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Santa Clara Valley Habitat Plan
2025 Least Bell's Vireo Surveys

Project #4957-01

Prepared for:

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Section 1. Introduction

The state and federally endangered least Bell's vireo (*Vireo bellii pusillus*) is a covered species under the Santa Clara Valley Habitat Plan (VHP). The VHP requires the Santa Clara Valley Habitat Agency to conduct surveys for this species to help monitor its status in the VHP area. Specifically, Section 7.3.3 of the VHP describes monitoring surveys for the species as follows:

> Surveys of riparian woodland within the Reserve System will be conducted. Initially, the Implementing Entity will document any nesting activity in the study area. Because least Bell's vireos have only been documented twice in the recent past (once nesting, once foraging), other songbird species (e.g., song sparrow, common yellowthroat, Wilson's warbler, black headed grosbeak) that nest in the understory of riparian woodland could be used as indicators of habitat quality until least Bell's vireos are documented nesting in the study area. The focus areas for least Bell's vireo will initially be the species' modeled habitat (Appendix D) within the Reserve System and on other public lands. Surveys along these stream reaches will characterize the songbird communities (also part of natural community monitoring) and detect any least Bell's vireos present during the nesting season. Species status will be based on presence in the Reserve System and other public lands. Monitoring will also occur at least every 5 years in targeted sites outside the vireo's modeled habitat in the study area to determine if it is expanding (in particular, in the northern portion of the County). These surveys would be done by the Implementing Entity.

This report documents a survey conducted for least Bell's vireos by H. T. Harvey & Associates and Habitat Agency personnel along selected streams within the VHP area between early May and mid-June 2025.

Section 2. Survey Area

The 2025 surveys focused on selected stream reaches supporting riparian habitat that provides suitable conditions (e.g., plant species composition and vegetation structure) for use by nesting least Bell's vireos. These reaches, which are shown on Figures 1-6, were as follows:

- Pacheco Creek at the Habitat Agency's Pacheco Creek Reserve; transect length = 6.5 km (Figure 2)
- Pacheco Creek at the Habitat Agency's O'Connell Ranch Reserve; transect length = 4.5 km (Figure 3)
- Llagas Creek at the Habitat Agency's Lakeside Ranch Reserve; transect length = 2.6 km (Figure 4)
- Lower Llagas Creek from Southside Road (at the north end of the South County Regional Wastewater Authority plant) to Bloomfield Avenue, where least Bell's vireo attempted nesting in 1997 and was recorded again in 2001; transect length = 5.0 kilometers (km) (Figure 5)
- Lower Llagas Creek from Bloomfield Avenue to the confluence with the Pajaro River; transect length = 2.9 km from start to end and back (Figure 6)

Each of these locations provides ostensibly suitable nesting habitat for the least Bell's vireo. The least Bell's vireo is characterized as a riparian-obligate breeder (Kus 1998), using dense thickets of early-successional willow shrubs and other low bushes along perennial or ephemeral streams (Franzreb et al. 1994, Kus et al. 2010). Ideal least Bell's vireo nesting habitat includes a wide (greater than 250 m) riparian corridor with dense shrub growth extending vertically from 0.6 to 3 m, few trees greater than 8 cm diameter at breast height (dbh) in the canopy, and an open canopy (Kus 2002, Sharp and Kus 2006, Kus et al. 2010). These structural characteristics of the habitat are more important than vegetation composition. Least Bell's vireos build their nests near the edge of vegetation patches in the forks of low branches in dense shrubs or small trees. The majority of nests in California are built in willows (*Salix* spp.), but a wide variety of other vegetation including coast live oak (*Quercus agrifolia*), California blackberry (*Rubus ursinus*), Mexican elderberry (*Sambucus mexicana*), poison oak (*Rhus diversiloba*), and non-native trees are used by a minority of individuals.

The survey areas provided suitable conditions for nesting least Bell's vireos, supporting riparian woodland dominated by some combination of red willow (*Salix laevigata*), sandbar willow (*Salix exigua*), Fremont cottonwood (*Populus fremontii*), western sycamore (*Platanus racemosa*), valley oak (*Quercus lobata*), boxelder (*Acer negundo*), and mulefat (*Baccharis salicifolia*) interspersed with a variety of herbaceous plants, and with dense vegetation in the lower strata in many areas. Thus, the Habitat Agency determined that if least Bell's vireo were nesting in the VHP area in 2025, surveys in these locations would have a high probability of detecting the species.

