

BOT-1 GENERAL BOTANICAL RESOURCES TECHNICAL MEMORANDUM

**KERN RIVER No. 3 HYDROELECTRIC PROJECT
*FERC PROJECT No. 2290***

PREPARED FOR:



October 2023

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LIST OF ACRONYMS AND ABBREVIATIONS

Cal-IPC	California Invasive Plant Council
CNDDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CR	California State listed as rare
CRPR	California Rare Plant Rank
FERC	Federal Energy Regulatory Commission
FSS	U.S. Forest Service Sensitive Species
KR3	Kern River No. 3
NFKR	North Fork Kern River
NNIP	non-native invasive plant
PAD	Preliminary Application Document
Project	Kern River No. 3 Hydroelectric Project (FERC Project No. 2290)
RSP	Revised Study Plan
SCE	Southern California Edison
SE	California State listed as endangered
SSP	special-Status plant
USFS	U.S. Forest Service

1.0 INTRODUCTION

This Technical Memorandum provides the methods and findings of field surveys associated with the *BOT-1 General Botanical Resources Study Plan* in support of Southern California Edison's (SCE) Kern River No. 3 (KR3) Hydroelectric Project (Project) relicensing, Federal Energy Regulatory Commission (FERC) Project No. 2290. The BOT-1 Study Plan was included in SCE's Revised Study Plan (RSP) submitted on July 1, 2022 (SCE, 2022). In the October 12, 2022, Study Plan Determination (SPD), FERC approved the BOT-1 Study Plan with modifications. Specifically, FERC recommended that SCE modify the study area to include the Salmon, Corral, and Cannell Creek Bypass Reaches¹ and the Fairview Dam Bypass Reach,² plus buffers (FERC, 2022).

Data were collected from April to October 2022 and April to June 2023. All field sampling efforts and data analysis are completed and summarized below.

2.0 STUDY GOALS AND OBJECTIVES

The objectives of the study, as outlined in the BOT-1 Study Plan (SCE, 2022), include:

- Documenting the presence of Mojave tarplant (*Deinandra mohavensis*) and Tracy's eriastrum (*Eriastrum tracyi*)
- Mapping any sensitive natural communities
- Documenting the presence of other special-status plants (SSPs), including U.S. Forest Service (USFS) Sensitive Species (FSS)
- Ground-truthing USFS vegetation mapping
- Documenting non-native invasive plants (NNIPs) with high ecological impact (Cal-IPC, 2023)

3.0 STUDY AREA

The study area includes lands and waters within the FERC Project Boundary in addition to areas adjacent to, or in the proximity of, the FERC Project Boundary along the North Fork Kern River (NFKR) and Salmon, Corral, and Cannel Creeks for the purposes of characterization and data collection relevant to understanding Project operations and

¹ The Salmon Creek Diversion Bypass Reach is defined as the 0.4-mile bypass reach from Salmon Creek Diversion downstream to the confluence with the North Fork Kern River (NFKR). The Corral Creek Diversion Bypass Reach is defined as the 1.1-mile bypass reach from Corral Creek Diversion downstream to the confluence with the NFKR. The Cannell Creek Bypass Reach is defined as the 1-mile bypass reach from the spillway to the confluence with the NFKR.

² The Fairview Dam Bypass Reach is defined as the approximately 16-mile bypass reach of the NFKR between Fairview Dam and the KR3 Powerhouse tailrace.

maintenance activities. Specific study sites are further described below and shown on Figure 3-1.

The study sites include:

- A 50-foot buffer around the following:
 - Project roads
 - Fairview Dam, intake, and sandbox
 - Aboveground sections of the conveyance flowline, including the siphon
 - Salmon and Corral Creek Diversions
 - Pressure flume, forebay, and penstocks
 - KR3 Powerhouse Put-in/Take-out parking area
 - KR3 Powerhouse and supporting maintenance buildings
 - The habitat corridors along the 0.4-mile-long bypass reach of Salmon Creek
 - The 1.1-mile-long bypass reach of Corral Creek
 - The approximately 1-mile-long bypass reach of Cannell Creek
- Fairview Dam Bypass Reach from the river's edge to the outer edge of the riparian strip, plus a 50-foot buffer or to the edge of Mountain Highway 99, whichever is closer.

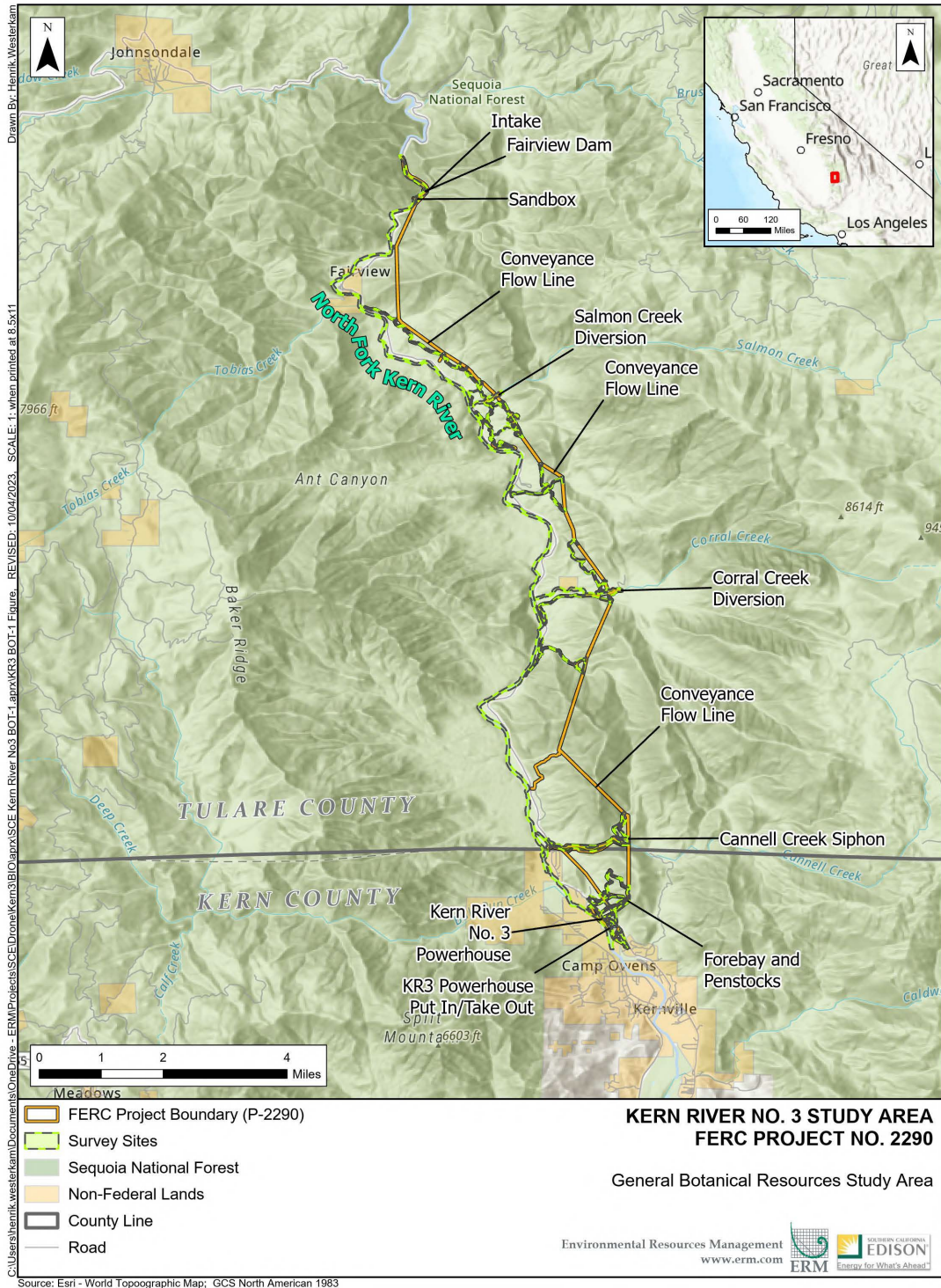


Figure 3-1. General Botanical Resources Study Area.

4.0 METHODS

Study implementation generally followed the methods described in the BOT-1 Study Plan (SCE, 2022), and as amended by FERC in their SPD (FERC, 2022), with the exceptions noted below.

Study Plan Variances

The BOT-1 Study Plan was implemented as stated for all study sites except:

- Access to the west bank of the Fairview Dam Bypass Reach.

Pedestrian access to the west bank was restricted based on lack of trails or crossings and unsafe terrain blocking access to portions of the Fairview Dam Bypass Reach. Traversing the NFKR as a crossing to the west bank (via raft or other watercraft) was deemed infeasible and unsafe for botanical surveys and was not attempted. While the Whiskey Flat Trail was used for accessing a portion of the west bank, trail length and trail distance from the NFKR limited pedestrian access to the entire portion of the study site. Where access to the NFKR west bank within the Fairview Dam Bypass Reach was limited by safety, botanical resources were evaluated from the east bank using 8X binoculars to the extent possible. Target plants (SSPs and NNIPs) were evaluated using these alternative methods. Although the entire west bank of the NFKR in the Fairview Dam Bypass Reach could not be directly surveyed, it is not suspected that the resources are substantially different than those observed on the east bank. Access to the east bank of the NFKR within the Fairview Dam Bypass Reach is well-established, and pedestrian access to this portion of the study site was determined to be safe.

- Geospatial data was collected for all target NNIPs except:
 - Red brome (*Bromus madritensis* ssp. *rubens*)
 - Cheatgrass (*Bromus tectorum*)

These two species (both NNIPs; California Invasive Plant Council [Cal-IPC] High) were found to be ubiquitous throughout the study sites in such a large volume that mapping was deemed impractical. Therefore, specific location data was not collected.

4.1. LITERATURE REVIEW

SSP occurrences and sensitive vegetation communities documented by past studies and multiple databases were examined in the Preliminary Application Document (PAD) (SCE, 2021). Since those studies were conducted, new occurrences have been recorded to the California Natural Diversity Database (CNDDDB), Consortium of California Herbaria (CCH), California Native Plant Society (CNPS), or iNaturalist (CDFW, 2023a; CCH, 2023; CNPS, 2023; iNaturalist, 2023). Also, new species have been added to the federal and state special-status species lists, and others have been deemed sensitive by various government and non-governmental organizations (NGOs).

This literature review verified the protective status of SSPs identified in the PAD or RSP (SCE, 2021; SCE, 2022; CDFW, 2023b). Literature on the ecology and life history of special-status botanical resources was reviewed with a focus on Mojave tarplant and Tracy's eriastrum.

These databases were accessed to update the previous literature review conducted when preparing the RSP and PAD. A target list of SSPs was compiled from the following sources:

- The CNDDDB (CDFW, 2023a) and the CNPS Inventory of Rare, Threatened and Endangered Plants (CNPS, 2023). The following U.S. Geological Survey 7.5-minute topographic Quadrangles were queried for SSP species: Fairview and Kernville, Sentinel Peak, Durrwood Creek, Bonita Meadows, Sirretta Peak, Cannell Peak, Weldon, Lake Isabella North, Alta Sierra, Tobias Peak, and Johnsondale.

Location records for species found in the CNDDDB and CNPS quad search were refined by accessing the CCH (2023). These records were used to evaluate the potential for each SSP to occur in the Project Vicinity based on the proximity to the study area and the vegetation alliances. The target list includes two categories of potential occurrence in the study area:

1. Known to occur in the Project Vicinity—SSPs with recorded populations in the Project Vicinity, as determined by CNDDDB, CCH, or SCE studies; and
2. May occur in the Project Vicinity—SSPs that may occur in the Project Vicinity based on the geographic location and elevation of the Project, vegetation alliances, and other habitat features present.

USFS-provided vegetation alliances within the study area were obtained as geospatial layers and reviewed prior to ground-truthing in Task 2 (Appendix A).

A list of non-native plants with a Cal-IPC rating of High (NNIPs) potentially occurring within the study area with severe ecological impacts was prepared.

4.2. FIELD SURVEYS

Three botanical survey periods were identified based on published phenologies of target NNIPs and SSPs: spring (March through April), summer (June through July), and late summer/fall (August through September). Between 2022 and 2023, surveys were conducted across the study sites as described above. Specific study site survey times are shown in Table 4.2-1.

Prior to the start of field surveys, known occurrences of special-status botanical resources and areas of potentially suitable habitat for special-status botanical resources were prepared as printed paper maps or as maps accessible by a handheld device. Reference population locations of SSPs known to occur near the study area were visited to verify survey timing and phenology.

Plants were identified by visual recognition and comparison to plant keys using The Jepson Manual (Baldwin et al., 2012) supplemented by the Jepson eFlora (Jepson Flora Project, 2023) and Kern County Flora (Moe, 2016) where appropriate and where key characters required additional examination. Observations of SSPs and NNIPs (high ecological impact) were recorded in the field using hand-held Global Positioning System (GPS) units. A cumulative list of plant species observed was compiled during field surveys. All plants were documented to species, subspecies, or variety (if possible).

For groups of plants that are difficult to differentiate, specimens were collected for laboratory analysis. Documented habitats and localities were consulted when reviewing species identifications to ensure the validity of any potential range extensions.

Table 4.2-1. Schedule of Field Surveys

Survey Dates	Survey Season	Survey Area and Task
April 12 to 20, 2022	Spring	Conducted field botanical surveys of aboveground Project facilities and the Cannell Creek Bypass Reach
June 7 to 9, 2022	Summer	Conducted field botanical surveys of aboveground Project facilities and the Cannell Creek Bypass Reach
August 3 to 11, 2022	Late Summer/Fall	Conducted field botanical surveys of aboveground Project facilities, the Corral Creek Bypass Reach, the Cannell Creek Bypass Reach, the Salmon Creek Bypass Reach, and the Fairview Dam Bypass Reach Mapped vegetation alliances of aboveground Project facilities, the Corral Creek Bypass Reach, the Cannell Creek Bypass Reach, and the Salmon Creek Bypass Reach,
October 27, 2022	None	Mapped vegetation alliances of the Fairview Dam Bypass Reach
April 17 to 20 2023	Spring	Conducted field botanical surveys of the Corral Creek Bypass Reaches, the Salmon Creek Bypass Reaches, and the Fairview Dam Bypass Reaches
May 30 to June 2, 2023	Summer	Conducted field botanical surveys of the Corral Creek Bypass Reaches, Salmon Creek Bypass Reaches, and the Fairview Dam Bypass Reaches

5.0 DATA SUMMARY

5.1. LITERATURE REVIEW

Three Sensitive Natural Communities were found to potentially occur in the Project Vicinity (Table 5.1-1) The literature review returned a target plant list of 8 SSPs that were known to occur and 15 SSPs that may occur (Table A-1 in Appendix A) and 25 Cal-IPC high NNIPs that could potentially occur in the Project Vicinity (Table B-1 in Appendix B).

Table 5.1-1. Sensitive Natural Communities Potentially Occurring in the Project Vicinity

Natural Community	Rank ^a Global/ State	Query Sources	Habitat ^b	Potential to Occur
Big Tree Forest	G3/S3.2	CNDDDB	Lower montane coniferous forest, including groves of giant sequoia (<i>Sequoiadendron giganteum</i>) and associated with abundant groundwater.	Occurrence unlikely. Several groves known from west of the Project Vicinity, with the closest located approximately 5 miles to the west (CDFW, 2023a). This community is extremely conspicuous, and groves are well-reported in the Project Vicinity.
Great Valley Cottonwood Riparian Forest	G2/S2.1	CNDDDB	Riparian forest in fine-grained alluvial soils with a canopy of broadleaved, deciduous species, dominated by Fremont cottonwoods (<i>Populus fremontii</i>) and Goodding's black willow (<i>Salix gooddingii</i>) and with an understory adapted to annual flooding.	May potentially occur. Known along the South Fork of the Kern River, from eastern Isabella Lake to Canebrake Creek. Riparian habitat along upper Kern River within the Project Vicinity may meet the classification for the natural community.
Southern Interior Cypress Forest	G2/S2.1	CNDDDB	Closed-cone coniferous forest, densely spaced, and fire-adapted with dominant species varying by elevation.	May potentially occur. Several groves known from canyons and ephemeral channels within the Project Vicinity (CDFW, 2023a).

