APPENDIX D
Biological Resources

This page intentionally left blank

APPENDIX D1
Botanical Survey Summary

This page intentionally left blank

Appendix D1

Summary of Botanical Studies in the Study Area

The following summarizes the botanical studies conducted in the study area between 1981 and 2013.

Gustafson 1981

Gustafson conducted one of the earliest full taxonomic floristic surveys of Areas A and B of the Reserve, with the identified plants deposited in the Los Angeles County Natural History Museum. No mapping or transects were completed at this time, but some rough cover estimates were made. Gustafson found a total of 235 plant species, 130 of which were introduced or naturalized, and 105 of which were indigenous to California. Weedy introduced components covered approximately 40% of the area under investigation (Areas A and B). Approximately 15% of the 40% nonnative vegetation cover was attributed to iceplant species (Johnston et al. 2011).

Henrickson 1991

Triggered by the Playa Vista Project, James Henrickson, PhD. conducted a botanical resources survey of the Reserve in April to October 1990. The entire limits of Areas A, B, and C (and D, which is no longer part of the Reserve) were traveled on foot with a detailed account of all plant species present along with community associations observed. Each of these areas is quite diverse in habitat type and species composition. Three special-status plant species were observed in Area B: woolly seablite (*Suaeda taxifolia*), Lewis' evening primrose (*Camissoniopsis lewisii*), and suffrutescent wallflower (*Erysimum insulare* ssp. *suffrutescens*). Populations of woolly seablite, a typical salt marsh species, were observed in areas classified as tidal pickleweed flats but were restricted to the upland margins of the Ballona Creek channel. Lewis' evening primrose and suffrutescent wallflower were also observed in Area B but were concentrated in areas classified as sand dunes and flats habitat, which are remnants of the extensive dune system that bordered the Santa Monica Bay. These species were not found in any other region of the Reserve. Of all the remaining plant species documented, none were considered special-status (WRA 2011).

Psomas 1995

A follow up of Henrickson's 1991 survey was conducted in April to mid-October 1995, led by Dr. Edith Read of Psomas and Associates and field support staff provided by Impact Sciences. Presence or absence of the special-status species reported by Henrickson were confirmed during the 1995 walking surveys and any additional special-status species observed along with any notable differences in vegetation communities were documented. Prior to any field work commencing, Psomas and Associates compiled a list of plant species of potential concern from the California Natural Diversity Database (CNDDB), the California Native Plant Society's Inventory of Rare and Endangered Vascular Plants (CNPS), and Henrickson's 1991 survey. On account of the extensive nature of Henrickson's survey and the detailed species list obtained, it was justified that the 1995 studies would solely focus on the flowering and fruiting periods of the sensitive species. If possible, reference populations for targeted species in the southern coastal California area were visited to confirm accurate survey timing for each species (WRA 2011).

Results of the Psomas Study concluded that two of the same sensitive species mapped by Henrickson (1991), Lewis' evening primrose and suffrutescent wallflower, were still present on site. In addition, southern tarplant (*Centromadia parryi* ssp. *australis*) was also observed for the first time. Woolly seablite was documented as an observed special-status species by Henrickson; however, no mention of this species was found within the Psomas Study (WRA 2011).

Populations of Lewis' evening primrose were recorded in Areas B and C, which coincide with documented observations made by Henrickson (1991). No individuals of this species were observed elsewhere within the Reserve. It is estimated that the total population size in Area B was approximately 5,000 individuals and Area C contained approximately 6,000 individuals. All observed individuals were found to occur on sandy soils, in areas away from dense grasses and weeds. This species was found to commonly co-occur with California sun cup (*Camissoniopsis bistorta*), a species that holds no sensitivity status. Due to the close relationship of these species and their nearly identical morphology, it is believed by Dr. Read that hybrids between these two species are possible in areas where they co-occur, which she believed could lead to potential mis-identification. Because of this potential hybridization between species, individuals mapped during the Psomas Study may have been hybrids and therefore results of this study were unable to determine whether this species had expanded or declined (WRA 2011).

The Henrickson study documented suffrutescent wallflower as occurring in the dune habitats of Area B and its continued existence was confirmed by the Psomas 1995 surveys with approximately 10 individuals observed. It was not indicated by Henrickson as to how many individuals were present during his surveys, so it is unclear as to this populations' progression. Results of the Psomas study reported that the expansion of this species appeared to be hindered by increasing densities of ripgut brome (*Bromus diandrus*) (WRA 2011).

Southern tarplant was not observed by Henrickson but was recorded during the Psomas surveys in areas east of the baseball fields of Area C. Specific morphological characteristics, such as black anthers and prickly, sticky foliage make this species easily identifiable from other species in this genus. Extensive surveys were conducted during the 1995 surveys for this species to avoid overlooking individuals that occur within dense stands of common tarplant (*Deinandra fasciculata* [*Hemizonia fasciculata*]). All individuals, except for one, of this species were found to occur in compacted, clay soil in shallow depressions and openings in dense stands of curly dock (*Rumex crispus*) and horseweed (*Conyza canadensis*). The population of southern tarplant in Area C is the only known population in the region of Marina del Rey. The nearest population outside of the Ballona Wetlands is in Harbor Regional Park, approximately 10 miles south. Botanists involved with the Psomas Study visited this population prior to field surveys to confirm proper timing of surveys. This population was found to be extant (WRA 2011).

Vegetation communities reported in the Psomas study matched the communities discussed by Henrickson in 1991 except for two areas in Area B where pickleweed saltmarsh areas and freshwater marsh habitat along Jefferson had since expanded (WRA 2011).

WRA 2002

As part of ongoing restoration at the Reserve, the dune habitat in the western end of Area B was monitored in 2002 by Michael Josselyn and Becky Miller of WRA, Inc. (WRA). The purpose of this monitoring effort was to provide all interested parties with an update of the Ballona Dunes post restoration activities and also to provide a baseline for which all future restoration could be measured against. All vegetation in the sand dune habitat was assessed during the 2002 study by walking homogenous stands of plant communities with an advanced global positioning system (GPS) backpack unit. Multiple species, both native and nonnative, were recorded within this area. Many of the dominant plant species observed in the dune areas on the western edge of Area B during the WRA 2002 study coincided with species observed during focused rare plant surveys conducted in 2010 and 2011, such as dune lupine (*Lupinus chamissonis*), sand verbena (*Abronia* sp.), and coast buckwheat. The area east of the dunes in Area B, made up of coastal salt marsh habitat, continued to be dominated by species indicative of this habitat such as pickleweed, alkali heath, salt grass, and saltbush (*Atriplex lentiformis*) during the WRA 2002 study. These same species were observed again during protocol-level rare plant surveys conducted in 2010 and 2011 (WRA 2011).

Results of 2002 vegetation survey did not report any observations of suffrutescent wallflower, though past surveys (Henrickson 1991 and Psomas 1995) have confirmed presence of this species in Area B. Furthermore, some sun cup species (*Camissoniopsis* spp. [*Camissonia* spp.]) were observed; however, they were not identified to species so it is unclear whether any of these species observed were considered rare (e.g., Lewis' evening primrose). Though no special-status species were observed during these 2002 surveys, results of this survey are still useful in providing an updated species account of this area (WRA 2011).

CLAEMD Study 2004/2005

Upon completion of the installation of two self-regulating tide gates and a one-way flap gate in March 2003 in Area B, between Ballona Creek and the Reserve, it was determined by agencies involved in the flap gate installation process (U.S. Army Corps of Engineers [USACE], National Marine Fisheries Service, City staff, Kathy Keane Biological Consulting, and MEC Analytical Systems/Weston Solutions) that vegetation surveys were necessary to assess any change in pickleweed stands with respect to increased inundation. Expert assistance was obtained from Dr. Philippa Drennan of Loyola Marymount University (LMU) for taxonomic and protocol quality assurance. Methods for vegetation surveying consisted of the establishment of 10 permanent transects at various locations. Eight transects were located at various distances (3-meter, 5-meter, 9-meter, and 18-meter) parallel to their closest channel while the remaining two transects were located somewhat equidistant between and perpendicular to the two main channels of Area B. Eight of the 10 transects were specifically positioned to capture any changes in vegetation percent cover, canopy height, and soil chemistry as a result of increased inundation. The remaining two transects, those set at equidistance from the two main channels, functioned as controls. 0.25 square meter (m^2) quadrats at 5-meter intervals along transects were used to assess vegetation. Tallest plant shoot measurements and identification of all species within the quadrat were recorded. This process was repeated for each transect (WRA 2011).

Though the majority of the results of the CLAEMD Study were not intended to provide floristic survey data, they do provide data on presence, but not absence, of species within the western portion of Area B. Populations of seablite were observed on site; however, it is unclear as to whether these stands are of those of the special-status species (woolly seablite). In addition, coast buckwheat was observed within the Reserve. Due to the nature of the survey, no exact locations of seablite or coast buckwheat were reported in the CLAEMD Study. It is assumed that exact species locations are available from actual hard copy field data collected during transect surveys (WRA 2011).

LA City 2005

In 2004, the City of Los Angeles (LA City) conducted a post-construction biological survey of vegetation for the USACE after the installation of two self-regulating tide gates (SRTs) and a one-way flap gate between Ballona Creek and the BWER (LA City 2005). Ten 30-meter permanent vegetation transects were established in the salt marsh in the western portion of Area B. Transects were located adjacent and parallel to the tidal channels at 3, 5, 9, 18, and 30 meter distances (two at each distance). The LA City survey team used a 0.25 m^2 (0.5 meter x 0.5 meter) quadrat sampling method spaced every five meters, for a total of six quadrats per transect (Johnston et al. 2011).

LA City found nine plant species during their fall 2004 surveys, with most of the transects dominated by Salicornia virginica (pickleweed) or fleshy jaumea (*Jaumea carnosa*). In addition, the majority of the nonnative plant cover comprised A. semibaccata and rabbitfoot grass (*Polypogon monspeliensis*), with foxtail chess (*Bromus madritensis* spp. *rubens*) occurring in one quadrat (Johnston et al. 2011).

CDFG 2007

The California Department of Fish and Game (CDFG; now California Department of Fish and Wildlife) conducted a site-wide assessment of the major vegetation alliances and habitats to correlate with state-wide data. Plant community type (i.e., alliance-level) surveys were conducted by Todd Keeler-Wolf (CDFG), following the "Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities" (CDFG 2009). The Reserve was divided into 16 habitat groups. The generalized habitat categories were based on characteristics such as structural feature, ecosystem function, and landscape process as well as dominant or characteristic plant species, characteristic animal species, and presumed extirpated or rare or endangered species (Johnston et al. 2011).

BOLD Study 2007

As part of an agreement between the Playa Vista landowners and the Friends at Ballona Wetlands, an 8-acre parcel located in the southwest corner of Area B was designated as the site for an outdoor learning laboratory, referred to as the Ballona Outdoor Learning and Discovery (BOLD) area (BOLD 2007). An assessment of the BOLD area, which included soil and groundwater characteristics, hydrology assessments, wetland delineation, biota present, and cultural resources, was necessary in order to proceed with permitting activities and ultimately begin construction. The above assessment required a detailed account of all plant species observed on site which included plant species identification and mapping of plant communities present. Expert assistance was provided by Dr. Philippa Drennan of LMU who also assisted in the CLAEMD Study 2004/2005. A first broad assessment of the area found it to be dominated by mostly nonnative, invasive species such as sea-fig (*Carpobrotus edulis*). Lower elevations in the northwest corner of the BOLD parcel were dominated by pickleweed with small amounts of salt grass present, an indication that this particular area currently receives sufficient tidal flushing to support coastal wetland vegetation (WRA 2011).

The following is a description of the methods employed for the BOLD Study 2007:

> Site visits were conducted in March through June 2005. The entire area to be assessed included the full 8-acre BOLD parcel along with an additional 100-foot radius to the north and east. In order to prepare a vascular plant checklist for the BOLD area, all vascular plant taxa within the BOLD and BOLD-adjacent areas were identified and, where possible, collected during site visits on the following dates: 10 March 2005, 5 April 2005, 19April 2005, 26 April 2005, 10 May 2005, 1 June 2005, 8 June 2005, 17 June 2005, and 22June 2005.

Vegetation surveying was accomplished by establishing transect lines, 30 meters long, at 21 sites within the BOLD area that showed spatial and/or vegetation differences. An additional site was sampled in the dunes area at the western edge of the Reserve. The percentage of species cover within 0.25 m^2 quadrats and positioned at 5-meter intervals along each transect was used to characterize the dominant species for each vegetation type. Transect sampling was conducted on 24 June 2005 and 27 June 2005 (WRA 2011).

Results of the above vegetation surveys concluded that there were 134 total species present within the BOLD area. Of these 134 species found, 85 were considered nonnative (BOLD 2007). None of the potentially occurring special-status species were found to occur within the BOLD parcel. Stands of coast buckwheat were, however, found to occur within this area, though exact location was not specified (WRA 2011).

San Gabriel Rivers Watershed Council 2007

Nonnative plant mapping surveys were conducted for four species by J. Casanova of the Los Angeles and San Gabriel Rivers Watershed Council, with assistance from the California State Coastal Conservancy. The four species were pampas grass (*Cortaderia selloana*), Geraldton carnation weed (*Euphorbia terracina*), Canary Island palm (*Phoenix canariensis*), and Washington fan palm (*Washingtonia robusta*) (Johnston et al. 2011).

Johnston et al. 2011 and 2012

Plant species observed were documented by the team conducting vegetation transect surveys throughout all areas of the Reserve during 2009–2010 and 2010–2011; however, these surveys were not floristic in nature and sampled each habitat type using quadrats along pre-determined transects (WRA 2011).

WRA 2011

Prior to surveys in 2010 and 2011, WRA and ICF International (ICF) assessed the CNPS, U.S. Fish and Wildlife Service (USFWS), and the CNDDB lists to determine the habitat preferences for special-status species recorded in the vicinity of the Reserve and determined that 30 special-status plant species have the potential to occur within the Reserve. July 2010 surveys coincided with peak blooming periods for 11 potentially occurring special-status plant species; October 2010 coincided with peak blooming periods for 6 special-status plant species; and April 2011 coincided with peak blooming periods for 13 special-status plant species. In addition, WRA staff spoke with knowledgeable botanists from the Rancho Santa Ana Botanic Garden who are familiar with these species and visited reference populations of species, as possible, to determine the likelihood of presence of sensitive plant species in the project area prior to surveys (WRA 2011).

WRA conducted focused, rare plant surveys to update all previously conducted floristic, protocol-level surveys for the 30 potential special-status plant species with potential to occur within the Reserve during July. WRA also conducted floristic, protocol-level surveys in October and April. All three surveys were conducted by walking transects or traversing areas with suitable habitat throughout the site. Per CDFG 2009 guidelines, rainfall data was collected for Santa Monica, California, the nearest rainfall gauge. Rainfall data for this region indicated that precipitation was within the normal range for 2010 and is slightly above the average for 2011 (WRA 2011).

Approximately 15 individuals of suffrutescent wallflower (*Erysimum insulare* ssp. *suffrutescens*, CNPS List 4), 85 individuals of woolly seablite (*Suaeda taxifolia*, CNPS List 4) were observed within the Reserve in July and October 2010. Approximately 12,300 individuals of Lewis' evening primrose (*Camissoniopsis lewisii*, CNPS List 3), 350 individuals of Orcutt's pincushion (*Chaenactis glabriuscula* var. *orcuttiana*, CNPS List 1B), approximately 600 individuals of South Coast branching phacelia (*Phacelia ramosissima* var. *austrolitoralis*, CNPS List 4), and an additional 14 individuals, for a total of 29 individuals, of suffrutescent wallflower were observed within the Reserve in April 2011. No other special-status plant species were observed in the Reserve. In addition, approximately 0.24 acre of coast buckwheat (*Eriogonum parviflorum*), habitat for Quino checkerspot (*Euphydryas editha quino*) and/or El Segundo blue (*Euphilotes battoides alluni*) butterflies, was mapped on the site (WRA 2011).

The Bay Foundation 2013

In 2013, biologists from the Bay Foundation updated the categorization and mapping of the major vegetation alliances and habitats on the Reserve. This information had not been updated since last performed by the California Department of Fish and Wildlife in 2007. The field work for the update was conducted between May and October 2013 in accordance with methods created by the Vegetation and Classification Mapping Program with supplemental information derived from monitoring surveys conducted between 2009 and 2013 throughout the Reserve (Johnston et al. 2011, 2012). Habitat categories were classified on an individual basis based on geo-referenced polygons classifying dominant vegetation community and physical characteristics such as soil and hydrology. When applicable, categories are "crosswalked" from alliance and association types in accordance with the Manual of California Vegetation (Sawyer 2009) and from previous site surveys. Additional habitat categories were identified to accurately reflect current site conditions (i.e., nonnative habitats).

APPENDIX D2
Vegetation Alliance and Association Acreages by Habitat Type

This page intentionally left blank

Appendix D2

Vegetation Alliance and Association Acreages by Habitat Type

The following provides a list of the vegetation alliances and associations found on the study site, summarizes the habitat type(s) these vegetation alliances and associations are found in, and provides existing acreage of each. It should be noted that portions of the study site not covered in The Bay Foundation vegetation mapping included the Marina del Rey Property and two of the seven potential well relocation sites on the southern end of the SoCalGas Property. In addition, no lands adjacent to the study site were mapped at this level.

Table D2-1. Vegetation Alliance and Association Acreages by Habitat Type.

		Category 1		Category 2							Category 3		Category 4									Category 5		
Vegetation Type	**Nativity**	**Subtidal**	**Intertidal**	**Tidal Wetland**	**Non-tidal Salt Marsh**	**Ruderal Marsh**	**Brackish Marsh**	**Brackish Scrub**	**Salt Pan**	**Riparian Scrub and Woodland**	**Iceplant Wetland**	**Pampas Grass**	**Dune**	**Non-native Dune**	**Disturbed Hard-pack**	**Annual / Ruderal Grassland**	**Non-native "Tall" Herbaceous**	**Iceplant Stand**	**Upland Scrub**	**Non-native Tree**	**Eucalyptus Grove**	**Developed**	**Acres**	**Total Polygons**
Acacia spp. mu	nn																			1.70			1.7	15
Acmispon glaber - Croton Californicus mu	n												3.62										3.6	4
Acmispon glaber alliance	n												1.08										1.1	1
Ambrosia psilostachya alliance	n												0.14										0.1	1
Anemopsis californica alliance	n						0.10																0.1	1
Artemesia californica alliance	n												0.66						1.43				2.1	4
Arthrocnemum subterminale alliance	n			1.02	0.56																		1.6	6
Arundo donax stand	nn																0.38						0.4	7
Atriplex lentiformis alliance	n							10.56															10.6	18
Atriplex prostrata stand	nn					0.04																	0.0	1
Atriplex semibaccata mu	nn					0.04																	0.0	1
Avena fatua - mixed herb association	nn															2.87							2.9	1
Baccharis pilularis - annual grass/ herb association	c																0.87		2.06				2.9	7
Baccharis pilularis - Artemesia californica association	n																		20.07				20.1	5
Baccharis pilularis - Baccharis salicifolia mu	n																		0.22				0.2	2
Baccharis pilularis - Carpobrotus edulis mu	c																	0.26					0.3	3
Baccharis pilularis - Glebionis coronaria mu	c																0.10						0.1	1
Baccharis pilularis - Isocoma menziesii - annual grass mu	c															0.95							0.9	1
Baccharis pilularis - Malosma laurina mu	n																		0.89				0.9	1
Baccharis pilularis alliance	n																		14.47				14.5	14
Baccharis salicifolia - annual grass mu	c									0.12													0.1	2
Baccharis salicifolia - Helminotheca echioides mu	c					0.19																	0.2	2

