



TransTerra Consulting

INTEGRATED ENVIRONMENTAL SERVICES



Botanical Assessment for APN 308-231-002 Geck-Moeller



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INTRODUCTION

Purpose of Study

This Botanical Assessment was prepared to provide baseline data about the type and extent of biological resources under the jurisdiction of the California Department of Fish and Wildlife (CDFW) and US Fish and Wildlife Service (USFWS) that either currently present or have the potential to be found at the project location. The goals of this evaluation are to ensure that any sensitive plant species or communities will not be affected, either directly or indirectly, by the proposed developments. Protections for the environment include preserving sensitive habitats and preventing impacts to special status plant species as mandated by the federal Endangered Species Act (ESA) and the California Endangered Species Act (CESA). In addition to the CESA, the California Environmental Quality Act (CEQA) provides that species categorized as “Species of Special Concern” (SSC), “Fully Protected Species” (FP), or “Watchlisted Species” (WL) by the California Department of Fish and Wildlife (CDFW) are also considered during impact analysis. A botanical survey was performed in 2016 by SHN Consulting Engineers & Geologists, Inc. botanist Joseph Saler, resulting in no special status botanical species (Saler 2016). This follow-up survey was performed to ensure no special status plants had arrived in the area since the last survey was conducted.

Project Area

In the following report, the “Project Area” is defined as the area within the parcel where direct impacts to the environment from developmental activities may occur. On-site field assessments are completed within the Project Area. An additional “Biological Assessment Area” (BAA) encompasses a larger buffer zone around the Project Area to evaluate the potential for indirect impacts to nearby sensitive habitats, special status species, or seasonal or migrating species, as a result of activities within the Project Area. The BAA is evaluated using online maps and databases, as described below. The BAA may extend beyond the project parcel; however, field studies are not conducted outside of parcel boundaries due to access restrictions unless otherwise specified.

Project Location and Description

The property is with the Humboldt assessor’s parcel number (APN) 308-231-002 is located in Loleta, California (Table 1, Figure 1). The address is 12 Hawks Hill Road, Loleta, CA, with portions of the parcel on either side of Hawks Hill Road at its junction with Table Bluff Road. The Project Area is located on one parcel divided by Hawks Hill Road totaling to 4.68-acres spanning approximately 165 to 220 feet above sea level.

The proposed project includes construction of a 1,985ft² residence and a driveway. The project is located in the southwest portion of the parcel. No construction is proposed along the southern portion of the parcel laying on the other side of Hawks Hill Road as discussed with the client during the first site visit, May 19, 2022. A second site visit was conducted on June 20, 2022, to account for different blooming periods.

Table 1. Parcel and Project Area overview

Property Data	Description
APN #	308-231-002
Parcel size	4.68-acres
USGS 7.5-minute quadrangle	Fields Landing
Coastal Jurisdiction	O
State Fire Responsibility Area	Y
Humboldt County Zoning / Land-Use Designation	AE

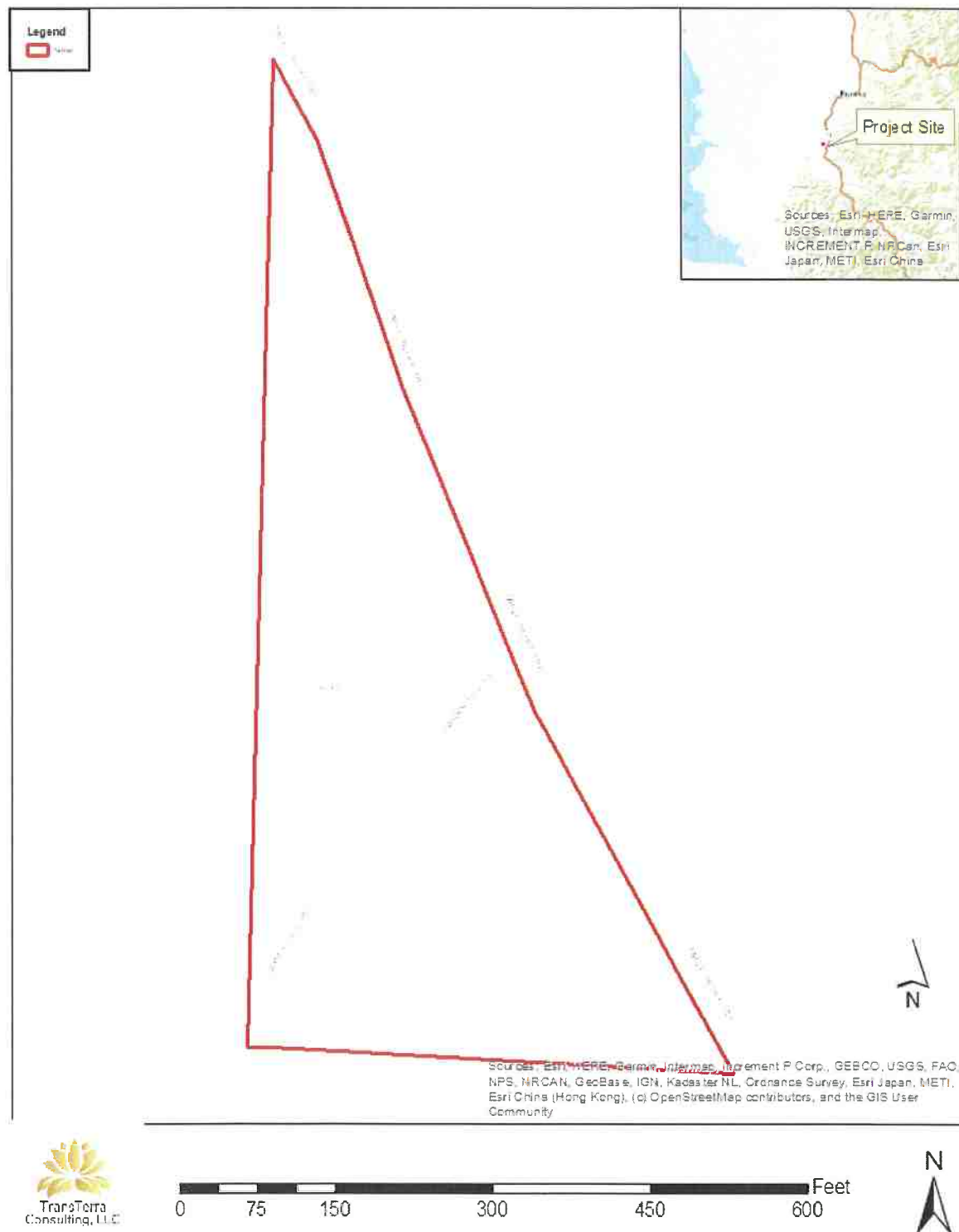




Figure 2. Aerial image of the Project Area and existing infrastructure (Google Earth 2020)

METHODS

A Botanical Assessment is based on information from several sources: (1) published research, maps, and databases showing the distribution of ecological habitats, soil types, watercourses, topography, and the local and regional distribution of special status plant and animal species; (2) on-site field evaluations and data collection by a certified, professional biologist; and, where applicable, (3) consultation with knowledgeable outside sources such as federal, state, or county scientists or land managers, private consultants, and property owners.