CNDDDB = California Natural Diversity Data Base

^a Rank (CDFW, 2023a)

Global/State Rank

G1/S1: Fewer than 6 viable occurrences worldwide/statewide, and/or up to 518 hectares

G2/S2: 6–20 viable occurrences worldwide/statewide, and/or more than 518–2,590 hectares

G3/S3: 21–100 viable occurrences worldwide/statewide, and/or more than 2,590–12,950 hectares

^b Holland, 1986

5.2. FIELD SURVEYS

The following SSPs³ were found:

- Call's Angelica (*Angelica callii*)—California Rare Plant Rank (CRPR) 4.3
- Kern Canyon clarkia (*Clarkia xantiana* ssp. *parviflora*)—CRPR 4.2
- Kern County larkspur (=Rose-flowered larkspur) (*Delphinium purpusii*)—CRPR 1B.3/FSS
- Kern River daisy (*Erigeron multiceps*)—CRPR 1B.2/FSS

³ Plant status listed as per the *Special Vascular Plants, Bryophytes, and Lichens List* (CDFW, 2023b).

- Limestone dudleya (*Dudleya abramsii* ssp. *calcicola*)—CRPR 4.3
- Mojave tarplant (*Deinandra mohavensis*)—California State listed as endangered (SE) / CRPR 1B.3 / FSS
- Piute cypress (*Hesperocyparis nevadensis*)—CRPR 1B.2
- Tracy's eriastrum (*Eriastrum tracyi*)— California State listed as endangered (CR) / CRPR 3.2/FSS
- Transverse Range phacelia (*Phacelia exilis*)—CRPR 4.3
- Two-colored monkeyflower (*Erythranthe discolor*)—CRPR 4.2

A compendium of 347 plant species were documented within the study sites (Table C-1 in Appendix C). Field surveys located 8 of the 23 target SSPs (Table A-1 in Appendix A). An additional two SSPs were located that were not identified as target species identified in the PAD (SCE, 2021). Locations of documented SSPs are shown in Appendix D (Figures D-1a through D-1f), and associated geospatial data will be submitted to the CNDDDB.

The following Cal-IPC high NNIPS were found:

- Cheatgrass (*Bromus tectorum*)
- Red brome (*Bromus madritensis* ssp. *rubens*)
- Himalayan blackberry (*Rubus armeniacus*)

Three of the 25 NNIPS that could potentially occur in the Project Vicinity were located during field surveys (Table B-1 in Appendix B). As previously described, cheatgrass and red brome were ubiquitous at study sites and no geospatial data were collected. Locations of Himalayan blackberry are shown in Appendix E (Figure E-1).

Ground-truthing of the vegetation of the study area documented 19 of the USFS mapped vegetation alliances (Appendix F). While many of the USFS mapped alliances were found to be generally accurate at the study sites, some revisions were made using data collected during ground-truthing (Figure G-1a through G-1g in Appendix G).

Of the three documented CNDDDB Sensitive Natural Communities in the vicinity of the study area (see Appendix B), Great Valley Cottonwood Riparian Forest was found to be represented by the USFS Mixed Riparian vegetation alliance (Figures G-1a through G-1g in Appendix G). Three small stands of Piute cypress (Southern Interior Cypress Forest) were found (Figures D-1a through D-1f in Appendix D). No big trees (Big Tree Forest) were found in the study sites.

Finally, one western pond turtle (*Emys marmorata*) (state species of special concern; USFS sensitive) was incidentally observed basking on the margins of Cannell Creek

during focused botanical field surveys (for more information on western pond turtle, see the *BIO-5 Western Pond Turtle Interim Technical Memorandum* [Attachment J to this Initial Study Report]). No other incidental special-status wildlife observations were documented during this study.

6.0 STUDY SPECIFIC CONSULTATION

- 8 April 2022: Jillian Roach (Environmental Resources Management, Inc.), David Moore (SCE), and Randi McCormick (McCormick Biological, Inc.) met with Norman Leonard (USFS) to discuss survey timing and adequacy of rainfall during the previous rainy season (2021/2022) and circumstances under which survey periods/sites would potentially be augmented in 2023.

7.0 OUTSTANDING STUDY PLAN ELEMENTS

All Study Plan elements have been completed as outlined in SCE's RSP (SCE, 2022) filing, and as amended in FERC's SPD (FERC 2022), with the exception of the variances described above. This study is now complete.

8.0 REFERENCES

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APPENDIX A
TARGET SPECIAL-STATUS PLANTS

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Table A-1. Target Special-Status Plants

Species Name	Status Federal/State/ CRPR/USFS	Blooming Period	Elevation Range (feet)	Habitat	Potential to Occur
Alkali mariposa lily <i>Calochortus striatus</i>	-/-1B.2/FSS	April-June	225-5,235	Moist alkaline and/or mesic sites in chaparral, chenopod scrub, Mojavean desert scrub, meadows and seeps	May occur. Potentially suitable habitat is present; nearest record is less than 1 mile southeast of the Project Vicinity near Kernville (CCH, 2023). Not observed during 2022 or 2023 study site surveys.
Calico monkeyflower <i>Diplacus pictus</i>	-/-1B.2/-	March-May	325-4,690	Broadleafed upland forest, cismontane woodland	May occur. Suitable habitat is present; numerous populations are known from as close as 12 miles south and west of the Project Vicinity (CCH, 2023), with several records in habitat similar to the Project Vicinity. Not observed during 2022 or 2023 study site surveys.
Call's angelica <i>Angelica callii</i>	-/-4.3/-	June-July	3,605-6,560	Cismontane woodland, lower montane coniferous forest	Known to occur. Prior to field surveys, this species has been recorded less than 1 mile north of the Project Vicinity (CCH, 2023). Not observed during 2022 or 2023 study site surveys.
Cut-leaf checkerbloom <i>Sidalcea multifida</i>	-/-2B.3/-	May-September	5,740-9,185	Great Basin scrub, lower montane coniferous forest, meadows and seeps, pinyon and juniper woodland	May occur. A small portion of the Project Vicinity is within the elevation range for this species; general vegetation may be present, conditions in the Project Vicinity are unlikely to support this species. One record is located approximately 2.5 miles north of the northern portion of the Project Vicinity (CDFW, 2023a). Note: One CCH specimen location is within the Project Vicinity; however, the specimen label states, "in open Yellow Pine forest" and "along fork of Kern Trail between Lloyd Meadow and canyon rim Sequoia National Forest" (CCH, 2023). Lloyd Meadow is 12 miles north of the northern limit of the Project Vicinity. Not observed during 2022 or 2023 study site surveys.
Delicate bluecup <i>Githopsis tenella</i>	-/-1B.3/-	April-June	1,065-6,235	Chaparral, cismontane woodland	May occur. Suitable habitat is present and there are records from approximately 9 miles southeast of the Project Vicinity in similar habitat (CCH, 2023). Not observed during 2022 or 2023 study site surveys.
Kern Canyon clarkia <i>Clarkia xantiana</i> ssp. <i>parviflora</i>	-/-4.2/-	May-June	2,295-11,875	Chaparral, cismontane woodland, Great Basin scrub, valley and foothill grassland	Known to occur. This plant is known from several locations both inside and outside of the Project Vicinity within the Kern River drainage (CCH, 2023; CDFW, 2023a). Observed during 2022 and 2023 study site surveys.
Kern River daisy <i>Erigeron multiceps</i>	-/-1B.2/FSS	June-September	4,920-8,315	Meadows and seeps, openings in upper montane coniferous forest	Known to occur. Several populations known from the Project Vicinity (CCH, 2023; CDFW, 2023a). Observed during 2022 and 2023 study site surveys.
Kern River evening-primrose <i>Camissonia integrifolia</i>	-/-1B.3/-	(sometimes April) May	2,295-3,280	Chaparral	May occur. Suitable habitat is present; and the nearest record is in rabbitbush scrub approximately 9 miles southeast of the Project Vicinity (CCH, 2023). Not observed during 2022 or 2023 study site surveys.
Kernville poppy <i>Eschscholzia procera</i>	-/-3/-	June-July (sometimes August)	2,655-3,365	Sandy floodplains in cismontane woodland	May occur. Suitable habitat is present on the Project Vicinity and populations are known from the vicinity (CCH, 2023). Not observed during 2022 or 2023 study site surveys.
Mojave tarplant <i>Deinandra mohavensis</i>	-/SE/1B.3/FSS	(sometimes May) June-October (sometimes January)	2,095-5,250	Chaparral, coastal scrub, riparian scrub	Known to occur. Localities reported include "Kernville" and Corral Creek near the Kern River within the Project Vicinity (CCH, 2023). Observed during 2022 and 2023 study site surveys.
Muir's tarplant <i>Carlquistia muirii</i>	-/-1B.3/FSS	July-August (sometimes October)	2,475-8,200	Dry, open sites on granitic soil in montane chaparral, lower montane coniferous forest, upper montane coniferous forest	May occur. Potentially suitable habitat is present, although records in the region are within chaparral types that are typically found at higher elevations; nearest record is approximately 2.7 miles west of Project Vicinity (CCH, 2023). Not observed during 2022 or 2023 study site surveys.
Palmer's mariposa lily <i>Calochortus palmeri</i> var. <i>palmeri</i>	-/-1B.2/FSS	April-July	2,325-7,840	Chaparral, lower montane coniferous forest, meadows and seeps	Known to occur. Suitable habitat is present and at least one population is located within the Project Vicinity (CDFW, 2023a). Not observed during 2022 or 2023 study site surveys.
Piute cypress <i>Hesperocyparis nevadensis</i>	-/-1B.2/-	NA	2,360-6,005	Closed-cone coniferous forest, chaparral, cismontane woodland, pinyon and juniper woodland	Known to occur. Two locations recorded within the Project Vicinity with several just outside of the Project Vicinity (CCH, 2023; CDFW, 2023a). Observed during 2022 and 2023 study site surveys.

Species Name	Status Federal/State/ CRPR/USFS	Blooming Period	Elevation Range (feet)	Habitat	Potential to Occur
Prairie wedge grass <i>Sphenopholis obtusata</i>	-/-/2B.2/-	April–July	980–6,560	Cismontane woodland, meadows, streambanks, and seeps	Known to occur. Northern portion of Project Vicinity in limestone cliffs Kern River Canyon (CCH, 2023; CDFW, 2023a). Not observed during 2022 or 2023 study site surveys.
Rose-flowered larkspur (=Kern County larkspur) <i>Delphinium purpusii</i>	-/-/1B.3/FSS	(sometimes March) April–May	980–4,395	Chaparral, cismontane woodland, pinyon and juniper woodland	Known to occur. Suitable habitat present and several populations are known to occur within the Project Vicinity (CCH, 2023a). Observed during 2022 and 2023 study site surveys.
Shevock's copper moss <i>Mielichhoferia shevockii</i>	-/-/1B.2/FSS	NA	2,460–4,595	Areas of cismontane woodland with metamorphic rock and mesic soils	Known to occur. One CNDDDB record located along the Kern River within the Project Vicinity (CDFW, 2023a) Not observed during 2022 or 2023 study site surveys.
Shevock's golden-aster <i>Heterotheca shevockii</i>	-/-/1B.3/FSS	August–November	750–2,955	Chaparral, cismontane woodland	May occur. Suitable habitat is present; records approximately 11 miles south-southwest of the Project Vicinity in similar habitat along the lower Kern River canyon (CCH, 2023). Not observed during 2022 or 2023 study site surveys.
The Needles buckwheat <i>Eriogonum breedlovei</i> var. <i>shevockii</i>	-/-/4.3/-	(sometimes June) July–September	5,295–8,450	Granite crevices; pinyon and juniper woodland, upper montane coniferous forest	May occur. Although potential vegetation types are not present, granite outcrops and crevices occur in Project Vicinity; several records approximately 2.5 miles west of Project Vicinity near Baker Point (CCH, 2023).
Tracy's eriastrum <i>Eriastrum tracyi</i>	-/CR/3.2/FSS	May–July	1,030–5,840	Chaparral, cismontane woodland, valley and foothill grassland	Known to occur (initially identified as “may occur”). Suitable habitat is present. Prior to field surveys, this species has been recorded less than 1 mile north and 6 miles southeast of the Project Vicinity in similar habitat (CCH, 2023; CDFW, 2023a). Observed during 2022 or 2023 study site surveys.
Tulare cryptantha <i>Cryptantha incana</i>	-/-/1B.3/FSS	June–August	4,690–7,055	Gravelly or rocky areas in lower montane coniferous forest	May occur. Potentially suitable habitat is present several populations recorded within 5 miles of the Project Vicinity (CCH, 2023; CDFW, 2023a). Not observed during 2022 or 2023 study site surveys.
Two-colored monkeyflower <i>Erythranthe discolor</i>	-/-/4.2/-	June–July	4,265–8,200	Openings along small streams, meadow edges, generally in granitic soils	Known to occur (initially identified as “may occur”). Suitable habitat is present. Prior to field surveys, this species has been recorded in the Project Vicinity in similar habitat (CCH, 2023). Observed during 2022 and 2023 study site surveys.
Unexpected larkspur <i>Delphinium inopinum</i>	-/-/4.3/FSS	May–July	6,200–9,185	Areas with metamorphic rocks in upper montane coniferous forest	May occur. Although the Project Vicinity is outside of the published elevation range and habitat for this species, a record has been reported from about 2.5 miles south of the Project Vicinity at Kern Hot Springs with habitat similar to the Project Vicinity in the surrounding area (CCH, 2023). Not observed during 2022 or 2023 study site surveys.
White pygmy-poppy <i>Canbya candida</i>	-/-/4.2/FSS	March–June	1,965–4,790	Sandy soils in Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland	May occur. Several populations have been recorded in Cyrus Canyon, approximately 3.5 miles south of the Project Vicinity, and one location was recorded as “Kernville” in 1891, which is less than 1 mile south of the Project Vicinity (CCH, 2023). Given the widespread nature of the known occurrences in the region, this plant should be considered even though habitat types are not present. Not observed during 2022 or 2023 study site surveys.

CNDDDB = California Natural Diversity Data Base; CRPR = California Rare Plant Rank; FSS = U.S. Forest Service Sensitive; USFS = U.S. Forest Service

Status:

Federal

FE Federally listed as endangered
 FT Federally listed as threatened
 – No federal status

State

SE California State listed as endangered
 ST California State listed as threatened
 SR California State Listed as rare
 – No state status

CRPR (California Rare Plant Rank) List Ranks

List 1B Plants rare, threatened, or endangered in California and elsewhere
 List 2B Plants rare, threatened, or endangered in California, but more common elsewhere
 List 3 More information needed about this plant, a review list
 List 4 Plants of limited distribution, a watch list

CRPR Threat Ranks

0.1 Seriously threatened in California (high degree/immediacy of threat)
 0.2 Fairly threatened in California (moderate degree/immediacy of threat)

APPENDIX B
POTENTIALLY OCCURRING NON-NATIVE INVASIVE PLANTS

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Table B-1. Non-Native Invasive Plants Potentially Occurring in the Project Vicinity with a High Ecological Impact Rating (Cal-IPC)

Scientific Name	Common Names	Field Survey Results
<i>Aegilops triuncialis</i>	Barb goatgrass	Not documented.
<i>Arundo donax</i>	Giant reed	Not documented.
<i>Brassica tournefortii</i>	Sahara mustard	Not documented.
<i>Bromus madritensis</i> ssp. <i>rubens</i>	Red brome	Present through the study area; specific location data was not collected.
<i>Bromus tectorum</i>	Cheatgrass	Present through the study area; specific location data was not collected.
<i>Carthamnus lanatus</i>	Wooly distaff thistle	Not documented.
<i>Centaurea solstitialis</i>	Yellow starthistle	Not documented.
<i>Centaurea stoebe</i> ssp. <i>micranthos</i>	Spotted knapweed	Not documented.
<i>Cortaderia jubata</i>	Jubatagrass	Not documented.
<i>Cortaderia selloana</i>	Pampasgrass	Not documented.
<i>Cytisus scoparius</i>	Scotch broom	Not documented.
<i>Elymus caput-medusae</i>	Medusahead	Not documented.
<i>Euphorbia virgata</i>	Leafy spurge	Not documented.
<i>Genista monspessulana</i>	French broom	Not documented.
<i>Hedera helix</i>	English ivy	Not documented.
<i>Lepidium latifolium</i>	Perennial pepperweed	Not documented.
<i>Lythrum salicaria</i>	Purple loosestrife	Not documented.
<i>Onopordum acanthium</i>	Scotch thistle	Not documented.
<i>Rubus armeniacus</i>	Himalayan blackberry	Populations documented at Salmon Creek, Corral Creek, and along Mountain 99 near Fairview Dam.
<i>Sesbania punicea</i>	Scarlet wisteria	Not documented.
<i>Spartium junceum</i>	Spanish broom	Not documented.

