

APPENDIX B

**POTENTIAL FOR SPECIAL STATUS PLANT AND WILDLIFE SPECIES TO OCCUR IN THE
STUDY AREA**

Appendix B. Special Status Plant and Wildlife Species Habitat Suitability in the Open Space parcel of Marin Sanitary Service. List compiled from 2010 searches of the California Department of Fish and Game (CDFG) Natural Diversity Database, U.S. Fish and Wildlife Service (USFWS) Species Lists, and California Native Plant Society (CNPS) Electronic Inventory for the San Rafael, and San Quentin USGS 7.5' quadrangles and a review of other CDFG lists and publications (Jennings and Hayes 1994, Zeiner et al. 1990, Moyle 2002).

SPECIES	STATUS* (Blooming Period)	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Mammals				
American Badger <i>Taxidea taxus</i>	SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Requires friable soils and open, uncultivated ground. Preys on burrowing rodents.	No Potential. Habitat is to fragmented and in close proximity to human disturbance to provide suitable habitat for this species.	No additional surveys or actions required for this species.
Long-eared Myotis <i>Myotis evotis</i>	WBWG: M	Primarily a forest associated species. Species has been found in nearly all brush, forest and woodland habitat along the California coast. Day roosts in hollow trees, under exfoliating bark, rock outcrop crevices and buildings. Other roosts include caves, mines and under bridges.	Moderate. Woodland within the Study Area may provide suitable roosting habitat for this species.	If tree removal takes place outside of September 1 - October 31, then surveys are recommended to identify potential roost sites prior to tree removal.
Fringed Myotis <i>Myotis thysanodes</i>	WBWG: H	Associated with a wide variety of habitats including mixed coniferous-deciduous forest and redwood/sequoia groves. Buildings, mines and large snags are important day and night roosts.	Unlikely. Study Area unlikely to support roosting habitat for this species.	No additional surveys or actions required for this species.

SPECIES	STATUS* (Blooming Period)	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Long-legged Myotis <i>Myotis volans</i>	WBWG: H	Generally associated with woodlands and forested habitats. Large hollow trees, rock crevices and buildings are important day roosts. Other roosts include caves, mines and buildings.	Unlikely. Species is not documented to occur within the portion of the San Francisco Bay peninsula that the Study Area is located on.	No additional surveys or actions required for this species.
Greater Western Mastiff Bat <i>Eumops perotis californicus</i>	WBWG: H	Found in a wide variety of habitat. Distribution appears to be tied to large rock structures which provide suitable roosting sites, including cliff crevices and cracks in boulders.	Unlikely. Sub-optimal roosting locations are present. Many large cavities found among the oak/bay forests, however no rocky roost locations were identified within the Study Area.	No additional surveys or actions required for this species.
Pallid Bat <i>Antrozous pallidus</i>	SSC, WBWG: H	Found in deserts, grasslands, shrublands, woodlands, and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	Moderate. Potential roost habitat exists within the oak woodland of the Study Area, and potentially along the exposed rock wall of the old quarry adjacent to the site. Potential foraging habitat exists around the Study Area.	If tree removal takes place outside of September 1 - October 31, then surveys are recommended to identify potential roost sites prior to tree removal.
Townsend's Big-eared Bat <i>Euderma maculatum</i>	SSC, WBWG: H	Primarily found in rural settings in a wide variety of habitats including oak woodlands and mixed coniferous-deciduous forest. Day roosts highly associated with caves and mines. Very sensitive to human disturbance.	Unlikely. Sub-optimal roosting locations are present. Many large cavities found among the oak/bay forests, however no rocky roost locations were identified within the Study Area.	No additional surveys or actions required for this species.

SPECIES	STATUS* (Blooming Period)	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Salt Marsh Harvest Mouse <i>Reithrodontomys raviventris</i>	FE, SE, CFP	Found only in the saline emergent wetlands of San Francisco Bay and its tributaries. Pickleweed is primary habitat. Do not burrow, build loosely organized nests. Require higher areas for flood escape.	No Potential. No pickleweed or saltmarsh habitat found within Study Area.	No additional surveys or actions required for this species.
Birds				
Golden Eagle <i>Aquila chrysaetos</i>	BCC, CFP	Rolling foothills mountain areas, sage-juniper flats, desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	Unlikely. Study Area lacks suitable nesting or extensive enough foraging habitat for this species.	No additional surveys or actions required for this species.
White-tailed Kite <i>Elanus leucurus</i>	CFP	Year-long resident of coastal and valley lowlands; frequently found around grasslands and agricultural areas. Specific plant associations appear unimportant for nesting and roosting, but vegetation structure and prey abundance are considered important. Preys on small diurnal mammals and occasional birds, insects, reptiles, and amphibians.	Moderate. Potential nesting habitat provided by dense oak trees within the Study Area. Marginal foraging habitat provided within the Study Area and neighboring open space.	Recommend a breeding raptor/bird survey if ground disturbance or tree removal takes place during the breeding bird season, February 1 - August 31.

SPECIES	STATUS* (Blooming Period)	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Bald Eagle <i>Haliaeetus leucocephalus</i>	SE, CFP	Frequents ocean shores, lake margins, and rivers for both nesting and wintering. Requires large bodies of water, or free-flowing rivers with abundant fish and adjacent snags or other perches. Most nests are located within 1 mile of water. Nests in large, old-growth, or dominant live tree with open branchwork. Shows a preference for ponderosa pine. Roosts communally in winter.	Unlikely. Study Area outside of breeding range. Possible winter roosting locations, due to its close proximity to a large body of water, however forest composition and close proximity to human disturbance may preclude the species from utilizing the Study Area for winter roosting.	No additional surveys or actions required for this species.
Northern Harrier <i>Circus cyaneus</i>	SSC	Nests and forages in grassland habitats, usually in association with coastal salt and freshwater marshes. Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas. Breeds April to September.	Unlikely. No suitable breeding or foraging habitat present within the Study Area.	No additional surveys or actions required for this species.
Ferruginous Hawk <i>Buteo regalis</i>	BCC	Frequents open grasslands, sagebrush flats, desert scrub, low foothills surrounding valleys and fringes of pinyon-juniper habitats. Preys on lagomorphs, ground squirrels and mice. Population trends may follow lagomorph population cycles.	Unlikely. Study Area lacks sufficient foraging habitat and is in close proximity to human disturbance; making it unlikely that the Study Area would be utilized as a winter roost site.	This species only winters in the area, and has no breeding potential within the Study Area. No additional surveys or actions required for this species.