		Category 1		Category 2							Category 3		Category 4									Category 5		
Vegetation Type	**Nativity**	**Subtidal**	**Intertidal**	**Tidal Wetland**	**Non-tidal Salt Marsh**	**Ruderal Marsh**	**Brackish Marsh**	**Brackish Scrub**	**Salt Pan**	**Riparian Scrub and Woodland**	**Iceplant Wetland**	**Pampas Grass**	**Dune**	**Non-native Dune**	**Disturbed Hard-pack**	**Annual / Ruderal Grassland**	**Non-native "Tall" Herbaceous**	**Iceplant Stand**	**Upland Scrub**	**Non-native Tree**	**Eucalyptus Grove**	**Developed**	**Acres**	**Total Polygons**
Baccharis salicifolia alliance	**n**									5.84							0.02		0.20				**6.1**	**14**
Bassia hyssopifolia - Spergularia macrotheca - annual grass mu	**nn**					1.05																	**1.0**	**1**
Bassia hyssopifolia mu	**nn**					0.16								0.08			0.37						**0.6**	**4**
Bolboschoenus maritimus alliance	**n**						0.80																**0.8**	**2**
Bolboschoenus spp. - Malvella leprosa mu	**n**						0.48																**0.5**	**1**
Brassica nigra - Euphorbia terracina mu	**nn**																0.36						**0.4**	**2**
Brassica nigra - Gleibonis coronaria mu	**nn**																15.68						**15.7**	**6**
Brassica nigra - Ricinus communis mu	**nn**																0.33						**0.3**	**1**
Brassica nigra - Salsola tragus mu	**nn**																0.21						**0.2**	**1**
Brassica nigra stand	**nn**														0.91		65.67						**66.6**	**22**
Bromus spp. stand	**nn**															0.03							**0.0**	**1**
Bromus diandrus - Avena spp. stand	**nn**													0.82									**0.8**	**1**
Bromus diandrus - Frankenia salina mu	**c**					0.05																	**0.1**	**1**
Bromus diandrus - mixed herb stand	**nn**													4.17		2.39							**6.6**	**14**
Bromus madritensis stand	**nn**															0.11							**0.1**	**1**
Bromus spp. - mixed herb stand	**nn**															3.75							**3.7**	**4**
Bromus spp. stand	**nn**													0.03		3.49							**3.5**	**11**
California annual grassland mu	**nn**															0.80							**0.8**	**1**
Carpobrotus edulis - Acacia sp. mu	**nn**																	0.21					**0.2**	**1**
Carpobrotus edulis - Baccharis pilularis - Glebionis coronaria mu	**c**																1.90		2.24				**4.1**	**3**
Carpobrotus edulis - Distichlis littoralis mu	**c**										0.72							0.05					**0.8**	**6**
Carpobrotus edulis - Glebionis coronaria mu	**nn**																1.01						**1.0**	**1**
Carpobrotus edulis - mixed herb mu	**nn**																	0.89					**0.9**	**5**
Carpobrotus edulis stand	**nn**										1.21			0.66				26.32					**28.2**	**97**

		Category 1		Category 2							Category 3		Category 4									Category 5		
Vegetation Type	**Nativity**	**Subtidal**	**Intertidal**	**Tidal Wetland**	**Non-tidal Salt Marsh**	**Ruderal Marsh**	**Brackish Marsh**	**Brackish Scrub**	**Salt Pan**	**Riparian Scrub and Woodland**	**Iceplant Wetland**	**Pampas Grass**	**Dune**	**Non-native Dune**	**Disturbed Hard-pack**	**Annual / Ruderal Grassland**	**Non-native "Tall" Herbaceous**	**Iceplant Stand**	**Upland Scrub**	**Non-native Tree**	**Eucalyptus Grove**	**Developed**	**Acres**	**Total Polygons**
Centaurea diluta stand	**nn**																0.85						**0.8**	**2**
Clematis lingusticifolia mu	**n**									0.21													**0.2**	**1**
Cortaderia selloana - Salicornia pacifica mu	**c**											0.08											**0.1**	**1**
Cortaderia selloana stand	**nn**											5.71											**5.7**	**23**
Cressa truxillensis - annual grass mu	**c**					8.47																	**8.5**	**9**
Cressa truxillensis - Distichlis littoralis alliance	**n**				1.40																		**1.4**	**7**
Cressa truxillensis - Festuca perennis - Helminotheca echioides mu	**c**					1.27																	**1.3**	**1**
Cressa truxillensis - Festuca perennis mu	**c**					0.71																	**0.7**	**1**
Cressa truxillensis - mixed herb mu	**c**					0.26																	**0.3**	**1**
Cressa truxillensis mu	**n**			0.24	7.69	0.40																	**8.3**	**28**
Croton californicus mu	**n**												0.24										**0.2**	**1**
Deinandra fasciculata - ruderal herbaceous mu	**c**																0.17						**0.2**	**1**
Distichlis littoralis - annual grass association	**c**					1.77																	**1.8**	**5**
Distichlis littoralis - Bassia hyssopifolia mu	**c**					0.06																	**0.1**	**1**
Distichlis littoralis - Bromus diandrus association	**c**					0.87																	**0.9**	**2**
Distichlis littoralis - Heliotropium curassavicum mu	**n**				0.58																		**0.6**	**1**
Distichlis littoralis - Jaumea carnosa association	**n**			0.05																			**0.1**	**1**
Distichlis littoralis - mixed herb mu	**c**					0.32																	**0.3**	**2**
Distichlis littoralis - Salicornia pacifica association	**n**			0.10	0.30																		**0.4**	**3**
Distichlis littoralis alliance	**n**			0.18	3.40								0.46										**4.0**	**20**
Elymus triticoides alliance	**n**				0.03		0.07						0.24										**0.3**	**3**

		Category 1		Category 2							Category 3		Category 4									Category 5		
Vegetation Type	**Nativity**	**Subtidal**	**Intertidal**	**Tidal Wetland**	**Non-tidal Salt Marsh**	**Ruderal Marsh**	**Brackish Marsh**	**Brackish Scrub**	**Salt Pan**	**Riparian Scrub and Woodland**	**Iceplant Wetland**	**Pampas Grass**	**Dune**	**Non-native Dune**	**Disturbed Hard-pack**	**Annual / Ruderal Grassland**	**Non-native "Tall" Herbaceous**	**Iceplant Stand**	**Upland Scrub**	**Non-native Tree**	**Eucalyptus Grove**	**Developed**	**Acres**	**Total Polygons**
Encelia californica - Artemesia californica association	**n**												0.89										**0.9**	**1**
Eriogonum parvifolium - Heterotheca grandifora mu	**n**												0.09										**0.1**	**1**
Eriogonum parvifolium mu	**n**												0.25										**0.2**	**2**
Erodium spp. - annual grass mu	**nn**															0.12							**0.1**	**1**
Eucalyptus spp. stand	**nn**																				3.40		**3.4**	**5**
Euphorbia terracina - Glebionis coronaria - annual grass mu	**nn**																0.31						**0.3**	**1**
Euphorbia terracina mu	**nn**														0.45		7.01	0.01					**7.5**	**27**
Euthamia occidentalis mu	**n**						1.03																**1.0**	**7**
Exotic landscaping mu	**nn**																			2.65			**2.7**	**3**
Frankenia salina - annual grass mu	**c**					1.02																	**1.0**	**4**
Frankenia salina - Brassica nigra mu	**c**					1.61																	**1.6**	**3**
Frankenia salina - Carpobrotus edulis mu	**c**										0.03												**0.0**	**1**
Frankenia salina - Cressa Truxillensis mu	**n**					0.04																	**0.0**	**1**
Frankenia salina - Distichlis littoralis association	**n**				0.28	0.60																	**0.9**	**4**
Frankenia salina alliance	**n**				0.79	0.01																	**0.8**	**17**
Glebionis coronaria - annual grass mu	**nn**																12.23						**12.2**	**1**
Glebionis coronaria mu	**nn**																7.83					0.20	**8.0**	**14**
Gleibionis coronaria - annual grass mu	**nn**																0.49						**0.5**	**1**
Helminotheca echioides - annual grass mu	**nn**					2.75																	**2.7**	**2**
Helminotheca echioides - Cressa truxillensis mu	**c**					0.19																	**0.2**	**1**
Helminotheca echioides - Distichlis littoralis mu	**c**					0.18																	**0.2**	**3**
Helminotheca echioides - Malvella leprosa mu	**c**					0.71																	**0.7**	**2**

		Category 1		Category 2							Category 3		Category 4									Category 5		
Vegetation Type	**Nativity**	**Subtidal**	**Intertidal**	**Tidal Wetland**	**Non-tidal Salt Marsh**	**Ruderal Marsh**	**Brackish Marsh**	**Brackish Scrub**	**Salt Pan**	**Riparian Scrub and Woodland**	**Iceplant Wetland**	**Pampas Grass**	**Dune**	**Non-native Dune**	**Disturbed Hard-pack**	**Annual / Ruderal Grassland**	**Non-native "Tall" Herbaceous**	**Iceplant Stand**	**Upland Scrub**	**Non-native Tree**	**Eucalyptus Grove**	**Developed**	**Acres**	**Total Polygons**
Helminotheca echioides mu	**nn**					0.85																	**0.9**	**5**
Heterotheca grandiflora - Artemesia douglasiana - annual grass mu	**c**															0.13							**0.1**	**1**
Heterotheca grandiflora mu	**n**														0.11								**0.1**	**1**
Isocoma menziesii alliance	**n**																		0.14				**0.1**	**2**
Jaumea carnosa mu	**n**			0.40							0.09												**0.5**	**11**
Juncus mexicanus alliance	**n**						0.11																**0.1**	**2**
Lupinus chamissonis - Ericameria ericoides alliance	**n**												0.04										**0.0**	**1**
Lupinus chamissonis association	**n**												2.79										**2.8**	**4**
Malephora crocea stand	**nn**																	0.02					**0.0**	**1**
Malosma laurina alliance	**n**																		0.08				**0.1**	**1**
Malvella leprosa - annual grass mu	**c**					1.99																	**2.0**	**1**
Malvella leprosa mu	**n**				1.35																		**1.3**	**4**
Myoporum laetum stand	**nn**																			0.60			**0.6**	**2**
Opuntia microdasys mu	**nn**																		0.02				**0.0**	**1**
Palm spp. mu	**nn**																			0.31			**0.3**	**4**
Phacelia ramossisima mu	**n**												0.11										**0.1**	**1**
Psuedognaphalium canescens mu	**n**														0.45								**0.4**	**1**
Psuedognaphalium sp. - Heterotheca grandiflora - Erodium spp. mu	**c**														1.09								**1.1**	**1**
Psuedognaphalium sp. - Heterotheca grandiflora mu	**n**														1.04								**1.0**	**1**
Raphanus sativus stand	**nn**																2.32						**2.3**	**5**
Rhus integrifolia alliance	**n**																		0.06				**0.1**	**1**
Ricinus communis - Raphanus sativus mu	**nn**																0.13						**0.1**	**1**
Ricinus communis mu	**nn**																0.46						**0.5**	**3**
Ruderal herbaceous mu	**nn**													8.58	0.92		40.57					0.25	**50.4**	**31**

		Category 1		Category 2							Category 3		Category 4									Category 5		
Vegetation Type	**Nativity**	**Subtidal**	**Intertidal**	**Tidal Wetland**	**Non-tidal Salt Marsh**	**Ruderal Marsh**	**Brackish Marsh**	**Brackish Scrub**	**Salt Pan**	**Riparian Scrub and Woodland**	**Iceplant Wetland**	**Pampas Grass**	**Dune**	**Non-native Dune**	**Disturbed Hard-pack**	**Annual / Ruderal Grassland**	**Non-native "Tall" Herbaceous**	**Iceplant Stand**	**Upland Scrub**	**Non-native Tree**	**Eucalyptus Grove**	**Developed**	**Acres**	**Total Polygons**
Salicornia pacifica - annual grass association	c					6.71																	**6.7**	**7**
Salicornia pacifica - Arthrocnemum subterminale - annual grass mu	c					0.90																	**0.9**	**1**
Salicornia pacifica - Arthrocnemum subterminale association	n			0.03	7.52	2.37																	**9.9**	**10**
Salicornia pacifica - Brassica nigra association	c					2.77																	**2.8**	**2**
Salicornia pacifica - Cressa truxillensis mu	n			0.17	8.47																		**8.6**	**7**
Salicornia pacifica - Distichlis littoralis association	n			0.89	1.47																		**2.4**	**11**
Salicornia pacifica - Frankenia salina - Distichlis littoralis mu	n				0.02																		**0.0**	**1**
Salicornia pacifica - Frankenia salina association	n			0.04	1.29																		**1.3**	**4**
Salicornia pacifica - Jaumea carnosa - Distichlis littoralis association	n			1.79																			**1.8**	**9**
Salicornia pacifica - Jaumea carnosa association	n			2.95																			**2.9**	**13**
Salicornia pacifica - Malvella leprosa mu	n				0.18																		**0.2**	**2**
Salicornia pacifica - mesembryanthemum nodiflorum mu	c					0.39																	**0.4**	**1**
Salicornia pacifica - mixed herb mu	c					0.30																	**0.3**	**3**
Salicornia pacifica - Schoenoplectus spp. mu	n						0.35																**0.3**	**1**
Salicornia pacifica - Symphyotrichum subulatum mu	n				0.74																		**0.7**	**1**
Salicornia pacifica alliance	n			10.37	49.54	0.39																	**60.3**	**62**
Salix exigua - Baccharis salicifolia mu	n									0.12													**0.1**	**1**
Salix exigua alliance	n									0.32													**0.3**	**2**
Salix lasiolepsis alliance	n									8.84													**8.8**	**16**

		Category 1		Category 2							Category 3		Category 4									Category 5		
Vegetation Type	**Nativity**	**Subtidal**	**Intertidal**	**Tidal Wetland**	**Non-tidal Salt Marsh**	**Ruderal Marsh**	**Brackish Marsh**	**Brackish Scrub**	**Salt Pan**	**Riparian Scrub and Woodland**	**Iceplant Wetland**	**Pampas Grass**	**Dune**	**Non-native Dune**	**Disturbed Hard-pack**	**Annual / Ruderal Grassland**	**Non-native "Tall" Herbaceous**	**Iceplant Stand**	**Upland Scrub**	**Non-native Tree**	**Eucalyptus Grove**	**Developed**	**Acres**	**Total Polygons**
Schinus molle association	**nn**																			0.03			**0.0**	**1**
Schinus sp. - Myoporum laetum stand	**nn**																			0.03			**0.0**	**1**
Schinus terebinthifolius - mixed palm - mixed herb mu	**nn**																			0.24			**0.2**	**1**
Schoenoplectus (S. americanus, Bulboschoenus maritimus, B. robustus) mu	**n**						0.50																**0.5**	**3**
Schoenoplectus americanus alliance	**n**						0.17																**0.2**	**1**
Schoenoplectus californicus alliance	**n**						0.16																**0.2**	**2**
Schoenoplectus spp. - Distichlis littoralis mu	**n**						0.03																**0.0**	**1**
Schoenoplectus spp. - Malvella leprosa mu	**n**						2.08																**2.1**	**1**
Suaeda taxifolia mu	**n**				0.05																		**0.0**	**1**
Typha spp. - Cortaderia selloana mu	**c**					0.10																	**0.1**	**1**
Typha spp. alliance	**n**						0.43																**0.4**	**2**
Unvegetated	**----**						0.21						0.03										**0.2**	**2**
Unvegetated (development)	**----**																					62.31	**62.3**	**13**
Unvegetated (dirt road)	**----**																					2.35	**2.3**	**8**
Unvegetated (open water)	**----**	53.69																					**53.7**	**1**
Unvegetated (salt scald)	**----**								22.81													0.02	**22.8**	**14**
Unvegetated (tidal channel)	**----**		3.49																				**3.5**	**3**
Total Acres	**----**	**53.7**	**3.5**	**18.2**	**85.6**	**39.5**	**6.5**	**10.6**	**22.8**	**15.5**	**2.0**	**5.8**	**10.7**	**14.3**	**5.0**	**14.6**	**159.2**	**27.8**	**41.9**	**5.6**	**3.4**	**65.1**	**611.3**	**811**

Note: Within nativity column, n = native, nn = nonnative, and c = co-dominant native and nonnatives.
Source: Reproduced from The Bay Foundation 2013

APPENDIX D3
Study Area Plant List by Survey Effort

This page intentionally left blank

Study Area Plant List

Scientific Name	Common Name	Family	Native/ Non-native	(1) 1979	(2) 1981	(3) 1991	(4) 1992	(5) 2001	(6) 2002	(7) 2005	(8) 2010	(9) 2011	(10) 2011
------	palm tree	Arecaceae	n-n								x	x	
Abronia umbellata	common sand verbena	Nyctaginaceae	n	x	x	x	x	x	x				x
Abronia villosa	villose abronia	Nyctaginaceae	n							x			
Acacia dealbata	silver wattle mimosa	Fabaceae	n-n		x				x				
Acacia decurrens	green wattle	Fabaceae	n-n										x
Acacia longifolia	long-leaved acacia	Fabaceae	n-n			x			x				x
Acacia neriifolia (*)	Mattle (Oleander wattle)	Fabaceae	n-n						x				
Acacia sp.	acacia	Fabaceae	n-n			x		x	x	x	x	x	
Acmispon americanus var, *americanus*	Spanish clover	Fabaceae	n		x	x	x		x				
Acmispon glaber (=*Lotus scoparius*)	deerweed	Fabaceae	n	x	x	x	x	x	x	x	x	x	x
Acmispon sp. (=*Lotus* sp.)	lotus	Fabaceae									x		
Acmispon strigosus	strigose lotus	Fabaceae	n		x	x	x		x				
Acroptilon repens	Russian knapweed	Asteraceae	n-n		x	x			x			x	x
Adenostoma fasciculatum	common chamise	Rosaceae	n	x					x				
Agave americana	century plant	Agavaceae	n-n			x			x				x
Agave attenuata (*)	swan's neck agave (fox tail agave)	Agavaceae (Liliaceae)	n-n						x				
Agave sp.	agave	Agavaceae	n-n					x					

Scientific Name	**Common Name**	**Family**	**Native/ Non-native**	(1) 1979	(2) 1981	(3) 1991	(4) 1992	(5) 2001	(6) 2002	(7) 2005	(8) 2010	(9) 2011	(10) 2011
Agrostis stolonifera	stoloniferous creeping bentgrass	Poaceae	n-n		x				x				x
Albizia lophantha	plume albizia	Fabaceae	n-n		x	x			x				
Aloe vera (*)	medicinal aloe	Asphodelacae (=Liliaceae)	n-n			x			x				
Amaranthus albus	tumbleweed amaranthus	Amaranthaceae	n-n		x	x			x				
Amaranthus californicus	California amaranthus	Amaranthaceae	n		x		x		x				x
Amaranthus deflexus	low pigweed	Amaranthaceae	n-n		x				x				
Amaranthus rudis	waterhemp	Amaranthaceae	n-n			x			x				
Ambrosia acanthicarpa	annual bursage	Asteraceae	n		x	x	x		x				
Ambrosia chamissonis	Chamisso's bur-sage	Asteraceae	n		x	x	x		x		x	x	x
Ambrosia psilostachya	western ragweed	Asteraceae	n		x	x	x	x	x	x	x	x	x
Ammania sp. (*)	red stem	Lythraceae	n						x				
Amsinckia menziesii	fiddleneck	Boraginaceae	n										x
Anagallis arvensis	scarlet pimpernel	Myrsinaceae	n-n	x		x		x	x	x	x	x	
Anemopsis californica	yerba mansa	Saururaceae	n		x	x	x		x		x	x	x
Apium graveolens	garden celery	Apiaceae	n-n		x			x	x	x		x	x
Aptenia cordifolia	baby sun rose	Aizoaceae	n-n		x				x				x
Artemisia californica	California sage brush	Asteraceae	n	x			x	x	x	x	x	x	x
Artemisia douglasiana	Douglas' mugwort	Asteraceae	n	x	x	x	x	x	x	x			x
Artemisia dracunculus	wild tarragon	Asteraceae	n		x	x	x		x				x
Artemisia sp.	mugwort	Asteraceae	--									x	
Arthrocnemum subterminale (=*Salicornia subterminalus*)	Parish's pickleweed	Chenopodiaceae	n	x		x	x	x	x	x(t)	x	x	x
Arundo donax	giant river reed	Poaceae	n-n		x	x		x	x	x	x	x	x
Asclepias fasciculatus	narrow leaf milkweed	Apocynaceae	n										x