Records Search and Literature Review

Occurrences of biological species are a function of their physical environment. Therefore, prior to on-site field assessments, TransTerra compiles hydrologic, physiographic, habitat, and species-distribution information for the project site and vicinity. Where applicable, watercourses and wetland areas are identified through the Humboldt GIS Portal¹ and the National Wetlands Inventory² (NWI). Soil types are mapped with the Natural Resource Conservation Service Web Soil Survey³ or the Humboldt GIS Portal. Topography and elevation data are compiled from USGS 7.5-minute topographic maps. General habitat distribution and historical land-use are determined from Google Earth Pro (v.7.3) aerial imagery. Base maps for the field assessment are compiled using the Avenza Systems field mapping application⁴.

Lists of special status plant species with a potential to occur in the Project Area are compiled from the CDFW's California Natural Diversity Database (CNDDDB)⁵ and the California Native Plant Society (CNPS) database⁶. The databases are searched using a 9-quad query that includes the USGS 7.5-minute quadrangle in which the project site is located plus the surrounding eight quadrangles. Other pertinent resources for special status species in Humboldt County include the Jepson Manual, Second Edition (Baldwin et al., 2012) and the Arcata Fish and Wildlife Office website⁷. The local and regional species-distribution data from these sources are cross-referenced with the physiography and habitat types at the project site to generate a refined list of species with a reasonable probability to be found at that location.

¹ <https://humboldt.gov/1357/Web-GIS>

² <https://www.fws.gov/wetlands>

³ <https://websoilsurvey.sc.egov.usda.gov>

⁴ <https://www.avenza.com/avenza-maps>

⁵ <https://wildlife.ca.gov/Data/CNDDDB>

⁶ <http://www.rareplants.cnps.org/>

⁷ <https://www.fws.gov/arcata/es>

The databases are also used to produce a map of specific locations near the Project Area where special status species can be observed in the field, for comparison with specimens on-site. The California Invasive Plant Council (Cal-IPC) inventory⁸ is the primary reference for documenting invasive plants in the Project Area.

Field Assessment and Data Collection

The area covered by the field assessment for this Botanical Assessment was determined by the project description provided by the client, in addition to observations for any possible adjacent areas of direct, indirect, or cumulative effects, as discussed below. Surveys for sensitive natural communities follow CDFW's (2018) *Protocol for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities*. The reconnaissance survey includes an assessment of the various habitats present in the Project Area, any sensitive habitat types, habitats associated with rare plant species, an inventory of plant species, and an inventory of migratory bird species, specifically via nests. All observations of habitats, including evidence for pertinent floral areas are recorded on-site. The field assessment for this project was conducted on May 19, 2022, and June 20, 2022, by TransTerra Associate Biologists Nate Johle and Kale McNeill.

ENVIRONMENTAL SETTING

The BAA is located in the North Coast Ranges Subregion of the Northwestern California Region of the California Floristic Province (Jepson Flora Project, 2020). The climate classification for this area is Warm Temperate (Köppen, 1936), with moderate to warm temperatures on average and most precipitation occurring during winter months.

The property is situated in the Coastal Zone to the northeast of the town of Loleta on a coastal terrace. (Humboldt County, 2020). Elevations on the property are approximately 165 to 220 feet above sea level. The BAA is primarily flat; slopes range between approximately 0 to 10 percent slopes within the general area of the proposed residence.

Steep slopes within North Coast Ranges are prone to high instability and landsliding (Kelsey, 1978). Several historic landslides are mapped throughout all the BAA. Potential liquefaction or other geologic hazards are not evident in the BAA (Humboldt County, 2020). No faults are mapped within the parcel.

Soils

The kinds of soils on a property will strongly influence whether or not sensitive natural communities or special status plants will be present. For example, hydric soils, which are seasonally, or permanently saturated soils as found in wetlands, or soils that possess unique "edaphic characteristics"

⁸ <https://www.cal-ipc.org/plants/inventory>

such as high serpentine content, provide the required substrate for the growth and survival of particular sensitive communities and plants.

Soils across the parcel are of the Rohnerville soils series, silty clay loam textured soils with deep dark topsoil of approximately twenty-four inches (Saler 2016). Soils that may influence sensitive natural communities or special status plants were not observed on site. Few wetland species were observed across the parcel due to the well-drained nature of the soils across the parcel.

Watercourses

Watercourses in California are designated as Class I, II, III, or IV based on their annual flow capacity and role in supporting aquatic life (Table 3). Generally, development activities shall not be located or occur within 150 feet of any Class I or wetlands, within 100 feet of any Class II watercourse or within 50 feet of any Class III watercourse.

Table 2. Definitions of Class I-IV watercourses

<i>Class</i>	<i>Definition</i>
<i>I</i>	<i>Perennial streams that contain fish or are domestic water supplies</i>
<i>II</i>	<i>Perennial streams that do not contain fish but do contain other aquatic life or are within 1,000 ft (305 m) of a Class I stream</i>
<i>III</i>	<i>Watercourses that do not support aquatic life but have the potential to deliver sediment to a Class I or II stream.</i>
<i>IV</i>	<i>Human-made streams for domestic, agricultural, or hydroelectric supply or for other beneficial use.</i>

The parcel falls within two watersheds: Humboldt Bay and Strong Creek Eel. However, no watercourses were identified in the project parcel.

Wetlands and Streamside Management Areas

Wetlands, as defined by the USDA-Natural Resources Conservation Service (NRCS), are areas that (1) have a predominance of hydric soils; and (2) are inundated or saturated by surface or groundwater at levels necessary to support hydrophytic vegetation that require saturated soil conditions. For this study, a formal wetland delineation per USACE was not performed. Wetland boundaries are estimated by GIS queries and field observations.

A “Streamside Management Area” (SMA) is a legally designated buffer zone along streams and aquatic habitats where extra precaution is required to protect water quality. Section 314-61.6 of the Humboldt County General Plan provides for the protection of SMAs along perennially and intermittent streams as well as other wet areas such as natural ponds, springs, vernal pools, marshes, and wet meadows.

