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East Contra Costa County Habitat Conservation Plan Natural Community Conservation Plan

Assessment of Plan Effects on CEQA Species

Prepared for:

East Contra Costa County Habitat Conservancy

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EXECUTIVE SUMMARY

The East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP or Plan) provides a net benefit to 28 species covered by the endangered species permits issued to participating local agencies. However, projects covered by the Plan must also comply with the California Environmental Quality Act (CEQA) and evaluate project effects on all special-status species. For the 28 species covered by the permits, the Plan satisfies any mitigation requirements of CEQA. This report provides an assessment of the effects of the Plan on 59 special-status species that were not covered by the Plan ("CEQA species"), 41 plant and 18 animal species. The purpose of the assessment was to provide a programmatic, cumulative CEQA effects analysis for CEQA species taking into account impacts of all covered activities, including all adverse and beneficial effects of covered development activities and conservation measures. The cumulative effects of the Plan on each species were determined to be beneficial, neutral, adverse but less-than-significant, or potentially significant by considering the number of known populations and extent of suitable habitat that could be adversely affected within areas of anticipated development as well as those that would benefit from being in areas that may be preserved, enhanced, and managed for covered species and communities by the Plan.

This assessment determined that net Plan effects on 39 special-status plant species and all 18 special-status animal species would be either:

- beneficial (i.e., the Plan's conservation strategy would provide benefits that outweigh anticipated adverse effects of development activities),
- neutral (i.e., the Plan's conservation strategy would provide benefits that offset anticipated adverse effects of development activities), or
- adverse but less-than-significant (i.e., the Plan's development activities may adversely affect the species but would not result in a substantial impact on regional populations, taking into account the Plan's conservation strategy).

Thus, for all but two species that were evaluated, Plan impacts were determined to be less than significant under CEQA. Payment of the Plan fee for a covered project (or providing equivalent mitigation consistent with the Plan) will therefore be sufficient to mitigate the effects of the project on 57 of the CEQA species evaluated in this report, assuming no substantial change in the status of these species or of the cumulative environment. Table ES-1 summarizes the CEQA species analysis results by species, briefly discussing the net adverse and beneficial effects to each species expected to result from covered activities, as well as a net effect determination and the rationale for that determination.

The assessment determined that Plan impacts are potentially significant for two recently described species: the Lime Ridge navarretia (*Navarretia gowenii*) and the Lime Ridge eriastrum (*Eriastrum ertterae*). Because of uncertainty regarding the distribution of these species in the inventory area, it was determined that the Plan alone may not be sufficient to mitigate impacts to these species to a level below significance. Therefore, additional mitigation may be needed for project-level CEQA compliance for these species if that covered project has the potential to impact either species. Suggested measures to mitigate impacts to these species are described in this document.

This assessment is intended to serve as the technical documentation to justify findings in future project-level CEQA documents that the Plan adequately mitigates the cumulative effects of covered activities to less-than-significant levels for 57 of the 59 CEQA species evaluated in this report. This conclusion can be reached either because overall effects of Plan activities are expected to be beneficial or neutral, or because any residual adverse effects of Plan activities would be so low as to be less than significant when viewed on a regional (i.e., Plan-wide) scale. In either case, for covered projects, no further mitigation should be required under CEQA beyond payment of the HCP/NCCP fee or provision of equivalent mitigation consistent with the Plan (e.g., providing land in-lieu of fees). This assessment will facilitate future CEQA assessment of covered projects, and is intended to serve as the detailed assessment of cumulative impacts to CEQA species when incorporated by reference. Following is suggested text that can be included in project-specific CEQA evaluations to reference this CEQA species assessment (with the individual project's name used to fill in the blank spaces):

> An assessment was performed on the net effects of the HCP/NCCP, including both the beneficial and adverse effects of all covered development activities and conservation measures, on 59 special-status species that are not covered by the HCP/NCCP, called "CEQA species" (H. T. Harvey & Associates 2015). This "CEQA Species Assessment" considered the extent of habitat and populations of these species that could be affected within areas of anticipated development, as well as in areas that may be preserved, enhanced, and managed for covered species and communities by the HCP/NCCP, to determine the net cumulative impact of the HCP/NCCP on each CEQA species. The cumulative impacts to each CEQA species were categorized into one of four groups: beneficial, neutral, adverse but less-than-significant, or potentially significant. The CEQA Species Assessment found that the cumulative effects of the HCP/NCCP, including the proposed project, on 57 of the 59 CEQA species fell into one of the first three groups and are therefore less-than-significant.
>
> The _____ Project has the potential to adversely affect the following CEQA species: _____, all of which were evaluated in the CEQA Species Assessment. The proposed project does not support the two species found in the CEQA Species Assessment to have potentially significant effects from the HCP/NCCP covered activities. Because the proposed project is covered by the HCP/NCCP, the CEQA Species Assessment serves as a cumulative impact assessment for all of the CEQA species that may be impacted by the Project. The _____ Project will be implemented in accordance with the HCP/NCCP's conditions. Through payment of HCP/NCCP fees or equivalent mitigation, the Project will contribute to the HCP/NCCP's conservation strategy, thereby benefiting all CEQA species addressed in the CEQA Species Assessment (H. T. Harvey & Associates 2015). Therefore, with incorporation of HCP/NCCP fees or equivalent mitigation and adherence to other HCP/NCCP conditions, this Project's individual impacts and its contribution to cumulative impacts to CEQA species are less than significant.

The conclusion above does not apply to any special-status species not evaluated in this report, or to Lime Ridge navarretia or Lime Ridge eriastrum. If a covered project has any potential to impact Lime Ridge navarretia , Lime Ridge eriastrum, or a special-status species not covered by the Plan or evaluated in this report, a project-specific impact analysis would be required for the affected species.

The recommended citation for this CEQA Species Assessment is as follows:

> H. T. Harvey & Associates. 2015. *East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan: Assessment of Plan Effects on CEQA Species*. Prepared for the East Contra Costa County Habitat Conservancy.

Table ES-1. Summary of Net Effects of the Plan on CEQA Species.

SPECIES	POTENTIAL ADVERSE EFFECTS	BENEFICIAL MEASURES[1]	NET EFFECT[2]	RATIONALE
Upland Plants of Non-Serpentine Chaparral, Woodland, Scrub, or Grassland Habitats				
Large-flowered fiddleneck (*Amsinckia grandiflora*)	• None	• Potential preservation of unknown populations	Neutral or beneficial effect	No take is allowed for this species under the Plan, and any newly discovered populations would be protected.
California androsace (*Androsace elongata* ssp. *acuta*)	• Some chaparral, oak woodland loss • High degree of grassland loss • Possible loss of population in maximum UDA south of Clayton	• Enhancement measures in preserves, especially in chaparral and scrub, expected to increase habitat suitability	Neutral or beneficial effect	More likely to benefit from preserve acquisition and management than to be impacted by development and preserve improvements. Under the maximum UDA a known population may be lost. However, the species is widely distributed, and such loss would not be expected to cause a range reduction. Potential population loss expected to be adequately mitigated by enhanced management of preserves.
Coast rock cress (*Arabis blepharophylla*)	• More likely to be located within UDA than within preserves	• Enhancement measures such as managing grazing to control non-native grasses on outcrops could benefit species	Neutral or less than significant adverse effect	Not likely to be impacted by Plan activities, as rock outcrops are not expected to be impacted. If impacted, no large or regionally important populations are expected to be lost.
Brewer's calandrinia (*Calandrinia breweri*)	• Very low likelihood of population impacts due to 2 acres of chaparral loss	• Enhancement measures in chaparral and scrub preserves expected to increase habitat suitability, especially prescribed burns	Beneficial effect	More likely to benefit from preserve acquisition and management than to be impacted by development and preserve improvements.
Hospital Canyon larkspur (*Delphinium californicum* ssp.	• Some chaparral, oak woodland, and oak savanna loss	• Enhancement measures in preserves expected to increase habitat suitability by increasing chaparral openings and	Beneficial effect	More likely to benefit from preserve acquisition and management than to be impacted by development and preserve

SPECIES	POTENTIAL ADVERSE EFFECTS	BENEFICIAL MEASURES[1]	NET EFFECT[2]	RATIONALE
***interius*)**		improving oak woodland and riparian habitats		improvements.
Lime Ridge eriastrum (*Eriastrum ertterae*)	• Low potential for impacts; all known populations are located just outside the inventory area in the Lime Ridge Open Space • Occurs in or in close proximity to chaparral-based habitats, which will be subject to few impacts under the Plan (mainly under maximum UDA scenario) • Unknown populations could be impacted in the UDA near Clayton, Black Diamond, Deer Valley, Briones Valley, and the grasslands and scrublands in the foothills to the west of Byron Hot Springs.	• Enhancement measures in preserves expected to increase habitat suitability by increasing chaparral openings	Although the net effect could be neutral or even beneficial, there is potential for a significant adverse effect if an unknown population within the inventory area is lost without mitigation	All known populations are located outside of the inventory areas and will not be impacted. Further, habitat preservation and enhancement activities within the inventory area could improve habitat quality for currently unknown population of this species. If this species occurs in the inventory area at all, it is much more likely that an unknown population would be preserved by the Plan than impacted. However, due to the apparent extreme rarity of this species, loss of even one population could be significant if not mitigated. As a result, it was determined that the Plan alone is likely not sufficient to mitigate impacts to this species to a level below significance, and additional mitigation may be needed for project-level CEQA compliance.
Mt. Diablo buckwheat (*Eriogonum truncatum*)	• None	• Potential preservation of unknown populations	Neutral or beneficial effect	No take is allowed for this species under the Plan, and any newly discovered populations would be protected.
Diamond-petaled California poppy (*Eschscholzia rhombipetala*)	• None	• Potential preservation of unknown populations	Neutral or beneficial effect	No take is allowed for this species under the Plan, and any newly discovered populations would be protected.
Fragrant fritillary (*Fritillaria liliacea*)	• High degree of grassland loss, but plant less likely than stinkbells to be located in	• Some enhancements in preserves could benefit species, particularly if currently	Neutral effect	May not be affected by Plan activities at all. However, if present in inventory area,

SPECIES	POTENTIAL ADVERSE EFFECTS	BENEFICIAL MEASURES[1]	NET EFFECT[2]	RATIONALE
	lower-elevation grasslands near Horse Valley, Lone Tree Valley, and Marsh Creek Reservoir that fall within the UDA	occupied areas are now overgrazed		somewhat equally likely to benefit from preserve acquisition and management as to be impacted by development and preserve improvements.
Hall's bush mallow (*Malacothamnus hallii*)	• Low likelihood of population impacts due to 2 acres chaparral loss	• Enhancement measures in chaparral and scrub preserves expected to increase habitat suitability, especially prescribed burns	Beneficial effect	More likely to benefit from preserve acquisition and management than to be impacted by development and preserve improvements.
Sylvan microseris (*Microseris sylvatica*)	• Some chaparral, oak woodland, and oak savanna loss, although populations all likely located outside the UDA near Mt. Diablo	• Enhancement measures in preserved chaparral and scrub expected to increase habitat suitability, especially prescribed burns and careful grazing management in oak woodland and savanna habitats to control non-native grasses	Beneficial effect	More likely to benefit from preserve acquisition and management than to be impacted by development and preserve improvements.
Woodland woolythreads (*Monolopia gracilens*)	• Some chaparral, oak woodland, and oak savanna loss, although populations all likely located outside the UDA near Mt. Diablo	• Oak woodland conservation measures and enhancement of preserves likely to benefit species, such as weed control, burns, and improved grazing management	Beneficial effect	More likely to benefit from preserve acquisition and management than to be impacted by development and preserve improvements.
Lime Ridge navarretia (*Navarretia gowenii*)	• Low potential for impacts; all known populations are currently protected in preserves • Occurs in or in close proximity to chaparral-based habitats, which will be subject to few impacts under the Plan (mainly under maximum UDA scenario) • Also occurs in high-quality open grassland, generally on north-facing slopes • Unknown populations could be impacted in the UDA near	• Clayey grassland and chaparral habitats could receive significant benefits from reduction in overgrazing, soil disturbance, and trampling, or initiation of grazing where choked by weeds and non-native grasses	Although the net effect could be neutral or even beneficial, there is potential for a significant adverse effect if an unknown population within the inventory area is lost without mitigation	Two known populations are located outside of the inventory areas and will not be impacted. One known population is located inside the inventory area, but is inside a preserve. Additional habitat preservation and enhancement activities within the inventory area could improve habitat quality for currently unknown population of this species. If this species occurs in the inventory area at all, it is

SPECIES	POTENTIAL ADVERSE EFFECTS	BENEFICIAL MEASURES[1]	NET EFFECT[2]	RATIONALE
	Clayton, Black Diamond, Deer Valley, Briones Valley, and the grasslands and scrublands in the foothills to the west of Byron Hot Springs.			much more likely that an unknown population would be preserved by the Plan than impacted. However, due to the extreme rarity of this species, loss of even one population could be significant if not mitigated. As a result, it was determined that the Plan alone is likely not sufficient to mitigate impacts to this species to a level below significance, and additional mitigation may be needed for project-level CEQA compliance.
Michael's rein-orchid (*Piperia michaelii*)	• Some chaparral, oak woodland loss • Enhancement measures intended to promote healthy scrub mosaic (such as burns) may negatively affect species, which prefers dense chaparral • Small populations may be extirpated by localized preserve improvements	• Oak woodland conservation measures and careful grazing management in this habitat, especially where currently overgrazed, may benefit the species	Neutral or less than significant adverse effect	Populations may be lost in preserves due to improvements unless focused surveys aid planning. If impacted, not likely to affect large, numerous, or regionally important populations. More likely to occur in preserves than impacted by development, but some preserve enhancements may negatively affect habitats.
Rayless ragwort (*Senecio aphanactis*)	• Some chaparral, scrub and woodland loss	• Enhancement measures in chaparral and scrub preserves may increase habitat suitability, especially prescribed burns	Neutral or beneficial effect	Species may not be affected by Plan activities, as may be extirpated from inventory area. However, much more likely to benefit from preserve acquisition and management than to be impacted by development and preserve improvements.
Oval-leaved viburnum (*Viburnum ellipticum*)	• Some chaparral, oak woodland loss	• Oak woodland conservation measures and careful grazing management in this habitat, especially where currently overgrazed, may benefit the	Beneficial effect	More likely to benefit from preserve acquisition and management than to be impacted by development and preserve improvements.

SPECIES	POTENTIAL ADVERSE EFFECTS	BENEFICIAL MEASURES[1]	NET EFFECT[2]	RATIONALE
		species by preventing erosion on steep slopes		
Serpentine-adapted Plant Species				
Oakland star-tulip (*Calochortus umbellatus*)	• Some chaparral, oak woodland, and savanna loss • High degree of grassland loss, but plant unlikely to be located in majority of inventory area grasslands due to reliance on serpentine soils • Potential loss of small populations from preserve enhancements, but this is unlikely	• Enhancement of preserves likely to benefit species and serpentine habitats, such as weed control, burns, and improved grazing management	Beneficial effect	More likely to benefit from preserve acquisition and management than to be impacted by development and preserve improvements.
Chaparral harebell (*Campanula exigua*)	• Very low likelihood of population impacts due to 2 acres chaparral loss, which is not expected to be suitable serpentine chaparral	• Enhancement of preserves likely to benefit species and serpentine chaparral habitats, such as weed control and burns	Beneficial effect	More likely to benefit from preserve acquisition and management than to be impacted by development and preserve improvements.
Serpentine collomia (*Collomia diversifolia*)	• Very low likelihood of population impacts due to 2 acres chaparral loss, which is not expected to be suitable serpentine chaparral	• Enhancement of preserves likely to benefit species and serpentine chaparral habitats, such as weed control and burns	Beneficial effect or if population loss, less-than-significant adverse effect	More likely to benefit from preserve acquisition and management than to be impacted by development and preserve improvements.
Small-flowered morning-glory (*Convolvulus simulans*)	• High degree of grassland loss, and plant may be located in lower-elevation serpentine grasslands near Horse Valley and Deer Valley that fall within the UDA • Possible population loss if serpentine seeps are used to supply water to newly constructed wetlands in preserves	• Some enhancement measures, such as weed control and prevention of overgrazing, could improve habitat for the species within preserves	Less than significant adverse effect	More likely to be impacted by development and preserve improvements than to benefit from preserve enhancement. Populations may be lost in preserves due to wetland creation unless focused surveys aid planning. Impacts not likely to affect large, numerous, or regionally important populations, or to extirpate species from region.
Bay buckwheat	• Some oak woodland and	• Changes in grazing	Beneficial effect	More likely to benefit from

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(*Eriogonum umbellatum* var. *bahiiforme*)	savanna loss, but most of this not expected to provide suitable serpentine habitat	management in woodlands and savannas expected to benefit species, by controlling non-native grass cover or moderating overgrazing in some areas • Woodland restoration activities may increase suitable habitat for species		preserve acquisition and management than to be impacted by development and preserve improvements.
Jepson's woolly sunflower (*Eriophyllum jepsonii*)	• Some chaparral, oak woodland, and savanna loss, but most of this not expected to provide suitable serpentine habitat	• Enhancement of preserves likely to benefit species and serpentine chaparral habitats, such as weed control and burns • Changes in grazing management in woodlands and savannas expected to benefit species, by controlling non-native grass cover or moderating overgrazing in some areas	Beneficial effect	More likely to benefit from preserve acquisition and management than to be impacted by development and preserve improvements.
Stinkbells (*Fritillaria agrestis*)	• High degree of grassland loss, and populations may be located in lower-elevation serpentine grasslands near Horse Valley, Lone Tree Valley, and Marsh Creek Reservoir that fall within the UDA • Possible population loss if occupied mesic valleys used as constructed wetland sites in preserves	• Some enhancements in preserves could benefit species, particularly if currently occupied areas are now overgrazed	Less than significant adverse effect	More likely to be impacted by development and preserve improvements than to benefit from preserve enhancement – particularly due to species biology, which indicates non-native grass control will not benefit this species much. Populations may be lost in preserves due to wetland creation unless focused surveys aid planning. However, because this species rarely occurs in large populations and is widely distributed across the state, impacts within the Plan area would not cause a range reduction

SPECIES	POTENTIAL ADVERSE EFFECTS	BENEFICIAL MEASURES[1]	NET EFFECT[2]	RATIONALE
				or substantially reduce the species' abundance due to populations protected at Contra Loma Regional Park and Los Vaqueros Reservoir. Thus, any effects related to covered activities would not be significant.
Phlox-leaved serpentine bedstraw (*Galium andrewsii* ssp. *gatense*)	• Very low likelihood of population impacts due to small amount of oak woodland and chaparral loss, most of which is not expected to be suitable serpentine habitat	• Enhancement of preserves likely to benefit species and serpentine chaparral habitats, such as weed control and burns • Changes in grazing management in woodlands expected to benefit species, by controlling non-native grass cover or moderating overgrazing in some areas	Beneficial effect	More likely to benefit from preserve acquisition and management than to be impacted by development and preserve improvements.
Serpentine leptosiphon (*Leptosiphon ambiguus*)	• Small amount of chaparral loss, which is not expected to support serpentine habitats • High degree of grassland loss, but much of this not expected to support serpentine habitats. Location records for species indicate it is likely to be located in serpentine grasslands outside the UDA near Mt. Diablo.	• Enhancement of preserves likely to benefit species and serpentine chaparral habitats, such as weed control and burns • Changes in grazing management in grasslands expected to benefit species, by controlling non-native grass cover or moderating overgrazing in some areas	Beneficial effect	More likely to benefit from preserve acquisition and management than to be impacted by development and preserve improvements.
Mt. Diablo phacelia (*Phacelia phacelioides*)	• Some chaparral and oak woodland loss, but most of this not expected to provide suitable serpentine habitat	• Enhancement of preserves likely to benefit species and serpentine chaparral habitats, such as weed control and burns • Changes in grazing management in woodlands expected to benefit species, by controlling non-native grass cover or moderating overgrazing in some areas	Beneficial effect	More likely to benefit from preserve acquisition and management than to be impacted by development and preserve improvements.

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Most beautiful jewel-flower (*Streptanthus albidus* ssp. *peramoenus*)	• Some chaparral and oak woodland loss, but most of this not expected to provide suitable serpentine habitat • High degree of grassland loss, but much of this not expected to support serpentine habitats. Location records for species indicate it is likely to be located in serpentine grasslands outside the UDA near Mt. Diablo.	• Enhancement of preserves likely to benefit species and serpentine chaparral habitats, such as weed control and burns • Changes in grazing management in woodlands expected to benefit species, by controlling non-native grass cover or moderating overgrazing in some areas	Beneficial effect	More likely to benefit from preserve acquisition and management than to be impacted by development and preserve improvements.
Alkaline-adapted and Wetland Plant Species				
Alkali milk-vetch (*Astragalus tener* var. *tener*)	• None	• Potential preservation of unknown populations	Neutral or beneficial effect	No take is allowed for this species under the Plan, and any newly discovered populations would be protected.
Heartscale (*Atriplex cordulata var. cordulata*)	• Moderate potential for impacts or population loss within sandy alkaline grasslands, chenopod scrub, and wetlands in UDA east of Oakley, near Deer Valley, Briones Valley, and Marsh Creek Reservoir, and near the Byron Airport • Possible preserve-related impacts resulting from wetland construction	• Alkaline habitats are expected to receive significant benefits from reduction in overgrazing and trampling • Restoration of native hydrology could benefit populations where areas have been ditch-drained	Less than significant adverse effect	More likely to be impacted by development and preserve improvements than to benefit from preserve enhancement. Populations may be lost in preserves due to wetland creation unless focused surveys aid planning. Impacts not likely to affect large, numerous, or regionally important populations, or to extirpate species from region, and potential impacts somewhat mitigated by enhancement of alkaline habitats.
Crownscale (*Atriplex coronata* var. *coronata*)	• High potential for impacts or population loss within alkaline wetlands and vernal pools in UDA east of Oakley, near Deer Valley, Briones Valley, and Marsh Creek Reservoir – plant records widely distributed in	• Alkaline habitats are expected to receive significant benefits from reduction in overgrazing and trampling • Restoration of native hydrology could benefit populations where areas have been ditch-drained	Beneficial effect	Likely some populations will be impacted by development, but likely that more populations will benefit from preserve enhancement. Populations may be lost in preserves due to wetland creation unless focused surveys

SPECIES	POTENTIAL ADVERSE EFFECTS	BENEFICIAL MEASURES[1]	NET EFFECT[2]	RATIONALE
	eastern portion of inventory area • Possible preserve-related impacts resulting from wetland construction			aid planning. Impacts not likely to affect large, numerous, or regionally important populations, or to extirpate species from region, and potential impacts mitigated by enhancement of alkaline habitats.
Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*)	• Moderate to low potential for loss within alkaline wetlands within AA Zone 6 or near Byron Airport	• Alkaline habitats are expected to receive significant benefits from reduction in overgrazing and trampling • Restoration of native hydrology could benefit populations where areas have been ditch-drained	Neutral or beneficial effect	More likely to benefit from preserve acquisition and management than to be impacted by development and preserve improvements. The expected benefits to preserved populations and habitat enhancement from the restoration and focused management of alkaline wetlands are expected to at least offset potential adverse impacts that could occur if one or more unknown populations were lost due to implementation of the Plan.
Spiny-sepaled button celery (*Eryngium spinosepalum*)	• Moderate potential for impacts or population loss within vernal pools and alkaline wetlands near the Byron Airport, some loss of alkaline wetlands in this area that could provide suitable habitat or support populations	• Alkaline wetland habitats could be expected to receive significant benefits from reduction in overgrazing and trampling, or initiation of grazing where vernal pools choked by weeds • Restoration of native hydrology could benefit populations where areas have been ditch-drained	Neutral or beneficial effect	Only one population is known to occur in the county; however, there is some uncertainty regarding the identification of this population. *E. spinosepalum* generally occurs in the Central Valley but is known to intergrade with *E. vaseyi* which is more common in Contra Costa County. The plants occurring near Byron Airport are described as having intermediate characteristics between *E. spinosepalum* and *E. vaseyi*. If the plants near Byron Airport are in fact *E. spinosepalum*, other populations likely occur in the vicinity, but

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				may have been previously over-looked and misidentified as *E. vaseyi*. In that case, this species may be more likely to benefit from preserve acquisition and management than to be impacted by development and preserve improvements.
Hogwallow starfish (*Hesperevax caulescens*)	• Moderate potential for impacts or population loss within shallow vernal pools and wetlands near Deer Valley, Briones Valley, and Marsh Creek Reservoir, and near the Byron Airport	• Wetland habitats could expected to receive significant benefits from reduction in overgrazing and trampling, or initiation of grazing where vernal pools choked by weeds	Neutral effect or slight beneficial effect	Plant is widespread and is equally likely to benefit from preserve acquisition and management as to be impacted by development and preserve improvements.
Contra Costa goldfields (*Lasthenia congdonii*)	• None	• Potential preservation of unknown populations	Neutral or beneficial effect	No take is allowed for this species under the Plan, and any newly discovered populations would be protected.
Ferris' goldfields (*Lasthenia ferrisiae*)	• Low potential for impacts near the Byron Airport and Discovery Bay, some loss of alkaline wetlands in this area that could provide suitable habitat or support populations	• Alkaline wetland habitats could expected to receive significant benefits from reduction in overgrazing and trampling, or initiation of grazing where vernal pools choked by weeds • Restoration of native hydrology could benefit populations where areas have been ditch-drained	Beneficial effect	More likely to benefit from preserve acquisition and management than to be impacted by development and preserve improvements.
Little mouse tail (*Myosurus minimus* ssp. *apus*)	• Moderate potential for impacts or population loss within alkaline vernal pools and wetlands near Deer Valley, Briones Valley, and Marsh Creek Reservoir, and near the Byron Airport	• Wetland habitats could expected to receive significant benefits from reduction in overgrazing and trampling, or initiation of grazing where vernal pools choked by weeds • Restoration of native hydrology could benefit populations where areas have been ditch-drained	Neutral or beneficial effect	Location records indicate the species is widespread in eastern portion of inventory area, and is somewhat more likely to benefit from preserve acquisition and management than to be impacted by development and preserve improvements. The expected benefits to preserved populations

SPECIES	POTENTIAL ADVERSE EFFECTS	BENEFICIAL MEASURES[1]	NET EFFECT[2]	RATIONALE
				and habitat enhancement from the restoration and focused management of alkaline wetlands are expected to at least offset potential adverse impacts that could occur if one or more unknown populations were lost due to implementation of the Plan.
Cotula navarretia (*Navarretia cotulifolia*)	• Moderate potential for impacts or population loss within mesic clayey grasslands near Deer Valley, Briones Valley, and Marsh Creek Reservoir, and near the Byron Airport	• Mesic clayey grassland habitats could receive significant benefits from reduction in overgrazing, soil disturbance, and trampling, or initiation of grazing where choked by weeds and non-native grasses • Restoration of native hydrology could benefit populations where areas have been ditch-drained	Neutral or beneficial effect	Location records indicate the species is widespread in eastern portion of inventory area, and is somewhat more likely to benefit from preserve acquisition and management than to be impacted by development and preserve improvements.
Shining navarretia (*Navarretia nigelliformis* ssp. *radians*)	• Moderate potential for impacts or population loss within mesic clayey grasslands near Black Diamond, Deer Valley, Briones Valley, and Marsh Creek Reservoir, and near the Byron Airport	• Mesic clayey grassland and woodland habitats could receive significant benefits from reduction in overgrazing, soil disturbance, and trampling, or initiation of grazing where choked by weeds and non-native grasses	Neutral or beneficial effect	Two of three known populations in the county are already protected; the third population occurs on private property that is part of a priority acquisition zone (2f); additional, unknown populations may be impacted, but any impacts would be offset by preservation and enhancement measures.
Lobb's aquatic buttercup (*Ranunculus lobbii*)	• Very low potential for impacts to wetland habitats supporting populations due for species being centered on Mt. Diablo • Low risk of changes in hydrology from wetland construction	• Wetland habitats could expected to receive significant benefits from reduction in overgrazing and trampling, or initiation of grazing where vernal pools choked by weeds	Neutral or beneficial effect	Species may not be affected by Plan activities, as may only occur within Mt. Diablo State Park. However, much more likely to benefit from preserve acquisition and management than to be impacted by development and preserve improvements.
Slender-leaved	• Very low potential for impacts	• Wetland habitats could	Neutral or	Species may not be affected by

SPECIES	POTENTIAL ADVERSE EFFECTS	BENEFICIAL MEASURES[1]	NET EFFECT[2]	RATIONALE
pondweed (*Stuckenia filiformis* ssp. *alpina*)	to wetland habitats supporting populations due for species being centered on Mt. Diablo • Low risk of changes in hydrology from wetland construction	expected to receive significant benefits from reduction in overgrazing and trampling, or initiation of grazing where wetlands choked by weeds	beneficial effect	Plan activities, as may only occur within Mt. Diablo State Park. However, much more likely to benefit from preserve acquisition and management than to be impacted by development and preserve improvements.
Caper-fruited tropidocarpum (*Tropidocarpum capparideum*)	• None	• Potential preservation of unknown populations	Neutral or beneficial effect	No take is allowed for this species under the Plan, and any newly discovered populations would be protected.
Reptiles and Amphibians				
California horned lizard (*Phyrnosoma coranatum frontale*)	• Loss of up to 4152 ac grasslands, 115 ac alkaline grasslands, and 2 ac chaparral, some of which is underlain by sandy or gravelly soils and could provide suitable habitat or is located near known records	• Prescribed burns in chaparral and grassland expected to open up and improve habitat suitability • Cessation of poison baiting and trapping expected to lead to increase in ground squirrel burrows used by species	Beneficial effect	Number of individuals directly impacted by habitat loss likely to be smaller than number of individuals that will benefit from preserve enhancements.
San Joaquin whipsnake (*Masticophis flagellum ruddocki*)	• Loss of up to 4152 ac grasslands and 115 ac alkaline grasslands, all of which could provide suitable habitat for the species	• Prescribed burns in chaparral and grassland expected to open up and improve habitat suitability • Cessation of poison baiting and trapping expected to lead to increase in ground squirrel burrows used by species	Beneficial effect	Number of individuals directly impacted by habitat loss likely to be smaller than number of individuals that will benefit from preserve enhancements.
Western spadefoot (*Spea hammondii*)	• Loss of up to 4152 ac of annual grasslands, 115 ac alkaline grasslands, 56 ac of seasonal wetlands, and 31 ac of alkali wetlands, much of which would not provide suitable sandy or gravelly habitat for the species	• Weed control and vegetation management expected to benefit species • Wetland restoration and/or creation, if it occurs in appropriate soil types, could increase suitable habitat	Neutral or beneficial effect	Species may not be affected by Plan activities, as it may not be present within the inventory area. If present, number of individuals directly impacted by habitat loss is likely to be none or at least smaller than number of individuals that will benefit from preserve enhancements.

SPECIES	POTENTIAL ADVERSE EFFECTS	BENEFICIAL MEASURES[1]	NET EFFECT[2]	RATIONALE
Birds				
White-tailed Kite (*Elanus leucurus*)	• Loss of up to 4152 ac of annual grasslands, 115 ac alkaline grasslands, 3545 ac of cropland, 1466 ac of pasture, 73 ac of oak woodland, and 165 ac of oak savanna which provides breeding and foraging habitat for the species	• Measures to increase rodent prey base (i.e., cessation of trapping, grassland enhancement) expected to allow increased density of kites in preserves • Savanna restoration likely to increase number of suitable nesting sites • Acquisitions targets to maintain and increase habitat connectivity	Less than significant adverse effect	Increase in density of kites within preserves will help to offset the impact to populations occurring from habitat losses. A net decline in habitat and populations may occur, but the preservation and enhancement of habitat in preserves will reduce this impact to less-than-significant levels.
Northern Harrier (*Circus cyaneus*)	• Loss of up to 4152 ac of annual grasslands, 115 ac of alkaline grasslands, 3545 ac of cropland, 1466 ac of pasture, 56 ac of seasonal wetlands, 74 ac of perennial wetlands, and 31 ac of alkali wetlands which provides breeding and nonbreeding habitat for the species	• Measures to increase rodent prey base (i.e., cessation of trapping, grassland enhancement) expected to allow increased density of harriers in preserves • Wetland creation could provide additional suitable breeding habitat	Neutral or less than significant adverse effect	Species is expected to be less prevalent in UDAs than kites (see above). Increase in density of breeding harriers within preserves could potentially offset impact occurring from habitat losses, and any net adverse effect would not substantially affect regional populations due to the low numbers of individuals/pairs affected.
Peregrine Falcon (*Falco peregrinus*)	• Loss of up to 4152 ac of annual grasslands, 115 ac of alkaline grasslands, 3545 ac of cropland, 1466 ac of pasture, 56 ac of seasonal wetlands, 74 ac of perennial wetlands, and 31 ac of alkali wetlands which provides foraging habitat for the species	• Surveys may identify known nesting locations, which may then be preserved	Neutral or beneficial effect	No take is allowed for this species under the Plan, and there is a low probability that nesting habitat will be impacted. Any newly discovered nesting sites may be protected.
Long-eared Owl (*Asio otus*)	• Loss of up to 73 ac of oak woodland and 35 ac of riparian habitats, much of which would not provide suitable habitat for species, nor would be expected	• Measures to increase rodent prey base (i.e., cessation of trapping, grassland enhancement) could benefit owls	Beneficial effect	Species is very uncommon, and not known to breed in UDA areas. Therefore Plan impacts are not expected to have negative population effects. More likely to

SPECIES	POTENTIAL ADVERSE EFFECTS	BENEFICIAL MEASURES[1]	NET EFFECT[2]	RATIONALE
	to affect breeding pairs	• Riparian restoration measures such as removal of non-natives and establishment of continuous canopies could increase or improve nesting habitat in preserves		benefit from preserve acquisition and management than to be impacted by development.
Short-eared Owl (*Asio flammeus*)	• Loss of up to 4152 ac of annual grasslands, 115 ac of alkaline grasslands, 3545 ac of cropland, 1466 ac of pasture, 56 ac of seasonal wetlands, 74 ac of perennial wetlands, and 31 ac of alkali wetlands, which has a low potential of supporting breeding pairs based on known location records	• Measures to increase rodent prey base (i.e., cessation of trapping, grassland enhancement) could benefit owls • Wetland creation could provide additional suitable habitat	Neutral effect	Species is very uncommon within the inventory area. Potential impacts expected to be fully offset by beneficial enhancement measures on preserves, but in general, Plan effects not likely to provide either a substantial benefit or adverse effect.
Loggerhead Shrike (*Lanius ludovicianus*)	• Loss of up to 4152 ac of annual grasslands, 3545 ac of cropland, 1466 ac of pasture, 165 ac of oak savanna, and 2 ac of chaparral which could provide suitable habitat	• Measures to increase rodent prey base (i.e., cessation of trapping, grassland enhancement) could benefit shrikes • Installation of artificial burrowing owl perches • Prescribed burns in chaparral and grassland expected to open up and improve habitat suitability	Less than significant adverse effect	Increase in density of shrikes within preserves will help to offset the impact to populations occurring from habitat losses. A net decline in habitat and populations may occur, but the preservation and enhancement of habitat in preserves will reduce this impact to less-than-significant levels.
Yellow Warbler (*Dendroica petechia*)	• Loss of up to 35 ac of riparian habitat	• Riparian restoration measures such as removal of non-natives, maintenance of riparian buffers in urban areas, and establishment of continuous canopies could increase or improve nesting habitat in preserves	Beneficial effect	Species not currently known to breed in inventory area, but riparian restoration could encourage individuals to nest there. Few non-breeding individuals expected to be negatively affected.
Yellow-breasted Chat (*Ictera virens*)	• Loss of up to 35 ac of riparian habitat	• Riparian restoration measures such as removal of non-natives,	Neutral or beneficial effect	Species not currently known to breed in inventory area and not

SPECIES	POTENTIAL ADVERSE EFFECTS	BENEFICIAL MEASURES[1]	NET EFFECT[2]	RATIONALE
		maintenance of riparian buffers in urban areas, and establishment of continuous canopies could increase or improve nesting habitat in preserves		expected to occur in impact areas given their urban character. Riparian restoration could encourage individuals to nest there. Very few, if any non-breeding individuals expected to be negatively affected.
Grasshopper Sparrow (*Ammodramus savannarum*)	• Loss of up to to 4152 ac of annual grasslands, 115 ac of alkaline grasslands, 3545 ac of cropland, and 1466 ac of pastures suitable for foraging sparrows (species not known to breed in inventory area)	• Grassland enhancement measures such as weed control, burns, and seeding with natives will increase habitat suitability	Beneficial effect	Species not currently known to breed in inventory area. Grassland enhancement could improve habitat to encourage individuals to nest there. Non-breeding migrants are uncommon and are not expected to be negatively affected.
Mammals				
American badger (*Taxidea taxus*)	• Loss of up to 4152 ac of annual grasslands, 115 ac of alkaline grasslands, and 165 ac of oak savanna, some of which has been known previously to support badgers	• Measures to increase rodent prey base (i.e., cessation of trapping, grassland enhancement) and and increase in burrows will benefit badgers • Acquisition, enhancement, and protection of lands such that contiguous movement corridors are maintained	Beneficial effect	Individuals and habitats are more likely to benefit from preserve acquisition and management than to be impacted by development.
Ringtail (*Bassariscus astutus*)	• Loss of up to 73 ac of oak woodland and 35 ac of riparian habitats potentially suitable for ringtails	• Riparian restoration measures such as establishment of continuous canopies could improve ringtail habitat in preserves	Beneficial effect	No take is allowed for this species under the Plan, and there is a low probability that occupied habitat will be impacted. Habitat preservation will far outweigh any potential habitat impacts.
San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*)	• Loss of up to 73 ac of oak woodland and 35 ac of riparian habitats potentially suitable for woodrats	• Riparian restoration measures such as removal of non-natives and establishment of continuous canopies could improve woodrat habitat in preserves	Beneficial effect	Individuals and habitats are more likely to benefit from preserve acquisition and management, particularly with regards to riparian restoration efforts, than to be impacted by development.

SPECIES	POTENTIAL ADVERSE EFFECTS	BENEFICIAL MEASURES[1]	NET EFFECT[2]	RATIONALE
				Few individuals are expected to be affected compared to the number of total woodrats in the inventory area.
Pallid bat (*Antrozous pallidus*)	• Loss of up to 4152 ac of annual grasslands, 3545 ac of cropland, 73 ac of oak woodland, 165 ac of oak savanna and 35 ac of riparian habitats potentially suitable for roosting, but certainly suitable for foraging pallid bats	• Riparian restoration measures such as removal of non-natives and establishment of continuous canopies could improve bat roosting habitat in preserves • Savanna restoration, including planting of oaks, could increase suitable habitat for pallid bats	Neutral effect	Impacts resulting from development of roost sites and foraging habitat will likely be offset by improvements to riparian and savanna habitats within the preserves.
Western mastiff bat (*Eumops perotis*)	• No likely impacts to breeding habitats, as species is only expected to roost in high cliffs outside the UDA areas • Some foraging habitat may be lost	• Preserve enhancements not likely to benefit species' roosting habitat • Prey base may increase in foraging habitat due to preserve enhancements such as grassland burns, seeding, etc.	Neutral effect	All potential impacts minor and likely offset by preserve enhancements.
Western red bat (*Lasiurus blossevillii*)	• Loss of up to 35 ac of riparian habitats, much of which is not expected to support the mature cottonwood stands required by this species for breeding	• Riparian restoration measures such as removal of non-natives and establishment of continuous canopies could improve bat roosting habitat in preserves	Neutral or beneficial effect	Impacts to breeding individuals unlikely, and impacts to foraging habitat is minor. These impacts would be offset by enhancement and restoration of riparian habitats within preserves.

[1] Preservation of suitable habitat and species' populations incidental to preservation of habitat for Plan-covered species is a beneficial measure applicable to all these CEQA species.

[2] All effects considered beneficial, neutral, or less than significant adverse effects are considered less than significant under CEQA. Therefore, for all species evaluated in this report except Lime Ridge navarretia and Lime Ridge eriastrum, cumulative impacts of the Plan are expected to be less than significant.

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LIST OF TERMS USED IN THIS ANALYSIS

TERM OR ABBREVIATION	DEFINITION
Acquisition Analysis Zones (AA Zones)	Privately owned lands defined by the Plan that are under analysis for acquisition. These areas are being considered for acquisition as part of the Plan Preserve System, but in some cases they may also be included in the Plan UDA and thus be developed in the future. Each AA Zone has specific goals and requirements for when preserves are assembled, and have further been divided into AA Subzones for more detailed analysis.
CEQA Species	Species for which this document analyzes the net effects of the Plan. These species were not included in the Plan as covered or no-take species or otherwise addressed by the Plan, but Plan activities (either development or conservation actions) may affect them, and assessment of impacts to these species under CEQA is necessary for future development projects.
Covered Activities	Activities, including urban development, certain rural infrastructure projects, compensatory habitat creation and restoration, and preserve management activities, that will receive coverage for incidental take of species covered under the Plan.
Covered Species	All special-status species for which take approval has been granted by the USFWS and CDFW in the Plan.
Currently Protected Lands	Lands within the Plan area that are currently protected from development. These include lands owned and maintained by municipalities, East Bay Regional Parks, public watershed such as that surrounding Los Vaqueros Reservoir, and State Park lands on Mt. Diablo. The Plan's Preserve System is intended to enhance and build open space corridors between these lands. Some Plan-based restoration actions could take place in currently protected lands.
Direct Impacts	Effects of an activity that occur at the same time and place as activity implementation, such as removal of habitat from ground disturbance.
EIS/EIR	The 2006 Environmental Impact Statement/Environmental Impact Report disclosing general effects of Plan implementation under CEQA and NEPA.
Indirect Impacts	Effects of an activity that occur either later in time or at a distance from the activity location but are reasonably foreseeable, such as loss of aquatic species from upstream effects on water quality.
Initial UDA	The initial Urban Development Area defined by the Plan. The Plan assumes that at least this amount/area of land would be developed through expansion of the participating cities.
Inventory Area	The area discussed and analyzed by the Plan (see Section 1.2.2 of the Plan). This area encompasses areas east of Mt. Diablo (including the eastern flanks of Mt. Diablo) eastwards to the county line. Salt and brackish marshes along the San Joaquin River and the Delta are not included in the Plan area, and these areas will not be affected by Plan implementation. Included in the Inventory Area are currently developed areas, areas which will definitely be developed under the Plan, privately-owned lands that could be developed, unaffected, or acquired for the Plan's Preserve system, and public lands that are not available for acquisition and are considered currently protected lands.
Long-term Impacts	Effects of an activity that last longer than 5 years after the activity ceases. Long-term effects may be the result of ongoing maintenance and operation of a project, or may result in a permanent change in the condition of a resource, in which case they are considered permanent impacts.
Maximum UDA	The maximum Urban Development Area defined by the Plan. If participating cities expand their urban growth boundaries beyond their limits in 2006 when the Plan was approved, the Plan would cover that development up to the geographic limits established by the Maximum UDA.
Permanent Impacts	Effects of an activity that last longer than 5 years after the activity ceases and that

	result in a permanent change in the condition of a resource.
Permittees	Participating entities in the Plan, including Contra Costa County, the Contra Costa County Flood Control and Water Conservation District, the East Bay Regional Park District, and participating incorporated cities (Brentwood, Clayton, Oakley, and Pittsburg).
Plan	The 2006 Eastern Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan.
Rural Infrastructure Projects	Major rural transportation improvement projects located outside the designated UDA that have been specifically approved for coverage under the Plan, such as the Buchanan Bypass, improvements along Marsh Creek Road, and the Byron Airport Expansion.
Short-term Impacts	Impacts that last for a period of approximately 1-5 years starting from the time an activity ceases.
Temporary Impacts	Impacts on vegetation or habitat that do not result in permanent habitat removal.

INTRODUCTION

PURPOSE OF THIS CEQA SPECIES ASSESSMENT

The 2006 East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP or Plan) is intended to preserve and enhance wildlife habitat, protect open space, and provide recreational opportunities in eastern Contra Costa County (Figure 1) while streamlining regulatory compliance for participating entities by avoiding separate permitting for individual projects, including take authorization for state and federally protected species. The Plan analyzes the effects of future development and other activities that could adversely affect the species that were "covered" by the Plan and describes the process by which conservation actions will be taken to benefit these species. As a result of these conservation actions, the Plan will have a net benefit to all covered species.

All activities and projects that seek permit coverage under the Plan will still require approval by local jurisdictions and must satisfy the California Environmental Quality Act (CEQA). Individual projects undergoing CEQA review must analyze project-specific impacts to all biological resources. For covered projects, impacts to covered species and habitat types have already been analyzed in a cumulative context via the Plan. However, certain other special-status species (hereafter "CEQA species") were not included as covered species in the Plan or otherwise addressed by the Plan, yet assessment of impacts to these other species will still be required during CEQA evaluation of individual projects.

The Plan's EIR/EIS (Jones & Stokes 2006) assessed impacts of implementation of the Plan's conservation strategy on these CEQA species. However, it did not (and was not required to) assess impacts of covered urban development and rural infrastructure activities on CEQA species. Thus, the current document supplements the analysis in the Plan's EIR/EIS by providing a programmatic analysis of impacts of all covered activities, including all adverse effects of covered development activities and all effects (which will be overwhelmingly beneficial) of conservation measures, on CEQA species. This document therefore provides a cumulative CEQA effects analysis for CEQA species.

This document is intended to serve as the technical documentation to justify findings in future project-level CEQA documents that a project's compliance with the Plan (including payment of any necessary fees) adequately mitigates project effects for certain CEQA species to less-than-significant levels either because overall effects of Plan activities are expected to be beneficial or neutral, or because any residual adverse effects of Plan activities would be so low as to be less than significant when viewed on a regional (i.e., Plan-wide) scale. For example, a traditional project-specific CEQA analysis may determine that an individual covered project may result in significant impacts to a CEQA species by virtue of the magnitude of the project's impact. That traditional analysis may then identify project-specific mitigation appropriate for reducing the impact to a less-than-significant level. However, with the HCP/NCCP now in effect, that covered project will contribute to the Plan's conservation strategy, and elements of that conservation strategy may result in benefits to the CEQA species in question. If the net impact of all Plan activities, including adverse and beneficial effects of both development and conservation activities, on that CEQA species is less than significant, then by virtue of being a covered

activity itself (and complying with Plan conditions), the individual project's impacts on that species can be determined to be less than significant. Thus, this CEQA Species Assessment Report will facilitate future project-specific CEQA analysis for individual covered projects, and indeed may serve in lieu of any detailed cumulative CEQA analysis for such projects when incorporated by reference into such CEQA analyses. This document includes recommendations for citation by such CEQA analyses (see *Recommended Use and Citation of This Document*). Note, however, that this CEQA Species Assessment Report does not relieve a project proponent of the responsibility of completing a project-specific assessment of biological resources impacts as necessary to comply with CEQA.

This document also identifies two species for which the Plan may not adequately mitigate impacts to less-than-significant levels and suggests an approach to mitigating impacts of covered activities on these species so that overall impacts will be less than significant.

PLAN OVERVIEW

The Plan provides a framework to streamline environmental review and permitting processes for impacts to covered special-status species in eastern Contra Costa County (County). Contra Costa County, the Contra Costa County Flood Control and Water Conservation District, the East Bay Regional Park District, and participating cities (Brentwood, Clayton, Oakley, and Pittsburg) will use the Plan for projects and activities that require coverage for incidental take of these species. These entities (hereafter "Permittees") have obtained a 30-year take permit from the U.S. Fish and Wildlife Service (USFWS) for species listed under the Federal Endangered Species Act (FESA) and from the California Department of Fish and Wildlife (CDFW) for species under the California Endangered Species Act (CESA), California Fish and Game Code, and Natural Community Conservation Planning Act (NCCPA). The Permittees will then extend their take authorization to activities, such as development, that meet the conditions of the Plan. By avoiding separate permitting for individual projects, this Plan streamlines the incidental take authorization process while creating a comprehensive, cohesive ecosystem conservation Plan, as well as mitigation and conservation strategies that will contribute to the recovery of covered species in the inventory area (see Section 3.3.7 of the Plan for an evaluation of covered species and Section 1.2.2 of the Plan for a description of the inventory area).

Activities and projects in the Plan area that require incidental take authorization through the Plan and require avoidance, minimization, and mitigation measures are considered covered activities. All activities and projects that seek coverage under the Plan will require approval by local jurisdictions and must be consistent with the biological goals of the Plan and the take coverage is that available under the permits. There are three categories for covered activities: 1) urban growth within defined urban growth areas (see Section 2.3.1 in the Plan), 2) activities and projects within designated Plan preserves, and 3) rural infrastructure projects that are outside the urban development area (UDA) (see Figure 1).

Urban Development Area activities. These activities include the construction, maintenance, and use of the following facilities:

- Residential, commercial, and industrial facilities
- Public service facilities (police stations, fire stations, hospitals, schools)

- Recreational facilities (parks, golf courses)
- Transportation facilities (sidewalks, roads, bridges, highways)
- Public and private utilities (transmission lines, gas lines)
- Water supply facilities (treatment plants, pipelines)
- Flood control facilities (dams, detention ponds)

See Section 2.3.1 in the Plan for further details on activities within the UDA.

Activities within the Plan preserves. Plan activities that occur within preserves, including habitat creation and enhancement activities, may result in take of some individuals of covered species, although the effects are generally expected to be temporary and minimal. These activities include:

- Management activities (vegetation management, fire management, transportation through preserves, relocation of covered species from impact sites, demolition or removal of structures or roads, and control of introduced/invasive species)
- Recreation (public use of trails and parking lots)
- Habitat enhancement, restoration, and creation (e.g., wetland creation)
- Surveys, research, and monitoring by qualified biologists
- Emergency activities (firefighting, evacuations, hazardous material remediation, repairs)
- Construction and maintenance of utilities

See Section 2.3.4 in the Plan for details on Plan preserve activities.

Rural infrastructure projects. Rural infrastructure projects within the inventory area will support urban growth within the UDA. These include the following general categories:

- Transportation projects (road widening, road building or extensions, Byron Airport expansion, BART, road safety improvements, bicycle trails)
- Flood Protection Projects (detention basin and reservoir construction or expansion, channel improvement or widening)
- Utility construction (public and private utility infrastructure)

See Section 2.3.2 in the Plan for further details on covered rural infrastructure projects.

PLAN IMPACTS AND CONSERVATION MEASURES

To determine the net effects of the Plan on CEQA species, we assessed potential adverse effects of covered activities on CEQA species' suitable habitat and areas of known or potential occurrence of CEQA species. Such effects included adverse effects of urban development and rural infrastructure activities, as well as the effects of conservation measures. Effects of conservation measures will be overwhelmingly beneficial, but some conservation measures (such as prescribed burns or grazing) may be beneficial for some species but adverse for others. Although impacts to CEQA species were not assessed in the Plan, many of the covered species co-occur with, or utilize similar habitats to, CEQA species within eastern Contra Costa County,

and therefore act as associate or indicator species. To guide our analysis, we used the previously established impacts to covered species and to certain habitats, as described in the Plan, to aid our determinations regarding the impacts and benefits of Plan on CEQA species. The following sections describe the impacts and conservation measures of the Plan in sufficient detail to lay the groundwork for our assessment of the net effects of the Plan on CEQA species.

Impacts. The Plan determines direct impacts on land cover types under two scenarios, the initial UDA scenario and the maximum UDA scenario. The approximate extent of impacts for both of these areas is shown in Figure 1. The initial UDA consists of most of the area within the current County urban limit line (ULL) and city limits. Assuming complete build-out within this area, covered activities would result in a total impact to 8,670 acres (ac) of land cover types in the inventory area that are not currently developed. The maximum UDA consists of the largest area of urban development that is allowed under the terms of the Plan. This allows for additional areas of development, including areas south of Clayton, surrounding Byron, near the Byron Airport, and south of Antioch near Sand Creek (Figure 1). The maximum UDA would result in a total of 11,853 ac of impacts to land cover types that are currently not developed. It is assumed that the extent of actual build-out under the Plan will fall somewhere between the acreages predicted by these two scenarios.

Under either the initial or maximum UDA scenario, the Plan also covers a number of rural infrastructure projects specifically identified in the Plan, which are expected to result in an additional 1126 ac of impacts, totaling approximately 9,796 ac of total impacts for the initial UDA or 13,029[1] ac for the maximum UDA. The expected impacts to, and preservation or restoration requirements for, terrestrial land cover types are summarized in Table 1. A similar impacts and mitigation summary for riparian, wetland, and aquatic land cover types appears in Table 2. While Tables 1 and 2 include all expected impacts from urban expansion and rural infrastructure development, it should be noted they do not include any impacts expected to occur as a result of facilities or trail construction within the Plan Preserve System (see Conservation Measures, below). The extent of such preserve-related impacts is expected to be minor.

[1] As reported in Table 4-3 of the Plan (2006).

Table 1. Summary of Impacts to and Mitigation Requirements for Terrestrial Land Cover Types under the Initial and Maximum UDA Scenarios.[1]

LAND COVER TYPE (TOTAL ACREAGE IN INVENTORY AREA)	INITIAL UDA SCENARIO			MAXIMUM UDA SCENARIO		
	Total Acreage Impacted (% of Total)	Minimum Preserved Acreage (% of total remaining unprotected)	Minimum Restoration or Creation Acreage Requirement (in addition to preservation)	Total Acreage Impacted (% of Total)	Minimum Preserved Acreage (% of total remaining unprotected)	Minimum Restoration or Creation Acreage Requirement (in addition to preservation)
Annual Grassland (58,840)	2533 (7)	13,000 (40)	N/A	4152 (12)	16,500 (54)	N/A
Alkali Grassland (1997)	115 (7)	900 (60)	N/A	115 (7)	1250 (83)	N/A
Rock Outcrop (119)	0	N/A	N/A	0	N/A	N/A
Ruderal (6188)	1271 (22)	N/A	N/A	1311 (23)	N/A	N/A
Oak Savanna (5894)	42 (1)	500 (16)	42 (restoration)	165 (5)	500 (16)	165 (restoration)
Oak Woodland (24,198)	21 (<1)	400 (3)	N/A	73 (1)	400 (3)	N/A
Chaparral/Scrub (3016)	0	550 (70)	N/A	2 (<1)	550 (70)	N/A
Cropland (20,516)	2973 (15)	250 (1)	N/A	3545 (17)	400 (2)	N/A
Pasture (4491)	1077 (30)	N/A	N/A	1466 (41)	N/A	N/A
Orchard (3995)	537 (13)	N/A	N/A	647 (16)	N/A	N/A
Vineyard (2031)	657 (37)	N/A	N/A	912 (51)	N/A	N/A
Non-native Woodland (51)	26 (60)	N/A	N/A	26 (60)	N/A	N/A
Recreation Impacts (trails, staging, camp sites) (N/A)	275	N/A	N/A	275	N/A	N/A

[1] Data are from the Plan (2006).

Table 2. Summary of Impacts to and Mitigation Requirements for Riparian, Wetland, and Aquatic Land Cover Types under the Initial and Maximum UDA Scenarios.[1]

LAND COVER TYPE (TOTAL ACREAGE IN INVENTORY AREA)	INITIAL UDA SCENARIO			MAXIMUM UDA SCENARIO		
	Total Acreage Impacted	**Minimum Preserved Acreage (% of available in Acquisition Analysis Zones)**	**Minimum Restoration or Creation Requirement (in addition to preservation)**	**Total Acreage Impacted**	**Minimum Preserved Acreage (% of available in Acquisition Analysis Zones)**	**Minimum Restoration or Creation Requirement (in addition to preservation)**
Riparian (448)	30 (8)	60 (16)	50 (restoration)	35 (10)	70 (19)	55 (restoration)
Perennial Wetlands (362)[2]	74 ac perennial (20)	74 ac (32)	84	75 ac perennial (21)	75 ac (32%)	85
Seasonal Wetlands (242)[2]	43 (18)	129 (75)	104 (restoration)	56 (23)	168 (98%) impacts capped if not enough wetlands to meet required ratio	163 (restoration)
Alkali Wetland (380)	28 (14)	84 (50%)	61 (restoration)	31 (16)	93 (55)	67 (restoration)
Aquatic (1823)	12 (6)	12 (10%)	6 (created ponds)	12 (6)	12 (10)	6 (created ponds)
Pond (165)	7 (6)	14 (18)	21 (creation, will fulfill some loss of open waters under slough/channel category)	8 (7)	16 (20)	22 (creation, will fulfill some loss of open waters under slough/channel category)
Slough/Channel (213)	72 (66)	36 (26%)	72 (restoration, riparian restoration can also fill this category)	72 (66)	36 (26%)	72 (restoration, riparian restoration can also fill this category)
Perennial and Intermittent Streams (409 miles)	0.3 perennial and 0.3 intermittent (0)	0.6 perennial (3) and 0.3 intermittent (0)	0.6 (restoration preferred over creation)	0.4 perennial and 0.4 intermittent (0)	0.8 perennial (4) and 0.4 intermittent (0)	0.8 (restoration preferred over creation)
Ephemeral Creeks (unknown miles)	4.0 (N/A)	4 (N/A)	4 (restoration preferred over creation)	5 (N/A)	5 (N/A)	5 (restoration preferred over creation)

[1] Data are from the Plan (2006).

[2] These are estimates of the perennial and seasonal wetlands in the inventory area. A high proportion of mapped wetlands were "unidentified" because hydrology could not be determined from the aerial signature. However, the Plan's assumptions were that approximately 75% of these were perennial and 25% were seasonal, and this was how the acreages were added to categories of known perennial and seasonal wetlands for the purposes of this summary table. These are likely over-estimates of the wetland impacts, because whole complexes were mapped, rather than observing USACE-jurisdictional boundaries, which are less inclusive.

Conservation measures. The Plan presents a variety of conservation measures, which are defined as "specific actions taken to avoid or minimize take, compensate for loss of habitat, or provide for the conservation of covered species" (Plan 2006, page 5-1). These measures can be divided into three general components based on spatial scale: landscape, natural community, and species-level conservation measures.

Landscape-level conservation measures consist of preserve assembly and preserve management, which will be established through the acquisition of properties (through title, easement, mitigation banking, or land dedication) that contain vegetation communities supporting habitat suitable for covered species, or are suitable for creation or restoration of such habitat. One of the goals of the Plan is to preserve mitigation lands for projects across eastern Contra Costa County in a well-planned fashion that targets high-quality habitats, presents an integrated approach to watershed management, and provides buffers against urban impacts for covered species. This systematic approach to mitigation-based preserves is expected to be more effective than the piecemeal conservation of mitigation lands for individual projects that would be expected to occur without a Plan. Under the Plan, land acquisition will be focused in areas that will provide the greatest benefit by connecting existing protected lands and creating larger, more effective preserves. These preserves will establish the Plan Preserve System. Preserve management will be implemented to maintain existing habitat for covered species, create and restore habitat, and control exotic species. The Plan calls for the preservation of approximately 23,800-30,300 ac of preserves, depending on the extent of actual impacts (see Section 5.3.1 of the Plan for more details on landscape-level conservation measures).