SPECIES	STATUS* (Blooming Period)	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
American Peregrine Falcon <i>Falco peregrinus anatum</i>	SE, BCC, CFP	Prefers dry, open terrain, either level or hilly. Forages far afield, even to marshlands and ocean shores. Nests near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures. Nest consists of a scrape on a depression or ledge in an open site.	Unlikely. Vertical cliffs of the old quarry located immediately to the west of the Study Area potentially provide nesting habitat, better nesting habitat is provided on ledges of buildings and bridges for the area. There is no suitable nesting habitat within the Study Area.	No additional surveys or actions required for this species.
California Black Rail <i>Laterallus jamaicensis coturniculus</i>	ST, BCC, CFP	Mainly inhabits salt marshes bordering larger bays. Occurs in tidal salt marsh heavily grown to pickleweed; also in fresh-water and brackish marshes, all at low elevation.	No Potential. No suitable marsh habitat present in the Study Area.	No additional surveys or actions required for this species.
Western Yellow-billed Cuckoo <i>Coccyzus americanus occidentalis</i>	FC, SE, BCC	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems. Nests in riparian jungles of willow, often mixed with cottonwoods, with lower story of blackberry, nettles, or wild grape.	No Potential. Study Area lacks extensive riparian habitat required to support this species.	No additional surveys or actions required for this species.

SPECIES	STATUS* (Blooming Period)	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Burrowing Owl <i>Athene cunicularia</i>	BCC, SSC	Found in open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	Unlikely. Marginal wintering habitat is present in the Study Area. No ground squirrels observed during site visit and high grass height around small mammal burrows are not favored by this species.	No additional surveys or actions required for this species.
Northern Spotted Owl <i>Strix occidentalis caurina</i>	FT, SSC	Old-growth forests or mixed stands of old-growth and mature trees. Occasionally in younger forests with patches of big trees. Prefers high, multistory canopy dominated by big trees, trees with cavities or broken tops, woody debris and space under canopy.	No Potential. No old-growth forest present in proximity to the Study Area.	No additional surveys or actions required for this species.
Long-eared Owl <i>Asio otus</i>	SSC	Inhabits riparian bottom lands grown to tall willows and cottonwoods; also, belts of live oak paralleling stream courses. Require adjacent open land productive of mice and the presence of old nests of crows, hawks, or magpies for breeding.	Unlikely. Study Area lacks suitable hydrologic features and riparian vegetation to support this species.	No additional surveys or actions required for this species.

SPECIES	STATUS* (Blooming Period)	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Short-eared Owl <i>Asio flammeus</i>	SSC	Found in swamp lands, both fresh and salt; lowland meadows; irrigated alfalfa fields. Tule patches/tall grass needed for nesting/daytime seclusion. Nests on dry ground in depression concealed in vegetation.	No Potential. No suitable habitat present within the Study Area for this species.	No additional surveys or actions required for this species.
Vaux's Swift <i>Chaetura vauxi</i>	SSC	Found in redwood, douglas fir, and other coniferous forests. Nests in large hollow trees and snags. Often nests in flocks. Forages over most terrains and habitats but shows a preference for foraging over rivers and lakes.	Unlikely. Study Area lacks coniferous forests favored by this species for nesting. Potential foraging habitat present, however breeding within the Study Area is unlikely.	No additional surveys or actions required for this species.
Black Swift <i>Cypseloides niger</i>	BCC, SSC	Generally found in the coastal belt of Santa Cruz and Monterey County; central and southern Sierra Nevada; San Bernardino and San Jacinto Mountains. Breeds in small colonies on cliffs behind or adjacent to waterfalls in deep canyons and sea-bluffs above surf; forages widely.	Unlikely. No waterfalls are present within the Study Area. Species may rarely occur over the Study Area during migration periods.	No additional surveys or actions required for this species.
Rufous Hummingbird <i>Selasphorus rufus</i>	BCC	Breeds in transition life zone of northwest coastal area from Oregon border to southern Sonoma County. Nests in berry tangles, shrubs, and conifers. Favors habitats rich in nectar-producing flowers.	Unlikely. The Study Area is located farther south than this species' documented breeding range.	No additional surveys or actions required for this species.

SPECIES	STATUS* (Blooming Period)	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Lewis's Woodpecker <i>Melanerpes lewis</i>	BCC	Uncommon winter resident occurring in open oak savannahs, broken deciduous and coniferous habitats.	Unlikely. Marginal oak and grassland habitat exists in portions of the Study Area. The Study Area lies inside this species wintering range, and may be an uncommon visitor to the Study Area, however does not breed within the area.	No additional surveys or actions required for this species.
Little Willow Flycatcher <i>Empidonax traillii brewsteri</i>	SE	Most numerous where extensive thickets of low, dense willows edge on wet meadows, ponds, or backwaters. Winter migrant.	No Potential. Study Area lacks extensive riparian habitat required to support this species. Study Area lacks sufficient wet meadows, ponds, and backwaters to suit this species habitat needs.	No additional surveys or actions required for this species.
Purple Martin <i>Progne subis</i>	SSC	Inhabits woodlands and low elevation coniferous forests. Nests in old woodpecker cavities and human-made structures. Nest is often located in tall, isolated tree or snag.	Unlikely. Potential suitable summering woodland habitat is found within the Study Area, however foraging habitat is sub-optimal. Species does not breed in the area.	No additional surveys or actions required for this species.
Bank Swallow <i>Riparia riparia</i>	ST	Migrant in riparian and other lowland habitats in western California. Colonial nester in riparian areas with vertical cliffs and bands with fine-textured or fine-textured sandy soils near streams, rivers, lakes or the ocean.	Unlikely. Study Area lacks vertical cliffs and banks with fine textured sandy soils. No suitable breeding habitat is present in the area and the Study Area is outside of this species' documented range.	No additional surveys or actions required for this species.

