪ northwestern pond turtle	▪ Same references as listed with Objective WILD-4.2.1.
Goal WILD-5: Prioritize multi-species and multi-resource benefits.	See below	See below	See below
Objective WILD-5.1: Acquire, protect, restore, and/or enhance habitat that provides multi-species benefits within the GAI in advance of transportation project impacts.	Sub-Objective WILD-5.1.1: Prioritize mitigation to provide benefits to special-status species that may co-occur with the species of mitigation need in key areas and that will provide functional lift to other special-status species within the GAI. Sub-Objective WILD-5.1.2: Identify SHS right-of-way areas where enhancement efforts may benefit pollinators, as well as the species of mitigation need. Sub-Objective WILD-5.1.3: Align with LCP ESHA requirements to prioritize preservation, restoration, and/or enhancement actions that provide a functional lift to the ESHA and their resource values, when feasible.	▪ northwestern pond turtle	▪ Same references as listed with Objective WILD-4.2.1.

^a This column includes species of mitigation need that could benefit from these objectives.
^b More information on these plans is provided in Chapter 3, *Relevant Plans, Policies, and Regulations*, and Chapter 4, *Existing Mitigation Opportunities*.
^c As identified in recovery plans and other pertinent documents (see Table 7-2).

Figure 7-2. State Wildlife Action Plan Conservation Target Habitats



7.8 Summary

Caltrans anticipates that future SHOPP and STIP-eligible transportation projects may be conditioned by CDFW, FWS, and NMFS to address the pressures and stressors that threaten species of mitigation need within the GAI. The pressures and stressors include:

- Habitat loss, fragmentation, and degradation;
- Invasive species;
- Disease and predation;
- Climate change, drought, wildfire, and sea-level rise; and
- Contaminants.

Caltrans will seek to align advance mitigation project scopes with conservation goals and objectives that address the identified pressures and stressors, thereby aligning advance mitigation efforts with regional conservation efforts.

Regional conservation goals and objectives provide a framework for scoping compensatory mitigation credit establishment that would successfully offset future transportation project impacts on plant and wildlife resources by creating functional lift or conservation benefit and by mitigating the pressures and stressors on wildlife resources within the GAI. To summarize Table 7-3:

- **Goals WILD-1 and WILD-2** seek to conserve existing habitat for species of mitigation need within the GAI and increase connectivity between blocks of habitat. The objectives to fulfill these goals are acquisition, protection, restoration, and/or enhancement of land. Caltrans intends to prioritize efforts that provide the greatest functional lift for the species of mitigation need and that provide a conservation benefit in terms of size, connectivity, quality, and contribution to the climate resilience of habitat within the GAI. By increasing connectivity for species of mitigation need, Caltrans anticipates that co-occurring species will realize these same benefits. These goals and objectives were selected to address habitat loss, fragmentation, and degradation as well as address impacts from climate change, drought, wildfire, and sea-level rise. Further, Caltrans anticipates that actions completed through restoration, enhancement, and/or preservation may also provide opportunities to address invasive species, predation, and road-associated mortality.
- **Goal WILD-3** seeks to support climate resiliency for species of mitigation need habitat within the GAI. The primary objectives are to reduce the effects of climate change and sea-level rise on these species by increasing the protection and functionality of land that is identified as crucial for climate resiliency, including corridors that allow the wildlife species to migrate from areas of low climate resilience into areas with higher resilience and addressing the climate change-related threat from invasive species. In addition to addressing climate change and sea-level rise in general, these goals and objectives address habitat loss, fragmentation, and degradation as well as invasive species.

- **Goal WILD-4** seeks to decrease mortality of species of mitigation need from known immediate and ongoing threats to individuals or populations by protecting native vegetation, reducing conditions that favor predators and competitors, and protecting the species of mitigation need from road-associated mortality. These objectives address issues related to habitat loss, fragmentation, and degradation as well as threats from invasive species and predation.
- **Goal WILD-5** seeks to guide advance mitigation scoping to prioritize multi-species and multi-resource benefits to maximize ecological benefits within the GAI. Advance mitigation provides the opportunity to maximize Caltrans' benefit to conservation within the GAI, including to species other than the species of mitigation need and other land management objectives. Goal WILD-5 was developed to include conservation for multiple species.

Each of the goals and objectives have sub-objectives intended to guide advance mitigation scoping toward natural resource regulatory agencies' regional conservation goals. These sub-objectives will prompt Caltrans to incorporate priority habitats or corridors into advance mitigation scopes and address important threats within the area through an advance mitigation project. This concept is an important way Caltrans seeks to use advance mitigation scoping to set the stage, once funding approval is received, for specific advance mitigation projects that will provide a functional lift for the species of mitigation need and maximize conservation benefits from mitigation within the GAI.

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8. AQUATIC RESOURCES CONSERVATION GOALS AND OBJECTIVES

Caltrans' primary objective for aquatic resources is to avoid and minimize all impacts on fish, wetlands, non-wetland waters, vernal pools, and riparian habitat from Caltrans transportation projects within the GAI. However, when avoidance and minimization are insufficient or infeasible, compensatory mitigation may be used to offset impacts. Credits or values established through SHC § 800.6(a)-authorized advance mitigation projects offer the unique opportunity to consolidate needed compensatory mitigation. This consolidation helps to provide strategically placed and environmentally sound compensatory mitigation options, including restoration, enhancement, and preservation, and to provide an improved environmental outcome that may not be available through the usual transportation project-by-project approach to compensatory mitigation.

Caltrans seeks to align its advance mitigation projects with natural resource regulatory agencies' conservation goals and objectives and, therefore, contribute to an improved environmental outcome within the GAI. With this in mind, this chapter presents Caltrans' understanding of natural resource regulatory agencies' regional conservation goals and objectives that could be applied to advance mitigation projects undertaken within the GAI to offset forecast impacts from SHOPP transportation projects.

The goals and objectives developed in this chapter are intended to guide advance mitigation scoping decisions toward those choices that will provide for the greatest environmental benefit available through the advance mitigation planning and delivery processes. Such advance mitigation projects undertaken by Caltrans should contribute to aquatic resource, vernal pool, and riparian habitat restoration and enhancement, and should yield compensatory mitigation usable by future transportation projects, as specified in SHC § 800.¹ Compensatory mitigation usable by future transportation projects should be expressed in standard units or terms recognized by the natural resource regulatory agencies.

Information presented in this chapter is for advance mitigation project scoping purposes only. Transportation projects must still go through environmental and permitting processes, and must demonstrate avoidance and minimization efforts prior to compensation.

8.1 Approach

For the purposes of this RAMNA, conservation goals and objectives are a broad set of regional natural resource sustainability goals and objectives that are consistent with both regulatory requirements and conservation science.

¹ Pursuant to SHC § 800.9, to the maximum extent practicable, the information required for an RCIS is presented in this RAMNA. During CDFW's review of an RCIS, CDFW determines whether the goals and objectives presented in the RCIS are consistent with FGC § 1852, subdivision (c)(8).

To determine the aquatic resource conservation goals and objectives applicable to the GAI:

- First, in Section 8.2, Caltrans identifies natural resource regulatory agencies with the authority to condition transportation projects with aquatic resource-related and riparian habitat compensatory mitigation within the GAI.
- Then, in Section 8.3, Caltrans summarizes information for wetland, non-wetland waters, riparian habitat, and fish species addressed by the assessment.
- Next, in Sections 8.4, 8.5, and 8.6, for aquatic resources, Caltrans identifies:
 - Federal and state policies, and binding and non-binding regional conservation and land management plans;
 - Current and projected pressures and stressors, including climate change and sea-level rise, for which there is a transportation nexus;
 - Opportunities to enhance conservation benefits through advance mitigation projects; and
 - Opportunities to provide co-benefits, where possible, to water quality, groundwater recharge, and species that require aquatic habitats.
- Last, Caltrans analyzes the aforementioned information in relation to the transportation-related activities that could potentially affect aquatic resources and riparian habitats, and the potential range of compensatory mitigation that could satisfy a transportation project condition associated with the activities.

The result of this analysis is a framework of conservation goals and objectives for use in advance mitigation project scoping (Section 8.7).

8.2 Natural Resource Regulatory Agencies with Aquatic Resources Oversight

Table 8-1 lists the natural resource regulatory agencies with the authority to condition transportation projects delivered within the GAI with aquatic resource-related compensatory mitigation. Terrestrial special-status wildlife species are known to use streams, wetlands, and other aquatic resources that are regulated by federal and state agencies specific to those habitat types. This RAMNA identifies goals and objectives for terrestrial species separately in Chapter 7, *Wildlife Resources Conservation Goals and Objectives*.

Table 8-1. Natural Resource Regulatory Agencies with the Authority to Approve Aquatic Resource Compensatory Mitigation Credits (or Values)

Agency	Summary
CCC	CCC protects the coast by planning for and regulating new development in the coastal zone pursuant to the policies of the Coastal Act. Through the issuance of CDPs, CCC implements the policies of the Coastal Act, including protecting sensitive resources (for example, wetlands, waters, ESHAs), water quality, public access to the coast, and more, and requires mitigation for unavoidable impacts on these resources. CCC also coordinates with local governments in developing and certifying LCPs, which allow local governments to assume the authority to issue CDPs within their jurisdiction. The agency also provides comprehensive guidance to local governments and project applicants regarding planning for and adapting to climate change and sea-level rise. The CCC, agency, or authorized local government with a certified LCP also determines how an ESHA is defined.
CDFW	CDFW oversees the conservation, protection, and management of fish, wildlife, native plants, and the habitats necessary for biologically sustainable populations of those species in California. California law (FGC § 1602) also requires an entity to notify CDFW prior to commencing any activity that may substantially divert or obstruct the natural flow of any river, stream, or lake; substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or deposit or dispose debris, waste, or other materials containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. CDFW issues agreements to project proponents under its authorities, including Lake and Streambed Alteration Agreements, approvals of conservation and mitigation banks, approvals of MCAs and RCISs, and NCCP permits. Under the CESA, CDFW also has authority to issue Incidental Take Permits for state-listed species, and Consistency Determinations for state and federally listed species. Additionally, CDFW's Environmental Review and Permitting, Conservation and Mitigation Banking, NCCP, and RCIS programs implement sections of the FGC, Division 1 of Title 14 of the California Code of Regulations, et seq. These programs help fulfill CDFW's mission to manage California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values.
Corps	It is the mission of the Corps' Regulatory Program (33 CFR Part 230 and Parts 320–332) to protect the nation's aquatic resources and navigation capacity while allowing reasonable development through fair, flexible, and balanced permit decisions. The Corps is responsible for administering laws for the protection and preservation of aquatic resources pursuant to Section 10 of the Rivers and Harbors Act of 1899 and CWA Section 404. Pursuant to the Rivers and Harbors Act, all work or structures in, over, or under navigable WOTUS require Corps authorization. The Corps authorizes, under CWA Section 404, the discharge of dredged or fill material into WOTUS, including wetlands. When the Corps' civil works projects are proposed to be used or altered by another entity, CWA Section 408 permission (33 USC 408 or Section 14 of the Rivers and Harbors Act of 1899, as amended) must be obtained in addition to the CWA Section 404 authorization. According to the 2008 mitigation rule, in general it is the preference of the Corps to use the following order of priority for mitigation: mitigation bank, in-lieu fee program, permittee-responsible mitigation under the watershed approach, in-kind/on-site permittee responsible mitigation, and out-of-kind/off-site permittee-responsible mitigation, but the preference may change based on what is environmentally preferable.

Agency	Summary
EPA	EPA has authority under the CWA (33 USC § 11251–1357) to restore and maintain the chemical, physical, and biological integrity of the nation’s waters. EPA and the Corps jointly implement the CWA Section 404 program, which regulates discharge of dredge or fill material into WOTUS. Federal authorizations also need to be reviewed for compliance with CWA Section 401. EPA has been delegated the responsibility of implementing CWA Section 401 for projects on tribal land, unless EPA has delegated 401 authority to a recognized tribe.
FWS	FWS has jurisdiction over a broad range of fish and wildlife resources. FWS does not, however, have jurisdiction over anadromous fish. FWS authorities related to these resources are codified under multiple statutes, including, but not limited to, the FESA. Most statutes give FWS an advisory role in mitigation. However, if a non-federal entity applies for an incidental take permit for a listed animal species, Section 10(a)(2)(b) of the FESA requires that the impact of any incidental take be minimized and mitigated to the maximum extent practicable. Section 7(a)(1) of the FESA also requires all federal agencies to use their authorities to conserve listed species. Many federal agencies have developed programs to include mitigation as part of the Section 7(a)(2) consultation on their proposed actions to partially fulfill this Congressional mandate. In May 2023, FWS issued a Mitigation Policy that builds upon the guidance in the 1981 Mitigation Policy for recommendations and requirements on mitigating adverse impacts of land and water developments on fish and wildlife, and an FESA Compensatory Mitigation Policy that adopts mitigation principles established in the FWS Mitigation Policy establishes compensatory mitigation standards, and provides guidance for the application of compensatory mitigation through implementation of the FESA. Conservation banking can assist federal and non-federal participants in the Sections 7 and 10 processes. In May 2003, FWS issued comprehensive federal guidelines designed to promote conservation banks as a tool for mitigating adverse impacts on species; the guidelines foster national consistency by standardizing establishment and operational criteria. Many activities conducted under Sections 7 and 10 of the FESA result in adverse effects on listed species, including habitat loss or modification. One way to offset these types of impacts is to include in the project design a plan that involves the restoration and/or protection of similar habitat on and/or off site. Purchasing credits in conservation banks is one method of protecting habitat on or off site.
NMFS	NMFS has jurisdiction over marine species listed as threatened or endangered under the FESA. Federal agencies must consult with NMFS to ensure that their actions do not jeopardize the continued existence of FESA-listed species, or result in the destruction or adverse modification of designated critical habitat. NMFS also manages and conserves wildlife and fisheries resources in the marine and estuarine environment under the Magnuson-Stevens Fishery Conservation and Management Act. Federal agencies must consult with NMFS on any action that might adversely affect EFH. NMFS will advise federal agencies to avoid, minimize, mitigate, or otherwise offset adverse effects on EFH. Magnuson-Stevens Fishery Conservation and Management Act EFH consultation can be done in tandem with FESA consultation. NMFS protects marine mammals under the Marine Mammal Protection Act, with the exception of sea otters, walruses, manatees, and polar bears, which are managed by FWS. With some exceptions, the Marine Mammal Protection Act prohibits the take of marine mammals, including harassment, hunting, capturing, collecting, or killing, in U.S. waters and by U.S. citizens on the high seas.