Natural community conservation measures include the enhancement of existing land cover types, as well as restoration or creation of land cover types that have been degraded or lost as a result of previous activities. These measures will focus on parameters such as vegetation and grazing management, enhancement of ecosystem functions and values, invasive species control, and enhancement of prey abundance. Differing natural community types, such as grasslands, oak woodlands, or riparian woodland/scrub, for example, have differing goals for enhancement and preservation related to the disparate ecosystem functions provided by each community type. Habitat enhancements, where existing degraded communities are improved through weed control, burns, or revegetation efforts, will occur strictly within Plan preserves. Restoration and creation activities will also only occur in preserves, unless suitable sites are not found, in which case they will be conducted on currently protected lands within the inventory area that are managed with similar principles as the Plan Preserve System.

It is expected that approximately 424-586 ac of wetlands, aquatic habitat, and riparian woodlands will be created or restored within Plan preserves (or within other currently protected lands within the inventory area) as compensatory mitigation for habitat loss occurring due to covered activities. Restoration may entail such activities as planting appropriate native vegetation, restoring hydrology to previously dewatered areas, installing check dams to arrest channel downcutting, and others. Loss of aquatic habitat will be compensated through the creation of 28 ac of ponds. Additionally, 42-165 ac of oak savanna will be restored in areas with low canopy cover or recruitment through sapling planting, and other adaptive management measures such as construction of grazing exclosures. All natural communities in the Plan preserves are expected to be enhanced through changes in management designed to benefit covered species and their

habitats. These include reducing or modulating livestock grazing pressure in grasslands, alkali grasslands, and oak savanna, fencing of wetlands to prevent overuse by livestock, targeted invasive plant removal and control, prescribed burns, and cessation of rodent control activities. Section 5.3.2 of the Plan provides details on natural community conservation measures.

For some covered species, landscape- and community-level conservation measures will be adequate to maintain and increase population levels. For covered species that may require species-specific management activities to assist in their recovery, species-level conservation measures will be implemented to supplement the landscape- and community-level conservation measures. These measures are intended to provide for particular needs for different species not necessarily ensured by landscape- and community-level preserve goals, such as providing hibernacula for bats or retiring wind turbines within preserves to protect golden eagles (*Aquila chrysaetos*). Further detail on species-specific conservation measures can be found in Section 5.3.3 of the Plan.

The use of Best Management Practices (BMPs) during build-out of covered activities and projects is required under the Plan. These BMPs, which will be specified in greater detail for individual projects, are intended to minimize or prevent construction-related impacts to water quality, erosion, siltation, and pollution. Generally, these will include use of silt fencing, fiber rolls, and other erosion-control measures, implementation of a fuel-spill prevention program, conducting work in wetlands and riparian areas during the dry season when feasible, and others. BMPs apply to all covered activities, including restoration and management activities implemented by the East Contra Costa County Habitat Conservancy.

Prospective acquisition of lands for the Plan Preserve System has been planned through the creation of several Acquisition Analysis (AA) Zones (Figure 2). These zones, which are further split into subzones, delimit areas of similar biological resources where attempts to acquire lands should be focused so that the Preserve System will conserve high quality remaining habitat in such a way that best benefits covered species. Differing AA subzones have differing acquisition requirements that must be fulfilled under the terms of the Plan. These requirements relate to landscape-level, natural community-level, and species-level conservation measures. For example, these requirements may dictate certain areas that need to be preserved in order to establish and preserve movement corridors and connection with other protected lands (landscape-level); certain acquisition requirements for specific habitats may be outlined so that a certain number of ponds in an AA subzone are preserved (natural community-level); or requirements may dictate that acquired parcels include known populations of plants (species-level). Requirements for land acquisition in Zones 4, 5, and 6 differ relative to the amount of urban development covered under the Plan (initial vs. maximum UDA).

These requirements are separate from acquisition priority, which takes into account habitat quality in each subzone as well as expected property values and future availability for purchase or easement. Thus, high quality habitats in areas likely to experience growth pressure and/or rising property values in Zone 2 are indicated to be higher priority areas, meaning that the East Contra Costa County Habitat Conservancy (the Implementing Entity for the Plan) should pursue purchase or easement creation in these areas in preference to areas within subzones indicated as being moderate or lower priority. The priority rating for acquisition for some subzones differs

between the initial vs. maximum UDA scenarios (Figure 2). It is important to note that even if a zone is listed as moderate or lower priority under either development scenario, specific acquisition requirements set forth in the Plan must still be met by the end of the 30-year Plan term. These subzone-specific requirements are summarized in Tables 3-5.

Table 3. Acquisition Requirements for AA Zones 1, 2, and 3.[1]

SUBZONE(S)	ACQUISITION REQUIREMENTS	NOTES
1a	85 ac annual grassland preserved	
1b and 1c	At least 1450 ac of annual grassland	Creates a connection from Black Diamond Mines Regional Preserve to Detachment Concord
1d	At least 25% will be acquired	Acquisition will focus on the southern half of the subzone, providing better linkage between Black Diamond Mines Regional Preserve and Detachment Concord.
1e	No requirements	If land is acquired to meet other requirements (e.g. overall grassland requirements), it will be contiguous with other acquired lands
2a	At least 60% will be acquired; Known population of Mt. Diablo manzanita	Acquisitions will focus on northwestern and southeastern corners to increase connections between Black Diamond Mines Regional Preserve, Detachment Concord, and Clayton Ranch
2c	At least 7 of 13 ponds	Acquisitions will provide habitat for pond-associated species
2a, 2b, 2c	At least 90% of the remaining chaparral	Acquisitions will protect modeled core habitat for Alameda whipsnake and link whipsnake habitat between Mt. Diablo State Park and Black Diamond Mines Regional Preserve; A 0.5-mile connection between Black Diamond Mines Regional Preserve and Clayton Ranch will be acquired.
2d	The known occurrence of round-leaved filaree	
2f	Land acquired for San Joaquin kit fox movement will contain at least two known occurrences of big tarplant and the known occurrence of round-leaved filaree in Deer Valley	If possible, acquisitions will include sites known to support alkali soils in Deer Valley
2h	The two known occurrences of big tarplant and the known occurrences of Mt. Diablo manzanita and Brewer's dwarf flax	If pre-acquisition surveys indicate modeled suitable habitat for silvery legless lizard to be suitable, those sites will be given a higher priority
3a	At least 90% (of 177 ac) of modeled habitat for Alameda whipsnake	Protected habitat is largest block of chaparral/scrub outside existing protected lands; acquired land will increase width of linkage with other large chaparral patches in Mt. Diablo State Park
3b and 3c	No requirements	Land acquired in these zones can count toward land cover acquisition requirements

[1] Land acquisition requirements for Zones 1, 2, and 3 will be met regardless of the actual level of urban development (i.e. initial or maximum UDA).

Table 4. Acquisition requirements for AA Zone 4.[1]

SUBZONE (SUBZONE SIZE IN ACRES)	MINIMUM ACQUISITION ACREAGE WITH INITIAL UDA (%)	MINIMUM ACQUISITION ACREAGE WITH MAXIMUM UDA (%)	ADDITIONAL ACQUISITION REQUIREMENTS
4a (2266)	1700 (75%); 90% (of 222 ac) of core Alameda whipsnake habitat within 4a and 4h	1700 (75%); 90% (of 222 ac) of core Alameda whipsnake habitat within 4a and 4h	Known occurrence of Diablo helianthella and Brewer's dwarf flax
4b (1731)	0 (0%)	0 (0%)	Known occurrence of Mt. Diablo fairy lantern
4c (4160)	Acquisition requirements for 4c, 4e, 4f, and 4g are grouped	Acquisition requirements for 4c, 4e, 4f, and 4g are grouped	"Focus" on riparian woodland/scrub along Marsh Creek
4d (1588)	953 (60%)	953 (60%)	
4e (740)	Acquisition requirements for 4c, 4e, 4f, and 4g are grouped	Acquisition requirements for 4c, 4e, 4f, and 4g are grouped	
4f (2138)	Acquisition requirements for 4c, 4e, 4f, and 4g are grouped	Acquisition requirements for 4c, 4e, 4f, and 4g are grouped	Known occurrences of Brewer's dwarf flax
4g (659)	Acquisition requirements for 4c, 4e, 4f, and 4g are grouped	Acquisition requirements for 4c, 4e, 4f, and 4g are grouped	
4h (1055)	791 (75%); 90% (of 222 ac) of core Alameda whipsnake habitat within 4a and 4h	791 (75%); 90% (of 222 ac) of core Alameda whipsnake habitat within 4a and 4h	Linkage between Morgan Territory Ranch with Morgan Territory Regional Preserve and Mt. Diablo State Park; core Alameda whipsnake habitat
Totals for 4c, 4e, 4f, 4g (7697)	1400 (18%)	3000 (39%)	
All zones			270 ac of chaparral/scrub (of 435 total ac) will be protected

[1] The only difference between the initial and maximum UDA scenarios in relation to Zone 4 is the amount of acquisition acreage in Subzones 4c, 4e, 4f, and 4g. Acquisition will "focus" along Marsh Creek (4c and 4d) and the Upper Marsh Creek Sub-basin (4a, 4c 4e, 4f, 4g, and 4h). Acquisition in 4d will meet biological objectives for San Joaquin kit fox movement corridors. Acquisitions along Marsh Creek will focus on suitable yellow-legged frog habitat, and will protect California tiger salamander, California red-legged frog, and Alameda whipsnake breeding and dispersal habitat. Only natural land cover types will count toward acquisition requirements (not orchard, pasture, or urban).

Table 5. Subzone Acquisition Requirements and Priorities for AA Zones 5[1] and 6[2].

SUBZONE	INITIAL UDA ACQUISITION REQUIREMENTS OR PRIORITIES	ADDITIONAL REQUIREMENTS OR PRIORITIES UNDER MAXIMUM UDA	NOTES
Zone 5 – General Priorities	Acquire sites with suitable habitat for vernal pool invertebrates within Altamont Hills core area recovery region. Acquire at least 4300 ac annual grassland in 5a and/or 5d and 1000 ac in 5c; acquire 750 ac alkali grassland, and acquire 40 ac of alkali wetland.	Acquire seasonal and alkali wetlands along Alameda County line; Give priority to sites with suitable habitat for vernal pool invertebrates in USFWS recovery units. Acquire at least 7100 ac annual grassland in 5a, 5b, and/or 5d and 1000 ac in 5c; acquire 900 ac alkali grassland; and acquire 40 ac of alkali wetland.	
5a	Acquisitions must connect to public land/open space; protect 2 of the 4 occurrences of brittlescale; Protect at least 2 occurrences of recurved larkspur	All land preserved in 5a and 5b must be connected to other preserve lands within Zone 5, or other existing public lands (e.g. Los Vaqueros); protect all of the known occurrences of brittlescale in 5a and 5d	The Byron Airport may implement an avoidance and preservation program in and around the airport. This would include 113 conserved ac on the property and 170 ac in 5a or 5d.
5b		All land preserved in 5a and 5b must be connected to other preserve lands within Zone 5, or other existing public lands (e.g. Los Vaqueros)	
5c	Acquisitions must connect to public land/open space	Acquire seasonal and alkali wetlands along Alameda County line	If feasible, acquire land suitable for silvery legless lizard (most, or all, is on private quarry land that is not suitable for acquisition)
5d	Protect 2 of the 4 occurrences of brittlescale	Protect all of the known occurrences of brittlescale in 5a and 5d	The Byron Airport may implement an avoidance and preservation program in and around the airport. This would include 113 conserved ac on the property and 170 ac in 5a or 5d.
Zone 6 – General priorities	Fee title or conservation easements of cropland or pasture along Marsh Creek or Kellogg Creek for riparian restoration opportunities; fee title or conservation easements on most alkali grasslands and wetlands; acquisition to support Dutch Slough restoration project. Acquire at least 100 ac of alkali grassland; 20 ac of alkali wetlands, and 250 ac of cropland or pasture among all subzones.	Fee title or conservation easements of cropland or pasture along Marsh Creek or Kellogg Creek for riparian restoration opportunities; fee title or conservation easements on most alkali grasslands and wetlands; acquisition to support Dutch Slough restoration project. Acquire at least 300 ac of alkali grassland; 40 ac of alkali wetlands, and 400 ac of cropland or pasture among all subzones.	
6a	Properties adjacent to Dutch Slough; properties adjacent to Marsh Creek		

SUBZONE	INITIAL UDA ACQUISITION REQUIREMENTS OR PRIORITIES	ADDITIONAL REQUIREMENTS OR PRIORITIES UNDER MAXIMUM UDA	NOTES
6b	Properties adjacent to Kellogg Creek		
6c	Properties adjacent to Kellogg Creek; properties adjacent to Marsh Creek		
6d	Protect at least 2 occurrences of recurved larkspur; at least 20 ac of alkali wetland (occurs mostly in 6d and 6e)		
6e	At least 20 ac of alkali wetland (occurs mostly in 6d and 6e)		
6f	Properties adjacent to Kellogg Creek		

[1] Land acquisition in Zone 5 will focus initially in 5a because it has the largest blocks of alkali grassland and alkali wetland, and to meet conservation goals for San Joaquin kit fox, as well as covered invertebrates and amphibians. The secondary focus will be 5d to improve linkages between Vasco Caves Regional Preserve and surrounding open space for San Joaquin kit fox movement, and in 5c to protect Swainson's hawk foraging habitat and kit fox movement habitat.

[2] Land acquisition in Zone 6 will focus on cropland or pasture along Marsh Creek and Kellogg Creek, most of the alkali grassland and wetlands, and lands adjacent to Dutch Slough restoration project.

IDENTIFICATION OF CEQA SPECIES

CEQA SPECIES SELECTION METHODOLOGY

For the purpose of assessing the cumulative effects of the Plan, we define "CEQA species" as including the following:

- "No-take" plants listed or proposed for listing as threatened or endangered under the FESA.
- Species that are candidates for possible future listing as threatened or endangered under the FESA.
- "No-take" plants listed or proposed for listing by the State of California as threatened or endangered under the CESA.
- Species that meet the definitions of rare or endangered under CEQA.[2]
- Plants listed as rare under the California Native Plant Protection Act.[3]
- Plants with a current California Rare Plant Rank (CRPR) indicating the species is considered rare, threatened, or endangered (i.e., plants with CRPR 1B and 2B).
- Plants with a current CRPR indicating the species is uncommon and/or has a limited distribution, or that the taxon is uncommon and more information is needed to determine its appropriate listing status or resolve taxonomic questions (i.e., plants with CRPR 3 and 4).
- Animals designated by the CDFW as California Species of Special Concern.
- "No-take" animals listed in the California Fish and Game Code as fully protected species (birds at §3511, mammals at §4700, reptiles and amphibians at §5050, and fish at §5515), with the exception of the golden eagle, which is both a no-take and a covered species under the Plan.

The Plan has already assessed the impacts of covered activities on covered species and established a conservation program that will result in a net benefit to those species. Therefore, no additional assessment for these species is necessary. The Plan did not include such an assessment for "no-take" species, instead simply identifying these species and measures to avoid take of them. Therefore, this CEQA species assessment includes all plants and animals that were considered no-take species under the Plan. All other species listed or proposed for listing under the FESA and/or CESA were already considered for inclusion in the Plan as covered or no-take species, but were determined not to occur within the Plan area. As a result, with the exception of the state/federally listed no-take plants, no other state/federally listed species were included in this CEQA species assessment.

Some of these species, particularly CRPR 3 and 4 species, would not reasonably be expected to be considered as candidates for federal or even official state listing within the term covered by the Plan. Because CRPR 3 and 4 species are often fairly widespread, and may be abundant in some areas, these species are often not considered special-status species for purposes of CEQA

[2] State CEQA Guidelines, Section 15380
[3] California Fish and Game Code, Section 1900 *et seq.*

evaluation. In spite of the fact that these species are not federally listed and are not likely to be listed, they can still be considered "endangered" or "rare" (and thus under threat of endangerment) under CEQA. CEQA guidelines (Sec. 15380) indicate that a species not included in any formal FESA or CESA list shall nevertheless be considered to be rare or endangered if the species can be shown to meet certain criteria; namely, when its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease or other factors, or when the species is existing in such small numbers throughout all or a significant portions of its range that it may become endangered as described above if its environment worsens. Thus, impacts on CRPR 3 and 4 species may be significant if they result in the loss of a large proportion of the regional population, the loss of exemplary or unique populations, or a substantial reduction in the species' range. Given the large inventory area size and potential for significant effects related to loss of a large number of the remaining individuals or discrete populations, or range reduction, we have included species on CRPR 3 and 4 as CEQA species if they could potentially be affected by the Plan. Consideration of these species is also consistent with CNPS recommendations that all CRPR plants be fully considered during the preparation of environmental documentation relating to CEQA, and consistent with the definition of special-status species used in the Plan's EIR/EIS (Jones & Stokes 2006).

We also considered whether other species that are not on one of the aforementioned lists should be included in this analysis as CEQA species. For example, given the large size of the Plan area, we considered whether there could potentially be effects on species that are not on one of these lists that would be so great as to substantially affect regional distribution or abundance. However, we determined that species not on these lists are generally widespread and/or abundant enough regionally that covered activities would not be expected to affect them to the point where impacts would be considered significant under CEQA. Although we consulted regional lists of locally rare and/or declining plant species provided by the East Bay Chapter of the CNPS, we did not include plants as CEQA species if they were not included on the state-wide lists. We also did not include as CEQA species those animal species that were Federal Species of Concern, an informal term that the USFWS applies to species that may be declining or in need of conservation, but that were not also California Species of Special Concern.

We identified plant and animal species meeting the above criteria by reviewing existing general plans and other relevant CEQA documentation that analyze impacts to special-status species in the Plan inventory area. We considered all species listed in these documents:

- State Route 4 Bypass Project EIR (1994)
- City of Brentwood General Plan Update EIR (2001)
- Contra Costa General Plan (2002)
- City of Pittsburg General Plan EIR (2004)
- City of Clayton General Plan EIR (2005)
- City of Oakley General Plan EIR (2005)
- Contra Costa General Plan Initial Study/Mitigated Negative Declaration (2005)
- East Contra Costa County HCP/NCCP EIS/EIR (Jones & Stokes 2006)
- Addendum to the EIR for the State Route 4 Bypass Project (2007)
- *Breeding Bird Atlas of Contra Costa County* (Glover 2009)

Additionally, we reviewed and considered species listed in California Natural Diversity Database CNDDB (2014) records for this analysis (Figures 3-5). It should be noted that the CNDDB is a voluntary reporting system, and the absence of CNDDB data from a given area does not indicate absence. As a result, CNDDB data were used primarily to indicate areas of known presence, and to provide a general impression of a species' known distribution.

To better target our analysis, senior wildlife ecologist Steve Rottenborn, Ph.D., senior wildlife ecologist Julie Klingmann, M.S., wildlife ecologist Scott Demers, M.S., and plant ecologist Kelly Hardwicke, Ph.D. conducted a field reconnaissance of the inventory area on 24 July 2008. The purpose of this visit was to examine land cover types and land uses, and to qualitatively assess habitat quality for potential CEQA species in the inventory area. We surveyed representative locations within target conservation and preserve areas from all six AA zones, as well as within urban development areas surrounding participating municipalities. This enabled us to better refine our list of CEQA species and determine which species were likely to be affected by activities covered by the Plan.

We then refined the species list by considering the potential of each species to occur within the inventory area, the most current status of each species as "special-status", and other biological considerations (i.e., recent breeding records for birds that are considered species of special concern by CDFW only when breeding). We further refined the list of considered species by reviewing the topography, soil type, habitat quality, and characteristics of the inventory area that would influence the presence and abundance of potential CEQA species.

For plant species, we also considered specific historical and current location records from CNPS, CNDDB, Calflora, and the Consortium of California Herbaria (CCH 2014) to determine where known populations exist or have existed within the inventory area. We then used this information to determine whether actually occupied or highly suitable habitat, as opposed to merely potentially suitable habitats, would be affected by Plan activities. We thus restricted our analysis to special-status plant species with populations known to occur within or in the general vicinity of the inventory area to avoid being too speculative regarding potential Plan effects on special-status species not known from the region. Therefore, plant CEQA species have a somewhat measurable or predictable likelihood of being affected in some way by Plan activities. Plant species only known to occur within habitats (e.g., coastal salt marsh) or areas (e.g., Mt. Diablo State Park) that will not be affected by covered activities were not included in our final list of CEQA species. Additionally, plants that occurred within the inventory area historically but are presumed extirpated from the area, and that are not likely to be rediscovered due to habitat loss within the inventory area or widespread extirpation, were also excluded from our analysis. A comprehensive list of all plant and animal species we considered that did not meet our criteria as CEQA species are presented in Appendix A.

For the remaining CEQA species, we qualitatively assessed where CEQA species are likely to occur within the inventory area relative to land cover types, the impacts to CEQA species from covered activities, and the benefits to CEQA species that will result from the implementation of conservation measures. We considered the location of existing and historical records of CEQA species to determine where they are known or likely to still be present, but also used this

information, along with information on species' biology relative to existing land cover, elevation, soil types, and occurrences of associate species, to extrapolate where additional suitable habitat or additional, unknown populations may be located in the inventory area. In a few cases, this led to consideration of species not currently known from the inventory area, but that occur in nearby, very similar habitats to those found in the inventory area. For CRPR 4 species, no georeferenced database of records (where each individual population is treated as a record) exists. In this case, we relied on collections accessioned in the CCH and reported records from Calflora (2014). Collection and report data are less robust than standardized records, because location information associated with herbarium specimens and informal reports is not always very specific, which can obscure which and how many separate collections were taken from the same population.

DESCRIPTIONS OF CEQA SPECIES

The CEQA species included in our analysis are presented in Table 6. In total, we considered impacts related to Plan implementation on 41 plant species and 18 animal species.

Table 6. CEQA Species Included in Cumulative Effects Analysis.

COMMON NAME	SCIENTIFIC NAME	STATUS[1]	HABITATS USED
PLANTS			
Large-flowered fiddleneck[2]	*Amsinckia grandiflora*	FE, SE, CRPR 1B.1	Open grassy slopes in cismontane woodland, and valley and foothill grassland habitat, from 902-1804 feet (ft) in elevation.
California androsace	*Androsace* ssp. *elongata*	CRPR 4.2	Dry, grassy slopes in chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland.
Coast rock cress	*Arabis blepharophylla*	CRPR 4.3	Broadleaved upland forest, coastal bluff scrub, and coastal prairie, often associated with rock outcrops. Suitable habitat exists in the foothills of Mt. Diablo and along the coastal ridges south of Pittsburg, especially in rocky areas.
Alkali milk-vetch[2]	*Astragalus tener var. tener*	CRPR 1B.2	Alkaline soils in playas, valley and foothill grasslands underlain by adobe clay, and vernal pool habitats at elevations below 197 ft.
Heartscale	*Atriplex cordulata* var. *cordulata*	CRPR 1B.2	Chenopod scrub, alkaline sinks and wetlands, alkaline areas of valley and foothill grasslands below 1250 ft.
Crownscale	*Atriplex coronata* var. *coronata*	CRPR 4.2	Chenopod scrub, alkaline valley and foothill grassland, and alkaline vernal pools below 1800 ft. This species requires strongly alkaline soils.
Brewer's calandrinia	*Calandrinia breweri*	CRPR 4.2	Chaparral and coastal scrub habitats with sandy or loamy soils. Requires recent disturbance, such as a burn.
Oakland star-tulip	*Calochortus umbellatus*	CRPR 4.2	Mid-elevation broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, and valley and foothill grassland. Shows affinity for serpentine soils, but does not require them.
Chaparral harebell	*Campanula exigua*	CRPR 1B.2	Mid- to high-elevation chaparral habitats, often found on serpentine soils.
Congdon's tarplant	*Centromadia parryi* ssp. *congdonii*	CRPR 1B.1	Valley and foothill grasslands with alkaline soils, alkaline seasonal wetlands. This low-elevation (below 760 ft) species tolerates or even requires moderate disturbance.
Serpentine collomia	*Collomia diversifolia*	CRPR 4.3	Chaparral and cismontane woodland; usually on or near serpentinite rock outcrops or gravelly serpentine soils.
Small-flowered morning glory	*Convolvulus simulans*	CRPR 4.2	Chaparral openings, coastal scrub, and valley and foothill grassland; requires clay soils and shows strong affinity to serpentinite seeps.
Hospital canyon larkspur	*Delphinium californicum* ssp. *interius*	CRPR 1B.2	Chaparral and cismontane woodlands from 750-3750 ft in elevation. Only expected in Mt. Diablo area, does occur outside state-protected lands.
Lime Ridge eriastrum	*Eriastrum ertterae*	CRPR 1B.1	Chaparral openings or edges from 656 to 951 ft.; alkaline or semi-alkaline, sandy soils.

COMMON NAME	SCIENTIFIC NAME	STATUS[1]	HABITATS USED
Mt. Diablo buckwheat[2]	*Eriogonum truncatum*	CRPR 1B.1	Sandy soils in chaparral, coastal scrub, and valley and foothill grassland habitats at elevations from 10 to 1148 ft.
Bay buckwheat	*Eriogonum umbellatum* var. *bahiiforme*	CRPR 4.2	Rock outcrops and rocky soils in cismontane woodland and lower montane coniferous forest; often found on serpentinite outcrops.
Jepson's woolly sunflower	*Eriophyllum jepsonii*	CRPR 4.3	Coastal scrub, chaparral, and cismontane woodland; species shows moderate affinity for serpentine substrates.
Spiny-sepaled button celery	*Eryngium spinosepalum*	CRPR 1B.2	Vernal pools and mesic areas in valley and foothill grassland from 262 to 837 ft; often on clay soils.
Diamond-petaled California poppy[2]	*Eschscholzia rhombipetala*	CRPR 1B.1	Alkaline and clayey soils in valley and foothill grassland habitats below 3200 ft in elevation.
Stinkbells	*Fritillaria agrestis*	CRPR 4.2	Chaparral, cismontane woodland, pinyon and juniper woodland, and valley and foothill grassland; requires clay soils and is often, but not always, associated with serpentinite features.
Fragrant fritillary	*Fritillaria liliacea*	CRPR 1B.2	Cismontane woodland, coastal prairie, coastal scrub, and valley and foothill grassland; usually associated with serpentinite soils and features.
Phlox-leaved serpentine bedstraw	*Galium andrewsii* ssp. *gatense*	CRPR 4.2	Chaparral, cismontane woodland, and lower montane coniferous forests; requires rocky, serpentine soils.
Hogwallow starfish	*Hesperevax caulescens*	CRPR 4.2	Shallow vernal pools and mesic areas in valley and foothill grassland; requires clay soils.
Contra Costa goldfields[2]	*Lasthenia congdonii*	CRPR 1B.1	Mesic cismontane woodlands, alkaline playas, valley and foothill grasslands and vernal pools at elevations below 1542 ft.
Ferris' goldfields	*Lasthenia ferrisiae*	CRPR 4.2	Vernal pools with alkaline soils and alkaline sinks; requires seasonal hydrology and heavily alkaline, clay soils.
Serpentine leptosiphon	*Leptosiphon ambiguus*	CRPR 4.2	Mid-elevation cismontane woodland, coastal scrub, and valley and foothill grasslands; usually found on serpentine soils.
Hall's bush mallow	*Malacothamnus hallii*	CRPR 1B.2	Chaparral and coastal scrub habitats.
Sylvan microseris	*Microseris sylvatica*	CRPR 4.2	Occurs in a wide range of habitats including chaparral and cismontane woodland. Can also occur in serpentine valley and foothill grassland.
Woodland woolythreads	*Monolopia gracilens*	CRPR 1B.2	Open areas in broadleafed upland forests, chaparral, and North Coast coniferous forests; also found in cismontane woodland and valley and foothill grassland; weakly associated with serpentine soils.
Little mouse tail	*Myosurus minimus* ssp. *apus*	CRPR 3.1	Mesic areas in valley and foothill grassland or alkaline vernal pools.
Cotula navarretia	*Navarretia cotulifolia*	CRPR 4.2	Seasonal wetlands in chaparral, cismontane woodland, and valley and foothill grasslands; associated with heavy adobe clay soils.

COMMON NAME	SCIENTIFIC NAME	STATUS[1]	HABITATS USED
Lime Ridge navarretia	*Navarretia gowenii*	CRPR 1B.1	Chaparral and grassland habitat with calcium carbonate rich soil and high clay content, from 590-1000 ft in elevation.
Shining navarretia	*Navarretia nigelliformis* ssp. *radians*	CRPR 1B.2	Mesic areas in cismontane woodland, valley and foothill grassland, and vernal pools; sometimes in clay soils.
Mt. Diablo phacelia	*Phacelia phacelioides*	CRPR 1B.2	Rocky, mid- to high-elevation areas in chaparral and cismontane woodland habitats. Occurs on serpentine soils.
Michael's rein-orchid	*Piperia michaelii*	CRPR 4.2	Coastal bluff scrub, closed-cone coniferous forest, cismontane woodland, coastal scrub, lower montane coniferous forest, and chaparral.
Lobb's aquatic buttercup	*Ranunculus lobbii*	CRPR 4.2	Wetlands within a wide variety of habitats including woodlands, forests, and grasslands.
Rayless ragwort	*Senecio aphanactis*	CRPR 2B.2	Chaparral, cismontane woodland, and coastal scrub habitats below 2625 ft.
Most beautiful jewel-flower	*Streptanthus albidus* ssp. *peramoenus*	CRPR 1B.2	Chaparral, cismontane woodland, and valley and foothill grassland; occurs on or near serpentine outcrops.
Slender-leaved pondweed	*Stuckenia filiformis* ssp. *alpina*	CRPR 2B.2	Marshes and swamps from 900-7000 ft in elevation.
Caper-fruited tropidocarpum[2]	*Tropidocarpum capparideum*	CRPR 1B.1	Alkaline clay soils in valley and foothill grasslands, at elevations below 1493 ft.
Oval-leaved viburnum	*Viburnum ellipticum*	CRPR 2B.3	Occurs in chaparral, cismontane woodlands, and lower montane coniferous forests.
REPTILES/AMPHIBIANS			
California horned lizard	*Phrynosoma coronatum frontale*	CSSC	Frequents a wide variety of habitats; most common in lowlands along sandy washes with scattered low bushes.
San Joaquin whipsnake	*Masticophis flagellum ruddocki*	CSSC	Open, dry vegetative associations with little or no tree cover. Uses small mammal burrows as refugia.
Western spadefoot	*Spea hammondii*	CSSC	Grasslands and occasionally valley-foothill hardwood woodlands; vernal pools or similar ephemeral pools required for breeding.
BIRDS			
White-tailed kite	*Elanus leucurus*	FP	Nests in tall shrubs and trees, forages in grasslands, agricultural fields, and marshes.
Northern harrier	*Circus cyaneus*	CSSC (nesting)	Forages in marshes, grasslands, and ruderal habitats; nests in extensive marshes and wet fields.
Peregrine falcon[2]	*Falco peregrinus*	FP	Nests primarily on ledges on cliffs and large rock outcrops, forages for birds in a wide variety of open habitats.
Long-eared owl	*Asio otus*	CSSC (breeding)	Dense riparian and live oak thickets near meadow edges, and nearby woodland and forest habitats; also found in dense conifer stands at higher elevations.
Short-eared owl	*Asio flammeus*	CSSC (breeding)	Breeds in dense vegetation in open grassland and marshes.

COMMON NAME	SCIENTIFIC NAME	STATUS[1]	HABITATS USED
Loggerhead shrike	*Lanius ludovicianus*	CSSC (breeding)	Nests in tall shrubs and dense trees, forages in grasslands, marshes, and ruderal habitats.
Yellow warbler	*Dendroica petechia brewsteri*	CSSC (breeding)	Breeds in riparian woodlands, particularly those dominated by willows and cottonwoods.
Yellow-breasted chat	*Icteria virens*	CSSC (breeding)	Breeds in riparian habitats having dense understory vegetation, such as willow and blackberry.
Grasshopper sparrow	*Ammodramus savannarum*	CSSC (breeding)	Forages on insects and seeds in open habitats. Breeds in grassland habitats.
MAMMALS			
American badger	*Taxidea taxus*	CSSC	Open areas with deep soils that facilitate digging of burrows. Forages on ground squirrels, other rodents, snakes, and other small animals.
Ringtail[2]	*Bassariscus astutus*	FP	Rocky slopes and outcrops, mature woodland, and other habitats providing cavities for denning.
San Francisco dusky-footed woodrat	*Neotoma fuscipes annectens*	CSSC	Habitats include hardwood forests, brushlands, and other brushy areas that provide cover. Forages on berries, fungi, leaves, flowers, and nuts.
Pallid bat	*Antrozous pallidus*	CSSC	Forages over many habitats; roosts in buildings, rocky outcrops and rocky crevices in mines and caves.
Western mastiff bat	*Eumops perotis californicus*	CSSC	Found in central and south coastal California. Roosts primarily in cliffs or high buildings.
Western red bat	*Lasiurus blossevillii*	CSSC	Roosts in forests and woodlands and feeds over grasslands, shrublands, open woodlands and forests.

1 Status: Fully Protected (FP); California Species of Special Concern (CSSC); Federal Endangered (FE), State Endangered (SE); California Rare Plant Rank (CRPR).
2 Designated a "no-take" species by the Plan.

Plants

Large-flowered fiddleneck (*Amsinckia grandiflora*). Federal Listing Status: Endangered; State Listing Status: Endangered; California Rare Plant Rank: 1B.1. Large-flowered fiddleneck is an annual herb in the borage family (Boraginaceae) that occurs on open grassy slopes from 902 to 1804 ft elevation in the Central Valley, inner Coast Range, and adjacent valleys. This species is most closely associated with relatively undisturbed, wet habitats with clay soils. It is threatened by agriculture, development, grazing, and non-native plants, and possibly by trampling and altered fire frequency (CNPS 2014).

Large-flowered fiddleneck is endemic to California and is known from fewer than five natural occurrences in Alameda, Contra Costa, and San Joaquin counties. Of eight occurrence records in the CNDDB database, five populations have been extirpated. Only three known populations are presumed extant, and all are declining. The only known population in Contra Costa County occurs at Black Diamond Regional Park, where it was reintroduced in 1989. At last count in 2010, this population numbered only two plants (CNDDB 2014). Unknown populations of

large-flowered fiddleneck could occur in similar habitats in the vicinity of Black Diamond Regional Park. Large-flowered fiddleneck is a "no-take" species according to the Plan.

California androsace (*Androsace elongata* ssp. *acuta*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 4.2. California androsace occurs on dry, grassy slopes (Baldwin et al. 2012) in chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland habitats. It is also suggested by CNPS that the species may be found in meadows and seeps, but this is not corroborated by other sources and may be a database error (CNPS 2014). The documented elevations for this species range from 492 to 3937 ft. This annual herb in the primrose family (Primulaceae) blooms from March through June. California androsace is a widespread species found in Alameda, Contra Costa, Colusa, Fresno, Glenn, Kern, Los Angeles, Merced, Riverside, San Bernardino, San Benito, San Diego, Siskiyou, San Joaquin, San Luis Obispo, San Mateo, Stanislaus, and Tehama counties. California androsace also has been reported from Baja California and is endangered in Oregon (CNPS 2014). The species is possibly threatened by grazing, trampling, non-native plants, alteration of fire regimes, and recreational activities.

Potential habitat for this species occurs in the inventory area on mid- and higher-elevation, sloped areas, particularly in the foothills surrounding Mt. Diablo. All collections of this species from within the inventory area were recorded from dry slopes and canyons near Mt. Diablo, while other populations occur outside the inventory area along Shell Ridge, near Walnut Creek (Calflora 2014, CCH 2014). Many of the collections are old (1930s or prior), and have not been confirmed as current. Some collections in the area were taken near chaparral burns (CCH 2014). Unknown populations of California androsace are expected to occur on the eastern foothills of Mt. Diablo, outside the UDAs.

Coast rock cress (*Arabis blepharophylla*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 4.3. Coast rock cress is a perennial herb in the mustard family (Brassicaceae) that occurs in rocky soils, talus, scree, and rock outcrops in broadleaved upland forest, coastal bluff scrub, and coastal prairie habitats. The range of the species includes Contra Costa, Lake, Monterey, Marin, Santa Cruz, San Francisco, San Mateo, and Sonoma counties. Blooming occurs from February to May. Population records exist for sites at elevations from 10-3609 ft (CNPS 2014). Coast rock cress may be threatened by competition from non-native grasses or invasive species.

Suitable habitat for this plant occurs in rock outcrop areas supporting a suite of native coastal scrub species, near the northwestern boundary of the inventory area of Mt. Diablo, within and outside UDAs, and potentially within AA Zone 1. Coast rock cress is reported to occur within the Clayton Quadrangle (Calflora 2014), but otherwise is found outside the inventory area in Contra Costa County at Red Rock near San Quentin.

Alkali milk-vetch (*Astragalus tener* var. *tener*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 1B.2. Alkali milk-vetch is an annual herb in the pea family (Fabaceae) that occurs in alkaline soils in playas, valley and foothill grasslands underlain by adobe clay, and vernal pool habitats at elevations between 3 and 197 ft. It is a California endemic found in 16 USGS quadrangles in Alameda, Merced, Napa, Solano, and Yolo

counties. It is presumed extirpated from its historical range in Contra Costa, Monterey, San Benito, Santa Clara, San Francisco, San Joaquin, Sonoma, and Stanislaus counties. Blooming occurs from March to June. Threats to alkali milk-vetch include: development, competition from non-native plants, and habitat destruction, especially from agricultural conversion.

This species is presumed extirpated from Contra Costa County, but unknown populations could exist in the inventory area. Alkali milk-vetch is a "no-take" species according to the Plan.

Heartscale (*Atriplex cordulata* var. *cordulata*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 1B.2. Heartscale is found at lower elevations (below approximately 1240 ft) in alkaline or saline, sandy soils in chenopod scrublands, meadows and seeps, and valley and foothill grasslands. It is in the goosefoot (Chenopodiaceae) family. It has a highly variable blooming period, with potential to bloom from April to October. The range of this species has been reduced to remaining alkaline grasslands in Alameda, Butte, Colusa, Fresno, Glenn, Kern, Madera, Merced, San Luis Obispo, Solano, and Tulare counties, and it is presumed to be extirpated from its historical range in Stanislaus, San Joaquin, and Yolo counties (CNPS 2014). CNPS (2014) notes that this species is very similar to the related species crownscale (*Atriplex coronata* var. *coronata*), and that it may be threatened by competition from non-native plants. It is also possibly threatened by trampling.

The CNPS (2014) records heartscale from at least three inventory area quads (Antioch South, Byron Hot Springs, Clifton Court Forebay), but provides no further location information. One verified collection of heartscale has been made within the inventory area, in Briones Valley approximately 0.2 mile (mi) west of Marsh Creek Reservoir. Another record of the species is reported in the CNDDB (2014) within 5 mi of the study boundary at the Springtown alkali sink northeast of Livermore (CNDDB 2014). While the established databases present conflicting location information for this species, it is likely that some extant populations exist within the inventory area. Unknown populations of heartscale are expected to occur in the southeastern portion of the inventory area between the Briones Valley and the Clifton Court Forebay, outside the UDAs, and due to the presence of suitable sandy alkaline habitat, possibly within the UDA east of Oakley.

Crownscale (*Atriplex coronata* var. *coronata*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 4.2. Crownscale is widely distributed across the Central Valley and the central California coast in chenopod scrub, alkaline valley and foothill grassland, and alkaline vernal pools at elevations of approximately 3-1936 ft. Records for populations of this California endemic exist from Alameda, Contra Costa, Fresno, Glenn, Kings, Kern, Merced, Monterey, San Luis Obispo, Solano, and Stanislaus counties (CNPS 2014). This annual herb in the Chenopodiaceae (goosefoot) family has an extremely variable flowering period and can bloom from March to October. Crownscale requires strongly alkaline, open soils.

This species is known to occur in many locations within the eastern and central portions of inventory area, including Deer and Horse Valleys, by Los Vaqueros Reservoir, and "near Marsh Creek" (CCH 2014), and this species is expected to occur primarily in the eastern portion of the inventory area, principally between the Horse Valley and the Clifton Court Forebay, and mostly

outside the UDAs. Collections have also been made in areas outside the inventory area east of Oakley near Rock Slough (Calflora 2014).

Brewer's calandrinia (*Calandrinia breweri*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 4.2. Brewer's calandrinia is widely distributed across California in chaparral and coastal scrub habitats at elevations of approximately 33-4025 ft. Population records show this species occurring in a widespread distribution covering Contra Costa, Los Angeles, Mendocino, Monterey, Mariposa, Marin, Napa, Orange, Riverside, Santa Barbara, San Bernardino, Santa Clara, Santa Cruz, San Diego, Shasta, San Luis Obispo, San Mateo, Sonoma, and Ventura counties, as well as in Baja California and Santa Cruz and Santa Rosa Islands. This species is apparently uncommon in all regions over its large range, and it is generally associated with sandy or loamy substrates under some disturbance, such as recent burns. Brewer's calandrinia is an annual herb in the purslane (Portulacaceae) family and blooms from March to June.

Most populations known from within the inventory area occur on Mt. Diablo or its surrounding foothills and canyons, and in Black Diamond Regional Park south of Antioch (Calflora 2014). Several of these populations occur on recovering chaparral burn sites. Additionally, a collection exists from a population on a rocky coastal scrub outcrop near the Carquinez Straits, indicating that similar habitat within the inventory area would also provide suitable habitat for this species (CCH 2014). Unknown populations of Brewer's calandrinia within the inventory area are expected to occur on the eastern foothills of Mt. Diablo, outside the UDAs.

Oakland star-tulip (*Calochortus umbellatus*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 4.2. Oakland star-tulip inhabits a small endemic range including populations in Alameda, Contra Costa, Lake, Marin, Santa Clara, San Mateo, and Stanislaus counties (CNPS 2014). It is thought to be extirpated from the southernmost extent of its historical range in Santa Cruz County. This bulbiferous herb in the lily family (Liliaceae) is generally associated with, but does not always occur on, serpentine substrates. Safford et al. (2005) rate the species' serpentine affinity at 2.9, thus classifying it as a strong indicator (but not a serpentine endemic) on their serpentine preference scale. It is found in a variety of habitats including broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, and valley and foothill grassland at elevations of approximately 330-2310 ft. Oakland star-tulip can bloom from March to May.

Most populations within Contra Costa County are known from the County's western forested ridges, but populations do occur on serpentinite and sandstone formations around Mt. Diablo, south of Concord at Camp 69, and in Long Canyon in Morgan Territory Regional Preserve (Calflora 2014). Within the inventory area, only the Mt. Diablo populations have been collected recently, but it can be assumed suitable habitat occurs for this species more extensively in the foothills to the east of Mt. Diablo, primarily outside the UDAs.

Chaparral harebell (*Campanula exigua*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 1B.2. Chaparral harebell is an annual herb in the bellflower family (Campanulaceae) that blooms from May to June. This species occurs in rocky, usually serpentinite soils in chaparral at elevations of 902-4101 ft. Safford et al. (2005) rate the

species' serpentine affinity at 3.9, indicating a broad endemic or strong indicator of serpentine habitats. Chaparral harebell is a California endemic documented in 18 USGS quadrangles in Alameda, Contra Costa, Merced, San Benito, Santa Clara, and Stanislaus counties. Mining and vehicles may threaten the species (CNPS 2014).

Several populations are recorded by CNDDB (2014) from within the inventory area or just outside it, all from higher elevations near Mt. Diablo. Known populations are all mapped as occurring within the Mt. Diablo State Park, but several of these occur very close to non-protected lands, such as a population on the north side of the peak, near Clayton, and one population south of Marsh Creek near the southern boundary of the inventory area. This species could therefore occur within the inventory area on the eastern foothills of Mt. Diablo, outside the UDAs.

Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 1B.1. This annual herb occurs in valley and foothill grassland, particularly those with alkaline substrates, and in slumps or disturbed areas where water collects. It is restricted to lower elevation wetlands below approximately 760 ft. Congdon's tarplant, which is in the composite (Asteraceae) family, has a variable blooming period that extends from June through November. The range of this species has been reduced to remaining alkaline grasslands in Alameda, Contra Costa, Monterey, Santa Clara, San Luis Obispo, and San Mateo counties, and it is presumed to be extirpated from its historical range in Solano and Santa Cruz counties (CNPS 2014). This species is considered by CNPS to be severely threatened by development.

Several populations occur in suitable soils in the Diablan foothills south of the inventory area, particularly within the Diablo and Tassajara quads, within the San Ramon Valley, and along Alamo Creek (CNDDB 2014). The CCH (2014) has 17 records of the species collected in Contra Costa County. The CNDDB (2014) lists 23 records of this species within Contra Costa County. The largest concentration of suitable habitat for this species within the inventory area occurs in the southeastern portion of the County, between Livermore and Tassajara, in lower, heavy alkaline clay foothills, swales, and valleys.

Serpentine collomia (*Collomia diversifolia*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 4.3. Serpentine collomia is a California endemic that occurs in Contra Costa, Colusa, Glenn, Lake, Mendocino, Napa, Shasta, Stanislaus, and Yolo Counties. As such, Contra Costa populations occur near the southern limit of the species' range. Suitable habitats include chaparral and cismontane woodland, and the species is typically found on serpentinite substrates that are rocky or gravelly (CNPS 2014). Safford et al. (2005) rate the species' serpentine affinity at 5.7, indicating it is a strict endemic only found on serpentine soils. Serpentine collomia is an annual herb in the Polemoniaceae (phlox) family that occurs at elevations ranging from approximately 1000–1980 ft and has a short blooming period occurring from May to June.

All known collections within the Plan area occur on serpentinite outcrops near the summit of Mt. Diablo, including near Murchio Gap and Meridian Ridge (Calflora 2014). As the CNDDB and CNPS do not routinely keep georeferenced records for CRPR 4 species, it is uncertain whether some populations also occur within the inventory area outside of Mt. Diablo State Park. For the

sake of our analysis, we have assumed the species could occur in similar habitats located outside the Park, on the eastern foothills of Mt. Diablo, outside the UDAs.

Small-flowered morning-glory (*Convolvulus simulans*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 4.2. Small-flowered morning-glory is widely distributed across several counties in central and southern California in chaparral openings, coastal scrub, and valley and foothill grassland, at elevations of 100-2310 ft (CNPS 2014). Contra Costa County represents the northern limit of the species' known range, but the species is also known from Fresno, Kern, Los Angeles, Orange, Riverside, Santa Barbara, San Benito, San Clemente Island, Santa Catalina Island, Santa Cruz Island, San Diego, San Joaquin, San Luis Obispo, and Stanislaus counties, as well as from San Clemente, Santa Catalina, and Santa Cruz Island, and south into Baja California (CNPS 2014). This annual herb in the morning-glory (Convolvulaceae) family blooms from March to July. This species requires clay soils, and is also strongly associated with serpentinite seeps, with an affinity rating of 3.7 indicating the plant is a broad serpentine endemic or strong indicator (Safford et al. 2005).

Fairly large areas within inventory boundaries are currently undeveloped and underlain with clay soils, and some areas near Mt. Diablo support both clay soils and serpentinite features. All populations of small-flowered morning glory in Contra Costa County occur within the inventory area, including within "fields between Antioch and Marsh Creek", 2 miles west of Byron Hot Springs, and near Los Vaqueros Reservoir (CNPS 2014, CCH 2014). This species is principally expected to occur in serpentinite seeps near Mt. Diablo, in areas near Horse Valley and the Marsh Creek Reservoir, possibly both within and outside the UDAs.

Hospital Canyon larkspur (*Delphinium californicum* ssp. *interius*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 1B.2. Hospital Canyon larkspur inhabits a small endemic range covering the mid- and upper elevations of the inner Coast Ranges along the San Francisco Bay Area, occurring south as far as Mount Hamilton. Records exist from Alameda, Contra Costa, Merced, San Benito, Santa Clara, San Joaquin, and Stanislaus counties (CNPS 2014). The species is found in chaparral and cismontane woodland habitats, usually in openings or dry grassy slopes, at elevations of approximately 640-3600 ft. Hospital Canyon larkspur is a perennial herb in the buttercup (Ranunculaceae) family and blooms from April to June.

Five of the six populations listed in the CNDDB occur within the boundaries of Mt. Diablo State Park or on land owned by Save Mount Diablo (CNDDB 2014). The sixth population is located northwest of Mt. Diablo, outside of the inventory area. However, East Bay CNPS reports a possible population occurring on a privately owned parcel on the northeast side of the peak just outside of Russelman Park and south of Clayton (CCH 2014), and this species could therefore occur on the eastern and northeastern foothills of Mt. Diablo, outside the UDAs.

Lime Ridge eriastrum (*Eriastrum ertterae*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 1B.1. Lime Ridge eriastrum is an annual herb in the phlox family (Polemoniaceae) that blooms from June to July. This species occurs on alkaline, semi-alkaline, or sandy substrates in chaparral openings from 655 to 950 ft in elevation. This California endemic was recently described in 2013 and is known only from the Lime Ridge

area. It is potentially threatened by recreational activities, electric transmission tower maintenance, and non-native plants (CNPS 2014).

Although the only known population of this species is located outside the Plan Area, suitable habitat exists within the Plan Area. Because this species was only recently described it is possible that additional, unknown populations exist in Contra Costa County.

Mt. Diablo buckwheat (*Eriogonum truncatum*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 1B.1. Mt. Diablo buckwheat is an annual herb in the buckwheat family (Polygonaceae) that occurs in sandy soils in chaparral, coastal scrub, and valley and foothill grassland habitats at elevations from 10 to 1148 ft. It blooms from April to September. Mt. Diablo buckwheat is a California endemic documented in five USGS quadrangles in Alameda, Contra Costa, and Solano counties, but is presumed extirpated in all but one location (Mt. Diablo State Park). Trampling and non-native plants threaten the species, although urbanization has already severely reduced habitat (CNPS 2014).

In 2005, Michael Park rediscovered the species in Mt. Diablo State Park. Unknown populations could occur in the vicinity of Mt. Diablo. Mt. Diablo Buckwheat is a "no-take" species according to the Plan.

Bay buckwheat (*Eriogonum umbellatum* var. *bahiiforme*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 4.2. Bay buckwheat, also known as sulphur buckwheat or sulphur flower buckwheat, is a perennial herb in the buckwheat (Polygonaceae) family. This species is found from 2297 ft to 7218 ft elevation in rocky, often serpentine soils in lower montane coniferous forests and cismontane woodlands. Safford et al. (2005) rate this species' serpentine affinity as 3.5, indicating that bay buckwheat is a broad endemic on serpentine or a strong indicator. Bay buckwheat can bloom from July to September and is found in Alameda, Contra Costa, Colusa, Glenn, Humboldt, Lake, Mendocino, Monterey, Napa, San Benito, Santa Clara, Siskiyou, San Joaquin, and Stanislaus counties.

The CCH (2014) lists seven collections found in Contra Costa County, all within the inventory area on the eastern slopes of Mt. Diablo and in the Morgan Territory Regional Preserve. The species is not expected to occur within the inventory area outside of these eastern foothill areas, and thus is unlikely to occur within the UDAs.

Jepson's woolly sunflower (*Eriophyllum jepsonii*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 4.3. Jepson's woolly sunflower is a California endemic that occurs in Alameda, Contra Costa, Kern, Monterey, San Benito, Santa Clara, Stanislaus, and Ventura Counties. As such, Contra Costa populations occur near the northern limit of the species' range. Suitable habitats include coastal scrub, chaparral, and cismontane woodland, and the species is often found on serpentinite substrates (CNPS 2014). Safford et al. (2005) rate the species' serpentine affinity at 3.5, indicating it is a broad endemic on serpentine or a strong indicator. Jepson's woolly sunflower is a perennial herb in the Asteraceae family that occurs at elevations of approximately 660-3385 ft and has a spring blooming period occurring between April and June.

All known populations occurring within the inventory area occur along the foothills of Mt. Diablo, including near Mitchell Canyon, Perkins Canyon, Black Diamond Regional Park, Diablo Foothills Regional Park, and near Los Vaqueros Reservoir (Calflora 2014, CCH 2014). Unknown populations of Jepson's woolly sunflower are expected to occur on the eastern and northeastern foothills of Mt. Diablo, primarily outside the UDAs.

Spiny-sepaled button celery (*Eryngium spinosepalum*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 1B.2. Spiny-sepaled button celery is an annual herb in the celery family (Apiaceae) that blooms from April to May. This species occurs on clay soils in vernal pools and in mesic valley and foothill grassland from 260 to 840 feet in elevation. This California endemic is known from Contra Costa, Fresno, Kern, Madera, Merced, San Luis Obispo, Stanislaus, Tulare, and Tuolumne counties. It is threatened by development, grazing, road maintenance, hydrological alterations, and agriculture (CNPS 2014).

This species generally occurs in the Central Valley, but it is known from one occurrence in Contra Costa County, near Byron Airport (CNDDB 2014). It apparently intergrades with *E. castrense* and possibly *E. vaseyi* (CNPS 2014), making it taxonomically problematic. Due to the difficulty of distinguishing it from closely related species, other, currently unknown populations may exist in Contra Costa County.

Diamond-petaled California poppy (*Eschscholzia rhombipetala*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 1B.1. Diamond-petaled California poppy is an annual herb in the poppy family (Papaveraceae) that blooms from March to April. This species occurs in alkaline, clayey soils in valley and foothill grassland habitats from 0 to 3200 ft in elevation. This California endemic has been documented in 12 USGS quadrangles and is presumed extant in Alameda, San Joaquin, and San Luis Obispo counties. It is believed extirpated from Contra Costa, Colusa, and Stanislaus Counties. Agriculture and grazing threaten the species (CNPS 2014).

This species is known from only 10 occurrence records, and only three have been seen in the last 20 years (CNDDB 2014). It was once thought to be extinct, but it was rediscovered on the Carrizo Plain in 1992. It was also found at the Lawrence Livermore Laboratory Site in 1997 (CNDDB 2014). Although this species is thought to be extirpated from Contra Costa County, it occurs in adjacent Alameda County and could occur in similar habitat in the Plan Area.

Stinkbells (*Fritillaria agrestis*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 4.2. Stinkbells are widely distributed across California in chaparral, cismontane woodland, pinyon and juniper woodland, and valley and foothill grassland, at elevations of 33-5102 ft. This bulbiferous herb in the Liliaceae family blooms from March to June. Stinkbells require heavy clay soils, and are sometimes associated with serpentinite features. Safford et al. (2005) score the species' serpentine affinity at 2.7, which is a strong serpentine indicator. Most populations of this species are small, and it is thought to be endangered by development and grazing (CNPS 2014).

This species is known to occur in several locations within the east and central portions of the inventory area, including within Contra Loma Regional Park, at the eastern end of Briones

Valley, near Camino Diablo Road to the northwest of Clifton Court Forebay, and by Los Vaqueros Reservoir (Calflora 2014). Unknown populations of this species are expected to occur in the general Marsh Creek Reservoir area, and potentially in similar habitats in Horse Valley, both inside and outside UDAs.

Fragrant fritillary (*Fritillaria liliacea*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 1B.2. This perennial, bulbiferous herb in the Liliaceae family occurs in cismontane woodland, coastal prairie, coastal scrub, and valley and foothill grassland habitats, sometimes on areas with serpentine substrates, at elevations of 10-1345 ft (CNPS 2014). Safford et al. (2005) score the species' serpentine affinity as 1.8, which is only a weak serpentine indicator, with as many as 40% of known populations occurring on non-ultramafic deposits. The blooming period extends from February through April. Its range spans 10 counties including Alameda and Contra Costa Counties. The fragrant fritillary is generally associated with relatively open grassland habitats underlain with heavy clay soils derived from serpentine bedrock such as the Climara soils series in Santa Clara County. This species does not compete well with non-native grasses but is able to persist on moderate slopes that are grazed annually.

Only one population of fragrant fritillary is recorded by the CNDDB as occurring in the vicinity of the inventory area, in Diablo Foothills Regional Park (CNDDB 2014). However, there is a vouchered specimen collected from a northerly-facing slope along Shell Ridge on Mt. Diablo (CCH 2014), and the species could potentially occur in the inventory area in the higher elevation foothills immediately to the east of Mt. Diablo State Park, primarily or entirely outside the UDAs. Although there are no known populations in this area, the species could potentially also occur in clayey or serpentine grasslands near the Marsh Creek Reservoir.

Phlox-leaved serpentine bedstraw (*Galium andrewsii ssp. gatense*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 4.2. Phlox-leaved serpentine bedstraw is an annual herb in the madder family (Rubiaceae). It is known from several counties in central California, as well as in Los Angeles County, and can occur at elevations of 500-4785 ft. It grows in rocky, serpentinite areas in chaparral, cismontane woodland, and lower montane coniferous forests. Safford et al. (2005) score the species' serpentine affinity as 5.1, which is considered a broad serpentine endemic. This means as many as 90% of known populations occur on ultramafic soils. The blooming period extends from April through July (CNPS 2014).

This species occurs in a number of locations within the inventory area surrounding or along the foothill ridges of Mt. Diablo, including Round Valley Regional Park, in Deer Valley, Los Vaqueros Reservoir, Morgan Territory Regional Park, Diablo Foothills Regional Park, Black Diamond Regional Preserve, and Chaparral Springs (Calflora 2014). Additional populations could be located in similar habitats in the eastern foothills of Mt. Diablo, and most occurrences of this species in the Plan area are expected to be located outside the UDAs.

Hogwallow starfish (*Hesperevax caulescens*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 4.2. Hogwallow starfish is an annual herb in the sunflower family (Asteraceae). It grows in shallow vernal pools and mesic areas in valley and

foothill grassland habitat with clayey soils. The blooming period extends from March through June. Populations are currently known from Alameda, Amador, Butte, Contra Costa, Colusa, Fresno, Glenn, Kern, Merced, Monterey, Sacramento, San Joaquin, San Luis Obispo, Solano, Stanislaus, Sutter, Tehama, and Yolo counties from elevations up to 1657 ft (CNPS 2014). Hogwallow starfish is most threatened by development and agricultural activities.

Within the Plan area, populations have been recorded from Los Vaqueros Reservoir, from Roddy Ranch in Deer Valley, and along Marsh Creek near Brentwood (Calflora 2014). Several other collections have been made from populations occurring near the inventory area, including within wetlands on clay inclusions in the Antioch Dunes, and along San Pablo Creek (CCH 2014). Within the inventory area, this species could occur in suitable mesic clay habitats in the grasslands to the east of the Mt. Diablo foothills.

Contra Costa goldfields (*Lasthenia conjugens*). Federal Listing Status: Endangered; State Listing Status: None; California Rare Plant Rank: 1B.1. Contra Costa goldfields is an annual herb in the sunflower family (Asteraceae) that occurs in mesic cismontane woodlands, alkaline playas, valley and foothill grasslands and vernal pools at elevations from 0 to 1542 ft. It blooms from March to June. The range of this California endemic is documented in 24 USGS quadrangles in Alameda, Contra Costa, Monterey, Marin, Napa, Solano, and Sonoma counties. It is presumed extirpated from its historic range in Mendocino, Santa Barbara, and Santa Clara counties (CNPS 2014).

Of the four occurrence records in Contra Costa County, three populations are presumed extirpated. The only known extant population in Contra Costa County occurs near the headwaters of Rodeo Creek, just north of Highway 4 (CNDDB 2014). Unknown populations could exist in suitable habitat near the northern end of the inventory area, adjacent to Carquinez Strait. Contra Costa goldfields is a “no-take” species according to the Plan.

Ferris' goldfields (*Lasthenia ferrisiae*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 4.2. This annual herb in the family Asteraceae occurs in central and northern California in alkaline, clayey vernal pools and clay-based alkaline sinks at elevations of 66-2297 ft (CNPS 2014). This species blooms from February to May. It is distinguished from the Plan-covered federally endangered species Contra Costa goldfields (*Lasthenia conjugens*) by the conic shape of the receptacle, among other reproductive characters (Baldwin et al. 2012).

