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2023 RARE PLANT SPOT-CHECK SURVEYS

Fountain Wind Project Shasta County, California



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September 28, 2023



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INTRODUCTION

Western EcoSystems Technology, Inc. (WEST) performed rare plant surveys at the proposed Fountain Wind Project (Project) in Shasta County, California over the course of three survey seasons in 2018, 2019, and 2021. No targeted rare plants were documented in the Project development corridors during the 2018, 2019, or 2021 surveys, the methods and results of which are presented in Flaig et al. (2018 and 2019) and Thompson et al. (2021). Although no rare plants were identified in the survey corridors during those surveys, as of summer 2023 the survey data were 2-5 years old depending on the area and year surveyed. To support the California Environmental Quality Act (CEQA) analysis currently being conducted by the California Energy Commission (CEC) in association with the CEC's review of the Project, WEST conducted rare plant spot-check surveys during the 2023 growing season to support (or modify) prior findings regarding the potential presence of rare plants in the Project's development corridors. The following report describes the methods and results of rare plant spot-check surveys conducted during the 2023 growing season.

PROJECT AND SURVEY AREA

The Project is located on privately owned commercial timberlands in central Shasta County, California. The dominant vegetation type in and around the Project is early seral mixed coniferous forest (post-fire and unburned), with smaller amounts of mixed montane chaparral and mixed montane riparian forest/scrub. The primary land use in this area is commercial timber production, which has resulted in a highly fragmented landscape across much of the area. Dominant overstory species include a combination of ponderosa pine (*Pinus ponderosa*), white fir (*Abies concolor*), Douglas fir (*Pseudotsuga menziesii*), incense-cedar (*Calocedrus decurrens*), and sugar pine (*Pinus lambertiana*). Additional details regarding the survey area can be found in Flaig et al. (2018 and 2019).

Prior rare plant surveys were conducted in 2018, 2019, and 2021 to ensure complete coverage of potential disturbance areas within proposed development corridors of 2021 (Thompson et al. 2021). Development corridors have continued to evolve during Project permitting, with the latest development corridors representing a much-reduced Project footprint relative to previously surveyed corridors (Figure 1).

Spot-check surveys conducted in 2023 focused on "high quality habitat" believed to have the highest likelihood of supporting rare plants. Based on habitat requirements of target species, wet montane meadows, mixed montane riparian scrub, mixed montane riparian forest, and rock outcrops were among the targeted vegetation communities, as most of the target species are typically associated with these communities. A sample of unburned mixed conifer forest was also surveyed.

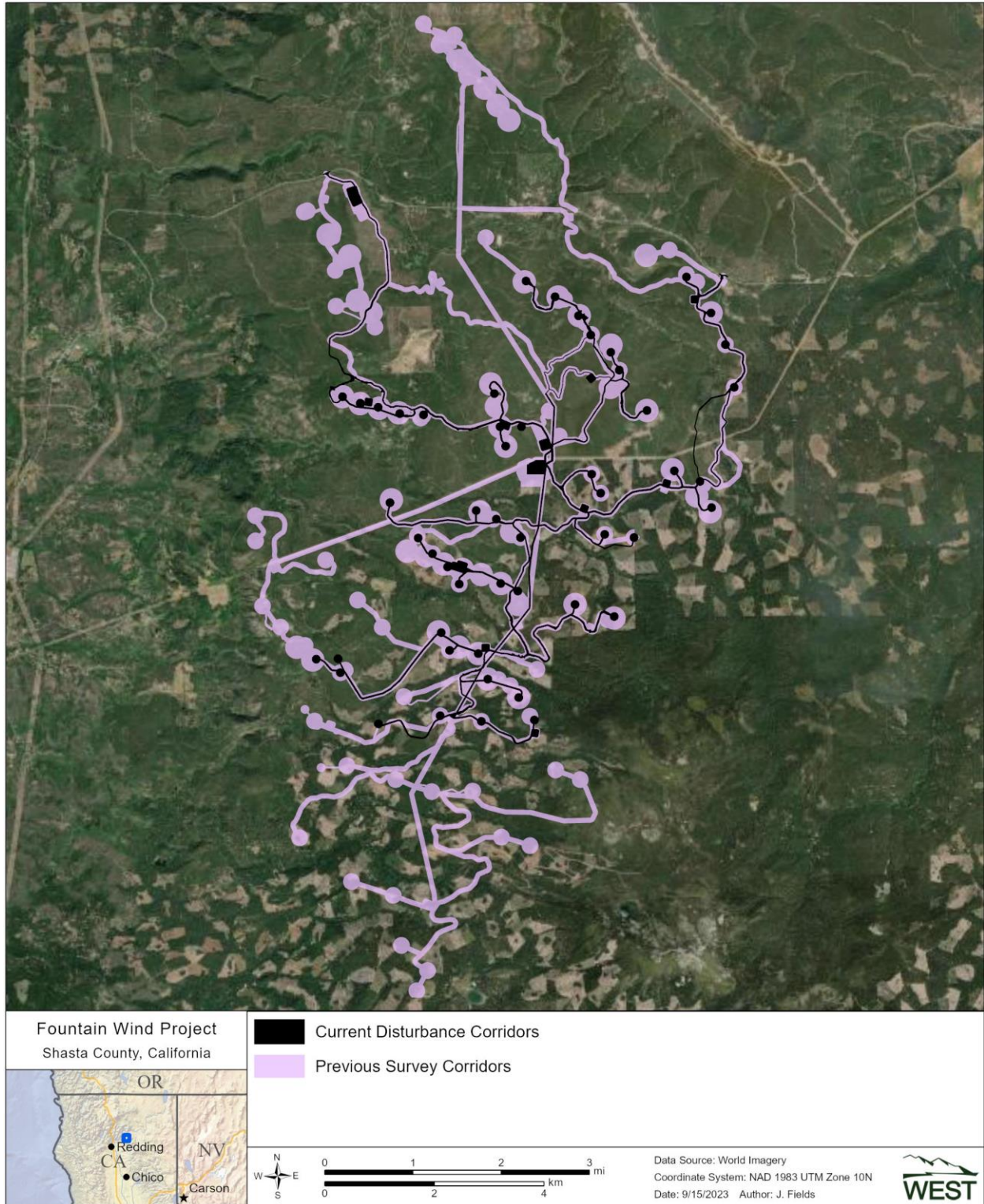


Figure 1. Corridors surveyed from 2018-2021 and the current disturbance corridors at the Fountain Wind Project, Shasta County, California.