Agency	Summary
Water Boards	The Porter-Cologne Act governs water quality regulation in California and gives the Water Boards the authority to condition projects, through waste discharge requirements, to protect water quality and the beneficial uses of waters of the state, as identified in Basin Plans. Basin Plans, adopted by RWQCBs, incorporate the beneficial use designation of surface waters of the state and must consider (among other uses) the use and value of water for protection and propagation of fish, shellfish, and wildlife. The Water Boards have been delegated the responsibility of implementing CWA Section 401, which regulates the discharge of pollutants, such as dredged and fill material, into WOTUS. The Water Boards may determine that compensatory mitigation is necessary to offset unavoidable impacts on aquatic resources. Compensatory mitigation can be achieved through purchase of credits as outlined in the <i>State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State</i> (SWRCB 2019b). Projects that occur within one region are regulated by that regional board, whereas projects that cross regions (or have statewide significance) are regulated by SWRCB.

8.3 Aquatic Resources and Species of Mitigation Need

An overview of aquatic resources was provided in Chapter 2, *Environmental Setting*, and is summarized below. The GAI overlaps, in part or in whole, with the HUC-8 boundaries listed in Table 8-2.

8.3.1. Wetlands and Non-wetland Waters

The term “major stream system” in the *Water Quality Control Plan for the Central Valley Region* (Central Valley RWQCB 2019) or the *Water Quality Control Plan for the North Coast Region* (North Coast RWQCB 2025) does not refer to any streams that occur within the GAI. However, based on their size and number of tributaries, the Smith River, Winchuck River, Klamath River, Redwood Creek, Trinity River, Upper Sacramento, and Rogue River can be considered major stream systems of the GAI. Additionally, there are hundreds of named and unnamed tributaries, the majority of which flow into the Pacific Ocean directly, that are influenced by rain and snowmelt runoff.

Aquatic habitat types with the potential to occur within the GAI are mapped in Appendix H, *Aquatic Resource Locations*. Based on the SAMNA Reporting Tool’s wetlands and waters layer, the GAI has a total of 23,164 acres of aquatic habitat (Table 2-3), consisting of 56 wetland and non-wetland waters habitats listed in Table 2-6 (Caltrans 2025b, 2025c). Sixteen beneficial uses that support the preservation and enhancement of wildlife habitat and aquatic resources within the GAI also align with the AMP’s objective to contribute to an improved environmental outcome through transportation project mitigation and are relevant to this RAMNA (Table 2-5).

Table 8-2. Named Aquatic Features within the GAI with Documented Aquatic Resource Goals and Objectives, by HUC-8

Chetco HUC-8 17100312	Lower Klamath HUC-8 18010209	Smith HUC-8 18010101	Trinity HUC-8 18010211
▪ Smith River ▪ Winchuck River	▪ Klamath River ▪ Redwood Creek ▪ Rogue River ▪ Smith River ▪ Trinity River	▪ Klamath River ▪ Rogue River ▪ Smith River ▪ Winchuck River	▪ Klamath River ▪ Redwood Creek ▪ Shasta Bally ▪ Trinity River ▪ Upper Sacramento

Source: North Coast RWQCB 2025, Central Valley RWQCB 2019

8.3.2. Riparian Habitat

Riparian habitat is discussed in Section 2.19. Because no detailed riparian GIS layer is currently available, riparian habitat information was excerpted from the SAMNA's vegetation layer. The riparian habitats identified within the GAI include montane riparian (Table 2-3).

8.3.3. Fish Species of Mitigation Need

Two threatened and endangered fish species were selected as fish species of mitigation need (Section 1.5.3) and are described below.

Eulachon

Eulachon (Southern DPS) (*Thaleichthys pacificus*) is both federally and state threatened. It is an anadromous smelt with range limits reaching as far south as the Mad River in Northern California. The southern DPS is the only threatened listing that exists for this species, and additional populations exist further up the Pacific Coast towards Alaska. Although eulachon spawn in lower reaches of freshwater rivers and streams, as an anadromous species they spend over 95 percent of their life history in the ocean, migrating upstream to spawn. Eulachon are known to spawn over coarse sand and fine gravel beds with flowing water, and have been observed as far upstream as 46 miles inland. This species is known to migrate as early as December with peak spawning in March and April. Studies have suggested that the southern DPS spawn only once in their lifetime, while the remainder of the species can spawn in their second through fourth years, and rarely during a fifth spawning season. Most individuals tend to spawn and die after their third year. Changing ocean conditions, river and stream damming, and water diversions have led to the decline in population abundance and spawning success of this species in California (CDFW 2010).

Southern Oregon/ Northern California Coast Coho Salmon

Coho salmon (*Oncorhynchus kisutch*) are anadromous fish, which are known to migrate from the sea into freshwater to spawn eggs in the gravel of stream beds (Sandercock 1991). The species includes a variety of DPSs across North America from California to Alaska. The Southern Oregon/Northern California Coast coho salmon DPS is a distinct population unit that is both federally and state threatened. Coho salmon juveniles can be found in rivers, estuaries, and wetlands for at least one summer before migrating to saltwater to feed, grow, and mature, before returning to spawn in freshwater. Southern Oregon/Northern California Coast coho salmon are susceptible to a variety of factors that impact their life history and habitat viability, including streambed alteration from construction, erosion and natural disasters degrading habitat, and agricultural runoff (Bisson et al. 1987, CDFW 2004, and Spence et al. 1996).

8.4 Regional Conservation Efforts

Caltrans' understanding of natural resource regulatory agency conservation goals and objectives is that they are generally designed to protect aquatic resources. Several conservation and land management plans listed in Table 3-1, relevant to the aquatic resources, identify key habitats, specific designated waters, or areas for aquatic resource enhancement and restoration. For example, some LCPs include ESHAs with aquatic resource attributes. Other plans identify key qualities, such as water quality, that are essential for aquatic resource enhancement and restoration. Still other plans name specific National Hydrologic Dataset features for aquatic resource enhancement and restoration. Additionally, the documents include strategies for aquatic resource protection and measures to address specific known, ongoing threats to aquatic resources. These conservation and land management plans are presented in Table 8-3.

Table 8-3. Documents Identifying Aquatic Resource Goals and Objectives within the GAI

Document	Reference	Information Identified
Policies, Procedures, Guidelines, and Water Quality Plans	See below	See below
<i>2008 Final Compensatory Mitigation Rule</i>	<i>73 Federal Register</i> 19593	This is the Corps' ruling to establish standards and criteria for the use of all types of compensatory mitigation, including on- and off-site permittee-responsible mitigation, mitigation banks, and in-lieu fee mitigation to offset unavoidable impacts on WOTUS. It recognizes that consolidating mitigation may be environmentally preferable for linear projects (because advance, or at least concurrent, compensatory mitigation is environmentally preferable but not always possible to achieve) (Preamble and 33 Section 332.3).
<i>2022 Fish Passage Annual Legislative Report</i>	Caltrans 2022	In compliance with SHC § 156, this report identifies priority fish passage barriers on the SHS. Priorities are determined through FishPAC collaboration and are based on the following: ▪ Species diversity – listed threatened and endangered salmon and steelhead species currently or historically present in the watershed ▪ Habitat – suitable habitat quality and quantity above each crossing, relative to recovery of threatened and endangered species ▪ Best professional knowledge – professional, discretionary value for science-based information known to fisheries and engineering subject matter experts Subject matter experts include CDFW, NMFS, FWS, CCC, CalTrout, Pacific States Marine Fisheries Commission, and other local fish passage advocates.
<i>303(d) List of Impaired Water Bodies</i>	SWRCB 2024	Section 303(d) of the CWA requires that every 2 years, each state submit to EPA a list of rivers, lakes, and reservoirs in the state for which pollution control or requirements have failed to provide for water quality. Based on a review of this list and its associated TMDL Priority Schedule (Appendix G in this document), 13 waterbodies are listed as impaired within the GAI. Of these 13 waterbodies, 4 have an established EPA-approved TMDL.

Document	Reference	Information Identified
<i>California Coastal Act of 1976</i>	CCC 2022	The California Coastal Act is the primary law that governs decisions of the CCC. It outlines, among other things, standards for development within the coastal zone. The California Coastal Act requires mitigation for impacts on coastal habitats and other types of coastal resource impacts—for example, visual impacts—that are outside the scope of this document. The CCC regulates potentially impactful projects within the coastal zone, primarily through the issuance of CDPs. In coastal local jurisdictions where the CCC has certified an LCP, the local government assumes CDP authority within its jurisdiction (with certain exceptions, such as some coastal wetlands, where the CCC retains original jurisdiction). LCPs are used by local governments to guide development in the coastal zone in coordination with the CCC. LCPs that overlap the GAI are listed in Appendix D, Local Coastal Programs
<i>California Wetlands Conservation Policy</i>	Executive Order W-59-93	The “No Net Loss Policy” for wetlands aims to “[e]nsure no overall net loss and achieve a long-term net gain in the quantity, quality, and permanence of wetlands acreage and values in California in a manner that fosters creativity, stewardship and respect for private property.”
<i>Definition and Delineation of Wetlands in the Coastal Zone</i>	CCC 2011	This identifies wetland delineation procedures and the use of a one-parameter approach for identifying a wetland.
<i>National Wetlands Mitigation Action Plan</i>	EPA and Corps 2002	This is an EPA and Corps comprehensive, interagency document to further achievement of the goal of no net loss of wetlands. The goals and objectives of the <i>National Wetlands Mitigation Action Plan</i> were incorporated into the 2008 Final Compensatory Mitigation Rule, which was updated in 2015 and includes the no net loss policy.
<i>Final 2015 Regional Compensatory Mitigation and Monitoring Guidelines for South Pacific Division</i>	Corps 2015	This provides guidelines for compensatory mitigation site selection. A watershed approach should be used when selecting sites to establish compensatory mitigation.
<i>State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State</i>	SWRCB 2019b	This creates a State of California wetland definition, a framework for determining jurisdiction of state wetlands, wetland delineation procedures, and application procedures for discharges of dredge and fill material to waters of the state.

Document	Reference	Information Identified
<i>Water Quality Control Plan for the North Coast Region</i>	North Coast RWQCB 2018	This identifies water quality objectives and beneficial uses for the North Coast.
<i>Water Quality Control Plan (Basin Plan) for the Central Valley Region</i>	Central Valley RWQCB 2019	This identifies water quality objectives and beneficial uses for the Central Valley Sacramento River Basin.
Conservation and Land Management Documents	See below	See below
California Essential Habitat Connectivity Project (CEHC)	Spencer et al. 2010	This identifies Natural Landscape Blocks and Essential Connectivity Areas within the North Coast Ecoregion Sections, which overlap the GAI. There are 24 in the North Coast Ecoregion Section.
SWAP	CDFW 2025	The GAI overlaps one of the SWAP's defined geographic provinces: North Coast and Klamath Province: In this province, both aquatic species of mitigation need are considered Species of Greatest Conservation Need.
Redwood National and State Parks General Management Plan	USDOI 2000	This general management plan is a joint management effort with State and National parks, that comprises of all state and federal units – including Redwood National, Jedediah Smith Redwoods, Prairie Creek Redwoods, and Redwood Heritage State Wilderness state and national parks. It includes restoration initiatives for state and national units, rehabilitation for second-growth forest, and landform restoration and improvements of watershed headwater streams throughout tributaries, estuaries, and the sea.
Klamath National Forest Land and Resource Management Plan (2010 Update)	USDA 1995	Klamath National Forest management plan that includes goals to: - maintain 20 pieces of large wood (40 cubic feet or larger) per 1,000 lineal feet within 3rd to 5th order channels, or as identified in the ecosystem management process at the watershed level; - restore riparian vegetation to provide summer and winter thermal regulation within the riparian area; and - improve anadromous fish habitat to meet the following conditions: less than 15% of the stream bottom is composed of fine sediment and less than 20% of stream riffles are embedded (3rd to 5th order streams).