Several specimens have been collected from populations within the inventory area, and it is likely that more populations are yet to be discovered within low, vernally mesic, clayey wetlands and alkaline sinks within the southeastern grassland portion of Contra Costa County, primarily outside the UDAs but possibly within the UDAs near Byron. It has been recorded from the Byron area, near Los Vaqueros Reservoir, west of Discovery Bay, and to the west of Clifton Court Forebay (Calflora 2014).

Serpentine leptosiphon (*Leptosiphon ambiguus*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 4.2. This annual herb in the Polemoniaceae family occurs in a tight, endemic range centered on the San Francisco Bay Area

and adjacent counties. Serpentine leptosiphon, formally called *Linanthus ambiguus*, is found within serpentine areas within cismontane woodland, coastal scrub, and valley and foothill grasslands at elevations of 395-3700 ft (CNPS 2014). This plant is a strict serpentine endemic, with a serpentine affinity score of 5.8 indicating a very high proportion of all known populations occur on ultramafic substrates (Safford et al. 2005). This species blooms from March to June.

A small number of specimens have been collected from populations within the inventory area along the slopes of Mt. Diablo. It has been recorded from the Mt. Olympia area, the edge of Donner Canyon south of Clayton, and near the intersection of Prospector's Gap and Ray Morgan Road as recently as 2005 (Calflora 2014). Additional populations are expected to occur in the northeastern foothills of Mt. Diablo, near Clayton, primarily outside the UDAs.

Hall's bush mallow (*Malacothamnus hallii*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 1B.2. This evergreen shrub in the mallow family (Malvaceae) occurs in chaparral and coastal scrub habitats. The blooming period extends from May through September, and sometimes extends as late as October. The range of this species extends over lower and mid-elevation scrubby slopes from approximately 30 to 2510 ft. It is found in Contra Costa, Lake, Mendocino, Merced, Santa Clara, San Mateo, and Stanislaus counties (CNPS 2014). Hall's bush mallow is threatened by development and is also possibly threatened by non-native plants.

Several populations occur or formerly occurred within scrubby or chaparral habitats along the western foothills of Mt. Diablo (CNDDB 2014), and many of the known populations within the inventory area are protected within Mt. Diablo State Park lands. Outside the inventory area, the plant is found at Lime Ridge Open Space, to the west of Clayton. Additional populations may occur on higher elevation chaparral habitats near the Mt. Diablo State Park boundary, outside the UDAs.

Sylvan microseris (*Microseris sylvatica*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 4.2. Sylvan microseris is a California endemic that occurs in most counties between Kern and Lassen. It can inhabit a wide range of habitats including chaparral, cismontane woodland, Great Basin scrub, pinyon and juniper woodland. Additionally, CNPS reports that the species is also found in serpentine areas within valley and foothill grasslands, although the species has not been scored for serpentine affinity and may occur in serpentine areas merely because they are open and sparsely vegetated. Sylvan microseris is a perennial herb in the Asteraceae family that occurs at elevations of 150-4950 ft (CNPS 2014). Its blooming period occurs from March to June.

It has been collected from several populations within the inventory area, with most populations located on Mt. Diablo or its foothills, particularly on north-facing slopes near Donner Canyon, south of Clayton. Sylvan microseris is apparently widespread within Black Diamond Regional Preserve, occurring "on north facing slopes from Somersville to Nortonville" (Calflora 2014). Based on this and other, older location records for the Antioch foothills, it is expected that north-facing slopes in the Antioch foothills still provide suitable habitat for sylvan microseris (Calflora 2014, CCH 2014). Unknown populations of sylvan microseris are expected to occur on the northeastern foothills of Mt. Diablo stretching towards Brentwood, outside the UDAs.

Woodland woolythreads (*Monolopia gracilens*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 1B.2. This annual herb occurs in open areas in broadleafed upland forests, chaparral, and North Coast coniferous forests; it is also found in cismontane woodland and valley and foothill grassland and is weakly associated with serpentine soils. It is known from about 45 populations in Alameda, Contra Costa, Monterey, Santa Clara, Santa Cruz, San Luis Obispo, and San Mateo Counties. Woodland woolythreads is in the sunflower family (Asteraceae), blooms between February and July, and occurs at elevations from 325 to 3940 ft (CNPS 2014).

This plant has been found in several locations in Mt. Diablo State Park. The observations include rocky openings in chaparral, often formed by prior burns. Woodland wooly threads occurs on hillsides and ridge crests. Based on these prior findings, this species is expected to occur in unknown populations within the Mt. Diablo State Park in woodland openings, or in adjacent areas that are outside the UDAs.

Little mouse tail (*Myosurus minimus* ssp. *apus*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 3.1. This hydrophytic, annual herb occurs in mesic valley and foothill grassland or alkaline vernal pools at a wide range of elevations from 66 to 2000 ft. The blooming period for this species is variable and may occur from March to June, depending on hydrologic conditions. The known range of little mouse tail includes populations in 11 counties in California, including Contra Costa, Baja California, and Oregon (CNPS 2014). The wide range indicates that there are most likely other populations within California, especially within the Central Valley, but this plant is often overlooked due to its short blooming period and small stature. The taxonomic status of this subspecies is uncertain, as it is very similar to *M. sessilis*. It is currently (2014) in review to be considered for upgrade to a CRPR of 1B.

Historically, this species was collected in several locations in eastern Contra Costa County, and the type specimen is from the Antioch area (Calflora 2014). One specimen collection record indicated the species was "common" in the alkaline vernal flats near Byron (CCH 2014). Other collection records are from the Deer Valley area, Briones Valley, and near Los Vaqueros Reservoir. However, CNDDB only displays records of this species from Jersey Island, outside of the inventory boundary. In our opinion, this species could potentially occur in wetlands in the lower foothills stretching from Deer Valley to Byron, as well as areas near Byron. It may be located in areas both outside the UDAs and within the UDAs near Brentwood and Byron.

Cotula navarretia (*Navarretia cotulifolia*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 4.2. Cotula navarretia occurs in several Bay Area and central California counties within seasonal wetlands in chaparral, cismontane woodland, and valley and foothill grasslands at elevations of 13-6004 ft (CNPS 2014). It is an annual herb in the family Polemoniaceae that blooms from May to June, and typically grows in areas underlain with heavy adobe clay.

Cotula navarretia has been recorded from several populations within the inventory area, including north of Clayton along Kirker Pass Road, in Briones Valley approximately 8 mi south

of Antioch near Deer Valley Road, and in the vicinity of Byron Hot Springs (Calflora 2014, CCH 2014). Given the widely separated nature of these records, this species could potentially occur in clayey soils scattered across the central and southern portions of the inventory area from Clayton to the Alameda-Contra Costa County border, both within and outside UDAs.

Lime Ridge navarretia (*Navarretia gowenii)*. Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 1B.1. Lime Ridge navarretia was described as a new species in 2007 and is known from only four occurrences in two counties in California: Contra Costa and Stanislaus. The plant is an annual herb in the phlox family (Polemoniaceae) and blooms in May and June. This species is found in grassland and chaparral habitats at elevations from 590 to 1000 ft (CNPS 2014) and prefers calcium carbonate-rich soil with high clay content. The Stanislaus population occurs on soils underlain by serpentine bedrock (CNPS 2014).

In Contra Costa County, this species has been found at two locations at the Lime Ridge Open Space approximately 1.5 mi from the Plan boundary, and at one location in the Conservancy Preserves contiguous with East Bay Regional Park District's Black Diamond Mines Regional Preserve. The Lime Ridge Open Space populations both occur on the Domengine sandstone formation (H. Bartosh, pers. comm.). One of the locations is a previously burned area on the southeast side of one of the quarries in a clay soil. The other location in the Lime Ridge Open Space is on a summit, in clay soils, near the antenna facility. The population in the Black Diamond Mine Regional Preserve occurs in open, north-facing grassland on soils in the Altamont-Fontana complex (H. Bartosh, pers. comm.).

Based on these occurrences, Lime Ridge navarretia may occur at other locations in the Lime Ridge Open Space, in grassland or chaparral on clay soils. Additionally, the Domengine formation extends throughout the Plan area east from Clayton to Byron Hot Springs. Within this formation, additional unknown populations may occur within or near chaparral habitats found outside of Clayton or within Black Diamond Mines Regional Preserve and along the edge of Horse Valley (H. Bartosh, pers. comm).

Shining navarretia (*Navarretia nigelliformis* ssp. *radians*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 1B.2. Shining navarretia is an annual herb in the Polemoniaceae and blooms between April and July. The species occurs in cismontane woodland, valley and foothill grassland, or vernal pool habitats. Shining navarretia can be found at elevations from 250 to 3300 ft, sometimes on clay soils (CNPS 2014). The species is known from approximately 64 occurrences, two of which may be extirpated, in Alameda, Contra Costa, Colusa, Fresno, Madera, Merced, Monterey, San Benito, San Joaquin, and San Luis Obispo counties.

In the inventory area there have been three records of this species, two of which occur within existing parks and regional preserves. At Mt. Diablo State Park shining navarretia was observed in a clay depression near a burned area. At the Contra Loma Regional Park, the species was found on a north to northwest facing slope. The third occurrence was identified on private lands to the southeast of the Black Diamond Mines Regional Preserve, growing in clayey soils at the toeslopes of drainages. These records suggest that shining navarretia may occur in other areas

within these protected lands, and potentially in other privately owned lands in the, hilly terrain surrounding existing preserves within the Plan area, such as along the edges of Horse and Deer Valleys.

Mt. Diablo phacelia (*Phacelia phacelioides*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 1B.2. Mt. Diablo phacelia is an annual herb in the waterleaf family (Hydrophyllaceae) that blooms from April through May. This species occurs in rocky areas of chaparral and cismontane woodlands at elevations of approximately 1650 to 4525 ft. This species is often found on serpentine soils, and was classified as a 4.2 or broad endemic/strong indicator of serpentine habitat by Safford et al. (2005), although CNPS (2014) does not consider the plant a serpentine species. It is found in eight USGS 7.5-minute quadrangles in Contra Costa, San Benito, Santa Clara, and Stanislaus counties. Overall, Mt. Diablo phacelia is known from fewer than 20 occurrences, many of which are historical and need field surveys. The species is possibly threatened by foot traffic and trail construction. (CNPS 2014).

Within the inventory area, all known populations occur on protected, Mt. Diablo State Park lands, typically on or close to the summits of peaks and outside the UDAs. However, one CNDDB (2014) record is located on the far eastern side of the park, on the boundary between the park and other, currently unprotected foothill areas, suggesting that this species might occur in similar high-elevation foothills along the Mt. Diablo Park border within the inventory area, outside the UDAs.

Michael's rein-orchid (*Piperia michaelii*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 4.2. This perennial herb in the Orchidaceae family occurs in a wide variety of habitats, generally occurring in dry sites in coastal bluff scrub, closed-cone coniferous forest, cismontane woodland, coastal scrub, lower montane coniferous forest, and chaparral at elevations up to 3020 ft. The blooming period extends from April through August. The range of this species includes at least 20 California counties, although it may be extirpated from its historical range in Los Angeles and Ventura Counties.

Several collections of Michael's rein-orchid have been made from the inventory area, mostly from locations surrounding Mt. Diablo and other scrubby or wooded parklands or watershed areas such as Round Valley Regional Park, Morgan Territory Regional Preserve, and south of Clayton. Michael's rein orchid has also been collected outside the inventory area near the Briones Reservoir and Point San Pablo, facing the bay (Calflora 2014, CCH 2014). These records suggest that this species could occur in the inventory area in suitable habitat types from Detachment Concord to the Alameda-Contra Costa County border, principally outside the UDAs.

Lobb's aquatic buttercup (*Ranunculus lobbii*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 4.2. This annual herb occurs in Alameda, Contra Costa, Mendocino, Marin, Napa, Solano, and Sonoma counties and also in Oregon. The species may now be extirpated from its historical range in Santa Cruz and San Mateo counties. Lobb's aquatic buttercup grows in mesic areas of woodlands, forests, and grasslands at elevations of 49-1542 ft (CNPS 2014). This species, a member of the buttercup family (Ranunculaceae), blooms

from February to May depending on hydrologic conditions. This aquatic herb is threatened by urbanization, habitat alteration, and agriculture.

Mesic sites and wetlands scattered throughout the inventory area provide potential habitat for this species. Although the species has been found in several areas in western Contra Costa County, it is known from the inventory area only from wetlands near Mt. Diablo, including along the eastern flanks of the peak about 0.25 miles west of Marsh Creek Road (Calflora 2014). Within the inventory area, it could potentially occur in similar high-elevation foothills along the Mt. Diablo Park border within the inventory area, outside the UDAs.

Rayless ragwort (*Senecio aphanactis*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 2B.2. Rayless ragwort is an annual herb in the sunflower family (Asteraceae). It grows in chaparral, cismontane woodland, and coastal scrub habitats, and can bloom from January to April. Populations have been recorded from 50 to 2625 ft in elevation (CNPS 2014). The geographic range includes Alameda, Contra Costa, Fresno, Los Angeles, Merced, Monterey, Orange, Riverside, Santa Barbara, San Benito, Santa Clara, San Diego, San Luis Obispo, Solano, and Ventura counties. Populations have also been recorded on Santa Catalina Island, Santa Cruz Island, and Santa Rosa Island, although strangely the species was not detected on Santa Cruz Island from 1934 to 1991 (CNPS 2014), possibly indicating a long-lived seed bank.

At least two populations are recorded in the inventory area, one from the hills near Nortonville east of Clayton, and one from the foothills near Byron Hot Springs (CNDDB 2014). Within the inventory area, potential distribution of this species is somewhat of a mystery, but any areas of alkaline chaparral and woodlands between Clayton and the Clifton Court Forebay should be considered potential suitable habitat for the species. It has the greatest potential to occur outside the UDA in the Mt. Diablo foothills, but it may occur within the UDAs near Byron and the Byron Airport.

Most beautiful jewel-flower (*Streptanthus albidus* ssp. *peramoenus*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 1B.2. This annual herb occurs on serpentinite outcrops (or near such outcrops) in chaparral, cismontane woodland, and valley and foothill grassland habitats. This species has a serpentine affinity score of 4.3, which indicates that it is a broad serpentine endemic/strong indicator (Safford et al. 2005). It is known to occur within a wide range of elevations from approximately 310 to 3300 ft. The blooming period for this species occurs from April to September, although this period may be longer in certain years. The known range of most beautiful jewel-flower includes populations in Alameda, Contra Costa, Monterey, Santa Barbara, Santa Clara, and San Luis Obispo counties. Thus, the observed range for the species is disjunct, with one part of the range centered in the inner Coast Ranges along San Francisco Bay, and the other in the outer Coast Ranges in San Luis Obispo and Santa Barbara Counties. It is possible the southern range represents a different species, which would indicate that the species has a more tightly restricted, endemic range than previously thought (CNPS 2014). This species is threatened by non-native plants and grazing.

Within the inventory area, at least four populations of most beautiful jewel-flower have been recorded on or near serpentinite outcrops occurring along the foothills of Mt. Diablo. Three of

these populations are located within Mt. Diablo State Park, and are thus permanently protected, but one population occurs just outside park boundaries below a serpentinite outcrop near the southeast end of Prospectors' Gap Road (CNDDB 2014). Within the inventory area, it may occur in similar high-elevation foothills along the Mt. Diablo Park border, outside the UDAs.

Slender-leaved pondweed (*Stuckenia filiformis* ssp. *alpina*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 2B.2. Slender-leaved pondweed is a perennial rhizomatous herb in the pondweed family (Potamogetonaceae) that occurs in freshwater marsh habitats from 984 to 7053 ft in elevation. It blooms from May to July. Slender-leaved pondweed is widely distributed across the United States, occurring in at least 25 states, but is considered rare within California. Within California it is found from as far north as Lassen County to as far south as Merced county (CNPS 2014).

Within Contra Costa County, this species has been documented at two locations: Sibley Regional Park on the far western side of the county, and near the northwest base of Mt. Diablo. Neither of these records is located within the inventory area, but given the very broad range of this aquatic species, unknown populations could exist in other freshwater wetland habitats within the Plan area, particularly along the southern edge of the Plan area in higher elevations.

Caper-fruited tropidocarpum (*Tropidocarpum capparideum*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 1B.1. Caper-fruited tropidocarpum is an annual herb belonging to the mustard family (Brassicaceae) that occurs in alkaline clay soils in valley and foothill grasslands, at elevations between 3 and 1493 ft. It blooms from March to April. Caper-fruited tropidocarpum was thought to be extinct, but in 2000 was rediscovered on Ft. Hunter Liggett. Historic occurrences are reported from Alameda, Contra Costa, Fresno, Glenn, Monterey, Santa Clara, San Joaquin, and San Luis Obispo counties. The species is possibly threatened by grazing, military activities, trampling, and non-native plants (CNPS 2014).

In Contra Costa County, historic records exist from the Byron Hot Springs, Clifton Court Forebay, Woodward Island, and Clayton quadrangles. However, the species is presumed extirpated from the county and has not been observed in Contra Costa County since 1957 (CNDDB 2014). Unknown populations could occur on alkaline grassland soils in the inventory area. Caper-fruited tropidocarpum is a "no-take" species according to the Plan.

Oval-leaved viburnum (*Viburnum ellipticum*). Federal Listing Status: None; State Listing Status: None; California Rare Plant Rank: 2B.3. Oval-leaved viburnum is a deciduous shrub in the honeysuckle (Caprifoliaceae) family that CNPS (2014) lists as occurring in 26 USGS 7.5-minute quadrangles in Contra Costa, El Dorado, Fresno, Glenn, Humboldt, Mendocino, Napa, Placer, Shasta, Sonoma, and Tehama counties and in Oregon and Washington State. It occurs in chaparral, cismontane woodland, and lower montane coniferous forest habitats at elevations from 705 to 4593 ft and blooms from May to June (CNPS 2014).

While oval-leaved viburnum has a widespread range, it is not common wherever it is found and it often occurs as small populations of 10 or fewer shrubs. Within the inventory area, the species is found in several locations on Mt. Diablo, in Morgan Territory Regional Preserve, and outside

the inventory area in Briones Regional Park and near Las Trampas Ridge. Within the inventory area, this species is mostly expected to occur in the southeastern foothills of Mount Diablo, outside the UDAs.

Reptiles and Amphibians

California horned lizard (*Phyrnosoma coranatum frontale*). Federal listing status: None; State listing status: Species of Special Concern. The California horned lizard was historically found along the Pacific coast from the Baja California border west of the deserts and the Sierra Nevada, north to the Bay Area, and inland as far north as Shasta Reservoir, and south into Baja California. Habitat conversion and fragmentation for agricultural purposes has resulted in extirpation from much of its former range. Also, the introduction of non-native Argentine ants, which are inedible to horned lizards and tend to displace the native carpenter ants, is another factor in horned lizard population declines. The California horned lizard occupies loose sandy loam and alkaline soils in a variety of habitats including chaparral, grasslands, saltbush scrub, coastal scrub, and clearings in riparian woodlands. California horned lizards are often found in lowlands along sandy washes with scattered shrubs and along dirt roads, and frequently found near anthills. This species primarily eats ants but also consumes other small invertebrates such as spiders, beetles, termites, flies, bees, and grasshoppers.

No records of California horned lizards are known from the initial or maximum UDAs, and most areas within those UDAs do not provide suitable habitat. The majority of the urban development will not occur on suitable habitat for this species, with the exception of chaparral and grassland habitat around Clayton, and grassland habitat near Byron and Antioch. Two recent records exist immediately to the west of the inventory area, in chaparral habitat (Figure 5). One record is within Mt. Diablo State Park, approximately 1 mi west of Clayton, and the other is located near Mount Zion Peak, approximately 1 mi south of Clayton (CNDDB 2014; see Figure 5). These records are located in chaparral habitat with gravelly soils. A third record, consisting of 2 adults and 4 juveniles hiding in ground squirrel burrows, is located in sandy grasslands west of Byron (Figure 5; CNDDB 2014). Additionally, there are two historical records, apparently from within former grasslands, within or near the Pittsburg city limits (CDFW 1994). It is expected that this species occurs very locally (i.e., with a sparse distribution) and in low numbers in grasslands, chaparral, and other open habitats with loose soils, including alkaline soils, throughout lowlands and foothill areas in much of the Plan's inventory area.

San Joaquin whipsnake (*Masticophis flagellum ruddocki*). Federal Status: None; State Status: Species of Special Concern. The San Joaquin whipsnake is a subspecies of the coachwhip, which is related to racers. San Joaquin whipsnakes occur on the west side of the San Joaquin Valley and on the San Joaquin Valley floor in Kern County in sparse grasslands and saltbush scrub communities with little or no trees. This species occurs in open, dry, treeless areas, including grassland and saltbush scrub. San Joaquin whipsnakes take refuge in rodent burrows, under shaded vegetation, and under surface objects such as rocks or logs. They require the presence of mammal burrows for refuge, temperature regulation, and possibly egg-laying.

No records exist in the initial and maximum UDA, and the only CNDDB record for this species in the inventory area is from Kellogg Creek, in an area immediately to the east of what is now the northern end of Los Vaqueros Reservoir (Figure 5; CNDDB 2014). However, San Joaquin

whipsnakes could be uncommon inhabitants of treeless grasslands in the southeast portion of the Plan's inventory area. This area represents the northern extent of their range, with more records occurring in Alameda County to the south. San Joaquin whipsnakes would most likely be found in areas where California ground squirrels provide burrows. Most of this potential habitat falls outside the initial and maximum UDA, though the species could occur within portions of the UDA near the Byron airport under the maximum UDA scenario.

Western spadefoot (*Spea hammondii*). Federal Status: None; State Status: Species of Special Concern. The western spadefoot ranges throughout the Central Valley and adjacent foothills, and is usually quite common where it occurs. This species occurs primarily in grasslands, especially with temporary pools, but occasional populations occur in hardwood woodlands, chaparral, floodplains, and other areas. Individuals are generally associated with sandy or gravelly soil types and spend most of their time buried underground, typically emerging only at night during rainy periods. This species is primarily terrestrial, except when breeding. Breeding occurs during heavy rainfall when shallow pools form, normally from late winter to the end of March. Chorusing males may be heard during this period, but agricultural irrigation may elicit vocalizations in any month. Females lay numerous small, irregular clusters containing 10 to 42 eggs that are fertilized externally. Eggs hatch rapidly, normally within two weeks, and tadpoles mature within three to eleven weeks. Adults prey on insects and worms and tadpoles consume planktonic organisms and algae, but can also be carnivorous.

No records of this species exist within the Plan's inventory area, and given the survey effort for special-status vernal pool branchiopods and California tiger salamanders in temporary pools in the Plan area, there is a low probability that the spadefoot has gone undetected here. However, the species has been recorded in the easternmost edge of Alameda County to the south (CDFW 1994), and there is at least some potential for it to occur in the southeastern portion of the county in grasslands, alkali wetlands, and other open habitats with sandy or gravelly soils that are suitable for digging and have depressions that form shallow pools in winter. Most such areas are located outside the initial and maximum UDAs, with only a small area of potential habitat within the maximum UDA around the Byron Airport.

Birds

White-tailed kite (*Elanus leucurus*). Federal Status: None; State Status: Fully Protected Species. White-tailed kites are generally associated with open habitats with low ground cover and scattered trees or tall shrubs for nesting. Kite nests are built near the tops of oaks, willows, or other dense broad-leafed deciduous tress in partially cleared or cultivated fields, grassy foothills, marsh, riparian, woodland, and savanna. Kites prey primarily on small rodents (especially the California vole [*Microtus californicus*]), but also feed on birds, insects, reptiles, and amphibians.

This species is common throughout most of the Plan's inventory area, and breeding records occur within the initial and maximum UDAs, including the Antioch, Oakley, and Brentwood areas (CNDDB 2014). Breeding kites are most common in the eastern portion of the inventory area (i.e., Zone 6) in open grassland and agricultural areas (Glover 2009). However, breeding kites can occur in a variety of habitats throughout the inventory area, such as grassland, savanna,

oak woodland, riparian, and wetlands. The white-tailed kite is a "no-take" species according to the Plan.

Northern harrier (*Circus cyaneus*). Federal Status: None; State Status: Species of Special Concern. The northern harrier is commonly found in open grasslands, agricultural areas, and marshes. Harriers usually nest in emergent wetlands or wet meadows providing some protection from mammalian predators, but they may also nest in taller grasslands, grain fields, or on sagebrush flats. Nests are located on the ground, often in areas where long grasses or marsh plants provide cover and protection. Harriers hunt for a variety of prey, including rodents, birds, frogs, reptiles, and insects by flying low and slow in a traversing manner, utilizing both sight and sound to detect prey items.

Northern harriers are common in croplands, pastures, and various wetland areas in the northern and eastern portions of the Plan's inventory area, especially in areas that provide suitable cover and are adjacent or in close proximity to wetlands. Confirmed breeding records in the inventory area occur in weedy fields or marshes in acquisition Subzone 6a and 6e (Glover 2009). Two CNDDB-mapped breeding records from outside the inventory area, including one from a levee edge at the Clifton Court Forebay and one from an annual grassland in Tassajara Valley, also corroborate that harriers breed in these regions (Figure 5; CNDDB 2014). During migration and in winter, migrants forage in open habitats throughout the Plan area.

Peregrine Falcon (*Falco peregrinus*). Federal Status: None; State Status: Fully Protected. The peregrine falcon occurs throughout much of the world, and is known as one of the fastest flying birds of prey. Peregrine falcons prey almost entirely on birds, which they capture while in flight. These falcons nest on ledges and caves on steep cliffs, and occasionally on human-made structures such as buildings, bridges, and electrical transmission towers. In California, they are known to nest along the entire coastline, in the Coast Ranges, and the Cascade Ranges and Sierra Nevada. A severe decline in populations of the widespread North American subspecies *anatum* began in the late 1940s. This decline was attributed to the accumulation of DDE, a metabolite of the organochlorine pesticide DDT, in aquatic food chains. When concentrated in the bodies of predatory birds such as the peregrine falcon, this contaminant led to reproductive effects, such as the thinning of eggshells.

The *Breeding Bird Atlas of Contra Costa County* (Glover 2009) indicates confirmed breeding in only two atlas blocks on the southern and western slopes of Mt. Diablo, outside the Plan area. However, rock outcrops and cliffs on the northern and eastern slopes, within the Plan area, are also expected to provide suitable nesting sites for peregrine falcons, and there is some potential for the species to nest on buildings or bridges, or in old red-tailed hawk (*Buteo jamaicensis*) or common raven (*Corvus corax*) nests on electrical transmission towers as the species has begun to do in other parts of the Bay Area. The peregrine falcon is a "no-take" species according to the Plan.

Long-eared owl (*Asio otus*). Federal listing status: None; State listing status; Species of Special Concern. Long-eared owls are uncommon yearlong residents throughout California except in the Central Valley and Southern California deserts, where it is an uncommon winter visitor. This species frequents dense, riparian and live oak thickets near meadow edges, and

nearby woodland and forest habitats. Long-eared owls use old crow, magpie, hawk, heron, and squirrel nests in a variety of trees with dense canopy. They will hunt in open areas, and occasionally in woodland and forested habitats. Long-eared owls feed primarily on voles but also eat other small rodents and birds.

There are no breeding records for this species within the initial and maximum UDAs, and habitats within these development zones are likely unsuitable due to the scarcity of dense forest within most of the UDAs. However, the species may breed in small numbers in more heavily forested portions of the Plan area outside the UDAs. For example, a possible breeding long-eared owl was located along Morgan Territory Road in 2002 (S. Glover pers. comm.). Small numbers of long-eared owls may occur in areas providing dense woody vegetation for roosting and extensive grasslands for foraging throughout the Plan area, including lowland areas within or near the UDAs, during migration and in winter.

Short-eared owl (*Asio flammeus*). Federal listing status: None; State listing status: Species of Special Concern. Short-eared owls occur in open habitats such as grasslands, wet meadows, and marshes. They usually hunt during crepuscular and nocturnal hours, but they can occasionally be seen hunting during the day. Short-eared owls hunt mice, ground squirrels, and other small mammals, and occasionally capture small birds such as meadowlarks or blackbirds; however their main source of food is usually voles. Like harriers, they hunt by flying just above the ground and will hover above prey before striking. Short-eared owls nest on the ground in small tufts, or mounds, of vegetation in areas that provide suitable cover and foraging. In winter they may form loose communal ground roosts in fields with thick grass or along vegetated fencelines.

In the Plan's inventory area, short-eared owls occur in small numbers, primarily as winter visitors in grasslands and wetland habitats that provide cover for roosting. Short-eared owls breed in marshes in the Suisun Bay and Central Valley to the north and east of the inventory area, but they are expected to breed in the Plan area irregularly and in very low numbers, if they breed there at all. A possible breeding owl observed near the east end of Camino Diablo Road near Byron (Glover 2009) suggests the possibility of breeding in the southeastern part of the Plan area, possibly both within and outside the initial and maximum UDA associated with Byron.

Loggerhead shrike (*Lanius ludovicianus*). Federal listing status: None; State listing status; Species of Special Concern. This predatory songbird inhabits much of the lower 48 states. Loggerhead shrikes are considered a fairly common species in California, although populations have declined significantly over the last 20 years. Loggerhead shrikes are generally associated with open habitats interspersed with shrubs, trees, poles, fences or other perches from which they can hunt. They occur rarely in heavily urbanized areas, but are often found in open cropland. Loggerhead shrikes are primarily monogamous and are very territorial throughout the year. Nests are built in densely-vegetated shrubs or trees, often containing thorns, which offer protection from predators and upon which prey items are impaled. This species will eat mostly large insects, but also will hunt small birds, mammals, amphibians, reptiles, fish, carrion, and various other invertebrates.

Within the Plan's inventory area, loggerhead shrikes are widespread and inhabit grasslands, croplands, orchards, oak savannas, and other open habitats. Breeding records are distributed throughout the entire inventory area (Glover 2009), though the species occurs in developed areas only where large undeveloped infill parcels are present. For instance, there is a record of a nesting pair, near the intersection of Highway 4 and Cypress Road in Oakley, which occurs within the initial and maximum UDA areas (Figure 5; CNDDB 2014). Shrikes are absent from wooded areas in the southwest region, where oak woodland is the dominant cover type, and from the highest-elevation areas in the western part of the inventory area. Those areas are largely within existing open space areas, including Mt. Diablo State Park.

Yellow warbler (*Dendroica petechia*); Federal status: None; State status; Species of Special Concern. Yellow warblers occur in a variety of wooded habitats having high insect abundance. The most common habitats used by this species, particularly for breeding, include riparian habitats consisting of alders, cottonwoods, willows and other trees and shrubs. The presence of willows is one common feature of yellow warbler habitat north of Mexico whereas south of Mexico, mangroves are a dominant feature. Most yellow warblers migrate to Mexico and South America in the fall and return to California to breed in April.

Non-breeding yellow warblers are common in riparian habitats, urban parks, and a variety of other habitats throughout the Plan's inventory area during migration, however the species is not known to breed in the inventory area. There are a few breeding occurrences from the western portion of Contra Costa County (e.g., Tilden Regional Park, near Briones Valley, San Pablo Reservoir) in willow-dominated riparian areas (Glover 2009). It is possible that small numbers of yellow warblers breed in lower-elevation riparian habitats in the eastern part of the inventory area (e.g., Zone 6), where willows are the dominant riparian cover type.

Yellow-breasted chat (*Ictera virens*); Federal listing status: None; State listing status; Species of Special Concern. Similar to the yellow warbler, the yellow-breasted chat favors dense riparian thickets for foraging and nesting. Chats mainly forage on invertebrates, but will consume berries and fruits when available. Yellow-breasted chats breed in dense riparian vegetation close to the ground. They are much less abundant than yellow warblers in California, as the loss of nesting habitat and brown-headed cowbird nest parasitism has caused declines in the region.

Yellow-breasted chats are not known to breed in the inventory area. However, small numbers of breeding pairs breed just to the north of the inventory area on Bethel Island, and breeding chats have been observed near the northern end of Big Break Road in Oakley, just north of the inventory area (Glover 2009, S. Glover pers. comm.). It is possible that a very small number of pairs of chats may breed in willow-dominated riparian habitat in the eastern portion of the Plan area, primarily outside the UDAs. The species may occur in very low numbers in riparian habitat throughout the Plan area during migration.

Grasshopper sparrow (*Ammodramus savannarum*). Federal listing status: None; State listing status: Species of Special Concern. The grasshopper sparrow uses a variety of grassland habitats, as well as pastures and fallow croplands. Grasshopper sparrows are generally associated with short to medium-height heterogeneous grasslands with some forbs (Shuford

1993). They consume both insects and seeds on the ground, particularly bare ground, and in low vegetation. Grasshopper sparrows use grasses to build domed nests at ground level, usually at the base of grass clumps.

No breeding records for grasshopper sparrows exist within the initial or maximum UDA. Most confirmed breeding records of grasshopper sparrows within Contra Costa County are from the western portion of the County (e.g., the Berkeley Hills). However, small numbers of grasshopper sparrows have been recorded during the breeding season within open space preserves in or adjacent to the western edge of the inventory area, including Mt. Diablo State Park and Black Diamond Mines Regional Preserve, and in grasslands south of Mt. Diablo (Glover 2009). Several birds have also been observed singing on Jersey Island to the north of the inventory area (S. Glover, pers. comm.). Therefore, there is potential for very small numbers of this species to breed in grasslands or pastures outside the UDAs in the western part of the inventory area, most likely in areas that contain diverse grassland vegetation.

Mammals

American badger (*Taxidea taxus*). Federal Status: None; State Status: Species of Special Concern. American badgers are stocky, burrowing mammals that occur in grasslands, pastures, and other dry open habitats throughout the western United States. They are strong diggers and will dig burrows even in dry, brittle soil for cover. They primarily feed on ground-dwelling rodents, including rats, mice, and especially ground squirrels, but will also feed on birds, snakes, and insects. Badgers are primarily nocturnal, although they are occasionally active during the day. They mate during late summer, and females give birth to a litter of young the following spring.

There are several CNDDB records throughout non-native annual grasslands in the inventory area; none are within the initial UDA but two are within the maximum UDA. Several badger records occur in the southeastern portion of the inventory area, including one in the Byron maximum UDA, one to the west of Byron (Subzone 5a), and one in Round Valley (on East Bay Regional Park land; Figure 5; CNDDB 2014). Other records in the inventory area are located to the south of Antioch (Subzone 2f), the northwest of Brentwood (Subzone 2i), and to the west of Brentwood in the maximum UDA, in Subzone 2i (Figure 5; CNDDB 2014). Since American badgers are highly specialized hunters and have large home ranges, they are present in the Plan area only in low numbers, but they are expected to occur in grasslands and less intensively cultivated agricultural habitats throughout most of the Plan's inventory area, primarily outside the UDAs, where drier soils and California ground squirrel populations are present.

Ringtail (*Bassariscus astutus*). Federal Status: None; State Status: Fully Protected. The ringtail is distributed throughout much of the state of California, occurring in forests and shrubland, often in close association with rocky areas or riparian habitats. This species nests in rock recesses, hollow trees, logs, snags, abandoned burrows, or woodrat nests; young are usually born between May and June (Walker *et al.* 1968). Ringtails are omnivorous, eating rodents, rabbits, birds, invertebrates, fruits, and nuts (Taylor 1954, Trapp 1978). The status of this species in eastern Contra Costa County is poorly known. Although this species' strictly nocturnal habits may be at least partially responsible for the lack of information on this species' distribution in the project vicinity, it is unlikely to be common given the scarcity of sightings,

and the scarcity of roadkill records (*e.g.*, compared to the American badger, which is much more frequently detected by roadkills). Ringtails are infrequently reported to the CNDDB (2014), which lists no records of the species in the Plan area. Nevertheless, ringtails are expected to be present in woodland and forested habitats in the Plan area, and possibly near rock outcrops providing cavities and crevices that may serve as denning sites.

San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*). Federal listing status: None; State listing status: Species of Special Concern. The San Francisco dusky-footed woodrat is one of 11 subspecies of the dusky-footed woodrat that occur in central California. The dusky-footed woodrat is generally associated with forest habitats with moderate canopy, year-round greenery, a brushy understory, and suitable nest-building materials. Oak and riparian woodlands and chaparral often provide suitable habitat for this species. Since this species occurs in areas that are covered, they tend to avoid open grassland and open oak woods with small amounts of underbrush. Woodrats use sticks to build mound lodges, often at the base of a tree or shrub. Some lodges can be large (up to 5 or 6 ft across) and structurally complex, with multiple chambers for reproduction and food storage. Because woodrats build large structures, other species often occupy them as well, including other mammals, reptiles, amphibians, and insects.

San Francisco dusky-footed woodrats are not typically reported to the CNDDB, and thus there is only one CNDDB record from the Plan area (in an oak woodland, approximately 1.5 mi southwest of Los Vaqueros Reservoir; Figure 5; CNDDB 2014). However, this species is expected to be present throughout most of the woodland and chaparral-dominated habitats in the western portion of the Plan area, primarily outside the UDAs. The lower-elevation northern and eastern portions of the Plan area are more open and have a longer history of disturbance by agricultural and urban uses, and woodrats are absent from most of these areas. Within the UDAs, woodrats are likely restricted to forest remnants and riparian habitats in less heavily urban areas.

Pallid bat (*Antrozous pallidus*). Federal listing status: None; State listing status: Species of Special Concern. The pallid bat occupies a range of habitats, including grasslands, shrublands, woodlands, and forests from sea level up through mixed conifer forests. However, this species is most common in open, dry habitats with rocky areas for roosting. Day roosts are in caves, crevices, mines, and occasionally in hollow trees and buildings. Night roosts may be in more open sites, such as porches and open buildings. Adequate roost sites for pallid bats must protect bats from high temperatures. Little is known about hibernation sites, or winter roosts, but some pallid bats roost in rock crevices in winter. Regionally, riparian areas are important winter habitat for this species. This species forages on a wide variety of insects and arachnids, including beetles, orthopterans, homopterans, moths, spiders, scorpions, solpugids, and Jerusalem crickets. Pallid bats form maternity colonies in early April, and may have a dozen to 100 individuals; males may roost separately or in the nursery colony. Pallid bats are known to be sensitive to human disturbances at roost sites.

There are several CNDDB records of pallid bats in the County, including records from the Danville area, but not from the inventory area (CNDDB 2014). However, this species is expected to occur at scattered locations throughout the portions of the Plan area providing oak

woodlands, oak savanna, riparian habitats, and rock outcrops in grasslands. Most such habitats are outside the UDAs, but small numbers of pallid bats could occur in the UDAs.

Western mastiff bat (*Eumops perotis*). Federal Status: None. State Status: CSSC. The western mastiff bat occurs as an uncommon resident in the San Joaquin Valley, as well as the Coastal Range and inland sites from central to southern California and throughout the desert regions. This species is the largest native bat in the United States, with a forearm length of 3.1 to 3.3 inches and weighing up to 3.5 ounces. Its wings are long and narrow, allowing fast, sustained flights over open habitats. Western mastiff bats forage mainly on slow moving flying insects. This species roosts primarily in cliffs or high structures as night roosts, day roosts, or maternity roosts, particularly where there is a minimum 10-ft vertical drop at the entrance to roosts. They are known to roost with other bat species, including the pallid bat.

No definite records of the western mastiff bat exist in the inventory area. However, high cliffs around Mt. Diablo and its foothills provide suitable roost sites for this species, particularly where they are adjacent to grasslands and other open habitats. As a result, this species is likely present in the Plan area, primarily (or perhaps solely) outside the UDAs.

Western red bat (*Lasiurus blossevillii*). Federal Status: None. State Status: CSSC. In California, the red bat occurs from Shasta County to the Mexican border, west of the Sierra Nevada/Cascade crest and deserts. The winter range for this species includes western lowlands and coastal regions south of the San Francisco Bay. Western red bats primarily roost and breed in riparian areas that are structurally diverse and dominated by cottonwoods. This species preys on a variety of small insects including crickets, beetles, and moths.

There is only one CNDDB record of the western red bat from the Plan area (from the vicinity of Antioch; Figure 5; CNDDB 2014). A compilation of red bat records from a variety of sources identified no other records from the Plan area (Johnston and Whitford 2009), suggesting that this species occurs sparingly in the Plan area. Western red bats likely occur here primarily during migration and winter, when they roost solitarily in the foliage of trees in a variety of habitats, including urban and rural habitats. Breeding in the Plan area is unlikely due to the absence of riparian habitats with tall cottonwoods and willows.

CUMULATIVE IMPACT ASSESSMENT

IMPACT ASSESSMENT METHODS AND ASSUMPTIONS

This impact analysis for CEQA species is based principally on a comparison of the extent of impacts to habitat of a given species that may result from Plan-covered development with the expected benefits to the species based on the extent, type, and level of enhancement that will result from the implementation of conservation measures. Neither the precise distribution of CEQA species within the UDAs and the potential preserve acquisition areas, nor site-specific information on potential impacts or conservation measures, is available for most species, areas, or Plan activities. Nevertheless, we have attempted to provide an impact assessment for each species that is as quantitative as possible by relying on assumptions based on the expected outcome of the Plan under two specific scenarios: implementation under complete development of the entire initial UDA, and implementation under complete development of the maximum UDA. As explained above, these two implementation scenarios lead to differing extent and areas of expected impacts (see Figure 1 and Tables 1 and 2), and differing mitigation requirements for preservation, enhancement, and restoration. The Plan states that the final level of build-out is expected to be in between the initial and maximum UDA scenarios. As we cannot predict the precise level of build-out nor which exact areas will certainly be impacted within the maximum UDA, we use these scenarios to "bookend" our impact and significance determinations in a similar manner as done by the Plan.

We adhere to the definitions of *direct*, *indirect*, *temporary*, *short-term*, and *long-term impacts* provided in the 2006 EIS/EIR (see *List of Terms Used in This Analysis* for definitions), and follow the same assumptions regarding the initial validity of the baseline ecological conditions presented in the Plan and its EIS/EIR. We further assume that conservation/preservation goals stated in the Plan will be fully effective in their stated objectives.

To assess species-level impacts, we focused on the expected net outcome of all covered urban build-out and rural infrastructure projects, preserve management activities, habitat restoration and enhancement, and other landscape-level changes expected to occur under each of the Plan scenarios. We then compared these scenarios to the currently existing conditions within eastern Contra Costa County as observed in December 2012 to determine whether Plan activities would result in a net adverse effect, net benefit, or neutral effect on each species. Preservation of suitable habitat for a species was considered to provide a benefit to the species under the assumption that preserved habitat is likely to be of higher quality than impacted habitat in most cases, and that habitat management would be well funded, focused on maximizing ecological functions and values, and assured of being implemented. In addition, we considered the enhancement of new preserves via focused management for particular covered species or habitat types in determining the degree to which the conservation measures (e.g., preservation and enhancement through management) would offset anticipated impacts.

Even considering all records, collections, and location information available for the CEQA species considered in this report, we assume that many, and perhaps most, existing populations of many CEQA species within the inventory area are currently unknown. As private lands are typically less well-surveyed than public lands, it is expected that unknown populations of at least

some of the CEQA species exist in private lands within the UDA that are likely to be developed, or in private lands within AA Zones that may or may not be acquired for the Plan Preserve System. However, we used all available information to determine where each species is most likely to occur, particularly relative to the UDAs and potential AA zones. For example, for plants, we used soils mapping (Figures 3a-b), land cover/habitat mapping (Figures 4a-b), elevation data, and location records of extant and extinct populations (CNDDB records[4] shown on Figures 3-5) to generate assumptions regarding (1) what constituted suitable habitat for each CEQA species, and (2) where currently unknown populations of plant CEQA species may be located. Still, in light of the uncertainties involved in this analysis, it should be acknowledged that differences between our assumptions regarding the likely occurrence of a species and the species' actual abundance and distribution could affect the accuracy of our determinations regarding the net effects of the Plan on that species, both in magnitude and direction (i.e., adverse/beneficial).

Plant species addressed in the Plan itself do not present this problem, because of two major considerations the Plan sets forth with regard to plants. Firstly, for those covered plant species considered currently endangered or so rare that a "worsening of environment" or loss of additional populations could lead to endangerment of the species, the species was considered a "no-take" species in the Plan. Plan-compliant projects must make provisions to avoid impacts to all populations of these no-take species. Covered plant species have certain limits under the Plan on the number of populations that may be impacted, so the maximum degree of impact to the species can be definitively assessed. Additionally, there are species-specific acquisition requirements that mandate that certain known or future discovered populations of covered plant species must be protected (see Tables 3-5). Thus, the Plan can have confidence in the minimum level of protection and/or compensatory mitigation for covered species. This level of confidence cannot be achieved for non-covered plant CEQA species. However, in cases where the Plan may have net adverse effects on plant CEQA species, we have indicated below where the East Contra Costa County Habitat Conservancy may choose to prioritize acquisition, or where impacts may be avoided for known populations of plant CEQA species, to reduce the potential for adverse impacts and maximize the potential for beneficial impacts on CEQA species related to implementation of the Plan.

In order to assess effects on species under the Plan we used a number of assumptions regarding the implementation of the Plan. These assumptions are listed below.

- **Location of Impacts.** As stated in the EIS/EIR (Jones & Stokes 2006), we assume that at a minimum, all areas within the initial UDA will be directly or indirectly impacted, and impacts could possibly also include all areas within the maximum UDA, even those areas also mapped as AA Zones, such as Zone 2i north of Marsh Creek Reservoir or Zone 6a near Oakley (Figures 1 and 2).

[4] CNDDB only regularly maintains georeferenced record information for plant species on CNPS lists 1-3. However, some list 4 species are being entered into the CNDDB. In this area, stinkbells, a list 4 species, is also shown on the CNDDB. In addition to this location information, we used location information available from herbarium collection records of each species.

- **Amount of Impact by Land Cover Type.** We assumed all upland habitats within the UDAs would be permanently lost as suitable habitat for CEQA species following implementation (see below for our assumptions on impacts to aquatic and wetland habitats). Expected impact acreages for each land cover type are summarized in Tables 1 and 2.

- **Conservation and Land Acquisition.** We assumed that all acquisition and preservation requirements, both in terms of acreage quotas and qualitative species-level and natural community level conservation measures, will be satisfied. The requirements for acreage preservation and compensatory mitigation by habitat are shown in Tables 1 and 2, and the acquisition requirements by AA Zone are summarized in Tables 3-5.

- **Quality of Impacted vs. Conservation Lands.** Even in the absence of habitat enhancement and restoration, it is assumed that the quality of lands acquired for conservation will be of higher value for most species than the lands that are impacted. This assumption results both from the focused acquisition of high-quality lands and from the fact that many areas within the UDAs are currently dominated by agricultural lands or other land-use types that have been more heavily altered by human activity than the conservation lands, which are more likely to be natural lands or lands that are easily enhanced or restored to relatively natural conditions.

- **Predicting "Fate" of Specific Locations within the Inventory Area.** Uncertainty exists as to whether a specific area in a given AA zone will be conserved by purchase or fee title easement, or left unprotected. Similarly, where the UDA and AA Zones overlap (i.e., where areas could be either developed or protected), or where the maximum UDA exceeds the initial UDA (since it is possible that not all the maximum UDA will be developed), it is unknown which specific areas may be developed. Therefore, we assumed that within acquisition zones indicated as "higher priority", more land was likely to be acquired, compared to areas in zones indicated as "lower priority" which we assumed would be subject to less land acquisition (Figure 2). However, it should be noted that except for areas within the initial UDA, which will all be developed, and areas already conserved in regional, state, and local parks, we do not know with certainty the fate of any specific parcel or location in the inventory area, except where known plant populations are required to be preserved under terms of the Plan. Our determinations of the net effects of the Plan were based on two scenarios: development of only the initial UDA, and development of the maximum UDA.

- **Acquisition Priorities.** Some AA zones have differing priorities for acquisitions under the maximum vs. initial UDA scenarios, and we took such differences into consideration during our analysis when considering the likelihood a specific area would be preserved. Areas with lower priorities under one or both of the UDA scenarios were considered less likely to be acquired for the Preserve System.

- **Delta Brackish and Freshwater-dependent Marsh Species.** Following the Plan and EIS/EIR impact assessment methodology, we assumed that implementation of the Plan would not lead to substantial direct or indirect effects to marsh species that depend on

brackish and freshwater habitats outside the inventory area within Suisun Bay, Big Break, Rock Slough and other sloughs, and the San Joaquin River. We assumed that natural community conservation measures for riparian zones, streams, and wetlands within the UDA would protect these off-site areas from effects related to channelization, sediment release and transport, changes in hydrology, and increased runoff, and that BMPs observed during construction of individual covered projects would further protect off-site, downstream areas from deleterious changes in water quality.

- **Wetlands and Riparian Habitats within the UDA.** While we assumed that all natural community conservation measures described in the Plan would be enacted, including observance of riparian and stream setbacks and avoidance of wetland and riparian impacts where feasible, we also assumed that these habitats would be degraded to some extent by surrounding development due to fragmentation and isolation, noise, and other anthropogenic disturbance. Thus, we assumed that preserved wetlands, riparian corridors, and streams within the UDA would have a reduced ability to support special-status species following build-out.

- **Effects of Natural Community Conservation Measures.** We assumed that directives for natural community conservation measures such as invasive species management; wetland, riparian, and aquatic creation, enhancement and restoration; and restoration of oak savanna would be successful in improving habitat quality for those covered and CEQA species that utilize such habitats. We assumed such actions will allow for greater densities of CEQA species, healthier populations, or expansion into restored, enhanced, or differently managed areas that do not support these species currently. As a result, we assumed that lands that are managed specifically for certain natural communities will provide habitat value for special-status species far beyond the mere preservation of existing habitat on that land.

- **Effects of Species-level Conservation Measures.** We assumed that species-specific conservation measures intended to improve habitat and available resources for the Plan's covered species, as well as BMPs that would be implemented to avoid and minimize impacts to covered species during all covered activities (including Conservancy management and restoration activities), would have similar effects on CEQA species that utilize the same habitats and have similar habitat requirements. Again, we have assumed that lands that are managed specifically for certain habitat conditions will provide habitat for special-status species far beyond the mere preservation of existing habitat on that land.

- **Success of Conservation Measures.** We also assumed that all conservation measures would be successful in achieving the stated conservation and enhancement goals. For example, under Conservation Measure 2.5, Manage Natural Burrow Availability and Prey Base in Grasslands, we assume that the indicated method of management (in this case, cessation of all poison baiting and trapping activities) will translate to an increase in rodent prey.

- **Uncertainty in Quantifying Preserve Impacts with Precision.** Lands acquired for preservation under the Plan Preserve System will experience minor, localized impacts related to trail construction, compensatory pond and wetland construction, enhancement activities, and other actions. Unlike areas within the UDA, we assumed direct, permanent impacts would not occur to the majority of areas acquired for preserves. Therefore, we did not account for worst-case scenarios, but rather assumed what was reasonably expected to happen. For example, we considered the possibility that special-status plant populations could occur on a preserve in the path of a proposed trail, and in such a case the population would be impacted. However, we assumed the probability of such an impact to be very low.

- **Uncertainty in Quantifying Impacts to Certain Habitats**. As some features such as wetlands and rock outcrops, and sensitive habitat associations such as serpentine grasslands, could not be accurately mapped for the Plan within the large inventory area based on aerial signature, some degree of uncertainty exists regarding the amount, location, and type of these habitats. We assumed that mandatory planning surveys for individual covered projects for compliance with the terms of the Plan, Clean Water Act compliance, and project-specific CEQA impact assessment would accurately inventory such features, and either lead to their on-site preservation, or inform requirements for appropriate and adequate compensatory mitigation as stated under the Plan objectives and required mitigation ratios. As a result, we made reasonable, rather than worst-case, assumptions regarding the potential impact to such habitats when they occur within the UDAs. Again, we assumed impacts would occur as summarized in Tables 1 and 2, so, for example, we assumed no impacts to rock outcrops will occur from projects implemented under the Plan (Table 1).

Conditions on covered activities, discussed in Chapter 6 of the HCP/NCCP, will assist in the conservation of CEQA species as well. Although these conditions were not explicitly taken into account in assessing potential effects of the HCP/NCCP on CEQA species, as our quantification of potential effects on CEQA species relied primarily on potential impacts to or conservation of suitable habitat, effects to CEQA species will be avoided and minimized to some extent by compliance with these conditions. Table 7 lists the applicable HCP/NCCP conditions and indicates the CEQA species that would benefit from those conditions.

Table 7. Summary of HCP/NCCP Conditions and Conservation Measures Applicable to CEQA Species.

CEQA Species	HCP/NCCP Plan Conditions and Conservation Measures									
	1.6: Minimize Development Footprint Adjacent to Open Space	1.7: Establish Stream Setbacks	1.8: Establish Fuel Management Buffer	1.9: Incorporate Urban-Wildland Interface Design Elements	1.10: Maintain Hydrologic Conditions and Minimize Erosion	1.11: Avoid Direct Impacts on Fully Protected Wildlife Species	1.12: Implement BMPs for Rural Road Maintenance	1.13: BMPs for Flood Control Facility Maintenance	1.14: Design Requirements for Covered Roads outside the UDA	2.12: Wetland, Pond, and Stream Avoidance and Minimization
Upland Plants of Non-Serpentine Chaparral, Woodland, Scrub, or Grassland Habitats	X		X	X			X		X	
Serpentine-adapted Plant Species	X		X	X			X		X	
Alkaline-adapted and Wetland Plant Species	X	X	X	X	X		X	X	X	X
California Horned Lizard	X		X	X			X		X	
San Joaquin Whipsnake	X		X	X			X		X	
Western Spadefoot	X		X	X			X	X	X	
White-tailed Kite	X		X	X			X		X	
Northern Harrier	X		X	X		X	X		X	
Peregrine Falcon	X		X	X		X	X		X	
Long-eared Owl	X		X	X			X		X	
Short-eared Owl	X		X	X			X		X	
Loggerhead Shrike	X		X	X			X		X	
Yellow Warbler	X	X	X	X	X		X		X	X
Yellow-breasted Chat	X	X	X	X	X		X		X	X
Grasshopper Sparrow	X		X	X			X		X	
American badger	X		X	X			X		X	
Ringtail	X	X	X	X	X	X	X		X	X
San Francisco Dusky-footed Woodrat	X	X	X	X	X		X		X	X
Pallid Bat	X		X	X					X	
Western Mastiff Bat	X		X	X					X	
Western Red Bat	X	X	X	X	X				X	X

NET EFFECTS OF THE PLAN ON PLANT CEQA SPECIES

Upland Plants of Non-Serpentine Chaparral, Woodland, Scrub, or Grassland Habitats

The 16 plant species discussed in this section share upland habitat associations with no specific, known affinity for rare soils, such as serpentine or alkaline soils, and they are non-specialized in this regard. In general, these species are typically found in scrubby[5], chaparral or woodland habitats, and they are expected to be associated with such habitats within the inventory area. Some of these non-specialized upland species may also be found in open grasslands, in transitional areas between open grasslands and scrubby or wooded habitats, or within grassy oak savanna, but none of these species are specific to grassland habitats. In general, the chaparral and woodland habitats where these species are most typically found in the inventory area are expected to experience a minor extent of impacts in comparison to the extent of these habitats expected to be acquired and incorporated into the Plan Preserve System (Table 1).

Most of the upland habitats favored by this non-specialized upland group, particularly chaparral, will experience low levels of direct loss and high levels of preservation and enhancement under the Plan. The range of expected impacts to chaparral is 0-2 ac (under the initial and maximum UDA scenarios, respectively), or less than 1% of this land cover type in the inventory area. Preservation requirements for chaparral mandate that even if no chaparral is directly impacted, 500 ac (70% of the remaining unprotected chaparral in the inventory area) will be preserved and managed to enhance habitat for Alameda whipsnake. Management for this endemic chaparral snake will also increase habitat values for several of the upland species in this non-specialized group, such as Brewer's calandrinia.

Similarly, oak woodland and oak savanna are expected to experience low levels of direct loss under the development covered by the Plan. Most of this loss is expected to occur in areas near Clayton or along the southern edges of the UDA boundary south of Pittsburg (Figure 1), or may occur due to isolated rural infrastructure projects. Approximately 42-165 ac of oak savanna in the inventory area will be lost, but 500 ac of the remaining unprotected savanna will be preserved and enhanced through management (Table 1). Additionally, 45-165 ac of savanna will be restored by planting oaks in areas with undesirably low canopy cover and/or low canopy replacement. This restoration acreage estimate reflects a 1:1 loss to restoration ratio, indicating that the small area of oak savanna impacted under the Plan will be compensated through restoration. As the savanna incorporated into the Plan Preserve System will be enhanced through management (including modulation of grazing rates and removal of invasive weed infestations), it is expected that overall, savanna habitat will improve within the inventory area for special-status plant species. It is worth noting that restored savanna (which will consist of planting oaks in grassland parcels) may not present the same microhabitat parameters until the planted oaks reach maturity, which will not occur until after full implementation of the Plan. Only 21-73 ac of oak woodlands in the inventory area will be directly impacted, while at least 400 ac of the remaining unprotected woodland will be preserved and enhanced through management. For both

[5] Coastal scrub, coastal bluff scrub, and some rock outcrops would qualify as "scrubby" habitats. These habitats were not specifically mapped by the Plan, but small patches likely exist in grasslands, outcrops, and edges of chaparral in the inventory area. Coastal scrub and chaparral were mapped as one unit by the Plan.

of these oak habitat types, the preservation requirement is the same under either UDA scenario. However, because acquisition priorities for different areas shift under the two UDA scenarios, it is possible that even more oak woodlands and savanna areas may be preserved than are necessary to meet the minimum land cover specific requirements to satisfy total preservation acreage requirements under the two scenarios.

This group of 16 non-specialized upland plant species appears to be most closely associated with chaparral and woodland habitats in the inventory area. However, some of these species may occur in grassland areas occasionally (or they are generally associated with grassy habitats when found in other areas of the state), and thus the net effect of the Plan on grassland habitats is also relevant to the impact assessment for these species. Lower-elevation grassland habitats, especially in the north-central portion of the inventory area, are within the UDA and are likely to experience heavier losses to development. Approximately 2533-4152 ac of the grasslands in the inventory area will be impacted by covered projects (under the initial and maximum UDA scenarios, respectively). Much of this loss will occur in the north-central part of the inventory area under approximately 600 ft in elevation. However, similar low-elevation grasslands will be preserved in AA Zones 1a, 1d, 1e, 2h, and 2i, and others. Overall, approximately 13,000-16,500 ac (under the initial and maximum UDA scenarios, respectively) of annual grasslands will be acquired and incorporated into the Plan preserves. These preserve grasslands will be managed for covered species, and it can be expected that the general habitat quality of these areas will improve due to weed removal, grazing management intended for species preservation rather than profit, and increasing the rodent prey base (as burrows provide a native source of small-scale isolated disturbance, known to increase plant diversity). Eleven populations of grassland-adapted covered plant species will be preserved, thus likely targeting high-quality grassland habitat for preservation, which may also support CEQA species, such as sylvan microseris.