Per the Humboldt County GIS layer, the project parcel is not located within a streamside management area. The NWI and Humboldt GIS layers do not show wetlands on the property. (Figure 3). However, these GIS databases may not capture the full, accurate scope of waterways in the area.

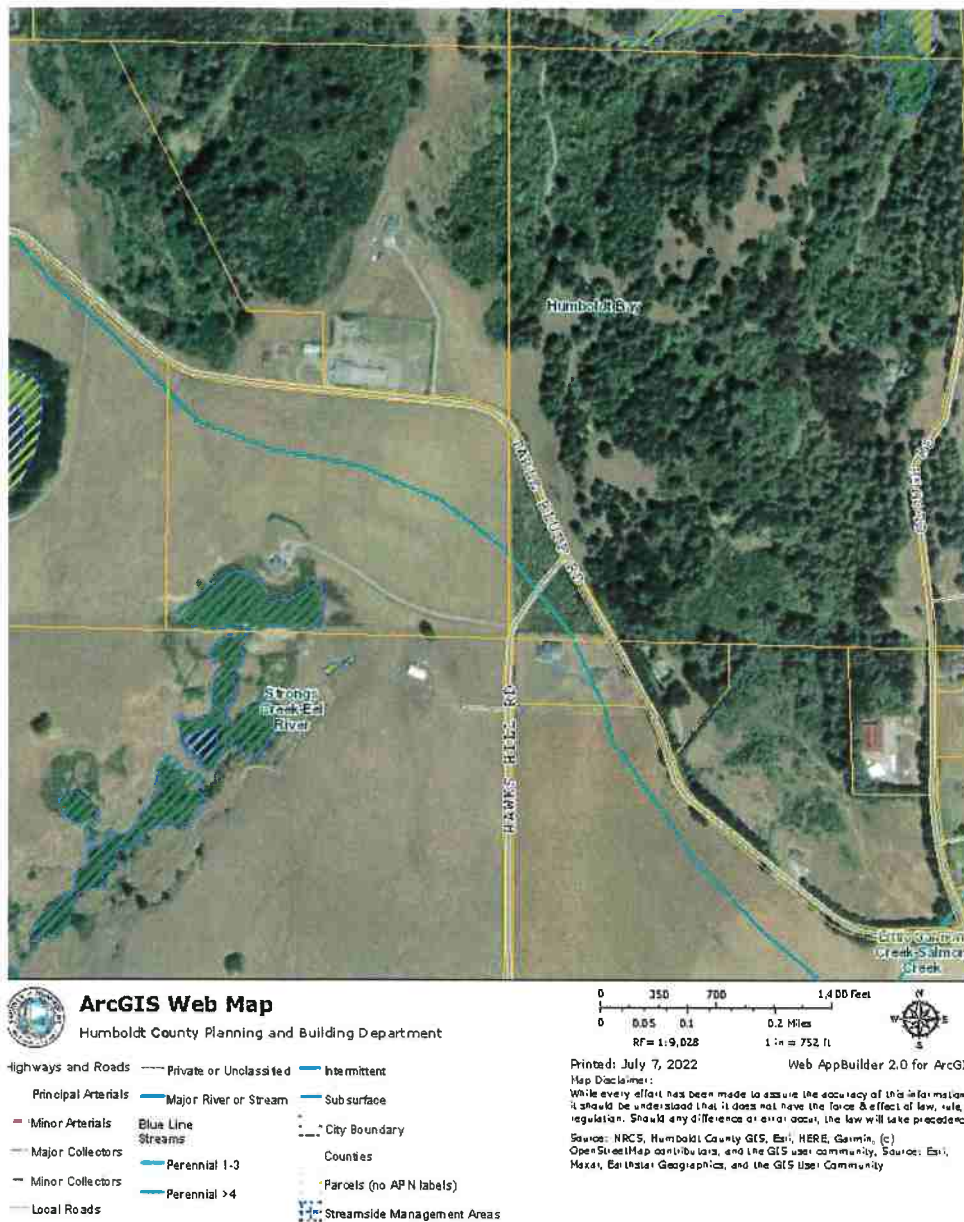


Figure 3. Map of watercourses, Streamside Management Areas (SMAs), and wetlands on the property as mapped by Humboldt County GIS.

Vegetation Communities

Natural terrestrial communities in the Project Area are designated based on the CDFW criteria originally described in Holland (1986) to facilitate habitat available for sensitive species. Wetland communities are based on Cowardin et al. (1979). Sensitive natural communities are designated based on lists and alliances described using A Manual of California Vegetation (CNPS, 2022).

The property is largely dominated by the following vegetation types:

The parcel is a Non-native Grassland to Coastal Scrubland (Holland, 1986). The large area with no tree or shrub layer is a Non-native Grassland with the herb layer of the western half dominated by Poison hemlock (*Daucus carota*) and the herb layer of the eastern half dominated by Cow parsnip (*Heracleum maximum*). Surrounding the Non-native Grassland is a Northern Coastal Bluff Scrub (Holland, 1986) with a shrub layer dominated by Cascara (*Frangula purshiana*) and patches of blackberry brambles composed of California blackberry (*Rubus ursinus*) and Himalayan blackberry (*Rubus armeniacus*). The other half of the parcel that is on the other side of Hawks Hill Road is dominated by large California blackberry thickets throughout and Sitka spruce (*Picea sitchensis*) which lines Table Bluff Road. Other shrub and tree species that are spread throughout the parcel with no dominance are listed below (Table 3).

Offsite Conditions

Offsite conditions primarily consist of adjacent agriculture and housing developments.

