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LACO

TECHNICAL MEMORANDUM

Botanical Survey Results
Proposed Kneeland Biosolids Disposal Site
City of Eureka
Portions of APN 314-131-092

Date: August 10, 2015
Project No.: 7471.09

Prepared By: Gary Lester, Senior Botanist

Reviewed By: Michael D. Nelson, Principal, AICP

Attachments: Figure 1: Location Map
Figure 2: Site Map

Appendix A: Plant Species Encountered during Site Visit

1.0 INTRODUCTION

This technical memorandum presents the results of a biological survey performed by LACO Associates (LACO) in support of proposed City of Eureka biosolids disposal at the subject property. The subject property is located in Kneeland, an unincorporated area of Humboldt County, California, and is identified as a portion of Assessor's Parcel Numbers (APN) 314-131-092 (Figures 1 and 2, hereafter referred to as Site). Currently, the Site is open prairie, undeveloped land. Generally, the Site consists of a relatively level pasture area. The purpose of the study was to determine whether the moderately sloped to level pasture area of the Site proposed for biosolids disposal contains sensitive biological resources.

Steve Salzman of Greenway Partners provided this proposed project description:

The City of Eureka is seeking an alternative biosolids disposal site to the current Elk River site. Re-location to the proposed Kneeland property (approximately 20 acres of APN 314-131-092) would require biosolids be hauled in either 20 cubic yard (CY) end dumps or ten yard dump trucks. The biosolids will be dumped at a couple spots (staging areas) on the Kneeland application area. The spots must be easily accessible by the trucks and pretty centrally located in the application area. It will be spread using either manure spread or bull dozer. It is possible that some spreading could occur right out of the back of the ten yard dump trucks. The application would spread a layer one inch thick over the entire site. The spreading will be followed immediately (within a day or two) with disking to get the materials underground. Disking will incorporate application material into the top 6" of the soil column. This will be followed by seeding. All this will be done in August/ September to be done before the seasonal rainfall.

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2.0 METHODS

Field surveys of the Site were conducted on May 6, 27, and 29, 2015, and June 8, 2015. LACO's biologist, Gary Lester, conducted the surveys. Mr. Lester is qualified to conduct biological surveys. He has an undergraduate degree in Botany, has received training in recognition of the local flora and fauna, rare plant identification, and survey protocol, and has 40 years of biological field experience in northern California.

The Site topographic maps, aerial photography maps, and the California Department of Fish and Wildlife (DFW) Iaqua Buttes Quad California Natural Diversity Data Base (CNDDB) were reviewed prior to and during the surveys for potential sensitive species occurrence. The U.S. Fish and Wildlife Service Wetlands Inventory (FWS, 2015) was reviewed for recognized wetlands.

The surveys were conducted following protocol developed by James Nelson for DFW (DFW, 2009). An intuitively controlled, seasonally appropriate set of surveys, one early spring survey and one late spring survey, was conducted, sampling the identified potential habitat. Also surveyed was the appurtenant road system that accesses the Site off the County road. The survey was high in coverage (95 to 100% of the Site). Plants were identified to the lowest taxonomic level (genus or species) necessary for rare plant identification. The scientific nomenclature follows the Jepson Manual (Baldwin, et. al. 2012). Data presented here includes natural plant community descriptions, the compiled plant and animal species list, and any detected sensitive plant and animal populations. This report presents an overview of biological resources present or readily apparent at the time of the survey on the proposed biosolid application area (approximately shown in Figure 2) as described in the introduction, for use in establishing opportunities or identifying constraints. The proposed project would require heavy equipment to deliver, spread, till, and seed the application area. The work is proposed for August or September, prior to winter rainfall (Steve Salzman, Greenway Partners, pers. comm.). The property owner has hayed, tilled, and added soil amendments over the proposed application area the past few years (Eric Almquist, pers. comm.).

