



**ADVANCE MITIGATION PROGRAM
Southern Cascades Ecoregion Section
within Caltrans District 2
Regional Advance Mitigation
Needs Assessment**

Appendices

Version 1.0

**Establishing Caltrans' Need for Advance Mitigation
for Caltrans District 2 and Caltrans District 3
for the Southern Cascades Ecoregion Section
forecast fiscal years 2021/2022 to 2030/2031**

California Department of Transportation – District 2

February 2023

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APPENDIX A: GIS SOURCES

This RAMNA relies on maps to convey information. At the bottom of each map figure is a citation that lists the GIS source identification numbers. These source identification numbers refer to Table A-1, where the metadata documentation is provided. When available, the source date and/or website address to access the data layer online are also provided.

Table A-1. District 2 RAMNA GIS Sources

ID	GIS Layer	Source Agency	Source Date	Download Date	Website
1	State Highway Network	Caltrans	8/1/2018	10/11/2018	http://www.dot.ca.gov/hq/tsip/gis/data/library/Metadata/NHS.html
2	SHOPP	Caltrans	2021/2022 Q1	8/3/2022	Caltrans System Planning
3	Ecoregion Section (GAI)	USFS	1/26/2021	1/26/2021	https://data.fs.usda.gov/geodata/edw/datasets.php?xmlKeyword=Ecomap
4	National Watershed Boundary Dataset	USGS	9/26/2014	10/19/2018	https://www.usgs.gov/core-science-systems/ngp/national-hydrography
5	California Conservation Easements	California Protected Areas Database	12/1/2020	2/2/2021	http://www.calands.org/cced
6	California Protected Areas Holdings	California Protected Areas Database	2/10/2021	2/10/2021	http://www.calands.org/data
7	Tribal Land Boundaries	U.S. Bureau of Indian Affairs	5/16/2017	10/11/2018	https://hub.arcgis.com/items/2e915ef3df48422283e5b2c7d89dfcba
8	U.S. Military Installations	U.S. Census Bureau	12/1/2017	10/11/2018	https://www.census.gov/cgi-bin/geo/shapefiles/index.php
9	County Boundaries	U.S. Census Bureau	7/8/2016	10/11/2018	https://data.ca.gov/dataset/ca-geographic-boundaries
10	Farmland Mapping and Monitoring Program	California Department of Conservation	6/7/2016	4/27/2021	https://gis.conservation.ca.gov/portal/home/item.html?id=16689151f4d240d2a16232ea650a6c62
11	ACE Climate Resilience – ACE [ds2738]	CDFW	2/22/2018	10/17/2018	https://map.dfg.ca.gov/metadata/ds2738.html?5.66.18
12	Vegetation D2/D3 in Caltrans District 2 Geospatial Data for the Advance Mitigation Needs Assessment for the First Quarter of FY 2021/2022	SAMNA	1/1/2017	6/15/2022	http://www.dot.ca.gov/env/advancemitigation/

ID	GIS Layer	Source Agency	Source Date	Download Date	Website
13	Waters and Wetlands D2/D3 in Caltrans District 2 Geospatial Data for the Advance Mitigation Needs Assessment for the Second Quarter of FY 2021/2022	SAMNA	1/1/2017	6/15/2022	http://www.dot.ca.gov/env/advancemitigation/
14	USFWS Critical Habitat	FWS	10/1/2018	3/24/2021	https://ecos.fws.gov/ecp/report/table/critical-habitat.html
15	CEHC	CDFW	10/1/2017	10/17/2018	Layer is a merge of Essential Connectivity Areas and Landscape Blocks
16	Natural Landscape Blocks – CEHC	CDFW	10/1/2017	10/17/2018	https://map.dfg.ca.gov/metadata/ds0621.html?5.66.18
17	Potential Riparian Connections – CEHC	CDFW	3/1/2010	10/17/2018	https://map.dfg.ca.gov/metadata/ds0622.html?5.66.18
18	Salmonid Essential Fish Habitats	NOAA Fisheries	1/1/2014	10/12/2021	https://www.fisheries.noaa.gov/resource/map/essential-fish-habitat-groundfish-and-salmon
19	National Flood Hazard Layer	Federal Emergency Management Agency	10/21/2021	11/12/2021	https://msc.fema.gov/portal/home
20	CalWater Hydrologic Areas	California Department of Forestry and Fire Protection	11/1/2016	10/19/2018	https://frap.fire.ca.gov/mapping/gis-data/
21	Terrestrial Connectivity – ACE [ds2734]	CDFW	8/28/2019	9/25/2019	https://map.dfg.ca.gov/metadata/ds2734.html?5.80.28
22	SWAP Terrestrial Targets – 2015	CDFW	2/1/2018	10/29/2018	https://map.dfg.ca.gov/metadata/ds1966.html?5.66.18
23	Aquatic Biodiversity Summary – ACE [ds2768]	CDFW	2/22/2018	7/3/2019	https://map.dfg.ca.gov/metadata/ds2768.html?5.80.28
24	Calfish PAD (Passage Assessment Database)	Calfish	10/3/2019	12/15/2019	https://map.dfg.ca.gov/metadata/ds0069.html?5.84.18vo

ID	GIS Layer	Source Agency	Source Date	Download Date	Website
25	Terrestrial Biodiversity Summary – ACE [ds2739]	CDFW	2/24/2020	7/3/2019	https://map.dfg.ca.gov/metadata/ds2739.html?5.80.28
26	Corps Regulatory In-Lieu Fee & Bank Information Tracking System	Mitigation Service Banks	Not available	6/7/2021	https://ribits.ops.usace.army.mil/
27	CDFW Approved Mitigation Service Areas	Mitigation Service Banks	7/23/2018	1/21/2021	https://map.dfg.ca.gov/metadata/ds2782.html?5.76.22
28	National Wild and Scenic Rivers	USFS	3/2/2016	8/4/2021	https://www.rivers.gov/mapping-gis.php
29	National Hydrology Dataset Plus	EPA	3/13/2019	4/29/2021	https://www.epa.gov/waterdata/get-nhdplus-national-hydrography-dataset-plus-data
30	303(d) List of Impaired Waterbodies	SWRCB	6/9/2021	5/13/2022	https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/2018_integrated_report.html
31	Zipcodes	U.S. Postal Service	2/11/2020	3/11/2020	https://www.arcgis.com/home/item.html?id=8d2012a2016e484dafaac045f9aea24
32	Fire Hazard Severity Zones in State Responsibility Area (SRA)	California Department of Forestry and Fire Protection	11/1/2007	6/1/2022	https://osfm.fire.ca.gov/divisions/community-wildfire-preparedness-and-mitigation/wildland-hazards-building-codes/fire-hazard-severity-zones-maps/
33	Northern Sierra Nevada Foothill Landscape Blocks [ds1004]	CDFW	6/17/2014	9/12/2022	https://map.dfg.ca.gov/metadata/DS1004.html
34	Northern Sierra Nevada Foothill Riparian Corridors [ds1018]	CDFW	6/17/2014	9/12/2022	https://map.dfg.ca.gov/metadata/DS1018.html
35	Northern Sierra Nevada Foothill Wildlife Linkages [ds1005]	CDFW	6/9/2014	9/12/2022	https://map.dfg.ca.gov/metadata/DS1005.html

ID	GIS Layer	Source Agency	Source Date	Download Date	Website
36	Klamath Basin Ecological Connectivity for Pacific Fisher – Habitat Cores	Data Basin	7/10/2018	1/5/2023	https://databasin.org/galleries/b094c161429d4b1791c39dd6fddca12d/
37	Klamath Basin Ecological Connectivity for Pacific Fisher - Least-cost Corridors	Data Basin	5/16/2019	1/5/2023	https://databasin.org/galleries/b094c161429d4b1791c39dd6fddca12d/

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APPENDIX B: TRANSPORTATION PROJECTS PLANNED FOR THE GAI DURING THE PLANNING PERIOD

To identify the list of SHOPP projects planned for the GAI, Caltrans consulted the SHOPP Ten-Year Book for fiscal years 2021/22 to 2030/31 (Caltrans 2021). 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 29 SHOPP transportation projects in the GAI that are currently in the planning and conceptual phases (Table B-1).

Each transportation project's potential impact was defined using a buffer from the edge of pavement. Different buffer widths were used depending on the transportation project's activity or activities, since many transportation project consist of multiple activities. Most of the planned activities are to replace or install culverts. See Table 1 of Caltrans 2021 for the range of buffers relevant to the transportation projects listed in the SHOPP Ten-Year Book.

The subset of the Caltrans District 2 transportation projects that are planned in the GAI during the planning period covered by this RAMNA, as well as the HUC-8 and ecoregion section, advertised year, and planned activities for each planned transportation project, are listed in Table B-1.

References

Caltrans (California Department of Transportation). 2021. *State Highway Operation and Protection Program Ten-Year Project Book Fiscal Years 2021/22–2030/31*. State Highway Operation and Protection Program Fiscal Year 2021/22 (Quarter 1). September. Sacramento, California.

Table A-1. SHOPP Transportation Projects Planned in the GAI and Planning Period

ID Number	HUC-8	Ecoregion Section	Advertised Year	Caltrans District	County	Route	Begin Mile	End Mile	Activity
22082	Honey-Eagle Lakes	Southern Cascades	2028/29	2	Lassen	36	0.5	22.2	Drainage
22082	North Fork Feather	Southern Cascades	2028/29	2	Lassen	36	0.5	22.2	Drainage
23001	Honey-Eagle Lakes	Southern Cascades	2027/28	2	Lassen	36	R16.786	22.4	Pavement
19191	Honey-Eagle Lakes	Southern Cascades	2022/23	2	Lassen	44	0	37.247	Pavement
22261	Lower Pit	Southern Cascades	2022/23	2	Lassen	44	6.5	7.1	Safety – SI
19217	Honey-Eagle Lakes	Southern Cascades	2023/24	2	Lassen	139	0.74	11	Pavement
19184	North Fork Feather	Southern Cascades	2023/24	2	Plumas	36	9.2	18.42	Pavement
20048	Big Chico Creek-Sacramento River	Southern Cascades	2028/29	2	Plumas	36	0	9.2	Pavement
20048	North Fork Feather	Southern Cascades	2028/29	2	Plumas	36	0	9.2	Pavement
21694	North Fork Feather	Southern Cascades	2022/23	2	Plumas	36	R13.6	R14.2	Safety – SI
21813	Battle Creek	Southern Cascades	2028/29	2	Plumas	36	R12.8	R12.8	Roadside
21813	North Fork Feather	Southern Cascades	2028/29	2	Plumas	36	R12.8	R12.8	Roadside
21813	Battle Creek	Southern Cascades	2028/29	2	Plumas	70	49.8	49.8	Roadside
21813	Battle Creek	Southern Cascades	2028/29	2	Plumas	70	R79.2	R79.2	Roadside

ID Number	HUC-8	Ecoregion Section	Advertised Year	Caltrans District	County	Route	Begin Mile	End Mile	Activity
21813	North Fork Feather	Southern Cascades	2028/29	2	Plumas	70	49.8	49.8	Roadside
21813	North Fork Feather	Southern Cascades	2028/29	2	Plumas	70	R79.2	R79.2	Roadside
14187	North Fork Feather	Southern Cascades	2023/24	2	Plumas	89	30.2	R42.185	Pavement
21813	Battle Creek	Southern Cascades	2028/29	2	Shasta	5	R31.1R	R31.1R	Roadside
21813	Battle Creek	Southern Cascades	2028/29	2	Shasta	5	R43.2	R43.2	Roadside
21813	North Fork Feather	Southern Cascades	2028/29	2	Shasta	5	R31.1R	R31.1R	Roadside
21813	North Fork Feather	Southern Cascades	2028/29	2	Shasta	5	R43.2	R43.2	Roadside
20046	Battle Creek	Southern Cascades	2030/31	2	Shasta	44	43.2	57	Pavement
20046	Lower Pit	Southern Cascades	2030/31	2	Shasta	44	43.2	57	Pavement
21813	Battle Creek	Southern Cascades	2028/29	2	Shasta	44	34.7	34.7	Roadside
21813	North Fork Feather	Southern Cascades	2028/29	2	Shasta	44	34.7	34.7	Roadside
22067	Battle Creek	Southern Cascades	2025/26	2	Shasta	44	R26.8	71.389	Pavement
22067	Clear Creek-Sacramento River	Southern Cascades	2025/26	2	Shasta	44	R26.8	71.389	Pavement
22067	Lower Pit	Southern Cascades	2025/26	2	Shasta	44	R26.8	71.389	Pavement
19500	Lower Pit	Southern Cascades	2030/31	2	Shasta	89	29.19	29.19	Bridge
19923	Lower Pit	Southern Cascades	2023/24	2	Shasta	89	21.2	30.6	Pavement
23093	Lower Pit	Southern Cascades	2028/29	2	Shasta	89	30.6	43.345	Pavement

ID Number	HUC-8	Ecoregion Section	Advertised Year	Caltrans District	County	Route	Begin Mile	End Mile	Activity
16679	Lower Pit	Southern Cascades	2021/22	2	Shasta	299	67.8	77.8	Pavement
20051	Lower Pit	Southern Cascades	2029/30	2	Shasta	299	60	67.8	Pavement
21700	Lower Pit	Southern Cascades	2025/26	2	Shasta	299	57.5	58.7	Safety – SI
22087	Lower Pit	Southern Cascades	2024/25	2	Shasta	299	88.1	89.5	Protective betterments
19974	Shasta	Southern Cascades	2025/26	2	Siskiyou	3	R48.6	54.187	Pavement
13255	Shasta	Southern Cascades	2021/22	2	Siskiyou	5	R9.9	R68.1	Safety – collision reduction
16682	Sacramento Headwaters	Southern Cascades	2021/22	2	Siskiyou	5	2.7	R15.9	Pavement
19899	McCloud	Southern Cascades	2024/25	2	Siskiyou	89	20.3	R34.62	Pavement
19899	Sacramento Headwaters	Southern Cascades	2024/25	2	Siskiyou	89	20.3	R34.62	Pavement
20047	Lower Pit	Southern Cascades	2026/27	2	Siskiyou	89	0	21	Pavement
20047	McCloud	Southern Cascades	2026/27	2	Siskiyou	89	0	21	Pavement
19925	Butte	Southern Cascades	2028/29	2	Siskiyou	97	R11.0	35	Pavement
19925	Shasta	Southern Cascades	2028/29	2	Siskiyou	97	R11.0	35	Pavement
20049	Shasta	Southern Cascades	2027/28	2	Siskiyou	97	L0.0	R11.0	Pavement
22085	Butte	Southern Cascades	2030/31	2	Siskiyou	97	0.16	54.089	Drainage
22085	Lost	Southern Cascades	2030/31	2	Siskiyou	97	0.16	54.089	Drainage
22085	Shasta	Southern Cascades	2030/31	2	Siskiyou	97	0.16	54.089	Drainage
20049	Shasta	Southern Cascades	2027/28	2	Siskiyou	265	19.801	20.328	Pavement
21813	Battle Creek	Southern Cascades	2028/29	2	Tehama	5	33.3	33.3	Roadside

ID Number	HUC-8	Ecoregion Section	Advertised Year	Caltrans District	County	Route	Begin Mile	End Mile	Activity
21813	Battle Creek	Southern Cascades	2028/29	2	Tehama	5	34.4	34.4	Roadside
21813	North Fork Feather	Southern Cascades	2028/29	2	Tehama	5	33.3	33.3	Roadside
21813	North Fork Feather	Southern Cascades	2028/29	2	Tehama	5	34.4	34.4	Roadside
19967	Battle Creek	Southern Cascades	2030/31	2	Tehama	36	67.5	R75.10	Pavement
19967	Paynes Creek-Sacramento River	Southern Cascades	2030/31	2	Tehama	36	67.5	R75.10	Pavement
20052	Battle Creek	Southern Cascades	2028/29	2	Tehama	36	78.4	92	Pavement
20052	Big Chico Creek-Sacramento River	Southern Cascades	2028/29	2	Tehama	36	78.4	92	Pavement
20052	Thomes Creek-Sacramento River	Southern Cascades	2028/29	2	Tehama	36	78.4	92	Pavement

Source: Caltrans 2021a
Notes: L = left, R = right

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APPENDIX C: LAND COVER TYPES

Land cover types in the GAI were excerpted from the SAMNA Reporting Tool's vegetation layer, which was developed by merging CDFW's 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 2021a, 2021b; CDFW 2019). A general description of each land cover type found in the GAI is provided below, and complete descriptions can be found in Mayer and Laudenslayer (1988). Table 2-2 in the main text indicates the acreages of each habitat type that are mapped in the Southern Cascades Ecoregion Section.

A key map, provided after the list of habitat types, references mapbook pages, including zoomed-in views of locations in the GAI and mapped land cover types (page C-3). These 31 maps correspond with the aquatic resources maps in Appendix F.

Tree-dominated Habitats: Tree-dominated habitats have at least 10 percent total tree canopy crown closure. In the GAI, tree-dominated habitats include aspen, blue oak-foothill pine, blue oak woodland, closed-cone pine-cypress, Douglas-fir, eastside pine, Jeffrey pine, juniper, Klamath mixed conifer, lodgepole pine, montane hardwood, montane hardwood-conifer, montane riparian, ponderosa pine, red fir, Sierran mixed conifer, subalpine conifer, valley foothill riparian, valley oak woodland, and white fir.

Shrub-dominated Habitats: Shrub-dominated habitats have at least 10 percent total cover by shrub species and less than 10 percent cover by tree species. In the GAI, shrub-dominated habitats include alkali desert scrub, alpine-dwarf shrub, bitterbrush, low sage, mixed chaparral, montane chaparral, and sagebrush.

Herbaceous-dominated Habitats: Herbaceous-dominated habitats have at least 2 percent total cover by herbaceous species and less than 10 percent total cover by tree or shrub species. In the GAI, herbaceous-dominated habitats include annual grassland, fresh emergent wetland, pasture, perennial grassland, and wet meadow.

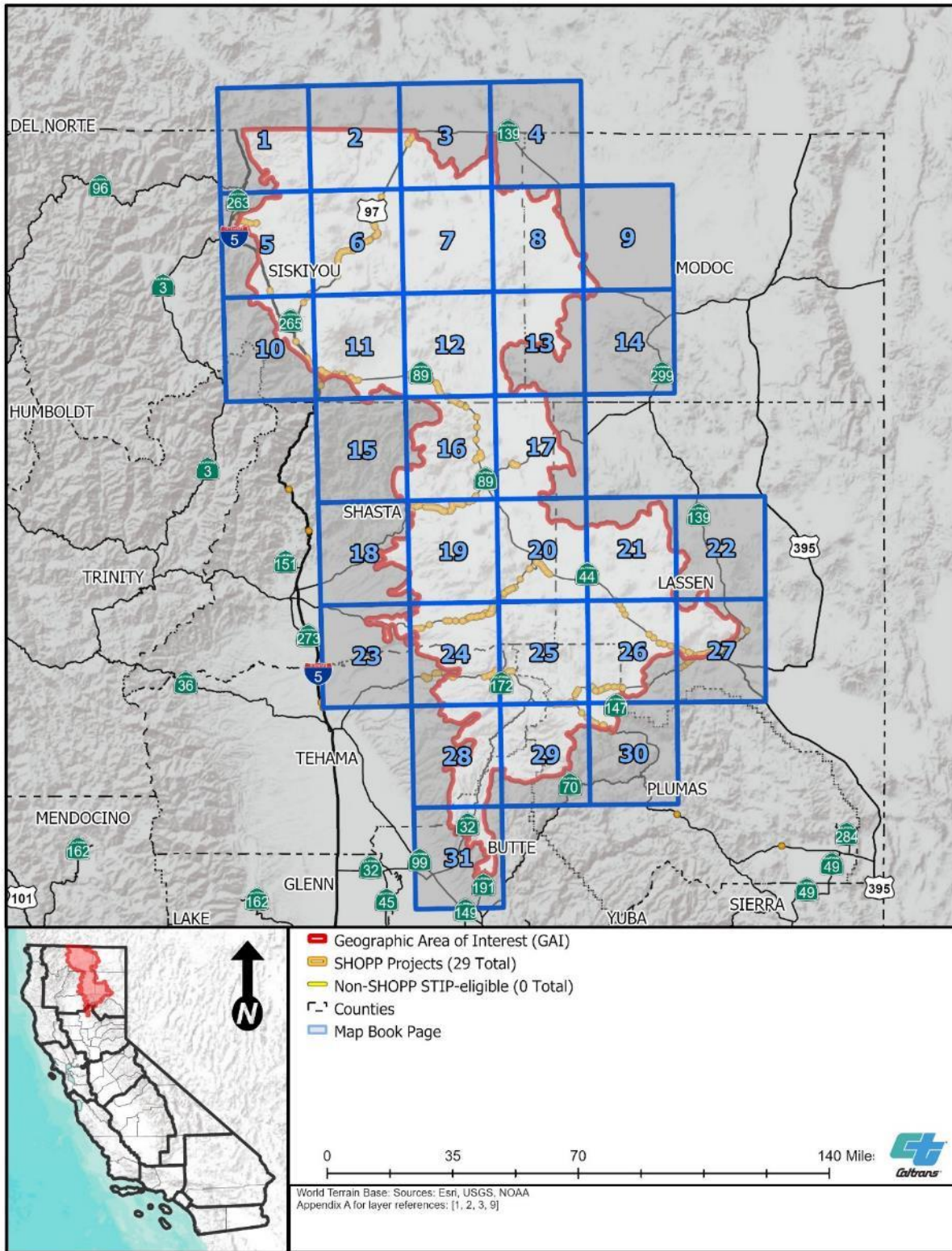
Aquatic Habitats: Aquatic habitats have at least 98 percent total cover by open water, and no more than 2 percent total cover by vegetation in the continually exposed shore zone. In the GAI, aquatic habitats include lacustrine and riverine.

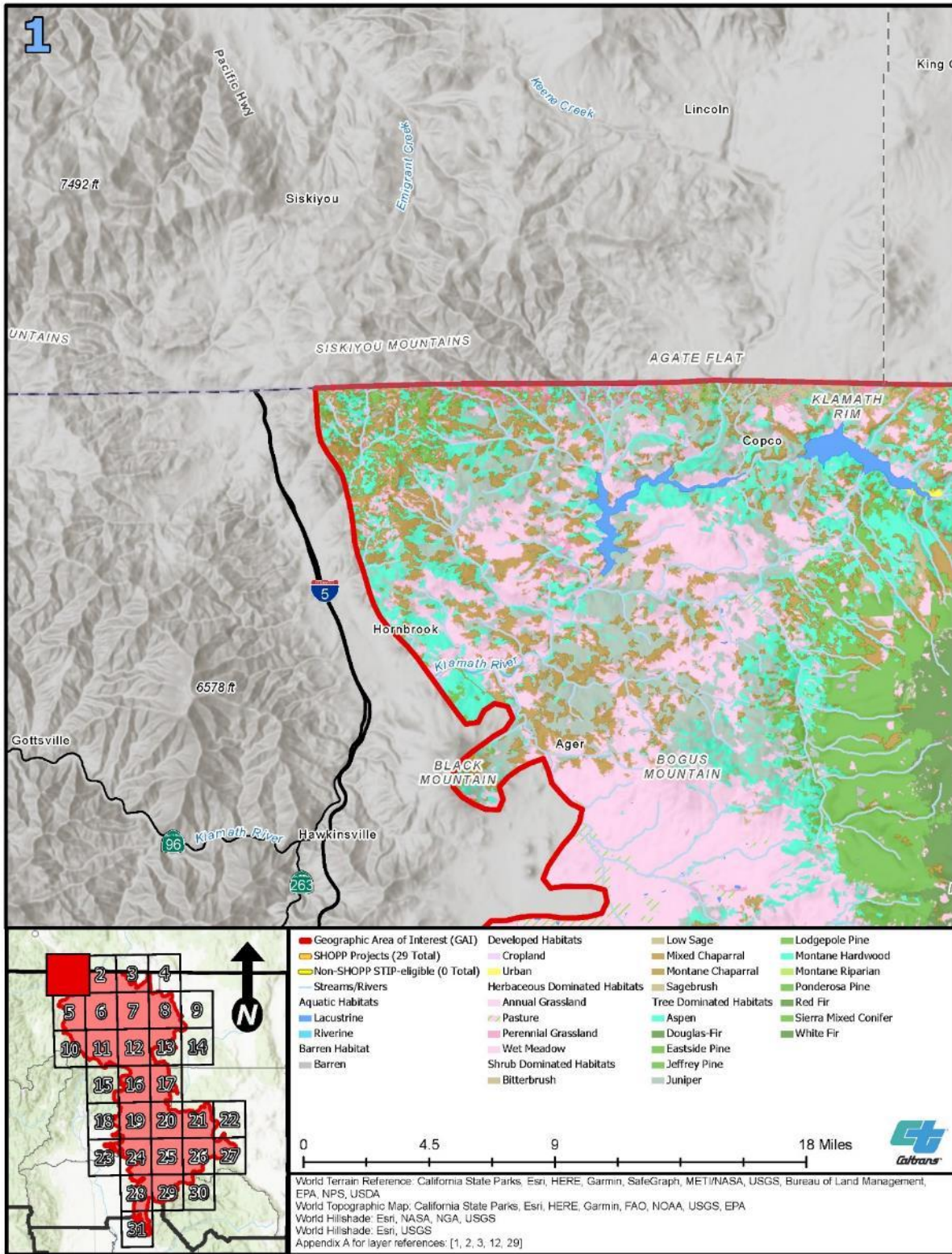
Developed Habitats: Developed habitats have at least 2 percent total cover by non-wildland vegetation grown for food, fiber, or landscaping, and do not meet criteria for any wildland habitat. In the GAI, developed habitats include cropland, deciduous orchard, evergreen orchard, irrigated grain crops, rice, and urban.

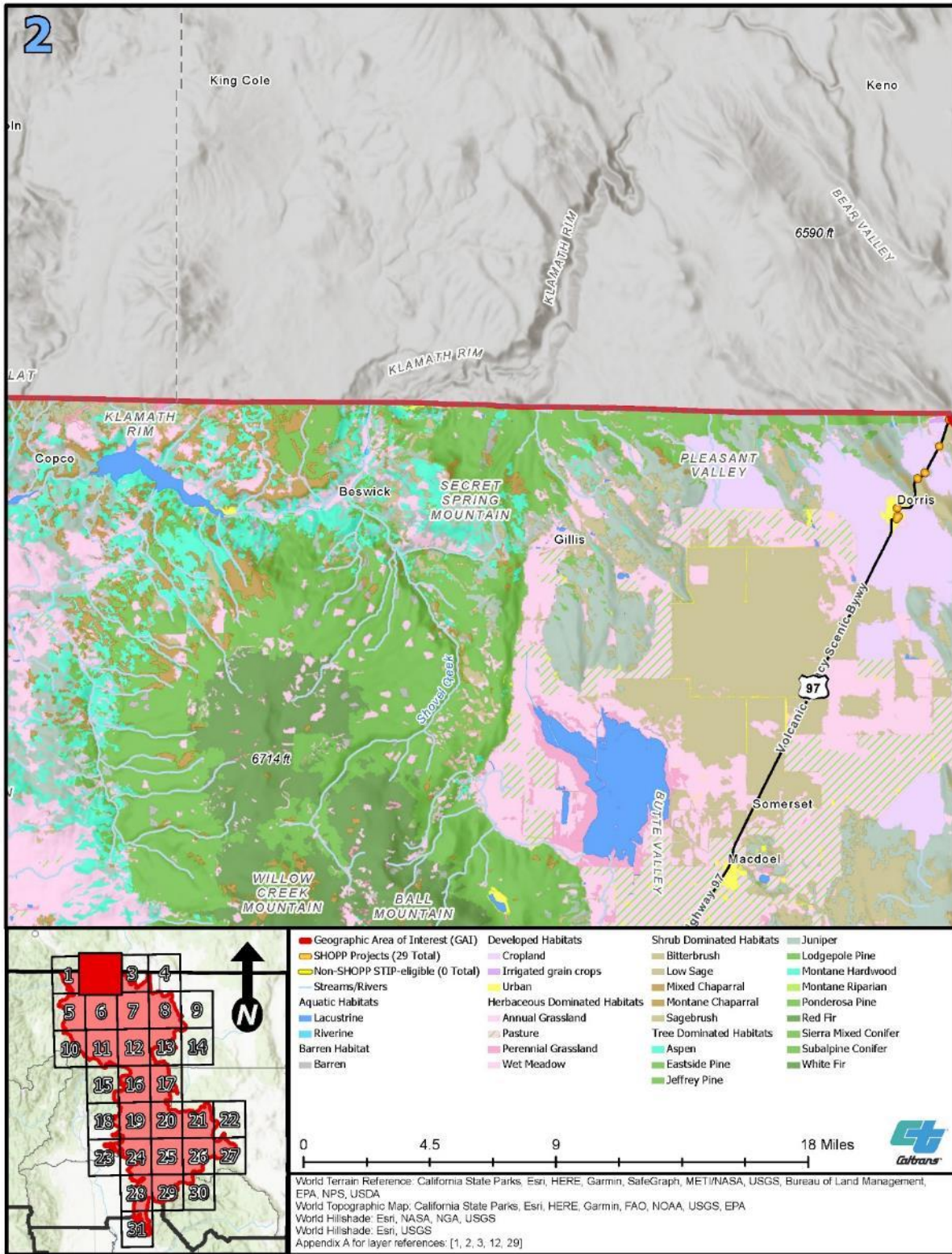
Non-vegetated Habitats: Non-vegetated habitats include barren areas, characterized by less than 2 percent cover by herbaceous species. In the GAI, non-vegetated habitats consist of barren areas.

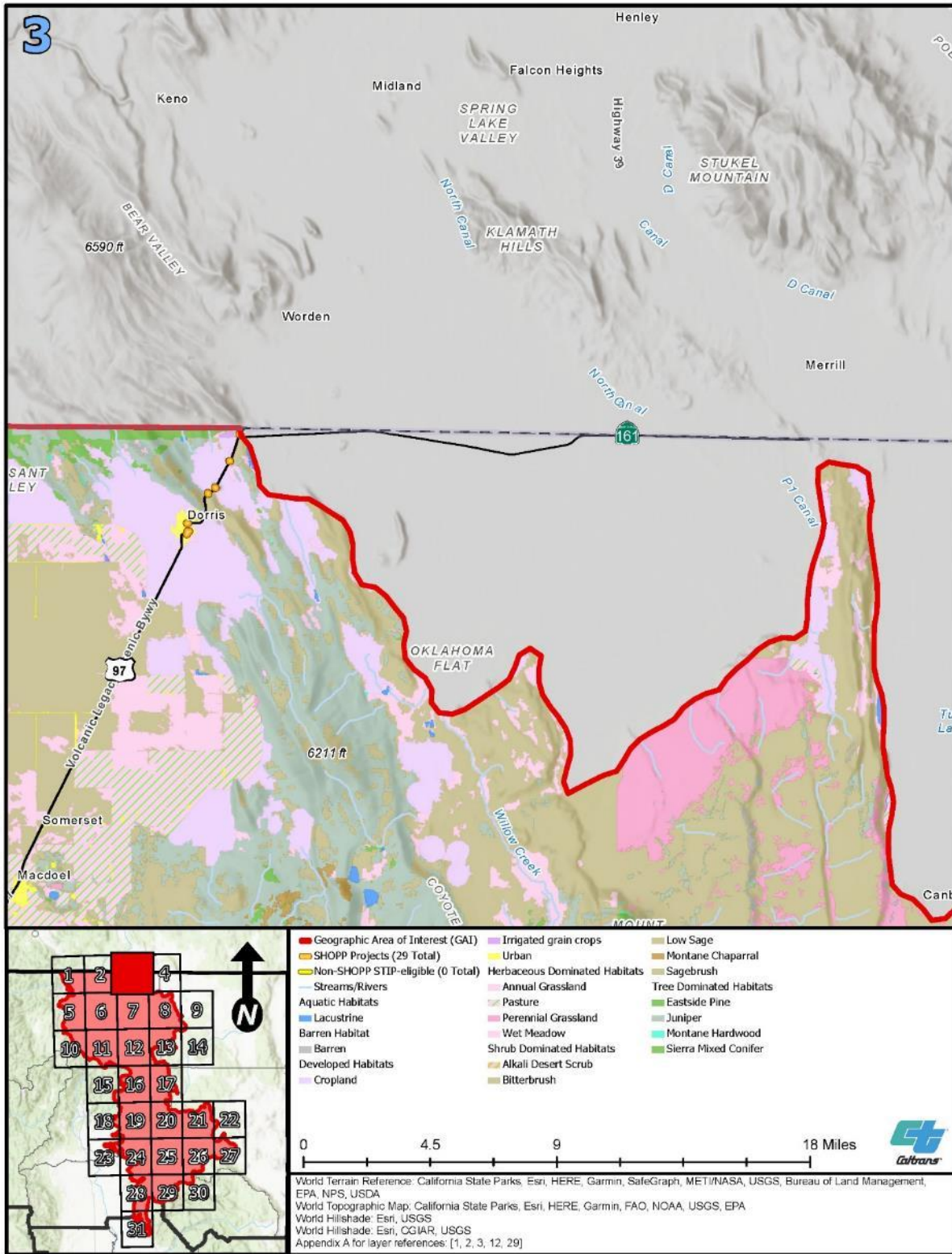
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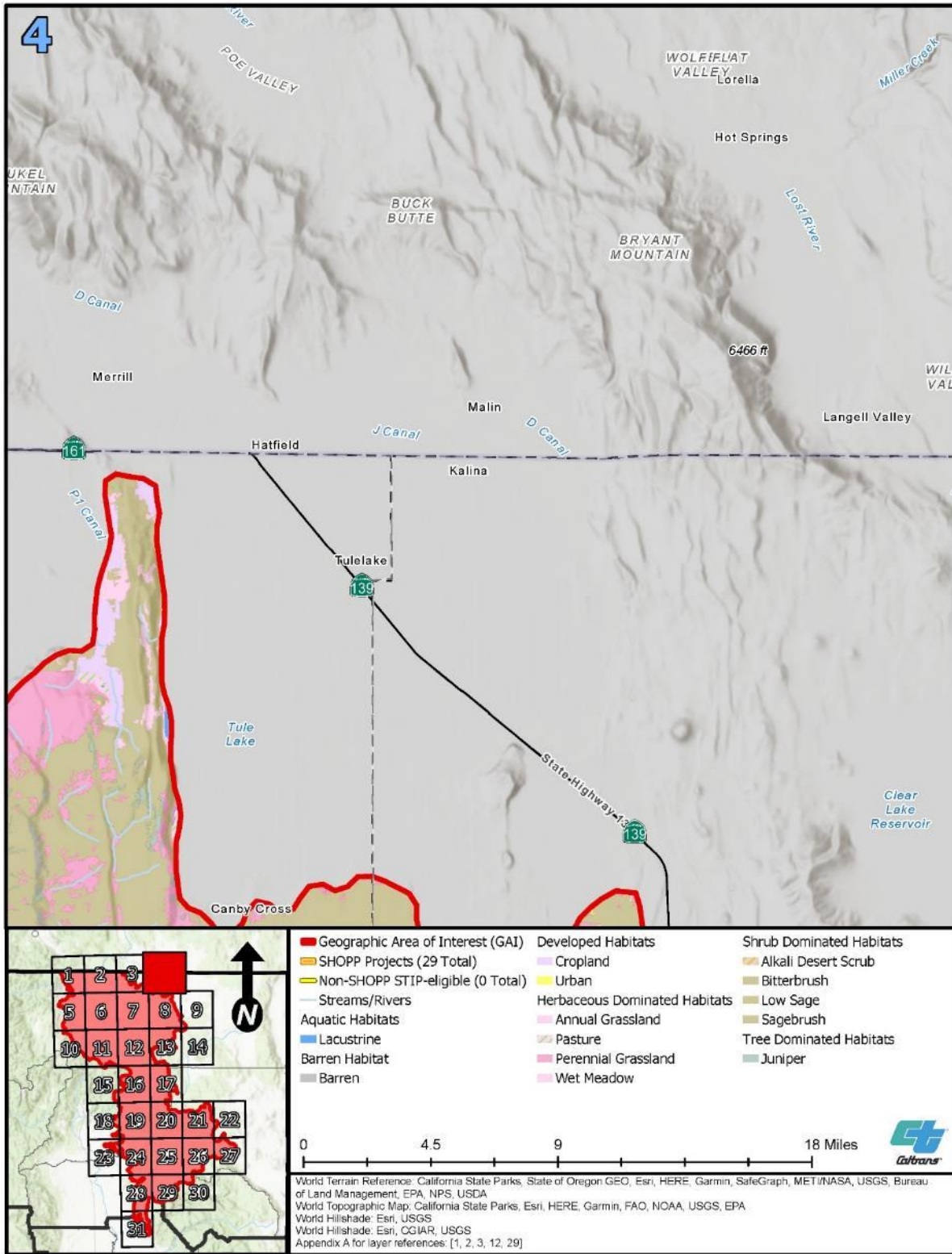
- Caltrans (California Department of Transportation). 2021a. "Vegetation_ D2/D3 in Caltrans District 2 Geospatial Data for the Advance Mitigation Needs Assessment for the First Quarter of FY 2021/2022" (data file). Accessed June 15, 2022. <http://www.dot.ca.gov/env/advancemitigation/>.
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- Mayer, Kenneth E., and William F. Laudenslayer, Jr., eds. 1988. "A Guide to Wildlife Habitats of California." State of California, Resources Agency, Department of Fish and Game. Sacramento, California. Including Revisions and Updates. Accessed August 2, 2021. <https://www.wildlife.ca.gov/Data/CWHR/Wildlife-Habitats>.