Scientific Name	Common Names	Field Survey Results
<i>Tamarix chinensis</i>	Chinese tamarisk	Not documented.
<i>Tamarix parviflora</i>	Smallflower tamarisk	Not documented.
<i>Tamarix ramosissima</i>	Saltcedar	Not documented.
<i>Ulex europaeus</i>	Gorse	Not documented.

Source: Cal-IPC, 2023

Cal-IPC = California Invasive Plant Council

Cal-IPC Rating Definitions:

High These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

APPENDIX C
COMPENDIUM OF PLANTS DOCUMENTED IN FIELD SURVEYS

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Table C-1. Compendium of Plants Documented in Field Surveys

Family	Scientific Name	Common Name	Status (Federal/State/CRPR/USFS)
Agavaceae	<i>Hesperoyucca whipplei</i>	Chaparral yucca	Native
Asteraceae	<i>Brickellia californica</i>	California brickellia	Native
Asteraceae	<i>Brickellia microphylla</i>	Little leaved brickellia	Native
Asteraceae	<i>Centromadia pungens</i>	Common tarweed	Native
Asteraceae	<i>Chaenactis fremontii</i>	Fremont pincushion	Native
Asteraceae	<i>Chaenactis glabriuscula</i>	Common yellow chaenactis	Native
Asteraceae	<i>Chaenactis xantiana</i>	Xantus' chaenactis	Native
Asteraceae	<i>Cirsium occidentale</i>	Western thistle	Native
Asteraceae	<i>Cirsium occidentale</i> var. <i>californicum</i>	California thistle	Native
Asteraceae	<i>Cirsium vulgare</i>	Bullthistle	Cal-IPC Moderate
Asteraceae	<i>Corethrogyne filaginifolia</i>	Common sandaster	Native
Asteraceae	<i>Deinandra mohavensis</i>	Mojave tarplant	-/SE/1B.3/FSS
Asteraceae	<i>Encelia actoni</i>	Acton encelia	Native
Asteraceae	<i>Ericameria arborescens</i>	Goldenfleece	Native
Asteraceae	<i>Ericameria cuneata</i>	Rock goldenbush	Native
Asteraceae	<i>Ericameria linearifolia</i>	Interior goldenbush	Native
Asteraceae	<i>Ericameria nauseosa</i>	Rubber rabbitbrush	Native
Asteraceae	<i>Ericameria teretifolia</i>	Green rabbitbrush	Native
Asteraceae	<i>Erigeron canadensis</i>	Canada horseweed	Native
Asteraceae	<i>Erigeron multiceps</i>	Kern River daisy	-/-/1B.3/FSS
Asteraceae	<i>Eriophyllum ambiguum</i>	Annual wooly sunflower	Native
Asteraceae	<i>Eriophyllum confertiflorum</i>	Yellow yarrow	Native
Asteraceae	<i>Eriophyllum lanatum</i>	Wooly sunflower	Native
Asteraceae	<i>Eriophyllum pringlei</i>	Pringle eriophyllum	Native
Asteraceae	<i>Euthamia occidentalis</i>	Western goldenrod	Native
Asteraceae	<i>Gnaphalium palustre</i>	Lowland cudweed	Native
Asteraceae	<i>Helianthus annuus</i>	Hairy leaved sunflower	Native
Asteraceae	<i>Hemizonella minima</i>	Opposite leaved tarweed	Native

Family	Scientific Name	Common Name	Status (Federal/State/CRPR/USFS)
Asteraceae	<i>Heterotheca grandiflora</i>	Telegraph weed	Native
Asteraceae	<i>Heterotheca sessiliflora</i>	Golden aster	Native
Asteraceae	<i>Holocarpha heermannii</i>	Heermann's tarweed	Native
Asteraceae	<i>Lactuca serriola</i>	Prickly lettuce	Non-native
Asteraceae	<i>Lasthenia debilis</i>	Greene's goldfields	Native
Asteraceae	<i>Lasthenia gracilis</i>	Needle goldfields	Native
Asteraceae	<i>Layia glandulosa</i>	White layia	Native
Asteraceae	<i>Lepidospartum squamatum</i>	Scalebroom	Native
Asteraceae	<i>Leptosyne bigelovii</i>	Bigelow coreopsis	Native
Asteraceae	<i>Logfia filaginoides</i>	Filago	Native
Asteraceae	<i>Logfia gallica</i>	Narrowleaf cottonrose	Native
Asteraceae	<i>Malacothrix californica</i>	California dandelion	Native
Asteraceae	<i>Malacothrix clevelandii</i>	Cleveland's malacothrix	Native
Asteraceae	<i>Malacothrix glabrata</i>	Desert dandelion	Native
Asteraceae	<i>Matricaria discoidea</i>	Pineapple weed	Native
Asteraceae	<i>Micropus californicus</i>	Qtips	Native
Asteraceae	<i>Monolopia lanceolata</i>	Common monolopia	Native
Asteraceae	<i>Orochaenactis thysanocarpha</i>	Mountain pincushion	Native
Asteraceae	<i>Pseudognaphalium beneolens</i>	Cudweed	Native
Asteraceae	<i>Pseudognaphalium luteoalbum</i>	Jersey cudweed	Non-native
Asteraceae	<i>Rafinesquia californica</i>	California chicory	Native
Asteraceae	<i>Rigiopappus leptocladus</i>	Wireweed	Native
Asteraceae	<i>Senecio flaccidus</i> var. <i>douglasii</i>	Bush groundsel	Native
Asteraceae	<i>Senecio vulgaris</i>	Common groundsel	Non-native
Asteraceae	<i>Solidago elongata</i>	West coast Canada goldenrod	Native
Asteraceae	<i>Stephanomeria pauciflora</i>	Wire lettuce	Native
Asteraceae	<i>Stephanomeria virgata</i>	Twiggy wreath plant	Native
Asteraceae	<i>Stylocline gnaphaloides</i>	Everlasting stylocline	Native

Family	Scientific Name	Common Name	Status (Federal/State/CRPR/USFS)
Asteraceae	<i>Syntrichopappus fremontii</i>	Fremont's syntrichopappus	Native
Asteraceae	<i>Uropappus lindleyi</i>	Silver puffs	Native
Asteraceae	<i>Xanthium strumarium</i>	Cocklebur	Native
Bartramiaceae	<i>Anacolia</i> sp.	No common name	Native
Betulaceae	<i>Alnus rhombifolia</i>	White alder	Native
Boraginaceae	<i>Amsinckia intermedia</i>	Common fiddleneck	Native
Boraginaceae	<i>Amsinckia menziesii</i>	Menzies' fiddleneck	Native
Boraginaceae	<i>Amsinckia tessellata</i>	Devil's lettuce	Native
Boraginaceae	<i>Cryptantha echinella</i>	Prickly cryptantha	Native
Boraginaceae	<i>Cryptantha flaccida</i>	Beaked cryptantha	Native
Boraginaceae	<i>Cryptantha muricata</i>	Prickly cryptantha	Native
Boraginaceae	<i>Pectocarya penicillata</i>	Winged pectocarya	Native
Boraginaceae	<i>Pectocarya setosa</i>	Moth combseed	Native
Boraginaceae	<i>Plagiobothrys acanthocarpus</i>	Adobe allocarya	Native
Boraginaceae	<i>Plagiobothrys arizonicus</i>	Arizona popcorn flower	Native
Boraginaceae	<i>Plagiobothrys tenellus</i>	Slender popcorn flower	Native
Brassicaceae	<i>Boechera arcuata</i>	Arching rockcress	Native
Brassicaceae	<i>Boechera sparsiflora</i>	Sicklepod rockcress	Native
Brassicaceae	<i>Boechera stricta</i>	Drummond's rockcress	Native
Brassicaceae	<i>Brassica nigra</i>	Black mustard	Cal-IPC Moderate
Brassicaceae	<i>Caulanthus coulteri</i>	Coulter's jewel flower	Native
Brassicaceae	<i>Descurainia pinnata</i> ssp. <i>brachycarpa</i>	Western tansymustard	Native
Brassicaceae	<i>Descurainia sophia</i>	Herb sophia	Cal-IPC Limited
Brassicaceae	<i>Draba verna</i>	Whitlow grass	Non-native
Brassicaceae	<i>Erysimum capitatum</i> var. <i>capitatum</i>	Sanddune wallflower	Native
Brassicaceae	<i>Hirschfeldia incana</i>	Summer mustard	Cal-IPC Moderate
Brassicaceae	<i>Lepidium nitidum</i>	Shining pepper grass	Native
Brassicaceae	<i>Nasturtium officinale</i>	Watercress	Native
Brassicaceae	<i>Sisymbrium altissimum</i>	Tumble mustard	Non-native

Family	Scientific Name	Common Name	Status (Federal/State/CRPR/USFS)
Brassicaceae	<i>Sisymbrium irio</i>	London rocket	Cal-IPC Limited
Brassicaceae	<i>Sisymbrium orientale</i>	Indian hedge mustard	Non-native
Brassicaceae	<i>Streptanthus tortuosus</i>	Jewelweed	Native
Brassicaceae	<i>Thysanocarpus curvipes</i>	Common fringe pod	Native
Brassicaceae	<i>Thysanocarpus laciniatus</i>	Narrow leaved lacepod	Native
Brassicaceae	<i>Tropidocarpum gracile</i>	Slender tropidocarpum	Native
Cactaceae	<i>Opuntia basilaris</i> var. <i>basilaris</i>	Beavertail cactus	Native
Caprifoliaceae	<i>Lonicera interrupta</i>	Chaparral honeysuckle	Native
Caryophyllaceae	<i>Herniaria hirsuta</i>	Herniaria	Non-native
Caryophyllaceae	<i>Silene gallica</i>	Common catchfly	Non-native
Caryophyllaceae	<i>Silene laciniata</i> ssp. <i>californica</i>	California Indian pink	Native
Caryophyllaceae	<i>Stellaria media</i>	Chickweed	Non-native
Chenopodiaceae	<i>Chenopodium atrovirens</i>	Dark green goosefoot	Native
Chenopodiaceae	<i>Chenopodium berlandieri</i>	Pit seed goosefoot	Native
Chenopodiaceae	<i>Chenopodium californicum</i>	California goosefoot	Native
Chenopodiaceae	<i>Chenopodium fremontii</i>	Fremont's goosefoot	Native
Chenopodiaceae	<i>Chenopodium pratericola</i>	Meadow goosefoot	Native
Chenopodiaceae	<i>Salsola tragus</i>	Russian thistle	Cal-IPC Limited
Comandraceae	<i>Comandra umbellata</i>	Bastard toadflax	Native
Convolvulaceae	<i>Calystegia longipes</i>	Piute morning glory	Native
Convolvulaceae	<i>Cuscuta californica</i>	California dodder	Native
Crassulaceae	<i>Dudleya abramsii</i> ssp. <i>calicicola</i>	Limestone dudleya	-/-/4.3/-
Crassulaceae	<i>Sedella pumila</i>	Sierra mock stonecrop	Native
Cucurbitaceae	<i>Cucurbita palmata</i>	Coyote melon	Native
Cucurbitaceae	<i>Marah horrida</i>	Sierra man-root	Native
Cupressaceae	<i>Calocedrus decurrens</i>	Incense cedar	Native
Cupressaceae	<i>Hesperocyparis nevadensis</i>	Piute cypress	-/-/1B.2/-
Cupressaceae	<i>Juniperus californica</i>	California juniper	Native
Cyperaceae	<i>Carex alma</i>	Sedge	Native

Family	Scientific Name	Common Name	Status (Federal/State/CRPR/USFS)
Cyperaceae	<i>Carex nudata</i>	Torrent sedge	Native
Cyperaceae	<i>Carex praegracilis</i>	Field sedge	Native
Cyperaceae	<i>Carex senta</i>	Rough sedge	Native
Cyperaceae	<i>Eleocharis parishii</i>	Parish's spike rush	Native
Dennstaedtiaceae	<i>Pteridium aquilinum</i>	Western brackenfern	Native
Dryopteridaceae	<i>Dryopteris arguta</i>	California wood fern	Native
Ephedraceae	<i>Ephedra nevadensis</i>	Nevada ephedra	Native
Ephedraceae	<i>Ephedra viridis</i>	Green ephedra	Native
Equisetaceae	<i>Equisetum arvense</i>	Common horsetail	Native
Ericaceae	<i>Arctostaphylos glauca</i>	Big berry manzanita	Native
Ericaceae	<i>Arctostaphylos patula</i>	Green leaf manzanita	Native
Ericaceae	<i>Arctostaphylos viscida</i>	Whiteleaf manzanita	Native
Euphorbiaceae	<i>Croton setiger</i>	Turkey-mullein	Native
Euphorbiaceae	<i>Euphorbia albomarginata</i>	Rattlesnake sandmat	Native
Fabaceae	<i>Acmispon argophyllus</i>	Silverleaf trefoil	Native
Fabaceae	<i>Acmispon glaber</i>	Deerweed	Native
Fabaceae	<i>Acmispon grandiflorus</i>	Large leaved lotus	Native
Fabaceae	<i>Acmispon strigosus</i>	Strigose lotus	Native
Fabaceae	<i>Albizia julibrissin</i>	Silktree	Non-native
Fabaceae	<i>Astragalus purshii</i> var. <i>tinctus</i>	Pursh's milk vetch	Native
Fabaceae	<i>Lupinus adsurgens</i>	Drew's silky lupine	Native
Fabaceae	<i>Lupinus andersonii</i>	Anderson's lupine	Native
Fabaceae	<i>Lupinus benthamii</i>	Spider lupine	Native
Fabaceae	<i>Lupinus bicolor</i>	Lupine	Native
Fabaceae	<i>Lupinus cocinnus</i>	Bajada lupine	Native
Fabaceae	<i>Lupinus excubitus</i>	Grape lupine	Native
Fabaceae	<i>Lupinus stiversii</i>	Harlequin lupine	Native
Fabaceae	<i>Melilotus albus</i>	White sweetclover	Non-native
Fabaceae	<i>Robinia pseudoacacia</i>	Black locust	Cal-IPC Limited
Fabaceae	<i>Trifolium hirtum</i>	Rose clover	Cal-IPC Limited
Fabaceae	<i>Trifolium microcephalum</i>	Hairy clover	Native
Fabaceae	<i>Trifolium willdenovii</i>	Tomcat clover	Native

Family	Scientific Name	Common Name	Status (Federal/State/CRPR/USFS)
Fagaceae	<i>Quercus chrysolepis</i>	Gold cup live oak	Native
Fagaceae	<i>Quercus garryana</i>	Oregon oak	Native
Fagaceae	<i>Quercus kelloggii</i>	California black oak	Native
Fagaceae	<i>Quercus wislizeni</i>	Interior live oak	Native
Garryaceae	<i>Garrya flavescens</i>	Ashy silk tassel	Native
Gerinaceae	<i>Erodium cicutarium</i>	Coastal heron's bill	Cal-IPC Limited
Grimmiaceae	<i>Grimmia</i> sp.	Grimmia moss	Native
Grossularaceae	<i>Ribes cereum</i>	Wax currant	Native
Grossularaceae	<i>Ribes roezlii</i>	Sierra gooseberry	Native
Hydrophyllaceae	<i>Emmenanthe penduliflora</i>	Whispering bells	Native
Hydrophyllaceae	<i>Nemophila pulchella</i>	Eastwood's nemophila	Native
Hydrophyllaceae	<i>Phacelia cicutaria</i> var. <i>hispida</i>	Caterpillar phacelia	Native
Hydrophyllaceae	<i>Phacelia distans</i>	Common phacelia	Native
Hydrophyllaceae	<i>Phacelia egena</i>	Rock phacelia	Native
Hydrophyllaceae	<i>Phacelia exilis</i>	Transverse Range phacelia	-/-/4.3/-
Hydrophyllaceae	<i>Phacelia mutabilis</i>	Changeable phacelia	Native
Hydrophyllaceae	<i>Phacelia ramosissima</i>	Branching phacelia	Native
Hydrophyllaceae	<i>Phacelia tanacetifolia</i>	Tansy leafed phacelia	Native
Hydrophyllaceae	<i>Pholistoma auritum</i> var. <i>auritum</i>	Blue fiesta flower	Native
Juncaceae	<i>Juncus balticus</i>	Wire rush	Native
Juncaceae	<i>Juncus bufonius</i>	Common toad rush	Native
Juncaceae	<i>Juncus mexicanus</i>	Mexican rush	Native
Juncaceae	<i>Juncus rugulosus</i>	Wrinkled rush	Native
Lamiaceae	<i>Lamium amplexicaule</i>	Henbit	Non-native
Lamiaceae	<i>Marrubium vulgare</i>	White horehound	Cal-IPC Limited
Lamiaceae	<i>Monardella breweri</i>	Brewer's monardella	Native
Lamiaceae	<i>Salvia columbariae</i>	Chia sage	Native
Lamiaceae	<i>Stachys albens</i>	Cobwebby hedge nettle	Native
Lamiaceae	<i>Trichostema lanceolatum</i>	Vinegarweed	Native
Liliaceae	<i>Calochortus invenustus</i>	Plain mariposa	Native