3.0 ENVIRONMENTAL SETTING

The Site is located southeast of Eureka, California, in the unincorporated community of Kneeland (Southeast ¼ of Northeast ¼ of Section 9, Township 4 North, Range 2 East, Humboldt Base Meridian, Figure 1). The ground surface elevations for the Site range between 2,140 and 2,280 feet above mean sea level. The moderately-sloped, developable Site area features gently sloping ground (<15%), with managed pasture, scattered tree cover, and an adjacent access road. The proposed application area (see Figure 2) is comprised by dense cover of perennial grasses and forbs. Dominants include sweet vernal grass (*Anxoxanthum oderatum*), perennial ryegrass (*Festuca perenne*), California oat grass (*Danthonia californica*), tall fescue (*Festuca arundinacea*), orchard grass (*Dactylis glomerata*), velvet grass (*Holcus lanatus*), rescue grass (*Bromus catharticus*), wild blue rye (*Elymus glaucus*) and red fescue (*Festuca rubra*). Very widely scattered tree cover includes mature Oregon white oak (*Quercus garryana*), tan-oak (*Notholithocarpus densiflorus*), and Douglas-fir (*Pseudotsuga menziesii*) with a few associated native shrubs of thimbleberry (*Rubus parviflorus*), non-native Himalaya blackberry (*Rubus armeniacus*), herbaceous cover of California blackberry (*Rubus ursinus*), and sword fern (*Polystichum munitum*). A small pasture seasonal drainage and roadside ditch occurs east/central to the proposed application area. It is vegetated by a dominance of hydrophytic vegetation including pennyroyal (*Mentha pulegium*), soft rush (*Juncus effusus*), spreading rush (*Juncus patens*), and toad rush (*Juncus bufonius*). Pasture vegetation canopy coverage

was visually estimated at 90 to 100 percent. A plant list of those species encountered during the biological survey is provided in Appendix A.

4.0 SENSITIVE SPECIES ANALYSIS

4.1 Sensitive Plant Species Historically Reported Nearby

The species included on Lists 1 to 4 (herein referred to as sensitive species) of the current CNPS Inventory of Rare and Endangered Vascular Plants of California (http://www.cnps.org, 2015) were reviewed to determine potential presence in the Site (all the above species data base use the U.S. Geological Survey (1979) Iaqua Buttes Quad as the reference point). The CNPS inventory includes all species listed as rare or endangered by the Federal and State governments. Based on the species identified in the CNDDB records, the range of habitats present, and the geographical range of the various sensitive species, the species considered most likely to occur in the vicinity of the Site area are listed in Table 1. Only coastal prairie habitats were present, eliminating many sensitive species specific to other types of habitats. Only Siskiyou checkerbloom (*Sidalcea malviflora* spp. *patula*) of the listed sensitive plant species below was identified onsite.

Table 1. Sensitive Species Potentially Present at the Site

Species	Common Name	CNPS List*	Preferred Habitat
Coptis laciniata	Oregon goldenthread	4.2	Streambanks; identifiable year-round
Erythronium revolutum	Coast fawn lily	2B.2	Forests, road edges, March-July
Gilia capitata ssp. pacifica	Pacific gilia	1B.2	Coastal forest, prairies; May-August
Lycopodium clavatum	Running-pine	4.1	Coniferous forests; identifiable year-round
Mitellastra caulescens	Leafy-stemmed Mitrewort	4.2	Coastal forests, stream banks; flowers May to July
Montia howellii	Howell's Montia	2B.2	Disturbed forest edges, damp roadsides; flowers February to May
Noccaea fendleri ssp. californica	Kneeland Prairie pennycress	1B.1	Coastal prairie, frequently serpentine rock outcrops, April-August.
Packera bolanderi	Seacoast ragwort	2B.2	Coastal forests, roadsides, May-July
Sidalcea malachroides	Maple-leaved Checkerbloom	4.2	Coastal forest openings, flowers March to June
Sidalcea malvaflora ssp. patula	Siskiyou checkerbloom	1B.2	Forest edges and prairies; May-August
Sidalcea oregana ssp. exima	Coast checkerbloom	1B.2	Forest edges and prairies; May-August

*CNPS List Codes:
1B.1- Rare, threatened or endangered in California and elsewhere, seriously threatened in California
1B.2- Rare, threatened or endangered in California and elsewhere, moderately threatened in California;
2B.2- Rare, threatened or endangered in California, but more common elsewhere, moderately threatened in California;
4.1-Plants of limited distribution, seriously threatened in California;
4.2-Plants of limited distribution, moderately threatened in California.