Table 2. Plant species observed during 2016 (Saler 2016) and both 2022 field assessments

Layer	Scientific Name	Common Name	Origin	WMVC Wetland Indicator
Herb	<i>Achillea millefolium</i>	Common yarrow	native	FACU
Herb	<i>Agrostis gigantea</i>	Redtop	introduced	FAC
Herb	<i>Agrostis stolonifera</i>	Creeping bent	invasive	FAC
Herb	<i>Aira caryophylla</i>	Silver hair grass	introduced	FACU
Herb	<i>Anaphalis margaritacea</i>	Pearly everlasting	native	FACU
Herb	<i>Anthoxanthum odoratum</i>	Sweet vernal grass	invasive	FACU
Herb	<i>Aquilegia formosa</i>	Crimson columbine	native	FAC
Herb	<i>Avena sativa</i>	Cultivated oat	introduced	UPL
Herb	<i>Bellis perennis</i>	English daisy	introduced	UPL
Herb	<i>Brassica nigra</i>	Black mustard	invasive	NL
Herb	<i>Briza maxima</i>	Rattlesnake grass	invasive	NL
Herb	<i>Briza minor</i>	Small quaking grass	introduced	FACU
Herb	<i>Bromus carinatus</i>	California brome	native	UPL
Herb	<i>Bromus diandrus</i>	Ripgut grass	invasive	UPL
Herb	<i>Bromus hordeaceus</i>	Soft chess	invasive	FACU
Herb	<i>Calandrinia ciliata</i>	Red maids	native	FACU
Herb	<i>Cardamine oligosperma</i>	Western bittercress	native	FAC
Herb	<i>Carduus pycnocephalus</i>	Italian thistle	invasive	UPL
Herb	<i>Carex leptopoda</i>	Slender-footed sedge	native	FAC
Herb	<i>Cerastium arvense</i>	Field chickweed	native	FACU
Herb	<i>Cerastium glomeratum</i>	Sticky mouse-ear chickweed	introduced	FACU
Herb	<i>Cirsium arvense</i>	Canada thistle	invasive	FAC



Layer	Scientific Name	Common Name	Origin	WMVC Wetland Indicator
Herb	<i>Cirsium vulgare</i>	Bull thistle	invasive	FACU
Herb	<i>Conium maculatum</i>	Poison hemlock	invasive	FAC
Herb	<i>Crepis capillaris</i>	Smooth hawksbeard	introduced	FACU
Herb	<i>Cynosurus echinatus</i>	Bristly dogtail grass	invasive	UPL
Herb	<i>Dactylis glomerata</i>	Orchard grass	invasive	FACU
Herb	<i>Daucus carota</i>	Queen Anne's lace	introduced	FACU
Herb	<i>Digitalis purpurea</i>	Purple foxglove	invasive	FACU
Herb	<i>Dipsacus fullonum</i>	Wild teasel	invasive	FAC
Herb	<i>Elymus glaucus</i> subsp. <i>glaucus</i>	Blue wildrye	native	FACU
Herb	<i>Epilobium ciliatum</i>	Northern willow herb	native	FACW
Herb	<i>Erigeron canadensis</i>	Horseweed	native	FACU
Herb	<i>Festuca arundinacea</i>	Tall fescue	invasive	UPL
Herb	<i>Festuca californica</i>	California fescue	native	FACU
Herb	<i>Festuca microstachys</i>	Small fescue	native	UPL
Herb	<i>Festuca bromoides</i>	Brome fescue	introduced	UPL
Herb	<i>Festuca perennis</i>	Italian rye grass	invasive	UPL
Herb	<i>Festuca rubra</i>	Red fescue	native	FAC
Herb	<i>Fragaria vesca</i>	Wood strawberry	native	FACU
Herb	<i>Galium aparine</i>	Goose grass	native	FACU
Herb	<i>Geranium dissectum</i>	Cut-leaved geranium	invasive	UPL
Herb	<i>Geranium molle</i>	Dovefoot geranium	introduced	UPL
Herb	<i>Heracleum maximum</i>	Cow parsnip	native	FAC
Herb	<i>Holcus lanatus</i>	Common velvet grass	invasive	FAC
Herb	<i>Horkelia californica</i> var. <i>californica</i>	California horkelia	native	UPL
Herb	<i>Hypochaeris radicata</i>	Rough cat's-ear	invasive	FACU
Herb	<i>Iris douglasiana</i>	Douglas iris	native	UPL
Herb	<i>Juncus bufonius</i>	Toad rush	native	FACW
Herb	<i>Leontodon saxatilis</i>	Hairy hawkbit	introduced	FACU
Herb	<i>Lepidium didymum</i>	Lesser swine cress	introduced	
Herb	<i>Leucanthemum vulgare</i>	Ox-eye daisy	invasive	FACU
Herb	<i>Linum bienne</i>	Western blue flax	introduced	UPL
Herb	<i>Lotus corniculatus</i>	Bird's-foot trefoil	introduced	FAC
Herb	<i>Lupinus rivularis</i>	Riverbank lupine	native	FAC
Herb	<i>Lysimachia arvensis</i>	Scarlet pimpernel	introduced	UPL
Herb	<i>Mimulus moschatus</i>	Musk monkeyflower	native	OBL
Herb	<i>Matricaria discoidea</i>	Pineapple weed	introduced	FACU
Herb	<i>Maianthemum racemosum</i>	Feathery false lily of the valley	native	FAC
Herb	<i>Maianthemum stellatum</i>	Starry false lily of the valley	native	FAC
Herb	<i>Mentha pulegium</i>	Pennyroyal	invasive	OBL
Herb	<i>Navarretia divaricata</i>	Mountain navarretia	native	NL
Herb	<i>Navarretia squarrosa</i>	Skunkweed	native	FACU
Herb	<i>Oxalis</i> sp.		introduced	
Herb	<i>Parentucellia viscosa</i>	Yellow parentucellia	invasive	FAC
Herb	<i>Phalaris aquatica</i>	Harding grass	invasive	FACU
Herb	<i>Plantago lanceolata</i>	English plantain	invasive	FACU
Herb	<i>Poa annua</i>	Annual blue grass	introduced	FAC
Herb	<i>Poa pratensis</i> subsp. <i>pratensis</i>	Kentucky blue grass	introduced	FAC
Herb	<i>Polygonum aviculare</i>	Prostrate knotweed	introduced	FAC
Herb	<i>Polystichum munitum</i>	Western sword fern	native	FACU
Herb	<i>Prunella vulgaris</i>	Common self-heal	native	FACU
Herb	<i>Pseudognaphalium ramosissimum</i>	Pink cudweed	native	UPL