Family	Scientific Name	Common Name	Status (Federal/State/CRPR/USFS)
Liliaceae	<i>Calochortus venustus</i>	Butterfly mariposa lily	Native
Loasaceae	<i>Mentzelia albicaulis</i>	White stemmed blazing star	Native
Loasaceae	<i>Mentzelia veatchiana</i>	Veatch's blazing star	Native
Lythraceae	<i>Lythrum californicum</i>	Common loosestrife	Native
Malvaceae	<i>Fremontodendron californicum</i>	California fremontia	Native
Malvaceae	<i>Malacothamnus fremontii</i>	Fremont's bush mallow	Native
Malvaceae	<i>Malacothamnus orbiculatus</i>	Tehachapi bush mallow	Native
Montiaceae	<i>Calandrinia menziesii</i>	Calandrinia	Native
Montiaceae	<i>Calyptidium monandrum</i>	Common pussypaws	Native
Montiaceae	<i>Claytonia exigua</i>	Little spring beauty	Native
Montiaceae	<i>Claytonia parviflora</i> ssp. <i>parviflora</i>	Miner's lettuce	Native
Montiaceae	<i>Claytonia perfoliata</i>	Miner's lettuce	Native
Myrtaceae	<i>Eucalyptus sideroxylon</i>	Red iron bark	Non-native
Namaceae	<i>Eriodictyon californicum</i>	Yerba santa	Native
Nyctaginaceae	<i>Mirabilis laevis</i>	Desert wishbone bush	Native
Oleaceae	<i>Forestiera pubescens</i>	Desert olive	Native
Oleaceae	<i>Fraxinus latifolia</i>	Oregon ash	Native
Oleaceae	<i>Fraxinus velutina</i>	Arizona ash	Native
Onagraceae	<i>Camissonia campestris</i>	Field primrose	Native
Onagraceae	<i>Camissonia contorta</i>	Contorted sun cup	Native
Onagraceae	<i>Clarkia speciosa</i>	Red spotted clarkia	Native
Onagraceae	<i>Clarkia speciosa</i> ssp. <i>polyantha</i>	Red spot clarkia	Native
Onagraceae	<i>Clarkia unguiculata</i>	Woodland clarkia	Native
Onagraceae	<i>Clarkia xantiana</i> ssp. <i>parviflora</i>	Kern Canyon clarkia	-/-/4.2/-
Onagraceae	<i>Clarkia xantiana</i> ssp. <i>xantiana</i>	Xantus' clarkia	Native
Onagraceae	<i>Epilobium brachycarpum</i>	Willow herb	Native
Onagraceae	<i>Epilobium canum</i> ssp. <i>latifolium</i>	California fuchsia	Native

Family	Scientific Name	Common Name	Status (Federal/State/CRPR/USFS)
Onagraceae	<i>Epilobium ciliatum</i>	Slender willow herb	Native
Onagraceae	<i>Oenothera californica</i> ssp. <i>californica</i>	California evening primrose	Native
Onagraceae	<i>Oenothera elata</i>	Evening primrose	Native
Orobanchaceae	<i>Castilleja applegatei</i>	Wavy leaf paintbrush	Native
Orobanchaceae	<i>Castilleja exserta</i>	Owl's clover	Native
Orobanchaceae	<i>Castilleja minor</i>	Lesser paintbrush	Native
Orobanchaceae	<i>Castilleja subinclusa</i> ssp. <i>subinclusa</i>	Long leaf paintbrush	Native
Orobanchaceae	<i>Pedicularis semibarbata</i>	Pine woods lousewort	Native
Papaveraceae	<i>Argemone munita</i>	Prickly poppy	Native
Papaveraceae	<i>Ehrendorferia chrysantha</i>	Golden eardrops	Native
Papaveraceae	<i>Eschscholzia caespitosa</i>	Tufted eschscholzia	Native
Papaveraceae	<i>Eschscholzia californica</i>	California poppy	Native
Papaveraceae	<i>Eschscholzia minutiflora</i>	Coville's poppy	Native
Papaveraceae	<i>Platystemon californicus</i>	Cream cups	Native
Phrymaceae	<i>Diplacus aurantiacus</i>	Sticky monkeyflower	Native
Phrymaceae	<i>Diplacus calycinus</i>	Rock Bush Monkeyflower	Native
Phrymaceae	<i>Erythranthe cardinalis</i>	Cardinal monkey flower	Native
Phrymaceae	<i>Erythranthe discolor</i>	Two-colored monkeyflower	-/-/4.2/-
Phrymaceae	<i>Erythranthe floribunda</i>	Many flowered monkey flower	Native
Phrymaceae	<i>Erythranthe guttata</i>	Seep monkey flower	Native
Phrymaceae	<i>Mimetanthe pilosa</i>	Snouted monkey flower	Native
Pinaceae	<i>Pinus jeffreyi</i>	Jeffrey pine	Native
Pinaceae	<i>Pinus monophylla</i>	Single leaf pinyon	Native
Pinaceae	<i>Pinus sabiniana</i>	Gray pine	Native
Plantaginaceae	<i>Collinsia torreyi</i>	Torrey's collinsia	Native
Plantaginaceae	<i>Keckiella breviflora</i>	Gaping keckiella	Native
Plantaginaceae	<i>Penstemon grinnellii</i> var. <i>scrophularioides</i>	Grinnell's beardtongue	Native

Family	Scientific Name	Common Name	Status (Federal/State/CRPR/USFS)
Plantaginaceae	<i>Penstemon laetus</i> var. <i>laetus</i>	Mountain blue penstemon	Native
Plantaginaceae	<i>Penstemon speciosus</i>	Showy penstemon	Native
Plantaginaceae	<i>Plantago ovata</i>	Desert plantain	Native
Plantaginaceae	<i>Veronica persica</i>	Bird's eye speedwell	Non-native
Platanaceae	<i>Platanus racemosa</i>	California sycamore	Native
Poaceae	<i>Agrostis exarata</i>	Spike bentgrass	Native
Poaceae	<i>Argopyron cristatum</i>	Crested wheatgrass	Non-native
Poaceae	<i>Avena barbata</i>	Slim oat	Cal-IPC Moderate
Poaceae	<i>Avena fatua</i>	Wildoats	Cal-IPC Moderate
Poaceae	<i>Bromus diandrus</i>	Ripgut brome	Cal-IPC Moderate
Poaceae	<i>Bromus hordeaceus</i>	Soft chess	Cal-IPC Limited
Poaceae	<i>Bromus madritensis</i> ssp. <i>rubens</i>	Red brome	Cal-IPC High
Poaceae	<i>Bromus sitchensis</i> var. <i>carinatus</i>	California brome	Native
Poaceae	<i>Bromus tectorum</i>	Cheatgrass	Cal-IPC High
Poaceae	<i>Deschampsia danthonioides</i>	Annual hairgrass	Native
Poaceae	<i>Distichlis spicata</i>	Salt grass	Native
Poaceae	<i>Elymus elymoides</i>	Squirrel tail grass	Native
Poaceae	<i>Elymus glaucus</i>	Blue wildrye	Native
Poaceae	<i>Elymus triticoides</i>	Beardless wild rye	Native
Poaceae	<i>Festuca microstachys</i>	Small fescue	Native
Poaceae	<i>Festuca myuros</i>	Rattail sixweeks grass	Cal-IPC Moderate
Poaceae	<i>Hordeum murinum</i>	Foxtail barley	Cal-IPC Moderate
Poaceae	<i>Melica californica</i>	California melicgrass	Native
Poaceae	<i>Melica imperfecta</i>	California melic	Native
Poaceae	<i>Melica stricta</i>	Nodding melic	Native
Poaceae	<i>Muhlenbergia rigens</i>	Deergrass	Native
Poaceae	<i>Poa bulbosa</i>	Bulbous blue grass	Non-native
Poaceae	<i>Poa secunda</i>	Pine bluegrass	Native
Poaceae	<i>Polypogon monspeliensis</i>	Annual beard grass	Cal-IPC Limited
Poaceae	<i>Schismus arabicus</i>	Arabian schismus	Cal-IPC Limited

Family	Scientific Name	Common Name	Status (Federal/State/CRPR/USFS)
Poaceae	<i>Setaria pumila</i>	Yellow bristlegrass	Non-native
Poaceae	<i>Stipa occidentalis</i>	Western needle grass	Native
Poaceae	<i>Stipa speciosa</i>	Desert needle grass	Native
Polemoniaceae	<i>Allophyllum gilioides</i>	Dense false gilia	Native
Polemoniaceae	<i>Eriastrum tracyi</i>	Tracy's eriastrum	-/CR/3.2/FSS
Polemoniaceae	<i>Gilia brecciarum</i> ssp. <i>neglecta</i>	Nevada gilia	Native
Polemoniaceae	<i>Gilia cana</i>	Showy gilia	Native
Polemoniaceae	<i>Gilia capitata</i> ssp. <i>abrotanifolia</i>	Ball gilia	Native
Polemoniaceae	<i>Gilia leptantha</i> ssp. <i>purpusii</i>	Purpus' gilia	Native
Polemoniaceae	<i>Gilia oroleuca</i>	Volcanic gilia	Native
Polemoniaceae	<i>Gilia tricolor</i>	Bird's eyes	Native
Polemoniaceae	<i>Leptosiphon bicolor</i>	True babystars	Native
Polemoniaceae	<i>Leptosiphon nudatus</i>	Tehachapi linanthus	Native
Polemoniaceae	<i>Linanthus dichotomus</i>	Evening snow	Native
Polemoniaceae	<i>Phlox diffusa</i>	Spreading phlox	Native
Polygonaceae	<i>Centrostegia thurberi</i>	Thurber spiny herb	Native
Polygonaceae	<i>Chorizanthe membranacea</i>	Pink spineflower	Native
Polygonaceae	<i>Chorizanthe xanti</i>	Riverside spineflower	Native
Polygonaceae	<i>Eriogonum baileyi</i> var. <i>baileyi</i>	Bailey's buckwheat	Native
Polygonaceae	<i>Eriogonum fasciculatum</i>	California buckwheat	Native
Polygonaceae	<i>Eriogonum gracillimum</i>	Rose and white buckwheat	Native
Polygonaceae	<i>Eriogonum nudum</i> var. <i>pubiflorum</i>	Hairy flowered buckwheat	Native
Polygonaceae	<i>Eriogonum nudum</i> var. <i>westonii</i>	Weston's buckwheat	Native
Polygonaceae	<i>Eriogonum roseum</i>	Wand buckwheat	Native
Polygonaceae	<i>Eriogonum saxatile</i>	Rock buckwheat	Native
Polygonaceae	<i>Eriogonum wrightii</i> var. <i>subscaposum</i>	Wright's buckwheat	Native
Polygonaceae	<i>Eriogonum wrightii</i> var. <i>trachygonum</i>	Wright's buckwheat	Native
Polygonaceae	<i>Fallopia convolvulus</i>	Black bindweed	Non-native

Family	Scientific Name	Common Name	Status (Federal/State/CRPR/USFS)
Polygonaceae	<i>Persicaria punctata</i>	Dotted smartweed	Native
Polygonaceae	<i>Rumex crispus</i>	Curly dock	Cal-IPC Limited
Pottiaceae	<i>Didymodon vinealis</i>	Didymon moss	Native
Pteridaceae	<i>Adiantum capillus-veneris</i>	Venus hair	Native
Pteridaceae	<i>Myriopteris covillei</i>	Coville's lip fern	Native
Pteridaceae	<i>Pellaea mucronata</i>	Bird's foot fern	Native
Pteridaceae	<i>Pentagramma triangularis</i>	Gold back fern	Native
Ranunculaceae	<i>Clematis ligusticifolia</i>	Creek clematis	Native
Ranunculaceae	<i>Delphinium hansenii</i> ssp. <i>kernense</i>	Kern larkspur	Native
Ranunculaceae	<i>Delphinium purpusii</i>	Kern County larkspur	-/-/1B.3/FSS
Ranunculaceae	<i>Ranunculus testiculatus</i>	Tuberclad crowfoot	Non-native
Ranunculaceae	<i>Thalictrum fendleri</i>	Fendler's meadow rue	Native
Rhamnaceae	<i>Ceanothus cuneatus</i> var. <i>cuneatus</i>	Buck brush	Native
Rhamnaceae	<i>Ceanothus leucodermis</i>	Chaparral whitethorn	Native
Rhamnaceae	<i>Frangula californica</i>	California coffeeberry	Native
Rhamnaceae	<i>Rhamnus crocea</i>	Redberry	Native
Rhamnaceae	<i>Rhamnus ilicifolia</i>	Evergreen buckthorn	Native
Rosaceae	<i>Adenostoma fasciculatum</i>	Chamise	Native
Rosaceae	<i>Cercocarpus betuloides</i> var. <i>betuloides</i>	Birch leaf mountain mahogany	Native
Rosaceae	<i>Chamaebatia foliolosa</i>	Sierran mountain misery	Native
Rosaceae	<i>Prunus andersonii</i>	Desert peach	Native
Rosaceae	<i>Pyracantha coccinea</i>	Scarlet firethorn	Cal-IPC Limited
Rosaceae	<i>Rosa woodsii</i>	Woods' rose	Native
Rosaceae	<i>Rubus armeniacus</i>	Himalayan blackberry	Cal-IPC High
Rosaceae	<i>Rubus parviflorus</i>	Thimbleberry	Native
Rubiaceae	<i>Galium aparine</i>	Cleavers	Native
Rubiaceae	<i>Galium bolanderi</i>	Bolander's bedstraw	Native
Rubiaceae	<i>Galium nuttallii</i>	Climbing bedstraw	Native
Rutaceae	<i>Ruta graveolens</i>	Common rue	Non-native
Salicaceae	<i>Populus fremontii</i>	Fremont cottonwood	Native

Family	Scientific Name	Common Name	Status (Federal/State/CRPR/USFS)
Salicaceae	<i>Populus trichocarpa</i>	Black cottonwood	Native
Salicaceae	<i>Salix exigua</i>	Narrowleaf willow	Native
Salicaceae	<i>Salix geyeriana</i>	Geyer's willow	Native
Salicaceae	<i>Salix laevigata</i>	Polished willow	Native
Salicaceae	<i>Salix lasiolepis</i>	Arroyo willow	Native
Salicaceae	<i>Salix melanopsis</i>	Dusky willow	Native
Sapindaceae	<i>Aesculus californica</i>	Buckeye	Native
Saxifragaceae	<i>Lithophragma parviflorum</i>	Pink woodland star	Native
Scrophulariaceae	<i>Scrophularia californica</i>	California bee plant	Native
Scrophulariaceae	<i>Verbascum thapsus</i>	Woolly mullein	Cal-IPC Limited
Selaginellaceae	<i>Selaginella</i> sp.	Unknown spikemoss	Native
Simaroubaceae	<i>Ailanthus altissima</i>	Tree of heaven	Cal-IPC Moderate
Solanaceae	<i>Datura wrightii</i>	Jimsonweed	Native
Solanaceae	<i>Nicotiana attenuata</i>	Coyote tobacco	Native
Solanaceae	<i>Solanum umbelliferum</i>	Blue witch	Native
Solanaceae	<i>Solanum xanti</i>	Nightshade	Native
Themidaceae	<i>Brodiaea terrestris</i> ssp. <i>kernensis</i>	Kern dwarf brodiaea	Native
Themidaceae	<i>Dichelostemma volubile</i>	Twining brodiaea	Native
Themidaceae	<i>Dipterostemon capitatum</i> ssp. <i>capitatum</i>	Bluedicks	Native
Typhaceae	<i>Typha latifolia</i>	Broadleaf cattail	Native
Ulmaceae	<i>Ulmus parviflora</i>	Chinese elm	Non-native
Urticaceae	<i>Urtica dioica</i>	Stinging nettle	Native
Verbanaceae	<i>Verbena lasiostachys</i> var. <i>lasiostachys</i>	Vervain	Native
Viburnaceae	<i>Sambucus mexicana</i>	Blue elderberry	Native
Viscaceae	<i>Arceuthobium campylopodum</i>	Pine dwarf mistletoe	Native
Viscaceae	<i>Phoradendron leucarpum</i>	American mistletoe	Native
Vitaceae	<i>Parthenocissus inserta</i>	Woodbine	Non-native
Vitaceae	<i>Vitis californica</i>	California wild grape	Native
Zygophyllaceae	<i>Tribulus terrestris</i>	Puncture vine	Cal-IPC Limited