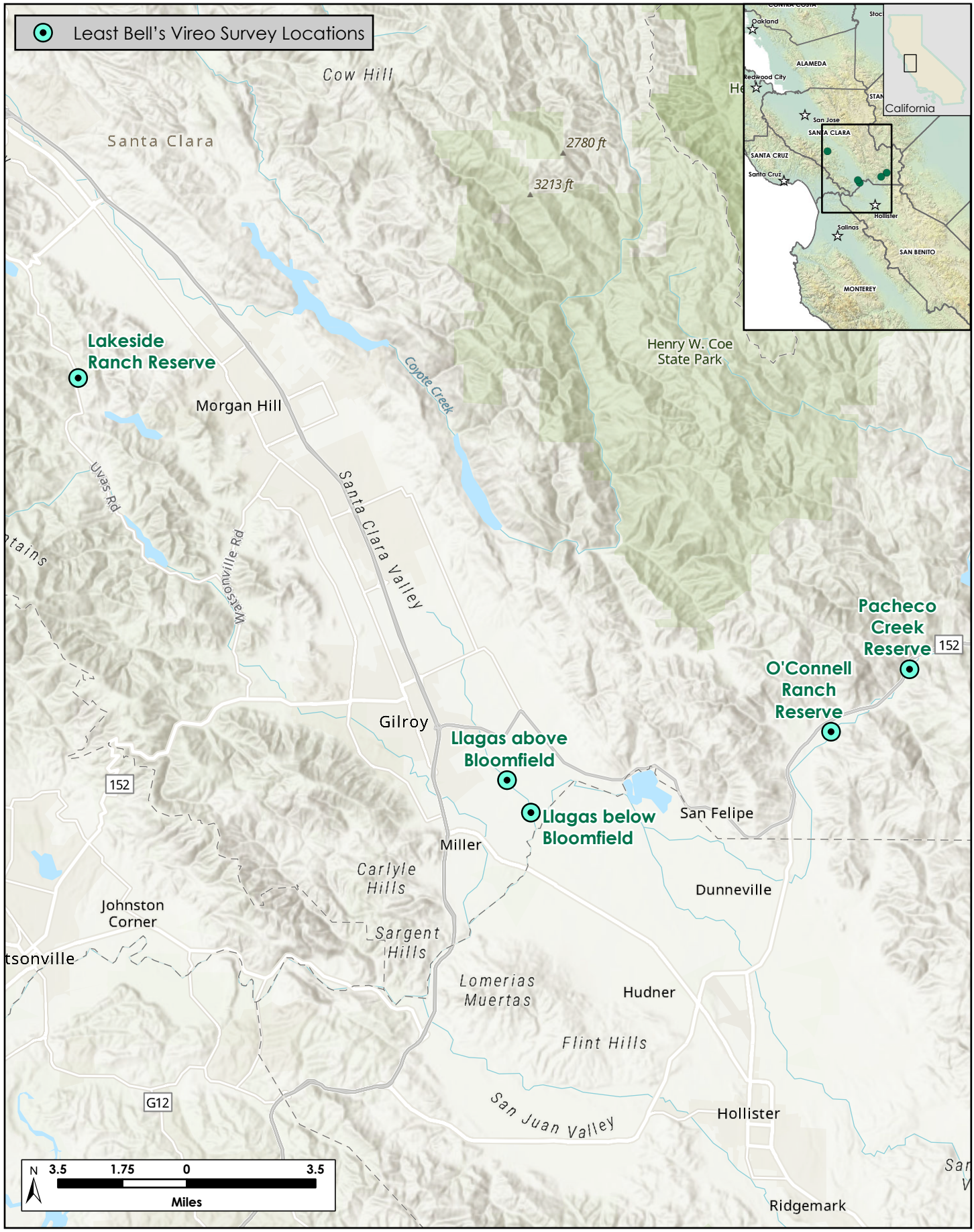

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Figure 1. Vicinity Map
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December 2025

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Figure 2. Pacheco Creek Reserve Survey Transect
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December 2025