Some species in this non-specialized upland group are associated with rocky soils and rock outcrops. This was a land cover type that was difficult to map for the Plan using aerial signatures, and thus the true extent of these areas was only estimated. Rock outcrops are not expected to occur in the UDA, which contains little of the hilly land in which outcrops generally occur, and the Plan determined that rock outcrops would not be impacted by covered rural infrastructure projects (based on estimated impact acreages listed, see Table 1). Thus, the Plan (and our effects analysis) anticipates no impacts to habitats suitable for strongly rock-adapted CEQA species. In reality, if any unmapped rock outcrops are present within the footprint of future Plan-covered activities, impacts to rock outcrop-associated species could occur unless these features are avoided. Rocky soils, which contain inclusions of up to 5% rock outcrops (SCS 1969), are shown in Figures 3a-b, while rock outcrops mapped by the Plan are shown on Figures 4a-b and 5a-b.

Direct loss of suitable/preferred habitat for these 16 upland species will occur due to urban development within the UDA or covered rural infrastructure projects outside of preserves, but in general these impacts are not expected to affect many (if any) extant populations of these species. While low-elevation grasslands (which form much of the UDA) may provide theoretically suitable habitat for some of these species (based on general habitat information provided by CNPS and Calflora), location records from the vicinity of eastern Contra Costa County indicate a strong preference for rocky, scrubby, wooded, and/or transition zones between

grassland and other upland habitats for this group. The distribution of woodland and chaparral habitats within the inventory area generally indicates these species are more likely to be located in central and southern portions of the inventory area, where Plan preserves are likely to be located.

Within preserves, there is some potential for these species to be adversely affected by burning or weed removal, construction and maintenance of trails and other facilities, wetland and riparian restoration or creation, and potential increases in anthropogenic disturbances in some currently privately owned areas that are opened for public recreation. However, there is a low probability of such impacts, and any such adverse effects would have only localized and largely short-term adverse effects, if they occur at all. Conversely, disturbance in some privately owned areas may decrease once incorporated into preserves, depending on current land use and changes in management to improve habitat for covered species. Sites for wetland and trail construction, or other direct, localized impacts occurring within the preserves will be surveyed for covered and no-take plants during the pre-acquisition phase. If these surveys are conducted in a protocol-level, floristic manner, particularly in direct impact areas, non-covered special-status species will also be detected and reserve managers can avoid the low risk of these potential, preserve-related impacts to CEQA species. In most cases, compensatory wetland creation is not expected to have the potential to affect many of the species in this group, which tend to be located on slopes with unfavorable topography and edaphic conditions for wetlands. Proposed trails or constructed wetlands could be re-sited (when feasible) if an unknown population is discovered. Additionally, if currently known populations of CEQA species are avoided by preserve activities when feasible, this would result in a similar reduction in risk for these species.

Management activities within Plan preserves will provide several widespread and/or long-term beneficial effects on these non-specialized upland species. Managing grazing for covered species may release grazing pressure in some currently overgrazed areas, and may also control invasive weeds or open up choked areas that have not been grazed while in private holdings, both of which could enhance grassland and grassy oak savanna for plant CEQA species. Prescribed burns and other chaparral management activities are expected to enhance chaparral habitat significantly by allowing for soil conditions that only exist after a burn (to which some of the plant species in this upland group are specifically adapted). Burns are important in creating and maintaining habitat mosaics that are typical of healthy chaparral systems. Conservation Measure 1.4 (*Prepare and Implement an Exotic Plant Control Program for the Preserve System*) is also expected to benefit all preserved habitat types.

Net effects of the Plan on each of these 16 species are discussed in greater detail below.

Large-flowered fiddleneck. Large-flowered fiddleneck is a federally and state endangered species with a CRPR of 1B.1, which indicates it is seriously endangered in California (CNPS 2014). As such, impacts to any populations could endanger the species and would be considered significant. This species has been designated as a “no-take” species by the East Contra Costa County HCP/NCCP. Any areas to be impacted that support suitable land cover types would have to be surveyed, and any populations of large-flowered fiddleneck would be avoided and may be incorporated into the preserve system.

Because the species would not be impacted and could be preserved, Plan implementation is expected to have either no effect (if no other unknown populations exist in the inventory area) or a net beneficial effect (if any additional populations are preserved) on the large-flowered fiddleneck under either UDA scenario.

California androsace. California androsace has a CRPR of 4.2, and as such, impacts to this species within the inventory area would be significant only if large, dense, or numerous populations are impacted, or if impacts would lead to an effective range reduction for the species. According to CNPS (2014), grassy slopes in oak savanna, oak woodlands, and chaparral would be considered especially suitable habitat for this species within the inventory area. Within Contra Costa County, historical records indicate the species has mainly been found in chaparral habitats (CCH 2014). Because of this species' association with chaparral habitats within the this region, this species is expected to be concentrated in currently protected areas or privately owned areas that are much more likely to become part of the Plan Preserve System than impacted.

Under the initial UDA scenario, there is very low likelihood that any populations of California androsace will be impacted, and a much higher probability that unknown populations potentially occurring in Zone 4 or, more likely, Subzone 3a, will be preserved. The species does not rely on chaparral, and thus, under the initial UDA, any potentially impacted populations would likely be associated with impacts to oak woodland, oak savanna, or to impacts along the transition zones between grasslands and these land cover types.

The likelihood that a population will be impacted is greater within the maximum UDA than within the initial UDA, because more chaparral, oak woodland and savanna, and grasslands will be impacted under the maximum scenario (Table 1), and because there are historical records of a population within the maximum UDA south of Clayton that, if extant, could be lost. However, the population potentially impacted under this scenario has not been observed since the 1930s, so is likely already extirpated in any case. Furthermore, the likelihood a population will be protected and enhanced is also greater with development of the maximum UDA, particularly in regards to lands in Subzones 3b, 4g, and 4f (all of which have a higher acquisition priority under this scenario).

Several locations in potential future preserve areas AA Zone 4 and Subzones 3a and 3b provide ample areas of suitable habitat for the species (see land cover mapping in these zones on Figure 4). Subzone 3a, one of the areas most likely to support an unknown population of California androsace, is a high-priority acquisition under either scenario, and contains 90% of the suitable habitat for Alameda whipsnake, which would also be suitable for California androsace, will be preserved. While preservation itself is not a direct benefit, management activities to decrease exotic plant populations in chaparral and scrub habitats in preserves, and particularly, to enact prescribed burns, will increase habitat suitability for the species. Trail construction within preserved areas presents possible impacts but these are unlikely, given the expected small, localized amount of impacts occurring from trail construction compared to the amount of available suitable habitat. As noted previously, preserve managers can reduce this risk further by conducting floristic surveys as opposed to surveys only targeting covered and no-take species.

Because the species is not likely to be located in the UDA and is more likely to be located in areas to be preserved, and because preserve activities will result in a net enhancement of the species' habitat, Plan implementation is expected to have either no effect (if no other unknown populations exist in the inventory area) or a net beneficial effect (if any additional populations are preserved) on the California androsace under either UDA scenario.

Coast rock cress. Coast rock cress has a CRPR of 4.3, and as such, impacts to this species within the inventory area would be significant only if large, dense, or numerous populations are impacted, or if impacts would lead to an effective range reduction for the species. This species is strongly associated with rock outcrops that have a heavy coastal influence, and therefore, the inventory area likely represents the extreme eastern, inland edge of the species' range. If any populations of this species are located within the inventory area, which is somewhat unlikely, they are likely to be concentrated in lowland, northern portions of the UDA rather than in currently protected areas or potential acquisition areas, since these latter areas are located farther inland (away from Suisun Bay) than much of the UDA.

Under the initial or maximum UDA scenarios, there is little potential for any populations to be impacted, due to this species' dependence on coastal rock outcrops; no rock outcrops were intended to be impacted under terms of the Plan (Table 1). Furthermore, because few impacts to occur rock outcrops, if any, are project to occur under the Plan, it is even more unlikely that a large or regionally significant population would be lost due to development under the Plan. Most of the area within the UDA does not have the soils or topography necessary to support this species. There are no rock outcrops mapped by the Plan or particularly rocky soils mapped by the SCS in the coastal portions of the UDA, but based on previous mapping data, we know there are some sandstone-based rock outcrops in the areas not underlain with alkaline soils just south of the UDA boundary near Buchanan Road, between Kirker Creek and James Donlon Boulevard (Figure 4). Other rock outcrops may be located in similar topography in the northern portions of AA Zones 1e, 1a, and 1d. These AA zones are of lower priority for protection under the Plan Preserve System, and they overlap considerably with the initial and maximum UDAs. We expect most of the areas within AA Zones 1a and 1e to be developed. The initial and maximum UDA limits in this area are very similar, but a slightly larger area of impacts will occur under the maximum UDA (Figure 1), thus slightly increasing the possibility of impacting either potentially suitable and/or occupied habitat for coast rock cress. Even if covered rural infrastructure projects located closer to the interior of the inventory area were to impact suitable habitat, these areas would for the most part have too much of an inland character to support the species.

Areas in scrubby, rocky, coastal habitats that are sparsely vegetated provide particularly suitable habitat for this species. Coast rock cress is not known to be associated with serpentine soils or outcrops. Based on available specimen location records (CCH 2014), habitat requirements likely include some exposure to coastal winds and fog, and a low level of competition from other plant species, particularly non-native grasses. As a result, any unknown populations incorporated into preserves would be most likely to occur in the southeastern half of AA Zone 1e, or within northern portions of Zone 1d. No preservation requirements exist for Zone 1e, but 25% of Zone 1d will be acquired (Table 3). Preservation in Zone 1d will focus on southern portions of this Zone, near Black Diamond Mines Regional Park (Figure 2), which may be too far inland to support coast rock cress. Therefore, overall, there is very little potential for preservation of any

unknown populations of this species. Were any populations protected, the expected changes in land management in preserves, particularly in regard to invasive species control and possibly, changes in grazing management, could benefit the species by reducing weedy vegetation.

There is a very low potential for development covered by the Plan to impact this species. In general the species is more likely to occur within the UDAs than within new preserves, but because impacts to rock outcrops are not expected to occur, and the inventory area likely represents only marginally suitable habitat due to a more inland character than is apparently associated with occurrences of the species, there is a very low potential for impacts. Portions of the inventory area supporting rock outcrops are likely too far inland to provide high-quality habitat, being at the extreme eastern edge of the species' range. Therefore, we do not expect impacts to this species to be great enough to result in a significant impact under CEQA.

Brewer's calandrinia. Brewer's calandrinia has a CRPR of 4.2, and as such, impacts to this species within the inventory area would be significant only if large, dense, or numerous populations are impacted, or if impacts would lead to an effective range reduction for the species. Because of this species' strong affinity for chaparral habitats, this species is likely to be concentrated in currently protected areas (which will remain unaffected by the Plan), or in privately owned areas that are much more likely to become part of the Plan's Preserve System than impacted.

Under the initial UDA, there is essentially no potential for any populations to be impacted, due to this species' very strict reliance on chaparral habitats (no chaparral will be impacted under the initial UDA [Table 1]). There is instead a high likelihood that one or more populations would be acquired due to the Alameda whipsnake and Mt. Diablo manzanita-driven acquisition requirements. Subzones 2a, 2b, 2c, and 3a provide suitable habitat, and any given area of suitable chaparral in these zones is very likely to be preserved due to acquisition requirements targeted for Alameda whipsnake core habitat and Mt. Diablo manzanita (Table 3). Subzone 4a is also a higher priority for acquisition and may provide some potentially suitable habitat for the species. Small patches of chaparral in Subzones 4b, 4g, 3b, and 3c may also provide suitable habitat, although these areas are not a higher priority for acquisition, nor are the patches of chaparral underlain by loamy or sandy soils as large and contiguous as in the aforementioned Subzones 2a-c and 3a.

Under the maximum UDA scenario, there is a very low likelihood a population could be impacted near Clayton due to the expected 2 ac of chaparral impacts under this scenario (Table 1). It is unlikely a large or regionally important population would be located in this small area of impacts. Also, with the added development risk under the maximum UDA scenario, parcels in Subzones 4g and 4c would be more likely to be acquired, thus increasing the overall likelihood of protecting and enhancing at least one population.

Areas in chaparral or scrubby habitats that have been recently burned, or that are near areas that have been recently burned, and that are underlain with loamy or sandy soils provide particularly suitable habitat for the species. As a result, the expected changes in land management in preserves, particularly in regard to prescribed burns and changes in fire management, would greatly benefit the species, and may even allow it to colonize new areas of chaparral if these

areas have been under fire suppression regimes up to this time. There is a low risk of adverse effects on populations in preserves from trail construction and potentially from weed removal activities, although a more open canopy would likely benefit any populations in the long term. Overall, this plant is thought to favor disturbance, both from burns and other types of soil disturbance, and thus would likely be resilient to the soil disturbance caused by weed removal. Compaction of soils on trail surfaces would likely be detrimental to Brewer's calandrinia (which has an affinity for course-textured soils), but these impacts would be so localized that it is unlikely that a trail would extirpate an entire population even if constructed through the population.

There is a low potential for development covered by the Plan to impact this species, and a much greater potential for the species to occur in new preserves. Furthermore, enhanced management of preserves, particularly with respect to burn management, will benefit the species. Therefore, the Plan will have a net beneficial effect on Brewer's calandrinia under either UDA scenario.

Hospital Canyon larkspur. Hospital Canyon larkspur has a CRPR of 1B.2, which indicates it is considered fairly endangered in California (CNPS 2014). As such, impacts to this species within the inventory area would be significant if moderately large, dense, or numerous populations are impacted, if populations were extirpated, and/or if impacts would lead to an effective range reduction for the species. Because of this species' affinity for chaparral and woodland habitats, it is likely to be concentrated in currently protected areas (which will remain unaffected by the Plan), or in privately owned areas that are much more likely to become part of the Plan Preserve System than impacted.

Under the initial UDA, there is only a low potential for any populations to be impacted, due to this species' reliance on chaparral and mesic woodland habitats (no chaparral will be impacted under the initial UDA, and only 21 ac of oak woodland and 42 ac of oak savanna impacts are expected [Table 1]). There is instead a high likelihood that one or more populations would be acquired due to the acquisition requirements for the Alameda whipsnake and Mt. Diablo manzanita (which are chaparral-specialists) or the Mt. Diablo fairy-lantern and Diablo helianthella (which have similar habitat requirements to Hospital Canyon larkspur). An abundance of suitable habitat occurs surrounding Mt. Diablo, where extensive stands of chaparral and woodlands are located. Subzones 2a, 2b, 2c, and 3a provide suitable habitat, and any given area of suitable chaparral in these zones is very likely to be preserved due to acquisition requirements targeted for Alameda whipsnake core habitat and Mt. Diablo manzanita (Table 3). Subzone 4a is also a higher priority for acquisition and widespread areas of oak woodlands and savannas provide potentially suitable habitat for the species along the southeastern slopes of Mt. Diablo. Subzones 4b, 4g, 3b, and 3c also provide suitable habitat, although these areas are lower priority for acquisition.

There is little potential for any populations of this species to be impacted under the maximum UDA scenario. The mapped extent of a known population near Clayton (which is along the canyon bottom of Donner Creek) is located just outside the maximum UDA limits. This indicates that impacts to any unknown populations in the Clayton area would not be expected to effect a range reduction or extirpate the species from the vicinity of Clayton. Another population has been reported from the privately owned Young parcel near Russelmann Park (CCH 2014), in

AA Subzone 3b (not shown on CNDDB maps). Under the maximum UDA scenario, parcels in Subzones 4g and 4c would be more likely to be acquired, thus increasing the overall likelihood of protecting and enhancing at least one population. In fact, the acquisition requirements for AA Zone 4 increase from 1400 ac of required preservation under the initial UDA to 3000 ac of required preservation under the maximum UDA scenario, effectively doubling the chance of acquiring an unknown population of Hospital Canyon larkspur in this area.

Openings in chaparral (which are largely created and maintained in a healthy chaparral mosaic by fires), or wooded, mesic canyon bottoms provide particularly suitable habitat for the species. As a result, the expected changes in land management in preserves, particularly in regard to prescribed burns and changes in fire management, would greatly benefit the species by increasing the extent of openings. Riparian preservation requirements (Table 2) will likely increase the chances of acquiring suitable habitat, because this species often occurs in mesic canyon bottoms. There is a low risk of adverse effects on populations in preserves from trail construction, and potentially from weed removal activities and compensatory wetland creation. Compaction of soils on trail surfaces would likely be detrimental to the Hospital Canyon larkspur, but these impacts would be so localized that it is unlikely that a trail would extirpate an entire population even if constructed through a population. Weed removal activities would likely only cause temporary impacts, and overall would improve habitat for the species by improving general habitat quality and protecting the chaparral openings favored by the plants. This species is not strictly a wetland species, so if a population occurred along the edges of an area that was later flooded or excavated for wetland creation, the change in hydrology would negatively affect the plants. Because this species typically occurs in steep-sided, shady canyons with unfavorable topography for compensatory wetland expansion or pond creation, such impacts are highly unlikely.

There is a low potential for impacts to this species, and a much greater potential for the species to occur in, and benefit from the new preserves. Furthermore, enhanced management of preserves, particularly with respect to burn management, will benefit the species. Therefore, the Plan will have a net beneficial effect on Hospital Canyon larkspur under either UDA scenario.

Lime Ridge eriastrum. Lime Ridge eriastrum has a CRPR of 1B.1, and as such, is considered seriously threatened in California. This species was described as recently as 2013 and is known from only two occurrence records in the CNDDB (2014). Both of the known occurrences are located in the Lime Ridge Open Space, approximately 1.5 miles outside of the inventory area. However, because this species was only recently described, there is a reasonable probability that other unknown populations occur in the vicinity, possibly within the inventory area. Based on the apparent extreme rarity of the species, any impacts to this species within the inventory area would be significant, as the loss of even a few individuals could endanger the species. Because of this species' association with openings in chaparral underlain by alkaline or sandy soils, and based on known location records centered in the Lime Ridge Open Space, this species is most likely to be concentrated in existing protected areas (which will remain unaffected by the Plan), or in areas that would be more likely to be preserved by the Plan.

Under the initial UDA scenario, there is very low potential for populations to be impacted because no populations are known to occur in the inventory area. There is low potential for

occurrence in potentially suitable alkaline chaparral areas near Marsh Creek, Horse Valley, Deer Valley, and Briones Valley, and potential for preservation of one or more populations due to the alkaline grasslands acreage requirements in Zones 5 and 6 (Table 5). Although only Subzone 5a is higher priority for conservation, general acreage requirements in Zones 5 and 6 (Table 5) indicate a high probability that suitable habitat (potentially occupied) from several or all of these Subzones will be acquired into the Preserve System.

Under the maximum UDA scenario, there is a greater likelihood an unknown population could be impacted near the Byron Airport or within the UDA expansion that overlaps with the northern portion of Subzone 2i. However, with the added development risk under the maximum UDA scenario, parcels in Subzones 5d and 5b would be more likely to be acquired, the preserved acreage in Zone 4 would be doubled, and an additional 350 ac of alkaline grasslands (some of which may be scrubby enough to support the species) would be acquired across all zones (Tables 1, 2, and 5), thus increasing the overall likelihood of protecting and enhancing at least one population of Lime Ridge eriastrum.

Alkaline areas in chaparral and oak woodlands and scrubby upland areas in alkaline grasslands may represent suitable habitat for the species. As a result, the expected changes in land management in preserves, particularly in regard to burn frequency in chaparral, could benefit the species' habitat. There is a low risk of adverse effects on populations in preserves from trail construction and potentially from weed removal activities. Compaction of soils on trail surfaces would likely be detrimental to Lime Ridge eriastrum, but these impacts would be so localized that it is unlikely that a trail would impact a population. Weed removal would be expected to benefit this species. Compensatory wetland construction could endanger populations of this species if hydrologic regimes are changed in a manner that would be unfavorable for the species, such as if an area with upland hydrology was converted to wetland hydrology following construction.

There is a low potential for impacts to this species, and a moderate potential for the species to occur in new preserves. Enhanced management of preserves, particularly with respect to fire regimes and weed control would benefit the species and its habitat if it is present. Therefore, the Plan will likely have a beneficial effect on the species under either UDA scenario. However, due to the extreme rarity of this species, loss of or impacts to even a single population would be significant under CEQA if not adequately mitigated. Although there is a higher likelihood that any unknown populations occurring in the Plan area would be preserved rather than impacted, this alone does not ensure that preservation of a population(s) sufficient to offset such impacts, were they to occur, will be enacted by the Plan. In this respect, this species shares some characteristics in terms of rarity and known distribution as those plant species designated "no take" under the Plan (although because Lime Ridge eriastrum was both formally described and listed by the CNPS after the Plan was developed, the species was not considered for coverage under the Plan). As a result, it was determined that the Plan alone is likely not sufficient to mitigate impacts to this species to a level below significance, and additional mitigation may be needed for project-level CEQA compliance.

To avoid significant impacts to this species, mitigation measures should be implemented for covered activities on a project-specific basis. Such measures would apply to relatively few

projects due to the species' apparent association with chaparral and the limited area within the UDAs that is located in or near chaparral. Recommended measures to reduce impacts to less-than-significant levels under CEQA are described below.

> **Mitigation Measure 1.** In all chaparral impacted by covered activities, as well as in impacted areas of grassland, shrubland, and oak woodland land cover types occurring within 500 feet of chaparral, protocol-level, targeted surveys for Lime Ridge eriastrum shall be conducted in addition to any applicable surveys for no-take plant species.
>
> **Mitigation Measure 2.** If Lime Ridge eriastrum is found in an area of proposed development, the covered project shall avoid any take of the species (to the extent feasible) by avoiding individuals and maintaining a minimum 30-ft buffer around the occupied habitat (or other buffer width as determined appropriate by a qualified plant ecologist based on the site, contributing watershed, and other project impacts), if feasible. The exact buffer shall be set such that enough of the contributing watershed is protected that substantive changes to the hydrologic conditions supporting the population can be avoided.
>
> **Mitigation Measure 3.** If direct impacts to the population cannot be fully avoided, or if any indirect impacts occurring within the buffer are determined by the qualified Plant ecologist to have the potential to endanger or degrade the avoided population, the applicant shall preserve and manage an extant population that is not currently protected. The protected population shall be of similar or greater size (in terms of numbers of individuals) and health as compared to the impacted population. The protected population will be preserved and managed in perpetuity. In the event that all populations of Lime Ridge eriastrum have already been preserved or are extinct, or in the event that all unprotected populations are substantially smaller than the population to be impacted, the occurrence shall be avoided.

Mt. Diablo buckwheat. Mt. Diablo buckwheat has a CRPR of 1B.1, which indicates it is seriously endangered in California (CNPS 2014). As such, impacts to any populations could endanger the species and would be considered significant. This species has been designated as a "no-take" species by the East Contra Costa County HCP/NCCP. Any areas to be impacted that support suitable land cover types would have to be surveyed, and any populations of Mt. Diablo buckwheat would be avoided and may be incorporated into the preserve system.

Because the species would not be impacted and could be preserved, Plan implementation is expected to have either no effect (if no other unknown populations exist in the inventory area) or a net beneficial effect (if any additional populations are preserved) on the Mt. Diablo buckwheat under either UDA scenario.

Diamond-petaled California poppy. Diamond-petaled California poppy has a CRPR of 1B.1, which indicates it is seriously endangered in California (CNPS 2014). As such, impacts to any populations could endanger the species and would be considered significant. This species has been designated as a "no-take" species by the East Contra Costa County HCP/NCCP. Any areas to be impacted that support suitable land cover types would have to be surveyed, and any

populations of diamond-petaled California poppy would be avoided and may be incorporated into the preserve system.

Because the species would not be impacted and could be preserved, Plan implementation is expected to have either no effect (if no other unknown populations exist in the inventory area) or a net beneficial effect (if any additional populations are preserved) on the diamond-petaled California poppy under either UDA scenario.

Fragrant fritillary. Fragrant fritillary has a CRPR of 1B.2, which indicates it is considered fairly endangered in California (CNPS 2014). As such, impacts to this species within the inventory area would be significant if moderately large, dense, or numerous populations are impacted, if multiple or large populations were extirpated, or if impacts would lead to an effective range reduction for the species. This species has a weak serpentine affinity and occurs in both serpentine and non-serpentine grassland and prairie habitats, as well as scrubland and woodland openings. In general, in the inventory area, such habitats may be impacted in the area west of Brentwood and south of Antioch, but currently known location records for this species indicate that its Contra Costa County range is apparently restricted to areas west of Mt. Diablo. Thus, if this species is present in the inventory area, it would likely be in areas closer to Mt. Diablo and thus more likely to be preserved than impacted.

Under the initial UDA, there is a very low potential for a population to be impacted to the southwest of Pittsburg, or to the west of Marsh Creek near Brentwood. A fairly large acreage of grasslands will be impacted (2533 ac), but much of this area is not expected to support suitable microhabitat characteristics. The area mapped both within the initial UDA and within AA Subzone 2i may provide suitable habitat for the species. There are no mapped serpentine grasslands in this area, but scattered records for stinkbells (Figures 3 and 4) indicate there could be some isolated inclusions of serpentine grassland. However, records for and collections of fragrant fritillary in Contra Costa County are concentrated in serpentine grasslands on the foothills of Mt. Diablo and in the western portion of the county outside the inventory area (Calflora 2014, CCH 2014). It is possible that areas in Subzone 2i north of Balfour Road contains areas of suitable habitat, and grasslands throughout AA Zones 1, 2, 3, and 4 could contain small patches of suitable habitat and/or unknown populations, but this is based on the presumed presence of suitable habitat, not on known location records. The most western portions of the inventory area near the Concord Naval Weapons Station supports a mix of grasslands and small scrubby patches and could be the most likely portion of the inventory area to locate unknown populations of this species, although surveys of the Inland Area of the Naval Weapons Station did not detect this species (Vollmar Consulting 2008). There is relatively low potential for populations to be acquired under this scenario, but this could occur if the species is located in the grasslands acquired to satisfy acquisition requirements in AA Zone 1, or if unknown populations of the species are acquired in Zone 4 acquisitions.

Under the maximum UDA scenario, there is a slightly greater likelihood a population could be impacted near Horse Valley due to the expected increase in impacts to the northern portion of Subzone 2i under this scenario (Table 1, Figure 2). Overall, grassland impacts will total 4152 ac and riparian impacts will total 35 ac under this scenario, but it is expected that only a small portion of this area could be considered suitable habitat for fragrant fritillary. With the added

development risk under the maximum UDA scenario, up to 3000 ac of additional grasslands, will be acquired, therefore slightly increasing the probability of preserving at least one population.

Expected changes in land management in preserves, particularly in regard to grazing management, could potentially benefit the species, and may even allow it to colonize new areas underlain with suitable soils if these areas have been overgrazed up to this time. However, because this species is an early blooming perennial that bolts before taller annual grass canopies have developed in the spring, it can tolerate higher levels of competition and does not tend to get shaded out. Thus, grazing management will only be expected to improve habitat for this species if it would benefit from a reduction in stocking rates. There is a low risk of adverse effects on populations in preserves from trail construction and potentially from weed removal activities, although a more open canopy would likely benefit any populations in the long term. Compaction of soils on trail surfaces could be detrimental to fragrant fritillary, but these impacts would be so localized that it is unlikely that a trail would extirpate an entire population even if constructed through the population. Additional preserve-related dangers to this species are compensatory wetland creation and riparian restoration activities. This species could occur in flatter, low-lying grassy areas favorable for wetland construction, which would negatively affect the species by changing hydrology in the area occupied by the plants. Such an action could lead to extirpation of a population. Planting and other disturbance occurring at riparian restoration sites could also impact populations, if present.

Based on known location records, there is a very low potential for impacts to this species, and a low potential for the species to occur in new preserves. Enhanced management of preserves, particularly with respect to grazing regimes (if areas are currently overgrazed), would benefit this species' habitat, but trail construction, wetland creation, and riparian restoration could negatively affect populations. It is unlikely that many (if any) populations, and no especially large populations, will be affected either negatively or positively by Plan activities, but there is a slightly greater possibility that this species, if affected at all, would be preserved rather than impacted. Loss of one or two small populations, even if no other populations are preserved, would not be expected to constitute a significant effect on the species' ability to persist in the area, if it is present in the inventory area at all. Possible impacts are not likely to effect a range reduction given the currently known range extending both north, south, west, and northeast of the Plan area, or substantially impact the species' metapopulation structure. Therefore, it is our opinion that the Plan will likely have no significant effect, either beneficial or adverse, on fragrant fritillary under either UDA scenario.

Hall's bush mallow. Hall's bush mallow has a CRPR of 1B.2, which indicates it is considered fairly endangered in California (CNPS 2014). As such, impacts to this species would be significant if moderately large, dense, or numerous populations are impacted, if entire populations were extirpated, and/or if impacts would lead to an effective range reduction for the species. Due to the distribution of this species in the Bay Area, impacts to any one population in Contra Costa County would not likely cause a range reduction. Because of this species' affinity for chaparral and coastal scrub habitats, if it occurs in the inventory area it is likely to be concentrated in currently protected areas (which will remain unaffected by the Plan), or in privately owned areas that are much more likely to become part of the Plan Preserve System than impacted.

Under the initial UDA scenario, there is essentially no potential for any populations to be impacted, due to this species' very strict reliance on chaparral habitats (no chaparral will be impacted under the initial UDA [Table 1]). There is instead a high likelihood that one or more populations would be acquired due to the Alameda whipsnake and Mt. Diablo manzanita-driven acquisition requirements. Subzones 2a, 2b, 2c, and 3a provide suitable habitat, and any given area of suitable chaparral in these zones is very likely to be preserved due to acquisition requirements targeted for Alameda whipsnake core habitat and Mt. Diablo manzanita (Table 3). Subzone 4a is also a higher priority for acquisition and may provide some potentially suitable habitat for the species. Small patches of chaparral in Subzones 4b, 4g, 3b, and 3c may also provide suitable habitat, although these areas are not a higher priority for acquisition.

Under the maximum UDA scenario, there is a very low likelihood a population could be impacted near Clayton due to the expected 2 ac of chaparral impacts (Table 1). Because of the small impact area, it is unlikely that such development would extirpate an entire population. Also, with the added development risk under the maximum UDA scenario, parcels in Subzones 4g and 4c would be more likely to be acquired, thus increasing the overall likelihood of protecting and enhancing at least one population. Again, the acquisition requirements for AA Zone 4 increase from 1400 ac of required preservation under the initial UDA to 3000 ac of required preservation under the maximum UDA scenario, effectively doubling the chance of acquiring an unknown population of Hall's bush mallow in this area.

Areas in native-dominated chaparral or scrubby habitats provide especially suitable habitat for the species. Location records indicate the species may have some particular affinity for south or west-facing, steep-sided slopes, sites that are in or near recently burned areas, and sandy soils. Bates (1963) identified the entire genus as "fire-followers". As a result, the expected changes in land management in preserves, particularly in regard to prescribed burns and changes in fire management, would greatly benefit the species, and may even allow it to colonize new areas of chaparral. Most types of weed removal activities would not be likely to affect the species greatly as it is a deep-rooted, hardy perennial that can easily be avoided by weed removal crews. There is a low risk of adverse effects on populations in preserves from trail construction. Compaction of soils on narrow trail surfaces would not be likely to substantially affect hardy perennial shrubs such as Hall's bush mallow, but in any case such impacts would be so localized that it is unlikely that a trail would extirpate an entire population even if constructed through a population.

There is a low potential for impacts to this species, and a much greater potential for the species to occur in new preserves. It is very unlikely impacts to the 2 ac of chaparral affected under the maximum UDA scenario would lead to the loss of an entire population. Furthermore, enhanced management of preserves, particularly with respect to burn management, is expected to benefit the species. Therefore, the Plan is expected to have a net beneficial effect on Hall's bush mallow under either UDA scenario.

Sylvan microseris. Sylvan microseris has a CRPR of 4.2, and as such, impacts to this species within the inventory area would be significant only if large, dense, or numerous populations are impacted, or if impacts would lead to an effective range reduction for the species. Because of this species' affinity for chaparral, oak woodland, oak savanna, and occasionally sparse

serpentine grassland or small grassy openings in wooded habitats, this species is likely to be concentrated in currently protected areas near Mt. Diablo (which will remain unaffected by the Plan), or in privately owned areas that are much more likely to become part of the Plan Preserve System than impacted.

Under the initial UDA, there is only a low potential for populations to be impacted, considering this species' distribution records, which center on the slopes of Mt. Diablo. There is instead a high likelihood that one or more populations would be acquired due to the Alameda whipsnake, Mt. Diablo fairy lantern, and Mt. Diablo manzanita-driven acquisition requirements, as well as generally stringent acquisition requirements for all of AA Zone 2 (Table 3). In this area, there is an extensive chaparral-woodland-grassland habitat mosaic favorable for sylvan microseris. Acquisition in AA Zone 2 will also focus on preserving a corridor to Black Diamond Mines Regional Park, where a known population occurs. Mt. Diablo fairy lantern, Brewer's western flax, and Alameda whipsnake-based requirements in AA Zone 4 may also benefit the species, although there are fewer areas of suitable north-facing slopes in this portion of the inventory area (as it is located on the south and east flanks of Mt. Diablo). Subzone 4a is also a higher priority for acquisition and may provide some potentially suitable habitat for the species. Subzones 4b, 4g, 3b, and 3c may also provide suitable habitat, although these areas are not a higher priority for acquisition.

Under the maximum UDA scenario, the probability that a population could be impacted is slightly higher than under the initial UDA scenario due to the expected increase in areal extent of oak woodland, oak savanna, and grassland impacts under this scenario (Table 1). A known population in Donner Canyon is no more at risk under the maximum UDA than under the initial UDA. However, if the presence of this population indicates others may be in that area, these could be at slightly higher risk from additional development to the southwest of Clayton. However, with the added development risk under the maximum UDA scenario, parcels in Subzones 4g and 4c would be more likely to be acquired, and total Zone 4 preservation requirements will double, thus increasing the overall likelihood of protecting and enhancing at least one population. Also, because of the known population in Donner Canyon, development under the maximum UDA scenario would not be expected to effect a range reduction or extirpate the species from the immediate vicinity.

Areas in chaparral, scrubby, wooded, or open grassland habitats that are underlain with coarse or serpentine soils provide particularly suitable habitat for the species; although sylvan microseris is not strongly serpentine adapted, it tolerates serpentine and shows an affinity for the low competition and open character of serpentine grasslands. As a result, the expected changes in land management in preserves, particularly in regard to prescribed burns and changes in fire management, and grazing management intended to specifically benefit Plan-covered species, would likely benefit sylvan microseris. These measures are expected to increase habitat quality within the chaparral-scrub-woodland-grassland foothill mosaic inhabited by the species. There is a low risk of adverse effects on populations in preserves from trail construction and potentially from weed removal activities, although a more open canopy would likely benefit any populations in the long term. Compaction of soils on trail surfaces would likely be detrimental to sylvan microseris (which has an affinity for course-textured soils), but these impacts would be so

localized that it is unlikely that a trail would extirpate an entire population even if constructed through a population.

There is a low potential for impacts to this species, and a much greater potential for the species to occur in new preserves. Furthermore, enhanced management of preserves, particularly with respect to burn management and grazing management, will benefit the species. Therefore, the Plan will have a net beneficial effect on sylvan microseris under either UDA scenario.

Woodland woolythreads. Woodland woolythreads has a CRPR of 1B.2, which indicates it is considered fairly endangered in California (CNPS 2014). As such, impacts to this species within the inventory area would be significant if moderately large, dense, or numerous populations are impacted, if populations are extirpated, or if impacts would lead to an effective range reduction for the species. Because of this species' affinity for openings in chaparral and woodland habitats, and occasionally serpentine grasslands, this species is likely to be concentrated in currently protected areas near Mt. Diablo (which will remain unaffected by the Plan), or in privately owned areas that are much more likely to become part of the Plan Preserve System than impacted.

Under the initial UDA, there is only a low potential for populations to be impacted, considering this species' distribution records, which center on the slopes of Mt. Diablo. There is instead a high likelihood that one or more populations would be acquired due to the Alameda whipsnake, Mt. Diablo fairy lantern, and Mt. Diablo manzanita-driven acquisition requirements, as well as generally stringent acquisition requirements for all of AA Zone 2 (Table 3). In this area, there is an extensive chaparral-woodland-grassland habitat mosaic favorable for woodland woolythreads. Mt. Diablo fairy lantern, Brewer's western flax, and Alameda whipsnake-based requirements in AA Zone 4 may also benefit the species. Subzone 4a is also a higher priority for acquisition and may provide some potentially suitable habitat for the species. Subzones 4b, 4g, 3b, and 3c may also provide suitable habitat, although these areas are not a higher priority for acquisition.

Under the maximum UDA scenario, the probability that a population could be impacted is slightly higher than under the initial UDA scenario due to the expected increase in areal extent of oak woodland, oak savanna, and grassland impacts under this scenario (Table 1). Known populations in Mt. Diablo State Park are no more at risk under the maximum UDA than under the initial UDA. The presence of these populations indicates others may be in that area, these could be at slightly higher risk from additional development to the southwest of Clayton. However, with the added development risk under the maximum UDA scenario, parcels in Subzones 4g and 4c would be more likely to be acquired, and total Zone 4 preservation requirements will double, thus increasing the overall likelihood of protecting and enhancing at least one population.

Areas in chaparral, scrubby, wooded, or open grassland habitats that are underlain with coarse or serpentine soils provide particularly suitable habitat for the species; although woodland woolythreads is not strongly serpentine adapted, it tolerates serpentine and shows an affinity for the low competition and open character of serpentine grasslands. As a result, the expected changes in land management in preserves, particularly in regard to prescribed burns and changes in fire management, and grazing management intended to specifically benefit Plan-covered

species, would likely benefit sylvan microseris. These measures are expected to increase habitat quality within the chaparral-scrub-woodland-grassland foothill mosaic inhabited by the species. There is a low risk of adverse effects on populations in preserves from trail construction and potentially from weed removal activities, although a more open canopy would likely benefit any populations in the long term. Compaction of soils on trail surfaces would likely be detrimental to woodland woolythreads (which has an affinity for coarse-textured soils), but these impacts would be so localized that it is unlikely that a trail would extirpate an entire population even if constructed through a population.

There is a low potential for impacts to this species, and a much greater potential for the species to occur in new preserves. Given the low likelihood of population loss under the Plan, the beneficial effects of enhanced management of preserves for the species, particularly with respect to burn management and grazing management, would more than compensate for such potential impacts. Therefore, the Plan will likely have a net beneficial effect on woodland woolythreads under either UDA scenario; alternatively if population loss were to occur, the Plan would have a less-than-significant adverse effect on the species.

Lime Ridge navarretia. Lime Ridge navarretia has a CRPR of 1B.1, and as such, is considered seriously threatened in California. This recently described, poorly known species is only known from a total of four occurrences, three of which are located outside the inventory area. However, because two of these populations occur within 1.5 miles of the inventory area, and because it is known from both western Contra Costa County and Stanislaus County, there is a reasonable probability that unknown occurrences are present in the intervening inventory area. Based on the apparent extreme rarity of the species, any impacts to this species within the inventory area would be significant, as the loss of even a few individuals could endanger the species. Because of this species' association with high-quality grassland and chaparral underlain by calcium carbonate rich soils with high clay content, and based on known location records centered around the Lime Ridge Open Space and Black Diamond Mines Regional Preserve, this species is most likely to be concentrated in existing protected areas (which will remain unaffected by the Plan), or in areas that would be more likely to be preserved by the Plan.

Under the initial UDA scenario, there is very low potential for populations to be impacted since no populations are known to occur in the inventory area. There is low potential for occurrence in potentially suitable heavy clay grassland areas in in Zones 2, 4, 5 and 6, and a subsequent potential for preservation of one or more populations due to the alkaline grasslands acreage requirements in Zones 5 and 6 (Table 5). Specifically, Subzones 2i (the northern portion), 2h, 6e, 6d, 6c, 5c, 5a, 5d, 5b, and potentially 4e and 4d provide suitable habitat, and although of those only Subzone 5a is higher priority for conservation, general acreage requirements indicate a high probability that suitable habitat (potentially occupied) from several or all of these Subzones will be acquired into the Preserve System.

Under the maximum UDA scenario, there is a slightly greater likelihood a population could be impacted in the UDA expansion that overlaps with the northern portion of Subzone 2i. However, with the added development risk under the maximum UDA scenario, parcels in Subzones 5d, 4d, and 5b would be more likely to be acquired, and an additional 359 ac of alkaline grasslands and wetlands (which often occur on suitably clayey soils) would be acquired

across all zones (Tables 1, 2, and 5). This would increase the overall likelihood of protecting and enhancing at least one currently unknown population.

Clayey grassland and chaparral, and similar microhabitats in oak woodland, and scrublands apparently represent suitable habitat for the species within the inventory area. As a result, the expected changes in land management in preserves, particularly in regard to grazing management, would be expected to benefit any newly discovered populations of this species by helping to maintain a healthy, moderately grazed canopy and reducing negative effects of overgrazing on the species' growth and reproduction. Clayey soils on slopes would in some cases be subject to less edaphic disturbance and terracing under milder grazing regimes. There is some risk of impacts to any newly discovered populations in preserves from trail construction, but due to the species' edaphic requirements, compaction would not likely negatively affect the species, and trail impacts would be so localized they would be unlikely to extirpate entire populations. Weed removal impacts may also negatively affect individual plants, although a more open herbaceous canopy would also likely benefit any populations in the long term. If unknown populations of the species occur in chaparral in the inventory area, management of fire regimes for covered species would be likely to improve habitat for Lime Ridge navarretia as well. Compensatory wetland construction could endanger populations of this species if hydrologic regimes are changed in a manner that would be unfavorable for the species, such as if an area with seasonal hydrology was inundated perennially.

There is a low potential for impacts to this species, and a moderate potential for the species to occur in new preserves. Enhanced management of preserves, particularly with respect to grazing management, fire regimes, and weed control would benefit the species and its habitat if it is present. Therefore, the Plan will likely have a beneficial effect on the species under either UDA scenario. However, due to the extreme rarity of this species, loss of or impacts to even a single population would be significant under CEQA if not adequately mitigated. Although there is a higher likelihood that any unknown populations occurring in the Plan area would be preserved rather than impacted, this alone does not ensure that preservation of a population(s) sufficient to offset such impacts, were they to occur, will be enacted by the Plan. In this respect, this species shares some characteristics in terms of rarity and known distribution as those plant species designated "no take" under the Plan (although because Lime Ridge navarretia was both formally described and listed by the CNPS after the Plan was developed, the species was not considered for coverage under the Plan). As a result, it was determined that the Plan alone is likely not sufficient to mitigate impacts to this species to a level below significance, and additional mitigation may be needed for project-level CEQA compliance.

To avoid significant impacts to this species, mitigation measures should be implemented for covered activities on a project-specific basis. Such measures would apply to relatively few projects due to the species' apparent association with chaparral and the limited area within the UDAs that is located in or near chaparral. Recommended measures to reduce impacts to less-than-significant levels under CEQA are described below.

> **Mitigation Measure 1.** In all chaparral and grassland habitats with clay soils that will be impacted by covered activities, as well as in impacted areas of shrubland and oak woodland land cover types occurring within 500 feet of chaparral, protocol-level,

targeted surveys for Lime Ridge navarretia shall be conducted in addition to any applicable surveys for no-take plant species.

Mitigation Measure 2. If Lime Ridge navarretia is found in an area of proposed development, the covered project shall avoid any take of the species (to the extent feasible) by avoiding individuals and maintaining a minimum 30-ft buffer around the occupied habitat (or other buffer width as determined appropriate by a qualified plant ecologist based on the site, contributing watershed, and other project impacts), if feasible. The exact buffer shall be set such that enough of the contributing watershed is protected that substantive changes to the hydrologic conditions supporting the population can be avoided.

Mitigation Measure 3. If direct impacts to the population cannot be fully avoided, or if any indirect impacts occurring within the buffer are determined by the qualified Plant ecologist to have the potential to endanger or degrade the avoided population, the applicant shall preserve and manage an extant population that is not currently protected. The protected population shall be of similar or greater size (in terms of numbers of individuals) and health as compared to the impacted population. The protected population will be preserved and managed in perpetuity. In the event that all populations of Lime Ridge navarretia have already been preserved or are extinct, or in the event that all unprotected populations are substantially smaller than the population to be impacted, the occurrence shall be avoided.

Michael's rein-orchid. Michael's rein-orchid has a CRPR of 4.2, and as such, impacts to this species within the inventory area would be significant only if large, dense, or numerous populations are impacted, or if impacts would lead to an effective range reduction for the species (which would be very unlikely given the known distribution of the species). The species does not tend to occur in large populations, so the risk of a very large population loss is negligible. Because of this species' affinity for dry chaparral, woodland, and scrub habitats in both coastal and inland locations, Michael's rein-orchid is likely to be concentrated in currently protected areas (which will remain unaffected by the Plan), or in privately owned areas that are much more likely to become part of the Plan Preserve System than impacted.

Under the initial UDA, there is very little potential for any populations to be impacted, due to this species' association with chaparral, scrub, and woodland habitats, which will experience a total of 21 ac of impacts (no chaparral will be impacted under the initial UDA, and oak savanna does not represent suitable habitat for this species [Table 1]). There is instead a greater likelihood that one or more populations would be acquired due to the Alameda whipsnake, Mt. Diablo manzanita, Diablo helianthella, and/or Mt. Diablo fairy lantern-driven acquisition requirements. Areas throughout AA Zones 2 and 3 provide potentially suitable habitat, and many of these subzones are a higher priority for preservation. AA Zone 4 also provides an ample amount of dry slopes in woodlands and chaparral habitats suitable for the species. Particularly, Subzones 4d, 4e, and 4f may contain unknown populations, as known populations occur in both Round Valley Regional Park and Morgan Territory Regional preserve (Calflora 2014).

Under the maximum UDA scenario, the potential for population impacts increases slightly, with a total of 75 ac of direct impacts to suitable land cover types expected to occur with this scenario (Table 1). These additional impacts would principally take place near Clayton, which is in the vicinity of a known population near Donner Canyon (which is not located within the maximum UDA). However, with the added development risk to unknown populations potentially occurring near Clayton under the maximum UDA scenario, parcels in Subzones 4f and 4e would be more likely to be acquired due to a higher priority listing under the Plan, and total Zone 4 preservation requirements will double, thus increasing the overall likelihood of protecting and enhancing at least one population.

This species is somewhat unusual in that areas in dense chaparral or woodland habitats provide particularly suitable habitat for the species. As a result, the expected changes in land management in preserves, particularly in regard to prescribed burns and changes in fire management in chaparral, may negatively impact some populations if canopy structure following the burns is more open, although this effect is likely to be negligible. However, management of oak woodlands, which will seek to preserve or increase canopy cover and recruitment through grazing exclosures, may aid in establishing and preserving the dense structure associated with occurrences of this species. Additionally, grazing management could benefit the species by reducing the risk of trampling and soil disturbance, especially in mesic areas of chaparral or woodland that are now exposed to inappropriate levels livestock disturbance. There is also a low risk of adverse effects on populations in preserves from trail construction and potentially from weed removal activities. Compaction of soils on trail surfaces would likely be detrimental to Michael's rein-orchid (which has an affinity for course-textured soils). Because the typical population size for this species is very small, there is some chance that such trail-related impacts, even though localized, could extirpate an entire population if constructed through a population. The population structure of *Piperia* species tends to be numerous, widespread, small populations within areas of suitable habitat (Yadon's Piperia Recovery Workshop 2005). The most likely negative effects (aside from habitat loss) for *Piperia* species apparently occurs when specialized pollinators are lost from an area, or when populations shrink to the point that inbreeding depression affect species reproduction. Plan developments are not likely to substantially isolate small populations of Michael's rein orchid or small patches of its habitat, nor are the expected impacts to suitable habitat likely, on a regional scale to contribute substantially to widespread native pollinator decline in oak woodland and chaparral communities. There is a low likelihood that Plan-directed chaparral management would actually improve habitat for native chaparral pollinators that may service Michael's rein-orchid, but it is unknown if such indirect effects would benefit the species to a significant degree.

There is a low potential for direct impacts to this species, and a much greater potential for the species to occur in new preserves. Some management measures could have adverse effects on the species. Enhanced management of preserves, particularly with respect to burn management, weed control, and trail construction, may negatively impact the species, or at least may not provide substantial benefits. In contrast, oak woodland conservation measures and modulation of current grazing management in these habitats, where currently overgrazed, may benefit the species. Depending on the degree of currently overgrazed chaparral and woodland habitat incorporated into the Preserve System, impacts may occur that are not fully mitigated by habitat

enhancement within preserves, and additionally, localized impacts within preserves may extirpate whole populations of this species due to their typically small population size.

In summary, the Plan is likely to have a net neutral effect on Michael's rein-orchid. In reality, the actual net effect will depend heavily on the location of any unknown populations affected by the Plan, both by development and preservation. Depending on the number of populations impacted by either development or preserve management, the Plan has a low potential to have a net negative impact on the species. However, location records and collections indicate that this species is widely distributed in scrubby, chaparral, or woodland habitats throughout the county, and this species is expected to occur as relatively frequent, small populations such that extirpation of a small number of populations would not likely have substantial effects on the species' metapopulation or result in a substantial numerical decline in individuals. Therefore, if Plan activities were result in a net adverse effect on the species, such impacts are expected to be less-than-significant under either UDA scenario. Alternatively, if more populations are preserved in oak woodlands where management changes are expected to benefit the species, Plan activities could result in a beneficial effect on the species.

Rayless ragwort. Rayless ragwort has a CRPR of 2B.2, which indicates it is considered fairly endangered in California, although it may be more common elsewhere (CNPS 2014). As such, impacts to this species within the inventory area would be significant if large, dense, or numerous populations are impacted, or if impacts would lead to an effective range reduction for the species in California. This species occurs in chaparral and oak woodland and oak savanna habitats, but only on alkaline soils. It is more likely to be concentrated in currently protected areas (which will remain unaffected by the Plan) or in privately owned areas that are more likely to become part of the Plan Preserve System, rather than impacted areas.

Under the initial UDA scenario, there is a low potential for unknown populations to be impacted if they occur near the species' records near Byron and southeast of Clayton. Populations could also occur in the alkaline, woodland or chaparral areas near Marsh Creek, Horse Valley, Deer Valley, and Briones Valley, but initial UDA impacts would only likely affect suitable habitat near Byron and Clayton. There is a low likelihood that one or more populations would be acquired due to the brittlescale and recurved larkspur-driven acquisition requirements in Zone 5, as records of these species occur close to the Byron record for rayless ragwort (also known as chaparral ragwort, Figures 3 and 4). Although only Subzone 5a is higher priority for conservation, general acreage requirements in Zones 5 and 6 (Table 5) indicate a high probability that suitable habitat (potentially occupied) from several or all of these Subzones will be acquired into the Preserve System.

Under the maximum UDA scenario, there is a greater likelihood a population could be impacted near the Byron Airport, and potentially within the UDA expansion that overlaps with the northern portion of Subzone 2i. However, with the added development risk under the maximum UDA scenario, parcels in Subzones 5d and 5b would be more likely to be acquired, the preserved acreage in Zone 4 would be doubled, and an additional 350 ac of alkaline grasslands (some of which may be scrubby enough to support the species) would be acquired across all zones (Tables 1, 2, and 5), thus increasing the overall likelihood of protecting and enhancing at least one population of rayless ragwort.

Alkaline areas in chaparral and oak woodlands and scrubby upland areas in alkaline grasslands represent particularly suitable habitat for the species. As a result, the expected changes in land management in preserves, particularly in regard to burn frequency in chaparral, could benefit the species' habitat. There is a low risk of adverse effects on populations in preserves from trail construction and potentially from weed removal activities. Compaction of soils on trail surfaces would likely be detrimental to rayless ragwort, but these impacts would be so localized that it is unlikely that a trail would extirpate an entire population even if constructed through the population. Weed removal would be expected to benefit this species, which does not tolerate competition. Compensatory wetland construction could endanger populations of this species if hydrologic regimes are changed in a manner that would be unfavorable for the species, such as if an area with upland hydrology was converted to wetland hydrology following construction.

There is a very low potential for impacts to this species, and a slightly larger potential for the species to occur in new preserves. Enhanced management of preserves, particularly with respect to fire and weed management, would benefit the species and its habitat. Due to the known records in the Plan area, the species would not be extirpated from this portion of its range even if impacted by the Plan, and the loss of one or two small populations would not be considered significant given the known distribution of the species. Therefore, the Plan is expected to have a net beneficial effect on rayless ragwort under either UDA scenario, if it occurs within the inventory area at all.

Oval-leaved viburnum. Oval-leaved viburnum has a CRPR of 2B.3, which indicates that the species is rare or endangered in California but common elsewhere, and further, that the species is "not very" endangered in California (CNPS 2014). As such, impacts to this species within the inventory area would be significant only if large, dense, or numerous populations are impacted, or if impacts would lead to an effective range reduction for the species. Because of this species' strong affinity for chaparral and oak woodland habitats, it is likely to be concentrated in currently protected areas (which will remain unaffected by the Plan), or in privately owned areas that are much more likely to become part of the Plan Preserve System than impacted.

Under the initial UDA scenario, there is very little potential for any populations to be impacted. This is due to the species' very strict reliance on chaparral and oak woodland habitats, which will experience a total of 21 ac of impacts (no chaparral will be impacted under the initial UDA, and oak savanna does not represent suitable habitat for this species [Table 1]). There is instead a high likelihood that one or more populations would be acquired due to the Alameda whipsnake, Mt. Diablo manzanita, Brewer's western flax, Diablo helianthella, and/or Mt. Diablo fairy lantern-driven acquisition requirements. Areas throughout AA Zones 2 and 3 provide potentially suitable habitat, and many of these subzones are a higher priority for preservation. AA Zone 4 also provides an ample amount of dry slopes in woodlands and chaparral habitats suitable for the species. Known populations occur in Subzones 4a and 4b, one of which is in the general location of the known occurrence of Brewer's western flax that must be acquired to satisfy this Subzone's acquisition requirements under the Plan (Table 4).

Under the maximum UDA scenario, there is a slightly increased likelihood an unknown population could be impacted near Clayton due to the expected 2 ac of chaparral impacts and

additional oak woodland impacts in this area under this scenario (Table 1). However, with the added development risk under the maximum UDA scenario, parcels in Subzones 4g and 4c would be more likely to be acquired and total Zone 4 preservation requirements will double, thus increasing the overall likelihood of protecting and enhancing at least one population.

Steep north- or west-facing slopes in chaparral or woodland habitats provide particularly suitable habitat for the species. Expected changes in land management in preserves, particularly in regard to prescribed burns and changes in fire management, and measures to increase oak woodland recruitment could potentially benefit oval-leaved viburnum. Unfortunately, little information is known about the species with respect to fire ecology, tolerance for other disturbance, or other aspects of species biology that would indicate how specific management actions could affect populations. There is a low risk of adverse effects on populations in preserves from trail construction and potentially from weed removal activities, but due to this species' perennial life form and woody growth habit, it is very unlikely such impacts would substantially endanger either individual plants or whole populations. Due to this species' affinity for strong slopes with topography unfavorable for compensatory wetland creation, it is also very unlikely any wetlands would be constructed where populations occur. All of the potential preserve-related effects on this species would either be expected to benefit the plant's habitat or would be too localized to cause substantial effects.

There is a low potential for impacts to this species, and a much greater potential for the species to occur in new preserves. Furthermore, enhanced management of preserves, particularly with respect to burn management, will benefit the species. Therefore, the Plan will have a net beneficial effect on oval-leaved viburnum under either UDA scenario.

Serpentine-adapted Plant Species

The 11 plant species discussed in this section all have a known affinity for ultramafic or serpentine soils, and they are highly specialized in this regard. Serpentine soils have high concentrations of heavy metals such as magnesium, chromium, and cobalt, and this precludes the growth (or at least vigorous growth) of most common plant species. Additionally, serpentine soils tend to have low nutrient content. As a result, serpentine-affected areas tend to have very sparse vegetation. Typically, plant species specifically adapted to process or sequester high concentrations of toxic metals, and to grow under low-nutrient conditions, occur and thrive in these areas. Because less than 1% of the land area of California is underlain with serpentine soils, these endemic, specifically adapted species are often rare.

Beyond the association with serpentinite substrates, these species can be quite variable in regards to other habitat preferences. Many, such as chaparral harebell and serpentine collomia, are upland species associated with rock outcrops or gravelly soils. This is because serpentine affected soils often, though not always, occur near outcrops of serpentine rock that have been brought close to or through the soil surface through geologic processes. However, other serpentine species are generally associated with fine-textured soils or even wetland environments, such as the serpentine seep-associated small-flowered morning glory. Land cover types known to support serpentine or ultramafic inclusions can include rock outcrops, seeps, chaparral, oak woodland and savanna, and grasslands. Because other conditions can cause

sparse vegetation, and because SCS soils mapping of the inventory area is not very precise in terms of serpentine inclusions within soil series occurring in the inventory area, it is difficult to know exactly where all of the serpentine habitats are located. However, the majority of known serpentine habitat in the inventory area occurs near Mt. Diablo, eastern foothills such as the Morgan Territory Preserve, the Los Vaqueros Reservoir watershed, and also most likely near the Marsh Creek Reservoir. CNDDB maps most areas of serpentine grassland (a sensitive community type tracked by the database) as being west of the inventory area. Under the Plan, most serpentine or likely serpentine habitats in the inventory area, especially those which occur in the chaparral and woodland habitats near Mt. Diablo, are expected to experience a minor extent of impacts in comparison to the amount of these habitats expected to be acquired and incorporated into the Plan Preserve System (Table 1).

Only approximately 1% or less of the total acreage of lost and preserved lands of each cover type can be expected to support serpentine habitats, and thus relatively little acreage of serpentine habitats will be affected, either adversely or beneficially, by Plan activities. It is likely that most of the habitats favored by the serpentine species group will experience low levels of direct loss and high levels of preservation and enhancement under the Plan, due to the known distribution of serpentine soils in Mt. Diablo State Park and several other currently protected areas in the Diablo foothills.

The range of expected impacts to chaparral is 0-2 ac (depending on the UDA scenario), or less than 1% of that land cover type in the inventory area. In contrast, preservation requirements for chaparral mandate that even if, as assumed by the initial UDA scenario, no chaparral is directly impacted, 500 ac will be preserved and managed to enhance habitat for the Alameda whipsnake. Management for this endemic chaparral snake will also increase habitat values for several of the upland species in this serpentine group, such as phlox-leaved serpentine bedstraw.

Similarly, oak woodland and oak savanna are expected to experience low levels of direct loss. Approximately 42-165 ac of oak savanna in the inventory area will be lost, but 500 ac of the remaining unprotected savanna will be preserved and enhanced through management (Table 1). Additionally, some 45-165 ac of savanna will be restored by planting oaks in areas with low canopy cover and/or low canopy replacement. This restoration acreage estimate reflects a 1:1 loss to restoration ratio, indicating that the small area of oak savanna impacted under the Plan will only be temporarily lost. As the savanna incorporated into the Plan Preserve System will be enhanced through management (including modulation of grazing rates and removal of invasive weed infestations), it is expected that overall, savanna habitat will improve within the inventory area for special-status plant species. Only 21-73 ac of oak woodlands in the inventory area will be directly impacted, while at least 400 ac of the remaining unprotected woodland will be preserved and enhanced via management. For both of these oak habitat types, the preservation requirement is the same under either UDA scenario. However, because acquisition priorities for different areas shift under the two UDA scenarios, it is possible that even more oak woodlands and savanna areas may be preserved than are necessary to meet the minimum land cover specific requirements to satisfy total preservation acreage requirements under the two scenarios., Additionally, a higher concentration of serpentine substrates is expected to occur near Mt. Diablo, and therefore the preserved oak habitats will likely have a higher ratio of serpentine to normal soils than the impacted oak habitats in the north-central inventory area.

