



**ADVANCE MITIGATION PROGRAM
Lake Tahoe and Truckee Sub-basins
Regional Advance Mitigation
Needs Assessment**

Version 1.0

**Establishing Caltrans' Need for Advance Mitigation
for the Lake Tahoe and Truckee Sub-basins
forecast fiscal years 2023/24 to 2032/33**

California Department of Transportation – District 3

July 2026

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CONTENTS

Executive Summary	ES-1
1. Introduction	1-1
1.1 AMP Overview	1-2
1.2 Caltrans District 3 Transportation Infrastructure	1-7
1.3 Regulatory Framework Summary	1-9
1.4 SAMNA	1-10
1.5 GAI and Resource Focus	1-12
1.6 RAMNA	1-14
1.7 Coordination History	1-15
1.8 Document Organization	1-17
2. Environmental Setting	2-1
2.1 Ecoregion Sections in the GAI	2-1
2.2 Land Ownership	2-3
2.3 Topography	2-5
2.4 Climate	2-8
2.5 Land Cover Types	2-11
2.6 Invasive Species	2-14
2.7 Special-status Terrestrial Species	2-15
2.8 Critical Habitat	2-16
2.9 Connectivity	2-18
2.10 Sub-basins	2-23
2.11 Hydrology	2-26
2.12 Flood Hazard Areas	2-28
2.13 Water Quality	2-30
2.14 Wild and Scenic Rivers	2-33
2.15 Aquatic Resources	2-33
2.16 Riparian Habitat	2-38
2.17 Fire Hazard Severity Zones	2-38
3. Relevant Plans, Policies, and Regulations	3-1
3.1 Relationship to Goals and Objectives	3-1
4. Existing Mitigation Opportunities	4-1
4.1 SHOPP Advance Mitigation Credits	4-1

4.2 HCPs and NCCPs.....	4-2
4.3 Conservation and Mitigation Banks.....	4-3
4.4 In-lieu Fee Programs.....	4-3
4.5 RCISs and MCAs	4-7
4.6 Wildlife Crossing and Aquatic Corridor Enhancements.....	4-7
5. Modeled Estimated Impacts.....	5-1
5.1 Approach.....	5-1
5.2 Estimated Wildlife Impacts	5-3
5.3 Estimated Aquatic Resources Impacts.....	5-9
6. Benefiting Transportation Project Considerations	6-1
6.1 Why Timing is Important.....	6-1
6.2 Patterns of Estimated Potential Impacts	6-3
6.3 Acceleration Priorities	6-10
7. Wildlife Resources Conservation Goals and Objectives	7-1
7.1 Approach.....	7-1
7.2 Natural Resource Regulatory Agencies with Wildlife Resources Oversight	7-2
7.3 Species of Mitigation Need.....	7-3
7.4 Regional Conservation Efforts.....	7-4
7.5 Pressures and Stressors	7-10
7.6 Multi-species Benefits	7-12
7.7 Advance Mitigation Conservation Goals and Objectives.....	7-15
7.8 Summary.....	7-22
8. Aquatic Resources Conservation Goals and Objectives.....	8-1
8.1 Approach.....	8-1
8.2 Natural Resource Regulatory Agencies with Aquatic Resources Oversight.....	8-2
8.3 Aquatic Resources	8-5
8.4 Regional Conservation Efforts.....	8-6
8.5 Pressures and Stressors	8-6
8.6 Multi-resource Benefits	8-13
8.7 Advance Mitigation Conservation Goals and Objectives.....	8-15
8.8 Summary.....	8-21

9. Assessment of Authorized Activities	9-1
9.1 Overview of Advance Mitigation Project Scope Development.....	9-1
9.2 Benefiting Transportation Project Needs Summary	9-3
9.3 Authorized Activity Summary	9-4
9.4 Next Steps.....	9-17
10. References.....	10-1

APPENDICES

Appendix A – GIS Sources

Appendix B – Transportation Projects Planned for the GAI during the Planning Period

Appendix C – Land Cover Types

Appendix D – Complete SAMNA Species Results

Appendix E – Aquatic Resource Locations

TABLES

Table 1-1. Advance Mitigation Project Types	1-2
Table 1-2. Natural Resource Regulatory Agencies with Oversight over Natural Resources in the GAI	1-9
Table 1-3. Comments Received by Caltrans on the RAMNA.....	1-16
Table 1-4. Interagency Meetings.....	1-17
Table 1-5. Document Organization	1-17
Table 2-1. Land Ownership in the GAI	2-3
Table 2-2. Land Cover Types in the GAI.....	2-11
Table 2-3. Crosswalk Table of HUC-8 Sub-basins with HUs in the GAI.....	2-24
Table 2-4. Sub-basins	2-26
Table 2-5. Beneficial Uses	2-30
Table 2-6. Impaired Waters in the GAI.....	2-32
Table 2-7. Wetland and Non-wetland Types in the GAI	2-37
Table 3-1. Comprehensive Plans, Agreements, Resource Management Plans, Policies, and Regulations Relevant to the GAI	3-3
Table 4-1. SHOPP Advance Mitigation Credits	4-2
Table 4-2. Overview of In-lieu Fee Programs in the GAI.....	4-4

Table 5-1. Summary of Estimated SHOPP Impacts on Special-status Species Habitat in the GAI	5-3
Table 5-2. Summary of Estimated SHOPP Impacts on Terrestrial Species of Mitigation Need in the GAI.....	5-4
Table 5-3. Estimated SHOPP Impacts on Species of Mitigation Need and Co- occurring Species Habitat: Sierra Nevada Ecoregion Section (acres).....	5-5
Table 5-4. Summary of Estimated SHOPP Impacts on Threatened and Endangered Fish Habitat in the GAI (acres).....	5-9
Table 5-5. Summary of Estimated SHOPP Impacts on Wetlands in the GAI (acres)	5-10
Table 5-6. Summary of Estimated SHOPP Project Impacts on Non-wetland Waters in the GAI (acres).....	5-10
Table 5-7. Summary of Estimated SHOPP Project Impacts on Areas of Potential Riparian Function in the GAI (acres)	5-11
Table 6-1. Sierra Nevada Ecoregion Section: Estimated Impacts on Terrestrial Species of Mitigation Need in the GAI, by Transportation Project Delivery Year.....	6-4
Table 6-2. Lake Tahoe Sub-basin: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year.....	6-6
Table 6-3. Truckee Sub-basin: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year.....	6-8
Table 7-1. Natural Resource Regulatory Agencies with the Authority to Approve Wildlife Resource Compensatory Mitigation Credits (or Values)	7-2
Table 7-2. Documents Identifying Areas for Species of Mitigation Need Conservation in the GAI	7-5
Table 7-3. Advance Mitigation Conservation Goals and Objectives for the Species of Mitigation Need.....	7-17
Table 8-1. Natural Resource Regulatory Agencies with the Authority to Approve Aquatic Resource Compensatory Mitigation Credits (or Values).....	8-3
Table 8-2. Named Aquatic Features in the GAI with Aquatic Resource Goals and Objectives, by HUC-8	8-5
Table 8-3. Documents Identifying Aquatic Resource Goals and Objectives in the GAI	8-7
Table 8-4. Advance Mitigation Conservation Goals and Objectives for Aquatic Resources	8-17
Table 9-1. Summary of Transportation-related Advance Mitigation Project Scope Requirements	9-2
Table 9-2. Summary of Conservation-related Advance Mitigation Project Scope Goals and Objectives	9-3

Table 9-3. Advance Mitigation Project Types	9-4
Table 9-4. Wildlife Resources Credit Options and Feasibility, July 2026.....	9-14
Table 9-5. Aquatic Resources Credit Options and Feasibility, July 2026	9-16

FIGURES

Figure 1-1. Advance Mitigation Planning Phase.....	1-4
Figure 1-2. Advance Mitigation Project Delivery Phase.....	1-4
Figure 1-3. GAI Road Infrastructure	1-8
Figure 2-1. Ecoregion Sections	2-2
Figure 2-2. Land Ownership.....	2-4
Figure 2-3. Protected Lands: Conservation Easements and GAP Status	2-6
Figure 2-4. Topography.....	2-7
Figure 2-5. Terrestrial Climate Resilience Rankings	2-10
Figure 2-6. Major Land Cover	2-13
Figure 2-7. Federally Designated Critical Habitat.....	2-17
Figure 2-8. Terrestrial Connectivity	2-19
Figure 2-9. California Fish Passage Advisory Committee Locations.....	2-22
Figure 2-10. HUC-8 Sub-basins and HUs	2-25
Figure 2-11. Flood Hazard Areas	2-29
Figure 2-12. Aquatic Resource Features and Major Stream Systems	2-34
Figure 2-13. Fire Hazard Severity Zones	2-39
Figure 4-1. In-lieu Fee Program Aquatic Resources Service Areas	4-5
Figure 4-2. In-lieu Fee Program Vernal Pool Service Areas.....	4-6
Figure 6-1. Timing Advance Mitigation with Transportation Project Delivery.....	6-2
Figure 6-2. Sierra Nevada Ecoregion Section: Estimated Impacts on Terrestrial Species of Mitigation Need in the GAI, by Transportation Project Delivery Year.....	6-5
Figure 6-3. Lake Tahoe Sub-basin: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year.....	6-7
Figure 6-4. Truckee Sub-basin: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year.....	6-9
Figure 6-5. Location of SHOPP Estimated Impacts, by Transportation Project Delivery Year, Ten-Year Book (2024, Quarter 3).....	6-11
Figure 7-1. Terrestrial Biodiversity in the GAI.....	7-14
Figure 7-2. State Wildlife Action Plan Conservation Target Habitats	7-21
Figure 8-1. Aquatic Biodiversity of the GAI.....	8-14

LIST OF ACRONYMS

Acronym	Definition
ACE	Areas of Conservation Emphasis
AMA	Advance Mitigation Account
AMP	Advance Mitigation Program
AMP Guidelines	<i>Advance Mitigation Program Final Formal Guidelines</i>
Basin Plan	Water Quality Control Plan
BEI	Bank Enabling Instrument
BIOS	Biogeographic Identification and Observation System
BLM	Bureau of Land Management
Cal-IPC	California Invasive Plant Council
Caltrans	California Department of Transportation
CDFW	California Department of Fish and Wildlife
CEHC	California Essential Habitat Connectivity
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CNRA	California Natural Resources Agency
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
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
NFWF	National Fish and Wildlife Foundation
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
RAMNA	Regional Advance Mitigation Needs Assessment
RCIS	regional conservation investment strategy
RipZET	Riparian Zone Estimator Tool
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
SFEI	San Francisco Estuary Institute
SHC	Streets and Highways Code
SHOPP	State Highway Operation and Protection Program
SHOPP Ten-Year Book	<i>State Highway Operation & Protection Program Ten-Year Project Book Fiscal Year 2023/24—2032/33</i>
SHS	State Highway System
SWRCB	State Water Resources Control Board
STIP	State Transportation Improvement Program
SWAP	State Wildlife Action Plan
TMDL	total maximum daily load
TRPA	Tahoe Regional Planning Agency
USC	U.S. Code
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USGS	U.S. Geological Survey

Water Boards
WOTUS

SWRCB and RWQCBs
waters of the U.S.

EXECUTIVE SUMMARY

[Dear Readers: An executive summary will be provided in the final document.—AMP]

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1. INTRODUCTION

California's State Highway System ("SHS") relies on long-range planning documents to guide its operation and maintenance. In this *Lake Tahoe and Truckee Sub-basins Regional Advance Mitigation Needs Assessment* ("RAMNA"), the California Department of Transportation ("Caltrans") District 3 presents its forecast of natural resource compensatory mitigation¹ needs for the Lake Tahoe and Truckee 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 ^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)
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

^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 The State Water Resources Control Board (“SWRCB”) and Regional Water Quality Control Boards (“RWQCBs”) typically do not approve the establishment of, or accept, preservation credits as the sole or primary type of mitigation.

^f 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 2019a). As shown on Figures 1-1 and 1-2, the AMP Guidelines present a 10-step process, the first 5 are the advance mitigation planning phase, and the next 5 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 (2019a)

Figure 1-2. Advance Mitigation Project Delivery Phase



Source: Caltrans (2019a)

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 in order 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 2019a) and provides the results of a regional assessment of Caltrans' advance mitigation needs in the Lake Tahoe and Truckee sub-basins.⁴

Caltrans District 3 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 2019a). 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 3 advance mitigation project for funding (Step 5; Figure 1-1; Caltrans 2019a). Thereafter, Caltrans District 3 will use the RAMNA as a reference (Caltrans 2019a).

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 2019a). Advance mitigation project delivery is undertaken after an advance mitigation project has been approved by the Caltrans Director and programmed⁵ (Figure 1-2; Caltrans 2019a). The 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 U.S. Environmental Protection Agency (“EPA”) and U.S Army Corps of Engineers (“Corps”) 2008 Mitigation Rule, U.S. Fish and Wildlife Service (“FWS”) Mitigation Policy (FWS 2023a), FWS Endangered Species Act Compensatory Mitigation Policy (FWS 2023b), and National Oceanic and Atmospheric Administration (“NOAA”) Mitigation Policy for Trust Resources (NOAA 2022) 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, such as 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 3 Transportation Infrastructure⁶

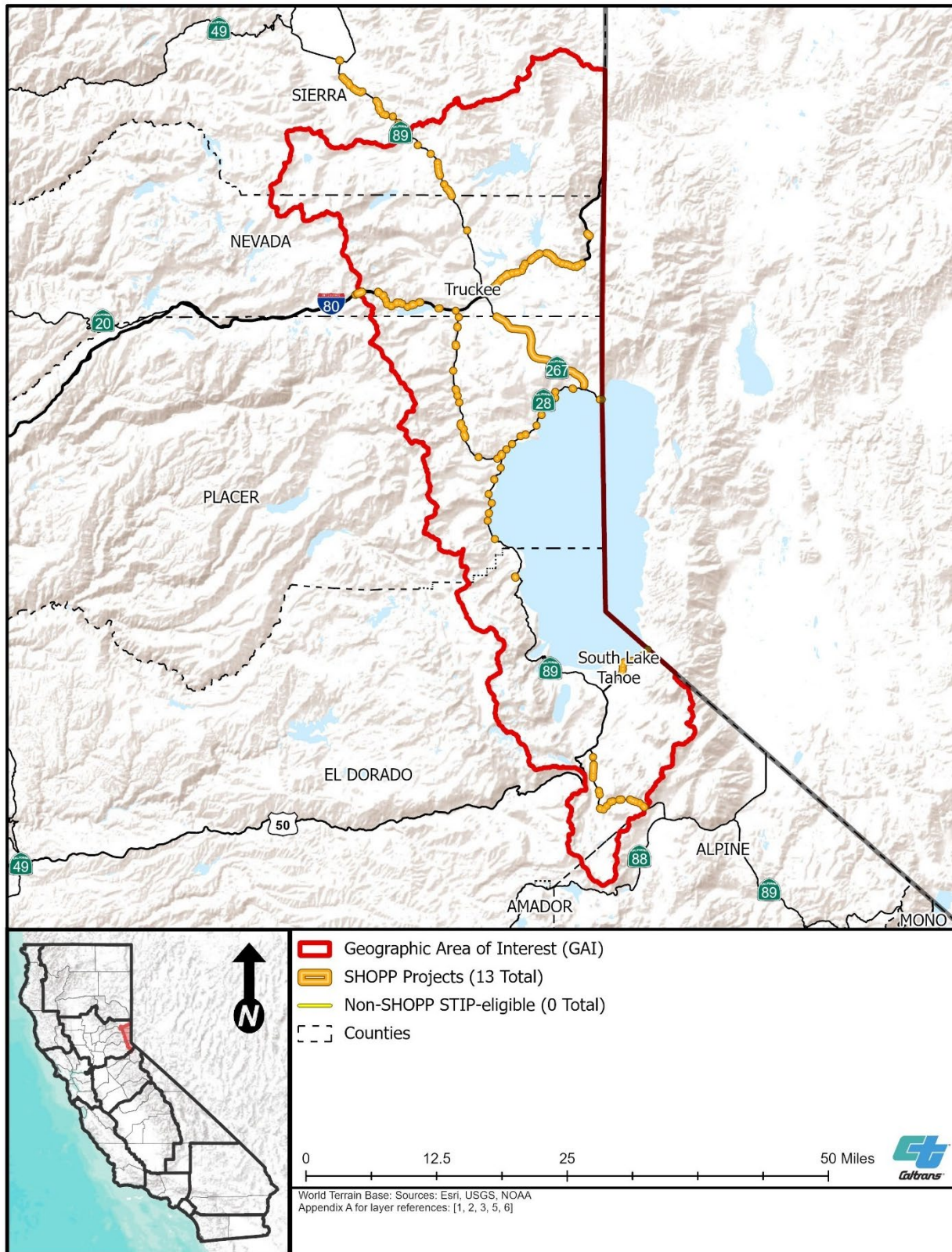
Headquartered in Marysville, Caltrans District 3 includes Butte, Colusa, El Dorado, Glenn, Nevada, Placer, Sacramento, Sierra, Sutter, Yolo, and Yuba Counties. Caltrans District 3 headquarters and field offices maintain and operate 1,491 centerline miles of freeway, expressways, and conventional highways. These SHS roadways range from scenic two-lane highways to controlled-access freeways. State Route 99 and Interstate 5—two major north-to-south routes connecting northern and south-central California—and Interstate 80 and U.S. Highway 50—two major east-to-west routes connecting California with states to the east—traverse Caltrans District 3. State Routes 28, 89, and 267 also occur in the geographic area of interest (“GAI”).

Other transportation agencies that implement transportation improvements in the GAI for this RAMNA (MPOs, RTPAs, and other public agencies) are the Alpine County Local Transportation Commission, El Dorado County Transportation Commission, Nevada County Transportation Commission, Placer County Transportation Planning Agency, Sacramento Area Council of Governments, Sierra County Local Transportation Commission, Tahoe MPO, Tahoe Regional Planning Agency, and Tahoe Transportation District. The above-listed transportation agencies are eligible for STIP funding.

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

⁶ Adapted from: <https://dot.ca.gov/caltrans-near-me/district-3/d3-popular-links/d3-about>

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.)
- Federal Clean Water Act (“CWA”), Sections 401 and 404 (33 USC § 1251–1376)
- Federal 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 in the GAI are listed in Table 1-2.

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

Partner	Web Address
CDFW, North Central Region	https://wildlife.ca.gov/regions/2
SWRCB	https://www.waterboards.ca.gov/
RWQCB, Lahontan Region	https://www.waterboards.ca.gov/lahontan/
Corps, South Pacific Division, Sacramento District	https://www.spk.usace.army.mil/
EPA, Region 9	http://www.epa.gov/region9/
FWS, Reno Fish and Wildlife Office	https://www.fws.gov/office/reno-fish-and-wildlife
FWS, Sacramento Fish and Wildlife Office	https://www.fws.gov/office/sacramento-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 instrument 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,⁷ and in-lieu fee programs require 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 require an agreement.

1.4 SAMNA

Predicting likely future transportation project effects on natural resources takes place at the intersection of transportation and conservation planning. In 2024, 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 & Protection Program Ten-Year Project Book 2023/24—2032/33* (“SHOPP Ten-Year Book”) for fiscal years 2023/24 to 2032/33 (Caltrans 2024a). The forecast was performed using the Caltrans Statewide Advance Mitigation Needs Assessment Reporting Tool (“SAMNA Reporting Tool”), a GIS overlay model developed by Caltrans to support advance mitigation planning (Caltrans 2024b). Potential impacts for all 12 Caltrans Districts were estimated. Statewide, 688 transportation projects and more than 600 wildlife and aquatic resources were evaluated through the SAMNA Reporting Tool, yielding thousands of results (Caltrans 2024c). The subset of the Caltrans District 3 transportation projects that are planned in the GAI during this RAMNA’s planning period and each associated eight-digit hydrologic unit code (“HUC” or “HUC-8”), ecoregion section, advertised year, and planned

⁷ 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.

activities 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 Reporting Tool geospatial data and model assumptions are described more fully in Caltrans (2024c). Results are presented in four different reports: terrestrial and aquatic species and subspecies, threatened and endangered fish, wetlands, and non-wetland waters. The unit of measure for impacts is acres.

SAMNA Caveats: The Statewide Advance Mitigation Needs Assessment (“SAMNA”) is strictly and specifically intended to be used by Caltrans to justify, propose, and scope advance mitigation projects (Caltrans 2024c). 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 therefore be fully liable.

1.4.1. Riparian Landcover Dataset

The Riparian Zone Estimator Tool (“RipZET”) is a Microsoft Excel and GIS-based decision support tool developed by the San Francisco Estuary Institute (“SFEI”) to estimate the extent of riparian areas based on the concept of “functional riparian width.” According to this concept, various riparian functions can extend different distances from their adjacent surface waters, depending on local topographic slope, vegetation, and position along a drainage network. More information about the science behind RipZET can be found in SFEI (2015a).

Since 2015, RipZET has been used in smaller and more regional studies across California and has been refined a number of times by SFEI. However, in 2023, SFEI developed a larger-scale statewide riparian landcover dataset for Caltrans to assist with advance mitigation planning (Caltrans 2023a). For this statewide product, SFEI used readily

available data that were appropriate for the larger scale of the analysis (Caltrans 2023a). For example, SFEI used elevation data that are less detailed than recommended in SFEI (2015b) because high-resolution statewide data are not available—SFEI used 5-meter NextMAP data, not the recommended 0.5-meter LiDAR data. More information regarding the inputs to the statewide landcover dataset can be found in Caltrans (2023a). Further, it was not feasible to perform the field verification step used for the smaller-scale efforts. More information regarding the process and computations within RipZET's modules can be found in SFEI (2015b).

Whether the statewide riparian landcover dataset developed for Caltrans improves forecasts of Caltrans riparian-related mitigation needs is currently unknown. Statewide outputs are not regarded as riparian maps *per se* because they do not depict actual boundaries based on field observations. Instead, they represent modeled areas where riparian functions are likely to be supported based on hillslope and vegetation processes (Caltrans 2023a). Hence, the modeled impacts presented in this RAMNA using the statewide riparian landcover dataset layer are better understood to be forecast impacts on areas of potential riparian function, more so than on riparian habitat itself, and are likely more extensive than actual impacts on riparian habitat or the vegetation associated with the bed and bank of streams or lakes. For transportation project environmental studies and permits, the extent of potential impacts on fish and wildlife resources associated with modification of the bed and bank of wetland and non-wetland water resources will ultimately be determined by biologists in the field.

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 complete 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 in 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") (CDFW 2015) is organized by ecoregion. To identify a focus area,

consistent with Step 2 of the advance mitigation planning process (Figure 1-1), in 2025, Caltrans District 3 subject matter specialists:

- reviewed the entirety of Caltrans District 3's SAMNA results by HUC-8 sub-basin and ecoregion section (Caltrans 2024b; available on: www.dot.ca.gov/programs/environmental-analysis/biology/advancemitigation);
- reviewed the SAMNA results' associated 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 for the Lower Sacramento Basin was previously performed in 2022 (Caltrans 2022);
- observed that the portions of Caltrans District 3 located within the Lake Tahoe and Truckee sub-basins in the GAI have forecast compensatory mitigation needs during the planning period; and
- identified the Lake Tahoe and Truckee sub-basins as locations where Caltrans District 3 and other public agencies that implement transportation improvements could benefit from advance mitigation planning—hereafter called the “GAI” (Figure 1-3).

Because the Lake Tahoe and Truckee sub-basins form an ecological boundary and not a political boundary, a portion of the GAI overlaps Caltrans District 10. However, the GAI does not overlap state highways in District 10.

1.5.2. Terrestrial Species of Mitigation Need

Compensatory mitigation for species in the GAI was identified as both a historical and anticipated future transportation project compensatory mitigation need within Caltrans District 3. 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, after reviewing SAMNA results for the planning period, Caltrans District 3 identified a species that, if compensatory mitigation credits were available and in-hand, transportation project schedules could potentially benefit. This terrestrial “species of mitigation need” is Sierra Nevada yellow-legged frog (*Rana sierrae*), which is listed as federally endangered and state threatened.

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*. Sierra Nevada yellow-legged frog is also discussed in Chapter 8, *Aquatic Resources Conservation Goals and Objectives*.

1.5.3. Aquatic Resources and Riparian Habitat

For the purposes of this RAMNA, aquatic resources include all wetlands and non-wetland waters that may be subject to Corps, EPA, SWRCB and RWQCB (or “Water Boards”), and/or CDFW regulations, as well as threatened and endangered fish that may be subject to CDFW, and/or FWS regulations. No fish species of mitigation need were identified for this RAMNA. Riparian habitat is described in Section 2.16.

Compensatory mitigation for aquatic resources and riparian habitat in the GAI were identified as both historical transportation project compensatory mitigation needs and anticipated future transportation project compensatory mitigation needs within Caltrans District 3. SHOPP transportation projects have historically been conditioned by natural resource regulatory agencies for these resources and have benefited from mitigation credits, when available.

The Lake Tahoe (HUC-8 16050101) and Truckee (HUC-8 16050102) sub-basins inform the analysis of estimated aquatic resources and riparian habitat compensatory mitigation needs 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 Lake Tahoe and Truckee sub-basins, referred to as the GAI;
- applies to fiscal years 2023/24 to 2032/33 (planning period), which is concurrent with the time period addressed by the SHOPP Ten-Year Book (Caltrans 2024a);
- discusses potential compensatory mitigation conditions that may be placed on future transportation projects by the seven resource and regulatory agency signatories⁸ 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 in the GAI and planning period;
- documents Caltrans’ forecast of potential wildlife and aquatic resource⁹ compensatory mitigation needs for the GAI and planning period, as reported by the SAMNA (Caltrans 2024b);

⁸ Natural resource regulatory signatories are CDFW; SWRCB; Corps Los Angeles, Sacramento, and San Francisco Districts; EPA; FWS; National Marine Fisheries Service; and California Coastal Commission.

⁹ *Aquatic resources* are defined in Section 1.5.3.

- identifies information that will be important to Caltrans when scoping any of the AMP's authorized activities in the GAI, in accordance with SHC § 800.6(a), including documenting the existing compensatory mitigation supply;
- 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 in 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 2019a).

1.7 Coordination History

With respect to external communications, the AMP Guidelines describe three communication milestones within the advance mitigation project planning process (Caltrans 2019a). 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 3 Transportation Planning has regularly scheduled meetings with the El Dorado County Transportation Commission, Tahoe Regional Planning Agency, and Tahoe Transportation District. At this time (July 2026), no STIP transportation projects in their planning phase and located in the GAI were identified for the planning period.

1.7.2. RAMNA Review

The AMP Guidelines (Caltrans 2019a) 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 March 2025, 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.

[Dear Readers: This table will be completed after the draft is reviewed and prior to finalizing the RAMNA.—AMP]

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

Commenter	Date of Comment(s)
CDFW ^a	To be determined
To be determined	To be determined
To be determined	To be determined

^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.

[Dear Readers: This table will be completed after the draft is reviewed and prior to finalizing the RAMNA.—AMP]

Table 1-4. Interagency Meetings

Meeting Participants	Meeting Date
To be determined	To be determined
To be determined	To be determined
To be determined	To be determined

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 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 that can inform 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 in the vicinity of 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	Title	Content
Chapter 9	Assessment of Authorized Activities	This chapter describes options and analyzes the feasibility of purchasing and/or establishing mitigation credits (or similar) in the GAI that have a high probability of successfully accelerating transportation project delivery and protect natural resources through transportation project mitigation.
Chapter 10	References	This chapter lists references cited in the RAMNA.
Appendices	Various	Appendices supporting this document: Appendix A – GIS Sources Appendix B – Transportation Projects Planned for the GAI during the Planning Period Appendix C – Land Cover Types Appendix D – Complete SAMNA Species Results Appendix E – Aquatic Resource Locations

2. ENVIRONMENTAL SETTING

In this chapter, Caltrans describes the GAI in terms of ecoregion sections, land ownership, topography, climate, land cover, 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 2024c). 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*.

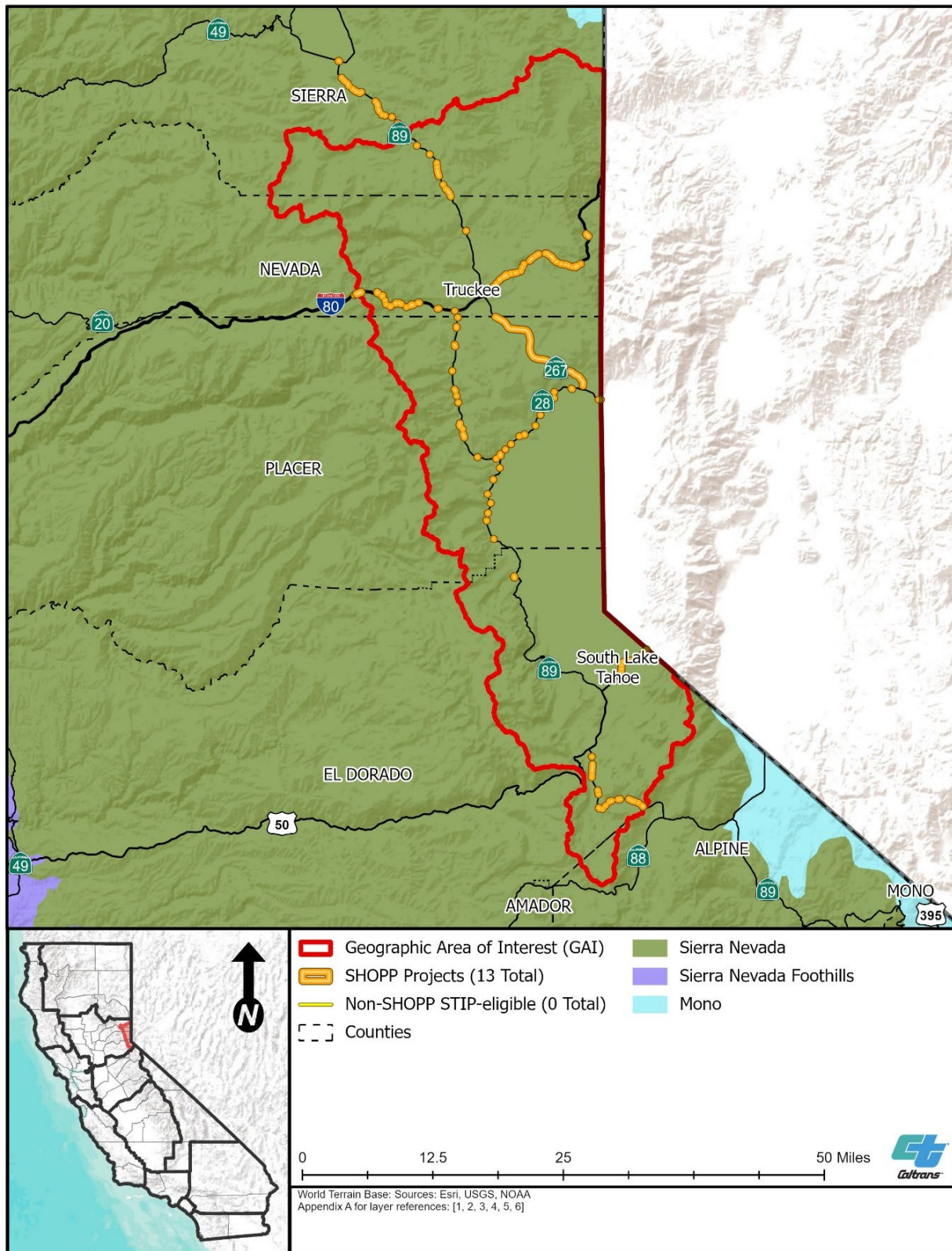
2.1 Ecoregion Sections in the GAI

The GAI consists of approximately 514,000 acres within California's Lake Tahoe and Truckee sub-basins (HUC-8s), which are overlapped by a portion of the Sierra Nevada Ecoregion Section (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). The Sierra Nevada Ecoregion Section is within the larger Sierran Forest – Alpine Meadows Province (McNab et al. 2007).

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



2.2 Land Ownership

The GAI spans parts of Alpine, Nevada, El Dorado, Placer, and Sierra Counties (Figure 1-3). Federal lands account for most of the land in the GAI (55.2 percent) and are administered and managed by the Corps and USFS (Table 2-1, Figure 2-2). USFS land includes the Tahoe and El Dorado National Forests and Lake Tahoe Basin Management Unit. Privately owned and managed lands account for 35.9 percent of land in the GAI. Lands owned or managed by nonprofit conservancies and land trusts account for 4.9 percent of land in the GAI. State lands, which account for 3.7 percent of land in the GAI, include lands owned and managed by the California Department of Parks and Recreation, CDFW, California State Lands Commission, and the California Tahoe Conservancy. Land governed by counties, cities, and special districts accounts for less than 1 percent of land in the GAI (Table 2-1, Figure 2-2).