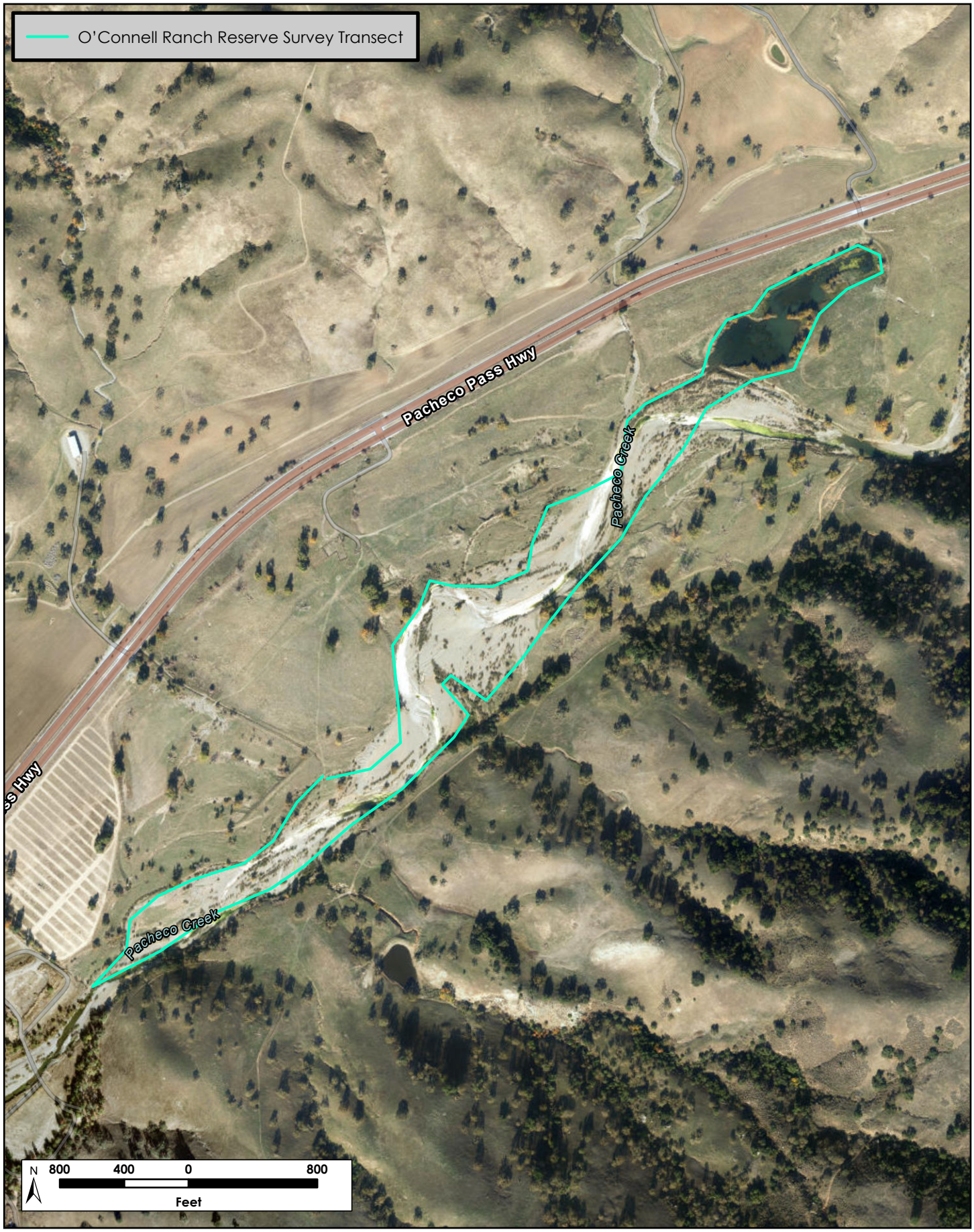

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Figure 3. O'Connell Ranch Reserve Survey Transect
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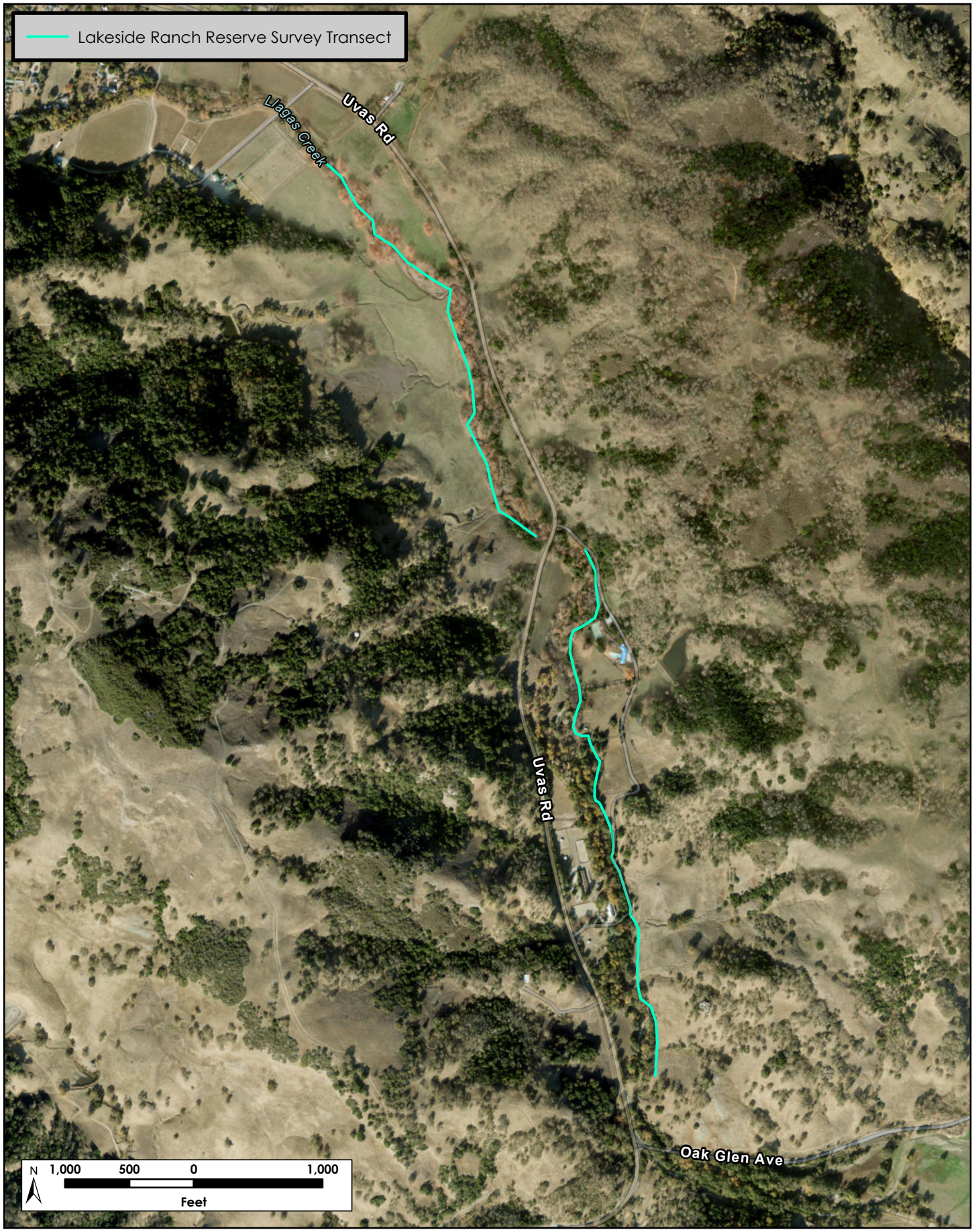