Most serpentine species in the inventory area likely most commonly occur in chaparral, scrubby, or woodland habitats, as opposed to open serpentine grassland. However, some of these species, such as stinkbells, usually occur in grassland, and thus the net effect of the Plan on grassland habitats is also relevant to the impact assessment for these species. Approximately 2533–4152 ac of grasslands will be impacted by covered projects, much of this in the north-central inventory area under approximately 600 ft in elevation. However, less than 1% of these grasslands are likely to be on serpentine substrates. While the lower-elevation grasslands in the north-central portion of the inventory area will experience heavier losses to development, these areas are even less typically underlain with soil types likely to contain ultramafic inclusions than areas near Mt. Diablo, so the actual acreage of serpentine affected grassland habitats directly affected by Plan activities will likely be under 25 ac under either scenario. Total grassland preservation acreages will be 13,000–16,500 ac preserved, with a higher ratio of serpentine affected grasslands occurring in the preserved areas than in the impacted areas. Thus, we estimate that as much as eight times more serpentine-affected grasslands will be preserved compared to directly impacted under the Plan. Eleven known populations of grassland-adapted covered plant species will be preserved, and any grassland-based populations of Brewer's western flax acquired for preservation are likely to also support some of the 11 species discussed below.

Measures to reduce weed populations that may be threatening serpentine habitats in any land cover type would be of great benefit to all species in this group, which do not handle plant-plant competition well. As a result, targeted management (such as managed grazing of serpentine grasslands) of serpentine-based habitats in Preserves would benefit these species considerably.

As mentioned previously, some species in the serpentine-adapted group are associated with rocky soils and rock outcrops. This was a land cover type that was difficult to map for the Plan using aerial signatures, so it is difficult to determine the true extent of these areas (similar to the problem with determining how much and which areas of larger land cover categories are serpentine-affected). Rock outcrops are not expected to occur in the UDA, which contains little of the hilly land in which outcrops generally occur, and the Plan determined that rock outcrops would not be impacted by covered rural infrastructure projects (based on estimated impact acreages listed, see Table 1). Thus, the Plan (and our effects analysis) anticipates no impacts to habitats suitable for strongly rock-adapted CEQA species. In reality, if any unmapped rock outcrops are present within the footprint of future Plan-covered activities, impacts to rock outcrop-associated species could occur unless these features are avoided. Because the microhabitats habitats utilized by species associated with serpentine outcrops can be so specific, and because so many rare plant species often occur in a single area of serpentine rock outcrops, loss of serpentine rock outcrops could be considered a significant impact in its own right under CEQA, as well as potentially causing significant impacts to some of the species in this group. Rocky soils, which contain inclusions of up to 5% rock outcrops (SCS 1969), are shown in Figures 3a-b, while rock outcrops mapped by the Plan are shown on Figures 4a-b and 5a-b.

Direct loss of suitable/preferred habitat for these 11 serpentine species may occur due to urban development within the UDA or covered rural infrastructure projects outside of preserves, but in general these impacts are not expected to affect many extant populations of these species. Greater effects may occur due to indirect impacts on serpentine habitats, principally due to the

deposition of nitrogen as pollution from increased traffic emissions as population and development expands in the area under the Plan. Therefore, it is expected that any areas of serpentine savanna or serpentine grasslands in preserves will be managed carefully with grazing to prevent the development of thick stands of weeds and non-native grasses in serpentine habitats, because these species do not respond well to increased plant-plant competition for resources. Additionally, conservation measures intended to control weeds will improve and protect serpentine habitats within preserves. Because the habitats required by this group are so thoroughly determined by local edaphic conditions, compensatory habitat creation is not possible. However, enhancement of degraded, preserved serpentine habitats through adjustment of grazing management could mitigate for the loss of serpentine habitat, depending on the level of degradation or non-native grass invasion in preserved serpentine habitats.

Within preserves, there is some potential for these species to be impacted by trail construction and maintenance, wetland and riparian restoration or creation, and potential increases in anthropogenic disturbances in some currently privately owned areas that would be opened for public recreation if acquired under the Plan. However, there is a low probability of such impacts, and any such adverse effects would have only localized and largely short-term adverse effects, if they occur at all. Conversely, disturbance in some privately owned areas may decrease once incorporated into preserves, depending on current land use and changes in management to improve habitat for covered species. Sites for wetland and trail construction, or other direct, localized impacts occurring within the preserves will be surveyed for covered and no-take plants. If these surveys are conducted in a protocol-level, floristic manner, non-covered special-status species will also be detected and preserve managers can avoid the low risk of these potential, preserve-related impacts to CEQA species by re-siting proposed trails or constructed wetlands when feasible if an unknown population is discovered. Additionally, if currently known populations of CEQA species are avoided by preserve activities when feasible, this would result in a similar reduction in risk for these species.

Management activities within Plan preserves will provide several widespread and/or long-term beneficial effects on serpentine-associated species. Managing grazing for covered species may release grazing pressure in some currently overgrazed areas, and may also control invasive weeds or open up choked areas that have not been grazed while in private holdings, both of which could enhance serpentine grassland for plant CEQA species. Conservation Measure 1.4 (*Prepare and Implement an Exotic Plant Control Program for the Preserve System*) is also expected to benefit all preserved habitat types.

Net effects of the Plan on each of these 11 species are discussed in greater detail below.

Oakland star-tulip. Oakland star-tulip has a CRPR of 4.2, and as such, impacts to this species within the inventory area would be significant only if large, dense, or numerous populations are impacted, or if impacts would lead to an effective range reduction for the species. Because of this species' strong affinity for serpentine habitats, this species is likely to be concentrated in currently protected areas (which will remain unaffected by the Plan), or in privately owned areas that are much more likely to become part of the Plan's Preserve System than impacted, because much of the known serpentine-affected soils and outcrops in the inventory area occur near Mt. Diablo. The species can occur in grasslands but within the inventory area is much more likely to

occur in chaparral, woodland, or scrubby habitats. Additionally, this species rarely occurs in large populations, and loss of populations within the Plan area would not lead to a range restriction, given other known occurrences in surrounding counties.

Under the initial UDA scenario, there is a low potential for populations to be impacted, due to the low impact acreages for chaparral (no chaparral will be impacted under the initial UDA [Table 1]), and for oak woodlands and savannas. A fairly large area of grassland will be impacted, but much of this area is not expected to support serpentine edaphic conditions. The area most likely to support this species that could be impacted is the area, which would be extremely marginal habitat for the species, mapped both within the initial UDA and within AA Subzone 2i. This area is located north of Marsh Creek Reservoir. There are no mapped serpentine grasslands in this area, but scattered records for stinkbells (Figures 3 and 4) indicate there could be some isolated inclusions of serpentine grassland. Stinkbells are considered a strong indicator of serpentine substrates (Safford et al. 2005). There is a stronger likelihood that one or more populations would be acquired due to the Brewer's western flax-driven acquisition requirements in AA Zones 2 and 4 (Tables 3 and 4). Additionally, any given area of suitable chaparral in Zone 2 is very likely to be preserved due to acquisition requirements targeted for Alameda whipsnake core habitat, some of which may be serpentine (Table 3). Subzone 4a is also a higher priority for acquisition and may provide some potentially suitable habitat for the species.

Under the maximum UDA scenario, there is a negligible increase in likelihood that an Oakland star-tulip population could be impacted near Clayton or near Deer Valley due to the expected 2 ac of chaparral impacts under this scenario (Table 1), and an overall increase in grassland impacts (the large majority of which would not be considered suitable habitat for Oakland star-tulip). However, with the added development risk under the maximum UDA scenario, parcels in Subzones 4g and 4c would be more likely to be acquired and total Zone 4 preservation requirements will double, thus increasing the overall likelihood of protecting and enhancing at least one population.

Expected changes in land management in preserves, particularly in regard to prescribed burns and changes in fire management, weed control, and managing grazing regimes for covered species, would greatly benefit the species. There is a low risk of adverse effects on populations in preserves from trail construction and potentially from weed removal activities, although a more open canopy would benefit any populations in the long term. Due to small population sizes sometimes observed in this species, trails could extirpate small populations, but it would be unlikely that trails are placed directly through high-quality serpentine habitats given surveys for no-take species and populations of species that must be acquired to meet Plan requirements. Indirect effects of increased nitrogen deposition are not likely to be substantial, because increased traffic and population will mostly be located away from the areas near Mt. Diablo most likely to support serpentine habitats; and additionally, enhanced grazing management and weed control activities will help reduce problematic overgrowth from non-native grasses and weed infestations.

There is a low potential for impacts to this species, and a much greater potential for the species to occur in new preserves. Furthermore, enhanced management of preserves, particularly with

respect to weed control and grazing management, will benefit the species. Therefore, it is expected the Plan will have a net beneficial effect on the Oakland star-tulip under either UDA scenario.

Chaparral harebell. Chaparral harebell has a CRPR of 1B.2, which indicates it is considered fairly endangered in California (CNPS 2014). As such, impacts to this species within the inventory area would be significant if moderately large, dense, or numerous populations are impacted, if populations were lost, or if impacts would lead to an effective range reduction for the species. Because of this species' strict affinity for chaparral habitats, particularly rocky serpentine chaparral, it is likely to be concentrated in currently protected areas (which will remain unaffected by the Plan), or in privately owned areas that are much more likely to become part of the Plan Preserve System than impacted.

Under the initial UDA scenario, there is essentially no potential for any populations to be impacted, due to this species' very strict reliance on chaparral habitats (no chaparral and no rock outcrops will be impacted under the initial UDA scenario [Table 1]). There is instead a high likelihood that one or more populations would be acquired due to the Alameda whipsnake, Mt. Diablo manzanita, and Brewer's western flax-driven acquisition requirements. Subzones 2a, 2b, 2c, and 3a provide suitable habitat, and any given area of suitably rocky, serpentine chaparral in these zones is very likely to be preserved due to acquisition requirements targeted for Alameda whipsnake core habitat and Mt. Diablo manzanita (Table 3). AA Subzone 4a is also a higher priority for acquisition and a known chaparral harebell population is mapped by the CNDDB in the southwestern portion of this subzone (Figures 3 and 4). Small patches of chaparral in Subzones 4b, 4g, 3b, and 3c may also provide suitable habitat, although these areas are not a higher priority for acquisition.

Under the maximum UDA scenario, there is only a slightly greater likelihood a population could be impacted near Clayton due to the expected 2 ac of chaparral impacts under this scenario (Table 1). However, with the added development risk under the maximum UDA scenario, parcels in Subzones 4g and 4c would be more likely to be acquired and total Zone 4 preservation requirements will double, thus increasing the overall likelihood of protecting and enhancing at least one population. Also, due to the small area of expected chaparral impacts, it is highly unlikely that any populations would be fully lost within the Plan area, nor is it likely that any large or regionally important populations would be impacted by such a small area of development.

Areas in chaparral, particularly talus slides and rocky serpentine outcrops, represent particularly suitable habitat for the species. As a result, the expected changes in land management in preserves, particularly in regard to prescribed burns and changes in fire management, would be expected to somewhat benefit the species, by helping to maintain a healthy, patchy, open chaparral canopy. There is a low risk of adverse effects on populations in preserves from trail construction and potentially from weed removal activities; although, a more open herbaceous canopy would also likely benefit any populations in the long term. Compaction of soils on trail surfaces would likely be detrimental to the chaparral harebell (which has an affinity for rocky soils), but these impacts would be so localized that it is unlikely that a trail would extirpate an

entire population even if constructed through the population. Indirect nitrogen deposition is not likely to increase greatly in areas as remote as those in which this species is expected to occur.

There is a low potential for impacts to this species, a very low potential for actual population extirpation or large population impacts (and such potential exists under the maximum UDA scenario only), and a much greater potential for the species to occur in new preserves. Furthermore, enhanced management of preserves, particularly with respect to burn management and weed control, would benefit this species' habitat. Therefore, the Plan will have a net beneficial effect on chaparral harebell under either UDA scenario.

Serpentine collomia. Serpentine collomia has a CRPR of 4.3, and as such, impacts to this species within the inventory area would be significant only if large, dense, or numerous populations are impacted, or if impacts would lead to an effective range reduction for the species. Because of this species' absolute requirement for serpentine substrates in chaparral and oak woodland, this species is likely to be concentrated in currently protected areas (which will remain unaffected by the Plan), or in privately owned areas that are much more likely to become part of the Plan Preserve System than impacted.

Under the initial UDA scenario, there is essentially no potential for any populations to be impacted, due to this species' very strict reliance on chaparral habitats (no chaparral will be impacted under the initial UDA [Table 1]). There is instead a high likelihood that one or more populations would be acquired due to the Alameda whipsnake, Mt. Diablo manzanita, and Brewer's western flax-driven acquisition requirements. Subzones 2a, 2b, 2c, and 3a provide suitable habitat, and any given area of suitable chaparral in these zones is very likely to be preserved due to acquisition requirements targeted for Alameda whipsnake core habitat and Mt. Diablo manzanita (Table 3). Subzone 4a is also a higher priority for acquisition and may provide some potentially suitable habitat for the species. Small patches of chaparral in Subzones 4b, 4g, 3b, and 3c may also provide suitable habitat, but are of a lower priority for acquisition.

Under the maximum UDA scenario, there is a very low likelihood a population could be impacted near Clayton due to the expected 2 ac of chaparral impacts under this scenario (Table 1). However, with the added development risk under the maximum UDA scenario, parcels in Subzones 4g and 4c would be more likely to be acquired and total Zone 4 preservation requirements will double, thus increasing the overall likelihood of protecting and enhancing at least one population. Also, the chaparral area near Clayton is not considered strongly serpentine, and this also reduces the likelihood that the species would occur in the area impacted by development. It is very unlikely that a larger or regionally significant population occurs in this area.

Areas in chaparral habitats that are underlain with rocky or gravelly serpentine soils provide particularly suitable habitat for the species. As a result, the expected changes in land management in preserves, particularly in regard to prescribed burns and changes in fire management, could potentially benefit the species, and may even allow it to colonize new areas of chaparral underlain with suitable soils if these areas have been under fire suppression regimes up to this time. As the edaphic conditions favored by this plant are so harsh and specific, this is fairly unlikely. There is a low risk of adverse effects on populations in preserves from trail

construction and potentially from weed removal activities, although a more open canopy would benefit any populations in the long term. Compaction of soils on trail surfaces could be detrimental to serpentine collomia, but these impacts would be so localized that it is unlikely that a trail would extirpate an entire population even if constructed through the population. Indirect nitrogen deposition is not likely to increase greatly in areas as remote as those in which this species is expected to occur, and serpentine collomia may not occur outside of Mt. Diablo State Park in any case.

There is a very low potential for impacts to this species, no potential for impacts to large or regionally important populations or reduction in range, and a much greater potential for the species to occur in new preserves. Furthermore, enhanced management of preserves, particularly with respect to weed control and fire management, could benefit the quality of the species' habitat. Therefore, it is expected the Plan will have a net beneficial effect on serpentine collomia under either UDA scenario.

Small-flowered morning-glory. Small-flowered morning-glory has a CRPR of 4.2, and as such, impacts to this species within the inventory area would be significant only if large, dense, or numerous populations are impacted, or if impacts would lead to an effective range reduction for the species. This species has microhabitat requirements for clayey serpentine substrates, typically near seeps in grassland or coastal scrub. Most serpentine habitat in the inventory area is likely to be concentrated in currently protected areas (which will remain unaffected by the Plan), or in privately owned areas that are much more likely to become part of the Plan Preserve System than impacted. However, the only known records for this species occur in the south and eastern portions of the inventory area. Some areas of known occurrence are near Los Vaqueros Reservoir and will not be impacted by Plan activities, but others may be impacted within either the maximum or initial UDA. This species is unlike several others in this group in that not only does it occur in and near wetlands, it does not occur in chaparral or woodland habitats.

Under the initial UDA scenario, there is some potential for a population to be impacted west of Marsh Creek, near Brentwood. While no serpentine seeps are mapped in this area, this is to be expected because this habitat type typically occurs in extremely localized areas too small to be mapped under the Plan's initial broad-scale mapping effort. A fairly large acreage of grasslands will be impacted (2533 ac), but much of this area is not expected to support serpentine edaphic conditions or seeps. The area mapped both within the initial UDA and within AA Subzone 2i may provide suitable habitat for the species. There are no mapped serpentine grasslands in this area, but scattered records for stinkbells (Figures 3 and 4) indicate there could be some isolated inclusions of serpentine grassland. Stinkbells are considered a strong indicator of serpentine substrates (Safford et al. 2005). It is possible that areas in Subzone 2i north of Balfour Road contains areas of suitable habitat, and grasslands throughout AA Zones 1, 2, 3, and 4 could contain small patches of suitable habitat and/or unknown populations. A known population occurs just outside and to the west of Roddy Ranch Golf Course (CCH 2014), but it is unknown whether this population falls in Subzone 2h, which is of higher priority for acquisition, Subzone 2i, which may be developed, Subzone 2g, which is lower priority for acquisition, or in a small area north of Deer Creek that is not mapped within any AA Zones.

Under the maximum UDA scenario, there is a greater likelihood a population could be impacted near Horse Valley due to the expected increase in impacts to the northern portion of Subzone 2i under this scenario (Table 1, Figure 2). Overall, grassland impacts will total 4152 ac under this scenario, but it is expected that only a small portion of this area could be considered suitable habitat for serpentine-adapted species such as small-flowered morning-glory. With the added development risk under the maximum UDA scenario, grassland parcels in Subzones 4c, 4e, 4f, and 4g that could theoretically support patches of suitable habitat would be more likely to be acquired, thus increasing the overall likelihood of protecting and enhancing at least one population to a small degree.

Expected changes in land management in preserves, particularly in regard to grazing management, could potentially benefit the species, and may even allow it to colonize new areas underlain with suitable soils if these areas have been overgrazed up to this time. There is a low risk of adverse effects on populations in preserves from trail construction and potentially from weed removal activities, although a more open canopy would benefit any populations in the long term. Compaction of soils on trail surfaces could be detrimental to small-flowered morning-glory, but these impacts would be so localized that it is unlikely that a trail would extirpate an entire population even if constructed through the population. A larger preserve-related danger to this species is habitat alteration due to compensatory wetland creation. If a serpentinite seep is used to supply hydrology to a newly constructed wetland, this could negatively affect the species by changing hydrology in the area occupied by the plants, which could lead to extirpation of the population. Indirect nitrogen deposition may increase in areas this species would be expected to occur in, but the overall effect of this increase will likely be negligible compared to more direct effects occurring from either development or wetland construction.

There is a moderate potential for impacts to this species due to expected UDA development in AA Subzone 2i, and a low to moderate potential for the species to occur in new preserves. Enhanced management of preserves, particularly with respect to grazing management, would benefit this species' habitat. However, other activities such as wetland creation, if enacted without taking populations of this species into consideration, could have negative effects on small-flowered morning-glory. Therefore, the Plan could have a net negative effect on small-flowered morning-glory, particularly under the maximum UDA scenario. However, given the listing status and level of endangerment for this species, this impact would only likely be considered significant if the species were completely extirpated from the Marsh Creek-Horse Valley area, or if multiple or especially large populations were affected, which is considered very unlikely given the few areas of truly suitable serpentine seep habitat that likely occur within the UDA. Impacts related to the Plan would also not be likely lead to a more major range reduction, due to the population near Los Vaqueros Reservoir, which will remain unaffected by the Plan (although this population could be affected by the unrelated reservoir expansion project). Therefore, although the Plan is expected to have a negative impact on small-flowered morning-glory under either UDA scenario, this impact is not expected to be significant under CEQA.

Bay buckwheat. Bay buckwheat has a CRPR of 4.2, and as such, impacts to this species within the inventory area would be significant only if large, dense, or numerous populations are impacted, or if impacts would lead to an effective range reduction for the species. Because of this species' affinity for rocky, serpentine oak woodland and savanna habitats, this species is

likely to be concentrated in currently protected areas (which will remain unaffected by the Plan), or in privately owned areas that are much more likely to become part of the Plan's Preserve System than impacted, because much of the known serpentine affected soils and outcrops, especially those within habitats suitable for the species, occur near Mt. Diablo.

Under the initial UDA scenario, there is a low potential for populations to be impacted, due to the low impact acreages for oak woodlands and savannas (approximately 63 ac total impacts [Table 1]), and most if not all of these impacted areas would not be expected to be serpentine. As such, it is highly unlikely that if population or multiple populations occur within the UDA, these would be unusually large, numerous, or regionally important. The areas most likely to support this species that could be impacted are areas far outside the initial UDA, near Morgan Territory Preserve and Mt. Diablo State Park, within AA Subzones 4e, 4f, 4h, and 4a. There is a much stronger likelihood that one or more populations would be acquired due to the Brewer's western flax-driven acquisition requirements in AA Zone 4, and also due to the stated goals to provide linkages between Morgan Territory Region Preserve, Morgan Territory Ranch, and Mt. Diablo State Park (see Figure 2, Table 4). Subzones 4a and 4f are higher priority for acquisition and may provide some potentially suitable habitat for the species.

Under the maximum UDA scenario, there is a negligible increase in the likelihood a bay buckwheat population could be impacted due to the increased impacts to oak woodlands and savannas under this scenario (238 ac, Table 1), and again most if not all of these impacted areas would not be expected to be serpentine. However, with the added development risk under the maximum UDA scenario, parcels in Subzones 4g and 4c would be more likely to be acquired and total Zone 4 preservation requirements will double. As these Subzones are the areas most likely to support additional unknown populations, this increases the overall likelihood of protecting and enhancing at least one population.

Areas in oak woodlands and savannas with rocky serpentine outcrops represent particularly suitable habitat for the species. As a result, the expected changes in land management in preserves, particularly in regard to grazing regimes, may benefit the species by preventing overgrazing but also controlling non-native grass cover. Woodland restoration activities, such as oak planting, could possibly increase available suitable habitat for the species. There is a low risk of adverse effects on populations in preserves from trail construction and potentially from weed removal activities; although, a more open herbaceous canopy would also likely benefit any populations in the long term. Compaction of soils on trail surfaces would likely be detrimental to bay buckwheat (which has an affinity for rocky soils), but these impacts would be so localized that it is unlikely that a trail would extirpate an entire population even if constructed through the population. Indirect nitrogen deposition is not likely to substantially increase in areas as remote as those in which this species is expected to occur.

There is a very low potential for impacts to this species, and a much greater potential for the species to occur in new preserves. There is a very low likelihood that numerous or large populations would be impacted even if the species does occur within the UDA. Furthermore, enhanced management of preserves, particularly with respect to weed control and fire management, could benefit the quality of the species' habitat. Therefore, it is expected the Plan will have a net beneficial effect on bay buckwheat under either UDA scenario.

Jepson's woolly sunflower. Jepson's woolly sunflower has a CRPR of 4.3, and as such, impacts to this species within the inventory area would be significant only if large, dense, or numerous populations are impacted, or if impacts would lead to an effective range reduction for the species. Because of this species' affinity for serpentine substrates in chaparral and oak woodland, this species is likely to be concentrated in currently protected areas (which will remain unaffected by the Plan), or in privately owned areas that are much more likely to become part of the Plan Preserve System than impacted.

Under the initial UDA scenario, there is only a low potential for populations to be impacted, if suitable serpentine habitat occurs within the expected 63 ac of impacts to oak woodlands, savannas (which may include some scrubby areas suitable for the species), and chaparral (Table 1). Because these areas are not expected to contain highly suitable serpentine habitat for the species, it is highly unlikely that if populations occur within the UDA, these would be unusually large, numerous, or regionally important. There is instead a high likelihood that one or more populations would be acquired due to the Alameda whipsnake, Mt. Diablo manzanita, and Brewer's western flax-driven acquisition requirements. Subzones 3a, 2a, 2b, 2h, and 2f provide suitable habitat near known populations, as do Subzones 4b, 4a, 4h, 4f, and 4e. Subzone 4a is also a higher priority for acquisition and may provide some potentially suitable habitat for the species. Areas in Subzones 4b, 4g, 3b, and 3c may also provide suitable habitat, but are of a lower priority for acquisition.

Under the maximum UDA scenario, there is a very low likelihood a population could be impacted near Clayton due to the increased UDA impacts under this scenario (Table 1, Figure 1). Again, only a small percentage of this increased woodland and chaparral impacts, if any, would be expected to be serpentine. With the added development risk under the maximum UDA scenario, parcels in Subzones 4g and 4c would be more likely to be acquired and total Zone 4 preservation requirements will double, thus increasing the overall likelihood of protecting and enhancing at least one population.

Areas in chaparral or woodland habitats that are underlain with serpentine soils, or that are along the edges of chaparral, provide particularly suitable habitat for the species. As a result, the expected changes in land management in preserves, particularly in regard to prescribed burns and changes in fire management, could greatly benefit the species, and may even allow it to colonize new areas of chaparral underlain with suitable soils if these areas have been under fire suppression regimes up to this time. A well-managed typical burn frequency will increase the formation of association edges between patches, where this species is often found. There is a low risk of adverse effects on populations in preserves from trail construction and potentially from weed removal activities, although a more open canopy would benefit any populations in the long term. Compaction of soils on trail surfaces could be detrimental to Jepson's woolly sunflower, but these impacts would be so localized that it is unlikely that a trail would extirpate an entire population even if constructed through the population. Indirect nitrogen deposition is not likely to increase greatly in most of the remote areas this species would be expected to occur in. However, as some populations may be located in or near lower Mitchell Canyon south of Clayton, increased development near Clayton could have some effect on nitrogen deposition in habitats south and east of the development. Managing grazing regimes in this area or enacting

weed control strategies intended to enhance habitat for covered species such as Brewer's western flax will mitigate these effects.

There is a very low potential for impacts to this species, and a much greater potential for the species to occur in new preserves. There is an extremely low probability than any impacted populations would be especially large or regionally important, given that impacts are only expected to occur in woodland and chaparral habitats not known to have serpentine influence. Enhanced management of preserves, particularly with respect to burn management, would benefit this species' habitat, which could be widespread in suitable parcels acquired near Mt. Diablo State Park. Therefore, the Plan will likely have a beneficial effect on Jepson's woolly sunflower under either UDA scenario.

Stinkbells. Stinkbells has a CRPR of 4.2, and as such, impacts to this species within the inventory area would be significant only if large, dense, or numerous populations are impacted, or if impacts would lead to an effective range reduction for the species. This species occurs most often in the inventory area in clayey, serpentine-affected grasslands and meadows, but can also occur in clayey serpentine chaparral or oak woodlands. Most serpentine habitat in the inventory area is likely to be concentrated in currently protected areas (which will remain unaffected by the Plan), or in privately owned areas that are much more likely to become part of the Plan Preserve System than impacted. However, the only known records for this species occur in the central, south, and eastern portions of the inventory area, and comprise several locations that either may be impacted within either the maximum or initial UDA, or occur in Contra Loma Regional Park and will not be impacted by the Plan.

Under the initial UDA scenario, there is some potential for a population to be impacted west of Marsh Creek, near Brentwood. A fairly large acreage of grasslands will be impacted (2533 ac), but much of this area is not expected to support serpentine edaphic conditions or seeps. The area mapped both within the initial UDA and within AA Subzone 2i that is located north of Marsh Creek Reservoir supports at least one population, but will likely be developed. There are no mapped serpentine grasslands in this area, but scattered records for stinkbells (Figures 3 and 4) indicate there are inclusions of suitable habitat for the species in the Horse Valley, Lone Tree Valley, and Marsh Creek Reservoir areas. It is possible that areas in Subzone 2i north of Balfour Road contains areas of suitable habitat, and grasslands throughout AA Zones 1, 2, 3, and 4 could contain small patches of suitable habitat and/or unknown populations. A known population occurs to the west of Byron within AA Subzone 5c (Calflora 2014, Figures 3 and 4), which is of moderate priority for acquisition.

Under the maximum UDA scenario, there is a slightly greater likelihood a population could be impacted near Horse Valley due to the expected increase in impacts to the northern portion of Subzone 2i under this scenario (Table 1). The larger UDA near Byron would still not impact the populations occurring in Subzone 5c. Overall, grassland impacts will total 4152 ac under this scenario, but it is expected that only a small portion of this area could be considered suitable habitat for serpentine-adapted species such as stinkbells. With the added development risk under the maximum UDA scenario, grassland parcels in Subzones 4c, 4e, 4f, and 4g that could theoretically support patches of suitable habitat would be more likely to be acquired, thus

increasing the overall likelihood of protecting and enhancing at least one population to a small degree.

Expected changes in land management in preserves, particularly in regard to grazing management, could potentially benefit the species, and may even allow it to colonize new areas underlain with suitable soils if these areas have been overgrazed up to this time. However, because this species is an early blooming perennial that bolts before taller annual grass canopies have developed in the spring, unlike most other serpentine-adapted species in this group, it can tolerate higher levels of competition and does not tend to get shaded out. Thus, grazing management may have only limited benefits for this species. Also, based on the known location records of this species, it is likely to be concentrated more in potential development areas than in potential Plan preserves. There is a low risk of adverse effects on populations in preserves from trail construction and potentially from weed removal activities, although a more open canopy would benefit any populations in the long term. Compaction of soils on trail surfaces could be detrimental to stinkbells, but these impacts would be so localized that it is unlikely that a trail would extirpate an entire population even if constructed through the population. An additional minor preserve-related threat to this species is compensatory wetland creation. This species could occur in clayey depressions and low-lying grassy areas favorable for construction of new wetlands, which would negatively affect the plants by altering hydrology. Such an action could lead to extirpation of a population. Indirect nitrogen deposition may increase in areas this species would be expected to occur in, such as near Brentwood, but the overall effect of this increase will likely be negligible compared to more direct effects occurring from either development or wetland construction. Additionally, modulation of grazing regimes to control non-native grass canopies in serpentine grasslands would mitigate for this effect.

There is potential for impacts to this species due to expected UDA development in AA Subzone 2i and within the UDA to the north of this Subzone, and a moderate potential for the species to occur in new preserves. However, because this species tends to occur in small populations, it is very unlikely that any large or regionally important populations would be impacted or lost under the Plan. Enhanced management of preserves with respect to grazing management (again, if currently overgrazed) would benefit this species' habitat. However, other activities such as wetland creation, if enacted without taking populations into consideration, could have negative effects on stinkbell populations. Therefore, the Plan could have a negative effect on stinkbells, particularly under the maximum UDA scenario. Given the listing status and relatively low level of endangerment of this species, and the presumed continued existence of currently protected populations in Contra Loma Regional Park and Los Vaqueros Reservoir Watershed, such impacts would not completely extirpate the species from the region or affect a substantial proportion of the regional population and would thus be considered less than significant.

Phlox-leaved serpentine bedstraw. Phlox-leaved serpentine bedstraw has a CRPR of 4.2, and as such, impacts to this species within the inventory area would be significant only if large, dense, or numerous populations are impacted, or if impacts would lead to an effective range reduction for the species. Because of this species' affinity for chaparral and oak woodland on rocky, serpentinite substrates, this species is much more likely to be concentrated in currently protected areas near Mt. Diablo or near parks in the central-southern portion of the inventory

area (which will remain unaffected by the Plan), or in privately owned areas that are much more likely to become part of the Plan Preserve System than impacted.

Under the initial UDA, there is only a low potential for populations to be impacted, due to this species' known distribution on the slopes of Mt. Diablo and areas near Round Valley Regional Park, Los Vaqueros Reservoir, Black Diamond Mines, and Morgan Territory Regional Preserve. No chaparral and only 21 ac of oak woodland are expected to be impacted under this scenario (not all of which will represent suitable serpentine habitat for the species, indicating that if populations do exist in these areas, they are not likely to be large or regionally important). There is instead a high likelihood that one or more populations would be acquired due to the Alameda whipsnake, Mt. Diablo fairy lantern, Brewer's western flax, and Mt. Diablo manzanita-driven acquisition requirements, as well as generally stringent acquisition requirements for all of AA Zone 2 and Subzones 4a and 4h (Tables 3 and 4). Acquisition in AA Subzones 4a and 4f will focus on preserving a corridor between Mt. Diablo State Park and other protected lands in the area, and suitable habitat and potential unknown populations are also likely to be located in preserves within Subzones 1b, 1c, 2a, 2b, and 3a. Subzones 4b, 4g, 3b, and 3c may also provide suitable habitat, although these areas are not a higher priority for acquisition.

Under the maximum UDA scenario, there is a slightly greater likelihood a population could be impacted due to the expected increase in areal extent of oak woodland and chaparral impacts under this scenario (Table 1). However, with the added development risk under the maximum UDA scenario, parcels in Subzones 4g and 4c would be more likely to be acquired and total Zone 4 preservation requirements will double, thus increasing the overall likelihood of protecting and enhancing at least one population.

Areas in chaparral or oak woodland habitats that are underlain with rocky or serpentine soils provide particularly suitable habitat for the species. The expected changes in land management in preserves, particularly in regard to prescribed burns, changes in fire management, and grazing management intended to specifically benefit Plan-covered species, would also likely benefit phlox-leaved serpentine bedstraw, by increasing habitat quality within the foothill chaparral-woodland mosaic inhabited by the species and removing weed pressure. There is a low risk of adverse effects on populations in preserves from trail construction and potentially from weed removal activities, although a more open canopy would likely benefit any populations in the long term. Compaction of soils on trail surfaces would likely be detrimental to phlox-leaved serpentine bedstraw (which can occur in rocky soils), but these impacts would be so localized that it is unlikely that a trail would extirpate an entire population even if constructed through the population. Indirect nitrogen deposition is not likely to increase greatly in most of the remote areas in which this species is expected to occur.

There is a low potential for impacts to this species, and a much greater potential for the species to occur in new preserves. There is a very low probability that a large or regionally important population, or multiple populations, would occur in the small area of oak woodland and chaparral that may be impacted under the Plan, due to the fact that these areas are not known to support serpentine communities. Furthermore, enhanced management of preserves, particularly with respect to burn management and grazing management, would benefit this species' habitat.

Therefore, the Plan will have a net beneficial effect on phlox-leaved serpentine bedstraw under either UDA scenario.

Serpentine leptosiphon. Serpentine leptosiphon has a CRPR of 4.2, and as such, impacts to this species within the inventory area would be significant only if large, dense, or numerous populations are impacted, or if impacts would lead to an effective range reduction for the species. Because of this species' absolute requirement for serpentine substrates in oak woodland, grassland, and coastal scrub, this species is likely to be concentrated in currently protected areas (which will remain unaffected by the Plan), or in privately owned areas that are much more likely to become part of the Plan Preserve System than impacted.

Under the initial UDA scenario, there is little potential for any populations to be impacted, due to this species' very strict reliance on serpentine habitats in oak woodlands (which will experience only 21 ac of impacts) and grasslands (Table 1). A large area (2533 ac) of grasslands will be impacted, but most of this area will not support this strictly endemic serpentine species because of the absence of serpentine soils. Location records in the inventory area for serpentine leptosiphon are all located close to Mt. Diablo in woodland and scrub-chaparral habitats, and it is likely the species would not be found in the small serpentine patches presumed (based on occurrence of stinkbells) to exist near Marsh Creek and Horse Valley, where potential impacts could occur. There is instead a high likelihood that one or more populations would be acquired due to the Brewer's western flax-driven acquisition requirements. Subzones 2a, 3a, 3b, 4b, 4a, and 4h all provide suitable habitat, and areas of suitable serpentine oak woodlands or grasslands in these zones are fairly likely to be preserved due to acquisition requirements targeted for Brewer's dwarf flax (Table 4).

Under the maximum UDA scenario, there is a very low likelihood a population could be impacted near Clayton due to the expected 2 ac of chaparral impacts under this scenario, and additional oak woodland and grassland impacts (Table 1). This area also is not likely to provide high quality habitat for this strict serpentine endemic. Also, with the added development risk under the maximum UDA scenario, parcels in Subzones 4g and 4c would be more likely to be acquired and total Zone 4 preservation requirements will double, thus increasing the overall likelihood of protecting and enhancing at least one population.

Mid-elevation areas in woodland and scrubby or grassy habitats that are underlain with serpentine soils provide particularly suitable habitat for the species. As a result, the expected changes in land management in preserves, particularly in regard maintaining canopy cover in oak woodlands and weed management activities, could potentially benefit the species' habitats. There is a low risk of adverse effects on populations in preserves from trail construction and potentially from weed removal activities, although a more open canopy would benefit any populations in the long term. Compaction of soils on trail surfaces could be detrimental to serpentine leptosiphon, but these impacts would be so localized that it is unlikely that a trail would extirpate an entire population even if constructed through the population. Indirect nitrogen deposition is not likely to increase greatly in areas as remote as those in which this species is expected to occur, and serpentine leptosiphon may not occur outside of Mt. Diablo State Park in any case. However, if any unknown grassland populations of this species are

preserved near Antioch or Brentwood, appropriate grazing management would ameliorate any effects of nitrogen deposition.

There is a very low potential for impacts to this species, and a much greater potential for the species to occur in new preserves. It is very unlikely that any large, numerous, or regionally important populations would be affected by development under the Plan. Furthermore, enhanced management of preserves, particularly with respect to weed control and oak woodland management, could benefit the quality of the species' habitat. Therefore, it is expected the Plan will have a net beneficial effect on serpentine leptosiphon under either UDA scenario.

Mt. Diablo phacelia. Mt. Diablo phacelia has a CRPR of 1B.2, which indicates it is considered fairly endangered in California (CNPS 2014). As such, impacts to this species within the inventory area would be significant if moderately large, dense, or numerous populations are impacted, if such populations were lost, or if impacts would lead to an effective range reduction for the species. Because of this species' affinity for serpentine chaparral and oak woodland habitats, as well as its known distribution surrounding Mt. Diablo, it is likely to be concentrated in currently protected areas (which will remain unaffected by the Plan), or in privately owned areas that are much more likely to become part of the Plan Preserve System than impacted.

Under the initial UDA scenario, there is only a low potential for populations to be impacted, if suitable serpentine habitat occurs within the expected 21 ac of impacts to oak woodlands and chaparral (Table 1). Again, it is unlikely that substantial area of truly suitable serpentine habitat for this species exists in these areas. Location records in the inventory area for Mt. Diablo phacelia are all located close to Mt. Diablo in woodland and scrub-chaparral habitats (Figures 3 and 4), and it is likely the species would not be found in the small serpentine patches presumed to exist near Marsh Creek and Horse Valley, where potential impacts could occur. There is instead a high likelihood that one or more populations would be acquired due to the Alameda whipsnake, Mt. Diablo manzanita, Mt. Diablo fairy lantern, and Brewer's western flax-driven acquisition requirements. AA Subzones 3a, 3b, 4b, and 4a provide suitable habitat near known populations. Subzones slightly further away from the peak, such as 4b, 4g, and 4c may also provide suitable habitat and harbor unknown populations, but these subzones are of lower priority for acquisition.

Under the maximum UDA scenario, there is a very low likelihood a population could be impacted near Clayton due to the increased UDA impacts under this scenario (Table 1, Figure 1), although again this would not be expected to impact a large or regionally important population. Most of these increased impacts will affect woodlands and chaparral habitats, but only a small percentage of this would be expected to be serpentine. With the added development risk under the maximum UDA scenario, parcels in Subzones 4g and 4c would be more likely to be acquired and total Zone 4 preservation requirements will double, thus increasing the overall likelihood of protecting and enhancing at least one population.

Areas in chaparral or woodland habitats that are underlain with serpentine soils provide particularly suitable habitat for the species. As a result, the expected changes in land management in preserves, particularly in regard to prescribed burns and changes in fire management, could greatly benefit the species, and may even allow it to colonize new areas of

chaparral underlain with suitable soils if these areas have been under fire suppression regimes up to this time. There is a low risk of adverse effects on populations in preserves from trail construction and potentially from weed removal activities, although a more open canopy would benefit any populations in the long term. Compaction of soils on trail surfaces could be detrimental to Mt. Diablo phacelia, but these impacts would be so localized that it is unlikely that a trail would extirpate an entire population even if constructed through the population. Indirect nitrogen deposition is not likely to increase greatly in most of the remote areas this species would be expected to occur in.

There is a very low potential for impacts to this species, and a much greater potential for the species to occur in new preserves. There is very little risk of population loss, and even less risk of loss of multiple or large populations. In contrast, there is a much higher likelihood that this species would be preserved by the Plan in suitable serpentine-affected parcels acquired near Mt. Diablo State Park, where enhanced management of preserves, particularly with respect to burn management, would benefit this species' habitat. Therefore, the loss of one or two small populations would not substantially reduce the species' range or regional abundance. The Plan will likely have a beneficial effect on Mt. Diablo phacelia under either UDA scenario, and if loss of any small unknown populations does occur, such adverse impacts would be less-than-significant and outweighed by expected benefits to, and increased preservation of, the species.

Most beautiful jewel-flower. Most beautiful jewel-flower has a CRPR of 1B.2, which indicates it is considered fairly endangered in California (CNPS 2014). As such, impacts to this species within the inventory area would be significant if large, dense, or numerous populations are impacted, or if impacts would lead to an effective range reduction for the species. Because of this species' affinity for serpentine chaparral, oak woodland, and grassland habitats, as well as its known distribution surrounding Mt. Diablo, it is likely to be concentrated in currently protected areas (which will remain unaffected by the Plan), or in privately owned areas that are much more likely to become part of the Plan Preserve System than impacted.

Under the initial UDA scenario, there is only a low potential for populations to be impacted, if suitable serpentine habitat occurs within the expected 21 ac of impacts to oak woodlands and chaparral (Table 1). A large area (2533 ac) of grasslands will be impacted, but again most of this area will not support this serpentine species. Large or numerous populations are not expected to occur in these largely non-serpentine areas. Location records in the inventory area for most beautiful jewel-flower are all located close to Mt. Diablo in woodland and scrub-chaparral habitats, and it is likely the species would not be found in the small serpentine patches presumed to exist near Marsh Creek and Horse Valley, where potential impacts could occur. There is instead a high likelihood that one or more populations would be acquired due to the Alameda whipsnake, Mt. Diablo manzanita, Mt. Diablo fairy lantern, and Brewer's western flax-driven acquisition requirements. AA Subzones 3a, 3b, 4b, and 4a provide suitable habitat near known populations. Subzones slightly further away from the peak, such as 4b, 4g, and 4c may also provide suitable habitat and harbor unknown populations, but these subzones are of lower priority for acquisition.

Under the maximum UDA scenario, there is a very low likelihood a population could be impacted near Clayton due to the increased UDA impacts under this scenario (Table 1, Figure 1),

although again this area is neither expected to represent particularly suitable serpentine habitat nor is it large enough that a very large population or full population extirpation would be expected to occur. Additional grassland impacts will occur (4152 ac), but again it is likely that very little of this acreage represents suitable habitat for the species. Only a small percentage of the impacted chaparral, woodland, or grasslands would be expected to be serpentine. With the added development risk under the maximum UDA scenario, parcels in Subzones 4g and 4c would be more likely to be acquired and total Zone 4 preservation requirements will double, thus increasing the overall likelihood of protecting and enhancing at least one population.

Areas in serpentine chaparral, woodland, or grassland habitats provide particularly suitable habitat for the species. As a result, the expected changes in land management in preserves, particularly in regard to prescribed burns and changes in fire management, could greatly benefit the species in chaparral, and may even allow it to colonize new areas of chaparral underlain with suitable soils if these areas have been under fire suppression regimes up to this time. Grazing management may also enhance habitat for the species in serpentine grasslands if these areas are currently improperly grazed (particularly if they are undergrazed). There is a low risk of adverse effects on populations in preserves from trail construction and potentially from weed removal activities, although a more open canopy would benefit any populations in the long term. Compaction of soils on trail surfaces could be detrimental to most beautiful jewel-flower, but these impacts would be so localized that it is unlikely that a trail would extirpate an entire population even if constructed through the population. Indirect nitrogen deposition is not likely to increase greatly in most of the remote areas this species would be expected to occur in.

There is a very low potential for impacts to this species, and a much greater potential for the species to occur in new preserves. There is very little risk of population loss, and even less risk of loss of multiple or large populations. Because of the much higher likelihood that this species will be preserved by the Plan in suitable serpentine-affected parcels acquired near Mt. Diablo State Park, where enhanced management of preserves, particularly with respect to burn and weed management, would benefit this species' habitat, the loss of one or two small populations would not be significant nor would this substantially reduce the species' range or regional abundance. Therefore, the Plan will likely have a beneficial effect on the most beautiful jewel-flower under either UDA scenario, and if loss of any small unknown populations does occur, such adverse impacts would be less-than-significant and outweighed by the expected benefits to, and increased preservation of, the species.

Alkaline-adapted and Wetland Plant Species

The 14 plant species discussed in this section share habitat preferences with the specific, known affinity for alkaline soils, and/or they tolerate saturated and inundated soils well enough to occur in wetlands. Wetlands in a large portion of eastern Contra Costa County are saline or affected by alkaline soil substrates. Alkaline substrates can seriously affect the availability of nutrients, as well as contributing to osmotic stress in seasonal wetlands or in upland alkaline habitats. Wetland-adapted species often show low drought tolerance and are specifically adapted to certain hydrologic regimes.

Although these species share an association with alkaline and/or wetland conditions, they can be quite variable in regards to other habitat preferences. Some, such as hogwallow starfish, are generally associated with seasonal clayey depressions or shallow vernal pools. Others are upland species associated with sparsely vegetated alkaline grasslands and chenopod scrub. Many of these species are associated with heavy clays, because fine particles tend to settle in the low-lying positions occupied by wetlands and alkaline sinks. However, other alkaline species, such as heartscale, occur in coarse-textured soils.

Wetlands will occur mainly as small inclusions in all habitats mapped within the inventory area, including chaparral, oak woodland and savanna, and grasslands. Wetlands also occur in floodplains, scattered in low depressions throughout the inventory area, and are most extensive in the eastern portion of the inventory area. The Plan does not attempt to accurately map either the complete extent, location, or type of all wetlands within the inventory area. While it is difficult to know exactly where all of the wetlands occur, limits given on the extent of wetland impacts are expected to be accurate, as each project under the Plan must comply with the Clean Water Act and receive Section 404 approval for impacts to Waters of the U.S. Perennial wetlands will experience 74-75 ac of impacts, but an equivalent acreage will be preserved. Approximately 84-85 ac of perennial wetlands will be restored or created within the Plan preserves or in nearby pre-existing Parks in addition to the preserved perennial wetlands (Table 2). Seasonal wetlands (which are the most likely wetland hydrology type to support most of the species in this group) will experience 43-56 ac of impacts, but will be preserved and managed at a 3:1 ratio (preserved wetlands to impacted wetlands), with impacts capped if sufficient preservation acreage is not available to meet this ratio (Table 2). Additionally, some 104-163 ac of seasonal wetlands will be restored, either in the new preserves or within currently existing parklands managed in a similar way to the Plan preserves.

The majority of known alkaline habitat in the inventory area occurs near Clifton Court Forebay and close to the San Joaquin River, and also areas in Deer, Horse, and Briones Valleys near the Marsh Creek Reservoir (Figure 4). The CNDDB maps most areas of alkaline meadows (a sensitive community type tracked by the database that would provide excellent habitat for many species in this group) in the southeastern corner of the inventory area. Alkaline habitats are expected to experience a minor extent of impacts (approximately 115 ac of alkaline grasslands and 28-31 ac of alkaline wetlands) in comparison to the amount of these habitats expected to be acquired and incorporated into the Plan Preserve System (Tables 1 and 2). Preservation requirements for these habitats include 900 ac of alkaline grassland under the initial UDA scenario; 1200 ac of alkaline grasslands under the maximum UDA scenario; 84-93 ac of alkaline wetlands preserved; and 61-67 ac of alkaline wetlands restored.

Wetlands within the UDA and close to rural infrastructure projects are likely to be directly impacted. Alkaline habitats near the Byron Airport expansion, near Marsh Creek Reservoir and Horse Valley, and within the UDA to the east of Oakley are also likely to be impacted under the Plan. Preservation requirements for wetlands and alkaline habitats of all types are so stringent that it is likely that a majority of the wetlands and alkaline habitats within the AA Zones must be acquired, and therefore any given wetland or alkaline parcel in an AA zone has a fairly high likelihood of preservation, and any area suitable for wetland restoration is more likely to be used for that purpose than impacted (Table 2). For example, 50-55% of the alkaline wetlands

estimated to occur in all AA zones must be acquired, 75-98% of all seasonal wetlands in all AA zones must be acquired, and 32% of all perennial wetlands in all AA zones must be acquired. Approximately 60-83% of *all* remaining unprotected alkaline grasslands in the inventory area must be acquired.

Alkaline habitats and wetlands are similar in that they share a common major threat (in addition to habitat loss and development). This threat is overgrazing. In alkaline grasslands, plant growth tends to be stunted due to the harsh edaphic conditions. When these habitats are grazed as if they were producing similar biomass as non-alkaline areas under similar hydrologic conditions, they quickly become overgrazed, denuded, and degraded. Soils are exposed to erosion, and there is a decrease in both palatable species and species diversity. Common weedy species with higher alkaline tolerance can colonize the degraded habitats. Chenopod scrub (included as alkaline grasslands under the Plan), a habitat so heavily affected by alkaline edaphic conditions that very little grass can survive, should be grazed very carefully, such as for targeted weed control purposes, or under short durations, as it cannot recover quickly from the loss of biomass and disturbance to the soils and slow-growing, halophytic shrub vegetation. It is expected that preserves that include these alkaline habitats will be managed in this manner.

Similarly, in the arid west, livestock that are not moved frequently out of wetlands to drier ridges can damage wetlands by remaining in the wet areas and contaminating waters, causing soil disturbance, contributing to head cuts in riparian areas, and continuing to remove vegetation until very little is left. Therefore, adoption of management actions such as rotational grazing or grazing exclosures for overgrazed alkaline and/or wetland habitats in Plan Preserves has the potential to allow these areas to recover. Such recovery could substantially increase habitat values for CEQA species, which depend on these habitat types. It is expected that the Plan's adaptive management strategies will incorporate these management approached to achieve habitat enhancement. A complete absence of grazing in some alkaline habitats and wetlands, particularly vernal pool systems, could leave these habitats open to weed invasions and a detrimental, thick cover of non-native grasses. Therefore, careful prescription of grazing treatments is essential for successful management of these habitats.

Compensatory wetlands will be created under the Plan, and some of these areas may provide additional suitable habitat both for species covered under the Plan and for some of the CEQA species discussed here. However, care should be taken when expanding or enhancing existing wetland complexes, because if a population of a special-status plant species is excavated to provide depth, or is subjected to long-term changes in hydrology, it may be extirpated.

Direct loss of suitable/preferred habitat for these alkaline and/or wetland species may occur due to urban development within the UDA or covered rural infrastructure projects outside of preserves. However, these impacts are not expected to affect many extant populations of these species based on currently known location records (CCH 2014, Calflora 2014, CNDDB 2014; see Figures 3 and 4). Indirect impacts may also occur due to altered hydrology and fragmentation of wetlands that are not directly impacted within the UDA. Within the preserves, conservation measures intended to control weeds could improve and protect alkaline and wetland habitats, but we predict that the most effective tool to improve these habitats will be the modulation of grazing intensity to improve and maintain habitat for covered species such as San

Joaquin spearscale. Similar to serpentine rock outcrops, permanent impacts to areas of vernal pool or alkaline meadow habitats could be considered significant under CEQA regardless of species-level impacts, due to the rarity of these habitats throughout the state. Such impacts could also have substantial effects on some of the species in this group, depending on rarity and specificity of the plant's preferred alkaline and/or wetland microhabitat.

Within preserves, suitable habitat for these species has a low chance of being impacted by trail construction and maintenance, wetland and riparian restoration or creation, and potential increases in anthropogenic disturbances in some currently privately owned areas that would be opened for public recreation if acquired under the Plan. Conversely, disturbance in some privately owned areas may decrease once incorporated into preserves, depending on current land use and changes in management to improve habitat for covered species, thus potentially benefiting these species. Sites for wetland and trail construction, or for other direct, localized impacts occurring within the preserves will be surveyed for covered and no-take plants. If these surveys are conducted in a protocol-level, floristic manner, non-covered special-status species will also be detected and preserve managers can avoid the low risk of these potential, preserve-related impacts to CEQA species by re-siting proposed trails or constructed wetlands when feasible if an unknown population is discovered. Additionally, if currently known populations of CEQA species are avoided by preserve activities when feasible, this would result in a similar reduction in risk for these species.

Net effects of the Plan on each of these 14 species are discussed in greater detail below.

Alkali milk-vetch. Alkali milk-vetch has a CRPR of 1B.2, which indicates it is considered fairly endangered in California (CNPS 2014). This species has been designated as a "no-take" species by the East Contra Costa County HCP/NCCP. Any areas to be impacted that support suitable land cover types would have to be surveyed, and any populations of alkali milk-vetch would be avoided and may be incorporated into the preserve system. Wetland restoration and creation under the Plan would be expected to benefit this species.

Because the species would not be impacted and could be preserved, Plan implementation is expected to have either no effect (if no other unknown populations exist in the inventory area) or a net beneficial effect (if any additional populations are preserved) on the alkali milk-vetch under either UDA scenario.

Heartscale. Heartscale has a CRPR of 1B.2, which indicates it is considered fairly endangered in California (CNPS 2014). As such, impacts to this species within the inventory area would be significant if moderately large, dense, or numerous populations are impacted, if large population or multiple populations were lost, or if impacts would lead to an effective range reduction for the species. Because of this species' strict affinity for alkaline habitats underlain with sandy soils, it is somewhat equally likely to be concentrated in currently protected areas (which will remain unaffected by the Plan), in privately owned areas that are more likely to become part of the Plan Preserve System, and impacted areas. Due to the wetland impact caps, this species is even less likely to be impacted by the Plan even if it occurs within the UDA.

Under the initial UDA scenario, there is some potential for unknown populations to be impacted. This species relies very strictly on sandy alkaline grasslands and alkaline seasonal wetlands. Based on NRCS soils mapping (SCS 1969), such areas mainly occur in AA Subzone 6a (Figure 3), which overlaps considerably with the initial UDA. Extensive alkaline/saline-affected lowlands, much of which have been disturbed by agriculture, occur in the northeastern corner of the inventory area. However, because heartscale, like other congeneric saltscale species, can tolerate or are even closely associated with disturbed soils, this does not exclude the possibility small or sparse populations could be present in areas that have been disked and planted. Populations could also occur in sandy inclusions in the alkaline areas near Marsh Creek Reservoir, Horse Valley, Deer Valley, and Briones Valley, but initial UDA impacts would only likely affect suitable habitat in the southern portion of Subzone 2i. There is also a moderate to high likelihood that one or more populations would be acquired due to the brittlescale and recurved larkspur-driven acquisition requirements in Zone 5, and the alkaline grasslands acreage requirements in Zones 5 and 6 (Table 5). Specifically, Subzones 2i (the northern portion), 6e, 6d, 6c, 5c, 5a, 5d, and 5b may provide suitable habitat, and although only Subzone 5a is higher priority for conservation, general acreage requirements indicate a high probability that suitable habitat (potentially occupied) from several or all of these Subzones will be acquired into the preserve System.

Under the maximum UDA scenario, there is a greater likelihood a population could be impacted near the Byron Airport, and in the UDA expansion that overlaps with the northern portion of Subzone 2i. However, with the added development risk under the maximum UDA scenario, parcels in Subzones 5d and 5b would be more likely to be acquired, and an additional 359 ac of alkaline grasslands and wetlands would be acquired across all zones (Tables 1, 2, and 5), thus increasing the overall likelihood of protecting and enhancing at least one population.

Areas in alkaline grasslands, chenopod scrub, and alkaline wetlands represent particularly suitable habitat for the species. As a result, the expected changes in land management in preserves, particularly in regard to grazing management, would be expected to benefit the species by helping to maintain a healthy, moderately grazed canopy, reducing trampling by livestock, and reducing negative effects of overgrazing on the species' growth and reproduction. There is a low risk of adverse effects on populations in preserves from trail construction and potentially from weed removal activities, although such impacts would be highly localized and a more open herbaceous canopy would also likely benefit any populations in the long term. Compaction of soils on trail surfaces would likely be detrimental to heartscale (which has an affinity for coarse, loose, sandy soils), but these impacts would be so localized that it is unlikely that a trail would extirpate an entire population even if constructed through the population - particularly because many habitats in which this species is found, such as wetlands, would not be good candidate habitats for trail construction. Compensatory wetland construction could endanger populations of this species if hydrologic regimes are changed in a manner that would be unfavorable for the species, such as if an area with seasonal hydrology was inundated perennially. However, if planned carefully, some wetland restoration efforts could benefit populations that are declining due to anthropogenic hydrologic alterations, such as where an alkaline meadow has been ditch-drained for pasture.

There is a moderate to high potential for Plan activities to adversely impact to this species, and only a moderate potential for the species to occur in new preserves. As much of the potentially suitable areas within the UDA are actively disturbed, it is unlikely any large or dense populations would be lost under the Plan. Enhanced management of preserves, particularly with respect to grazing management and weed control, may benefit the species and its habitat. A known population occurs in currently protected lands to the west of Marsh Creek Reservoir, and thus Plan effects will not be likely to extirpate the species from the region. Additionally, some of the potential negative effects incurred under the Plan, such as potential population loss, are likely to be mitigated by preservation of other populations and the enhancement of large tracts of alkaline habitats. Therefore, although heartscale may experience net negative impacts under the Plan under either UDA scenario, these impacts are not expected to reach the threshold for significance and are thus expected to be less than significant under CEQA.

Crownscale. Crownscale has a CRPR of 4.2, and as such, impacts to this species within the inventory area would be significant only if large, dense, or numerous populations are impacted, or if impacts would lead to an effective range reduction for the species. Because of this species' dependence on alkaline vernal pools and wetlands with clayey soils, this species is likely to be concentrated in currently protected areas (which will remain unaffected by the Plan), or in privately owned areas that are somewhat more likely to become part of the Plan Preserve System than impacted. Due to the wetland impact caps, this species is even less likely to be impacted by the Plan even if it occurs within the UDA.

Under the initial UDA scenario, there is some potential for populations to be impacted, as the species is rather widespread across the alkaline grassy areas between Antioch and the southeastern corner of the inventory area. This potential mainly occurs in AA Zone 6 and Subzone 2i. Alkaline habitat also occurs in Subzone 6a, which overlaps considerably with the UDA. Extensive alkaline/saline-affected lowlands, much of which have been disturbed by agriculture, occur in the northeastern corner of the inventory area. However, because crownscale, like other congeneric saltscale species, can tolerate or are even closely associated with disturbed soils, this does not exclude the possibility it could be present in areas that have been disked and planted. Indeed, there is at least one known population that may be impacted near Rock Slough in this Subzone. Populations also occur in the alkaline areas near Marsh Creek Reservoir, Horse Valley, Deer Valley, Sand Creek, and Briones Valley, but initial UDA impacts would only likely affect suitable habitat in the southern portion of Subzone 2i (Figure 2). There is also a moderate to high likelihood that one or more populations would be acquired due to the brittlescale and recurved larkspur-driven acquisition requirements in Zone 5, and the alkaline grasslands acreage requirements in Zones 5 and 6 (Table 5). Specifically, Subzones 2i (the northern portion), 2h, 6e, 6d, 6c, 5c, 5a, 5d, and 5b provide suitable habitat, and although only Subzone 5a is higher priority for conservation, general acreage requirements indicate a high probability that suitable habitat (potentially occupied) from several or all of these Subzones will be acquired into the preserve System. Mapped occurrences of Northern Claypan Vernal Pool (Figures 3 and 4) occur in Subzones 5a and 5d, and one or several of these pools may support crownscale.