Scientific Name	**Common Name**	**Family**	**Native/ Non-native**	(1) 1979	(2) 1981	(3) 1991	(4) 1992	(5) 2001	(6) 2002	(7) 2005	(8) 2010	(9) 2011	(10) 2011
Astragalus trichopodus	milk vetch	Fabaceae	n			x			x				
Atriplex lentiformis	big saltbush	Chenopodiaceae	n			x	x		x		x	x	x
Atriplex patula	spear saltbush	Chenopodiaceae	n	x			x						x
Atriplex prostrata (=*Atriplex triangularis*)	fat hen	Chenopodiaceae	n-n	x		x	x	x	x	x(t)	x	x	x
Atriplex rosea	tumbling oracle	Chenopodiaceae	n-n			x			x				
Atriplex semibaccata	Australian saltbush	Chenopodiaceae	n-n	x		x	x	x	x	x(t)	x	x	x
Atriplex sp.	atriplex	Chenopodiaceae	--									x	
Avena barbata	slender wild oat	Poaceae	n-n			x		x	x	x(t)			x
Avena fatua	common wild oat	Poaceae	n-n			x		x	x	x	x	x	x
Avena sp.	oat	Poaceae	n-n	x								x	
Baccharis pilularis	coyote brush	Asteraceae	n	x	x	x	x		x		x	x	x
Baccharis pilularis var. *consanguinea* (*)	pigeon foot	Asteraceae	n				x						
Baccharis salicifolia	mule fat	Asteraceae	n	x		x		x	x	x	x	x	x
Bassia hyssopifolia	five-hooked bassia	Chenopodiaceae	n-n		x	x			x		x	x	x
Batis maritima	salt wort	Bataceae	n										x
Bauhinia variegata	orchid tree	Fabaceae	n-n			x			x				
Beta vulgaris	beet	Chenopodiaceae	n-n										x
Bolboschoenus maritimus	Olney's bulrush	Cyperaceae	n										x
Bolboschoenus robustus	robust bulrush	Cyperaceae	n	x	x	x	x		x				
Brassica nigra	black mustard	Brassicaceae	n-n	x		x			x	x	x	x	x
Brassica rapa	common yellow mustard	Brassicaceae	n-n			x			x			x	x
Brassica sp.	mustard	Brassicaceae	--									x	
Brickellia californica	California brickellbush	Asteraceae	n			x			x				x
Bromus carinatus	brome grass	Poaceae	n-n								x	x	
Bromus catharticus	rescue-grass	Poaceae	n-n			x			x				x

Scientific Name	**Common Name**	**Family**	**Native/ Non-native**	(1) 1979	(2) 1981	(3) 1991	(4) 1992	(5) 2001	(6) 2002	(7) 2005	(8) 2010	(9) 2011	(10) 2011
Bromus diandrus	ripgut chess	Poaceae	n-n			x		x	x	x	x	x	x
Bromus hordeaceus	soft cheatgrass	Poaceae	n-n			x		x	x	x			x
Bromus madritensis ssp. *rubens*	foxtail chess	Poaceae	n-n					x	x	x(t)	x	x	x
Bromus marginatus	large mountain brome	Poaceae	n				x						
Bromus spp.	brome grass	Poaceae	n-n	x								x	
Cakile maritima	maritime sea-rocket	Brassicaceae	n-n			x			x				x
Callistemon citrinus	crimson bottle brush	Myrtaceae	n-n										x
Calystegia macrostegia	southern California morning glory	Convolvulaceae	n					x		x			
Calystegia macrostegia ssp. *cyclostegia*	southern California morning glory	Convolvulaceae	n		x	x	x		x				
Camissonia sp.	sun cup	Onagraceae	n			x			x				
Camissonia strigulosa	Sandy soil sun cup	Onagraceae											x
Camissoniopsis bistorta (=*Camissonia bistorta*)	California sun cup	Onagraceae	n	x	x	x	x	x	x	x			x
Camissoniopsis cheiranthifolia (=Camissonia cheiranthifolia)	beach evening primrose	Onagraceae	n	x	x	x			x	x			
Camissoniopsis cheiranthifolia ssp. suffruticosa (=*Camissonia cheiranthifolia* ssp. *suffruticosa*)	beach suncup	Onagraceae	n	x			x	x					x
Camissoniopsis lewisii (=*Camissonia lewisii*)	Lewis' evening primrose	Onagraceae	n			x			x				x
Camissoniopsis micrantha (=*Camissonia micrantha*)	Miniature sun cup (Spencer primrose)	Onagraceae	n		x	x	x		x				x

Scientific Name	**Common Name**	**Family**	**Native/ Non-native**	(1) 1979	(2) 1981	(3) 1991	(4) 1992	(5) 2001	(6) 2002	(7) 2005	(8) 2010	(9) 2011	(10) 2011
Camissoniopsis sp.	sun cup	Onagraceae	n								x	x	
Carduus pycnocephalus	Italian thistle	Asteraceae	n-n										x
Carex praegracilis	clustered field sedge	Cyperaceae	n		x		x	x	x	x			
Carpobrotus chilensis	sea-fig iceplant	Aizoaceae	n-n	x				x	x	x			
Carpobrotus edulis	hottentot-fig	Aizoaceae	n-n	x	x	x		x	x	x	x	x	x
Casuraina glauca	grey sheoak	Casuarinaceae	n-n										x
Centaurea melitensis	tocalote	Asteraceae	n-n		x	x		x	x	x	x	x	x
Centromadia parryi ssp. *a ustralis*	southern tarplant	Asteraceae	n						x				
Ceratonia siliqua (*)	St. John's bread	Fabaceae	n-n		x	x			x				
Chaenactis glabriuscula	yellow chaenactis	Asteraceae	n		x	x	x	x	x	x			
Chaenactis glabriuscula var. *orcuttiana*	Orcutt's pincushion	Asteraceae	n										x
Chenopodium album	lambs-quarters	Chenopodiaceae											x
Chenopodium berlandieri	pitseed goosefoot	Chenopodiaceae	n			x			x				
Chenopodium murale	nettle-leaved goosefoot	Chenopodiaceae	n-n			x			x				
Chenopodium sp.	goosefoot (chenopodium)	Chenopodiaceae	n	x			x	x	x	x			
Chondrilla juncea	rush chondrilla	Asteracea	n-n		x								
Chrysanthemum sp.	daisy (chrysanthemum)	Asteraceae	n-n	x	x	x							
Cichorium intybus	common chickory	Asteraceae	n-n		x	x			x				x
Ciclospermum leptophyllum	marsh parsley	Apiaceae	n-n		x				x				
Cirsium vulgare	bull thistle	Asteraceae	n-n		x	x			x				x
Citrullus lanatus (*) (=*Citrullus colocynthis* var. *lanatus*)	watermelon	Cucurbitaceae	n-n		x	x			x				

Scientific Name	**Common Name**	**Family**	**Native/ Non-native**	(1) 1979	(2) 1981	(3) 1991	(4) 1992	(5) 2001	(6) 2002	(7) 2005	(8) 2010	(9) 2011	(10) 2011
Clematis ligusticifolia	western white clematis	Ranunculaceae	n				x						
Conium maculatum	poison hemlock	Apiaceae	n-n		x				x				x
Convolvulus arvensis	field convolvulus	Convolvulaceae	n-n		x	x		x	x	x			x
Corethrogyne filaginifolia (=*Corethrogyne filaginifolia* var. *filaginifolia*; *Lessingia filaginifolia* var. *filaginifolia*)	common sand aster	Asteraceae	n		x		x		x				x
Cortaderia jubata	purple pampas grass	Poaceae	n-n							x			
Cortaderia selloana	silver pampas grass	Poaceae	n-n	x		x			x		x	x	x
Cotula australis	Australian cotula	Asteraceae	n-n						x				
Cotula coronopifolia	common brass buttons	Asteraceae	n-n	x	x	x			x				x
Cotula sp.	brass-buttons	Asteraceae	n-n					x		x			
Crassula argentea	jade plant	Crassulaceae	n-n										x
Crassula connata	sand pygmyweed	Crassulaceae	n		x	x	x		x				x
Crassula ovata	silver jade plant	Crassulaceae	n-n		x	x		x	x	x(t)			
Cressa truxillensis	spreading alkali weed	Convolvulaceae	n	x	x	x	x	x	x	x(t)	x	x	x
Croton californicus	California croton	Euphorbiaceae	n		x	x	x	x	x	x	x	x	x
Cryptantha intermedia	clearwater cryptantha	Boraginaceae	n			x	x		x				x
Cucurbita foetidissima	Calabazilla (foetid gourd)	Cucurbitaceae	n		x	x	x		x				
Hesperocyparis glabra (Cupressus arizonica) (a) (**)	Smooth cypress	Cupressaceae	n-n			x			x				x
Cuscuta californica	California Dodder	Convolvulaceae	n		x	x	x	x	x	x			
Cuscuta campestris	field dodder	Convolvulaceae	n		x		x		x				
Cuscuta indecora var. *indecora*	large-seeded dodder	Convolvulaceae	n			x			x				

Scientific Name	Common Name	Family	Native/ Non-native	(1) 1979	(2) 1981	(3) 1991	(4) 1992	(5) 2001	(6) 2002	(7) 2005	(8) 2010	(9) 2011	(10) 2011
Cuscuta sp.	dodder	Convolvulaceae	n			x			x		x	x	x
Cynodon dactylon	Bermuda grass (creeping-cynodon)	Poaceae	n-n			x		x	x	x			x
Cyperus eragrostis	tall flatsedge (eragrostoid cyperus)	Cyperaceae	n		x	x	x		x				x
Cyperus esculentus	chufa flat-sedge	Cyperaceae	n		x	x			x				
Cyperus involucratus	umbrella papyrus	Cyperaceae	n-n		x	x			x				
Datura wrightii	Western jimson weed (Wright's datura)	Solanaceae	n		x	x	x	x	x	x			x
Daucus pusilus	rattlesnake weed	Apiaceae	n-n										x
Deinandra fasciculata	fascicled tarplant	Asteraceae	n		x		x		x				X
Deinandra paniculata	paniculate tarplant (San Diego tarplant)	Asteraceae	n			x			x				
Delosperma litorale	seaside delosperma	Aizoaceae	n-n		x				x				
Dichondra occidentalis	western dichondra	Convolvulaceae	n			x			x				
Digitaria sp.	digitaria	Poaceae	n-n			x			x				
Distichlis littoralis (=*Monanthochloe littoralis*)	shore grass	Poaceae	n			x			x				
Distichlis spicata	spiked saltgrass	Poaceae	n	x		x	x	x	x	x(t)	x	x	x
Dysphania ambrosioides (=*Chenopodium ambrosioides*)	Mexican tea	Chenopodiaceae				x			x				x
Dysphania botrys	Jerusalem-oak goosefoot	Chenopodiaceae	n-n			x			x				
Dysphania pumilio	clammy goosefoot	Chenopodiaceae	n-n						x				
Echinochloa crus-galli	common barnyard-grass	Poaceae	n-n			x			x				
Ehrharta erecta	upright veldtgrass	Poaceae	n-n			x			x				x

Scientific Name	**Common Name**	**Family**	**Native/ Non-native**	(1) 1979	(2) 1981	(3) 1991	(4) 1992	(5) 2001	(6) 2002	(7) 2005	(8) 2010	(9) 2011	(10) 2011
Eleocharis macrostachya	longstem spike-rush	Cyperaceae	n		x	x	x		x				x
Eleocharis montevidensis	Montevideo spike- rush	Cyperaceae	n		x		x		x				
Elymus condensatus (=*Leymus condensatus*)	giant rye grass	Poaceae	n			x			x				
Elymus triticoides (=*Leymus triticoides*)	creeping wild rye	Poaceae	n									x	x
Encelia californica	California encelia	Asteraceae	n					x		x		x	x
Epilobium ciliatum	ciliate willow-herb	Onagraceae	n			x			x				
Ericameria ericoides	Californian goldenbush	Asteraceae	n		x		x		x		x	x	
Ericameria pinifolia	pine goldenbush	Asteraceae	n			x			x				x
Erigeron bonariensis (=*Conyza bonariensis*)	flax leaf horseweed (Buenos Aires conyza)	Asteraceae	n-n		x	x		x	x	x			
Erigeron canadensis (=*Conyza canadensis*)	Canadian horseweed	Asteraceae	n		x	x			x		x	x	x
Eriogonum fasciculatum	California wild buckwheat	Polygonaceae	n			x	x	x	x	x			x
Eriogonum gracile	slender woolly eriogonum	Polygonaceae	n				x						
Eriogonum parvifolium	seacliff wild buckwheat	Polygonaceae	n			x	x	x	x	x	x	x	x
Eriogonum sp.	buckwheat	Polygonaceae	--								x		
Eriophyllum confertiflorum	golden yarrow	Asteraceae	n										x
Erodium botrys	long-beaked filaree	Geraniaceae	n-n		x	x		x	x	x(t)			x
Erodium cicutarium	red-stemmed filaree	Geraniaceae	n-n	x	x	x			x		x		x
Erodium moschatum	whitestem filaree	Geraniaceae	n-n										x
Erodium spp.	filaree	Geraniaceae	n-n								x	x	
Erysimum suffrutescens (=*Erysimum insulare* ssp. *suffrutescens*)	suffrutescent wallflower	Brassicaceae	n	x		x	x		x				x

Scientific Name	**Common Name**	**Family**	**Native/ Non-native**	(1) 1979	(2) 1981	(3) 1991	(4) 1992	(5) 2001	(6) 2002	(7) 2005	(8) 2010	(9) 2011	(10) 2011
Eschscholzia californica	California poppy	Papaveraceae	n			x		x	x	x			x
Eucalyptus camaldulensis	red gum	Myrtaceae	n-n		x	x			x				x
Eucalyptus globulus	blue gum	Myrtaceae	n-n			x			x				x
Eucalyptus sp.	eucalyptus	Myrtaceae	n-n	x							x	x	
Eucalyptus tereticornis	forest red gum	Myrtaceae	n-n		x				x				
Eucalyptus viminalis	manna gum	Myrtaceae	n-n		x				x				
Euphorbia albomarginata (=*Chamaesyce albomarginata*)	rattlesnake sandmat	Euphorbiaceae	n		x		x		x				x
Euphorbia maculata (=*Chamaesyce maculata*)	common spotted spurge	Euphorbiaceae	n-n		x	x			x				x
Euphorbia peplus	pretty spurge	Euphorbiaceae	n-n		x	x			x				x
Euphorbia polycarpa (=*Chamaesyce polycarpa*)	small-seeded spurge	Euphorbiaceae	n		x		x		x				
Euphorbia serpens (=*Chamaesyce serpens*)	Matted spurge (serpent euphorbia)	Euphorbiaceae	n-n		x	x	x		x				
Euphorbia sp. (=*Chamaesyce* sp.)	spurge (chamaesyce)	Euphorbiaceae	--								x	x	
Euphorbia terracina	terracina spurge	Euphorbiaceae	n-n								x	x	x
Euphorbia virgate (=*Euphorbia esula*)	leafy spurge	Euphorbiaceae	n-n			x			x				x
Euryops pectinatus (*)	euryops daisy	Asteraceae	n-n			x			x				
Euthamia occidentalis	western goldenrod	Asteraceae	n		x	x	x				x	x	x
Extriplex californica (=*Atriplex californica*)	California saltbush	Chenopodiaceae	n			x	x		x				x
Festuca arundinacea	reed fescue	Poaceae	n-n			x			x				
Festuca myuros (=*Vulpia myuros* var. *hirsute*, var. *myuros*)	rat-tailed fescue	Poaceae	n-n				x	x	x	x			x

Scientific Name	**Common Name**	**Family**	**Native/ Non-native**	(1) 1979	(2) 1981	(3) 1991	(4) 1992	(5) 2001	(6) 2002	(7) 2005	(8) 2010	(9) 2011	(10) 2011
Festuca perennis (=*Lolium multiflorum*, *Lolium perenne*)	Italian rye-grass	Poaceae	n-n			x		x	x	x	x	x	x
Ficus carica	common fig	Moraceae	n-n			x			x				x
Foeniculum vulgare	common fennel	Apiaceae	n-n	x	x	x		x	x	x	x	x	x
Frankenia salina	alkali frankenia	Frankeniaceae	n	x	x	x	x	x	x	x(t)	x	x	x
Fraxinus velutina	velvet arizona ash	Oleaceae	n		x		x		x				x
Galium angustifolium	narrow-leaved bedstraw	Rubiaceae	n		x		x		x				
Gazania linearis	hardy gazania	Asteraceae	n-n			x			x				
Gazania scaposa (*)	African daisy	Asteraceae	n-n		x				x				
Geranium molle	dove's-foot geranium	Geraniaceae	n-n										x
Glebionis coronaria	garland chrysanthemum	Asteraceae	n-n					x	x	x(t)	x	x	x
Gnaphalium palustre	Western marsh cudweed	Asteraceae	n								x		
Grindelia camporum	field gumplant (Great Valley grindelia)	Asteraceae	n		x	x	x		x				x
Guillenia lasiophylla	California mustard	Brassicaceae	n				x	x		x			
Hainardia cylindrica	barbgrass (thin tail)	Poaceae	n-n										x
Hedera canariensis	Canary ivy	Araliaceae	n-n			x			x				
Hedera helix	English ivy	Araliaceae	n-n										x
Hedypnois cretica	Crete hedypnois	Asteraceae	n-n		x				x				x
Helianthus annuus	common annual sunflower	Asteraceae	n		x	x	x		x				
Heliotropium curassavicum	salt heliotrope	Boraginaceae	n			x	x	x	x	x	x	x	x
Helminthotheca echioides (=*Picris echioides*)	bristly ox-tongue	Asteraceae	n-n	x	x	x							x

Scientific Name	Common Name	Family	Native/ Non-native	(1) 1979	(2) 1981	(3) 1991	(4) 1992	(5) 2001	(6) 2002	(7) 2005	(8) 2010	(9) 2011	(10) 2011
Heteromeles arbutifolia	toyon	Rosaceae	n			x			x				x
Heterotheca grandiflora	telegraph weed	Asteraceae	n		x	x	x	x	x	x	x	x	x
Heterotheca villosa	villous golden-aste	Asteraceae	n			x			x				x
Hirschfeldia incana	field mustard	Brassicaceae	n-n			x			x				x
Hoffmannseggia glauca	waxy hoffmannseggia	Fabaceae	n			x			x				
Hordeum brachyantherum	meadow barley	Poaceae											x
Hordeum depressum	dwarf barley	Poaceae	n								x	x	
Hordeum murinum ssp. *leporinum*	mouse barley	Poaceae	n			x			x		x	x	x
Hordeum sp.	barley	Poaceae	n-n	x									
Hypochaeris glabra	smooth cat's-ear	Asteraceae	n-n			x	x	x	x	x			x
Hypochaeris radicata	rough cat's-ear	Asteraceae	n-n										x
Iris sp.	iris	Iridaceae	n-n										x
Isocoma menziesii var. *vernioides*	coastal goldenbush	Asteraceae	n										x
Iva axillaris	poverty weed	Asteraceae	n										x
Jaumea carnosa	fleshy juamea	Asteraceae	n		x	x	x		x	x(t)	x	x	x
Juglans regia	English walnut	Juglandaceae	n-n			x			x				
Juncus balticus	Baltic rush	Juncaceae	n			x	x		x				x
Juncus bufonius	common toad-rush	Juncaceae	n			x	x	x	x	x			x
Juncus bufonius var. *occidentalis*	common toad-rush	Juncaceae	n			x			x				
Juncus mexicanus	Mexican rush	Juncaceae	n			x			x		x	x	x
Juncus sp.	rush wire-grass	Juncaceae	n	x							x	x	
Juniperus chinensis	Hollywood juniper	Cupressaceae	n-n										x
Lactuca eucra (*)		Asteraceae	n-n			x			x				
Lactuca serriola	prickly lettuce	Asteraceae	n-n		x	x	x	x	x	x	x		x

Scientific Name	Common Name	Family	Native/ Non-native	(1) 1979	(2) 1981	(3) 1991	(4) 1992	(5) 2001	(6) 2002	(7) 2005	(8) 2010	(9) 2011	(10) 2011
Lactuca virosa	wild lettuce	Asteraceae	n-n			x	x	x	x	x			
Laennecia coulteri (=*Conyza coulteri*)	Coulter's horseweed	Asteraceae	n		x				x				
Lamarckia aurea	goldentop	Poaceae	n-n			x			x				
Lamium amplexicaule	henbit	Lamiaceae	n-n										x
Lantana camara	orange-flowered lantana	Verbenaceae	n-n			x			x				
Lasthenia californica ssp. *californica*	California goldfields	Asteraceae	n										x
Lepidium latifolium	broad-leaved peppergrass	Brassicaceae	n-n			x			x				x
Lepidium virginicum (=*Lepidium virginicum* var. *pubescens*)	tall peppergrass	Brassicaceae	n			x	x		x				x
Leptochloa uninervia	Mexican sprangle top	Poaceae	n			x	x		x				
Liquidambar styraciflua	sweet gum	Altingiaceae (Hamamelidaceae)	n-n			x			x				x
Lobularia maritima	sweet alyssum	Brassicaceae	n-n	x		x			x				x
Logfia sp. (=*Filago* sp.)	filago	Asteraceae	--			x			x				
Luma apiculata	temu	Myrtaceae	n-n			x			x				
Lupinus bicolor	bicolored lupine	Fabaceae	n		x	x	x		x				x
Lupinus chamissonis	coastal bush lupine	Fabaceae	n	x	x	x	x	x	x	x	x	x	x
Lupinus excubitus var. *hallii*	grape soda lupine	Fabaceae	n		x		x		x				
Lupinus longifolius	longleaf bush lupine	Fabaceae	n			x			x				
Lupinus succulentus	arroyo lupine	Fabaceae	n		x	x	x		x				x
Lupinus truncatus	truncate-leaved lupine	Fabaceae	n		x		x		x				
Lycium californicum	California boxthorn	Solanaceae	n							x			