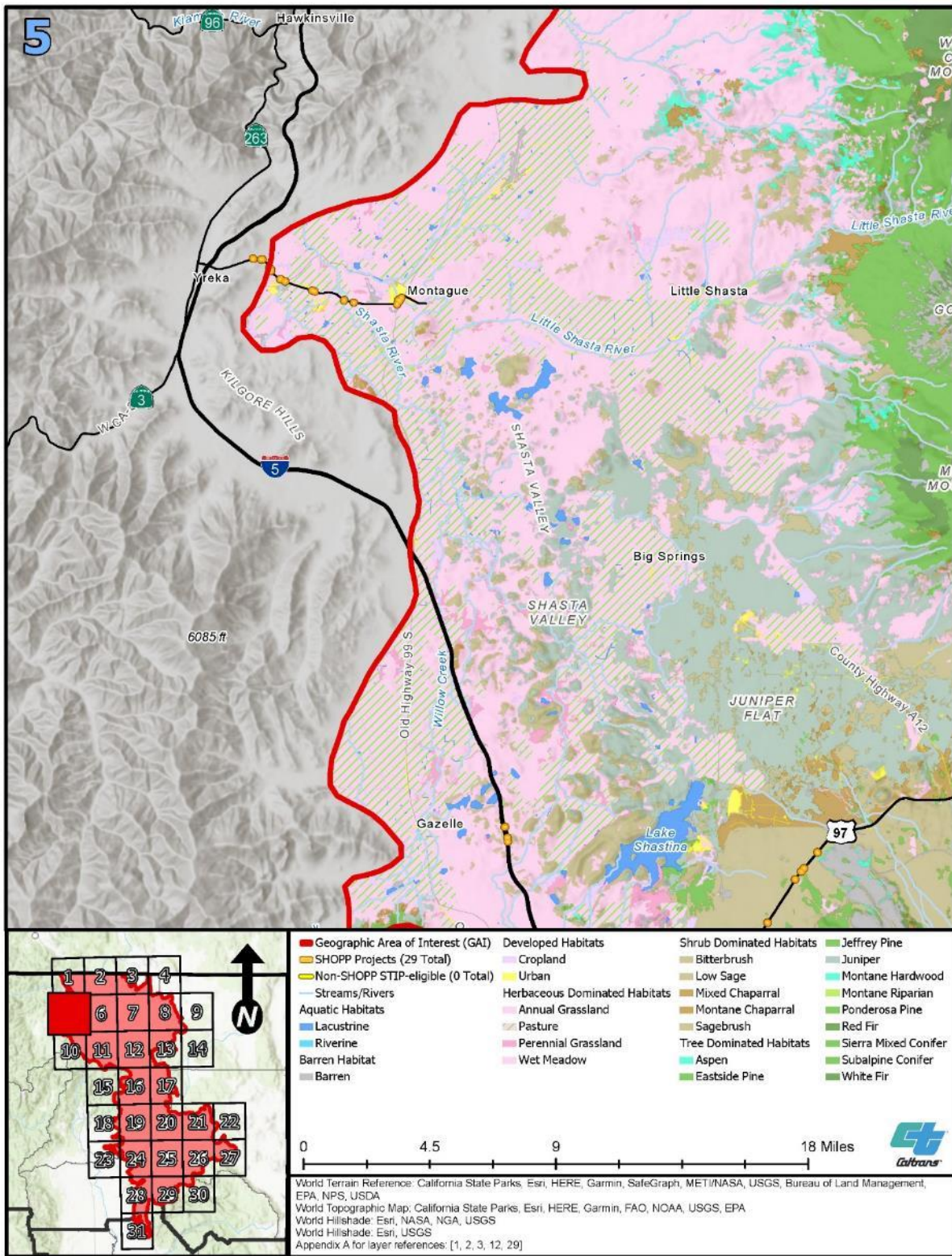


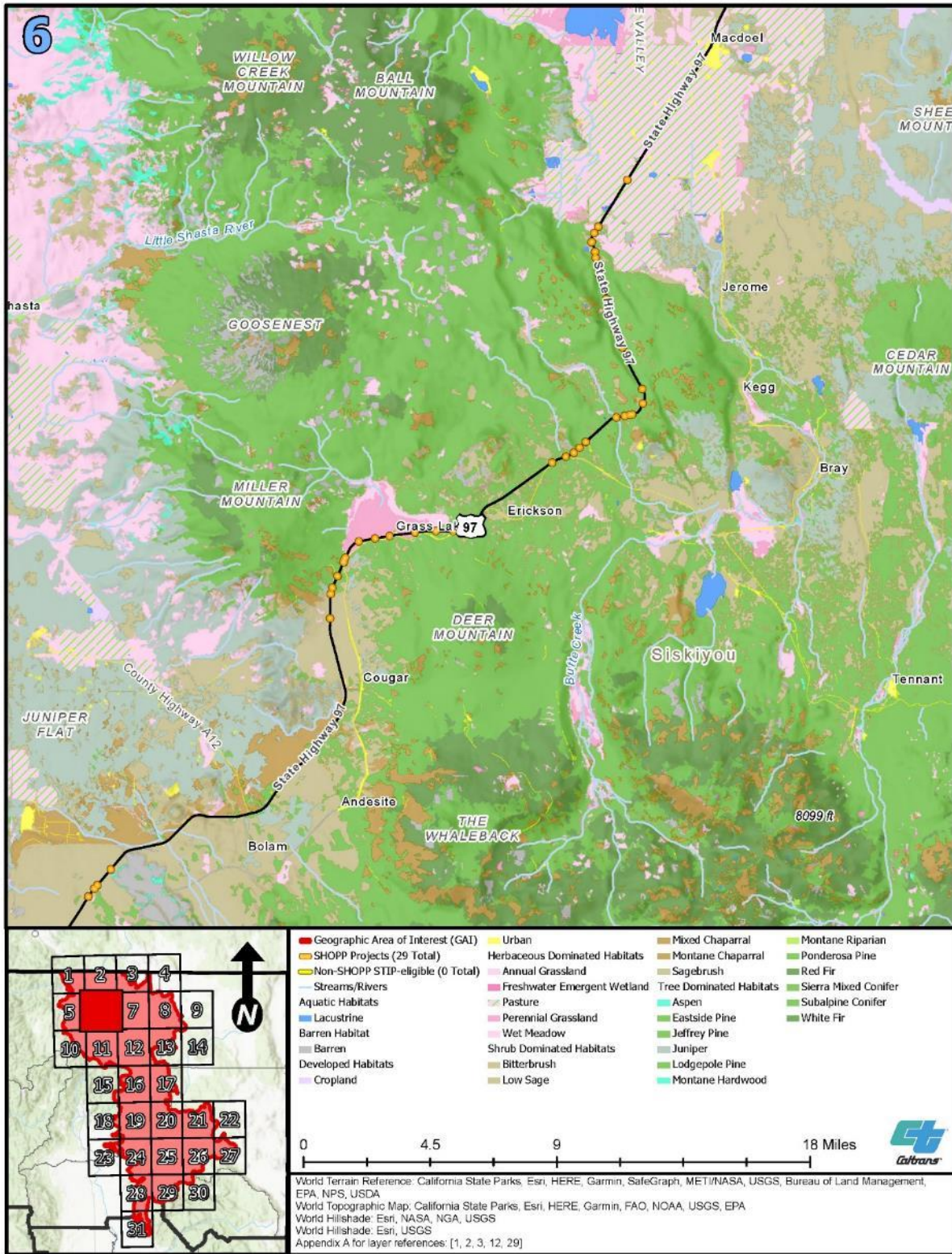


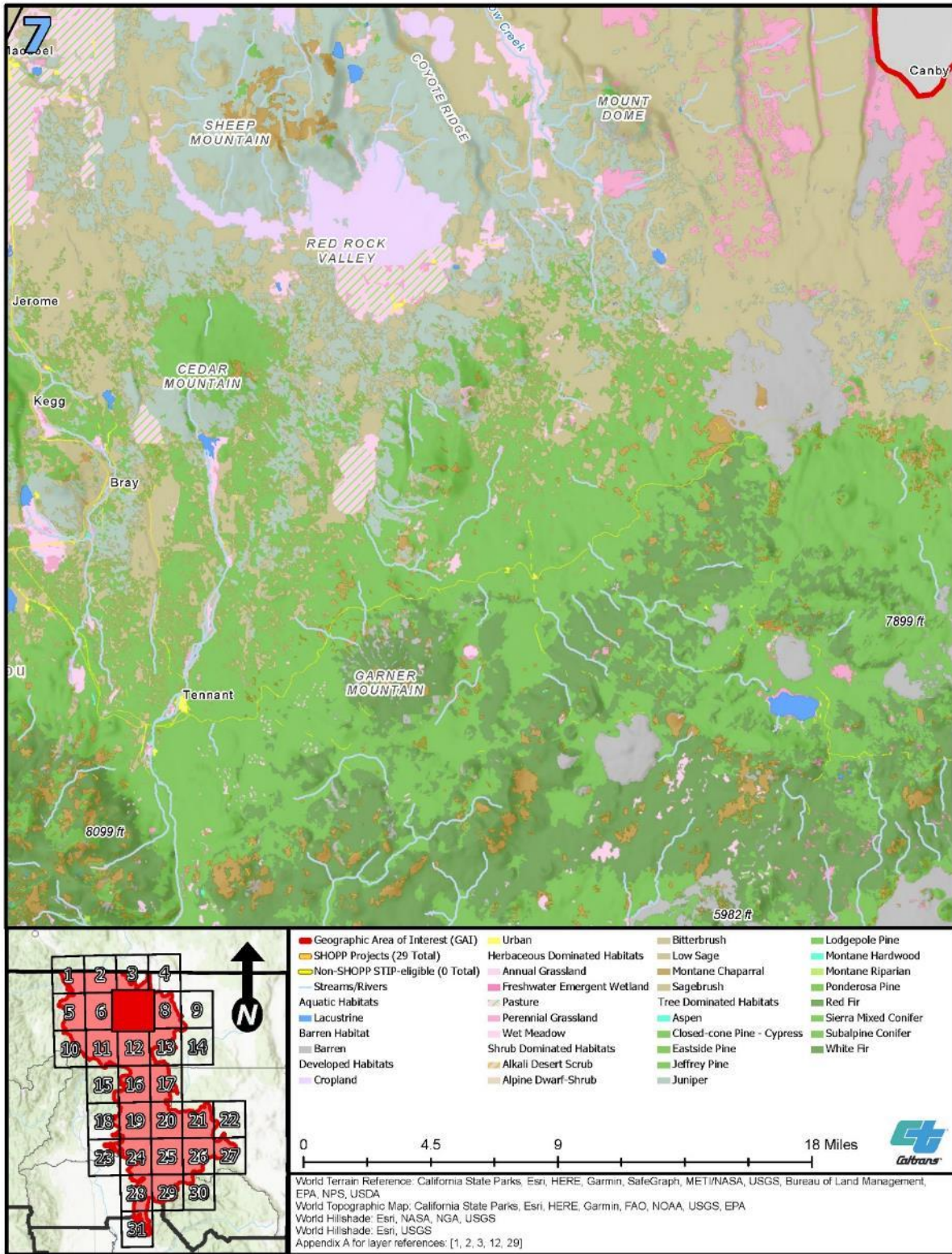


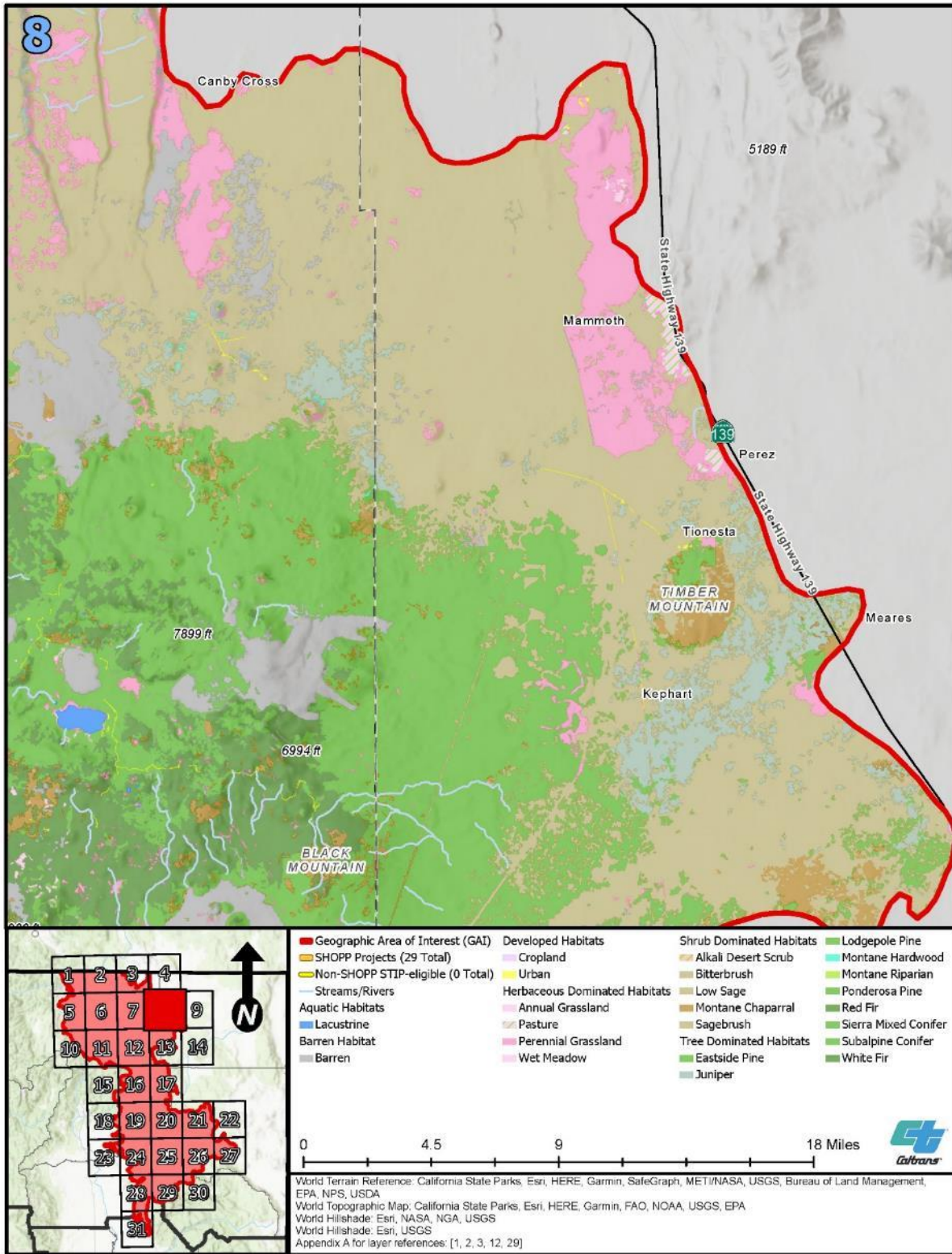


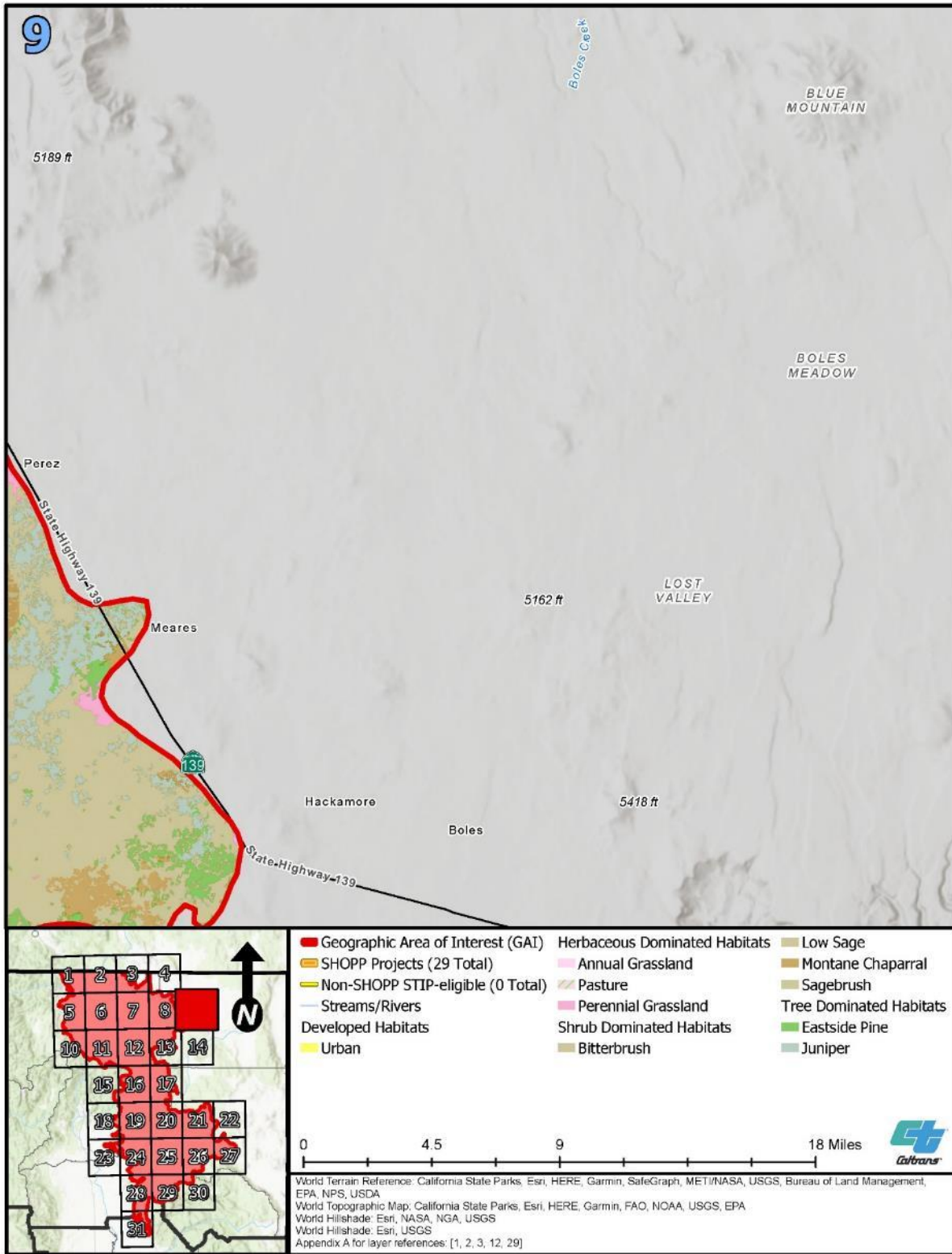


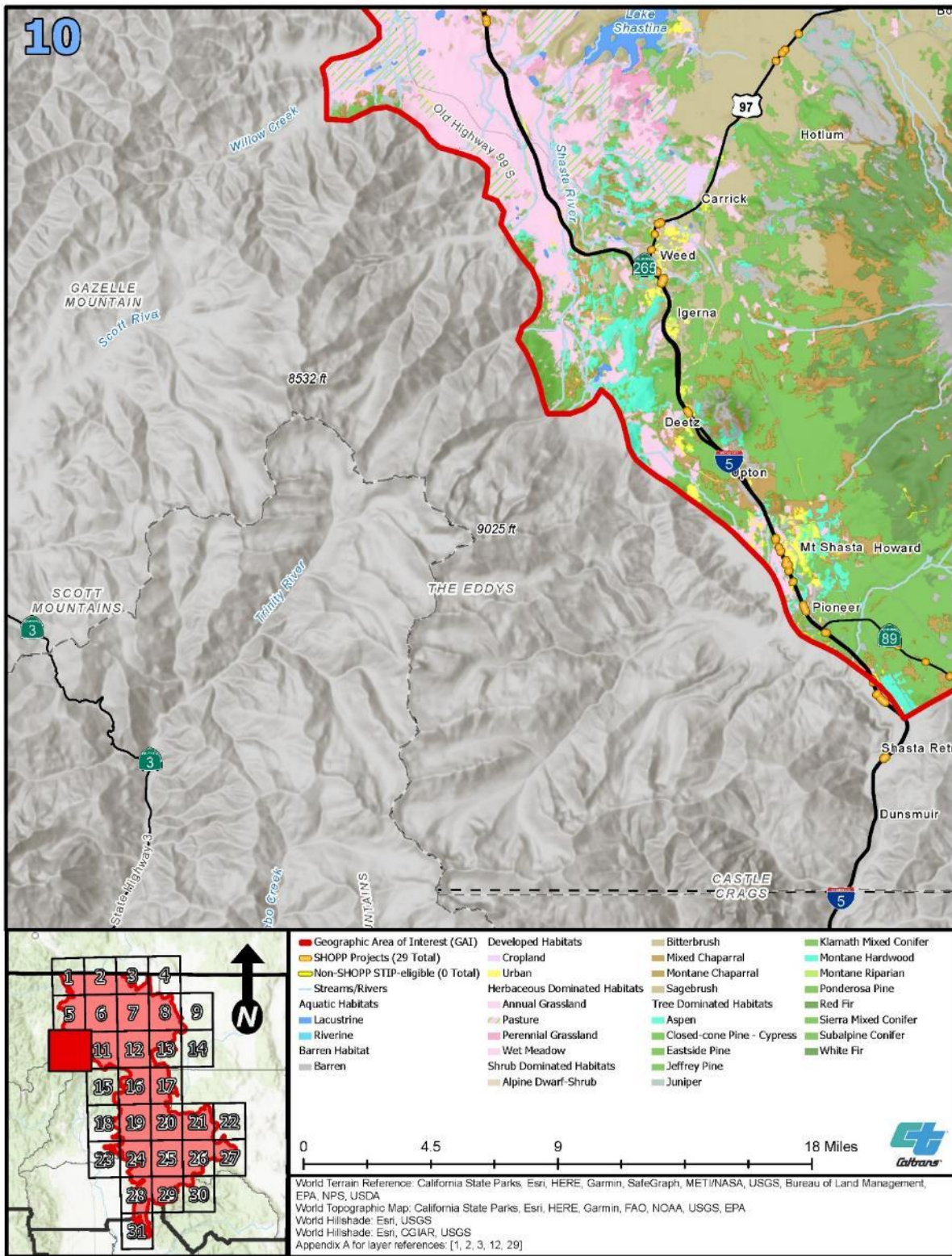


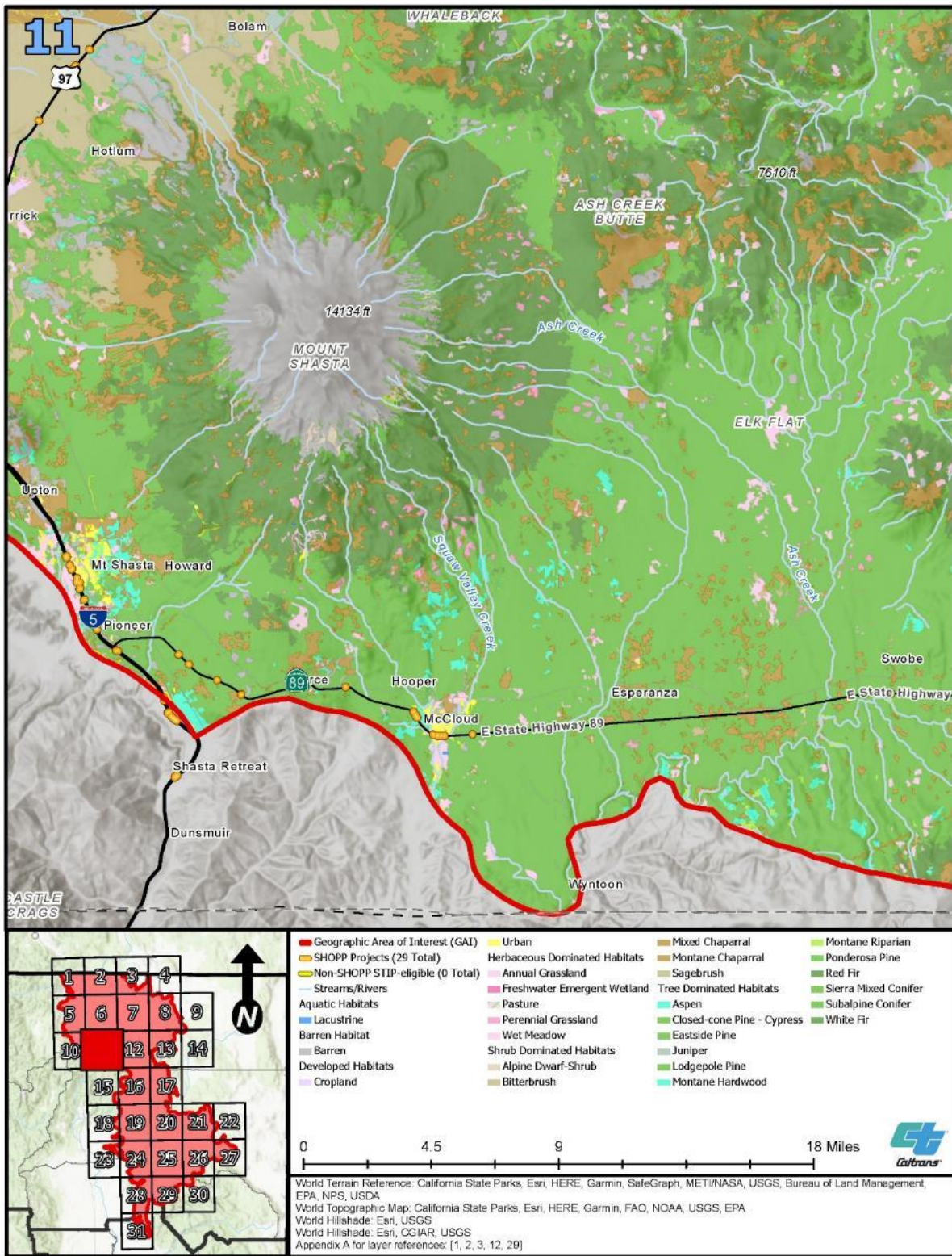


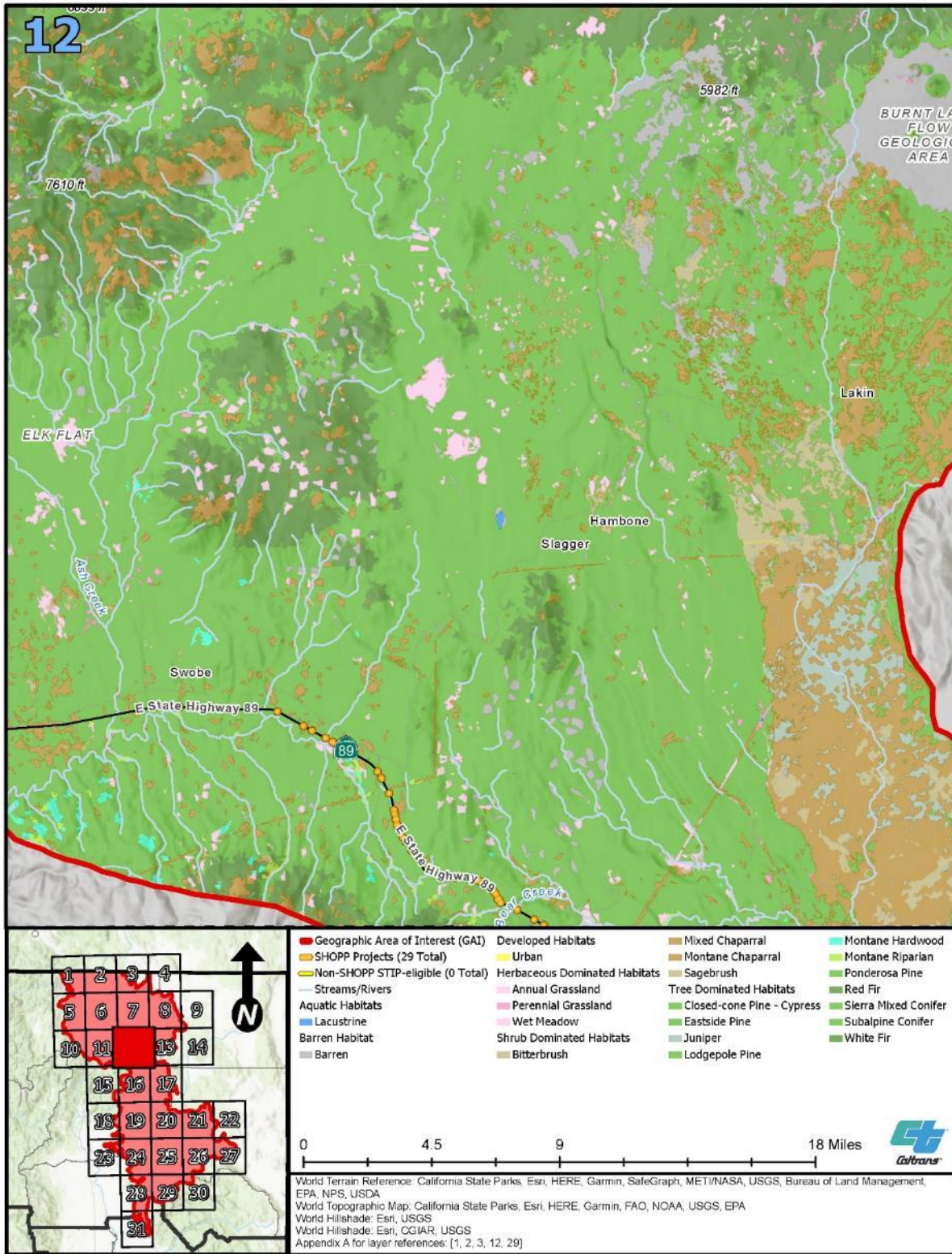


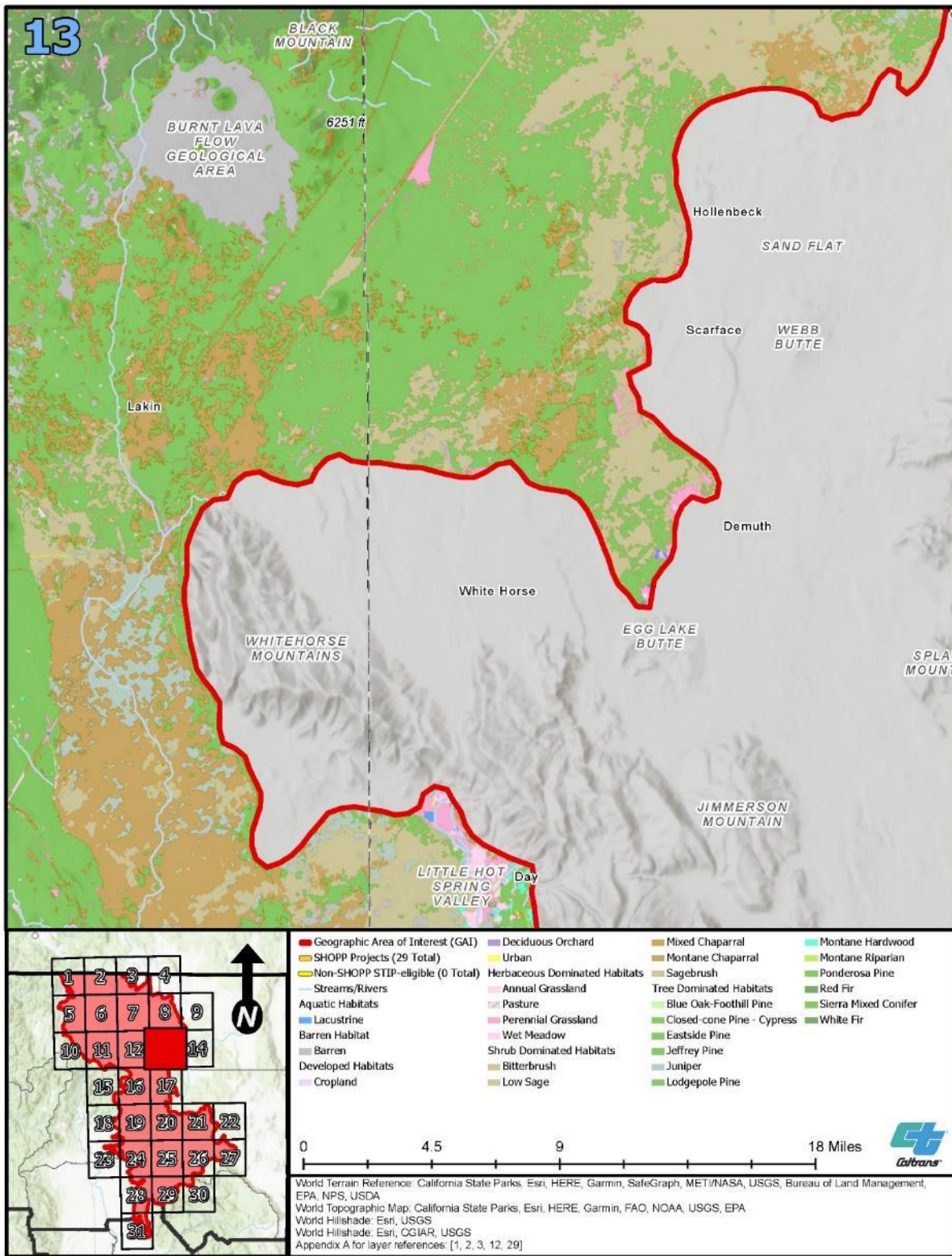


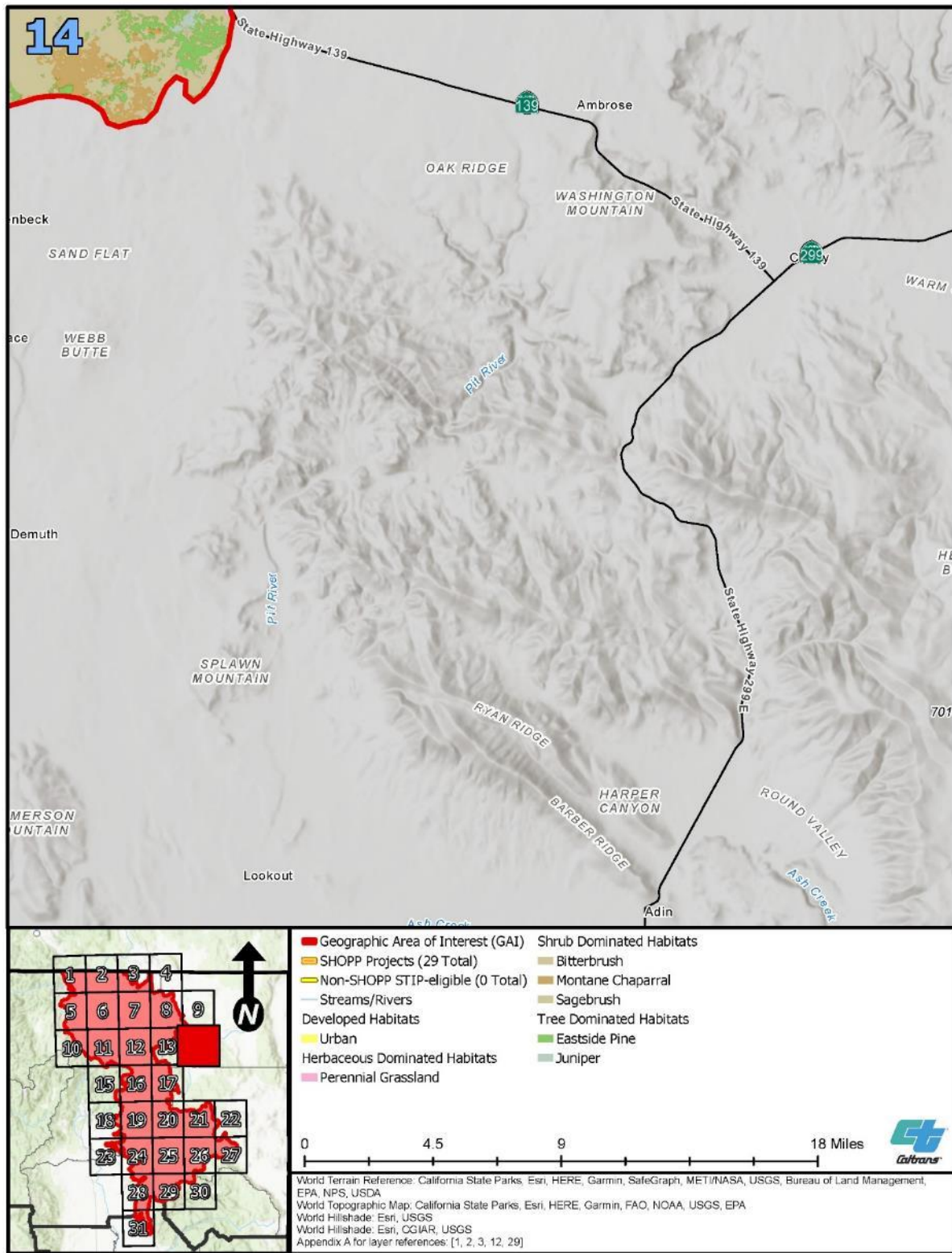


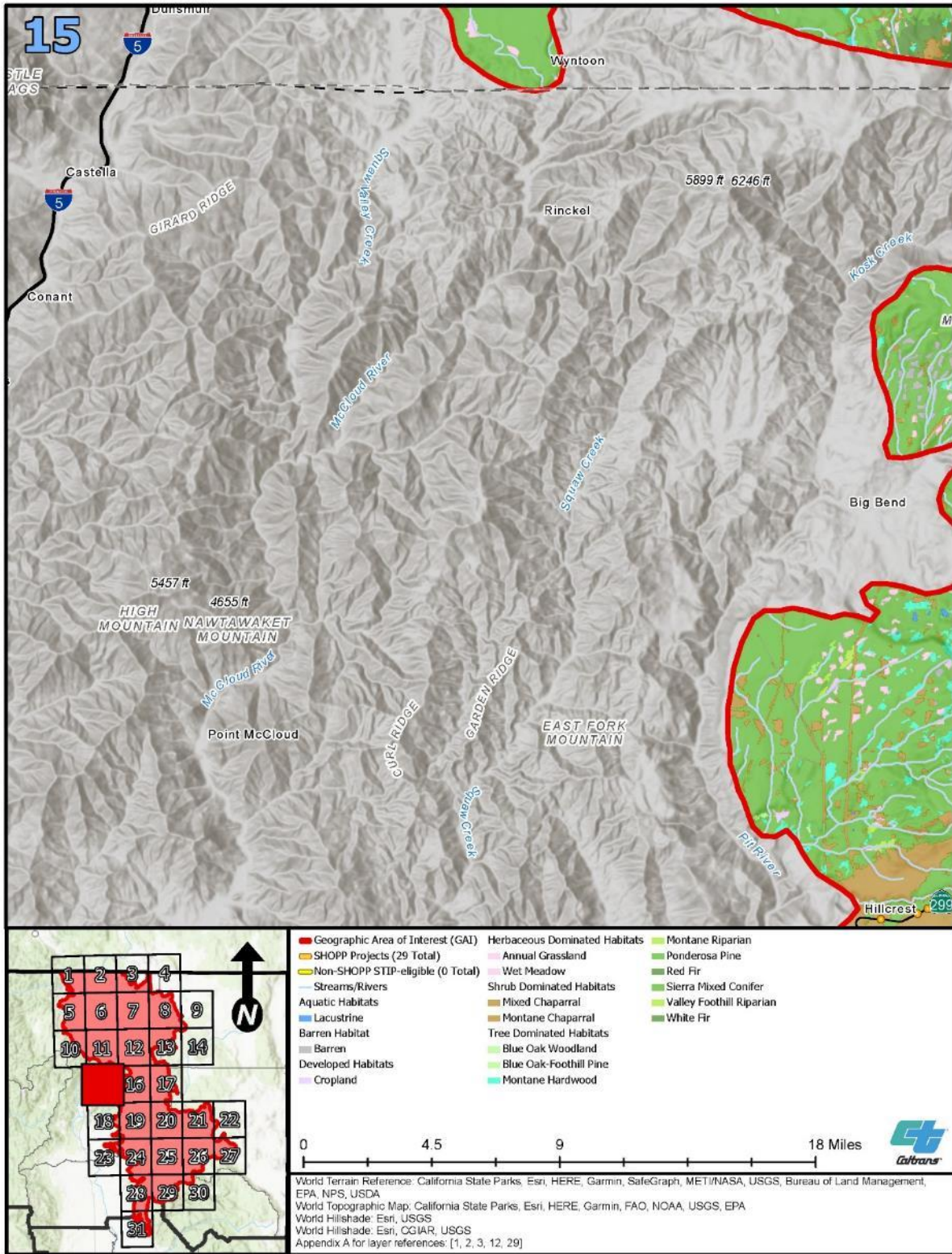


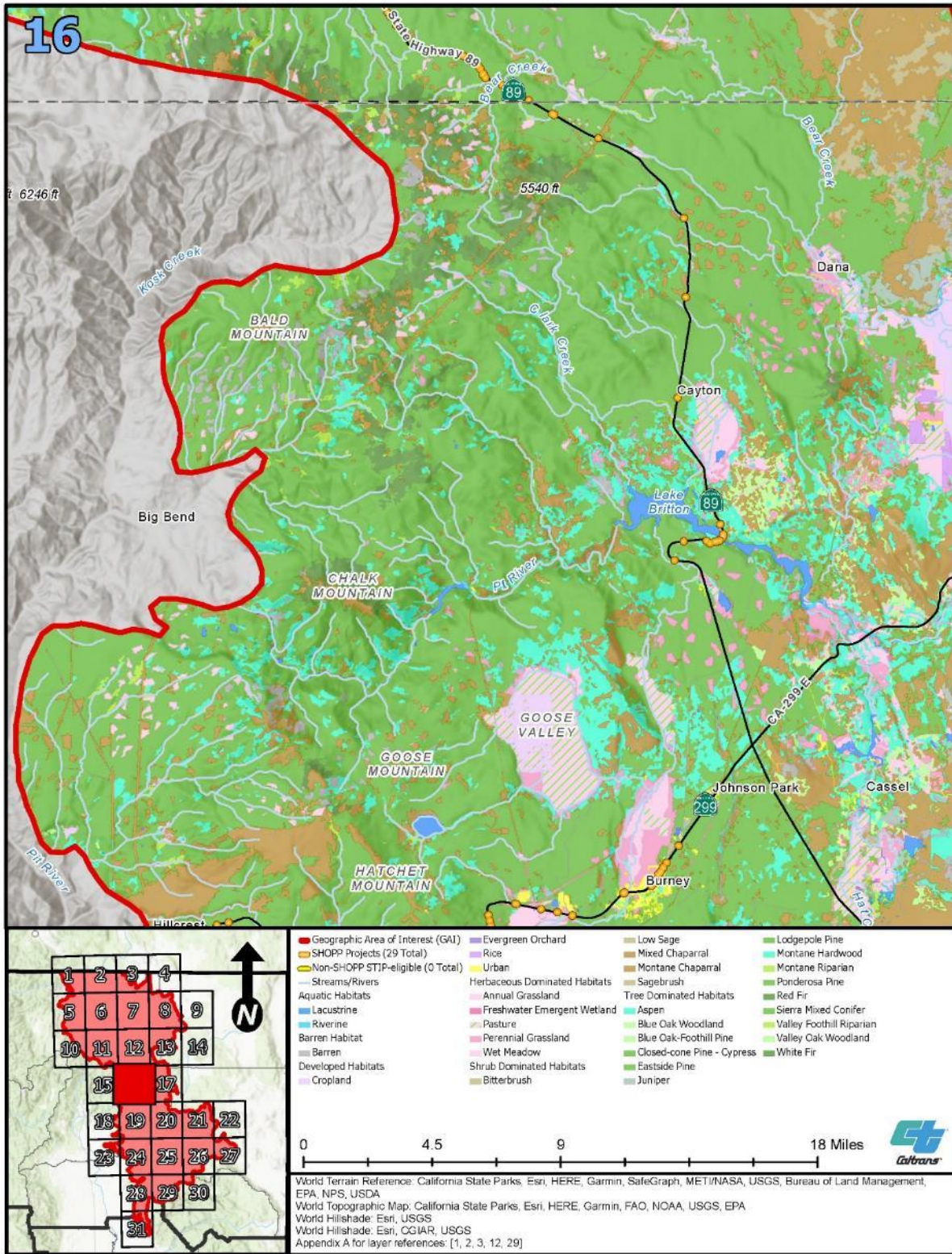


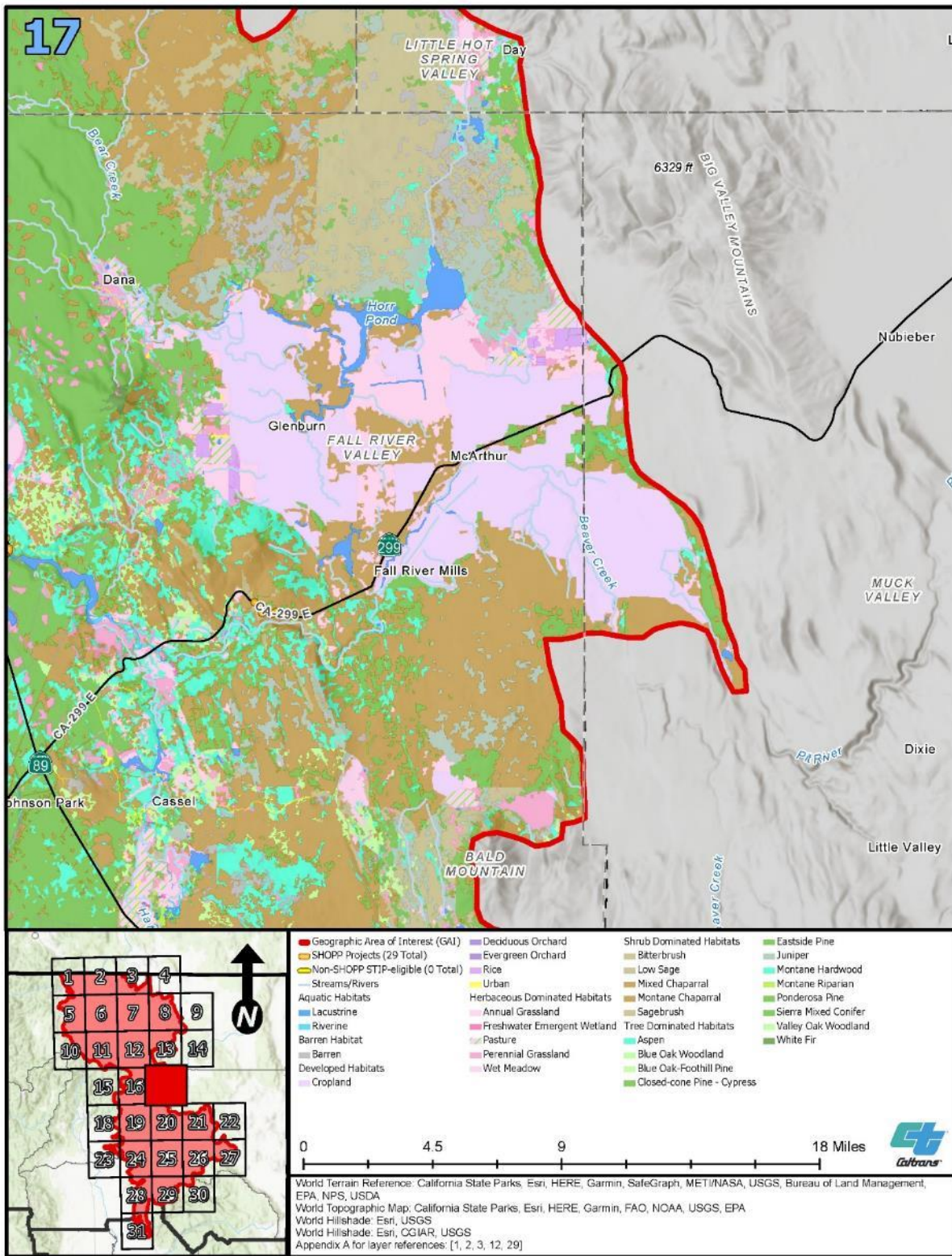


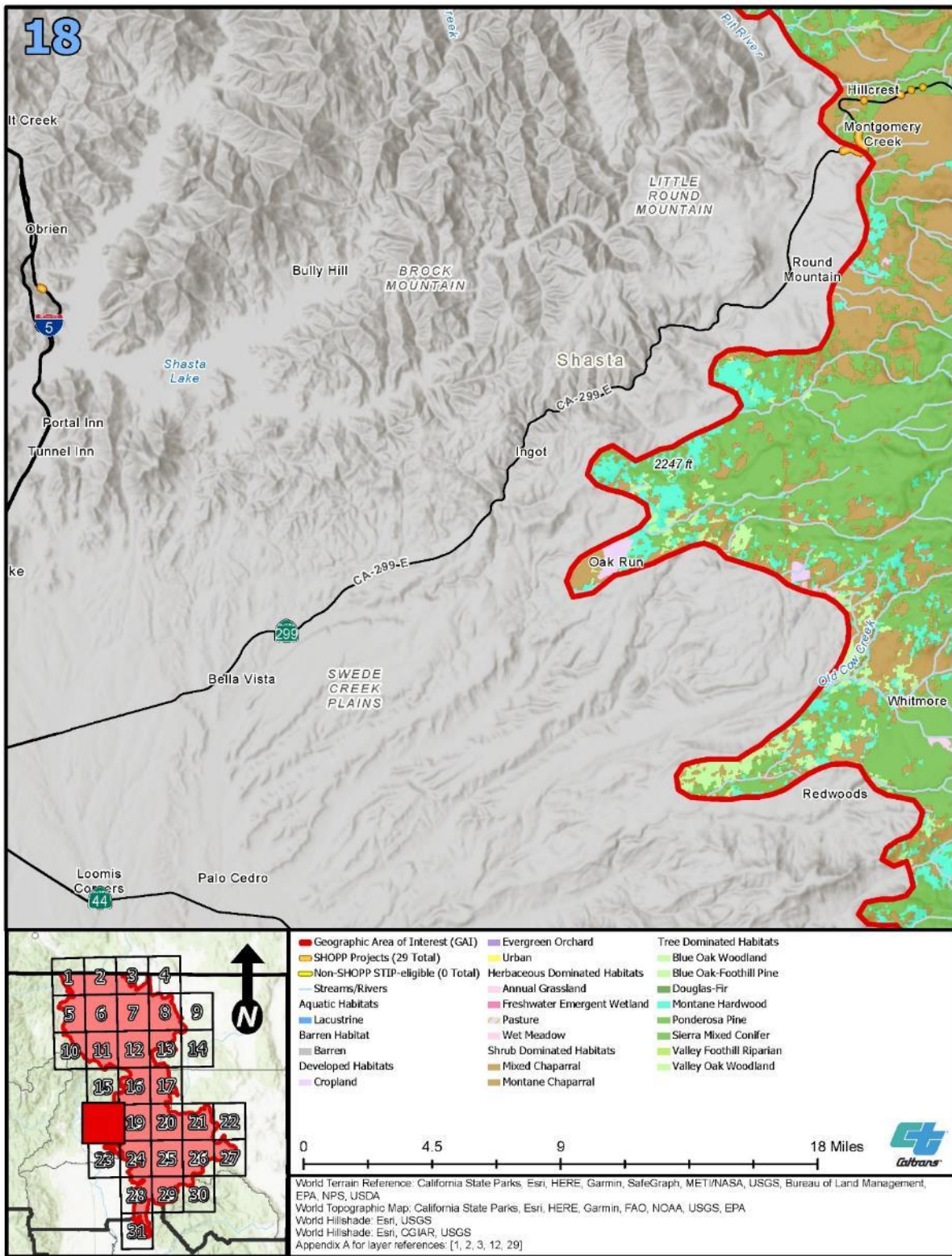


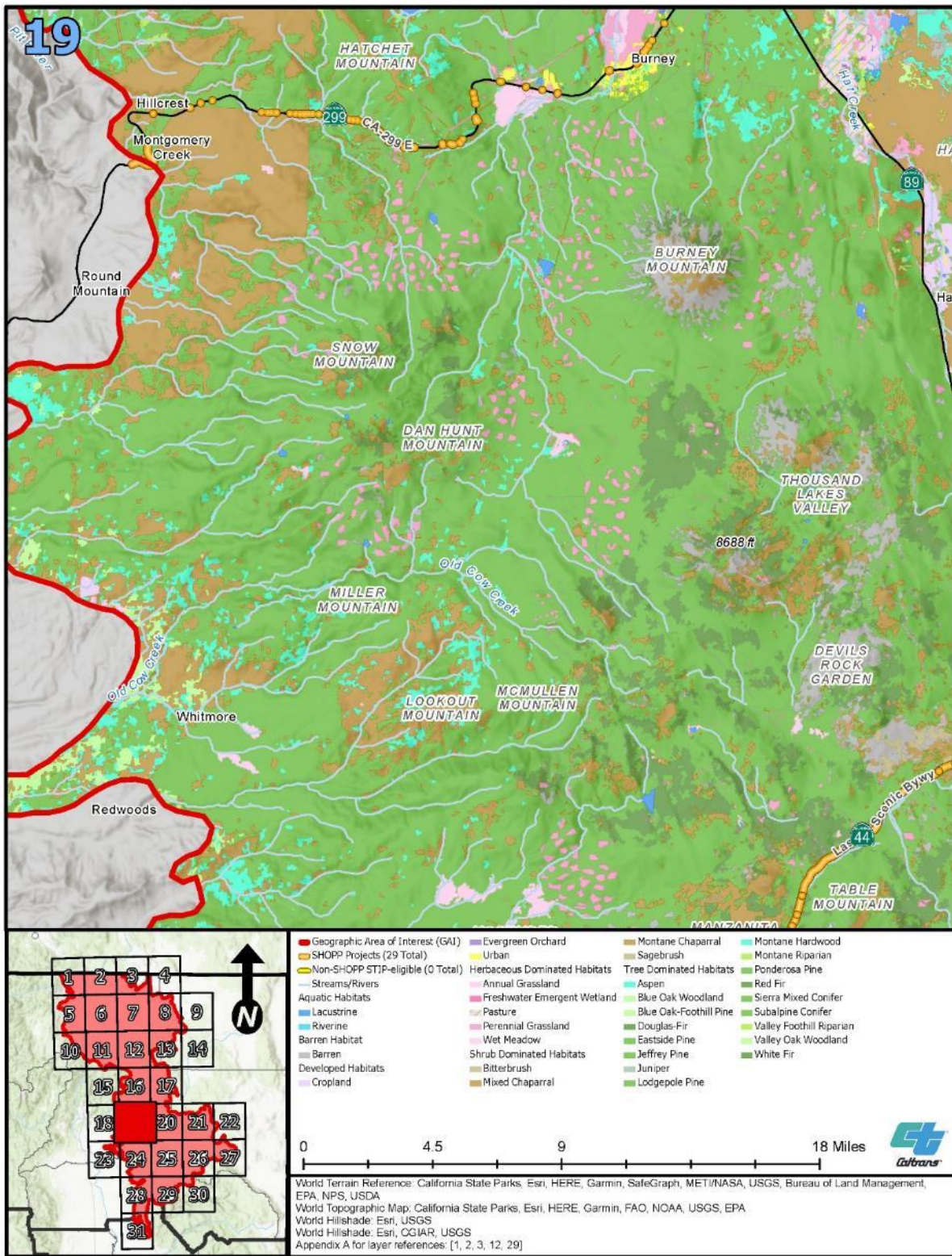


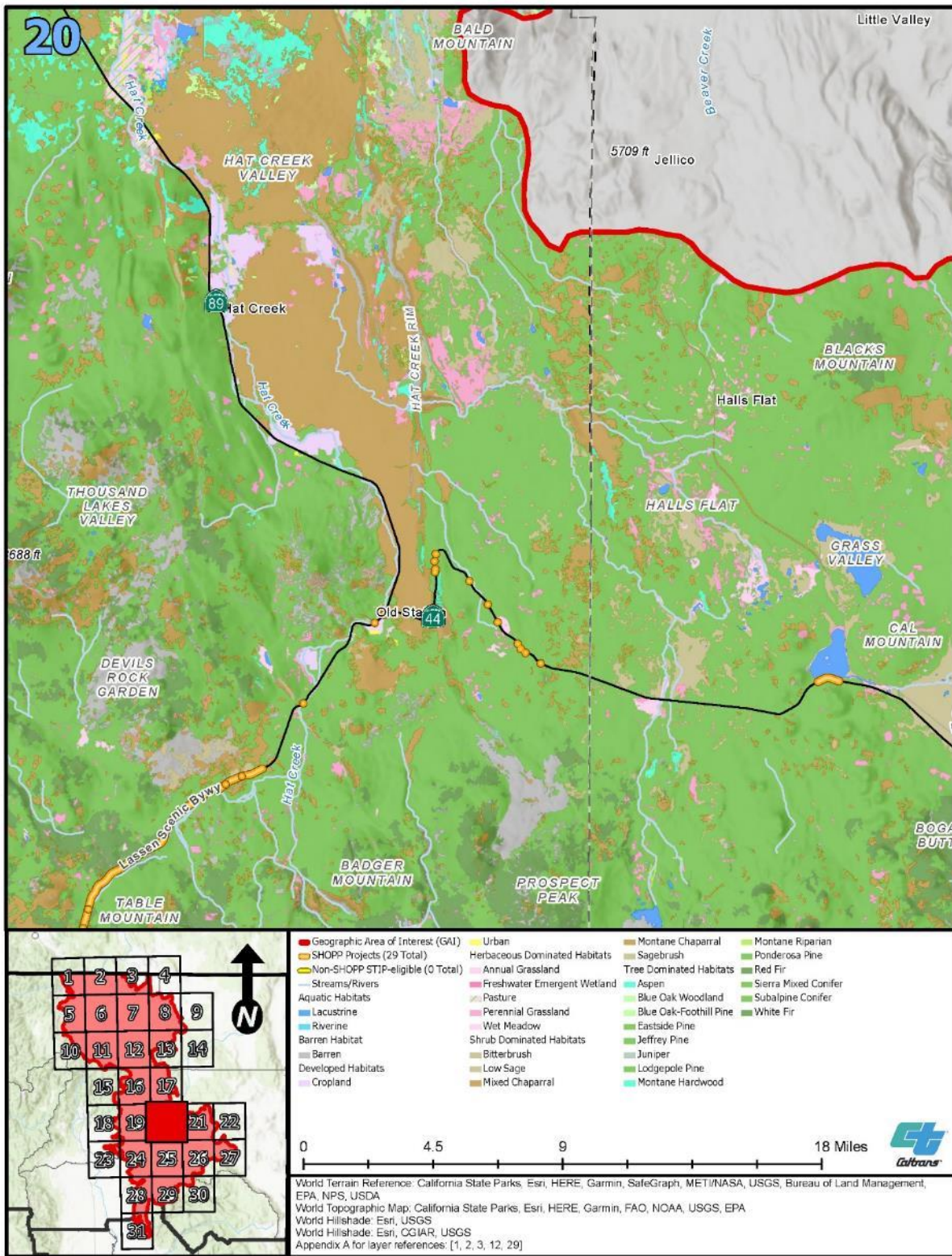


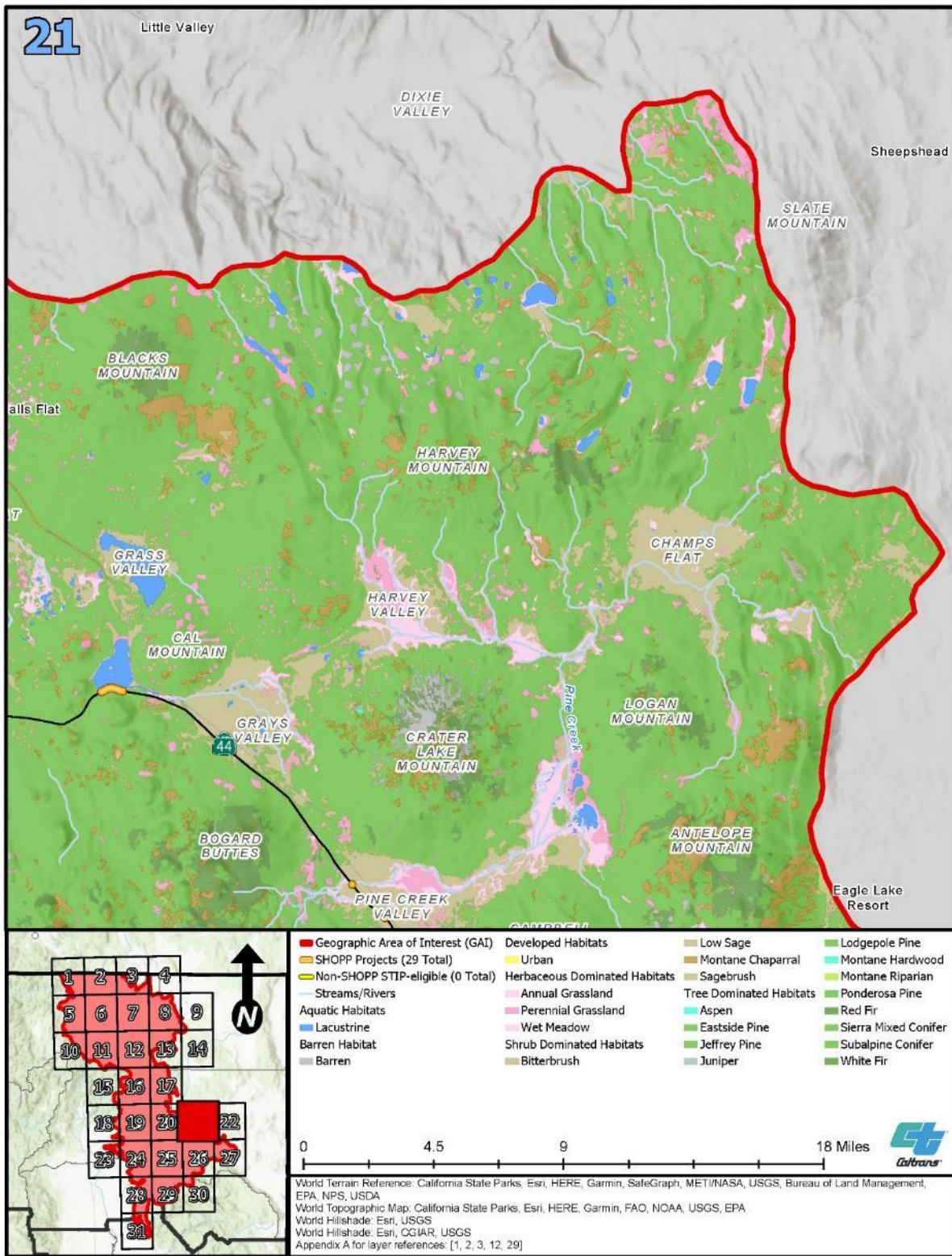


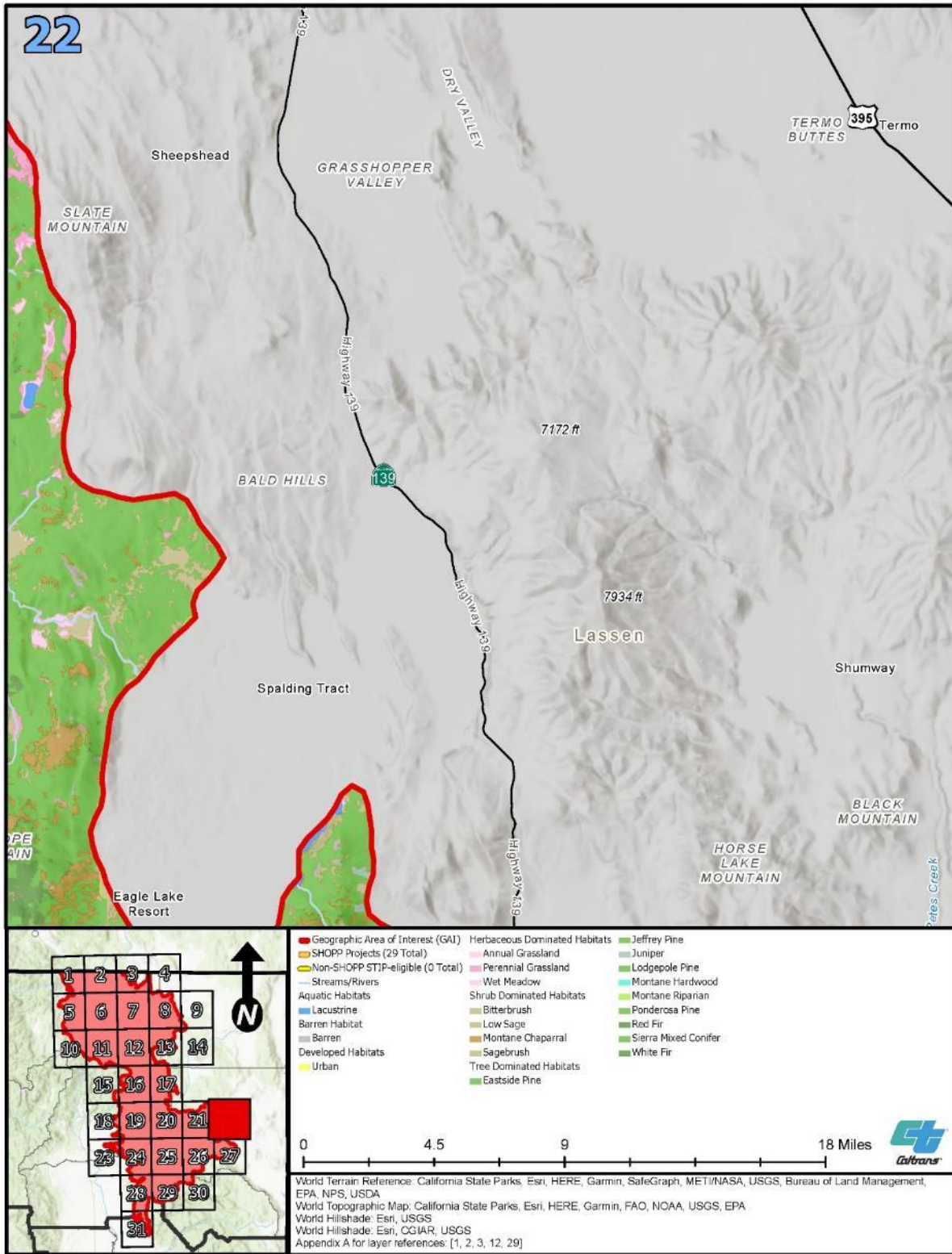


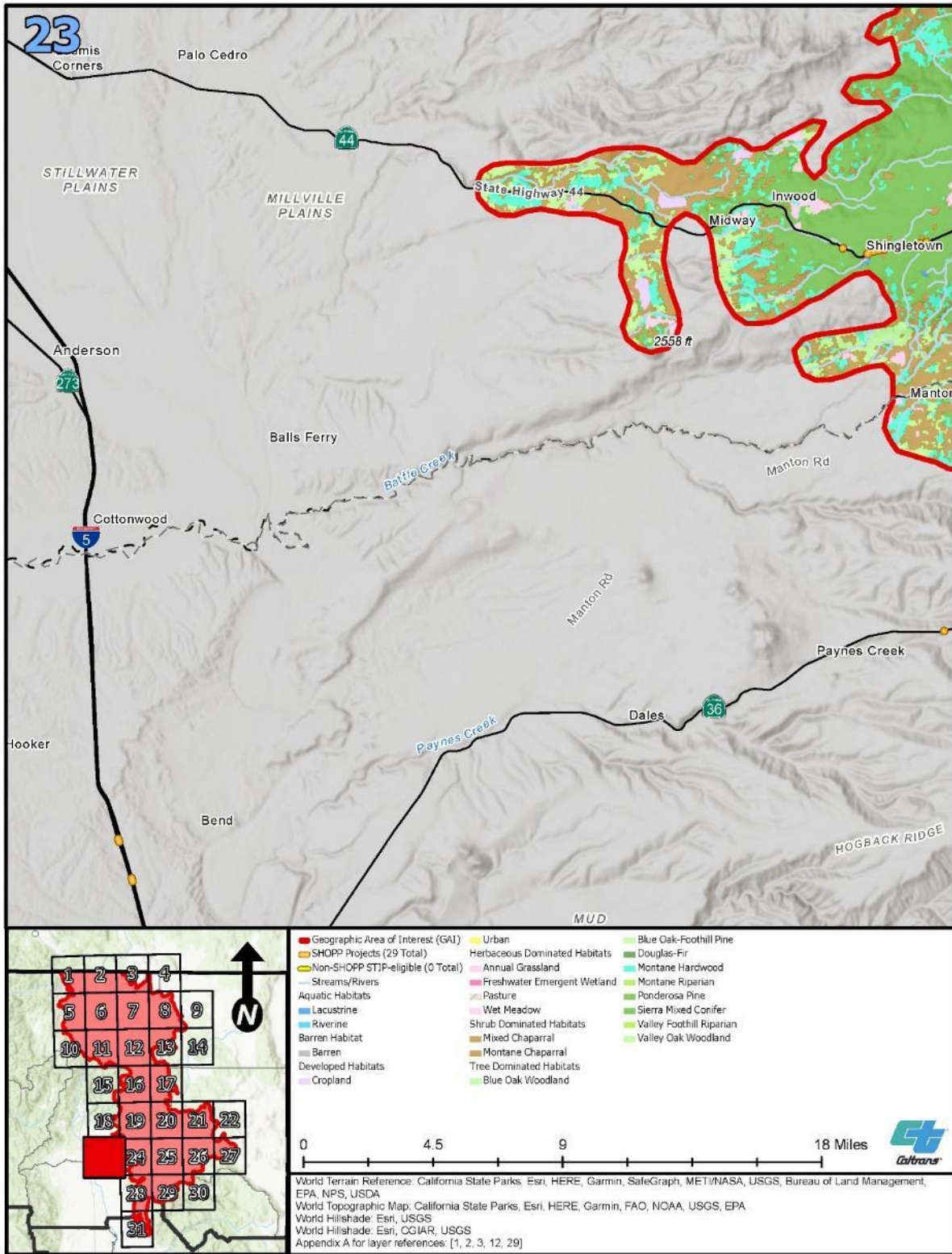


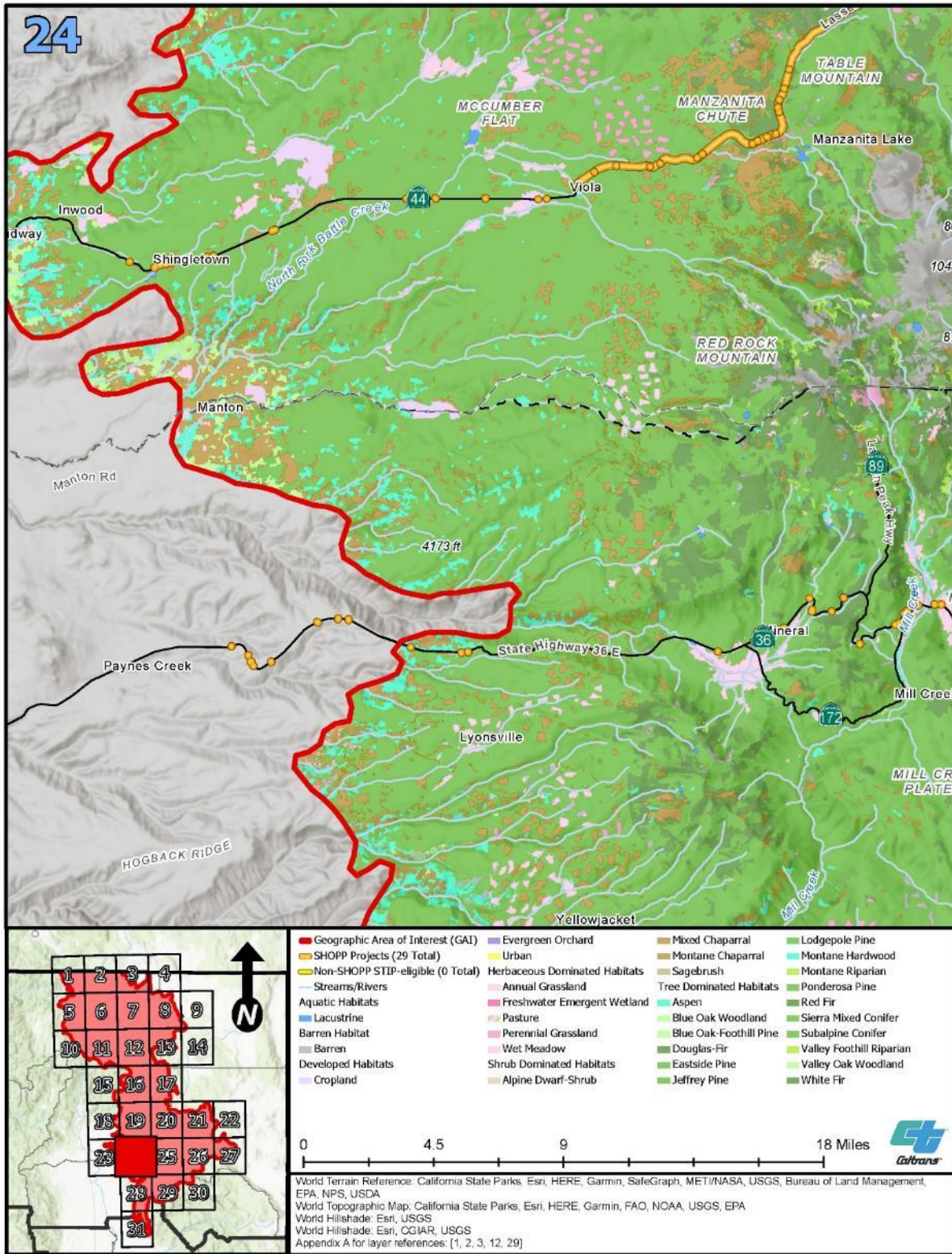


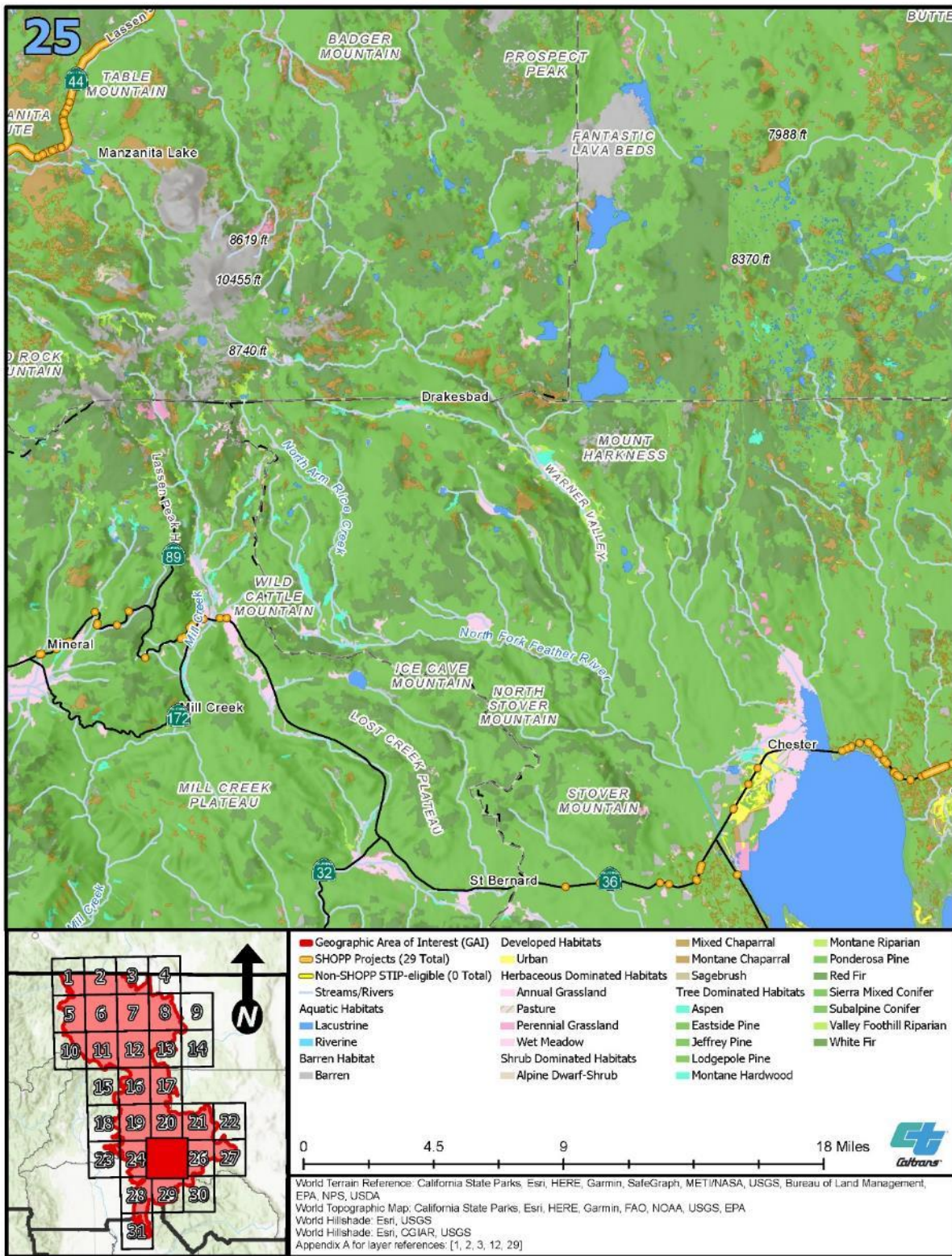




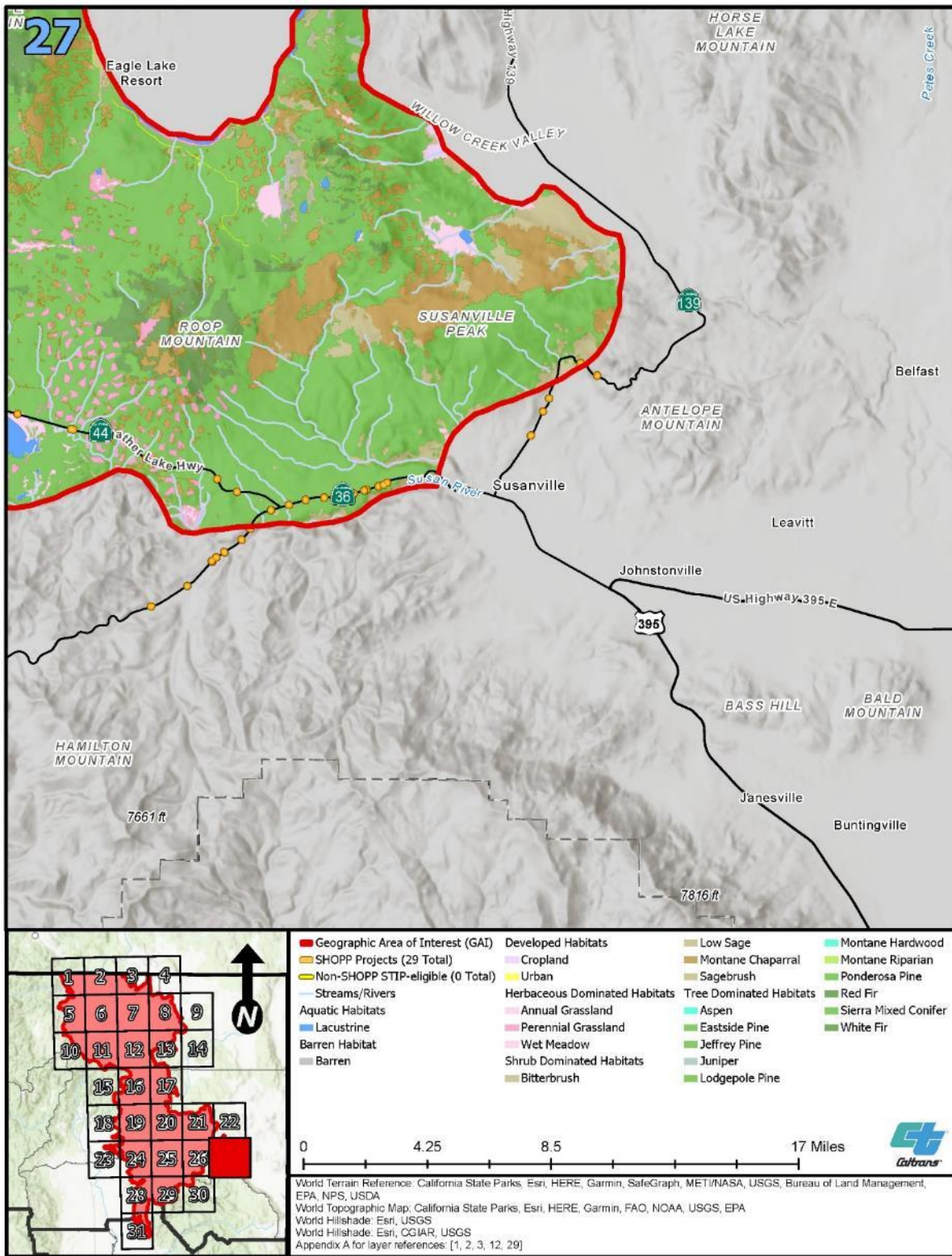


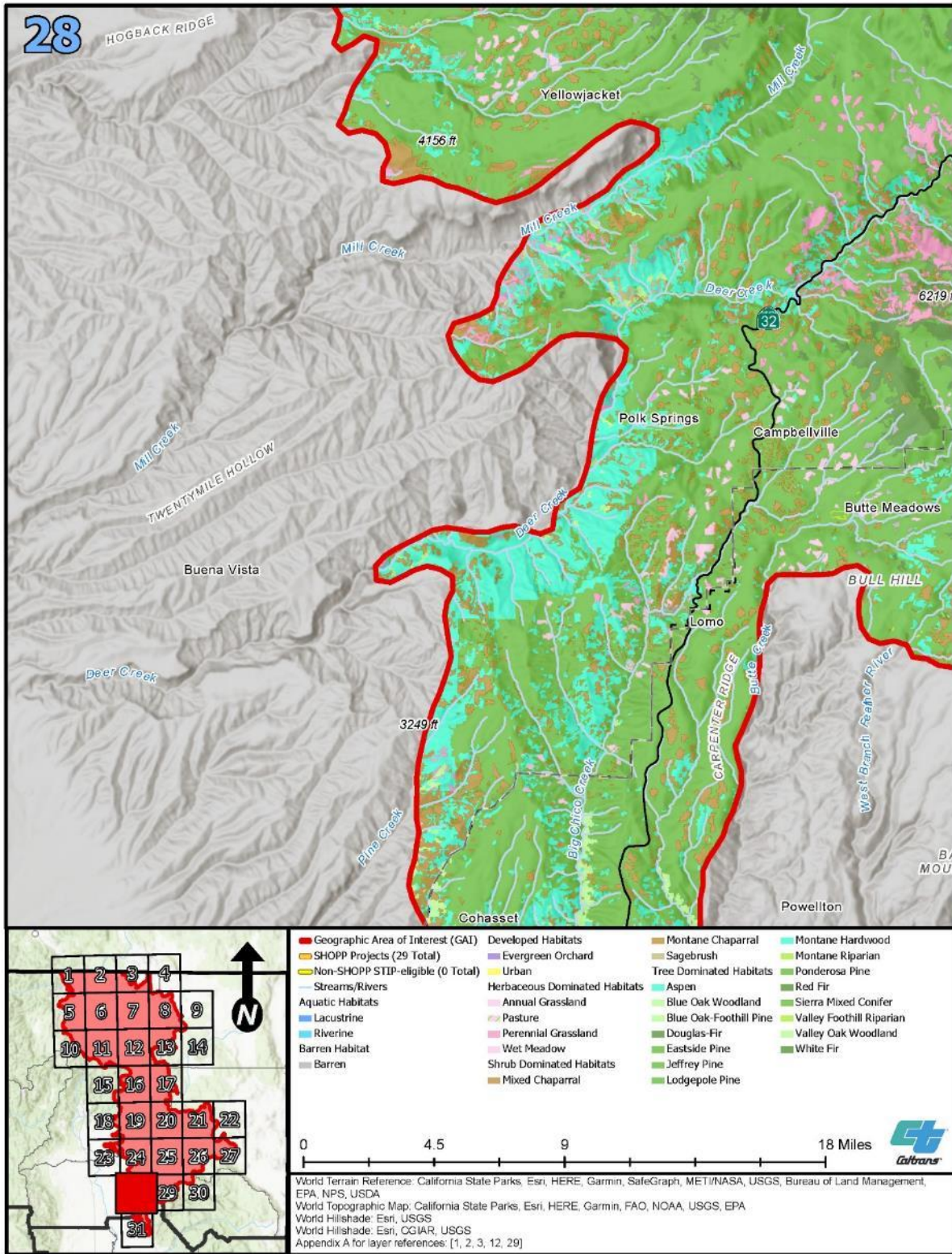


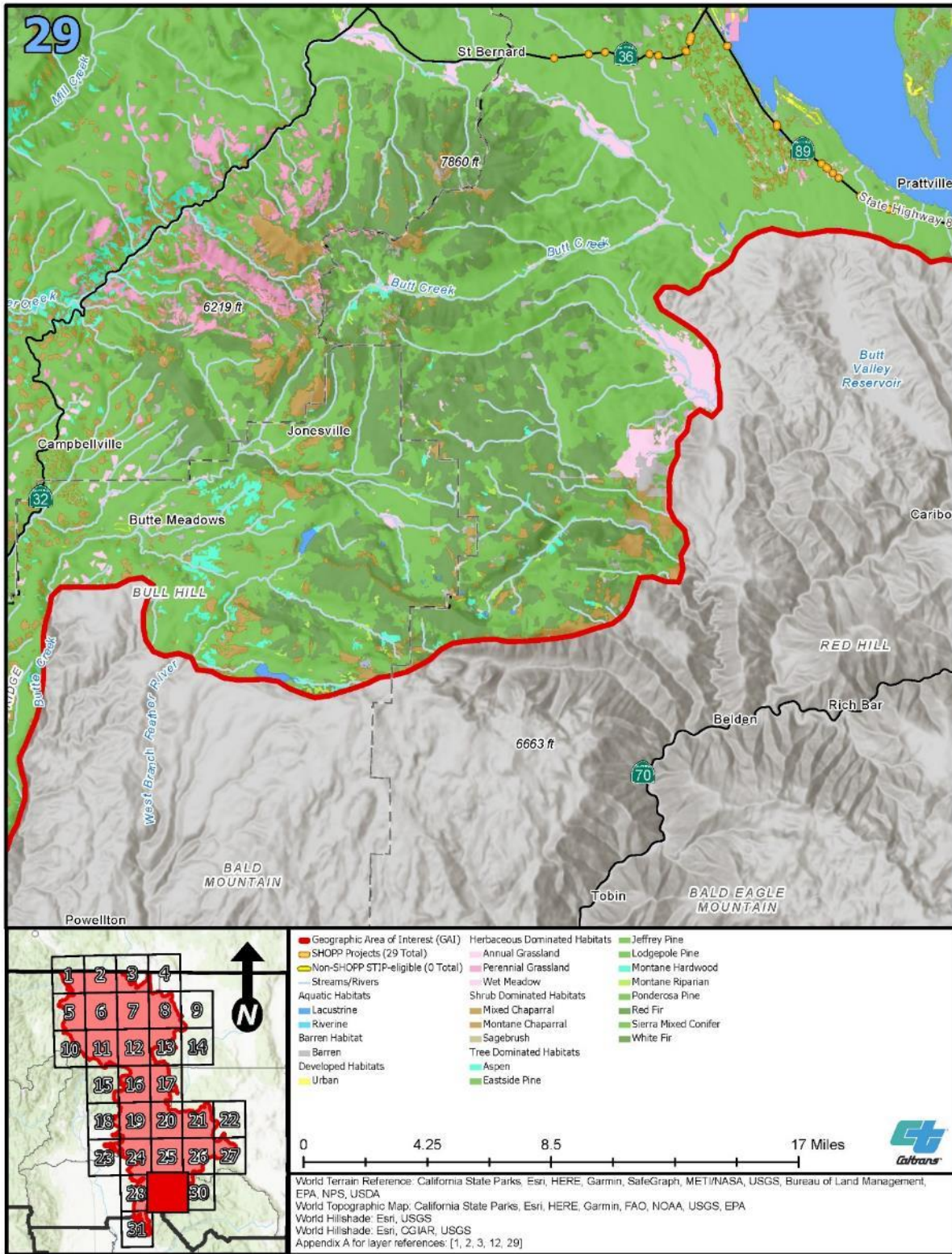


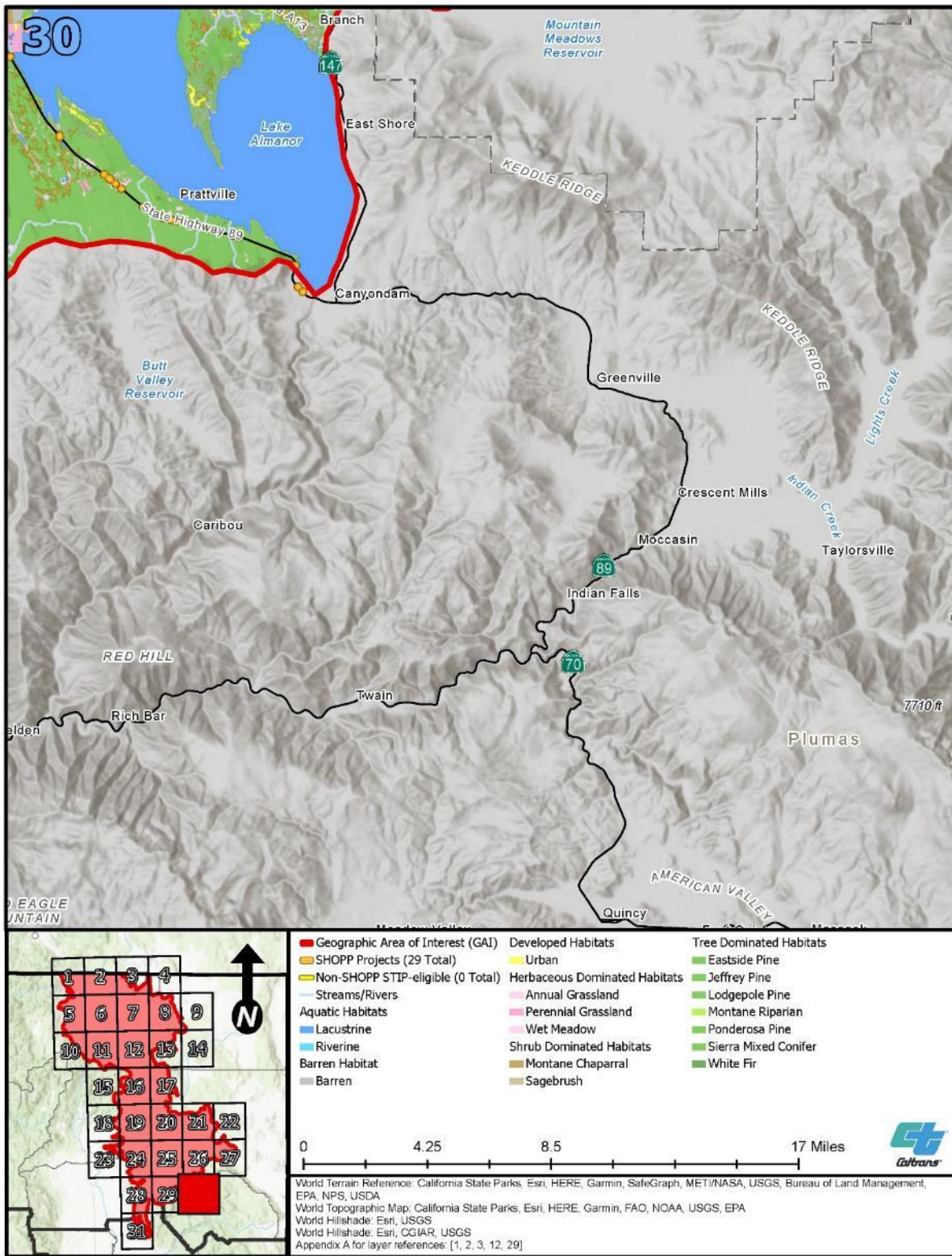


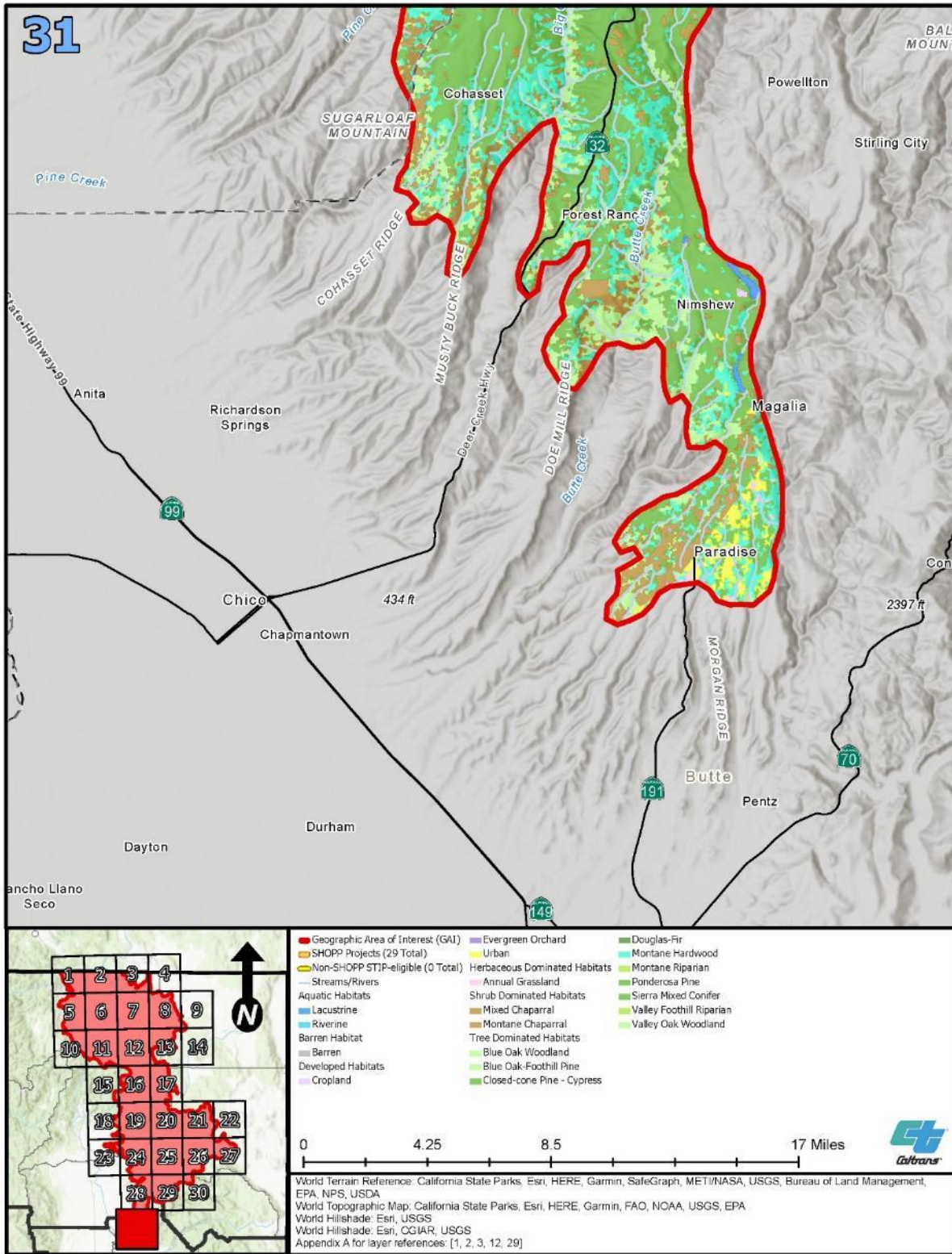












APPENDIX D: COMPLETE SAMNA SPECIES RESULTS

Complete terrestrial species SAMNA results for the GAI are provided in Table D-1. The table lists the species for which the SAMNA has enough and the right kind of information to forecast potential impacts from transportation projects conceptualized in long-range transportation plans (Caltrans 2021).

SAMNA results are only as accurate as their foundational data and have not been ground-truthed. Regarding these results:

- Species without CWHR system-supplied home ranges but identified by the California Natural Diversity Database as potentially present will be incorporated into the analysis of specific advance mitigation projects and future transportation projects.
- Subspecies may or may not have CWHR-supplied or other documented sources showing their home ranges. When a subspecies did not have home range information that could not be incorporated into the SAMNA model (that is, from a geographically based, available dataset), SAMNA results are provided at the species level, which may include both special-status and non-special-status species; therefore, the number of species with the potential to be affected may be overestimated.
- If impacts were estimated, additional information sources¹ were consulted to determine whether special-status subspecies are located in the GAI, and the SAMNA results are usable for this analysis. Footnotes have been added to the tables where data input limitations and modeling assumptions resulted in identification of potential impacts to species or subspecies that are not present in the GAI.
- When no impacts are estimated for a specific habitat, for any species, the habitat was excluded from this appendix.
- When no impacts for a species are estimated for any habitat, the species is included. Based on available information, it is potentially present in the GAI but not in the habitats forecast to be affected by transportation projects.

Total habitat impacts for each special-status species are indicated in the far-right column of each table. Total habitat impacts in the bottom row of each table indicate the total anticipated impacts for each habitat type. These totals are not additive across all special-status species because each habitat type may provide suitable habitat for more than one special-status species or subspecies.

Habitats referenced in Table D-1 are mapped in Appendix C. The terrestrial species of mitigation need for this GAI are foothill yellow-legged frog (*Rana boylei*) and fisher (*Pekania pennanti*). Several other special-status species share habitat with these species

¹ For plants, this includes the California Native Plant Society and California Consortium of Herbaria. For federally listed species, this includes recent 5-year reviews, FWS species profiles, recovery plans, and Environmental Conservation Online System range maps. For birds, this includes *California Species of Special Concern* (Shuford and Gardali 2008). For amphibians and reptiles, this includes California Herps online, HCPs/NCCPs, and NPS documents.

of mitigation need and may be affected by Caltrans' future transportation projects. Advance mitigation planning will consider the special-status species that co-occur in habitats that may also benefit from advance mitigation project planning and scoping to improve the conservation benefits of compensatory mitigation in the GAI. For example, advance mitigation established for foothill yellow-legged frog impacts may also provide mitigation to compensate for impacts on other species. The types of habitats for the species of mitigation need with the potential to be affected in the GAI, and the other special-status species that may share these habitats, were excerpted from Table D-1 and are provided in tables in Chapter 5 of the main text.

References

- Caltrans (California Department of Transportation). 2021. *Statewide Advance Mitigation Needs Assessment Report*. State Highway Operation and Protection Program. Ten-Year Project Book. First Quarter 2021/2022 Fiscal Year. May. Sacramento, California.