The following summaries are for the sensitive plant species shown in Table 1:

Oregon goldenthread is known from Northern California streambanks. Little habitat for this species occurs at the Site. California Rare Plant Ranking (CRPR, CNPS, 2015) of 4.1, defined as a species of limited distribution and a moderate number of the California populations are seriously threatened.

The **Coast fawn lily** is known from recent observations on adjacent Humboldt Redwood Company property (CNDDB, 2015). The known occurrences are from forest overstory habitats. This species may occur in nearby forests, but few suitable habitats were seen at the Site. A CRPR of 1B.2, defined as rare, threatened or endangered in California and elsewhere, and the majority of the California populations are seriously threatened.

The **Pacific gilia** is known from recent records from Humboldt Redwood Company properties near the Humboldt County Kneeland airport. Although suitable habitat occurs on-site, this species was not observed. A CRPR of 1B.2, defined as rare, threatened or endangered in California and elsewhere, and the majority of the California populations are seriously threatened.

Running Pine occurs in moist, moderately open redwood or mixed evergreen forests, often on northern aspects or ridge tops, occasionally at the edge of exposed old dirt roads, habitats which occur within the Site. Running pine is evergreen, non-flowering, and visible throughout the year. A CRPR of 4.1, defined as California plant of limited distribution and a high number of the California populations are threatened.

The **leafy-stemmed mitrewort** is known from historical collections near Lawrence Creek (~3.5 miles south). The known occurrences are from perennial stream course habitats. Little or no habitat for this species occurs at the Site. A CRPR of 4.2, defined as a California plant of limited distribution and elsewhere, and a moderate number of the California populations are seriously threatened.

Howell's Montia nearest known historical occurrence is the adjacent Humboldt Redwood Company forest tract road system and the Humboldt County Kneeland airport property (CNDDB, 2015). This species occupies exposed, recently impacted haul or skid roads and turnouts that remain seasonally moist through May. Only as much as 300 square feet of suitable habitat occurs on the Site. A CRPR of 2B.2, defined as rare, threatened or endangered in California, but more common elsewhere and a moderate number of the California populations are threatened.

Kneeland Prairie pennycress is known only from the rocky serpentine soils near the Kneeland Airport. The pennycress is not considered likely present due the insignificance of the rock outcrop component in the on-site prairie. A CRPR of 1B.1, defined as rare, threatened or endangered in California, and the majority of the California populations are threatened.

Seacoast ragwort nearest known occurrence is approximately 5.5 miles southeast on Mountain View Road (CNDDB, 2015). This species typically occupies exposed, shady roadcuts. Little or no suitable habitat occurs on the Site. A CRPR of 2B.2, defined as rare, threatened or endangered in California, but more common elsewhere, and a moderate number of the California populations are threatened.

Habitat for the **Maple-leaved Checkerbloom** is coastal forest and margins in northwestern California. It is reported historically from forested habitats in the Kneeland area. Potential habitat for this species is present

within the Site. A CRPR of 4.2, defined as California plant of limited distribution and a moderate number of the California populations are threatened.

The **Siskiyou and Coast Checkerblooms** are known from prairies and forest edges in northern California. Both species have been found in the Kneeland area (CNDDB, 2015). A CRPR of 1B.2, defined as rare, threatened or endangered in California and elsewhere, and a moderate number of the California populations are threatened. The Siskiyou checkerbloom was observed on site.

4.2 Potential Sensitive Animal Species Present

According to current CNDDB records and the U.S. Fish and Wildlife Service (FWS) Iaqua Butte Quad species list (FWS. 2015), the range of habitats present, and the geographical range of the sensitive animal species, the species considered most likely to occur in the vicinity of the Site are listed in Table 2. Only coastal prairie habitats were present, eliminating many of the sensitive species specific to other types of habitats. None of the listed sensitive animal species below were identified onsite.