Document	Reference	Information Identified
Rogue River National Forest Land and Resource Management Plan	USFS 1990	USFS' management plan for the Rogue River National Forest. It includes goals to: • enhance characteristics of riparian areas and improve water quality, wildlife habitat, and fish habitat near or within riparian ecosystems; • provide habitat for viable populations of all existing native vertebrate wildlife species; • protect aquatic ecosystems that support anadromous and resident fish; • enhance ecosystem function to provide for long term integrity and productivity of biological communities; and • improve riparian and streamside ecosystems.
Six Rivers National Forest Land and Resource Management Plan	USFS 1995a	USFS' management plan for the Six Rivers National Forest. It contains guidelines that prioritize the Smith River, Klamath River tributaries, Trinity River tributaries, Mad River tributaries, and North Fork Eel River for restoration. It includes a goal to maintain habitat characteristics consistent with the Habitat Capability Model within 300 feet around western pond turtle occupied pond and stream habitats. It also prioritizes salmonid spawning and rearing habitat for maintenance, restoration of fish habitat, and riparian restoration.
Shasta-Trinity National Forest Land Resource Management Plan	USFS 1995b	USFS' management plan for the Shasta-Trinity National Forest. It describes a direction to manage inner gorge lands as protective zones for riparian areas. It lists northwestern pond turtle as an aquatic dependent wildlife species with current management direction to manage riparian reserves. It outlines width requirements for riparian reserves: • a minimum of 150 feet along perennial streams and lakes; • a minimum of 300 feet along all perennial fish-bearing streams; and • a minimum 100 feet along all seasonally flowing or intermittent streams and wetlands less than 1 acre.
Northwest California Integrated Draft Resource Management Plan and Environmental Impact Statement	USDOI 2024	BLM's resource management plan covering the Arcata and Redding Field Offices that is currently in development. Only the Arcata Field Office is in the GAI. The plan requires buffers of 300 feet on either side of the channel in fish-bearing streams, 150 feet on either side of the channel in non-fish-bearing streams, and a 100-foot buffer on either side of the stream channel in intermittent streams and landslide prone areas.

Document	Reference	Information Identified
Special-status Species and Sensitive Habitat Documents	See below	See below
Recovery Plan for the Southern Distinct Population Segment of Eulachon (<i>Thaleichthys pacificus</i>)	NMFS 2017	This is NMFS' recovery plan for eulachon. The recovery plan objectives include ensuring subpopulation viability, eliminating the severity of threats, and providing opportunities for interchange of genetic material between and within subpopulations.
Final Recovery Plan for the Southern Oregon/ Northern California Coast Evolutionarily Significant Unit of Coho Salmon (<i>Oncorhynchus kisutch</i>)	NMFS 2014	This is NMFS' recovery plan for the SONCC ESU of coho salmon. The recovery plan objectives include: • a low risk of extinction with a geometric mean of wild adults over 12 years exceeding the low risk threshold; • a positive population growth rate • widely distributed populations in which annual within-population juvenile distribution is greater than 80 percent of habitat; • low hatchery impacts on wild fish in which the proportion of hatchery-origin adults is less than 0.05; and • life-history diversity.
Recovery Strategy for California Coho Salmon	CDFW 2004	This is CDFW's recovery plan for coho. The plan includes goals that focus on increasing habitat and total population size. Recovery criteria include maintenance and improvements to populations and distribution by increasing quantity of spawning adults, while enhancing and restoring habitat throughout species range. An additional goal includes population recovery to the point of reintroducing tribal and commercial fishing.
Review of 2024 Ocean Salmon Fisheries	NOAA 2025	This is NMFS' fisheries management plan for salmonids on the west coast. The conservation goal for coho salmon in the GAI is an exploitation rate no more than 16 percent adult for the Trinity River component and 15 percent for all other components of the SONCC coho ESU. California commercial salmon fishing was closed from 2023-2025.

Document	Reference	Information Identified
Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon	FWS 2005b	Regions within the GAI covered by this plan include portions of Northern California Coast, Northern California Coast Ranges, and Klamath Mountains. It includes goals and objectives to: • promote natural ecosystem processes and functions by protecting intact vernal pools and vernal pool complexes; • prevent additional threats to vernal pools and listed species from emerging; • maintain hydrology of vernal pools and vernal pool complexes; and • control invasive nonnative and native plants.

8.5 Pressures and Stressors

Pressures and stressors refer to environmental trends or physical, chemical, or biological factors or conditions that affect aquatic resources. According to the SWAP (CDFW 2025), a pressure is defined as “an anthropogenic (human-induced) or natural driver that could result in changing the ecological conditions of the target. Pressures can be positive or negative depending on intensity, timing, and duration. Negative or positive, the influence of a pressure to the target is likely to be significant.” Additionally, stress is defined in the SWAP as “[a] degraded ecological condition of a target that resulted directly² or indirectly from negative impacts of pressures (e.g., habitat fragmentation)” (CDFW 2025). The Corps defines human stressors as human-caused sources of disturbance in an ecosystem, such as roads, urban areas, and agricultural lands (Corps 2015).

The documents in Table 8-3 identify multiple pressures and stressors on aquatic resources within the GAI where hydrology, land use and management, and climate intersect. These pressures and stressors were evaluated in relation to the types of direct and indirect effects that could result from transportation projects funded through SHOPP and could benefit from in-kind mitigation purchased or established through an advance mitigation project. When designating an area as an ESHA, the CCC and LCPs also consider the pressures and stressors discussed below.

8.5.1. Habitat Loss, Fragmentation, and Degradation

Urbanization and other anthropogenic factors such as roads, poor grazing practices, barriers, and habitat invasion by nonnative species have led to the loss and degradation of aquatic resources. Additionally, the expansion of roads and urbanization have resulted in habitat fragmentation, a decrease in connectivity between habitats that support different life stages, and the contribution of nonpoint source pollution from chemicals and toxins. Roads have affected local hydrological conditions by changing sheet flow and altering water movement in drainages (CDFW 2016, 2025). Within the GAI, most urbanization and development have occurred along the northwestern coast (Figure 2-7).

Eulachon depend on safe and unobstructed migratory corridors from the ocean through estuarine and riverine habitats to reach spawning grounds and return to the ocean (NOAA 2011). Eulachon avoid polluted waters, which is a self-determining form of habitat fragmentation and loss. However, eulachon can take up and store pollutants in their spawning water, which is a result of habitat degradation (NOAA 2011). Damming and polluting aquatic systems and habitat that eulachon rely on directly degrade and fragment habitat leading to habitat loss, over-competition, over-harvesting, and population decline both in quantity and survivability due to reduction of genetic variability (CDFW 2010).

SONCC coho salmon also depend on safe and unobstructed migratory corridors. SONCC coho have experienced loss of habitat due to streambed alteration activities from construction like damming rivers, building roads, and constructing channels (Bisson et al.

² Direct effects occur at the time of construction and indirect effects are reasonably certain to occur, but later in time.

1987). Channelization of streams also disrupts aquatic ecosystem processes downstream from the direct streambed alteration and can increase flooding, channel erosion, and even habitat destruction (Booth 1991). Excessive sediment from roads, landslides, and erosion resulting from climate change and induced natural disasters result in habitat degradation and ultimately habitat loss (CDFW 2004).

8.5.2. Invasive Species

Transportation projects and associated ongoing maintenance activities have the potential to introduce and/or spread nonnative, invasive species. When invasive, nonnative species enter an ecosystem, they can disrupt the natural balance, resulting in a reduction of biodiversity, degradation of habitats, alteration of native genetic diversity, shifting of wetland type, disruption of aquatic and terrestrial connectivity, and further threats to already endangered or threatened natural resources (CDFW 2025).

Invasive plant species that affect riparian systems within the GAI include giant reed, leafy spurge, cape ivy (*Delairea odorata*), common ivy (*Hedera helix*), ailanthus tree (*Ailanthus altissima*), bigleaf periwinkle (*Vinca major*), butterfly bush (*Buddleja davidii*), parrot feather (*Myrophyllum aquaticum*), watermilfoil (*spicatum*) and Himalayan blackberry (*Rubus armeniacus*) (Cal-IPC 2026). Invasive animal species that can damage aquatic ecosystems within the GAI include but are not limited to bullfrogs, largemouth bass, and bluegill (CDFW 2025).

The degree to which invasive species play a role in limiting coho salmon or eulachon populations within the GAI is not well understood; however, invasive species have high potential to negatively affect coho salmon through competition, habitat loss, and predation (CDFW 2025).

8.5.3. Altered Hydrology, Geomorphology, and Water Quality

Water quality and hydrology can be directly altered by physical barriers such as culverts, dams (including cofferdams), dikes, trash racks, bridges, roads, canals, and other human-made infrastructure, which can have effects both upstream and downstream by truncating connectivity, altering sediment transport processes, altering natural flow regimes, and changing water surface elevations, adding to the downstream loss of habitat. Stable geomorphology and sediment transport are critical to maintaining healthy streams so that degradation and aggradation do not destroy habitats in the stream, riparian, and wetland habitats downstream. The loss of wetlands can result in increased flooding and decreased water quality in downstream tributaries. Water diversions, in-channel construction, riparian vegetation reduction, agriculture, alteration of streambed and banks, components of timber management, and point and nonpoint source pollution have affected the aquatic ecosystem by altering historical flooding regimes, erosion, and deposition of sediments that maintain floodplains (CDFW 2025).

Sediment related contaminants, animal waste runoff, and agricultural runoff can significantly degrade water quality (Spence et al. 1996; Knutson and Naef 1997; CDFW 2004) directly impacting Southern Oregon/Northern California Coast coho salmon life history and habitat.

Vernal pool and seasonal wetland hydrology may be altered by changes to surface and subsurface flow, depending on topography, precipitation, and soil types (FWS 2005). Additionally, port and shipping terminals pose risk of leaks, spills, pipeline breakages impacting water quality through direct in-water pollution (NOAA 2011). Pollutants associated with roads and industrial activity can directly negatively impact water quality.

These stressors affect coho salmon by reducing reproductive rates for adult coho salmon. Flow reductions through water use also increase the likelihood for fish stranding and contaminant concentration and can cause tissue damage to coho salmon (NMFS 2014). One of the most widespread stressors for coho salmon is increased water temperature, which regulates feeding, spawning, growth, and migration. Proper levels of dissolved oxygen, pH, and ammonia can all be shifted to levels dangerous for coho salmon through agricultural runoff and sedimentation (NMFS 2014).

Eulachon are susceptible to accumulation of sublethal concentrations of contaminants in agricultural runoff, which directly affect the survivability of populations by increasing stress, predisposition to disease, delaying development, and disrupting physiological processes. Adult eulachon take and store pollutants from their natal rivers and are known to avoid polluted waters when possible (Smith and Saalfeld 1955; Rogers et al. 1990). Small fish are more likely to experience greater stress from avoiding trawling activities due to their smaller size (Broadhurst et al. 2006).

In many river systems, the creation of dikes, levees, tide gates, and culverts has affected water quality, geomorphology, and hydrology directly and/or indirectly. Removing or altering hydrologic connections can negatively affect the ability of coho salmon to migrate to and from their natal streams. This, in turn, reduces overall reproductive success through a reduction in egg development, increased risk of mortality before spawning, and direct loss of spawning habitat (NMFS 2014). Other aquatic species are also affected by the loss of hydrologic connectivity.

8.5.4. Climate Change, Drought, and Sea-level Rise

Section 2.4 provided a brief overview of the GAI's climate and available planning-level predictions for climate change for the region. In the next 30 years, the climate is expected to change. Expected changes include higher average winter temperatures, reduced annual snowpack, and increased fire frequency and intensity (CDFW 2025). The lower permeability of roads can exacerbate the risks associated with flooding and erosion. Water availability and delivery is a complex issue in the west, exacerbated by cycles of drought and flood. These events are expected to increase in frequency and intensity due to climate change (Lovich et al. 2017). Climate change is expected to affect freshwater wetland habitats by reducing those away from the coast that are surrounded by upland habitat, with sea-level rise expected to flood those near the coast (CDFW 2025).

Eulachon are sensitive to changes in water quality, and high temperatures, over 10 degrees Celsius, can lead to mortality and spawning failure (Blahm and McConnel 1971). Aquatic environments are susceptible to the physical, chemical, and biological alterations caused by severe storms, drought, seasonal cycles, El Niño and La Niña events, and

decadal events, all of which can directly impact Southern Oregon/Northern California Coast coho salmon individuals and habitat (Parrish and Tegner 2001). During periods of prolonged drought, sandbars may remain inaccessible and spawning populations cannot migrate up their natal streams (Anderson 1995). Droughts can also lead to landslides, flooding, and erosion. High flows and runoff can lead to flooding which can wash out spawning areas resulting in the complete loss of eggs, stranding juveniles and smolts on the floodplain or washing them downstream to poor habitat or isolated channels and pools (CDFW 2004, Sandercock 1991, NMFS 1998)). Heavy flows from flooding can lead to erosion drastically modifying streambeds and fully terraforming aquatic systems that may take years to recover (CDFW 2004, Spence et al. 1996).