- Shuford, W. D., and T. Gardali, editors. 2008. *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conversation Concern in California*.

Table D-1. Complete SAMNA Results for the Southern Cascades Ecoregion Section in the GAI, by Land Cover (acres)

Common Name	Scientific Name	Status	Land Cover																								Total	
			Annual Grass	Aspen	Barren	Bitterbrush	Blue Oak-Foothill Pine	Eastside Pine	Jeffrey Pine	Juniper	Lacustrine	Lodgepole Pine	Low Sage	Mixed Chaparral	Montane Chaparral	Montane Hardwood	Montane Hardwood-Conifer	Montane Riparian	Pasture	Perennial Grassland	Ponderosa Pine	Sagebrush	Sierran Mixed Conifer	Urban	Wet Meadow	White Fir		
Plants	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	
Ashland thistle	<i>Cirsium ciliolatum</i>	SE	1.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.01
Boggs Lake hedge-hyssop	<i>Gratiola heterosepala</i>	FS, SE	1.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	1.54
Gentner's fritillary	<i>Fritillaria gentneri</i>	FE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.25	0.00	0.08	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.46
Geysers panicum	<i>Panicum acuminatum</i> var. <i>thermale</i>	SE	1.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.55
Greene's tuctoria	<i>Tuctoria greenei</i>	FE, SR	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
Indian Valley brodiaea	<i>Brodiaea rosea</i>	FS, SE	1.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.70
Siskiyou mariposa lily	<i>Calochortus persistens</i>	FS, SR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.68
Slender Orcutt grass	<i>Orcuttia tenuis</i>	FT, SE	1.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.40
Trinity buckwheat ^a	<i>Eriogonum alpinum</i>	FS, SE	0.00	0.00	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22
Amphibians	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	
California red-legged frog	<i>Rana draytonii</i>	FT, SSC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.00	0.07	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.57
Cascades frog	<i>Rana cascadae</i>	FS, SCE, SSC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	3.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.12	10.93	64.22	
Coastal tailed frog	<i>Ascaphus truei</i>	SSC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.27	0.00	0.00	2.51	0.00	0.00	0.00	0.00	0.00	2.82	
Ensatina ^b	<i>Ensatina eschscholtzii</i>	FS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.25	1.41	0.07	0.01	0.27	0.00	0.00	2.49	0.00	21.50	0.00	0.00	0.00	28.00	
Foothill yellow-legged frog ^c	<i>Rana boylei</i>	FS, FPT, ST, SSC	1.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.25	2.31	0.07	0.12	0.27	0.00	0.00	2.54	0.00	34.86	0.00	0.12	3.96	48.13	
Long-toed salamander ^d	<i>Ambystoma macrodactylum</i>	FE, SE, SFP, SSC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	3.69	0.00	0.00	0.00	0.07	0.04	0.27	0.00	0.00	0.85	0.00	49.68	0.00	0.00	10.86	65.73	
Northern leopard frog	<i>Lithobates pipiens</i>	SSC	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.75	0.00	0.00	0.07	0.96	
Oregon spotted frog	<i>Rana pretiosa</i>	FT, FS, SSC	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	

Common Name	Scientific Name	Status																								Total	
			Annual Grass	Aspen	Barren	Bitterbrush	Blue Oak-Foothill Pine	Eastside Pine	Jeffrey Pine	Juniper	Lacustrine	Lodgepole Pine	Low Sage	Mixed Chaparral	Montane Chaparral	Montane Hardwood	Montane Hardwood-Conifer	Montane Riparian	Pasture	Perennial Grassland	Ponderosa Pine	Sagebrush	Sierran Mixed Conifer	Urban	Wet Meadow		White Fir
Shasta salamander ^e	<i>Hydromantes shastae</i>	FS, ST	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.00	0.00	0.58
Sierra Nevada yellow-legged frog	<i>Rana sierrae</i>	FE, FS, ST	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.07
Invertebrates	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
Shasta crayfish	<i>Pacifastacus fortis</i>	FE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18
Reptiles	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below
Blainville's horned lizard	<i>Phrynosoma blainvillii</i>	None	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.06
California mountain kingsnake	<i>Lampropeltis zonata</i>	None	1.86	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	2.25	13.65	0.08	0.16	0.27	0.00	0.00	3.74	0.00	52.30	0.00	0.12	10.93	85.52
Common gartersnake ^f	<i>Thamnophis sirtalis</i>	FE	1.95	0.00	0.00	0.00	0.16	2.96	0.11	0.17	0.45	0.00	0.00	2.25	13.65	0.08	0.16	0.27	0.16	1.61	4.27	2.78	52.31	0.00	0.14	10.93	94.42
Common sagebrush lizard ^g	<i>Sceloporus graciosus</i>	FS	0.00	0.00	0.00	0.57	0.00	2.96	0.11	0.17	0.00	3.66	0.02	1.68	12.27	0.01	0.15	0.00	0.00	0.00	2.46	2.78	33.28	0.00	0.00	10.93	71.07
Gophersnake	<i>Pituophis catenifer</i>	None	1.95	0.00	0.00	0.57	0.16	2.96	0.11	0.17	0.00	0.00	0.02	2.25	13.65	0.08	0.16	0.27	0.16	1.61	4.27	2.78	52.31	6.36	0.14	10.93	100.95