Table 2. Sensitive Animal Species Potentially Present at the Site

Species	Common Name	Fed/State List	Preferred Habitat
Accipiter striatus	Sharp-shinned hawk	State Species of Concern	Coniferous forest
Aquila chrysaetos	Golden Eagle	State Watch List	Breeds in mature tree canopies
Strix occidentalis caurina	Northern Spotted owl	Federal Threatened	Breeds in mature tree cavities
Taxidea taxus	American Badger	SSC	Prairies, open country

The following summaries are for the sensitive animal species shown in Table 2:

Sharp-shinned Hawk is forest nesting raptor, primarily away from the immediate coast. Sharp-shinned Hawk populations in California are considered a Species of Concern (DFW, 2015).

The **Golden Eagle** is known from a diverse number of northern California inland habitats. Nests are recorded from mature canopy trees or snags. No nests of this species were observed in the Site. DFG (2015) lists the California wintering populations and nests of Golden Eagle as protected.

The **Northern Spotted Owl** is known from widely scattered mature forest habitats in northern California. Adjacent suitable habitat occurs on the Site. The FWS has listed the California populations of Northern Spotted owl as threatened.

The **American badger** is known from prairie habitats in northern California. Suitable burrowing habitat occurs on the Site. The American Badger is a California species of concern (DFW, 2015).

5.0 BIOLOGICAL SURVEY RESULTS

One sensitive plant species was recorded on the Site during the biological survey (Figure 2, Site Map). A small population (6' x 5' loose mat) of Siskiyou checkerbloom was located at the west-central portion of the proposed disposal area. The approximate coordinates are 40° 44' 41.53" N, 123° 57' 10.17" W (World

Geodetic System 1984, Google Earth). A plant species list of those plant species encountered during the field survey is provided in Appendix A.

Seasonal wetlands were evident along the southeast-central margin of the disposal area (Figure 2). The wetlands habitat was defined by a dominance of hydrophytic vegetation and evidence of persistent flowing or standing water. The surface water appears to originate from a seasonal drainage or spring emanating directly from the southeast-central slopes of the Site grassland.

No animal species of State concern (Table 2) were seen using the site, leaving any visible evidence of trails, scat, or burrows. No animal species of any type were observed using the Site for nesting or rearing young.

6.0 RECOMMENDATIONS

Setbacks of at least 25 feet from the Siskiyou checkerbloom population should be established and be sufficient to avoid disturbance to the sensitive plant species. Site location markings/signage or suitable staking, fencing and or flags shall be posted to prevent accidental equipment encroachment into the Siskiyou checkerbloom area.

A small seasonal wetland was observed along the access road adjacent to the Site, and it appears to extend a short distance into the disposal site as a seasonal drainage. If heavy equipment access is proposed to the Site at this location (see Figure 2), efforts shall be made to avoid any permanent impacts to the seasonal wetlands. Setbacks of at least 25 feet from the wetland should be established and be sufficiently marked in the field to avoid accidental wetland encroachment by equipment. The wetland buffer shall be marked in the field with visible staking, fencing, and/or flags.

If recommendations are adhered to, the checkerbloom and the seasonal wetland would be protected from permanent impacts. It is the professional opinion of LACO Associates that, due to the lack of on-site flora and fauna diversity, there will be no significant loss of biological resources found at the Site.

7.0 REFERENCES

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U.S. Geological Survey. 1979. Iaqua Buttes Quadrangle, California-Humboldt Co., 7.5 Minute Series (Topogrphic) Denver, CO.