METHODS

Rare Plant Surveys

Twenty spot-check sample locations were identified for surveys in 2023. Sample locations included areas representing rock outcrops (two locations), wet montane meadows (three locations), mixed montane riparian scrub (eight locations), mixed montane riparian forest (three locations), and unburned mixed conifer (four locations) vegetation communities (Figure 2). The 20 sample locations were distributed throughout the Project area in or near areas of potential disturbance (temporary or permanent; Figure 2). Several locations in the wet meadow complex near Highway 299 were 100-200 meters from the nearest proposed disturbance; however, these areas were representative of wet montane meadow habitats in the area.

The list of target species developed for the 2021 surveys (Thompson et al. 2021) served as the basis for the 2023 spot-check surveys (Appendix A). Given the number of species identified as having some potential for occurrence, visitation of known reference populations of the species was not feasible/practicable; however, prior to conducting the surveys, WEST botanist(s) reviewed literature and photographs for target plant species.

Focused spot-check surveys to confirm likely presence or absence of target species were conducted over two survey periods during summer of 2023, including one survey period in June and one in August. Surveys were conducted by experienced WEST botanists; surveyor qualifications are included in Appendix B. Pedestrian transect surveys were conducted within targeted survey areas using an intuitive controlled survey approach, during which the surveyor meandered through the survey area targeting locations with the greatest potential for supporting rare plants. Surveys were generally consistent with the 2018 *CDFW Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CDFW 2018). A list of vascular plant species encountered that had not been documented during prior surveys was maintained and added to the comprehensive list of species documented during prior surveys (Appendix C). Plant species were identified to the highest taxonomic level possible when encountered using *The Jepson Manual: Vascular Plants of California, Second Edition* (Baldwin et al. 2012).

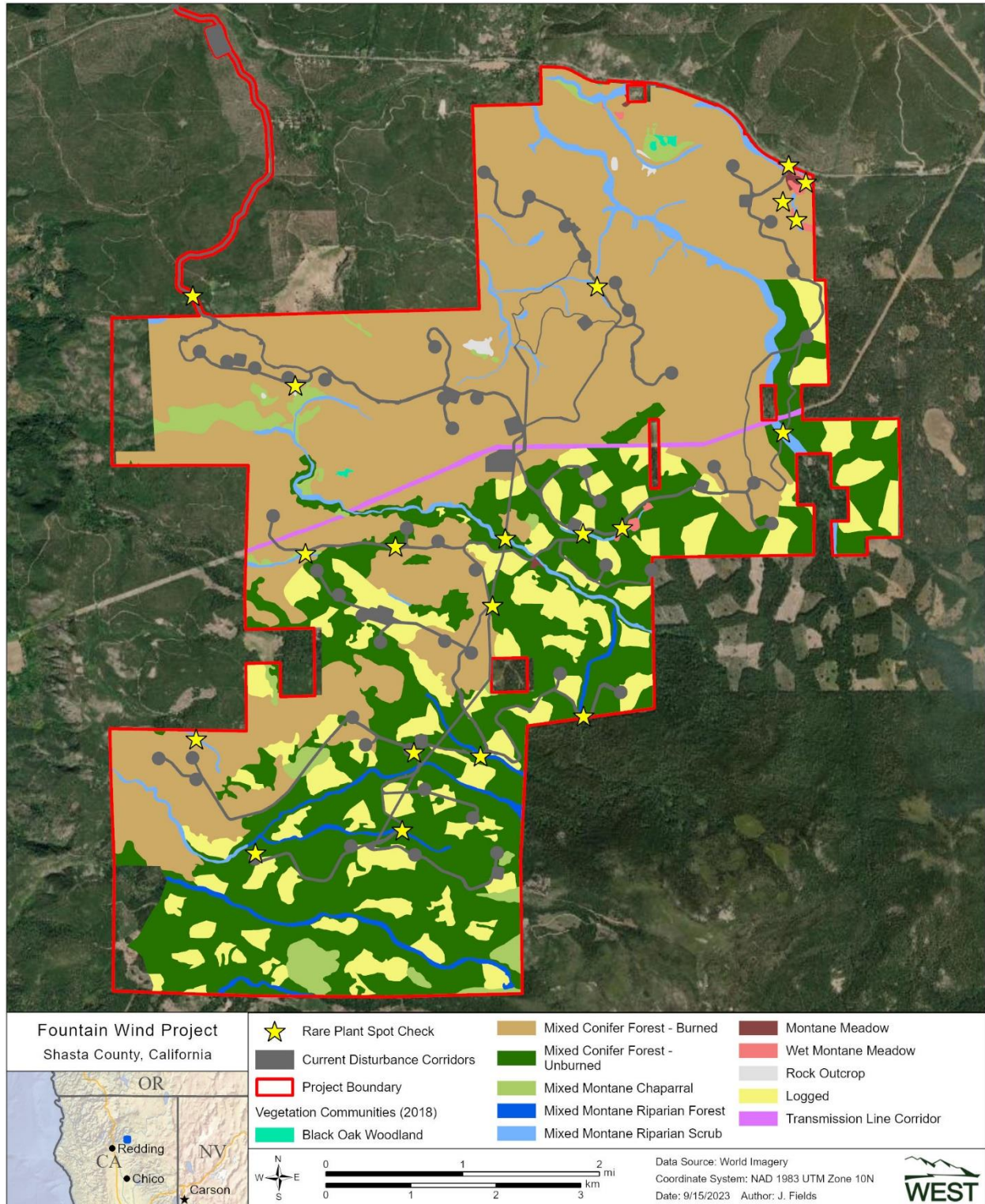


Figure 2. Rare plant spot check survey locations for surveys conducted in June and August 2023 at the Fountain Wind Project, Shasta County, California.

RESULTS AND DISCUSSION

The first round of spot-check surveys was conducted on June 15 and 16, 2023. All 20 survey locations were visited, and no rare plants were identified. The second round of surveys was conducted on August 29 and 30, 2023. All 20 survey locations were visited again, and no rare plants were identified.