Table 2-1. Land Ownership in the GAI

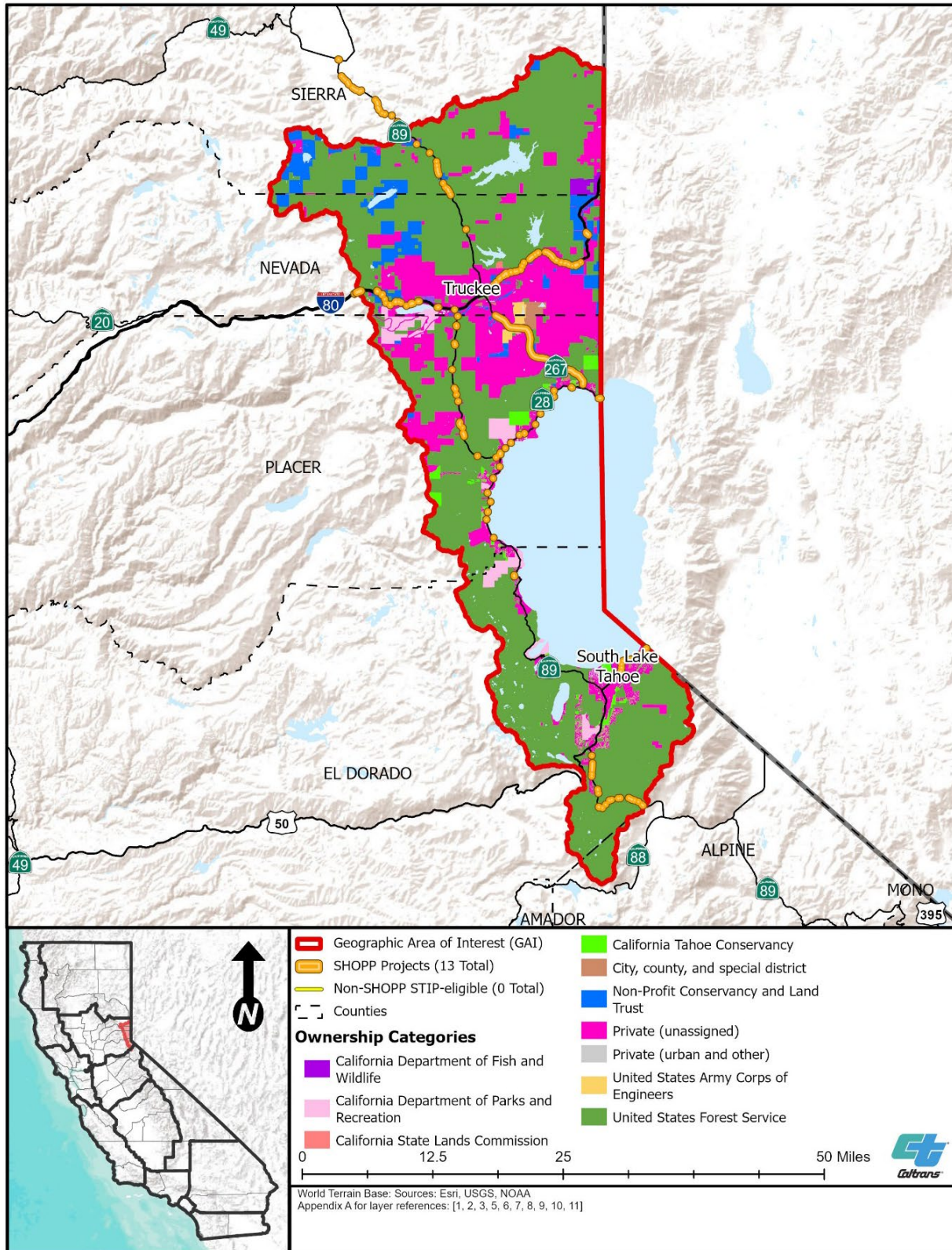
Land Owner or Land Use	Number of Parcels	Total Acreage per Agency/Owner ^a	Ownership as Percentage of GAI ^b
USFS	1,189	282,023	54.9
Private (unassigned)	4	184,701	35.9
Nonprofit conservancy and land trust	670	24,991	4.9
California Department of Parks and Recreation	118	9,520	1.9
California Tahoe Conservancy	3,467	6,452	1.3
City, county, and special district	46	2,190	0.4
Corps	10	1,670	0.3
CDFW	11	1,572	0.3
California State Lands Commission	3	861	0.2
Private (urban and other)	1	3	<0.1
Total	—	513,982	100%

Sources: California Protected Lands Database, California Conservation Easement Database, Caltrans (2024b), 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.

Figure 2-2. Land Ownership



2.2.1. Protected Lands

The California Protected Areas Database, developed by the GreenInfo Network, provides an inventory of lands that are owned in fee or protected for open space purposes throughout California by over 1,000 public 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 the 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’ 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 in areas with Ranks 1, 2, or 3. Lands with conservation easements are also identified in the California Protected Areas Database; some of the planned SHOPP transportation projects are near conservation easements (Figure 2-3).

In addition, the California Conservation Easement Database, also developed by the GreenInfo Network, provides an inventory of easements and deed-based restrictions on private land. These restrictions limit land uses to those compatible with maintaining the land as open space. These lands under easement may be actively farmed, grazed, forested, or held as nature reserves. Easements are typically held on private lands with no public access, and may include easements held by land trusts and non-profit organizations, local jurisdictions (city and county), and state and national agencies.

2.3 Topography

The GAI is located along the California – Nevada border and is bound by the Sierra Nevada mountain range to the north and west, the Carson Range to the east, and the northern part of the Hope Valley to the south. A portion of Lake Tahoe is in the central and southern part of the GAI. Elevations in the GAI range from 4,920 to 10,877 feet above mean sea level (Figure 2-4).

Figure 2-3. Protected Lands: Conservation Easements and GAP Status

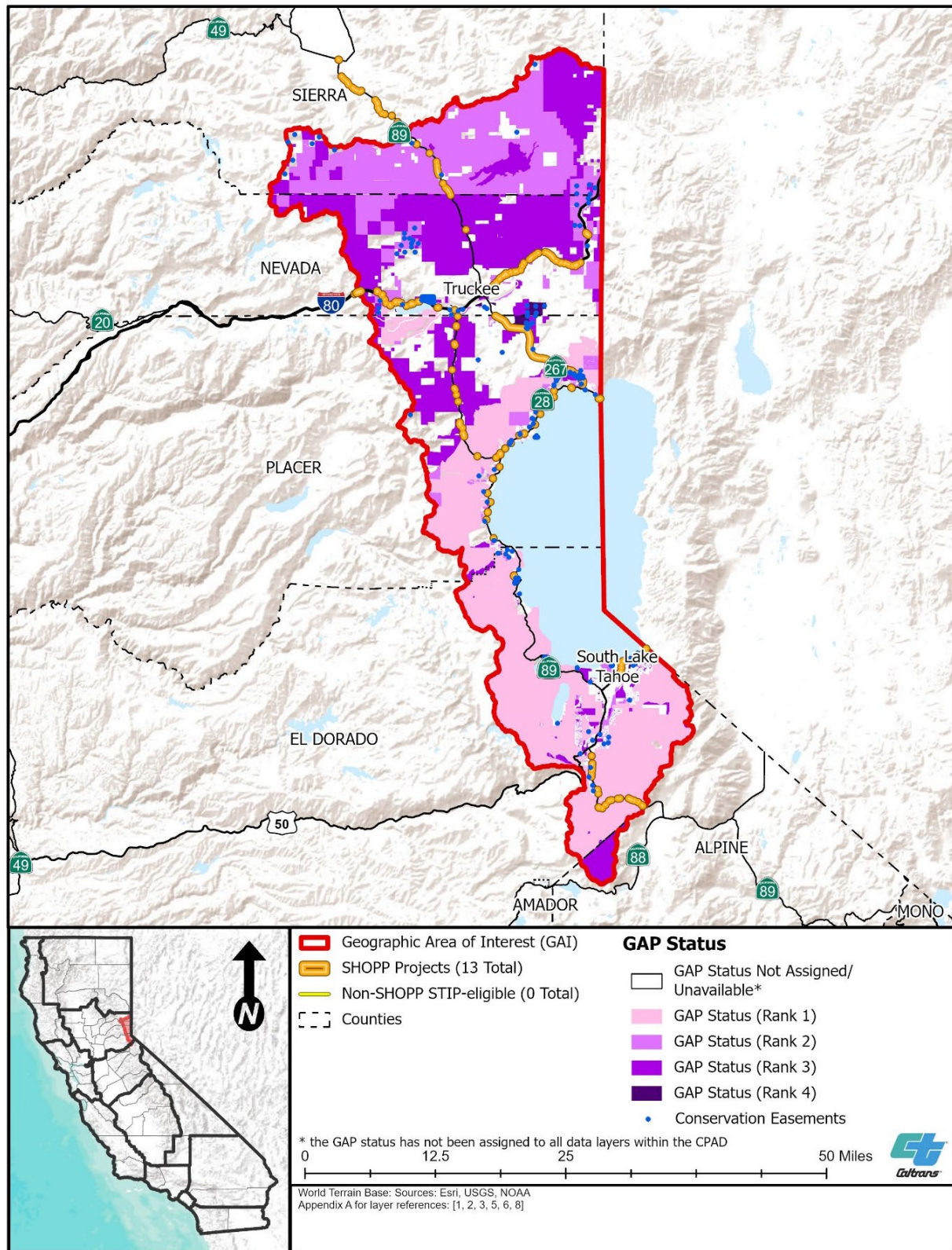
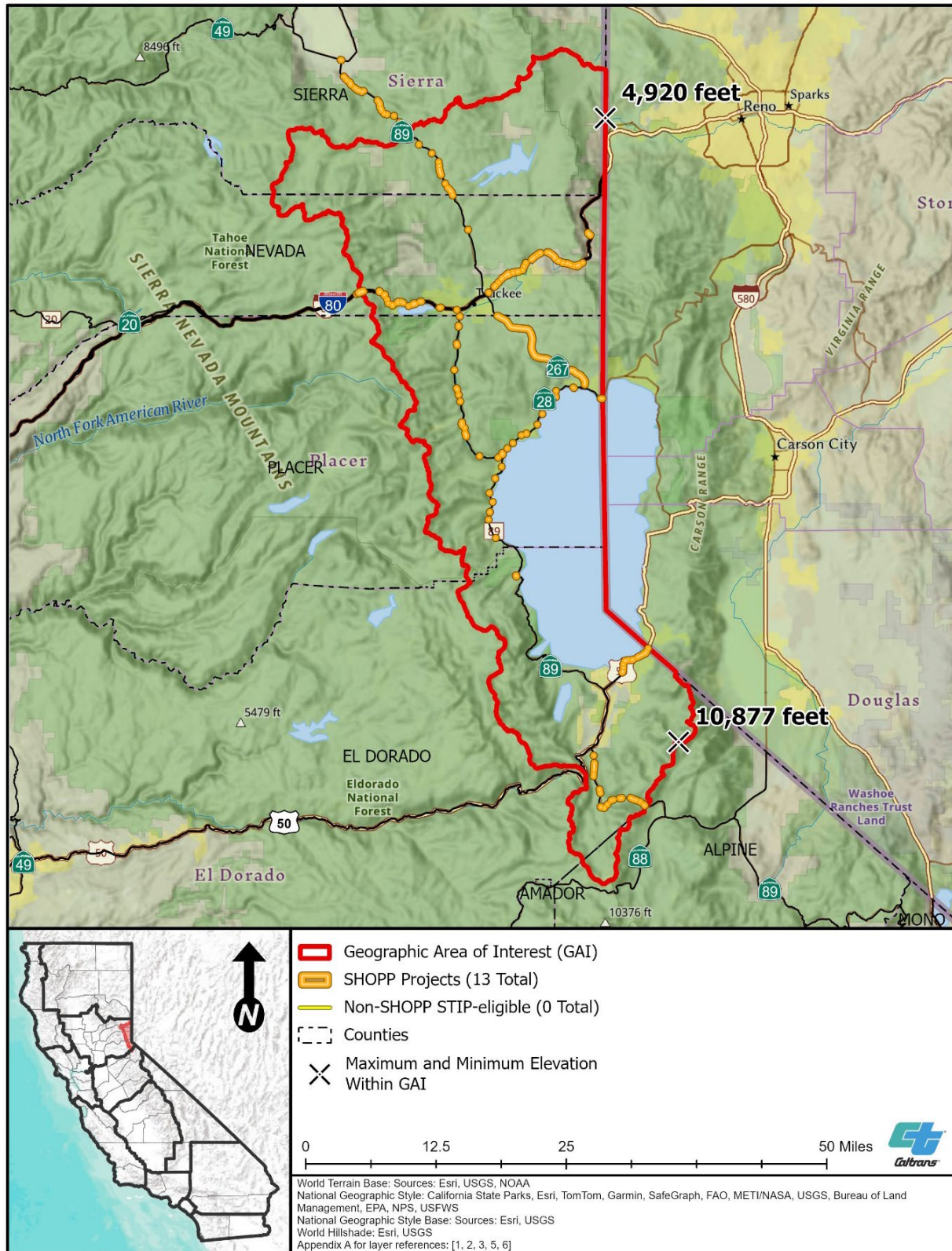


Figure 2-4. Topography



2.4 Climate

Areas of the GAI below 6,500 feet, such as the northeastern corner of the GAI, are characterized by a Mediterranean climate with cool, wet winters and hot, dry summers, with slightly warmer summers and cooler winters to the east. Areas above 6,500 feet, such as the southern border of the GAI, have a boreal climate, consisting of long, cold winters and short, warm to cool summers. Within the Sierra Nevada, areas of higher elevation receive more precipitation as storm systems move west to east. The eastern slope of the Sierra Nevada range is affected by a rainshadow, creating a drier climate (Raumann and Souldard 2012). The eastern portion of the Sierra Nevada is influenced by the climate of the Great Basin, which has colder winters and more summer rainfall. The southern portion of the Sierra Nevada is at the highest elevation and receives more snow. However, due to the effects of global climate change, more precipitation has fallen as rain rather than snow in recent years (Halofsky 2021).

Over the next 30 years, the climate is expected to change. Results of Caltrans' climate vulnerability assessment are summarized in Section 2.4.1. The predicted resilience of the GAI to effects resulting from climate change are summarized in Section 2.4.2.

2.4.1. 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 3 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, 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).

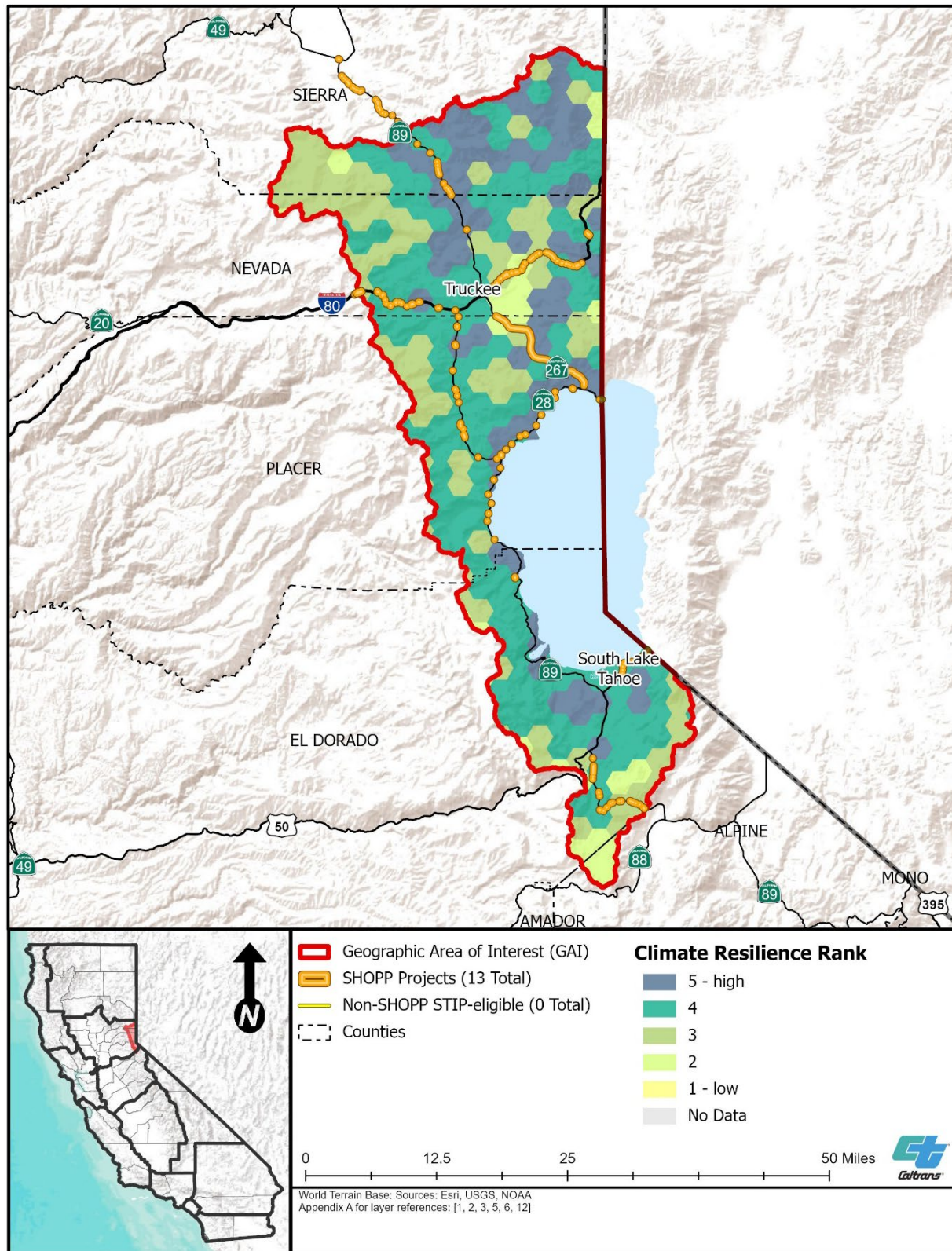
The effects of climate change in the GAI pose risks for transportation infrastructure, reliability, and capacity. Transportation systems were designed for historical climate conditions; changing climatic conditions, including an increased frequency of extreme weather events, are expected to disrupt and damage the SHS. Predicted climate change effects consist of projected extended periods of higher temperatures during the summer; large fluctuations in precipitation, with dry years becoming drier and wet years becoming wetter; as well as an increased risk of drought, wildfires, and landslides over the three time periods analyzed in the technical report (Caltrans 2019b).

2.4.2. Climate Resiliency

A climate change-resilient natural community area is a terrestrial location expected to remain stable in the face of climate change (CDFW 2018a). 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 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 2018a).

Resiliency is an important consideration when establishing compensatory mitigation. Figure 2-5 presents the terrestrial climate change resilience rank from the ACE dataset (CDFW 2018a). Higher resilience is shown for most of the GAI, from around Lake Tahoe to the northern extent of the GAI. Resilience in these areas ranges from 4 to 5. Resilience along the western and southern edges of the GAI is lower, ranging from 1 to 3.

Figure 2-5. Terrestrial Climate Resilience Rankings



2.5 Land Cover Types

General land cover types are depicted on the maps provided in Appendix C, *Land Cover Types*. Land cover types in 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 2024d). Based on these data, tree-dominated habitats account for the largest habitat type, encompassing 58.2 percent of the GAI, with Sierran mixed conifer being the most common. Aquatic habitats account for 18.7 percent of the GAI, with lacustrine the most common. Shrub-dominated habitats account for 14.4 percent of the GAI, with montane chaparral the most common. Developed and non-vegetated habitat types (barren areas) combined account for 5 percent of the GAI, with barren the most common. Herbaceous-dominated habitats account for 3.7 percent of the GAI, with annual grassland the most common (Table 2-2, Appendix C). Land cover is generally shown on Figure 2-6.

Table 2-2. Land Cover Types in the GAI

CWHR Habitat Type	Acres^a	Cover as Percentage of GAI^b
Tree-dominated Habitats	298,800	58.21
Aspen	552	0.11
Eastside Pine	60,903	11.86
Jeffrey Pine	21,785	4.24
Juniper	16	<0.01
Lodgepole Pine	12,153	2.37
Montane Hardwood	60	0.01
Montane Hardwood-Conifer	635	0.12
Montane Riparian	3,790	0.74
Ponderosa Pine	15	<0.01
Red Fir	42,666	8.31
Sierran Mixed Conifer	122,394	23.84
Subalpine Conifer	14,630	2.85
White Fir	19,201	3.74
Shrub-dominated Habitats	73,979	14.41
Alpine Dwarf-Shrub	685	0.13
Bitterbrush	7,904	1.54
Low Sage	431	0.08

CWHR Habitat Type	Acres ^a	Cover as Percentage of GAI ^b
Mixed Chaparral	36	0.01
Montane Chaparral	51,761	10.08
Sagebrush	13,162	2.56
Herbaceous-dominated Habitats	18,999	3.70
Annual Grassland	7,715	1.50
Perennial Grassland	5,749	1.12
Wet Meadow	5,536	1.08
Aquatic Habitats	95,799	18.66
Lacustrine	95,683	18.64
Riverine	117	0.02
Developed Habitats	7,881	1.54
Cropland	112	0.02
Urban	7,769	1.51
Non-vegetated Habitats	17,886	3.48
Barren	17,886	3.48
Total^c	513,345	100%

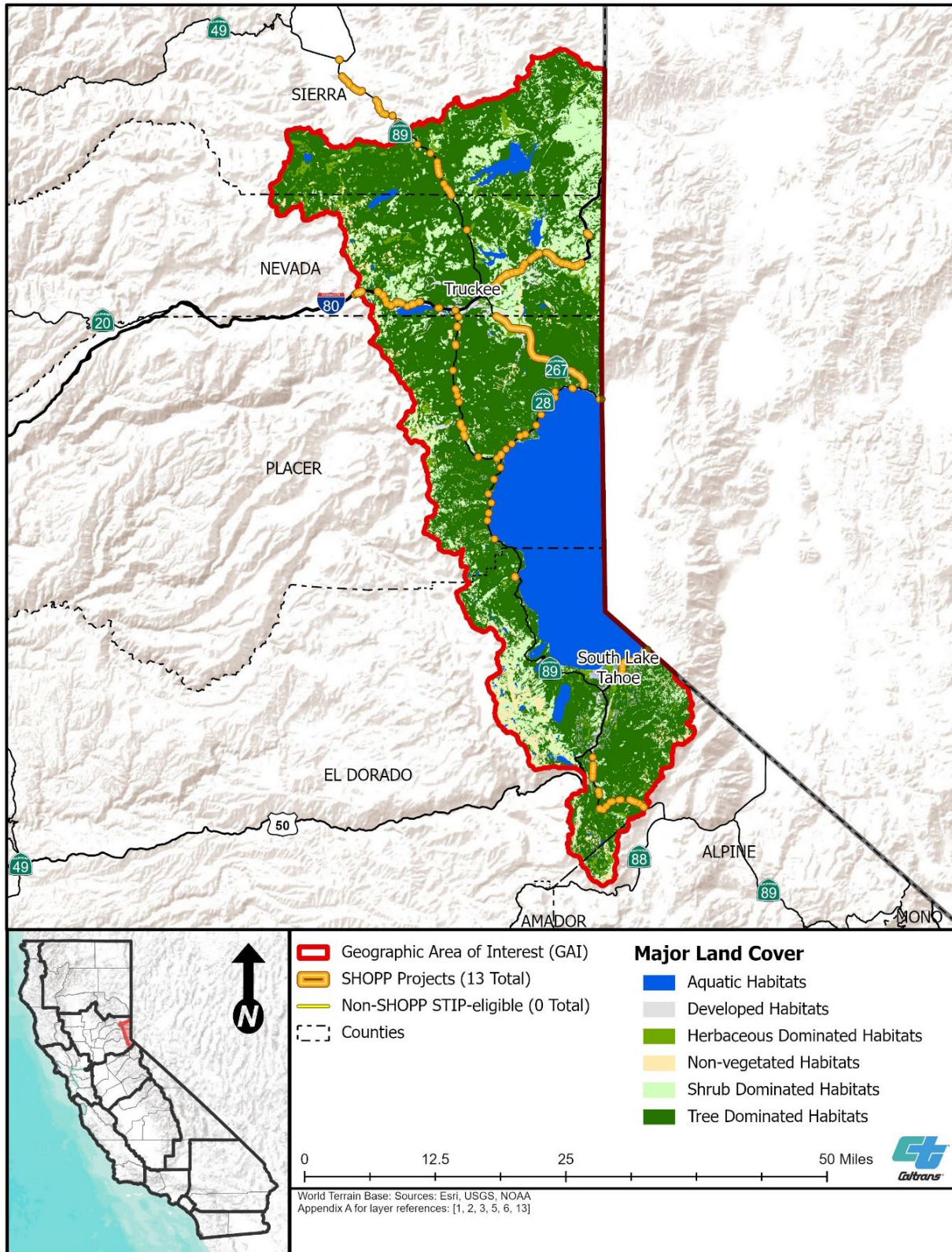
Source: Caltrans (2024d)

^a Numbers were rounded to the nearest whole number.

^b Numbers were rounded to the hundredths.

^c Totals may be different due rounding.

Figure 2-6. Major Land Cover^a



^a For greater detail, see Appendix C., *Land Cover Types*

2.6 Invasive Species

Both invasive plant and animal species are known to occur in 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 (FWS 2022a; 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 2024a; 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 2026).

In the GAI, invasive plant species have been specifically identified as threats or stressors to terrestrial and aquatic biological resources (CDFW 2024a). 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 in the GAI that are identified as problematic in the California SWAP or the Cal-IPC inventory include, but are not limited to, creeping bentgrass (*Agrostis stolonifera*), tree of heaven (*Ailanthus altissima*), meadow foxtail (*Alopecurus pratensis*), fivehook bassia (*Bassia hyssopifolia*), hoary alyssum (*Berteroa incana*), ripgut grass (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), red brome (*Bromus rubens*), cheatgrass (*Bromus tectorum*), musk thistle (*Carduus nutans*), diffuse knapweed (*Centaurea diffusa*), yellow star-thistle (*Centaurea solstitialis*), spotted knapweed (*Centaurea stoebe* ssp. *australis*), rush skeleton weed (*Chondrilla juncea*), Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), poison hemlock (*Conium maculatum*), common hound’s tongue (*Cynoglossum officinale*), bristly dogtail grass (*Cynosurus echinatus*), Scotch broom (*Cytisus scoparius*), orchardgrass (*Dactylis glomerata*), foxglove (*Digitalis purpurea*), wild and Fuller’s teasel (*Dipsacus fullonum* and *D. sativus*), medusa head (*Elymus caput-medusae*), redstem filaree (*Erodium cicutarium*), French broom (*Genista monspessulana*), common velvet grass (*Holcus lanatus*), hare barley (*Hordeum murinum*), Klamathweed (*Hypericum perforatum*), woad (*Isatis tinctoria*), kochia (*Bassia scoparia*), white-top (*Lepidium appelianum*), lens-podded hoary cress (*Lepidium chalepense*), perennial pepperweed (*Lepidium latifolium*), ox-eye daisy (*Leucanthemum vulgare*), dalmatian toadflax (*Linaria dalmatica* ssp. *dalmatica*), butter-and-eggs (*Linaria vulgaris*), Eurasian water-milfoil (*Myriophyllum spicatum*), Scotch thistle (*Onopordum acanthium* ssp. *acanthium*), English plantain (*Plantago lanceolata*),

Kentucky blue grass (*Poa pratensis* ssp. *pratensis*), Russian knapweed (*Rhaponticum repens*), Himalayan blackberry (*Rubus armeniacus*), sheep sorrel (*Rumex acetosella*), curly dock (*Rumex crispus*), Russian thistle (*Salsola tragus*), Spanish broom (*Spartium junceum*), tall sock-destroyer (*Torilis arvensis*), and woolly mullein (*Verbascum thapsus*) (Cal-IPC 2026; CDFW 2025).

Nonnative animals that are/may be present within the GAI and can negatively affect aquatic species include American bullfrog (*Lithobates catesbiana*), quagga mussels (*Dreissena bugensis*), zebra mussels (*Dreissena polymorpha*), New Zealand mud snail (*Potamopyrgus antipodarum*), nonnative crayfish, red-eared slider (*Trachemys scripta elegans*), Chinese mitten crab (*Eriocheir sinensis*), western mosquitofish (*Gambusia affinis*), and introduced sport and bait fish including sunfish (*Mola mola*), striped bass (*Morone saxatilis*), black crappie (*Pomoxis nigromaculatus*), bluegill (*Lepomis macrochirus*), brook trout (*Salvelinus fontinalis*), and brown trout (*Salmo trutta*) (CDFW 2025). Nonnative animals that are/may be present in the GAI and can negatively affect terrestrial wildlife through competition, predation, or parasitism include feral pigs (*Sus scrofa*), domestic dogs (*Canis lupus familiaris*), domestic cats (*Felis catus*), European starlings (*Sturnus vulgaris*), and brown-headed cowbirds (*Molothrus ater*) (CDFW 2025).

2.7 Special-status Terrestrial Species

Special-status terrestrial species are discussed below, with additional detail provided in Appendix D, *Complete SAMNA Species Results*. Threatened and endangered fish species with the potential to occur in the GAI are discussed in Section 2.15.2.

Special-status species with the potential to occur in the GAI were extracted from the SAMNA Reporting Tool's species-attributed vegetation data layer, which was developed using the CWHR (CDFW 2021), the Jepson Herbarium's floristic province layer, CDFW's RareFind 5 database (CDFW 2024b), and other information (Caltrans 2024b; Appendix D). 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 Bureau of Land Management ["BLM"] sensitive). Based on a search of the SAMNA Reporting Tool's species-attributed vegetation layer, 45 non-fish special-status species have the potential to occur in the GAI.

Although it is the best information currently available, the SAMNA Reporting Tool's species list is uncertain (Appendix D). 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 2024b). When the 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 D). Further, although 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.

2.8 Critical Habitat

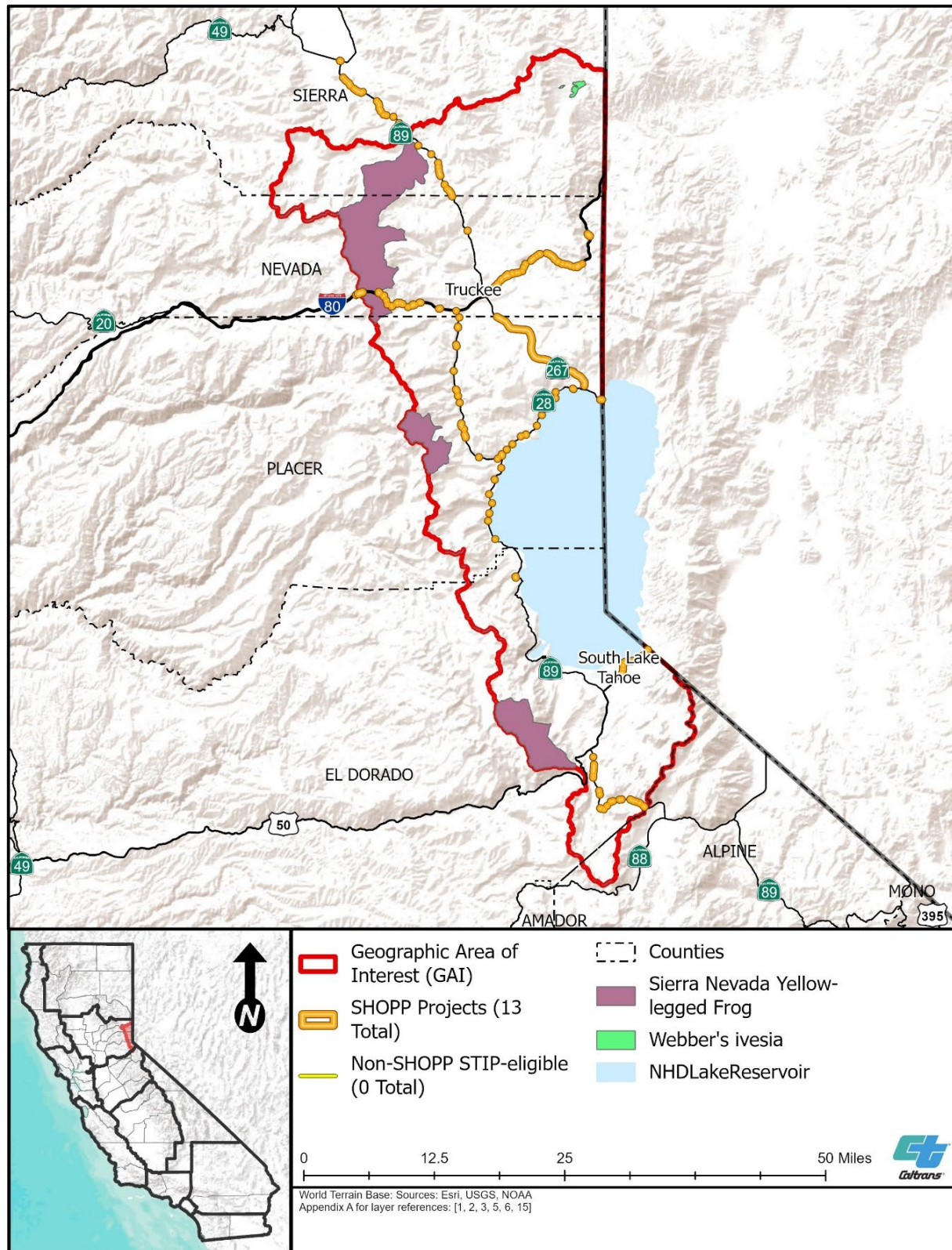
FWS and National Marine Fisheries Service (“NMFS”) regulate impacts on critical habitat under the FESA. The FESA (16 USC § 1531–1544) defines critical habitat for a threatened or endangered species as (i) “specific areas within the geographical area occupied by the species at the time it is listed ... 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 publishes proposals to designate critical habitat in the *Federal Register* and considers information received during the public comment period (FWS 2017).