SPECIES	STATUS* (Blooming Period)	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Olive-sided Flycatcher <i>Contopus cooperi</i>	BCC, SSC	Nesting habitats are mixed conifer, montane hardwood-conifer, douglas-fir, redwood, red fir and lodgepole pine. Most numerous in montane conifer forests where tall trees overlook canyons, meadows, lakes or other open terrain.	Unlikely. Study Area has marginal foraging habitat, but lacks suitable coniferous trees and is unlikely to support breeding habitat.	No additional surveys or actions required for this species.
Loggerhead Shrike <i>Lanius ludovicianus</i>	BCC, SSC	Generally nests in broken woodlands, savannah, pinyon-juniper, Joshua tree and riparian woodlands, desert oases, scrub, and washes. Prefers open country for hunting, with perches for scanning, and fairly dense shrubs and brush for nesting. Found throughout much of the state.	Moderate. Patches of dense vegetation and open grassland habitat provide potentially suitable habitat for this species.	Recommend a breeding bird survey if ground disturbance or tree removal takes place during the breeding bird season, February 1 - August 31.
Yellow Warbler <i>Dendroica petechia brewsteri</i>	SSC	Frequents riparian plant associations. Prefers willows, cottonwoods, aspens, sycamores and alders for nesting and foraging. Also nests in montane shrubbery in open conifer forests.	Unlikely. Study Area lacks suitable riparian vegetation, and is unlikely to support breeding habitat.	No additional surveys or actions required for this species.

SPECIES	STATUS* (Blooming Period)	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
San Francisco (formally Saltmarsh) Common Yellowthroat <i>Geothlypis trichas sinuosa</i>	BCC, SCC	Resident of the San Francisco Bay region, in fresh and saltwater marshes with riparian forest. Requires thick, continuous cover down to water surface for foraging; tall grasses, tile patches, willows for nesting.	Unlikely. Study Area does not have sufficient freshwater marsh with riparian forest habitat for this species. Potential for the species to occur during dispersal periods, however no suitable breeding habitat is present in the Study Area.	No additional surveys or actions required for this species.
Bryant's Savannah Sparrow <i>Passerculus sandwichensis alaudinus</i>	SSC	Associated with the coastal fog belt, primarily between Humboldt and northern Monterey counties. Occupies low tidally influenced habitats, adjacent to ruderal areas; often found where Pickleweed communities merge into grassland. Infrequently found in drier grasslands. Builds nests in taller grasses and rushes along roads, levees, and water conveyance canals.	Unlikely. Study Area falls within the fog belt range of this species, however lacks suitable marsh habitat or tidally influenced habitat. Species may infrequently occur within the Study Area during dispersal periods, however the breeding potential within the site is marginal.	No additional surveys or actions required for this species.

SPECIES	STATUS* (Blooming Period)	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Grasshopper Sparrow <i>Ammodramus savannarum</i>	SSC	Found in dense grasslands on rolling hills, lowland plains, in valleys and on hillsides on lower mountain slopes. Favors native grasslands with a mix of grasses, forbs, and scattered shrubs. Loosely colonial when nesting.	Unlikely. Grassland habitat within the Study Area is only marginal for this species and unlikely to support breeding.	No additional surveys or actions required for this species.
Bell's Sage Sparrow <i>Amphispiza belli belli</i>	BCC	Nests in chaparral dominated by dense stands of chamise. Found in coastal sage scrub in southern portions of range. Nest is typically located on the ground beneath a shrub or in a shrub 6 to 18 inches above ground. Territories about 50 yards apart.	No Potential. No chaparral or coastal sage scrub habitat found within the Study Area. No nesting habitat is present within the Study Area.	No additional surveys or actions required for this species.
Tricolored Blackbird <i>Agelaius tricolor</i>	BCC, SSC, RP	A highly colonial species, most numerous in Central Valley and vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few kilometers of the colony.	No Potential. No suitable wetland vegetation habitat present for nesting.	No additional surveys or actions required for this species.

SPECIES	STATUS* (Blooming Period)	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Western Snowy Plover <i>Charadrius alexandrinus nivosus</i>	FT, SSC, BCC, RP	Found on sandy beaches, salt pond levees and shores of large alkali lakes. Requires sandy, gravelly or friable soils for nesting. The federal listing applies only to the Pacific coastal population.	No Potential. No suitable nesting or foraging habitat present within the Study Area.	No additional surveys or actions required for this species.
California Clapper Rail <i>Rallus longirostris obsoletus</i>	FE, SE, CFP	Salt-water and brackish marshes traversed by tidal sloughs in the vicinity of San Francisco Bay. Associated with abundant growths of pickleweed, but feeds away from cover on invertebrates from mud-bottomed sloughs.	No Potential. No suitable marsh habitat present in the Study Area.	No additional surveys or actions required for this species.

Reptiles and Amphibians

SPECIES	STATUS* (Blooming Period)	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
California Red-legged Frog <i>Rana aurora draytonii</i>	FT, SSC, RP	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby, or emergent riparian vegetation. Requires 11 to 20 weeks of permanent water for larval development. Must have access to estivation habitat.	Unlikely. There is no suitable habitat for this species within the Study Area. There are 2 perennial ponds close to the site, however they are down a steep slope and are not documented to support this species. The closest documented occurrence is over 4.5 miles south west of the site and there are several complete barriers to migration (the Bay, saltmarsh habitat, freeways and commercial/residential development) that preclude the species from moving to this site.	No additional surveys or actions required for this species.
California Tiger Salamander <i>Ambystoma californiense</i>	FE, SSC, RP	Populations in Santa Barbara and Sonoma counties currently listed as endangered. Inhabits grassland, oak woodland, ruderal and seasonal pool habitats. Seasonal ponds and vernal pools are crucial to breeding. Adults utilize mammal burrows as estivation habitat.	No Potential. No suitable breeding habitat within the Study Area, and no small mammal burrows were observed during the site visit. There are no documented CNDDB occurrences within 5 miles of the Study Area.	No additional surveys or actions required for this species.