Based on a review of Shasta County precipitation data (NCEI 2023), precipitation for the period May–August 2023 (4.3 inches) exceeded the historic average of 3.43 inches over the same 4-month period (data from prior century 1901-2000), as well as that for the same period from 2000 – 2022 (2.96 inches). Above average precipitation during the summer months, on the heels of an above average snowpack, resulted in good survey conditions across the Project area, with saturated soils noted by surveyors in the wet meadow complexes during both visits, along with consistent stream flows in the riparian corridors. Representative photos of sample locations surveyed in 2023 are provided in Appendix D and a comprehensive list of plant species encountered over all survey years (2018, 2019, 2021 with additions from 2023) is provided in Appendix C.

The lack of rare plants identified during the 2023 spot-check surveys conducted in an above average precipitation year in targeted high-quality habitats provides supporting evidence for the absence of rare plants documented during the prior surveys conducted in 2018, 2019, and 2021 (Flaig et al. 2018 and 2019; Thompson et al. 2021). Given the absence of rare plants identified in the survey corridors to date, impacts to rare plants are not anticipated during Project construction.

REFERENCES

- Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken (eds.). 2012. *The Jepson Manual: Vascular Plants of California*, second edition. University of California Press, Berkeley.
- California Department of Fish and Wildlife (CDFW). 2018. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities. March 20, 2018. State of California Natural Resources Agency Department of Fish and Wildlife.
- California Native Plant Society (CNPS) Rare Plant Program. 2021. Inventory of Rare and Endangered Plants of California (Online Edition, V8-0. 0.39). Accessed: September 2021. Information online: <http://www.rareplants.cnps.org>
- California Natural Diversity Database (CNDDDB). 2021. Inventory of the Status and Location of Rare Plants and Animals in California. State of California, Natural Resources Agency, Department of Fish and Wildlife (CDFW), Biogeographic Data Branch, CNDDDB. Accessed September 2021. Available online at: <https://www.wildlife.ca.gov/Data/CNDDDB>
- ESRI. 2019. World Imagery and Aerial Photos. ArcGIS Resource Center. Environmental Systems Research Institute (ESRI), producers of ArcGIS software. Redlands, California. Information online: <http://www.arcgis.com/home/webmap/viewer.html?useExisting=1>
- Flaig, K., Q. Hays, and J. Thompson. 2018. Rare Plant Surveys and Natural Vegetation Community Mapping, Fountain Wind Project, Shasta County, California. Prepared for Pacific Wind Development LLC; Portland, OR. Prepared by Western EcoSystems Technology, Inc. (WEST),

Flaig, K., A. Chatfield, and J. Thompson. 2019. Rare Plant Surveys and Natural Vegetation Community Mapping, Fountain Wind Project, Shasta County, California. Prepared for ConnectGen Operating LLC, Houston, Texas. Prepared by Western EcoSystems Technology, Inc. (WEST), Corvallis, Oregon. December 20, 2019.

National Centers for Environmental Information (NCEI). 2023. Climate at a Glance: City Time Series, published September 2023, retrieved on September 21, 2023 from <https://www.ncei.noaa.gov/access/monitoring/climate-at-a-glance/city/time-series>

North American Datum (NAD). 1983. NAD83 Geodetic Datum.

Thompson, J., K. Lawrence, and A. Chatfield. 2021. Rare Plant Surveys, Fountain Wind Project, Shasta County, California. Prepared for CG Fountain Wind LLC, Houston, Texas. Prepared by Western EcoSystems Technology, Inc. (WEST), Corvallis, Oregon. October 19, 2021.

Appendix A. Federally listed, State-listed, and California Native Plant Society Rare Plant Species and Their Potential for Occurrence within the Fountain Wind Project

Appendix A. Federally listed and California Native Plant Society- (CNPS) listed rare plant species and their potential for occurrence within the Fountain Wind Project.

| Species | Federal Status* | CNPS** Status | Survey period | Habitat Requirements | Potential for Occurrence within the Project |
|----------------------------------------------------------------|------------------------|----------------------|----------------------|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Shasta ageratina <i>Ageratina shastensis</i> | | 1B.2 | June-Oct | Rocky, often carbonate sites; lower montane coniferous forest | Possible. Although uncommon, suitable habitat may be present within the Project |
| Scabrid alpine tarplant <i>Anisocarpus scabridus</i> | | 1B.3 | June-Sept | Open ridges or slopes on metamorphics | Possible. Suitable habitat may be present within the Project |
| Slender silver-moss <i>Anomobryum julaceum</i> | | 4.2 | | Rocky, moist (bryophyte-moss) | Possible. Although far from its known range, suitable habitat may be present within the Project |
| vanilla-grass <i>Anthoxanthum nitens</i> ssp. <i>nitens</i> | | 2B.3 | Apr-July | Meadows and seeps | Possible. Although limited, suitable wetland habitat may be present within the Project |
| Klamath manzanita <i>Arctostaphylos klamathensis</i> | | 1B.2 | May-Aug | Chaparral and upper montane and subalpine coniferous forests; rocky outcrops and slopes | Possible. Although uncommon, suitable habitat may be present within the Project; CNDDDB documents only 2 occurrences in Shasta County |
| marbled wild-ginger <i>Asarum marmoratum</i> | | 2B.3 | Apr-Aug | Understory of lower montane coniferous forests | Possible. Suitable habitat may be present within the site |
| northern spleenwort <i>Asplenium septentrionale</i> | | 2B.3 | July-Aug | Chaparral and montane coniferous forests; form grass-like tufts in granitic rock crevices | Unlikely. No granitic rock crevices present within the survey corridors |
| upswept moonwort <i>Botrychium ascendens</i> | | 2B.3 | July-Aug | Lower montane coniferous forests; grassy fields and woodlands near springs and creeks | Possible. Although limited, suitable wetland/riparian habitat may be present within the Project |
| scalloped moonwort <i>Botrychium crenulatum</i> | | 2B.2 | June-Sept | Lower montane coniferous forests; moist meadows near creeks; marshes | Possible. Although limited, suitable wetland/riparian habitat may be present within the Project |
| mingan moonwort <i>Botrychium minganense</i> | | 2B.2 | July-Sept | Creek banks in mixed conifer forests | Possible. Although limited, suitable wetland/riparian habitat may be present within the Project |
| western goblin <i>Botrychium montanum</i> | | 2B.1 | July-Sept | Creek banks in old-growth coniferous forests | Possible. Although limited, suitable wetland/riparian habitat may be present within the Project |