Cal-IPC = California Invasive Plant Council; CRPR = California Rare Plant Rank; FSS = U.S. Forest Service Sensitive; USFS = U.S. Forest Service

Status:

Federal

- FE Federally listed as endangered
- FT Federally listed as threatened
- No federal status

State

- SE California State listed as endangered
- ST California State listed as threatened
- SR California State Listed as rare
- No state status

CRPR (California Rare Plant Rank) List Ranks

- List 1B Plants rare, threatened, or endangered in California and elsewhere
- List 2B Plants rare, threatened, or endangered in California, but more common elsewhere
- List 3 More information needed about this plant, a review list
- List 4 Plants of limited distribution, a watch list

CRPR Threat Ranks

- 0.1 Seriously threatened in California (high degree/immediacy of threat)
- 0.2 Fairly threatened in California (moderate degree/immediacy of threat)

Cal-IPC Rating Definitions:

- High These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.
- Moderate These species have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.
- Limited These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

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APPENDIX D
DOCUMENTED LOCATIONS OF SPECIAL-STATUS PLANTS

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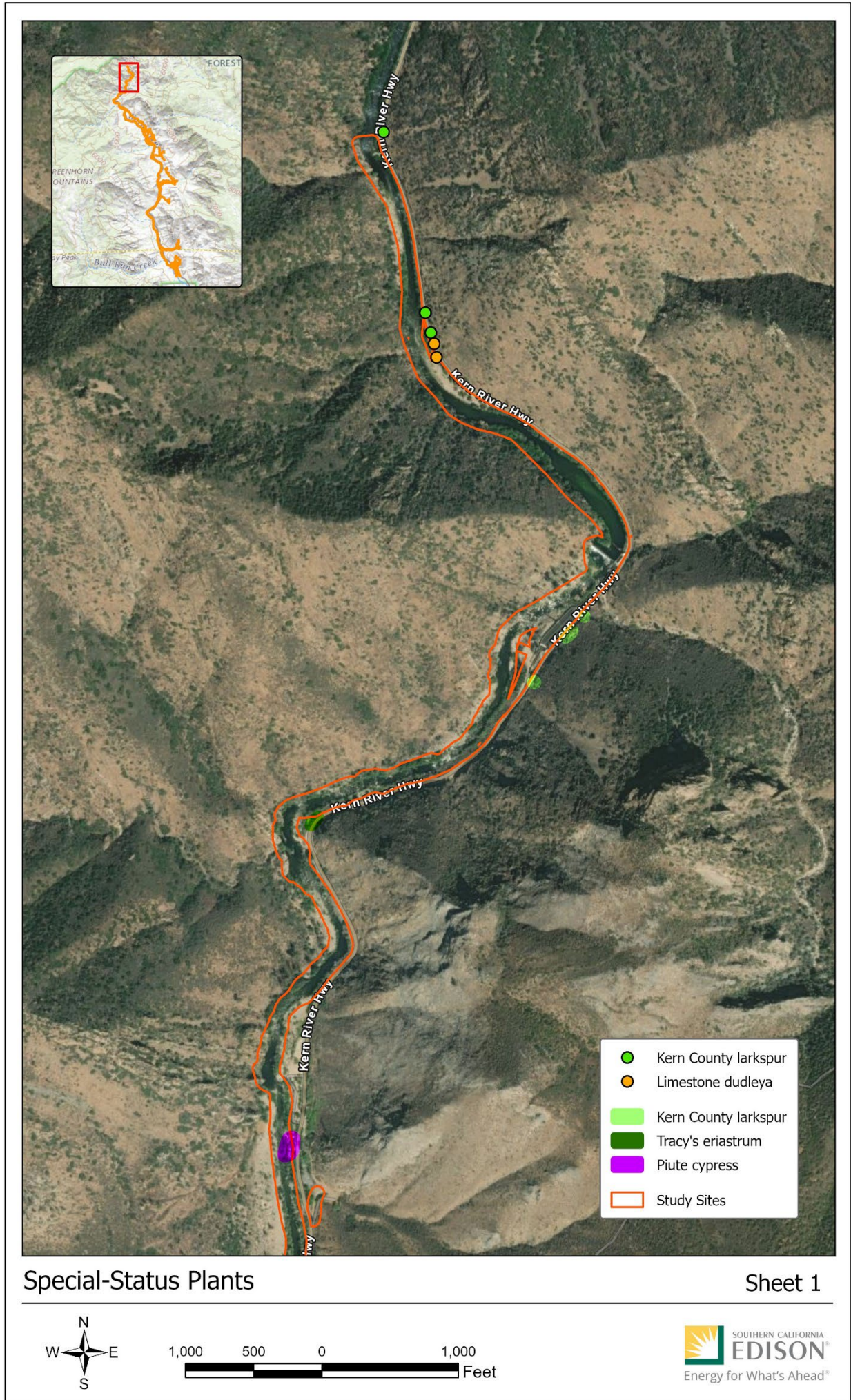


Figure D-1a. SSPs Observed during Botanical Field Surveys.

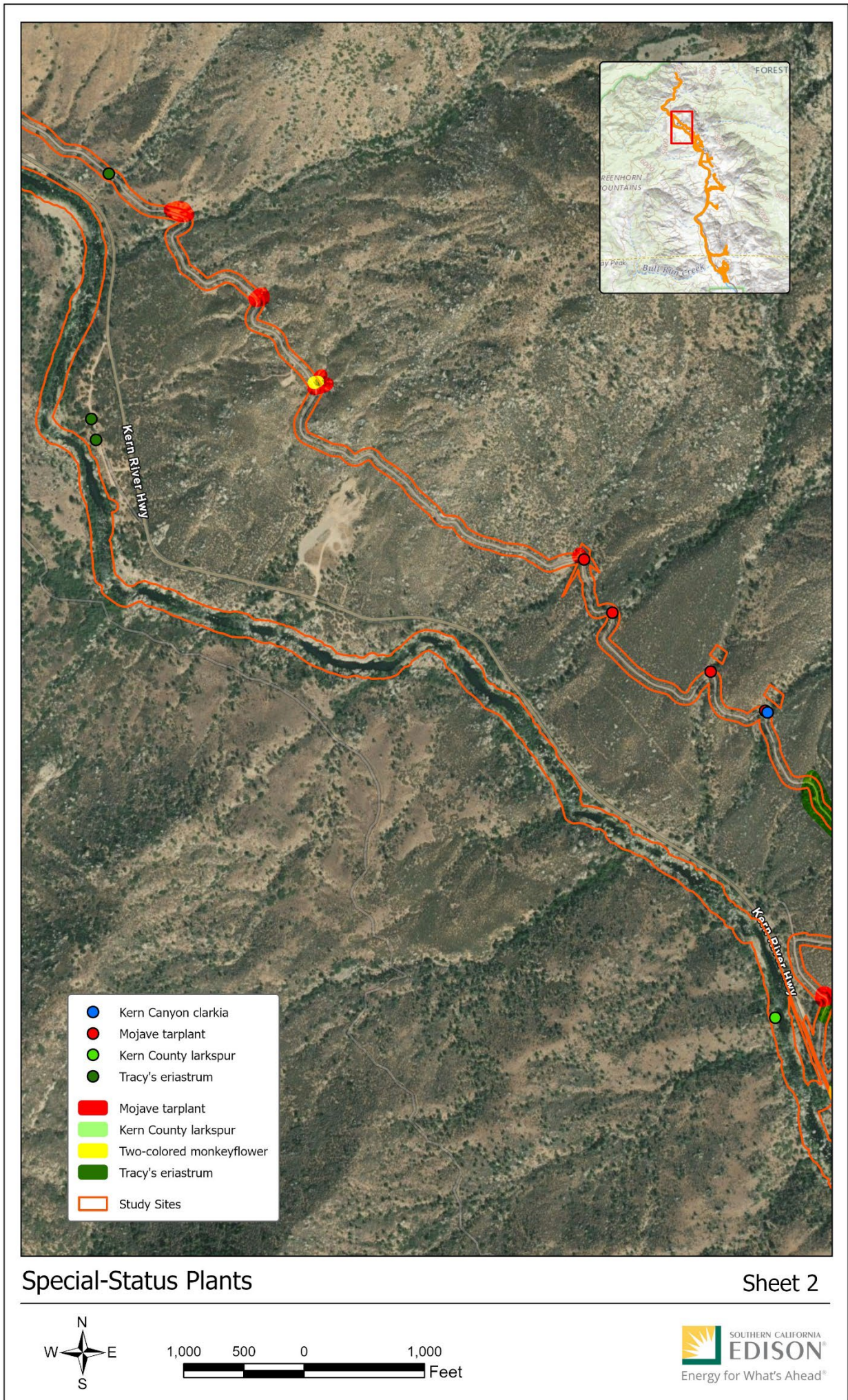


Figure D-1b. SSPs Observed during Botanical Field Surveys.

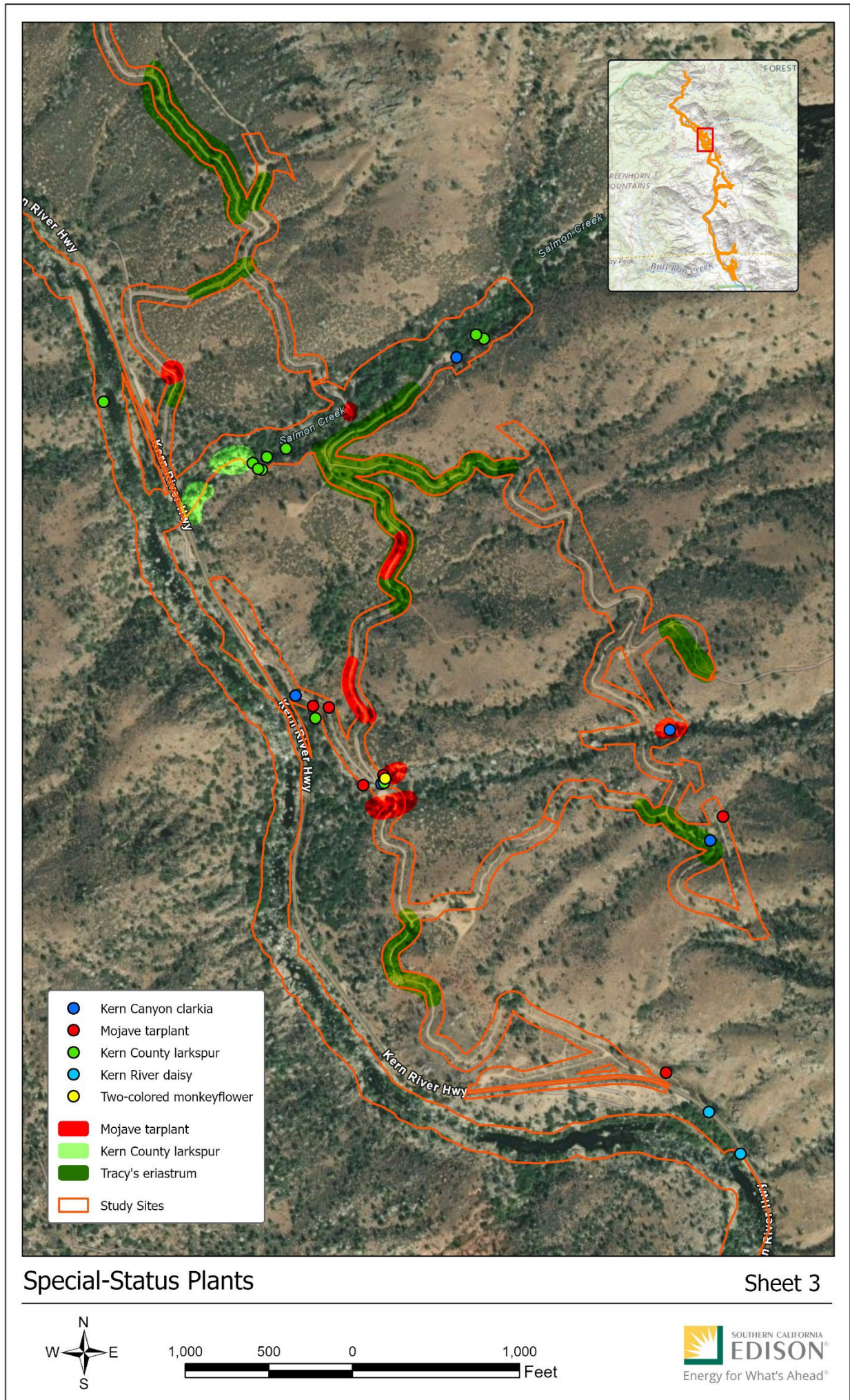


Figure D-1c. SSPs Observed during Botanical Field Surveys.

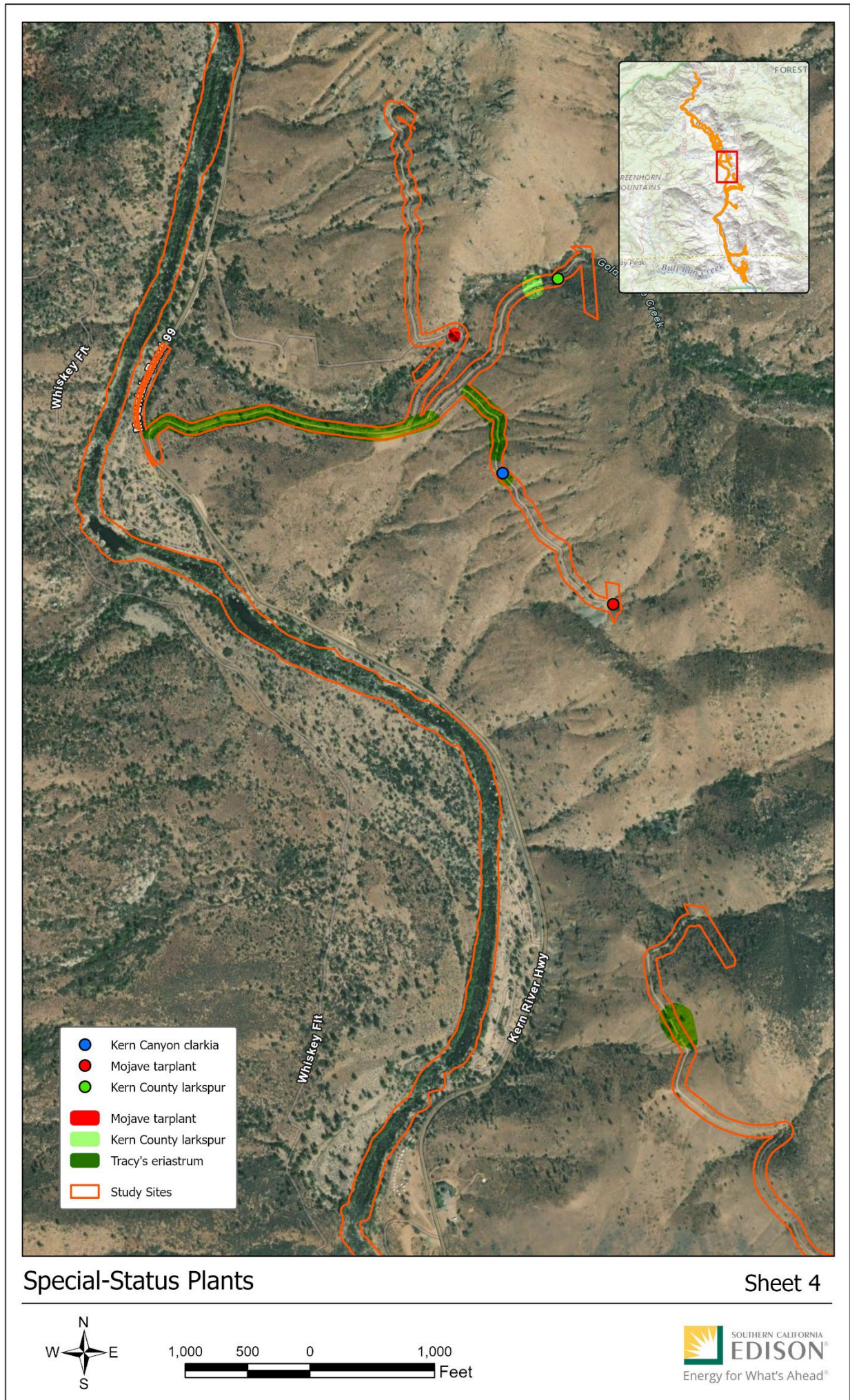


Figure D-1d. SSPs Observed during Botanical Field Surveys.