Layer	Scientific Name	Common Name	Origin	WMVC Wetland Indicator
Herb	<i>Pteridium aquilinum</i> var. <i>pubescens</i>	Western bracken fern	native	FACU
Herb	<i>Ranunculus parviflorus</i>	Small-flowered buttercup	introduced	FACU
Herb	<i>Ranunculus repens</i>	Creeping buttercup	invasive	FACW
herb	<i>Raphanus raphanistrum</i>	jointed charlock	introduced	
Herb	<i>Raphanus sativus</i>	Wild radish	invasive	UPL
Herb	<i>Rumex acetosella</i>	Sheep sorrel	invasive	FACU
Herb	<i>Rumex crispus</i>	Curly dock	invasive	FAC
Herb	<i>Scrophularia californica</i>	California figwort	native	FAC
Herb	<i>Senecio minimus</i>	Coastal burnweed	invasive	FACU
Herb	<i>Senecio vulgaris</i>	Common groundsel	introduced	FACU
Herb	<i>Silybum marianum</i>	Milk thistle	invasive	UPL
Herb	<i>Solanum americanum</i>	American nightshade	native	
Herb	<i>Solanum aviculare</i>	New Zealand nightshade	introduced	
Herb	<i>Solidago elongata</i>	West coast Canada goldenrod	native	FACU
Herb	<i>Sonchus asper</i> subsp. <i>asper</i>	Prickly sow thistle	introduced	FACU
Herb	<i>Sonchus oleraceus</i>	Common sow thistle	introduced	UPL
Herb	<i>Spergularia rubra</i>	Red sand-spurry	introduced	FAC
Herb	<i>Stachys ajugoides</i>	Hedge-nettle	native	OBL
Herb	<i>Stachys rigida</i> var. <i>rigida</i>	Rough hedge-nettle	native	FACW
Herb	<i>Stellaria media</i>	Common chickweed	introduced	FACU
Herb	<i>Symphyotrichum chilense</i>	Pacific aster	native	FAC
Herb	<i>Taraxacum officinale</i>	Common dandelion	introduced	FACU
Herb	<i>Tellima grandiflora</i>	Fringe cups	native	FACU
Herb	<i>Trifolium pratense</i>	Red clover	introduced	FACU
Herb	<i>Trifolium repens</i>	White clover	introduced	FAC
Herb	<i>Trifolium subterraneum</i>	Subterranean clover	introduced	UPL
Herb	<i>Trifolium dubium</i>	Little hop clover	introduced	FACU
Herb	<i>Urtica dioica</i>	stinging nettle	native	FAC
Herb	<i>Vicia hirsuta</i>	Hairy vetch	introduced	UPL
Herb	<i>Vicia sativa</i>	Spring vetch	introduced	UPL
Herb	<i>Viola adunca</i>	Western dog violet	native	FAC
Herb	<i>Zeltnera venusta</i>	charming centaury	native	
Shrub	<i>Baccharis pilularis</i>	Coyote brush	native	UPL
Shrub	<i>Corylus cornuta</i> subsp. <i>californica</i>	California hazelnut	native	FACU
Shrub	<i>Cytisus scoparius</i>	Scotch broom	invasive	UPL
Shrub	<i>Erica lusitanica</i>	Spanish heather	invasive	UPL
Shrub	<i>Frangula purshiana</i>	Cascara	native	FAC
Shrub	<i>Gaultheria shallon</i>	Salal	native	FACU
Shrub	<i>Genista monspessulana</i>	French broom	invasive	UPL
shrub	<i>Leptospermum scoparium</i>		cultivated	
Shrub	<i>Lonicera involucrata</i> var. <i>ledebourii</i>	Black twinberry	native	FAC
Shrub	<i>Morella californica</i>	Wax myrtle	native	FACW
Shrub	<i>Oemleria cerasiformis</i>	Oso berry	native	FACU
Shrub	<i>Ribes sanguineum</i> var. <i>sanguineum</i>	Red-flowering currant	native	FACU
Shrub	<i>Rosa nutkana</i> subsp. <i>nutkana</i>	Nootka rose	native	FAC
Shrub	<i>Rosa rubiginosa</i>	Sweet-brier	introduced	FACW
Shrub	<i>Rubus armeniacus</i>	Himalayan blackberry	invasive	FACU
Shrub	<i>Rubus parviflorus</i>	Thimbleberry	native	FACU
Shrub	<i>Rubus ursinus</i>	California blackberry	native	FACU
Shrub	<i>Sambucus racemosa</i> var. <i>racemosa</i>	Red elderberry	native	FACU
Shrub	<i>Spiraea douglasii</i>	Douglas' spiraea	native	FACW

Layer	Scientific Name	Common Name	Origin	WMVC Wetland Indicator
Shrub	<i>Vaccinium ovatum</i>	California huckleberry	native	FACU
Tree	<i>Abies grandis</i>	Grand fir	native	FACU
Tree	<i>Ilex aquifolium</i>	English holly	invasive	FACU
Tree	<i>Juniperus sp.</i>	cultivated juniper	cultivated	
Tree	<i>Picea sitchensis</i>	Sitka spruce	native	FAC
Tree	<i>Pinus radiata</i>	Monterey pine	native/ invasive	UPL
Tree	<i>Prunus cerasifera</i>	Cherry plum	introduced	
Tree	<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>	Douglas-fir	native	FACU
Tree	<i>Salix lasiandra</i> var. <i>lasiandra</i>	Pacific willow	native	FACW

SENSITIVE NATURAL COMMUNITIES

Natural Communities are part of the “Natural Heritage conservation triad” (CDFW, 2020) for California, tracked along with plants and animals. “Sensitive Natural Communities” are those that are rare either within the state or globally, and are currently ranked by CDFW, CNPS, and other groups within California based on Manual of California Vegetation, 2nd Edition (CNPS, 2020). CDFW considers alliances and associations with a S1 to S3 rank to be Sensitive (CDFW, 2019).

Riparian habitats may be considered to be sensitive natural communities as they qualify as wetlands or “waters of the state” or “waters of the U.S.” as regulated by Regional Water Quality Control Board or U.S. Army Corps of Engineers through the *Clean Water Act* and/or the *Porter-Cologne Water Quality Control Act*.

The Non-native grassland was identified as a Poison hemlock or fennel patch, ranked SNA, GNA (CNPS, 2022). The blackberry brambles were identified as a Salal-berry bramble dominated by California blackberry, ranked S4, GNR (CNPS, 2022). No sensitive communities were identified.

INVASIVE PLANT SPECIES

Background on Controlling Invasive Species

Section 55.4.12.16 of Humboldt County Ordinance 2599 requires cooperation on the part of cannabis permit holders in the control and eradication of invasive plant species in the county. Section 55.4.12.16 states “It is the responsibility of a certificate or permit holder to work to eradicate invasive species. As part of any application, the existence of invasive species on the project parcel(s) need to be identified, including the type(s) of invasive plant species, where they are located, and a plan to control their spread. All invasive plant species shall be removed from the cultivation site and associated infrastructure using measures appropriate to the species. Removal shall be confirmed during subsequent annual inspection. Corrective action may be required if invasive species are found to have returned” (Humboldt County Board of Supervisors, 2018, p. 44).

Preventing invasive species from becoming established can be more effective than restoring an injured ecosystem. Controlling established invasive species is difficult, and complete eradication is extremely difficult. Prevention is the best approach for avoiding the loss of valuable native species that may be pushed out and replaced by pest species.