The GAI includes federally designated final critical habitat for two species (FWS 2022b):

- Sierra Nevada yellow-legged frog (*Rana sierrae*)
- Webber’s ivesia (*Ivesia webberi*)

Critical habitat is an important consideration when establishing compensatory mitigation. Designated critical habitat for these species is indicated on Figure 2-7.

Figure 2-7. Federally Designated Critical Habitat



2.9 Connectivity

Roads can be barriers to special-status wildlife species movement as well as 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).

2.9.1. 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

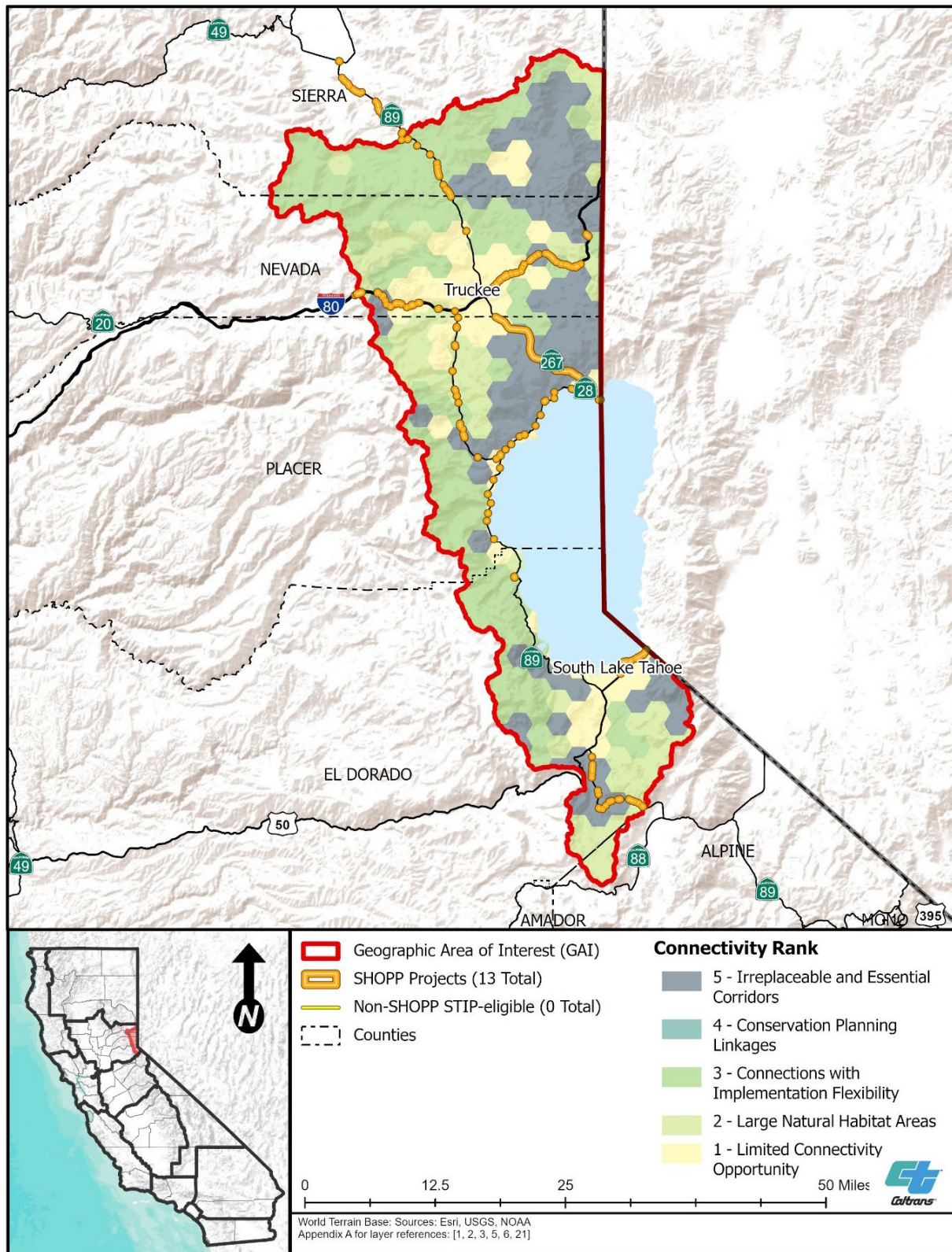
The CEHC Project, a statewide assessment commissioned by CDFW and Caltrans, identified large remaining blocks of intact habitat or natural landscape that support native biodiversity and modeled linkages or essential connectivity areas between them that need to be maintained, particularly as corridors for wildlife (CDFW 2018b; 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 (CDFW 2018a) builds on the CEHC Project and includes mapped corridors or linkages and where they occur in relation to large, contiguous natural areas (Figure 2-8). 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
- Rank 3 (connections with implementation flexibility) – areas with connectivity importance, including core habitat areas and areas on the periphery of mapped habitat linkages

Figure 2-8. Terrestrial Connectivity



- 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 in areas with a connectivity rank of 3 or 1, followed by areas with a connectivity rank of 5, with fewer planned transportation projects occurring within areas with a connectivity rank of 2 and none with a connectivity rank of 4 (Figure 2-8).

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). 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 in 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).

One priority wildlife movement barrier on the SHS was identified in the GAI: Interstate 80 Truckee River Canyon in Sierra and Nevada Counties. Target species for movement for this barrier included mule deer (*Odocoileus hemionus*), black bear (*Ursus americanus*), mountain lion (*Puma concolor*), wolf (*Canis lupus*), and elk (*Cervus canadensis*) (CDFW 2022).

2.9.2. Fish Passage

Article 3.5 of Chapter 1 of Division 1 of the California Streets and Highways Code ("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 2023c) 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

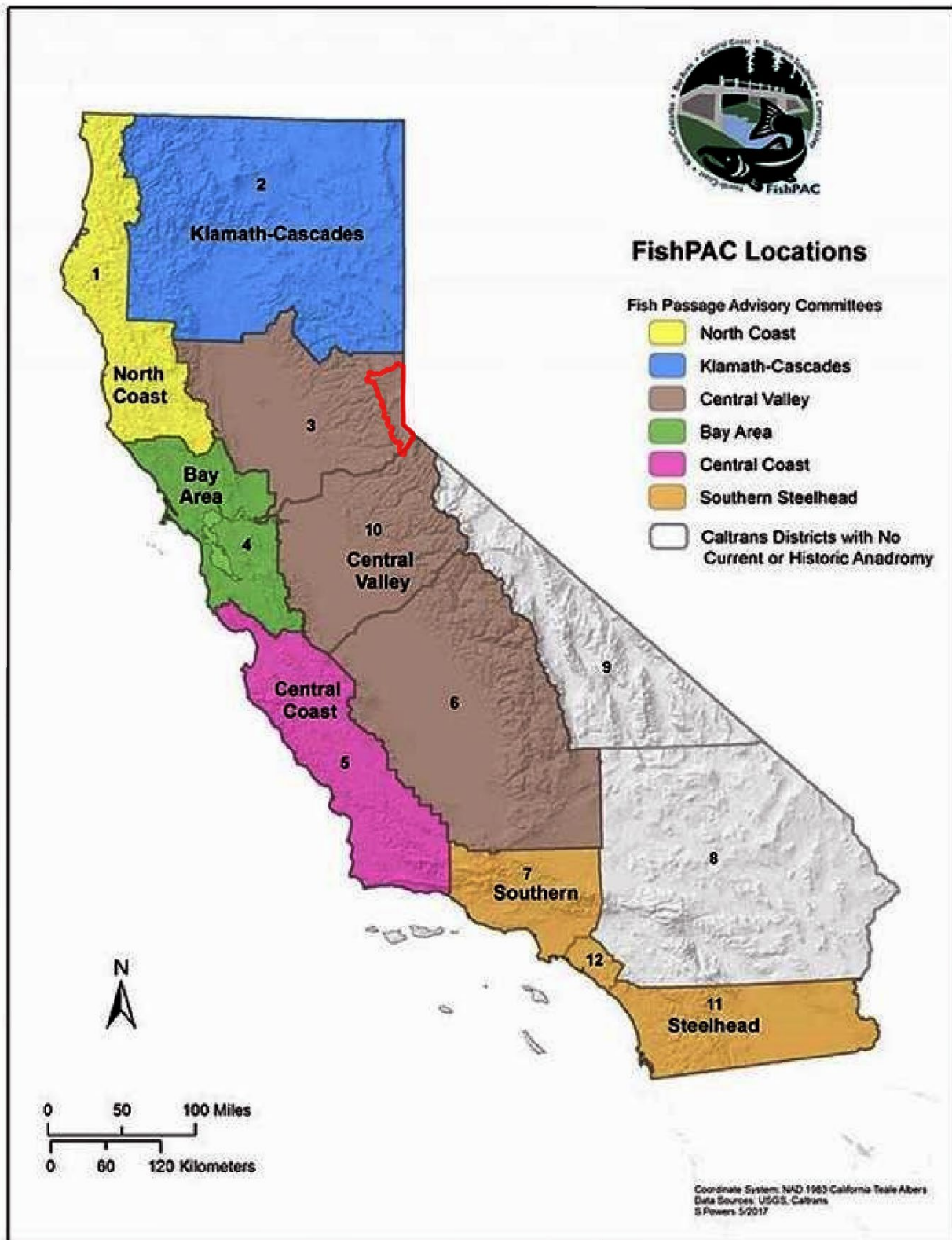
The CESA and FESA list 10 Evolutionarily Significant Units (“ESUs”)/ Distinct Population Segments (“DPS”) of salmon and steelhead as threatened or endangered. Barriers created by the SHS are known to block access to habitat for each of these species’ units. CDFW, in coordination with CalTrout, estimates 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 2-9 depicts the six California Fish Passage Advisory Committee (“FishPAC”) locations throughout the state, including the GAI outlined in red. 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.

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 as well as help to address sediment transport, water temperature, dissolved oxygen, and stream erosion issues.

Figure 2-9. California Fish Passage Advisory Committee Locations



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 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.

2.10 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 2024b; USGS 2014). However, the California Department of Water Resources and Water Boards do not necessarily use HUC-8 codes (California Department of 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.

Table 2-3 provides a crosswalk between the HUC-8 and HU classification systems for each HUC-8 within the GAI. The GAI overlaps the Lake Tahoe and Truckee sub-basins,

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

which loosely correspond to the American River, Feather River, Lake Tahoe, Little Truckee River, Susanville, Truckee River, West Fork Carson River, and Yuba River HUs. Figure 2-10 shows the overlap between sub-basins and state-level HUs in the GAI. The Lake Tahoe, Little Truckee River, and Truckee River HUs are completely in the GAI.

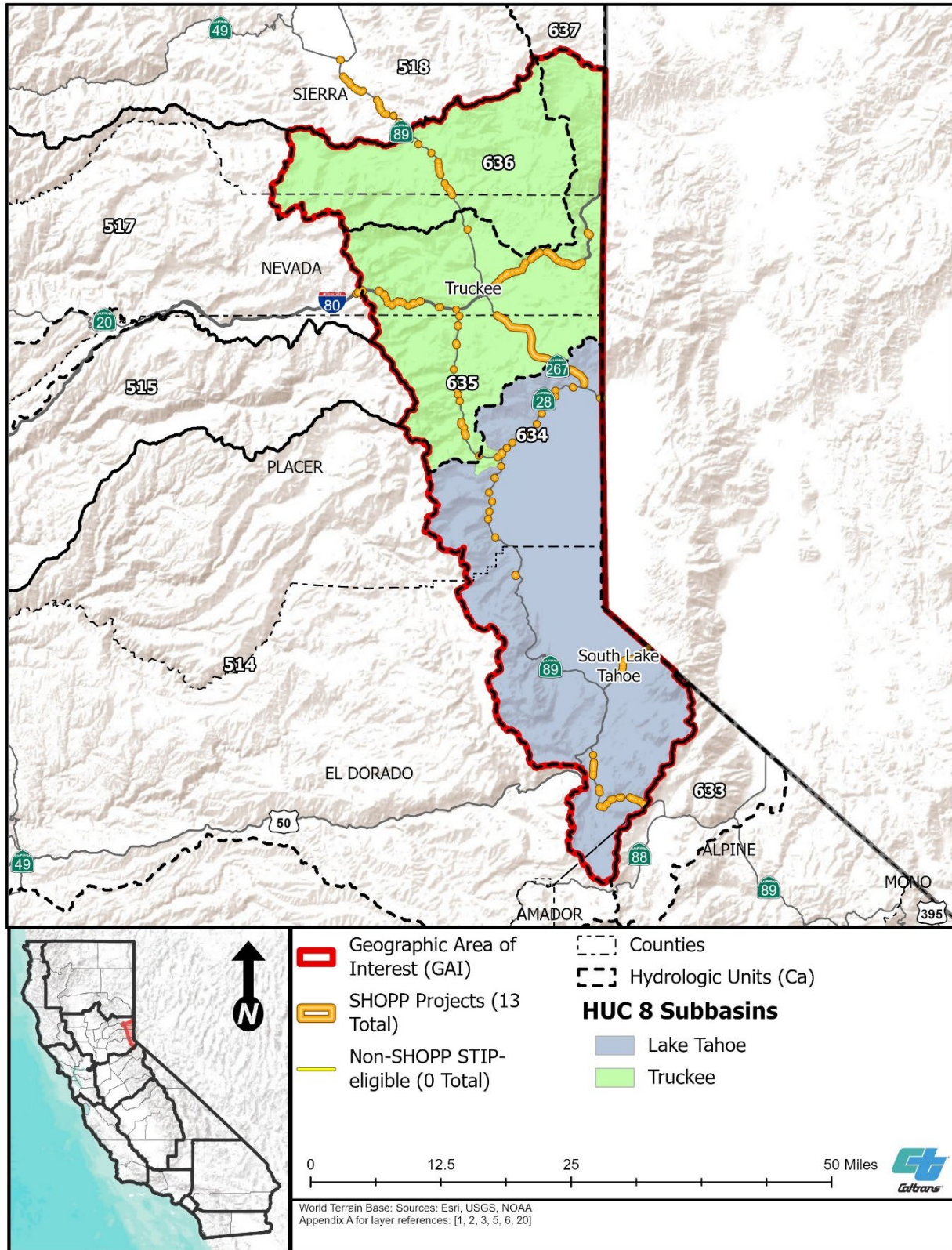
Table 2-3. Crosswalk Table of HUC-8 Sub-basins with HUs in the GAI

HUC-8 Number	HUC-8 Name	HUC-8 Acreage ^a	HU Number	HU Name	HU Acreage ^a
16050101	Lake Tahoe	324,375	514	American River	1,426,353
16050101	Lake Tahoe	324,375	634	Lake Tahoe	237,263
16050101	Lake Tahoe	324,375	635	Truckee River	164,383
16050101	Lake Tahoe	324,375	633	West Fork Carson River	67,763
16050102	Truckee	779,072	514	American River	1,426,353
16050102	Truckee	779,072	515	American River	482,366
16050102	Truckee	779,072	518	Feather River	1,975,547
16050102	Truckee	779,072	634	Lake Tahoe	237,263
16050102	Truckee	779,072	636	Little Truckee River	110,538
16050102	Truckee	779,072	637	Susanville	1,421,097
16050102	Truckee	779,072	635	Truckee River	164,383
16050102	Truckee	779,072	517	Yuba River	539,305
16050102	Truckee	779,072	518	Yuba River	1,975,547

Source: Caltrans (2024f)

^a Numbers were rounded to the nearest whole number.

Figure 2-10. HUC-8 Sub-basins and HUs



2.11 Hydrology

The Lake Tahoe and Truckee sub-basins of the GAI drain an area of 513,927 acres (803 square miles) (Table 2-4). Described individually below, these sub-basins include 815 rivers and streams that traverse 754 miles in the Lahontan RWQCB boundary (Table 2-4, Figure 2-10).

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
Lake Tahoe	16050101	237,120	255	247
Truckee	16050102	276,806	560	507
Total	Not applicable	513,927	815	754

Source: California Department of Water Resources (2016)

^a Numbers were rounded to the nearest whole number.

2.11.1. Lake Tahoe Sub-basin

In the GAI, the Lake Tahoe sub-basin drains an area of 237,120 acres (370 square miles) and includes 255 rivers and streams that traverse 247 miles (Table 2-4). As noted in Table 2-3, the Lake Tahoe sub-basin includes portions of the American River, Lake Tahoe, Truckee River, and West Fork Carson River HUs. Descriptions of these HUs are provided below and may include features that occur outside of the Lake Tahoe sub-basin or the GAI.

The American River HU is associated with the American River; the headwaters are within the El Dorado National Forest in the Sierra Nevada. Composed of three forks, the North, Middle, and South, the American River is a tributary to the Rubicon River, Duncan Creek, Long Canyon Creek, and Silver Creek. Several reservoirs are also located along the American River, including French Meadows, Hell Hole, Union Valley, Ice House, Lake Valley, Loon Lake, Silver Lake, Slab Creek, and Stumpy Meadows. Once past the various impoundments, the American River ultimately drains into the Sacramento River (Sacramento River Watershed Program 2026). The part of the American River HU that lies within the Lake Tahoe sub-basin includes portions of the South Fork American and Middle Fork American hydrologic areas.

The Lake Tahoe HU is associated with the Lake Tahoe watershed. A total of 63 streams feed into Lake Tahoe; however, the Truckee River is the only waterbody to drain water out of the lake (EPA 2026). The part of the Lake Tahoe HU that lies within the Lake Tahoe sub-basin includes portions of the South Tahoe, North Lake Tahoe, and Tahoe Lake Body hydrologic areas.

The Truckee River HU is associated with the Truckee River watershed. The Little Truckee River tributary is a separate hydrologic unit that has significant hydrologic, sediment, and nutrient contributions to the main river. The Truckee River emerges from the northwestern periphery of Lake Tahoe, flows northeasterly for 121 miles, drains part of the high Sierra

Nevada, and empties into Pyramid Lake in the Great Basin (Lahontan RWQCB 2021). Tributaries to the Truckee River include the Little Truckee River, Prosser Creek, Donner Creek, Martis Creek, Hunter Creek, Alum Creek, Dog Creek, Steamboat Creek, Dry Creek, the North Truckee Drain, and Long Valley Creek (Bureau of Reclamation 2022; Town of Truckee 2006).

The West Fork Carson River HU originates within a section of the Mokelumne Wilderness in the Sierra Nevada. Alpine runoff flows north where tributaries such as Horsethief Canyon, Willow, Red Lake, and Forestdale Creeks flow into the West Fork Carson River before reaching Brockliss Slough (Water Education Foundation 2006). The part of the West Fork Carson River HU that lies within the Lake Tahoe sub-basin includes portions of the Upper West Fork Carson River and Woodfords hydrologic areas.

2.11.2. Truckee Sub-basin

In the GAI, the Truckee sub-basin (also known as the Truckee River Basin) drains an area of approximately 276,806 acres (432 square miles), and includes 560 rivers and streams that traverse 507 miles (Table 2-4). As noted in Table 2-3, the Truckee sub-basin includes portions of the American River, Feather River, Lake Tahoe, Little Truckee River, Susanville, Truckee River, and Yuba River HUs. Descriptions of the American River, Lake Tahoe, and Truckee River HUs are provided in the Lake Tahoe sub-basin section.

The part of the American River HU that lies within the Truckee sub-basin includes portions of the Middle Fork American and North Fork American hydrologic areas.

The Feather River HU is associated with the Upper and Lower Feather River watersheds. The headwaters of the Upper Feather River watershed are within the Sierra Nevada crest. There are several tributaries from its headwaters to Lake Oroville, including Spanish, Rock, and Sly Creeks. The Lower Feather River watershed originates from Lake Oroville. Waters flow 60 miles south from the lake to join with the Sacramento River at Verona (Sacramento River Watershed Program 2026). The part of the Feather River HU that lies within the Truckee sub-basin includes a portion of the Middle Fork Feather hydrologic area.

The part of the Lake Tahoe HU that lies within the Truckee sub-basin includes a portion of the North Tahoe hydrologic area.

The Little Truckee River HU is associated with the largest tributary to the Truckee River, the Little Truckee River. Headwaters are located north of Perazzo Creek and flow eastward and southeastward to Stampede Reservoir and Boca Reservoir before feeding into the larger Truckee River (Sacramento River Watershed Program 2026).

The Susanville HU is located within the North Lahontan Hydrologic Basin and contains portions of the Herlong, Susan River, Eagle Drainage, and Snow Storm Mountain hydrologic areas.

The part of the Truckee River HU that lies within the Truckee sub-basin includes portions of the Dog Valley and Truckee River hydrologic areas.

The Yuba River HU is associated with the Yuba River watershed, which originates on the western slopes of the Sierra Nevada and flows near Donner Pass to the Feather River near Yuba City. Streams include Canyon and Slate Creeks on the North Fork Yuba River, and Kanaka and Grizzly Creeks on the Middle Fork Yuba River as well as Canyon and Poorman Creeks on the South Fork Yuba River (Sacramento River Watershed Program 2026). The part of the Yuba River HU that lies within the Truckee sub-basin includes portions of the South Yuba, Middle Yuba, and North Yuba hydrologic areas.

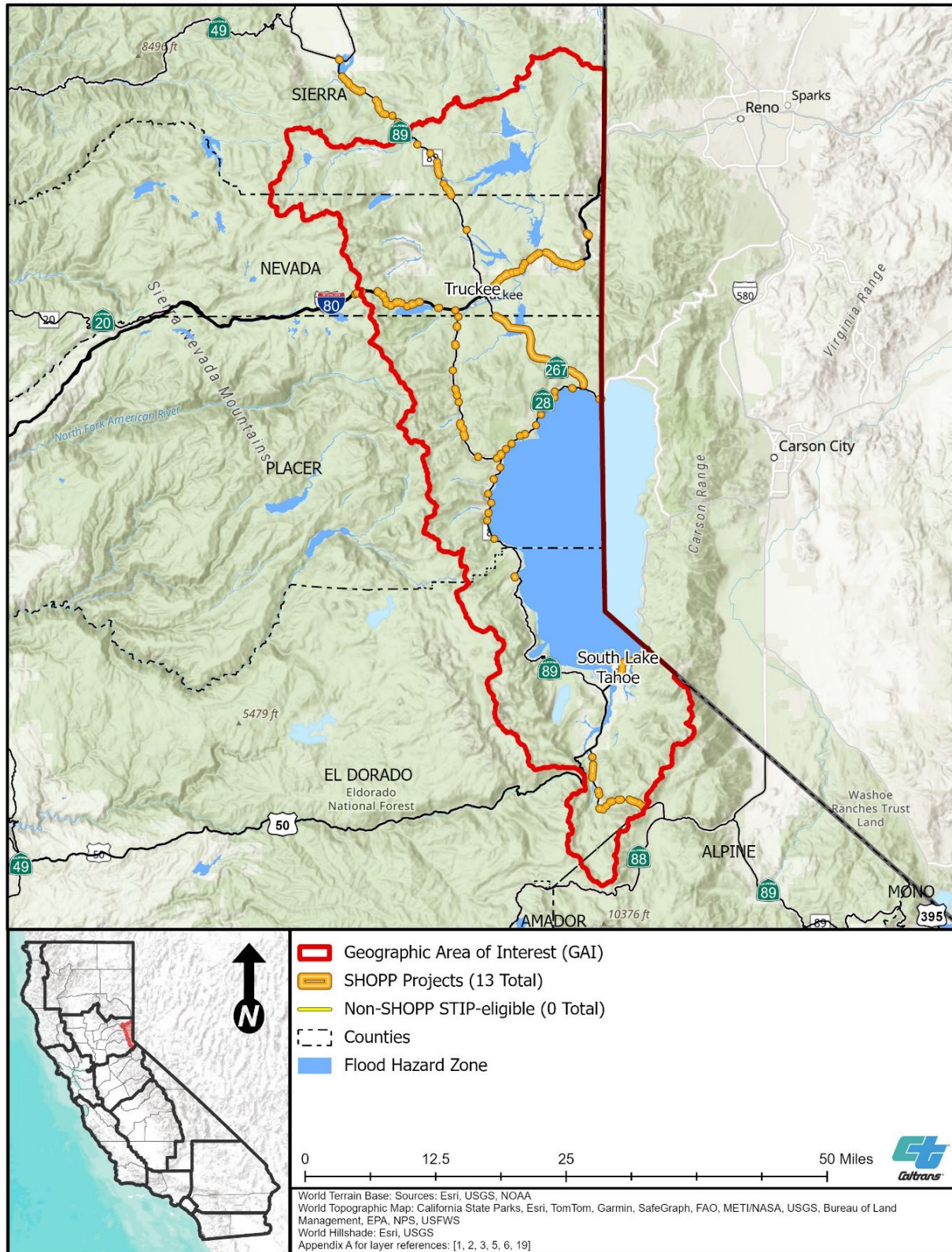
2.12 Flood Hazard Areas

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 in the GAI are shown on Figure 2-11. Waterbodies associated with the majority of flood hazard risk in the GAI include the Stampede Reservoir, Boca Reservoir, Prosser Creek Reservoir, Matis Creek Lake, Donner Lake, Lake Tahoe, and the Upper Truckee River. This information is important for scoping advance mitigation projects and transportation projects undertaken in the GAI, which will need to comply with Executive Order 11988.

Figure 2-11. Flood Hazard Areas



2.13 Water Quality

Water quality objectives for surface waters and groundwater in the GAI are provided in the *Water Quality Control Plan for the Lahontan Region* (“Basin Plan”; Lahontan RWQCB 2021). Water quality objectives identified in the Basin Plan 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 and groundwater are also identified in the Basin Plan (Lahontan RWQCB 2021). 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 in 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	Lahontan Basin Plan	Relevant to RAMNA? ^a
Agricultural supply	Applicable	No
Aquaculture	Applicable	No
Cold freshwater habitat	Applicable	Yes
Commercial and sport fishing	Applicable	No
Flood peak attenuation/flood water storage	Applicable	Yes
Freshwater replenishment	Applicable	Yes
Groundwater recharge	Applicable	Yes
Industrial service supply	Applicable	No
Inland saline water habitat	Applicable	Yes
Migration of aquatic organisms	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	Lahontan Basin Plan	Relevant to RAMNA? ^a
Municipal and domestic supply	Applicable	No
Navigation	Applicable	No
Non-contact water recreation	Applicable	No
Spawning, reproduction, and/or early development	Applicable	Yes
Warm freshwater habitat	Applicable	Yes
Water contact recreation	Applicable	No
Water quality enhancement	Applicable	Yes
Wildlife habitat	Applicable	Yes

Source: Lahontan RWQCB (2021)

^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 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 17 waterbodies in the GAI (SWRCB 2021). This RAMNA considers a waterbody's CWA Section 303(d) impairment designation as relevant to the RAMNA when it indicates a waterbody's loss of a relevant aquatic resource-related beneficial use (Table 2-5). The primary sources of these impairments are rural and agricultural land uses, mining, silvicultural activities, sewage system and septic tank system discharges, and urban runoff. Section 303(d) of the CWA requires that every 2 years, each state submits to EPA a list of rivers, lakes, and reservoirs in the state for which pollution control or requirements have failed to meet water quality standards. Water bodies in the GAI that are included on the Section 303(d) list of impaired waters, their impairments, and whether total maximum daily loads ("TMDLs") have been established are provided in Table 2-6 (SWRCB 2021). A RWQCB may need to consult with CDFW or other natural resource regulatory agencies to determine whether a beneficial use may be affected by a water quality-related decision.

Table 2-6. Impaired Waters in the GAI

Sub-basin	Impaired Water	Impairment	TMDL Status	Relevant to RAMNA? ^a
Lake Tahoe	Bijou Park Creek	Metals (iron)	Required, not established yet	Yes
Lake Tahoe	Blackwood Creek	Metals (iron)	Required, not established yet	Yes
Lake Tahoe	Cold Creek	Nutrients (nitrogen)	Required, not established yet	Yes
Lake Tahoe	East Tributary Griff Creek	Indicator bacteria	Required, not established yet	No
Lake Tahoe	General Creek	Metals (iron)	Required, not established yet	Yes
Lake Tahoe	Griff Creek	Indicator bacteria	Required, not established yet	No
Lake Tahoe	Heavenly Valley Creek (source to USFS boundary)	Sedimentation/siltation	Being addressed by EPA-approved TMDL	Yes
Lake Tahoe	Heavenly Valley Creek (USFS boundary to Trout Creek)	Total dissolved solids	Required, not established yet	Yes
Lake Tahoe	Hidden Valley Creek	Nutrients (phosphorus)	Required, not established yet	Yes
Lake Tahoe	Tallac Creek (below Highway 89)	Indicator bacteria	Required, not established yet	No
Lake Tahoe	Trout Creek (above Highway 50)	Metals (iron)	Required, not established yet	Yes
Lake Tahoe	Trout Creek (below Highway 50)	Metals (iron)	Required, not established yet	Yes
Lake Tahoe	Truckee River	Sedimentation/siltation	Being addressed by EPA-approved TMDL	Yes
Lake Tahoe	Truckee River, Upper (above Christmas Valley)	Metals (iron)	Required, not established yet	Yes
Lake Tahoe	Truckee River, Upper (below Christmas Valley)	Metals (iron)	Required, not established yet	Yes
Lake Tahoe	Ward Creek	Metals (iron)	Required, not established yet	Yes
Truckee	Bronco Creek	Sedimentation/siltation	Being addressed by EPA-approved TMDL	Yes

Sub-basin	Impaired Water	Impairment	TMDL Status	Relevant to RAMNA? ^a
Truckee	Gray Creek (Nevada County)	Sedimentation/siltation	Being addressed by EPA-approved TMDL	Yes
Truckee	Little Truckee River	Indicator bacteria	Required, not established yet	No
Truckee	Martis Creek	Nutrients (phosphorus)	Required, not established yet	Yes
Truckee	Squaw Creek	Sedimentation/siltation	Being addressed by EPA-approved TMDL	Yes

Source: SWRCB (2021)

^a TMDLs relevant to the RAMNA reflect impaired aquatic resource-related beneficial uses.

2.14 Wild and Scenic Rivers

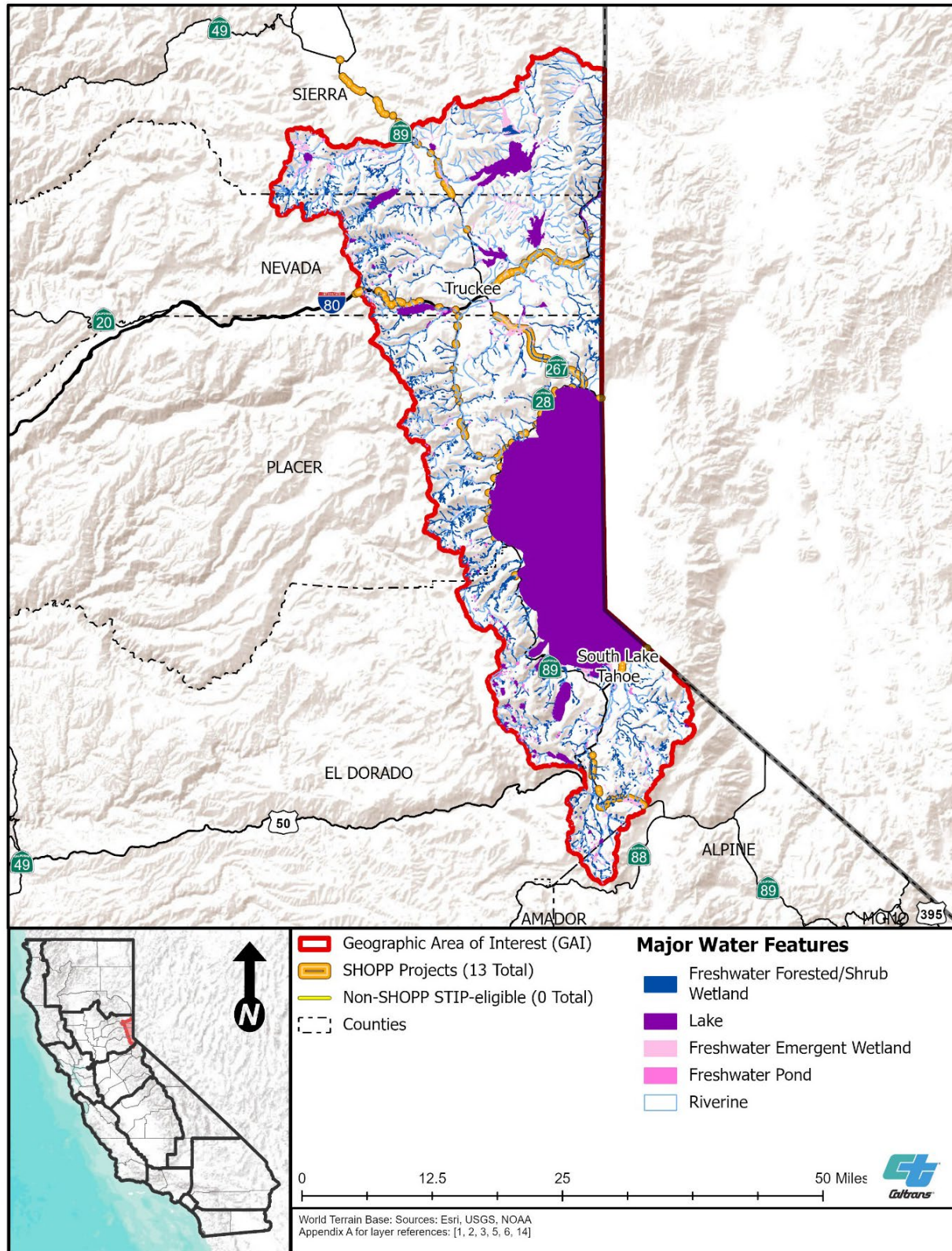
The purpose of the federal Wild and Scenic Rivers Act of 1968 (16 USC Chapter 28) and the state Wild and Scenic Rivers Act of 1972 (Public Resources Code § 5093.50) is to protect and enhance the wild, scenic, and recreational values of designated rivers (National Wild and Scenic Rivers System n.d.; Water 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, are 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.