SPECIES	STATUS* (Blooming Period)	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Western Pond Turtle <i>Emys (=Clemmys) marmorata</i>	SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches with aquatic vegetation. Need basking sites and suitable (sandy banks or grassy open fields) upland habitat for egg-laying.	Unlikely. There are no suitable perennial pools or ponds for this species within the Study Area. The closest pond is over 600 ft to the west, and is down a steep slope. It is unlikely that a turtle would nest so far away (vertically and distance wise) from the perennial water source. There are no documented CNDDB occurrences within 3.5 miles of the Study Area, and there are complete migration barriers between the Study Area and this occurrence.	No additional surveys or actions required for this species.
Foothill Yellow-legged Frog <i>Rana boylei</i>	SSC	Found in or near rocky streams in a variety of habitats. Prefers partly-shaded, shallow streams and riffles with a rocky substrate; requires at least some cobble-sized substrate for egg-laying. Needs at least 15 weeks to attain metamorphosis. Feeds on both aquatic and terrestrial invertebrates.	No Potential. Study Area has no perennial streams required to sustain this species.	No additional surveys or actions required for this species.

SPECIES	STATUS* (Blooming Period)	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Fishes				
Green Sturgeon <i>Acipenser medirostris</i>	SSC, FT	Spawn in the Sacramento River and the Klamath River. Spawn at temperatures between 8-14 degrees C. Preferred spawning substrate is large cobble, but can range from clean sand to bedrock.	No Potential. There is no suitable aquatic habitat for this species within the Study Area.	No additional surveys or actions required for this species.
Delta Smelt <i>Hypomesus transpacificus</i>	FT, ST, RP	Lives in the Sacramento-San Joaquin estuary in areas where salt and freshwater systems meet. Occurs seasonally in Suisun Bay, Carquinez Strait and San Pablo Bay. Seldom found at salinities > 10 ppt; most often at salinities < 2 ppt.	No Potential. There is no suitable aquatic habitat for this species within the Study Area.	No additional surveys or actions required for this species.
Tidewater Goby <i>Eucyclogobius newberryi</i>	FE, SSC	Brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County to the mouth of the Smith River. Found in shallow lagoons and lower stream reaches, they need fairly still but not stagnant water and high oxygen levels.	No Potential. There is no suitable aquatic habitat for this species within the Study Area. This species is considered extirpated from the San Francisco Bay.	No additional surveys or actions required for this species.
Coho Salmon - central CA coast ESU <i>Oncorhynchus kisutch</i>	FE, SE, NMIFS	Occurs inland and in coastal marine waters. Requires beds of loose, silt-free, coarse gravel for spawning. Also needs cover, cool water and sufficient dissolved oxygen.	No Potential. There is no suitable aquatic habitat for this species within the Study Area.	No additional surveys or actions required for this species.

SPECIES	STATUS* (Blooming Period)	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Steelhead - central CA coast ESU <i>Oncorhynchus mykiss</i>	FT, NMFS	Occurs from the Russian River south to Soquel Creek and Pajaro River. Also in San Francisco and San Pablo Bay Basins. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles remain in fresh water for one or more years before migrating downstream to the ocean.	No Potential. There is no suitable aquatic habitat for this species within the Study Area.	No additional surveys or actions required for this species.
Chinook Salmon - Central Valley spring-run ESU <i>Oncorhynchus tshawytscha</i>	FT, ST, RP, NMFS	Populations spawning in the Sacramento and San Joaquin Rivers and their tributaries. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles remain in fresh water for one or more years before migrating downstream to the ocean.	No Potential. There is no suitable aquatic habitat for this species within the Study Area.	No additional surveys or actions required for this species.
Chinook Salmon - winter-run ESU <i>Oncorhynchus tshawytscha</i>	FE, SE, RP, NMFS	Occurs in the Sacramento River below Keswick Dam. Spawns in the Sacramento River but not in tributary streams. Requires clean, cold water over gravel beds with water temperatures between 6 and 14 degrees C for spawning. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles typically migrate to the ocean soon after emergence from the gravel.	No Potential. There is no suitable aquatic habitat for this species within the Study Area.	No additional surveys or actions required for this species.

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Invertebrates				
Myrtle's silverspot butterfly <i>Speyeria zerene myrtleae</i>	FE, RP, SSI	Restricted to the foggy, coastal dunes/hills of the Point Reyes peninsula; extirpated from coastal San Mateo County. Larval foodplant thought to be <i>Viola adunca</i> .	No Potential. This species is generally found within three miles of the coast. The Study Area is located more than 8 miles from the coast, and lacks suitable habitat for this species.	No additional surveys or actions required for this species.
California freshwater shrimp <i>Syncaris pacifica</i>	FE, SE, SSI, RP	Endemic to Marin, Napa, and Sonoma counties. Found in low elevation, low gradient (generally less than 1%) perennial streams where riparian cover is moderate to heavy. Shallow pools away from main stream flow. Winters near undercut banks with exposed roots. In the summer uses leafy branches touching water.	No Potential. The Study Area lacks perennial streams required for this species.	No additional surveys or actions required for this species.
Plants				
Napa false indigo <i>Amorpha californica</i> var. <i>napensis</i>	List 1B (April-July)	Chaparral; openings in broadleaf upland forest or cismontane woodland. 120-2000 meters	Moderate. Suitable cismontane woodland habitat occurs within the Study Area. A documented occurrence (1924) is located within four miles of the Study Area.	If disturbance is proposed for natural areas, a protocol level rare plant survey is recommended during May.
Mt. Tamalpais manzanita <i>Arctostaphylos hookeri</i> ssp. <i>montana</i>	List 1B (February-April)	Serpentine, rocky sites in chaparral, valley and foothill grassland. 160-760 meters.	Unlikely. Although grassland habitat is present, suitable serpentine sites do not occur within the Study Area.	No additional surveys or actions required for this species.