Natural pathways for the introduction and dispersal of invasive plant species include wind, water, or animals. Areas disturbed by both natural and human causes (roadsides, trails, log landings, energy transmission rights-of-way, and construction zones) are particularly susceptible to invasion and should be targeted for prevention efforts (monitoring, equipment washing), as these are likely sources of seed or propagules for the translocation of invasive species. Motorized and non-motorized transportation devices (including ATVs and bicycles) transport seeds of invasive plants.

The California Invasive Plant Council (Cal-IPC) inventory⁹ is the most current and comprehensive database of invasive plants in California and was used to define and list the plants considered “invasive” in the BAA. Invasive species are assigned a rating based on the potential severity of their impact on the environment as follows:

- 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.
- Alert. An Alert rating is applied to species that currently have High or Moderate impacts outside California and limited distributions within the state but show a potential to increase their distribution and impact on the state.
- Watch. These species have been assessed as posing a high risk of becoming invasive in the future in California.

Invasive species identified on-site are subject to mitigation measures and subsequent annual inspections to ensure compliance.

⁹ <https://www.cal-ipc.org/plants/inventory>

Invasive Species Observed in the BAA

Invasive species observed in the BAA are listed in Table 4. Because the survey did not take place during the blooming period for some species, a full floristic list is not available and other invasive species could be present on the property. Appropriate mitigation measures should be taken to control and eradicate all invasive species on-site, as described below. Many invasive species were naturalized throughout the BAA and removal would be difficult. Removal of scotch broom and French broom is recommended.

Table 3. Invasive plants observed in the Project Area Scientific Name	Common Name	Cal-IPC Rating
<i>Agrostis stolonifera</i>	Creeping bent	limited
<i>Anthoxanthum odoratum</i>	Sweet vernal grass	moderate
<i>Brassica nigra</i>	Black mustard	moderate
<i>Briza maxima</i>	Rattlesnake grass	limited
<i>Bromus diandrus</i>	Ripgut grass	moderate
<i>Bromus hordeaceus</i>	Soft chess	limited
<i>Carduus pycnocephalus</i>	Italian thistle	moderate
<i>Cirsium arvense</i>	Canada thistle	moderate
<i>Cirsium vulgare</i>	Bull thistle	moderate
<i>Conium maculatum</i>	Poison hemlock	moderate
<i>Cynosurus echinatus</i>	Bristly dogtail grass	moderate
<i>Cytisus scoparius</i>	Scotch broom	high
<i>Dactylis glomerata</i>	Orchard grass	limited
<i>Digitalis purpurea</i>	Purple foxglove	limited
<i>Dipsacus fullonum</i>	Wild teasel	moderate
<i>Erica lusitanica</i>	Spanish heather	limited
<i>Festuca arundinacea</i>	Tall fescue	moderate
<i>Festuca perennis</i>	Italian rye grass	moderate
<i>Genista monspessulana</i>	French broom	high
<i>Geranium dissectum</i>	Cut-leaved geranium	moderate
<i>Holcus lanatus</i>	Common velvet grass	moderate
<i>Hypochaeris radicata</i>	Rough cat's-ear	moderate
<i>Ilex aquifolium</i>	English holly	moderate
<i>Leucanthemum vulgare</i>	Ox-eye daisy	moderate
<i>Mentha pulegium</i>	Pennyroyal	moderate
<i>Parentucellia viscosa</i>	Yellow parentucellia	limited
<i>Phalaris aquatica</i>	Harding grass	moderate
<i>Pinus radiata</i>	Monterey pine	limited
<i>Plantago lanceolata</i>	English plantain	limited
<i>Ranunculus repens</i>	Creeping buttercup	limited
<i>Raphanus sativus</i>	Wild radish	limited
<i>Rubus armeniacus</i>	Himalayan blackberry	high
<i>Rumex acetosella</i>	Sheep sorrel	moderate
<i>Rumex crispus</i>	Curly dock	limited
<i>Senecio minimus</i>	Coastal burnweed	moderate
<i>Silybum marianum</i>	Milk thistle	limited

SPECIAL STATUS BIOLOGICAL RESOURCES

The following analysis of biological resources is based on field observations and 9-quad database searches for historical or existing occurrences of special status plant species. Appendix B includes a list of all plant species recorded in the area from the CNPS inventory, their preferred habitat, and an analysis of their potential to occur in the BAA and Project Area.

The metrics for determining the potential for species to be found in the project, as listed in Appendices B and C, are defined as:

- None: there is no appropriate habitat for the species in the Project Area or BAA.
- Low: there are no previous records of occurrence in the 9-quad area, and minimal or marginal suitable habitat in the Project Area or BAA.
- Moderate: there are some previously recorded occurrences in the 9-quad area, and there is appropriate habitat in the Project Area or BAA.
- High: there are numerous previously recorded observations in the 9-quad area, including observations near the Project Area or BAA, and the Project Area or BAA includes highly available and appropriate habitat.
- Present: species were observed during the on-site field assessment.

Special Status Plant Species

The results of the database queries identified 36 special status plant species with a CNPS ranking of 1 to 2 within the 9-quad area (Appendix B). No plant species were determined to have a moderate or high potential to occur in the BAA. The parcel was previously used for agriculture, along with the surrounding area, for the past 100 years. In the more recent past, the parcel was developed with a concrete pad, gravel driveway, and electrical hook-ups. The agricultural and development background of the property influences the plant species found and explains the lack of special status plant species expected and observed.

Summary: The parcels history of agriculture and development has influenced the plant community observed.

POTENTIAL DIRECT, INDIRECT, AND CUMULATIVE IMPACTS

This impact assessment is based upon proposed activity associated with residential construction.

The potential direct, indirect, and cumulative effects of construction activities include removal of vegetation, disturbance and compaction of soil, alteration of hydrologic regime, sedimentation, and erosion, increase in invasive species, and visual impacts.

The site is gently sloping and will require minimal grading for the residence construction and for the driveway construction. Impact to the hydrologic regime is expected to be minimal. Tree clearing is not proposed.

RECOMMENDATIONS

Follow all recommendations outlined by existing agency policies for minimizing impacts to natural resources. Impacts can be addressed in the operations plan and Best Management Practices can be employed to minimize impacts.

Agency personnel from CDFW and USFWS can further analyze the potential impacts and provide technical assistance. If required, pre-construction reconnaissance surveys should follow the guidelines set forth in the CDFW Survey and Monitoring Protocols and Guidelines (CDFW, 2020); guidelines from the Arcata Fish and Wildlife Office website on the Endangered Species Program¹⁰; and the CNPS Botanical Survey Guidelines (CNPS, 2001). Follow all recommendations outlined by existing agency policies for minimizing impacts to natural resources.