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Figure 4. Lakeside Ranch Reserve Survey Transect
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Figure 5. Lower Llagas Creek (above Bloomfield Avenue) Survey Transect

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Figure 6. Lower Llagas Creek (below Bloomfield Avenue) Survey Transect

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Section 3. Methods

3.1 Field Surveys

Section 7.3.3 of the VHP describes the methodology for monitoring surveys for the species as follows:

> Surveys will consist of either standard point count or area search methods (Ralph et al. 1993) depending on the terrain and size of the reach. The nesting season for riparian songbirds is typically April 15–July 31 in the study area. The period with the highest potential to detect breeding least Bell's vireo is mid- to late May (Santa Clara Valley Audubon Society 2005). Locations of all singing males will be recorded using a GPS receiver, as will any nests or other evidence of breeding activity.

Surveys were conducted from May 2 to June 14, 2025 by H. T. Harvey & Associates wildlife ecologist Steve Rottenborn, who has considerable prior experience with the least Bell's vireo and conducting surveys for the species, and by Habitat Agency biologist Matt Fogarty. Both observers are very familiar with the identification, by sight and sound, of the bird species occurring in the survey areas. Santa Clara Valley Water District biologist Matt Bozzo and Habitat Agency Executive Director Edmund Sullivan each assisted with one survey.

Surveys followed the USFWS *Least Bell's Vireo Survey Guidelines* (USFWS 2001) from the perspective of the general survey period (between April 10 and July 31), survey interval (with surveys at least 10 days apart), daily timing (dawn to 11:00 a.m.), suitability of weather conditions (with no surveys conducted during periods of excessive cold, heat, wind, rain, or other inclement weather conditions), and the general manner in which surveys were conducted. However, whereas the USFWS protocol necessitates eight separate surveys, the purpose of our survey was to determine whether least Bell's vireos established a territory in 2025, rather than trying to more definitively determine presence or absence. In our opinion, a lower level of survey effort would be adequate to determine whether this species established a breeding territory in 2025, based on the highly vocal nature of territorial males and the concentration of survey effort during the peak period for this species' territory establishment and breeding. Therefore, we conducted two surveys of each site.

Surveys were conducted using transect survey methods. During the surveys, surveyors walked transects through (at the Pacheco Creek and O'Connell Ranch Reserve sites) or adjacent to (at the other three locations) potential riparian breeding habitat looking and listening for least Bell's vireos and other birds. A record of all birds seen and heard during surveys was maintained. The time, temperature, cloud cover, wind speed, and wind direction were recorded at the start and end of each survey to document that conditions met the USFWS guidelines. Table 1 contains data on the dates, times, observers, and weather conditions during each survey.

Table 1. Survey Dates, Times, Observers, and Weather Conditions

Transect	Survey Date	Survey Time	Observers	Weather Conditions
Pacheco Creek Reserve	5/3/2025	6:06-11:40am	S. Rottenborn, M. Fogarty, E. Sullivan	Start - 52º F, overcast, no wind; End - 57º F, overcast, wind 5-8 mph from SW
	6/14/2025	6:00-9:40am	S. Rottenborn	Start - 48° F, partly cloudy, no wind; End - 55º F, partly cloudy, wind 3-5 mph from NW
O'Connell Ranch Reserve	5/2/2025	6:05-9:00am	S. Rottenborn, M. Fogarty	Start - 54º F, low overcast, no wind; End - 57º F, low overcast, no wind
	6/3/2025	5:45-8:35am	S. Rottenborn, M. Fogarty	Start - 47º F, mostly clear, no wind; End - 56º F, overcast/high fog, no wind
Lakeside Ranch Reserve	5/18/2025	5:45-8:26am	S. Rottenborn, M. Fogarty	Start - 48º F, clear, no wind; End - 56º F, clear, no wind
	6/10/2025	5:45-7:03am	S. Rottenborn, M. Fogarty	Start - 55° F, overcast, no wind; End - 62º F, partly cloudy, no wind
Lower Llagas Creek above Bloomfield	5/10/2025	5:48-8:53am	S. Rottenborn, M. Fogarty	Start - 55º F, mostly clear, no wind; End - 62º F, clear, no wind
	6/13/2025	5:45-9:30am	S. Rottenborn	Start - 49º F, mostly clear, no wind; End - 60º F, clear, wind 3-4 mph from NW
Lower Llagas Creek below Bloomfield	5/4/2025	5:58-8:15am	S. Rottenborn, M. Fogarty	Start - 48º F, partly cloudy, no wind; End - 50º F, partly cloudy, no wind
	5/30/2025	5:45-7:50am	S. Rottenborn, M. Fogarty, M. Bozzo	Start - 47º F, clear, no wind; End - 59º F, clear, no wind