SPECIES	STATUS* (Blooming Period)	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Marin manzanita <i>Arcostaphylos virgata</i>	List 1B (January- March)	On sandstone or granitic substrate in broadleaf upland forest, closed-cone coniferous forest, chaparral, North Coast coniferous forest. 60-700 meters.	Unlikely. Although grassland habitat is present, suitable sandstone or granitic substrate soils do not occur within the Study Area.	No additional surveys or actions required for this species.
small groundcone <i>Boschniakia hookeri</i>	List 2 (April- August)	North Coast coniferous forest. 90- 885 meters.	No Potential. There is no suitable coniferous forest habitat within the Study Area.	No additional surveys or actions required for this species.
Tiburon mariposa lily <i>Calochortus tiburonensis</i>	FT; ST; List 1B (March- June)	Serpentinite in valley and foothill grassland. 50-150 meters.	Unlikely. Although grassland habitat is present, suitable serpentinite sites do not occur within the Study Area.	No additional surveys or actions required for this species.
Tiburon paintbrush <i>Castilleja affinis</i> ssp. <i>neglecta</i>	FE; ST; List 1B (April-June)	Serpentinite in valley and foothill grassland. 60-400 meters.	Unlikely. Although grassland habitat is present, suitable serpentinite sites do not occur within the Study Area.	No additional surveys or actions required for this species.
San Francisco Bay spineflower <i>Chorizanthe cuspidata</i> var. <i>cuspidata</i>	List 1B (April-July)	Sandy soils in coastal bluff scrub, coastal dunes, coastal prairie, coastal scrub. 3-215 meters.	No Potential. There is no suitable coastal bluff scrub habitat within the Study Area.	No additional surveys or actions required for this species.
Mt. Tamalpais thistle <i>Cirsium hydrophyllum</i> var. <i>vaseyi</i>	List 1B (May- August)	Serpentinite seeps in broadleaf upland forest, chaparral, meadows. 240-620 meters.	Unlikely. Although broadleaf upland forest is present, suitable serpentinite sites do not occur within the Study Area.	No additional surveys or actions required for this species.
Point Reyes bird's-beak <i>Cordylanthus maritimus</i> ssp. <i>palustris</i>	List 1B (June- October)	Coastal salt marshes. 0-10 meters.	No Potential. There is no suitable coastal salt marsh habitat within the Study Area.	No additional surveys or actions required for this species.

SPECIES	STATUS* (Blooming Period)	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Tiburon buckwheat <i>Eriogonum luteolum</i> var. <i>caninum</i>	List 1B (May- September)	Chaparral, cismontane woodland, coastal prairie, valley and foothill grassland. On serpentine soils, sandy to gravelly sites. 0-700 meters.	Unlikely. Although grassland habitat is present within the Study Area, site soils are loamy. Documented occurrences are located within five miles of the Study Area, primarily on serpentine soils.	No additional surveys or actions required for this species.
minute pocket moss <i>Fissidens pauperculus</i>	List 1B	Damp to coastal soil in North Coast coniferous forest. 10-1024 meters.	No Potential. There is no suitable coniferous forest habitat within the Study Area.	No additional surveys or actions required for this species.
Marin checker lily <i>Fritillaria lanceolata</i> var. <i>tristylis</i>	List 1B (February- May)	Coastal bluff scrub, coastal prairie, coastal scrub. 15-150 meters.	No Potential. There is no suitable coastal scrub or coastal prairie habitat within the Study Area.	No additional surveys or actions required for this species.
fragrant fritillary <i>Fritillaria liliacea</i>	List 1B (February- April)	Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland; often on serpentine or clay soil. 3-410 meters.	Unlikely. Although woodland and grassland habitat is present within the Study Area, suitable soils for this species do not occur on-site.	No additional surveys or actions required for this species.
woolly-headed gilia <i>Gilia capitata</i> ssp. <i>tomentosa</i>	List 1B (May-July)	Rocky outcrops in coastal bluff scrub. 15-155 meters.	No Potential. There is no suitable coastal bluff scrub habitat within the Study Area.	No additional surveys or actions required for this species.
San Francisco gumplant <i>Grindelia hirsutula</i> var. <i>maritima</i>	List 1B (June- September)	Sandy or serpentine sites in coastal bluff scrub, coastal scrub, valley and foothill grassland. 15- 400 meters.	Unlikely. Although grassland habitat is present within the Study Area, suitable soils for this species do not occur on- site.	No additional surveys or actions required for this species.

SPECIES	STATUS* (Blooming Period)	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Diablo helianthella <i>Helianthella castanea</i>	List 1B (March-June)	Broadleaf upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland. 60-1300 meters.	Moderate. Suitable cismontane woodland and valley and foothill grassland habitat occurs within the Study Area.	If disturbance is proposed for natural areas, a protocol level rare plant survey is recommended during May.
hayfield tarweed <i>Hemizonia congesta</i> ssp. <i>leucocephala</i>	List 3 (April-October)	Coastal scrub, hills and valleys in valley and foothill grassland. Sometimes on roadsides or in fallow fields. 25-455 meters.	Moderate. Suitable cismontane woodland and valley and foothill grassland habitat occurs within the Study Area.	If disturbance is proposed for natural areas, a protocol level rare plant survey is recommended during May.
Marin western flax <i>Hesperolinon congestum</i>	FT; ST; List 1B (April-July)	Serpentine sites in chaparral, valley and foothill grassland; sometimes on roadsides. 5-370 meters.	Unlikely. Although grassland habitat is present, suitable serpentine sites do not occur within the Study Area.	No additional surveys or actions required for this species.
Santa Cruz tarplant <i>Holocarpus macradenia</i>	FT; FE; List 1B (June-October)	Serpentine in chaparral or valley and foothill grassland. 10-220 meters.	Unlikely. Although grassland habitat is present, suitable serpentine sites do not occur within the Study Area.	No additional surveys or actions required for this species.
thin-lobed horkelia <i>Horkelia tenuiloba</i>	List 1B (May-July)	Mesic, sandy openings in broadleaf upland forest, chaparral, valley and foothill grassland. 50-500 meters.	Unlikely. No suitable mesic, sandy habitat occurs within the Study Area. Nearby documented occurrences (within five miles) were located on the edge of seeps and meadows.	No additional surveys or actions are required for this species.
woolly headed lessingia <i>Lessingia hololeuca</i>	List 3 (June-October)	Clay or serpentine in broadleaf upland forest, coastal scrub, lower montane coniferous forest, valley and foothill grassland. 15-305 meters.	Unlikely. Although woodland and grassland habitat is present within the Study Area, suitable soils for this species do not occur on-site.	No additional surveys or actions required for this species.