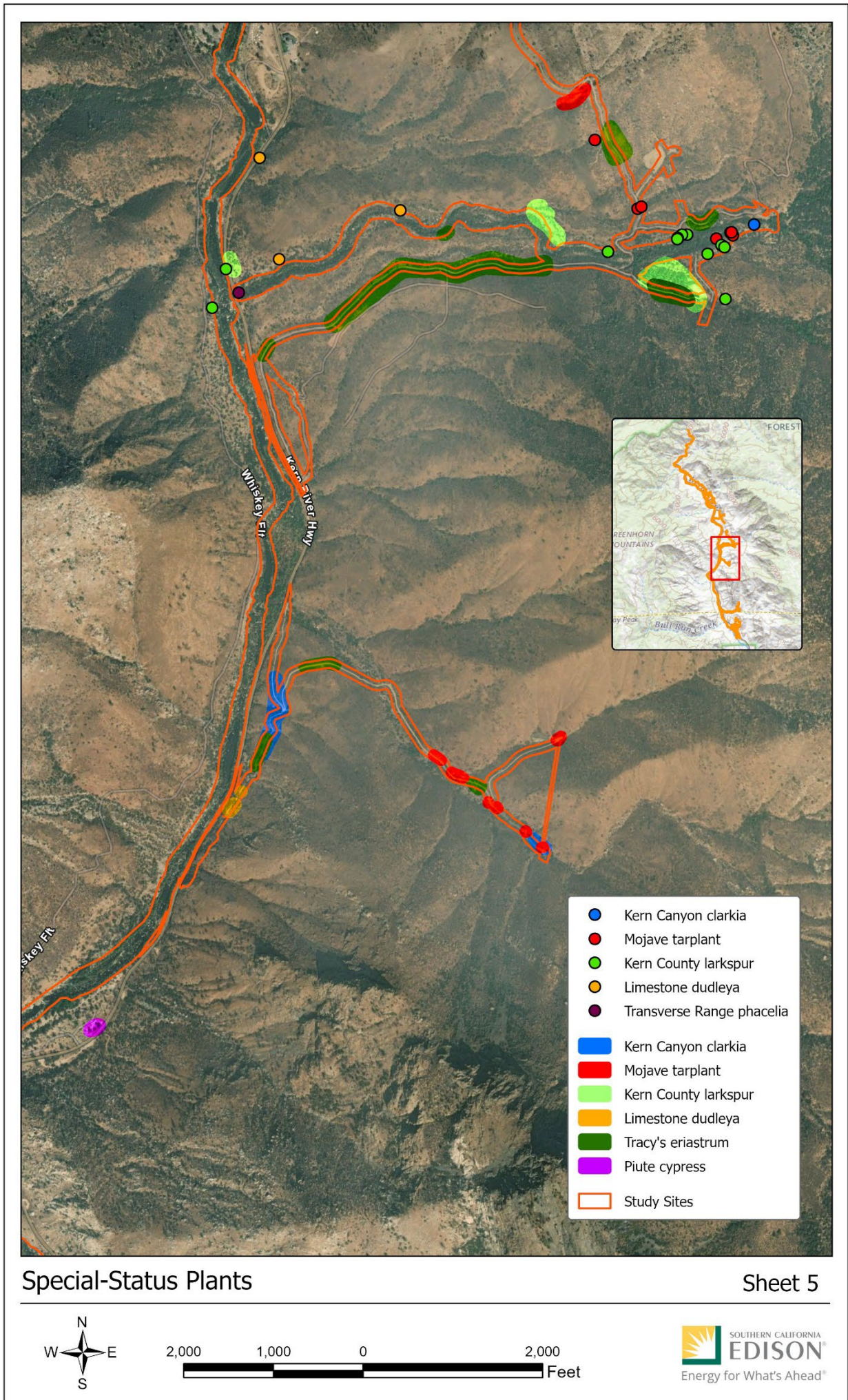


Figure D-1e. SSPs Observed during Botanical Field Surveys.

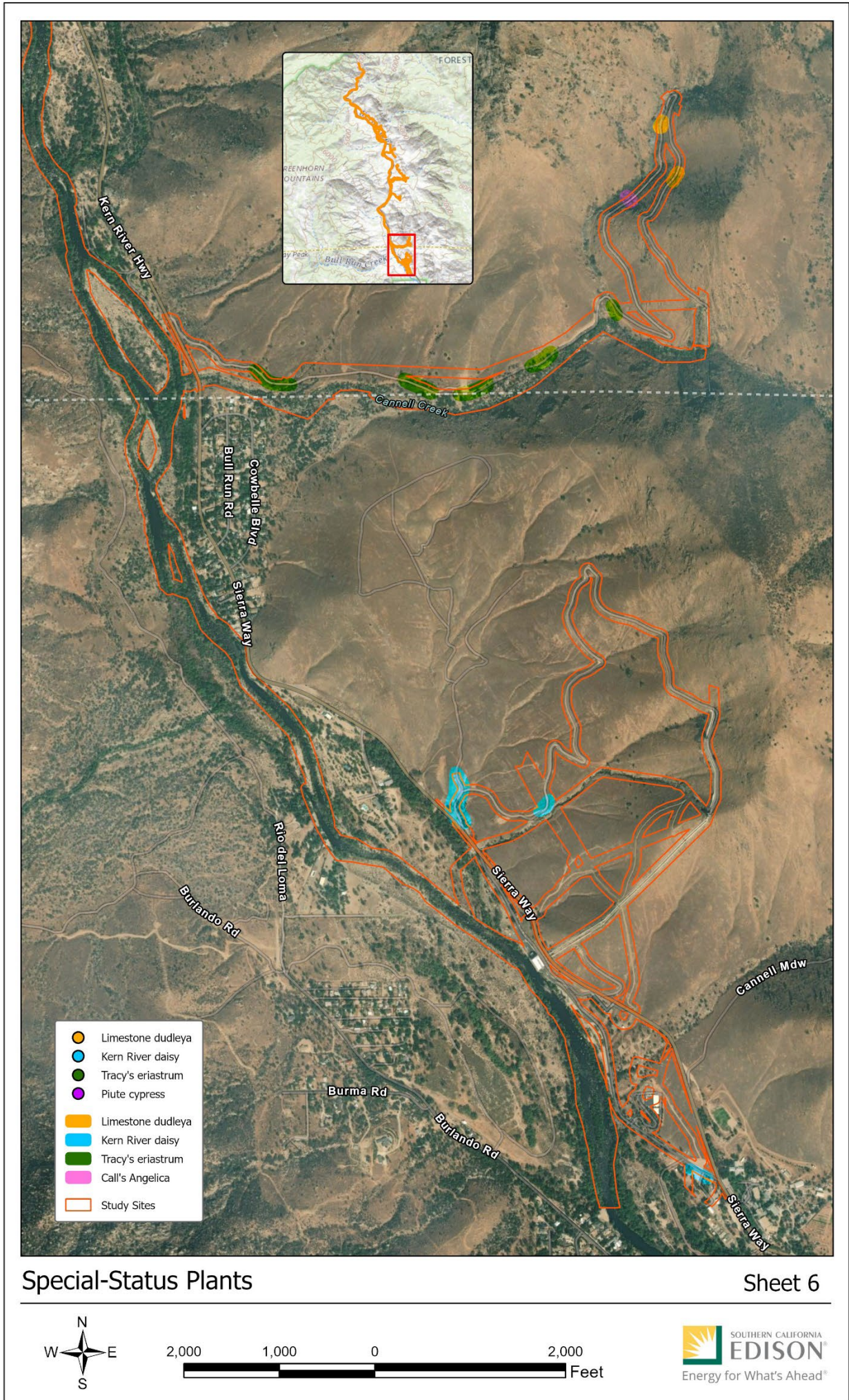
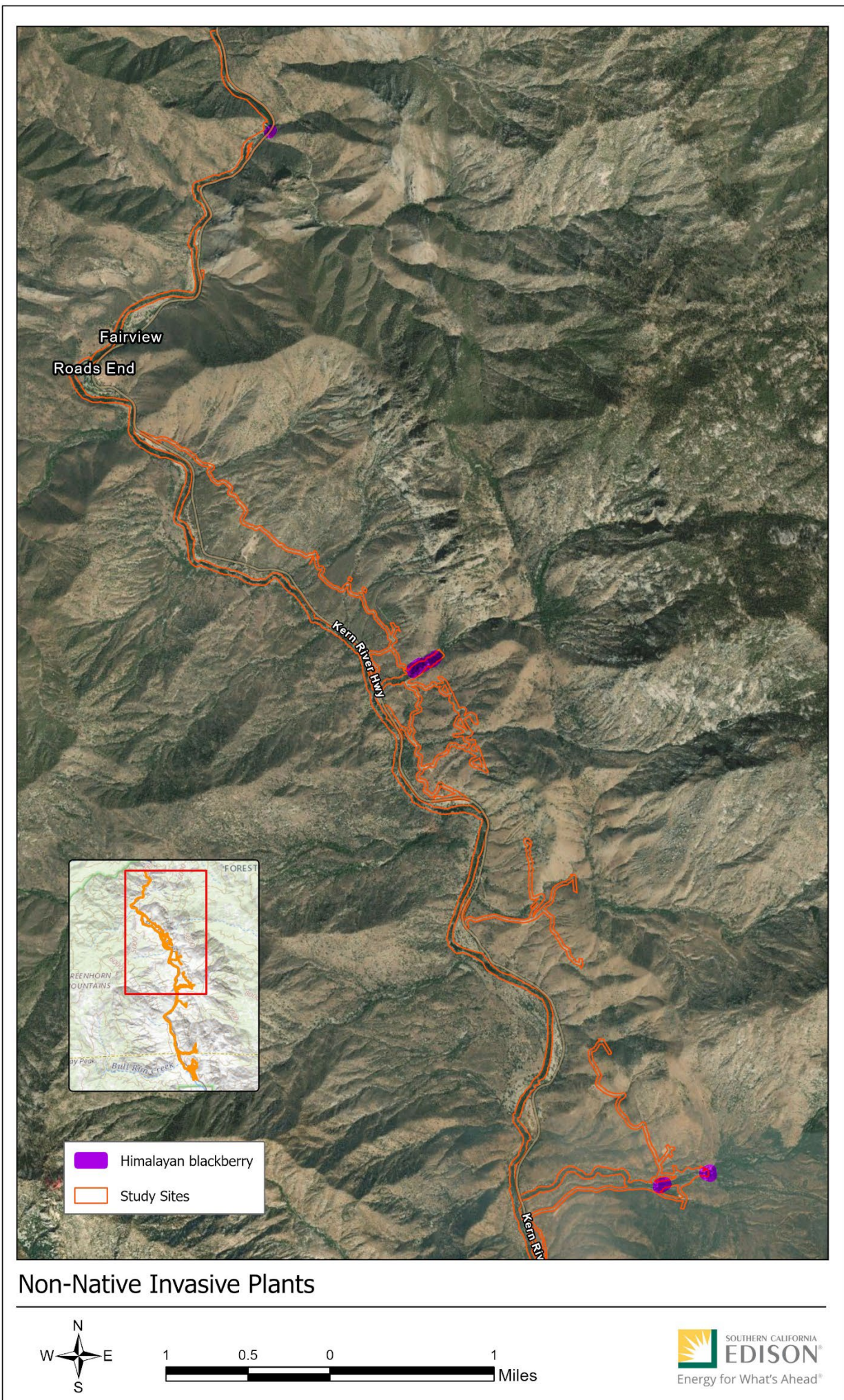


Figure D-1f. SSPs Observed during Botanical Field Surveys.

APPENDIX E
DOCUMENTED LOCATIONS OF CAL-IPC HIGH NON-NATIVE INVASIVE PLANTS

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Non-Native Invasive Plants



Figure E-1. Cal-IPC High NNIPs Observed during Botanical Field Surveys.

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APPENDIX F
USFS DESCRIPTIONS OF VEGETATION ALLIANCES IN THE STUDY SITES

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The following vegetation descriptions of the U.S. Forest Service (USFS) Vegetation Alliances are taken from the Southern Sierra Ecological Province (USFS, 2009). Scientific and common names for plants listed here were listed as named by the USFS without any name changes that may have occurred since vegetation description publication.

(BR) - RABBITBRUSH ALLIANCE

Extreme southeastern areas of the southern Sierra Nevada are partially under the influence of the Mojave Desert climate regime. This Alliance is found on dry slopes and flats that are dominated by various species of Rabbitbrush (*Chrysothamnus* spp.) in those areas as well as in other sites that may have a history of ground disturbance. The Bitterbrush Alliance has been mapped in scattered locations in six subsections, chiefly within an elevation range of about 2,600 to 9,000 feet, often in proximity to the Annual Grasses and Forbs Alliance in the Eastern Slopes, Kern Plateau and Tehachapi – Piute Mountains Subsections. In the Tehachapis, it is also associated with Gray Pine (*Pinus sabiniana*) and in eastside environments, with Big Sagebrush (*Artemisia tridentata*). California Buckwheat (*Eriogonum fasciculatum*) may be present in this alliance in minor amounts.

(CA) - CHAMISE ALLIANCE

Chamise (*Adenostoma fasciculatum*) is a dominant shrub of lower elevation, xeric slopes and ridges of the western Sierra Nevada Mountains between about 1,200 to 4,800 feet. This alliance has been mapped most frequently in the westside Upper Foothills Metamorphic Belt Subsection, and more sparsely in the Lower Batholith Subsection. Associated minor species of this Alliance include shrubs of the Lower Mixed Chaparral Alliance such as Birchleaf Mountain Mahogany (*Cercocarpus betuloides*) and Whiteleaf Manzanita (*Arctostaphylos viscida*). California Buckwheat (*Eriogonum fasciculatum* var. *polifolium*) and, especially towards the eastside, the grass Squirreltail (*Elymus elymoides*) may also be present in this type. Interior Live Oak (*Quercus wislizenii*), Canyon Live Oak (*Q. chrysolepis*), Gray Pine (*Pinus sabiniana*) and Ponderosa Pine (*P. ponderosa*) may occur in close proximity to the Chamise Alliance.

(CQ) – LOWER MONTANE MIXED CHAPARRAL ALLIANCE

The Lower Montane Mixed Chaparral Alliance is very common in the southern Sierra Nevada Mountains at elevations below about 5,800 feet on the westside and higher in the Tehachapi – Piute Mountains Subsection. The Alliance has been mapped in nine subsections and may contain mixtures of Ceanothus species, Whiteleaf and Common Manzanitas (*Arctostaphylos viscida*, *A. manzanita*), Chamise (*Adenostoma fasciculatum*), Fremont or Wavyleaf Silk-tassel (*Garrya fremontii*, *G. elliptica*), Flannelbush (*Fremontodendron californicum*), Birchleaf Mountain Mahogany (*Cercocarpus betuloides*), Poison Oak (*Toxicodendron diversilobum*), Shrub Oaks (*Quercus* spp.) and other lower elevation shrub species. Foothill Ash (*Fraxinus dipetala*) and Bush Poppy (*Dendromecon rigida*) may occasionally be part of this mixture as well.