8.5.5. Wildfire Risk

Vegetation can be altered by large-scale wildfire effects from altering microclimatic regimes, increasing runoff and river discharge, and enhancing erosion and sediment inputs, transport, and deposition. Roads can exacerbate the risks associated with runoff and shifting sedimentation levels. Drought-related conditions can increase the probability and severity of wildfire, which paired together can quickly destroy aquatic habitat directly from natural disaster impacts and indirectly through wildfire firefighting emergency response (Lovich et al. 2017). Fires can also affect the physical characteristics of riparian and wetland ecosystems by transitioning vegetation from aquatic and riparian areas to uplands (Bixby et al. 2015). Fire in riparian zones can reduce canopy cover and the amount of woody debris, resulting in increased water temperatures and changes to habitat complexity in rivers or streams (CDFW 2025). Increased wildfire occurrence is likely to create additional erosion and reduce large woody debris in riverine habitats already under increased pressures from extreme drought and floods (CDFW 2021; Grantham 2018). These issues are listed as factors involved with coho salmon declines and continue to negatively affect this species (NOAA 2024).

8.6 Multi-resource Benefits

Advance mitigation planning provides Caltrans an opportunity to integrate the enhancement and/or restoration of multiple aquatic resource related values into its advance mitigation scoping to benefit California native aquatic biodiversity, aquatic and terrestrial connectivity, special-status species, wetlands, and non-wetland aquatic resources:

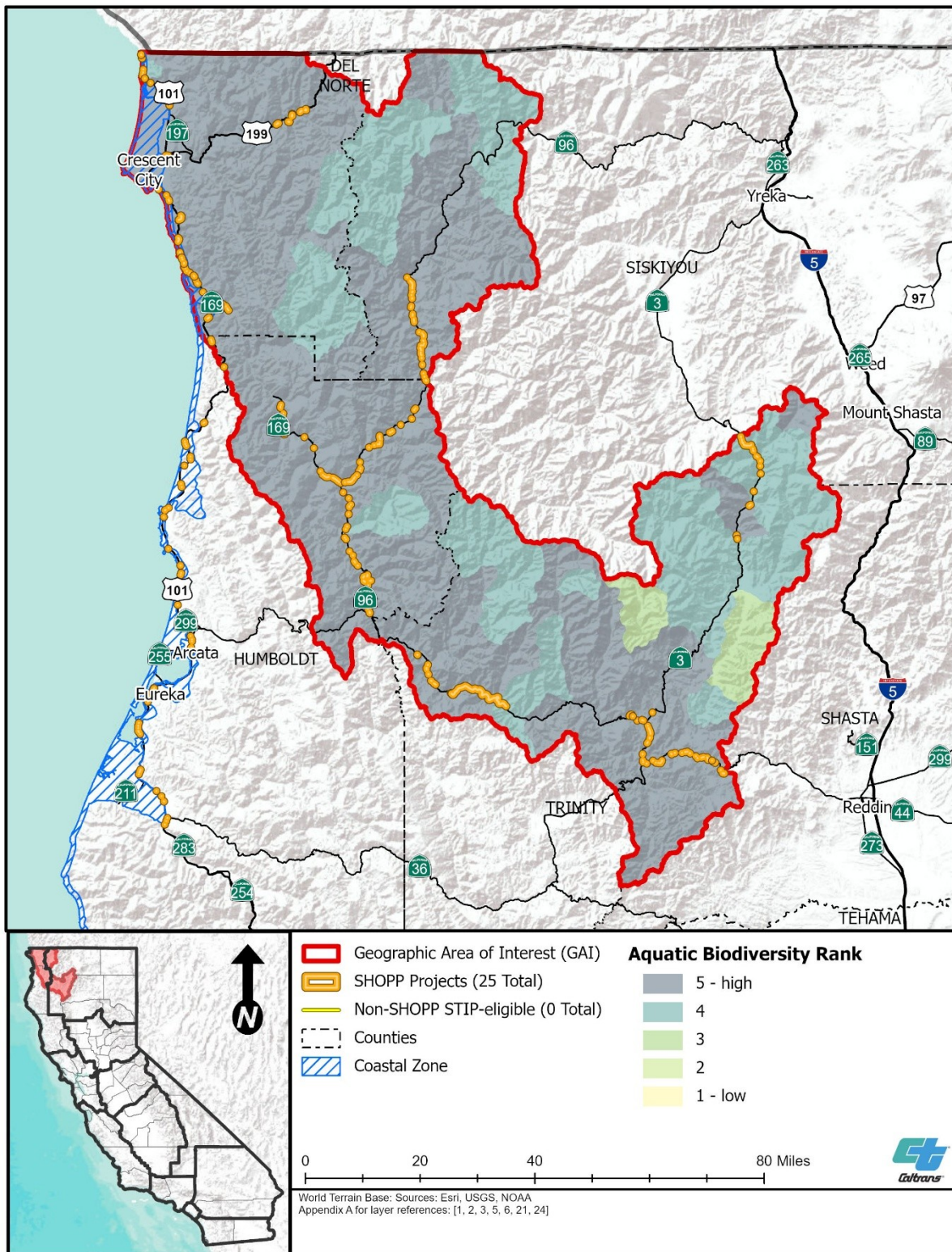
- Figure 8-1 illustrates the regional aquatic biodiversity within the GAI, as provided by CDFW's ACE GIS dataset. According to these data, high aquatic biodiversity dominates the GAI. These areas are located along the SHS with planned SHOPP projects.
- Enhancing and/or restoring the aquatic resources within the GAI is expected to contribute to biologically sustainable populations of special-status aquatic, wetland, and riparian plant and wildlife species. For example, increasing the amount, complexity, and connectivity of riparian habitat will provide additional shaded riverine aquatic habitat within the GAI that can benefit fish species such as

steelhead, green sturgeon (*Sinosturio medirostris*), and tidewater goby (*Eucyclogobius newberri*), as well as other species that use aquatic habitat such as marbled murrelet (*Brachyramphus marmoratus*), Del Norte salamander (*Plethodon elongatus*), and Sanford arrowhead (*Sagittaria sanfordii*).

- Enhancing and/or restoring the aquatic resources within the GAI is expected to support or contribute to beneficial uses of wetland and non-wetland waters of the GAI. For example, enhancement and/or restoration of wetlands adjacent to spawning habitat would likely improve spawning habitat water quality. Further, enhancement and/or restoration of wetlands adjacent to GAI waters could sequester contaminants on waters identified as 303(d) impaired and/or with an established TMDL.

Caltrans will consider aquatic resources' biodiversity values, special-status species with the potential to co-occur in aquatic habitats, ESHAs, beneficial uses of waters, and impaired waters during advance mitigation project scoping, thereby improving the conservation benefits of mitigation within the GAI.

Figure 8-1. Aquatic Biodiversity of the GAI



8.7 Advance Mitigation Conservation Goals and Objectives

The conservation goals and objectives compiled in Table 8-4 are intended to be relevant to anticipated future SHOPP transportation project compensatory mitigation needs, be consistent with the goals and objectives of natural resource regulatory agencies for aquatic resources, address pressures and stressors on aquatic resources, and support mitigation success within the GAI. Each conservation goal is supported by one or more conservation objective; objectives are more specific, measurable, achievable, relevant, and time-bound measures that align to a desired result specified by a goal. At the broad scale, these aquatic resource goals and objectives encompass ecological processes; address functions and values of aquatic systems; and prioritize regional conservation that preserves intact aquatic resources, restores aquatic function, and supports climate change planning.

Sub-objectives are included for each objective to guide Caltrans' advance mitigation scoping toward those actions that would create the greatest functional lift or conservation benefit, support long-term preservation, restore surface water flows, protect and restore hydrologic processes such as channel stability, and reduce climate change effects on aquatic resources within the GAI. Sub-objectives also capture specific measures from conservation and land management plans that address threats to aquatic resources. Several of the goals are interrelated, and many objectives could apply to more than one goal; objectives were grouped with the goal to which they most specifically aligned. Goals and objectives are generally presented in order from general to more specific.

The goals, objectives, and sub-objectives presented in Table 8-4 reflect Caltrans' intention to develop advance mitigation project scopes for in-kind mitigation and are intended to reflect the watershed approach, as practiced by natural resource regulatory agencies. The watershed approach is an analytical process through which the CCC, Corps, EPA, and Water Boards make decisions that support the sustainability or improvement of aquatic resources, with the goal of maintaining and improving the quality and quantity of aquatic resources through strategic selection of compensatory mitigation sites. The Corps subscribes to a watershed approach for compensatory mitigation that uses the HUC-based classification system; a topographic watershed-based system; or littoral cell boundary, in the case of coastal and marine resources, depending on the size and location of a transportation or other project (Corps 2015). The Water Boards generally subscribe to an approach for compensatory mitigation decisions that follows the Corps' watershed approach; however, the HU classification system may be used on a case-by-case basis (SWRCB 2019b).

Fish barrier removal priorities exist both on and off the SHS. However, on-system fish passage barriers take priority over off-system barriers until such time that no feasible on-system barriers exist. Caltrans and CDFW agree to a collaborative barrier prioritization process through the FishPACs. This prioritization is updated each year in the *Fish Passage Annual Legislative Report* (Caltrans 2021a). The priorities on the SHS are dynamic, changing as they are addressed and as funding becomes available.

For the SHS, priority barriers are determined in coordination with the six regional FishPACs and reported to the Legislature in October of each year, in accordance with SHC § 156.1-3 (Senate Bill 857, Kuehl, Chapter 589, Statutes of 2005). Priority fish passage barriers currently account for an estimated 330 miles of blocked habitat for threatened and endangered salmon and steelhead along the California coastline and inland Central Valley. Full-span solutions allow Caltrans to reduce the overall number of known barriers on the SHS, provide access to the highest-quality habitat, and reduce rework and partial solutions, which require long-term monitoring and costly maintenance until the end of the facility's service life, when the full-span solution will be required. Priority locations are ranked by considering a species' listing status and diversity, quality and quantity of habitat for recovery, and related best professional knowledge. FishPAC's subject matter experts include CDFW, NMFS, FWS, CCC, CalTrout, Pacific States Marine Fisheries Commission, other local fish passage advocates, and Caltrans.

Table 8-4. Advance Mitigation Conservation Goals and Objectives for Aquatic Resources

Objective	Sub-Objective	Alignment with Documents Identified in Table 8-3
<i>Goal AR-1: No net loss of area, functions, values, and condition of wetland and non-wetland water resources.</i>	See below	See below
Objective AR-1.1: Improve quality and function of wetland and non-wetland water resources.	Sub-Objective AR-1.1.1: Enhance and/or rehabilitate wetland and non-wetland water resources such that the greatest functional lift to the aquatic resource is provided, including by consolidating compensatory mitigation consistent with Executive Order W59-93. Sub-Objective AR-1.1.2: Enhance and/or rehabilitate key wetland and non-wetland water habitats that are identified in the SWAP, FWS recovery plans, CDFW recovery plans, LCPs, and other land management plans identified in Table 8-3. Sub-Objective AR-1.1.3: Enhance and/or rehabilitate riparian vegetation within the GAI, as well as other streams listed in Table 8-2. Sub-Objective AR-1.1.4: Enhance and/or restore wetland and non-wetland water resource functions, such as connectivity, abundance of native plants, and water quality, that define habitat value for aquatic organisms and increase basin-wide value of resources.	▪ All documents found in Table 8-3.
Objective AR-1.2: Avoid a net loss of aquatic resource acreage by establishing aquatic resources.	Sub-Objective AR-1.2.1: Establish and/or re-establish wetland and non-wetland waters, particularly in key wetland and non-wetland water habitats that are identified in the SWAP, FWS recovery plans, CDFW recovery plans, LCPs, and other land management plans identified in Table 8-3. Sub-Objective AR-1.2.2: Establish and/or re-establish riparian vegetation in the HUC-8s included in Table 8-2, and other streams listed in Table 8-2.	▪ Same references as listed with Objective AR-1.1.