Section 4. Results and Discussion

4.1 Least Bell's Vireo

No least Bell's vireos were detected during 2025 surveys. In our opinion, this survey was intensive enough that it would likely have detected any least Bell's vireos that established a territory and bred successfully in the survey areas in 2025. Given that only two well-spaced surveys were conducted at each site, it would have been possible for an individual or pair to have briefly occupied habitat along one of these transects, and even attempted unsuccessfully to breed, before dispersing undetected. However, this species' highly vocal nature when territorial makes it relatively easy to detect when it is present. For example, Rottenborn found a pair of least Bell's vireos incidentally in northern San Benito County, just outside the VHP area, on June 14. The male was singing loudly and repeatedly in late morning/early afternoon, and it was seen interacting with a second bird (presumably a female). Had such behavior occurred along one of the survey transects, and had a pair remained on one of the surveyed sites long enough to breed successfully, it is our opinion that the bird(s) would have been detected by our surveys.

4.2 Other Bird Species

4.2.1 General Results

Survey results are detailed in Appendix A. A total of 5,151 bird observations representing 107 avian species were recorded during the 2025 surveys. Species richness was similar among the five transects, with 66-71 species recorded per transect. Average bird abundance/survey was highest at O'Connell Ranch Reserve (690 individuals), owing in part to the large numbers of tricolored blackbirds (*Agelaius tricolor*) flying through the reserve during surveys (see Section 4.2.2 below) and the large number of post-breeding red-winged blackbirds (*Agelaius phoeniceus*) observed foraging there during the June 3 survey. Average abundance was lowest along lower Llagas Creek below Bloomfield Avenue (312 individuals), likely due to the short nature of that transect and the paucity of birds in the adjacent cultivated fields.

Several species, such as Vaux's swift (*Chaetura vauxi*), greater yellowlegs (*Tringa melanoleuca*), cedar waxwing (*Bombycilla cedrorum*), orange-crowned warbler (*Oreothlypis celata*), black-throated gray warbler (*Setophaga nigrescens*), Townsend's warbler (*Setophaga townsendi*), and western tanager (*Piranga ludoviciana*), were northbound migrants that are not expected to breed in the areas where they were observed. However, most of the species observed were species that were breeding, or could have bred, where observed. Confirmation of breeding was not an objective of this survey, but based on breeding evidence such as active nests, adults carrying food for young, and recently fledged young, 29 species were confirmed breeding.

4.2.2 Special-Status Birds and Neotropical Migrants

Eight special-status bird species were observed during the surveys: white-tailed kite (*Elanus leucurus*), golden eagle (*Aquila chrysaetos*), bald eagle (*Haliaeetus leucocephalus*), Swainson's hawk (*Buteo swainsoni*), loggerhead shrike (*Lanius ludovicianus*), yellow-breasted chat (*Icteria virens*), tricolored blackbird, and yellow warbler (*Setophaga petechia*). Following is a summary of these observations:

- A single white-tailed kite, a state fully protected species, was observed during each of the two surveys along lower Llagas Creek upstream from Bloomfield Avenue.

- Golden eagle, a state fully protected species, was represented by three individuals observed at the Pacheco Creek Reserve during one survey.

- Bald eagle, state-listed as endangered and a state fully protected species, was represented by a nesting pair with at least one large chick at O'Connell Ranch Reserve and single adults seen on single surveys at Pacheco Creek Reserve and Lakeside Ranch Reserve.

- Swainson's hawk, state-listed as threatened, was represented by two individuals seen during each survey along lower Llagas Creek upstream from Bloomfield Avenue and single individuals on single surveys at O'Connell Ranch Reserve and along lower Llagas Creek downstream from Bloomfield Avenue.

- Loggerhead shrike, a California species of special concern, was represented by an adult with two recently fledged juveniles at O'Connell Ranch Reserve during one survey.

- Single individuals of the yellow-breasted chat, a California species of special concern, were detected on single surveys along lower Llagas Creek both upstream and downstream from Bloomfield Avenue.

- From mid-April through May 2025, there was an unusually large influx of tricolored blackbird (state-listed as threatened) into southern Santa Clara County and San Benito County, possibly due to breeding failures in more traditional breeding areas in the Central Valley. Several colonies were observed in the Pacheco Creek/San Felipe Lake area, and during that period, it was not unusual to see small flocks of tricolored blackbirds flying around the area, either looking for breeding sites or foraging. Although no breeding colonies were observed during least Bell's vireo surveys, multiple flocks totaling 748 individuals were observed at O'Connell Ranch Reserve on both surveys and during single surveys at Pacheco Creek Reserve and along both of the lower Llagas Creek transects.

- Yellow warbler, a California species of special concern, was represented by 11 individuals, and the species was recorded on all five transects. Some of these may have been late northbound migrants, although the species may breed along all five transects.