Please contact me with any comments or concerns regarding this report or future work required for your project. I can be reached at tami@trans-terra.com or (707) 840-4772. I have included our staff experience as an attachment to this report as it is often requested by agency personnel reviewing work of this nature.

¹⁰ <https://www.fws.gov/arcata/es/>

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APPENDIX A

Project Site Photographs



Non-native grassland in foreground, North Coast Bluff Scrubland in background, camera facing west.



Non-native grassland in foreground, North Coast Bluff Scrubland in background, camera facing east.



Abandoned bird nest, side view.



Abandoned bird nest, top view.

APPENDIX A

Project Site Photographs



Non-native grassland that was once the gravel driveway.

APPENDIX B

Results of the CNPS Database 9-quad Search for Rare Plants

Central USGS 7.5-minute quadrangle used for search: **Fields Landing**

CRPR: California Rare Plant Rank (<https://www.cnps.org/rare-plants/cnps-rare-plant-ranks>)

1B.1	Plants rare, threatened, or endangered in California and elsewhere; seriously threatened in California.	2B.2	Plants rare, threatened, or endangered in California, but more common elsewhere; fairly threatened in California.	4.1	Plants of limited distribution; seriously threatened in California.
1B.2	Plants rare, threatened, or endangered in California and elsewhere; fairly threatened in California.	2B.3	Plants rare, threatened, or endangered in California, but more common elsewhere; not very threatened in California.	4.2	Plants of limited distribution; fairly threatened in California.
1B.3	Plants rare, threatened, or endangered in California and elsewhere; not very threatened in California.	3.1	Plants about which we need more information; seriously threatened in California.	4.3	Plants of limited distribution; not very in California.
2A	Plants presumed extirpated in California, but more common elsewhere.	3.2	Plants about which we need more information; fairly threatened in California.		
2B.1	Plants rare, threatened, or endangered in California, but more common elsewhere; seriously threatened in California.	3.3	Plants about which we need more information; not very threatened in California.		

Scientific Name	Common Name	CRPR	Blooming Period	Habitat	Microhabitat	Elev. Low
<i>Abronia umbellata</i> var. <i>breviflora</i>	pink sand-verbena	1B.1	Jun-Oct	Coastal dunes		0
<i>Astragalus pycnostachyus</i> var. <i>pycnostachyus</i>	coastal marsh milk-vetch	1B.2	(Apr)Jun-Oct	Coastal dunes, Marshes, and swamps		0

APPENDIX B



APPENDIX B

Results of the CNPS Database 9-quad Search for Rare Plants

Scientific Name	Common Name	CRPR	Blooming Period	Habitat	Microhabitat	Elev. Low
Cardamine angulata	seaside bittercress	2B.2	(Jan)Mar-Jul	Lower montane coniferous forest, North Coast coniferous forest	Streambanks	50
Carex arcta	northern clustered sedge	2B.2	Jun-Sep	Bogs and fens, North Coast coniferous forest		195
Carex leptalea	bristle-stalked sedge	2B.2	Mar-Jul	Bogs and fens, Marshes and swamps, Meadows, and seeps		0
Carex lyngbyei	Lyngbye's sedge	2B.2	Apr-Aug	Marshes and swamps		0
Carex praticola	northern meadow sedge	2B.2	May-Jul	Meadows and seeps		0
Castilleja ambigua var. humboldtensis	Humboldt Bay owl's-clover	1B.2	Apr-Aug	Marshes and swamps		0
Castilleja litoralis	Oregon coast paintbrush	2B.2	Jun	Coastal bluff scrub	Sandy	50
Chloropyron maritimum ssp. palustre	Point Reyes salty bird's-beak	1B.2	Jun-Oct	Marshes and swamps; Coastal salt marsh		0
Clarkia amoena ssp. whitneyi	Whitney's farewell-to-spring	1B.1	Jun-Aug	Coastal bluff scrub		35
Collinsia corymbosa	round-headed Chinese-houses	1B.2	Apr-Jun	Coastal dunes		0
Downingia willamettensis	Cascade downingia	2B.2	Jun-Jul (Sep)	Cismontane woodland, Valley and foothill grassland, Vernal pools		50

APPENDIX B



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Results of the CNPS Database 9-quad Search for Rare Plants

Scientific Name	Common Name	CRPR	Blooming Period	Habitat	Microhabitat	Elev. Low
<i>Erysimum menziesii</i>	Menzies' wallflower	1B.1	Mar-Sep	Coastal dunes		0
<i>Erythronium revolutum</i>	coast fawn lily	2B.2	Mar-Jul (Aug)	Bogs and fens, Broadleafed upland forest, North Coast coniferous forest	Mesic, Streambanks	0
<i>Fissidens pauperculus</i>	minute pocket moss	1B.2		North Coast coniferous forest		35
<i>Gilia capitata</i> ssp. <i>pacifica</i>	Pacific gilia	1B.2	Apr-Aug	Chaparral, Coastal bluff scrub, Coastal prairie, Valley, and foothill grassland		15
<i>Gilia millefoliata</i>	dark-eyed gilia	1B.2	Apr-Jul	Coastal dunes		5
<i>Hesperis matronalis</i> var. <i>brevifolia</i>	short-leaved evax	1B.2	Mar-Jun	Coastal bluff scrub, Coastal dunes, Coastal prairie		0
<i>Lasthenia californica</i> ssp. <i>macrantha</i>	perennial goldfields	1B.2	Jan-Nov	Coastal bluff scrub, Coastal dunes, Coastal scrub		15
<i>Lathyrus japonicus</i>	seaside pea	2B.1	May-Aug	Coastal dunes		5
<i>Lathyrus palustris</i>	marsh pea	2B.2	Mar-Aug	Bogs and fens, Coastal prairie, Coastal scrub, Lower montane coniferous forest, Marshes and swamps, North Coast coniferous forest	Mesic	5
<i>Layia carnosa</i>	beach layia	1B.1	Mar-Jul	Coastal dunes		0