Scientific Name	**Common Name**	**Family**	**Native/ Non-native**	(1) 1979	(2) 1981	(3) 1991	(4) 1992	(5) 2001	(6) 2002	(7) 2005	(8) 2010	(9) 2011	(10) 2011
Lycium ferocissimum	African boxthorn	Solanaceae	n-n		x	x			x				x
Lycopersicon esculentum	common tomato	Solanaceae	n-n		x				x				
Lythrum hyssopifolia	hyssop loosestrife	Lythraceae	n-n		x	x			x				x
Malacothamnus fasciculatus	chaparral bush-mallow	Malvaceae	n		x		x		x				
Malacothrix saxatilis	cliff aster	Asteraceae	n		x	x	x		x				x
Malephora crocea	red-flowered iceplant	Aizoaceae	n-n		x	x			x				x
Malosma laurina	laurel sumac	Anacardiaceae	n	x	x	x	x		x	x			x
Malva nicaeensis	bull mallow	Malvaceae	n-n		x	x			x				x
Malva parviflora	cheeseweed mallow	Malvaceae	n-n		x	x		x	x	x	x		x
Malvella leprosa	alkali mallow	Malvaceae	n		x	x	x		x		x	x	x
Marah macrocarpus	wild cucumber	Cucurbitaceae	n										x
Marrubium vulgare	horehound	Lamiaceae	n-n	x	x	x			x		x	x	x
Matricaria discoidea (=*Matricaria matricarioides*; *Chamomilla suaveolens*)	pineapple weed	Asteraceae	n-n		x	x			x				x
Medicago lupulina	black burclover (black medicago)	Fabaceae	n-n								x		
Medicago polymorpha	California burclover	Fabaceae	n-n	x	x	x		x	x	x	x		x
Melaleuca citrine	crimson bottlebrush	Myrtaceae	n-n									x	
Melaleuca sp.	melaleuca	Myrtaceae	--									x	
Melica imperfecta	coast range onion grass (imperfect melic)	Poaceae	n			x	x		x				x
Melilotus albus	white sweetclover	Fabaceae	n-n		x	x			x				x
Melilotus indicus	indian sweetclover (sourclover)	Fabaceae	n-n	x	x	x		x	x	x(t)	x	x	x
Melilotus limensis (*)		Fabaceae	n-n		x								

Scientific Name	**Common Name**	**Family**	**Native/ Non-native**	(1) 1979	(2) 1981	(3) 1991	(4) 1992	(5) 2001	(6) 2002	(7) 2005	(8) 2010	(9) 2011	(10) 2011
Mesembryanthemum crystallinum	crystalline iceplant	Aizoaceae	n-n			x		x	x	x(t)	x		x
Mesembryanthemum nodiflorum	slender leaf iceplant	Aizoaceae	n-n	x	x	x			x		x	x	x
Mimulus aurantiacus var. *puniceus*	red bush monkeyflower	Phrymaceaee	n										x
Morus albus	white mulberry	Moraceae	n-n			x			x				x
Myoporum laetum	Ngaio tree (myoporum)	Schrophulariaceae (=Myoporaceae)	n-n	x	x	x		x	x	x	x	x	x
Narcissus tazetta	paper white narcissus	Amaryllidaceae	n-n		x				x				
Nemophila menziesii	baby blue eyes	Hydrophyllaceae	n										x
Nerium oleander	oleander	Apocynaceae	n-n			x			x				x
Nicotiana glauca	tree tobacco	Solanaceae	n-n	x	x	x		x	x	x	x	x	x
Oenothera elata ssp. *hirsutissima*	hairy evening primrose	Onagraceae	n				x						
Oenothera elata ssp. *hookeri*	Hooter's evening primrose	Onagraceae	n		x	x			x				
Olea europaea	olive	Oleaceae	n-n			x			x				x
Opuntia ficus-indica	mission cactus	Cactaceae	n-n			x			x				x
Opuntia littoralis	coastal prickly pear	Cactaceae	n			x			x				x
Osteospermum fruticosum	African daisy	Asteraceae	n-n		x				x				x
Oxalis pes-caprae	Bermuda buttercup	Oxalidaceae	n-n	x	x	x			x				x
Parapholis incurva	sickle grass	Poaceae	n-n	x				x	x	x(t)	x	x	x
Paspalum dilatatum	Dallis grass	Poaceae	n-n			x			x				x
Pelargonium zonale	garden geranium	Geraniaceae	n-n			x			x				x
Peritome arborea (=*Isomeris arborea*)	bladderpod	Cleomaceae (Capparaceae)	n										x
Persicaria lapathifolia	willow weed	Polygonaceae	n			x	x	x	x	x			
Petunia parviflora	wild petunia	Solanaceae	n			x			x				

Scientific Name	**Common Name**	**Family**	**Native/ Non-native**	(1) 1979	(2) 1981	(3) 1991	(4) 1992	(5) 2001	(6) 2002	(7) 2005	(8) 2010	(9) 2011	(10) 2011
Phacelia ramosissima	branching phacelia	Boraginaceae	n		x	x				x	x		x
Phacelia ramosissima var. *austrolitoralis*[b]	branching phacelia	Boraginaceae	n				x		x		x	x	
Phalaris aquatica	Canary grass	Poaceae	n-n									x	
Phalaris minor	little seed canary grass	Poaceae	n-n										x
Phalaris paradoxa	hood Canary grass	Poaceae	n-n										
Phaseolus limensis (*)	marge lima bean	Fabaceae	n-n						x				
Phoenix canariensis	Canary Island date palm	Arecaceae	n-n		x	x		x	x	x			x
Phoenix dactylifera	date palm	Arecaceae	n-n			x		x	x	x			
Pinus aff. canariensis	Canary Island pine	Pinaceae	n-n										x
Pinus muricata	Bishop pine	Pinaceae	n										x
Plantago lanceolata	English plantain	Plantaginaceae	n-n		x	x		x	x	x			x
Plantago major	common plantain	Plantaginaceae	n-n		x	x		x	x	x			x
Plantago sp.	plantain (rib grass)	Plantaginaceae	--									x	
Plantanus racemosa	western sycamore	Platanaceae	n										x
Poa annua	annual bluegrass	Poaceae	n-n			x			x				
Podocarpus macrophylla (*)	kusamaki (yew podocarpus)	Podocarpaceae	n-n			x			x				
Polycarpon tetraphyllum	four-leaved allseed	Caryophyllaceae	n-n			x			x				x
Polygonum aviculare ssp. *depressum* (=*Polygonum arenastrum*)	common knotweed	Polygonaceae	n-n			x		x	x	x			x
Polypogon monspeliensis	rabbit's foot grass	Poaceae	n-n			x		x	x	x(t)	x	x	x
Polypogon viridis (=*Agrostis semiverticillata*)	water beardgrass	Poaceae	n			x			x				

Scientific Name	Common Name	Family	Native/ Non-native	(1) 1979	(2) 1981	(3) 1991	(4) 1992	(5) 2001	(6) 2002	(7) 2005	(8) 2010	(9) 2011	(10) 2011
Populus fremontii	Fremont cottonwood	Salicaceae	n	x	x	x	x	x	x	x			x
Prunus persica	peach	Rosaceae	n-n			x			x				
Prunus sp.	apricot	Rosaceae	n-n			x			x				
Pseudognaphalium beneolens	fragrant everlasting cudweed	Asteraceae	n		x	x	x		x				x
Pseudognaphalium bioletti (=*Gnaphalium bicolor*)	twocolor cudweed	Asteraceae	n		x	x	x	x	x	x			
Pseudognaphalium californicum (=*Gnaphalium californicum*)	California cudweed	Asteraceae	n			x	x	x	x	x			x
Pseudognaphalium microcephalum	small-headed white everlasting	Asteraceae	n		x		x		x				
Pseudognaphalium ramosissimum (=*Gnaphalium ramosissimum*)	pink cudweed	Asteraceae	n		x		x		x				
Pseudognaphalium sp. (=*Gnaphalium* sp.)	cudweed	Asteraceae	n	x					x		x		
Pseudognaphalium spp.	false cudweed	Asteraceae	--								x	x	
Pseudognaphalium stramineum (=*Gnaphalium stramineum*)	Chilean cudweed	Asteraceae	n		x	x			x				
Pyracantha sp.	firethorn	Rosaceae	n-n			x			x				
Pyrus communis	pear	Rosaceae	n-n										x
Quercus agrifolia	coast live oak	Fagaceae	n			x			x				
Quercus virginiana (*)	southern live oak	Fagaceae	n-n						x				
Raphanus sativus	wild radish	Brassicaceae	n-n	x		x	x	x	x	x	x	x	x

Scientific Name	**Common Name**	**Family**	**Native/ Non-native**	(1) 1979	(2) 1981	(3) 1991	(4) 1992	(5) 2001	(6) 2002	(7) 2005	(8) 2010	(9) 2011	(10) 2011
Rhus integrifolia	lemonade berry	Anacardiaceae	n		x		x		x	x			x
Rhus ovata	sugar bush	Anacardiaceae	n	x				x	x	x			x
Ribes malvaceum	chaparral currant	Grossulariaceae	n	x	x		x		x				
Ricinus communis	castor bean	Euphorbiaceae	n-n	x	x	x		x	x	x	x	x	x
Robinia pseudoacacia	black locust	Fabaceae	n-n										x
Rosa californica	California rose	Rosaceae	n			x			x				x
Rumex crispus	curly dock	Polygonaceae	n-n	x		x		x	x	x	x	x	x
Rumex fueginus	golden dock	Polygonaceae	n				x						
Rumex pulcher	fiddle dock	Polygonaceae	n-n										x
Rumex salicifolius	willow dock	Polygonaceae	n			x	x	x	x	x			x
Rumex sp.	dock	Polygonaceae	?								x	x	
Ruppia maritima	ditch grass	Ruppiaceae	n		x		x		x				
Sagittaria montevidensis ssp. *calycina*	Montevideo arrowhead	Alismataceae	n		x		x		x				
Salicornia pacifica (=*Salicornia virginica*)	common pickleweed	Chenopodiaceae	n	x		x	x	x	x	x(t)	x	x	x
Salix exigua	narrow-leaved willow	Salicaceae	n			x			x				x
Salix gooddingii	black willow	Salicaceae	n						x				
Salix laevigata	red willow	Salicaceae	n	x	x	x	x	x	x	x			
Salix lasiolepis	arroyo willow	Salicaceae	n		x	x	x	x	x	x	x		x
Salix sp.	willow	Salicaceae	n								x	x	
Salsola sp.	Russian thistle	Chenopodiaceae	n-n									x	
Salsola tragus	Russian thistle	Chenopodiaceae	n-n			x	x	x	x	x(t)			x
Sambucus nigra ssp. *caerulea*	blue elderberry	Adoxaceae	n			x			x				x
Schinus molle	Peruvian pepper tree	Anacardiaceae	n-n		x	x			x				x
Schinus terebinthifolius	Brazilian pepper tree	Anacardiaceae	n-n			x		x	x	x	x	x	x
Schismus barbatus	Mediterranean grass	Poaceae	n-n			x			x				x

Scientific Name	**Common Name**	**Family**	**Native/ Non-native**	(1) 1979	(2) 1981	(3) 1991	(4) 1992	(5) 2001	(6) 2002	(7) 2005	(8) 2010	(9) 2011	(10) 2011
Schoenoplectus americanus	Olney bulrush	Cyperaceae	n		x	x	x		x				
Schoenoplectus californicus	California bulrush	Cyperaceae	n		x	x	x		x				x
Scirpus sp.	bulrush	Cyperaceae	--								x	x	
Senecio vulgaris	common groundsel	Asteraceae	n-n		x				x				x
Sesuvium verrucosum	western sea-purslane	Aizoaceae	n	x			x		x				
Setaria parviflora (=*Setaria gracilis*)	bristlegrass	Poaceae	n			x			x				
Silene gallica	small-flowered catchfly	Caryophyllaceae	n-n										x
Silybum marianum	milk thistle	Asteraceae	n-n		x	x			x			x	x
Sinapis alba	white mustard	Brassicaceae	n-n										x
Sisymbrium altissimum	tumble-mustard	Brassicaceae	n-n			x			x				
Sisymbrium irio	London rocket	Brassicaceae	n-n			x			x				x
Solanum americanum	small-flowered nightshade	Solanaceae	n			x			x				x
Solanum douglasii	Douglas's nightshade	Solanaceae	n		x	x	x	x	x	x			
Solanum nigrum	black nightshade	Solanaceae	n-n		x	x			x				x
Solanum physalifolium var. *nitidibaccatum* (=*Solanum sarrachoides*)	hairy nightshade	Solanaceae	n-n		x				x				
Solanum xanti	chaparral nightshade	Solanaceae	n	x		x			x				
Solidago velutina ssp. *californica*	California goldenrod	Asteraceae	n			x			x				
Sonchus arvensis	field sowthistle	Asteraceae	n-n								X		
Sonchus asper ssp. *asper*	prickly sow thistle	Asteraceae	n-n		x	x	x	x	x	x(t)			x
Sonchus oleraceus	common sow thistle	Asteraceae	n-n	x	x	x			x		x		x
Sonchus spp.	sow thistle	Asteraceae	--								x	x	

Scientific Name	**Common Name**	**Family**	**Native/ Non-native**	(1) 1979	(2) 1981	(3) 1991	(4) 1992	(5) 2001	(6) 2002	(7) 2005	(8) 2010	(9) 2011	(10) 2011
Sorghum halepense	Johnson's grass	Poaceae	n-n			x			x				
Sorghum nutans (*)	Indian grass	Poaceae	n-n			x			x				
Spartium junceum	Spanish broom	Fabaceae	n-n			x			x				
Spergularia bocconi	Boccone's sandspurrey	Caryophyllaceae	n-n			x	x	x	x				
Spergularia macrotheca	salt marsh sand spurry	Caryophyllaceae	n	x			x						
Spergularia marina	hairy sand spurry	Caryophyllaceae	n	x		x	x		x				x
Spergularia rubra	red sandspurry	Caryophyllaceae	n-n										x
Spergularia villosa	sand spurrey	Caryophyllaceae	n-n			x			x				
Stenotaphrum secundatum	St. Augustine grass	Poaceae	n-n			x			x				
Stephanomeria exigua	small wire lettuce	Asteraceae	n		x		x		x				
Stephanomeria sp.	wire lettuce (milk aster)	Asteraceae	n					x		x			
Stephanomeria virgata	rod wire lettuce (tall stephanomeria)	Asteraceae	n		x	x	x		x				x
Stipa cernua (=*Nassella cernua*)	nodding needlegrass	Poaceae	n			x			x				x
Stipa miliacea (=*Piptatherum miliaceum*)	smilo grass	Poaceae	n-n			x			x				x
Suaeda calceoliformis	horned sea blite	Chenopodiaceae	n		x		x		x				
Suaeda sp.	sea-blite	Chenopodiaceae	n	x				x	x	x			
Suaeda taxifolia	woolly sea-blite	Chenopodiaceae	n			x			x				x
Symphytotrichum subulatum var. *parviflorum* (**) (=*Aster subulatus* var. *ligulatus*)	Short flower annual saltmarsh aster (annual water aster)	Asteraceae	n		x	x	x		x				
Taraxacum officinale	dandelion	Asteraceae	n-n			x			x				x

Scientific Name	**Common Name**	**Family**	**Native/ Non-native**	(1) 1979	(2) 1981	(3) 1991	(4) 1992	(5) 2001	(6) 2002	(7) 2005	(8) 2010	(9) 2011	(10) 2011
Tetragonia tetragonoiodes	New Zealand spinach	Aizoaceae	n-n		x	x							x
Tribulus terrestris	puncture vine	Zygophyllaceae	n-n						x				
Triglochin maritima	seaside arrow grass	Juncaginaceae	n										x
Tropaeolum majus	garden nasturtium	Tropaeolaceae	n					x		x		x	
Typha angustifolia	narrow leaf cattail	Typhaceae	n-n										x
Typha domingensis	southern cattail	Typhaceae	n				x		x				x
Typha latifolia	broad-leaved cattail	Typhaceae	n				x		x	x			
Typha sp.	cattail	Typhaceae	n						x			x	
Ulmus parvifolia	Chinese elm	Ulmaceae	n-n						x				x
Ulmus sp.	elm	Ulmaceae	n-n						x				
Urtica dioica ssp. *holosericea*	hoary nettle	Urticaceae	n				x		x				x
Urtica urens	dwarf nettle	Urticaceae	n-n						x				x
Verbascum virgatum	wand mullein	Scrophulariaceae	n-n						x				
Verbena lasiostachys	common verbena	Verbenaceae	n				x		x				
Washingtonia robusta	slender fan palm	Arecaceae	n-n						x	x			x
Washingtonia sp.	fan palm	Arecaceae	n-n						x				
Xanthium sp.	cocklebur	Asteraceae	n	x					x				
Xanthium spinosum	spiny cocklebur	Asteraceae	n						x				
Xanthium strumarium	rough cocklebur	Asteraceae	n				x	x	x	x		x	x
Yucca gloriosa (*)	Spanish dagger	Agavaceae (Liliaceae)	n-n						x				
Yucca sp.	yucca	Agavaceae (Liliaceae)	--									x	

Sources (1) through (7) as reported by Johnston et al. (2011) in Appendix C.1.

(1) *Clark, J. 1979. "*Ballona Vegetation Survey.*"* In: *Ballona Wetlands Study: Part 3.* University of California, Los Angeles. School of Architecture and Planning.

(2) Gustafson, R. 1981. "The Vegetation of Ballona." In *The Biota of the Ballona Region*, Los Angeles County, edited by R.W. Schreiber, BO1- BO29. Los Angeles: Los Angeles County Natural History Museum Foundation.

(3) Henrickson, J. 1991. "DRAFT Botanical Resources of Playa Vista." Prepared for Maguire Thomas Partners.

(4) Altschul, J. and Homburg, J. 1992. "Life in the Ballona." Adapted from Gustafson, R. 1981. *The Vegetation of Ballona*. (unpublished)

(5) MEC Analytical Systems. 2001. "Biological Study of Ballona Wetlands, Los Angeles County, California." Prepared for U.S. Army Corps of Engineers, Los Angeles District.

(6) Read, E. 2002. Playa Vista Master Species list. (unpublished)

(7) City of Los Angeles. 2005. "Ballona Wetlands Vegetation." Prepared for US Army Corps of Engineers.
(Note: x(t) = on transects)

Sources (8) through (10) are as follows:

(8) Johnston, K.K., E. Del Giudice-Tuttle, I.D. Medel, S. Bergquist, D.S. Cooper, J. Dorsey, and S. Anderson. 2011. The Ballona Wetlands Ecological Reserve Baseline Assessment Program: 2009–2010 Final Report. Santa Monica Bay Restoration Commission. Prepared for the California State Coastal Conservancy, Los Angeles, California.

(9) Johnston, K.K., E. Del Giudice-Tuttle, I.D. Medel, C.J. Piechowski, D.S. Cooper, J. Dorsey, and S. Anderson. 2012. The Ballona Wetlands Ecological Reserve Baseline Assessment Program: 2010–2011 Final Report. Santa Monica Bay Restoration Commission. Prepared for the California State Coastal Conservancy, Los Angeles, California.

(10) WRA, Inc. 2011. Protocol Rare Plant Surveys: 2010–2011 Ballona Wetlands Ecological Reserve Marina del Rey, Los Angeles County, California

Note:

a = Flora of North America reports *Cupressus arizonica* having widely modified cultivars throughout the south west (*Flora of North America Volume 2*. Ed: Flora of North America Editorial Committee. 1993. Oxford University Press, Inc.). *Cupressus arizonica* has been misidentified as the common ornamental form of Arizona cypress planted throughout the world. *Hesperocyparis glabra (Cupressus arizonica* var. *glabra)* is the correct taxon from which most, if not all, plantings of the former Arizona cypress complex are derived. (Adams et al. 2010. Geographic variation in the leaf essential oils of *Hesperocyparis arizonica* and *H. glabra.* Phytologia 92: 366–387).

b = Recent taxonomic descriptions do not recognize varieties of *Phacelia ramosissima*; however, *Phacelia ramosissima* var. *austrolitoralis* is currently recognized by CNPS as a rare plant (CNPS 3.2).