A number of Neotropical migrants were observed during our surveys. Neotropical migrants are of conservation concern due to habitat loss and other stressors on both breeding and wintering grounds. Those recorded during our 2025 surveys, in addition to the Swainson's hawk, yellow warbler, and yellow-breasted chat noted above, were lesser nighthawk (*Chordeiles acutipennis*), Vaux's swift, ash-throated flycatcher (*Myiarchus cinerascens*), western kingbird (*Tyrannus verticalis*), western wood-pewee (*Contopus sordidulus*), western flycatcher (*Empidonax difficilis*), western warbling-vireo (*Vireo gilvus*), northern rough-winged swallow (*Stelgidopteryx serripennis*), barn swallow (*Hirundo rustica*), cliff swallow (*Petrochelidon pyrrhonota*), Swainson's thrush (*Catharus ustulatus*), hooded oriole (*Icterus cucullatus*), Bullock's oriole (*Icterus bullockii*), black-throated gray warbler, Townsend's warbler, Wilson's warbler (*Cardellina pusilla*), western tanager, black-headed grosbeak (*Pheucticus melanocephalus*), and lazuli bunting (*Passerina amoena*). All of these species except Vaux's swift, black-throated gray warbler, Townsend's warbler, and western tanager could breed within the study area.

Per Section 7.3.3 of the VHP, describing least Bell's vireo monitoring surveys, songbirds such as the song sparrow (*Melospiza melodia*), common yellowthroat (*Geothlypis trichas*), Wilson's warbler, and black-headed grosbeak that nest in the understory of riparian woodland could be used as indicators of habitat quality until least Bell's vireos are documented nesting in the study area. All four of those species were recorded during surveys, being particularly abundant along the two lower Llagas Creek transects.

4.2.3 Brown-headed Cowbirds

Because least Bell's vireos are highly susceptible to brood parasitism by the brown-headed cowbird (*Molothrus ater*), cowbird abundance along the survey transects was of interest. Cowbirds were recorded in numbers – being the 15th most abundant species – and were noted on all transects. Numbers were lowest at O'Connell Ranch Reserve, where only two were recorded, followed by Pacheco Creek Reserve (with 10); cowbirds were relatively numerous on the other three transects. The abundance of brown-headed cowbirds along streams in the southern part of the VHP area is expected to constrain the potential for least Bell's vireos to establish a viable breeding population in the region.

Section 5. Literature Cited

Franzreb, K. J. Greaves, and R. McKernan. 1994. Least Bell's Vireo. Pages 216-217. *In* Thelander, C. G., and M. Crabtree, editors. Life on the edge: a guide to California's endangered natural resources: wildlife. BioSystems Books, Santa Cruz, CA. 550 p.

Kus, B. E. 1998. Use of restored riparian habitat by the endangered Least Bell's Vireo (*Vireo bellii pusillus*). Restoration Ecology 6(1):75–82.

Kus, B. 2002. Least Bell's Vireo (*Vireo bellii pusillus*). *In* The Riparian Bird Conservation Plan: a strategy for reversing the decline of riparian-associated birds in California. California Partners in Flight.

Kus, B., S. L. Hopp, R. R. Johnson and B. T. Brown. 2010. Bell's Vireo (*Vireo bellii*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology.

Ralph, C. J., G. R. Geupel, P. Pyle, T. E. Martin, and D. F. DeSante. 1993. Handbook of Field Methods for Monitoring Landbirds. Gen. Tech. Rep. PSW-GTR-144. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture; 41 p.

Santa Clara Valley Audubon Society. 2005. Checklist of the Birds of Santa Clara County. Updated March 31, 2005.

Sharp, B. L., and B. E. Kus. 2006. Factors influencing the incidence of cowbird parasitism of Least Bell's Vireos. Journal of Wildlife Management 70(3): 682-690.

Appendix A. Birds Observed during Least Bell's Vireo Surveys

Appendix A. Bird Species Observed during Least Bell's Vireo Surveys, May 2 to June 14, 2025.