SPECIES	STATUS* (Blooming Period)	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
<p>Tamalpais lessingia <i>Lessingia micradenia</i> var. <i>micradenia</i></p>	<p>List 1B (July-October)</p>	<p>Chaparral, valley and foothill grassland; usually on serpentine and often on roadsides. 100-500 meters.</p>	<p>Moderate. Suitable and valley and foothill grassland habitat occurs within the Study Area. Nearby documented occurrences (within five miles) were located primarily located on serpentine soils, but also along roadsides.</p>	<p>If disturbance is proposed for natural areas, a protocol level rare plant survey is recommended during August.</p>
<p>Mt. Diablo cottonweed <i>Micropus amphibolus</i></p>	<p>List 3 (March-May)</p>	<p>Bare, grassy, or rocky slopes in broadleaf upland forest, chaparral, cismontane woodland, valley and foothill grassland. 45-825 meters.</p>	<p>High. Suitable broadleaf upland forest, cismontane woodland, and valley and foothill grassland are present within the Study Area.</p>	<p>If disturbance is proposed for natural areas, a protocol level rare plant survey is recommended during May.</p>
<p>marsh microseris <i>Microseris paludosa</i></p>	<p>List 1B (April-June)</p>	<p>Closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland. 5-300 meters.</p>	<p>Moderate. Suitable broadleaf upland forest, cismontane woodland, and valley and foothill grassland are present within the Study Area. This species is documented to occur with five miles of the Study Area (1944); the documented population was located along a ridgeline.</p>	<p>If disturbance is proposed for natural areas, a protocol level rare plant survey is recommended during May.</p>
<p>Baker's navarretia <i>Navarretia leucocephala</i> ssp. <i>bakeri</i></p>	<p>List 1B (April-July)</p>	<p>Mesic sites in cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, vernal pools. Adobe or alkaline soils. 5-1740 meters.</p>	<p>Unlikely. Although woodland and grassland habitat is present, suitable serpentine sites do not occur within the Study Area. Documented occurrences of this species (within five miles) were located on serpentine soils.</p>	<p>No additional surveys or actions required for this species.</p>

SPECIES	STATUS* (Blooming Period)	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Marin County navarretia <i>Navarretia rosulata</i>	List 1B (May-July)	Serpentine, rocky sites in closed-cone coniferous forest, chaparral. 200-635 meters.	No Potential. There is no suitable coniferous forest habitat within the Study Area.	No additional surveys or actions required for this species.
white-rayed pentachaeta <i>Pentachaeta bellidiflora</i>	FE; SE; List 1B (March- May)	Cismontane woodland, valley and foothill grassland. Open, dry rocky slopes and grassy areas, often on serpentine. 35-620 meters.	Moderate. A documented occurrence (1992, assumed extirpated) is located within the Study Area. Suitable habitat is present on-site.	This species was not observed during the April 16, 2010 site visit. No additional surveys or actions required for this species.
hairless popcorn flower <i>Plagiobothrys glaber</i>	List 1A (March- May)	Often on serpentine in alkaline meadows and seeps, marshes and swamps. 15-180 meters.	No Potential. There is no suitable meadow seep, marsh, or swamp habitat within the Study Area.	No additional surveys or actions required for this species.
North Coast semaphore grass <i>Pleuropogon hooverianus</i>	ST; List 1B (April- August)	Open, grassy, mesic areas in broadleaf upland forest, meadows and seeps, North Coast coniferous forest. 10-671 meters.	Unlikely. Mesic areas are limited within the Study Area. Documented occurrences (1940s) were located in wet meadows and along creekbeds.	No additional surveys or actions required for this species.
Marin knotweed <i>Polygonum marinense</i>	List 3 (May- August)	Coastal salt marshes and brackish marshes. 0-10 meters.	No Potential. There is no suitable marsh habitat within the Study Area.	No additional surveys or actions required for this species.
Tamalpais oak <i>Quercus parvula</i> var. <i>tamalpaisensis</i>	List 1B	Lower montane coniferous forest. 100-750 meters.	No Potential. There is no suitable coniferous forest habitat within the Study Area.	No additional surveys or actions required for this species.
Point Reyes checkerbloom <i>Sidalcea calycosa</i> ssp. <i>rhizomata</i>	List 1B (April- September)	Freshwater marshes and swamps near the coast. 3-75 meters.	No Potential. There is no suitable marsh habitat within the Study Area.	No additional surveys or actions required for this species.