(*) = unpublished, invalidly published, illegitimate, or rejected name for taxon native to CA or not found on Jepson interchange.

(**) = taxonomic or nomenclatural synonym for taxon not occurring in CA (erroneous reports, misapplication of names, misidentifications, other exclusions.

This page intentionally left blank

APPENDIX D4
Benthic Invertebrate Studies

This page intentionally left blank

Appendix D4

Summary of Benthic Invertebrate Studies in the Study Area (1980 to 2011)

The following summarizes the results of benthic invertebrate studies performed in the study area between 1980 and 2011. Table D4-1 provides a summary of the benthic invertebrate studies conducted in the study area. This table is then followed by a summary of the survey results.

Table D4-1. Summary of Benthic Invertebrate Surveys and Reports in the Study Area (modified from PWA 2006a to include later studies reported by Johnston et al. 2011, 2012)

Year	Author	Geographic Extent	Description
1980	Reish	Area B	General marine biology study of Playa Vista
1981	Ramirez	Area B	Mollusk survey for *Biota of the Ballona Region*
1991	Boland and Zedler	Area B	Fish and invertebrate research sponsored by the National Audubon Society
1991	Carter	Areas A, B, C, and D*	Noninsect invertebrate survey for Playa Vista EIR
1996	Chambers Group	Areas A and B	Benthic infauna survey for Impact Sciences
1999	Chambers Group	Areas A and B	Benthic infauna survey for Impact Sciences
2000	Glen Lukos Associates	Areas A, B, and C	Habitat assessment for Riverside and San Diego Fairy Shrimp for Playa Vista Project
2001	MEC-Weston	Area B	Vegetation, fish, bird, and benthic infauna study, provided monitoring data for USACE 1135 (LA City 2005)
2003	MEC-Weston	Area B	Vegetation, fish, bird, and benthic infauna study, provided monitoring data for USACE 1135 (LA City 2005)
2003	Wetlands Research Associates	Area B	Benthic infauna survey
2005	MEC-Weston	Area B	Vegetation, fish, bird, and benthic infauna study, provided monitoring data for USACE 1135 (LA City 2005)
2005	Dorsey	Area B	BOLD report
2009-2010	Johnston et al.	Area A and B	Year 1 Baseline Assessment Program
2010-2011	Johnston et al.	Area A and B	Year 2 Baseline Assessment Program

* = Area D, located east of Lincoln Boulevard, was considered part of the Ballona Wetlands until the late 1990s, when a residential development project was constructed there.

Reish (1980)

Reish conducted what is considered by some to be a definitive study of the benthic invertebrates of the Reserve. From previous reports evaluated by Reish, a combined total of 15 taxa were found. From the four seasons (August and November 1979 and April and June 1980) during which Reish sampled, 63 taxa were identified. The number of taxa found at each station increased as distance from the mouth of the tide channel decreased. The lowest number of taxa was recorded in April 1980. The highest number of taxa was found in June 1980. Reish found that Area B was dominated by a few species typical of Southern California coastal wetlands. *Streblospio benedicti* was the most abundant species and was present at all stations. *Capitella capitata*, *Polydora nuchalis*, and unidentified oligochaetes were the next most abundant species (Johnston et al. 2011). Figure D4-1 depicts sample locations and Figure D4-2 summarizes results.

Figure D4-1 depicts benthic infauna sampling stations from studies conducted between 1980 and 2005 (Reish 1980; Ramirez 1981; Boland and Zedler 1991; Chambers 1996, 1999; WRA 2004; MEC 2005). Yellow bars represent the flap gate (A) and tide gate locations (B), respectively. Chambers A is in the Fiji Ditch of Area A. (Reproduced from Johnston et al. 2011)

Figure D4-2 summarizes densities (number of benthic infauna individuals/m^2) from studies conducted between 1980 and 2007 (Reish 1980; Chambers 1996 and 1999; Dorsey 2007). A and B represent the flap gate and tide gate locations, respectively. Chambers A is in the Fiji Ditch of Area A. (Reproduced from Johnston et al. 2011).

Ramirez (1981)

Ramirez conducted monthly sampling of marine mollusks in the Reserve between August 1980 and May 1981 and identified 19 mollusk taxa. The highest species richness (14 species) was recorded nearest to the mouth of the tide channel. Ramirez recorded the presence of *Macoma nasuta, Protothaca staminea, Assiminea californica*, and *Melampus olivaceus* at all stations (Johnston et al. 2011). Figure D4-1 depicts sample locations.

Boland and Zedler (1991)

In April, July, and October of 1990, the Pacific Estuarine Research Laboratory of San Diego State University surveyed six stations (Boland and Zedler 1991). A total of 11 taxa were identified. Boland and Zedler also found that species richness was lowest at the stations furthest from the tide gates (Johnston et al. 2011). Figure D4-1 depicts sample locations.

Carter (1991)

Carter conducted quarterly surveys of noninsect invertebrates in Areas A, B, C, and D that focused on epifauna. The study's aim was to define species composition and relative distribution over the course of one year. The study found a total of 30 taxa, with the most common including: *M. nasuta,* *Tagelus subteres, Bulla gouldiana, Uca crenulata, Pachygrapsus crassipes,* and *Capitella capitata. C. capitata* are known to invade disturbed habitats and are indicators of pollution, when found occurring in large populations in an ecosystem that is otherwise species poor. Cerithidea californica was the most abundant species found in the saline channels (Johnston et al. 2011).

Chambers Group (1996 and 1999)

The Chambers Group sampled seven sites in Ballona Creek, Marina del Rey, and Areas A and B in 1996 and 1999 to compile a census of the benthic invertebrate communities of the Reserve. A total of 23 taxa were identified. Annelids, arthropods, and mollusks were the predominant organismal groups. Oligochaetes were the most numerous taxa found at all but two sample stations. Densities of benthic invertebrates samples ranged from 6,089 individuals /m^2 to 95,550 individuals/m^2. The highest densities of benthic invertebrates were recorded at the Area B stations closest to the tide gates. They concluded that the Reserve had a benthic community dominated by taxa characteristic of Southern California coastal wetlands, but that the species diversity was lower than that of larger, less disturbed wetlands (Johnston et al. 2011).

In 1998, the Chambers Group returned to sample the same eight stations in Areas A and B to assess benthic invertebrate communities after the replacement of the easternmost tidal flap gates. They found that densities of benthic invertebrates were lower at all stations, while distribution trends remained generally the same. Densities of oligochaetes were also reduced (Johnston et al. 2011). Figure D4-1 depicts sample locations and Figure D4-2 summarizes results.

Glen Lukos Associates (2000)

Areas A, B, and C were evaluated for habitat suitable for both the Riverside and the San Diego fairy shrimp, although the habitat assessment did not include either wet- or dry-season sampling. Wherever substantial ponding was observed during the May 2000 assessments, the water was measured for specific conductance and visual observations of any aquatic invertebrates and vegetation were collected. No ponds in Areas A, B, or C were determined to be capable of supporting either type of fairy shrimp due to high salinities or inadequate length or depth of ponding, and thus, both the Riverside fairy shrimp and the San Diego fairy shrimp were determined to be absent from the project area (Glen Lukos Associates 2000).

MEC-Weston (2001, 2003, and 2005)

The United States Army Corps of Engineers (USACE) installed a self-regulating tide gate, in March 2003. In support of the tide gate project, MEC-Weston conducted benthic invertebrate surveys in Area B in 2001, 2003, and 2005 (Johnston et al. 2011). Figure D4-1 depicts sample locations.

WRA (2003)

In 2003, a survey was conducted for benthic infauna in the tide channels of Area B before and after the installation of the USACE self-regulating tide gates to assess the benthic invertebrate population. The trend observed at all stations was an overall increase in the number of benthic invertebrates as distance from the tide gate increased. Additionally, WRA found that all stations had an increased number of benthic invertebrates in the September (before) sampling than in the February (after) sampling, with the exception of amphipods (Johnston et al. 2011).

Dorsey (2007)

In 2005, benthic invertebrate surveys were conducted at two stations in the tidal channels of Area B as part of the Ballona Outdoor Learning and Discovery (BOLD) Report. Samples were collected at two stations during April and August 2005. The most abundant macrofauna was *C. californica*, with 311 individuals/m^2, followed by the sea anemone (*Diadumene* sp.) with 1.3 individuals/m^2. Sixteen taxa of infauna were identified. The most abundant taxa were: Monocorophium insidiosum, *A. inculta, C. capitata, P. nucalis,* and *S. benedicti*. Species abundance was higher in the April samples (17,429 individuals/m^2 and 4,388 individuals/m^2) than in the August samples (4,054 individuals/m^2 and 2,946 individuals/m^2) (Johnston et al. 2011). Figure D4-3 depicts sample locations.

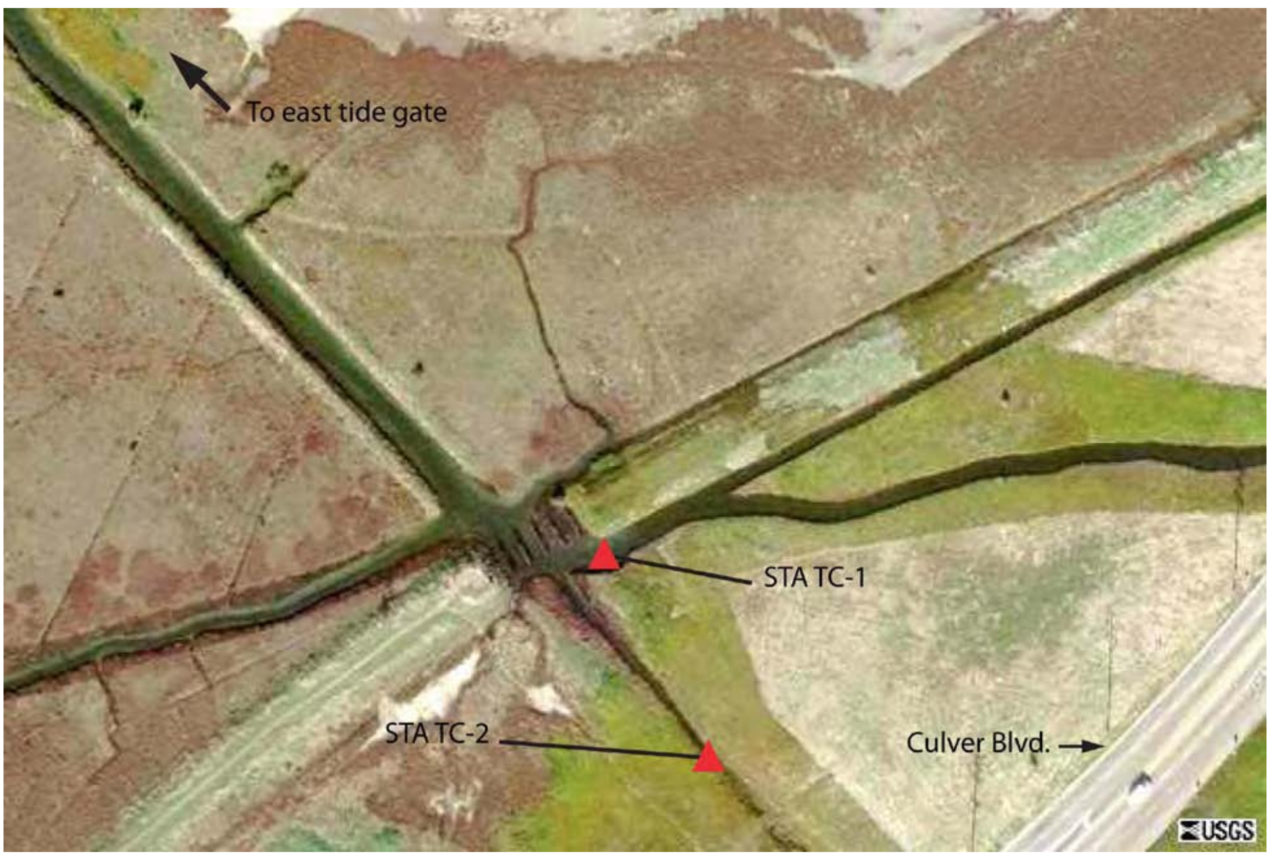


Figure D4-3 depicts BOLD benthic invertebrate sampling stations. (Reproduced from Johnston et al. 2011).

Merkel & Associates (2009)

While conducting fish surveys in late summer 2009, Merkel & Associates collected a numbers of invertebrates from Ballona Creek. Collected invertebrate species in order of decreasing relative abundance: Pacific calico scallop (*Argopecten ventricosus*), Navanax nudibranch (*Navanax inermis*), Asian mussel (*Musculista senhousia*), Gould's bubble snail (*Bulla gouldiana*), Cancer crab (*Cancer* sp.), green shore crab (*Hemigrapsus oregonensis*), and kelp crab (*Pugettia producta*). One individual of each of the following invertebrates was also captured in trawls: clam (*Chione* sp.), Pacific batwing seaslug (*Gastropteron pacificum*), Mediterranean mussel (*Mytilus galloprovincialis*), and tuberculate pear crab (*Pyromaia tuberculata*). No invertebrates were captured at the Fiji Ditch, although California hornsnail (*Cerithidea californica*) was observed. Invertebrates captured in the tide channel sites include: green shore crab, California horn snail, Mediterranean mussel, clam, Pacific calico scallop, common slipper limpet (*Crepidula fornicate*), eggcockle (*Laevicardium* sp.), and Asian mussel (Johnston et al. 2011).

Johnston et al. (2009-2010)

Between 2009 and 2010, Johnston et al. conducted benthic invertebrate surveys for the Baseline Assessment Program (BAP) on the Reserve (Johnston et al 2011). Infauna results showed the group of organisms that consistently had the highest proportion of the samples at each station was gastropods, dominated by California hornsnail, when all samples for each station were combined. The California hornsnail density included both live and dead individuals. The groups that were the next highest proportion of the samples were mollusks and gammarids. The sample station closest to the tide gate in the main channel, had the highest proportion of mollusks compared to the other stations. Invertebrate density, when averaged for all cores and all organisms combined, increased with increased distance from the tide gates (with the exception of one station which had low overall abundances during both sampling periods). The sample station furthest from the tide gate had the highest average number of individuals/m^2 in both October 2009 (55,640 individuals/m^2) and April 2010 (74,223 individuals/m^2) when averaged for all cores, whereas Boland and Zedler (1991) recorded densities of zero in the southern wetland channels of Area B. Contrasted to Reish (1980) with an average of 229,406 individuals/m^2 at a particular station in June, the BAP survey at the same location average of 22,914 individuals/m^2 in April 2010 and 39,186 individuals/m^2 in October 2009. The lowest average density was recorded at a station in Area A with 2,968 individuals/m^2 when averaged for all cores combined. Epifauna results showed the average number of California hornsnail were similar across all transects in June 2010. In September, only Transect 1 had a higher value than that of June. Both Transects 2 and 3 had lower numbers of California hornsnail in September. Targeted surveys for mimic tryonia (*Tryonia imitator*), a nonlisted special-status species, were not conducted during the first year of the BAP. No special-status species were observed visually at the sampling stations nor were they found in any of the samples (Johnston et al. 2011). Figure D4-4 and Figure D4-5 shows areas sampled for this study.

Figure D4-4 depicts BAP benthic invertebrate sampling stations. Yellow bars represent the flap gate (A) and tide gate (B) locations, respectively (reproduced from Johnston et al. 2011). BW1 and BW2 are in the Fiji Ditch of Area A.

Figure D4-5 shows the location of *C. californica* sampling transects (reproduced from Johnston et al. 2011). Transects 1 through 3 are represented as blue lines, and Transect 4, represented as an orange line, was added during the second survey period.

Johnston et al. (2010–2011)

Between 2010 and 2011, Johnston et al. (2012) conducted benthic invertebrate surveys for the BAP on the Reserve (Johnston et al. 2011). Infauna results showed 42 taxa were identified in small and large cores in April of the second baseline assessment year. *Monocorophium insidiosum, Grandidierella japonica, Capitella capitata Cmplx, Acteocina inculta, Oligochaeta,* and *Streblospio benedicti* were the most common species found in order of greatest to lowest density of individuals/m^2. The phylum with the highest total percentage of organisms in the large core samples was Mollusca. Five species from three phyla accounted for 69.4% of the density of organisms for the large core samples. There were a total of 20 species identified in the large core samples across all stations surveyed. *A. inculta* accounted for 30.6% of the total average density of organisms across stations for large care samples. *Cirriformia* sp. and *M. insidiosum* accounted for the next highest percentages of the large core samples (18.4% and 10.2% respectively). The phylum Arthropoda had the highest percentage of organisms in the small cores samples. Seven species from three phyla accounted for 93.3% of the density of organisms for the small core samples. There were a total of 36 species identified in the small cores samples across all stations surveyed. *M. insidiosum* accounted for 48.3% of the total average density of organisms across all small core stations. *G. japonica* and *C. capitata Cmplx* accounted for the next highest percentage of the small core samples (15.1% and 7.5%, respectively). The small cores samples had an average density of organisms of 54,862.9 individuals/m^2. Epifauna results showed the average number of California hornsnail across all transects was lower in winter and fall (January 267.2 individuals/m^2 and September 239.0

individuals/m^2) than in spring and summer (March 422.8 individuals/m^2 and June 387.0 individuals/m^2). The average number of California hornsnail was found to be highest in the March survey on all transects except one which recorded a higher number during September (58.4 individuals/m^2). For data comparison between both baseline years, the average number of California hornsnail was roughly three times higher in 2010 (June and September combined) at Transect 1 (86.8 individuals/m^2) and Transect 2 (55.6 individuals/m^2), whereas Transect 3 had a slightly higher average number of California hornsnail in 2011 (43.6 individuals/m^2). Targeted surveys for mimic tryonia were not conducted during the second year of the BAP. No special-status species were observed visually at the sampling stations nor were they found in any of the samples (Johnston et al. 2012). Figure D4-4 and Figure D4-5 shows areas sampled for this study.