Northern rubber boa	<i>Charina bottae</i>	None	0.00	0.02	0.00	0.00	0.00	0.00	0.11	0.00	0.00	3.69	0.00	0.00	13.65	0.08	0.16	0.27	0.00	0.00	4.27	0.00	52.31	0.00	0.14	10.93	85.63
Ring-necked snake ^h	<i>Diadophis punctatus</i>	FS	1.42	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	2.25	1.81	0.08	0.09	0.27	0.16	0.47	3.05	0.00	3.95	4.82	0.00	0.00	18.52
Striped racer	<i>Masticophis [Coluber] lateralis</i>	FT, ST	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.25	1.38	0.07	0.01	0.27	0.00	0.00	2.49	0.00	21.62	0.00	0.00	0.00	28.09
Western skink ⁱ	<i>Plestiodon skiltonianus</i>	FS	1.95	0.00	0.00	0.00	0.16	0.00	0.00	0.17	0.00	0.00	0.00	2.25	13.65	0.08	0.16	0.27	0.16	1.61	4.27	0.00	52.31	0.00	0.00	10.93	87.99
Birds	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	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	0.00	0.00	39.12	0.00	0.00	0.00	0.00	0.00	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.57
Bald eagle	<i>Haliaeetus leucocephalus</i>	FS, SE, SFP	1.95	0.02	48.17	0.57	0.16	2.96	0.11	0.17	0.45	3.69	0.02	2.25	13.65	0.08	0.16	0.27	0.00	1.61	4.27	2.78	52.31	0.00	0.14	10.93	146.75
Bank swallow	<i>Riparia riparia</i>	FS, ST	0.00	0.00	4.55	0.00	0.00	0.00	0.00	0.00	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	1.02	0.00	0.00	6.17
Bell's sparrow ^j	<i>Artemisiospiza belli</i>	FT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.07

Common Name	Scientific Name	Status																								Total	
			Annual Grass	Aspen	Barren	Bitterbrush	Blue Oak-Foothill Pine	Eastside Pine	Jeffrey Pine	Juniper	Lacustrine	Lodgepole Pine	Low Sage	Mixed Chaparral	Montane Chaparral	Montane Hardwood	Montane Hardwood-Conifer	Montane Riparian	Pasture	Perennial Grassland	Ponderosa Pine	Sagebrush	Sierran Mixed Conifer	Urban	Wet Meadow		White Fir
Bewick's wren ^k	<i>Thryomanes bewickii</i>	SSC	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.13	0.00	0.00	0.00	0.21	0.27	0.00	0.05	0.00	0.00	0.00	0.55	0.00	0.00	4.49	0.00	0.00	5.85
Black swift	<i>Cypseloides niger</i>	SSC	0.12	0.00	7.68	0.00	0.16	0.00	0.00	0.00	0.45	0.00	0.00	0.00	0.24	0.01	0.04	0.00	0.00	0.00	0.28	0.00	1.39	0.88	0.00	0.00	11.24
Black tern	<i>Chlidonias niger</i>	SSC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02
Burrowing owl	<i>Athene cunicularia</i>	FS, SSC	1.63	0.00	45.46	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.02	2.25	8.39	0.00	0.00	0.00	0.09	0.92	3.25	2.31	0.00	1.86	0.02	0.00	66.59
California quail ^l	<i>Callipepla californica</i>	SSC	1.86	0.02	0.00	0.57	0.16	2.96	0.00	0.17	0.00	0.00	0.02	2.25	12.82	0.08	0.09	0.27	0.00	1.12	4.22	2.78	32.65	6.36	0.14	0.00	68.55
California spotted owl	<i>Strix occidentalis occidentalis</i>	FS, SSC	0.00	0.02	0.00	0.00	0.00	0.21	0.11	0.00	0.00	3.69	0.00	0.00	0.00	0.07	0.12	0.27	0.00	0.00	2.69	0.00	50.13	0.00	0.00	10.93	68.21
California towhee ^m	<i>Melospiza [Pipilo] crissalis</i>	FT, SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.00	0.01	0.00	0.00	0.00	0.29	0.00	0.00	0.16	0.00	0.00	0.66
Common yellowthroat ⁿ	<i>Geothlypis trichas</i>	SSC	1.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.00	0.47	2.81	0.00	0.00	0.00	0.12	0.00	5.09
Golden eagle	<i>Aquila chrysaetos</i>	FS, SFP, SFS	1.95	0.00	48.17	0.57	0.16	2.96	0.11	0.17	0.00	3.69	0.02	2.25	13.65	0.08	0.16	0.27	0.16	1.61	4.27	2.78	52.31	6.36	0.14	10.93	152.81
Grasshopper sparrow	<i>Ammodramus savannarum</i>	SSC	1.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.05
Great blue heron	<i>Ardea herodias</i>	SFS	1.95	0.00	0.00	0.00	0.16	2.96	0.00	0.17	0.45	0.00	0.00	0.00	0.00	0.08	0.16	0.27	0.00	1.61	4.27	0.00	52.31	6.27	0.14	10.93	81.74
Great egret	<i>Ardea alba</i>	SFS	1.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.45	0.00	0.00	2.55
Great gray owl	<i>Strix nebulosa</i>	FS, SE, SFS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.48	0.00	0.00	10.93	56.44
Greater white-fronted goose ^o	<i>Anser albifrons</i>	SSC	1.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.38	0.00	0.00	0.00	0.00	0.14	0.00	3.83
Hutton's vireo ^p	<i>Vireo huttoni</i>	SSC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.16	0.00	0.00	0.00	0.00	0.00	0.00	2.29	0.00	0.67	0.03	0.00	0.00	5.15
Loggerhead shrike	<i>Lanius ludovicianus</i>	SSC	1.65	0.00	37.33	0.37	0.16	0.92	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.00	0.00	0.76	1.10	0.55	0.00	4.65	0.00	0.00	47.73
Long-eared owl	<i>Asio otus</i>	SSC	1.95	0.02	0.00	0.57	0.16	2.96	0.00	0.17	0.00	0.00	0.02	2.25	13.65	0.08	0.16	0.27	0.16	1.61	4.27	2.78	52.31	0.00	0.14	10.93	94.50
Marsh wren ^q	<i>Cistothorus palustris</i>	SSC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.12
Northern goshawk	<i>Accipiter gentilis</i>	FS, SSC, SFS	0.00	0.02	0.00	0.57	0.16	2.96	0.11	0.17	0.00	3.69	0.02	2.25	13.65	0.08	0.16	0.27	0.00	0.00	4.27	2.78	52.31	0.00	0.00	10.93	94.43
Northern harrier	<i>Circus [cyaneus] hudsonius</i>	SSC	1.21	0.00	7.78	0.37	0.00	1.75	0.11	0.17	0.00	0.00	0.02	0.00	0.03	0.00	0.00	0.00	0.00	0.18	0.73	2.41	0.02	3.03	0.02	0.00	17.86
Spotted owl	<i>Strix occidentalis</i>	FS, SSC	0.00	0.02	0.00	0.00	0.00	0.39	0.11	0.00	0.00	3.69	0.00	0.00	0.00	0.07	0.15	0.27	0.00	0.00	2.91	0.00	51.22	0.00	0.00	10.93	69.75