Objective	Sub-Objective	Alignment with Documents Identified in Table 8-3
Goal AR-2: Restore and/or enhance the chemical, physical, and biological integrity of wetlands and non-wetland waters.	See below	See below
Objective AR-2.1: Restore and/or enhance water quality.	Sub-Objective AR-2.1.1: In coordination with the RWQCB, restore and/or enhance wetland and non-wetland waters with RWQCB biology-related beneficial use designations such as cold freshwater habitat; estuarine habitat; freshwater replenishment; groundwater recharge; inland saline water habitat; marine habitat; migration of aquatic organisms; preservation of areas of special biological significance; rare, threatened, or endangered species; spawning, reproduction, and/or early development; warm freshwater habitat; wetland habitat; wildlife habitat; and water quality enhancement. Sub-Objective AR-2.1.2: In coordination with natural resource regulatory agencies, address aggradation, erosion, nutrients, contaminants, sedimentation, and temperatures in the Chetko, Lower Klamath, Smith, and Trinity HUC-8s. Sub-Objective AR-2.1.3: In coordination with the RWQCB, implement restoration and enhancement actions that address water quality for aquatic resources, for example, at Smith River, Winchuck River, Klamath River, Redwood Creek, Shasta Bally, Trinity River, Upper Sacramento, and Rogue River as well as freshwater and coastal marshes. Sub-Objective AR-2.1.4: Restore and/or enhance areas upstream of places with high water quality protection and remediation values, such as ASBSs, ESHA-designated areas, and CCAs. Sub-Objective AR-2.1.5: Restore or create riparian floodplain habitat, adjacent wetlands, and adjacent non-wetland aquatic features to enhance water quality in tributaries and downstream systems. Sub-Objective AR-2.1.6: Rehabilitate and/or enhance small streams and sections of larger streams by removing nonnative plant species that degrade stream water quality, such as curlyleaf pondweed, giant reed, Himalayan blackberry, and water hyacinth.	▪ 303(d) List of Impaired Water Bodies (SWRCB 2024) ▪ SWAP (CDFW 2025)
Objective AR-2.2: Improve surface water hydrology.	Sub-Objective AR-2.2.1: Restore and/or enhance natural hydrologic regimes, natural sediment transport, and geomorphic processes. Sub-Objective AR-2.2.2: Reconnect severed aquatic systems and improve connectivity in aquatic and riparian systems, with particular focus on reconnecting higher watershed areas with lower watershed areas, such as reconnecting tributaries to Smith River, Winchuck River, Klamath River, Redwood Creek, Shasta Bally, Trinity River, Upper Sacramento, and Rogue River. Sub-Objective AR-2.2.3: Re-establish hydrologic regimes or drainage patterns for better function of depressional wetlands, estuarine and marine wetlands, estuarine saline, forested/shrub wetlands, lacustrine habitat, and riverine habitats.	▪ Same references as listed with Objective AR-2.1.
Objective AR-2.3: Improve water storage and groundwater recharge.	Sub-Objective AR-2.3.1: Promote restoration of stream and riparian areas' natural functions to provide water storage and release. Sub-Objective AR-2.3.2: Reduce excessive nonnative vegetation along stream/riparian corridors to lower vegetative transpiration rates to sustainable levels and increase water storage in soils and streams. Sub-Objective AR-2.3.3: Create or restore wetlands and streams to enhance groundwater-surface water dynamics in tributaries.	▪ Same references as listed with Objective AR-2.1.

Objective	Sub-Objective	Alignment with Documents Identified in Table 8-3
Goal AR-3: Restore and/or enhance and expand habitat for fish species of mitigation need.	See below	See below
Objective AR-3.1: Restore and/or enhance habitat.	Sub-Objective AR-3.1.1: Consult with FishPAC to select and implement habitat restoration and enhancement actions that support key populations and important habitat, and contribute to the recovery of threatened and endangered salmon and steelhead. Enhancement or restoration may include placement of large pieces of wood in alcoves and pools, and stream channel restoration. Sub-Objective AR-3.1.2: Consult with FishPAC to select and implement FishPAC and legislative priorities within the GAI to restore access to habitats that support key populations for recovery of threatened and endangered salmon and steelhead. The highest value for fish passage remediation and habitat restoration should be given to the current high-priority locations on the SHS (listed in each years' <i>Fish Passage Annual Report</i> to the Legislature). FishPAC priority locations have the highest biological value for recovery and should have the greatest support for remediating, both internally and from natural resource regulatory agencies. Sub-Objective AR-3.1.3: Align with LCP ESHA requirements to prioritize restoration and/or enhancement in ESHAs containing fish species of mitigation need such that a functional lift to the ESHA is provided, when feasible.	▪ <i>2022 Fish Passage Annual Legislative Reports</i> (Caltrans 2021) ▪ <i>SWAP</i> (CDFW 2025)
Goal AR-4: Support resiliency of aquatic resources to climate change and sea-level rise.	See below	See below
Objective AR-4.1: Reduce impacts from climate change and sea-level rise.	Sub-Objective AR-4.1.1: Enhance and/or restore aquatic resource function and value in areas of lower climate resilience, such as the northwestern portion of the GAI, and at tidal flats, salt pannes, and freshwater wetlands to reduce climate change and sea-level rise impacts on aquatic resources. Sub-Objective AR-4.1.2: Prioritize enhancement and/or restoration that will increase resilience to climate change and sea-level rise such as the estuaries around Pelican Bay, and the entrance to the Klamath and Smith Rivers, such that the potential for aquatic resource migration increases by the enhancement and/or restoration of ecotones that transition from aquatic to upland habitats. Sub-Objective AR-4.1.3: Prioritize riparian areas of the Chetko, Lower Klamath, Smith, and Trinity HUC-8s for enhancement and/or restoration to improve freshwater quantity and quality, floodplain connectivity, and instream cover continuity. Sub-Objective AR-4.1.4: Enhance, rehabilitate, establish, and/or re-establish aquatic habitats by using native species such as willows (<i>Salix</i> spp.), cattails (<i>Typha</i> spp.), rushes (<i>Juncus</i> spp.), cottonwoods (<i>Populus</i> spp.), Alder (<i>Alnus</i> spp.) and bulrushes (<i>Schoenoplectus</i> spp.) to reduce the effects of climate change. Sub-Objective AR-4.1.5: Reduce adverse instream flooding effects by restoring affected headwater and tributary hydrological functions for Smith River, Winchuck River, Klamath River, Redwood Creek, Shasta Bally, Trinity River, Upper Sacramento, and Rogue River. Sub-Objective AR-4.1.6: Prioritize habitat establishment and re-establishment within areas that can also reduce risk in flood-prone systems, particularly within areas along Klamath River and Smith River.	▪ <i>SWAP</i> (CDFW 2025)

Objective	Sub-Objective	Alignment with Documents Identified in Table 8-3
Objective AR-4.2: Improve aquatic habitat resiliency.	Sub-Objective AR-4.2.1: Promote native plant species that can stabilize banks, improve filtering of nutrient loads from water, and maintain the flood conveyance properties of streams and estuaries, such as rushes, bulrushes, cattail, and willows. Sub-Objective AR-4.2.2: Prioritize management of invasive species that occur within large contiguous areas in aquatic habitats that may be exacerbated by climate change such that the greatest functional lift is provided. Sub-Objective AR-4.2.3: Enhance, rehabilitate, establish, and/or re-establish small (that is, low order) tributaries/streams that discharge into larger rivers such as Smith River, Winchuck River, Klamath River, Redwood Creek, Shasta Bally, Trinity River, Upper Sacramento, and Rogue River. Sub-Objective AR-4.2.4: Improve the delivery, accretion, and re-use of sediments in aquatic habitats along the coast to increase the resilience of coastal wetlands and stream systems from the effects of climate change and sea-level rise.	▪ Same references as listed with Objective AR-4.1.
Goal AR-5: Provide multi-resource benefits.	See below	See below
Objective AR-5.1: Maximize mitigation opportunities for multiple environmental benefits.	Sub-Objective AR-5.1.1: Enhance, rehabilitate, establish, and/or re-establish aquatic resource areas currently occupied by, or that provide habitat for, one or more special-status species, or areas that contribute to the protection of ecologically, geographically, and/or genetically distinct populations or sub-populations of obligate aquatic special-status species. Sub-Objective AR-5.1.2: Enhance and/or restore habitats for other aquatic species such as aquatic invertebrates and plants, fish species included in Section 2.18.2, and species included in Appendix F of this document that could benefit from aquatic habitat enhancement and/or restoration. Sub-Objective AR-5.1.3: Address additional RWQCB beneficial use designations, such as recreation (for example, bird watching) through enhancement, rehabilitation, establishment, and/or re-establishment actions. Sub-Objective AR-5.1.4: Align with LCP ESHA requirements to prioritize enhancement, rehabilitation, establishment, and/or re-establishment actions that provide a functional lift to the ESHA, when feasible.	▪ SWAP (CDFW 2025)

8.8 Summary

Caltrans anticipates that future SHOPP transportation projects may be conditioned by the Corps, Water Boards, and/or CDFW to address the pressures and stressors that threaten aquatic resources within the GAI. The pressures and stressors include:

- Habitat loss, fragmentation, and degradation;
- Invasive species;
- Altered hydrology, geomorphology, and water quality;
- Climate change, drought, and sea-level rise; and
- Wildfire risk.

Therefore, Caltrans will seek to align advance mitigation scopes with conservation goals and objectives that address the identified pressures and stressors, thereby aligning advance mitigation efforts with regional conservation efforts. As noted in 33 CFR § 332.3, consolidating compensatory mitigation is generally ecologically preferable.

Regional conservation goals and objectives provide a framework for scoping mitigation credit establishment that would likely successfully offset future transportation project impacts on aquatic resources by creating functional lift or conservation benefits, and by mitigating the pressures and stressors on aquatic resources within the GAI. To summarize Table 8-4:

- **Goal AR-1** seeks to achieve no net loss of area, functions, values, and the condition of wetland and non-wetland water resources within the GAI. The primary objectives associated with this goal are to improve existing wetland and non-wetland water resources and create new ones. The sub-objectives were selected to address the following pressures and stressors: altered hydrology, geomorphology, and water quality; habitat loss, fragmentation, and degradation; invasive species; and wildfire risk.
- **Goal AR-2** seeks to restore and maintain the chemical, physical, and biological integrity of waters. The primary objectives associated with this goal are to protect and enhance water quality, improve surface water hydrology, and improve water storage and groundwater recharge. The sub-objectives were selected to address the following pressures and stressors: altered hydrology, geomorphology, and water quality.
- **Goal AR-3** seeks to direct advance mitigation planning toward fish species of mitigation concern. The objectives are designed to restore and/or enhance habitat for steelhead and coho salmon and increase the survivability of these species. The sub-objectives were selected to address the following pressures and stressors: altered hydrology and water quality; habitat loss, fragmentation, and degradation; and invasive species.
- **Goal AR-4** seeks to support climate resiliency for aquatic resources within the GAI. The primary objectives are to reduce impacts on aquatic resources from climate change and improve aquatic habitat climate resiliency. The sub-objectives were

selected to address the following pressures and stressors: climate change, drought, and sea-level rise; invasive species; and wildfire risk.

- **Goal AR-5** seeks to guide advance mitigation project scoping to prioritize multi-resource benefits, with the only objective being to coordinate mitigation efforts for multi-resource benefits. The sub-objective of Goal AR-5 describes what additional benefits exist for other resources within the GAI, including benefits to upland terrestrial habitat. Goal AR-5 was developed to include conservation for multiple resources while seeking to address in-kind transportation projects' effects on aquatic resources.

Each of the goals and objectives have sub-objectives intended to further guide advance mitigation project scoping toward resource and regulatory agencies' regional conservation goals and objectives. These sub-objectives will prompt Caltrans to incorporate multiple benefits into advance mitigation project scopes and address important threats within the area through an advance mitigation project. This concept is an important way Caltrans seeks to use advance mitigation scoping to set the stage, once funding approval is received, for specific advance mitigation projects to provide a functional lift for aquatic resources and maximize conservation benefits from mitigation within the GAI.

9. ASSESSMENT OF AUTHORIZED ACTIVITIES

Informed by this RAMNA and its reviewers' comments and feedback, Caltrans District 1 will nominate advance mitigation projects to the Caltrans Director and request funding approval (see Step 4 in Figure 1-1, Figure 6-1; Caltrans 2019). Each advance mitigation project nominated to the Director will consist of a scope, schedule, and cost for an SHC § 800.6(a)-authorized activity. With respect to scope, in this chapter, Caltrans analyzes the information presented previously to identify advance mitigation project scope options that have a high probability of successfully meeting the AMP's transportation project and environmental objectives. Understanding the regulatory framework, environmental setting, available opportunities to purchase credits, impact forecasts, transportation project schedule needs, and natural resource regulatory agency goals and objectives will assist Caltrans District 1 with scoping of SHC § 800.6(a)-authorized activities to be considered further for potential funding by the AMA (see Step 4 of Figure 1-1 and Section 9.4).

Note that the analysis presented in this chapter is for advance mitigation project scoping purposes only. Transportation projects must still go through environmental and permitting processes and must demonstrate avoidance and minimization efforts prior to compensation.

9.1 Overview of Advance Mitigation Project Scope Development

Advance mitigation project scopes will provide enough information, at the appropriate level of detail, for the Caltrans Director to concur with funding. Appropriately, advance mitigation project scopes will address transportation project delivery acceleration and environmental objectives:

- To meet the AMP's objective of accelerating transportation project delivery, advance mitigation project scopes will be consistent with the AMP's founding legislation and the state's competitive bid requirements and will address transportation project schedule milestones and constraints.
- To meet the environmental objectives through transportation project mitigation, an advance mitigation project scope will be consistent with natural resource regulatory agency goals and objectives expressed in an approved regulatory instrument or interagency agreement and/or aligned with conservation goals and objectives identified in Chapter 7, *Wildlife Resources Conservation Goals and Objectives*, or Chapter 8, *Aquatic Resources Conservation Goals and Objectives*.