		Number of Individuals Recorded During Survey										
		Pacheco Creek Reserve		O'Connell Ranch Reserve		Lakeside Ranch Reserve		Lower Llagas Creek (above Bloomfield)		Lower Llagas Creek (below Bloomfield)		
Common Name[1]	**Scientific Name**	**May 3**	**June 14**	**May 2**	**June 3**	**May 18**	**June 10**	**May 10**	**June 13**	**May 4**	**May 30**	**Total**
Canada Goose	*Branta canadensis*	40*		2		2		14		3		**61**
Wood Duck	*Aix sponsa*	8	6*	4	13*	9*	1		5			**46**
Gadwall	*Mareca strepera*			6			1	6				**13**
Mallard	*Anas platyrhynchos*	23*	17*	24	12	9	11	24		4	2	**126**
Common Merganser	*Mergus merganser*	6	2	4	1	13						**26**
California Quail	*Callipepla californica*	20	13	12*	6	10	22	7	9	8	4	**111**
Wild Turkey	*Meleagris gallopavo*	2		5			10*					**17**
Mourning Dove	*Zenaida macroura*	4	17	12	5	33*	15*	14	21	12	14	**147**
Band-tailed Pigeon	*Patagioenas fasciata*	35	14	28	18	84	34					**213**
Eurasian Collared Dove	*Streptopelia decaocto*		2		2			3	4		1	**12**
Rock Pigeon	*Columba livia*								10	45		**55**
Lesser Nighthawk	*Chordeiles acutipennis*							1				**1**
Vaux's Swift	*Chaetura vauxi*	4										**4**
White-throated Swift	*Aeronautes saxatilis*								1			**1**
Anna's Hummingbird	*Calypte anna*	5	2	1	2	3	2	3	11		1	**30**
American Coot	*Fulica americana*	7		1								**8**
Black-necked Stilt	*Himantopus mexicanus*			2								**2**
Killdeer	*Charadrius vociferus*	5	8	10	18	3*	2	2*	1			**46**
Spotted Sandpiper	*Actitis macularius*			1								**1**
Greater Yellowlegs	*Tringa melanoleuca*			14								**14**
California Gull	*Larus californicus*					1						**1**
Pied-billed Grebe	*Podilymbus podiceps*	2	2*	1	2							**7**
Double-crested Cormorant	*Nannopterum auritum*				3	1	1					**5**
Snowy Egret	*Egretta thula*					7				1		**8**
Black-crowned Night-Heron	*Nycticorax nycticorax*		2	1	15	5					2	**25**
Green Heron	*Butorides virescens*	2	2	3				3	3	1	2	**16**
Great Egret	*Ardea alba*			6	3	3	4	1				**17**
Great Blue Heron	*Ardea herodias*	1	1	4	1		1	1	3	3		**15**
Turkey Vulture	*Cathartes aura*	65	12	18	20	2	1	3	1			**122**
White-tailed Kite	*Elanus leucurus*							1	1			**2**
Golden Eagle	*Aquila chrysaetos*	3										**3**
Cooper's Hawk	*Astur cooperii*			1	1							**2**
Northern Harrier	*Circus hudsonius*							1	1	1		**3**

		Number of Individuals Recorded During Survey										
		Pacheco Creek Reserve		O'Connell Ranch Reserve		Lakeside Ranch Reserve		Lower Llagas Creek (above Bloomfield)		Lower Llagas Creek (below Bloomfield)		
Common Name[1]	**Scientific Name**	**May 3**	**June 14**	**May 2**	**June 3**	**May 18**	**June 10**	**May 10**	**June 13**	**May 4**	**May 30**	**Total**
Bald Eagle	*Haliaeetus leucocephalus*		1	2*	3*	1						**7**
Red-shouldered Hawk	*Buteo lineatus*		1		1	2	2		2	1		**9**
Swainson's Hawk	*Buteo swainsoni*				1			2	2		1	**6**
Red-tailed Hawk	*Buteo jamaicensis*	6	4	3*	6*	2	1	2	1	3	2*	**30**
Belted Kingfisher	*Megaceryle alcyon*	1		1	1	2						**5**
Acorn Woodpecker	*Melanerpes formicivorus*	8	10	6	13	33	42*					**112**
Downy Woodpecker	*Picoides pubescens*							1	2	1		**4**
Nuttall's Woodpecker	*Picoides nuttallii*	2	7	3	3	5	4	3	5	1	2	**35**
Hairy Woodpecker	*Picoides villosus*		1				3	3	6	2	1	**16**
Northern Flicker	*Colaptes auratus*	2	9*	2	4	3	4					**24**
American Kestrel	*Falco sparverius*	2		2	2	1	2					**9**
Ash-throated Flycatcher	*Myiarchus cinerascens*		2	9	5	9	12	14	24	6	12	**93**
Western Kingbird	*Tyrannus verticalis*	12	2	5	2	1		1				**23**
Western Wood-Pewee	*Contopus sordidulus*					3	3					**6**
Western Flycatcher	*Empidonax difficilis*					1		3	6	2	3	**15**
Black Phoebe	*Sayornis nigricans*	2	3	1	2	7	8	4	8	1	6*	**42**
Western Warbling-Vireo	*Vireo gilvus*					6	1	1		2		**10**
Loggerhead Shrike	*Lanius ludovicianus*				3*							**3**
Steller's Jay	*Cyanocitta stelleri*	1	2			4	12					**19**
California Scrub-Jay	*Aphelocoma californica*	12	10	3	9	22	13	17	22	3	4	**115**
Yellow-billed Magpie	*Pica nuttallii*			5	12	17*	2			7		**43**
American Crow	*Corvus brachyrhynchos*	1	1		1	2	2	10	23		5	**45**
Common Raven	*Corvus corax*	2	3	2	1	3	4	2	3		1	**21**
Chestnut-backed Chickadee	*Poecile rufescens*	1	9			10*	4	1	13		3	**41**
Oak Titmouse	*Baeolophus inornatus*	7*	9*	6	6	26*	15	1	14		2	**86**
Tree Swallow	*Tachycineta bicolor*	45	8	30	8	2		23		18	10*	**144**
Violet-green Swallow	*Tachycineta thalassina*		1		13	50*	40*					**104**
Northern Rough-Winged Swallow	*Stelgidopteryx serripennis*	14*	18	1	15	1						**49**
Barn Swallow	*Hirundo rustica*	1	2	6	2	2		4	14	1		**32**
Cliff Swallow	*Petrochelidon pyrrhonota*		4		15	1		15*	130*	12*	20*	**197**
Bushtit	*Psaltriparus minimus*	14	21	1	16	28*	8	12	10	7	13	**130**
Wrentit	*Chamaea fasciata*	1							1		1	**3**
Cedar Waxwing	*Bombycilla cedrorum*	14						5		6		**25**
White-breasted Nuthatch	*Sitta carolinensis*		1	1	7	9*	8*	2	3	1	5	**37**