Common Name	Scientific Name	Status																								Total	
			Annual Grass	Aspen	Barren	Bitterbrush	Blue Oak-Foothill Pine	Eastside Pine	Jeffrey Pine	Juniper	Lacustrine	Lodgepole Pine	Low Sage	Mixed Chaparral	Montane Chaparral	Montane Hardwood	Montane Hardwood-Conifer	Montane Riparian	Pasture	Perennial Grassland	Ponderosa Pine	Sagebrush	Sierran Mixed Conifer	Urban	Wet Meadow		White Fir
Northern spotted owl	<i>Strix occidentalis caurina</i>	FT, ST, SFS	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.22	0.00	1.09	0.00	0.00	0.00	1.54	
Olive-sided flycatcher	<i>Contopus cooperi</i>	SSC	0.00	0.02	0.00	0.00	0.16	2.96	0.11	0.00	0.00	3.69	0.00	2.25	0.00	0.08	0.16	0.27	0.00	0.00	4.27	0.00	52.31	0.00	0.00	10.93	77.20
Osprey	<i>Pandion haliaetus</i>	SFS	1.95	0.00	48.17	0.57	0.16	2.96	0.11	0.17	0.45	3.69	0.00	2.25	13.65	0.08	0.16	0.27	0.00	1.61	4.27	2.78	52.31	0.00	0.14	10.93	146.72
Peregrine falcon	<i>Falco peregrinus</i>	SFP, SFS	1.95	0.00	48.17	0.57	0.16	2.96	0.11	0.17	0.45	3.69	0.02	2.25	13.65	0.08	0.16	0.27	0.00	1.61	4.27	2.78	52.31	6.36	0.14	10.93	153.10
Purple martin	<i>Progne subis</i>	SSC	1.22	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.45	0.00	0.00	0.00	0.00	0.08	0.16	0.27	0.00	1.61	4.04	0.00	33.97	5.68	0.14	10.93	58.71
Red-winged blackbird ^f	<i>Agelaius phoeniceus</i>	SSC	1.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.00	1.61	0.00	0.00	6.36	0.14	0.00	10.33	
Sandhill crane	<i>Antigone [Grus] canadensis</i>	FS, ST, SFP	1.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	2.45
Savannah sparrow ^s	<i>Passerculus sandwichensis</i>	SE	1.95	0.00	0.00	0.57	0.16	0.00	0.00	0.17	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.16	1.38	0.00	2.78	0.00	0.00	0.14	0.00	7.35
Short-eared owl	<i>Asio flammeus</i>	SSC	1.42	0.00	0.00	0.57	0.00	0.69	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.06	0.25	0.22	1.12	3.21	0.12	0.00	7.91
Song sparrow ^l	<i>Melospiza melodia</i>	SSC	1.95	0.02	0.00	0.00	0.16	2.96	0.11	0.00	0.45	0.00	0.00	2.25	0.00	0.08	0.16	0.27	0.00	1.61	4.27	0.00	52.31	6.36	0.14	10.93	84.03
Sooty grouse ^u	<i>Dendragapus fuliginosus</i>	SSC	1.22	0.02	0.00	0.00	0.00	2.79	0.11	0.00	0.00	3.69	0.00	0.00	0.00	0.08	0.16	0.27	0.00	1.61	4.27	2.69	52.31	0.00	0.00	10.93	80.16
Spotted towhee ^v	<i>Pipilo maculatus</i>	SSC	0.00	0.02	0.00	0.57	0.16	2.64	0.11	0.17	0.00	0.00	0.00	2.25	13.65	0.08	0.16	0.27	0.00	0.00	4.24	2.75	52.29	6.27	0.00	10.93	96.59
Swainson's hawk	<i>Buteo swainsoni</i>	FS, ST	0.13	0.00	4.32	0.30	0.00	0.42	0.00	0.17	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.07	0.00	0.03	0.16	0.00	1.54	0.00	0.00	7.21
Vaux's swift	<i>Chaetura vauxi</i>	SSC	0.00	0.00	0.00	0.00	0.16	0.00	0.11	0.00	0.45	0.00	0.00	2.25	13.65	0.08	0.16	0.27	0.00	1.61	4.27	0.00	52.31	6.36	0.14	10.93	92.76
Vesper sparrow ^w	<i>Poocetes gramineus</i>	SSC	1.21	0.00	0.00	0.37	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.06	0.00	0.22	0.00	0.00	0.00	0.00	2.20
Willow flycatcher	<i>Empidonax traillii</i>	SE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24
Yellow warbler	<i>Setophaga petechia</i>	SSC	0.00	0.02	0.00	0.00	0.16	2.96	0.11	0.00	0.00	3.69	0.00	2.25	13.65	0.08	0.16	0.27	0.00	0.00	4.27	0.00	52.31	6.36	0.00	10.93	97.22
Yellow-breasted chat	<i>Icteria virens</i>	None	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27
Yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>	SSC	1.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.88	0.00	0.00	0.00	0.00	0.14	0.00	3.25
Mammals	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	See below	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	1.95	0.02	48.17	0.57	0.16	2.96	0.11	0.17	0.00	3.69	0.02	2.25	13.65	0.08	0.16	0.27	0.16	1.61	4.27	2.78	52.31	0.00	0.14	10.93	146.46

Common Name	Scientific Name	Status																								Total	
			Annual Grass	Aspen	Barren	Bitterbrush	Blue Oak-Foothill Pine	Eastside Pine	Jeffrey Pine	Juniper	Lacustrine	Lodgepole Pine	Low Sage	Mixed Chaparral	Montane Chaparral	Montane Hardwood	Montane Hardwood-Conifer	Montane Riparian	Pasture	Perennial Grassland	Ponderosa Pine	Sagebrush	Sierran Mixed Conifer	Urban	Wet Meadow		White Fir
Black-tailed jackrabbit ^x	<i>Lepus californicus</i>	SSC	1.95	0.02	0.00	0.57	0.16	2.96	0.11	0.17	0.00	3.69	0.02	2.25	13.65	0.08	0.16	0.27	0.16	1.61	4.27	2.78	52.31	6.36	0.14	10.93	104.65
Broad-footed mole ^y	<i>Scapanus latimanus</i>	SSC	1.95	0.02	0.00	0.00	0.16	2.96	0.11	0.00	0.00	3.69	0.00	0.00	0.00	0.08	0.16	0.27	0.16	1.61	4.27	0.00	52.31	0.00	0.14	10.93	78.82
Brush rabbit ^z	<i>Sylvilagus bachmani</i>	FE, SE	0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.25	1.41	0.07	0.01	0.27	0.05	0.24	2.49	0.00	21.62	0.00	0.00	0.00	28.82
California kangaroo rat ^{aa}	<i>Dipodomys californicus</i>	SSC	1.35	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	2.25	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.84
California vole ^{bb}	<i>Microtus californicus</i>	FS	1.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.00	0.00	0.00	0.09	0.00	0.24	0.00	0.39	0.06	0.00	0.00	2.03
Deer mouse ^{cc}	<i>Peromyscus maniculatus</i>	SSC	1.95	0.02	48.17	0.60	0.16	2.96	0.11	0.17	0.00	3.69	0.02	2.25	13.65	0.08	0.16	0.27	0.16	1.61	4.27	2.78	52.31	6.36	0.14	10.93	152.82
Dusky-footed woodrat ^{dd}	<i>Neotoma fuscipes</i>	FE, SSC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.68	0.27	0.00	0.01	0.00	0.00	0.18	1.34	2.44	0.16	0.00	0.14	0.00	6.23
Fisher	<i>Pekania pennanti</i>	FS, SSC	0.00	0.02	0.00	0.00	0.00	2.78	0.11	0.00	0.00	3.69	0.00	0.00	0.00	0.00	0.16	0.27	0.00	0.00	4.27	0.00	52.31	0.00	0.00	10.93	74.53
Fringed myotis	<i>Myotis thysanodes</i>	FS	1.95	0.02	48.17	0.57	0.16	2.96	0.11	0.17	0.45	3.69	0.02	2.25	13.65	0.08	0.16	0.27	0.16	1.61	4.27	2.78	52.31	6.36	0.00	10.93	153.13
Great Basin pocket mouse	<i>Perognathus parvus</i>	None	1.11	0.00	0.00	0.37	0.00	2.42	0.00	0.17	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.66	2.51	1.68	0.00	0.00	0.00	9.20
Lodgepole chipmunk ^{ee}	<i>Neotamias [Tamias] speciosus</i>	FS	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	6.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.97	0.00	0.00	10.93	43.98
Long-eared myotis	<i>Myotis evotis</i>	FS	0.00	0.02	48.17	0.57	0.16	2.96	0.11	0.17	0.45	3.69	0.00	2.25	13.65	0.08	0.16	0.27	0.16	1.61	4.27	2.78	52.31	0.00	0.14	10.93	144.95
Marten	<i>Martes caurina</i>	FS	0.00	0.02	48.10	0.00	0.00	2.81	0.11	0.00	0.00	3.69	0.00	0.00	0.00	0.00	0.16	0.27	0.10	1.61	4.27	0.00	52.31	0.00	0.14	10.93	124.52
Mountain beaver ^{ff}	<i>Aplodontia rufa</i>	FE	0.00	0.02	0.00	0.00	0.00	1.75	0.11	0.00	0.00	3.69	0.00	0.00	0.00	0.08	0.08	0.27	0.00	1.56	3.12	0.00	19.38	0.00	0.14	7.71	37.90
Mountain lion ^{gg}	<i>Puma concolor</i>	SCT	1.95	0.02	0.00	0.57	0.16	2.96	0.11	0.17	0.00	3.69	0.02	2.25	13.65	0.08	0.16	0.27	0.16	1.61	4.27	2.78	52.31	0.00	0.14	10.93	98.29
Northern flying squirrel	<i>Glaucomys sabrinus</i>	None	0.00	0.02	0.00	0.00	0.16	2.81	0.11	0.00	0.00	3.69	0.00	0.00	0.00	0.08	0.16	0.27	0.00	0.00	4.04	0.00	51.70	0.00	0.00	10.93	73.95
Northern river otter ^{hh}	<i>Lontra canadensis</i>	SSC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.84
Pallid bat	<i>Antrozous pallidus</i>	FS, SSC	1.95	0.00	48.17	0.57	0.16	2.96	0.11	0.17	0.00	3.69	0.02	2.25	13.65	0.08	0.16	0.27	0.16	1.61	4.27	2.78	52.31	6.36	0.14	10.93	152.81
Red fox	<i>Vulpes vulpes</i>	None	0.71	0.00	43.81	0.00	0.00	0.84	0.06	0.00	0.00	3.69	0.00	0.00	12.06	0.00	0.01	0.00	0.00	1.15	1.17	0.00	48.40	0.00	0.14	10.93	122.97
Ringtail ⁱⁱ	<i>Bassariscus astutus</i>	SFP	1.86	0.02	48.10	0.57	0.16	2.57	0.11	0.00	0.00	0.00	0.02	2.25	13.65	0.08	0.16	0.27	0.14	1.61	4.24	2.66	52.29	0.00	0.14	10.93	141.82
Sierra Nevada red fox	<i>Vulpes vulpes necator</i>	FS, ST	0.71	0.00	43.81	0.00	0.00	0.84	0.06	0.00	0.00	3.69	0.00	0.00	12.06	0.00	0.01	0.00	0.00	1.15	1.17	0.00	48.40	0.00	0.14	10.93	122.97

Common Name	Scientific Name	Status																								Total	
			Annual Grass	Aspen	Barren	Bitterbrush	Blue Oak-Foothill Pine	Eastside Pine	Jeffrey Pine	Juniper	Lacustrine	Lodgepole Pine	Low Sage	Mixed Chaparral	Montane Chaparral	Montane Hardwood	Montane Hardwood-Conifer	Montane Riparian	Pasture	Perennial Grassland	Ponderosa Pine	Sagebrush	Sierran Mixed Conifer	Urban	Wet Meadow		White Fir
Small-footed myotis	<i>Myotis ciliolabrum</i>	FS	0.53	0.00	43.49	0.00	0.16	2.27	0.11	0.00	0.45	0.00	0.02	2.25	13.40	0.08	0.12	0.27	0.00	1.56	4.10	2.59	51.68	3.15	0.02	10.93	137.17
Snowshoe hare	<i>Lepus americanus</i>	SSC	0.00	0.02	0.00	0.00	0.00	0.00	0.11	0.00	0.00	3.69	0.00	0.00	0.00	0.00	0.00	0.27	0.00	0.00	0.00	0.00	51.29	0.00	0.00	10.93	66.29
Spotted bat	<i>Euderma maculatum</i>	FS, SSC	0.90	0.00	0.00	0.57	0.16	2.96	0.11	0.17	0.00	0.00	0.02	0.00	13.65	0.00	0.16	0.27	0.00	1.61	4.27	2.78	52.31	6.30	0.14	10.93	97.35
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	FS, SSC	1.95	0.02	48.17	0.57	0.16	2.96	0.11	0.17	0.00	3.69	0.02	2.25	13.65	0.08	0.16	0.27	0.16	1.61	4.27	2.78	52.31	6.36	0.14	10.93	152.82
Vagrant shrew ^j	<i>Sorex vagrans</i>	SSC	1.95	0.02	0.00	0.00	0.16	0.00	0.11	0.00	0.00	3.69	0.00	0.00	12.78	0.07	0.16	0.00	0.00	1.54	1.88	0.00	51.94	0.00	0.14	10.93	85.36
Western mastiff bat	<i>Eumops perotis</i>	FS, SSC	0.48	0.02	46.97	0.00	0.16	0.00	0.00	0.17	0.00	0.00	0.00	2.25	7.92	0.08	0.16	0.27	0.07	1.51	3.65	0.00	0.00	5.32	0.12	0.00	69.15
Western red bat	<i>Lasiurus blossevillii</i>	SSC	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.21	0.03	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.67	0.00	0.00	0.00	1.22
Western spotted skunk ^{kk}	<i>Spilogale gracilis</i>	SSC	1.95	0.02	0.00	0.57	0.16	2.96	0.11	0.17	0.00	3.69	0.02	2.25	13.65	0.08	0.16	0.27	0.16	1.61	4.27	2.78	52.31	6.36	0.14	10.93	104.65
White-tailed jackrabbit	<i>Lepus townsendii</i>	SSC	0.00	0.00	0.00	0.00	0.00	1.55	0.11	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	2.25	0.00	0.00	0.02	0.00	4.07
Wolverine	<i>Gulo gulo</i>	FS, ST, SFP	0.00	0.02	39.94	0.00	0.00	0.00	0.11	0.00	0.00	0.03	0.00	0.00	10.20	0.00	0.08	0.27	0.00	0.54	0.00	0.00	6.56	0.00	0.02	0.07	57.82
Yuma myotis	<i>Myotis yumanensis</i>	FS	1.95	0.02	0.00	0.57	0.16	2.96	0.11	0.17	0.45	3.69	0.02	2.25	13.65	0.08	0.16	0.27	0.16	1.61	4.27	2.78	52.31	6.36	0.14	10.93	105.10
Not applicable	Not applicable	Total	1.95	0.02	48.17	0.57	0.16	2.96	0.11	0.17	0.45	3.69	0.02	2.25	13.65	0.08	0.16	0.27	0.16	1.61	4.27	2.78	52.31	6.36	0.14	10.93	153.13

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

^a This plant species does not occur in the GAI.

^b Ensatina: Only the yellow-blotched (*Ensatina eschscholtzii croceater*) and large-blotched (*E. e. klauberi*) subspecies are special status, and they do not occur in the GAI (neither occurs further north than Kern County).

^c Foothill yellow-legged frog: There are six distinct population segments (DPS) of foothill yellow-legged frog, all of which are FS and SSC, but have differing federal and state listing statuses. Only two DPS, North Coast DPS and North Feather DPS, occur in the GAI. The North Coast DPS is not proposed listed under FESA or listed under CESA, but the North Feather DPS is FPT and ST.

^d Long-toed salamander: Only the Santa Cruz (*Ambystoma macrodactylum croceum*) and the southern (*A. m. sigillatum*) subspecies are special status, and they do not occur in the GAI. Only the Santa Cruz subspecies is federally and state endangered.

^e Shasta salamander: The species is only found in the area surrounding Shasta Lake and is defined by the southeast Klamath Mountains subregion.

^f Common garter snake: Only the south coast (*Thamnophis sirtalis* pop. 1) distinct population segment and San Francisco (*Thamnophis sirtalis tetrataenia*) subspecies are special status, and they do not occur in the GAI. Only the San Francisco subspecies is federally endangered, and it does not occur north of San Francisco County.

^g Common sagebrush lizard: Only the northern (*Sceloporus graciosus graciosus*) subspecies is special status, and it does not occur in the GAI (occurs in the Great Basin, including in Modoc and Lassen County east of the GAI).

^h Ringneck snake: Only the San Bernadino (*Diadophis punctatus modestus*), regal (*D. p. regalis*), and San Diego (*D. p. similis*) subspecies are special status, and they do not occur in the GAI (regal only occurs in the Great Basin, the other two do not occur north of Kern County).

ⁱ Western skink: Only the Coronado (*Plestiodon skiltonianus interparietalis*) is special status, and it does not occur in the GAI (does not occur further north than San Diego County).

^j Bell's sparrow: Only the San Clemente (*Artemisospiza belli belli*) subspecies is special status, and it does not occur in the GAI (endemic to Channel Islands).

^k Bewick's wren: Only the San Clemente (*Thryomanes bewickii leucophrys*) subspecies is special status, and it does not occur in the GAI (endemic to Channel Islands).

^l California quail: Only the Catalina (*Callipepla californica catalinensis*) subspecies is special status, and it does not occur in the GAI (endemic to Channel Islands).

^m California towhee: Only the Inyo (*Melospiza crissalis eremophilus*) subspecies is special status, and it does not occur in the GAI (only occurs in Inyo County).

ⁿ Common yellowthroat: Only the saltmarsh (*Geothlypis trichas sinuosa*) subspecies is special status, and it does not occur in the GAI (only occurs in counties which border San Francisco Bay).

^o Greater white-fronted goose: Only the Tule (*Anser albifrons elgasi*) subspecies is special status, and it does not occur in the GAI.

^p Hutton's vireo: Only the Catalina (*Vireo huttoni unitti*) subspecies is special status, and it does not occur in the GAI (endemic to Channel Islands).

^q Marsh wren: Only the Clark's (*Cistothorus palustris clarkae*) subspecies is special status, and it does not occur in the GAI (does not occur north of Los Angeles County).

^r Red-winged blackbird: Only the Kern (*Agelaius phoeniceus aciculatus*) subspecies is special status, and it does not occur in the GAI (restricted to Lake Isabella and Walker Basin).

^s Savannah sparrow: Only the Bryant's (*Passerculus sandwichensis alaudinus*), Belding's (*P. s. beldingi*), and large-billed (*P. s. rostratus*) subspecies are special status, and they do not occur in the GAI. Only the Belding's subspecies is state endangered, and it does not occur north of Santa Barbara County.

^t Song sparrow: Only the Modesto population and Channel Island (*Melospiza melodia graminea*), Suisun (*M. m. maxillaris*), Alameda (*M. m. pusilluila*), and San Pablo (*M. m. samuelis*) subspecies are special status, and they do not occur in the GAI.

^u Sooty grouse: Only the Mount Pinos (*Dendragapus fuliginosus howardi*) subspecies is special status, and it does not occur in the GAI.

^v Spotted towhee: Only the San Clemente (*Pipilo maculatus clementae*) subspecies is special status, and it does not occur in the GAI (endemic to Channel Islands).

^w Vesper sparrow: Only the Oregon (*Pooecetes gramineus affinis*) subspecies is special status, and it does not occur in the GAI.

^x Black-tailed jackrabbit: Only the San Diego (*Lepus californicus bennettii*) subspecies is special status, and it does not occur in the GAI (does not occur north of Santa Barbara County).

^y Broad-footed mole: Only the Alameda Island (*S. l. parvus*) subspecies is special status, and it does not occur in the GAI (endemic to Alameda Island).

^z Brush rabbit: Only the riparian (*Sylvilagus bachmani riparius*) subspecies is special status, and it does not occur in the GAI.

^{aa} California kangaroo rat: Only the Marysville (*Dipodomys californicus eximius*) subspecies is special status, and it does not occur in the GAI.

^{bb} California vole: Only the Mohave river (*Microtus californicus mohavensis*), San Pablo (*M. c. sanpabloensis*), Amargosa (*M. c. scirpensis*), south coast marsh (*M. c. stephensi*), and Owens Valley (*M. c. vallicola*) subspecies are special status, and they do not occur in the GAI.

^{cc} Deer mouse: Only the Anacapa (*Peromyscus maniculatus anacapae*) and San Clemente Island (*P. m. clementis*) subspecies are special status, and they do not occur in the GAI (endemic to Channel Islands).

^{dd} Dusky-footed woodrat: Only the San Francisco (*N. f. annectens*) and riparian (*N. f. riparia*) subspecies are special status, and they do not occur in the GAI (neither subspecies occur north of the San Francisco Bay Area). Only the riparian subspecies is federally endangered.

^{ee} Lodgepole Chipmunk: Only the Mount Pinos chipmunk (*Neotamias speciosus callipeplus*) subspecies is special status, and it does not occur in the GAI.

^{ff} Mountain Beaver: Only Sierra Nevada (*Aplodontia rufa californica*), Point Arena (*A. r. nigra*), and Point Reyes (*A. r. phaea*) subspecies are special status, and they do not occur in the GAI. Only the Point Arena subspecies is federally endangered.

^{gg} Mountain lion: Only the Yuma (*Puma concolor browni*) subspecies is currently special status and only the Southern California/Central Coast evolutionarily significant unit is a candidate for state listing, and they do not occur in the GAI.

^{hh} Northern river otter: Only the southwestern river otter (*Lontra canadensis sonora*) subspecies is special status, and it does not occur in the GAI (only occurs in the Lower Colorado River Valley).

ⁱⁱ Ringtail: Only the southern California ringtail, Palo Verde Mountains ringtail, and Yuma ringtail are special status, and they do not occur in the GAI.

^{jj} Vagrant shrew: Only the salt-marsh wandering shrew (*Sorex vagrans halicoestes*) subspecies is special status, and they do not occur in the GAI (endemic to Channel Islands).

^{kk} Spotted skunk: Only the Channel Islands spotted skunk (*Spilogale gracilis amphiala*) subspecies is special status, and it does not occur in the GAI.

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APPENDIX E: HYDROLOGIC UNITS

Sub-basin Descriptions

Seventeen sub-basins overlap the GAI. A description of each sub-basin is provided in the following sections. A crosswalk between the HUC-8 sub-basins and HUs is provided in Table E-1 at the end of this appendix.

Battle Creek Sub-basin

The Battle Creek sub-basin drains an area of 169,702 acres (265 square miles) and includes 142 rivers and streams that traverse 217 miles. As noted in Table E-1, the Battle Creek sub-basin includes portions of the Eastern Tehama, Pit River, and Whitmore HUs. Descriptions of these HUs are provided below and may include features that occur outside of the Battle Creek sub-basin or GAI.

The Eastern Tehama HU is associated with the Big Chico Creek, Deer Creek, Upper Mill Creek, and Antelope Creek watersheds. Upper Mill Creek includes Mill Creek and Rocky Gulch Creek tributaries. Antelope Creek includes the North Fork, Middle, and South Fork Antelope Creek tributaries (EPA n.d.). The headwaters of Big Chico Creek, 45 miles long, originate on the southwestern slope of Colby Mountain. Deer Creek originates near the summit of Butt Mountain and flows 60 miles southwest into the Sacramento River. Mill Creek originates near a thermal spring area in Lassen Volcanic National Park, flowing 60 miles into the Sacramento River. Antelope Creek originates in Lassen Volcanic National Park, flowing into the Sacramento River (NMFS 2014). The part of the Eastern Tehama HU that lies within the Battle Creek sub-basin includes portions of the Barkley Mountain and Lyonsville hydrologic areas.

The Pit River HU is associated with the Pit River watershed, including the Goose Lake, Upper Pit River, Fall River, Hat Creek, Burney Creek, and Lower Pit River subwatersheds. Headwaters originate in northeastern California near the Oregon and Nevada border and flow to the confluence of Lake Shasta (Sacramento River Watershed Program 2022a). The part of the Pit River HU that lies within the Battle Creek sub-basin includes a portion of the Burney hydrologic area.

The Whitmore HU is associated with the Inks Creek, Battle Creek, and Inwood watersheds. Battle Creek includes two tributaries: North Fork and South Fork Battle Creek. The Inwood watershed includes both Bear and Dry Creeks (EPA n.d.). Battle Creek flows for 50 miles from Lassen Volcanic National Park to the Sacramento River (Sacramento River Watershed Program 2021). The part of the Whitmore HU that lies within the Battle Creek sub-basin includes portions of the Cow Creek, Manton, and Shingletown hydrologic areas.

Big Chico Creek – Sacramento River Sub-basin

The Big Chico Creek – Sacramento River sub-basin drains an area of 159,709 acres (250 square miles) and includes 193 rivers and streams that traverse 265 miles. As noted in Table E-1, the Big Chico Creek – Sacramento River sub-basin includes portions of the

Butte Creek, Eastern Tehama, and Feather River HUs. A description of the Eastern Tehama HU is provided in the Battle Creek sub-basin section. The part of the Eastern Tehama HU that lies within the Big Chico Creek – Sacramento River sub-basin includes portions of the Barkley Mountain, Cohasset, and Deer Creek hydrologic areas. Descriptions of the other HUs are provided below and may include features that occur outside of the Big Chico Creek – Sacramento River sub-basin or GAI.

The Butte Creek HU is associated with the Butte Creek watershed. The creek originates in the Butte Meadows/Jonesville Basin region, where several smaller tributary streams converge. Water flows through a steep canyon and valley near Chico. Lower Butte Creek transitions into complex water supply systems, eventually draining into the Sacramento River (Sacramento River Watershed Program 2021). The part of the Butte Creek HU that lies within the Big Chico Creek – Sacramento River sub-basin includes portions of the Upper Butte Creek and Upper Little Chico 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 2021). The part of the Feather River HU that lies within the Big Chico Creek – Sacramento River sub-basin includes a portion of the North Fork Feather hydrologic area.

Butte Sub-basin

The Butte sub-basin drains an area of 381,341 acres (596 square miles) and includes 181 rivers and streams that traverse 222 miles. As noted in Table E-1, the Butte sub-basin includes portions of the Klamath River, McCloud River, and Pit River HUs. A description of the Pit River HU is provided in the Battle Creek sub-basin section. The part of the Pit River HU that lies within the Butte sub-basin includes a portion of the McArthur hydrologic area.

The Klamath River HU is associated with the Klamath River watershed. The HU is also divided into seven hydrologic areas, including the Lower Klamath River, Salmon River, Middle Klamath River, Scott River, Shasta Valley, Butte Valley, and Lost River (North Coast RWQCB 2018). The part of the Klamath River HU that lies within the Butte sub-basin includes portions of the Butte Valley, Lost River, Middle Klamath River, and Shasta Valley hydrologic areas.

The McCloud River HU is associated with the McCloud River watershed. Headwaters originate within Colby Meadows, approximately 85 miles northeast of Redding. The river flows into Lake McCloud before traveling 12 miles into Lake Shasta (Sacramento River Watershed Program 2022b). The part of the McCloud River HU that lies within the Butte sub-basin includes a portion of the Wyntoon hydrologic area.

Butte Creek Sub-basin

The Butte Creek sub-basin drains an area of 71,038 acres (111 square miles) and includes 100 rivers and streams that traverse 146 miles. As noted in Table E-1, the Butte Creek sub-basin includes portions of the Butte Creek, Eastern Tehama, and Feather River HUs. Descriptions of the Butte Creek and Feather River HUs are provided in the Big Chico Creek – Sacramento River sub-basin section. The part of the Butte Creek HU that lies within the Butte Creek sub-basin includes portions of the Upper Butte Creek, Upper Dry Creek, and Upper Little Chico hydrologic areas. The part of the Feather River HU that lies within the Butte Creek sub-basin includes portions of the Bloomer Hill, North Fork Feather, and West Branch North Fork hydrologic areas. A description of the Eastern Tehama HU is provided in the Battle Creek sub-basin section. The part of the Eastern Tehama HU that lies within the Butte Creek sub-basin includes portions of the Cohasset and Deer Creek hydrologic areas.

Clear Creek – Sacramento River Sub-basin

The Clear Creek – Sacramento River sub-basin drains an area of 46,655 acres (73 square miles) and includes 47 rivers and streams that traverse 72 miles. As noted in Table E-1, the Clear Creek – Sacramento River sub-basin includes a portion of the Whitmore HU. A description of the Whitmore HU is provided in the Battle Creek sub-basin section. The part of the Whitmore HU that lies within the Clear Creek – Sacramento River sub-basin includes portions of the Cow Creek, Manton, and Shingletown hydrologic areas.

Cow Creek Sub-basin

The Cow Creek sub-basin drains an area of 109,447 acres (171 square miles) and includes 97 rivers and streams that traverse 174 miles. As noted in Table E-1, the Cow Creek sub-basin includes portions of the Pit River and Whitmore HUs. Descriptions of the Pit River and Whitmore HUs are provided in the Battle Creek sub-basin section. The part of the Pit River HU that lies within the Cow Creek sub-basin includes portions of the Burney and Lower Pit River hydrologic areas. The part of the Whitmore HU that lies within the Cow Creek sub-basin includes portions of the Cow Creek, Manton, and Shingletown hydrologic areas.

Honey-Eagle Lakes Sub-basin

The Honey-Eagle Lakes sub-basin drains an area of 304,112 acres (475 square miles) and includes 194 rivers and streams that traverse 276 miles. As noted in Table E-1, the Honey-Eagle Lakes sub-basin includes portions of the Feather River, Pit River, and Susanville HUs. A description of the Feather River HU is provided in the Big Chico Creek – Sacramento River sub-basin section. The part of the Feather River HU that lies within the Honey-Eagle Lakes sub-basin includes a portion of the North Fork Feather hydrologic area. A description of the Pit River HU is provided in the Battle Creek sub-basin section. The part of the Pit River HU that lies within the Honey-Eagle Lakes sub-basin includes portions of the Burney and McArthur hydrologic areas.

The Susanville HU is associated with the tributaries that feed Eagle Lake and Honey Lake. The tributaries of Eagle Lake include Cleghorn, Papoose, Merrill, and Pine Creeks.

The tributaries of Honey Lake include the Susan River and Willow, Long Valley, and Gold Run Creeks (Lahontan RWQCB 2021). The part of the Susanville HU that lies within the Honey-Eagle Lakes sub-basin includes portions of the Eagle Drainage, Snow Storm Mountain, and Susan River hydrologic areas.

Lost Sub-basin

The Lost sub-basin drains an area of 337,133 acres (527 square miles) and includes 79 rivers and streams that traverse 110 miles. As noted in Table E-1, the Lost sub-basin includes portions of the Klamath River and Pit River HUs. A description of the Klamath River HU is provided in the Butte sub-basin section. The part of the Klamath River HU that lies within the Lost sub-basin includes portions of the Butte Valley and Lost River hydrologic areas. A description of the Pit River HU is provided in the Battle Creek sub-basin section. The part of the Pit River HU that lies within the Lost sub-basin includes portions of the Big Valley and McArthur hydrologic areas.

Lower Pit Sub-basin

The Lower Pit sub-basin drains an area of 1,224,952 acres (1,194 square miles) and includes 611 rivers and streams that traverse 991 miles. As noted in Table E-1, the Lower Pit sub-basin includes portions of the Eastern Tehama, Feather River, Klamath River, McCloud River, Pit River, Susanville, and Whitmore HUs. Descriptions of the Eastern Tehama and Whitmore HUs are provided in the Battle Creek sub-basin section. The part of the Eastern Tehama HU that lies within the Lower Pit sub-basin includes a portion of the Barkley Mountain hydrologic area. The part of the Whitmore HU that lies within the Lower Pit sub-basin includes portions of the Cow Creek and Manton hydrologic areas. A description of the Feather River HU is provided in the Big Chico Creek – Sacramento River sub-basin section. The part of the Feather River HU that lies within the Lower Pit sub-basin includes a portion of the North Fork Feather hydrologic area.

Descriptions of the Klamath River and McCloud River HUs are provided in the Butte sub-basin section. The part of the Klamath River HU that lies within the Lower Pit sub-basin includes portions of the Butte Valley and Lost River hydrologic areas. The part of the McCloud River HU that lies within the Lower Pit sub-basin includes a portion of the Wyntoon hydrologic area.

A description of the Pit River HU is provided in the Battle Creek sub-basin section. The part of the Pit River HU that lies within the Lower Pit sub-basin includes portions of the Big Valley, Burney, Lower Pit River, and McArthur hydrologic areas. A description of the Susanville HU is provided in the Honey-Eagle Lakes sub-basin section. The part of the Susanville HU that lies within the Lower Pit sub-basin includes a portion of the Eagle Drainage hydrologic area.

McCloud Sub-basin

The McCloud sub-basin drains an area of 253,792 acres (397 square miles) and includes 197 rivers and streams that traverse 351 miles. As noted in Table E-1, the McCloud sub-basin includes portions of the Klamath River, McCloud River, Pit River, and Upper

Sacramento HUs. Descriptions of the Klamath River and McCloud River HUs are provided in the Butte sub-basin section. The part of the Klamath River HU that lies within the McCloud sub-basin includes portions of the Butte Valley and Shasta Valley hydrologic areas. The part of the McCloud River HU that lies within the McCloud sub-basin includes a portion of the Wyntoon hydrologic area. A description of the Pit River HU is provided in the Battle Creek sub-basin section. The part of the Pit River HU that lies within the McCloud sub-basin includes portions of the Lower Pit River and McArthur hydrologic areas.

The Upper Sacramento HU is associated with the Upper Sacramento River watershed. The headwaters of the Upper Sacramento River begin from the top of Mount Shasta to the north and the Klamath Mountains to the west. The waters flow approximately 40 miles and empty into Lake Shasta above Shasta Dam (Water Education Foundation n.d.). The part of the Upper Sacramento HU that lies within the McCloud sub-basin includes a portion of the Mount Shasta hydrologic area.

North Fork Feather Sub-basin

The North Fork Feather sub-basin drains an area of 336,827 acres (526 square miles) and includes 260 rivers and streams that traverse 388 miles. As noted in Table E-1, the North Fork Feather sub-basin includes portions of the Butte Creek, Eastern Tehama, Feather River, Pit River, and Susanville HUs. Descriptions of the Butte Creek and Feather River HUs are provided in the Big Chico Creek – Sacramento River sub-basin section. The part of the Butte Creek HU that lies within the North Fork Feather sub-basin includes portions of the Upper Dry Creek and Upper Little Chico hydrologic areas. The part of the Feather River HU that lies within the North Fork Feather sub-basin includes portions of the Bloomer Hill, North Fork Feather, and West Branch North Fork hydrologic areas.

Descriptions of the Eastern Tehama and Pit River HUs are provided in the Battle Creek sub-basin section. The part of the Eastern Tehama HU that lies within the North Fork Feather sub-basin includes portions of the Barkley Mountain and Deer Creek hydrologic areas. The part of the Pit River HU that lies within the North Fork Feather sub-basin includes a portion of the Burney hydrologic area.

A description of the Susanville HU is provided in the Honey-Eagle Lakes sub-basin section. The part of the Susanville HU that lies within the North Fork Feather sub-basin includes portions of the Eagle Drainage and Susan River hydrologic areas.

Paynes Creek – Sacramento River Sub-basin

The Paynes Creek – Sacramento River sub-basin drains an area of 8,050 acres (13 square miles) and includes 7 rivers and streams that traverse 16 miles. As noted in Table E-1, the Paynes Creek – Sacramento River sub-basin includes portions of the Eastern Tehama and Whitmore HUs. Descriptions of the Eastern Tehama and Whitmore HUs are provided in the Battle Creek sub-basin section. The part of the Eastern Tehama HU that lies within the Paynes Creek – Sacramento River sub-basin includes a portion of the Lyonsville hydrologic area. The part of the Whitmore HU that lies within the Paynes Creek – Sacramento River sub-basin includes a portion of the Manton hydrologic area.

Sacramento Headwaters Sub-basin

The Sacramento Headwaters sub-basin drains an area of 39,549 acres (62 square miles) and includes 15 rivers and streams that traverse 24 miles. As noted in Table E-1, the Sacramento Headwaters sub-basin includes portions of the Klamath River, McCloud River, and Upper Sacramento HUs. Descriptions of the Klamath River and McCloud River HUs are provided in the Butte sub-basin section. The part of the Klamath River HU that lies within the Sacramento Headwaters sub-basin includes a portion of the Shasta Valley hydrologic area. The part of the McCloud River HU that lies within the Sacramento Headwaters sub-basin includes a portion of the Wyntoon hydrologic area. A description of the Upper Sacramento HU is provided in the McCloud sub-basin section. The part of the Upper Sacramento HU that lies within the Sacramento Headwaters sub-basin includes a portion of the Mount Shasta hydrologic area.

Shasta Sub-basin

The Shasta sub-basin drains an area of 359,141 acres (561 square miles) and includes 221 rivers and streams that traverse 338 miles. As noted in Table E-1, the Shasta sub-basin includes portions of the Klamath River, McCloud River, and Upper Sacramento HUs. Descriptions of the Klamath River and McCloud River HUs are provided in the Butte sub-basin section. The part of the Klamath River HU that lies within the Shasta sub-basin includes portions of the Butte Valley, Middle Klamath River, and Shasta Valley hydrologic areas. The part of the McCloud River HU that lies within the Shasta sub-basin includes a portion of the Wyntoon hydrologic area. A description of the Upper Sacramento HU is provided in the McCloud sub-basin section. The part of the Upper Sacramento HU that lies within the Shasta sub-basin includes a portion of the Mount Shasta hydrologic area.

Thomes Creek – Sacramento River Sub-basin

The Thomes Creek – Sacramento River sub-basin drains an area of 91,059 acres (142 square miles) and includes 116 rivers and streams that traverse 147 miles. As noted in Table E-1, the Thomes Creek – Sacramento River sub-basin includes portions of the Eastern Tehama, Feather River, and Whitmore HUs. Descriptions of the Eastern Tehama and Whitmore HUs are provided in the Battle Creek sub-basin section. The part of the Eastern Tehama HU that lies within the Thomes Creek – Sacramento River sub-basin includes portions of the Barkley Mountain, Deer Creek, and Lyonsville hydrologic areas. The part of the Whitmore HU that lies within the Thomes Creek – Sacramento River sub-basin includes a portion of the Manton hydrologic area. A description of the Feather River HU is provided in the Big Chico Creek – Sacramento River sub-basin section. The part of the Feather River HU that lies within the Thomes Creek – Sacramento River sub-basin includes a portion of the North Fork Feather hydrologic area.

Upper Klamath Sub-basin

The Upper Klamath sub-basin drains an area of 190,956 acres (298 square miles) and includes 219 rivers and streams that traverse 267 miles. As noted in Table E-1, the Upper Klamath sub-basin includes a portion of the Klamath River HU. A description of the Klamath River HU is provided in the Butte sub-basin section. The part of the Klamath

River HU that lies within the Upper Klamath sub-basin includes portions of the Butte Valley, Middle Klamath River, and Shasta Valley hydrologic areas.

Upper Pit Sub-basin

The Upper Pit sub-basin drains an area of 123,526 acres (193 square miles) and includes 18 rivers and streams that traverse 28 miles. As noted in Table E-1, the Upper Pit sub-basin includes portions of the Klamath River and Pit River HUs. A description of the Klamath River HU is provided in the Butte sub-basin section. The part of the Klamath River HU that lies within the Upper Pit sub-basin includes a portion of the Lost River hydrologic area. A description of the Pit River HU is provided in the Battle Creek sub-basin section. The part of the Pit River HU that lies within the Upper Pit sub-basin includes portions of the Big Valley and McArthur hydrologic areas.