Summaries of transportation-related advance mitigation project scope requirements and conservation-related advance mitigation project scope goals and objectives are provided in Tables 9-1 and 9-2, respectively.

Table 9-1. Summary of Transportation-related Advance Mitigation Project Scope Requirements

Advance mitigation project scopes must:

Be an authorized activity in accordance with SHC § 800.6(a)

Benefit multiple transportation projects' delivery schedules

Deliver mitigation anticipated to be needed to fulfill the mitigation requirements of transportation improvements^a

Be consistent with natural resource regulatory agency goals and objectives

Yield mitigation in units and terms approved by natural resource regulatory agencies with the authority to condition transportation project permits with compensatory mitigation

Employ, as appropriate, existing applicable state and federal standards and instruments, mitigation-related agreements, advance mitigation project-specific agreements,^{b,c} and contracts with qualified third parties^d

Address overlapping mitigation requirements

Implement the state's competitive proposal and bidding processes^d

Strategically exercise the AMA

Manage the financial, technical, and strategic risks associated with Caltrans' investments

^a California Constitution, Article XIX, § 2, subdivision (a)

^b An advance mitigation project-specific interagency agreement is a general term to describe an agreement between natural resource regulatory agencies that attaches or binds advance mitigation requirements to a sponsor, qualified third party, or permittee; natural resource regulatory agencies agree that the action provides mitigation. Examples of advance mitigation project-specific interagency agreements include cooperative agreements, MCAs, or other interagency agreements. Advance mitigation project-specific interagency agreements are developed after a Caltrans advance mitigation project is funded.

^c The authority for Caltrans to enter into interagency agreements with public entities such as CDFW is under SHC § 114 and SHC § 130.

^d Procedures for Caltrans to enter in contracts with third parties are available at:
<https://dot.ca.gov/programs/procurement-and-contracts/contractor-resources>.

Table 9-2. Summary of Conservation-related Advance Mitigation Project Scope Goals and Objectives

Advance mitigation project scopes will strive to:

Benefit multiple wildlife species and aquatic resources

Be consistent with existing regional conservation planning expressed in a natural resource regulatory agency strategic plan, conservation plan, HCP, NCCP, watershed plan, restoration plan, investment strategy, RCIS, BEI, in-lieu fee program instrument, land management plan, or other documented conservation effort

Benefit regional biodiversity

Contribute to landscape climate change resiliency

Contribute to landscape connectivity

Contribute to federal and/or California special-status species population recovery

Mitigate effects of stressors on wildlife species and aquatic resources

Restore and rehabilitate wildlife habitat and aquatic resources

9.2 Benefiting Transportation Project Needs Summary

The proximity of planned SHOPP transportation projects to natural resources is shown in figures throughout this document; non-SHOPP, STIP-eligible projects were not identified for the planning period, and so are not shown. Estimated transportation project mitigation needs within the GAI for fiscal years 2024/25 to 2033/34 are presented in Chapter 5, *Modeled Estimated Impacts*, and the timing of the needs is analyzed in Chapter 6, *Benefiting Transportation Project Considerations*. For the time interval under consideration, fiscal years 2024/25 to 2033/34, Caltrans District 1 intends to prioritize purchasing or developing mitigation credits or values that address Road Repair and Accountability Act of 2017 (also known as Senate Bill 1) priorities that are planned for the middle and end of the planning period. Given the expected timing of mitigation need, at this time (August of fiscal year 2025/26) mitigation that can be purchased or established by fiscal year 2027/28 (within the next 2 years) could potentially address mitigation for impacts on approximately:

- 0.1 acre of threatened and endangered fish habitat, <0.1 acre of wetlands, <0.1 acre of non-wetland waters, and 1.3 acres of riparian habitat in the Lower Klamath sub-basin, potentially contributing to the acceleration of 1, 1, 1, and 2 transportation projects, respectively (Table 6-2)
- 0.7 acre of threatened and endangered fish habitat, 0.3 acre of non-wetland waters, and 3.9 acres of riparian habitat in the Smith sub-basin, potentially contributing to the acceleration of 3, 3, and 3 transportation projects, respectively (Table 6-3)
- 0.2 acre of threatened and endangered fish habitat, 0.2 acre of non-wetland waters, and 2.8 acres of riparian habitat in the Trinity sub-basin, potentially

contributing to the acceleration of 3, 3, and 3 transportation projects, respectively (Table 6-4)

- 6.4 acres of western pond turtle habitat in the Klamath Mountains Ecoregion Section, potentially contributing to the acceleration of 5 transportation projects (Table 6-5)
- 3.4 acres of western pond turtle habitat in the Northern California Coast Ecoregion Section, potentially contributing to the acceleration of 5 transportation projects (Table 6-6).

All or some of these needs could form the basis for Caltrans District 1 to develop an advance mitigation project scope.

9.3 Authorized Activity Summary

Advance mitigation project scope options that have a high probability of successfully meeting the AMP's objectives are feasible. Below, a brief description of each of the 11 SHC § 800.6(a)-authorized advance mitigation project types is provided, followed by a discussion of its feasibility. Listed in Table 9-3, some advance mitigation project types are not currently feasible because they are not available within the GAI. Others are not currently feasible because a regulatory and administrative pathway is not available. Others have potential but may not be feasible to implement on a schedule to contribute to accelerated transportation project delivery. Further, the activity authorized by SHC § 800.6(a)(4) is only feasible if § 800.6(a)(1)–(3) options are not feasible. Results of the feasibility analysis are summarized in the subsections below, and in Table 9-4 (wildlife resources) and Table 9-5 (aquatic resources) later in this chapter.

Table 9-3. Advance Mitigation Project Types^a

Advance Mitigation Project Type	Authorization	Section
Caltrans pays mitigation fees or other costs or payments associated with coverage of transportation projects under an approved NCCP ^b and/or an approved HCP.	SHC § 800.6(a)(2)	9.3.1
Caltrans purchases credits from an existing conservation bank.	SHC § 800.6(a)(1)	9.3.2
Caltrans purchases credits from an existing mitigation bank.	SHC § 800.6(a)(1)	9.3.3
Caltrans purchases credits from an existing in-lieu fee program.	SHC § 800.6(a)(1)	9.3.4
Caltrans purchases credits developed through an MCA, established under a CDFW-approved RCIS. ^c	SHC § 800.6(a)(3)(A)	9.3.5
Caltrans funds the establishment of a Caltrans or third-party sponsored and operated conservation bank, in accordance with applicable state and federal standards.	SHC § 800.6(a)(1)	9.3.6
Caltrans funds the establishment of a Caltrans or third-party sponsored and operated mitigation bank in accordance with applicable state and federal standards.	SHC § 800.6(a)(1)	9.3.7

Advance Mitigation Project Type	Authorization	Section
Caltrans funds the establishment of a Caltrans or third-party sponsored and operated in-lieu fee program in accordance with applicable state and federal standards.	SHC § 800.6(a)(1)	9.3.8
Caltrans funds the implementation of conservation actions and habitat enhancement actions ^{c,d} to generate mitigation credits pursuant to an MCA ^b established under a CDFW-approved RCIS. ^c The scope may include Caltrans first entering into or funding the preparation of an MCA. ^c The scope may also include Caltrans first entering into or funding the preparation of an RCIS. ^c	SHC § 800.6(a)(3) SHC § 800.6(a)(3)(A)	9.3.9
Caltrans acquires, restores, manages, monitors, enhances, and preserves lands, waterways, aquatic resources, or fisheries, or funds the acquisition, restoration, management, monitoring, enhancement, and preservation ^e of lands, waterways, aquatic resources, or fisheries, that would measurably advance a conservation objective specified in an RCIS if the department concludes that the action or actions could conserve or create environmental values that are appropriate to mitigate the anticipated potential impacts of planned transportation improvements.	SHC § 800.6(a)(3)(B)	9.3.10
When the other mitigation options (above) are not practicable, Caltrans may perform mitigation in accordance with a programmatic mitigation plan ^f pursuant to SHC § 800.9. The programmatic mitigation plan shall include, to the maximum extent practicable, the information required for an RCIS. ^c	SHC § 800.6(a)(4) SHC § 800.9	9.3.11

^a Caltrans intends to contract or subcontract implementation tasks when appropriate and as required.

^b When Caltrans is a permittee under the NCCP, or if Caltrans qualifies as a Participating Special Entity and the project is a covered activity in the NCCP

^c See: <https://www.wildlife.ca.gov/Conservation/Planning/Regional-Conservation>

^d Under specific conditions, fish passage and wildlife crossing structures may qualify as enhancement actions under an RCIS in accordance with FGC § 1850–1861.

^e The Water Boards do not typically approve establishment of or accept preservation credits.

^f Programmatic mitigation plans are defined in 23 USC § 169(a) (SHC § 800.9). No more than 25 percent of the funds in the AMA may be allocated for this purpose over a 4-year period [SHC § 800.6(a)(4)].

9.3.1. HCP and/or NCCP Fees

HCPs and NCCPs are discussed in Section 4.2. HCPs and NCCPs are species-focused and are aligned with and plan for natural resource protection. HCPs, including multiple species HCPs, and NCCPs provide for incidental take under FESA and CESA, respectively. FWS is the signatory agency to HCPs. CDFW is the signatory agency to NCCPs.

Caltrans identified no active or pending HCPs or NCCPs with plan areas that overlap the GAI to which Caltrans and/or RTPAs are currently signatories or Participating Special Entities. Other project-specific HCPs may exist in the GAI but apply to non-transportation agency users and cannot be used for Caltrans projects.

Feasibility. This authorized activity is not feasible. At this time (August of fiscal year 2025/26), there are no HCPs or NCCPs that Caltrans can contribute or pay fees to in the GAI.

9.3.2. Conservation Bank Credit Purchase

Conservation banks are discussed in Section 4.3. Conservation banks are species-focused, and each bank's alignment with natural resource protection is documented through its BEI. Caltrans identified one pending conservation bank with a service area that overlaps state highways within the GAI: the Klamath Lake Mitigation/Conservation Bank (Table 4-3; Figure 4-1). However, this bank does not provide credits for the species of mitigation need identified in this RAMNA. In addition, the bank is located in the state of Oregon, and CDFW and Water Boards will not accept conservation bank credit purchases outside of the state of California. Therefore, this bank will not be useable by Caltrans to fulfill any conservation bank credit purchase needs.

Feasibility. At this time (August of fiscal year 2025/2026), this authorized activity is not feasible because no conservation bank credits are available for purchase in the GAI for the species of mitigation need.

9.3.3. Mitigation Bank Credit Purchase

Mitigation banks are discussed in Section 4.3. Mitigation banks are wetlands- and non-wetland waters-focused, and each bank's alignment with natural resource protection is documented through its BEI. Caltrans identified one pending mitigation bank with a service area that overlaps state highways within the GAI: the Klamath Lake Mitigation/Conservation Bank (Table 4-3; Figure 4-1). The Corps is anticipated to be a signatory to this bank.

Feasibility. This authorized activity may be feasible. Caltrans District 1 may be able to address some aquatic resource mitigation needs through purchase from an existing mitigation bank if the bank instrument includes pre-transfer credit purchases. After the Caltrans Director's approval for funding, delivering an advance mitigation project to purchase credits or fees is expected to take 1 to 3 years, at which point the credits or values would be available to transportation projects. For existing banks, a BEI amendment would be required to formalize a process for bulk pre-transfer credit purchases and additional time for amending the bank instrument should be addressed in the schedule; the additional time it would take to amend an instrument may make this pathway infeasible. In 2021, the Interagency Project Delivery Team finalized new bank templates that incorporate pre-transfer purchase terms satisfactory to the Project Delivery Team; however, terms may not be satisfactory for bankers and Caltrans. Caltrans District 1 should explore with bank sponsors whether additional Caltrans-specific terms would also need to be negotiated with bank sponsors. The decision to amend a BEI is at the discretion of the bank sponsor.

9.3.4. In-lieu Fee Credit Purchase

In-lieu fee programs are discussed in Section 4.4.¹ In-lieu fee mitigation occurs when a permittee provides funds to an in-lieu fee sponsor instead of either completing project-

¹ Up-to-date information on approved in-lieu fee programs, including available credits, can be found at: <https://ribits.ops.usace.army.mil/ords/f?p=107:47:17546428866010::NO>

specific mitigation or purchasing credits from a conservation or mitigation bank. Additionally, it offers permittees an in-lieu fee option to satisfy their compensatory mitigation obligations as determined by the applicable regulatory agencies for impacts on aquatic resources authorized under the CWA, Rivers and Harbors Act, FESA, Porter-Cologne Water Quality Control Act, and other applicable laws. Once enough money is received by an in-lieu fee program, it implements wetland, stream, or threatened or endangered species habitat restoration, creation, enhancement, or preservation activities in a watershed or other defined area.² The in-lieu fee program's alignment with natural resource protection is documented through its enabling instrument and will be incorporated into future biological opinions on transportation projects.