Under the maximum UDA scenario, there is a greater likelihood a population could be impacted near the Byron Airport, and in the UDA expansion that overlaps with the northern portion of

Subzone 2i. However, with the added development risk under the maximum UDA scenario, parcels in Subzones 5d and 5b would be more likely to be acquired, and an additional 359 ac of alkaline grasslands and wetlands would be acquired across all zones (Tables 1, 2, and 5), thus increasing the overall likelihood of protecting and enhancing at least one population.

Areas in alkaline grasslands, chenopod scrub, and alkaline wetlands represent particularly suitable habitat for the species. As a result, the expected changes in land management in preserves, particularly in regard to grazing management, would be expected to benefit the species, by helping to maintain a healthy, moderately grazed canopy and reducing negative effects of overgrazing on the species' growth and reproduction. There is a low risk of adverse effects on populations in preserves from trail construction and potentially from weed removal activities, although a more open herbaceous canopy would also likely benefit any populations in the long term and the species does tolerate disturbance well. Compaction of soils on trail surfaces would likely be detrimental to crownscale, but these impacts would be so localized that it is unlikely that a trail would extirpate an entire population even if constructed through the population – particularly because many habitats in which this species is found, such as wetlands, would not be good candidate habitats for trail construction. Compensatory wetland construction could endanger populations of this species if hydrologic regimes are changed in a manner that would be unfavorable for the species, such as if an area with seasonal hydrology was inundated perennially. However, if planned carefully, some wetland restoration efforts could benefit populations that are declining due to anthropogenic hydrologic alterations, such as where an alkaline meadow has been ditch-drained for pasture.

There is a moderate potential for impacts to this species, and a high potential for the species to occur in new preserves. Unlike heartscale, crownscale is known to be widely distributed throughout several AA Subzones, while fewer populations are known from areas expected to be impacted within the UDA. The clayey alkaline soils associated with occurrences of this species are also more common in the inventory area than the sandy alkaline soils preferred by heartscale (Figure 3), and in general this species is more widely distributed and less rare than heartscale. Enhanced management of preserves, particularly with respect to grazing management and weed control, would benefit the species and its habitat. The potential negative effects, including potential population loss, incurred under the Plan would be less-than significant under CEQA and would be mitigated by the enhancement of large tracts of alkaline habitats, where more populations are expected to be preserved (and enhanced) than impacted. Therefore, the Plan will likely have a net beneficial effect on the species under either UDA scenario.

Congdon's tarplant. Congdon's tarplant has a CRPR of 1B.1, which indicates it is considered seriously endangered in California (CNPS 2014). As such, impacts to this species within the inventory area could be significant, especially if large, dense, or numerous populations are impacted, if population loss occurred, or if impacts would lead to an effective range reduction for the species. This species has an affinity for alkaline vernal pools and seasonal wetlands, and it is somewhat equally likely to be concentrated in currently protected areas (which will remain unaffected by the Plan), in privately owned areas that are more likely to become part of the Plan Preserve System, and impacted areas.

Under the initial UDA scenario, there is a low potential for unknown populations to be impacted, due to this species' preference for alkaline seasonal wetlands. The potential for impacts mainly occurs in AA Zone 6. Extensive alkaline habitat occurs in Subzone 6a, which overlaps considerably with the UDA. Much of these alkaline/saline-affected lowlands have been disturbed by agriculture. However, disturbed soils constitute especially favorable habitat for Congdon's tarplant, and therefore there is the possibility it could remain in areas that have been disked and planted, or that are otherwise disturbed. Populations could also occur in the alkaline areas near Marsh Creek Reservoir, Horse Valley, Deer Valley, and Briones Valley, but initial UDA impacts would only likely affect suitable habitat in the southern portion of Subzone 2i. In general, distribution records in northern Alameda County indicate that the species may be more concentrated in the southern and central portions of the inventory area than in the areas near Oakley. There is also a moderate to high likelihood that one or more populations would be acquired due to the brittlescale and recurved larkspur-driven acquisition requirements in Zone 5, and the alkaline grasslands acreage requirements in Zones 5 and 6 (Table 5). Specifically, Subzones 2i (the northern portion), 6e, 6d, 6c, 5c, 5a, 5d, and 5b provide ample suitable habitat in the form of alkaline wetlands. Although only Subzone 5a is higher priority for conservation, general acreage requirements in Zones 5 and 6 (Table 5) indicate a high probability that suitable habitat (potentially occupied) from several or all of these Subzones will be acquired into the preserve System.

Under the maximum UDA scenario, there is a greater likelihood a population could be impacted near the Byron Airport, and within the UDA expansion that overlaps with the northern portion of Subzone 2i. However, with the added development risk under the maximum UDA scenario, parcels in Subzones 5d and 5b would be more likely to be acquired, and an additional 359 ac of alkaline grasslands and wetlands would be acquired across all zones (Tables 1, 2, and 5), thus increasing the overall likelihood of protecting and enhancing at least one population of Congdon's tarplant.

Shallow, seasonal, clayey alkaline wetlands represent particularly suitable habitat for the species. As a result, the expected changes in land management in preserves, particularly in regard to grazing management, would be expected to benefit the species. Managed grazing could benefit this species by helping to maintain low cover of later-season weeds and grasses in seasonal wetlands that would compete with Congdon's tarplant, and because mature tarplants are not palatable to cattle, this could favor the species. Additionally, the soil disturbance provided by grazing is likely beneficial for the plants. Trail construction in the preserves should not pose much risk to this wetland species, as trails will not be constructed through wetlands. Weed removal activities would not likely cause long-term negative effects on populations, as the disturbance would likely improve habitat by removing weedy canopy and providing disturbance favored by the species. Compensatory wetland construction could endanger populations of this species if hydrologic regimes are changed in a manner that would be unfavorable for the species, such as if an area with seasonal hydrology was inundated perennially following construction. However, if planned carefully, some wetland restoration efforts could benefit populations that are declining due to anthropogenic hydrologic alterations, such as where an alkaline meadow has been ditch-drained for pasture.

There is a small to moderate potential for impacts to this species, and a moderate to high potential for the species to occur in new preserves. Due to the wetland impact caps, this species is even less likely to be impacted by the Plan even if it occurs within the UDA. It is unlikely a large or regionally important population, or multiple populations, would be lost given the known distribution, so it is expected that any such negative impacts that might occur would be less-than-significant. Unlike many 1B.1 species, Congdon's tarplant has a relatively wide distribution with 76 extant populations is at least six counties in California (CNPS 2014, CNDDB 2014). As such, the species is not as seriously endangered by the loss of one or two small populations as some 1B.1 species with fewer extant populations or more restricted ranges, and any population loss within the Plan area would not cause a major range reduction for the species. Therefore, the Plan is expected to have a net beneficial effect on Congdon's tarplant under either UDA scenario if no populations are impacted within the UDA. Alternatively, if any populations of this 1B.1 species are lost due to development under the Plan, it is expected that such impacts would be less-than-significant under CEQA.

Spiny-sepaled button celery. Spiny-sepaled button celery has a CRPR of 1B.2, which indicates it is considered fairly endangered in California (CNPS 2014). As such, impacts to this species within the inventory area would be significant if moderately large, dense, or numerous populations are impacted, if large population or multiple populations were lost, or if impacts would lead to an effective range reduction for the species. Currently, there is only one known population of spiny-sepaled button celery in Contra Costa County, near Byron Airport; however, there is some uncertainty regarding the identification of this population. *E. spinosepalum* (spiny-sepaled button celery) is generally restricted to the Central Valley region but is known to intergrade with *E. vaseyi* which is more common in Contra Costa County. The plants occurring near Byron Airport are described as having intermediate characteristics between *E. spinosepalum* and *E. vaseyi* (CNDDB 2014). If the plants near Byron Airport are in fact *E. spinosepalum*, other populations likely occur in the vicinity, but may have been previously over-looked and misidentified as *E. vaseyi*. Because of this species' dependence on alkaline vernal pools and grasslands, unknown populations of this species are more likely to be concentrated in privately owned areas that are more likely to become part of the Plan Preserve System and currently protected areas (which will remain unaffected by the Plan) than areas expected to be impacted. Additionally, based on expected wetland impact caps and wetland preservation requirements, it is possible that any populations that occur within the UDA would also be avoided by development.

Under the initial UDA scenario, there is low potential for populations to be impacted. This potential mainly occurs in the UDA near Byron and the area of Subzone 2i that overlaps with the initial UDA. Populations may occur in the alkaline areas near Marsh Creek Reservoir, Horse Valley, Deer Valley, Sand Creek, and Briones Valley, but initial UDA impacts would only likely affect suitable habitat in the southern portion of Subzone 2i and those areas near Byron (Figure 2). There is also a moderate likelihood that one or more populations would be acquired due to the brittlescale and recurved larkspur-driven acquisition requirements in Zone 5, and the alkaline grasslands acreage requirements in Zones 5 and 6 (Table 5). Specifically, Subzones 2i (the northern portion), 2h, 6e, 6d, 6c, 5c, 5a, 5d, and 5b provide suitable habitat, and although only Subzone 5a is higher priority for conservation, general acreage requirements indicate a high probability that suitable habitat (potentially occupied) from several or all of these Subzones will

be acquired into the Preserve System. Mapped occurrences of Northern Claypan Vernal Pool (Figures 3 and 4) occur in Subzones 5a and 5d, and one or several of these pools may support spiny-sepaled button celery.

Under the maximum UDA scenario, there is a greater likelihood that a population could be impacted near the Byron Airport, and possibly in the UDA expansion that overlaps with the northern portion of Subzone 2i. However, with the added development risk under the maximum UDA scenario, parcels in Subzones 5d and 5b would be more likely to be acquired, and an additional 359 ac of alkaline grasslands and wetlands would be acquired across all zones (Tables 1, 2, and 5), thus increasing the overall likelihood of protecting and enhancing at least one population.

Alkaline vernal pools and grasslands represent particularly suitable habitat for the species. As a result, the expected changes in land management in preserves, particularly in regard to grazing management, would be expected to benefit the species by helping to maintain low cover of non-native vernal pool weeds and grasses that would compete with spiny-sepaled button celery. Conversely, in areas where alkaline wetlands have been overgrazed, it is expected preserve management would reduce stocking rates and thus also improve habitat quality. Trail construction in the preserves should not pose much risk to this wetland species, as trails will not be constructed through intact vernal pools. Weed removal activities would also not likely cause long-term negative effects on populations, as the disturbance would likely improve habitat by removing weedy canopy cover and increasing habitat suitability in the long term. Compensatory wetland construction could endanger populations of this species if hydrologic regimes are changed in a manner that would be unfavorable for the species, such as if an area with seasonal hydrology was inundated perennially following construction. However, if planned carefully, some wetland restoration efforts could benefit populations that are declining due to anthropogenic hydrologic alterations, such as where an alkaline meadow-vernal pool complex has been ditch-drained for pasture.

There is moderate potential for impacts to this species, including to the only known population in the county, near Byron Airport. However, there is some taxonomic uncertainty regarding the identification of this population. If this population is in fact spiny-sepaled button celery, then there are likely additional, currently unknown populations in the Plan area. If there are additional, unknown populations, enhanced management of preserves, particularly with respect to grazing management, would benefit the species and its habitat. Due to uncertainty in the identification of the one known population in the county, and the difficulty of distinguishing *E. spinosepalum* from *E. vaseyi*, it is highly unlikely that there is one and only one population in the county. Therefore, the Plan is expected to have a net neutral or beneficial effect on spiny-sepaled button celery under either UDA scenario if no population loss occurs, and if population loss occurs, negative impacts from the Plan are expected to be less-than-significant under CEQA.

Hogwallow starfish. Hogwallow starfish has a CRPR of 4.2, and as such, impacts to this species within the inventory area would be significant only if large, dense, or numerous populations are impacted, or if impacts would lead to an effective range reduction for the species. Because of this species' dependence on vernal pools and wetlands with clayey soils, and based on known location records, this species is equally likely to be concentrated in privately

owned areas that may become part of the Plan Preserve System, currently protected areas (which will remain unaffected by the Plan), and areas expected to be impacted. However, due to wetland impact caps and wetland preservation requirements, it is more likely that unknown populations would be situated in wetlands to be avoided by development or preserved under the Plan, rather than lost.

Under the initial UDA scenario, there is some potential for populations to be impacted, as the species is rather widespread (but apparently common nowhere) across the alkaline grassy areas between Antioch and the southeastern corner of the inventory area. This potential mainly occurs in AA Subzone 2i where it overlaps with the UDA and areas near Byron. Populations occur in the alkaline areas near Marsh Creek Reservoir, Deer Valley, and west of Byron, but initial UDA impacts would only likely affect suitable habitat in the southern portion of Subzone 2i and the area immediately near Byron (Figure 2). There is a moderate potential for occurrence in suitable wetlands and vernal pool complexes in Zones 5 and 6, and consequently some potential for preservation of one or more populations due to the alkaline grasslands acreage requirements in Zones 5 and 6 (Table 5). Specifically, Subzones 2i (the northern portion), 2h, 6e, 6d, 6c, 5c, 5a, 5d, 5b, and potentially 4e and 4d provide suitable habitat, and although of those only Subzone 5a is higher priority for conservation, general acreage requirements indicate a high probability that suitable habitat (potentially occupied) from several or all of these Subzones will be acquired into the Preserve System. Mapped occurrences of Northern Claypan Vernal Pool (Figures 3 and 4) occur in Subzones 5a and 5d, and one or more of these pool complexes may support hogwallow starfish.

Under the maximum UDA scenario, there is a greater likelihood a population could be impacted near the Byron Airport, and particularly in the UDA expansion that overlaps with the northern portion of Subzone 2i, which is near a known population near Roddy Ranch golf course. However, with the added development risk under the maximum UDA scenario, parcels in Subzones 5d and 5b would be more likely to be acquired, and an additional 359 ac of alkaline grasslands and wetlands (which often occur on suitably clayey soils) would be acquired across all zones (Tables 1, 2, and 5). This would increase the overall likelihood of protecting and enhancing at least one population.

Shallow vernal pools and seasonal wetlands, and mesic clayey grassland flats represent particularly suitable habitat for the species. As a result, the expected changes in land management in preserves, particularly in regard to grazing management, would be expected to benefit the species by helping to maintain a healthy, moderately grazed canopy and reducing negative effects of overgrazing on the species' growth and reproduction. Suitable habitat for hogwallow starfish can be invaded and degraded by stands of non-native, mesic grasses such as Italian wild-rye (*Festuca perennis*) and medusa head (*Elymus caput-medusae*). There is some risk of impacts to populations in preserves from trail construction; trails would not be constructed through vernal pools, but they could be constructed through more upland areas in vernal pool complexes, which could support the species. As the species occurs in small populations, this impact could extirpate a small population. Weed removal impacts may also negatively affect individual plants, although a more open herbaceous canopy would also likely benefit any populations in the long term. Compensatory wetland construction could endanger populations of this species if hydrologic regimes are changed in a manner that would be

unfavorable for the species, such as if an area with seasonal hydrology was inundated perennially. However, if planned carefully, some wetland restoration efforts could benefit populations that are declining due to anthropogenic hydrologic alterations, such as where an alkaline meadow has been ditch-drained for pasture, or where flood control measures prevent normal lowland flooding.

There is a low to moderate potential for impacts to this species, and a moderate potential for the species to occur in new preserves. This species is widespread throughout the central portion of the state, and Plan-covered actions would have to impact numerous large populations to cause substantial negative impacts to the species; such large-scale impacts are not expected to occur. The species could not be extirpated from the inventory area due to Plan activities, as populations would remain in the Los Vaqueros Reservoir watershed. Enhanced management of preserves, particularly with respect to grazing management, wetland restoration, and weed control, would benefit the species and its habitat. Therefore, the Plan is not expected to have a strong net adverse or beneficial effect on the species under either UDA scenario, although it is slightly more likely the Plan will slightly benefit the species. Any adverse impacts would be less than significant under CEQA.

Contra Costa goldfields. Contra Costa goldfields have a CRPR of 1B.1, which indicates it is seriously endangered in California (CNPS 2014). As such, impacts to any populations could endanger the species and would be considered significant. This species has been designated as a "no-take" species by the East Contra Costa County HCP/NCCP. Any areas to be impacted that support suitable land cover types would have to be surveyed, and any populations of Contra Costa goldfields would be avoided and may be incorporated into the preserve system.

Because the species would not be impacted and could be preserved, Plan implementation is expected to have either no effect (if no other unknown populations exist in the inventory area) or a net beneficial effect (if any additional populations are preserved) on the Contra Costa goldfields under either UDA scenario.

Ferris' goldfields. Ferris's goldfields have a CRPR of 4.2, and as such, impacts to this species within the inventory area would be significant only if large, dense, or numerous populations are impacted, or if impacts would lead to an effective range reduction for the species. Because of this species' dependence on alkaline vernal pools and wetlands with clayey soils, and based on known location records, this species is more likely to be concentrated in privately owned areas that are somewhat more likely to become part of the Plan Preserve System than in currently protected areas (which will remain unaffected by the Plan), or areas expected to be impacted. Additionally, based on expected wetland impact caps and wetland preservation requirements, it is possible that any populations that occur within the UDA would also be avoided by development.

Under the initial UDA scenario, there is a low potential for unknown populations to be impacted, due to this species' preference for alkaline vernal pools and seasonal wetlands. Potential for adverse effects mainly occur in small areas near Discovery Bay, Byron, and the Byron Airport Expansion rural infrastructure project site. There is a moderate to high likelihood that one or more populations would be acquired due to the brittlescale and recurved larkspur-driven

acquisition requirements in Zone 5, and the alkaline grasslands acreage requirements in Zones 5 and 6 (Table 5). Specifically, Subzones 6e, 6f, 6c, 5d, and 5b provide ample suitable habitat in the form of alkaline wetlands and vernal pools, populations are known to occur in Subzones 6d, 5c, and 5a. Although only Subzone 5a is higher priority for conservation, general acreage requirements in Zones 5 and 6 (Table 5) indicate a high probability that suitable habitat (potentially occupied) from several or all of these Subzones will be acquired into the Preserve System.

Under the maximum UDA scenario, there is a greater likelihood a population could be impacted near the Byron Airport. However, with the added development risk under the maximum UDA scenario, parcels in Subzones 5d and 5b would be more likely to be acquired, and an additional 359 ac of alkaline grasslands and wetlands would be acquired across all zones (Tables 1, 2, and 5), thus increasing the overall likelihood of protecting and enhancing at least one population of Ferris' goldfields.

Shallow, seasonal, clayey, strongly alkaline wetlands and vernal pools represent particularly suitable habitat for the species. As a result, the expected changes in land management in preserves, particularly in regard to grazing management, would be expected to benefit the species by helping to maintain low cover of non-native vernal pool weeds and grasses that would compete with Ferris' goldfields. Conversely, in areas where alkaline wetlands have been overgrazed, it is expected that preserve management would reduce stocking rates and thus also improve habitat quality. Trail construction in the preserves should not pose much risk to this wetland species, as trails will not be constructed through intact vernal pools. Weed removal activities would also not likely cause long-term negative effects on populations, as the disturbance would likely improve habitat by removing weedy canopy cover and increasing habitat suitability in the long term. Compensatory wetland construction could endanger populations of this species if hydrologic regimes are changed in a manner that would be unfavorable for the species, such as if an area with seasonal hydrology was inundated perennially following construction. However, if planned carefully, some wetland restoration efforts could benefit populations that are declining due to anthropogenic hydrologic alterations, such as where an alkaline meadow-vernal pool complex has been ditch-drained for pasture.

There is low potential for impacts to this species and a moderate to high potential for the species to occur in new preserves. Enhanced management of preserves, particularly with respect to grazing management, would benefit the species and its habitat. No impacts to especially large or regionally important populations, or to numerous populations, are expected due to the low expected wetland impacts across the Plan area; any such loss of Ferris' goldfields would be less than significant and outweighed by expected preservation and benefit to the species under the Plan. Therefore, the Plan is expected to have a net beneficial effect on Ferris' goldfields under either UDA scenario.

Little mouse tail. Little mouse tail has a CRPR of 3.1, and is considered "seriously endangered in California" (CNPS 2014). As such, impacts to this species within the inventory area would be considered significant if large, dense, or numerous populations are impacted, if important populations are lost, or if impacts would lead to an effective range reduction for the species. Because of this species' dependence on alkaline vernal pools and grasslands, and based on

known location records, this species is more likely to be concentrated in privately owned areas that are more likely to become part of the Plan Preserve System and currently protected areas (which will remain unaffected by the Plan) than areas expected to be impacted. Additionally, based on expected wetland impact caps and wetland preservation requirements, it is possible that any populations that occur within the UDA would also be avoided by development.

Under the initial UDA scenario, there is some potential for populations to be impacted, as the species occurs sporadically in the alkaline grassy areas between Antioch and the southeastern corner of the inventory area. This potential mainly occurs in the UDA near Byron and the area of Subzone 2i that overlaps with the initial UDA. Populations may occur in the alkaline areas near Marsh Creek Reservoir, Horse Valley, Deer Valley, Sand Creek, and Briones Valley, but initial UDA impacts would only likely affect suitable habitat in the southern portion of Subzone 2i and those areas near Byron (Figure 2). There is also a moderate to high likelihood that one or more populations would be acquired due to the brittlescale and recurved larkspur-driven acquisition requirements in Zone 5, and the alkaline grasslands acreage requirements in Zones 5 and 6 (Table 5). Specifically, Subzones 2i (the northern portion), 2h, 6e, 6d, 6c, 5c, 5a, 5d, and 5b provide suitable habitat, and although only Subzone 5a is higher priority for conservation, general acreage requirements indicate a high probability that suitable habitat (potentially occupied) from several or all of these Subzones will be acquired into the Preserve System. Mapped occurrences of Northern Claypan Vernal Pool (Figures 3 and 4) occur in Subzones 5a and 5d, and one or several of these pools may support little mouse tail.

Under the maximum UDA scenario, there is a greater likelihood a population could be impacted near the Byron Airport, and in the UDA expansion that overlaps with the northern portion of Subzone 2i. However, with the added development risk under the maximum UDA scenario, parcels in Subzones 5d and 5b would be more likely to be acquired, and an additional 359 ac of alkaline grasslands and wetlands would be acquired across all zones (Tables 1, 2, and 5), thus increasing the overall likelihood of protecting and enhancing at least one population.

Alkaline vernal pools and grasslands represent particularly suitable habitat for the species. As a result, the expected changes in land management in preserves, particularly in regard to grazing management, would be expected to benefit the species by helping to maintain low cover of non-native vernal pool weeds and grasses that would compete with little mouse tail. Conversely, in areas where alkaline wetlands have been overgrazed, it is expected preserve management would reduce stocking rates and thus also improve habitat quality. Trail construction in the preserves should not pose much risk to this wetland species, as trails will not be constructed through intact vernal pools. Weed removal activities would also not likely cause long-term negative effects on populations, as the disturbance would likely improve habitat by removing weedy canopy cover and increasing habitat suitability in the long term. Compensatory wetland construction could endanger populations of this species if hydrologic regimes are changed in a manner that would be unfavorable for the species, such as if an area with seasonal hydrology was inundated perennially following construction. However, if planned carefully, some wetland restoration efforts could benefit populations that are declining due to anthropogenic hydrologic alterations, such as where an alkaline meadow-vernal pool complex has been ditch-drained for pasture.

There is a low to moderate potential for impacts to this species, and a moderate to good potential for the species to occur in new preserves. Enhanced management of preserves, particularly with respect to grazing management, would benefit the species and its habitat. Loss of any populations would constitute an adverse effect on the species, but given the low level of wetland impacts expected under the Plan, such impacts would be expected to be mitigated by potential benefits of population preservation and enhancement and would therefore be less than significant. Therefore, the Plan is expected to have a net beneficial effect on little mouse tail under either UDA scenario if no population loss occurs, and if population loss occurs, negative impacts from the Plan are expected to be less-than-significant under CEQA.

Cotula navarretia. Cotula navarretia has a CRPR of 4.2, and as such, impacts to this species within the inventory area would be significant only if large, dense, or numerous populations are impacted, or if impacts would lead to an effective range reduction for the species. Because of this species' dependence on wetlands and mesic chaparral and oak woodlands with heavy clay soils, and based on known location records, this species is equally likely to be concentrated in privately owned areas that are somewhat more likely to become part of the Plan Preserve System, currently protected areas (which will remain unaffected by the Plan), and areas expected to be impacted. Additionally, based on expected wetland impact caps and wetland preservation requirements, it is even more likely that any populations would be avoided or preserved, even if these occur within the UDA, than impacted.

Under the initial UDA scenario, there is a low potential for populations to be impacted in AA Subzone 2i where it overlaps with the UDA, and areas near Byron. This species is not known to favor alkaline habitats specifically, but it requires very heavy clay, mesic soils. Populations occur in areas west of Byron and in Briones Valley, but initial UDA impacts would only likely affect suitable habitat in the southern portion of Subzone 2i and the area immediately near Byron (Figure 2). There is a moderate potential for occurrence in suitable heavy clay grassland areas in in Zones 2, 4, 5 and 6, and a subsequent potential for preservation of one or more populations due to the alkaline grasslands acreage requirements in Zones 5 and 6 (Table 5). Specifically, Subzones 2i (the northern portion), 2h, 6e, 6d, 6c, 5c, 5a, 5d, 5b, and potentially 4e and 4d provide suitable habitat, and although of those only Subzone 5a is higher priority for conservation, general acreage requirements indicate a high probability that suitable habitat (potentially occupied) from several or all of these Subzones will be acquired into the Preserve System. Mapped occurrences of Northern Claypan Vernal Pool (Figures 3 and 4) occur in Subzones 5a and 5d, and one or more of these pool complexes may be located near to suitably clayey, mesic grassland soils.

Under the maximum UDA scenario, there is a greater likelihood a population could be impacted in the UDA expansion that overlaps with the northern portion of Subzone 2i. However, with the added development risk under the maximum UDA scenario, parcels in Subzones 5d, 4d, and 5b would be more likely to be acquired, and an additional 359 ac of alkaline grasslands and wetlands (which often occur on suitably clayey soils) would be acquired across all zones (Tables 1, 2, and 5). This would increase the overall likelihood of protecting and enhancing at least one population.

Mesic clayey grasslands represent particularly suitable habitat for the species within the inventory area. As a result, the expected changes in land management in preserves, particularly in regard to grazing management, would be expected to benefit the species by helping to maintain a healthy, moderately grazed canopy and reducing negative effects of overgrazing on the species' growth and reproduction. Clayey soils on slopes would in some cases be subject to less edaphic disturbance and terracing under milder grazing regimes. There is some risk of impacts to populations in preserves from trail construction, but due to the species' edaphic requirements, compaction would not likely negatively affect the species, and trail impacts would be so localized they would be unlikely to extirpate entire populations. Weed removal impacts may also negatively affect individual plants, although a more open herbaceous canopy would also likely benefit any populations in the long term. If unknown populations of the species occur in chaparral in the inventory area, management of fire regimes for covered species would be likely to improve habitat for cotula navarretia as well. Compensatory wetland construction could endanger populations of this species if hydrologic regimes are changed in a manner that would be unfavorable for the species, such as if an area with seasonal hydrology was inundated perennially.

There is a low potential for impacts to this species, and a moderate potential for the species to occur in new preserves or to be avoided within UDA development. Loss of a few populations of this widespread species would not lead to a range reduction or result in a substantial impact to regional populations, and such an impact would thus be less than significant. Enhanced management of preserves, particularly with respect to grazing management, fire regimes, and weed control would benefit the species and its habitat. Therefore, the Plan will likely have a net beneficial effect on the species under either UDA scenario.

Shining navarretia. Shining navarretia has a CRPR of 1B.2, which indicates it is considered fairly endangered in California (CNPS 2014). As such, impacts to this species within the inventory area would be significant if moderately large, dense, or numerous populations are impacted, if large population or multiple populations were lost, or if impacts would lead to an effective range reduction for the species. Because of this species' dependence on wetlands and mesic chaparral and oak woodlands with clay soils, and based on known location records, this species is slightly more likely to be concentrated in privately owned areas that may become part of the Plan Preserve System, or currently protected areas (which will remain unaffected by the Plan), than in areas expected to be impacted. In addition, due to wetland impact caps under the Plan, there is some possibility that any populations located within the UDA would be avoided.

Under the initial UDA scenario, there is a low potential for populations to be impacted. This species is not known to favor alkaline habitats specifically, but it requires clayey, mesic soils. Populations occur in Mt. Diablo State Park, Contra Loma Regional Park, and just outside of Black Diamond Mines Regional Preserve. Two of these populations are already protected and the third is likely to be acquired in a preserve. There is also moderate potential for occurrence in suitable heavy clay grassland areas in in Zones 2, 4, 5 and 6, and a subsequent potential for preservation of one or more populations due to the alkaline grasslands acreage requirements in Zones 5 and 6 (Table 5). Specifically, Subzones 2i (the northern portion), 2h, 6e, 6d, 6c, 5c, 5a, 5d, 5b, and potentially 4e and 4d provide suitable habitat, and although of those only Subzone 5a is higher priority for conservation, general acreage requirements indicate a high probability that

suitable habitat (potentially occupied) from several or all of these Subzones will be acquired into the Preserve System. Mapped occurrences of Northern Claypan Vernal Pool (Figures 3 and 4) occur in Subzones 5a and 5d, and one or more of these pool complexes may be located near to suitably clayey, mesic grassland soils.

Under the maximum UDA scenario, there is a greater likelihood a population could be impacted in the UDA expansion that overlaps with the northern portion of Subzone 2i. However, with the added development risk under the maximum UDA scenario, parcels in Subzones 5d, 4d, and 5b would be more likely to be acquired, and an additional 359 ac of alkaline grasslands and wetlands (which often occur on suitably clayey soils) would be acquired across all zones (Tables 1, 2, and 5). This would increase the overall likelihood of protecting and enhancing at least one population.

Mesic clayey grasslands represent particularly suitable habitat for the species within the inventory area. As a result, the expected changes in land management in preserves, particularly in regard to grazing management, would be expected to benefit the species by helping to maintain a healthy, moderately grazed canopy and reducing negative effects of overgrazing on the species' growth and reproduction. Clayey soils on slopes would in some cases be subject to less edaphic disturbance and terracing under milder grazing regimes. There is some risk of impacts to populations in preserves from trail construction, but due to the species' edaphic requirements, compaction would not likely negatively affect the species, and trail impacts would be so localized they would be unlikely to extirpate entire populations. Weed removal impacts may also negatively affect individual plants, although a more open herbaceous canopy would also likely benefit any populations in the long term. If unknown populations of the species occur in chaparral in the inventory area, management of fire regimes for covered species would be likely to improve habitat for shining navarretia as well. Compensatory wetland construction could endanger populations of this species if hydrologic regimes are changed in a manner that would be unfavorable for the species, such as if an area with seasonal hydrology was inundated perennially.

There is a low potential for impacts to this species, and a moderate potential for the species to occur in new preserves. Enhanced management of preserves, particularly with respect to grazing management, fire regimes, and weed control would benefit the species and its habitat. Due to the wetland impact caps under the Plan, and the species' known distribution, loss of a small population would not contribute to a range reduction, and would likely be mitigated by preservation and enhancement under the Plan. Therefore, the Plan will likely have a net beneficial effect on the species under either UDA scenario, or, if population loss occurs, the impact would be less-than-significant.

Lobb's aquatic buttercup. Lobb's aquatic buttercup has a CRPR of 4.2, and as such, impacts to this species within the inventory area would be significant only if large, dense, or numerous populations are impacted, or if impacts would lead to an effective range reduction for the species. Because of this species' affinity for vernal pool and depressional seasonal wetlands in oak woodlands, oak savanna, and grassland or small grassy openings in wooded habitats, and based on known population records, this species is likely to be concentrated in currently protected areas near Mt. Diablo (which will remain unaffected by the Plan), or in privately

owned areas that are much more likely to become part of the Plan Preserve System than impacted. Additionally, wetland impact caps and preservation requirements under the Plan further decrease the likelihood that populations of this species will be lost under the Plan (as some may be avoided even within the UDA), and increase the likelihood for preservation.

Under the initial UDA, there is only a low potential for populations to be impacted, due to this species' locational records, which center on the slopes of Mt. Diablo. There is instead a moderate likelihood that one or more populations would be acquired due to Mt. Diablo fairy lantern-driven acquisition requirements, or in attempts to acquire sufficient seasonal wetlands for the Preserve System to adequately mitigate wetland impacts (Table 2). Subzones 4a and 3a are of higher priority for acquisition, and depressional wetlands in this general Mt. Diablo area would provide suitable habitat for the species. Subzones 4b, 4g, 3b, and 3c may also provide suitable habitat, although these areas are not a higher priority for acquisition.

Under the maximum UDA scenario, there is a slightly greater likelihood a population could be impacted due to the expected increase in areal extent of oak woodland, oak savanna, and grassland impacts under this scenario (Table 1). Wetlands are at slightly higher risk from additional development to occur to the southwest of Clayton. However, with the added development risk under the maximum UDA scenario, parcels in Subzones 4g and 4c would be more likely to be acquired, thus increasing the overall likelihood of protecting and enhancing at least one population.

Depressional wetlands and vernal pools in wooded or grassland habitats provide particularly suitable habitat for the species. As a result, the expected changes in land management in preserves, particularly in regard to grazing management, would be expected to benefit the species by helping to maintain low cover of non-native vernal pool weeds and grasses that would compete with Lobb's aquatic buttercup. Conversely, in areas where wetlands have been overgrazed, it is expected preserve management would reduce stocking rates, and potentially fence wetlands off, thus also improving habitat quality. Trail construction in the preserves should not pose much risk to this wetland species, as trails will not be constructed through intact vernal pools. Weed removal activities would also not likely cause long-term negative effects on populations, as the disturbance would likely improve habitat by removing weedy canopy cover and increasing habitat suitability in the long term. Compensatory wetland construction could endanger populations of this species if hydrologic regimes are changed in a manner that would be unfavorable for the species, such as if an area with seasonal hydrology was inundated perennially following construction.

There is a low potential for impacts to this species, and a much greater potential for the species to occur in new preserves. Furthermore, enhanced management of preserves, particularly with respect to grazing management and weed control, would benefit the species. Due to the relatively widespread distribution of this species, it is not likely that any population loss would lead to a range reduction or result in a substantial decline in regional populations. Therefore, if it occurs outside Mt. Diablo State Park within the inventory area, the Plan will have a net beneficial effect on Lobb's aquatic buttercup under either UDA scenario.

Slender-leaved pondweed. Slender leaved pondweed has a CRPR of 2B.2 species, which indicates that the species is rare or endangered in California but common elsewhere, and further, that the species is "fairly" endangered in California (CNPS 2014). As such, impacts to this species within the inventory area would be significant only if large, dense, or numerous populations are impacted, or if impacts would lead to an effective range reduction for the species. Because of this species' affinity for freshwater marsh habitats, and based on known population records, this species is likely to be concentrated in currently protected areas near Mt. Diablo (which will remain unaffected by the Plan), or in privately owned areas that are much more likely to become part of the Plan Preserve System than impacted. Additionally, the impact caps on wetlands under the Plan as well as the wetland preservation requirements increase the likelihood that a population will be preserved by the Plan, and also decreases the likelihood that a population, even if located within the UDA, will be lost.

Under the initial UDA, there is only a low potential for populations to be impacted, due to this species' known occurrences, which are centered on the slopes of Mt. Diablo. There is instead a moderate likelihood that one or more populations would be acquired due to attempts to acquire sufficient perennial wetlands for the Preserve System to adequately mitigate wetland impacts (Table 2). Subzones 4a and 3a are of higher priority for acquisition, and depressional wetlands in this general Mt. Diablo area would provide suitable habitat for the species. Subzones 4b, 4g, 3b, and 3c may also provide suitable habitat, although these areas are not a higher priority for acquisition.

Under the maximum UDA scenario, there is only a slightly greater likelihood a population could be impacted due to a slight increase in impacts to perennial wetlands (75 ac vs. 74 ac) under this scenario (Table 1). Additionally, any increase in impacts would be offset by additional restoration/preservation requirements, thus increasing the overall likelihood of protecting and enhancing at least one population.

Freshwater marsh habitats provide particularly suitable habitat for the species. As a result, the expected changes in land management in preserves, particularly in regard to grazing management, would be expected to benefit the species by helping to reduce competition with invasive, exotic species. Conversely, in areas where wetlands have been overgrazed, it is expected preserve management would reduce stocking rates, and potentially fence wetlands off, thus also improving habitat quality. Trail construction in the preserves should not pose much risk to this wetland species, as trails will not be constructed through perennial wetlands. Weed removal activities would also not likely cause long-term negative effects on populations, as the disturbance would likely improve habitat by removing weedy canopy cover and increasing habitat suitability in the long term. Compensatory wetland construction could enhance populations of this species if hydrologic regimes are changed in a manner that would be favorable for the species, such as if an area with seasonal hydrology was inundated perennially following construction.

There is a low potential for impacts to this species, and a much greater potential for the species to occur in new preserves. Furthermore, enhanced management of preserves and restoration of perennial wetlands would benefit the species. Based on the species' overall distribution, any impacts related to the Plan will not cause a range reduction, and loss of one or two small

populations would not substantially reduce regional populations. Therefore, if it occurs outside Mt. Diablo State Park within the inventory area, the Plan will have a net beneficial effect on slender-leaved pondweed under either UDA scenario.

Caper-fruited tropidocarpum. Caper-fruited tropidocarpum has a CRPR of 1B.1, which indicates it is seriously endangered in California (CNPS 2014). As such, impacts to any populations could endanger the species and would be considered significant. This species has been designated as a "no-take" species by the East Contra Costa County HCP/NCCP. Any areas to be impacted that support suitable land cover types would have to be surveyed, and any populations of Caper-fruited tropidocarpum would be avoided and may be incorporated into the preserve system.

Because the species would not be impacted and could be preserved, Plan implementation is expected to have either no effect (if no other unknown populations exist in the inventory area) or a net beneficial effect (if any additional populations are preserved) on the Caper-fruited tropidocarpum under either UDA scenario.

NET EFFECTS OF THE PLAN ON ANIMAL CEQA SPECIES

Reptiles and Amphibians

California horned lizard. The California horned lizard is expected to occur in a range of habitats in the inventory area, including chaparral, grasslands, clearings in woodlands, and other open habitats that consist of loose sandy soils and alkaline soils. CNDDB (2014) records of this species are mapped in sandy grasslands west of Byron and in chaparral habitat with gravelly soils immediately to the west of the inventory area, near Clayton (Figure 5). Although this species is likely very uncommon and local in the inventory area, it could occur throughout a range of habitats in the inventory area, and thus some areas providing suitable habitat will be impacted by development, whereas other suitable habitat will be incorporated into the Plan Preserve System.

Under the initial UDA approximately 2533 ac of annual grassland and 115 ac of alkali grasslands, potential habitat for horned lizards, are expected to be impacted (Table 1). No chaparral impacts will occur under the initial UDA. Urban development most likely to impact this species will occur in the vicinity of Clayton, within 1 mile of CNDDB records for this species, and near Brentwood. Habitat in the Brentwood area consists of alkaline and sandy soils that are suitable for horned lizards. Habitat preservation requirements under the initial UDA scenario that would benefit this species include 13,000 ac of annual grassland, 900 ac of alkali grassland, and 550 ac of chaparral habitat. Specific preservation requirements that would benefit horned lizards include the acquisition of 90% of the chaparral located in acquisition Subzones 2a, 2b, and 2c (Table 3). Also, within acquisition Subzone 3a, at least 90% of Alameda whipsnake habitat will be acquired. Portions of this habitat are likely suitable for horned lizards, and this acquisition zone contains the largest block of chaparral/scrub outside existing protected lands. This acquisition will link large patches of suitable habitat with Mt. Diablo State Park. Acquisition Subzone 5a, a higher priority zone, contains suitable habitat for horned lizards and encompasses a known CNDDB record. Adjacent Subzones 5c and 5d are considered medium priority for acquisition, in both initial and maximum UDA scenarios, and if acquired would

improve connectivity and the effectiveness of management practices for this species (see Table 5 for acquisition requirements and priorities for zones 5 and 6).

Under the maximum UDA scenario, the impacts to annual grasslands will increase to 4152 ac, and 2 ac of chaparral will be impacted. Development in this scenario will encompass more suitable habitat in the Clayton area and will occur within ¼-mile of the CNDDB records that are immediately south and west of the inventory area. A larger portion of suitable habitat in the Brentwood area will also be developed. As discussed above, the habitat within the UDA in the Brentwood area consists of sandy and alkaline soils that likely support this species. Additional conservation measures under the maximum UDA, beyond the conservation measures discussed above for the initial UDA, include an increase in annual grassland preservation (16,500 ac) and an increase in alkali grassland preservation (1250 ac).

Specific management practices in California horned lizard habitat would improve habitat quality for this species, thereby increasing the carrying capacity in those habitats. For instance, in addition to preservation of grassland and chaparral habitat, prescribed burns in those habitats will improve habitat conditions for California horned lizards by reducing cover. Recent burns in areas with sandy or gravely soils increase habitat quality for the species. Also, this species would likely benefit from other habitat enhancement practices, including the cessation of poison baiting and trapping activities in grasslands, which will increase California ground squirrel populations. This is expected to result in an increase in burrows, providing more cover for horned lizards and thereby increasing the likelihood they will use the managed grasslands. As a result, the expected changes in land management in preserves, particularly in regard to prescribed burns and changes in fire management, would greatly benefit the species, and may even allow it to colonize new areas of chaparral if these areas have been under fire suppression regimes.

California horned lizards will experience a loss of annual grassland and alkali grassland habitat under both the initial and maximum UDA scenarios. The habitats encompassed by the initial and maximum UDA do not contain known records for this species, although they are expected to occur in these areas. However, horned lizards are expected to occur very locally and in low numbers within these areas, and thus the number of individuals expected to be impacted by Plan-related development is low. The preservation of suitable habitat is substantially greater than the loss of habitat under both UDA scenarios, and habitat enhancement techniques, including prescribed burns, will increase the value of preserves for this species relative to existing conditions. Therefore, implementation of the Plan will have a net benefit for California horned lizards under either UDA scenario.

San Joaquin whipsnake. The San Joaquin whipsnake is known to occur on the west side of the San Joaquin Valley and on the Valley floor in Kern County in open, dry areas including sparse grasslands and saltbush scrub. One record exists in the inventory area, from Kellogg Creek, immediately to the east of what is currently the Los Vaqueros Reservoir (Figure 5; CNDDB 2014). The inventory area likely represents the northern extent of this species' range, and it is expected to be more common in Alameda County to the south. However, the San Joaquin whipsnake could be an uncommon inhabitant of treeless grasslands, where they would occur primarily in areas with California ground squirrels because whipsnakes use burrows for cover.

Because the inventory area represents the northern extent of its range, this species is most likely to be concentrated in the southeastern portion of the inventory area and not within the initial or maximum UDA.

Under the initial UDA potential habitat loss for the San Joaquin whipsnake includes approximately 2533 ac of annual grasslands and 115 ac of alkali grasslands. However, as noted above, the majority of available suitable habitat in the inventory area (i.e., grasslands in the southeastern region of the inventory area) will not be impacted under this scenario. One area with suitable grassland habitat within the initial UDA exists to the south of Brentwood. This area is also a lower priority acquisition subzone (Subzone 2i) under the initial UDA and thus represents a portion of the inventory area that is suitable habitat, but unlikely to be protected. Because the inventory area is at the northern extent of this species' range, Subzone 2i is likely to support few, if any San Joaquin whipsnakes. The only known record for this species occurs in land that is already protected, and will therefore not be impacted by urban development. Habitat preservation requirements under the initial UDA that would benefit San Joaquin whipsnakes include 13,000 ac of annual grasslands and 900 ac of alkali grasslands. Acquisition zones under the initial UDA that are most likely to include suitable habitat within this species' range include Subzones 5a (higher priority), 5b (lower priority), and 5c and 5d (medium priority). Other acquisition requirements under the initial UDA that may benefit this species include protection of two occurrences each of brittlescale in Subzones 5a and 5d, and two occurrences of recurved larkspur in Subzone 5a, both alkaline plants that occur in habitats that may be suitable for whipsnakes. Also, acquisitions in Subzone 5c must connect to existing open space, thereby increasing the quality of habitat in those areas.

Under the maximum UDA scenario, the impacts to annual grasslands will increase to 4152 ac, although impacts to alkali grasslands would not increase relative to the initial UDA scenario. Development under the maximum UDA will encompass an additional portion of annual grassland to the south of Antioch and west of Brentwood, although it is unlikely that San Joaquin whipsnakes range that far to the north, as noted above. This area is also part of acquisition Subzone 2i, which is considered a lower priority acquisition zone in the maximum UDA scenario, as it is under the initial UDA scenario. Additional conservation measures that would affect this species, beyond those discussed in the initial UDA scenario above, include an increase in priority for Subzones 5b and 5d (higher priority) and Zone 5c (medium priority). Also, acquisitions in Subzones 5a and 5b must be connected to other preserves within Zone 5 or existing open space, and acquisition in Subzone 5c will include alkali wetlands along the Alameda County line, which will be beneficial to this species. Acquisitions in Subzone 5a and 5d must protect all brittlescale populations, which may provide additional protection for San Joaquin whipsnakes.

Similar to the effects described above for California horned lizard, specific management practices in grasslands would improve habitat quality for San Joaquin whipsnakes. For instance, prescribed burns in grasslands will improve habitat conditions for San Joaquin whipsnakes by removing trees and other dense vegetation. Perhaps more importantly, rodent populations are expected to increase with the cessation of poison baiting and trapping activities in grasslands, which will increase the number of available burrows in areas where they currently occur and provide new burrows in areas that are currently unoccupied by ground squirrels. The increase in

ground squirrel burrows will provide more cover for this species, thereby increasing the likelihood they will inhabit the managed grasslands. As a result, the expected changes in land management in preserves would greatly benefit the species, and may even allow it to colonize areas it currently does not occupy.

San Joaquin whipsnakes will experience a loss of potentially available annual grassland and alkali grassland habitat under both the initial and maximum UDA scenarios. However, the initial and maximum UDA areas do not encompass habitat that is likely to be used by this species currently, given that those areas are north of the known extent of this species (i.e., the Brentwood and Antioch areas), and preservation of suitable habitat is substantially greater than the loss of habitat under both UDA scenarios. Conservation requirements under the maximum UDA scenario will benefit this species more than under the initial UDA scenario, because of increased preserve connectivity and the linkage of preserves to Alameda County, where this species is known to occur. Additionally, habitat enhancement techniques, including prescribed burns and management for rodent burrows, will increase the value of preserves for this species relative to existing conditions. Therefore, implementation of the Plan will have a net benefit for San Joaquin whipsnakes under either the initial and maximum UDA scenarios.

Western spadefoot. The western spadefoot typically occurs in grasslands with temporary pools throughout the Central Valley and the adjacent foothills, especially in areas associated with sandy or gravelly soil types. There are no records of this species occurring in the inventory area; however the western spadefoot has been recorded on the easternmost edge of Alameda County, to the south. Therefore it is possible that this species occurs in grasslands, alkali wetlands, and open habitats with sandy or gravelly soils in the inventory area. If the species occurs here, it is likely patchily distributed in the southeastern portion of the inventory area, where suitable habitat is available and is near known occurrences in Alameda County. Suitable habitat in that area is more likely to fall within Plan preserves rather than in the UDA.

Under the initial UDA scenario, 2533 ac of annual grasslands, 115 ac of alkali grasslands, 43 ac of seasonal wetlands, and 28 ac of alkali wetlands will be impacted. However, these impacts will occur primarily outside the grasslands and wetlands in the southeastern region of the inventory area where the spadefoot is most likely to occur. Suitable grassland habitat, with potentially suitable wetlands, occurs within the initial UDA to the south of Brentwood. This area is a lower priority acquisition subzone (Subzone 2i) under the initial UDA and thus represents a portion of the inventory area that is suitable habitat, but unlikely to be protected. However, as with the San Joaquin whipsnake, this area is unlikely to support western spadefoot because the inventory area is at the northern extent of this species' range and Subzone 2i is likely to support few, if any, western spadefoots. Habitat preservation requirements under the initial UDA that could benefit this species (if it is present) include 13,000 ac of annual grasslands, 900 ac of alkali grasslands, 129 ac of seasonal wetlands, and 28 ac of alkali wetlands. Acquisition zones under the initial UDA that are most likely to include suitable habitat within this species' range includes Subzones 5a (higher priority), 5b (lower priority), and 5c and 5d (medium priority). Acquisition requirements in Subzone 5a include the acquisition of two of the four known brittlescale occurrences, an alkaline plant that may occur in suitable alkaline wetland habitat for western spadefoot. Also, acquisitions in Subzone 5c must connect to existing open space, thereby increasing the quality of habitat in those areas and the likelihood that this species can colonize

managed preserves. Conservation measures that may benefit this species include the restoration of 61 ac of alkali wetlands. Also, impacts to alkali wetlands and seasonal wetlands will be mitigated at a ratio of 2:1, thereby resulting in a net increase in available wetlands available to the western spadefoot.

Under the maximum UDA scenario, impact totals would increase to 4152 ac of annual grasslands, 56 ac of seasonal wetlands, and 31 ac of alkali wetlands, although again, most of these impacts would occur outside the potential range of the western spadefoot. Development under the maximum UDA will encompass an additional portion of annual grassland and wetlands to the south of Antioch and west of Brentwood, although it is unlikely that western spadefoot range that far to the north, as noted above. This area is also part of acquisition Subzone 2i, which is considered a lower priority acquisition zone in the maximum UDA scenario, as it is under the initial UDA scenario. Additional conservation measures that would affect this species, beyond those discussed in the initial UDA scenario above, include an increase in priority for Subzones 5b and 5d (higher priority) and Zone 5c (medium priority). Also, acquisitions in Subzones 5a and 5b must be connected to other preserves within Zone 5 or existing open space and acquisition in Subzone 5c will include alkali wetlands along the Alameda County line, which will be beneficial to this species, since this species is known to occur in the eastern portions of Alameda County. Also, all brittlescale populations must be protected in Subzones 5a and 5d, adding additional protection to potential western spadefoot habitat in the region of the inventory area most likely to contain this species.

Preserve management may provide additional benefit for this species through the removal of non-native invasive plants and restoration of suitable habitats. Those benefits are expected to be relatively limited given the current distribution and habitat use of this species; however, areas that are currently unsuitable for the western spadefoot may become suitable through restoration and management.

The loss of annual grassland, alkali grassland, seasonal wetland, and alkali wetland habitat as a result of development under the initial and maximum UDA scenarios is unlikely to result in impacts to this species, which is expected to occur only in the southeastern corner of the inventory area, if it is present in Contra Costa County at all. Preservation of suitable habitat is substantially greater than the loss of habitat under both UDA scenarios, especially in the southeastern portion of the inventory area where this species is most likely to occur. Conservation requirements under the maximum UDA scenario will benefit this species more than under the initial UDA scenario, because of increased preserve connectivity and the linkage of preserves to Alameda County, where this species is known to occur. Additional protection of brittlescale, an alkaline plant that can occur in alkaline wetlands, may benefit this species to some degree. Because this species is likely to be very uncommon in the inventory under existing conditions, the implementation of the Plan will have little effect on the western spadefoot. However, if restoration projects are successful, especially in areas that are sandy and alkaline, and preserves in the southeastern portion of the inventory area are connected to suitable habitat areas in eastern Alameda County, then Plan implementation under either UDA scenario may provide a net benefit to this species by increasing the amount and quality of suitable habitat available to this species.

Birds

White-tailed kite. White-tailed kites are generally associated with habitats with low ground cover and variable tree growth, and they typically nest on the tops of oaks, willows, or other dense broad-leafed trees. This species is common throughout most of the inventory area, and breeding records occur within the initial and maximum UDA, including the Antioch, Oakley, and Brentwood areas, and within potential preservation areas (Figure 5; CNDDB 2014). Breeding kites are most common in the eastern portion of the inventory area (i.e., Zone 6) in open grassland and agricultural areas (Glover 2009). However, breeding kites can occur in a variety of habitats throughout the inventory area, such as grassland, savanna, oak woodland, riparian, and wetlands.

Impacts to white-tailed kite habitat under the initial UDA scenario include 2533 ac of annual grasslands, 115 ac of alkali grasslands, 2973 ac of cropland, 1077 ac of pasture, 21 ac of oak woodland, and 42 ac of oak savanna. Because kites have been recorded in the Antioch, Oakley, and Brentwood areas, it is anticipated that development will eliminate remnant breeding habitat currently within the UDAs. Much of the grassland impacts in the northwest portion of the inventory area where kites are likely to forage (e.g., Subzones 1a, 1d, and 1e) are in lower priority acquisition zones, although Subzones 1c and 1b are higher priority acquisition zones. Cropland and other open habitats in Zone 6 are considered lower priority acquisition zones and in some areas overlap with UDA boundaries, decreasing the possibility of conservation. Preservation requirements under the initial UDA that would protect white-tailed kite habitat include 13,000 ac of annual grasslands, 900 ac of alkali grasslands, 250 ac of cropland, 400 ac of oak woodland, and 500 ac of oak savanna. Also, 42 ac of oak savanna restoration may also benefit this species by increasing nesting sites. Acquisition requirements in Zone 6 include the acquisition of 3600 ac of Swainson's hawk foraging habitat near Kellogg Creek, Marsh Creek, and Dutch Slough, which would potentially benefit white-tailed kites as well. Subzones 1b and 1c, in the northwest portion of the inventory area, are higher priority acquisition subzones. At least 1450 ac of annual grassland will be acquired in those zones, and preserve connectivity (to Black Diamond Mines Regional Preserve) will be a priority. Although a lower priority acquisition zone, requirements for Subzone 1d include a focus on the southern half of the zone, creating connectivity with Black Diamond Mines Regional Preserve and Detachment Concord. Contiguous preserves may benefit this species by increasing the effectiveness of management activities, such as those described below, and in helping to maintain prey populations. Habitats in Subzones 5a (higher priority), 5c, (medium priority), and 5d (medium priority) also could provide suitable habitat for this species. Acquisitions in Subzone 5c must connect to existing open space, thereby increasing habitat quality for this species in that region.

Under the maximum UDA scenario, impacts to potential white-tailed kite habitat increase to 4152 ac of annual grasslands, 3545 ac of cropland, 1466 ac of pasture, 73 ac of oak woodland, and 165 ac of oak savanna. The additional urban growth under the maximum UDA scenario will encompass annual grasslands to the south of Antioch and west of Brentwood (acquisition Subzone 2i), which are located in a lower priority conservation zone in both UDA scenarios. This area likely provides suitable foraging habitat for white-tailed kites. Preservation requirements under the maximum UDA will increase to 16,500 ac of annual grasslands and 1250 ac of alkali grasslands. Restoration requirements for oak savanna will increase to 165 ac. Additional conservation measures that would affect this species, beyond those discussed in the

initial UDA scenario above, include an increase in priority for Subzones 5b and 5d (higher priority) and Zone 5c (medium priority). Also, acquisitions in Subzones 5a and 5b must be connected to other preserves within Zone 5 or existing open space, which could benefit white-tailed kites and other raptors because management of larger preserves is likely to be more effective (both for the raptors and their prey) and because kites likely forage over large areas. Also, acquisition priorities for Subzones 4c, 4e, 4f, and 4g will increase from low to medium. These areas contain grassland and savanna that likely support white-tailed kites.

White-tailed kites will experience a loss of suitable habitat in the form of grassland, cropland, pasture, oak woodland, and oak savanna under the initial and maximum UDA scenarios. Because this species is widespread throughout most of the inventory area, including areas within the initial and maximum UDAs, kite populations will decline within UDAs as a result of conversion of suitable nesting and foraging habitat to urban land uses. The amount of suitable white-tailed kite habitat that would be lost to development represents approximately 45% of white-tailed kite habitat to be preserved and enhanced under the initial UDA and nearly 50% of kite habitat to be preserved and enhanced under the maximum UDA. Because of the net loss of white-tailed kite habitat, Plan activities are expected to result in a net adverse effect on white-tailed kite populations.

However, the habitat within the UDAs is generally of lower quality than the habitat to be preserved, and habitat that would be incorporated into new preserves will be enhanced. Improved grassland management, management specifically to increase rodent populations, and creation of new oak savanna in Plan preserves would benefit white-tailed kites in preserves by improving the quality of foraging and nesting habitat, even in areas where kites are currently present. As a result, densities of white-tailed kites are expected to increase in preserves. The white-tailed kite is a widespread species, and thus population declines that may occur in the Plan area if the benefits of habitat enhancement in preserves do not outweigh the effects of habitat loss in the UDAs will not result in a substantial range reduction or a substantial decline in regional populations. Therefore, under either UDA scenario, Plan impacts on the white-tailed kite are expected to be less than significant.

Northern harrier. The northern harrier occurs commonly in croplands, pastures, grasslands, and wetlands throughout the northern and eastern portions of the inventory area. Harriers typically nest in wetlands but may nest in grasslands, fields, and other open habitats away from water. Breeding harriers are present at low densities in fields and marshes throughout much of the eastern portion of the inventory area (Glover 2009), including both areas that are likely to fall within new Plan preserves and others that will be affected by Plan-related development. Nonbreeding harriers (likely primarily from populations breeding outside Contra Costa County) forage in open habitats throughout the inventory area during migration and winter, and most harrier use of cropland and disturbed habitats that are largely unsuitable for nesting occurs during the nonbreeding season.

Impacts to northern harrier habitat under the initial UDA scenario include 2533 ac of annual grasslands, 115 ac of alkali grasslands, 2973 ac of cropland, 1077 ac of pasture, 74 ac of perennial wetlands, 43 ac of seasonal wetlands, and 28 ac of alkali wetlands. Breeding harriers in the inventory area occur primarily at low elevations, and more low-elevation grasslands will

be impacted than higher-elevation grasslands under initial and maximum UDA scenarios, suggesting grassland impacts are more likely to occur in suitable habitat for this species. Much of the grassland impact under both UDA scenarios will occur in the northwestern portion of the inventory area, in the vicinity of Pittsburg, where acquisition zones are of lower priority. Preservation requirements under the initial UDA include 13,000 ac of annual grasslands, 900 ac of alkali grasslands, 250 ac of cropland, 74 ac of perennial wetlands, 129 ac of seasonal wetlands, and 28 ac of alkali wetlands. Restoration requirements that would benefit this species include 84 ac of perennial wetlands, 104 ac of seasonal wetlands, and 61 ac of alkali wetlands. Subzones 1b and 1c, in the northwest portion of the inventory area, are higher priority acquisition subzones that may benefit harriers. At least 1450 ac of annual grasslands will be acquired in those zones, and preserve connectivity (to Black Diamond Mines Regional Preserve) will be a priority. Although a lower priority acquisition zone, requirements for 1d include a focus on the southern half of the zone, creating connectivity with Black Diamond Mines Regional Preserve and Detachment Concord. Within Subzones 6d and 6e, both lower priority acquisition zones, at least 20 ac of alkali wetlands will be protected. Although all the subzones in Zone 6 are lower priority acquisitions, the priorities for Zone 6 include fee title or conservation easements of croplands or pastures along Marsh Creek or Kellogg Creek and on most alkali grasslands and wetlands. These Zone 6 conservation priorities are likely to occur in northern harrier foraging and breeding habitat. Although most acquisition zones with grassland habitat are lower priority under the initial UDA scenario, Subzone 5a is higher priority and 5c and 5d are medium priority. Acquisitions in Subzone 5c must connect to existing open space, thereby increasing the quality of habitat for harriers in that region of the inventory area.