Individual sites may support pure stands of these shrubs such as in the Wedgeleaf Ceanothus (*C. cuneatus*) Alliance. Associated trees often include Canyon and Interior Live Oaks (*Quercus chrysolepis*, *Q. wislizenii*) adjacent to these sites and often Ponderosa Pine (*Pinus ponderosa*) as well.

(CL) – WEDGELEAF CEANOTHUS ALLIANCE

Wedgeleaf Ceanothus (*Ceanothus cuneatus*) may dominate low elevation shrub habitats that have recently had ground disturbances such as intense fires as well as on certain nutrient-poor substrates, such as coarse textured soils or ultramafics. This alliance has been mapped occasionally in the three sections at elevations below about 5,600 feet. Minor amounts of other lower elevation shrubs such as California Buckwheat (*Eriogonum fasciculatum*) and Chamise (*Adenostoma fasciculatum*) and trees such as Gray Pine (*Pinus sabiniana*) and Blue Oak (*Quercus douglasii*) are typically associated with this Alliance.

(CS) – SCRUB OAK ALLIANCE

Shrub forms of oaks (*Quercus* spp.) may occur as recognized species, varietal forms of tree oaks, unclassified oak hybrids or as environmentally determined morphologic forms in which frequent fires may play a role. The Scrub Oak Alliance consists of shrubby oaks that are dominant in the shrub canopy at the time of mapping. It has been mapped abundantly in four subsections and less commonly in three others. Elevations generally range from about 2,600 to 9,000 feet, reflecting a variety of species that may occur in the mixture. In the southern Sierras, including the Tehachapi Mountains, mesic sites may have Scrub Oak (*Q. berberidifolia*), Interior Live Oak (*Q. wislizenii* var. *frutescens*), Brewer Oak (*Q. garryana* var. *breweri*) and/or Canyon Live Oak (*Q. chrysolepis* var. *nana*) in the mixture, with Huckleberry Oak (*Q. vaccinifolia*) on harsher sites and Tucker Oak (*Q. john-tuckeri*) in drier climates. Alliances adjacent to the Scrub Oak Alliance reflect this habitat diversity such as the common occurrence of tree forms of the Live Oaks, Blue Oak (*Q. douglasii*), Gray Pine (*Pinus sabiniana*), Singleleaf Pinyon Pine (*P. monophylla*), both Upper and Lower Montane Mixed Chaparral types, Buckwheat (*Eriogonum fasciculatum*) and the Great Basin – Mixed Chaparral Transition type.

(FD) – EPHEDRA ALLIANCE

Single species or a mixture of several species of the gymnosperm Mormon Tea (*Ephedra californica*, *E. nevadensis*, *E. viridis*) may dominate a site in this zone. The Ephedra Alliance has been mapped sparsely in several pockets in the Eastern Slopes Subsection at elevations from about 5,400 to 6,600 feet. It associates with species such as Bitterbrush (*Purshia tridentata*) and Big Sagebrush (*Artemisia tridentata*).

(HG) – ANNUAL GRASSES AND FORBS ALLIANCE

Throughout the low elevations of the western slopes of the southern Sierra Nevada, annual grasses such as Bromes (*Bromus* spp.), Needlegrass (*Achnatherum* spp.) and Wild Oats (*Avena* spp.) may dominate rolling hills. Dominant forbs in this Alliance include Owl's Clover (*Orthocarpus* spp.), Fiddleneck (*Amsinckia intermedia*) and Stork's

Bill (*Erodium* spp.). They may occur in pure stands or contain an overstory of scattered oaks (*Quercus* spp.) or California Buckeye (*Aesculus californica*). Associated westside species include hardwoods growing in sheltered areas and conifers such as Gray Pine (*Pinus sabiniana*) or Ponderosa Pine (*P. ponderosa*) in the Upper Foothills Metamorphic Belt and Lower Batholith Subsections. In some areas, this Alliance may dominate a vast array of slopes and aspects due to wildfires, xeric conditions and other factors; on eastside slopes in the Eastern Slopes and Kern Plateau Subsections, recent wildfires have created large grass patches at elevations up to 8,000 feet or more. Great Basin species such as Big Sagebrush (*Artemisia tridentata*), Rabbitbrush (*Chrysothamnus* spp.), Singleleaf Pinyon Pine (*P. monophylla*) and Jeffrey Pine (*P. jeffreyi*) are often found adjacent to these patches.

(IB) – URBAN-RELATED NON-VEGETATED

Urban development in California occurs in phases. When land is cleared prior to being paved, this category represents the occurrence of non-vegetated barren ground that is caused by urbanization. This land-use type also represents other mechanically-caused barren ground, such as open quarries or mined areas, barren ground along highways, and other areas cleared of vegetation prior to, during and after construction. The category has been mapped throughout this state, usually adjacent to agricultural areas, already established urbanized centers or other paved areas of the landscape.

(LS) – SCALEBROOM ALLIANCE

Drainages of low-gradient intermittent streams and washes in interior locations of the semiarid Tehachapi – Piute Mountains Subsection may be dominated by Scalebroom (*Lepidospartum squamatum*), a nearly leafless shrub. This Alliance has been mapped in a small area within an elevation range of about 2,400 to 3,200 feet in close association with species of Rabbitbrush (*Chrysothamnus* spp.). Trees found in this vicinity include Blue Oak (*Quercus douglasii*) and Gray Pine (*Pinus sabiniana*).

(ML) – BACCHARIS (RIPARIAN)

This riparian or dry wash Alliance is dominated by any species of Baccharis occupying wet habitats, including the most common, Mule Fat (*B. salicifolia*) and/or Desert Baccharis (*B. sergiloides*) in this area of the southern Sierras. Shortleaf Baccharis (*B. brachyphylla*) and/or Marsh Baccharis (*B. douglasii*) may also be found in this Alliance, which has been mapped occasionally in the Eastern Slopes and Tehachapi – Piute Mountains Subsections at elevations from about 2,000 to 2,800 feet. Fremont Cottonwood (*Populus fremontii*) and wet meadows are often found adjacent to or within these riparian sites, while Gray Pine (*Pinus sabiniana*) and Blue Oak (*Quercus douglasii*) stands are commonly found upland in the general vicinity.

(NR) – RIPARIAN MIXED HARDWOOD ALLIANCE

A mixture of two or more non-dominant hardwoods found in shaded drainages, riparian and seep sites has been mapped in scattered pockets of seven subsections in the southern Sierras zone such as in the Upper Foothills Metamorphic Belt, Tehachapi –

Piute Mountains, and Lower Batholith Subsections. Elevations range from below 1,000 feet up to about 9,600 feet, reflecting a variety of hardwoods such as Bigleaf Maple (*Acer macrophyllum*), California Bay (*Umbellularia californica*), Mountain Dogwood (*Cornus nuttallii*), Fremont or Black Cottonwoods (*Populus fremontii*, *P. balsamifera* ssp. *trichocarpa*) and Oregon Ash (*Fraxinus latifolia*). Tree Willows (*Salix* spp.), White Alder (*Alnus rhombifolia*) also commonly occur, with California Sycamore (*Platanus racemosa*) occasionally towards the west part of this zone. Upland trees such as Interior Live Oak (*Quercus wislizenii*) and Canyon Live Oak (*Q. chrysolepis*) occasionally occur on these sites. Quaking Aspen (*Populus tremuloides*) and Water Birch (*Betula occidentalis*) are more prevalent in this type in the Eastern Slopes Subsection and an occasional Valley Oak (*Q. lobata*) is more likely to occur in the Kern Plateau Subsection.

(PD) – GRAY PINE ALLIANCE

Gray Pine (*Pinus sabiniana*) is primarily found in the foothills, front country and steep, drier canyons of the Southern Sierras. When it is the dominant (and usually the only) conifer, such stands typically have a diverse multi-layered structure, with a mix of hardwoods and shrubs. The Gray Pine Alliance tends to be discontinuous, with interspersed patches of annual grasses. Blue Oak (*Quercus douglasii*), Interior Live Oak (*Q. wislizenii*) and Canyon Live Oak (*Q. chrysolepis*) often occur as mixed conifer-hardwood stands in this Alliance, especially towards the west and under drier site conditions in the southern Sierras. It has been mapped abundantly in the Upper Foothills Metamorphic Belt, Lower Batholith and Tehachapi – Piute Mountains Subsections and occasionally in the Upper Batholith and Volcanic Flows, Kern Plateau, Eastern Slopes and Upper Batholith Subsections at elevations up to about 7,000 feet, but usually much lower.

(QO) – WILLOW ALLIANCE

This Alliance is dominated by mixed or single species of tree Willow (*Salix* spp.). It has been mapped most frequently on the east side of the Sierra Nevada where stream or pond conditions provide sufficient moisture in seven subsections at low to moderate elevations, mostly from about 2,600 to 7,400 feet. Riparian hardwoods such as Water Birch (*Betula occidentalis*) and Fremont Cottonwood (*Populus fremontii*) often occur in close proximity to these areas, while Great Basin upland shrub species such as Rabbitbrush (*Chrysothamnus* spp.), Interior Rose (*Rosa woodsii*), and Big Sagebrush (*Artemisia tridentata*) may occur in narrow canyons adjacent to this Alliance.

(QW) – INTERIOR LIVE OAK ALLIANCE

Interior Live Oak (*Quercus wislizenii*) occurs as a hardwood dominant in semi-open or closed stands in this Alliance, and was mapped broadly and widespread along the western borders and some interior locations of six subsections of the southern Sierra Nevadas. It is most abundant in the Lower Batholith, Upper Foothills Metamorphic Belt and Tehachapi – Piute Mountains, and Batholith and Volcanic Flows Subsections, generally at elevations between about 1,200 to 6,400 feet. Canyon Live Oak (*Q.*

chrysolepis) or Black Oak (*Q. kelloggii*) may become associated with the Interior Live Oak Alliance at higher elevations, grading into the Interior Mixed Hardwoods Alliance, especially in the Tehachapi – Piute Mountains Subsection. Ponderosa Pine (*Pinus ponderosa*) commonly occurs with Interior Live Oak in mixed stands. On drier sites or lower elevations, Gray Pine (*P. sabiniana*), Blue Oak (*Q. douglasii*) and Buckeye (*Aesculus californica*) are associated trees. In most areas, shrub associates are chiefly those in the Lower Montane Mixed Chaparral type, such as Chamise (*Adenostoma fasciculatum*) and Wedgeleaf Ceanothus (*Ceanothus cuneatus*). However, shrubs such as California Buckwheat (*Eriogonum fasciculatum*), Scrub Oak (*Q. berberidifolia*) and Big Sagebrush (*Artemisia tridentata*) are more likely to be within and adjacent to this Alliance in the Tehachapi – Piute Mountains Subsection.

(SB) – BUCKWHEAT ALLIANCE

California Buckwheat (*Eriogonum fasciculatum* var. *polifolium*), a semi-woody shrub, has been mapped very commonly as a dominant shrub in the Tehachapi – Piute Mountains, Eastern Slopes and Kern Plateau Subsections. Additionally, it has been identified sparsely in the Lower Batholith Subsection. The usual mapped elevation range is from about 3,000 to 6,200 feet. It is closely associated with the Annual Grasses and Forbs and the Pinyon – Juniper Alliances throughout the area. In the limited region of Kern Plateau where California Buckwheat is dominant, westside species such as Canyon Live Oak (*Quercus chrysolepis*), Gray Pine (*Pinus sabiniana*) and shrubs in the Lower Montane Chaparral Alliance such as Wedgeleaf Ceanothus (*Ceanothus cuneatus*) occur in close proximity to this Alliance. In the Tehachapis and in the Eastern Slopes, more xeric conditions favor an association with Singleleaf Pinyon Pine (*P. monophylla*), Big Sagebrush (*Artemisia tridentata*) and shrubs in the High Desert Mixed Scrub Alliance and Great Basin – Desert Mixed Scrub Alliances.

(UB) – URBAN-OR DEVELOPED

This category applies to landscapes that are dominated by urban structures, residential units, or other developed land use elements such as highways, city parks, cemeteries and the like. In those cases in which the managed landscapes may have a considerable vegetation component, other land use categories may be more appropriate, such as Ornamental Conifer and Hardwood mixtures within city parks.

(WA) – WATER

Water is labeled in Calveg mapping in those cases in which permanent sources of surface water are identified within a landscape unit of sufficient size to be mapped. The category includes lakes, streams and canals of various size, bays and estuaries and similar water bodies. These areas are considered to have a minimum of vegetation components, except along the edges, which may be mapped as types such as Wet Meadows, Tule-Cattail freshwater marshes, or Pickleweed-Cordgrass saline or mixed marshes. Islands within water bodies may be mapped according to their terrestrial dominant vegetation types.

In addition, surface water bodies have recently been mapped separately in some parts of this zone under the following categories:

- **(W1)** Rivers and Streams (natural, flowing surface waters)
- **(W3)** Reservoirs (human-made lakes and ponds)
- **(W9)** Exposed non-water features such as gravel, sand bars, etc.

**APPENDIX G
GROUND-TRUTHED USFS VEGETATION ALLIANCES OCCURRING IN THE STUDY
AREA**

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Figure G-1a. Mapped USFS Vegetation Alliances Ground-Truthed during Botanical Field Surveys.

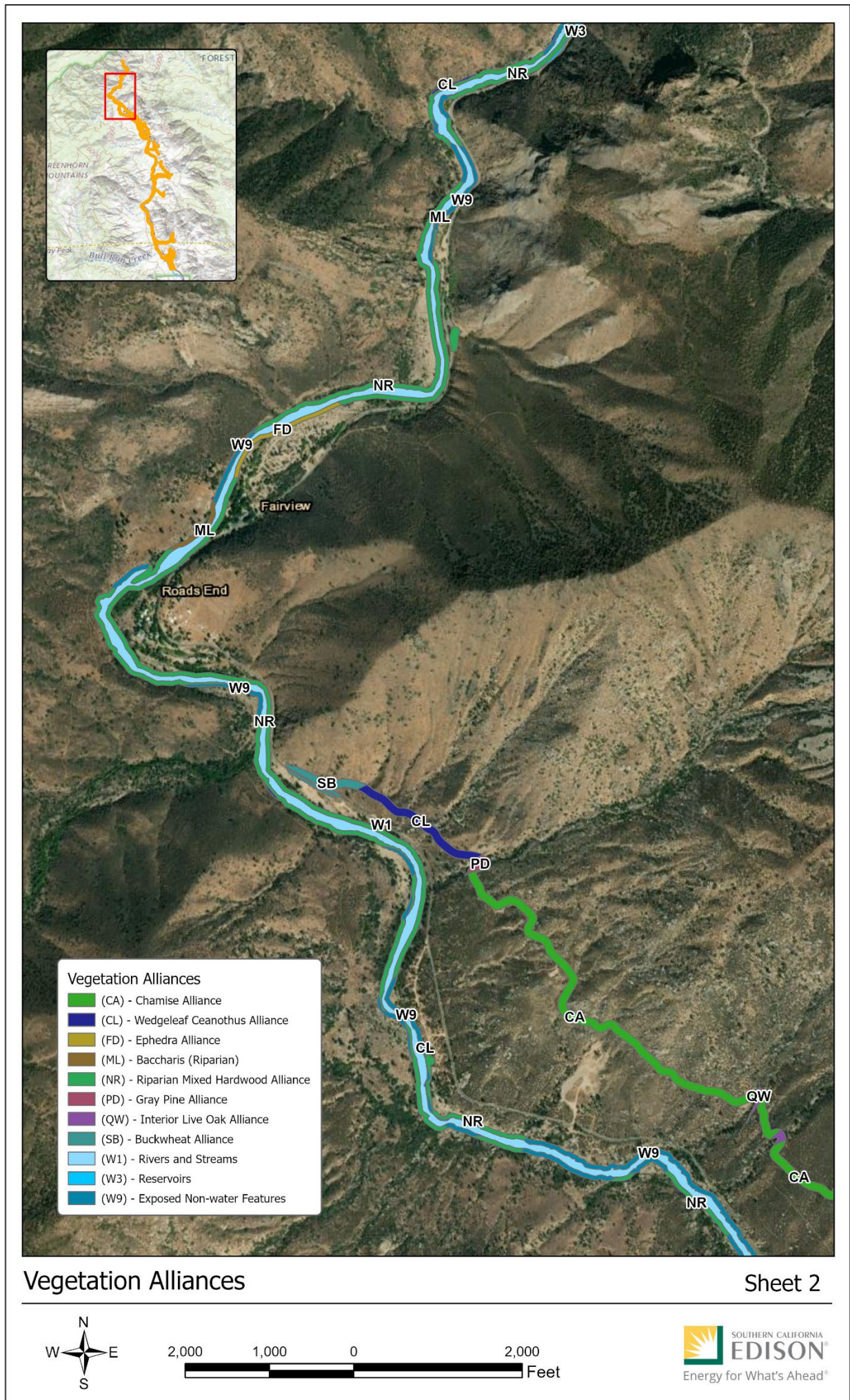


Figure G-1b. Mapped USFS Vegetation Alliances Ground-Truthed during Botanical Field Surveys.