Individuals Consulted:

Eric Almquist, Property Owner
Jennifer Olson, California Department of Fish and Wildlife
Steve Salzman, Greenway Partners, Project Manager
Michael Van Hattem, California Department of Fish and Wildlife

FIGURES

Figure 1 **Location Map**

Figure 2 **Site Map**

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PROJECT	KNEELAND BIO SOLIDS PILOT STUDY AREA SENSITIVE PLANT AND ANIMAL SURVEY	BY JDB	FIGURE 1
		DATE 7/9/15	
CLIENT	GREENWAY PARTNERS, INC.	CHECK GSL	JOB NO. 7471.09
LOCATION	APN: 314-131-092	SCALE AS SHOWN	
	LOCATION MAP		

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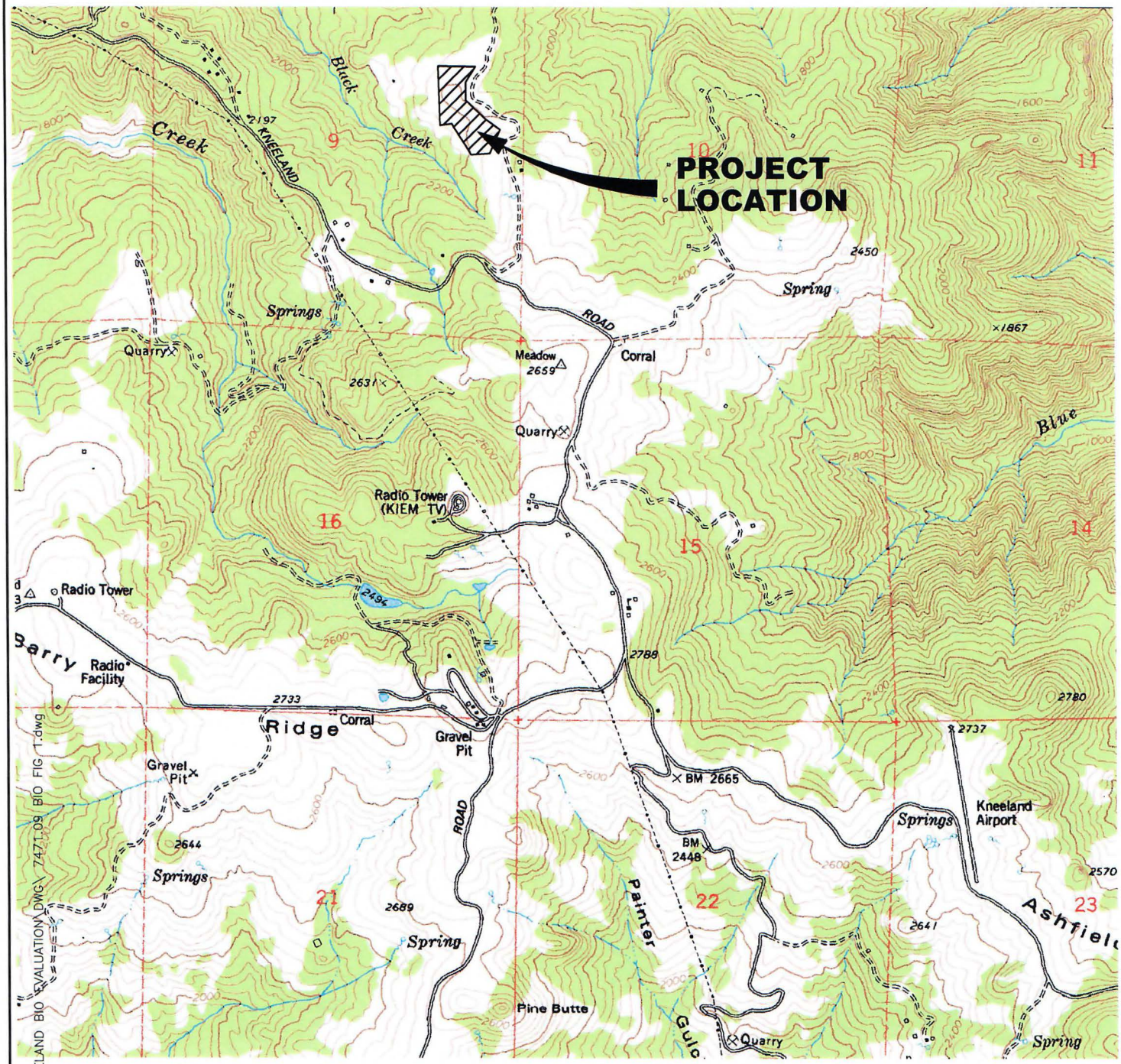