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| northwestern moonwort <i>Botrychium pinnatum</i> | | 2B.3 | July-Oct | Montane coniferous forests; in meadows or along creek banks | Possible. Although limited, suitable wetland/riparian habitat may be present within the Project |
| rattlesnake fern <i>Botrypus virginianus</i> | | 2B.2 | June | Streams; bogs and fens; lower montane coniferous forest; meadows and seeps | Possible. Although limited, suitable wetland/riparian habitat may be present within the Project |
| Watershield <i>Brasenia schreberi</i> | | 2B.3 | Apr-Oct | Freshwater marshes and swamps | Possible. Although extremely limited, suitable wetland habitat may be present within the Project |
| long-haired star-tulip <i>Calochortus longebarbatus</i> var. <i>longebarbatus</i> | | 1B.2 | June-Aug | Clay, mesic sites in Great Basin scrub, lower montane coniferous forest openings, meadows, and seeps | Possible. Suitable habitat may be present within the Project |
| Callahan's mariposa lily <i>Calochortus syntrophus</i> | | 1B.1 | May-June | Cismontane woodland; vernal mesic valley and foothill grassland | Possible. Suitable habitat may be present within the Project |
| Butte County morning-glory <i>Calystegia atriplicifolia</i> ssp. <i>buttensis</i> | | 4.2 | May-July | Dry, rocky places in open forest, chaparral | Possible. Suitable habitat may be present within the Project |
| Castle Crags harebell <i>Campanula shetleri</i> | | 1B.3 | June-Sept | In protected rock crevices in granite; lower montane coniferous forests | Unlikely. No granitic rock outcrops present within the survey corridors |
| bristly sedge <i>Carex comosa</i> | | 2B.1 | May-Sept | Marshes and swamps (lake margins); valley and foothill grasslands | Possible. Although limited, suitable wetland habitat may be present within the Project |
| woolly-fruited sedge <i>Carex lasiocarpa</i> | | 2B.3 | June-July | Bogs and fens; freshwater marshes and swamps, lake margins | Possible. Although limited, suitable wetland habitat may be present within the Project |
| Lassen paintbrush <i>Castilleja lassenensis</i> | | 1B.3 | June-Sept | Meadows and seeps; subalpine forest (volcanic) | Unlikely. Known occurrences restricted to flanks of Lassen and granite substrates in the Sierras |

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| Shasta clarkia <i>Clarkia borealis</i> ssp. <i>arida</i> | | 1B.1 | June-Aug | Cismontane woodlands | Possible. Suitable habitat may be present within the Project |
| northern clarkia <i>Clarkia borealis</i> ssp. <i>borealis</i> | | 4.3 | June-Sept | Cismontane woodland; lower montane coniferous forest | Possible. Suitable habitat may be present within the Project |
| silky cryptantha <i>Cryptantha crinita</i> | | 1B.2 | April-May | Gravelly streambeds of cismontane woodlands, valley foothill grasslands, lower montane coniferous forests, and riparian forests | Possible. Although limited, suitable streambed habitat may be present within the Project |
| Jepson's dodder <i>Cuscuta jepsonii</i> | | 1B.2 | July-Sept | Broadleafed upland forest, lower and upper montane coniferous forest (host spp. are <i>Ceanothus diversifolius</i> and <i>C. prostratus</i>) | Possible. Suitable habitat may be present within the Project |
| English sundew <i>Drosera anglica</i> | | 2B.3 | June-Sept | Bogs and fens; meadows | Possible. Although extremely limited, suitable wetland habitat may be present within the Project |
| Oregon fireweed <i>Epilobium oregonum</i> | | 1B.2 | June-Sept | Montane coniferous forests; in and near springs and bogs; sometimes on serpentine | Possible. Although limited, suitable wetland habitat may be present within the Project |
| Tracy's eriastrum <i>Eriastrum tracyi</i> | | 3.2 | June-July | Open areas on shale or alluvium | Possible. Suitable habitat may be present within the Project |
| blushing wild buckwheat <i>Eriogonum ursinum</i> var. <i>erubescens</i> | | 1B.3 | June-Sept | Rocky sites within lower montane coniferous forest and montane chaparral | Possible. Suitable habitat may be present within the Project |
| Shasta limestone monkeyflower <i>Erythranthe taylorii</i> | | 1B.1 | April-May | Openings, carbonate crevices and rocky outcrops of cismontane woodlands and lower montane coniferous forest | Unlikely. Suitable carbonate habitat not present within survey corridors |
| Shasta fawn lily <i>Erythronium shastense</i> | | 1B.2 | March-April | Usually carbonate, rocky, north facing, or shaded slopes in cismontane woodland and lower montane coniferous forest | Unlikely. No suitable carbonate habitats present within the survey corridors |

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| Butte County fritillary <i>Fritillaria eastwoodiae</i> | | 3.2 | March-June | Dry benches, slopes of yellow pine forest, chaparral | Possible. Suitable habitat may be present within the Project |
| Boggs Lake hedge hyssop <i>Gratiola heterosepala</i> | | 1B.2 | April-Aug | Freshwater marshes and swamps, vernal pools; clay soils | Possible. Although extremely limited, suitable wetland habitat may be present within the Project |
| Stebbins' harmonia <i>Harmonia stebbinsii</i> | | 1B.2 | May-June | Chaparral and lower montane coniferous forests; in ultramafic soils, often along roads | Unlikely. No ultramafic substrates present within the Project |
| little hulsea <i>Hulsea nana</i> | | 2B.3 | July-Aug | Alpine boulder and rock fields, subalpine coniferous forests; volcanic substrates | Unlikely. Suitable habitat does not present within the Project |
| Baker's globe mallow <i>Lilium bakeri</i> | | 4.2 | June-Sept | Chaparral, juniper woodland | Possible. Suitable habitat may be present within the Project |
| Castle Crags ivesia <i>Ivesia longibracteata</i> | | 1B.3 | June | Crevices in granitic cliffs; lower montane coniferous forests | Unlikely. No granitic cliff habitat present within the survey corridors |
| Finger rush <i>Juncus digitatus</i> | | 1B.1 | May-June | Vernal pools, swales, volcanic seeps | Possible. Although extremely limited, suitable wetland habitat may be present within the Project |
| Red Bluff dwarf rush <i>Juncus leiospermus</i> var. <i>leiospermus</i> | | 1B.1 | March-May | Vernally mesic meadows and seeps; valley and foothill grassland; vernal pools | Possible. Although limited, suitable wetland habitat may be present within the Project |
| Santa Lucia dwarf rush <i>Juncus luciensis</i> | | 1B.2 | April-July | Vernal pools, ephemeral drainages, wet meadows habitats and streamsides | Possible. Although limited, suitable wetland habitat may be present within the Project |
| Cantelow's lewisia <i>Lewisia cantelovii</i> | | 1B.2 | May-Oct | Mesic, granite; lower montane coniferous forest; cismontane woodland | Unlikely. Suitable granitic or serpentine seeps not present within the Project |
| Bellinger's meadowfoam <i>Limnanthes floccosa</i> ssp. <i>bellingiana</i> | | 1B.2 | April-June | Mesic; cismontane woodland; meadows and seeps | Possible. Although limited, suitable wetland habitat may be present within the Project |
| tufted loosestrife <i>Lysimachia thyrsoflora</i> | | 2B.3 | May-Aug | Meadows and seeps; mesic; upper montane coniferous forest | Possible. Although limited, suitable wetland habitat may be present within the Project |