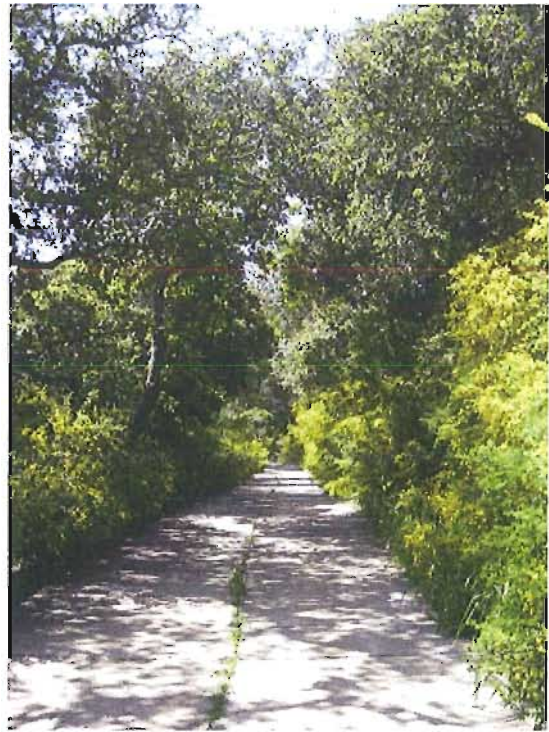
SPECIES	STATUS* (Blooming Period)	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Santa Cruz microseris <i>Stebbinsoseris decipiens</i>	List 1B (April-May)	Open areas in broadleaf upland forest, closed-cone coniferous forest, chaparral, coastal prairie, coastal scrub, valley and foothill grassland. On loose or disturbed soil, sometimes on serpentinite. 10-500 meters.	Moderate. Suitable valley and foothill grassland habitat occurs within the Study Area. Documented occurrences in the vicinity of the Study Area occurred on serpentinite soils, which do not occur on-site.	If disturbance is proposed for natural areas, a protocol level rare plant survey is recommended during May.
Tamalpais jewel-flower <i>Streptanthus batrachopus</i>	List 1B (April-July)	Serpentinite in closed-cone coniferous forest, chaparral. 305-650 meters.	No Potential. There is no suitable coniferous forest habitat within the Study Area.	No additional surveys or actions required for this species.
Mt. Tamalpais jewel-flower <i>Streptanthus glandulosus</i> ssp. <i>pulchellus</i>	List 1B (May-July)	Serpentinite in chaparral, valley and foothill grassland. 150-800 meters.	Unlikely. Although grassland habitat is present, suitable serpentinite sites do not occur within the Study Area.	No additional surveys or actions required for this species.
Tiburon jewel-flower <i>Streptanthus niger</i>	FE; SE; List 1B (May-June)	Serpentinite in valley and foothill grassland. 30-150 meters.	Unlikely. Although grassland habitat is present, suitable serpentinite sites do not occur within the Study Area.	No additional surveys or actions required for this species.
Suisun Marsh aster <i>Symphotrichum (Aster) lentum</i>	List 1B (May- November)	Brackish and freshwater marshes and swamps. 0-3 meters.	No Potential. There is no suitable marsh or swamp habitat within the Study Area.	No additional surveys or actions required for this species.
two-fork clover <i>Trifolium amoenum</i>	FE; List 1B (April-June)	Coastal bluff scrub, valley and foothill grassland. Sometimes on serpentinite, roadsides, swales, or cliff faces. 5-415 meters.	Moderate. Suitable grassland habitat occurs within the Study Area, although serpentinite soils are not present. A documented occurrence (1961) of this species occurs within three miles.	If disturbance is proposed for natural areas, a protocol level rare plant survey is recommended during May.

SPECIES	STATUS* (Blooming Period)	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
saline clover <i>Trifolium depauperatum</i> var. <i>hydrophyllum</i>	List 1B (April-June)	Marshes and swamps, vernal pools, swales. Mesic, sometimes alkaline sites in valley and foothill grassland. 0-300 meters.	No Potential. There is no suitable marsh or swamp habitat within the Study Area.	No additional surveys or actions required for this species.
coastal triquetrella <i>Triquetrella californica</i>	List 1B (moss)	Coastal bluff scrub and coastal scrub. 10-100 meters.	No Potential. There is no suitable coastal bluff scrub or coastal scrub habitat within the Study Area.	No additional surveys or actions required for this species.

* Key to status codes:

FE Federal Endangered
 FT Federal Threatened
 FC Federal Candidate
 NMFS Species under the Jurisdiction of the National Marine Fisheries Service
 BCC USFWS Birds of Conservation Concern
 RP Sensitive species included in a USFWS Recovery Plan or Draft Recovery Plan
 SE State Endangered
 ST State Threatened
 SR State Rare
 SSC CDFG Species of Special Concern
 CFP CDFG Fully Protected Animal
 SSI CDFG Special Status Invertebrates
 WBWG Western Bat Working Group; H= High Priority species, M= Medium Priority Species
 List 1A CNPS List 1A: Plants presumed extinct in California
 List 1B CNPS List 1B: Plants rare, threatened or endangered in California and elsewhere
 List 2 CNPS List 2: Plants rare, threatened, or endangered in California, but more common elsewhere
 List 3 CNPS List 3: Plants about which CNPS needs more information (a review list)

APPENDIX C
REPRESENTATIVE STUDY AREA PHOTOGRAPHS



Top: Oak woodland with interspersed grassland areas. A small population of deer are present within the Study Area.

Bottom: Paved road typical of the Study Area, lined with French Broom.

Photograph taken April 16, 2010.