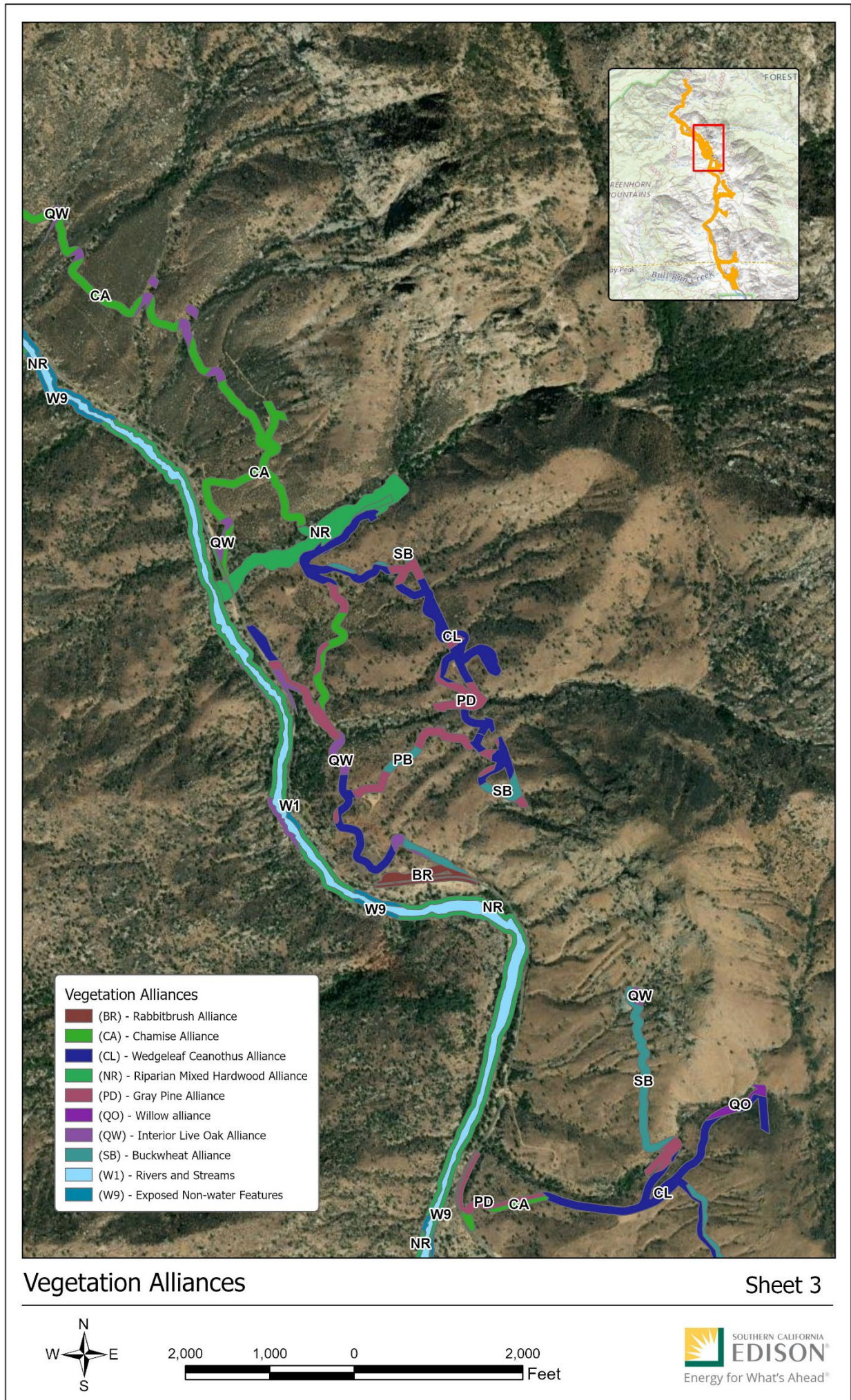


Figure G-1c. Mapped USFS Vegetation Alliances Ground-Truthed during Botanical Field Surveys.

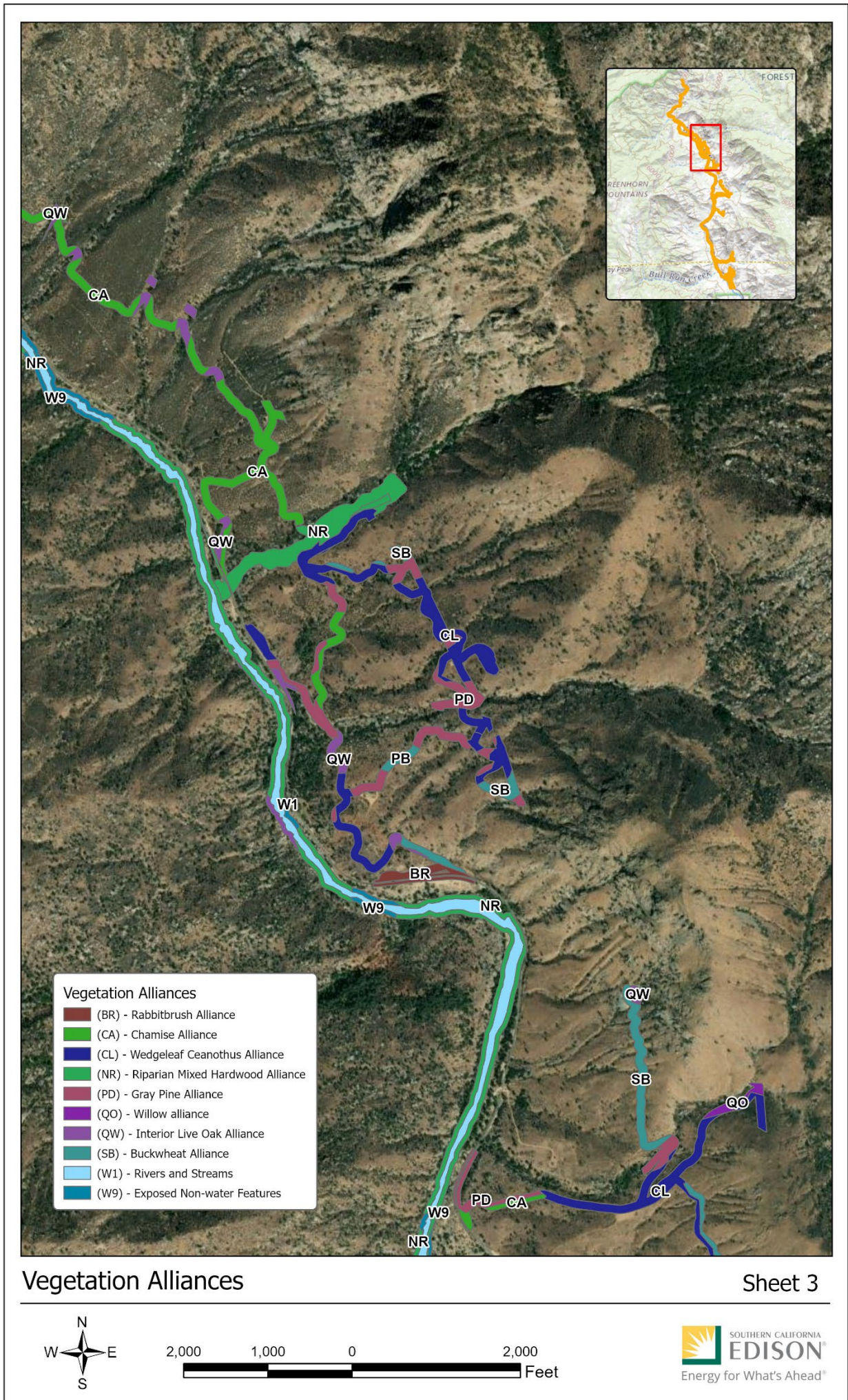


Figure G-1d. Mapped USFS Vegetation Alliances Ground-Truthed during Botanical Field Surveys.

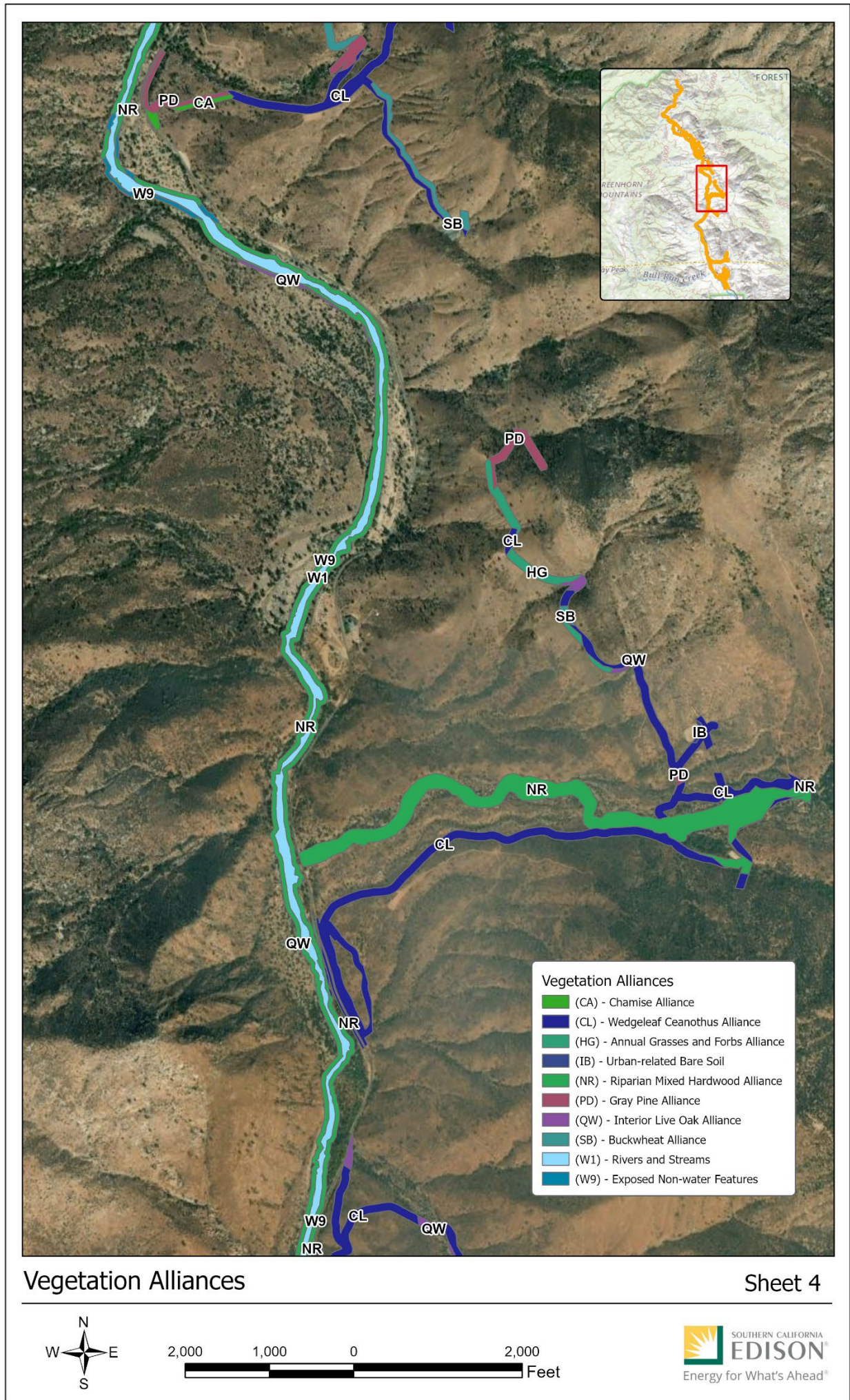


Figure G-1e. Mapped USFS Vegetation Alliances Ground-Truthed during Botanical Field Surveys.



Figure G-1f. Mapped USFS Vegetation Alliances Ground-Truthed during Botanical Field Surveys.

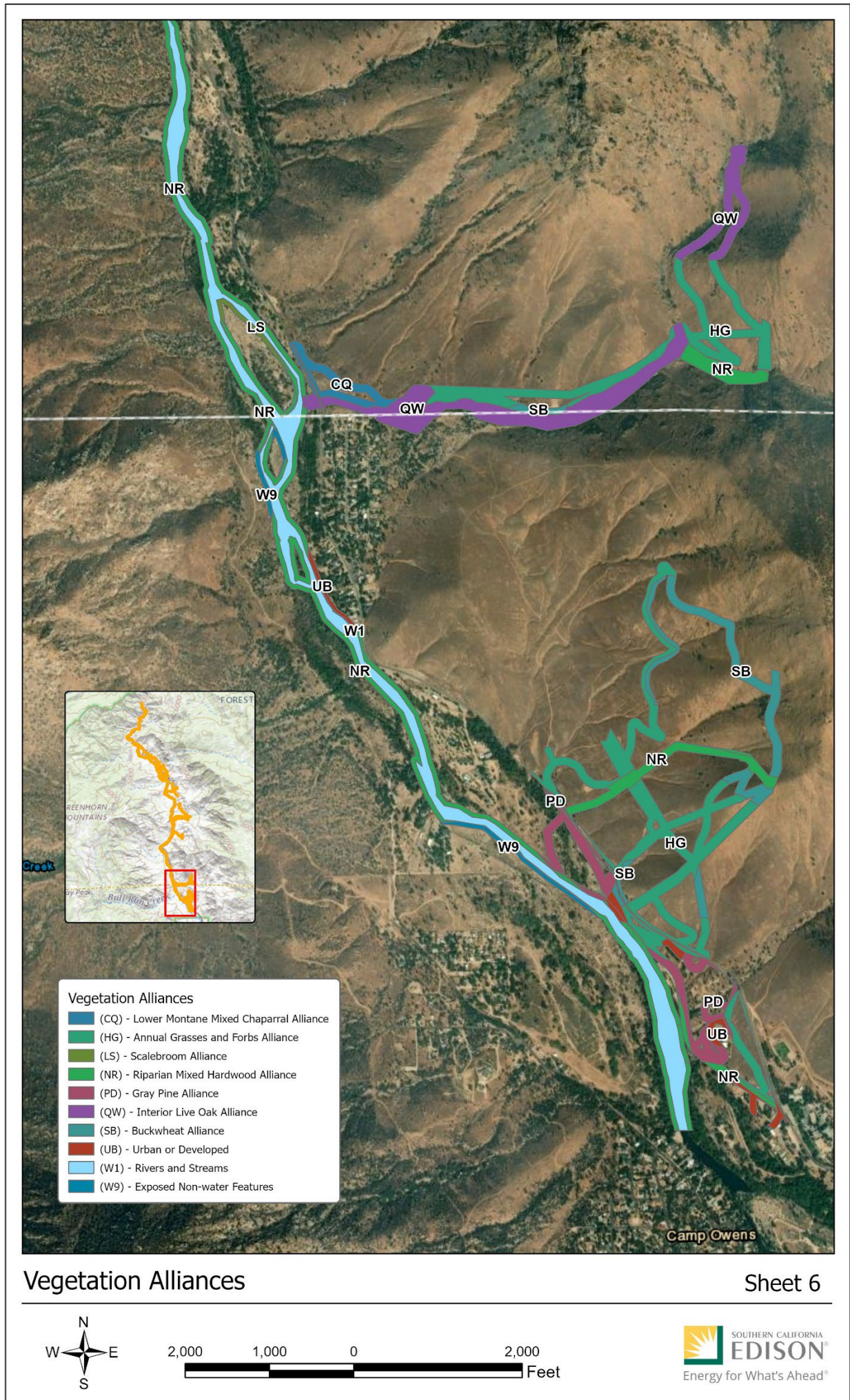


Figure G-1g. Mapped USFS Vegetation Alliances Ground-Truthed during Botanical Field Surveys.

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