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| Three-ranked hump-moss <i>Meesia triquetra</i> | | 4.2 | July | Wetlands (fens) | Possible. Although extremely limited, suitable wetland habitat may be present within the Project |
| broad-nerved hump-moss <i>Meesia uliginosa</i> | | 2B.2 | July, Oct | Moss on damp soil within meadows and seeps, bogs and fens, upper montane coniferous forest, and subalpine coniferous forest | Possible. Although limited, suitable wetland habitat may be present within the Project |
| Shasta snow-wreath <i>Neviusia cliftonii</i> | | 1B.2 | May-June | Lower montane coniferous forests, riparian woodlands; shady, north facing, or sheltered canyons | Possible. Although limited, suitable habitats may be present within the Project |
| slender Orcutt grass <i>Orcuttia tenuis</i> | T | 1B.1 | May-Oct | Vernal pools | Unlikely. No vernal pool habitat present within the survey corridors |
| Cascade grass of Parnassus <i>Parnassia cirrata</i> var. <i>intermedia</i> | | 2B.2 | Aug-Sept | Rock serpentine soils; montane coniferous forests, meadows and seeps, bogs, and fens | Unlikely. Suitable habitat absent from the survey corridors; nearest occurrence approximately 30 miles northwest of site |
| thread leaved beardtongue <i>Penstemon filiformis</i> | | 4.2 | May-Aug | Cismontane woodlands and lower montane coniferous forests; dry stony sites, grassy openings, and meadows | Possible. Suitable habitat may be present within the Project |
| Engelmann spruce <i>Picea engelmannii</i> | | 2B.2 | May-June | Upper montane coniferous forest | Possible. Suitable habitat may be present within the Project |
| Sierra blue grass <i>Poa sierrae</i> | | 1B.3 | April-June | Lower montane coniferous forests; shady, moist, rock slopes; often in canyons | Possible. Suitable habitat may be present within the Project |
| Profuse flowered pogogyne <i>Pogogyne floribunda</i> | | 4.2 | May-Sept | Vernal pools, seasonal lakes | Unlikely. No suitable habitat present within the survey corridors |
| Modoc county knotweed <i>Polygonum polygaloides</i> ssp. <i>esotericum</i> | | 1B.3 | May-Sept | Mesic; lower montane coniferous forest (vernal pools) | Unlikely. No vernal pool habitat present within the survey corridors |

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| Eel grass pondweed <i>Potamogeton zosteriformis</i> | | 2B.2 | June-July | Freshwater marsh | Unlikely. No suitable habitat present within the survey corridors |
| Newberry's cinquefoil <i>Potentilla newberryi</i> | | 2B.3 | May-Aug | Receding shorelines | Unlikely. No suitable habitat present within the survey corridors |
| Pacific fuzz wort <i>Ptilidium californicum</i> | | 4.3 | May-Aug | Bark of standing mature or recently fallen logs | Possible. Although limited, suitable wetland habitat may be present within the Project |
| marsh skullcap <i>Scutellaria galericulata</i> | | 2B.2 | June-Sept | Meadows and freshwater marshes of lower montane coniferous forests | Possible. Although limited, suitable wetland habitat may be present within the Project |
| Canyon creek stonecrop <i>Sedum obtusatum</i> ssp. <i>paradisum</i> | | 1B.3 | May-June | In crevices of exposed granite; chaparral and coniferous forests | Unlikely. No exposed granite habitat present within the survey corridors |
| long-stiped campion <i>Silene occidentalis</i> ssp. <i>longistipitata</i> | | 1B.2 | July-Aug | Lower and upper montane coniferous forest | Possible. Suitable habitat may be present within the Project |
| Klamath Mountain catchfly <i>Silene salmonacea</i> | | 1B.2 | June-July | Openings, usually serpentine, within lower montane coniferous forest | Unlikely. Potential suitable habitat likely absent within the survey corridors |
| English Peak greenbriar <i>Smilax jamesii</i> | | 4.2 | May-July | Riparian, streambanks, lake margins | Possible. Although limited, suitable wetland/riparian habitat may be present within the Project |
| hairy marsh hedgenettle <i>Stachys pilosa</i> | | 2B.3 | June-Sept | Mesic sites in Great Basin scrub | Unlikely. Suitable scrub habitat not present within the survey corridors |
| Long leaved starwort <i>Stellaria longifolia</i> | | 2B.2 | May-July | Meadows and seeps, riparian woodlands | Possible. Although limited, suitable wetland/riparian habitat may be present within the Project |
| Fineleaf pondweed <i>Stuckenia filiformis</i> ssp. <i>alpina</i> | | 2B.2 | May-July | Shallow, clear water of lakes, drainage channels | Unlikely. Potential suitable habitat absent from the survey corridors |
| Piorkowski's clover <i>Trifolium piorkowski</i> | | 1B.2 | April-May | Chaparral, cismontane woodland, lower montane coniferous forest (volcanic clay) | Unlikely. Potential suitable habitat likely absent within site; nearest occurrence over 30 miles north of site |

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| Siskiyou clover <i>Trifolium siskiyouense</i> | | 1B.1 | June-July | Wet mountain meadows | Unlikely. Potential suitable habitat likely absent from the survey corridors; nearest occurrence on volcanic plateau approximately 30 miles south of Project |
| Greene's tuctoria <i>Tuctoria greenei</i> | E | 1B.1 | May-July | Vernal pools | Unlikely. No vernal pool habitat present within the survey corridors |
| Shasta huckleberry <i>Vaccinium shastense</i> ssp. <i>shastense</i> | | 1B.3 | Dec-May | Acidic, mesic site; often on streambanks; sometimes on rocky outcrops, seeps, roadsides, and disturbed areas (chaparral, lower montane and subalpine coniferous forest, and riparian forest) | Possible. Although limited, suitable habitat may be present within the Project |
| oval-leaved viburnum <i>Viburnum ellipticum</i> | | 2B.3 | May-June | Chaparral, cismontane woodlands, and lower montane coniferous forests | Possible. Suitable habitat may be present within the Project |

Information from CNPS 2021, California Natural Diversity Database 2021, US Fish and Wildlife Service 2017.