		Number of Individuals Recorded During Survey										
		Pacheco Creek Reserve		O'Connell Ranch Reserve		Lakeside Ranch Reserve		Lower Llagas Creek (above Bloomfield)		Lower Llagas Creek (below Bloomfield)		
Common Name[1]	**Scientific Name**	**May 3**	**June 14**	**May 2**	**June 3**	**May 18**	**June 10**	**May 10**	**June 13**	**May 4**	**May 30**	**Total**
Bewick's Wren	*Thryomanes bewickii*	17	24	28	13	4	3	34	30	29	13	**195**
Northern House Wren	*Troglodytes aedon*			4	4	4	3			1		**16**
California Thrasher	*Toxostoma redivivum*	1			4	1		11	9	5	5	**36**
Northern Mockingbird	*Mimus polyglottos*							2	5			**7**
European Starling	*Sturnus vulgaris*	60*	12*	40*	40*	75*	32*	4	16	4*	3	**286**
Western Bluebird	*Sialia mexicana*	1	8	8	3	1	5			1		**27**
Swainson's Thrush	*Catharus ustulatus*							1		2		**3**
American Robin	*Turdus migratorius*		1		2*	3	6	2	3*	6*	4	**27**
Scaly-breasted Munia	*Lonchura punctulata*								2			**2**
House Sparrow	*Passer domesticus*								2	4	3	**9**
House Finch	*Haemorhous mexicanus*	18	15	10	20	10	23	13	28	13	14	**164**
Purple Finch	*Haemorhous purpureus*	1	1									**2**
Lesser Goldfinch	*Spinus tristis*	7	2	5		8	12	1			1	**36**
Lawrence's Goldfinch	*Spinus lawrencei*		2	2					2	2		**8**
American Goldfinch	*Spinus tristis*	1						5	3	2*	1	**12**
Lark Sparrow	*Chondestes grammacus*			1		1	1					**3**
Dark-eyed Junco	*Junco hyemalis*					1	4					**5**
Savannah Sparrow	*Passerculus sandwichensis*									1		**1**
Song Sparrow	*Melospiza melodia*	11	7	1	2		1	33	27	22	24	**128**
California Towhee	*Melozone crissalis*	10	5	17	10	19*	21	14	16	8	5	**125**
Spotted Towhee	*Pipilo maculatus*		1		1	7	10	9	13	5		**46**
Yellow-breasted Chat	*Icteria virens*								1	1		**2**
Western Meadowlark	*Sturnella neglecta*	1		6	4					1		**12**
Hooded Oriole	*Icterus cucullatus*							1	3			**4**
Bullock's Oriole	*Icterus bullockii*	2	1	4	1	2	1		1	7	4	**23**
Red-winged Blackbird	*Agelaius phoeniceus*	80	40	20	230	6	79	16	75	7	14	**567**
Tricolored Blackbird	*Agelaius tricolor*	410		180	67			70			21	**748**
Brown-headed Cowbird	*Molothrus ater*	3	7		2	26	12	17	15	21	14	**117**
Brewer's Blackbird	*Euphagus cyanocephalus*			1		4	30*	11	4	20	12	**82**
Great-tailed Grackle	*Quiscalus mexicanus*	5	6*	1	7							**19**
Orange-crowned Warbler	*Oreothlypis celata*					6				1		**7**
Common Yellowthroat	*Geothlypis trichas*							25	21	9	10	**65**
Yellow Warbler	*Setophaga petechia*	1		1		1		3		3	2	**11**
Yellow-rumped Warbler	*Setophaga coronata*	4										**4**

		Number of Individuals Recorded During Survey										
		Pacheco Creek Reserve		O'Connell Ranch Reserve		Lakeside Ranch Reserve		Lower Llagas Creek (above Bloomfield)		Lower Llagas Creek (below Bloomfield)		
Common Name[1]	**Scientific Name**	**May 3**	**June 14**	**May 2**	**June 3**	**May 18**	**June 10**	**May 10**	**June 13**	**May 4**	**May 30**	**Total**
Black-throated Gray Warbler	*Setophaga nigrescens*									1		**1**
Townsend's Warbler	*Setophaga townsendi*									2		**2**
Wilson's Warbler	*Cardellina pusilla*					1		1		7		**9**
Western Tanager	*Piranga ludoviciana*									10		**10**
Black-headed Grosbeak	*Pheucticus melanocephalus*	1	2		3	1	1	9	4	5	5	**31**
Lazuli Bunting	*Passerina amoena*	2				1		6				**9**
Total		**1016**	**363**	**578**	**686**	**617**	**539**	**498**	**640**	**352**	**272**	**5561**

[1] Species are listed in taxonomic order according to the American Ornithological Society's Checklist of North and Middle American Birds (https://checklist.americanornithology.org/taxa/).
* Breeding confirmed