This page intentionally left blank

APPENDIX D5
Biological Resources Existing Conditions

This page intentionally left blank

Biological Resources—Appendix D5

Biological Resources Existing Conditions Tables

TABLE D5-1
SUMMARY OF BENTHIC INVERTEBRATE ORGANISMS FOUND ON THE STUDY SITE

Phylum	Class	Order	Family	Species*	MEC (2005)	BAP (2011)
Annelida	Clitellata	—	—	*Oligochaeta*	X	X
Annelida	Polychaeta	—	Capitellidae	*Capitella capitata Cmplx*	X	X
Annelida	Polychaeta	—	Capitellidae	*Notomastus* sp	X	
Annelida	Polychaeta	—	Capitellidae	*Notomastus* sp HYP3	X	
Annelida	Polychaeta	—	Capitellidae	*Notomastus hemipodus*	X	
Annelida	Polychaeta	—	Orbiniidae	*Scoloplos acmeceps*		X
Annelida	Polychaeta	—	—	*Euclymeninae*	X	
Annelida	Polychaeta	Aciculata	Eunicidae	*Marphysa* sp		X
Annelida	Polychaeta	Aciculata	Nereididae	*Neanthes acuminata Cmplx*		X
Annelida	Polychaeta	Aciculata	Nereididae	*Nereididae*		X
Annelida	Polychaeta	Aciculata	Syllidae	*Exogone lourei*		X
Annelida	Polychaeta	Aciculata	Syllidae	*Exogone sp*	X	X
Annelida	Polychaeta	Canalipalpata	Cirratulidae	*Cirratulidae*		X
Annelida	Polychaeta	Canalipalpata	Cirratulidae	*Cirriformia sp*		X
Annelida	Polychaeta	Canalipalpata	Sabellidae	*Fabricinuda limnicola*	X	X
Annelida	Polychaeta	Canalipalpata	Spionidae	*Polydora nuchalis*	X	X
Annelida	Polychaeta	Canalipalpata	Spionidae	*Spionidae*	X	X
Annelida	Polychaeta	Canalipalpata	Spionidae	*Streblospio benedicti*	X	X
Annelida	Polychaeta	Phyllodocida	Glyceridae	*Hemipodus borealis*	X	
Annelida	Polychaeta	Spionida	Spionidae	*Polydora sp*	X	
Arthropoda	Insecta	Diptera	—	fly larvae		X
Arthropoda	Malacostraca	Amphipoda	Ampithoidae	*Ampithoe lacertosa*		X
Arthropoda	Malacostraca	Amphipoda	Ampithoidae	*Ampithoe plumulosa*		X
Arthropoda	Malacostraca	Amphipoda	Ampithoidae	*Ampithoe sp*		X
Arthropoda	Malacostraca	Amphipoda	Ampithoidae	*Ampithoe valida*	X	X
Arthropoda	Malacostraca	Amphipoda	Aoridae	*Grandidierella japonica*	X	X
Arthropoda	Malacostraca	Amphipoda	Corophiidae	*Monocorophium insidiosum*	X	X
Arthropoda	Malacostraca	Amphipoda	Corophiidae	*Monocorophium sp*		X
Arthropoda	Malacostraca	Amphipoda	Hyalellidae	*Allorchestes angusta*		X
Arthropoda	Malacostraca	Amphipoda	Hyalidae	*Protohyale frequens*		X
Arthropoda	Malacostraca	Amphipoda	Pontogeneiidae	*Tethygeneia opata*	X	
Arthropoda	Malacostraca	Amphipoda	Corophiidae	*Monocorophium acherusicum*	X	

TABLE D5-1 (Continued)
SUMMARY OF BENTHIC INVERTEBRATE ORGANISMS FOUND ON THE STUDY SITE

Phylum	Class	Order	Family	Species*	MEC (2005)	BAP (2011)
Arthropoda	Malacostraca	Isopoda	Sphaeromatidae	*Dynamenella dilatata*	X	
Arthropoda	Malacostraca	Isopoda	Sphaeromatidae	*Sphaeromatidae*		X
Arthropoda	Malacostraca	Tanaidacea	Paratanaoidea incertae sedis	*Tanaopsis cadieni*	X	
Arthropoda	Maxillopoda	Poecilostomatoid a	Sapphirinidae	*Edwardsia sp*	X	
Arthropoda	Ostracoda	Podocopida	—	*Podocopida*		X
Cnidaria	Anthozoa	—	—	*Anthozoa*	X	
Cnidaria	Anthozoa	Actiniaria	Actiniidae	*Anthopleura artemisia*	X	
Cnidaria	Anthozoa	Actiniaria	Diadumenidae	*Diadumene sp*		X
Cnidaria	Anthozoa	Actiniaria	Edwardsiidae	*Drillactis sp*	X	X
Cnidaria	Anthozoa	Actiniaria	—	*Athenaria*		X
Cnidaria	Anthozoa	Actiniaria	—	*Edwardsiidae*	X	
Cnidaria	Hydrozoa	Leptothecata	—	*Campanulariidae*	X	
Mollusca	Gastropoda	Cephalaspidea	Clyichnidae	*Acteocina harpa*	X	
Mollusca	Gastropoda	Opisthobranchia	Aglajidae	*Melanochlamys diomedea*		X
Mollusca	Gastropoda	Opisthobranchia	Cylichnidae	*Acteocina inculta*	X	X
Mollusca	Gastropoda	Sorbeoconcha	Potamididae	*Cerithidea californica*		X
Mollusca	Pelecypoda	Mytilida	Mytilidae	*Adula* sp *BW1*	X	
Mollusca	Pelecypoda	Mytilida	Mytilidae	*Mytilidae, juv*		X
Mollusca	Pelecypoda	Mytilida	Mytilidae	*Mytilus californianus*	X	
Mollusca	Pelecypoda	Tellinidae	Tellina	*Tellina cadieni*	X	
Mollusca	Pelecypoda	Venerida	Semelidae	*Theora lubrica*	X	
Mollusca	Pelecypoda	Venerida	Tellinidae	*Macoma secta*	X	
Mollusca	Pelecypoda	Venerida	Tellinidae	*Macoma nasuta*	X	
Mollusca	Pelecypoda	Venerida	Veneridae	*Protothaca staminea*	X	
Mollusca	Pelecypoda	Venerida	Solecurtidae	*Tagelus affinis*	X	
Mollusca	Pelecypoda	Venerida	Solenidae	*Solen rostriformis*		X
Mollusca	Pelecypoda	Venerida	Veneridae	*Chione californiensis*		X
Mollusca	Pelecypoda	Venerida	Veneridae	*Leukoma laciniata*		X
Mollusca	Pelecypoda	Venerida	Veneridae	*Protothaca laciniata*	X	
Mollusca	Pelecypoda	Venerida	Veneridae	*Tellina meropsis*		X
Mollusca	Pelecypoda	Venerida	Veneridae	*Venerupis phillipinarum*	X	X
Nematoda	—	—	—	*Nematoda*	X	
Nemertea	—	—	—	*Nemertea*		X
Nemertea	—	—	—	*Nemertea*		X
Nemertea	Anopla	—	Lineidae	*Lineus sp*	X	
Nemertea	Anopla	Paleonemertea	—	*Paleonemertea*	X	X
Nemertea	Anopla	Paleonemertea	Carinomidae	*Carinoma mutabilis*		X
Nemertea	Enopla	Hoplonemertea	Emplectonematidae	*Paranemertes californica*	X	X
Platyhelminthes	Rhabditophora	Seriata	Monocelididae	*Monocelididae*	X	
Sipuncula	—	—	—	*Sipuncula*	X	
Unknown	—	—	—	unknown (insect)		X

SOURCE: Johnston et al. 2012[1] (modified from Johnston et al. 2012[2])

1 Johnston et al. 2012
2 Johnston et al. 2012

TABLE D5-2
BUTTERFLY SPECIES OBSERVED IN THE SALT MARSH OF AREA B, RIPARIAN AND FRESHWATER MARSH HABITATS DURING SURVEYS BY THE FRIENDS OF BALLONA WETLANDS

Common Name	Species Name	2008	2009	2010	2011
Acmon Blue	*Plebejus acmon*	X	X	X	X*(freshwater)
American Lady	*Vanessa virginiensis*				X*(freshwater)
Anise Swallowtail	*Papilio zelicaon*			X	
Blue sp (unknown)	—			X	X
Cabbage White	*Pieris rapae*	X	X	X	X
Checkered White	*Pontia protodice*	X	X	X	
Cloudless Sulphur	*Phoebis sennae*	X			
Common Buckeye	*Junonia coenia*	X		X	X
Eufala Skipper	*Lerodea eufala*	X	X	X	X
Fiery Skipper	*Hylephila phyleus*	X		X	X
Gray Hairstreak	*Srtymon melinus*	X		X	X
Lady sp	—				X
Gulf Fritillary	*Argraulis vanillae*			X*(freshwater)	
Marine Blue	*Leptotes marina*	X	X	X	X
Monarch	*Danaus plexippus*				X*(freshwater)
Mourning Cloak	*Nymphalis antiopa*			X*(riparian)	X*(freshwater)
Orange Sulphur	*Colias euytheme*	X			
Queen	*Danaus gilippus*	X			
Red Admiral	*Vanessa atalanta*				X
Sachem Skipper	*Atalopedes campestris*			X	
Sandhill Skipper	*Polites sabuleti*			X	X
Skipper sp	—		X	X	X
Umber Skipper	*Poanes melane*	X		X	X
Wandering Skipper	*Panoquina errans*			X	X
West Coast Lady	*Vanessa anabella*			X	
Western Pygmy-blue	*Brephidium exilis*	X	X	X	X
Western Swallowtail	*Papilio rutulus*			X* (riparian, cabora, freshwater, triangle)	X
White Checkered Skipper	*Pyrgus albescens*			X*(freshwater)	
White sp	—			X	

SOURCE: Johnston et al. 2012[3] (reproduced from Johnston et al. 2012[4])

3 Johnston et al. 2012
4 Johnston et al. 2012

TABLE D5-3
FISH SPECIES IN THE TIDE CHANNELS OF THE RESERVE

Common Name	Scientific Name	1981[a]	1991[b]	1996[c]	2001[d]	2004[e]	2005[f]	2009[g]	2009–2011[h]
Arrow goby	*Clevelandia ios*	X	X	X	X		X	X	X
Black perch	*Embiotoca jacksoni*	X							
California halibut	*Paralichthys californicus*	X							
California killifish	*Fundulus parvipinnis*	X	X	X	X	X	X	X	X
Cheekspot goby	*Ilypnus gilberti*	X		X	X			X	
CIQ goby	*Clevlandia/Ilypnus/ Quietula complex*							X	
Diamond turbot	*Hypsopsetta guttulata*	X				X			X
Longjaw mudsucker	*Gillichthys mirabilis*	X	X	X	X		X	X	X
Pacific staghorn sculpin	*Leptocottus armatus*	X	X	X	X				X
Queenfish	*Seriphus politus*	X							
Round stingray	*Urobatis halleri*								X
Sailfin molly*	*Poecilia latipinna*	X	X	X		X	X		
Shadow goby	*Quietula y-cauda*	X		X					
Shiner perch	*Cymatogaster aggregate*	X							
Striped mullet	*Mugil cephalus*	X	X					X	X
Topsmelt	*Atherinops affinis*	X	X	X	X		X	X	X
Western mosquitofish*	*Gambusia affinis*	X	X	X	X	X	X	X	X
Yellowfin goby*	*Acanthogobius flavimanus*	X	X						

NOTES:

X = present during survey
* nonnative species

a Swift and Frantz (Area B of Reserve sampled)
b Boland and Zedler, and Stolz (Area B of Reserve sampled)
c Haglund et al. (Area B of Reserve sampled)
d MEC-Weston (Area B of Reserve sampled)
e MEC-Weston (Area B of Reserve sampled)
f LA City (Area B of Reserve sampled)
g Merkel & Associates (Fiji Ditch and Area B of Reserve sampled)
h Johnston et al. (combined 2011 and 2012 survey results for Fiji Ditch and Area B of Reserve)

SOURCE: Modified from Johnston et al. 2011 to include results from Johnston et al. 2011 and 2012[5]

5 Modified from Johnston et al. 2011 to include results from Johnston et al. 2011 and 2012

TABLE D5-4
FISH SPECIES IDENTIFIED FROM MARINA DEL REY AND/OR BALLONA CREEK

Common Name	Scientific Name	1991[a]	1996[b]	2005[c]	2009[d]	2009–2011[e]
Arrow goby	*Clevelandia ios*	X	X	X		X
Barred sand bass	*Paralabrax nebulifer*	X	X			
Bat ray	*Myliobatis californica*	X	X			X
Bay pipefish	*Syngnathus leptorhynchus*				X	
Black croaker	*Cheilotrema saturnum*				X	
California barracuda	*Sphyraena argentea*	X	X			
California clingfish	*Gobiesox rhessodon*	X				
California corbina	*Menticirrhus undulatus*		X			
California halibut	*Paralichthys californicus*	X	X	X	X	X
California killifish	*Fundulus parvipinnis*				X	X
California needlefish	*Strongylura exilis*	X	X			
California lizardfish	*Synodus lucioceps*					X
California tonguefish	*Symphurus atricauda*	X	X			
Cheekspot goby	*Ilypnus gilberti*	X	X			
CIQ goby (unknown)	*Clevlandia/Ilypnus/Quietula complex*				X	
Diamond turbot	*Hypsopsetta guttulata*	X	X		X	X
Fantail sole	*Xystreurys liolepis*		X		X	
Giant kelpfish	*Heterostichus rostratus*	X				X
Hornyhead turbot	*Pleuronichthys verticalis*	X			X	
Jacksmelt	*Atherinopsis californiensis*		X			
Kelp bass	*Paralabrax clanthratus*	X				X
Longjaw mudsucker	*Gillichthys mirabilis*	X	X	X		
Mussel blenny	*Hypsoblennius jenkinsi*	X	X			
Northern anchovy	*Engraulis mordax*	X	X			
Opaleye	*Girella nigricans*		X			
Pacific sardine	*Sardinops sagax*	X	X			
Pacific staghorn sculpin	*Leptocottus armatus*	X			X	
Queenfish	*Seriphus politus*	X	X		X	
Round stingray	*Urobatis halleri*	X			X	
Sailfin molly*	*Poecilia latipinna*			X		
Salema	*Xenistius californiensis*	X	X		X	
Sargo	*Anisotremus davidsoni*		X		X	
Shadow goby	*Quietula y-cauda*		X			
Shiner perch	*Cymatogaster aggregata*	X	X		X	
Shovelnose guitarfish	*Rhinobatis productus*				X	
Specklefin midshipman	*Porichthys myriaster*		X			X
Spotted kelpfish	*Gibbonsia elegans*	X	X			
Spotted sand bass	*Paralabrax maculatofasciatus*		X			
Spotted turbot	*Pleuronichthys ritteri*	X	X			
Striped kelpfish	*Gibbonsia metzi*				X	
Striped mullet	*Mugil cephalus*				X	X

TABLE D5-4 (Continued)
FISH SPECIES IDENTIFIED FROM MARINA DEL REY AND/OR BALLONA CREEK

Common Name	Scientific Name	1991[a]	1996[b]	2005[c]	2009[d]	2009–2011[e]
Topsmelt	*Atherinops affinis*	X	X	X	X	
Western mosquitofish*	*Gambusia affinis*			X		
White croaker	*Genyonemus lineatus*	X	X			
White seabass	*Atractoscion nobilis*	X	X			
White seaperch	*Phanerodon furcatus*		X			
Yellowfin croaker	*Umbrina roncador*		X		X	
Yellowfin goby*	*Acanthogobius flavimanus*	X				
Zebra perch	*Hermosilla azurea*		X			

NOTES:

X = present during survey
* nonnative species

a Allen (both Marina del Rey and Ballona Creek sampled)
b Haglund et al. (both Marina del Rey and Ballona Creek sampled)
c LA City (Marina del Rey not sampled)
d Merkel & Associates (Marina del Rey not sampled)
e Johnston et al. (combined 2011 and 2012 survey results within Ballona Creek; Marina del Rey not sampled)

SOURCE: Modified from Johnston et al. 2011 to include results from Johnston et al. 2011 and 2012.

TABLE D5-5
REPTILE AND AMPHIBIAN SPECIES IN THE STUDY AREA

Common Name	Scientific Name	1981[a]	1991[b]	1996[c]	2007[d]	2009[e]	2009–2011[f]	FWM[g]
American bullfrog*	*Rana catesbeiana*							X
Baja California treefrog	*Pseudacris hypochondriaca hypochondriaca*	X		X	X		X	X
California kingsnake	*Lampropeltis getula californiae*	X	X	X			X	X
California toad	*Bufo boreas halophilus*	X		X				X
Garden slender salamander	*Batrachoseps major major*	X	X				X	
Great Basin fence lizard	*Sceloporus occidentalis*	X	X	X	X	X	X	X
Red-eared slider*	*Trachemys scripta elegans*							X
San Bernardino ring-necked snake	*Diadophis punctatus modestus*						X	
San Diego alligator lizard	*Elgaria multicarinata webbii*	X	X	X	X	X	X	
San Diego gopher snake	*Pituophis catenifer annectens*	X	X	X	X	X	X	X
Southern California legless lizard (=Silvery legless lizard)	*Anniella stebbinsi* (=*Anniella pulchra pulchra*)	X	X		X		X	
Southern Pacific rattlesnake	*Crotalus oreganus helleri*						X	
Western side-blotched lizard	*Uta stansburiana elegans*	X	X	X	X	X	X	

NOTES:

X = species present
* Introduced species

a Hayes and Guyer—Areas A and B of the Reserve (as reported in PWA 2006a)
b Frank Hovore and Associates—Areas A and B of the Reserve (as reported in PWA 2006a)
c Impact Sciences, Inc.—Areas A and B of the Reserve (as reported in PWA 2006a)
d Sustaita et al.—Area B of the Reserve (as reported in PWA 2006a)
e Johnston et al.—Area B of the Reserve for Early Action Plant (EAP)
f Johnston et al.—Areas A, B, and C of the Reserve for Baseline Assessment Program (BAP)
g Species reported in the area of the adjacent freshwater marsh between 2009 and 2011 (Johnston et al. 2011, 2012)

TABLE D5-6
BIRD SPECIES DOCUMENTED IN THE STUDY AREA

Common Name	Scientific Name	Ballona Valley Status Designationc	Source		
			SMBRC[a]	FWM[b]	Cooper[c]
Acorn Woodpecker	*Melanerpes formicivorus*	Vagrant (casual on the coast)		X*	X
Allen's Hummingbird	*Selasphorus sasin*	Common perennial resident and nester	X[2]	X (2006–2010)	X
American Avocet	*Recurvirostra americana*	Currently an occasional transient		X	X
American Bittern	*Botarus lentiginosus*	Mostly extirpated as a winter resident; however, recent wintering documented at FWM (freshwater marsh)	X	X*	X
American Coot	*Fulica americana*	Reestablished; now a common breeding perennial resident at FWM; transient and winter resident elsewhere	X[1b]	X (2003–2010)	X
American Crow	*Corvus brachyrhynchos*	Common perennial resident	X[1a]	X	X
American Goldfinch	*Spinus tristis*	Extirpated as breeder; now an irregularly uncommon transient and winter visitor	X[1b]	X (2010)	X
American Kestrel	*Falco sparverius*	Fairly common resident	X[2]	X	X
American Pipit	*Anthus rubescens*	Fairly common winter resident	X	X	X
American Robin	*Turdus migratorius*	Occasional winter and irregular visitor to Westchester	X	X	X
American Tree Sparrow	*Spizella arborea*	Vagrant		X*	X
American White Pelican	*Pelecanus erythrorhynchos*	Rare winter visitor and transient		X*	X
American Wigeon	*Anas americana*	Common winter resident and fall transient	X	X	X
Anna's Hummingbird	*Calypte anna*	Common permanent resident in all terrestrial habitats	X[1a]	X (2006–2010)	X
Ash-throated Flycatcher	*Myiarchus cinerascens*	Fairly common transient in both spring and fall	X	X	X
Baird's Sandpiper	*Calidris bairdii*	Probably a rare early fall transient	X	X*	X
Bank Swallow	*Riparia riparia*	Occasional transient; may be most common in early fall		X*	X
Barn Owl	*Tyto alba*	Rare (at least rarely recorded) perennial visitor	X	X*	X
Barn Swallow	*Hirundo rustica*	Common transient and summer resident; uncommon in winter	X[1a]	X (2003–2010)	X
Belted Kingfisher	*Megaceryle alcyon*	Uncommon transient and winter visitor to all aquatic habitats	X	X	X
Bewick's Wren	*Thryomanes bewickii*	Irregular and occasional fall transient and rare winter visitor	X	X*	X
Black Oystercatcher	*Haematopus bachmani*	Uncommon resident	X		X
Black Phoebe	*Sayornis nigricans*	Common perennial resident in all habitats	X[1b]	X (2003–2010)	X

TABLE D5-6 (Continued)
BIRD SPECIES DOCUMENTED IN THE STUDY AREA

Common Name	Scientific Name	Ballona Valley Status Designationc	Source		
			SMBRC[a]	FWM[b]	Cooper[c]
Black Skimmer	*Rynchops niger*	Currently an irregularly uncommon mid-winter and spring visitor; rare at other times of year			X
Black Swift	*Cypseloides niger*	Probably a rare and irregular transient		X*	X
Black Turnstone	*Arenaria melanocephala*	Common transient and winter resident on jetties, breakwaters, and beach	X		X
Black-and-white Warbler	*Mniotilta varia*	—	X		
Black-bellied Plover	*Pluvialis squatarola*	Common nonbreeding resident, particularly in fall and winter	X	X	X
Black-crowned Night-Heron	*Nycticorax nycticorax*	Recent colonizer as a breeder; fairly common perennial resident	X[1b]	X	X
Black-headed Grosbeak	*Pheucticus melanocephalus*	Extirpated as breeder; now a fairly common transient; rare (irregular?) summer resident	X	X	X
Black-necked Stilt	*Himantopus mexicanus*	Reestablished as a common perennial resident and localized breeder away from the coast	X[1b]	X ('03,'07,'08, attempt '09,'10)	X
Blackpoll Warbler	*Setophaga striata*	Rare fall transient		X*	X
Black-throated Gray Warbler	*Setophaga nigrescens*	Uncommon transient and winter resident; more common in Westchester	X	X	X
Black-throated Sparrow	*Amphispiza bilineata*	Vagrant			X
Blue Grosbeak	*Passerina caerulea*	Uncommon transient; rare summer resident	X	X	X
Blue-gray Gnatcatcher	*Polioptila caerulea*	Common fall transient and fairly common winter resident	X	X	X
Blue-winged Teal	*Anas discors*	Uncommon perennial visitor	X	X	X
Bobolink	*Dolichonyx oryzivorus*	Rare transient	X	X*	X
Bonaparte's Gull	*Chroicocephalus ridibundus*	Currently an irregular common winter visitor and spring transient; rare in summer and fall	X	X	X
Brandt's Cormorant	*Phalacrocorax penicillatus*	Probably fairly common winder resident on breakwaters	X		X
Brant	*Branta bernicla*	Occasional spring transient; casual summer/ winter	X	X*	X
Brewer's Blackbird	*Euphagus cyanocephalus*	Uncommon and localized resident, more common in winter	X		X
Brewer's Sparrow	*Spizella breweri*	Probably a rare transient		X*	X
Brown Pelican	*Pelecanus occidentalis*	Abundant late summer, fall and winter resident	X	X*	X
Brown-headed Cowbird	*Molothrus ater*	Uncommon transient and summer visitor; rare in winter	X[2]	X (2007, 2010)	X
Bufflehead	*Bucephala albeola*	Common winter resident	X	X	X
Bullock's Oriole	*Icterus bullockii*	Uncommon summer resident and spring transient, rare in fall and winter	X[1a]	X	X