No nationally or state designated wild and scenic rivers are found in the GAI (National Wild and Scenic Rivers System n.d.; Omnibus Public Land Management Act of 2009).

2.15 Aquatic Resources

A high-level view of major aquatic resources in the GAI is provided on Figure 2-12, and detailed maps of aquatic resources are provided in Appendix E, *Aquatic Resource Locations*. For the purposes of advance mitigation planning, aquatic resources in the GAI include wetlands and non-wetland waters that may be subject to Corps, EPA, Water Boards, and/or CDFW regulations, as well as threatened and endangered fish that may be managed by CDFW and/or FWS. Riparian habitat is discussed separately in Section 2.16.

Figure 2-12. Aquatic Resource Features and Major Stream Systems^a



^a For greater detail, see Appendix E.

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 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 of material into any river, stream, or lake.

2.15.1. Historical Context

Historically, the GAI was characterized by abundant streams throughout the Sierra Nevada range. Gold mining impacted streams when damming, water diversion, dewatering, excavating, and settlement development resulted in the pollution of waterways in the region. Surface water runoff from the Sierra Nevada region flowed into the Central Valley and Nevada, meeting needs for hydropower, agriculture, and drinking water in California and Nevada. Water that flowed from the Sierra Nevada region was often stored in reservoirs and conveyed by aqueducts throughout the state. On the eastern side of the Sierra Nevada region, rivers and streams, such as the Truckee, Feather, and American Rivers, flowed into the Great Basin through the Lahontan, Mono, and Owens drainages.

The pressures of human development have created challenges for native species and natural ecosystems. Agricultural practices such as grazing, stocking waterbodies with non-native fish, as well as the timber and mining industries, have degraded streams and aquatic habitats, disrupted natural river flow regimes, increased the frequency and severity of wildfires, and compromised old-growth forests that provide critical habitat. According to the SWAP (CDFW 2025), aquatic and riparian systems are believed to be two of the most altered and impaired habitats of the Sierra Nevada. Among other critical findings, the Sierra Nevada Ecosystem Project found that key causes of the decline of mammals, birds, and other vertebrates in the Sierra, Cascades, and Modoc regions include the loss and degradation of riparian areas, foothill woodlands, and diverse old forest habitats (including large trees, snags, fallen logs, and layered vegetative structure) (CDFW 2025).

2.15.2. Threatened and Endangered Fish Species

Special-status terrestrial species with the potential to occur in the GAI are discussed in Section 2.7. Threatened and endangered fish species are discussed below.

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

Threatened and endangered fish species with the potential to occur in 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 2018, 2024g). Based on a search of the fish habitat layer, one federally or state listed threatened or endangered fish species has the potential to occur in the GAI: the federally threatened Lahontan cutthroat trout (*Oncorhynchus clarki*). Lahontan cutthroat trout is known to occur in the Truckee River and in the west fork of the Carson River just south of the GAI (CDFW 2026).

Although it is the best information currently available, the SAMNA Reporting Tool's fish species list is uncertain (Caltrans 2024g). 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 agency requires additional analysis and site-specific studies.

2.15.3. Wetlands

Wetland resources information for the GAI was extracted from the SAMNA Reporting Tool, which relies on the FWS National Wetlands Inventory maps (FWS 2024a), and data from the SFEI (2024) California Aquatic Resource Inventory (Table 2-7; Appendix E; Caltrans 2024e). These data were used to estimate the extent of wetlands in the GAI; however, the data layers are largely based on aerial imagery, have not been ground-truthed, provide no information on plant species associated with mapped areas, and are, therefore, relatively coarse. Although suitable for advance mitigation project scoping, site-specific wetland studies that result in more detailed mapping and classification of wetland aquatic resources would be required for advance mitigation projects to establish compensatory mitigation credits. For example, under Section 404 of the CWA, the Corps considers wetlands to be jurisdictional WOTUS only if they have the three parameters of hydrology, hydrophytic vegetation, and hydric soils, and satisfy criteria to be connected to a traditionally navigable water. Vernal pools may be jurisdictional WOTUS if they meet the definition of adjacent wetlands.

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 2-2 may not align with those presented in Table 2-7 (Caltrans 2024e).

2.15.4. 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 2-7; Appendix E; Caltrans 2024f). 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 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 2.5; therefore,

total acreages of water land cover types presented in Table 2-2 may not align with those presented in Table 2-7 (Caltrans 2024f).

Table 2-7. Wetland and Non-wetland Types in the GAI

Type	Lake Tahoe (acres) 16050101	Truckee (acres) 16050102	Total (acres) ^a
Depressional	0.6	<0.1	0.6
Depressional Forested	Not mapped	<0.1	<0.1
Depressional Natural Non-vegetated	75.6	0.1	75.7
Depressional Natural Vegetated	45.6	0.2	45.8
Depressional Perennial Natural Non-vegetated	Not mapped	<0.1	<0.1
Depressional Perennial Natural Vegetated	Not mapped	<0.1	<0.1
Depressional Perennial Unnatural Emergent	Not mapped	<0.1	<0.1
Depressional Perennial Unnatural Non-vegetated	Not mapped	<0.1	<0.1
Depressional Seasonal Natural Emergent	Not mapped	<0.1	<0.1
Depressional Seasonal Natural Forested	Not mapped	<0.1	<0.1
Depressional Seasonal Natural Shrub-Scrub	Not mapped	<0.1	<0.1
Depressional Seasonal Unnatural Emergent	Not mapped	<0.1	<0.1
Depressional Seasonal Unnatural Shrub-Scrub	Not mapped	<0.1	<0.1
Depressional Unnatural Non-vegetated	2.0	0.1	2.1
Depressional Unnatural Vegetated	2.3	0.2	2.5
Freshwater Emergent Wetland	2,205.6	5,366.2	7,571.8
Freshwater Forested/Shrub Wetland	3,819.2	3,750.3	7,569.5
Freshwater Pond	522.3	202.8	725.2
Lacustrine	0.3	16.7	17.1
Lacustrine Natural Non-vegetated	90.1	<0.1	90.1
Lacustrine Natural Vegetated	17.7	Not mapped	17.7
Lacustrine Unnatural Non-vegetated	Not mapped	<0.1	<0.1
Lake	88,307.2	7,179.3	95,486.5
Riverine	579.8	1,762.8	2,342.6
Slope	Not mapped	0.3	0.3
Slope Natural	264.3	4.4	268.6

Type	Lake Tahoe (acres) 16050101	Truckee (acres) 16050102	Total (acres) ^a
Slope Natural Forested	1,412.9	43.3	1,456.3
Slope Natural Wet Meadow Herbaceous	570.1	3.4	573.5
Total^b	97,916	18,330	116,246

Sources: Caltrans (2024e, 2024f)

^a Rounded to the nearest tenth. Numbers may not sum due to rounding.

^a Rounded to the nearest whole number. Numbers may not sum due to rounding.

2.16 Riparian Habitat

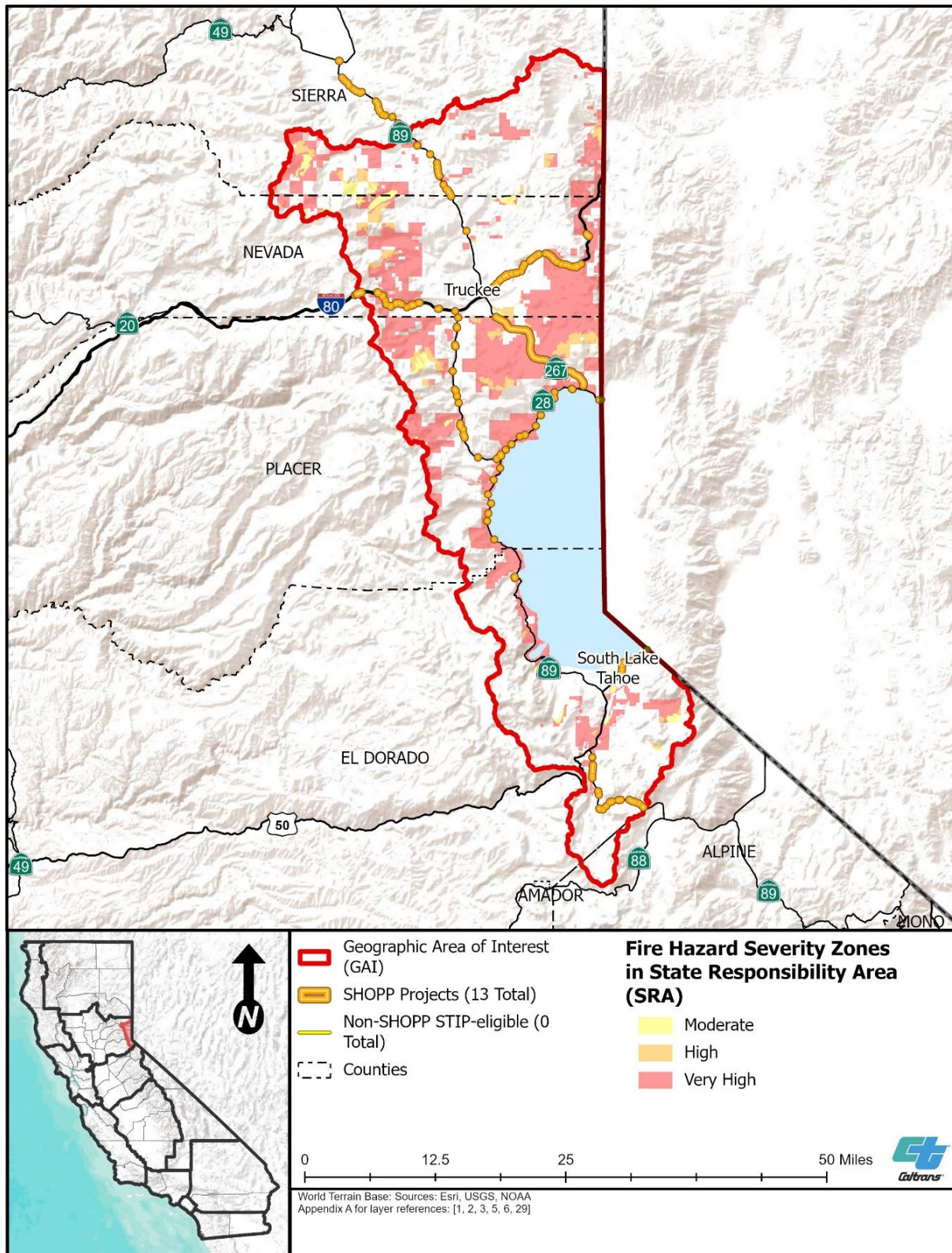
Riparian habitats may include portions that are wetlands or non-wetland waters, but they also may be outside of these categories. California does not have a GIS layer for riparian ecotones and the natural resource regulatory agencies with authority in California do not have a definition for riparian 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 (Kattelman and Embury 1996).

The GAI is located within the Lahontan Region, where vegetation can range from sagebrush and creosote brush in desert areas to pinyon-juniper and mixed conifer forests at higher elevations. Riparian areas within the Lahontan Region include riparian deciduous forest and desert washes (Lahontan RWQCB 2021). The SAMNA's vegetation layer identifies montane riparian habitat in the GAI (Table 2-2). The riparian landcover dataset, briefly described in Section 1.4.1, predicts areas of potential riparian function in the GAI; however, results are not ground-truthed.

2.17 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 2-13). 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 2-13, very high hazard severity zones are concentrated in the northern portion of the GAI, with high and moderate hazard severity zones scattered throughout. This information is important for scoping advance mitigation projects and transportation projects undertaken in the GAI, and it may inform the types of materials that can be used in an area based on their fire resistance capabilities.

Figure 2-13. Fire Hazard Severity Zones



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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: reference is complete
 - draft: reference is not complete, and changes may occur when it is finalized
 - in progress: formal draft version has not been completed, and the document is being written
 - in litigation: reference is subject to at least one lawsuit and is not being revised
 - updated periodically: reference is updated with new information on a somewhat frequent basis
 - not publicly available: 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 – 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 3 based on the SAMNA results and other information. Caltrans District 3 specifically identified compensatory mitigation for the Sierra Nevada yellow-legged frog, riparian habitat, and aquatic resources 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 in the GAI to support these specific wildlife and aquatic resources, and to benefit other wildlife and aquatic resources that depend on the same resources for at least part of their life cycle as well.

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
Assembly Bill 1889 Conservation Element: Wildlife and Habitat Connectivity	Updated periodically (by California legislature)	No	Law that requires a conservation element and wildlife connectivity element to be included in city and/or county general plans.	https://legiscan.com/CA/text/AB1889/2023	9/27/2024 (last amended)
Assembly Bill 2344 Wildlife Connectivity: Transportation Projects	Updated periodically (by California legislature)	No	Law that requires the development of an inventory of connectivity needs on the SHS where wildlife passage features could reduce wildlife-vehicle collisions or enhance wildlife connectivity.	https://legiscan.com/CA/text/AB2344/id/2609212	9/30/2022 (last amended)
California Fish and Game Commission Wetlands Resources Policy	Updated periodically	No	California Fish and Game Commission's policy to seek 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	Update to 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_strategic_plan_update_report_062310.pdf	6/1/2010
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)
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
Native Plant Protection Act	Final	No	Enacted in 1977, the 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_regulations/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 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, 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.	https://www.waterboards.ca.gov/water_issues/programs/cwa401/wrapp.html	5/28/2020 (effective date)

Title	Status	Spatial Data	Reference Purpose	Link	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 of 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://www.wildlife.ca.gov/conservation/lisa	7/12/2021 (last amended)
Wildlife Connectivity Actions FGC § 1955	Updated periodically (by California legislature)	No	Law that declares the importance for habitat connectivity because of a changing climate and changes in land use across the state.	https://leginfo.ca.gov/faces/codes_disp/laySection.xhtml?lawCode=FGC&sectionNum=1955	1/1/2022 (last amended)
Fish Passage FGC § 5901	Updated periodically (by California legislature)	No	Law that prohibits constructing or maintaining any device or contrivance that prevents or impedes, or tends to prevent or impede, the passing of fish up- and downstream.	https://california.public.law/codes/fish_and_game_code_section_5901#google_vignette	1/1/2024 (last amended)
Water Quality Control Plan for the Lahontan Region	Updated periodically	Yes	Implemented by the Lahontan RWQCB, this plan establishes general and site-specific water quality standards and objectives in the Lahontan Basin.	https://www.waterboards.ca.gov/lahtontan/water_issues/programs/basin_plan/	9/22/2021 (last amended)
Federal Laws, Guidelines, and Regulations	See below	See below	See below	See below	See below
12501-SPD Regulatory Program Standard Operating Procedure for Determination of Mitigation Ratios	Updated periodically	No	This is the Corps' standard operating procedure for determining compensatory mitigation requirements under Section 404 of the CWA, Section 10 of the Rivers and Harbors Act, and Section 103 of the Marine Protection, Research, and Sanctuaries Act.	https://www.spd.usace.army.mil/Missions/Regulatory/Public-Notices-and-References/?Page=8	3/5/2021
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 water bodies.	https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/2024-integrated-report.html	2/6/2024 (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.waterboards.ca.gov/plans_policies/antidegradation.html	6/7/2018 (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/collecion/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	10/10/2023 (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)

Title	Status	Spatial Data	Reference Purpose	Link	Date
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	5/20/2026 (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://www.epa.gov/cwa-404/section-404-permit-program	12/18/2024 (last amended)
Definition of “Waters of the United States”	Updated periodically	No	On November 17, 2025, the EPA and Department of the Army announced the proposed rule “Updated Definition of Waters of the United States”. This proposal implements the U.S. Supreme Court’s May 25, 2023, 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	5/24/1977
Federal Climate Action Plans	Updated periodically	No	Federal government action plans to broadly address the effects of climate change. These plans are individually tailored to each federal department. Those plans pertinent to this RAMNA are under the Departments of Agriculture, Commerce, and Interior, as well as plans specific to the Corps and EPA.	https://www.sustainability.gov/adaptation/	10/6/2022 (last amended)
FESA	Updated periodically (by Congress)	No	This Act authorizes FWS to protect federally listed threatened and endangered species.	https://www.fws.gov/endangered/laws-policies/	11/24/2003 (last amended)
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’ 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’ 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 the Corps comprehensive, interagency document provides guidance on further achievement of the goal of no net loss of wetlands and to set forth the no-net-loss policy.	https://www.epa.gov/cwa-404/national-wetlands-mitigation-action-plan	12/26/2002
Rising to the Urgent Challenge: Strategic Plan for Responding to Accelerating Climate Change	Updated periodically	No	FWS’ 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	9/1/2010
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)

Title	Status	Spatial Data	Reference Purpose	Link	Date
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 or permanent occupation, use, or alteration of any sea wall, bulkhead, jetty, dike, levee, wharf, pier, or other work built by the U.S. Section 408 permission may be granted when the proposed activity is not injurious to the public interest and does not impair the usefulness of the federal project.	https://www.law.cornell.edu/uscode/text/33/408	1/4/2025 (last amended)
Secretarial Order 3362: Improving Habitat Quality in Western Big-Game Winter Range and Migration Corridors	Updated periodically	No	U.S. Department of the Interior's order to enhance and improve the quality of big-game winter range and migratory corridor habitat on federal lands under management jurisdiction of the Department of the Interior. The GAI includes a priority area identified for mule deer by this order.	https://www.doi.gov/sites/doi.gov/files/uploads/so_3362_migration.pdf	2/1/2018
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
Wild and Scenic Rivers Act	Final	Yes	This Act preserves 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
A Climate Change Vulnerability Assessment of California's Terrestrial Vegetation	Final	Yes	CDFW's document to assess 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	California Governor's Office's planning report, which 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	CDFW's effort to analyze large amounts of map-based data to inform decisions around 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	CNRA, California Department of Food and Agriculture, and Governor's Office of Planning and Research's high-level planning document, which provides a roadmap to secure California's biodiversity future.	https://californiabiodiversityinitiative.org/pdf/california-biodiversity-action-plan.pdf	9/1/2018
California Essential Habitat Connectivity	Final	Yes	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://data-cdfw.opendata.arcgis.com/datasets/CDFW::natural-areas-small-california-essential-habitat-connectivity-cehc-ds1073/about	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	5/1/2005
Caltrans Adaptation Priorities Report: District 3	Final	No	Caltrans initiated a major agency-wide effort to adapt its infrastructure so that 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/d3-adaptation-priorities-report-2020-a11y.pdf	12/1/2020

Title	Status	Spatial Data	Reference Purpose	Link	Date
Caltrans Climate Change Vulnerability Assessment, District 3 Technical Report	Final	No	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/ada-remediated/d3-technical-report-a11y.pdf	10/1/2019
Conservation and Mitigation Banking	Updated periodically	No	CDFW's main public webpage describing the process for creating and using mitigation banks.	https://wildlife.ca.gov/Conservation/Planning/Banking	5/28/2026
From Wildlife-Vehicle Conflict to Solutions for California Wildlife & Drivers	Final	Yes	University of California, Davis's Road Ecology Center's 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/resource-type/report	6/15/2024
Lake Tahoe Basin Forest Action Plan	Final	Yes	California Tahoe Conservancy plan that outlines three strategies to support wildland-urban interface treatments and large-landscape restoration to address the growing threat of wildfires.	https://tahoe.ca.gov/wp-content/uploads/sites/257/2019/08/Lake-Tahoe-Basin-Forest-Action-Plan.pdf	8/16/2019
Large Mammal-Vehicle Collision Hot Spot Analyses, California, USA	Final	Yes	Western Transportation Institute's report documenting 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
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 in the GAI.	https://wildlife.ca.gov/Conservation/Planning/Regional-Conservation/RCIS	10/16/2025 (most recent document)
Restoring California's Wildlife Connectivity 2022: 2022 Priority Wildlife Connectivity Project Locations by Region	Final	Yes	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://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=204648&inline	12/1/2022
Safeguarding California Plan: 2018 Update	Final	No	CNRA's conservation plan, which 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
Sierra Nevada Conservancy 2024-2029 Strategic Plan	Final	No	Sierra Nevada Conservancy's 5-year strategic plan for internal guidance of goals and objectives within the Sierra-Cascade region. Includes goals to connect migration corridors for climate-vulnerable species, conserve significant carbon stores, improve ecological processes and functions, and develop forest-health and wildfire-resilience projects.	https://sierranevada.ca.gov/about-us/	6/6/2024
SWAP	Updated periodically (10-year intervals)	Yes	CDFW's plan for protection of species of greatest conservation need, in addition to habitats and other wildlife in California.	https://swap.wildlife.ca.gov/	10/1/2025 (last updated)
SWAP Transportation Companion Plan	Final	Yes	CDFW's companion document to SWAP that provides for protection of species specific to transportation project planning.	https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=136128&inline	12/1/2016
SWAP Water Management Companion Plan	Final	Yes	CDFW's companion document to SWAP that recommends water management practices throughout the state of California.	https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=229412&inline	10/1/2025

Title	Status	Spatial Data	Reference Purpose	Link	Date
Wildlife Connectivity Advance Mitigation Guidelines	Final	No	These 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	See below	See below	See below	See below	See below
Sierra Nevada Yellow-legged Frog Recovery Plan	Not applicable	No	A recovery plan has not been developed by FWS for Sierra Nevada yellow-legged frog.	https://ecos.fws.gov/ecp/species/9529	Not applicable
5-Year Status Review Sierra Nevada Yellow-legged frog	Final	No	FWS’ most recent 5-year review of the Sierra Nevada yellow-legged frog.	https://ecos.fws.gov/ecp/species/9529	4/25/2023
Critical Habitat Designation for the Sierra Nevada Yellow-Legged Frog	Final	Yes	FWS’ designation of critical habitat for the Sierra Nevada yellow-legged frog.	https://ecos.fws.gov/ecp/species/9529	8/26/2016
Sierra Nevada Yellow-legged Frog Biological Opinions	Updated periodically	No	FWS’ list of 51 biological opinions that have been issued for the Sierra Nevada yellow-legged frog; of these, 27 occur in the GAI.	https://ecos.fws.gov/ecp/species/9529	8/1/2024 (latest document)
Interagency Conservation Strategy for Mountain Yellow-Legged Frogs in the Sierra Nevada (<i>Rana sierrae</i> and <i>Rana muscosa</i>)	Final	Yes	A conservation strategy for mountain yellow-legged frogs in the Sierra Nevada, which includes the Sierra Nevada yellow-legged frog, and was developed by CDFW, USFS, FWS, and the National Park Service (“NPS”).	https://www.fws.gov/media/mountain-yellow-legged-frog-conservation-strategy	11/1/2018
Incidental Take Permits for Sierra Nevada Yellow-legged Frog	Updated periodically	No	CDFW’s list of incidental take permits issued for Sierra yellow-legged frog from its publicly available document search website. There is 1 document in the search.	https://nrm.dfg.ca.gov/documents/ContextDocs.aspx?cat=CESA-Permitting	7/23/2020 (latest document)
Lahontan Cutthroat Trout (<i>Oncorhynchus clarki henshawi</i>) Recovery Plan	Final	No	FWS’ recovery plan for Lahontan cutthroat trout. The recovery criteria that must be achieved before delisting can occur are based on management practices to enhance and protect habitat for self-sustaining populations, which have complicated components and are outlined in Part II of the recovery plan.	https://ecos.fws.gov/ecp/species/3964	1/30/1995
Status Review: Lahontan Cutthroat Trout (<i>Oncorhynchus clarkii henshawi</i>)	Updated periodically	Yes	FWS’ most recent formal review of the subspecies’ condition.	https://ecos.fws.gov/ecp/species/3964	2/24/2023 (latest document)
Critical Habitat Designation for the Lahontan Cutthroat Trout	Not applicable	No	Critical habitat for this species has not been designated.	https://ecos.fws.gov/ecp/species/3964	Not applicable
Lahontan Cutthroat Trout Biological Opinions	Updated periodically	Yes	FWS’ list of 59 biological opinions that have been issued for the Lahontan cutthroat trout; of these, 3 occur near the GAI.	https://ecos.fws.gov/ecp/species/3964	3/27/2024 (latest document)
State Land Management Plans	See below	See below	See below	See below	See below
General Planning Handbook for California State Parks	Final	Yes	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. Thirty state park entities occur in the GAI. Those with specific information 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
Land Management Plan for Antelope Valley and Smithneck Creek Wildlife Areas	Final	No	CDFW’s land management plan for Antelope Valley and Smithneck Creek Wildlife Areas. It includes plans for protecting habitat and regulating hunting to support the Loyaltan-Truckee mule deer herd, managing grazing to protect and enhance biological resources, and supporting the use of the wildlife areas for environmental education.	https://wildlife.ca.gov/Lands/Planning/Antelope-Valley-and-Smithneck-Creek-WA#env-rev	11/19/2008
Hallelujah Junction WA Land Management Plan	Final	No	CDFW’s land management plan for the Hallelujah Junction Wildlife Area. It includes guidance for the Department’s management, planning, and operations of the area.	https://wildlife.ca.gov/Lands/Planning/Hallelujah-Junction-WA	7/22/2010

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Burton Creek State Park General Plan and Final Environmental Impact Report	Final	Yes	Management plan for Burton Creek State Park, which includes the Antone Meadows Natural Preserve and Burton Creek Natural Preserve. It includes a variety of habitat restoration goals.	https://www.parks.ca.gov/?page_id=24354	11/18/2005
Donner Memorial State Park General Plan and Environmental Impact Report	Final	Yes	Management plan for Donner Memorial State Park. It includes goals to restore degraded upland habitats as well as aquatic, riparian, and wetland habitats. It also includes a goal to establish new effective habitat linkages between Donner Memorial State Park and other protected lands to increase species abundance and diversity.	https://www.parks.ca.gov/?page_id=24356	4/5/2003
Kings Beach State Recreation Area General Plan	Final	No	Management plan for Kings Beach State Recreation Area. It includes a goal to treat and prevent spread of aquatic invasive species.	https://www.parks.ca.gov/?page_id=24358	10/19/2018
Tahoe State Recreation Area General Plan Amendment	Final	No	Management plan for Tahoe State Recreation Area. It includes goals to restore riparian and shoreline areas.	https://www.parks.ca.gov/?page_id=24365	9/1/1998 (last amended)
FWS Land Management Plans	See below	See below	See below	See below	See below
Not applicable	Not applicable	Not applicable	No National Wildlife Refuges occur in the GAI	Not applicable	Not applicable
U.S. Military Land Management Plans	See below	See below	See below	See below	See below
Not applicable	Not applicable	Not applicable	No military lands occur in the GAI	Not applicable	Not applicable
U.S. Bureau of Indian Affairs Land Management Plans	See below	See below	See below	See below	See below
Not applicable	Not applicable	No	No federally recognized Indigenous reservations occur in the GAI.	Not applicable	Not applicable
USFS Land Management Plans	See below	See below	See below	See below	See below
Blueprint for Resilience: The Tahoe-Central Sierra Initiative	Final	Yes	The blueprint is a set of strategy maps that identify opportunities for forest protection and adaptation across a 2.4-million-acre region of the central Sierra Nevada. It aims to improve resilience to climate change and wildfire as well as to beetle- and drought-caused tree mortality.	https://research.fs.usda.gov/treesearch/66572	8/23/2023
Ecological Restoration Implementation Plan	Final	Yes	USFS' internal restoration plan, which includes general strategies focused on increasing collaboration with other organizations, completion of land management plans, and forest-specific goals.	https://www.californiachaparral.org/_static/875d896940cdc45f383c9c6eaaaf6c57/ecological-restoration-imp-plan-usfs-r5-1-chap-1.pdf?dl=1	1/1/2013
Lake Tahoe Basin Management Unit Land and Resource Management Plan	Final	Yes	USFS' plan for forest management of the Lake Tahoe Basin Management Unit. It includes many goals and objectives to restore aquatic habitats.	https://www.fs.usda.gov/main/ltbmu/landmanagement/planning	7/1/2016
Lake Tahoe West Restoration Project	In progress	Yes	The proposed Lake Tahoe West Restoration Project aims to restore forests, meadows, streams, and wildlife habitat along the western shore of the Lake Tahoe Basin.	https://www.fs.usda.gov/r05/laketahoebasin/newsroom/releases/forest-service-seeks-input-lake-tahoe-west-project	5/30/2025
Sierra Nevada Forest Plan Amendment Final Supplemental Environmental Impact Statement	Final	No	USFS' plan for forest management in each of the National Forests of the Sierra Nevada Mountains.	https://www.fs.usda.gov/detail/r5/landmanagement/planning/?cid=STELPRDB5349922	1/21/2004
Tahoe National Forest Land and Resource Management Plan Environmental Impact Statement	Final	No	USFS' management plan for the Tahoe National Forest. It includes several habitat restoration goals.	https://www.fs.usda.gov/main/tahoe/landmanagement/planning	1/1/1990

Title	Status	Spatial Data	Reference Purpose	Link	Date
Toiyabe National Forest Land and Resource Management Plan	Updated periodically	No	USFS' plan for forest management of the Humboldt-Toiyabe National Forest, which includes regions in the GAI. It includes goals to improve water quality and manage riparian areas to a satisfactory condition.	https://www.fs.usda.gov/r04/humboldt-toiyabe/planning/forest-plan/forest-plan-documents	1/1/1986
BLM Land Management Plans	See below	See below	See below	See below	See below
Eagle Lake Field Office Proposed Resource Management Plan and Final Environmental Impact Statement	Final	Yes	BLM's resource management plan for the Eagle Lake Field Office. Includes goals to improve 35 miles of perennial or intermittent streams and 33 acres of riparian/wetland areas within the management area, prioritize development of new water sources, and restore and rehabilitate streams.	https://eplanning.blm.gov/Project-Home/?id=fc31f28f-a7f2-f011-8406-001dd802fdea	5/1/2007
NPS Land Management Plans	See below	See below	See below	See below	See below
Nationwide Rivers Inventory	Final	Yes	Listing of Nationwide River Inventory river segments that are potential candidates for inclusion in the National Wild and Scenic River System. No listed national river segments or potential candidates occur in the GAI.	https://www.nps.gov/subjects/rivers/nationwide-rivers-inventory.htm	11/15/2024
Not applicable	Not applicable	Not applicable	No NPS lands occur in the GAI.	Not applicable	Not applicable
Local Government Land Management Plans	See below	See below	See below	See below	See below
Placer County Tahoe Basin Area Plan	Update periodically	Yes	Placer County and Tahoe Regional Planning Agency's area plan for the Tahoe Basin in Placer County. The plan sets forth goals for conservation, socioeconomics, land use, transportation, recreation, public services and facilities, and implementation. The conservation component addresses water quality, soil conservation and land coverage, stream environment zone, air quality, scenic resources, vegetation, fisheries and aquatic resources, wildlife resources, noise, cultural resources and natural hazards.	https://www.placer.ca.gov/DocumentCenter/View/55341/Tahoe-Basin-Area-Plan---Feb-2021	2/24/2021 (last amended)
Meyers Area Plan	Final	Yes	El Dorado County and Tahoe Regional Planning Agency's area plan for the Meyers area, which establishes goals in the areas of land use, transportation and circulation, environmental conservation, recreation, public services, and implementation. Environmental conservation goals focus on environmental threshold carrying capacity standards, protection of the Sierra juniper tree, protection of scenic areas, protection and enhancement of stream environment zones, review of nearby projects, improvement of water quality, and management of the Upper Truckee River Corridor District.	https://www.eldoradocounty.ca.gov/files/assets/county/v/1/documents/land-use/county-projects/tahoe-engineering/sb-bike-path-meyers-area-plan.pdf	3/1/2018
Threshold Standards and Regional Plan	Update periodically	Yes	Tahoe Regional Planning Agency's management plan that establishes shared goals for restoration of the Lake Tahoe Region based on specific thresholds to be restored to and then maintained when achieved. The Tahoe Regional Planning Agency includes representatives from Placer County, El Dorado County, and the City of South Lake Tahoe as well as appointees by the President, Governor, State Senate, and State Assembly. Plan thresholds are, in part, water quality based on clarity and algal levels found in the 1960s and establishing 6,000 acres of excellent lake habitat and 180 miles of good to excellent stream habitat. Goals pertaining to these thresholds include the restoration of wetlands, meadows, and riparian vegetation as well as the expansion of habitat for FESA and CESA species.	https://www.trpa.gov/regional-plan/	2/25/2026 (last amended)
Water Resources Plans and Documents	See below	See below	See below	See below	See below
Gray Creek Watershed Assessment and Restoration Plan	Final	Yes	Watershed assessment and restoration plan primarily developed by Northwest Hydraulic Consultants and funded in part by the SWRCB for the Gray Creek Watershed, which falls within the Truckee HUC-8. It includes goals to improve riparian and aquatic habitat, remove and/or treat invasive plant species within riparian areas, and reduce human-caused erosion.	https://www.truckeeriverwc.org/images/document/s/Gray_Creek_Watershed_Assessment.pdf	12/29/2006