Under the maximum UDA scenario, impacts to potential northern harrier habitat increase to 4152 ac of annual grasslands, 3545 ac of cropland, 1466 ac of pasture, 56 ac of seasonal wetlands, and 31 ac of alkali wetlands. Impacts to alkali grasslands and perennial wetlands will not increase. The additional urban growth will encompass annual grasslands to the south of Antioch and west of Brentwood (acquisition Subzone 2i), which is a lower priority conservation zone in both UDA scenarios. Preservation requirements under the maximum UDA will increase to 16,500 ac of annual grasslands, 1250 ac of alkali grasslands, 400 ac of cropland, 75 ac of perennial wetland, 168 ac of seasonal wetland, and 31 ac of alkali wetland. Restoration requirements increase to 85 ac of perennial wetlands, 163 ac of seasonal wetlands, and 67 ac of alkali wetlands. Additional conservation measures that would affect this species, beyond those discussed in the initial UDA scenario above, includes an increase in priority for Subzones 5b and 5d (higher priority) and Zone 5c (medium priority). Also acquisitions in Subzones 5a and 5b must be connected to other preserves within Zone 5 or existing open space, which will likely benefit northern harriers because they forage over large areas.

Management practices for raptors, including management specifically to increase rodent populations, on preserves will benefit northern harriers. Also, improved grazing management is expected to increase cover of native grasses and forbs, while reducing non-native vegetation, a potential benefit to this species. Wetland creation will also benefit this species if created wetlands are large enough to provide additional breeding habitat for this species.

The effects of Plan activities on northern harriers, in terms of the amount of grassland, cropland, pasture, and wetland habitats lost versus the amount of habitat preserved and managed, under the

initial and maximum UDA scenarios is similar to the effects described above for white-tailed kites. However, although northern harriers occur at scattered locations throughout the northern and eastern portions of the inventory area, breeding harriers are present in most of this area at lower densities than are white-tailed kites, which are more widespread and abundant in the UDAs. As a result, the number of individual pairs of northern harriers that would be displaced by conversion of nesting habitat to urban uses is expected to be much lower than would be the case for kites. As a result, enhancement of new Plan preserves through management and wetland restoration has the potential to better compensate for development-related impacts to harriers than would be the case for kites. Grassland management would increase prey abundance, and large wetland restoration projects would increase breeding habitat for this species in areas that may be unsuitable currently. These preservation requirements and conservation measures are likely to increase habitat quality, and thus density of harriers on preserves and properties with easements. It is possible that enhancement of preserves will not be sufficient to increase the densities of nesting harriers in preserves enough to offset development-related losses, in which case Plan activities would have a net adverse effect on nesting northern harriers. However, the number of pairs of harriers that would be affected would be relatively low (e.g., relative to regional populations or to species occurring more abundantly in the UDAs, such as white-tailed kites), and thus any adverse effect on northern harriers would be less than significant under CEQA.

The evaluation in the preceding paragraph focuses on breeding harriers, since the CDFW Species of Special Concern status only applies to breeding harriers. However, nonbreeding harriers that use the Plan area during migration and in winter will also be affected by Plan implementation. Since nonbreeding harriers are more likely to use croplands, pastures, and other marginal-quality habitats that will be impacted by the Plan, impacts to wintering harriers are proportionally greater than to breeding birds, and Plan-related development will displace more nonbreeding harriers than breeding birds. However, nonbreeding harriers also make greater use of higher-elevation grasslands in the inventory area than do breeding harriers, and thus enhancement of grasslands in preserves through focused management will help to offset development-related habitat losses. Because northern harriers are not as territorial during the nonbreeding seasons, substantial increases in the densities of foraging harriers could be achieved if preserve management increases prey abundance substantially, as is predicted. Also, wintering habitat is not likely limiting harrier populations in the inventory area, or regionally. Thus, the net effects of Plan-related activities on nonbreeding northern harriers are likely neutral, and certainly would not be considered a significant impact under CEQA.

Peregrine falcon. Only a few pairs of peregrine falcons, at most, currently nest in the Plan area. Natural nesting sites on cliffs and rock outcrops occur primarily outside the UDAs, and are much more likely to be incorporated into preserves than to be impacted by development projects. If peregrine falcons nest on transmission towers, buildings, or bridges, they could be either within or outside the UDAs. However, this species' adaptation to developed areas such as cities, as long as suitable prey and nesting sites are present, suggests that development does not necessarily result in the displacement of this species. For all these reasons, there is a low probability that the net effects of covered activities on peregrine falcons would be adverse, even in the absence of the protections afforded this "no-take" species. However, because the peregrine falcon is a "no-take" species under the Plan, pre-activity surveys and other measures

would be implemented to ensure that no take occurs. As a result, the net effects of the Plan will be neutral, if no peregrine falcons are affected, or beneficial, if new nesting sites are identified and incorporated into preserves.

Long-eared owl. Long-eared owls are uncommon, and in many places very local, year-round residents throughout much of California, except in the Central Valley and Southern California deserts, where the species is an uncommon winter visitor. This species nests in dense riparian areas and woodlands, typically in the former nests of crows or other raptors. Long-eared owls forage in open fields, pastures, and ruderal habitats for rodents, especially voles. There is only one record of potentially breeding long-eared owls in the inventory area, in protected open space along Morgan Territory Road (Glover 2009). If other breeding long-eared owls occur in the inventory area, they are more likely to occur in potential preserve areas near Mt. Diablo than in the initial or maximum UDAs.

Because long-eared owls forage in a variety of open habitats, including grassland, cropland, and pasture, suitable foraging habitat will be impacted in UDAs and enhanced through management of new Plan preserves. However, because long-eared owls require dense woody vegetation for nesting and roosting, woodland and forest habitats are expected to be most limiting to this species, and thus this effects analysis focuses on these wooded habitats. Impacts to potential long-eared owl nesting habitat under the initial UDA scenario include 21 ac of oak woodland habitats and 30 ac of riparian habitats. However, most of the initial or maximum UDA areas lack dense woody vegetation adjacent to appropriate open areas with abundant foraging opportunities required by nesting long-eared owls. Furthermore, this species is not known to breed in the UDAs (Glover 2009). Conservation measures that could benefit this species include preservation and management of 400 ac of oak woodlands and 60 ac of riparian habitats, as well as 50 ac of riparian restoration. Subzones 4a and 4h, higher priority acquisition zones, contain suitable woodlands and are the acquisition zones closest to the single potential breeding location noted by Glover (2009). At least 75% of these subzones will be acquired under the Plan. Also, Subzone 4h requirements include a linkage between Morgan Territory Regional Preserve and Mt. Diablo State Park. The preservation of contiguous habitat will likely be beneficial to this species. Subzones 4c, 4e, 4f, and 4g contain woodland and riparian habitats that could be used by this species, but they are lower priority acquisition zones, with acquisition requirements totaling 1400 ac, or 18% of the total area. Subzone 4b contains potential habitat as well, but this is a lower priority acquisition area, with no specific acquisition requirements.

Under the maximum UDA scenario, impacts to potential long-eared owl habitat increase to 73 ac of oak woodland and 35 ac of riparian habitats. The additional development in the Clayton area would encompass some potential habitat (i.e., oak woodlands), although the additional impacts under this scenario have a low potential to impact this species given what is currently known about its distribution. Riparian preservation requirements under the maximum UDA scenario increase to 70 ac and riparian restoration would increase to 55 ac. Acquisition requirements for Subzones 4c, 4e, 4f, and 4g would increase to 3000 ac and acquisition priority would increase to medium.

Management activities on preserves are not expected to benefit long-eared owls substantially simply because the species is apparently present in such low numbers. Nevertheless, preserve

management for greater rodent abundance, and enhancement of grasslands in preserves in general, would enhance foraging habitat and prey base in some areas, especially in grasslands in lower areas in the inventory area, as wintering long-eared owls are more likely to be using lower regions of the inventory area than resident breeders. Riparian enhancements that promote biological diversity and heterogeneity may benefit long-eared owls. These include the reduction of non-native species and an increase in cover and connectivity of native riparian vegetation.

Loss of oak woodlands and riparian habitats as a result of Plan-related development has a low probability of impacting this species given that impacts will occur predominantly in low-elevation areas where this species is not currently known to breed. As a result, any adverse effects of the Plan on long-eared owls are not expected to have population-level effects on this species. Riparian restoration projects could benefit this species, and improving connectivity between preserves, particularly in areas of the known occurrence (Subzones 4a and 4h), should maintain a higher degree of habitat quality for long-eared owls. Plan implementation, therefore, will result in a slight benefit to long-eared owls under the initial UDA scenario. This species would benefit more under the maximum UDA scenario because of additional restoration requirements and acquisition requirements in Subzones 4c, 4e, 4f, and 4g.

As was discussed for the northern harrier above, nonbreeding long-eared owls are not given CDFW Species of Special Concern status. As with the northern harrier, Plan activities will result in adverse effects to potential foraging habitat for long-eared owls as a result of development of lowland grasslands, croplands, and pastures while having beneficial effects by enhancing potential foraging habitat in preserves through focused grassland management. Due to the low numbers of long-eared owls occurring in the inventory area during any time of year, neither Plan-related development nor enhancement is expected to have substantial effects on nonbreeding abundance of this species in the inventory area or to have population-level effects on the species. Thus, the net effects of Plan-related activities on nonbreeding long-eared owls are likely neutral, and certainly would not be considered a significant impact under CEQA.

Short-eared owl. Short-eared owls occur in open habitats such as grasslands, wet meadows, and marshes. In the inventory area, short-eared owls occur primarily as migrants and winter residents in grasslands and wetland habitats that provide cover for roosting. However, evidence of possible breeding was observed near Byron in 2002 and 2004, in an area within the initial and maximum UDA (Glover 2009). Most breeding short-eared owls occurring in the region use extensive marsh habitats to the north of the inventory area, along Suisun Bay and San Joaquin River.

Impacts to potential short-eared owl habitat under the initial UDA scenario include 2533 ac of annual grasslands, 115 ac of alkali grasslands, 1077 ac of pasture, 74 ac of perennial wetlands, 43 ac of seasonal wetlands, and 28 ac of alkali wetlands. As with the northern harrier, the impacts to grasslands are expected to occur more at lower elevations under initial and maximum UDA scenarios, thereby impacting a higher proportion of suitable habitat for this species. Much of the grassland impacts under both UDA scenarios will occur in the northwestern portion of the inventory area (Zone 1), in the vicinity of Pittsburg, where acquisition zones are of lower priority. Also much of the pasture impacts will occur in the northeastern portion of the inventory area (Subzone 6a). These lower areas likely provide suitable habitat for short-eared owls,

although based on the lack of reports from these areas in the Contra Costa County breeding bird atlas (Glover 2009), there is a low probability that the species breeds in these areas. The known occurrence of a potential breeding short-eared owl is within the initial and maximum UDAs in Byron. Preservation requirement under the initial UDA that may benefit this species include 13,000 ac of annual grasslands, 900 ac of alkali grasslands, 74 ac of perennial wetlands, 129 ac of seasonal wetlands, and 28 ac of alkali wetlands. Again, based on the known distribution of the species, preservation of these habitats may not directly benefit these owls. However, restoration requirements of 84 ac of perennial wetlands, 104 ac of seasonal wetlands, and 61 ac of alkali wetlands could potentially provide suitable breeding habitat that may attract short-eared owls. Within Subzones 6d and 6e, both lower priority acquisition zones, at least 20 ac of alkali wetlands will be protected. Although all the subzones in Zone 6 are lower priority acquisitions, the priorities for Zone 6 include fee title or conservation easements of croplands or pastures along Marsh Creek or Kellogg Creek and on most alkali grasslands and wetlands. These Zone 6 conservation priorities are likely to occur in potential habitat for short-eared owls. Although most acquisition zones with short-eared owl habitat are lower priority under the initial UDA scenario, Subzones 5a (higher priority), 5c, (medium priority), and 5d (medium priority) also could provide suitable habitat for this species. Acquisitions in Subzone 5c must connect to existing open space, thereby increasing habitat quality for this species in that region of the inventory area.

Under the maximum UDA scenario, impacts to potential short-eared owl habitat increase to 4152 ac of annual grasslands, 1466 ac of pasture, 56 ac of seasonal wetlands, and 31 ac of alkali wetlands, habitat that has a low potential for supporting breeding short-eared owls based on the species' known distribution. The additional urban growth will encompass annual grasslands to the south of Antioch and west of Brentwood (acquisition Subzone 2i), which is a lower priority conservation zone in both UDA scenarios and the UDA around Byron will increase as well. Preservation requirements under the maximum UDA will increase to 16,500 ac of annual grasslands, 1250 ac of alkali grasslands, 400 ac of cropland, 75 ac of perennial wetland, 168 ac of seasonal wetland, and 31 ac of alkali wetland. Restoration requirements increase to 85 ac of perennial wetlands, 163 ac of seasonal wetlands, and 67 ac of alkali wetlands. Additional conservation measures that could affect short-eared owls, beyond those discussed in the initial UDA scenario above, includes an increase in priority for Subzones 5b and 5d (higher priority) and Zone 5c (medium priority).

Management practices for raptors, including general grassland management and specifically management for more rodents, on preserves could potentially benefit short-eared owls.

The loss of grassland, pasture, and wetland habitats under the initial and maximum UDA scenarios could potentially result in a loss of breeding habitat for short-eared owls. This species, however, occurs very rarely in the inventory area, and only one potential breeding location is known from the inventory area. The vast majority of short-eared owls in the region breed outside the inventory area. Therefore, Plan impacts to potential short-eared owl habitat are not expected to impact regional populations of this species substantially. The preservation of suitable habitat is much greater than the loss of habitat under both UDA scenarios and habitat enhancement techniques, particularly management for a higher prey base and an increase in structural diversity in grasslands, will benefit this species. Wetland restoration projects are also

expected to increase habitat for this species in areas that may be currently unsuitable. These preservation requirements and conservation measures are likely to increase habitat quality in the inventory area and offset any potential impacts to the species under the Plan. Therefore, implementation of the Plan will likely have no substantial effect, either beneficial or adverse, on nesting short-eared owls under either UDA scenario.

As with northern harriers above, the evaluation in the preceding paragraph focuses on breeding short-eared owls, since the CDFW Species of Special Concern status only applies to breeding owls. However, wintering short-eared owls are more common and widespread in the region. Since wintering owls are more abundant, the impacts are proportionally greater than to breeding birds. However, habitat enhancements in preserves will likely benefit wintering owls as well. Because wintering habitat is not likely limiting short-eared owl populations in the inventory area, or regionally, the net effects of Plan-related activities on nonbreeding short-eared owls is likely neutral, and certainly would not be considered a significant impact under CEQA.

Loggerhead shrike. Loggerhead shrikes are generally associated with open habitats interspersed with shrubs, trees, poles, fences, or other perches from which they can hunt. Within the inventory area, loggerhead shrikes are widespread, inhabiting grasslands, croplands, orchards, oak savannas, and other open habitats. They occur in a number of areas within the initial and maximum UDAs, particularly in undeveloped lots that are large enough to support a breeding pair. Loggerhead shrikes are also present in open habitats throughout many areas that will become preserves under the Plan.

Impacts to loggerhead shrike habitat under the initial UDA scenario includes 2533 ac of annual grasslands, 115 ac of alkali grasslands, 2973 ac of cropland, 1077 ac of pasture, and 42 ac of oak savanna. Because shrikes occur in undeveloped lots within the initial and maximum UDA areas, there will be direct impacts on individuals of this species. Much of the grassland impacts under both UDA scenarios will occur in the northwestern portion of the inventory area, in the vicinity of Pittsburg, where acquisition zones are of lower priority. Also, cropland and other open habitats in Zone 6, where shrikes are known to occur, are considered lower priority acquisition zones and in some areas overlap with UDA boundaries, decreasing the possibility of conservation. Preservation requirements under the initial UDA that will benefit loggerhead shrikes include 13,000 ac of annual grasslands, 900 ac of alkali grasslands, 250 ac of cropland, 500 ac of oak savanna, and 550 ac of chaparral. Also 42 ac of oak savanna restoration is also expected to benefit this species. Acquisition requirements for Subzones 2a, 2b, and 2c include at least 90% of chaparral to be acquired. These acquisitions could potentially benefit shrikes if vegetation is thinned through prescribed burns. Similarly, acquisition requirements designed to protect modeled Alameda whipsnake habitat (Subzones 3a, 4a, and 4h) may also benefit loggerhead shrikes, depending on the density of vegetation in those areas. Subzones 1b and 1c, in the northwest portion of the inventory area, are higher priority acquisition subzones. At least 1450 ac of annual grassland will be acquired in those zones, and preserve connectivity (to Black Diamond Mines Regional Preserve) will be a priority. Although a lower priority acquisition zone, requirements for 1d includes a focus on the southern half of the zone, creating connectivity with Black Diamond Mines Regional Preserve and Detachment Concord. Although all the subzones in Zone 6 are lower priority acquisitions, the priorities for Zone 6 include fee title or conservation easements of croplands or pastures along Marsh Creek or Kellogg Creek and on

most alkali grasslands and wetlands. These Zone 6 conservation priorities may provide some benefit to northern shrikes. Although most acquisition zones with grassland habitat are lower priority under the initial UDA scenario, Subzone 5a is higher priority and Subzones 5c and 5d are medium priority. Acquisitions in Subzone 5c must connect to existing open space, thereby increasing the quality of habitat for shrikes in that region of the inventory area.

Under the maximum UDA scenario, impacts to potential loggerhead shrike habitat increase to 4152 ac of annual grasslands, 3545 ac of cropland, 1466 ac of pasture, 165 ac of oak savanna, and 2 ac of chaparral. The additional urban growth will encompass annual grasslands to the south of Antioch and west of Brentwood (acquisition Subzone 2i), which is a lower priority conservation zone in both UDA scenarios. Preservation requirements under the maximum UDA will increase to 16,500 ac of annual grasslands, 1250 ac of alkali grasslands, and 400 ac of cropland. Restoration requirements for oak savanna will increase to 165 ac. Additional conservation measures that would affect this species, beyond those discussed in the initial UDA scenario above, includes an increase in priority for Subzones 5b and 5d (higher priority) and Zone 5c (medium priority). Also acquisitions in Subzones 5a and 5b must be connected to other preserves within Zone 5 or existing open space, which could benefit loggerhead shrikes because they are territorial and likely forage over large areas. Also acquisition priorities for Subzones 4c, 4e, 4f, and 4g will increase from low to medium. These areas contain grassland, savanna, and chaparral habitats that likely support loggerhead shrikes.

Loggerhead shrikes will experience a loss of suitable habitat in the form of grassland, cropland, pasture, and oak savannas under the initial and maximum UDA scenarios. Because this species is widespread throughout most of the inventory area, including some areas that are within the initial and maximum UDAs, shrike populations will decline within UDAs as a result of conversion of suitable nesting and foraging habitat to urban land uses. The amount of suitable loggerhead shrike habitat that would be lost to development represents approximately 46% of loggerhead shrike habitat to be preserved and enhanced under the initial UDA and approximately 50% of shrike habitat to be preserved and enhanced under the maximum UDA. Because of the net loss of loggerhead shrike habitat, Plan activities are expected to result in a net adverse effect on shrike populations.

However, the habitat within the UDAs is generally of lower quality than the habitat to be preserved, and habitat that would be incorporated into new preserves will be enhanced. Prescribed burns and other measures (e.g., seeding, grazing) are expected to increase cover of native grasses and forbs, while reducing non-native vegetation, a potential benefit to this species. These management measures are expected to result in an increase in populations of this species' prey, including small mammals. Also, shrikes will likely use artificial perches that are installed for burrowing owls. Management practices for chaparral areas, particularly prescribed burns, may also benefit loggerhead shrikes to some extent. As a result, densities of loggerhead shrikes are expected to increase in preserves. The loggerhead shrike is a fairly widespread species, and thus population declines that may occur in the Plan area if the benefits of habitat enhancement in preserves do not outweigh the effects of habitat loss in the UDAs will not result in a substantial range reduction or a substantial decline in regional populations. Therefore, under either UDA scenario, Plan impacts on the loggerhead shrike are expected to be less than significant.

Loggerhead shrikes are considered CDFW Species of Special Concern only when breeding, and thus the preceding effects analysis focused on breeding shrikes. Some of the loggerhead shrikes that occur within the inventory area during the nonbreeding season are migrants and wintering individuals from breeding populations elsewhere. Although some nonbreeding shrikes may use habitat that is not of sufficient quality to support breeding shrikes, effects of the Plan on suitable habitat for nonbreeding shrikes will be generally similar to the effects described above for breeding, resident shrikes.

Yellow warbler. This species typically breeds in riparian habitats, particularly those dominated by cottonwoods and willows, nesting in upright forks of trees and shrubs. Non-breeding yellow warblers are common in riparian habitats throughout the inventory area during migration periods, but the Contra Costa County breeding bird atlas recorded no breeding evidence in the inventory area (Glover 2009). Nevertheless, there were a few breeding occurrences from the western portion of Contra Costa County, all in willow stands (Glover 2009), and it is possible that small numbers of yellow warblers breed in lower elevation riparian areas in the eastern part of the inventory area (e.g., Zone 6), where willows are the dominant riparian cover type.

Impacts to potential yellow warbler habitat under the initial UDA include 30 ac of riparian habitat, though these impacts are expected to occur within, or near, urbanized areas that are unlikely to be suitable for breeding yellow warblers, especially in light of the breeding bird atlas results. Conservation measures that may benefit yellow warblers, if they are breeding in the inventory area, include the preservation of 60 ac of riparian habitats, restoration of 50 ac of riparian habitats, and maintenance of riparian buffers along streams within developed areas. Although all the subzones in Zone 6 are lower priority acquisitions, the priorities for Zone 6 include fee title or conservation easements of croplands or pastures along Marsh Creek or Kellogg Creek for riparian restoration opportunities. These lower-elevation areas provide the most suitable habitat for breeding yellow warblers in the inventory area. Under the maximum UDA scenario, impacts to riparian habitats will increase to 35 ac. Preservation of riparian areas will increase to 70 ac and riparian habitat restoration will increase to 55 ac. Acquisition requirements for Zone 6 do not increase under the maximum UDA scenario.

In addition to preservation and restoration requirements, conservation measures that will increase habitat quality for yellow warblers include riparian enhancements that promote biological diversity and heterogeneity. These include the reduction of non-native species and an increase in cover and connectivity of native riparian vegetation.

Yellow warblers are not known to breed in the inventory area. In the event that a few pairs do breed here, any potential adverse effects on the species resulting from habitat loss and degradation associated with the implementation of the Plan would affect very few pairs, and would thus have a negligible impact on regional populations of the species. Because riparian restoration will increase suitable nesting habitat, there is a possibility that yellow warblers will be encouraged to nest in areas where they are not nesting currently as a result of riparian habitat restoration or management. As a result, there is a greater likelihood that yellow warblers will benefit from the Plan than be adversely affected by it. Therefore, implementation of the Plan will have a slightly beneficial effect on breeding yellow warblers under both initial and maximum UDA scenarios. This species may benefit more under the maximum UDA, since

preservation and restoration of riparian habitats will increase relative to the impacts. Yellow warblers are considered CDFW Species of Special Concern only when breeding. Plan implementation is expected to have no measurable effect on non-breeding yellow warblers, since the species occurs abundantly in a variety of habitats (including urban and suburban plantings) during migration.

Yellow-breasted chat. Similar to the yellow warbler, although much less numerous in central California, the yellow-breasted chat favors dense riparian thickets for foraging and nesting, although they tend to occur sunnier, more brushy areas. No breeding records occur in the inventory area, although yellow-breasted chats could potentially occur as uncommon breeders in riparian habitats. Small numbers of breeding pairs have been observed to the north of the inventory area on Bethel Island, and breeding chats have been observed near the northern end of Big Break Road in Oakley, just outside the inventory area (Glover 2009, S. Glover pers. comm.).

Impacts to potential yellow-breasted chat habitat under the initial UDA include 30 ac of riparian habitat, though these impacts are expected to occur within, or near, urbanized areas that are unlikely to support breeding chats, especially in light of the breeding bird atlas results. Conservation measures that may benefit chats, if they are breeding in the inventory area, include the preservation of 60 ac of riparian habitats, restoration of 50 ac of riparian habitats, and maintenance of riparian buffers along streams within developed areas. Although all the subzones in Zone 6 are lower priority acquisitions, the priorities for Zone 6 include fee title or conservation easements of croplands or pastures along Marsh Creek or Kellogg Creek for riparian restoration opportunities. These lower-elevation areas provide the most suitable habitat for breeding yellow-breasted chats in the inventory area. Under the maximum UDA scenario, impacts to riparian habitats will increase to 35 ac. Preservation of riparian areas will increase to 70 ac and riparian habitat restoration will increase to 55 ac. Acquisition requirements for Zone 6 do not increase under the maximum UDA scenario.

In addition to preservation and restoration requirements, conservation measures that will increase habitat quality for yellow-breasted chats include riparian enhancements that promote biological diversity and heterogeneity. These include the reduction of non-native species and an increase in cover and connectivity of native riparian vegetation.

Yellow-breasted chats are not known to breed in the inventory area. In the event that a few pairs do breed here, any potential adverse effects on the species resulting from habitat loss and degradation associated with the implementation of the Plan would affect very few pairs, and would thus not have a substantial impact on regional populations of the species. Because riparian restoration will increase potential nesting habitat, there is a possibility that yellow-breasted chats will be encouraged to nest in areas where they are not nesting currently as a result of riparian habitat restoration or management. As a result, there is a greater likelihood that yellow-breasted chats will benefit from the Plan than be adversely affected by it. Therefore, implementation of the Plan will have either a neutral effect (if chats are completely absent from the inventory area) or a slightly beneficial effect on breeding yellow-breasted chats under both initial and maximum UDA scenarios. This species may benefit more under the maximum UDA, since preservation and restoration of riparian habitats will increase relative to the impacts. Yellow-breasted chats are considered CDFW Species of Special Concern only when breeding.

Plan implementation is expected to have no measurable effect on non-breeding chats, as the species is a rare migrant through the inventory area, and its abundance here is thus not limited by habitat availability.

Grasshopper sparrow. The grasshopper sparrow typically uses grasslands, pastures, and fallow croplands, although their preferred habitat is medium-height, open grasslands with heterogeneous cover. Most of the breeding records in Contra Costa County are from coastal hills in the western portion of Contra Costa County (Glover 2009) and this species has been observed in open space preserves (i.e., Mt. Diablo State Park, Black Diamond Mines Regional Preserve) on the western edge of the inventory area. Grasshopper sparrows have also been observed on Jersey Island, to the north of the inventory area (S. Glover, pers. com.). Therefore, this species could occur as a very rare breeder in grasslands or pastures in the inventory area, though it is not currently known to breed within the UDAs (Glover 2009).

Impacts to potential grasshopper sparrow habitat under the initial UDA scenario include 2533 ac of annual grasslands, 115 ac of alkali grasslands, 2973 ac of cropland (which may be potentially suitable when fallow), and 1077 ac of pasture. However, since breeding grasshopper sparrows have not been detected within the initial UDA area, impacts to breeding individuals are not expected to occur. Preservation requirements under the initial UDA include 13,000 ac of annual grasslands, 900 ac of alkali grasslands, and 250 ac of cropland. Acquisition priorities are high for Subzones 4a and 4h, which are adjacent to areas with breeding records for this species (see Table 4 for acquisition requirements for Zone 4). Subzone 4h acquisition requirements include linkage with Mt. Diablo State Park and Morgan Territory Ranch, which may benefit this species.

Under the maximum UDA, impacts to potential grasshopper sparrow habitat increase to 4152 ac of annual grasslands, 3545 ac of cropland, and 1466 ac of pastures. As with the initial UDA scenario, there have been no observations of breeding grasshopper sparrows within the maximum UDA, and because the breeding range is restricted to the western edge of the inventory area, the additional habitat loss under the maximum UDA scenario is not expected to impact grasshopper sparrows. Preservation requirements under the maximum UDA will increase to 16,500 ac of annual grasslands, 1250 ac of alkali grasslands, and 400 ac of cropland.

Grassland management is expected to promote native biological diversity and habitat heterogeneity by increasing native grasses and forbs, structural diversity, and reducing non-native plants. This will be accomplished with grazing, prescribed burning, seeding, and other management activities. Therefore, enhanced management of grasslands in preserves is likely to be beneficial for grasshopper sparrows, particularly in the western part of the inventory area where the species is known to breed, in that habitat that is currently unsuitable for this species may become suitable through the above-described practices.

There will be a loss of grassland, croplands, and pastures under the initial and maximum UDA scenarios. However, these areas are not currently occupied by grasshopper sparrows, and therefore, the loss of these habitats is not expected to directly impact this species. The acquisition and management of preserves, particularly those with grassland habitats in the western part of the inventory area, would benefit this species by improving grassland heterogeneity through prescribed burns and other management techniques. These managed

preserves may attract breeding grasshopper sparrows and contribute to an increase in their breeding success in the region. Thus, the implementation of the Plan is expected to have a net beneficial effect on grasshopper sparrows under both the initial and maximum UDA scenarios. Grasshopper sparrows are considered CDFW Species of Special Concern only when breeding. Plan implementation is not expected to have a substantial effect, either adverse or beneficial, on migrant grasshopper sparrows, which use a variety of grassy and weedy habitats and whose abundance in the inventory area is not limited by habitat availability.

Mammals

American badger. American badgers occur in grasslands and other open habitats with dry soils that are suitable for digging. American badgers likely occur throughout most of the inventory area, except for heavily urbanized areas, albeit in low densities. The most suitable habitat for badgers in the inventory area includes grasslands, savannas, and irregularly disced agricultural areas that have relatively dry soils and California ground squirrel populations. The CNDDB (2014) maps several badger records in the southeastern portion of the inventory area, including one in the Byron maximum UDA, one to the west of Byron (Subzone 5a), and one in Round Valley (Figure 5). Other records in the inventory area are located to the south of Antioch (Subzone 2f), the northwest of Brentwood (Subzone 2i), and to the west of Brentwood in the maximum UDA, in Subzone 2i (Figure 5; CNDDB 2014). Badgers are expected to occur in many of the areas that would be protected as preserves under the Plan as well.

Under the initial UDA scenario, impacts to potential American badger habitat include 2533 ac of annual grasslands, 115 ac of alkali grasslands, and 42 ac of oak savanna. Development most likely to impact this species would be in the vicinity of Byron, in the southeast, and near Brentwood and Antioch. The habitat in the Byron and Brentwood areas consists of alkaline and sandy soils that are suitable for badgers. Habitat preservation requirements under the initial UDA scenario that would benefit this species include 13,000 ac of annual grassland, 900 ac of alkali grassland, and 500 ac of oak savanna. Grasslands in the northwestern portion of the inventory area fall within lower priority acquisition subzones, although requirements for Subzone 1d includes at least 25% will be acquired and will focus on connectivity for grassland species. Acquisition in Subzones 1b and 1c will encompass at least 1450 ac of grassland and will connect to other open space (Black Diamond Mines Regional Preserve and Detachment Concord). Land acquisition designed to benefit San Joaquin kit fox will also benefit badgers as well. For instance, land acquisitions in Subzone 2f (which encompasses a badger record) will focus on kit fox movements, and acquisitions in Deer, Horse, and Lone Tree Valleys (Subzones 2e, 2f, and 2h) will protect important movement routes for San Joaquin kit fox between Black Diamond Mines Regional Preserve and Cowell Ranch State Park (Figure 2). Acquisitions in Zone 5 will focus on kit fox connectivity between the inventory area and San Joaquin County, also beneficial to badgers. Subzone 5a, a higher priority zone, contains suitable habitat for badgers and encompasses a known CNDDB record. Adjacent Subzones 5c and 5d are considered medium priority for acquisition, in both initial and maximum UDA scenarios. Acquisitions in Subzone 5c must connect to existing open space, thereby increasing the quality of habitat in those areas and the likelihood that this species can colonize managed preserves.

Under the maximum UDA scenario, impacts to American badger habitat increase to 4152 ac of annual grasslands and 165 ac of oak savanna. A larger portion of suitable habitat in the

Brentwood area will also be developed, including an area (Subzone 2i) that includes a badger record. Preservation requirements under the maximum UDA will increase to 16,500 ac of annual grasslands and 1250 ac of alkali grasslands. Restoration requirements for oak savanna will increase to 165 ac. Additional conservation measures that would affect this species, beyond those discussed in the initial UDA scenario above, includes an increase in priority for Subzones 5b and 5d (higher priority) and Zone 5c (medium priority). Also acquisitions in Subzones 5a and 5b must be connected to other preserves within Zone 5 or existing open space.

Management of grassland preserves for covered species, including burrowing owls and San Joaquin kit fox, will be particularly beneficial for American badgers. The cessation of rodent control will result in an increase in prey base and available burrows that will benefit this species. Also, prescribed burns and other measures (e.g., seeding, grazing) are expected to increase cover of native grasses and forbs, while reducing non-native vegetation, a potential benefit to badgers. Management practices and acquisition targets for kit fox, particularly the connectivity of movement corridors, will be extremely beneficial to badgers as well.

American badgers will experience a loss of annual grassland, alkali grassland, and savanna habitat under both the initial and maximum UDA scenarios. The habitats encompassed by the maximum UDA contain known records for this species. In particular, development to the west of Brentwood (acquisition Subzone 2i) is expected to impact badgers because that area provides high quality habitat for the species, as evidenced by the occurrence of several records in that vicinity. However, the preservation of suitable habitat is substantially greater than the loss of habitat under both UDA scenarios. Most importantly, habitat enhancement for other grassland-associated species, such as burrowing owls, San Joaquin kit fox, and California ground squirrels, will result in substantial increases in the value of preserves for this species relative to existing conditions. Therefore, Plan implementation will have a net benefit for American badgers under both UDA scenarios.

Ringtail. Impacts to potential ringtail habitat under the initial UDA scenario include 21 ac of oak woodland habitats and 30 ac of riparian habitats. Preservation requirements that will benefit this species include 400 ac of oak woodlands and 60 ac of riparian habitats. Also, 50 ac of riparian restoration will provide habitat that may be colonized by ringtails in the future. Subzones 4a and 4h, higher priority acquisition zones, contain suitable woodlands and are the closest acquisition zones to the known occurrence of this species. At least 75% of these subzones will be acquired under the Plan. Also Subzone 4h requirements include a linkage between Morgan Territory Region Preserve and Mt. Diablo State Park. The preservation of contiguous habitat will likely be beneficial to this species, since it will be more likely to colonize suitable habitat. Subzones 4c, 4e, 4f, and 4g contain woodland and riparian habitats that could be used by this species, but they are lower priority acquisition zones, with acquisition requirements totaling 1400 ac, or 18% of the total area. Subzone 4b contains potential habitat as well, but this is a lower priority acquisition area, with no specific acquisition requirements.

Under the maximum UDA scenario, impacts to potential ringtail habitat would increase to 73 ac of oak woodland and 35 ac of riparian habitats. The additional development in the Clayton area would encompass some potential habitat (i.e., oak woodlands), although the additional impacts under this scenario are not likely to substantially affect this species, which is more likely to be

concentrated in the extensive, contiguous habitat surrounding Mt. Diablo. Riparian preservation requirements under the maximum UDA scenario would increase to 70 ac and riparian restoration would increase to 55 ac. Oak woodland preservation would remain the same and acquisition requirements in Subzones 4a and 4h would remain the same as well. Acquisition requirements for Subzones 4c, 4e, 4f, and 4g would increase to 3000 ac and acquisition priority would increase to medium.

Conservation measures that will increase habitat quality for ringtails include riparian enhancements that promote biological diversity and heterogeneity. These include the reduction of non-native species and an increase in cover and connectivity of native riparian vegetation.

Although the loss of oak woodlands and riparian areas as a result of Plan-related development will result in the loss of potential habitat for ringtails, these impacts are likely to be outweighed by the restoration, enhancement, and preservation of suitable habitat. Therefore, there is a low probability that the net effects of covered activities on ringtails would be adverse, even in the absence of the protections afforded this "no-take" species. However, because the ringtail is a "no-take" species under the Plan, pre-activity surveys and other measures would be implemented to ensure that no take occurs. As a result, the net effects of the Plan are expected to be beneficial.

San Francisco dusky-footed woodrat. The San Francisco dusky-footed woodrat is generally associated with forest habitats with moderate canopy, year-round greenery, a brushy understory, and suitable nest-building materials. In the inventory area, San Francisco dusky-footed woodrats occur primarily in wooded riparian areas and woodlands with dense vegetation. Because this species occurs in areas with denser vegetation, woodrats tend to avoid open grassland and open oak woods with small amounts of underbrush.

Impacts to potential San Francisco dusky-footed woodrat habitat under the initial UDA scenario include 21 ac of oak woodland habitats and 30 ac of riparian habitats. Although buffers will be maintained around riparian areas, those habitats will most likely be unsuitable for woodrats, since feral cats and other urban-adapted nuisance species prey on woodrats. Preservation requirements that will benefit this species include 400 ac of oak woodlands and 60 ac of riparian habitats. Also 50 ac of riparian restoration will provide habitat that may be colonized by woodrats in the future. Subzones 4a and 4h, higher priority acquisition zones, contain suitable woodlands and are the closest acquisition zones to the known occurrence of this species. At least 75% of these subzones will be acquired under the Plan. Also Subzone 4h requirements include a linkage between Morgan Territory Region Preserve and Mt. Diablo State Park. The preservation of contiguous habitat will likely be beneficial to this species, since it will be more likely to colonize suitable habitat. Subzones 4c, 4e, 4f, and 4g contain woodland and riparian habitats that could be used by this species, but they are lower priority acquisition zones, with acquisition requirements totaling 1400 ac, or 18% of the total area. Subzone 4b contains potential habitat as well, but this is a lower priority acquisition area, with no specific acquisition requirements.

Under the maximum UDA scenario, impacts to potential San Francisco dusky-footed woodrat habitat increases to 73 ac of oak woodland and 35 ac of riparian habitats. The additional development in the Clayton area would encompass some potential habitat (i.e., oak woodlands),

although the additional impacts under this scenario are not likely to substantially affect this species. Riparian preservation requirements under the maximum UDA scenario would increase to 70 ac and riparian restoration would increase to 55 ac. Oak woodland preservation would remain the same and acquisition requirements in Subzones 4a and 4h would remain the same as well. Acquisition requirements for Subzones 4c, 4e, 4f, and 4g would increase to 3000 ac and acquisition priority would increase to medium.

Conservation measures that will increase habitat quality for woodrats include riparian enhancements that promote biological diversity and heterogeneity. These include the reduction of non-native species and an increase in cover and connectivity of native riparian vegetation.

Loss of oak woodlands and riparian areas as a result of Plan-related development will adversely affect San Francisco dusky-footed woodrats. However, this species is expected to be present throughout most of the woodland and chaparral-dominated habitats in the western portion of the Plan area, primarily outside the UDAs, and thus the loss of a relatively small amount of habitat (and/or impacts to relatively low numbers of individuals) in the UDAs is not expected to have a substantial effect on regional populations. Furthermore, riparian restoration and enhancement projects are expected to benefit this species and maintain habitat connectivity, and preserve management should maintain a higher degree of habitat quality for woodrats. Overall, Plan implementation, is expected to result in a slight net benefit to San Francisco dusky-footed woodrats under both UDA scenarios.

Pallid bat. Pallid bats are most common in open, dry habitats, but they likely occupy oak woodlands, oak savanna, riparian habitats, and rock outcrops in a number of locations in the inventory area. Day roosts are formed in caves, crevices, mines, and occasionally in hollow trees and buildings. Night roosts may be in more open sites, such as porches and open buildings. Regionally, riparian areas provide important winter habitat for this species.

Under the initial UDA scenario, potential habitat impacts that may affect pallid bats include 2533 ac of annual grasslands, 115 ac of alkali grasslands, 21 ac of oak woodland, and 42 ac of oak savanna, and 30 ac of riparian habitat. Impacts to grasslands are included in this analysis because the species will forage in grasslands; however important habitat features used by pallid bats within those habitats (i.e., rock outcrops) are relatively rare on the landscape and therefore impacts to most of those acreages are unlikely to directly affect this species. Although impacts to rock outcrops are not quantified within the Plan, development and fragmentation of grasslands near potential roost sites in rock outcrops will likely reduce their attractiveness to pallid bats, since these bats are at least somewhat sensitive to disturbance. Therefore, it is assumed that development within the UDA will eliminate foraging and roosting habitat in those areas. Preservation requirements that include potential pallid bat habitat include 13,000 ac of annual grasslands, 900 ac of alkali grasslands, 400 ac of oak woodlands and 60 ac of riparian habitats. Also, 50 ac of riparian restoration and 42 ac of oak savanna restoration will increase available habitat for pallid bats. Because this species forages in a wide range of habitats, habitat features that could provide roost sites (e.g., rock outcrops, hollow trees) are not detectable at the scale of this analysis. It is likely that a large proportion of the important suitable habitat for pallid bats in the inventory area (e.g., riparian areas, rock outcrops) is currently protected in open space preserves. However, acquisitions that protect grasslands (zones 1, 2, and 5), oak woodlands

(zones 2, 3, and 4), and savannas (zones 2, 3, and 4) would benefit this species. Specifically, acquisition subzones that contain a mixture of the above-described suitable habitats would be most beneficial for this species. Therefore, Subzones 4b, 4c, and 4e, all lower priority acquisition zones, may provide the most benefit for pallid bats because they contain oak woodland, savannas, grasslands, and rocky outcrops. There are few specific acquisition requirements within these subzones that target features that would benefit pallid bats, however acquisition within Subzone 4c will focus on riparian woodland/scrub along Marsh Creek.

Under the maximum UDA scenario, impacts to potential pallid bat habitat increase to 4152 ac of annual grasslands, 3545 ac of cropland, 73 ac of oak woodland, 165 ac of oak savanna and 35 ac of riparian habitats. The additional development under the maximum UDA scenario in the Clayton area would encompass more oak woodland, savanna, and grassland habitats. Additional impacts to grasslands would occur in the Antioch and Brentwood areas as well. Preservation requirements under the maximum UDA increases to 16,500 ac of annual grasslands, 1250 ac of alkali grasslands, and of 70 ac riparian habitats. Riparian restoration would increase to 55 ac. Oak woodland and savanna preservation would remain. Acquisition priority for Subzones 4c and 4e would increase to medium.

Conservation measures and management activities on preserves will provide some benefit to pallid bats. The management of preserves is expected to increase prey base (i.e., insects), however it is unlikely to have population-level effects for this species. Pre-construction surveys and avoidance minimization practices for Townsend's big-eared bat, a covered species under the Plan, will reduce direct impacts to pallid bats occurring in areas where such measures are implemented. Measures include the protection of abandoned mines, caves, and buildings when feasible. Additionally, riparian enhancements that promote biological diversity and heterogeneity may benefit this species to some degree. These include the reduction of non-native species and an increase in cover and connectivity of native riparian vegetation.

Pallid bats will experience a loss of foraging habitat under both the initial and maximum UDA scenarios, although it will not likely have a population-level effect on this species. Potential roost sites that may occur in development areas will likely be lost. Preservation and management of suitable habitat, particularly in acquisition Zone 4, will benefit the conservation of this species, however riparian and savanna restoration are likely to be the most valuable conservation measures for this species. Because the loss of habitat within the UDAs will likely be offset by preserve management and savanna and riparian habitat restoration, the implementation of the Plan will likely have a neutral effect on pallid bats, and it is not expected to have a significant impact on the species under CEQA.

Western mastiff bat. No records of the western mastiff bat exist in the inventory area. However, this species is likely an uncommon resident in high cliff areas around Mt. Diablo, or other suitable roost sites, that are adjacent to grasslands and other open habitats in the inventory area.

Direct impacts to western mastiff bats are unlikely to occur under the initial or maximum UDA scenarios since the species uses high cliffs for roosts. The vast majority of high cliffs that are suitable for western mastiff bats are within Mt. Diablo and other open space preserves. If any

suitable high cliffs are within areas that are not protected, development is unlikely to affect roost sites. Impacts to grasslands and other open habitats could potentially reduce some prey availability for this species; however these impacts would not result in population-level effects because foraging habitat is not likely a limiting factor for this species' populations.

Conservation measures are not likely to improve habitat quality for this species in the inventory area substantially. However, management of grasslands in preserves may increase prey availability, and because preserves are likely to be closer to the cliff roosting sites used by this species than are impacted habitats in the UDAs, preserve management will likely more than offset any loss of foraging habitat under the initial or maximum UDA scenarios.

Plan implementation is expected to have a neutral effect on western mastiff bats under both UDA scenarios.

Western red bat. Western red bat roosts occur primarily in riparian forests, especially structurally-diverse riparian forests dominated by cottonwoods. Within the inventory area, this species potentially breeds in mature riparian habitats, although appropriate habitats are uncommon in the inventory area. Instead, western red bats are expected to occur primarily as migrants and winter residents. Such individuals may roost in a variety of trees in both rural and urban areas and forage aerially over a wide variety of habitats.

Impacts to potential western red bat breeding habitat under the initial UDA scenario include 30 ac of riparian habitats. However, riparian habitats in the initial and maximum UDA likely lack the mature cottonwood stands and structural diversity typically associated with breeding western red bats, and thus there is a very low potential for Plan activities to impact breeding red bats. Preservation requirements that will benefit this species include 60 ac of riparian habitats, and 50 ac of riparian areas will be restored. Riparian restoration and enhancement in zone 6 will likely provide western red bats with the best opportunity for colonization, if those areas are restored with appropriate habitat for this species. Although all the subzones in zone 6 are lower priority acquisitions, the priorities for zone 6 include fee title or conservation easements of croplands or pastures along Marsh Creek or Kellogg Creek for riparian restoration opportunities.

Under the maximum UDA scenario, impacts to riparian habitats increase to 35 ac. Riparian preservation requirements under the maximum UDA scenario increases to 70 ac and riparian restoration would increase to 55 ac.

In addition to habitat preservation, management, and restoration, conservation measures that will increase habitat quality for western red bats include riparian enhancements that promote biological diversity and heterogeneity. These include the reduction of non-native species and an increase in cover and connectivity of native riparian vegetation.

Approximately 30 ac and 35 ac of impacts to riparian habitats will occur under the initial and maximum UDA, respectively. However, these areas are assumed to provide low quality habitat for western red bats, since appropriate riparian habitat for breeding and roosting is uncommon in the inventory area. Restoration and enhancement of riparian areas will likely benefit this species to some degree, since they are uncommon currently. Because red bats are unlikely to breed in

the inventory area under current conditions, and because nonbreeding red bats may occur in a variety of habitats, this species' abundance in the inventory area is unlikely to be limited by habitat availability. Therefore, the implementation of the Plan will have a neutral effect on western red bats, or may have a slight beneficial effect through riparian habitat restoration and enhancement.

SUMMARY OF NET EFFECTS OF THE PLAN ON CEQA SPECIES

Table ES-1 summarizes the anticipated net effects of Plan activities on CEQA species, indicating whether the Plan is expected to have a net beneficial, neutral, or adverse effect on each species; for adverse effects, Table ES-1 indicates whether or not the net impact is potentially significant under CEQA. For all species except Lime Ridge navarretia and Lime Ridge eriastrum, Plan impacts were determined to be less than significant, being either beneficial, neutral, or mildly adverse. This conclusion indicates that compliance with VHP conditions, including payment of the Plan fee or providing equivalent mitigation, for a covered project will be sufficient to mitigate the effects of the project on all CEQA species with the possible exception of Lime Ridge navarretia and Lime Ridge eriastrum (which have potential to occur only on a small proportion of covered Project sites). However, for Lime Ridge navarretia and Lime Ridge eriastrum, it was determined that the Plan alone is likely not sufficient to mitigate impacts to a level below significance, and additional mitigation may be needed for project-level CEQA compliance. Note that for no species does the net effect of the Plan differ between the two UDA scenarios in terms of whether the effect is beneficial, neutral, or adverse.

RECOMMENDED USE AND CITATION OF THIS DOCUMENT

As discussed in the *Introduction*, this document provides a programmatic analysis of impacts of all covered activities, including all adverse and beneficial effects of covered development activities and conservation measures, on CEQA species. This document therefore provides a cumulative CEQA effects analysis for CEQA species.

Planners and consultants preparing project-specific CEQA assessments of covered activities can incorporate the analysis herein in lieu of performing a detailed project-specific assessment of cumulative impacts to CEQA species. This report can also be used to document that, with compliance with Plan conditions, a project's impacts to CEQA species would be less than significant. Following is suggested text that can be included in project-specific CEQA evaluations to reference this CEQA Species Assessment (with the individual project's name used to fill in the blank spaces):

> An assessment was performed on the net effects of the HCP/NCCP, including both the beneficial and adverse effects of all covered development activities and conservation measures, on 59 special-status species that are not covered by the HCP/NCCP, called "CEQA species" (H. T. Harvey & Associates 2015). This "CEQA Species Assessment" considered the extent of habitat and populations of these species that could be affected within areas of anticipated development, as well as in areas that may be preserved, enhanced, and managed for covered species and communities by the HCP/NCCP, to determine the net cumulative impact of the HCP/NCCP on each CEQA species. The cumulative impacts to each CEQA species were categorized into one of four groups: beneficial, neutral, adverse but less-than-significant, or potentially significant. The CEQA Species Assessment found that the cumulative effects of the HCP/NCCP, including the proposed project, on 57 of the 59 CEQA species fell into one of the first three groups and are therefore less-than-significant.
>
> The _____ Project has the potential to adversely affect the following CEQA species: _____, all of which were evaluated in the CEQA Species Assessment. The proposed project does not support the two species found in the CEQA Species Assessment to have potentially significant effects from the HCP/NCCP covered activities. Because the proposed project is covered by the HCP/NCCP, the CEQA Species Assessment serves as a cumulative impact assessment for all of the CEQA species that may be impacted by the Project. The _____ Project will be implemented in accordance with the HCP/NCCP's conditions. Through payment of HCP/NCCP fees or equivalent mitigation, the Project will contribute to the HCP/NCCP's conservation strategy, thereby benefiting all CEQA species addressed in the CEQA Species Assessment (H. T. Harvey & Associates 2015). Therefore, with incorporation of HCP/NCCP fees or equivalent mitigation and adherence to other HCP/NCCP conditions, this Project's individual impacts and its contribution to cumulative impacts to CEQA species are less than significant.

The conclusion above does not apply to any special-status species not evaluated in this report, or to Lime Ridge navarretia or Lime Ridge eriastrum. If a covered project has any potential to impact Lime Ridge navarretia , Lime Ridge eriastrum, or a special-status species not covered by the Plan or evaluated in this report, a project-specific impact analysis would be required for the affected species.

The recommended citation for this CEQA Species Assessment is as follows:

> H. T. Harvey & Associates. 2015. *East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan: Assessment of Plan Effects on CEQA Species*. Prepared for the East Contra Costa County Habitat Conservancy.

LIMITATIONS

This assessment is based on information concerning the status of individual species with respect to the criteria described in *CEQA Species Selection Methodology* and concerning the known distributions, habitat affinities, and rarity of these CEQA species as of August 2014. If special status, as defined in this document, is conferred to other species in the future, the analysis in this document would not pertain to those species, and additional analysis would be necessary to determine the net cumulative effects of all Plan-covered activities on such species. In addition, if new information becomes available on the distributions, habitat affinities, and rarity of CEQA species that are addressed in this analysis, such information could result in changes to the conclusions (with respect to significance of cumulative Plan impacts) made in this document. Any such additional analysis may be performed either via revision of this document on a periodic basis by the Habitat Conservancy or performed in project-specific CEQA evaluations as needed.