TABLE D5-6 (Continued)
BIRD SPECIES DOCUMENTED IN THE STUDY AREA

Common Name	Scientific Name	Ballona Valley Status Designationc	Source		
			SMBRC[a]	FWM[b]	Cooper[c]
Burrowing Owl	*Athene cunicularia*	Rare fall and winter visitor	X		X
Bushtit	*Psaltriparus minimus*	Common perennial resident	X[1a]	X (2006–2010)	X
Cackling Goose	*Branta hutchinsii*	Vagrant		X*	X
California Gnatcatcher	*Polioptila californica*	Extirpated; however, a couple individuals observed in Reserve in 2010-2011.	X		
California Gull	*Larus californicus*	Common winter resident and fall transient; fairly common spring transient; uncommon summer lingerer	X	X	X
California Quail	*Callipepla californica*	Extirpated as a breeding perennial resident		X*	X
California Thrasher	*Toxostoma redivivum*	Once considered extirpated, individual(s) detected in Ballona wetlands	X	X*	X
California Towhee	*Melozone crissalis*	Fairly common perennial resident in areas of scrub	X[1a]	X (2009–2010)	X
Canada Goose	*Branta canadensis*	Established breeding at FWM	X[1b]	X (2006–2010)	X
Canvasback	*Aythya valisineria*	Extirpated as winter resident		X	X
Caspian Tern	*Hydroprogne caspia*	Common spring transient, fairly common nonbreeding visitor in summer, and uncommon during fall and winter	X[3]	X	X
Cassin's Vireo	*Vireo cassinii*	Occasional spring transient; rare in fall		X	X
Cassin's Kingbird	*Tyrannus vociferans*	Uncommon resident; local breeder	X[2]	X	X
Cattle Egret	*Bubulcus ibis*	Occasional winter visitor and transient	X	X*	X
Cedar Waxwing	*Bombycilla cedrorum*	Uncommon and localized winter visitor and transient		X*	X
Chestnut-sided Warbler	*Setophaga pensylvanica*	Rare fall transient		X*	X
Chipping Sparrow	*Spizella passerina*	Uncommon transient	X	X	X
Cinnamon Teal	*Anas cyanoptera*	Extirpated as a breeder; winter resident	X[1b]	X (2008–2010)	X
Clark's Grebe	*Aechmophorus clarkii*	Probably an occasional winter visitor			X
Clay-colored Sparrow	*Spizella pallida*	Probably a rare fall transient		X*	X
Cliff Swallow	*Petrochelidon pyrrhonota*	Common spring transient and summer resident; uncommon fall transient	X	X	X
Common Gallinule (=Common Moorhen)	*Gallinula galeata* (=*Gallinula chloropus*)	Reestablished as an uncommon transient and winter visitor at FWM; recent breeding at FWM confirmed		X (2008–2010)	X
Common Goldeneye	*Bucephala clangula*	Occasional winter visitor and early spring transient		X	X

TABLE D5-6 (Continued)
BIRD SPECIES DOCUMENTED IN THE STUDY AREA

Common Name	Scientific Name	Ballona Valley Status Designationc	Source		
			SMBRC[a]	FWM[b]	Cooper[c]
Common Loon	*Gavia immer*	Fairly common winter resident and spring transient		X*	X
Common Poorwill	*Phalaenoptilus nuttallii*	Casual transient	X		X
Common Raven	*Corvus corax*	Fairly common perennial resident	X[1a]	X	X
Common Yellowthroat	*Geothlypis trichas*	Common perennial resident	X[1a]	X (2003–2010)	X
Cooper's Hawk	*Accipiter cooperii*	Fairly common fall transient and winter visitor; uncommon summer resident; local breeder in residential areas	X[1b]	X	X
Dark-eyed Junco ("Oregon")	*Junco hyemalis*	Uncommon winter resident	X	X*	X
Double-crested Cormorant	*Phalacrocorax auritus*	Common winter resident; breeding at Marina del Rey	X[1b]	X	X
Downy Woodpecker	*Picoides pubescens*	Occasional perennial visitor	X[3]	X	X
Dunlin	*Calidris alpina*	Uncommon winter visitor and spring transient	X	X*	X
Dusky Flycatcher	*Empidonax oberholseri*	Occasional transient	X	X	X
Eared Grebe	*Podiceps nigricollis*	Fairly common winter resident and transient	X	X	X
Eastern Phoebe	*Sayornis phoebe*	Individual at FWM (Cooper 2009)		X*	X
Elegant Tern	*Thalasseus elegans*	Common spring, summer and fall resident to the immediate coast and lower Ballona Creek	X	X*	X
Eurasian Collared-dove	*Streptopelia decaocto*	Currently a vagrant, but increasing regionally	X	X*	X
European Starling (Introduced)	*Sturnus vulgaris*	Common perennial resident, most numerous in summer and fall	X[1b]	X (2010)	X
Ferruginous Hawk	*Buteo regalis*	Casual winter visitor		X*	X
Forster's Tern	*Sterna forsteri*	Uncommon to fairly common perennial visitor along immediate coast	X	X	X
Fox Sparrow	*Passerella iliaca*	Uncommon (and localized) winter resident and occasional transient	X	X	X
Gadwall	*Anas strepera*	Winter resident; uncommon through summer	X[2]	X (2005–2010)	X
Glaucous-winged Gull	*Larus glaucescens*	Fairly common winter resident (generally seen near coast and along Ballona Creek)	X	X	X
Golden-crowned Kinglet	*Regulus satrapa*	Vagrant			X
Golden-crowned Sparrow	*Zonotrichia atricapilla*	Fairly common winter resident in native scrub	X	X	X
Grasshopper Sparrow	*Ammodramus savannarum*	Vagrant	X		X
Gray Flycatcher	*Empidonax wrightii*	Occasional transient and casual winter visitor		X*	X

TABLE D5-6 (Continued)
BIRD SPECIES DOCUMENTED IN THE STUDY AREA

Common Name	Scientific Name	Ballona Valley Status Designationc	Source		
			SMBRC[a]	FWM[b]	Cooper[c]
Great Blue Heron	*Ardea herodias*	Common breeding resident	X[1b]	X	X
Great Egret	*Ardea alba*	Fairly common transient and winter resident; uncommon summer resident	X[1b]	X	X
Great Horned Owl	*Bubo virginianus*	Rare perennial resident	X[1a]		X
Greater Scaup	*Aythya marila*	Uncommon winter resident; casual in summer		X	X
Greater White-fronted Goose*	*Anser albifrons*	Rare transient and winter visitor		X	X
Greater Yellowlegs	*Tringa melanoleuca*	Fairly common transient and winter resident	X	X	X
Great-tailed Grackle	*Quiscalus mexicanus*	Common in winter, spring, and summer; occasional in fall	X[3]	X (2003–2010)	X
Green Heron	*Butorides virescens*	Reestablished breeder; uncommon perennial resident	X	X (2005, 2008–2010)	X
Green-winged Teal	*Anas crecca*	Common fall transient and winter resident	X	X	X
Hammond’s Flycatcher	*Empidonax hammondii*	Occasional spring transient throughout; probably rare fall transient	X	X	X
Heermann’s Gull	*Larus heermanni*	Common in summer, fall and winter along immediate coast; uncommon in late winter and spring	X		X
Hermit Thrush	*Catharus guttatus*	Uncommon winter resident	X	X	X
Hermit Warbler	*Setophaga occidentalis*	Uncommon mid-spring transient, casual in fall and winter		X	X
Herring Gull	*Larus argentatus*	Uncommon winter visitor	X	X	X
Hooded Merganser	*Lophodytes cucullatus*	Occasional and irregular late fall and winter visitor		X	X
Hooded Oriole	*Icterus cucullatus*	Common spring and early summer resident	X[2]	X	X
Horned Grebe	*Podiceps auritus*	Uncommon winter resident		X*	X
House Finch	*Carpodacus mexicanus*	Common perennial resident	X[1a]	X (2006–2010)	X
House Sparrow (Introduced)	*Passer domesticus*	Common perennial resident	X[1a]	X	X
House Wren	*Troglodytes aedon*	Common fall transient, fairly common through winter; recent spring records	X[3]	X	X
Indigo Bunting	*Passerina cyanea*	Probably a casual transient and summer visitor			X
Killdeer	*Charadrius vociferus*	Common perennial resident	X[1a]	X (2004–2010)	X
Lark Sparrow	*Chondestes grammacus*	Occasional fall transient; rare in late winter and spring		X*	X
Lazuli Bunting	*Passerina amoena*	Uncommon transient; casual into summer	X	X	X

TABLE D5-6 (Continued)
BIRD SPECIES DOCUMENTED IN THE STUDY AREA

Common Name	Scientific Name	Ballona Valley Status Designationc	Source		
			SMBRC[a]	FWM[b]	Cooper[c]
Least Bell's Vireo	*Vireo bellii pusillus*	Confirmed breeding in riparian habitat on Reserve and FWM	X[1a]	X* (2010)	X
Least Bittern	*Ixobrychus exilis*	Rare and localized perennial visitor or resident; breeding at FWM		X (2005–2010)	X
Least Sandpiper	*Calidris minutilla*	Common transient and uncommon winter visitor	X	X	X
Least Tern	*Sternula antillarum*	Fairly common summer resident, with a large breeding colony on Venice Beach and forage widely	X[1b]	X	X
Lesser Goldfinch	*Spinus psaltria*	Fairly common perennial resident in residential Westchester; uncommon transient and winter visitor on the immediate coast	X[1a]	X (2006–2010)	X
Lesser Nighthawk	*Chordeiles acutipennis*	Rare transient		X*	X
Lesser Scaup	*Aythya affinis*	Common winter resident; casual in summer	X	X	X
Lesser Yellowlegs	*Tringa flavipes*	Rare transient and winter visitor		X*	X
Lincoln's Sparrow	*Melospiza lincolnii*	Common transient and fairly common winter resident	X	X	X
Little Blue Heron	*Egretta caerulea*	Vagrant		X*	X
Loggerhead Shrike	*Lanius ludovicianus*	Extirpated as a breeder; now an uncommon summer, fall and winter resident	X	X	X
Long-billed Curlew	*Numenius americanus*	Currently an occasional transient	X	X*	X
Long-billed Dowitcher	*Limnodromus scolopaceus*	Common winter resident and transient	X	X	X
Long-tailed Duck	*Clangula hyemalis*	Occasional winter visitor and rare spring transient in salt water			X
MacGillivray's Warbler	*Geothlypis tolmiei*	Occasional transient		X	X
Mallard	*Anas platyrhynchos*	Common perennial resident	X[1a]	X (2003–2010)	X
Mandarin Duck (Introduced)	*Aix galericulata*	—	X	X	
Marbled Godwit	*Limosa fedoa*	Common transient and winter resident on immediate coast	X	X*	X
Marsh Wren	*Cistothorus palustris*	Fairly common fall transient and winter resident	X	X	X
Merlin	*Falco columbarius*	Uncommon transient and winter visitor	X	X	X
Mew Gull	*Larus canus*	Uncommon winter visitor	X	X	X
Mourning Dove	*Zenaida macroura*	Common perennial resident	X[1a]	X (2003–2010)	X
Mute Swan (Introduced)	*Cygnus olor*	—		X*	
Nashville Warbler	*Oreothypis ruficapilla*	Fairly common spring and uncommon fall migrant	X	X	X

TABLE D5-6 (Continued)
BIRD SPECIES DOCUMENTED IN THE STUDY AREA

Common Name	Scientific Name	Ballona Valley Status Designationc	Source		
			SMBRC[a]	FWM[b]	Cooper[c]
Northern Flicker	*Colaptes auratus*	Common fall and early spring transient; fairly common through winter; extirpated as a breeder	X	X	X
Northern Harrier	*Circus cyaneus*	Extirpated as a breeding perennial resident; now occasional fall/winter visitor w/ few overwintering	X	X	X
Northern Mockingbird	*Mimus polyglottos*	Common perennial resident	X[1a]	X (2006–2010)	X
Northern Parula	*Setophaga americana*	Single male reported (Cooper 2009)		X*	X
Northern Pintail	*Anas acuta*	Uncommon in migration and winter		X	X
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	Common spring transient; fairly common summer resident and early fall transient; casual in winter	X[1a]	X	X
Northern Shoveler	*Anas clypeata*	Common in fall and winter at FWM; uncommon to rare elsewhere	X	X	X
Northern Waterthrush	*Parkesia noveboracensis*	Rare transient		X*	X
Nutmeg Mannikin (Introduced)	*Lonchura punctulata*	Three individuals reported (Cooper 2008)		X	X
Nuttall's Woodpecker	*Picoides nuttallii*	Occasional fall and winter visitor; uncommon year round in residential Westchester	X	X*	X
Olive-sided Flycatcher	*Contopus cooperi*	Occasional transient		X	X
Orange Bishop (Introduced)	*Euplectes franciscanus*	Currently a fairly common spring, summer and fall resident within a small area near the FWM; occasional elsewhere	X[2]	X	X
Orange-crowned Warbler	*Oreothlypis celata*	Common transient and uncommon winter resident	X[2]	X (suspected 2010)	X
Osprey	*Pandion haliaetus*	Uncommon fall transient; rare visitor at all times of the year	X	X	X
Pacific Loon	*Gavia pacifica*	Uncommon winter resident and spring transient		X*	X
Pacific-slope Flycatcher	*Empidonax difficilis*	Fairly common transient; potential breeder	X	X	X
Palm Warbler	*Setophaga palmarum*	Occasional late fall transient; rare winter visitor and spring transient	X	X*	X
Pectoral Sandpiper	*Calidris melanotos*	Probably a rare fall transient		X*	X
Peregrine Falcon	*Falco peregrinus*	Uncommon transient and winter visitor; since 2003 singles have been present mid-summer through winter	X	X	X
Phainopepla	*Phainopepla nitens*	Casual transient		X*	X
Pied-billed Grebe	*Podilymbus podiceps*	Colonized as a breeder	X[1b]	X (2003–2010)	X

TABLE D5-6 (Continued)
BIRD SPECIES DOCUMENTED IN THE STUDY AREA

Common Name	Scientific Name	Ballona Valley Status Designationc	Source		
			SMBRC[a]	FWM[b]	Cooper[c]
Prothonotary Warbler	*Protonotaria citrea*	Vagrant (Cooper 2008)		X*	X
Purple Martin	*Progne subis*	Probably a rare transient	X	X*	X
Red Knot	*Calidris canutus*	Occasional fall transient and winter visitor; rare in spring			X
Red-breasted Merganser	*Mergus serrator*	Fairly common winter resident and rare transient; casual in summer	X	X*	X
Red-breasted Nuthatch	*Sitta canadensis*	Probably a rare, irregular fall and winter visitor during “invasion years”			X
Redhead	*Aythya americana*	Uncommon in fall and winter		X	X
Red-necked Phalarope	*Phalaropus lobatus*	Uncommon early fall and spring; most common in August		X	X
Red-shouldered Hawk	*Buteo lineatus*	Occasional transient and winter visitor	X	X	X
Red-tailed Hawk	*Buteo jamaicensis*	Common and conspicuous resident	X[1a]	X	X
Red-throated Loon	*Gavia stellata*	Uncommon spring transient	X	X*	X
Red-throated Pipit	*Anthus cervinus*	Vagrant		X*	X
Red-winged Blackbird	*Agelaius phoeniceus*	Common spring, summer and winter resident; breeding	X[2]	X (2003–2010)	X
Ring-billed Gull	*Larus delawarensis*	Common winter resident and fall transient; fairly common spring transient; uncommon summer lingerer	X	X	X
Ring-necked Duck	*Aythya collaris*	Uncommon		X	X
Rock Pigeon (Introduced)	*Columba livia*	Common perennial resident throughout	X[1b]	X	X
Royal Tern	*Thalasseus maximus*	Uncommon fall, winter and spring visitor to immediate coast and lower Ballona Creek	X		X
Ruby-crowned Kinglet	*Regulus calendula*	Fairly common winter resident	X	X	X
Ruddy Duck	*Oxyura jamaicensis*	Fairly common breeding resident	X[1b]	X (2003–2010)	X
Ruddy Turnstone	*Arenaria interpres*	Common transient and winter resident on jetties, break water, and beach	X		X
Rufous Hummingbird	*Selasphorus rufus*	Rare (or rarely-identified) spring transient and casual winter visitor		X*	X
Sage Thrasher	*Oreoscoptes montanus*	Probably a rare fall transient		X*	X
Sanderling	*Calidris alba*	Common transient and winter resident; generally found on the wet sand of beach	X	X*	X
Savannah Sparrow (“Belding’s”)	*Passerculus sandwichensis beldingi*	Fairly common perennial resident almost exclusively in and adjacent to *Salicornia*-dominated wetlands	X[1a]		X

TABLE D5-6 (Continued)
BIRD SPECIES DOCUMENTED IN THE STUDY AREA

Common Name	Scientific Name	Ballona Valley Status Designationc	Source		
			SMBRC[a]	FWM[b]	Cooper[c]
Savannah Sparrow ("Large-billed")	*Passerculus sandwichensis rostratus*	Rare and highly localized fall and winter visitor; found at Ballona Creek jetty			X
Savannah Sparrow (other ssp)	*Passerculus sandwichensis ssp*	Common transient and winter resident	X	X	X
Say's Phoebe	*Sayornis saya*	Common fall transient and winter resident; rare through summer	X[1b]	X	X
Semipalmated Plover	*Charadrius semipalmatus*	Probably a rare fall transient	X	X	X
Sharp-shinned Hawk	*Accipiter striatus*	Uncommon winter resident	X	X	X
Short-billed Dowitcher	*Limnodromus griseus*	Fairly common transient		X	X
Short-eared Owl	*Asio flammeus*	Currently a casual transient		X*	X
Snow Goose	*Chen caerulescens*	Casual winter visitor and transient; extirpated as a winter resident			X
Snowy Egret	*Egretta thula*	Fairly common perennial resident	X[1b]	X	X
Solitary Sandpiper	*Tringa solitaria*	Probably an occasional fall transient	X	X*	X
Song Sparrow	*Melospiza melodia*	Common perennial resident in riparian and emergent marsh vegetation and Westchester Bluffs; uncommon transient and winter visitor	X[1a]	X (2003–2010)	X
Sora	*Porzana carolina*	Reestablished as a fairly common transient and winter resident at FWM	X	X	X
Spotted Sandpiper	*Actitis macularius*	Fairly common transient and uncommon winter visitor	X	X	X
Spotted Towhee	*Pipilo maculatus*	Uncommon and localized transient and winter visitor; occasional in spring and summer	X	X*	X
Surf Scoter	*Melanitta perspicillata*	Common winter resident and spring transient; casual in summer	X		X
Surfbird	*Aphriza virgata*	Fairly common spring transient and winter resident on jetties and breakwater	X		X
Swainson's Thrush	*Catharus ustulatus*	Probably an occasional late spring transient	X	X	X
Swamp Sparrow	*Melospiza georgiana*	Occasional winter visitor and transient		X*	X
Thayer's Gull	*Larus thayeri*	Uncommon winter visitor	X		X
Townsend's Warbler	*Setophaga townsendi*	Fairly common spring and uncommon fall transient and winter resident;	X	X	X
Tree Swallow	*Tachycineta bicolor*	Fairly common transient and uncommon winter visitor; local breeder	X[1a]	X (2004–2010)	X
Tricolored Blackbird	*Agelaius tricolor*	Aside from regular wintering flock in vicinity of Westchester Park, only a casual visitor		X*	X
Tropical Kingbird	*Tyrannus melancholicus*	Probably a casual fall visitor		X*	X
Tundra Swan	*Cygnus columbianus*	Vagrant		X*	X