*E: Federally listed endangered species; T: Federally listed threatened species

**CNPS: California Rare Plant Ranks (CNPS 2021):

CNPS 1A: Plants presumed extirpated in California and either rare or extinct elsewhere.

CNPS 1B: Plants rare, threatened, or endangered in California and elsewhere.

CNPS 2A: Plants presumed extirpated in California, but common elsewhere.

CNPS 2B: Plants rare, threatened, or endangered in California, but more common elsewhere.

CNPS 3: Plants about which more information is needed – a review list.

CNPS 4: Plants of limited distribution – a watch list.

Threat Ranks

- 0.1 – Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat).
- 0.2 – Moderately threatened in California (20-80% of occurrences threatened/moderate degree and immediacy of threat).
- 0.3 – Not very threatened in California (less than 20% of occurrences threatened/low degree and immediacy of threat or no current threats known).

Appendix B. Botanical Field Surveyor Qualifications

JULIA FIELDS

Associate Biologist

11 years of experience

Julia Fields is an Associate Biologist working from WEST's Corvallis, Oregon, office. She provides support for wind and solar energy projects through report writing, fieldwork (primarily botanical), map preparation, and desktop analyses. Julia is an experienced botanist and restoration ecologist with extensive experience in plant identification, rare plant and vegetation monitoring, native wild seed collection, invasive species removal, and environmental restoration. She is proficient in the use of ArcGIS for data collection, management, and reporting.

PROFESSIONAL EXPERIENCE

Rare Plant and Vegetation Monitoring

Julia has surveyed vegetation for a variety of purposes from mine remediation, to renewable energy, to habitat restoration. She has monitored rare plants, noxious weeds, rangelands, and vernal pools as well as conducted wetland delineations, habitat mapping, and forest assessments.

Habitat Restoration and Management

Julia has developed vegetation management plans for solar facilities to support operations and maintenance within restored ecosystems. She conducts habitat assessments and provides recommendations for adaptive management. She has also managed projects to restore habitat for sensitive species including native seed collection and propagation, invasive plant removal, and revegetation. She has collaborated with state and federal agencies, non-profit organizations, and consulting firms to develop and implement habitat restoration goals.

Technical Report Preparation

Julia is an expert technical writer and editor. She supports wind and solar project development through writing numerous technical documents including monitoring summary reports, bird and bat conservation strategies, vegetation management plans, noxious weed plans and habitat mitigation plans.

CERTIFICATIONS AND TRAINING

- Using the Washington State Wetland Rating System in Western WA, Coastal Training Program
- Measuring and Monitoring Plant Populations, CNPS
- Climate-Smart Riparian Restoration, Elkhorn Slough Coastal Training
- CEQA Basics Workshop, Association of Environmental Professionals
- Trimble GNSS Mapping and GIS Certified

SPECIALTY AREAS

Project Management

Vegetation Monitoring

Revegetation Management

Plant Identification

EDUCATION

MS, Applied Watershed Science
California State University

BA, Biology and Art
Westmont College

PROFESSIONAL ROLES

Associate Biologist,
WEST
2022–Present

Restoration Ecologist,
Institute for Applied Ecology
2020–2021

Botanist/Biologist,
Burlison Consulting, Inc.
2018–2020

Restoration Ecologist,
Point Lobos Foundation
2017–2018

Vegetation Mapping Intern,
California Department of
Parks and Recreation
2016–2017

Field Technician,
Dr. Doug Smith's Watershed
Geology Lab
2015–2017

Grassland Monitoring Contractor,
Monterey Bay Regional
Park Service
2016



KURT F. FLAIG

Plant Ecologist

27 years of experience

Kurt Flaig is a Plant Ecologist and Project Manager based in WEST's Laramie, Wyoming, office, where he primarily manages and works on vegetation-related projects involving renewable energy development and transportation (e.g., wind, solar, Wyoming Department of Transportation). Kurt's work extends from the Mojave Desert in southern California to the tallgrass prairie of the Great Plains and includes conducting natural vegetation community classifications, performing project-specific assessments of potential for occurrence of special-status plant species, and conducting special-status plant species surveys. He conducts aquatic resource inventories for many of these projects and assists clients with federal and state wetland permitting. Kurt has designed wetland mitigation sites and monitored numerous wetland mitigation sites. In addition to wetland monitoring, he has extensive experience conducting upland vegetation monitoring for post-construction restoration, revegetation, and special-status plant species mitigation.

PROFESSIONAL EXPERIENCE

Rare Plants

Kurt regularly conducts special-status plant species assessments and surveys for county, state, BLM- and USFS-sensitive species and ESA-listed species. This experience includes evaluating project impacts to special-status plant species and communities and designing and implementing mitigation measures to address such impacts. Kurt has detected numerous occurrences of special-status plant species, including federally threatened and endangered species, throughout the western US. His experience includes locating occurrences in Alaska, Arizona, California, Colorado, Idaho, Kansas, Nebraska, New Mexico, North Dakota, Utah, Washington, and Wyoming.

Wetlands

Kurt has decades of experience in conducting wetland delineations throughout the US. He has prepared and assisted clients in preparing USACE Section 404 permits and California Department of Fish and Wildlife Streambed Alteration Agreements and in complying with various states' waters regulatory requirements. Kurt's experience also includes the design of wetland mitigation sites and extensive mitigation monitoring. He has formal training and considerable experience in conducting wetland functional assessments.

Vegetation Classification, Mapping, and Monitoring

Kurt has extensive experience in the classification and mapping of vegetation in a variety of community and ecosystem types throughout the western US, including detailed descriptions of natural vegetation communities and associated flora. He has conducted vegetation monitoring in a variety of systems, from coastal prairie, salt marsh, to southwestern deserts, shortgrass and tallgrass prairies, coniferous forest, and others. He is experienced at collecting baseline vegetation data, longer term monitoring studies for projects involving range inventories, grassland restoration, wetland/riparian restoration and mitigation, and soil erosion analysis, and is proficient in the utilization of numerous sampling methods.