There are no in-lieu fee programs with service areas that overlap the GAI.

Feasibility. At this time (August of fiscal year 2025/2026), this authorized activity is not feasible because there are no in-lieu fee programs within the GAI.

9.3.5. MCA Credit Purchase

As discussed in Section 4.5, MCAs are an advance mitigation tool that can be developed when and where an RCIS is approved by CDFW. CDFW has released RCIS program guidelines, including guidance for the creation of MCAs (CDFW 2023b)³. However, an approved RCIS is a pre-condition for MCA creation and there are no approved or pending RCIS's with service areas that overlap the GAI. Therefore, no MCAs have been developed within the GAI.

Feasibility. At this time (August of fiscal year 2025/26), this authorized activity is not feasible because no MCA credits are available for purchase within the GAI.

9.3.6. Conservation Bank Establishment

Instructions and guidance for establishing conservation banks are available from CDFW⁴ and FWS.⁵ Conservation banks are species-focused, and each bank's alignment with natural resource protection will be documented through its BEI. CDFW and FWS are potential signatories, and circumstances may occur in which the Corps and/or Water Boards would participate. The CCC may also participate for banks located within the Coastal Zone.

To support future transportation project conditions, a conservation bank funded through the AMA would establish CESA and FESA credits. At a minimum, conservation bank establishment project scopes will refer to and rely on information provided in:

- Chapter 2, *Environmental Setting*
- Chapter 3, *Relevant Plans, Policies, and Regulations*
- Chapter 7, *Wildlife Resources Conservation Goals and Objectives*

² https://www.fhwa.dot.gov/innovation/everydaycounts/edc-1/pdf/banking_faq.pdf

³ <https://wildlife.ca.gov/Conservation/Planning/Regional-Conservation>

⁴ <https://wildlife.ca.gov/Conservation/Planning/Banking/Templates>

⁵ <https://www.fws.gov/service/conservation-banking>

- Chapter 8, *Aquatic Resources Conservation Goals and Objectives*
- Appendix D, *Land Cover Types*
- Appendix E, *Complete SAMNA Species Results*

An understanding of CDFW and FWS goals and objectives for wildlife resources in the GAI will improve the chances that credits established through an advance mitigation project will meet the compensatory mitigation needs of Caltrans' future transportation projects. In Chapter 7, *Wildlife Resources Conservation Goals and Objectives*, Caltrans analyzed and synthesized the relevant and applicable information listed in Chapter 3, *Relevant Plans, Policies, and Regulations*, to develop its understanding of natural resource regulatory agency goals and objectives for the GAI. In brief, it is Caltrans' understanding that a conservation bank that addresses the following goals would be consistent with CDFW and FWS goals:

- Conserve and expand existing habitat for species of mitigation need within the GAI (WILD-1).
- Preserve, enhance, and increase connectivity between blocks of habitat supporting species of mitigation need to allow for dispersal that will maintain resilience and variability of wildlife populations (WILD-2).⁶
- Support resiliency of the landscape to climate change and sea-level rise (WILD-3).
- Decrease mortality and competition, and protect population health for species of mitigation need (WILD-4).
- Prioritize multi-species and multi-resource benefits (WILD-5).

Further, for each objective, Table 7-3 presents sub-objectives, which are intended to help guide Caltrans advance mitigation project scoping toward protecting natural resources through transportation project mitigation.

Feasibility. This authorized activity may be feasible. As pointed out previously, instructions and guidance for establishing conservation banks are available from CDFW and FWS. After the Caltrans Director's approval for funding, delivering an advance mitigation project to establish a conservation bank is expected to take 2 to 6 years before the initial credit release; the credits or values would be available to transportation projects according to the credit release schedule in the Interagency Review Team-approved BEI (CNRA et al. 2011). Caltrans may contract or subcontract bank establishment and/or implementation tasks, including site selection.

⁶ In 2021, CDFW was authorized to approve compensatory mitigation credits for wildlife connectivity actions taken under the conservation and mitigation banking program or the regional conservation investment strategy program (FGC § 1955 et. seq.). CDFW's *Wildlife Connectivity Advance Mitigation Guidelines* (CDFW 2024) provides guidance for applying connectivity actions to mitigation requirements.

9.3.7. Mitigation Bank Establishment

Instructions and guidance for establishing mitigation banks are available from the Corps⁷ and CDFW.⁸ At a minimum, mitigation bank establishment project scopes will refer to and rely on GAI information provided in:

- Chapter 2, *Environmental Setting*
- Chapter 3, *Relevant Plans, Policies, and Regulations*
- Chapter 7, *Wildlife Resources Conservation Goals and Objectives*
- Chapter 8, *Aquatic Resources Conservation Goals and Objectives*
- Appendix H, *Aquatic Resource Locations*

To support future transportation project permits, Caltrans would prioritize wetlands and waters credit establishment under the Corps' jurisdiction (wetlands and WOTUS) and Water Boards' jurisdiction (waters of the state), as well as riparian credit establishment under CDFW's Lake and Streambed Alteration Program.

Mitigation banks are wetland- and waters-focused, and each bank's alignment with natural resource protection is documented through its BEI. The Corps, RWQCB, FWS, and CDFW are potential signatories, and CCC may also participate for banks located within the Coastal Zone. In some circumstances, CDFW's participation in a bank would be documented through an MCA.

An understanding of Corps, RWQCB, FWS, and CDFW goals and objectives for aquatic resources within the GAI will improve the chances that credits established through an advance mitigation project will meet the compensatory mitigation needs of Caltrans' future transportation projects. In Chapter 8, *Aquatic Resources Conservation Goals and Objectives*, Caltrans analyzed and synthesized the relevant and applicable information listed in Chapter 3, *Relevant Plans, Policies, and Regulations*, to develop its understanding of natural resource regulatory agency goals and objectives for the GAI. In brief, it is Caltrans' understanding that a mitigation bank that addresses the following goals would be consistent with natural resource regulatory agency goals:

- Ensure no net loss to area, functions, values, and condition of WOTUS and waters of the state to ensure no overall net loss and long-term net gain in the quantity, quality, and permanence of wetland acreage and values in California in a manner that fosters creativity, stewardship, and respect for private property, as described in Executive Order W-59-93⁹ (AR-1).
- Restore and/or enhance the chemical, physical, and biological integrity of wetlands and non-wetland waters (AR-2).
- Restore and/or enhance and expand habitat for fish species of mitigation need (AR-3).

⁷ https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/mitig_info/

⁸ <https://wildlife.ca.gov/Conservation/Planning/Banking/Templates>

⁹ Preservation alone is not recognized by the Corps or Water Boards as providing no net loss.

- Support resiliency of aquatic resources to climate change and sea-level rise (AR-4).
- Provide multi-resource benefits (AR-5).

Further, for each objective, Table 8-4 presents sub-objectives, which are intended to help guide Caltrans advance mitigation project scoping toward protecting natural resources through transportation project mitigation.

Feasibility. This authorized activity may be feasible. As discussed above, instructions and guidance for establishing mitigation banks are available from the Corps and CDFW and, therefore, establishing credits is feasible. After the Caltrans Director's approval for funding, delivering an advance mitigation project to establish a mitigation bank is expected to take at least 2 to 6 years before the initial credit release, at which point the credits or values would be available to transportation projects. Caltrans may contract or subcontract bank establishment and/or implementation tasks, including site selection.

9.3.8. In-lieu Fee Program Establishment

In-lieu fee programs are wetlands, waters, and/or wildlife oriented and their alignment with natural resource protection will be documented through its enabling instrument. Instructions and guidance for establishing in-lieu fee programs are available from the federal agencies.¹⁰ With respect to wildlife, like the Corps, FWS also follows federal guidance for establishing an in-lieu fee program; however, a supportive regulatory and administrative pathway for CDFW to develop an in-lieu fee program has not been developed. The RWQCB would require any newly established ILF programs to meet no-net-loss requirements before accepting credits. To support future transportation project conditions, in-lieu fee program establishment projects would rely on the same information as mitigation bank establishment (Section 9.3.7). At a minimum, in-lieu fee establishment project scopes will refer to and rely on information provided in:

- Chapter 2, *Environmental Setting*
- Chapter 3, *Relevant Plans, Policies, and Regulations*
- Chapter 7, *Wildlife Resources Conservation Goals and Objectives*
- Chapter 8, *Aquatic Resources Conservation Goals and Objectives*
- Appendix H, *Aquatic Resource Locations*

To support future transportation project permits, Caltrans would seek CWA credit establishment under the Corps' jurisdiction (WOTUS) and RWQCB jurisdiction (waters of the state). The Corps, EPA, and/or Water Boards are potential signatories to the in-lieu fee program enabling instrument. Caltrans may also seek to establish credits that could be applied as compensatory mitigation to offset impacts as part of future FESA biological assessments/opinions in coordination with FWS.

Feasibility. This authorized activity may be feasible. As pointed out above, instructions and guidance for establishing an in-lieu fee program for CWA credits are available from

¹⁰ <https://www.spl.usace.army.mil/Missions/Regulatory/Mitigation/>

the federal agencies. After the Caltrans Director's approval for funding, delivering an advance mitigation project to establish an in-lieu fee program is expected to take 2 to 6 years. Credits or values would be available to transportation projects according to the Interagency Review Team-approved in-lieu fee enabling instrument. Caltrans may contract or subcontract implementation tasks.

9.3.9. MCA Credit or Value Establishment

As pointed out in Section 4.5, MCAs are an advance mitigation tool that can be developed when and where an RCIS is approved by CDFW. In accordance with the *Regional Conservation Investment Strategies Program Guidelines*, MCAs are species- and species habitat-focused and can include credits under CESA and/or for riparian habitat to meet mitigation needs under a Lake and Streambed Alteration Agreement. An MCA's alignment with natural resource protection will be documented through the foundational RCIS and the MCA itself (CDFW 2021). RCIS development is also an SHC § 800.6(a)-authorized advance mitigation project deliverable.

At this time, Caltrans cannot be an MCA sponsor.¹¹ Therefore, Caltrans envisions that credits or values created through an MCA and funded through the AMA could be established under three scenarios:

- Caltrans funds the performance of conservation actions and habitat enhancement actions as needed to generate mitigation credits pursuant to an MCA, in which a third party is the MCA sponsor. The MCA sponsor, CDFW, and landowner would be signatories to the MCA. This scenario assumes an existing RCIS anticipates the requirements and needs for MCA credits to apply to transportation projects.
- Caltrans funds the preparation of an RCIS that anticipates transportation project requirements and needs for MCA credits prior to funding the preparation of an MCA by a third party who is the MCA sponsor, as in the scenario above.¹²

To support future transportation project permits, an MCA or, if needed, an RCIS in concert with an MCA, funded through the AMA, would establish CESA and/or Lake and Streambed Alteration Program credits¹³ and CDFW would be the signatory. Caltrans may also request other natural resource regulatory agencies to be signatories to the MCA or may seek project-specific interagency agreements with other natural resource regulatory

¹¹ CDFW's legislation requires that MCA securities take the form of a letter of credit or cash according to FGC § 1856 subdivision (g)(17), which includes and references all of § 1798.5 subdivision (a)(2). Caltrans cannot provide a letter of credit or cash in accordance with the prohibition against pledging the credit of the state, based on Article XVI of the California Constitution, § 6, and Government Code § 16305.3. This conflict to establish security funds will need to be resolved before Caltrans can perform the role of MCA sponsor.

¹² CDFW's legislation requires that MCA securities take the form of cash, a letter of credit, or a surety bond according to FGC § 1856 subdivision (g)(17), which includes and references all of § 1798.5 subdivision (a)(2).

¹³ Caltrans is the Lead Agency under CEQA; CDFW's permitting authority does not include conditioning transportation projects under CEQA (Section 7).

agencies whose jurisdiction overlaps with CDFW's¹⁴. However, participation in an MCA may be more feasible for state agencies than federal agencies. Under federal definitions, MCAs may be treated as permittee-responsible mitigation. Federal agencies prioritize credits purchased or established through banking and in-lieu fee programs over permittee-responsible mitigation.

Feasibility. At this time (August of fiscal year 2025/26), RCIS program guidelines, which include guidance for the creation of MCAs, are available (CDFW 2023b).¹⁵ Once an MCA has been approved by CDFW, mitigation credits created through the agreement would be available to be applied to Caltrans transportation projects.

However, at this time, there are no pending or approved MCAs, timelines and specifics related to the MCAs are uncertain, and scoping and delivering an advance mitigation project within the AMP's timeline needs is unlikely. Caltrans will stay involved to understand the MCA credit or establishment process. However, given the nature of the AMP's revolving account, which sustains itself through transportation project reimbursements, Caltrans has determined that it cannot commit AMA funds until the creation process can predictably deliver credits on a schedule.