Title	Status	Spatial Data	Reference Purpose	Link	Date
Integrated Regional Water Management Plan Cosumnes American Bear Yuba Watersheds, California	Updated periodically	Yes	Water management plan primarily developed by the Nevada and El Dorado Irrigation Districts as well as the Placer and El Dorado County Water Agencies for the plan area, which includes portions of the Truckee and Lake Tahoe HUC-8s. It includes goals to restore the natural sediment regime in at least three river reaches, enhance and/or restore at least 4 miles of streams, remove nonnative trout and bullfrogs in 18 acres of high mountain lakes, and treat at least 50 acres of riparian habitat for nonnative plant species.	http://cabyregion.org/mdocs-posts/2021-caby-plan-update/	1/1/2021 (last updated)
Lake Tahoe Total Maximum Load Daily Report	Final	Yes	A report developed in part by the Lahontan RWQCB to guide restoration efforts for pollutant sources responsible for clarity decline in Lake Tahoe. It includes goals to restore stream channels and riparian vegetation.	https://www.epa.gov/lake-tahoe/lake-tahoe-water-quality-improvement-programs#tmdl	8/17/2011
Lake Tahoe Water Quality Management Plan	Final	No	Water quality management plan prepared in compliance with Section 208 of the CWA. This document was primarily developed by the Tahoe Regional Planning Agency for the plan area, which includes the Lake Tahoe HUC-8. The EPA and RWQCB were also directly involved with the development of the plan. It includes goals to restore the natural resources of the Lake Tahoe Region through the Environmental Improvement Program.	https://www.trpa.gov/regional-plan/#208	6/19/2013
Tahoe-Sierra Integrated Regional Water Management Plan Update	Updated periodically	Yes	Water management plan primarily developed by the Tahoe-Sierra Partnership for the plan area, which includes portions of the Truckee and Lake Tahoe HUC-8s. It includes goals to restore degraded streams, wetlands, riparian and upland areas, improve water quality of waterbodies, and remove invasive species.	https://www.stpud.us/documents	9/1/2021 (last updated)
Tahoe Valley South Basin (6-5.01) 2014 Groundwater Management Plan	Updated periodically	Yes	Groundwater management plan developed for South Tahoe Public Utility District for the South Lake Tahoe Basin, which includes the Lake Tahoe HUC-8. It includes goals to assess effects of groundwater pumping on habitats in waterbodies and support stream restoration efforts.	https://www.stpud.us/groundwater-management-plan	12/22/2014 (last updated)
Water Quality Control Plan for the Lahontan Region	Updated periodically	Yes	This water quality control plan for the Lahontan Region sets water quality standards for surface and ground waters. It identifies water quality objectives and beneficial uses for the Lahontan region, includes an objective for wetland restoration and protection, and identifies TMDLs for Heavenly Valley Creek.	https://www.waterboards.ca.gov/lahontan/water_issues/programs/basin_plan/references.html	9/22/2021 (last updated)
County General Plans	See below	See below	See below	See below	See below
Alpine County General Plan	Updated periodically	Yes	General plan for Alpine County. It includes a goal to enhance fisheries for endangered cutthroat trout and a land use designation for open space.	https://www.alpinecountyca.gov/615/General-Plan	8/17/2021 (last amended)
2004 El Dorado County General Plan	Updated periodically	Yes	General plan for El Dorado County. It requires a minimum setback of 100 feet from all perennial streams, rivers, and lakes, and 50 feet from intermittent streams and wetlands. It includes a land use designation for open space and natural resources.	https://www.edcgov.us/Government/planning/pages/adopted_general_plan.aspx	5/21/2024 (last amended)
Nevada County General Plan	Updated periodically	Yes	General plan for Nevada County. It requires variable setbacks and buffers of development from riparian areas and sensitive habitats. It includes a land use designation for open space.	https://www.mynevadacounty.com/1065/General-Plan	10/1/2014 (last updated)
Placer County General Plan	Updated periodically	Yes	General plan for Placer County. It requires a minimum 100-foot setback from the centerline of perennial streams, 50-foot setback from the centerline of intermittent streams, and 50-foot setback from the edge of sensitive habitats, including riparian zones; wetlands; old growth woodlands; and the habitat of special status, threatened, or endangered species. It includes a land use designation for greenbelt/open space.	https://www.placer.ca.gov/2977/Placer-County-General-Plan	5/21/2013 (last updated)
Sierra County General Plan 2012	Updated periodically	No	General plan for Sierra County. It requires a 50-foot setback from intermittent streams and wetlands, and a 100-foot setback from perennial streams. It includes a land use designation for open space and forest.	https://sierracounty.ca.gov/260/General-Plan	1/1/2025 (last amended)

Title	Status	Spatial Data	Reference Purpose	Link	Date
City General Plans	See below	See below	See below	See below	See below
South Lake Tahoe General Plan	Updated Periodically	Yes	This general plan for South Lake Tahoe includes a goal to restore key riparian areas and land use categories for conservation and open space.	https://www.cityofslt.gov/2457/Land-Use-Plans-and-Zoning-Map#tabab015b99-9a84-43fb-b551-3e9b648fe5c7_0	5/17/2011
Town of Truckee 2040 General Plan	Final	Yes	This general plan for the Town of Truckee includes a land use category for resource conservation/open space and several policies for restoration of riparian habitat, including for the Truckee and Donner Lake 100-year floodplain.	https://www.townoftruckee.gov/307/2040-General-Plan	5/1/2023
Other Conservation and Management Documents	See below	See below	See below	See below	See below
California EcoAtlas	Updated periodically (nearly daily)	Yes	Statewide database tracking the extent and condition of wetlands in California; managed by SFEI.	https://www.ecoatlas.org/	Updated nearly daily
Demonstrating the California Wetland Status and Trends Program: A Probabilistic Approach for Estimating Statewide Aquatic Resource Extent, Distribution and Change Over Time	Final	No	A report from the Southern California Coastal Water Research Project describing a pilot study that is tracking wetland conditions statewide.	https://www.sccwrp.org/publications/	4/1/2015
North Yuba River Watershed Restoration Plan	In progress	Not applicable	South Yuba River Citizens League restoration plan for the North Yuba watershed.	https://www.yubaforest.org/restoration-plan	Not applicable
The Upper Truckee River: Aquatic Habitat Monitoring for Restoration and Adaptive Management	Final	Yes	Analysis and monitoring report of aquatic and riparian habitat in the Upper Truckee Restoration Area developed by California Trout; Trout Unlimited; and the University of Nevada, Reno.	https://www.trpa.gov/upper-truckee-river-habitat-monitoring-trout-unlimited/	2014

^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 of California threatened, endangered, or sensitive species; state fully protected or rare species; or state species of special concern.

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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. Caltrans begins this chapter by describing the advance mitigation credits already held by District 3.

4.1 SHOPP Advance Mitigation Credits

The 2016 SHOPP, with California Transportation Commission approval, released the first funds used to program Caltrans advance mitigation projects in several Caltrans Districts. The projects were programmed against the \$40 million reserve created in the 2016 SHOPP for advance mitigation project delivery. Thirteen pilot advance mitigation projects were programmed in the SHOPP. Two such projects are within Caltrans District 3 and may inform advance mitigation planning:

- 03-1H520 Habitat Advance Mitigation: Giant Garter Snake and Swainson's Hawk Habitat Mitigation
- 03-2H140 Habitat Advance Mitigation: Wetland, Vernal Pool, and Riparian Habitat Advance Mitigation

Both advance mitigation projects consisted of purchasing bulk credits from six existing or pending mitigation and conservation banks (Table 4-1). However, the credits' service areas do not overlap the GAI.

Table 4-1. SHOPP Advance Mitigation Credits

Bank Where Credits Were Purchased	Credit Purchase Year	Signatories ^a	Service Area	Credit Type and Quantity
Colusa Basin Mitigation Bank, Sutter Basin Conservation Bank, Muzzy Ranch Conservation Bank	2019, 2021	CDFW, EPA, Corps, and/or FWS	Glenn, Colusa, Sutter, Yuba, Placer, Yolo, Tehama, Solano, San Joaquin, Contra Costa, Napa, Butte, and Sacramento Counties at various locations	22.35 giant garter snake credits 7.0 giant garter snake credits 6.0 Swainson's hawk foraging habitat credits
Colusa Basin Mitigation Bank, Elsie Gridley Conservation Bank, Cosumnes Floodplain Mitigation Bank, Bullock Bend Mitigation Bank	2020	NMFS, EPA, FWS, CDFW, and/or Corps	Tehama, Glenn, Butte, Yuba, Colusa, Sutter, Yolo, Placer, Sacramento, Yolo, Solano, El Dorado, Amador, Contra Costa, and San Joaquin Counties	2.46 seasonal wetland credits 2.23 preserved marsh credits 0.61 vernal pool reestablishment credit 0.9 floodplain mosaic wetland credit 6.0 riparian credits (salmonid riverine/Swainson's hawk nesting buffer restored) credits

^a These 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).

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 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 or NCCPs in the GAI to which Caltrans and/or RTPAs are currently signatories or Participating Special Entities. Other project-

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

² Pursuant to FGC § 2835.

specific HCPs may exist in the GAI but apply to non-transportation agency users and cannot be used for Caltrans projects.

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

Caltrans did not identify any active or pending conservation or mitigation banks in the GAI.

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.

There is one active in-lieu fee program with a service area that overlaps the GAI: the National Fish and Wildlife Foundation (“NFWF”) Sacramento District California In-Lieu Fee Program (Table 4-2; Figures 4-1 and 4-2). This program covers aquatic resources and vernal pools and has two service areas in these two categories that overlap the GAI, as shown on Figures 4-1 and 4-2. The NFWF Sacramento District California In-Lieu Fee Program’s instrument has been amended to include pre-transfer credit purchases.

Table 4-2. Overview of In-lieu Fee Programs in the GAI^a

Name	Year Approved	Signatories ^b	Instrument Includes Pre-transfer Credit Purchases?	Location	Credit Types
Sacramento District California In-Lieu Fee Program	2014	Corps, EPA, NMFS, RWQCB, NFWF	Yes	Corps Sacramento District Boundary (entire)	▪ Tahoe aquatic resources ▪ All other vernal pools

^a 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=107:47:13453394859366::NO>

^b All agencies other than NFWF 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).

Figure 4-1. In-lieu Fee Program Aquatic Resources Service Areas

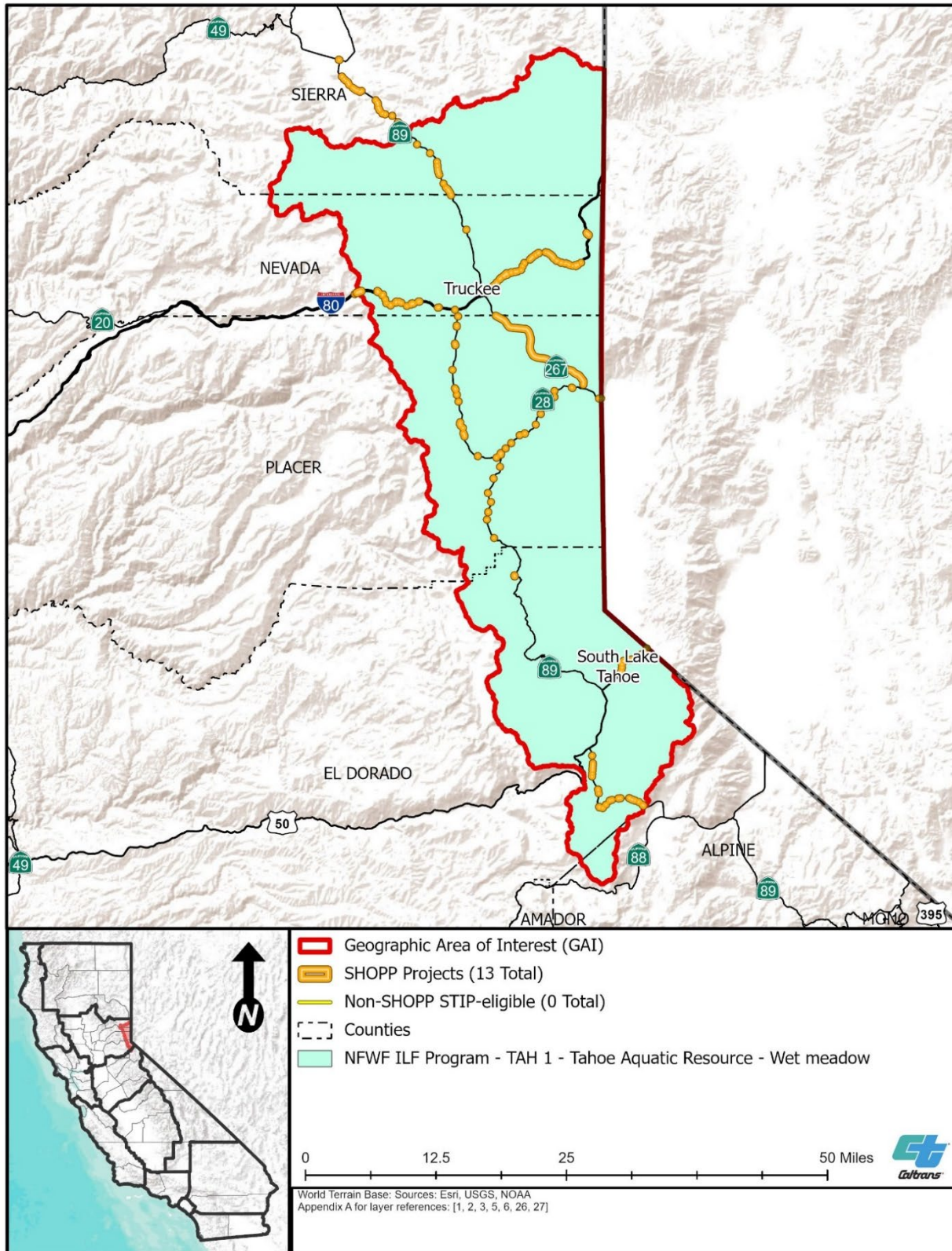
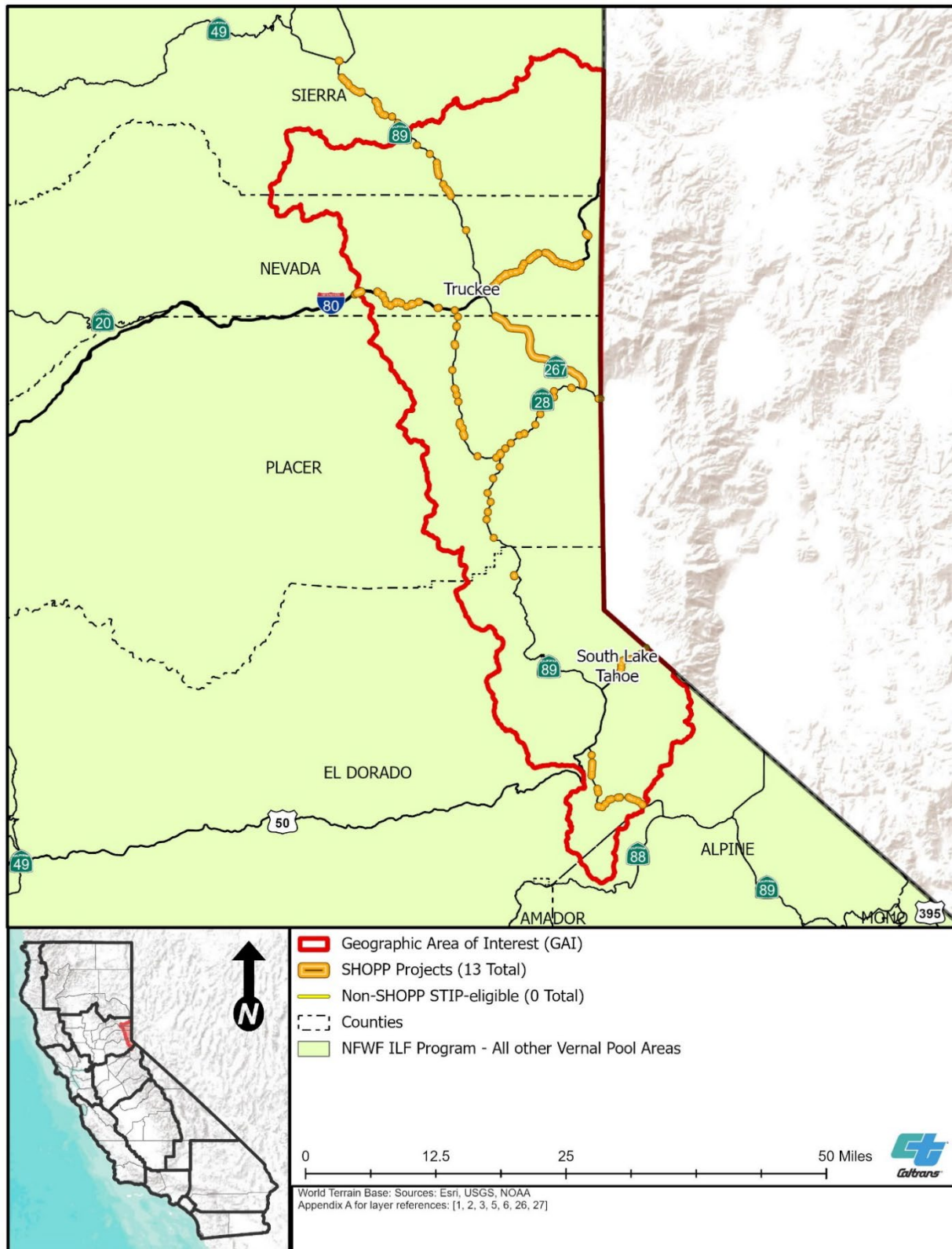


Figure 4-2. In-lieu Fee Program Vernal Pool Service Areas



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 within 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 the 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 2023). 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 can only be issued once an RCIS has been approved, there are also currently no MCAs in the 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's *Wildlife Connectivity Advance Mitigation Guidelines* (CDFW 2024c) outline how a wildlife connectivity action developed under a BEI or MCA program may be applied as conservation credits for projects. It contains a scoring system that allows the benefits of wildlife connectivity actions to be assessed and converted into conservation credits based on the biology of the target species, the type and quality of habitats being connected, site topography, the design of the connectivity structure, and several other factors. Connectivity information for the GAI is summarized in Section 2.9.

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5. MODELED ESTIMATED IMPACTS

In this chapter, Caltrans documents the potential compensatory mitigation needs in the GAI for fiscal years 2023/24 to 2032/33. 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. 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 the sections below, Caltrans:

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

Because Caltrans District 3 chose to focus the analysis on terrestrial and aquatic resources (Section 1.5), the terrestrial resource results presented below are for the Sierra Nevada Ecoregion Section and the aquatic resource results are for the Lake Tahoe and Truckee sub-basins (HUC-8s), which define the GAI.

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 2019a). Therefore, the compensatory mitigation needs for wildlife and aquatic resources in the GAI are based on Caltrans' anticipated SHOPP transportation project impacts and local and regional STIP-eligible transportation projects.

At this time, SHOPP transportation project needs are forecast quantitatively through the SAMNA model developed for the AMP and STIP-eligible needs are addressed qualitatively. 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, including the riparian landcover dataset. 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 2018) and the *Statewide Riparian Landcover Dataset* (Caltrans 2023a).

To identify the list of SHOPP projects planned for the GAI, Caltrans consulted the SHOPP Ten-Year Book for fiscal years 2023/24 to 2032/33 (Caltrans 2024a). 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 13 SHOPP transportation projects in 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 13 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 2019a, 2024a). The SAMNA model, its foundation, and assumptions are described in the *Statewide Advance Mitigation Needs Assessment Report* (Caltrans 2024c) and some of its uncertainties are highlighted in Appendix D, *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 terrestrial species of mitigation need and co-benefitting species can be found in Section 5.2 and forecast impacts on aquatic resources 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 D.

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.

At this time, no planned STIP-eligible transportation projects were identified in the GAI for fiscal years 2023/24 to 2032/33.

Non-SHOPP STIP-eligible Potential Impacts

Because no planned STIP-eligible transportation projects were identified in the GAI for fiscal years 2023/24 to 2032/33, no STIP-eligible related impacts or mitigation needs are anticipated.

5.2 Estimated Wildlife Impacts

The quantitative impacts presented in this document are estimates, pursuant to the SAMNA model. Specific 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 section in the GAI for species of mitigation need identified by Caltrans District 3, as well as for species that may co-occur in their habitats. The complete results of the SAMNA—inclusive of the 13 transportation projects planned in 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 D, *Complete SAMNA Species Results*.

The special-status terrestrial plant and wildlife species evaluated through the SAMNA consisted of federally and state threatened, endangered, or sensitive species; state fully protected or rare species; or state species of special concern (Caltrans 2024c). Based on a search of the species-attributed vegetation layer, 45 non-fish special-status terrestrial species have the potential to occur in the GAI (Section 2.7; Appendix D; Caltrans 2024b). Using the methods described in Section 5.1.1, the SAMNA analysis determined that 12 SHOPP transportation projects could potentially affect 16 habitat types, which could support up to 43 special-status species within the Sierra Nevada Ecoregion Section in the GAI (Table 5-1).

Table 5-1. Summary of Estimated SHOPP Impacts on Special-status Species Habitat in 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)
Sierra Nevada	12	16	43	49.0
Total	12	16	43	49.0

^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 federally 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 2024c).

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 mitigation need is anticipated (Section 1.5.2). The terrestrial species of mitigation need, as identified in Section 1.5.2—Sierra Nevada yellow-legged frog—was included in the analysis and is discussed briefly in the subsection below.

5.2.1. Sierra Nevada Yellow-legged Frog

This species was chosen as a species of mitigation need because of its status and the ongoing need for compensatory mitigation for transportation projects in the GAI. Sierra Nevada yellow-legged frog is a federally endangered and state-listed threatened amphibian species that prefers lakes, ponds, marshes, meadows, and streams at elevations ranging from 4,500 to 12,000 feet above mean sea level. Threats to this species include habitat destruction due to dams and water diversions, recreation, grazing, road construction, timber harvesting, impacts of climate change, and introduction of predatory invasive species.

Using the methods described in Section 5.1.1, impacts on Sierra Nevada yellow-legged frog 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 13 SHOPP transportation projects evaluated, 11 are forecast to affect 21.9 acres of Sierra Nevada yellow-legged frog habitat in the GAI (Table 5-2; Caltrans 2024b).

Table 5-2. Summary of Estimated SHOPP Impacts on Terrestrial Species of Mitigation Need in the GAI

Ecoregion Section	Sierra Nevada Yellow-legged Frog Habitat: Number of Caltrans SHOPP Projects ^a	Sierra Nevada Yellow-legged Frog: Estimated Habitat Impact (acres)	Total
Sierra Nevada	11	21.9	21.9
Total	11	21.9	21.9

Source: Caltrans (2024b)

^a Transportation projects are listed in Appendix B.

5.2.2. Potential Co-benefiting Species

The species of mitigation need co-occurs with other protected plant, amphibian, reptile, bird, and mammal species. By procuring or establishing advance mitigation credits for the species of mitigation need, Caltrans District 3 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 forecast impacts on an additional 40 special-status terrestrial species that potentially use the same habitats in the Sierra Nevada Ecoregion Section (Table 5-3).

Table 5-3. Estimated SHOPP Impacts on Species of Mitigation Need and Co-occurring Species Habitat: Sierra Nevada Ecoregion Section (acres)

Common Name	Species Name	Status	Jeffrey Pine	Lacustrine	Lodgepole Pine	Montane Hardwood-Conifer	Montane Riparian	Red Fir	Sierran Mixed Conifer	Wet Meadow	White Fir
Not applicable	Not applicable	Total	3.3	0.2	0.3	0.1	0.4	0.3	15.3	0.1	1.9
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
Sierra Nevada yellow-legged frog	<i>Rana sierrae</i>	FE, FS, ST	3.3	0.2	0.3	0.1	0.4	0.3	15.3	0.1	1.9
Plants	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
Tahoe yellow cress	<i>Rorippa subumbellata</i>	FS, SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	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
Long-toed salamander	<i>Ambystoma macrodactylum</i>	FE, SE, SFP, SSC	0.2	<0.1	0.1	0.0	0.0	0.0	0.7	<0.1	0.0
Northern leopard frog	<i>Lithobates pipiens</i>	SSC	0.0	<0.1	0.0	0.0	<0.1	0.0	0.4	<0.1	0.0
Yosemite toad	<i>Anaxyrus canorus</i>	FT, FS, SSC	<0.1	0.0	0.0	0.0	0.0	0.0	0.4	<0.1	0.0
Reptiles	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
Common sagebrush lizard	<i>Sceloporus graciosus</i>	FS	3.3	0.0	0.3	0.1	0.0	0.0	15.3	0.0	1.9

Common Name	Species Name	Status	Jeffrey Pine	Lacustrine	Lodgepole Pine	Montane Hardwood-Conifer	Montane Riparian	Red Fir	Sierran Mixed Conifer	Wet Meadow	White Fir
Birds	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
American white pelican	<i>Pelecanus erythrorhynchos</i>	SSC	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bald eagle	<i>Haliaeetus leucocephalus</i>	FS, SE, SFP, SFS	3.3	0.2	0.3	0.1	0.4	0.3	15.3	0.1	1.9
Black swift	<i>Cypseloides niger</i>	SSC	<0.1	0.0	0.0	0.0	0.0	0.0	0.1	<0.1	0.0
Black tern	<i>Chlidonias niger</i>	SSC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
California spotted owl	<i>Strix occidentalis occidentalis</i>	FS, SSC	0.3	0.0	0.3	0.0	0.2	0.3	13.9	0.0	1.8
Common loon	<i>Gavia immer</i>	SSC	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Golden eagle	<i>Aquila chrysaetos</i>	FS, SFS, SFP	3.3	0.0	0.3	0.1	0.4	0.3	15.3	0.1	1.9
Great gray owl	<i>Strix nebulosa</i>	FS, SE, SFS	0.0	0.0	0.3	0.0	0.0	0.3	15.0	0.1	1.9
Loggerhead shrike	<i>Lanius ludovicianus</i>	SE, SSC	0.4	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0
Long-eared owl	<i>Asio otus</i>	SSC	0.0	0.0	0.0	0.1	0.4	0.0	15.3	0.1	1.9
Northern goshawk ^a	<i>Accipiter atricapillus</i> ^a	FS, SSC, SFS	3.3	0.0	0.3	0.1	0.4	0.3	15.3	0.0	1.9
Northern harrier	<i>Circus cyaneus</i>	SSC	0.4	<0.1	0.0	0.0	<0.1	0.0	0.1	0.0	0.0
Olive-sided flycatcher	<i>Contopus cooperi</i>	SSC	3.3	0.0	0.3	0.1	0.4	0.3	15.3	0.0	1.9
Redhead	<i>Aythya americana</i>	SSC	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Common Name	Species Name	Status	Jeffrey Pine	Lacustrine	Lodgepole Pine	Montane Hardwood-Conifer	Montane Riparian	Red Fir	Sierran Mixed Conifer	Wet Meadow	White Fir
Sandhill crane ^b	<i>Antigone canadensis tabida^b</i>	FS, ST, SSC, SFP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Vaux's swift	<i>Chaetura vauxi</i>	SSC	<0.1	<0.1	0.0	0.0	0.0	0.0	0.6	0.0	0.0
Willow flycatcher	<i>Empidonax traillii</i>	FS, SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Yellow warbler	<i>Setophaga petechia</i>	SSC	3.2	0.0	0.2	0.1	0.4	0.3	14.5	0.0	1.9
Yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>	SSC	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Mammals	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
American badger	<i>Taxidea taxus</i>	SSC	3.3	0.0	0.3	0.1	0.4	0.3	15.3	0.1	1.9
Fisher	<i>Pekania pennanti</i>	FS, SSC	3.3	0.0	0.3	0.1	0.4	0.3	15.3	0.0	1.9
Fringed myotis	<i>Myotis thysanodes</i>	FS	3.3	0.2	0.3	0.1	0.4	0.3	15.3	0.0	1.9
Long-eared myotis	<i>Myotis evotis</i>	FS	3.3	0.2	0.3	0.1	0.4	0.3	15.3	0.1	1.9
Marten	<i>Martes caurina</i>	FS	3.3	0.0	0.3	0.1	0.4	0.3	15.3	0.1	1.9
Mountain beaver ^c	<i>Aplodontia rufa californica^c</i>	SSC	3.3	0.0	0.3	0.1	0.4	0.3	15.3	0.1	1.9
Pallid bat	<i>Antrozous pallidus</i>	FS, SSC	3.3	0.0	0.3	0.1	0.4	0.3	15.3	0.1	1.9
Ringtail	<i>Bassariscus astutus</i>	SFP	3.3	0.0	0.0	0.1	0.4	0.0	15.3	0.1	1.9
Sierra Nevada red fox	<i>Vulpes vulpes necator</i>	FS, FE, ST	0.7	0.0	0.3	0.0	0.1	0.0	1.6	0.1	0.0
Small-footed myotis	<i>Myotis ciliolabrum</i>	FS	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.0

Common Name	Species Name	Status	Jeffrey Pine	Lacustrine	Lodgepole Pine	Montane Hardwood-Conifer	Montane Riparian	Red Fir	Sierran Mixed Conifer	Wet Meadow	White Fir
Snowshoe hare ^d	<i>Lepus americanus tahoensis^d</i>	SSC	3.3	0.0	0.3	0.0	0.2	0.3	15.0	0.0	1.9
Spotted bat	<i>Euderma maculatum</i>	FS, SSC	3.3	0.0		0.1	0.4	0.0	15.3	0.1	1.9
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	FS, SSC	3.2	0.0	0.3	0.1	0.4	0.3	14.9	0.1	1.9
White-tailed jackrabbit	<i>Lepus townsendii</i>	SSC	3.3	0.0	0.3	0.0	0.0	0.3	0.0	0.1	0.0
Wolverine	<i>Gulo gulo</i>	FCT, FS, ST, SFP	3.3	0.0	0.3	0.1	0.4	0.3	15.3	0.1	1.9
Yuma myotis	<i>Myotis yumanensis</i>	FS	3.3	0.2	0.3	0.1	0.4	0.3	15.3	0.1	1.9

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

^a Northern goshawk was split into two separate species: Eurasian goshawk (*Accipiter gentilis*) and American goshawk (*Accipiter atricapillus*). The species that occurs in the GAI is American goshawk. The table reflects information in the SAMNA, which uses CWHR and other CDFW datasets that may not be current. The scientific name was updated in the table.

^b The listed species of sandhill crane is greater sandhill crane. The scientific name was updated in the table.

^c The listed species of mountain beaver that occurs in the GAI is the Sierra Nevada mountain beaver. The scientific name was updated in the table.

^d The listed species of snowshoe hare is the Sierra Nevada snowshoe hare. The scientific name was updated in the table.

5.3 Estimated Aquatic Resources Impacts

The quantitative impacts presented in this document are estimates, pursuant to the SAMNA model and the Caltrans riparian landcover dataset. 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. Areas of potential riparian function are also discussed. Refer to Appendix E, *Aquatic Resource Locations*, for maps depicting the location and extent of wetlands and non-wetland waters in the GAI. Riparian habitat is described in Section 2.16.

5.3.1. Estimated Impacts on Threatened and Endangered Fish Habitat

Using the methods described in Section 5.1.1, impacts on threatened and endangered fish habitat were estimated for the 13 transportation projects listed in Appendix B, *Transportation Projects Planned for the GAI during the Planning Period*. Of the 13 SHOPP transportation projects evaluated, 10 are forecast to affect 3.8 acres of Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*) habitat, the only threatened and endangered fish with habitat identified in the GAI (Table 5-4; Caltrans 2024g).

Table 5-4. Summary of Estimated SHOPP Impacts on Threatened and Endangered Fish Habitat in the GAI (acres)^{a,b}

Sub-basin (HUC-8)	Sub-basin Number	Number of Transportation Projects	Lahontan Cutthroat Trout	Total
Lake Tahoe	16050101	5	0.7	0.7
Truckee	16050102	7	3.0	3.0
Total^c Not applicable		10	3.8	3.8

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

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

^c Totals may not reflect numbers presented in rows above. Some SHOPP transportation projects cross more than one sub-basin.

5.3.2. Estimated Impacts on Wetlands

Using the methods described in Section 5.1.1, impacts on wetlands were estimated for the 13 transportation projects listed in Appendix B, *Transportation Projects Planned for the GAI during the Planning Period*. Of the 13 SHOPP transportation projects evaluated, 9 would result in impacts on 0.8 acre of wetland habitat in the GAI, including less than 0.1 acre of depressional natural non-vegetated, 0.1 acre of freshwater emergent wetland, and 0.7 acre of freshwater forested/shrub wetland (Table 5-5; Caltrans 2024e).