Technical Report Preparation

Kurt is an accomplished technical writer and editor and provides expertise in the preparation of various National Environmental Policy Act-related documents, including Environmental Impacts Statements, Biological Assessments, Biological Evaluations, and Habitat Conservation Plans. He has authored numerous technical reports and documents relating to special-status plant species, natural vegetation community mapping, and wetlands.

SPECIALTY AREAS

Wetlands

Rare Plants

Project Management

EDUCATION

MS, Range Ecology
Colorado State University
BS, Natural Resource Management
Colorado State University

PROFESSIONAL ROLES

Plant Ecologist,
WEST
2004–Present

Plant Ecologist,
H.T. Harvey & Associates
2001–2003

Range Technician,
Colorado State Cooperative
Extension Program
2000–2001, 1998–1999

Natural Resource Technician,
Center for Ecological Management
of Military Lands
2000–2001

Biological Science Technician,
US Forest Service
1999–2000

PROFESSIONAL AFFILIATIONS

California Native Plant Society
Colorado Native Plant Society
Wyoming Native Plant Society
Society of Wetland Scientists



Appendix C. Plant Species Encountered within the Fountain Wind Project

Appendix C. Plant Species Encountered within the Fountain Wind Project During the 2018, 2019, 2021, and 2023 Rare Plant Surveys.

| Family | Scientific Name* | Common Name |
|------------------|--------------------------------------------------|--------------------------|
| AGAVACEAE | <i>Camassia quamash</i> ssp. <i>breviflora</i> | small camas |
| ALLIACEAE | <i>Allium</i> spp. | onion |
| ANACARDIACEAE | <i>Toxicodendron diversilobum</i> | poison oak |
| APIACEAE | <i>Lomatium</i> spp. | lomatium |
| | <i>Osmorhiza berteroi</i> | sweet cicely |
| APOCYNACEAE | <i>Apocynum androsaemifolium</i> | bitter dogbane |
| | <i>Apocynum cannabinum</i> | Indianhemp |
| ARISTOLOCHIACEAE | <i>Asarum hartwegii</i> | Hartweg's wild ginger |
| ASCLEPIADACEAE | <i>Asclepias cordifolia</i> | heart leaf milkweed |
| | <i>Asclepias speciosa</i> | showy milkweed |
| ASTERACEAE | <i>Achillea millefolium</i> | common yarrow |
| | <i>Agoseris grandiflora</i> | giant mountain dandelion |
| | <i>Centaurea solstitialis</i> | yellow star thistle |
| | <i>Cichorium intybus</i> | chicory |
| | <i>Cirsium vulgare</i> | bull thistle |
| | <i>Erigeron</i> spp. | fleabane |
| | <i>Helenium bigelovii</i> | Bigelow's sneezeweed |
| | <i>Helianthella californica</i> | California helianthella |
| | <i>Lactuca serriola</i> | prickly lettuce |
| | <i>Madia glomerata</i> | mountain tarweed |
| | <i>Taraxacum officinale</i> | common dandelion |
| | <i>Wyethia mollis</i> | mountain mule ear |
| BERBERIDACEAE | <i>Mahonia repens</i> | creeping barberry |
| BETULACEAE | <i>Alnus incana</i> ssp. <i>tenuifolia</i> | mountain alder |
| BORAGINACEAE | <i>Cynoglossum officinale</i> | houndstongue |
| | <i>Eriodictyon californicum</i> | California yerba santa |
| | <i>Nasturtium officinale</i> | watercress |
| BRASSICACEAE | <i>Asyneuma prenanthoides</i> | California harebell |
| CAMPANULACEAE | <i>Symphoricarpos mollis</i> | creeping snowberry |
| CAPRIFOLIACEAE | <i>Paxistima myrsinites</i> | Oregon boxleaf |
| CELASTRACEAE | <i>Convolvulus</i> spp. | morning glory |
| CONVOLVULACEAE | <i>Cornus nuttallii</i> | mountain dogwood |
| CORNACEAE | <i>Calocedrus decurrens</i> | Incense-cedar |
| CUPRESSACEAE | <i>Carex athrostachya</i> | slenderbeak sedge |
| CYPERACEAE | <i>Carex inops</i> ssp. <i>inops</i> | long-stoloned sedge |
| | <i>Carex nebrascensis</i> | Nebraska sedge |
| | <i>Carex praegracilis</i> | field sedge |
| | <i>Carex utriculata</i> | beaked sedge |
| | <i>Carex</i> spp. | sedge |
| | <i>Cyperus acuminatus</i> | tapertip flatsedge |
| | <i>Eleocharis acicularis</i> | needle spikerush |
| | <i>Eleocharis macrostachya</i> | common spikerush |
| | <i>Schoenoplectus acutus</i> | tule |
| DENNSTAEDTIACEAE | <i>Pteridium aquilinum</i> var. <i>pubescens</i> | Western brackenfern |
| EQUISETACEAE | <i>Equisetum arvense</i> | common horsetail |
| | <i>Equisetum hymale</i> | Scouring-rush horsetail |
| ERICACEAE | <i>Arctostaphylos patula</i> | greenleaf manzanita |
| | <i>Chimaphila menziesii</i> | pipsissewa |
| | <i>Pterospora andromedea</i> | pinedrops |
| | <i>Pyrola picta</i> | whiteveined shinleaf |
| FABACEAE | <i>Lathyrus lanszwertii</i> | Nevada pea |
| | <i>Lupinus argenteus</i> | silvery lupine |