APPENDIX B



APPENDIX B

Results of the CNPS Database 9-quad Search for Rare Plants

Scientific Name	Common Name	CRPR	Blooming Period	Habitat	Microhabitat	Elev. Low
<i>Lilium occidentale</i>	western lily	1B.1	Jun-Jul	Bogs and fens, Coastal bluff scrub, Coastal prairie, Coastal scrub, Marshes and swamps, North Coast coniferous forest		5
<i>Monotropa uniflora</i>	ghost-pipe	2B.2	Jun-Aug (Sep)	Broadleafed upland forest, North Coast coniferous forest		35
<i>Montia howellii</i>	Howell's montia	2B.2	(Feb)Mar-May	Meadows and seeps, North Coast coniferous forest, Vernal pools	Roadsides (sometimes), Vernal Mesic	0
<i>Oenothera wolfii</i>	Wolf's evening-primrose	1B.1	May-Oct	Coastal bluff scrub, Coastal dunes, Coastal prairie, Lower montane coniferous forest	Mesic (usually), Sandy	10
<i>Packera bolanderi</i> var. <i>bolanderi</i>	seacoast ragwort	2B.2	(Jan-Apr) May-Jul (Aug)	Coastal scrub, North Coast coniferous forest	Roadsides (sometimes)	100
<i>Polemonium carneum</i>	Oregon polemonium	2B.2	Apr-Sep	Coastal prairie, Coastal scrub, Lower montane coniferous forest		0
<i>Puccinellia pumila</i>	dwarf alkali grass	2B.2	Jul	Marshes and swamps		5
<i>Sidalcea malviflora</i> ssp. <i>patula</i>	Siskiyou checkerbloom	1B.2	(Mar)May-Aug	Coastal bluff scrub, Coastal prairie, North Coast coniferous forest		50
<i>Sidalcea oregana</i> ssp. <i>eximia</i>	coast checkerbloom	1B.2	Jun-Aug	Lower montane coniferous forest, Meadows and seeps, North Coast coniferous forest		15

APPENDIX B

APPENDIX B

Results of the CNPS Database 9-quad Search for Rare Plants

Scientific Name	Common Name	CRPR	Blooming Period	Habitat	Microhabitat	Elev: Low
<i>Silene scouleri</i> ssp. <i>scouleri</i>	Scouler's catchfly	2B.2	(Mar-May) Jun-Aug (Sep)	Coastal bluff scrub, Coastal prairie, Valley, and foothill grassland		0
<i>Spergularia canadensis</i> var. <i>occidentalis</i>	western sand-spurrey	2B.1	Jun-Aug	Marshes and swamps		0
<i>Sulcaria spiralifera</i>	twisted horsehair lichen	1B.2		Coastal dunes, North Coast coniferous forest		0
<i>Viola palustris</i>	alpine marsh violet	2B.2	Mar-Aug	Bogs and fens, Coastal scrub		0

APPENDIX B

APPENDIX C

Measures to Prevent the Introduction and Spread of Invasive Species

Recommendations for preventing the spread of invasive species, and rehabilitating areas currently impacted by invasive species, are as follows:

- Minimize ground disturbance when possible, and restore damage caused by unavoidable disturbances.
- Cover, mulch, seed, or plant disturbed areas to prevent establishment of unwanted plants. Establishing native seed cover is preferred. Monitor the site and control unwanted plants that may appear.
- Reclaim/restore recently altered areas. Heavily disturbed areas are especially prone to the spread of invasive plant species. Immediate reclamation of these areas by planting non-invasive plant species is essential. Establishing native species in restoration activities will help create a desired vegetation cover.
- Make sure any equipment was not used previously in heavily infested areas and is clean of mud, seeds, and other propagules.
- Plants that are native to a site should be selected for use in landscaping whenever feasible. Use reputable nurseries and seed sources. Ask vendors if they are aware of restricted species. Check for “hitch-hikers” in nursery stock, packing materials, and associated locations. Use only certified seed, where feasible.
- Use fertilizers wisely. The most commonly used supplemental nutrients in agriculture or landscaping include limiting factors in plant growth, principally nitrogen and phosphorus. High nitrogen levels offer a supreme growth factor for all plants, granting an advantage to invasive plants. Many invasive species have adapted to use plentiful nutrients for explosive growth; therefore, excessive fertilizer application enhances the growth of invasive species. Using soil tests to prescribe proper levels of fertilizer is important. The use of native plants will cut down or eliminate the need for fertilizers, as many native plants can grow well without them.
- Protect native plant communities. A key to controlling invasive plants is to protect native plant communities. Where native plant communities have been displaced, invasive plants thrive, especially on bare soil and disturbed ground. Where native communities are still present, non-invasive plants can move into the empty niche created by the removal of invasive species. Protecting native plant communities from disturbance, deer browse, and other threats will strengthen their ability to resist invasion.
- Develop education and training. Land managers must be trained in invasive species identification, inventory, and control methods.

Tami Camper*

Owner-Founder

Tami is the founder of TransTerra Consulting LLC. She obtained a Bachelor of Science in Environmental Science from Western Washington University and Master of Science in Biology from Cal Poly Humboldt. She has worked on publications including a rare plant guide for timberlands of Mendocino County published by MCRCD. She has worked as a professional biologist and planner for over 20 years, specializing in wetland/stream surveys, wildlife/vegetation mapping, rare species surveys, biological assessments, impact assessments, mitigation, and monitoring plans, CEQA/NEPA and land-use planning. Though she has worked as an independent consultant for most of her career, she has also worked for HSU, Caltrans, Mendocino Redwood Company, and Streamline Planning (now SHN). Her desire is to implement her diverse background and passion for the natural world to aid clients through the environmental process. She is also a member of the Arcata Sunrise Rotary Club, California Native Plant Society, The Wildlife Society, The Society of Wetland Scientists and other local non-profits and professional organizations.

Kale McNeill

Associate Biologist

Kale earned their bachelor's degree in Botany from Humboldt State University in 2019. They grew up in Arcata and have previously worked in invasive and rare plant management and restoration for Redwood National & State Parks, Yosemite National Park, the Nevada Bureau of Land Management, and Whiskeytown National Recreation Area. They are currently working on their Master of Science degree at Cal Poly Humboldt, studying systematics and population genetics of rare bog violets of Northern California using phylogenomics, and teaching a plant taxonomy lab section. They are also a botanical scientific illustrator and have contributed artwork to an upcoming guidebook to plants of the Pacific Crest Trail. They are a member and volunteer for the California Native Plant Society.

Nate Johle

Associate Biologist

Nate received his Bachelor of Science degree in Environmental Biology with a German Studies minor in fall of 2022. He was employed as a Supplemental Instruction Leader for General Botany and General Zoology where he facilitated efficient and equitable study habits to other students. For a brief period, Nate prepared dissected specimen for labs and quizzes, as well as took microscope photos of various taxa to help move the lab into an online format as the General Zoology Lab Assistant. Last year Nate worked at the Dennis Walker Greenhouse as a Student Assistant, tending to the various plants in each room as he finished his degree. He is knowledgeable about local plants and ecosystems of Northern California.