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SCALE: 1"=2000'

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PROJECT	KNEELAND BIO SOLIDS PILOT STUDY AREA SENSITIVE PLANT AND ANIMAL SURVEY	BY JDB	FIGURE 2
		DATE 7/9/15	
CLIENT	GREENWAY PARTNERS, INC.	CHECK GSL	JOB NO. 7471.09
LOCATION	APN: 314-131-092	SCALE AS SHOWN	
	PROJECT AREA		

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NOTES:

1. IMAGE SHOWN HEREON IS FROM GOOGLE.
2. ALL LOCATIONS ARE APPROXIMATE (NOT SURVEY GRADE).

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APPLICATION AREA

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APPENDIX A

List of Sensitive Plant Species Encountered During Site Visit

Appendix A. Plant Species Encountered During Site Visit

Species	Common Name	Fed/State List	Native / Non-Native
Achillea millefolium	yarrow	none	Native
Adenocaulon bicolor	trail plant	none	Native
Agrostis stolonifera	creeping bentgrass	none	Non-Native
Aira caryophyllea	silver hair grass	none	Non-Native
Amelanchier alnifolia	western serviceberry	none	Native
Anagallis arvensis	scarlet pimpernel	none	Non-Native
Anaphalis margaritacea	pearly everlasting	none	Native
Anthoxanthum occidentale	vanilla grass	none	Native
Anthoxanthum odoratum	sweet vernal grass	none	Non-Native
Arrhenatherum elatius	tall oatgrass	none	Non-Native
Athyrium filix-femina	lady fern	none	Native
Avena barbata	slender oat grass	none	Non-Native
Baccharus pilularis	coyote brush	none	Native
Bellis perennis	English lawn daisy	none	Non-Native
Briza maxima	large quaking grass	none	Non-Native
Briza minor	small quaking grass	none	Non-Native
Bromus catharticus	rescue grass	none	Non-Native
Bromus diandrus	ripgut grass	none	Non-Native
Bromus *hordeaceus*	Soft brome	none	Non-Native
Brassica rapa	common mustard	none	Non-Native
Cardamine oligiosperma	western bittercress	none	Native
Carex concinnoides	Northwestern sedge	none	Native
Carex leptopoda	short-scale sedge	none	Native
Ceanothus thyrsiflorus	blue blossom	none	Native
Cerastium glomeratum	common chickweed	none	Non-Native
Cirsium arvense	Canadian thistle	none	Non-Native
Cirsium vulgare	bull thistle	none	Non-Native
Clarkia affinis	Farewell-to-spring	none	Native
Claytonia siberica	spring beauty	none	Native
Cyperus eragrostis	tall-flat sedge	none	Native
Dactylis glomerata	orchard grass	none	Non-Native
Daucus carota	Queen Anne's lace	none	Non-Native
Erigeron canadensis	horseweed	none	Native
Foeniculum vulgare	fennel	none	Non-Native
Festuca arundinacea	tall reed fescue	none	Non-Native
Festuca perenne	perennial ryegrass	none	Non-Native
Festuca bromoides	brome fescue	none	Non-Native
Frangula purshiana	cascara	none	Native
Galium aparine	goose grass	none	Native
Geranium molle	wild geranium	none	Non-Native
Gnaphilum sp.	cudweed	none	Non-Native
Helminthotheca echinoides	ox-tongue	none	Non-Native
Heracleum maximum	cow parsnip	none	Native