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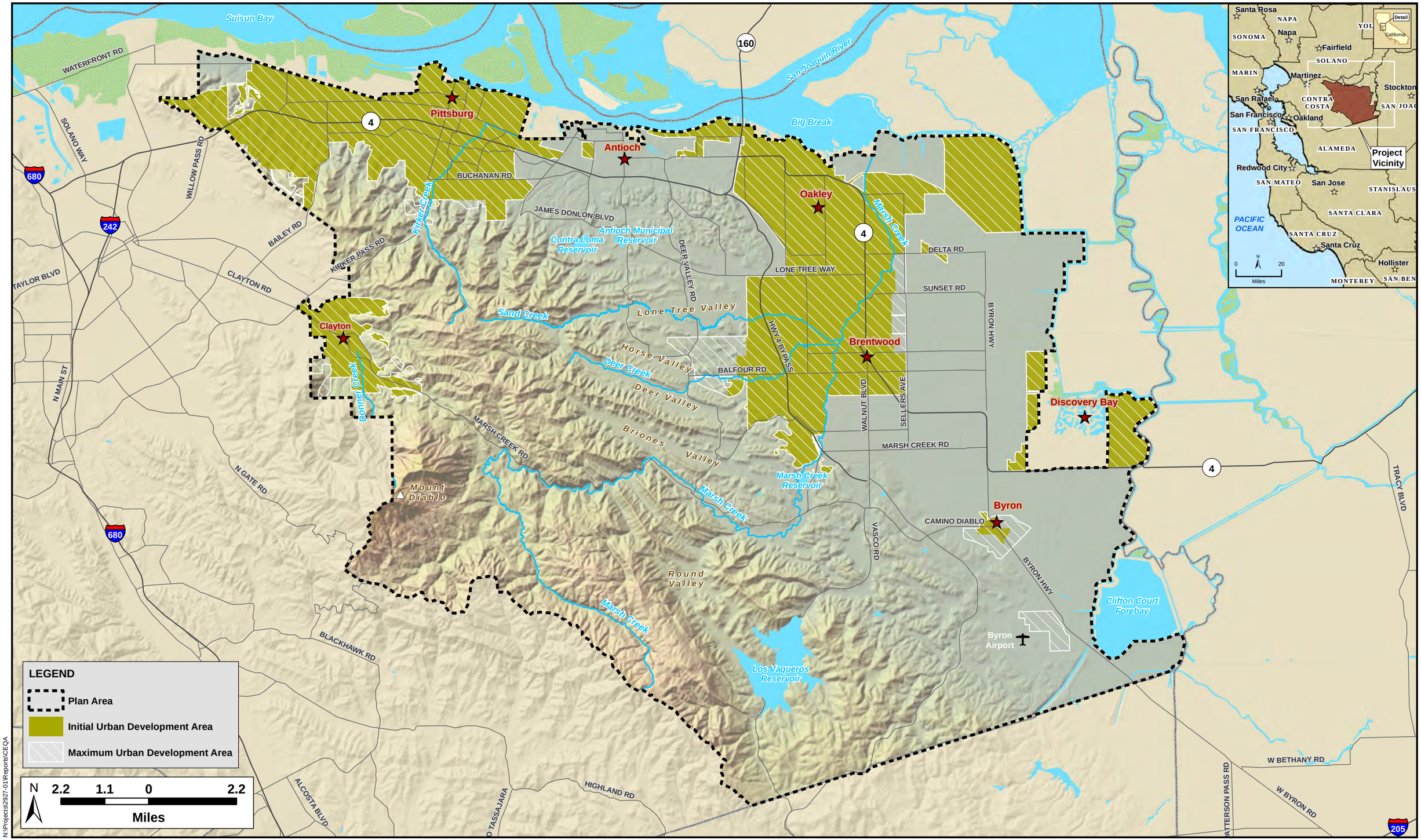

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Figure 1: Vicinity Map

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February 2015

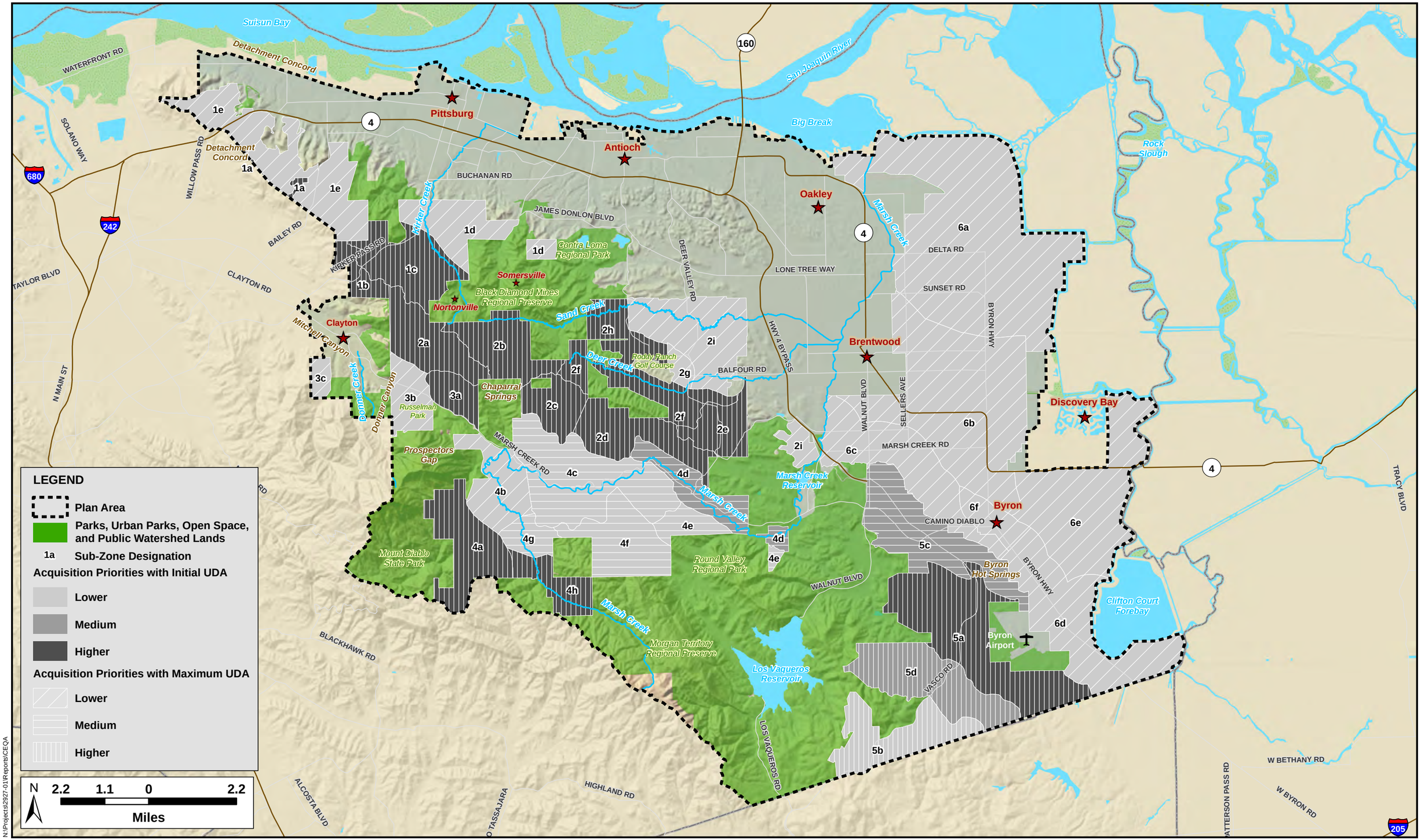

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Figure 2: Acquisition Priorities
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February 2015

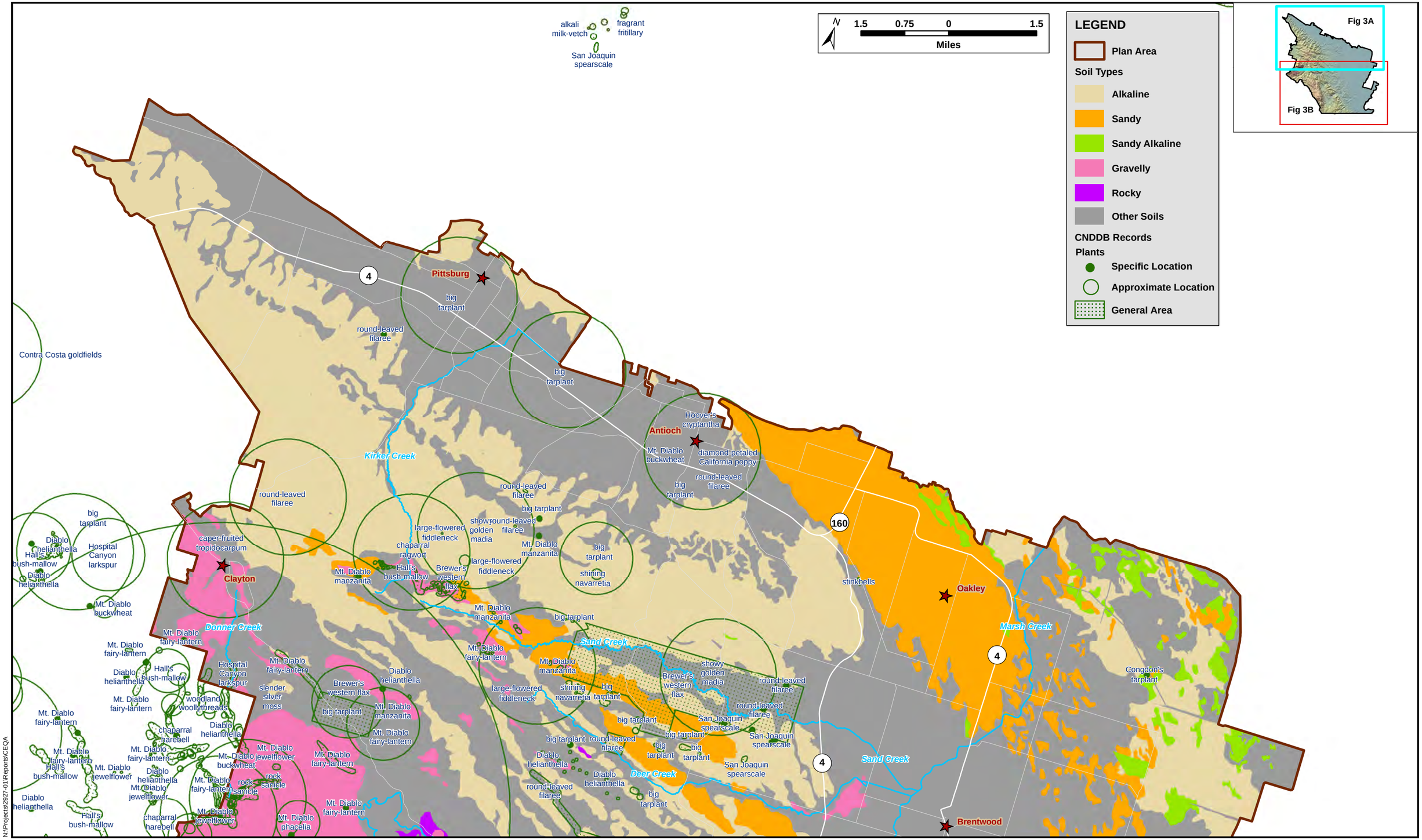

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Figure 3A: CNDDB Plant Records in Relation to Soil Alkalinity/Texture

East Contra Costa County HCP/NCCP CEQA Species Analysis (2927-01)
February 2015

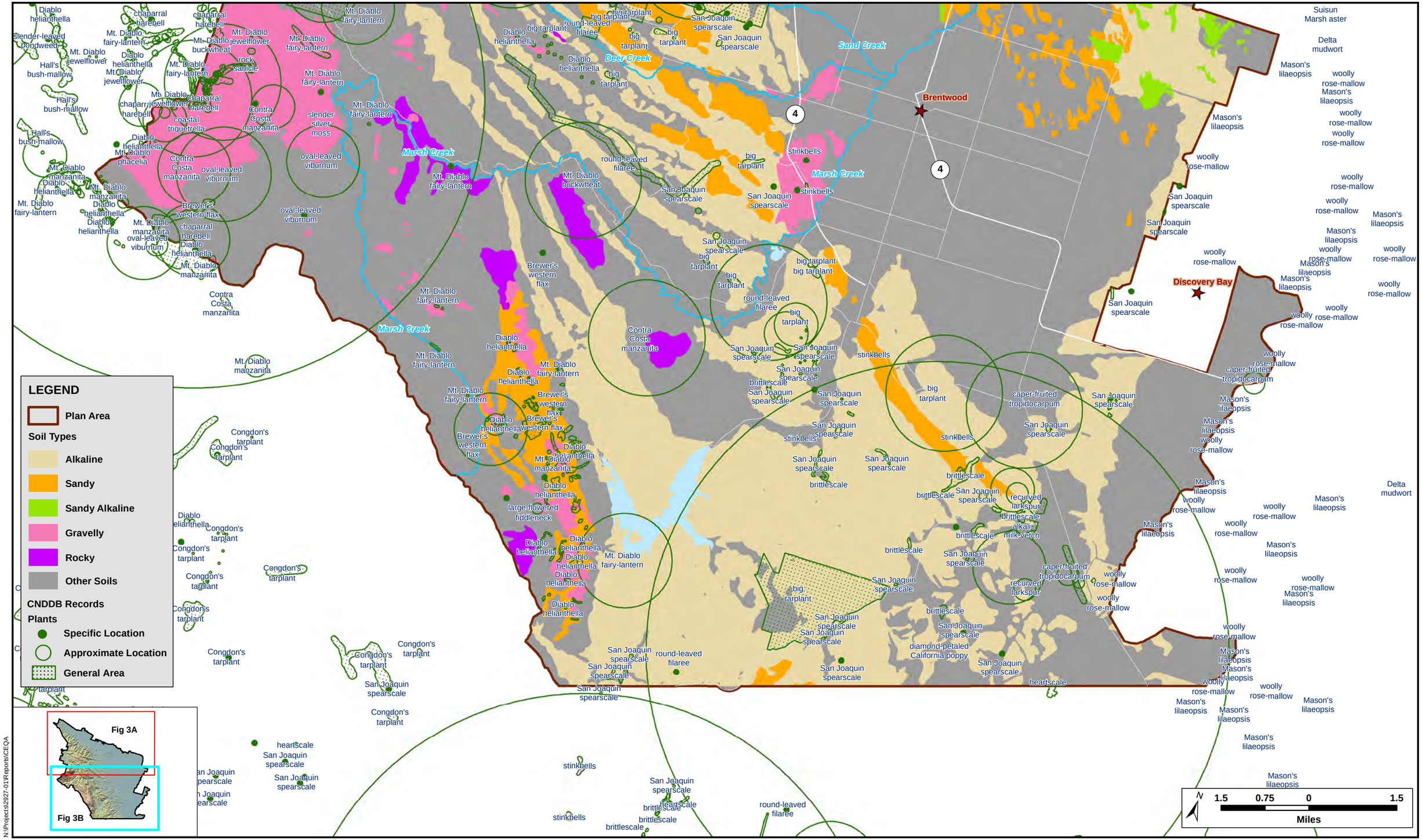

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Figure 3B: CNDDB Plant Records in Relation to Soil Alkalinity/Texture

East Contra Costa County HCP/NCCP CEQA Species Analysis (2927-01)
February 2015

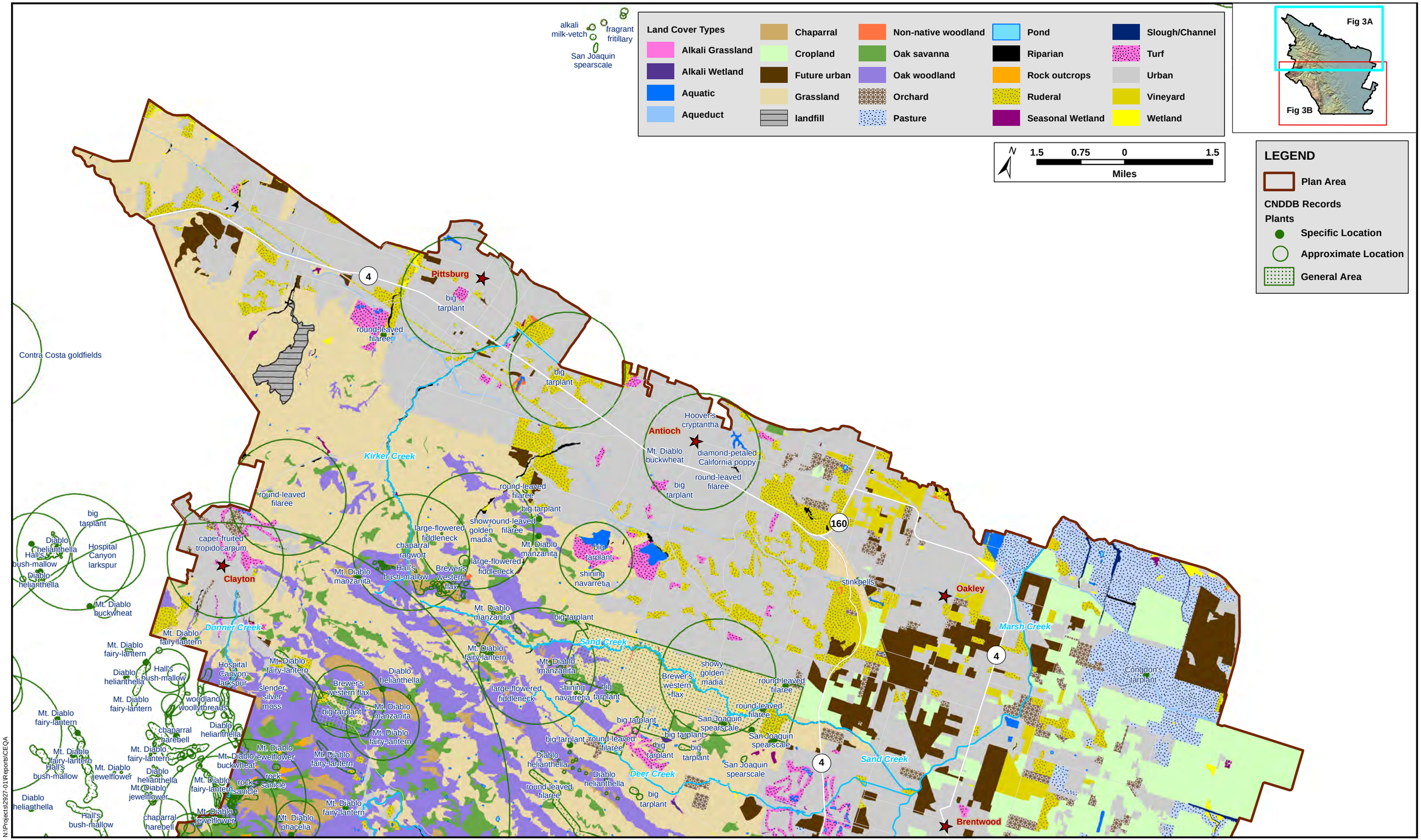

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Figure 4A: CNDDB Plant Records with Land Cover Types

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February 2015

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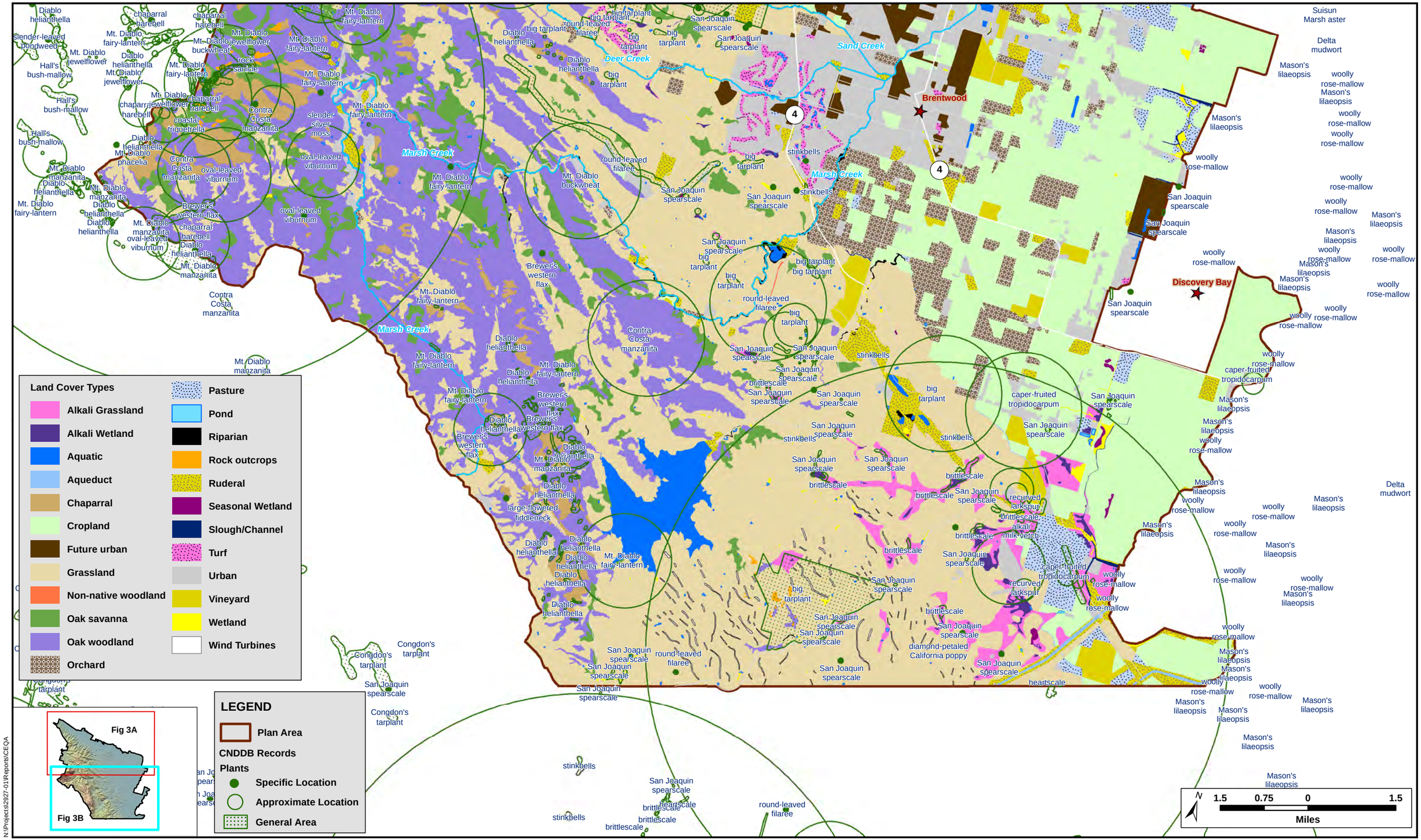

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Figure 4B: CNDDB Plant Records with Land Cover Types

East Contra Costa County HCP/NCCP CEQA Species Analysis (2927-01)
February 2015

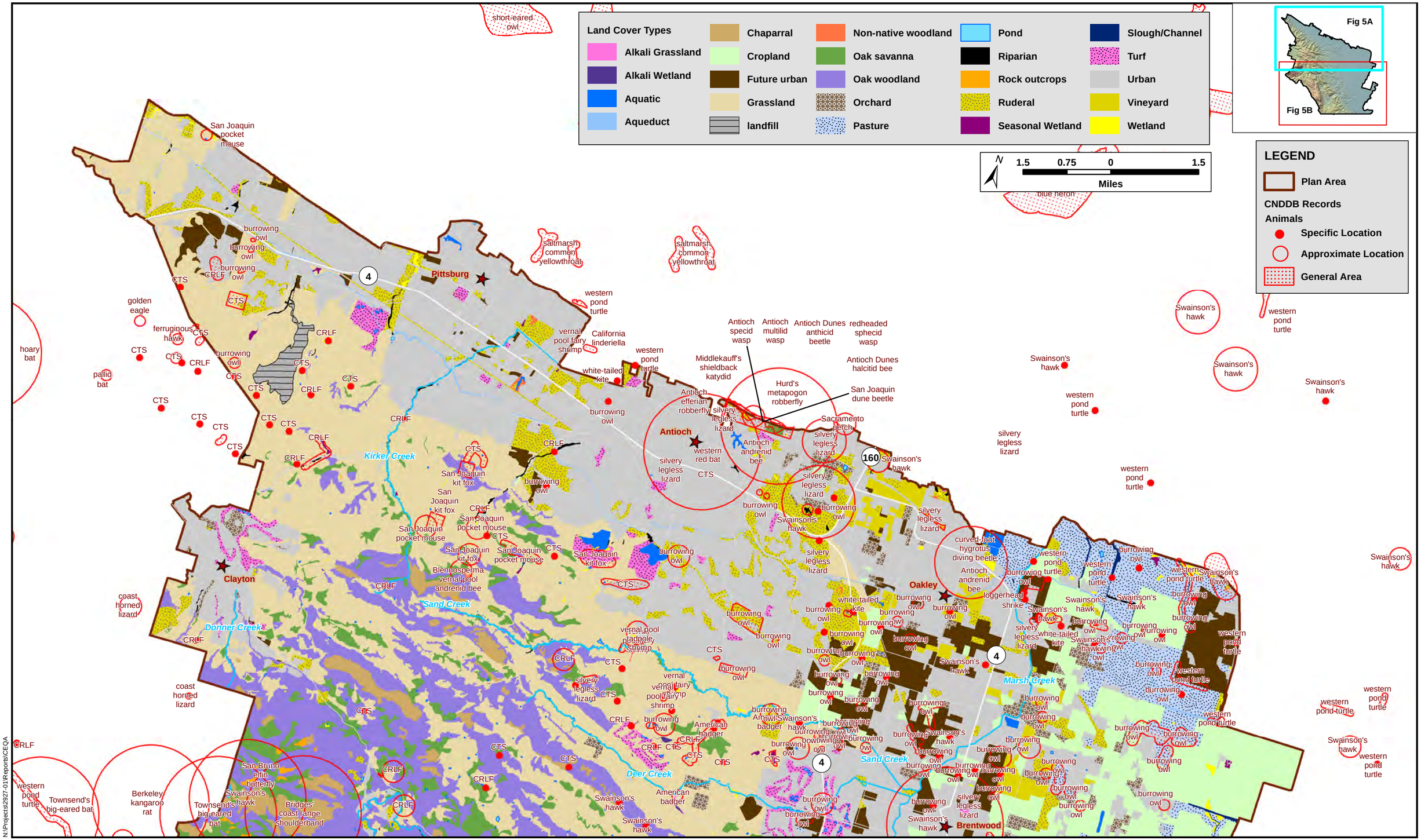

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Figure 5A: CNDDB Animal Records with Land Cover Types

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February 2015

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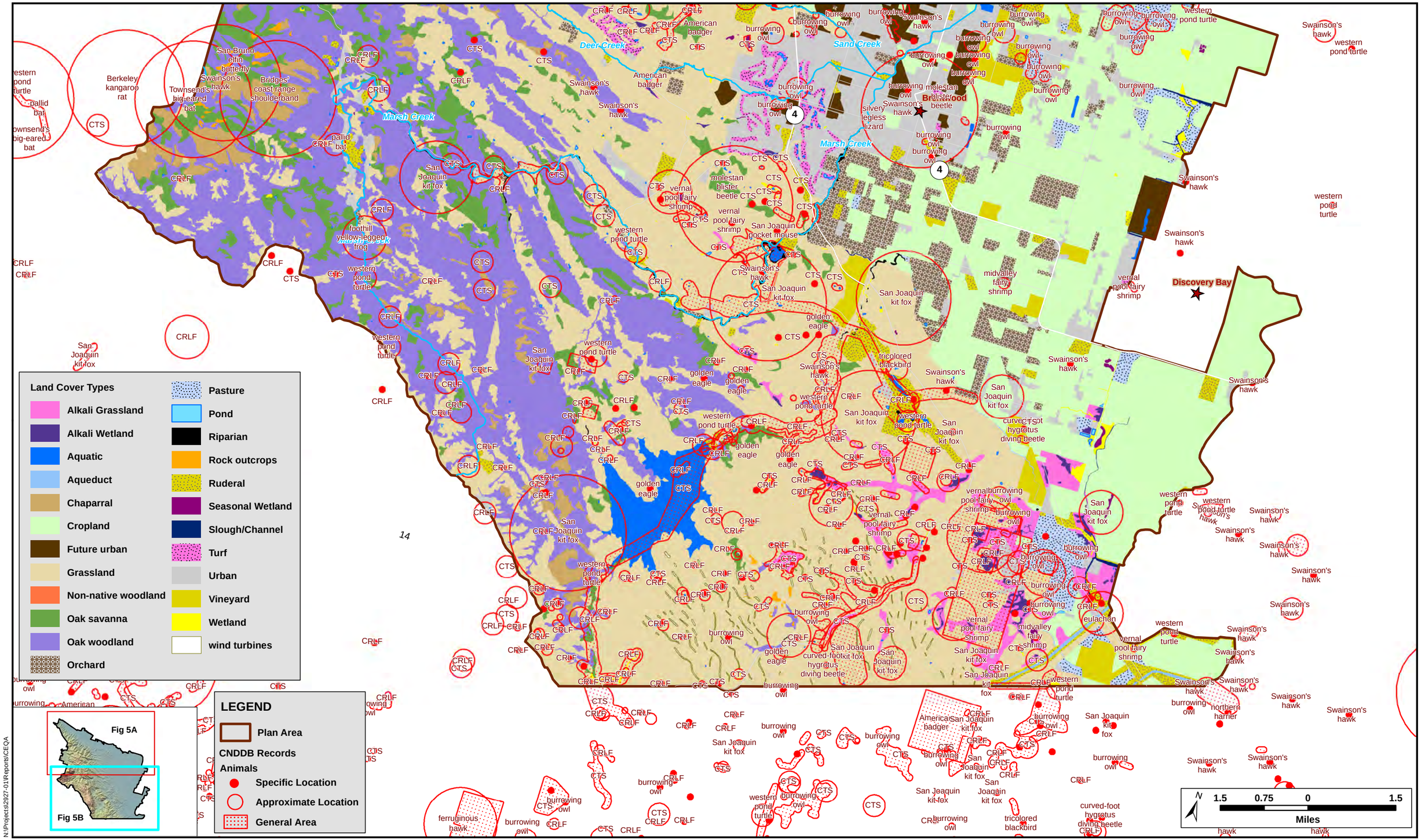

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Figure 5B: CNDDB Animal Records with Land Cover Types

East Contra Costa County HCP/NCCP CEQA Species Analysis (2927-01)

February 2015

APPENDIX A.
SPECIES CONSIDERED AND REJECTED AS CEQA SPECIES

Species Considered and Rejected for Cumulative Effects Analysis of the East Contra Costa County HCP/NCCP			
COMMON NAME	**SCIENTIFIC NAME**	**STATUS**	**REASON FOR REJECTION**
PLANTS			
Bent-flowered fiddleneck	*Amsinckia lunaris*	CRPR 1B.2	Found in quadrangles adjacent to Plan area quadrangles. Rejected as multiple observation records indicate the species is effectively restricted to western Contra Costa County and is not very likely to occur within the Plan area.
Slender silver moss	*Anomobryum julaceum*	CRPR 2B.2	CNDDB shows a record occurring at the summit of Mt. Diablo (within the Plan area). This record is highly suspect based on known habitat associations for the plant and it is unlikely to actually occur here.
Contra Costa manzanita	*Arctostaphylos manzanita ssp. laevigata*	CRPR 1B.2	Considered in the HCP/NCCP EIR, the Contra Costa County General Plan, and CCC General Plan EIR. Rejected as only occurs within Mt. Diablo State Park within the Plan area, and thus is already fully protected and not likely to be affected by Plan activities.
Pallid manzanita	*Arctostaphylos pallida*	FT, SE, CRPR 1B.1	Found in 3 quadrangles in western Contra Costa County and eastern Alameda County. Rejected as multiple observation records indicate the species is effectively restricted to western Contra Costa County and is not likely to occur within the Plan area.
Ferris' milk-vetch	*Astragalus tener* var. *ferrisiae*	CRPR 1B.1	Considered in the Contra Costa County General Plan. Rejected as not known from any Plan area quadrangles, has never been collected in Contra Costa County, and no CNDDB records exist within 5 miles of the Plan area boundaries. Appears to be restricted to the Central Valley east of Contra Costa County.
Parish's brittlescale	*Atriplex parishii*	CRPR 1B.1	Considered in the Brentwood General Plan. Rejected as not known from any Plan area quadrangles, has never been collected in Contra Costa County, and no CNDDB records exist within 5 miles of the Plan area boundaries. This species is unlikely to occur within the inventory area and is not likely to be affected by Plan activities.
Big-scale balsamroot	*Balsamorhiza macrolepis*	CRPR 1B.2	Considered because occurs within a Plan area quadrangle (Livermore). Rejected because the species has never been collected in Contra Costa County and no CNDDB records exist within 5 miles of the Plan area boundaries. This species is unlikely to occur within the inventory area and is not likely to be affected by Plan activities.
Large-flowered mariposa lily	*Calochortus uniflorus*	CRPR 4.2	Considered because listed as occurring in Contra Costa County according to CNPS. Rejected because the species has never been collected in Contra Costa County and no records exist within 5 miles of the Plan area boundaries. This species is unlikely to occur within the inventory area and is not likely to be affected by Plan activities.
Butte County morning-glory	*Calystegia atriplicifolia* ssp. *buttensis*	CRPR 4.2	Considered in the Contra Costa County General Plan. Rejected as CNPS asserts the Contra Costa records are more likely to be an as-yet undescribed taxa, not Butte County morning-glory. The species is otherwise restricted to the Cascades and northern Sierra Nevada in the northern portion of the state.

Species Considered and Rejected for Cumulative Effects Analysis of the East Contra Costa County HCP/NCCP			
COMMON NAME	**SCIENTIFIC NAME**	**STATUS**	**REASON FOR REJECTION**
Coastal bluff morning-glory	*Calystegia purpurata* ssp. *saxicola*	CRPR 1B.2	Mostly restricted to coastal habitats in Lake, Mendocino, and Marin counties. Rejected because the only known occurrence in Contra Costa County is in the Oakland East quadrangle on the western side of the county.
Bristly sedge	*Carex comosa*	CRPR 2B.1	Considered in the Contra Costa County General Plan. Rejected as not known from any Plan area quadrangles and no CNDDB records exist within 5 miles of the Plan area boundaries. Known in CCC only from the Webb Ponds in the far northeastern corner of the state, in the Deltaic region. Any undiscovered populations are likely to be in Delta or bayside marshes and are thus unlikely to be affected by Plan activities.
Brown fox sedge	*Carex vulpinoidea*	none (previously included on CRPR 2B.2)	Considered because occurs within a Plan area quadrangle (Woodward Island). Rejected because the species has never been collected in Contra Costa County and no CNDDB records exist within 5 miles of the Plan area boundaries. This plant is likely restricted to bayside and deltaic marshes in this region and is unlikely to be affected by Plan activities.
Johnny-nip	*Castilleja ambigua* ssp. *ambigua*	CRPR 4.2	Occurs within 11 counties, mostly in the SF Bay area. Rejected as multiple observation records indicate the species is effectively restricted to western Contra Costa County and is not very likely to occur within the Plan area.
Pink creamsacs	*Castilleja rubicundula* ssp. *rubicundula*	CRPR 1B.2	Found in 20 USGS quadrangles, mostly north of SF Bay. Rejected because there are no known populations in Contra Costa County according to CNDDB records.
Soft bird's-beak	*Chloropyron molle* ssp. *molle*	FE, SR, CRPR 1B.2	Found in eight USGS quadrangles from San Pablo Bay east to the Sacramento-San Joaquin River Delta. Rejected because location records and species biology indicate it is restricted to coastal salt/brackish marshes just outside the inventory area.
Bolander's water hemlock	*Cicuta maculata* var. *bolanderi*	CRPR 2B.1	Found around the SF Bay area (including just north of the inventory area) and in three other states. Rejected because location records and species biology indicate it is restricted to coastal fresh/brackish marshes.
Franciscan thistle	*Cirsium andrewsii*	CRPR 1B.2	Occurs within western Contra Costa, Marin, San Francisco, and San Mateo counties. Rejected as multiple observation records indicate the species is effectively restricted to western Contra Costa County and is not very likely to occur within the Plan area.
Slough thistle	*Cirsium crassicaule*	CRPR 1B.1	Considered in the State Route 4 Bypass EIR and Addenda. Rejected as not known from any Plan area quadrangles, has never been collected in Contra Costa County, and no CNDDB records exist within 5 miles of the Plan area boundaries. Appears to be restricted to the Central Valley east and south of Contra Costa County.

Species Considered and Rejected for Cumulative Effects Analysis of the East Contra Costa County HCP/NCCP			
COMMON NAME	**SCIENTIFIC NAME**	**STATUS**	**REASON FOR REJECTION**
Mt. Diablo bird's-beak	*Cordylanthus nidularius*	SR, CRPR 1B.1	Considered in the HCP/NCCP EIR, the Contra Costa County General Plan, and the CCC General Plan EIR. Rejected as the only known population occur within Mt. Diablo State Park within the Plan area, and thus is already fully protected and not likely to be affected by Plan activities. As this species appears to be restricted to serpentine chaparral, it is very unlikely to be located off currently protected lands in the inventory area, and thus is not likely to be affected by Plan activities.
Hoover's cryptantha	*Cryptantha hooveri*	CRPR 1A	Considered in the Contra Costa General Plan EIR. Rejected as has not been seen or collected anywhere since 1939. Contra Costa records are from inland dune habitats that are now lost or fully protected (Antioch Dunes). It is highly unlikely that extant populations of this species occur within the Plan area, and therefore it is not likely to be affected by Plan activities.
Norris' beard moss	*Didymodon norrisii*	CRPR 2B.2	Considered because CNDDB records exist within a Plan area quadrangle (Clayton). Rejected as only occurs within Mt. Diablo State Park near the inventory area, and thus is already fully protected and not likely to be affected by Plan activities.
Livermore tarplant	*Deinandra bacigalupi*	CRPR 1B.2	Considered because the three known populations for this species occur within 3 mi of the Plan boundary. However, has never been found within Contra Costa County, so is considered absent from the Plan area.
Western leatherwood	*Dirca occidentalis*	CRPR 1B.2	Considered in the Contra Costa County General Plan and CCC General Plan EIR. Rejected as multiple observation records (81 collections in Contra Costa County alone) indicate the species is effectively restricted to western Contra Costa County and is not very likely to occur within the Plan area.
Dwarf downingia	*Downingia pusilla*	CRPR 2B.2	Considered in the Contra Costa County General Plan and the Pittsburg General Plan. Rejected because all records are from vernal pools north of the Delta or within the Central Valley. This species is unlikely to occur within the inventory area or be affected by Plan activities.
Small spikerush	*Eleocharis parvula*	CRPR 4.3	Considered because Calflora indicates records exist within on Brown's Island and in the Antioch Dunes. Rejected as only occurs within the Antioch Dunes NWR within the inventory area, and thus is already fully protected. Additionally, this species is generally associated with saline-influenced perennial wetlands, and any undiscovered populations would likely be in the Deltaic marshes, not within inventory boundaries. This species is unlikely to be affected by Plan activities.

Species Considered and Rejected for Cumulative Effects Analysis of the East Contra Costa County HCP/NCCP			
COMMON NAME	**SCIENTIFIC NAME**	**STATUS**	**REASON FOR REJECTION**
Brandegee's eriastrum	*Eriastrum brandegeeae*	CRPR 1B.1	This plant has an uncertain taxonomic status. Thought to have been found just outside the Plan area at Lime Ridge Preserve near Clayton in 2003, this population is now thought to comprise a different *Eriastrum* sp. Has been removed from the Contra Costa species lists by both CNPS (2014) and CNDDB (2014). Current range is thought to be centered near the type location in Lake County, and is unlikely to be found in the Plan area.
Tiburon buckwheat	*Eriogonum luteolum* var. *caninum*	CRPR 1B.2	Found in Alameda, Contra Costa, and Marin counties. Rejected as multiple observation records indicate the species is effectively restricted to western Contra Costa County and is not very likely to occur within the Plan area.
Antioch Dunes buckwheat	*Eriogonum nudum* var. *psychicola*	CRPR 1B.1	Known from a single occurrence in the Antioch Dunes. Rejected as only occurs within the Antioch Dunes NWR within the inventory area, and thus is already fully protected.
Delta button celery	*Eryngium racemosum*	SE, CRPR 1B.1	Occurs in riparian scrub habitat and is mostly restricted to the Central Valley. The only known population in Contra Costa County occurs on Woodward Island and is possibly extirpated. Additionally, this population is outside the Plan area and is not expected to be affected by Plan activities.
Contra Costa wallflower	*Erysimum capitatum* var. *angustatum*	FE, SE, CRPR 1B.1	Only known records are dune habitats that are now lost or fully protected (Antioch Dunes). It is highly unlikely that extant populations of this species occur within the Plan area, and therefore it is not likely to be affected by Plan activities.
Toren's grimmia	*Grimmia torenii*	CRPR 1B.3	Considered because CNDDB records exist within a Plan area quadrangle (Clayton). Rejected as only occurs within Mt. Diablo State Park near the inventory area, and thus is already fully protected and not likely to be affected by Plan activities.
Great Valley gumweed	*Grindelia camporum*	none	Considered in the Contra Costa County General Plan EIR. Rejected as the species was considered too common to be officially listed by CNPS, and therefore is not a special-status species.
Hairy gumweed	*Grindelia hirsutula*	none	Considered in the Contra Costa County General Plan EIR. Rejected as the species was considered too common to be officially listed by CNPS, and therefore is not a special-status species.
Woolly rose-mallow	*Hibiscus lasiocarpus*	CRPR 2B.2	Considered in Pittsburg General Plan, Oakley General Plan, Contra Costa County General Plan, and CCC General Plan EIR. Rejected because all occurrence records are from brackish Delta marshes to the east of Plan area. Not expected to be affected by Plan activities.
Loma Prieta hoita	*Hoita strobilina*	CRPR 1B.1	Found in Contra Costa, Santa Clara, and Santa Cruz counties. Rejected because the only known occurrences in Contra Costa County are on the far western side (Oakland East and Richmond quadrangles). Not expected to be affected by Plan activities.

Species Considered and Rejected for Cumulative Effects Analysis of the East Contra Costa County HCP/NCCP			
COMMON NAME	**SCIENTIFIC NAME**	**STATUS**	**REASON FOR REJECTION**
Santa Cruz tarplant	*Holocarpha macradenia*	FT, SE, CRPR 1B.1	All extant populations in Contra Costa County are introduced. Rejected because the only known occurrences in Contra Costa County are on the far western side. Not expected to be affected by Plan activities.
Coast iris	*Iris longipetala*	CRPR 4.2	Considered because the species has records occurring in Contra Costa County (state databases do not maintain quad-level records on list 4 species). Rejected as herbarium observation records indicate the species is effectively restricted to western Contra Costa County and is not very likely to occur within the Plan area.
Carquinez goldenbush	*Isocoma arguta*	CRPR 1B.1	Considered in Contra Costa County General Plan. Described as occurring along the Carquinez Straits by Munz and Keck. No records exist within the Plan area, although nearby records from the Antioch North quadrangle suggest the species inhabits a range in Deltaic grasslands north of the County and within the Central Valley. Not likely to occur within Plan boundaries.
Northern California black walnut	*Juglans hindsii*	CRPR 1B.1	Considered in Contra Costa County General Plan EIR. One native occurrence (most occurrences are thought to be naturalized) is located in the Las Trampas Ridge quadrangle to the southwest of the Plan boundaries. Not likely to occur as a native population within the inventory area.
Delta tule pea	*Lathyrus jepsonii* var. *jepsonii*	CRPR 1B.2	Considered in Pittsburg General Plan, Contra Costa County General Plan, and CCC General Plan EIR. Rejected because all occurrence records are from brackish Deltaic marshes and Antioch Dunes to the north and east of Plan area. Historical records (1860s) exist from the Walnut Creek area but the plant does not occur in that region currently. Not expected to be affected by Plan activities.
Bristly leptosiphon	*Leptosiphon acicularis*	CRPR 4.2	Considered because occurs on CNPS lists for Contra Costa County as an "uncertain" taxa. However, although suitable habitat may occur there, no current or historical collections of this species have ever been made in Contra Costa County. Species is not known to occur within the inventory area and is therefore unlikely to be affected by Plan activities.
Mason's lilaeopsis	*Lilaeopsis masonii*	SR, CRPR 1B.1	Considered in Pittsburg General Plan, Oakley General Plan, Contra Costa County General Plan, and CCC General Plan EIR. Rejected because location records and species biology indicates it is restricted to brackish or freshwater marshes along channel edges in the Delta, along sloughs, and along the San Joaquin River, just outside the inventory area.
Delta mudwort	*Limosella subulata*	CRPR 2B.1	Considered in Pittsburg General Plan, Contra Costa County General Plan, and CCC General Plan EIR. Rejected because although several populations occur within Plan area quadrangles (e.g., Jersey Island, Antioch North, etc.), these are all restricted to coastal salt and brackish marshes along the far northern and eastern Deltaic region. In general, Bay and Deltaic marshes are not expected to be affected by Plan activities.

Species Considered and Rejected for Cumulative Effects Analysis of the East Contra Costa County HCP/NCCP			
COMMON NAME	**SCIENTIFIC NAME**	**STATUS**	**REASON FOR REJECTION**
Oregon meconella	*Meconella oregana*	CRPR 1B.1	Known in California from only five occurrences. Rejected as multiple observation records indicate the species is effectively restricted to western Contra Costa County and is not very likely to occur within the Plan area.
Mt. Diablo cottonweed	*Micropus amphibolus*	CRPR 3.2	Considered in Contra Costa County General Plan EIR. Rejected because all extant occurrences in the County are located in the far western area of the county, outside Plan boundaries. The closest record (which is from 1860) is still to the west of the Plan area in Walnut Creek. This species is not likely to occur within the Plan area.
San Antonio Hills monardella	*Monardella antonina* ssp. *antonina*	CRPR 3	Considered in the Contra Costa County General Plan. All recorded populations north and/or inland of Monterey County are thought to be misidentified (CNPS). As the species may not occur within the county at all, it is difficult to assess potential effects of Plan activities (if any), and therefore was rejected from consideration.
Adobe navarretia	*Navarretia nigelliformis* ssp. *nigelliformis*	CRPR 4.2	Considered because listed as occurring in Contra Costa County according to CNPS. Rejected because the species has never been collected in Contra Costa County and no records exist within 5 miles of the Plan area boundaries. This species is unlikely to occur within the inventory area and is not likely to be affected by Plan activities.
Hairless popcorn-flower	*Plagiobothrys glaber*	CRPR 1A	Considered because historical and possibly rediscovered populations exist in Plan area quadrangles (Livermore) or adjacent quadrangles (Altamont, Dublin). Rejected because no records of this species ever occurred as far north as Contra Costa County; northern-central Alameda appears to have been the northern extent of the species range.
Bearded popcorn-flower	*Plagiobothrys hystriculus*	CRPR 1B.1	Considered in the Contra Costa General Plan. Although a record occurs in a Plan area quadrangle (Antioch North), the population occurs across the Delta. This species is restricted to the Montezuma Hills region and is highly unlikely to occur within the Plan area.
Eel-grass pondweed	*Potamogeton zosteriformis*	CRPR 2B.2	Considered in the HCP/NCCP EIR. All records in the area are from deltaic and peat marshes on Webb and Jersey Islands, outside of the inventory area. This species is not likely to occur in the inventory area, due to the lack of similar habitat.
Valley oak	*Quercus lobata*	none	Considered in Brentwood General Plan and the Contra Costa County General Plan EIR. Rejected because was considered too common for listing by CNPS, and is not a special-status species.
Straggly gooseberry	*Ribes divaricatum* var. *pubiflorum*	none	Considered in the Contra Costa County General Plan EIR. Rejected because was considered too common for listing by CNPS, and is not a special-status species.

Species Considered and Rejected for Cumulative Effects Analysis of the East Contra Costa County HCP/NCCP			
COMMON NAME	**SCIENTIFIC NAME**	**STATUS**	**REASON FOR REJECTION**
Sanford's arrowhead	*Sagittaria sanfordii*	CRPR 1B.2	Considered in the State Route 4 Bypass EIR and Addenda. Rejected as not known from any Plan area quadrangles, has never been collected in Contra Costa County, and no CNDDB records exist within 5 miles of the Plan area boundaries. Appears to be restricted to Central Valley Marshes to the east of Contra Costa County.
Rock sanicle	*Sanicula saxatilis*	SR, CRPR 1B.2	Considered in the HCP/NCCP EIR, the Pittsburg General Plan, Contra Costa County General Plan, and CCC General Plan EIR. Rejected as only occurs within Mt. Diablo State Park within the Plan area, and thus all known Contra Costa County populations are already fully protected, occurring on Mt. Diablo either at the summit or due west of the summit. Although the species is known to occur in grassland habitats elsewhere in its range, all collections from the inventory area occur in chaparral and steep talus slopes in coastal scrub. This species is unlikely to be located off currently protected lands in the inventory area, and thus is not likely to be affected by Plan activities.
Marsh skullcap	*Scutellaria galericulata*	CRPR 2B.2	Considered in the Contra Costa County General Plan. Rejected because although a population occurs within a Plan area quadrangle (Woodward Island), all known occurrences are restricted to coastal salt and brackish marshes along the far northern and eastern Deltaic region of the County. These marshes are outside the Plan area and are not expected to be affected by Plan activities.
Mad-dog skullcap	*Scutellaria lateriflora*	CRPR 2B.2	Considered in the Contra Costa County General Plan. Rejected because although a population occurs within a Plan area quadrangle (Jersey Island), all known occurrences are restricted to coastal salt and brackish marshes along the far northern and eastern Deltaic region of the County. These marshes are outside the Plan area and are not expected to be affected by Plan activities.
Mt. Diablo jewel-flower	*Streptanthus hispidus*	CRPR 1B.3	Considered in the Contra Costa County General Plan EIR. Rejected as only occurs within Mt. Diablo State Park within the Plan area, and thus all known Contra Costa County populations are already fully protected and not likely to be affected by Plan activities. Also appears to favor the western slopes of Mt. Diablo rather than the eastern slopes.
California seablite	*Suaeda californica*	FE, CRPR 1B.1	Formerly known from San Francisco Bay area, where it was extirpated by development; now extant only in Morro Bay and near Cayucos Point. Rejected because it is presumed extirpated from Contra Costa County.

Species Considered and Rejected for Cumulative Effects Analysis of the East Contra Costa County HCP/NCCP			
COMMON NAME	**SCIENTIFIC NAME**	**STATUS**	**REASON FOR REJECTION**
Suisun marsh aster	*Symphyotrichum lentum*	CRPR 1B.2	Considered in the Pittsburg General Plan, the Oakley General Plan, the Contra Costa County General Plan, and CCC General Plan EIR. Rejected because although several populations occur within Plan area quadrangles (e.g., Jersey Island, Brentwood, etc.), these are all restricted brackish marshes along the far northern and eastern Suisun/Honker Bay and Deltaic region. In general, Bay and Deltaic marshes are not expected to be affected by Plan activities, and it is unlikely to occur within the inventory area.
Saline clover	*Trifolium hydrophilum*	CRPR 1B.2	Considered because occurs in an inventory area quadrangle (Livermore). Rejected because not known from eastern Contra Costa County, only brackish marshes in the bayside western County. As the species has not been collected in the county since 1900, it is not likely to be located in the inventory area and is not likely to be affected by Plan activities.
Coastal triquetrella	*Triquetrella californica*	CRPR 1B.2	Considered because CNDDB records exist in inventory area quadrangles (Diablo, Clayton). However, this record is highly suspect as it appears to be over 3,000 ft above the known elevational range of the species. Even if occurrence ID is correct, this species is unlikely to occur outside of the State Park and is unlikely to be affected by Plan activities.
INVERTEBRATES			
Antioch andrenid bee	*Perdita scituta antiochensis*	FSC	Considered in the Pittsburg General Plan EIR, Contra Costa County General Plan, and Contra Costa County General Plan EIR; federal species of special concern not considered in this analysis.
Antioch cophuran fobberfly	*Cophura hurdi*	FSC	Considered in the Pittsburg General Plan EIR, Contra Costa County General Plan, and Contra Costa County General Plan EIR; federal species of special concern not considered in this analysis.
Antioch Dunes anthicid beetle	*Anthicus antiochensis*	FSC	Considered in the Brentwood General Plan EIR, Pittsburg General Plan EIR, Contra Costa County General Plan, and Contra Costa County General Plan EIR; distribution outside of HCP/NCCP Inventory Area; federal species of special concern not considered in this analysis.
Antioch efferian robberfly	*Efferia antiochi*	FSC	Considered in the Pittsburg General Plan EIR, Contra Costa County General Plan, and Contra Costa County General Plan EIR; federal species of special concern not considered in this analysis.
Antioch multilid wasp	*Myrmosula pacifica*	FSC	Considered in the Pittsburg General Plan EIR, Contra Costa County General Plan, and Contra Costa County General Plan EIR; federal species of special concern not considered in this analysis.
Antioch sphecid wasp	*Philanthus nasilis*	FSC	Considered in the Pittsburg General Plan EIR, Contra Costa County General Plan, and Contra Costa County General Plan EIR; federal species of special concern not considered in this analysis.

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COMMON NAME	**SCIENTIFIC NAME**	**STATUS**	**REASON FOR REJECTION**
Bridges' Coast Range shoulderband snail	*Helminthoglypta nickliniana bridgesi*	FSC	Considered in the Contra Costa County General Plan and Brentwood General Plan EIR; federal species of special concern not considered in this analysis.
California linderiella	*Linderiella occidentalis*	FSC	Considered in the Brentwood General Plan EIR, Contra Costa County General Plan, Contra Costa County General Plan EIR, and SR4 Bypass Project EIR; federal species of special concern not considered in this analysis.
Ciervo aegialian scarab beetle	*Aegialia concinna*	FSC	Considered in the Contra Costa County General Plan EIR; federal species of special concern not considered in this analysis.
Curved-foot hygrotus diving beetle	*Hygrotus curvipes*	FSC	Considered in the Brentwood General Plan EIR, Oakley General Plan EIR, SR4 Bypass Project EIR, Contra Costa County General Plan, and Contra Costa County General Plan EIR; federal species of special concern not considered in this analysis.
Hurd's metapogon robberfly	*Metapogon hurdi*	FSC	Considered in the Contra Costa County General Plan; federal species of special concern not considered in this analysis.
Middlekauf's shieldback katydid	*Idiostatus middlekaufi*	FSC	Considered in the Pittsburg General Plan EIR, Contra Costa County General Plan, and Contra Costa County General Plan EIR; federal species of special concern not considered in this analysis.
Midvalley fairy shrimp	*Branchinecta mesovalliensis*	FSC	Considered in the Contra Costa County General Plan; federal species of special concern not considered in this analysis.
Molestan blister beetle	*Lytta molesta*	FSC	Considered in the Brentwood General Plan EIR, Pittsburg General Plan EIR, SR4 Bypass Project EIR, Contra Costa County General Plan, and Contra Costa County General Plan EIR; federal species of special concern not considered in this analysis.
Ricksecker's water scavenger beetle	*Hydrochara ricksecker*i	FSC	Considered in the Brentwood General Plan EIR and Contra Costa County General Plan; federal species of special concern not considered in this analysis.
Sacramento anthicid beetle	*Anthicus sacramento*	FSC	Considered in the Brentwood General Plan EIR and Contra Costa County General Plan; federal species of special concern not considered in this analysis.
San Joaquin dune beetle	*Coelus gracilis*	FSC	Considered in the Brentwood General Plan EIR, Pittsburg General Plan EIR, Contra Costa County General Plan, and Contra Costa County General Plan EIR; distribution outside of HCP/NCCP Inventory Area; federal species of special concern not considered in this analysis.
Yellow banded andrenid bee	*Perdita hirticeps luteocincta*	FSC	Considered in the Pittsburg General Plan EIR, Contra Costa County General Plan, and Contra Costa County General Plan EIR; federal species of special concern not considered in this analysis.
Durants snail	*Haplotrema duranti*	None	Considered in the Contra Costa County General Plan EIR; not a special-status species as defined in this analysis.
Phalangid	*Sitalcina serpentinea*	None	Considered in the Contra Costa County General Plan EIR; not a special-status species as defined in this analysis.

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COMMON NAME	**SCIENTIFIC NAME**	**STATUS**	**REASON FOR REJECTION**
Redheaded sphecid wasp	*Eucerceris ruficeps*	None	Considered in the Contra Costa County General Plan EIR; not a special-status species as defined in this analysis.
San Francisco forktail	*Ishnura gemina*	None	Considered in the SR4 Bypass Project EIR; not a special-status species as defined in this analysis.
San Francisco tree lupine moth	*Grapholita edwardsiana*	None	Considered in the Contra Costa County General Plan EIR; not a special-status species as defined in this analysis.
AMPHIBIANS/REPTILES			
Northern sagebrush lizard	*Sceloporus graciosus graciosus*	None	Considered in the Contra Costa County General Plan EIR; not a special-status species as defined in this analysis.
FISH			
Central Valley Fall/Late Fall-run Chinook salmon	*Oncorhynchus tshawytscha*	SSC	Effects analysis was conducted in Appendix C of East Contra Costa County HCP/NCCP. This species is not expected to be affected by covered activities or conservation measures.
Longfin smelt	*Spirinichus thaleichthys*	SSC	Considered in the Contra Costa County General Plan; distribution outside of HCP/NCCP Inventory Area.
Sacramento perch	*Archoplites interruptus*	SSC (within its native range)	Considered in the Contra Costa County General Plan; distribution outside of HCP/NCCP Inventory Area.
Sacramento splittail	*Pogonichthys macrolepidotus*	SSC	Considered in the Contra Costa County General Plan and Contra Costa County General Plan EIR; distribution outside of HCP/NCCP Inventory Area.
Pacific lamprey	*Lampetra tridentata*	FSC	Considered in the Contra Costa County General Plan EIR; distribution outside of HCP/NCCP Inventory Area, federal species of special concern not considered in this analysis.
River lamprey	*Lampetra ayresi*	FSC	Considered in the Contra Costa County General Plan; distribution outside of HCP/NCCP Inventory Area, federal species of special concern not considered in this analysis.
BIRDS			
Alameda song sparrow	*Melospiza melodia pusillula*	SSC (year round)	Considered in the Contra Costa County General Plan; distribution outside of HCP/NCCP Inventory Area (marsh species).
Greater white-fronted (tule) goose	*Anser albirons elgasi*	SSC (wintering)	Considered in the Contra Costa County General Plan; distribution outside of HCP/NCCP Inventory Area (delta species), may occur as an occasional forager.
Mountain plover	*Charadrius montanus*	SSC (wintering)	Considered in the Brentwood General Plan EIR and Contra Costa County General Plan; winter distribution outside of HCP/NCCP Inventory Area, may occur only as occasional visitor.
Redhead	*Aythya americana*	SSC (breeding)	Considered in the Contra Costa County General Plan; no breeding records in the HCP/NCCP Inventory Area.
Samuel's (San Pablo) song sparrow	*Melospiza melodia samuelis*	SSC (year round)	Considered in the Contra Costa County General Plan and Contra Costa County General Plan EIR; distribution outside of HCP/NCCP Inventory Area (tidal marsh species).

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COMMON NAME	**SCIENTIFIC NAME**	**STATUS**	**REASON FOR REJECTION**
San Francisco common yellowthroat	*Geothlypis trichas sinuosa*	SSC (year round)	Considered in the Pittsburg General Plan EIR and Contra Costa County General Plan EIR; distribution outside of HCP/NCCP Inventory Area.
Suisuns ong sparrow	*Melospiza melodia maxillaris*	SSC (year round)	Considered in the Pittsburg General Plan EIR, Oakley General Plan EIR, Contra Costa County General Plan, Contra Costa County General Plan EIR, and East Contra Costa County HCP/NCCP EIR; distribution outside of HCP/NCCP Inventory Area (tidal marsh species).
Vaux's swift	*Chaetura vauxi*	SSC (breeding)	CNDDB records exist in the HCP/NCCP Inventory Area; not within normal distribution, no known breeding sites in HCP/NCCP Inventory Area, likely occurs as occasional forager.
Allen's hummingbird	*Selasphorus sasin*	FSC	Considered in the Contra Costa County General Plan; federal species of special concern not considered in this analysis.
Black swift	*Cypseloides niger*	FSC	Considered in the Contra Costa County General Plan; federal species of special concern not considered in this analysis.
Costa's hummingbird	*Calypte costae*	FSC	Considered in the Contra Costa County General Plan; federal species of special concern not considered in this analysis.
Lawrence's goldfinch	*Carduelis lawrencei*	FSC	Considered in the Contra Costa County General Plan; federal species of special concern not considered in this analysis.
Lewis' woodpecker	*Melanerpes lewis*	FSC	Considered in the Contra Costa County General Plan; federal species of special concern not considered in this analysis.
Rufous hummingbird	*Selaphorus rufus*	FSC	Considered in the Contra Costa County General Plan; federal species of special concern not considered in this analysis.
Aleutian Canada goose	*Branta canadensis leucopareia*	None	Considered in the Brentwood General Plan EIR, Contra Costa County General Plan, and Contra Costa County General Plan EIR; delisted by the USFWS.
American bittern	*Botaurus lentiginosus*	None	Considered in the Contra Costa County General Plan; CDFW no longer considers this a species of special concern.
Bell's sage sparrow	*Amphispiza belli belli*	None	Considered in the Contra Costa County General Plan and East Contra Costa County HCP/NCCP EIR; CDFW no longer considers this a species of special concern.
Belted kingfisher	*Ceryle alcyon*	None	Considered in Contra Costa County General Plan EIR; CDFW no longer considers this a species of special concern.
Bufflehead	*Bucephala albeola*	None	Considered in the Contra Costa County General Plan; CDFW no longer considers this a species of special concern.
California horned lark	*Eremophila alpestris actia*	None	Considered in the Brentwood General Plan EIR, SR4 Bypass Project EIR, Contra Costa County General Plan, and East Contra Costa County HCP/NCCP EIR; CDFW no longer considers this a species of special concern.

Species Considered and Rejected for Cumulative Effects Analysis of the East Contra Costa County HCP/NCCP			
COMMON NAME	**SCIENTIFIC NAME**	**STATUS**	**REASON FOR REJECTION**
Cooper's hawk	*Accipiter cooperii*	None	Considered in the Brentwood General Plan EIR and Oakley General Plan EIR; CDFW no longer considers this a species of special concern.
Double-crested cormorant	*Phalacrocorax auritus*	None	Considered in the Contra Costa County General Plan, Contra Costa County General Plan, EIR, and East Contra Costa County HCP/NCCP EIR; CDFW no longer considers this a species of special concern, no nesting colonies in HCP/NCCP Inventory Area.
Ferruginous hawk	*Buteo regalis*	None	Considered in the Oakley General Plan EIR, SR4 Bypass Project EIR, and Contra Costa County General Plan; CDFW no longer considers this a species of special concern.
Great blue heron	*Ardea herodias*	None	Considered in Contra Costa County General Plan, Pittsburg General Plan EIR, and East Contra Costa County HCP/NCCP EIR; known rookeries are outside the East Contra Costa County HCP/NCCP EIR inventory area.
Long-billed curlew	*Numenius americanus*	None	Considered in the SR4 Bypass Project EIR and Contra Costa County General Plan; CDFW no longer considers this a species of special concern.
Osprey	*Pandion haliaetus*	None	Considered in the Brentwood General Plan EIR; CDFW no longer considers this a species of special concern.
Merlin	*Falco columbarius*	None	Considered in the Brentwood General Plan EIR; CDFW no longer considers this a species of special concern.
Prairie falcon	*Falco mexicanus*	None	Considered in the Brentwood General Plan EIR and Contra Costa County General Plan, and SR4 Bypass Project EIR; CDFW no longer considers this a species of special concern.
Sharp-shinned hawk	*Accipiter striatus*	None	Considered in the Brentwood General Plan EIR; CDFW no longer considers this a species of special concern.
Swainson's thrush	*Catharus ustulatus*	None	Considered in the Contra Costa County General Plan EIR; CDFW no longer considers this a species of special concern.
White-faced ibis	*Plegadis chihi*	None	Considered in the Contra Costa County General Plan and Brentwood General Plan EIR; CDFW no longer considers this a species of special concern.
MAMMALS			
San Pablo vole	*Microtus californicus sanpabloensis*	SSC	Considered in the Contra Costa County General Plan EIR and Contra Costa County General Plan; distribution outside of HCP/NCCP Inventory Area (tidal marsh species).
Suisun ornate shrew	*Sorex ornatus sinuosus*	SSC	Considered in the Oakley General Plan EIR and Contra Costa County General Plan distribution outside of HCP/NCCP Inventory Area (tidal marsh species).
Tule elk	*Cervus elaphus nannodes*	SSC	Considered in the Contra Costa County General Plan and Contra Costa County General Plan EIR; distribution outside of HCP/NCCP Inventory Area (restricted to Concord Naval Weapons Naval Station).

Species Considered and Rejected for Cumulative Effects Analysis of the East Contra Costa County HCP/NCCP			
COMMON NAME	**SCIENTIFIC NAME**	**STATUS**	**REASON FOR REJECTION**
Fringed myotis	*Myotis thysanodes*	FSC	Considered in the Brentwood General Plan EIR and Contra Costa County General Plan; federal species of special concern not considered in this analysis.
Long-legged bat	*Myotis volans*	FSC	Considered in the Brentwood General Plan EIR and Contra Costa County General Plan; federal species of special concern not considered in this analysis.
Long-eared myotis	*Myotis evotis*	FSC	Considered in the Brentwood General Plan EIR; federal species of special concern not considered in this analysis.
San Joaquin pocket mouse	*Perognathus inornatus inornatus*	FSC	Considered in the Pittsburg General Plan EIR, Oakley General Plan EIR, SR4 Bypass Project EIR, Contra Costa County General Plan, and Contra Costa County General Plan EIR; federal species of special concern not considered in this analysis.
Small-footed myotis	*Myotis ciliolabrum*	FSC	Considered in the Brentwood General Plan EIR and Contra Costa County General Plan; federal species of special concern not considered in this analysis.
Berkeley kangaroo rat	*Dipodomys heermanni berkeleyensis*	None	Considered in the Pittsburg General Plan EIR, Contra Costa County General Plan, and Contra Costa County General Plan EIR; not a special-status species as defined in this analysis.
Yuma myotis	*Myotis yumanensis*	None	Considered in the Brentwood General Plan EIR and Contra Costa County General Plan; CDFW no longer considers this a species of special concern.