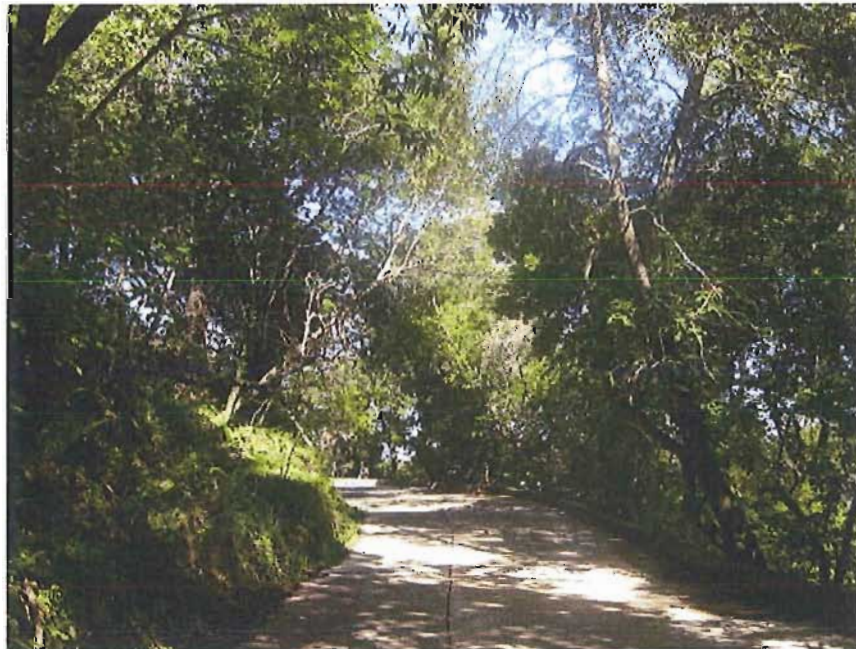
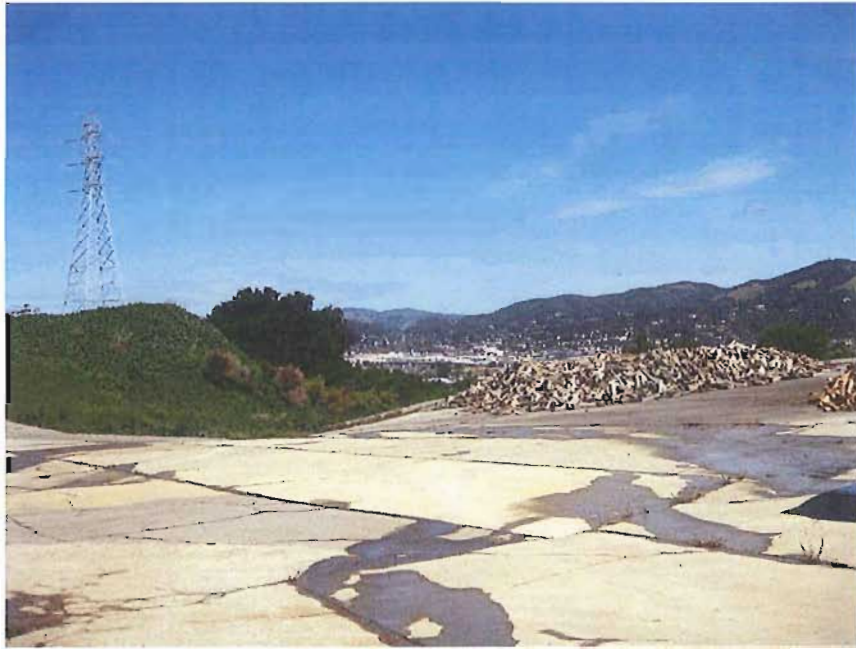


Top: An area of native grassland towards the top of the ridge.

Bottom: Paved area along the top of the ridge.

Photograph taken April 16, 2010.





Top: Paved area along top of ridge.

Bottom: Paved road through oak woodland.

Photograph taken April 16, 2010.



APPENDIX D

**Potential for the endangered *Pentachaeta bellidiflora* on Marin Sanitary Service property
(Letter report, WRA 2009)**



November 30, 2009

Steve Stafford
Community Development Dept.
City of San Rafael
P.O. Box 151560
San Rafael, CA 94915-1560

Re: Potential for the endangered *Pentachaeta bellidiflora* on Marin Sanitary Service property.

Dear Mr. Stafford,

This letter summarizes a habitat suitability site visit for the federal endangered plant species *Pentachaeta bellidiflora* (white-rayed pentachaeta) on a portion of the Marin Sanitary Service property in San Rafael, California. These studies were conducted on behalf of Marin Sanitary Service in response to your Sept. 22, 2009 letter requesting surveys for the species that is historically known from the vicinity.

White-rayed pentachaeta is an annual wildflower in the daisy family with a historic range from Marin to San Mateo County. It was thought to be extirpated (locally extinct) in Marin since the 1980's according to the California Department of Fish and Game CNDDDB database and the recently revised Marin Flora. The plant historically grew on thin soiled north facing slopes on some of the hills surrounding Greenbrae. The occurrence above Marin Sanitary Service was the easternmost historic occurrence known in Marin and was the last known population in the County. It was thought to have been extirpated by off-road motorcycle activity in the 1980's and has not been seen since, despite numerous surveys by local California Native Plant Society botanists. The only two remaining populations of the species currently known are in San Mateo County.

On October 12, 2009, Phil Greer and myself, plant ecologists at WRA, Inc., an environmental consulting firm in San Rafael, conducted a site visit to "Parcel E" (APN 018-180-76) on Marin Sanitary's property. This parcel is situated along the northwest to southeast running ridgeline situated above Marin Sanitary Service's Resource Recovery Center and is close to a historic occurrence of white-rayed pentachaeta. Much of the ridgeline itself is paved while other areas are dominated by oak woodland or non-native and invasive weeds; however, there were a few patches of thin-soiled habitats supporting native grassland on north-facing slopes that have potential to support white-rayed pentachaeta.

The October site visit was primarily a habitat suitability assessment since white-rayed pentachaeta blooms in the spring and, like many native annual wildflowers, is dry and typically considered unidentifiable at this time of year. However, further inspection of the remnant native grassland patches revealed a desiccated annual plant that possessed many of the distinguishing characteristics of white-rayed pentachaeta; however, its identification could not be positively confirmed.

WRA recommends that a protocol-level rare plant survey be conducted during the species' blooming window between March and May. All potentially suitable north facing grassland habitats on the site should be surveyed. If the plants are found they should be mapped and properly managed. A habitat management plan should be prepared if the species is found in order to guide future management activities to ensure long-term protection of the species. Potential threats to the plants on the site include human disturbance and habitat destruction by invasive weeds.

If you have any questions on our recommendation please do not hesitate to contact me.

Sincerely,

A handwritten signature in blue ink that reads "Geoff Smick".

Geoff Smick
Associate Plant Ecologist