Species	Common Name	Fed/State List	Native / Non-Native
Holcus lanatus	velvet grass	none	Non-Native
Hordeum brachyantherum	meadow barley	none	Native
Hosackia formosissimus	bicolored lotus	none	Native
Hydrophyllum tenuipes	Pacific waterleaf	none	Native
Hypericum perfoliata	Klamath weed	none	Non-Native
Hypochaeris glabra	annual cat's ear	none	Non-Native
Hypochaeris radicata	perennial cat's ear	none	Non-Native
Iris douglasiana	Douglas iris	none	Native
Juncus bolanderi	Bolander's rush	none	Native
Juncus bufonius	toad rush	none	Native
Juncus effusus	soft rush	none	Native
Juncus patens	creeping rush	none	Native
Lathyrus latifolius	common sweet pea	none	Non-Native
Lathyrus vestitus	wood pea	none	Native
Lapsana communis	nipplewort	none	Non-Native
Linum bienne	blue flax	none	Non-Native
Lonicera hispidula	hairy honeysuckle	none	Native
Lotus corniculatus	bird's foot trefoil	none	Non-Native
Leucanthemum vulgare	ox-eye daisy	none	Non-Native
Lupinus bicolor	annual lupine	none	Native
Lythrum hyssopifolia	hyssop loosestrife	none	Native
Madia sativa	coast tarweed	none	Native
Marah oregana	wild cucumber	none	Native
Maianthemum dilatatum	false lily-of-the-valley	none	Native
Medicago arabica	spotted burclover	none	Non-Native
Mentha pulegium	penny royal	none	Non-Native
Mimulus guttatus	common monkey-flower	none	Native
Navarretia squarosa	skunkweed	none	Native
Notholithocarpus densiflorus	tan-oak	none	Native
Osmorhiza berteroi	mountain sweet-cicely	none	Native
Parentucellia viscosa	yellow parentucellia	none	Non-Native
Plantago lanceolata	English plantain	none	Non-Native
Poa annua	annual bluegrass	none	Non-Native
Poa pratensis	Kentucky bluegrass	none	Non-Native
Polygonum arenastrum	common knotweed	none	Non-Native
Polypogon monspelianus	rabbit's foot grass	none	Non-Native
Polystichum munitum	sword fern	none	Native
Prosartes hookeri	Hooker's fairy bells	none	Native
Prunella vulgaris	self-heal	none	Non-Native
Pseudotsuga menziesii	Douglas-fir	none	Native
Pteridium aquilinum	bracken fern	none	Native
Quercus chrysolepis	Canyon live oak	none	Native
Quercus garryana	Oregon white oak	none	Native
Ranunculus repens	creeping buttercup	none	Non-Native

Species	Common Name	Fed/State List	Native / Non-Native
Ranunculus uncinatus	little buttercup	none	Native
Raphanus sativa	wild radish	none	Non-Native
Rubus armeniacus	Himalaya blackberry	none	Non-Native
Rubus parviflorus	thimbleberry	none	Native
Rubus spectabilis	salmonberry	none	Native
Rubus ursinus	California blackberry	none	Native
Rumex acetocella	sheep sorrel	none	Non-Native
Rumex crispus	curly dock	none	Non-Native
Salix scouleriana	Scouler's willow	none	Native
Sambucus racemosa	red elderberry	none	Native
Sanicula crassicaulis	Pacific snakeroot	none	Native
Senecio minimus	coastal burnweed	none	Non-Native
Senecio vulgaris	common groundsel	none	Non-Native
Sidalcea malviflora ssp. *patula*	Siskiyou checkerbloom	none	Native
Sisyrinchium bellum	blue-eyed grass	none	Native
Sonchus oleraceus	sow thistle	none	Non-Native
Stachys ajugioides	hedge nettle	none	Non-Native
Symphyortrichum chilensis	California aster	none	Native
Taraxacum officinale	common dandelion	none	Non-Native
Trientalis latifolium	Pacific star-flower	none	Native
Trifolium dubium	little hop clover	none	Non-Native
Trifolium pratense	red clover	none	Non-Native
Trifolium repens	white clover	none	Non-Native
Trifolium subterraneum	subterranean clover	none	Non-Native
Triphysaria pusilla	Dwarf owlsclover	none	Native
Veronica americana	American brooklime	none	Native
Vicia hirsuta	annual vetch	none	Non-Native
Viola palustris	Western dog violet	none	Native
Zeltnera muhlenbergii	Monterey centuary	none	Native