Crosswalk: HUC-8s to HUs

The SAMNA Reporting Tool expresses the landscape in terms of USGS HUC-8 sub-basins (Caltrans 2021; USGS 2014). However, SWRCB considers beneficial uses in terms of HUs (California Department of Water Resources 2016). Table E-1 provides a crosswalk between the HUC-8 and HU classification systems for the GAI.

Table E-1. Crosswalk Table of HUC-8 Sub-basins with HUs in the GAI

HUC-8 #	HUC-8 Name	HUC-8 Acreage ^a	HU #	HU Name	HU Acreage ^a
18020153	Battle Creek	236,367	509	Eastern Tehama	373,529
18020153	Battle Creek	236,367	510	Eastern Tehama	488,596
18020153	Battle Creek	236,367	526	Pit River	1,573,315
18020153	Battle Creek	236,367	507	Whitmore	528,985
18020157	Big Chico Creek – Sacramento River	609,427	521	Butte Creek	158,419
18020157	Big Chico Creek – Sacramento River	609,427	509	Eastern Tehama	373,529
18020157	Big Chico Creek – Sacramento River	609,427	518	Feather River	1,975,547
18010205	Butte	388,548	105	Klamath River	2,528,958
18010205	Butte	388,548	106	Klamath River	3,877,046
18010205	Butte	388,548	505	McCloud River	437,921
18010205	Butte	388,548	526	Pit River	1,573,315
18020158	Butte Creek	524,576	521	Butte Creek	158,419
18020158	Butte Creek	524,576	509	Eastern Tehama	373,529
18020158	Butte Creek	524,576	518	Feather River	1,975,547
18020158	Butte Creek	524,576	519	Feather River	1,254,833

HUC-8 #	HUC-8 Name	HUC-8 Acreage ^a	HU #	HU Name	HU Acreage ^a
18020154	Clear Creek – Sacramento River	438,804	507	Whitmore	528,985
18020151	Cow Creek	273,588	526	Pit River	1,573,315
18020151	Cow Creek	273,588	507	Whitmore	528,985
18080003	Honey-Eagle Lakes	1,794,233	518	Feather River	1,975,547
18080003	Honey-Eagle Lakes	1,794,233	526	Pit River	1,573,315
18080003	Honey-Eagle Lakes	1,794,233	637	Susanville	1,421,097
18010204	Lost	1,935,581	106	Klamath River	3,877,046
18010204	Lost	1,935,581	526	Pit River	1,573,315
18010204	Lost	1,935,581	527	Pit River	1,945,832
18020003	Lower Pit	1,688,221	509	Eastern Tehama	373,529
18020003	Lower Pit	1,688,221	518	Feather River	1,975,547
18020003	Lower Pit	1,688,221	106	Klamath River	3,877,046
18020003	Lower Pit	1,688,221	505	McCloud River	437,921
18020003	Lower Pit	1,688,221	526	Pit River	1,573,315
18020003	Lower Pit	1,688,221	527	Pit River	1,945,832
18020003	Lower Pit	1,688,221	637	Susanville	1,421,097
18020003	Lower Pit	1,688,221	507	Whitmore	528,985
18020004	McCloud	435,728	106	Klamath River	3,877,046
18020004	McCloud	435,728	505	McCloud River	437,921
18020004	McCloud	435,728	526	Pit River	1,573,315
18020004	McCloud	435,728	525	Upper Sacramento	430,842
18020121	North Fork Feather	775,323	521	Butte Creek	158,419
18020121	North Fork Feather	775,323	509	Eastern Tehama	373,529
18020121	North Fork Feather	775,323	518	Feather River	1,975,547
18020121	North Fork Feather	775,323	519	Feather River	1,254,833
18020121	North Fork Feather	775,323	526	Pit River	1,573,315
18020121	North Fork Feather	775,323	637	Susanville	1,421,097
18020155	Paynes Creek – Sacramento River	271,113	510	Eastern Tehama	488,596
18020155	Paynes Creek – Sacramento River	271,113	507	Whitmore	528,985

HUC-8 #	HUC-8 Name	HUC-8 Acreage ^a	HU #	HU Name	HU Acreage ^a
18020005	Sacramento Headwaters	378,904	106	Klamath River	3,877,046
18020005	Sacramento Headwaters	378,904	505	McCloud River	437,921
18020005	Sacramento Headwaters	378,904	525	Upper Sacramento	430,842
18010207	Shasta	508,177	105	Klamath River	2,528,958
18010207	Shasta	508,177	106	Klamath River	3,877,046
18010207	Shasta	508,177	505	McCloud River	437,921
18010207	Shasta	508,177	525	Upper Sacramento	430,842
18020156	Thomes Creek – Sacramento River	645,690	509	Eastern Tehama	373,529
18020156	Thomes Creek – Sacramento River	645,690	510	Eastern Tehama	488,596
18020156	Thomes Creek – Sacramento River	645,690	518	Feather River	1,975,547
18020156	Thomes Creek – Sacramento River	645,690	507	Whitmore	528,985
18010206	Upper Klamath	910,996	105	Klamath River	2,528,958
18010206	Upper Klamath	910,996	106	Klamath River	3,877,046
18020002	Upper Pit	1,715,964	106	Klamath River	3,877,046
18020002	Upper Pit	1,715,964	526	Pit River	1,573,315
18020002	Upper Pit	1,715,964	527	Pit River	1,945,832

Source: Caltrans (2021)

^a Numbers were rounded to the nearest whole number.

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APPENDIX F: AQUATIC RESOURCE LOCATIONS

Aquatic resource locations are shown by HUC-8 sub-basin and HU in the following maps, which also include major landmarks for perspective. These locations were excerpted from the SAMNA Reporting Tool's water and wetland layers (Caltrans 2021a, 2021b). Hydrologic units are described in Appendix E, which includes a crosswalk table of HUC-8 subbasins and HUs. These 31 maps correspond with the land cover maps in Appendix C.

Few sources of information are known to be available that can be used to describe existing and relevant wetland, riparian, and littoral resources. The FWS National Wetlands Inventory (2017) and the San Francisco Estuary Institute California Aquatic Resource Inventory (2018) are the only known datasets that include the distribution, extent, and types of aquatic resources in the GAI, and the SAMNA Reporting Tool relies upon them (Caltrans 2021a, 2021b).

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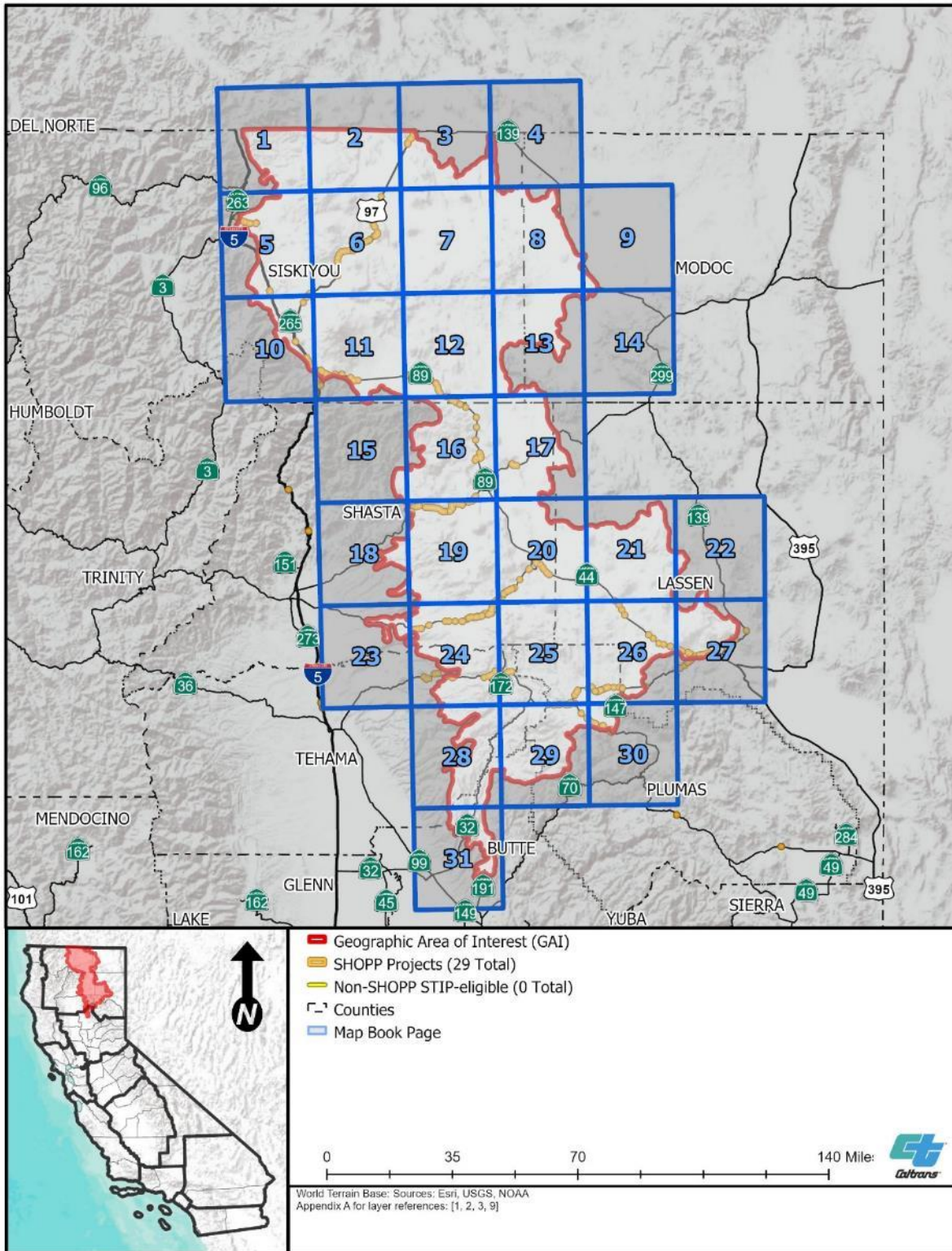
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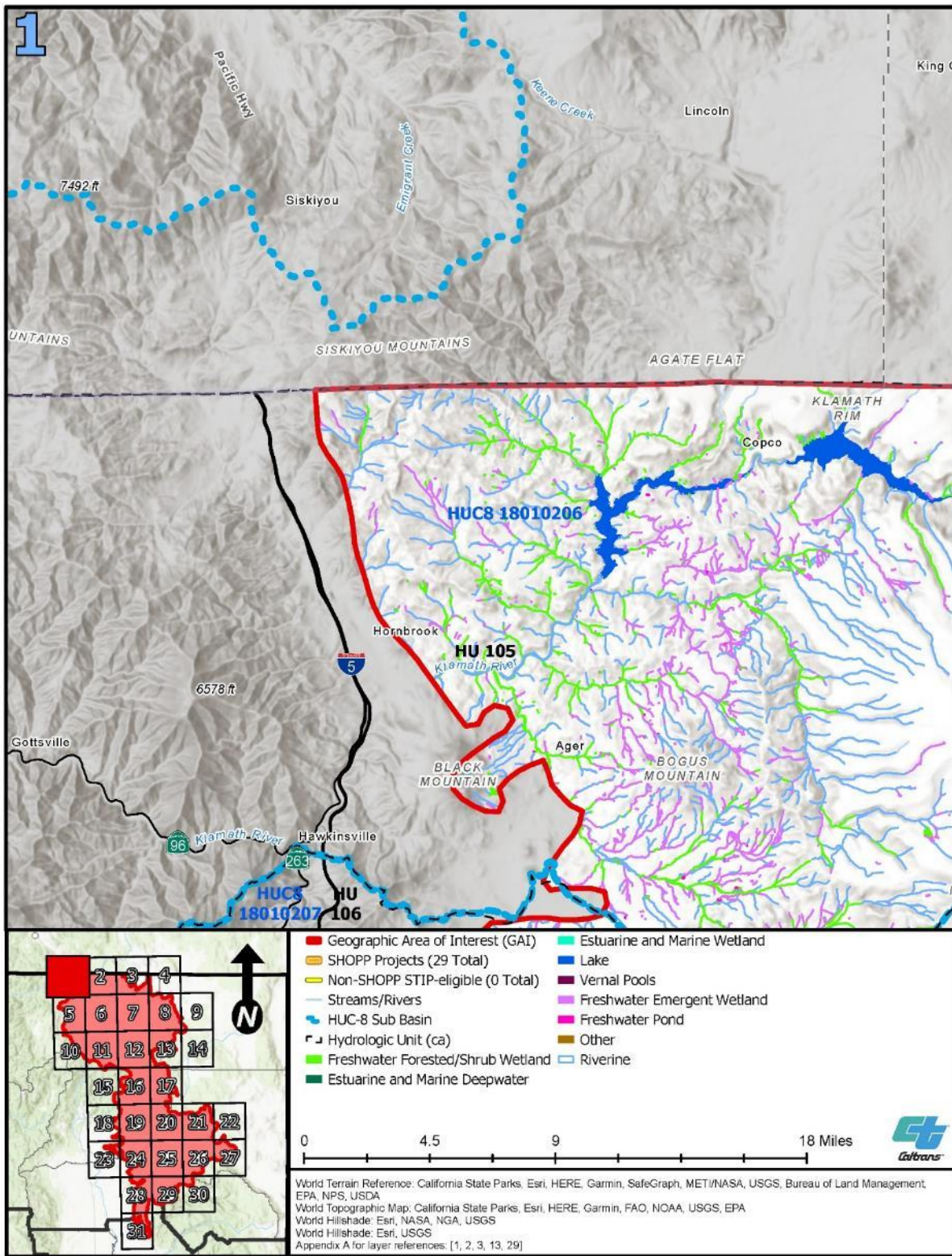
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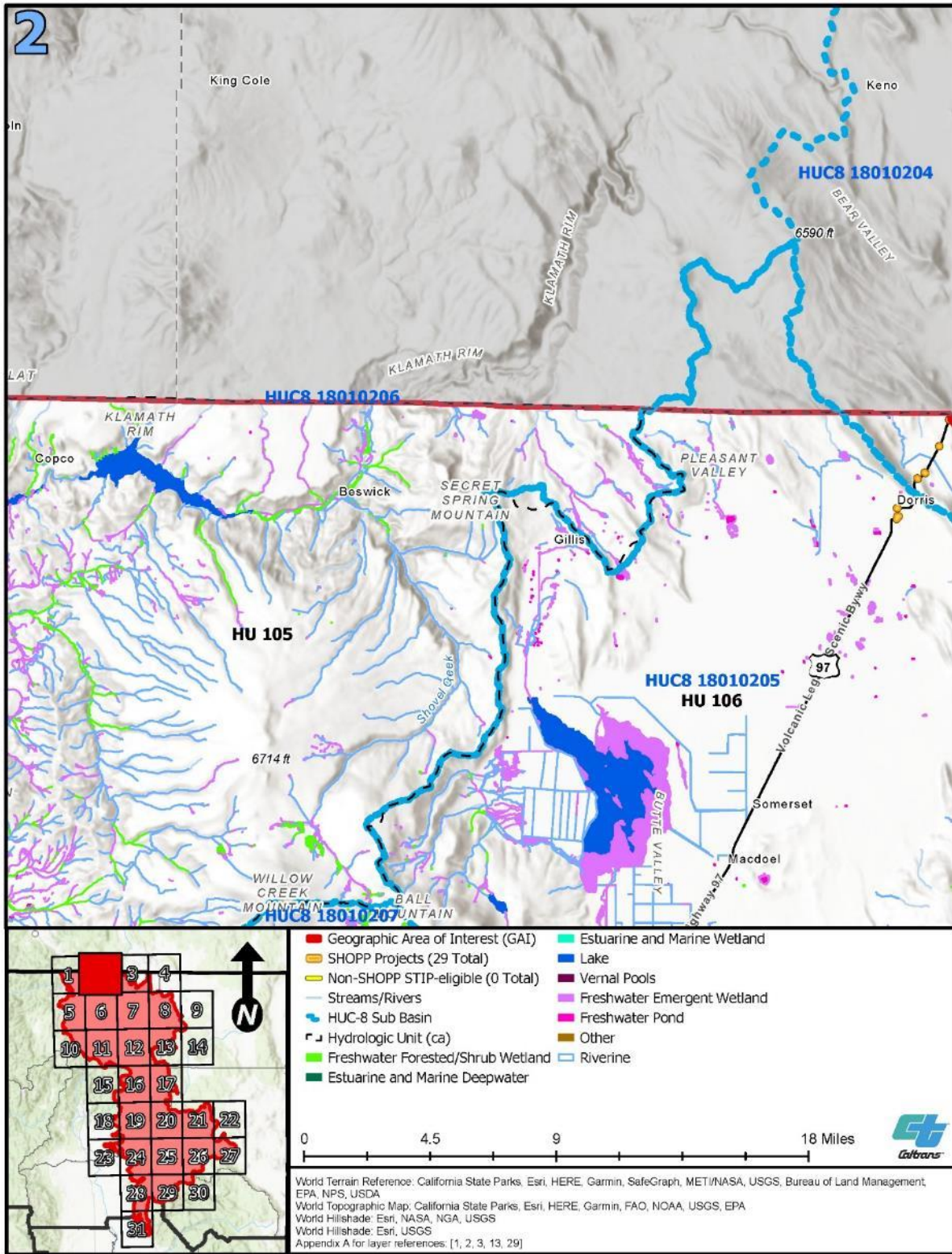
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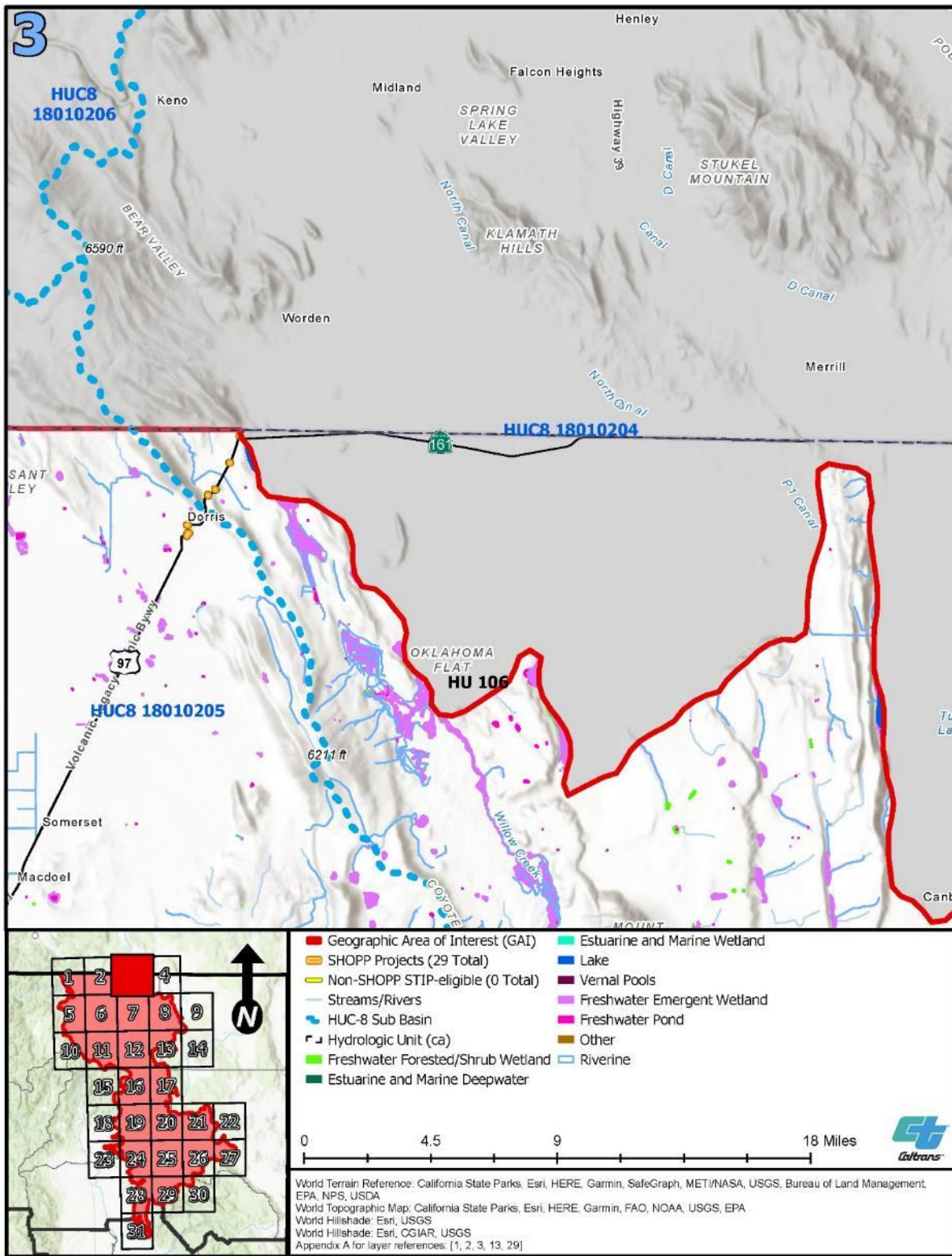
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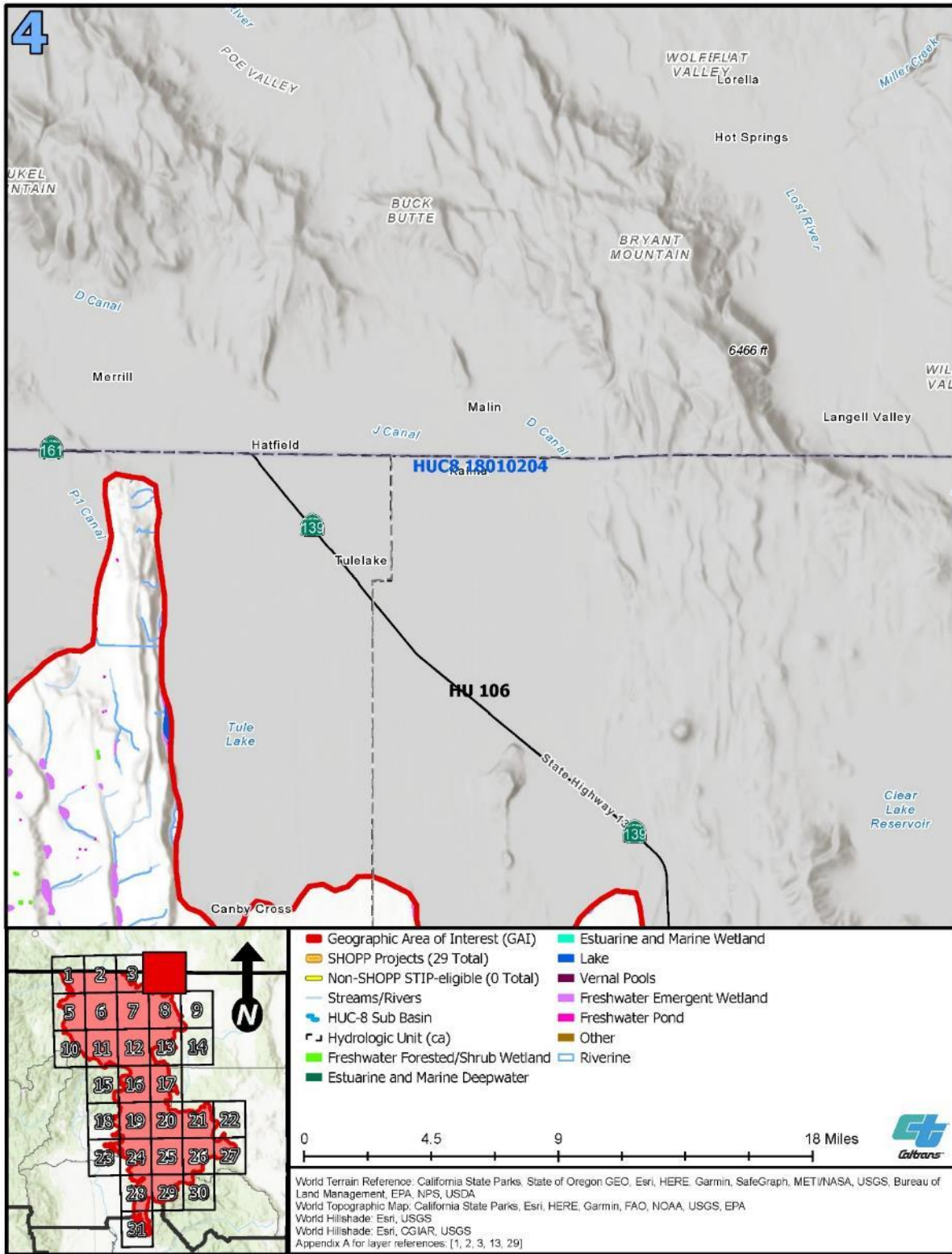
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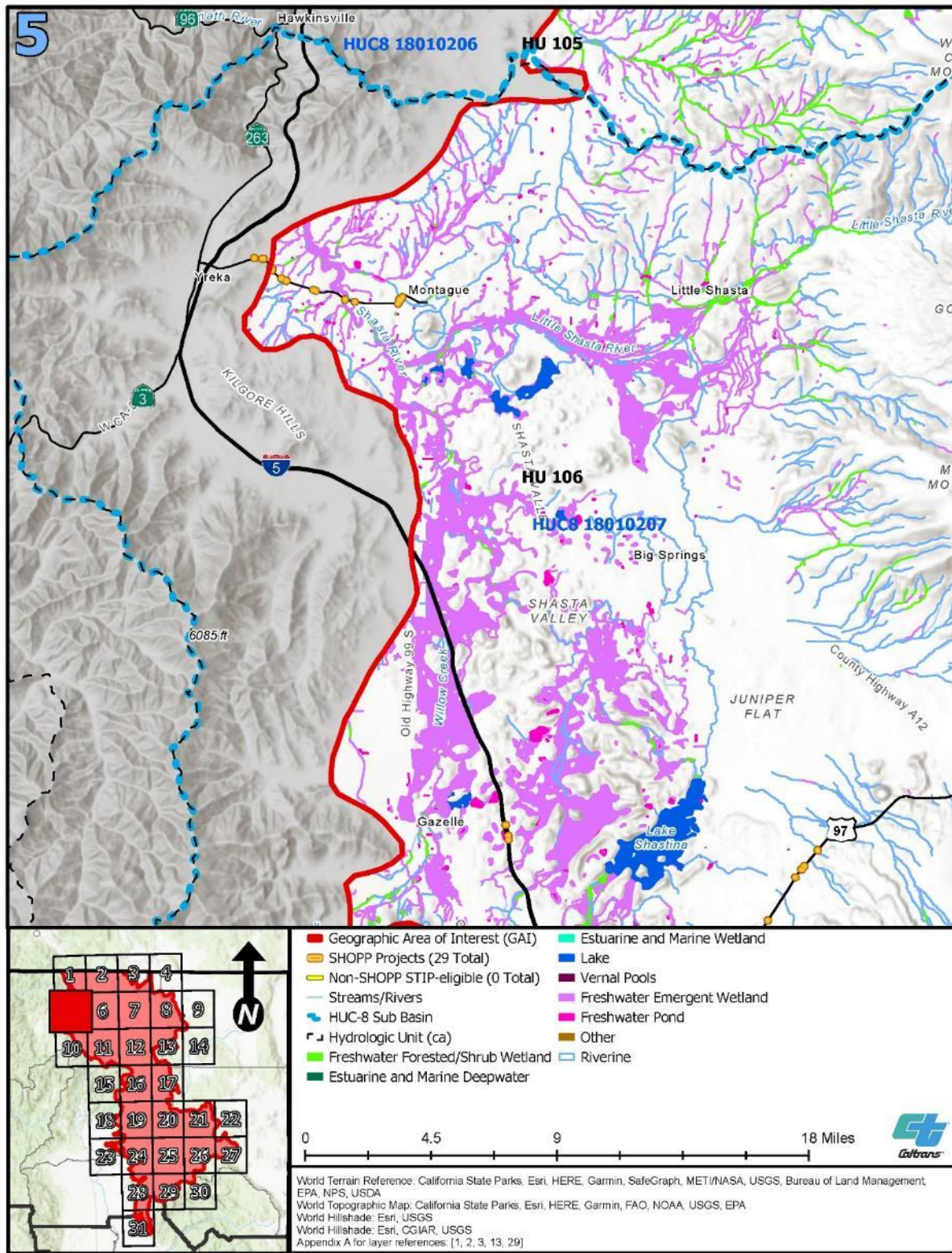