Table 5-5. Summary of Estimated SHOPP Impacts on Wetlands in the GAI (acres)

Sub-basin (HUC-8)	Sub-basin Number	Number of Transportation Projects	Depressional Natural Non- vegetated	Freshwater Emergent Wetland	Freshwater Forested/Shrub Wetland	Total ^b
Lake Tahoe	16050101	3	<0.1	0.0	0.1	0.1
Truckee	16050102	7	0.0	0.1	0.6	0.8
Total^{a,b}	Not applicable	9	<0.1	0.1	0.7	0.8

^a Totals may be different due to rounding.

^b Totals may not reflect numbers presented in rows above. Some SHOPP transportation projects cross more than one sub-basin; some are not forecast to affect wetlands.

Note the SAMNA's wetland layers provide output that appears similar to its terrestrial output, in that the results are provided in terms of wetland habitat. However, wetland forecasts based on the SAMNA's wetland layer are considered more accurate than wetland habitat forecasts based on the SAMNA's terrestrial habitat layers. Therefore, the wetland estimates in Table 5-5 are based solely on the SAMNA's wetland data layer (Caltrans 2024e).

5.3.3. Estimated Impacts on Non-wetland Waters

Using the methods described in Section 5.1.1, impacts on non-wetland waters were estimated for the 13 transportation projects listed in Appendix B, *Transportation Projects Planned for the GAI during the Planning Period*. Of the 13 SHOPP transportation projects evaluated, 10 would result in impacts on 4.0 acres of non-wetland waters in the GAI, including 0.2 acre of canal/ditch, less than 0.1 acre of lake/pond, and 3.8 acres of stream/river habitat (Table 5-6; Caltrans 2024f).

Table 5-6. Summary of Estimated SHOPP Project Impacts on Non-wetland Waters in the GAI (acres)

Sub-basin (HUC-8)	Sub-basin Number	Number of Transportation Projects	Canal/ Ditch	Lake/ Pond	Stream/ River	Total ^a
Lake Tahoe	16050101	5	0.0	<0.1	0.7	0.7
Truckee	16050102	7	0.2	0.0	3.1	3.2
Total^b	Not applicable	10	0.2	<0.1	3.8	4.0

^a Totals may be different due to rounding.

^b Totals may not reflect numbers presented in rows above. Some SHOPP transportation projects cross more than one sub-basin; some are not forecast to affect non-wetland waters.

5.3.4. Estimated Impacts on Areas of Potential Riparian Function

Potential impacts on areas of potential riparian function were estimated using the statewide riparian landcover dataset developed for Caltrans by SFEI (Section 1.4.1; Caltrans 2023a). The analysis consisted of an intersection of assumed transportation project footprints for the 13 transportation projects listed in Appendix B, *Transportation Projects Planned for the GAI during the Planning Period*, with the riparian landcover dataset. Given uncertainties in the dataset, results are shown in two ways, based on slope and based on vegetation. Vegetation polygon features used for the analysis are consistent with the SAMNA. Of the 13 SHOPP transportation projects evaluated, 12 could potentially affect 2.0 to 28.3 acres of areas of potential riparian function (Table 5-7).

Table 5-7. Summary of Estimated SHOPP Project Impacts on Areas of Potential Riparian Function in the GAI (acres)

Sub-basin (HUC-8)	Sub-basin Number	Number of Transportation Projects	Slope-based Estimate (acres) ^a	Vegetation Process-based Estimate (acres) ^b
Lake Tahoe	16050101	6	0.1	3.0
Truckee	16050102	8	1.9	25.3
Total^{b,c} Not applicable		12	2.0	28.3

^a Vegetation polygon features used for the analysis are consistent with the SAMNA.

^b Totals may be different due to rounding.

^c Totals may not reflect numbers presented in rows above. Some SHOPP transportation projects cross more than one sub-basin; one is not forecast to affect areas of potential riparian function.

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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.

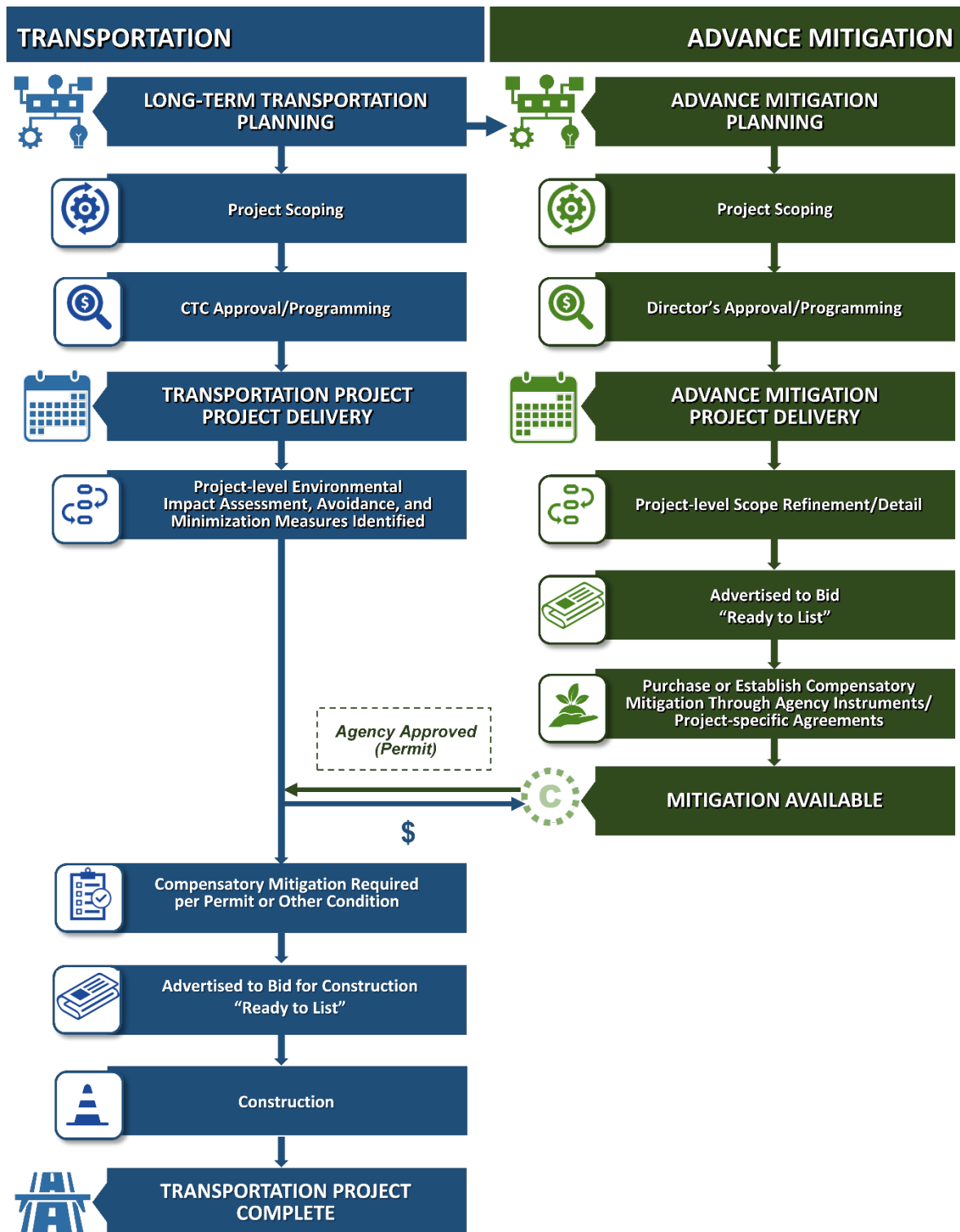
In this chapter, Caltrans summarizes the scheduling considerations and constraints of potential benefiting transportation projects in order to inform advance mitigation project schedules. A time frame for the forecast advance mitigation needs is provided and analyzed. The potentially benefiting transportation 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 perform 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;
- need compensatory mitigation delivered in a nearer timeframe, which may favor seeking already existing credits as an AMP advance mitigation project scope; or
- 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 Table 6-1 and on Figure 6-2, 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 Sierra Nevada Ecoregion Section are concentrated on Sierra Nevada yellow-legged frog habitat impacts in fiscal year 2026/27, with no impacts in fiscal years 2027/28, 2029/30, or 2031/32, and minor impacts spread throughout the rest of the 10-year planning period.
- As shown in Tables 6-2 and 6-3 and on Figures 6-3 and 6-4, when the SHOPP transportation projects identified previously have their aquatic resource impacts examined relative to their expected advertising date, the compensatory mitigation needs for HUC-8 sub-basins are spread throughout the 10-year planning horizon, as described below:
 - Compensatory mitigation needs in the Lake Tahoe sub-basin are focused on areas of potential riparian function in fiscal years 2025/26, 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.

- 2030/31, with lesser impacts in fiscal years 2023/24 and 2028/29; lesser impacts to fish habitat and non-wetland waters in fiscal years 2025/26, 2026/27, 2028/29, and 2030/31; and minor impacts to wetlands in fiscal years 2025/26, 2026/27, and 2030/31 (Table 6-2, Figure 6-3).
- Compensatory mitigation needs in the Truckee sub-basin are focused on areas of potential riparian function in fiscal year 2026/27, with lesser impacts in fiscal years 2024/25, 2028/29, and 2032/33; lesser impacts to fish and non-wetland waters in fiscal years 2024/25, 2026/27, 2028/29, and 2032/33; and minor impacts to wetlands in fiscal year 2026/27 (Table 6-3, Figure 6-4)

Spatially, these transportation projects are distributed throughout the GAI (Figure 6-5).

Table 6-1. Sierra Nevada Ecoregion Section: Estimated Impacts on Terrestrial Species of Mitigation Need in the GAI, by Transportation Project Delivery Year

Expected Advertisement Year	Sierra Nevada Yellow-legged Frog: Number of Transportation Projects	Sierra Nevada Yellow-legged Frog: Estimated Potential Impacts (acres)
2023/24	1	0.6
2024/25	1	0.1
2025/26	2	0.7
2026/27	3	18.7
2027/28	0	0.0
2028/29	2	0.8
2029/30	0	0.0
2030/31	1	0.6
2031/32	0	0.0
2032/33	1	0.3
Total^a	11	21.9

^a Total may be different due to rounding.

Figure 6-2. Sierra Nevada Ecoregion Section: Estimated Impacts on Terrestrial Species of Mitigation Need in the GAI, by Transportation Project Delivery Year

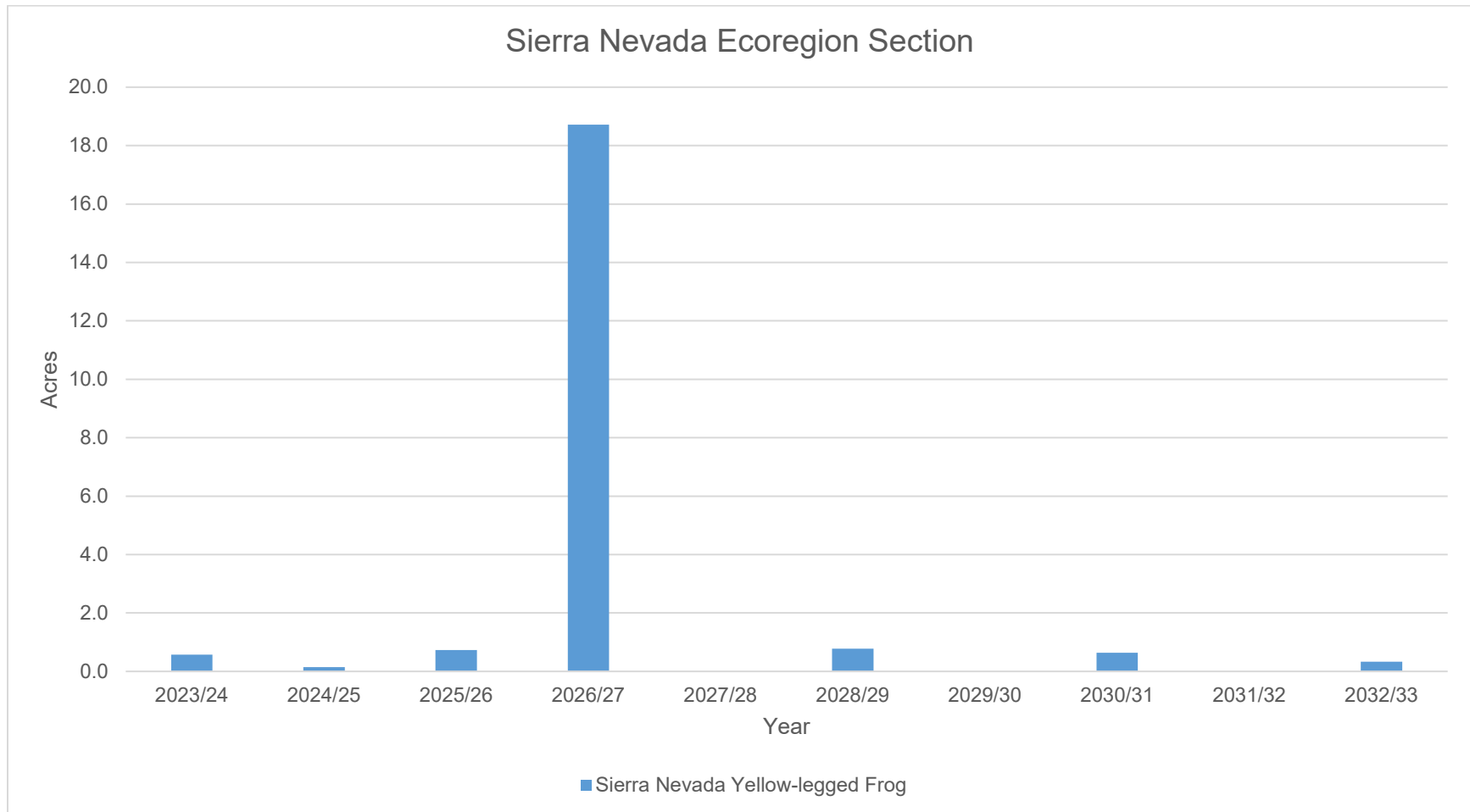


Table 6-2. Lake Tahoe Sub-basin: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

Expected Advertis- ement Year	Fish: Number of Trans- portation Projects	Fish: Estimated Potential Impacts (acres)	Wetland: Number of Trans- portation Projects	Wetland: Estimated Potential Impacts (acres)	Water: Number of Trans- portation Projects	Water: Estimated Potential Impacts (acres)	Riparian: Number of Trans- portation Projects	Slope- based Riparian: Estimated Potential Impacts (acres)	Vegetation Process- based Riparian: Estimated Potential Impacts (acres)
2023/24	0	0.0	0	0.0	0	0.0	1	0.0	0.1
2024/25	0	0.0	0	0.0	0	0.0	0	0.0	0.0
2025/26	2	0.1	1	<0.1	2	0.1	2	0.0	0.6
2026/27	1	0.3	1	<0.1	1	0.3	1	0.0	1.1
2027/28	0	0.0	0	0.0	0	0.0	0	0.0	0.0
2028/29	1	0.2	0	0.0	1	0.1	1	0.0	0.1
2029/30	0	0.0	0	0.0	0	0.0	0	0.0	0.0
2030/31	1	0.1	1	<0.1	1	0.1	1	0.1	1.1
2031/32	0	0.0	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	0.0
Total^a	5	0.7	3	0.1	5	0.7	6	0.1	3.0

^a Totals may be different due to rounding.

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

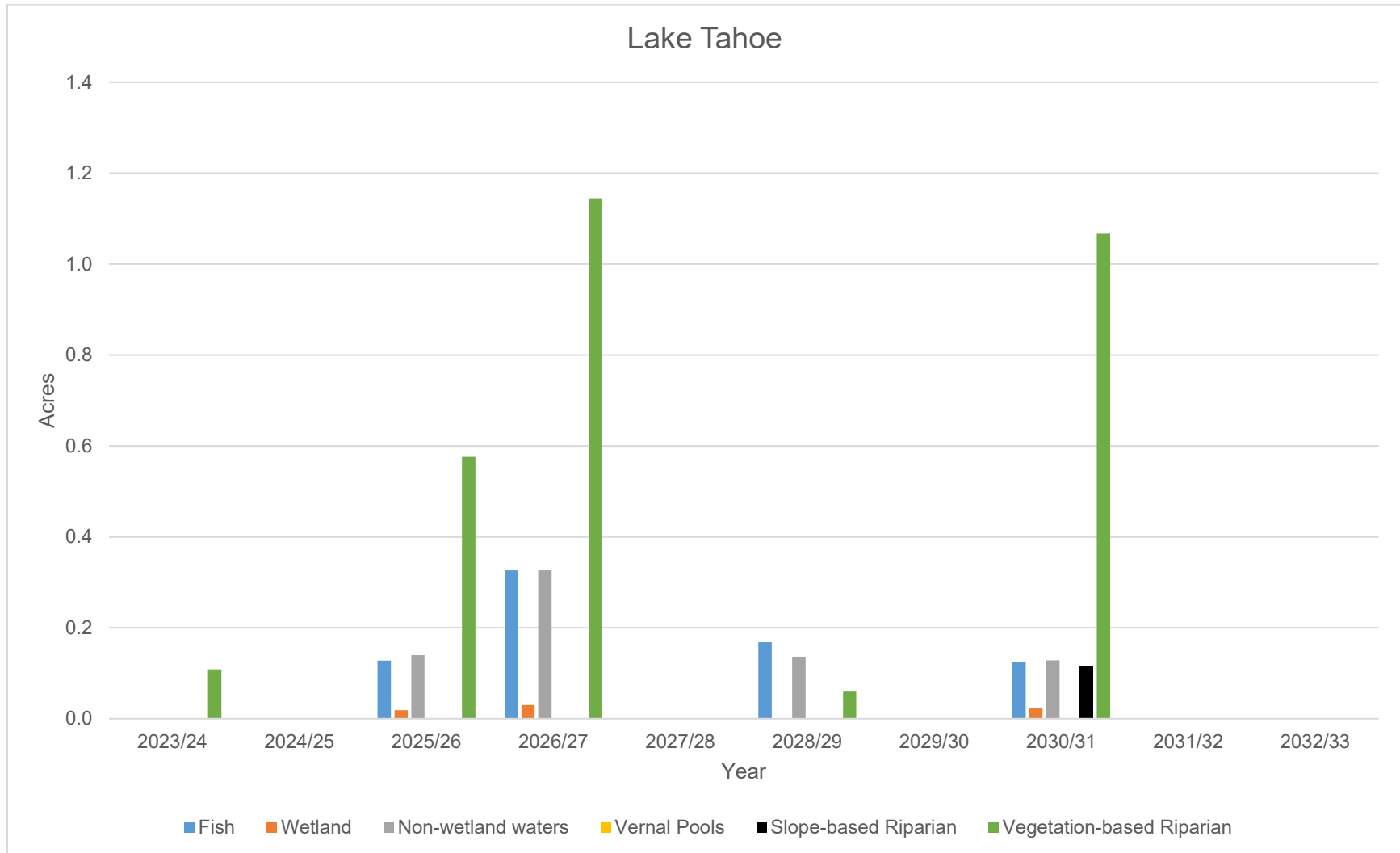
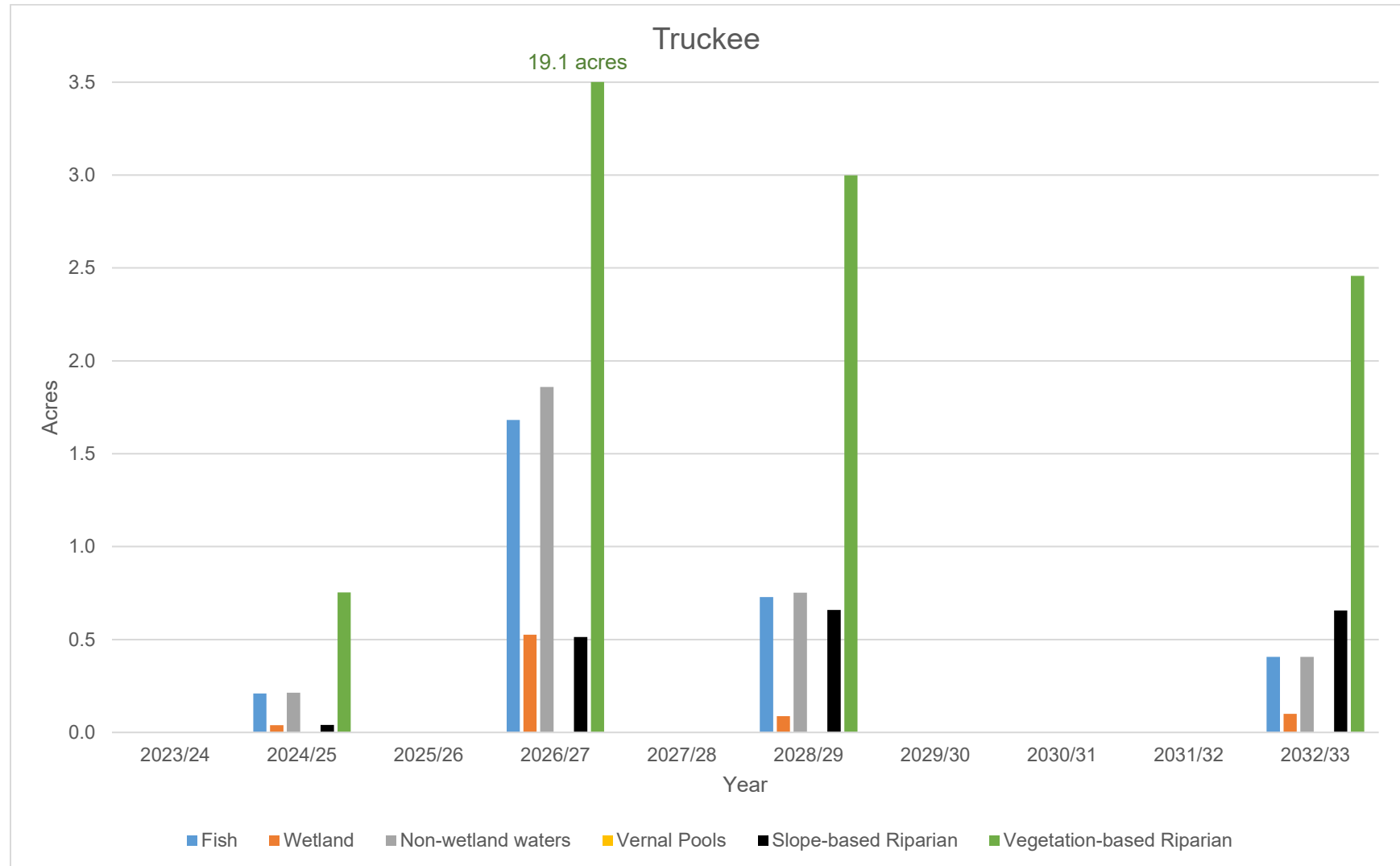


Table 6-3. Truckee Sub-basin: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year

Expected Advertis- ment Year	Fish: Number of Trans- portation Projects	Fish: Estimated Potential Impacts (acres)	Wetland: Number of Trans- portation Projects	Wetland: Estimated Potential Impacts (acres)	Water: Number of Trans- portation Projects	Water: Estimated Potential Impacts (acres)	Riparian: Number of Trans- portation Projects	Slope- based Riparian: Estimated Potential Impacts (acres)	Vegetation Process- based Riparian: Estimated Potential Impacts (acres)
2023/24	0	0.0	0	0.0	0	0.0	0	0.0	0.0
2024/25	1	0.2	1	<0.1	1	0.2	1	<0.1	0.8
2025/26	0	0.0	0	0.0	0	0.0	0	0.0	0.0
2026/27	3	1.7	3	0.5	3	1.9	3	0.5	19.1
2027/28	0	0.0	0	0.0	0	0.0	0	0.0	0.0
2028/29	2	0.7	2	0.1	2	0.8	2	0.7	3.0
2029/30	0	0.0	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	0.0
2031/32	0	0.0	0	0.0	0	0.0	0	0.0	0.0
2032/33	1	0.4	1	0.1	1	0.4	2	0.7	2.5
Total^a	7	3.0	7	0.8	7	3.2	8	1.9	25.3

^a Totals may be different on account of rounding.

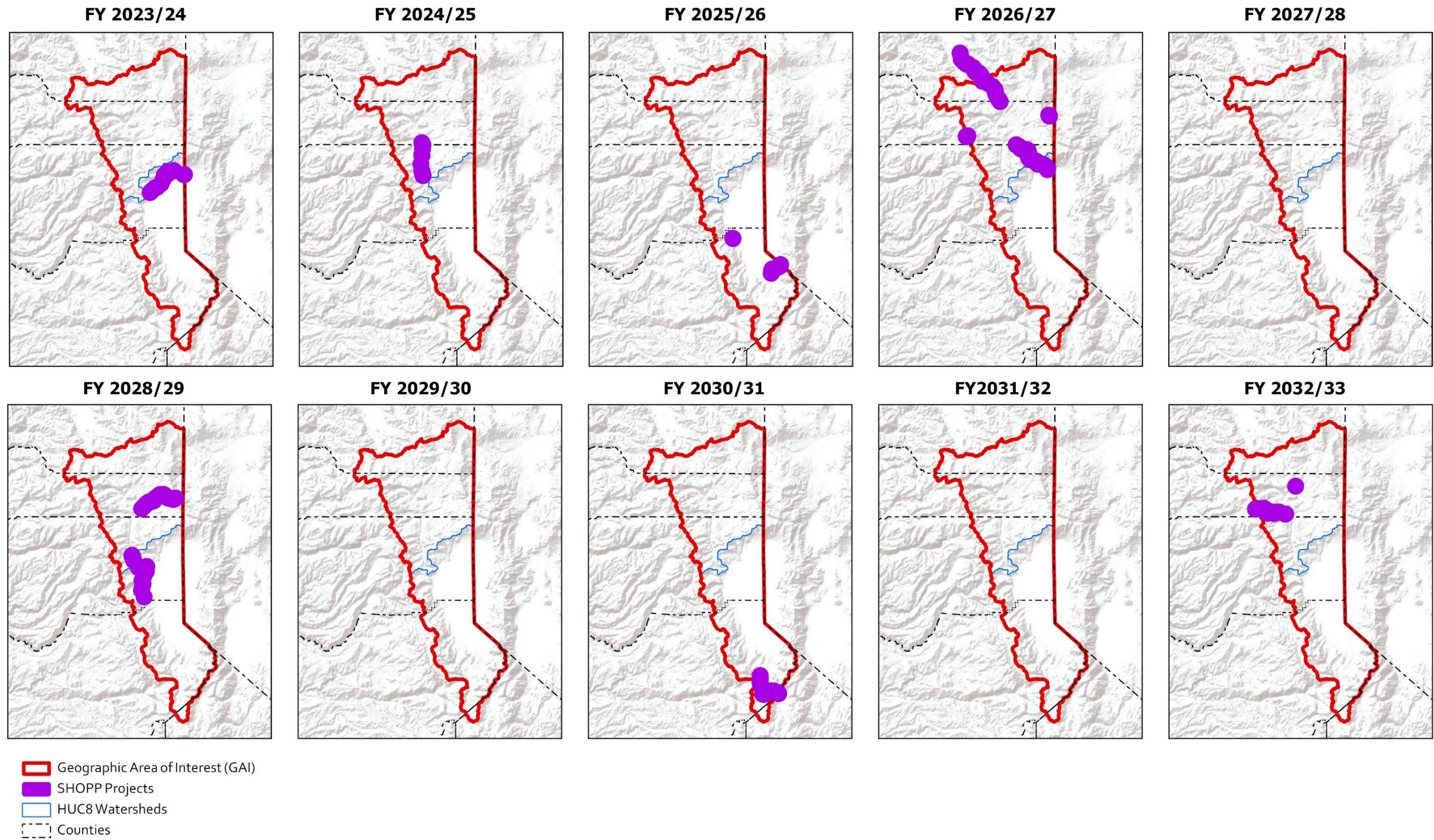
Figure 6-4. Truckee Sub-basin: Estimated Impacts on Aquatic Resources, by Transportation Project Delivery Year



6.3 Acceleration Priorities

Expressed in the SHS Management Plan, Caltrans District 3's current transportation project priorities consist of transportation projects that generally fall in the middle of the 10-year project portfolio (Figure 6-5; Caltrans 2023b). Transportation planning is dynamic, however, and delivery schedules associated with transportation projects that informed this RAMNA may change over time. This dynamism will affect Caltrans District 3's needs. For example, the impact forecasts presented here are based on the transportation project sequencing provided in the 2023/24 to 2032/33 (Quarter 3) SHOPP Ten-Year Book (Figure 6-5), yet since it was published, the transportation project delivery schedules may have changed, or the projects have been discontinued. Prior to proposing advance mitigation projects, Caltrans District 3 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.

Figure 6-5. Location of SHOPP Estimated Impacts, by Transportation Project Delivery Year, Ten-Year Book (2024, Quarter 3)



Sources: Esri, USGS, NOAA, USGS

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7. WILDLIFE RESOURCES CONSERVATION GOALS AND OBJECTIVES

Caltrans' primary objective for wildlife resources is to avoid and minimize all impacts on special-status species from Caltrans transportation projects in 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 in 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 in 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 wildlife 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 wildlife 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 wildlife resource-related compensatory mitigation in the GAI.
- Then, in Section 7.3, Caltrans summarizes the life history information for the 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 as well as land management plans,
 - current and projected pressures and stressors for which there is a potential transportation nexus,
 - 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 potentially 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 in the GAI with wildlife resource-related compensatory mitigation. The aquatic resources used by wildlife, such as streams, wetlands, and non-wetland waters, are 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 Wildlife Resource Compensatory Mitigation Credits (or Values)

Agency ^a	Summary
CDFW	CDFW oversees the conservation, protection, and management of fish, wildlife, native plants, and 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, and 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 CESA, Lake and Streambed Alteration Agreements, conservation and mitigation bank approvals, MCA and RCIS approvals, 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)(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 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.

^a In addition to the agencies listed above, the RWQCBs may exert jurisdiction over species to the extent that cold freshwater habitat; estuarine habitat; fish spawning; freshwater replenishment; groundwater recharge; migration of aquatic organisms; preservation of areas of biological significance; rare, threatened, or endangered species; spawning, reproduction, and/or early development; warm freshwater habitat; and wildlife habitat 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, a species of mitigation need was selected to focus the planning effort and 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 Sierra Nevada yellow-legged frog. This species is briefly described below.

7.3.1. Sierra Nevada Yellow-legged Frog

Sierra Nevada yellow-legged frog is an amphibian species that is listed as federally endangered and state threatened. It is found in the central and northern Sierra Nevada Mountains, from as far north as Lassen and Plumas Counties to as far south as Inyo and Tulare Counties (Vredenburg et al. 2007). The species is divided into three clades, with the GAI situated entirely within Clade 2. Additionally, four designated critical habitat subunits for this species are situated in the GAI: Black Buttes, Five Lakes, Crystal Range, and East Amador. Typical habitat for this species includes lakes, ponds, marshes, meadows, and streams at elevations ranging from 4,500 to 12,000 feet above mean sea level. It is common for this species to use alpine lakes with grassy or muddy margins, but it is not limited to these types of lakes (Zweifel 1955). Adults can breed in a diversity of aquatic habitats, both lentic and lotic, with oviposition occurring in shallows of lakes and marsh habitats (Brown et al. 2014).

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 in the GAI. 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 in 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 in the GAI

Document	Reference	Areas of Important Habitat
Special-status Taxa Documents	See below	See below
<i>Critical Habitat Designation for the Sierra Nevada Yellow-Legged Frog</i>	FWS 2016	Identifies critical habitat for the Sierra Nevada yellow-legged frog. The four designated critical habitat subunits that overlap the GAI include: ▪ Black Buttes ▪ Five Lakes ▪ Crystal Range ▪ East Amador
<i>Interagency Conservation Strategy for Mountain Yellow-Legged Frogs in the Sierra Nevada (Rana sierrae and Rana muscosa)</i>	CDFW et al. 2018	Identifies three Sierra Nevada yellow-legged frog clades, including one (Clade 2) that occurs in the GAI.
Conservation and Land Management Documents	See below	See below
<i>Burton Creek State Park General Plan and Final Environmental Impact Report</i>	California Department of Parks and Recreation 2005	Provides the Burton Creek State Park general plan. Includes Antone Meadows Burton Creek National Preserves. Includes goals to: ▪ provide special protection for federal and state listed species ▪ protect and rehabilitate native vegetation complexes within the park ▪ control and eradicate nonnative plant species ▪ protect special plants within the park to restore populations ▪ protect the perpetuation of native wildlife species populations ▪ rehabilitate degraded wildlife habitat ▪ remove water diversions on Burton Creek to ensure perpetuation of riparian-dependent species ▪ establish new habitat linkages between Burton Creek State Park and other protected lands to increase species abundance and diversity ▪ establish buffers around existing significant park resources

Document	Reference	Areas of Important Habitat
<i>Donner Memorial State Park General Plan and Environmental Impact Report Volume 1 of 2</i>	California State Parks 2003	Provides the Donner Memorial State Park general plan. Includes goals to: ▪ restore damaged or compromised habitats and landscape features ▪ restore aquatic, riparian, and wetland habitats ▪ control invasive non-native plant species ▪ protect sensitive animal populations ▪ establish new effective habitat linkages between Donner Memorial State Park as well as other protected lands to increase species abundance and diversity ▪ establish buffers around existing significant park resources
<i>Lake Valley State Recreation Area General Plan</i>	California Department of Parks and Recreation 1988	Provides the Lake Valley State Recreation Area general plan. Includes land use categories for open space/river-stream, open space/undeveloped, and wetlands/ponds-drains. Includes proposed land uses of open space/Stream Management Sensitivity Zone and open space/rehabilitated. Includes a goal to perpetuate both the environmental quality and wildlife habitat of the site. Potential Sierra Nevada yellow-legged frog habitat may exist within these land use categories.
<i>Tahoe State Recreation Area General Plan Amendment</i>	California State Parks 1998	Provides the Tahoe State Recreation Area general plan amendment. Includes goals to protect sensitive species and habitats as well as restore riparian and shoreline areas.
<i>Eagle Lake Field Office Resource Management Plan and Final Environmental Impact Statement</i>	BLM 2007	Provides BLM's resource management plan for the Eagle Lake Field Office. Includes goals to improve 35 miles of perennial or intermittent streams and 33 acres of riparian/wetland areas in the management area, prioritize development of new water sources, and restore and rehabilitate streams.
<i>Ecological Restoration Implementation Plan</i>	USFS 2013	Provides USFS' internal restoration plan, which includes general strategies focused on increasing collaboration with other organizations, completion of land management plans, and forest-specific goals, including the overarching goal to restore Sierra Nevada yellow-legged frog habitat.