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| Family | Scientific Name* | Common Name |
|-----------------|------------------------------------------------------|------------------------|
| | <i>Trifolium longipes</i> | longstalk clover |
| | <i>Trifolium pratense</i> | red clover |
| FAGACEAE | <i>Chrysolepis sempervirens</i> | chinquapin |
| | <i>Quercus kelloggii</i> | California black oak |
| GROSSULARIACEAE | <i>Ribes roezlii</i> | Sierra gooseberry |
| | <i>Ribes divaricatum</i> | spreading gooseberry |
| HYPERICACEAE | <i>Hypericum perforatum</i> | Klamath weed |
| IRIDACEAE | <i>Iris tenuissima</i> | slender iris |
| JUNCACEAE | <i>Juncus balticus</i> | Baltic rush |
| | <i>Juncus ensifolius</i> | swordleaved rush |
| | <i>Juncus tenuis</i> | slender rush |
| LAMIACEAE | <i>Mentha arvensis</i> | field mint |
| | <i>Monardella odoratissima</i> | mountain monardella |
| | <i>Prunella vulgaris</i> | self-heal |
| LILIACEAE | <i>Lilium pardalinum</i> | leopard lily |
| | <i>Zigadenus venenosus</i> | death camas |
| MELANTHIACEAE | <i>Trillium ovatum</i> | Pacific trillium |
| | <i>Veratrum californicum</i> | California corn lily |
| MYRSINACEAE | <i>Lysimachia latifolia</i> | Pacific starflower |
| OLEACEAE | <i>Fraxinus latifolia</i> | Oregon ash |
| ONOGRACEAE | <i>Epilobium angustifolium</i> | fireweed |
| | <i>Epilobium brachycarpum</i> | tall annual willowherb |
| | <i>Epilobium ciliatum</i> | fringed willowherb |
| ORCHIDACEAE | <i>Corallorhiza maculata</i> | spotted coralroot |
| | <i>Platanthera dilatata</i> var. <i>leucostachys</i> | Sierra bog orchid |
| | <i>Spiranthes romanzoffiana</i> | hooded lady's tresses |
| OROBANCHACEAE | <i>Boschniakia strobilacea</i> | California groundcone |
| | <i>Pedicularis densiflora</i> | Indian warrior |
| PAPAVERACEAE | <i>Dicentra formosa</i> | bleeding heart |
| | <i>Eschscholzia californica</i> | California poppy |
| PINACEAE | <i>Abies concolor</i> | white fir |
| | <i>Pinus lambertiana</i> | sugar pine |
| | <i>Pinus jeffreyi</i> | Jeffrey pine |
| | <i>Pinus ponderosa</i> | ponderosa pine |
| | <i>Pseudotsuga menziesii</i> | Douglas fir |
| PLANTAGINACEAE | <i>Veronica anagallis-aquatica</i> | water speedwell |
| PHRYMACEAE | <i>Erythranthe guttata</i> | seep monkeyflower |
| POACEAE | <i>Agrostis stolonifera</i> | bent grass |
| | <i>Alopecurus aequalis</i> | shortawn foxtail |
| | <i>Bromus carinatus</i> | mountain brome |
| | <i>Bromus tectorum</i> | cheatgrass |
| | <i>Cynosurus echinatus</i> | annual dogtail grass |
| | <i>Danthonia californica</i> | California oatgrass |
| | <i>Deschampsia cespitosa</i> | tufted hairgrass |
| | <i>Elymus trachycaulus</i> | slender wheatgrass |
| | <i>Glyceria borealis</i> | Northern mannagrass |
| | <i>Phleum pratense</i> | Timothy |
| | <i>Poa secunda</i> | Sandberg bluegrass |
| | <i>Stipa lemmonii</i> | Lemmon's needlegrass |
| | <i>Stipa nelsonii</i> | mountain needle grass |
| POLEMONIACEAE | <i>Gilia aggregata</i> | scarlet gilia |
| | <i>Navarretia divaricata</i> | mountain navarretia |

Appendix C. Plant Species Encountered within the Fountain Wind Project During the 2018, 2019, 2021, and 2023 Rare Plant Surveys.

| Family | Scientific Name* | Common Name |
|------------------|---------------------------------------------|---------------------------------|
| POLYGONACEAE | <i>Eriogonum lobbii</i> | Lobb's wild buckwheat |
| | <i>Eriogonum nudum</i> | naked buckwheat |
| | <i>Eriogonum ursinum ssp. ursinum</i> | Bear Valley buckwheat |
| | <i>Eriogonum vimineum</i> | wickerstem buckwheat |
| RANUNCULACEAE | <i>Aconitum columbianum</i> | monkshood |
| | <i>Ranunculus aquatilis</i> | White water crowfoot |
| | <i>Thalictrum fendleri</i> | meadow-rue |
| RHAMNACEAE | <i>Ceanothus cordulatus</i> | mountain whitethorn |
| | <i>Ceanothus cuneatus</i> | buckbrush |
| | <i>Ceanothus prostratus var. prostratus</i> | Mahala mat |
| | <i>Ceanothus velutinus</i> | tobacco brush |
| ROSACEAE | <i>Frangula californica</i> | California coffeeberry |
| | <i>Fragaria virginiana</i> | mountain strawberry |
| | <i>Potentilla gracilis</i> | Northwest cinquefoil |
| | <i>Prunus emarginata</i> | bitter cherry |
| | <i>Rosa woodsii</i> | interior rose |
| | <i>Rubus armeniacus</i> | Himalayan blackberry |
| | <i>Rubus leucodermis</i> | whitebark raspberry |
| RUBIACEAE | <i>Rubus parviflorus</i> | thimbleberry |
| | <i>Galium aparine</i> | common bedstraw |
| RUSCACEAE | <i>Maianthemum stellatum</i> | starry false lily of the valley |
| SALICACEAE | <i>Salix scouleriana</i> | Scouler's willow |
| SAPINDACEAE | <i>Acer circinatum</i> | vine maple |
| | <i>Acer macrophyllum</i> | bigleaf maple |
| SCROPHULARIACEAE | <i>Pedicularis spp.</i> | lousewort |
| | <i>Penstemon neotericus</i> | Plumas County beardtongue |
| | <i>Verbascum thapsus</i> | common mullein |
| VERBENACEAE | <i>Verbena lasiostachys</i> | western vervain |
| VIOLACEAE | <i>Viola glabella</i> | stream violet |

*Native plant species in bold.

**Appendix D. Representative Photos of Spot Check Locations at the Fountain Wind
Project**



Photo D-1. Mixed montane riparian forest at the Fountain Wind Project, Shasta County, California.



Photo D-2. Mixed montane riparian scrub at the Fountain Wind Project, Shasta County, California.



Photo D-3. Montane wet meadow at the Fountain Wind Project, Shasta County, California.



Photo D-4. Rock outcrop at the Fountain Wind Project, Shasta County, California.



Photo D-5. Rock outcrop at the Fountain Wind Project, Shasta County, California.



Photo D-6. Mixed conifer forest (unburned) at the Fountain Wind Project, Shasta County, California.