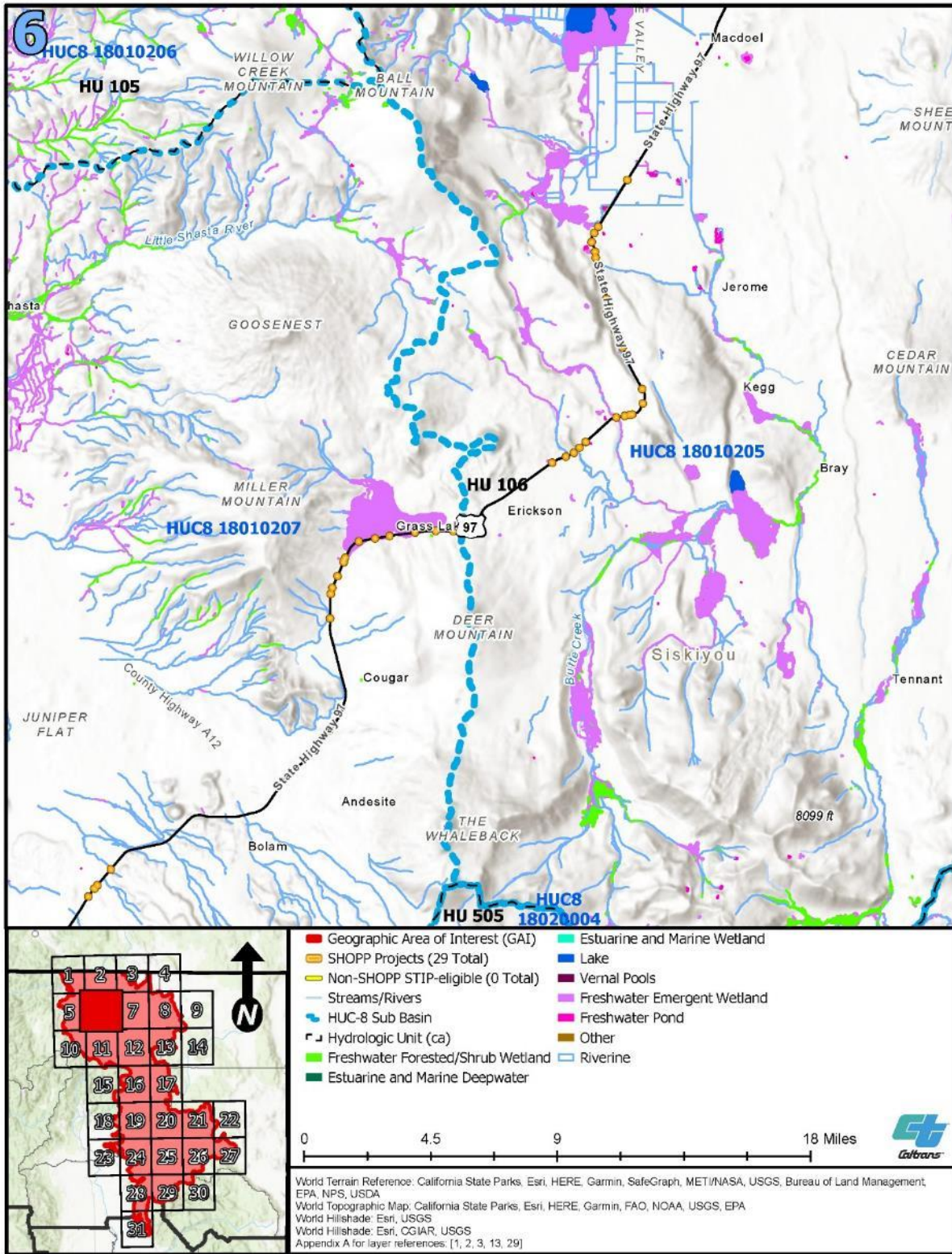


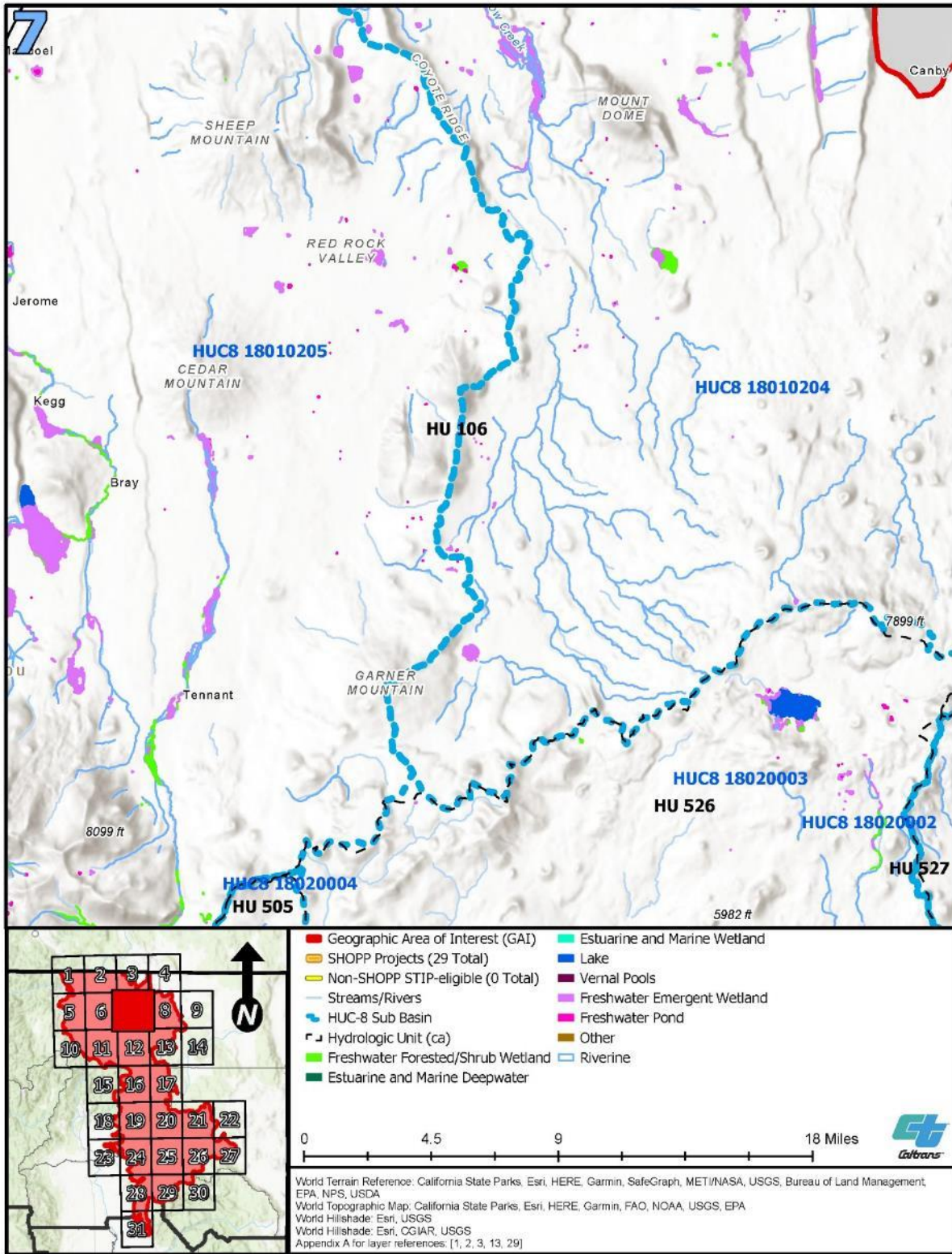


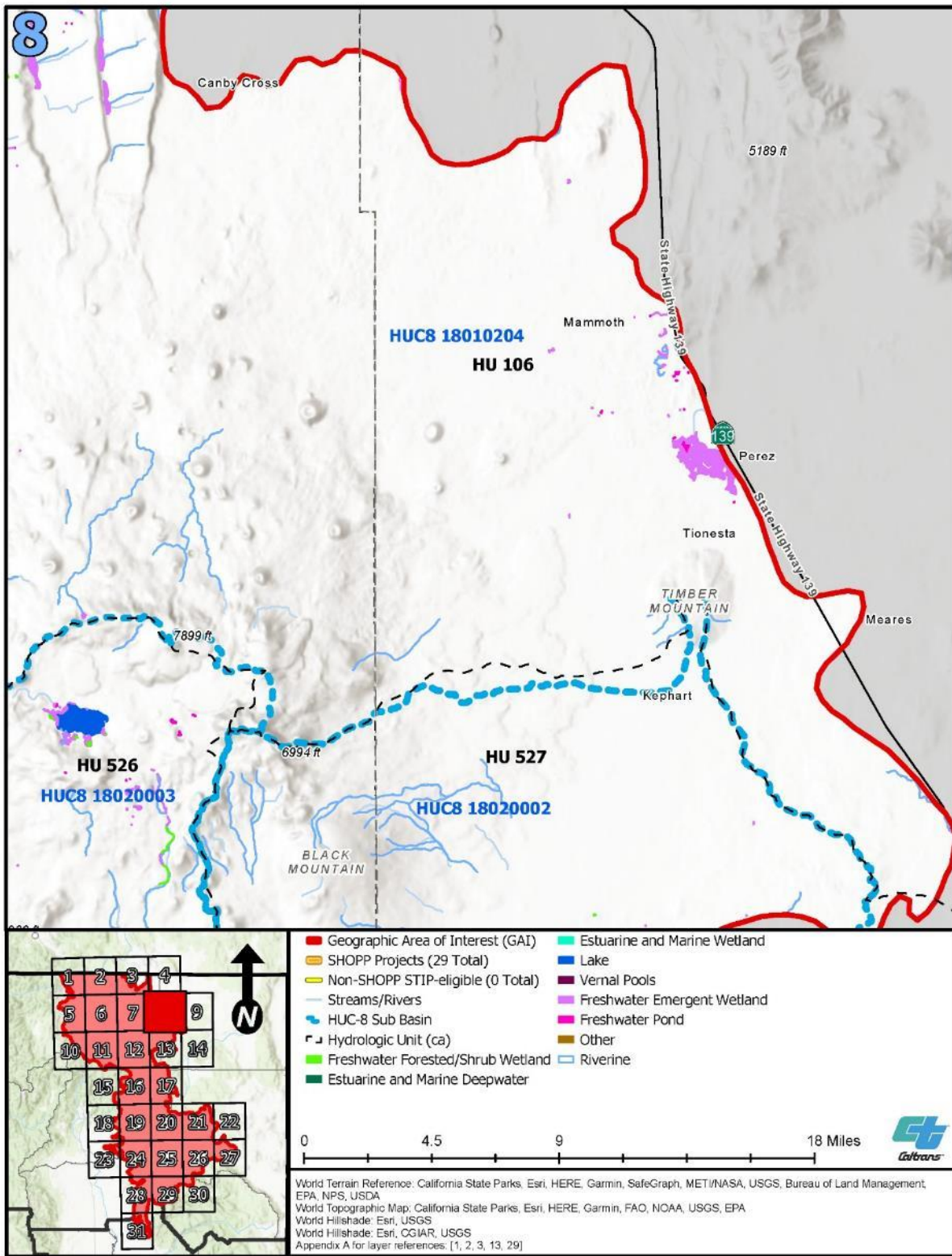


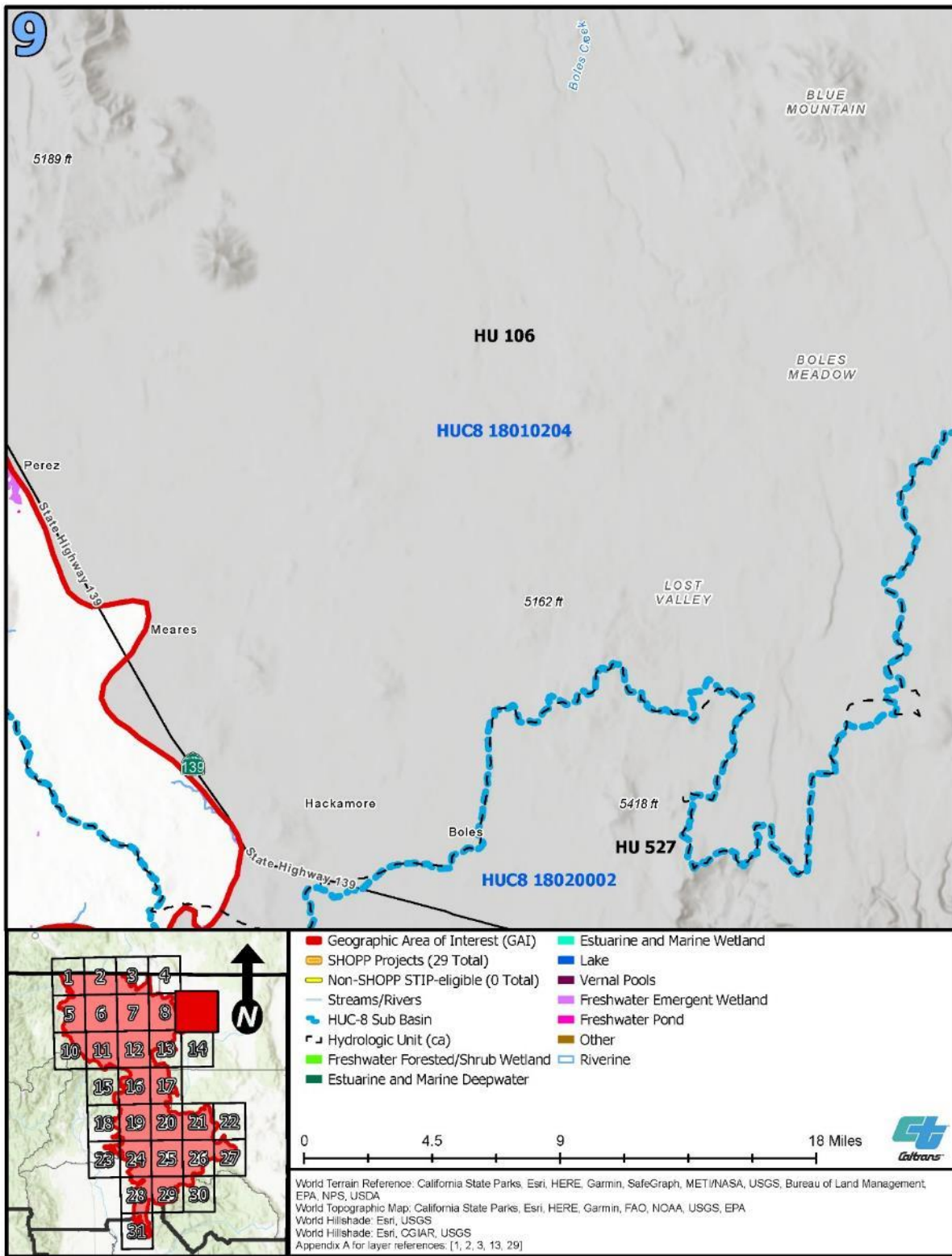


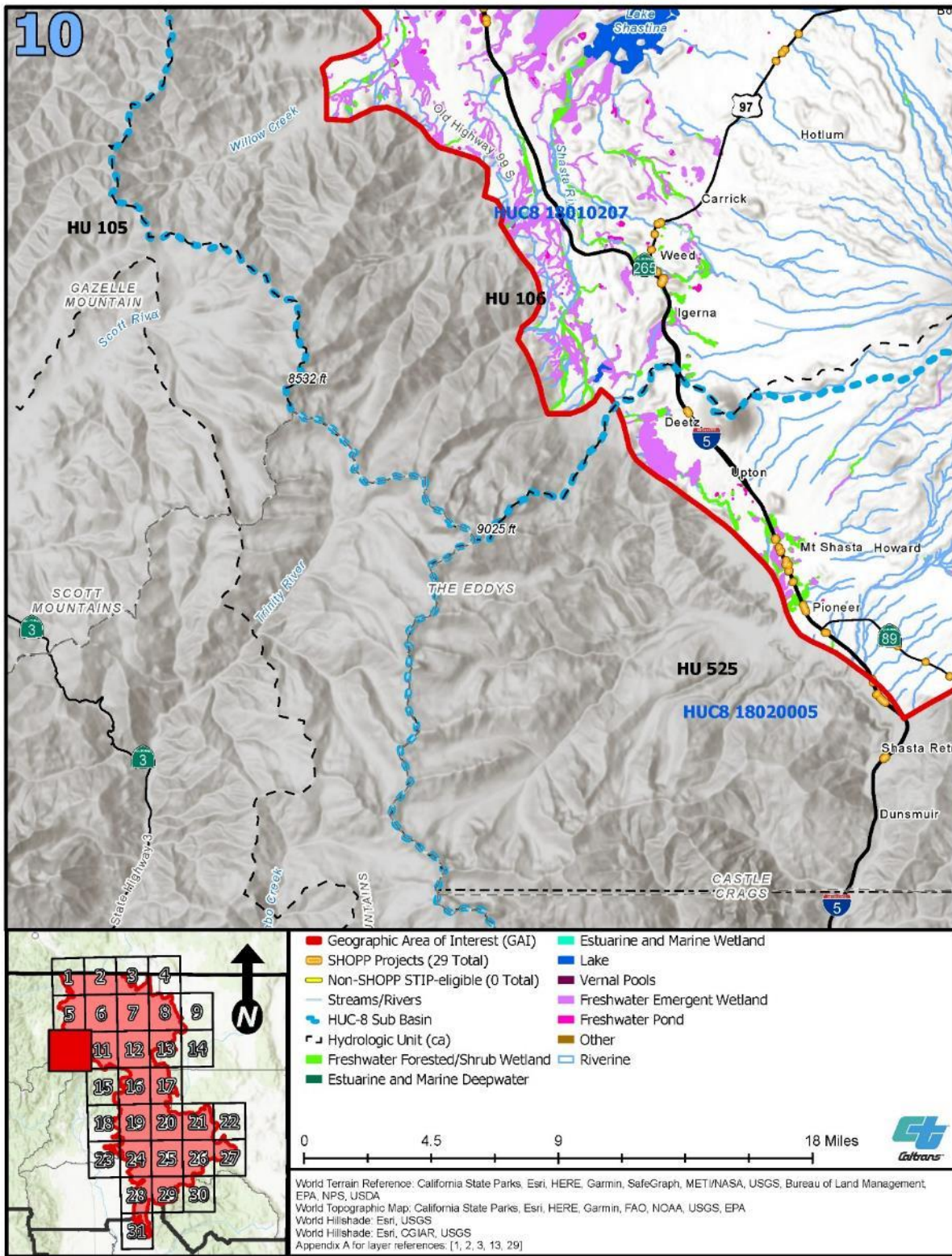


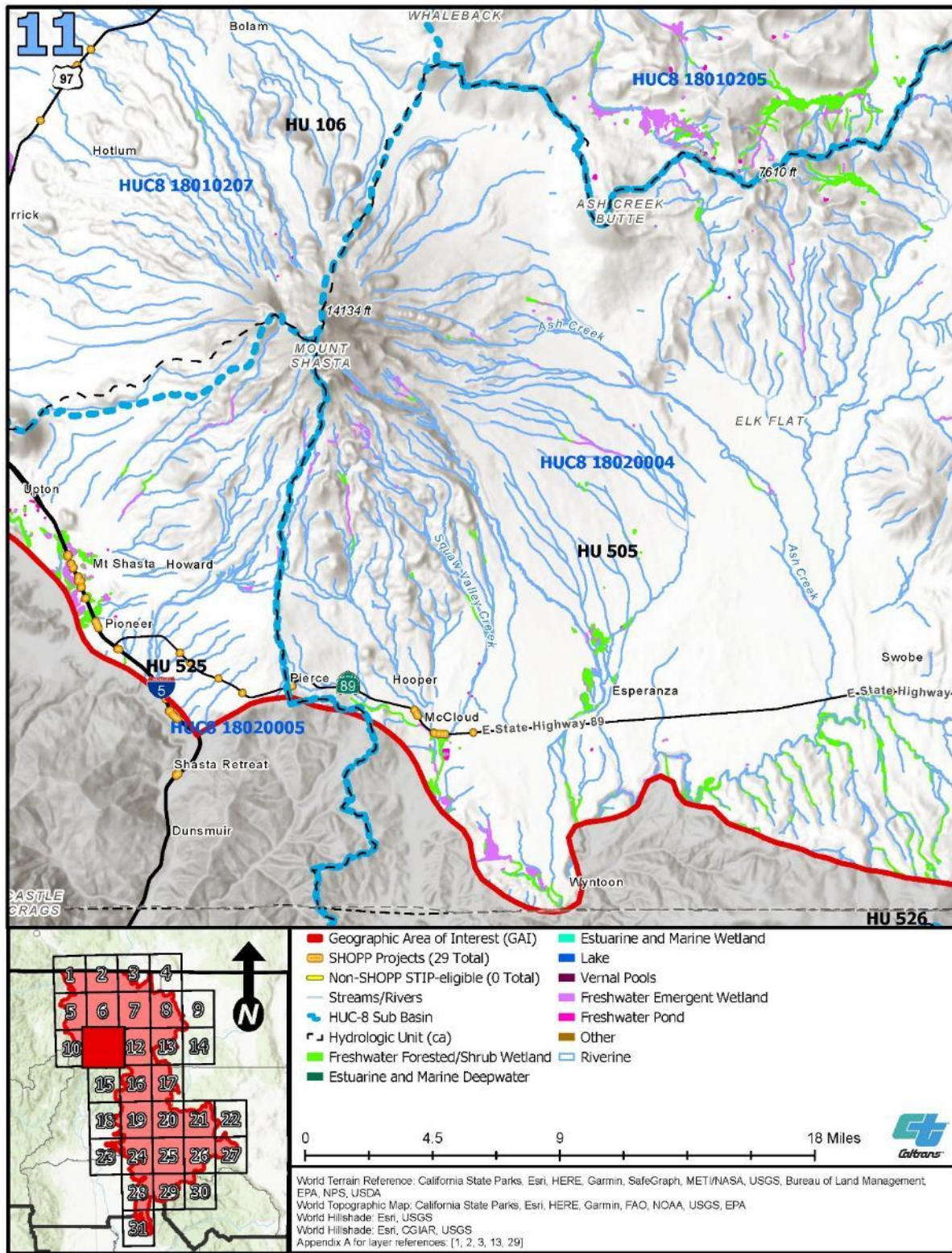


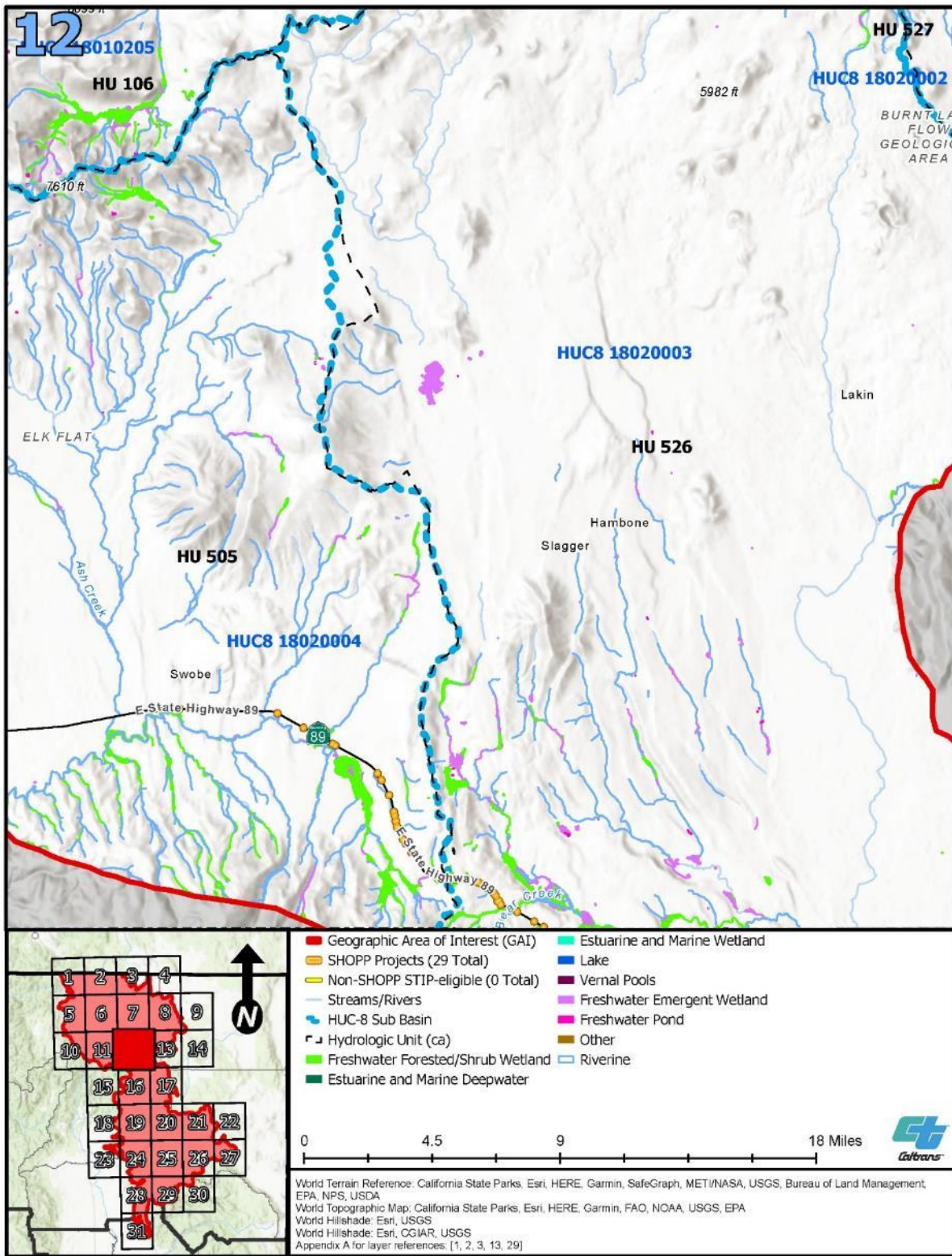


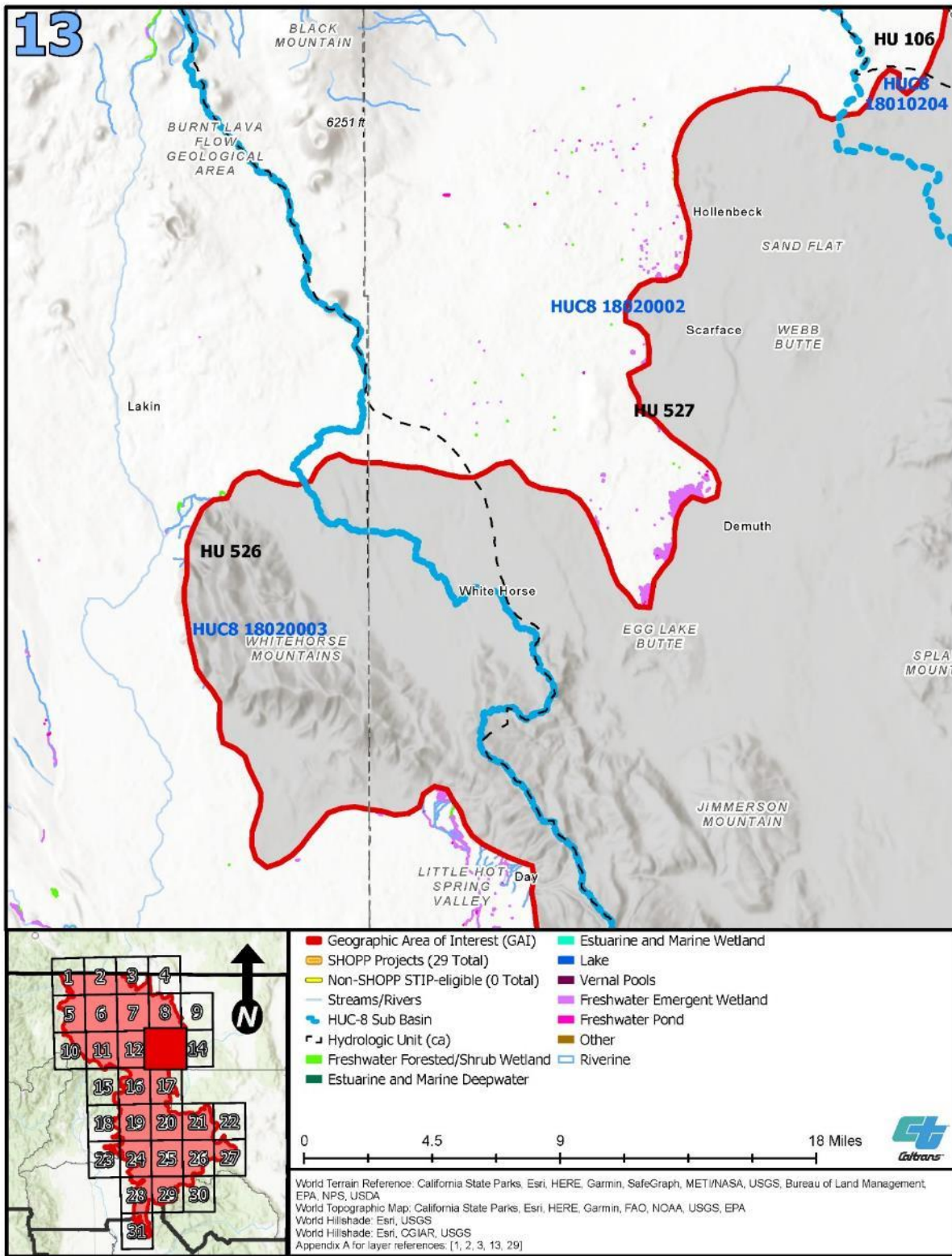


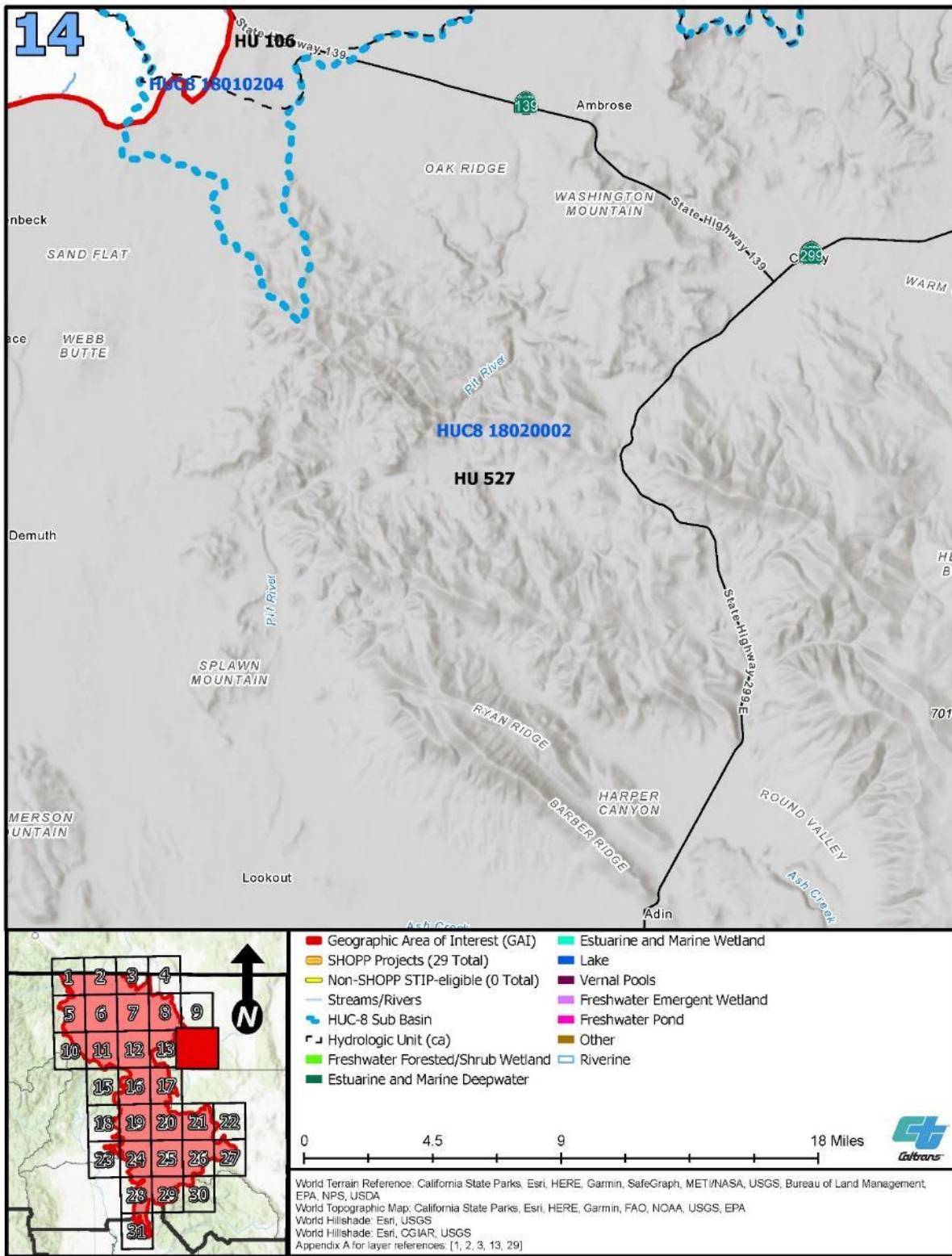


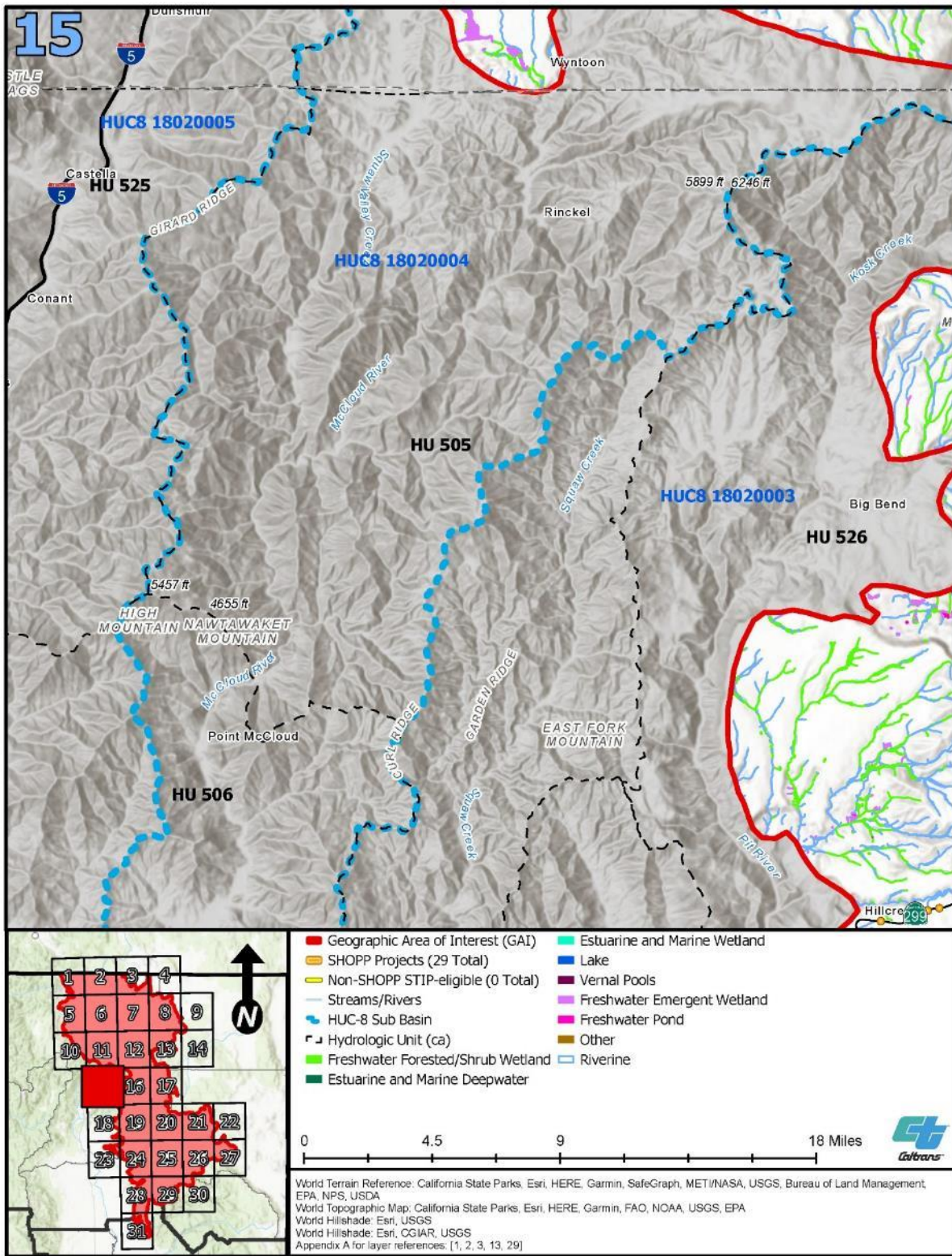


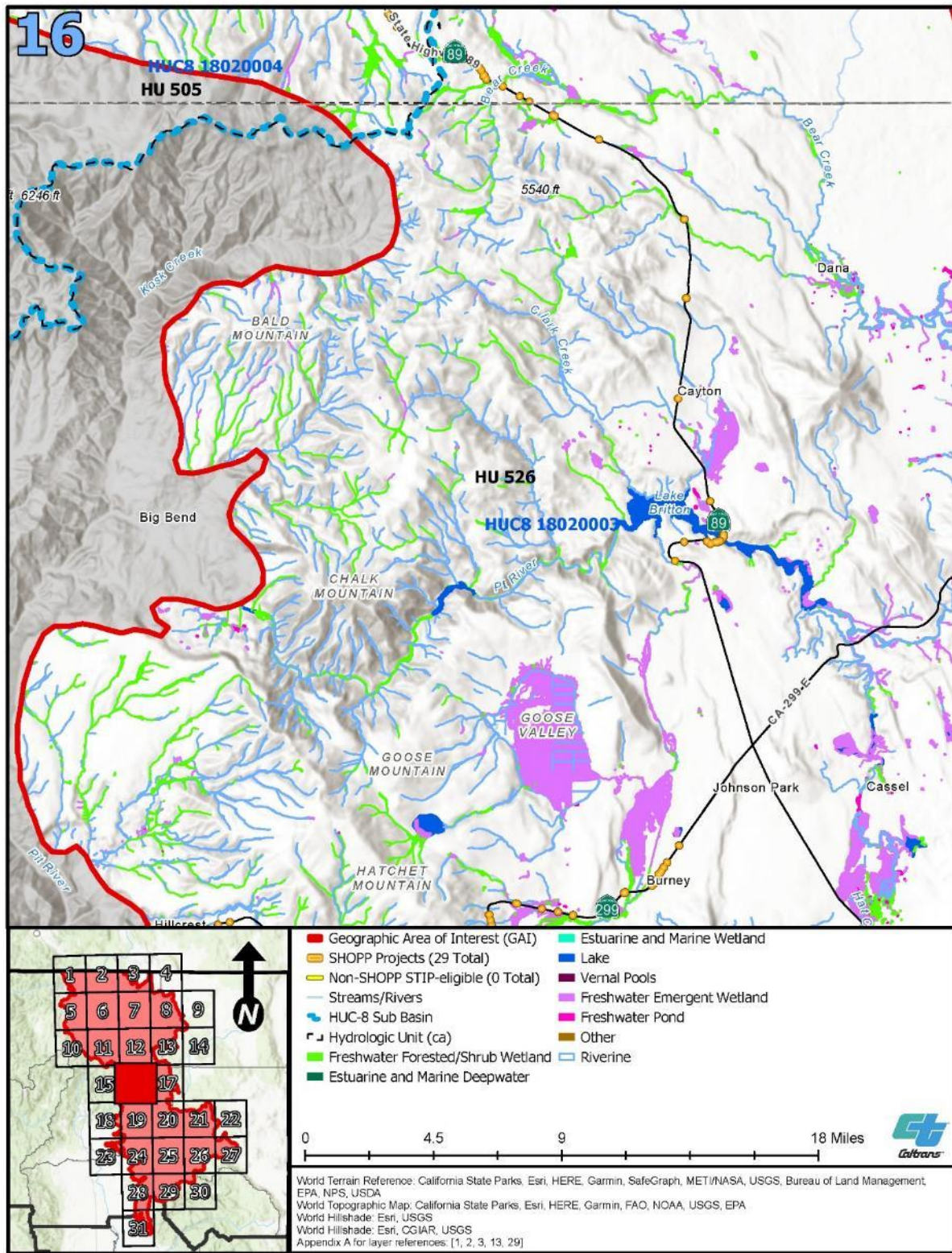


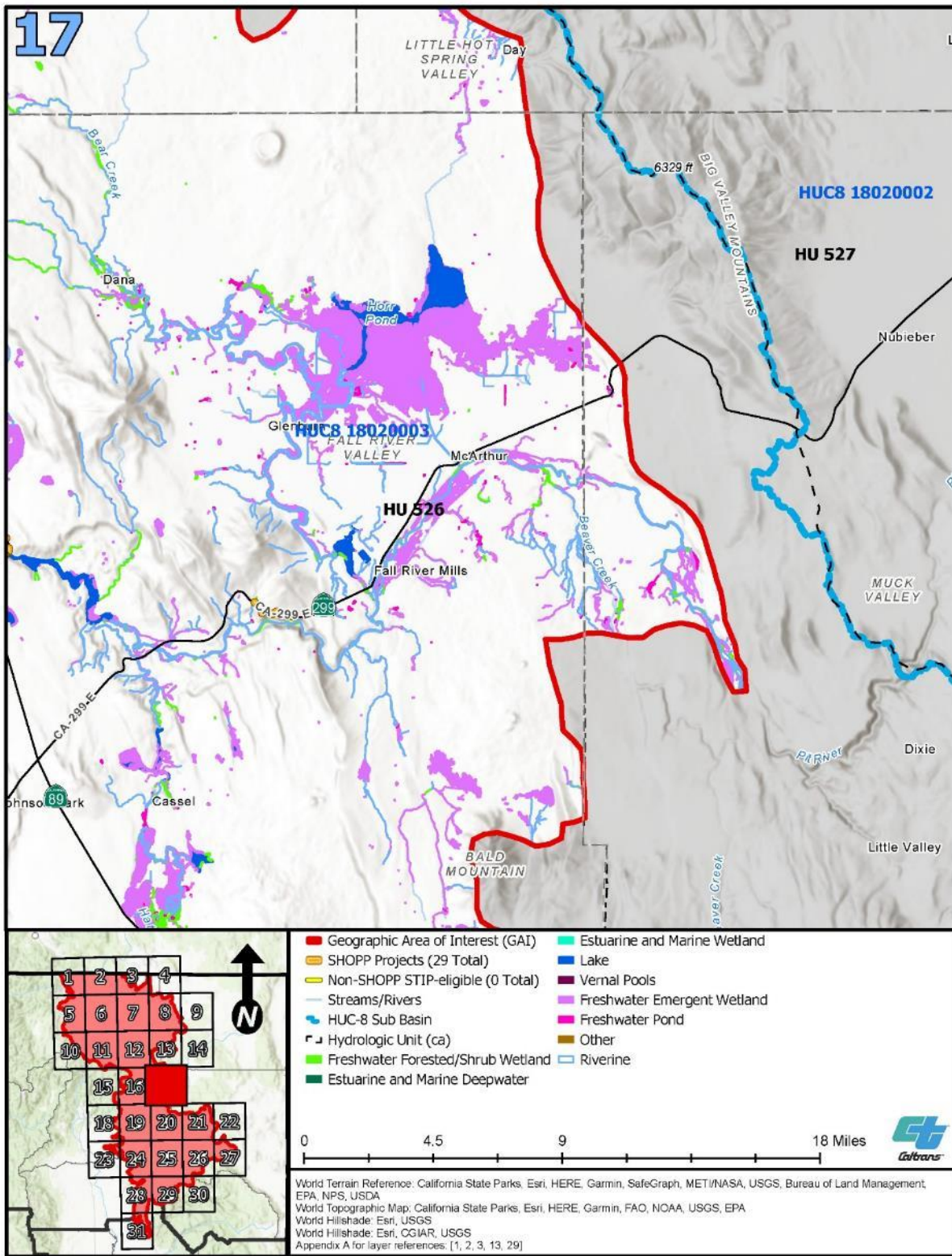