Wildlife Crossing and Aquatic Corridor Enhancements

As described in Section 4.6, CDFW is authorized through FGC § 1957(a) to approve compensatory mitigation credits for wildlife connectivity actions under both the Conservation and Mitigation Banking Program and the RCIS Program. Consequently, through these mechanisms, CDFW and other natural resource regulatory agencies may be able to recognize credits established through wildlife crossing and aquatic corridor enhancement made separate and distinct from specific transportation projects. A BEI and MCA for connectivity would be consistent with Caltrans' understanding of natural resource regulatory agency goals and objectives to preserve, enhance, and increase connectivity between blocks of species of mitigation need habitat (WILD-2 and AR-3), support resiliency of the landscape and aquatic resources to climate change and sea-level rise (WILD-3 and AR-4), and provide multi-resource benefits (WILD-5 and AR-5).

The AMP is authorized to fund the creation of credits through conservation banks [SHC § 800.6(a)] and MCAs created pursuant to a CDFW-approved RCIS [SHC § 800.6(b)]. FGC § 1957(a) provides a means by which the AMP could potentially fund credit establishment or creation through fish and wildlife connectivity project Caltrans will reassess wildlife crossing and aquatic corridor enhancements related to feasibility with respect to the AMA expenditures and mitigation needs covered in this RAMNA once

¹⁴ Parallel evaluations are undertaken when, for the same environmental enhancement/action, two or more agencies must employ different mechanisms to approve the credits.

¹⁵ <https://wildlife.ca.gov/Conservation/Planning/Regional-Conservation>

the RCIS Program's MCA Guidelines for wildlife crossing and aquatic corridor enhancements are finalized.

9.3.10. Mitigation That Meets an RCIS Conservation Objective

SHC § 800.6(a)(3)(B) authorizes the following expenditure from the AMA:

Caltrans acquires, restores, manages, monitors, enhances, and preserves lands, waterways, aquatic resources, or fisheries, or funds the acquisition, restoration, management, monitoring, enhancement, and preservation¹⁶

of lands, waterways, aquatic resources, or fisheries that would measurably advance a conservation objective specified in an RCIS if the department concludes that the action or actions could conserve or create environmental values that are appropriate to mitigate the anticipated potential impacts of planned transportation improvements.

Feasibility. At this time (August of fiscal year 2025/26), this authorized activity is not feasible because there are no RCIS programs established within the GAI. A supportive regulatory and administrative pathway for a natural resource regulatory agency to recognize credits or values outside of existing advance mitigation mechanisms, such as the procedures to establish banks, does not exist. Without an existing regulatory pathway, the time to establish credits or values for this advance mitigation project type is uncertain. Consequently, at this time, scoping and delivering an advance mitigation project within the AMP's timeline needs through this authorized activity is unlikely.

9.3.11. Mitigation in Accordance with a Programmatic Mitigation Plan

This project type may be undertaken by Caltrans if all other advance mitigation project types discussed above are not feasible [SHC § 800.6(a)(4)]. In brief, SHC § 800.6(a)(4) and SHC § 800.9 authorize the following expenditure from the AMA:

Caltrans performs mitigation in accordance with a programmatic mitigation plan pursuant to SHC §800.9. The programmatic mitigation plan shall include, to the maximum extent practicable, the information required for a RCIS.

This authorized activity would likely require an advance mitigation project-specific agreement, such as a cooperative agreement, and the time needed to establish credits or values for this advance mitigation project type is uncertain. In general, unless otherwise prescribed in regulation, an advance mitigation project-specific interagency agreement should include the agency's jurisdiction, resource type, resource value, protection level, service area, time frame, performance and compliance requirements, mitigation accounting procedures, funding, monitoring, and the advance mitigation project's closeout terms and conditions.

¹⁶ Water Boards do not typically approve establishment of or accept preservation credits.

Feasibility. At this time (August of fiscal year 2025/26), a number of the authorized activities listed in Table 9-3 appear to be feasible (see Tables 9-4 and 9-5). This suggests that addressing a Caltrans SAMNA-estimated need will not require another approach in accordance with SHC § 800.6(a)(4). At this time, management of the AMA does not need to consider limiting any advance mitigation project type to 25 percent of the fund.

9.3.12. Discussion

Caltrans modeled its compensatory mitigation needs in the GAI for fiscal years 2024/25 to 2033/34 (Chapter 5, *Modeled Estimated Impacts*) and evaluated its needs in light of when transportation projects might need the mitigation (Chapter 6, *Benefiting Transportation Project Considerations*, and Section 9.2). Summarized in Tables 9-4 and 9-5, Caltrans identified a number of options for how to meet its mitigation needs. The authorized activities consist of options to purchase existing mitigation credits (Sections 9.3.1 to 9.3.5) or to establish additional mitigation (Sections 9.3.6 through 9.3.11).

Based on its evaluation, Caltrans found that, at this time (August of fiscal year 2025/26), a few authorized activities appear to be feasible and, under several scenarios, advance mitigation project scopes could cover multiple resources and address overlapping natural resource regulatory agency jurisdictions (see Section 9.2). Under some conditions, establishing new mitigation credits through existing mechanisms may also be possible.

Table 9-4. Wildlife Resources Credit Options and Feasibility, August 2026

Authorized Activity	Regulatory and Administrative Pathway Available	Available/Opportunity Exists in the GAI	Potential to Address Overlapping Jurisdictions	Time to Complete Funding and Scoping ^a	Time to Complete Credit Approval Process
Pay NCCP or NCCP/HCP fees	No	No, there are no HCP/NCCPs in the GAI that apply to transportation projects	Not available	1 to 3 years	Not available
Purchase conservation bank credits	No	No, there are no conservation banks with service areas that overlap the GAI that are usable by Caltrans	Not available	1 to 3 years	1 month to 3 years (depending on complexity and possible need for amendment allowing advance mitigation purchase)
Purchase in-lieu fee credits	No	Not available	Not available	Not available	Not available
Purchase MCA credits	No	Not available	Not available	Not available	Not available
Establish conservation bank	Yes	Yes, with CDFW and FWS	Yes, with CDFW and FWS	2 to 6 years	2 to 6 years
Establish in-lieu fee program	Yes	Yes, with FWS	Yes, with FWS. Potential to align with Corps in-lieu fee program	2 to 6 years	4 to 6 years
Establish MCA credits or values ^b	No	Not available	Not available	Not available	Not available

Authorized Activity	Regulatory and Administrative Pathway Available	Available/Opportunity Exists in the GAI	Potential to Address Overlapping Jurisdictions	Time to Complete Funding and Scoping ^a	Time to Complete Credit Approval Process
Establish RCIS and MCA ^b	Yes; RCIS and MCA creation guidelines available	Yes, RCIS and MCA creation guidelines available	Maybe; for the CDFW program, CDFW approves the credits and allows other regulatory agencies to acknowledge MCA credits, if desired Potential for parallel evaluation(s) with other natural resource regulatory agencies	Not available	Not available
Establish mitigation that meets an RCIS objective	No	No, no RCIS's established in the GAI	Not available	Not available	Not available
Establish mitigation in accordance with a programmatic mitigation plan	No	Not available	Not available	Not available	Not available

^a Caltrans contracting processes and agency interactions are incorporated into this time estimate.

^b Either Caltrans or a third party would be the signatory with CDFW.

Table 9-5. Aquatic Resources Credit Options and Feasibility, August 2026

Authorized Activity	Regulatory and Administrative Pathway Available	Available/Opportunity Exists in the GAI	Potential to Address Overlapping Jurisdictions	Time to Complete Funding and Scoping ^a	Time to Complete Credit Approval Process
Purchase mitigation bank credits	Yes	Yes, there is one pending mitigation bank with a service area that overlaps the GAI	Yes, Corps, EPA, and FWS	Not available	1 month to 3 years (depending on complexity and possible need for amendment allowing advance mitigation purchase)
Purchase in-lieu fee credits	No	No, no in-lieu fee programs established in the GAI	Not available	Not available	1 month to 3 years (depending on complexity and possible need for amendment allowing advance mitigation purchase)
Purchase MCA credits	No	Not available	Not available	Not available	Not available
Establish mitigation bank	Yes	Yes, Corps, CDFW, EPA, FWS, RWQCB, and CCC.	Yes, Corps, CDFW, EPA, FWS, RWQCB, and CCC.	2 to 6 years	4 to 6 years

Authorized Activity	Regulatory and Administrative Pathway Available	Available/Opportunity Exists in the GAI	Potential to Address Overlapping Jurisdictions	Time to Complete Funding and Scoping ^a	Time to Complete Credit Approval Process
Establish in-lieu fee program	Yes	Yes, for Corps, EPA, FWS, and RWQCB	Maybe, Corps, EPA, FWS, and RWQCB	2 to 6 years	4 to 6 years
Establish MCA credits or values ^b	No, not at this time	There are no RCISs in the GAI. RCISs are a requirement for MCA creation.	Maybe; for the CDFW program, CDFW approves the credits and allows other regulatory agencies to acknowledge MCA credits, if desired Potential for parallel evaluation(s) with other natural resource regulatory agencies	Not available	Not available
Establish RCIS and MCA ^b	Yes; RCIS and MCA creation guidelines available	Yes, RCIS and MCA creation guidelines available	Maybe; for the CDFW program, CDFW approves the credits and allows other regulatory agencies to acknowledge MCA credits, if desired Potential for parallel evaluation(s) with other natural resource regulatory agencies	Not available	Not available
Establish mitigation that meets an RCIS objective	No	Not available	Not available	Not available	Not available
Establish mitigation in accordance with a programmatic mitigation plan	No	Not available	Not available	Not available	Not available

- ^a Caltrans contracting processes and agency interactions are incorporated into this time estimate.
^b Either Caltrans or a third party would be the signatory with CDFW.

9.4 Next Steps

Caltrans is required to avoid and minimize any impacts on the environment where practicable, but some impacts are unavoidable. When this is the case, as determined by a natural resource regulatory agency, Caltrans may use compensatory mitigation to offset these unavoidable impacts on the environment. Compensatory mitigation involves the restoration, establishment, enhancement, and/or preservation of the environment, including wetlands, non-wetland waters, and threatened or endangered species and/or their habitats, including riparian habitat.

Caltrans District 1 will consider all feasible options when developing advance mitigation project scopes. The feasibility of each authorized activity to meet the mitigation need depends on the availability of a regulatory and administrative pathway and other conditions summarized in Tables 9-4 and 9-5. Not included in the tables is an explicit comparison of other desired qualities, outcomes, or other factors of performing any particular authorized activity, which Caltrans District 1 will also consider based on its localized knowledge of delivering mitigation within its region. For example, Caltrans may prioritize advance mitigation projects that reduce risk in implementation and long-term management by requesting that others be bank or in-lieu fee sponsors.

As described in the introduction to this chapter and in Section 9.1, to inform the advance mitigation project scope, Caltrans District 1 will use information in the RAMNA. Each scope will consider mitigation needs; the timing of mitigation needs; conservation data and plans; input from natural resource regulatory agencies, interested parties, and tribes; feasibility; timing; and other financial, strategic, and technical risks associated with transportation project delivery and conservation actions. Advance mitigation project scopes will also employ, as appropriate, existing applicable state and federal standards and instruments, mitigation-related agreements, advance mitigation project-specific agreements, and contracts with qualified third parties.

Caltrans District 1 will submit a nominated advance mitigation project's scope, schedule, and budget to the Caltrans Director for approval. When the Director concurs and funding is approved, Caltrans District 1 will commit to delivering the advance mitigation project within the scope, schedule, and budget communicated with nomination materials. At that point, Caltrans District 1 will initiate project delivery (see Steps 6 through 10 on Figure 1-2; Caltrans 2025b, 2025c). Advance mitigation project delivery includes engaging stakeholders, analyzing project alternatives, coordinating with natural resource regulatory agencies with the authority to approve compensatory mitigation, contracting with third parties and/or credit sponsors, and developing an agency-approved instrument and/or one or more advance mitigation project-specific interagency agreement(s). Additionally:

- Stakeholder engagement will be conducted in accordance with each advance mitigation project's communication plan and be consistent with the applicable and appropriate requirements of existing applicable state and federal standards and instruments.

- When required by the advance mitigation project type, site selection may be performed by Caltrans or under contract to Caltrans through a competitive bid process, and may include existing mitigation providers such as banks, NCCPs, MCAs, and the identification of new acquisitions. When a competitive bid process is used, sites are subject to what bid respondents put forward in their proposals. Site selection should be consistent with appropriate conservation goals and objectives identified in Chapter 7, *Wildlife Resources Conservation Goals and Objectives*, and Chapter 8, *Aquatic Resources Conservation Goals and Objectives*.
- When appropriate for the advance mitigation project type, it may be necessary to identify the steps required to meet the goal of satisfying overlapping jurisdictional mitigation requirements.
- Instruments and advance mitigation project-specific interagency agreements will specify the terms of use of the credits, including the service areas. Service areas will be defined based on feedback from the natural resource regulatory agencies. It is intended for the ecological units used for this RAMNA to lead to ecologically based advance mitigation project scopes and service areas; Caltrans uses HUC-8 sub-basins to be consistent with the 2008 Mitigation Rule and ecoregion sections to be consistent with the SWAP.

As with all credits and values established through advance mitigation processes, the credits' suitability for application to a specific transportation project is determined in the future, on a case-by-case basis, when transportation project mitigation requirements are known.

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