Document	Reference	Areas of Important Habitat
<i>Land Management Plan Lake Tahoe Basin Management Unit</i>	USFS 2016	Provides USFS' plan for forest management of the Lake Tahoe Basin Management Unit. Includes objectives to: ▪ reconnect floodplains with stream channels as well as hydrology within and between watersheds ▪ restore the timing, variability, and duration of floodplain inundation and groundwater in meadows, wetlands, and other special aquatic features ▪ restore the geomorphic and biological characteristics of special aquatic features ▪ restore a minimum of two fens that are assessed to be at risk of conversion to meadow by 2029 ▪ restore stream segments with degraded habitat in a minimum of two streams by 2029 ▪ restore a minimum of two degraded aquatic habitat sites to support self-sustaining aquatic populations by 2029 ▪ complete restoration of Dicks Lake, Fontanillis Lake, Upper Velma Lake, Heather Lake, Susie Lake, Half Moon Lake, and Alta Morris Lake, adjacent to current Sierra Nevada yellow-legged frog populations within the Desolation Wilderness by removing introduced trout species by 2029 ▪ expand fishless high elevation aquatic habitats near existing or historic Sierra Nevada yellow-legged frog sub-populations
<i>Land and Resource Management Plan Toiyabe National Forest</i>	USFS 1986	Provides USFS' plan for forest management of the Humboldt-Toiyabe National Forest, which includes regions within the eastern portions of the GAI. Includes goals to improve water quality and manage riparian areas to a satisfactory condition.
<i>Meyers Area Plan</i>	El Dorado County and Tahoe Regional Planning Agency ("TRPA") 2018	Provides El Dorado County and TRPA's area plan for the Meyers area. Includes the following policies to enhance stream environment zones: ▪ Increase the area of naturally functioning stream environment zones through restoration/rehabilitation ▪ Provide incentives to reduce on-site land coverage of stream environment zones
<i>Placer County Tahoe Basin Area Plan</i>	Placer County and TRPA 2017	Provides Placer County and TRPA's area plan for the Tahoe Basin in Placer County. Includes a general policy to restore stream environment zones by accelerating stream environment zone restoration and implementing incentives related to redevelopments and transfers of development.

Document	Reference	Areas of Important Habitat
<i>Sierra Nevada Forest Plan Amendment Final Supplemental Environmental Impact Statement</i>	USFS 2004	Provides USFS' plan for forest management in each of the National Forests of the Sierra Nevada. Tahoe and Humboldt-Toiyabe National Forests are located in the GAI with the objectives to: ▪ increase structural diversity of vegetation; and ▪ restore desired conditions of aquatic, riparian, and meadow ecosystems.
<i>Tahoe National Forest Land and Resource Management Plan Environmental Impact Statement</i>	USFS 1990	Provides USFS' management plan for the Tahoe National Forest. Includes goals and objectives to: ▪ improve habitat capability for riparian and meadow-associated wildlife ▪ restore riparian vegetation such that 80 percent crown closure is present ▪ develop in-stream cover where existing cover is less than 50 percent
<i>Threshold Standards and Regional Plan</i>	TRPA 2024	Provides TRPA's management plan that establishes shared goals for restoration of the Lake Tahoe Region based on specific thresholds to be restored to and then maintained when achieved. Plan thresholds are, in part, water quality based on clarity and algal levels found during the 1960s as well as having 6,000 acres of excellent lake habitat and 180 miles of good to excellent stream habitat. Goals pertaining to these thresholds include the restoration of wetlands, meadows, and riparian vegetation as well as the expansion of habitat for FESA and CESA species.
SWAP	CDFW 2025	Provides the SWAP. The GAI overlaps one of the SWAP's defined geographic provinces: ▪ Central Valley and Sierra Nevada Province: – In the Central Valley and Sierra Nevada Province, the species of mitigation need (Sierra Nevada yellow-legged frog) is considered a Species of Greatest Conservation Need. ▪ The SWAP defines a broad target of increasing the acreage of specific vegetation types and habitats available to focal species by 5 percent over their 2015 levels by 2025.
City and County General Plans	See below	See below
<i>Alpine County General Plan</i>	Alpine County 2021	Describes implementation measures that protect aquatic or riparian habitat that could be used as potential habitat for Sierra Nevada yellow-legged frog.
<i>2004 El Dorado County General Plan</i>	El Dorado County 2004	Includes a policy to identify and protect stream and river riparian habitat, lake shore habitat, wetlands, and diverse wildlife habitat that could be used by Sierra Nevada yellow-legged frog.

Document	Reference	Areas of Important Habitat
<i>Nevada County General Plan</i>	Nevada County 2020	Requires variable setbacks and buffers of development from riparian areas and sensitive habitats.
<i>Placer County General Plan</i>	Placer County 2013	Provides the general plan for Placer County. Requires a minimum 100-foot setback from the centerline of perennial streams, 50-foot setback from the centerline of intermittent streams, and 50-foot setback from the edge of sensitive habitats, including riparian zones, wetlands, old growth woodlands, and the habitat of special status, threatened, or endangered species. Includes a land use designation for greenbelt/open space.
<i>Sierra County General Plan</i>	Sierra County 2012	Includes goals to protect streams, lakes, wetlands, streamside management zones, and other riparian areas as well as devote particular attention to preserving habitats for plant and wildlife species that are associated with mature forest successional stages, riparian areas, hardwoods, and meadows.
<i>City of South Lake Tahoe General Plan</i>	City of South Lake Tahoe 2011	Includes a goal to restore key riparian areas.
<i>Town of Truckee 2040 General Plan</i>	Town of Truckee 2023	Incorporates goals that include the restoration of riparian habitat to enhance its role as critical open space as well as a biological and scenic resource.

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 plans included in Table 7-2 identify multiple pressures and stressors contributing to the decline of the species of mitigation need within its range. These pressures and stressors were evaluated in relation to the types of effects that could result from transportation projects funded through SHOPP and STIP, and whether the species of mitigation need could benefit from in-kind compensatory mitigation purchased or established through an advance mitigation project.

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, dams, and water diversions have resulted in habitat fragmentation and a decrease in connectivity between habitats that support species of mitigation need populations.

Little is known about the impacts of road construction or use on Sierra Nevada yellow-legged frogs due to their remote distribution, but a few studies have addressed road effects on similar frogs or toads and other amphibians that could apply to this species. Some studies also have examined road effects on riparian habitat, which may have indirect effects on frog populations (Brown et al. 2014). Roads and highways hinder the movement of Sierra Nevada yellow-legged frogs and are considered permanent physical barriers leading to increased habitat fragmentation and isolation of populations (Vos and Chardon 1998). Roads near aquatic habitats that are poorly constructed or inadequately maintained may lead to increased erosion, sedimentation, and petrochemical runoff, negatively affecting amphibian populations (Brown et al. 2014). Culverts under roads may provide some connectivity for various species, but if not constructed properly they can also impede dispersal and trap some species such as Sierra Nevada yellow-legged frogs (CDFW 2019).

Habitat loss via urbanization and other development is not currently considered to be a significant threat to Sierra Nevada yellow-legged frog but may have some yet unknown level of local importance in specific parts of its geographic range (Brown et al. 2014).

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 native genetic diversity, shift habitat types, and further threaten already endangered or threatened natural resources. Introduced fish, bullfrogs, and other nonnative species are known to impact Sierra Nevada yellow-legged frog through predation and disease transmission (FWS 2024b).

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. Sierra Nevada yellow-legged frogs may be affected by chytridiomycosis, a disease caused by a fungal pathogen called chytrid. Although the effects of chytrid on Sierra Nevada yellow-legged frogs are not well understood, it is known to have caused mass mortality and population declines in other amphibian species (CDFW 2019; FWS 2002). Sierra Nevada yellow-legged frog may be particularly susceptible to this aquatic chytrid fungus because tadpoles remain in aquatic habitat for 3 to 4 years before metamorphosing, and post-metamorphic Sierra Nevada yellow-legged frogs are almost always near water (Brown et al. 2014).

Predation is considered a major threat to the species of mitigation need in the GAI. As noted above, Sierra Nevada yellow-legged frogs are susceptible to predation from invasive species, including bullfrogs, crayfish, and nonnative fish (FWS 2024b).

7.5.4. Climate Change, Drought, and Wildfire

Section 2.4 provided a brief overview of the GAI's climate and available planning-level predictions for climate change for the region. Over the next 30 years, the climate is expected to change. Expected changes include extended periods of higher temperatures and more frequent heat waves during 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 2019b).

Climate change has the potential to affect Sierra Nevada yellow-legged frog populations by increasing the frequency, duration, and magnitude of droughts. Drought may also make waterbodies shallower during winter, which increases the likelihood that the entire waterbody will freeze or become oxygen depleted, both of which can result in mortality that may adversely affect populations (Bradford 1982; Bradford et al. 1993). However, while climate change may be a factor in the decline of Sierra Nevada yellow-legged frog populations in the Sierra Nevada, its precise contribution remains unclear (Brown et al. 2014).

Terrestrial connectivity in the GAI, including large remaining blocks of intact habitat or natural landscape, is shown on Figure 2-8. 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 toward more

suitable habitat as the climate changes, and by providing protection for the ecological processes that support key habitat. The terrestrial climate resilience rank from the ACE dataset (CDFW 2018a) is presented on Figure 2-5. Climate resilience is high throughout the area surrounding the Lake Tahoe basin, with much of the area having a rank of 4 or 5, with ranks 2 and 3 scattered throughout the GAI. It is in the lower-elevation locations that impacts from climate change are expected to be the most severe in the GAI. Projected climate resilience increases with elevation in the mountainous portions of the GAI, reaching ranks of 4 or 5 near the highest peaks.

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 amphibians. Amphibians are especially susceptible to contaminants in their environment because of their highly permeable skin. Sierra Nevada yellow-legged frog is affected by new generations of pesticides, now in widespread use in the Central Valley, that have renewed the specter of potential negative effects on the biota of the Sierra Nevada resulting from pesticide drift. Sierra Nevada yellow-legged frogs spend a high percentage of their time in water, moving through the interface of water and air, and conduct a significant proportion of respiration through their skin, so they are at greater risk of exposure to pesticides that are readily absorbed through the skin, respiratory system, or gastrointestinal tract (Brown et al. 2014).

7.6 Multi-species Benefits

While the species of mitigation need identified for this GAI is Sierra Nevada yellow-legged frog, 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:

- long-toed salamander (*Ambystoma macrodactylum*)
- Northern leopard frog (*Lithobates pipiens*)
- Yosemite toad (*Anaxyrus canorus*)
- California spotted owl (*Strix occidentalis occidentalis*)
- yellow warbler (*Setophaga petechia*)
- American badger (*Taxidea taxus*)
- pallid bat (*Antrozous pallidus*)
- Sierra Nevada red fox (*Vulpes vulpes necator*)

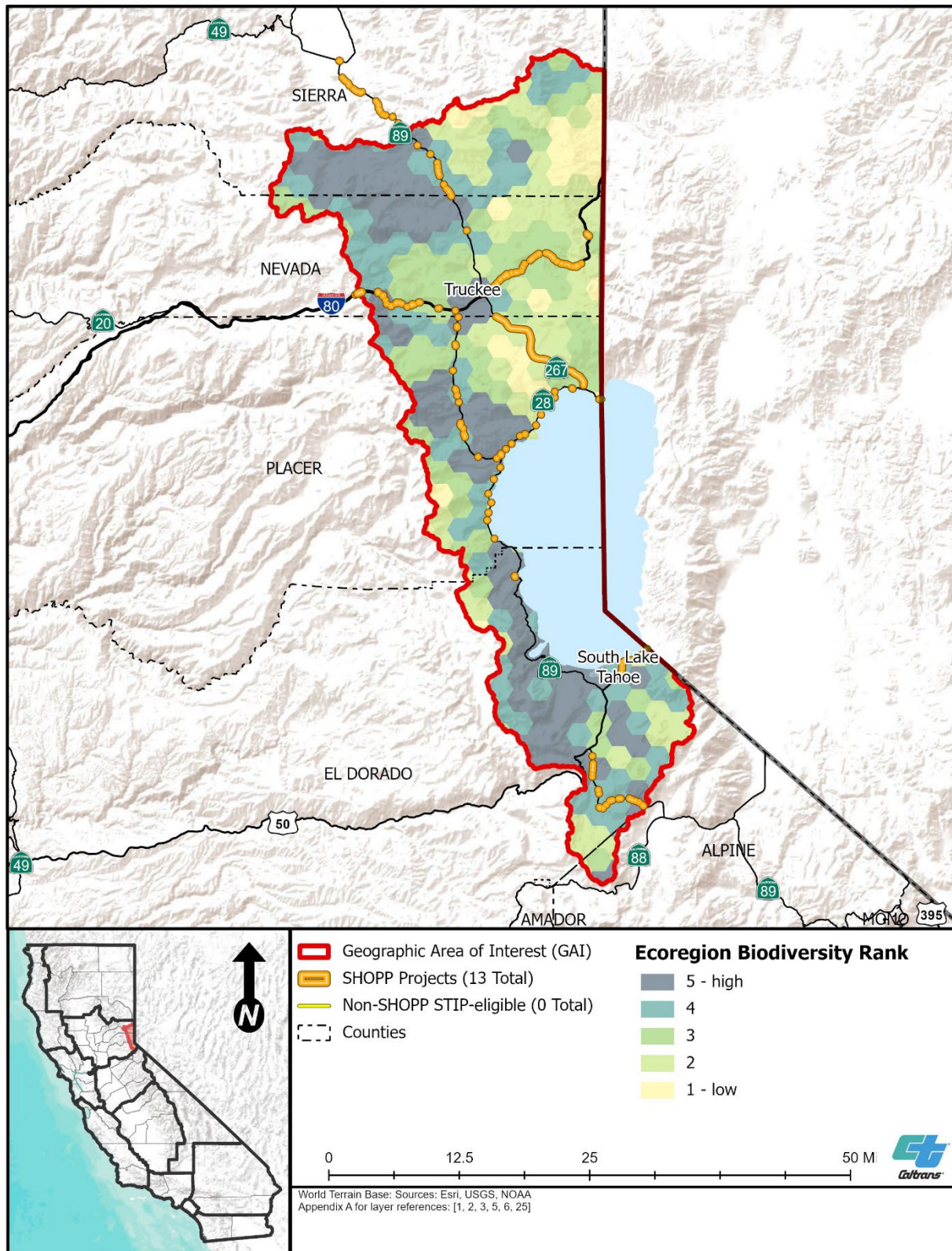
A complete list of co-benefiting species based on forecast impacts from the SAMNA model is included in Table 5-3.

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 in the GAI. Figure 7-1 illustrates the regional terrestrial biodiversity in 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 in the GAI with SHOPP projects show low biodiversity. Habitats are mapped in Appendix C, *Land Cover Types*, and the other special-status species that may occur in these habitats are provided in Appendix D, *Complete SAMNA Species Results*.

Other efforts, such as planting Caltrans easements with species beneficial to pollinators, are expected to contribute to biodiversity protection and enhancement in the GAI. Additionally, planting native plants in Caltrans easements also enhances biodiversity by reducing invasive species cover. The installation of culvert escape ramps 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 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 the species of mitigation need to inform advance mitigation scoping and thereby improve the conservation benefits of mitigation in the GAI.

Figure 7-1. Terrestrial Biodiversity in 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 with population recovery and success in the GAI. Each conservation goal is supported by one or more conservation objectives and is meant to further guide Caltrans District 3 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 in the GAI. Sub-objectives also capture specific measures from conservation and land management plans that address threats to the wildlife 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 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
Goal WILD-1: Conserve and expand habitat for species of mitigation need in the GAI to support ecosystem functions that are essential to recovery of the species.	See below	See below	See below
Objective WILD-1.1: Acquire, protect, restore, and/or enhance habitat of sufficient quantity to offset estimated impacts on species of mitigation need in the GAI in advance of transportation project impacts.	Sub-Objective WILD-1.1.1: Identify habitat for species of mitigation need in 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, Pacific Northwest subalpine forest, north coastal mixed evergreen and montane conifer forests, 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	Sierra Nevada yellow-legged frog	▪ SWAP (CDFW 2025) and companion plans ▪ <i>Critical Habitat Designation for the Sierra Nevada Yellow-Legged Frog</i> (FWS 2016) ▪ <i>Interagency Conservation Strategy for Mountain Yellow-Legged Frogs in the Sierra Nevada</i> (Rana sierrae and Rana muscosa) (CDFW, NPS, FWS, and USFS 2018) ▪ <i>Burton Creek State Park General Plan and Final Environmental Impact Report</i> (California Department of Parks and Recreation 2005) ▪ <i>Donner Memorial State Park General Plan and Environmental Impact Report Volume 1 of 2</i> (California State Parks 2003) ▪ <i>Lake Valley State Recreation Area General Plan</i> (California Department of Parks and Recreation 1988) ▪ <i>Tahoe State Recreation Area General Plan Amendment</i> (California State Parks 1998) ▪ <i>Eagle Lake Field Office Resource Management Plan and Final Environmental Impact Statement</i> (BLM 2007) ▪ <i>Ecological Restoration Implementation Plan</i> (USFS 2013) ▪ <i>Land Management Plan Lake Tahoe Basin Management Unit</i> (USFS 2016) ▪ <i>Land and Resource Management Plan Toiyabe National Forest</i> (USFS 1986) ▪ <i>Myers Area Plan</i> (El Dorado County and TRPA 2018) ▪ <i>Placer County Tahoe Basin Area Plan</i> (Placer County and TRPA 2017) ▪ <i>Sierra Nevada Forest Plan Amendment Final Supplemental Environmental Impact Statement</i> (USFS 2004) ▪ <i>Tahoe National Forest Land and Resource Management Plan Environmental Impact Statement</i> (USFS 1990) ▪ <i>Threshold Standards and Regional Plan</i> (TRPA 2024) ▪ <i>Alpine County General Plan</i> (Alpine County 2021) ▪ <i>2004 El Dorado County General Plan</i> (El Dorado County 2004) ▪ <i>Nevada County General Plan</i> (Nevada County 2020) ▪ <i>Placer County General Plan</i> (Placer County 2013) ▪ <i>Sierra County General Plan</i> (Sierra County 2012) ▪ <i>City of South Lake Tahoe General Plan</i> (City of South Lake Tahoe 2011) ▪ <i>Town of Truckee 2040 General Plan</i> (Town of Truckee 2023)

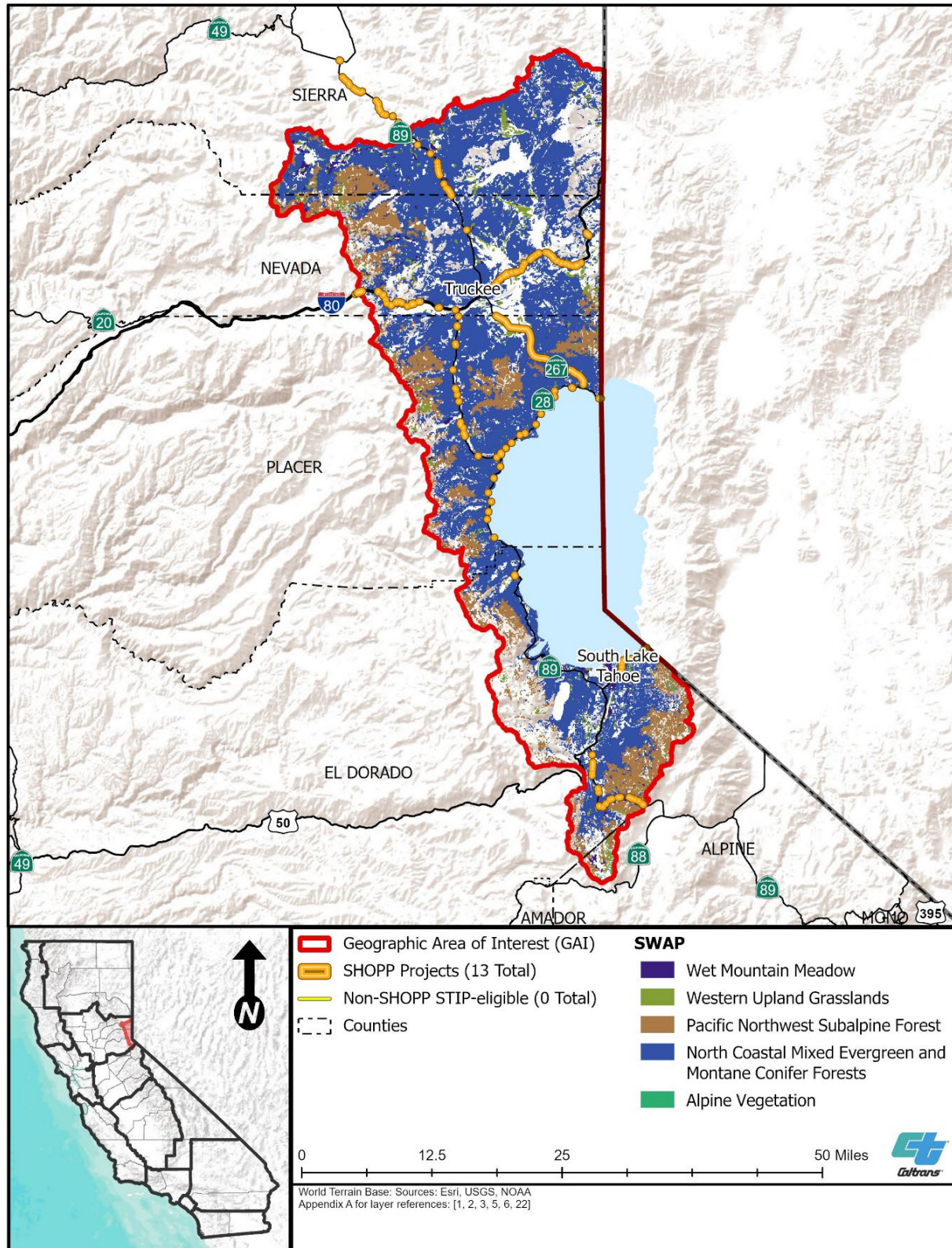
Objective	Sub-Objective	Affected Species ^a	Alignment with Conservation and Management Plans ^b
Goal WILD-2: Preserve, enhance, and increase connectivity between blocks of habitat supporting species of mitigation need to allow for dispersal that will maintain resilience and variability of populations.	See below	See below	See below
Objective WILD- 2.1: Acquire, protect, restore, and/or enhance movement corridors in the GAI in advance of transportation project impacts.	Sub-Objective WILD-2.1.1: Identify movement corridors for the species of mitigation need in the GAI and acquire, protect, restore, and/or enhance corridors such that the greatest functional lift for the 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 species of mitigation need. ^c	▪ Sierra Nevada yellow-legged frog	▪ Same references as listed with Objective WILD-1.1.
Goal WILD-3: Support resiliency of the landscape to climate change.	See below	See below	See below
Objective WILD-3.1: Acquire, protect, restore, and/or enhance habitat that supports resilience to climate change in 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 in the GAI (Figure 2-5). Sub-Objective WILD-3.1.2: Prioritize management of invasive species in key areas, such as movement corridors, that may be exacerbated by climate change and that would provide functional lift for the species of mitigation need.	▪ Sierra Nevada yellow-legged frog	▪ 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 in 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.	▪ Sierra Nevada yellow-legged frog	▪ Same references as listed with Objective WILD-1.1.
Objective WILD-4.2: Reduce impacts from nonnative predators in the GAI in advance of transportation project impacts.	Sub-Objective WILD-4.2.1: Identify and implement measures to reduce predation, such as designing ponds with a hydrologic regime that would discourage bullfrogs from establishing.	▪ Sierra Nevada yellow-legged frog	▪ Same references as listed with Objective WILD-1.1.
Objective WILD-4.3: Reduce road-associated mortality in the GAI in advance of transportation project impacts.	Sub-Objective WILD-4.3.1: Identify locations to develop safe SHS wildlife crossing areas in the GAI and direct the species of mitigation need to such crossing areas.	▪ Sierra Nevada yellow-legged frog	▪ Same references as listed with Objective WILD-1.1.

Objective	Sub-Objective	Affected Species ^a	Alignment with Conservation and Management Plans ^b
Goal WILD-5: Provide 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 in the GAI in advance of transportation project impacts.	Sub-Objective WILD-5.1.1: Prioritize mitigation to provide benefits for special-status species that may co-occur with the species of mitigation need and that will provide functional lift to other special-status species in 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, such as low traffic areas and other areas that would support pollinators and species of mitigation need, while reducing road-associated mortality. Sub-Objective WILD-5.1.3: Consider the needs of other co-occurring species when planning site-specific actions to restore or create aquatic breeding habitat for Sierra Nevada yellow-legged frog.	▪ Sierra Nevada yellow-legged frog	▪ Same references as listed with Objective WILD-1.1.

^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).

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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 or FWS to address the pressures and stressors that threaten the species of mitigation need in the GAI. The pressures and stressors include:

- habitat loss, fragmentation, and degradation;
- invasive species;
- disease and predation;
- climate change, drought, and wildfire; 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 wildlife resources by creating functional lift or conservation benefit as well as mitigating the pressures and stressors on wildlife resources in the GAI. To summarize Table 7-3:

- **Goals WILD-1 and WILD-2** seek to conserve and expand habitat for species of mitigation need in 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 in 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, and wildfire. 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 in the GAI. The primary objectives are to reduce the effects of climate change on these species by increasing the protection and functionality of land that is identified as crucial for climate resiliency, including corridors that allow these 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 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 the 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 to the GAI. Advance mitigation provides the opportunity to maximize Caltrans' benefit to conservation in 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 habitat 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 in 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, and riparian habitat from Caltrans transportation projects in 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 in 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 in 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 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

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).

regulatory requirements and conservation science. 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 in the GAI.
- Then, in Section 8.3, Caltrans summarizes information for the fish, wetland, and non-wetland waters addressed by the assessment.
- Next, in Sections 8.4, 8.5, and 8.6, for aquatic resources, Caltrans identifies:
 - federal and state policies as well as binding and non-binding regional conservation and land management plans;
 - current and projected pressures and stressors, including climate change, for which there is a transportation nexus;
 - opportunities to enhance the 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 areas of potential riparian function, 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 in 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
CDFW	CDFW oversees the conservation, protection, and management of fish, wildlife, native plants, and 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 of 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, conservation and mitigation banks approval, MCAs and RCISs approvals, 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. Per 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, on-site permittee responsible mitigation, and off-site permittee responsible mitigation, but the preference may change based on what is environmentally preferable.
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 Section 401 authority to a recognized tribe.

Agency	Summary
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-site and/or off-site. Purchasing credits in conservation banks is one method of protecting habitat on-site or off-site.
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 the RWQCBs, incorporate the beneficial use designation of 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 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 the 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 2019). Projects that occur in one region are regulated by that regional board, whereas projects that cross regions are regulated by SWRCB.

8.3 Aquatic Resources

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

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

Lake Tahoe HUC-8 16050101	Truckee HUC-8 16050102
▪ Alta Morris Lake ▪ Blackwood Creek ▪ Burton Creek ▪ Dicks Lake ▪ Fontanillis Lake ▪ Half Moon Lake ▪ Heather Lake ▪ Heavenly Valley Creek ▪ Lake Tahoe ▪ Susie Lake ▪ Tahoe Valley South Basin ▪ Upper Velma Lake	▪ Donner Creek ▪ Donner Lake ▪ Dry Creek ▪ Gray Creek ▪ Little Truckee diversion ditch ▪ Prosser Creek ▪ Trout Creek ^a ▪ Truckee River

^a Although there are multiple Trout Creeks in the GAI, the Tahoe-Sierra Integrated Regional Water Management Plan Update is referring to the one in the Truckee HUC-8.

8.3.1. Wetlands and Non-wetland Waters

In the GAI, the major stream systems include the Upper Truckee and Little Truckee Rivers (Lahontan RWQCB 2021). Additionally, there are hundreds of named and unnamed tributaries, the majority of which flow into these rivers. Flow into these systems originates from rainfall and snowfall in the Sierra Nevada (Figure 2-4).

Aquatic habitat types with the potential to occur in the GAI are mapped in Appendix E, *Aquatic Resource Locations*. Based on the SAMNA Reporting Tool's wetlands and waters layer, the GAI has a total of 116,246 acres of aquatic habitat, consisting of 21 wetland habitats and 7 non-wetland waters habitats listed in Table 2-7 (Caltrans 2024e, 2024f). Ten beneficial uses that support the preservation and enhancement of wildlife habitat and aquatic resources in 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).

8.3.2. Areas of Potential Riparian Function

Forecast transportation project impacts on areas of potential riparian function, as discussed in Chapter 5, *Modeled Estimated Impacts*, were obtained by using the Caltrans riparian landcover dataset (described in Section 1.4.1).

8.3.3. Fish Species of Mitigation Need

Threatened and endangered fish species potentially occurring in the GAI are discussed in Section 2.15.2. Based on SAMNA results and historical mitigation needs, no fish species were identified as species of mitigation need for this RAMNA; that is, based on

this RAMNA, fish species benefits will not be an advance mitigation project's primary objective (Section 1.5.3). Nevertheless, it is expected that a fish species could co-benefit from some advance mitigation projects, specifically the Lahontan cutthroat trout (*Oncorhynchus clarkii*).

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 that are relevant to the aquatic resources identify key habitats, specific designated waters, or areas for aquatic resource enhancement and restoration. Others identify key qualities, such as water quality, that are essential for aquatic resource enhancement and restoration. Still others name specific National Hydrologic Dataset features, presented in Table 8-2, 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.

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 in 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.

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

Table 8-3. Documents Identifying Aquatic Resource Goals and Objectives in 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	Provides 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. 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>303(d) List of Impaired Water Bodies</i>	SWRCB 2021	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 Total Maximum Daily Load Priority Schedule (Section 2.13), 17 waterbodies are listed as impaired in the GAI. Of the 17, 5 have an established TMDL (Table 2-6).
<i>California Wetlands Conservation Policy</i>	Executive Order W-59-93	Provides 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>National Wetlands Mitigation Action Plan</i>	EPA and Corps 2002	Provides EPA and Corps' comprehensive, interagency document to further achievement of the goal of no net loss of wetlands. The goals and objectives of this document 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	Provides guidelines for compensatory mitigation site selection. A watershed approach should be used when selecting sites to establish compensatory mitigation.

Document	Reference	Information Identified
<i>State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State</i>	SWRCB 2019	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.
<i>Water Quality Control Plan for the Lahontan Region</i>	Lahontan RWQCB 2021	Provides the water quality control plan for the Lahontan region that sets water quality standards for surface and ground waters. Identifies water quality objectives and beneficial uses for the Lahontan region and includes an objective for wetland restoration. Identifies TMDLs for Heavenly Valley Creek.
Conservation and Land Management Documents	See below	See below
<i>Burton Creek State Park General Plan and Final Environmental Impact Report</i>	California Department of Parks and Recreation 2005	Includes a goal to rehabilitate disturbed areas with native vegetation and remove water diversions on Burton Creek.
<i>Donner Memorial State Park General Plan and Environmental Impact Report</i>	California Department of Parks and Recreation 2003	Includes goals to restore aquatic, riparian, and wetland habitats and remove invasive species that are known to occur in wetlands such as poison hemlock (<i>Conium maculatum</i>).
<i>Eagle Lake Field Office Proposed Resource Management Plan and Final Environmental Impact Statement</i>	BLM 2007	Includes a goal to improve 35 miles of perennial or intermittent streams and 33 acres of riparian/wetland areas within the management area.
<i>Gray Creek Watershed Assessment and Restoration Plan</i>	Truckee River Watershed Council 2006	Includes many goals to improve riparian and aquatic habitat, such as: ▪ remove invasive plant species in riparian areas such as musk thistle (<i>Carduus nutans</i>), ▪ reduce human-caused erosion in Gray Creek, and ▪ reduce sediment contributions to the Truckee River and Gray Creek.