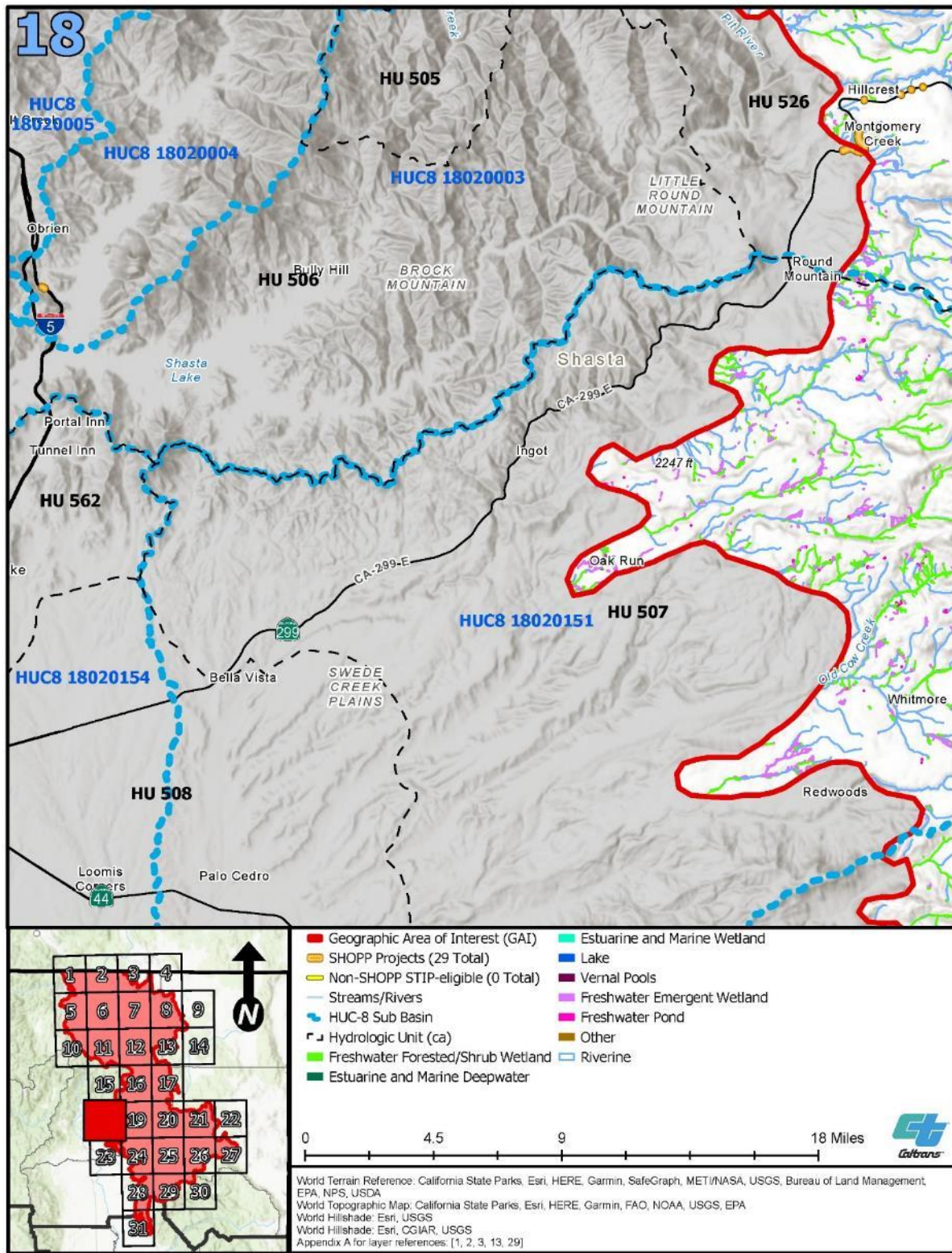


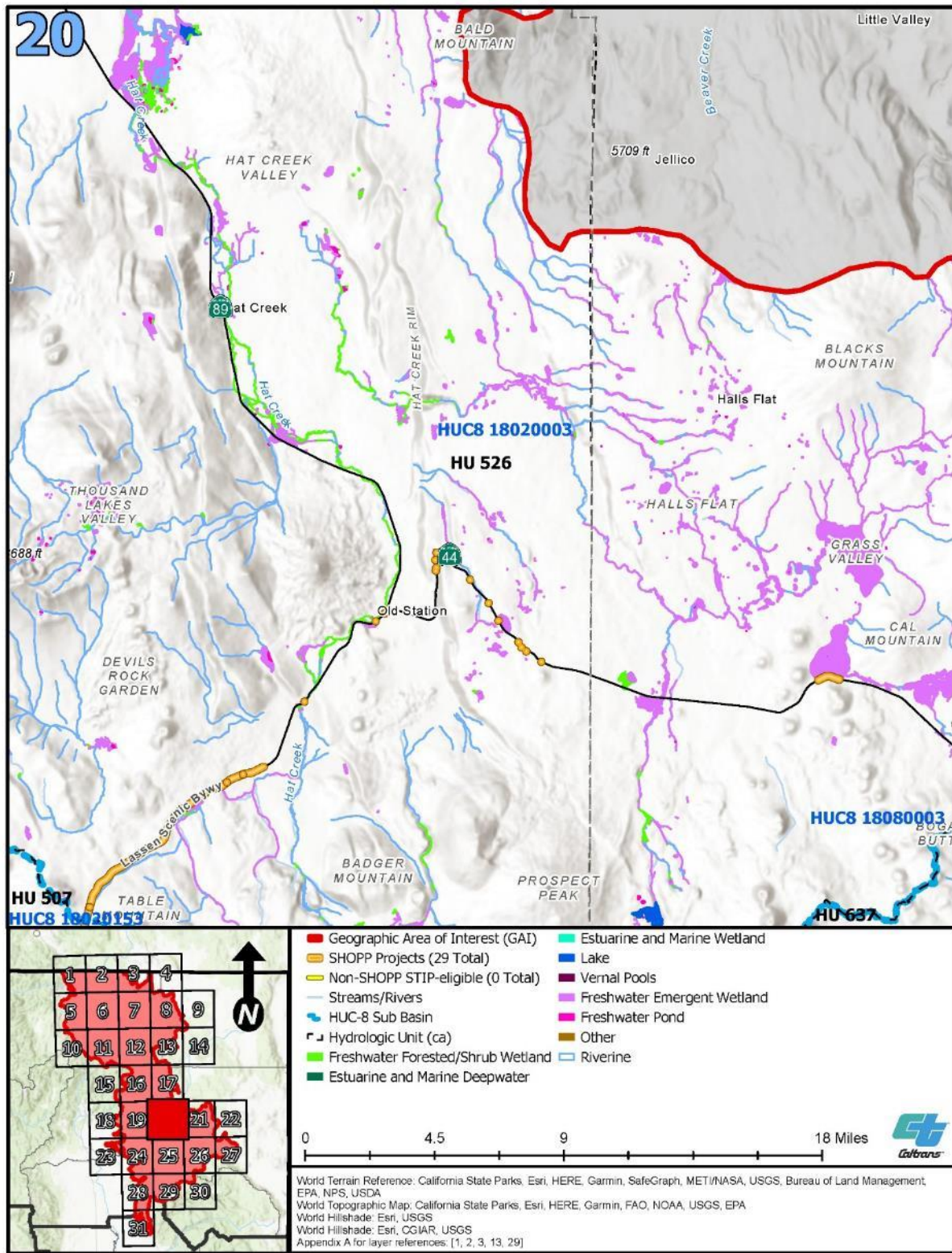


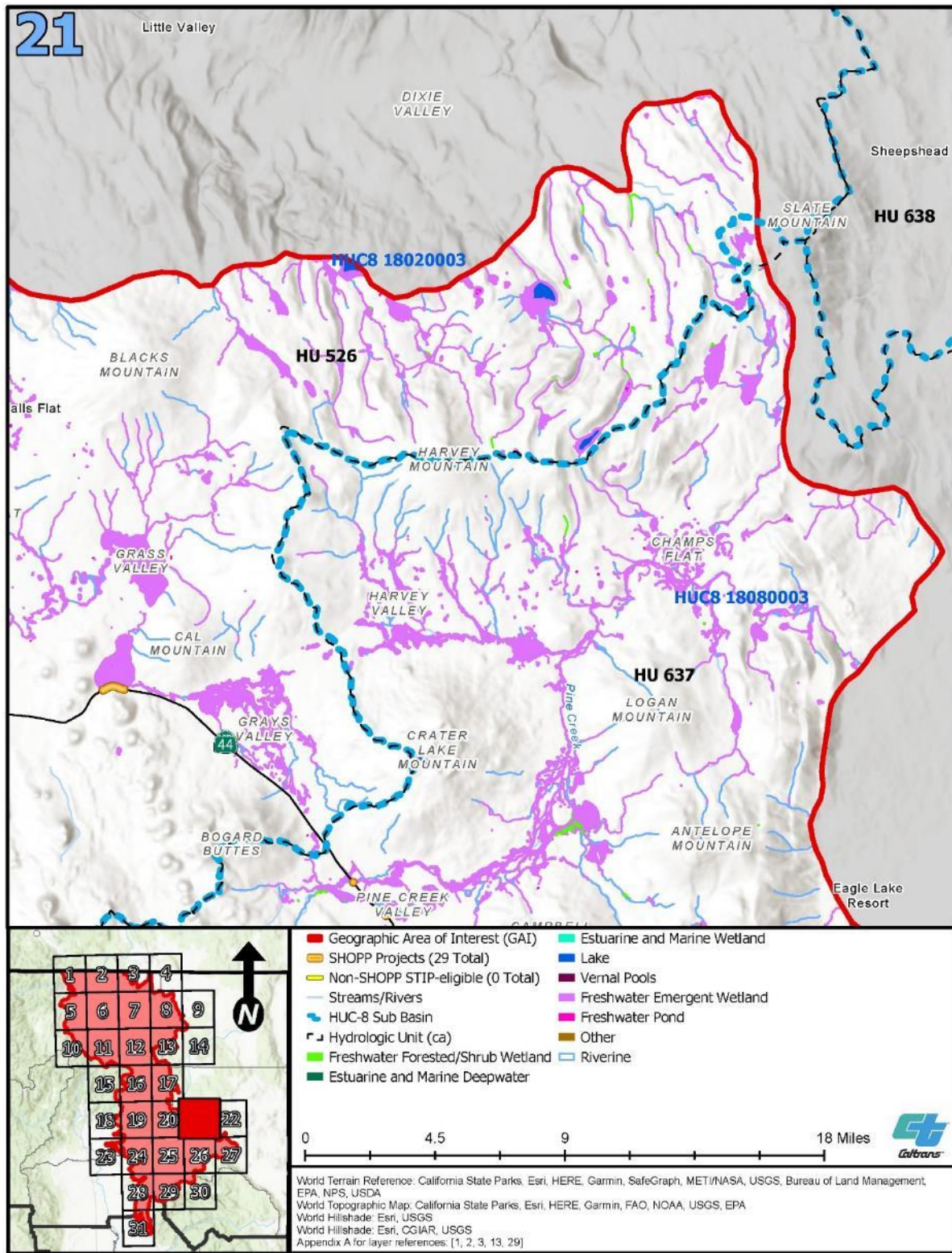


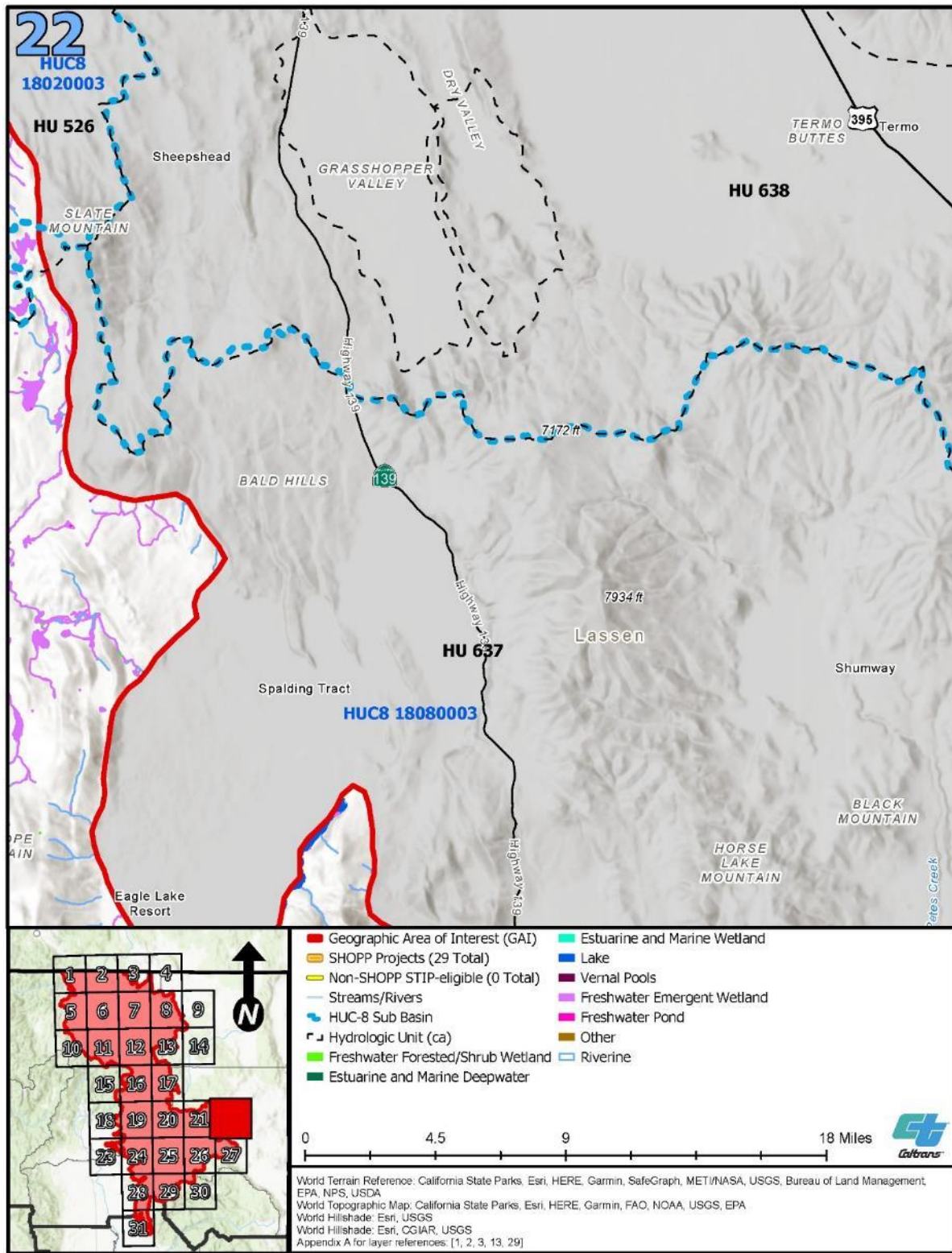


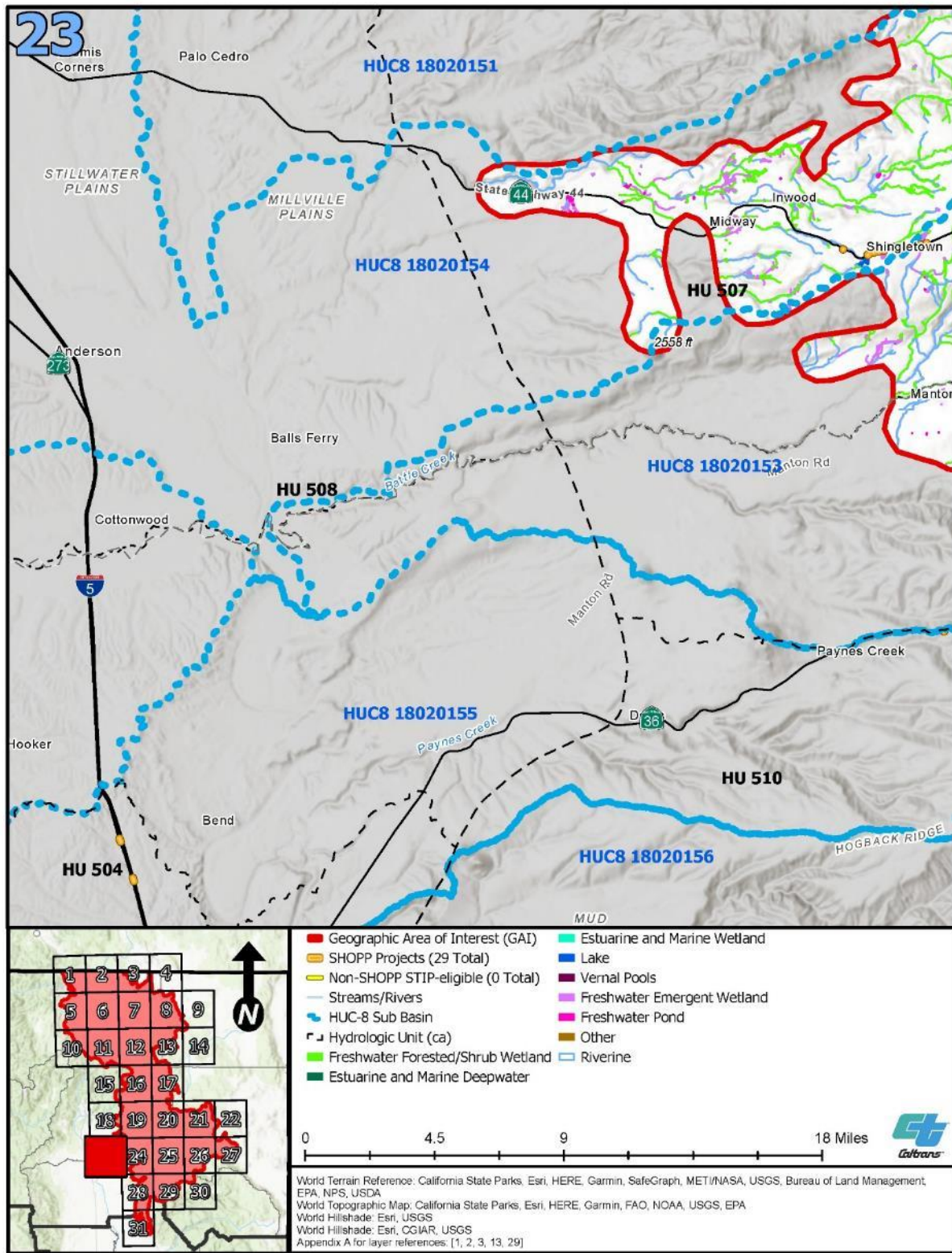


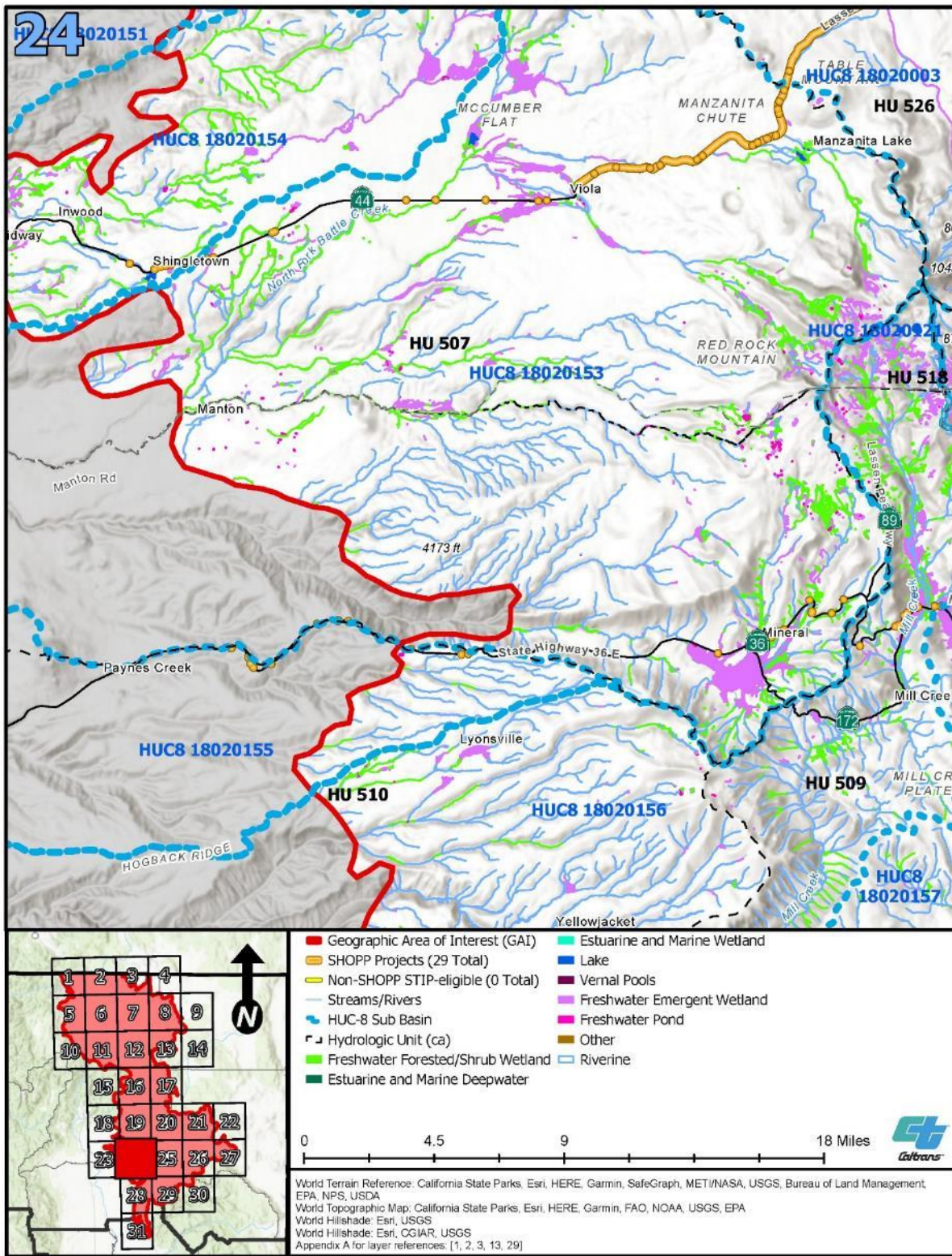


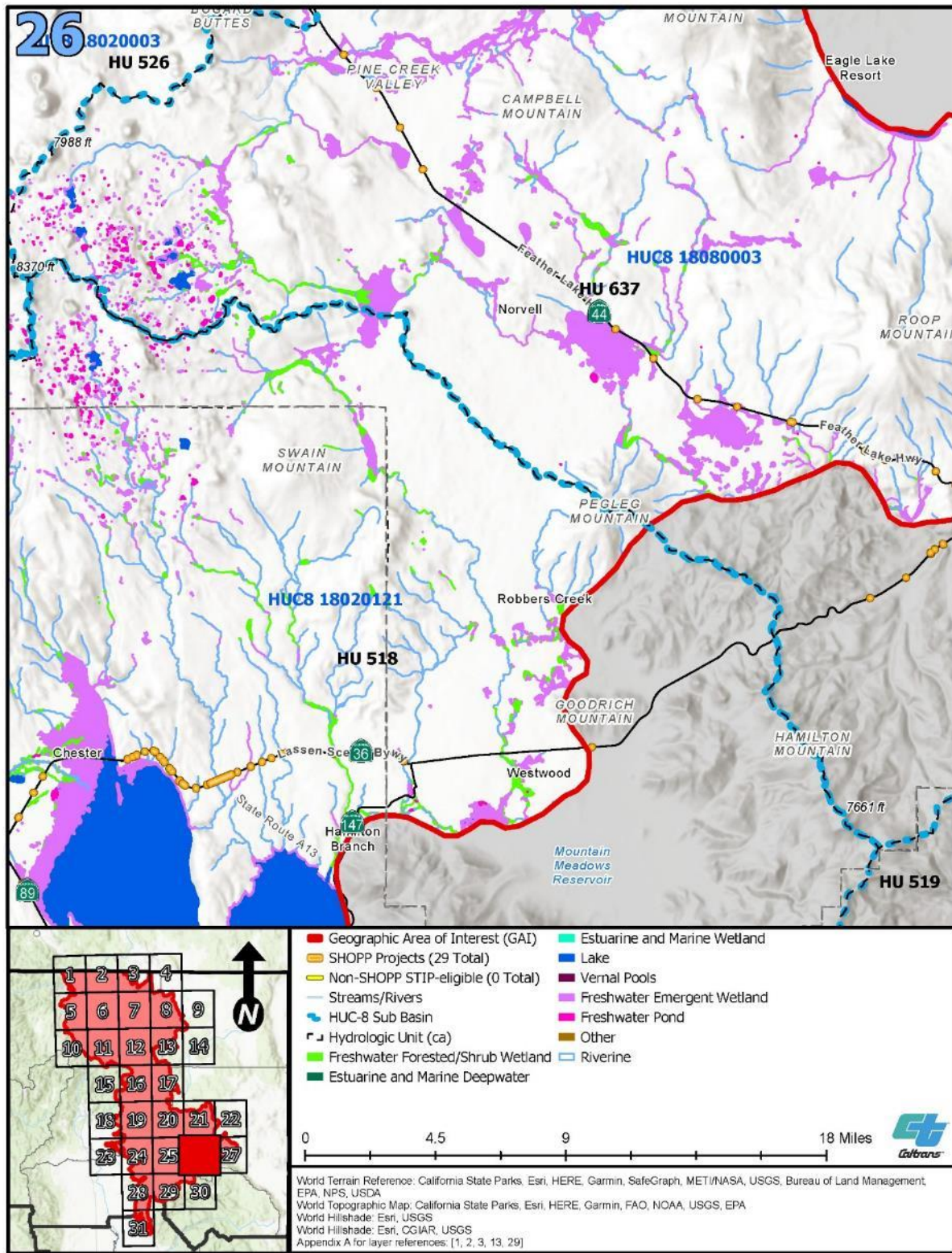


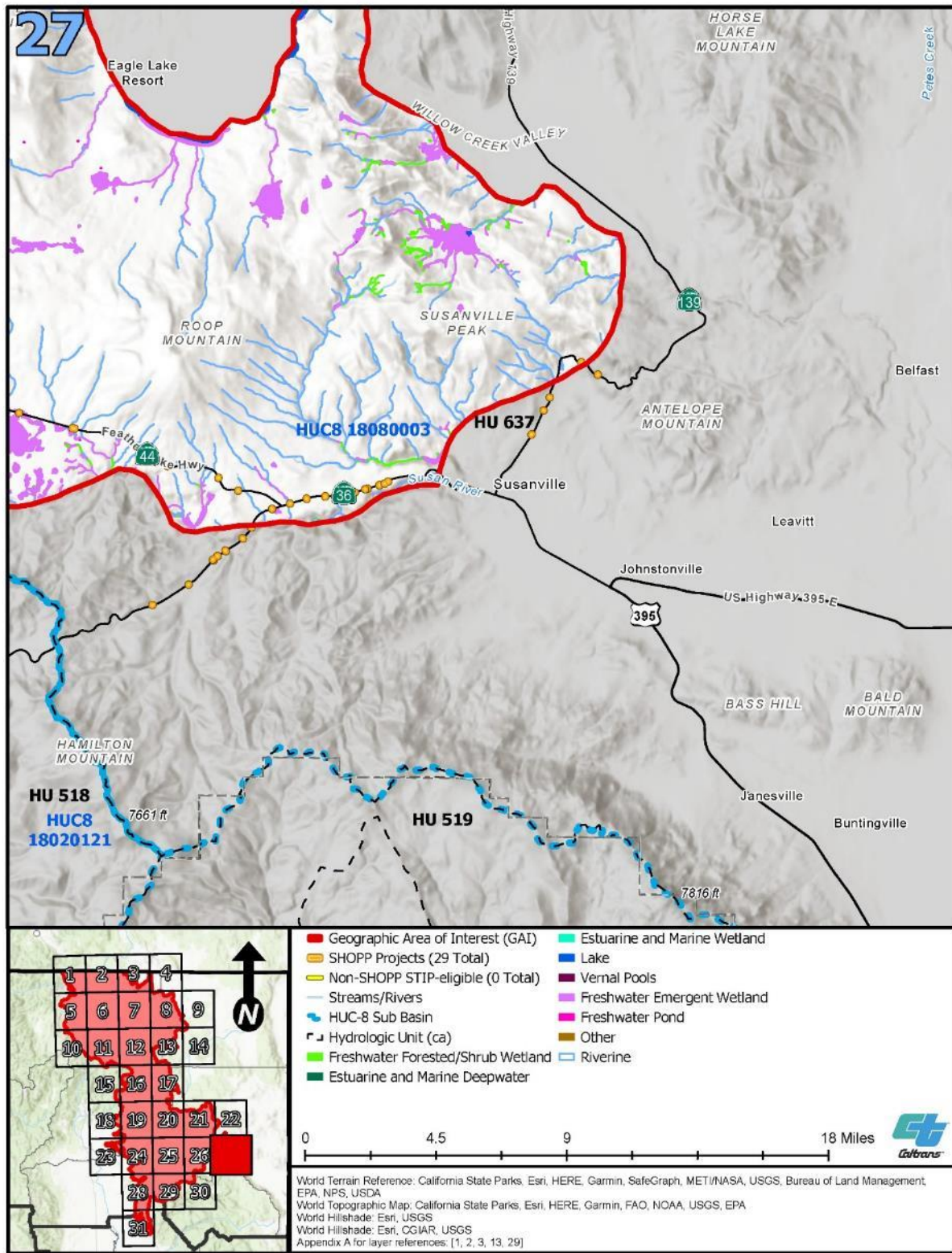


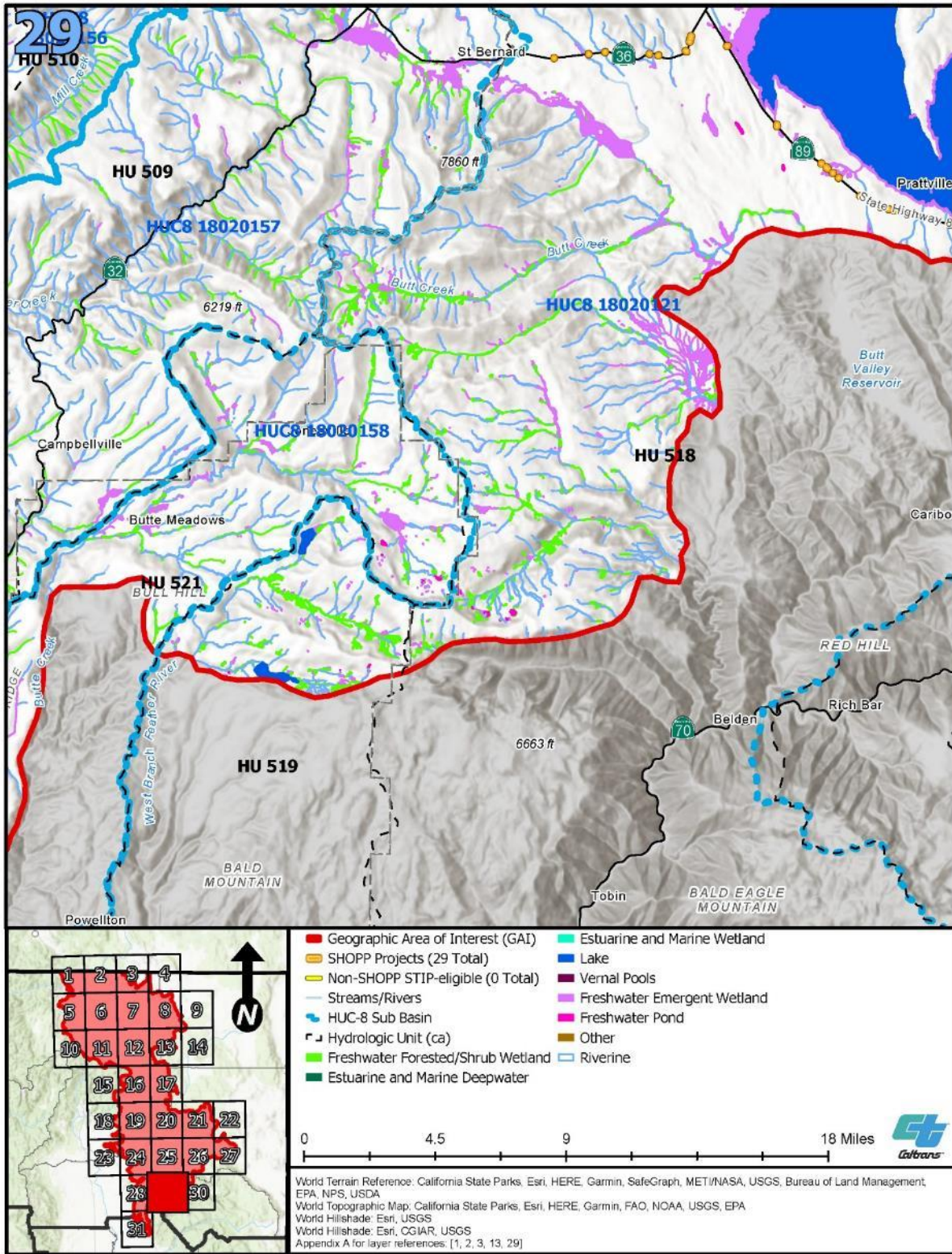


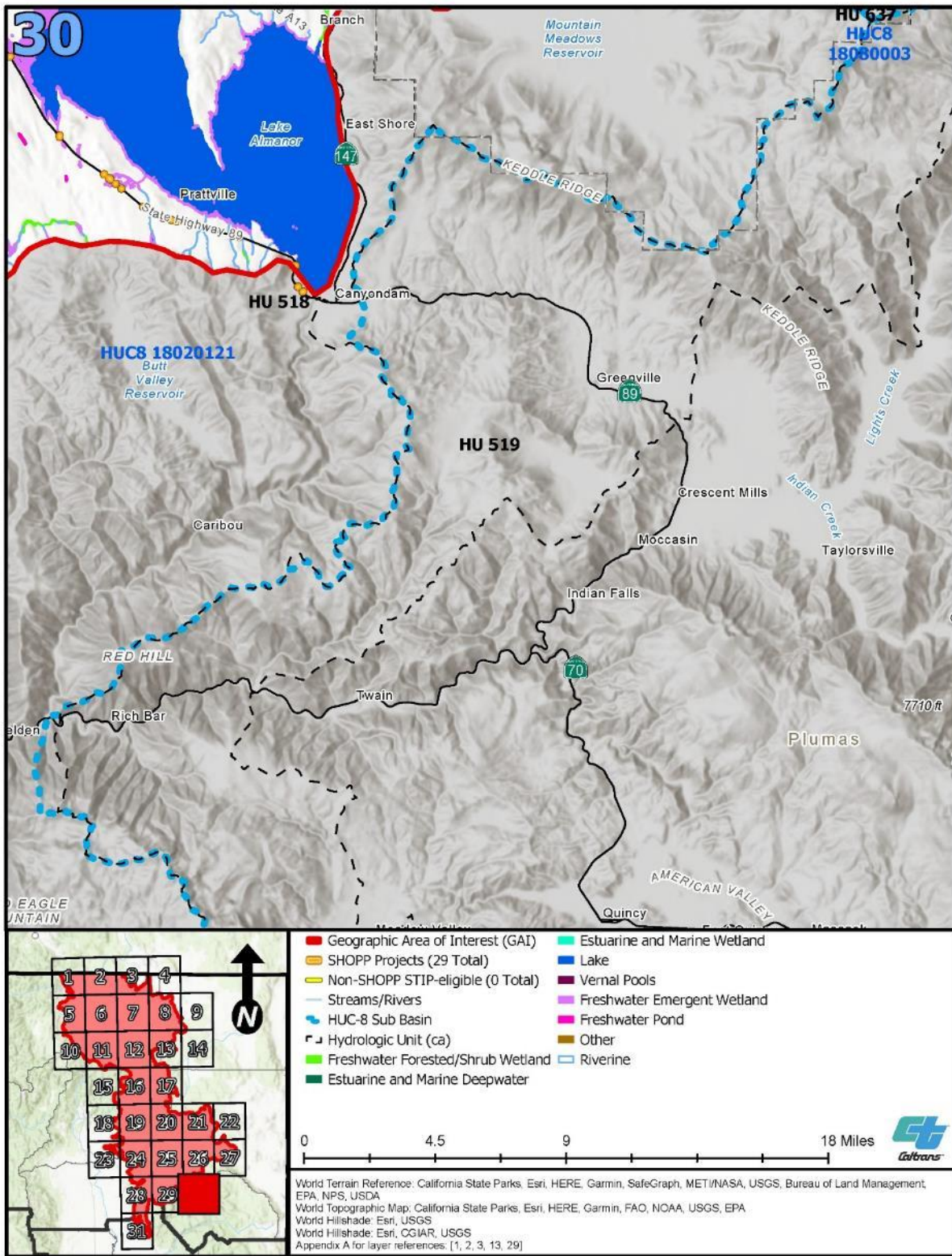


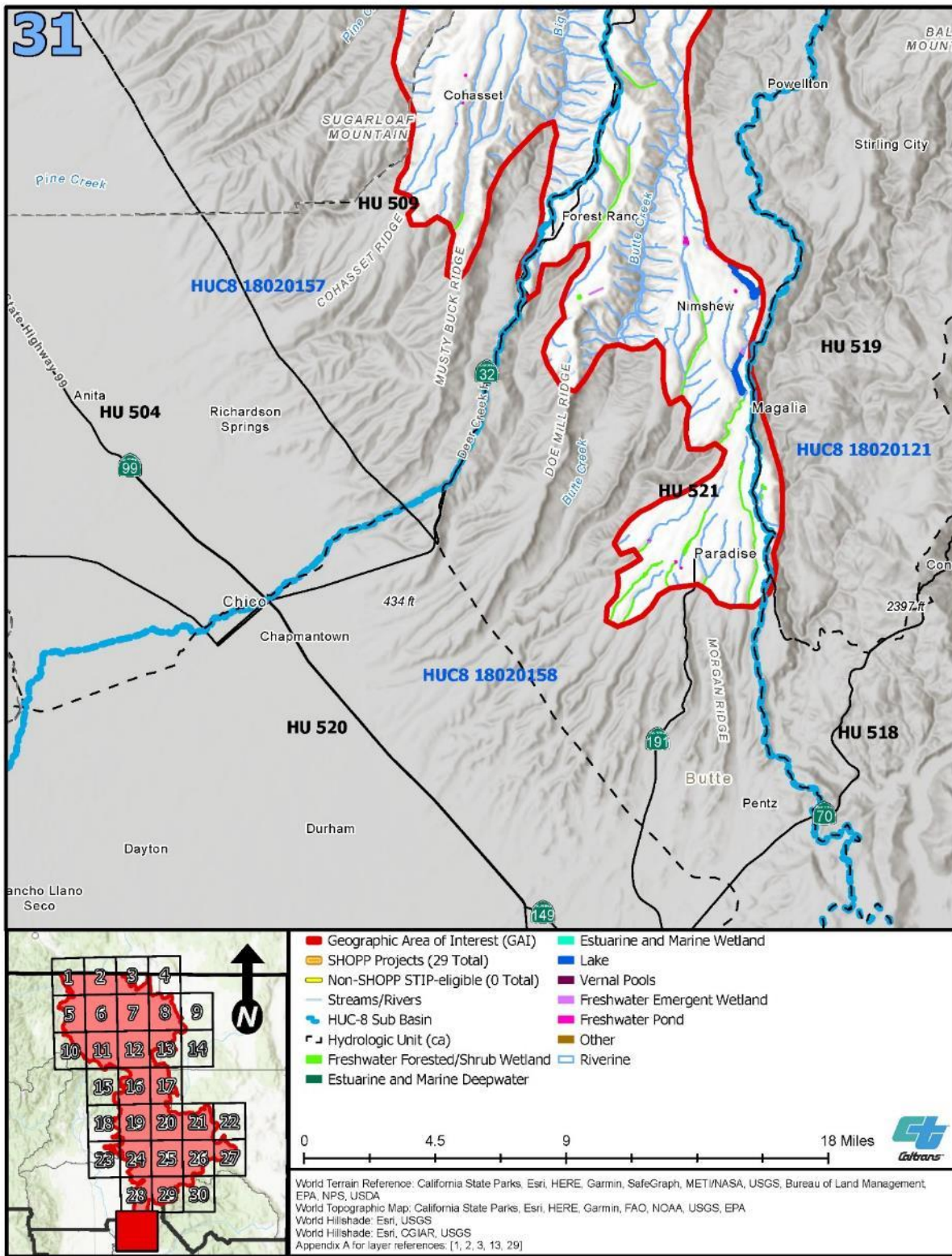












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