Document	Reference	Information Identified
<i>Integrated Regional Water Management Plan Cosumnes American Bear Yuba Watersheds, California</i>	Cosumnes, American, Bear and Yuba River Regional Water Management Group 2021	Includes the following goals in the plan area, which includes portions of the Truckee and Lake Tahoe HUC-8s: ▪ Restore the natural sediment regime in at least three river reaches ▪ Enhance and/or restore at least 4 miles of streams ▪ Remove trout and bullfrogs in 18 acres of high mountain lakes ▪ Treat at least 50 acres of riparian habitat for nonnative plant species
<i>Kings Beach State Recreation Area General Plan</i>	California State Parks 2018	Includes a goal to treat and prevent spread of aquatic invasive species.
<i>Land and Resource Management Plan Toiyabe National Forest</i>	USFS 1986	Includes a goal to improve water quality in the forest.
<i>Land Management Plan Lake Tahoe Basin Management Unit</i>	USFS 2016	Includes goals pertaining to restoration of wetlands and special aquatic resources: ▪ Reconnect floodplains with stream channels ▪ Restore natural floodplain inundation and ground water in meadows, wetlands, and other special aquatic features ▪ Restore a minimum of two fens that are assessed to be at risk of conversion to meadow by 2029 ▪ Restore stream segments with degraded habitat in a minimum of 2 streams by 2029 ▪ Restore a minimum of 2 degraded aquatic habitat sites to support self-sustaining aquatic populations by 2029 ▪ Complete restoration of Dicks Lake, Fontanillis Lake, Upper Velma Lake, Heather Lake, Susie Lake, Half Moon Lake, and Alta Morris Lake adjacent to current Sierra Nevada yellow-legged frog populations in the Desolation Wilderness by removing introduced trout species by 2029 ▪ Expand fishless high elevation aquatic habitats near existing or historic Sierra Nevada yellow-legged frog sub-populations
<i>Lake Tahoe Total Maximum Load Daily Report</i>	EPA 2010	Provides a report developed by the Lahontan RWQCB and the Nevada Division of Environmental Protection to guide restoration efforts for pollutant sources responsible for clarity decline in Lake Tahoe. Includes goals to restore stream channels and riparian vegetation.
<i>Lake Tahoe Water Quality Management Plan</i>	TRPA 2013	Includes goals to restore the natural resources of the Lake Tahoe region through the Environmental Improvement Program. TMDLs were developed for Blackwood and Heavenly Valley Creeks.

Document	Reference	Information Identified
<i>Meyers Area Plan</i>	El Dorado County and TRPA 2018	Provides El Dorado County and TRPA's area plan for the Meyers area (in the Lake Tahoe HUC-8). Includes policies to enhance stream environment zones to: ▪ increase the area of naturally functioning stream environment zones through restoration/rehabilitation, and ▪ Provide incentives to reduce on-site land coverage of stream environment zones.
<i>Placer County Tahoe Basin Area Plan</i>	Placer County and TRPA 2017	Provides Placer County and TRPA's area plan for the Tahoe Basin in Placer County. Includes a general policy to restore stream environment zones by accelerating stream environment zone restoration, and by implementing incentives related to redevelopments and transfers of development.
<i>Sierra Nevada Forest Plan Amendment Final Supplemental Environmental Impact Statement</i>	USFS 2004	Includes a goal to restore aquatic and riparian ecosystems.
<i>SWAP</i>	CDFW 2025	Identifies American Southwest riparian forest and woodland and freshwater marsh as conservation targets. Includes goals to increase freshwater emergent wetland habitat by 5 percent and increase functional riparian habitat by 5 percent by 2025 from 2015 acres. Identifies Brazilian waterweed (<i>Egeria densa</i>), Eurasian watermilfoil (<i>Myriophyllum spicatum</i>), hydrilla (<i>Hydrilla verticillata</i>), water hyacinth (<i>Pontederia crassipes</i>), and parrot feather (<i>Myriophyllum aquaticum</i>) as invasive species that invade aquatic habitats in the GAI.
<i>Tahoe National Forest Land and Resource Management Plan Environmental Impact Statement</i>	USFS 1990	Includes general goals to restore damaged watersheds, improve habitat for riparian and meadow-associated wildlife, restore riparian vegetation to 80 percent crown closure, and enhance in-stream cover where existing cover is less than 50 percent. Includes a specific goal to restore the Little Truckee diversion ditch and Prosser Creek.
<i>Tahoe-Sierra Integrated Regional Water Management Plan Update</i>	South Tahoe Public Utility District 2021	Includes goals to restore Trout, Donner, Dry, and Burton Creeks and remove invasive species such as quagga mussel (<i>Dreissena bugensis</i>), zebra mussel (<i>D. polymorpha</i>), bull thistle (<i>Cirsium vulgare</i>), scotch broom (<i>Cytisus scoparius</i>), rush skeletonweed (<i>Chondrilla juncea</i>), and yellow starthistle (<i>Centaurea solstitialis</i>).
<i>Tahoe Valley South Basin (6-5.01) 2014 Groundwater Management Plan</i>	South Tahoe Public Utility District 2014	Includes goals to maintain groundwater supplies and protect groundwater quality in the Tahoe Valley South Basin.

Document	Reference	Information Identified
<i>Threshold Standards and Regional Plan</i>	TRPA 2024	Includes goals to: ▪ Reduce average aquatic invasive plant abundance in the Tahoe Keys by a minimum of 75 percent from the 2020 baseline year ▪ Enhance the quality and function of meadows and wetlands such that a score of 88 percent of the regional possible stream environment zone condition index is achieved
<i>Town of Truckee General Plan</i>	Town of Truckee 2023	Includes goals for restoration activities in Truckee River and Donner Lake 100-year floodplains.

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 as well as 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 2016a, 2025). In the GAI, most urbanization and development have occurred between Interstate 80 and State Route 89 in the northwestern portion and west of State Route 89 in the south (Figure 2-6).

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. Invasive plant species that affect riparian systems in the GAI include redtop (*Agrostis* sp.), water hyacinth, Himalayan blackberry, meadow foxtail, Brazilian water weed, and perennial pepperweed (Cal-IPC 2024; CDFW 2025). Invasive wildlife species that affect riparian systems in the GAI include New Zealand mud snail and American bullfrog (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 is 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 2016b, 2025).

8.5.4. Climate Change and Drought

Section 2.4 provides a brief overview of climate in the GAI and available planning-level predictions for climate change for the region. Over the next 30 years, the climate is expected to change. Expected changes include extended periods of higher temperatures; less precipitation overall but with greater intensity when precipitation does occur; an increased shift toward rainfall instead of snowfall; and an increased risk of wildfire,

landslide, and flooding (Caltrans 2019b). Drought in the Sierra Nevada region can lead to changes in meadow hydrology that could affect stream flows and water release in wetland and riparian habitats (Dettinger 2018).

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. 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, resulting in increased water temperatures (CDFW 2025).

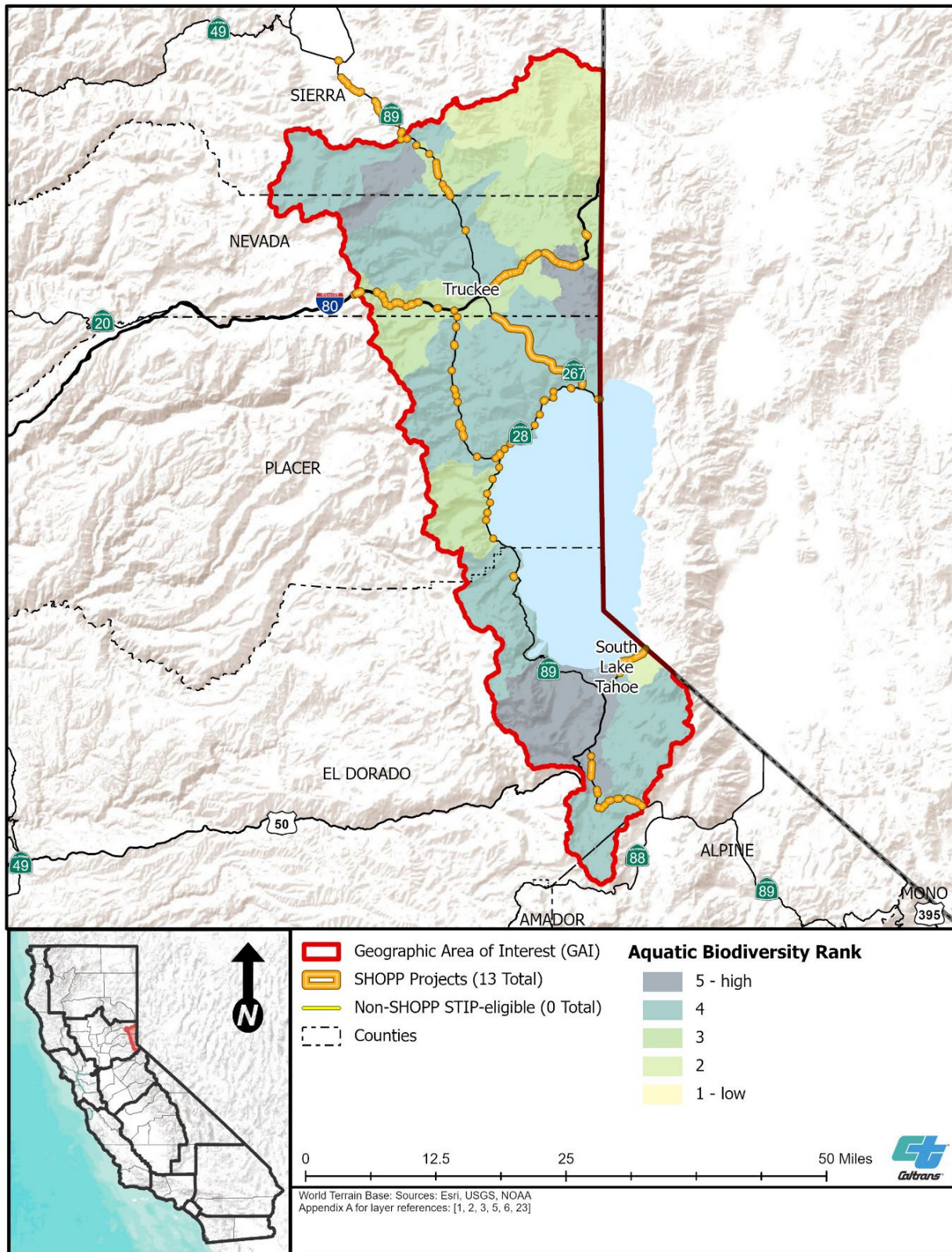
8.6 Multi-resource Benefits

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 in the GAI, as provided by CDFW's ACE GIS dataset. According to these data, moderate to high aquatic biodiversity dominates the GAI. These areas are located along the SHS with planned SHOPP projects.
- Enhancing and/or restoring the aquatic resources in 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 in the GAI that can benefit fish species such as mountain whitefish (*Prosopium williamsoni*) in addition to other species that use aquatic habitat such as Sheldon's amphipod (*Stygobromus sheldoni*), Tahoe yellow cress (*Rorippa subumbellata*), and woolly-fruited sedge (*Carex lasiocarpa*).
- Enhancing and/or restoring the aquatic resources in 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 wildlife habitat would likely improve wildlife habitat water quality. Further, enhancement and/or restoration of wetlands adjacent to GAI waters could sequester contaminants on waterways 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, beneficial uses of waterways, and impaired waterways during advance mitigation project scoping, thereby improving the conservation benefits of mitigation in 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 in 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 in 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 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 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 2019).

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

Objective	Sub-Objective	Alignment with Documents Identified in Table 8-3
Goal AR-1: No net loss to area, functions, values, and condition of wetland and non-wetland water resources.	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, and other land management plans identified in Table 8-3. Sub-Objective AR-1.1.3: Prioritize enhancement and/or restoration of riparian vegetation within the Lake Tahoe and Truckee HUC-8s, particularly in the Truckee River and Gray Creek, as well as other named and unnamed tributaries, many of which are 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, stream geomorphology, hydrologic regime, substrate diversity and complexity, and water quality, that define habitat value for aquatic organisms and increase basin-wide value of resources.	▪ <i>303(d) List of Impaired Water Bodies</i> (SWRCB 2021) ▪ <i>Burton Creek State Park General Plan and Final Environmental Impact Report</i> (California Department of Parks and Recreation 2005) ▪ <i>California Wetlands Conservation Policy</i> (Executive Order W-59-93) ▪ <i>Donner Memorial State Park General Plan and Environmental Impact Report</i> (California Department of Parks and 2003) ▪ <i>Eagle Lake Field Office Proposed Resource Management Plan and Final Environmental Impact Statement</i> (BLM 2007) ▪ <i>Gray Creek Watershed Assessment and Restoration Plan</i> (Truckee River Watershed Council 2006) ▪ <i>Integrated Regional Water Management Plan Cosumnes American Bear Yuba Watersheds, California</i> (Cosumnes, American, Bear and Yuba River Regional Water Management Group 2021) ▪ <i>Lake Tahoe Total Maximum Load Daily Report</i> (EPA 2010) ▪ <i>Land Management Plan Lake Tahoe Basin Management Unit</i> (USFS 2016) ▪ <i>Myers Area Plan</i> (El Dorado County and TRPA 2018) ▪ <i>National Wetlands Mitigation Action Plan</i> (EPA and Corps 2002) ▪ <i>SWAP</i> (CDFW 2025) ▪ <i>Placer County Tahoe Basin Area Plan</i> (Placer County and TRPA 2017) ▪ <i>Tahoe National Forest Land and Resource Management Plan Environmental Impact Statement</i> (USFS 1990) ▪ <i>Tahoe-Sierra Integrated Regional Water Management Plan Update</i> (South Tahoe Public Utility District 2021) ▪ <i>Tahoe Valley South Basin (6-5.01) 2014 Groundwater Management Plan</i> (South Tahoe Public Utility District 2014) ▪ <i>Threshold Standards and Regional Plan</i> (TRPA 2024) ▪ <i>Water Quality Control Plan for the Lahontan Region</i> (Lahontan RWQCB 2021)
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 reestablish wetland and non-wetland water aquatic resources, particularly in key wetland and non-wetland water habitats that are identified in the SWAP, FWS recovery plans, CDFW recovery plans, and other land management plans identified in Table 8-3. Sub-Objective AR-1.2.2: Establish and/or reestablish riparian vegetation within the Lake Tahoe and Truckee HUC-8s, particularly in Lake Tahoe, the Truckee River, and Gray Creek as well as other named and unnamed tributaries to the Truckee River and Lake Tahoe, many of which are 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; flood peak attenuation/flood water storage; freshwater replenishment; groundwater recharge; inland saline water habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; warm freshwater habitat; water quality enhancement; and wildlife habitat. Sub-Objective AR-2.1.2: In coordination with natural resource regulatory agencies, address aggradation, erosion, nutrients, contaminants, sedimentation, and temperatures within the Lake Tahoe and Truckee HUC-8s (Table 8-2). 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 Blackwood, Heavenly Valley, Prosser, and Gray Creeks, and the Truckee River; and at several lakes in the GAI, for example, Dicks Lake, Half Moon Lake, and Lake Tahoe. Sub-Objective AR-2.1.4: 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-2.1.5: Rehabilitate and/or enhance small streams and sections of larger streams by removing nonnative plant species that degrade stream water quality, such as Brazilian waterweed, Eurasian watermilfoil, hydrilla, water hyacinth, and parrot feather. Sub-Objective AR-2.1.6: Improve stream temperatures by increasing shaded riverine aquatic habitat in Burton, Gray, and Heavenly Valley Creeks for fish and other aquatic life.	▪ <i>303(d) List of Impaired Water Bodies</i> (SWRCB 2021) ▪ <i>Lake Tahoe Total Maximum Load Daily Report</i> (EPA 2010) ▪ <i>Tahoe National Forest Land and Resource Management Plan Environmental Impact Statement</i> (USFS 1990) ▪ <i>Tahoe Valley South Basin (6-5.01) 2014 Groundwater Management Plan</i> (South Tahoe Public Utility District 2014) ▪ <i>Threshold Standards and Regional Plan</i> (TRPA 2024) ▪ <i>Town of Truckee 2040 General Plan</i> (Town of Truckee 2023) ▪ <i>Water Quality Control Plan for the Lahontan Region</i> (Lahontan RWQCB 2021)
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 the Truckee River, Donner Creek, and Donner Lake. Sub-Objective AR-2.2.3: Re-establish hydrologic regimes or drainage patterns for better function of depressional, freshwater emergent wetland, freshwater forested/shrub wetland, freshwater pond, lacustrine, lake, riverine, and slope habitats.	▪ <i>303(d) List of Impaired Water Bodies</i> (SWRCB 2021) ▪ <i>Donner Memorial State Park General Plan and Environmental Impact Report</i> (California Department of Parks and Recreation 2003) ▪ <i>Threshold Standards and Regional Plan</i> (TRPA 2024) ▪ <i>Town of Truckee 2040 General Plan</i> (Town of Truckee 2023)
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 invasive 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 adjacent to streams to enhance groundwater-surface water dynamics in tributaries.	▪ <i>Tahoe Valley South Basin (6-5.01) 2014 Groundwater Management Plan</i> (South Tahoe Public Utility District 2014)

Objective	Sub-Objective	Alignment with Documents Identified in Table 8-3
Goal AR-3: Support resiliency of aquatic resources to climate change	See below	See below
Objective AR-3.1: Reduce impacts from climate change.	Sub-Objective AR-3.1.1: Enhance and/or restore aquatic resource function and value in areas of lower climate resilience, such as the northwestern and southern parts of the GAI, to reduce climate change effects on aquatic resources. Sub-Objective AR-3.1.2: Prioritize enhancement and/or restoration that will increase resilience to climate change such as aquatic features with hydrologic connection to the Truckee River and Donner Creek, 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-3.1.3: Prioritize riparian areas of the Lake Tahoe and Truckee HUC-8s identified in Table 8-2 and implement improvements for enhancement and/or restoration to improve freshwater quantity and quality, floodplain connectivity, and instream cover continuity. Sub-Objective AR-3.1.4: Enhance, rehabilitate, establish and/or re-establish aquatic habitats by using native species such as Fremont cottonwood (<i>Populus fremontii</i>), white alder (<i>Alnus rhombifolia</i>), willows (<i>Salix</i> spp.), cattails (<i>Typha</i> spp.), rushes (<i>Juncus</i> spp.), and bulrushes (<i>Schoenoplectus</i> spp.) to reduce the effects of climate change. Sub-Objective AR-3.1.5: Reduce adverse instream flooding effects by restoring affected headwater and tributary hydrological functions for the Truckee River and Gray Creek, and streams associated with the Lake Tahoe Basin. 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 the Truckee River and Gray Creek.	▪ <i>Gray Creek Watershed Assessment and Restoration Plan</i> (Truckee River Watershed Council 2006) ▪ <i>Integrated Regional Water Management Plan Cosumnes American Bear Yuba Watersheds, California</i> (Cosumnes, American, Bear and Yuba River Regional Water Management Group 2021) ▪ <i>SWAP</i> (CDFW 2025)
Objective AR-3.2: Improve aquatic habitat resiliency.	Sub-Objective AR-3.2.1: 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-3.2.2: Prioritize management of invasive species that occur within large contiguous areas in aquatic habitats, such as redtop, water hyacinth, Himalayan blackberry, meadow foxtail, Brazilian water weed, perennial pepperweed, New Zealand mud snail, and American bullfrog that may be exacerbated by climate change such that the greatest functional lift is provided. Sub-Objective AR-3.2.3: Enhance, rehabilitate, establish, and/or re-establish small (that is, low order) tributaries/streams that discharge into larger rivers and lakes such as the Truckee River and Lake Tahoe.	▪ <i>Burton Creek State Park General Plan and Final Environmental Impact Report</i> (California Department of Parks and Recreation 2005) ▪ <i>Donner Memorial State Park General Plan and Environmental Impact Report</i> (California Department of Parks and Recreation 2003) ▪ <i>Gray Creek Watershed Assessment and Restoration Plan</i> (Truckee River Watershed Council 2006) ▪ <i>Integrated Regional Water Management Plan Cosumnes American Bear Yuba Watersheds, California</i> (Cosumnes, American, Bear and Yuba River Regional Water Management Group 2021) ▪ <i>Kings Beach State Recreation Area General Plan</i> (California State Parks 2018) ▪ <i>Myers Area Plan</i> (El Dorado County and TRPA 2018) ▪ <i>Placer County Tahoe Basin Area Plan</i> (Placer County and TRPA 2017) ▪ <i>SWAP</i> (CDFW 2025) ▪ <i>Tahoe-Sierra Integrated Regional Water Management Plan Update</i> (South Tahoe Public Utility District 2021) ▪ <i>Threshold Standards and Regional Plan</i> (TRPA 2024) ▪ <i>Town of Truckee 2040 General Plan</i> (Town of Truckee 2023)

Objective	Sub-Objective	Alignment with Documents Identified in Table 8-3
Goal AR-4: Provide multi-resource benefits.	See below	See below
Objective AR-4.1: Maximize mitigation opportunities for multiple environmental benefits.	Sub-Objective AR-4.1.1: 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-4.1.2: Enhance and/or restore habitats for other aquatic species such as aquatic plants, fish species included in Section 2.15.2, as well as species included in Appendix D that could benefit from aquatic habitat enhancement and/or restoration. Sub-Objective AR-4.1.3: Address additional RWQCB beneficial use designations, such as recreation (for example, bird watching), through enhancement, rehabilitation, establishment and/or re-establishment actions.	▪ <i>Burton Creek State Park General Plan and Final Environmental Impact Report</i> (California Department of Parks and Recreation 2005) ▪ <i>Donner Memorial State Park General Plan and Environmental Impact Report</i> (California Department of Parks and Recreation 2003) ▪ <i>Eagle Lake Field Office Proposed Resource Management Plan and Final Environmental Impact Statement</i> (BLM 2007) ▪ <i>Gray Creek Watershed Assessment and Restoration Plan</i> (Truckee River Watershed Council 2006) ▪ <i>Integrated Regional Water Management Plan Cosumnes American Bear Yuba Watersheds, California</i> (Cosumnes, American, Bear and Yuba River Regional Water Management Group 2021) ▪ <i>Land Management Plan Lake Tahoe Basin Management Unit</i> (USFS 2016) ▪ <i>Myers Area Plan</i> (El Dorado County and TRPA 2018) ▪ <i>Placer County Tahoe Basin Area Plan</i> (Placer County and TRPA 2017) ▪ <i>SWAP</i> (CDFW 2025) ▪ <i>Tahoe National Forest Land and Resource Management Plan Environmental Impact Statement</i> (USFS 1990) ▪ <i>Tahoe-Sierra Integrated Regional Water Management Plan Update</i> (South Tahoe Public Utility District 2021) ▪ <i>Threshold Standards and Regional Plan</i> (TRPA 2024) ▪ <i>Town of Truckee 2040 General Plan</i> (Town of Truckee 2023)

8.8 Summary

Caltrans anticipates that future SHOPP transportation projects may be conditioned by the Corps, SWRCB, RWQCB, and/or CDFW to address the pressures and stressors that threaten aquatic resources in the GAI. These pressures and stressors include:

- habitat loss, fragmentation, and degradation;
- invasive species;
- altered hydrology, geomorphology, and water quality;
- climate change and drought; 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 benefit, and by mitigating the pressures and stressors on aquatic resources in 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 in 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/or 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 support climate resiliency for aquatic resources in the GAI. The primary objectives are to reduce impacts on aquatic resources from climate change and to improve aquatic habitat climate resiliency. The sub-objectives were selected to address the following pressures and stressors: climate change, drought, invasive species, and wildfire risk.
- **Goal AR-4** 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-objectives of Goal AR-4 describe what additional benefits exist for other resources in the GAI, including benefits to upland terrestrial habitat. Goal AR-4 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 in the area through an advance mitigation project. This concept is an important way Caltrans uses 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 to maximize conservation benefits from mitigation in the GAI.

9. ASSESSMENT OF AUTHORIZED ACTIVITIES

Informed by this RAMNA and its reviewers' comments and feedback, Caltrans District 3 will nominate advance mitigation projects to the Caltrans Director and request funding approval (see Step 4 on Figure 1-1; Figure 6-1; Caltrans 2019a). 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 3 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 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, as required.^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:
<http://ppmoe.dot.ca.gov/des/oe/contractor-info.html>.

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 on figures throughout this document and listed in Appendix B, *Transportation Projects Planned for the GAI during the Planning Period*; non-SHOPP, STIP-eligible projects were not identified for the planning period, and so are not shown. Estimated transportation project mitigation needs in the GAI for fiscal years 2023/24 to 2032/33 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 2023/24 to 2032/33, Caltrans District 3 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 (July of fiscal year 2026/27) mitigation that can be purchased or established by fiscal year 2028/29 (within the next 2 years) could potentially address approximately:

- 19.4 acres of Sierra Nevada yellow-legged frog habitat impacts within the Sierra Nevada Ecoregion Section, potentially contributing to the acceleration of 5 transportation projects
- 0.4 acre of fish habitat (Lahontan cutthroat trout), 0.1 acre of wetlands, 0.4 acre of non-wetland waters, and up to 2.7 acres of areas of potential riparian function impacts within the Lake Tahoe sub-basin, potentially contributing to the acceleration of 3, 2, 3, and 3 transportation projects, respectively
- 1.7 acres of fish habitat (Lahontan cutthroat trout), 0.5 acre of wetlands, 1.9 acres of non-wetland waters, and 0.5 to 19.1 acres of areas of potential riparian function

impacts within the Truckee sub-basin, potentially contributing to the acceleration of 3, 3, 3, and 3 transportation projects, respectively

All or some of these needs could form the basis for Caltrans District 3 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 in the GAI. Others are not currently feasible because a regulatory and administrative pathway is not available. Still 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
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

Advance Mitigation Project Type	Authorization	Section
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 SWRCB does 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. NCCP and/or HCP Fees

NCCPs and HCPs are discussed in Section 4.2. NCCPs and HCPs 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 the 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 (July of fiscal year 2026/27), 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 did not identify any conservation banks with service areas that overlap the GAI.

Feasibility. At this time (July of fiscal year 2026/27), this authorized activity is not feasible because no conservation banks have service areas that overlap the GAI.

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 did not identify any mitigation banks with service areas that overlap the GAI.

Feasibility. At this time (July of fiscal year 2026/27), this authorized activity is not feasible because no mitigation banks have service areas that overlap the GAI.

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-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, ESA, 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 within 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.

One active in-lieu fee program has a service area that overlaps the GAI: the NFWF Sacramento District In-Lieu Fee Program (Table 4-2; Figures 4-1 and 4-2). This in-lieu fee program's enabling instrument includes allowances for pre-transfer credit purchases.

Feasibility. This authorized activity is feasible. 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. Bulk credits purchased from an in-lieu fee program through an advance mitigation project might, with natural resource agency approval, be incorporated into future conditions on transportation projects.

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 2023).³ There are no approved or pending RCISs with service areas that overlap the GAI. Therefore, no MCAs have been developed in the GAI.

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=107:47:13453394859366::NO>

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

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

Feasibility. At this time (July of fiscal year 2026/27), this authorized activity is not feasible because no MCA credits are available for purchase in 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 wildlife resource protection will be documented through its BEI. CDFW and FWS are potential signatories, and circumstances may occur in which the Corps and/or SWRCB would participate.

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 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 C, *Land Cover Types*
- Appendix D, *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 habitat for species of mitigation need in the GAI to support ecosystem functions that are essential to recovery of the species (WILD-1).
- Preserve, enhance, and increase connectivity between blocks of wildlife 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 (WILD-3).
- Decrease mortality and competition, and protect population health for species of mitigation need (WILD-4).

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

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

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.). Soon thereafter, CDFW began developing a crediting methodology.

- 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 wildlife resources through transportation project mitigation.

Feasibility. This authorized activity may be feasible. As stated 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.

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 E, *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 RWQCBs' 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 aquatic resource protection is documented through its BEI. The Corps, RWQCB, FWS, and CDFW are potential signatories. In some circumstances, CDFW's participation in a bank could be documented through an MCA.

An understanding of the Corps, RWQCB, FWS, and CDFW's goals and objectives for aquatic 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 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

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

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

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 of area, functions, values, and condition of wetland and non-wetland water resources⁹ (AR-1).
- Restore and/or enhance the chemical, physical, and biological integrity of wetlands and non-wetland waters (AR-2).
- Support resiliency of aquatic resources to climate change (AR-3).
- Provide multi-resource benefits (AR-4).

Further, for each objective, Table 8-4 presents sub-objectives, which are intended to help guide Caltrans advance mitigation project scoping toward protecting aquatic 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 their enabling instrument. Instructions and guidance for establishing in-lieu fee programs are available from the federal agencies.¹⁰ With respect to wildlife, similar to 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.

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 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 E, *Aquatic Resource Locations*

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

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

To support future transportation project permits, Caltrans would seek CWA credit establishment under the Corps' (WOTUS) and RWQCB's (waters of the state) jurisdiction. The Corps, EPA, SWRCB, and/or RWQCB 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 ESA biological assessments/opinions in coordination with FWS.

Feasibility. This authorized activity may be feasible. As stated above, instructions and guidance for establishing an in-lieu fee program for CWA credits are available from 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 discussed 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 the CESA and/or for areas of potential riparian function 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 MCA itself. 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 two scenarios:

- Caltrans funds the performance of conservation 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 that 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

¹¹ CDFW's legislation requires that MCA securities take the form of a letter of credit or cash according to California Fish and Game Code § 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 In accordance with SHC § 800.6(a)(3)(A), advance mitigation project scopes funded through the AMA may also include Caltrans first entering into or funding the preparation of an RCIS.

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 request project-specific interagency agreements with other natural resource regulatory agencies whose jurisdiction overlaps with CDFW's.¹⁴ 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 (July of fiscal year 2026/27), RCIS program guidelines, which include guidance for the creation of MCAs, are available (CDFW 2023).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, 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 a natural resource regulatory agency's goals and objectives to preserve, enhance, and increase connectivity between blocks of species of mitigation need habitat (WILD-2 and AR-2), support resiliency of the landscape and aquatic resources to climate change (WILD-3 and AR-3), and provide multi-resource benefits (WILD-5 and AR-4).

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

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

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>

fund credit establishment or creation through fish and wildlife connectivity projects. 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 CDFW's guidelines for calculating wildlife crossing and aquatic corridor enhancement credits 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 (July of fiscal year 2026/27), this authorized activity is not feasible. 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

Caltrans may undertake this project type 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 SWRCB does not typically approve establishment of or accept preservation credits.

Feasibility. At this time (July of fiscal year 2026/27), 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 2023/24 through 2032/33 (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 establish additional mitigation (Section 9.3.6 through 9.3.11).

Based on its evaluation, Caltrans found that, at this time (July of fiscal year 2026/27), a few authorized activities appear to be feasible and advance mitigation project scopes could cover multiple resources and address overlapping natural resource regulatory agency jurisdictions under several scenarios (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, July 2026

Authorized Activity	Regulatory and Administrative Pathway Available	Available/Opportunity Exists in the GAI	Potential to Address Overlapping Jurisdictions	Time to Complete ^a
Pay NCCP and/or HCP fees	No	No, there are no HCP/NCCPs in the GAI that apply to transportation	Not available	Not available
Purchase conservation bank credits	No	No, there are no conservation banks with service areas that overlap the GAI	Not available	Not available
Purchase in-lieu fee program credits	No	No, although there is one in-lieu fee program in the GAI, it is not approved by FWS and does not offer species-specific credits	Not available	Not available
Purchase MCA credits	No	Not available	Not available	Not available
Establish conservation bank	Yes	Yes, with CDFW and FWS	Yes, with CDFW and FWS	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
Establish MCA credits or values	No	Not available	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
Establish mitigation that meets an RCIS objective	No	No, no RCISs established in the GAI	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 ^a
Establish mitigation in accordance with a programmatic mitigation plan	No	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, July 2026

Authorized Activity	Regulatory and Administrative Pathway Available	Available/Opportunity Exists in the GAI	Potential to Address Overlapping Jurisdictions	Time to Complete ^a
Purchase mitigation bank credits	No	No, there are no mitigation banks with service areas that overlap the GAI	Not available	Not available
Purchase in-lieu fee credits	Yes	Yes, there is one Corps in-lieu fee program in the GAI	No	1 to 3 years
Purchase MCA credits	No	Not available	Not available	Not available
Establish mitigation bank	Yes	Yes; for Corps, EPA, CDFW, and FWS	Yes; RWQCB, Corps, EPA, CDFW, and FWS	2 to 6 years
Establish in-lieu fee program	Yes	Yes; for Corps, EPA, and FWS	Maybe; Corps, FWS, EPA, and RWQCB	2 to 6 years
Establish MCA credits or values ^b	No, not at this time	There are no RCISs in the GAI and therefore no MCAs	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
Establish mitigation that meets an RCIS objective	No	Not available	Not available	Not available
Establish mitigation in accordance with a programmatic mitigation plan	No	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 3 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 as well as 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 3 will also consider based on its localized knowledge of delivering mitigation in its region. For example, Caltrans may prioritize advance mitigation projects that reduce risk in implementation and long-term management by eliciting others to 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 3 will use information within 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 3 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 3 will commit to delivering the advance mitigation project within the scope, schedule, and budget communicated with nomination materials. At that point, Caltrans District 3 will initiate project delivery (see Steps 6 through 10 on Figure 1-2; Caltrans 2023). 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 or under contract to Caltrans through a competitive bid process, and may include existing mitigation providers, for example, banks, NCCPs, and 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 ecoregions 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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