TABLE D5-6 (Continued)
BIRD SPECIES DOCUMENTED IN THE STUDY AREA

Common Name	Scientific Name	Ballona Valley Status Designationc	Source		
			SMBRC[a]	FWM[b]	Cooper[c]
Turkey Vulture	*Cathartes aura*	Uncommon transient	X	X	X
Vaux's Swift	*Chaetura vauxi*	Uncommon transient; occurring both in spring and fall; occasionally in large numbers	X	X	X
Vermilion Flycatcher	*Pyrocephalus rubinus*	Vagrant	X	X	X
Vesper Sparrow	*Pooecetes gramineus*	Occasional fall transient	X	X*	X
Violet-green Swallow	*Tachycineta thalassina*	Rare spring transient	X	X	X
Virginia Rail	*Rallus limicola*	Reestablished as an uncommon transient and rare winter visitor at FWM; more recently breeding confirmed at FWM	X	X (2009–2010)	X
Virginia's Warbler	*Oreothypis virginiae*	Rare fall transient		X	X
Wandering Tattler	*Tringa incana*	Uncommon winter visitor and transient, but present in small numbers practically year round	X		X
Warbling Vireo	*Vireo gilvus*	Fairly common spring transient, less common in fall		X	X
Western Grebe	*Aechmophorus occidentalis*	Common winter resident; rare in summer	X	X	
Western Gull	*Larus occidentalis*	Common summer, fall and winter resident in all aquatic habitats; fairly common in spring	X	X	X
Western Kingbird	*Tyrannus verticalis*	Common transient in both spring and fall; local breeder	X	X	X
Western Meadowlark	*Sturnella neglecta*	Common (but probably declining) winter resident, uncommon through summer	X[2]	X	X
Western Sandpiper	*Calidris mauri*	Common transient and uncommon winter visitor	X	X	X
Western Scrub-Jay	*Aphelocoma californica*	Fairly common perennial resident	X		X
Western Tanager	*Piranga ludoviciana*	Fairly common transient; casual winter visitor		X	X
Western Wood-Pewee	*Contopus sordidulus*	Occasional transient	X	X	X
Whimbrel	*Numenius phaeopus*	Common nonbreeding resident in saltwater habitats, with small numbers lingering through June along beach	X	X	X
White-crowned Sparrow	*Zonotrichia leucophrys*	Common winter resident and rare spring transient	X	X	X
White-faced Ibis	*Plegadis chihi*	Uncommon fall transient; occasional in spring	X	X	X
White-tailed Kite	*Elanus leucurus*	Fairly common nonbreeding resident from mid-summer to mid-winter; casual in spring	X[1b]	X	X
White-throated Sparrow	*Zonotrichia albicollis*	Probably a rare fall transient and winter visitor		X*	X
White-throated Swift	*Aeronautes saxatalis*	Irregularly common winter visitor; occasional at best in late summer and fall	X[3]	X	X
White-winged Dove	*Zenaida asiatica*	Rare fall transient		X*	X

TABLE D5-6 (Continued)
BIRD SPECIES DOCUMENTED IN THE STUDY AREA

Common Name	Scientific Name	Ballona Valley Status Designationc	Source		
			SMBRC[a]	FWM[b]	Cooper[c]
Willet	*Tringa semipalmata*	Common nonbreeding resident, primarily in saltwater habitats	X	X	X
Willow Flycatcher	*Empidonax traillii*	Fairly common transient	X	X	X
Wilson's Phalarope	*Phalaropus tricolor*	Uncommon and irregular early fall transient; rare spring transient		X	X
Wilson's Snipe	*Gallinago delicata*	Uncommon transient and winter resident in both fresh and salt marsh; most frequently seen in winter	X	X	X
Wilson's Warbler	*Cardellina pusilla*	Common spring and uncommon fall transient; rare winter visitor	X	X	X
Wood Duck	*Aix sponsa*	Rare visitor		X*	
Wrentit	*Chamaea fasciata*	Once considered extirpated, individual(s) recently detected in Ballona wetland	X		X
Yellow Warbler	*Setophaga petechia*	Common transient both in spring and fall; occasionally into early winter	X	X	X
Yellow-breasted Chat	*Icteria virens*	Rare transient; extirpated as a breeder	X	X	X
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*	Extirpated as a winter resident; now fairly common spring and rare fall transient at FWM		X	X
Yellow-rumped (Audubon) Warbler	*Setophaga coronata* ssp *auduboni*	Common winter resident and transient	X	X	X
Yellow-rumped (Myrtle) Warbler	*Setophaga coronata* ssp *coronata*	Uncommon winter visitor	X	X	X

NOTES: Species listed above include: "Common" (expected on every visit in season and hard to miss); "Fairly common" (expected in smaller numbers at proper season in ideal habitat); "Uncommon" (seen in season in small numbers, but somewhat unpredictable and often missed); "Occasional" (occurs annually, but typically in very low numbers so not regularly detected; and "Rare" (less than annual, but with an established pattern of occurrence, either seasonally). Unless reported by Johnston et al. (2011, 2012) and/or Read and Strecker (2010) or a Los Angeles County sensitive bird survey, species not included above include: "Casual" (irregular and never expected, with records every 10 years or so); "Vagrant" (one or two records total; unlikely to occur again); and "Extirpated" (species, or seasonal populations, that once occurred locally but no longer do).

a Santa Monica Bay Restoration Commission (Johnston et al. 2011, 2012). Superscript codes for this column refer to the following breeding categories (highest potential of breeding reported during the two survey periods used in table above):

- **Category 1a:** Nesting confirmed
- **Category 1b:** Breeding activity observed during survey, but actual nesting was adjacent to Reserve/lower Ballona Creek.
- **Category 2:** Potential breeding activity observed at Reserve/lower Ballona Creek during survey; e.g., paired and/or territorial birds during breeding season in suitable habitat, or family groups (including young capable of flight) appearing mid-season.
- **Category 3:** Sporadic occurrence of adult birds during breeding season, but with no direct evidence of breeding on or adjacent to site. This category is reserved for species known to breed in region, and not for over-summering, obviously nonbreeding individuals (including certain waterfowl, shorebirds) that might linger or pass through during spring/summer.

b Freshwater marsh (Read, E. and Strecker E. 2010). Unusual species observed in the Ballona freshwater marsh are marked with an asterisk (*).

c Dan Cooper (Cooper 2006: *Annotated Checklist of Birds of Ballona Valley, Los Angeles County, California*; and Cooper 2006, 2007, 2008, 2009: Addendums to Checklist).

TABLE D5-7
MAMMAL SPECIES DOCUMENTED AS OCCURRING IN THE STUDY AREA

Common Name	Scientific Name	Reference	Report Year
Black Rat	*Rattus rattus*	Impact Sciences	1996
Botta's pocket gopher	*Thomomys bottae*	Zedler Impact Sciences Psomas Johnston et al. Johnston et al.	1965 1996 2001 2011 2012
California Ground Squirrel	*Spermophilus beecheyi*	Zedler Psomas Johnston et al. Johnston et al.	1965 2001 2011 2012
Coyote	*Canis latrans*	E. Read email Johnston et al. Johnston et al.	2005 2011 2012
Desert Cottontail	*Sylvilagus audubonii*	Zedler Impact Sciences Johnston et al. Johnston et al.	1965 1996 2011 2012
Domestic Cat	*Felis cattus*	Zedler Impact Sciences Johnston et al. Johnston et al.	1965 1996 2011 2012
Domestic Dog	*Canis familiaris*	Friesen et al. Impact Sciences Johnston et al. Johnston et al.	1981 1996 2011 2012
Eastern Fox Squirrel	*Sciurus niger*	Johnston et al. Johnston et al.	2011 2012
Gray Fox	*Urocyon cinereoargenteus californicus*	Zedler	1965
House Mouse	*Mus musculus*	Zedler Friesen et al. Hovore Impact Sciences Psomas Johnston et al.	1965 1981 1991 1996 2001 2011
Norway Rat	*Rattus norvegicus*	Friesen et al. Impact Sciences	1981 1996
Raccoon	*Procyon lotor psora*	Friesen et al. Hovore Johnston et al. Johnston et al.	1981 1991 2011 2012
Rat Species	*Rattus sp*	Johnston et al. Johnston et al.	2011 2012
Red Fox	*Vulpes vulpes*	Hovore Impact Sciences	1991 1996
Southern California Salt Marsh Shrew	*Sorex ornatus salicornicus*	Zedler Friesen et al. Hovore	1965 1981 1991
San Diego Black-tailed Jackrabbit	*Lepus californicus bennetti*	Zedler Friesen et al.	1965 1981

TABLE D5-7 (Continued)
MAMMAL SPECIES DOCUMENTED AS OCCURRING IN THE STUDY AREA

Common Name	Scientific Name	Reference	Report Year
South Coast Marsh Vole	*Microtus californicus stephensi*	Zedler Friesen et al. Hovore Impact Sciences Psomas Johnston et al. Johnston et al.	1965 1981 1991 1996 2001 2011 2012
Striped Skunk	*Mephitis mephitis*	Zedler Impact Sciences Johnston et al. Johnston et al.	1965 1996 2011 2012
Virginia Opossum	*Didelphis virginiana*	Friesen et al. Hovore Impact Sciences Johnston et al. Johnston et al.	1981 1991 1996 2011 2012
Western Harvest Mouse	*Reithrodontomys megalotis*	Zedler Hovore Impact Sciences Psomas Johnston et al. Johnston et al.	1965 1991 1996 2001 2011 2012

SOURCE: Modified from PWA 2006a to include an earlier study reported by Zedler, J. B. 1982 and Johnston et al. 2011, 2012 survey results.[6]

6 Modified from PWA 2006a to include an earlier study reported by Zedler, J. B. 1982 and Johnston et al. 2011, 2012 survey results

TABLE D5-8
SPECIAL-STATUS NATURAL VEGETATION COMMUNITIES ON THE STUDY SITE

CNDDB (2014)	=	WRA (2015)	CDFW (Sawyer et al. 2009)	State Ranking	Subset Acres	Total Acres
South Mud Intertidal	=	Mudflat	N/A	S3.2	N/A	3.39
Southern Coastal Salt Marsh	=	Muted-Tidal Wetland and Subset of Non-Tidal Wetland (includes areas dominated or co-dominated by pickleweed)	N/A	S2.1	17.21	18.23
			Arthrocnemum subterminale alliance[a]	S2	1.02	
Coastal brackish marsh	=	Brackish marsh	N/A	S2.1	5.37	6.51
			Anemopsis californica alliance[a]	S2?	0.10	
			Bolboschoenus maritimus alliance[a]	S3	0.80	
			Elymus (=Leymus) triticoides alliance[a]	S3	0.07	
			Schoenoplectus americanus alliance[a]	S3	0.17	
		Nontidal Saltmarsh	Arthrocnemum subterminale alliance[a]	S2	0.56	1.38
			Elymus (=Leymus) triticoides alliance[a]	S3	0.03	
			Frankenia salina alliance[a]	S3	0.79	
		Ruderal Marsh	Frankenia salina alliance[a]	S3	N/A	0.01
Mule fat scrub	=	Subsets of Riparian Scrub and Woodland	Baccharis salicifolia—annual grass	S4	0.12	5.96
			Baccharis salicifolia alliance		5.84	
Southern Riparian Scrub	=	Subsets of Riparian Scrub and Woodland	Salix exigua—Baccharis salicifolia	S3.2	0.12	0.44
			Salix exigua alliance		0.32	
Southern Willow Scrub	=	Subset of Willow Thickets (includes area along former stream channel)	Salix lasiolepsis alliance	S2.1	N/A	8.84
Riversidean Upland Sage Scrub	=	Upland Scrub	N/A	S3.1	41.85	41.91
			Rhus integrifolia alliance[a]	S3	0.06	
Southern Dune Scrub	=	Stabilized Dune	N/A	S1.1	6.69	10.65
			Encelia californica—Artemisia californica association[a]	S3	0.89	
			Elymus (=Leymus) triticoides alliance[a]	S3	0.24	
			Lupinus chamissonis—Ericameria ericoides alliance[a]	S3	0.04	
			Lupinus chamissonis association[a]	S3	2.79	
Total					***85.08***	***97.32***

NOTES: The CNDDB uses the same ranking methodology originally developed by The Nature Conservancy and now maintained and recently revised by NatureServe. The *state rank* (S-rank) refers to the imperilment status only within California's state boundaries. It is a reflection of the overall status of an element through its state range. The state rank represent a letter + number score that reflects a combination of *Rarity*, *Threat*, and *Trend* factors, with weighting being heavier on *Rarity* than the other two.

S1 Critically Imperiled: Critically imperiled in the state because of extreme rarity (often five or fewer populations) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state.
S2 Imperiled: Imperiled in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the state.
S3 Vulnerable: Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the state.
S4 Apparently Secure: Uncommon but not rare in the state; some cause for long-term concern due to declines or other factors.
S5 Secure: Common, widespread, and abundant in the state.
SH All sites are historical; the element has not been seen for at least 20 years, but suitable habitat still exists.
SX All sites are extirpated.

Uncertainty about the rank of an element is expressed in two major ways:
- By expressing the ranks as a range of values: e.g., S2S3 means the rank is somewhere between S2 and S3.
- By adding a ? to the rank: e.g., S2? This represents more certainty than S2S3, but less certainty than S2.

[a] CDFW 2010: Special-Status Natural Vegetation Community.

SOURCE: ICF International, 2014.

TABLE D5-9
SUMMARY OF GLA HABITAT ASSESSMENT FOR RIVERSIDE AND SAN DIEGO FAIRY SHRIMP

	Riverside Fairy Shrimp			San Diego Fairy Shrimp	
	Ponding depth at least 12 inches	**Ponding Duration at least 60 days**	**Specific Conductance of less than 1,000 μMhos**	**Ponding duration at least 16 Day**	**Specific Conductance of less than 1,000 μMhos**
Requisite	Requisite(s) Not Present			Requisite(s) Not Present	
Area A					
A-1	X	X	X		X
A-2	X	X	X		X
A-3			X		X
A-4	X	X	X		X
A-5 to A-11	X	X	X		X
A-12	X	X	X		X
A-13			X		X
A-14			X		X
Area B					
B-1	X	X	X		X
B-2	X	X	X		X
B-3	X	X	X		X
B-4	X	X	X		X
B-5		X	X		X
B-6	X	X	X		X
B-7	X	X	X		X
B-8	X	X	X		X
B-9	X	X	X		X
B-10*	N/A	N/A	X	N/A	X
Area C					
C-1		X	X		X
C-2		X	X		X

NOTES:

μMhos = micromhos per centimeter

* B-10 receives nearly constant nuisance flows from development and remains wet for most of the year, meaning the depression is unsuitable for either species due to the long-term wetness.

SOURCE: Summarized by ICF International based on Glen Lukos Associates 2000 habitat assessment for Riverside and San Diego fairy shrimp.

TABLE D5-10
RESULTS OF SURVEYS FOR BELDING'S SAVANNAH SPARROW AT PLAYA VISTA, 1977 TO 2010

Study Year(s)	# Pairs Area B	# Pairs Area A	Surveys Conducted By
1977	37 pairs	No data	Massey 1977
1979	21	18	Dock and Schreiber 1981
1980	18	10	Dock and Schreiber 1981
1981	13	10-13	Dock and Schreiber 1981
1982–1985	No data	No data	—
1986	32	No data	Zembal et al. 1988
1987	30	5	Massey 1987
1988	No data	No data	—
1989	31	0	White 1989
1990	11-12	0	Corey and Massey 1990
1991	1 to 30 throughout the year	0 breeding; up to 7 Oct. to Feb.	Corey 1991
1992–1993	No data	No data	—
1994	10	0	Lockhart 1994
1995	21	0	Keane Biological Consulting 1996
1996	37	0	John Konecny, USFWS
1997	No surveys	No surveys	No surveys
1998	12 to 13	0	Keane Biological Consulting 1998
1999	No surveys	No surveys	—
2000	No surveys	No surveys	—
2001	13 to 15	0	Keane Biological Consulting 2001
2002	No surveys	No surveys	—
2003	No surveys	No surveys	Keane Biological Consulting 2004
2004	12	No surveys	Keane Biological Consulting 2004b
2005	11	No surveys	Keane Biological Consulting 2005
2007	12	No Surveys	Keane Biological Consulting 2007
2008	14	No Surveys	Keane Biological Consulting 2008
2009	22	No Survey	Keane Biological Consulting 2009
2010	20 territories	No territories, but two birds noted	Cooper 2010

SOURCE: PWA 2006[7] and Cooper 2010[8](reproduced from PWA 2006[9]; modified to include KBC 2009[10] and Cooper 2010[11])

7 PWA 2006
8 Cooper 2010
9 PWA 2006
10 KBC 2009
11 Cooper 2010

TABLE D5-11
HISTORY OF CALIFORNIA LEAST TERN NESTING IN THE VICINITY OF BALLONA WETLANDS, 1973–2014

Study Year(s)	Nesting Location	Number of Nesting Pairs	Number of Fledglings
1973–1976	Salt flats Area B	10–22	not recorded
1977	Venice Beach	35	30+
1977	Beethoven Street Fill	3	None
1978	Salt flats Area B	25–30	30
1978	Venice Beach	60–75	75
1979	Salt flats Area B	18–25	25
1979	Venice Beach	80–95	140
1980	Salt flats Area B	+	0
1980	Venice Beach	150–165	240
1981	Salt flats Area B	16	0
1981	Venice Beach	140–160	195
1982–1996	Salt flats Area B	0	0
1982–2005	Venice Beach[a]	82 to over 300	60 to over 300
2007	Venice Beach	449–453	414–440
2008	Venice Beach	460–698	296 in second nesting attempt (100% failure due to American crow predation of the first nesting attempt)
2009	Venice Beach	295	100% failure due to American crow predation
2010	Venice Beach	148–164	100% failure due to American crow predation
2011	Venice Beach	14–21	100% failure due to American crow predation
2014	Salt flats Area B	9	100% failure due to American crow predation
2014	Venice Beach	9+	9+

NOTE:
a One pair of least terns nested at Area B in 2001, but the nest was unsuccessful (KBC 2001[12])

SOURCE: PWA 2006[13] and Marschalek 007-2011[14] (modified from PWA 2006[15] to include Marschalek 2007–2011[16]); Richard Brody, pers. Comm. 2014

12 KBC 2001
13 PWA 2006
14 Marschalek 007-2011
15 PWA 2006
16 Marschalek 2007–2011

APPENDIX D6
Terrestrial Invertebrate Studies

This page intentionally left blank

Biological Resources—Appendix D6

Summary of Terrestrial Invertebrate Studies in the Study Area (1981 to 2011)

The following summarizes the results of terrestrial invertebrate studies performed in the study area between 1981 and 2013. Table D6-1 provides a summary of the benthic invertebrate studies conducted in the study area. This table is then followed by a summary of the survey results.

Table D6-1. Summary of Terrestrial Invertebrate Studies in the Study Area (modified from PWA 2006a to include later studies reported by Johnston et al. 2011, 2012 and Psomos 2013).

Year	Author	Geographic Extent	Description
1981	Nagano et al.	Areas A and B	Baseline report on insects and related terrestrial arthropods for The Biota of the Ballona Region
1991	Boland and Zedler	Area B	Fish and invertebrate research sponsored by the National Audubon Society
1991	Mattoni	Area B	Terrestrial arthropod survey for Playa Vista Environmental Impact Report (EIR)
1996	Hawks Biological Consulting	Areas A, B, C and D*	Sensitive insect survey for Impact Sciences
2000	Sapphos Environmental Inc	Area B	Survey of El Segundo blue butterfly for Psomas and USFWS
2007	Arnold 2007	Area B	Habitat assessment for special-status species
2008	Friends of Ballona	Area B	Walking butterfly surveys
2009	Friends of Ballona	Area B	Walking butterfly surveys
2010	Friends of Ballona	Area B	Walking butterfly surveys
2009-2010	Johnston et al. 2011	Areas A, B, C	Year 1 Baseline Assessment Program
2011	Friends of Ballona	Area B	Walking butterfly surveys
2011	Cooper 2011	Area B	Incidental observation
2010-2011	Johnston et al. 2011	Areas A, B, C	Year 2 Baseline Assessment Program
2013	Psomos	Area B	Survey of El Segundo blue butterfly

* = Area D, located east of Lincoln Boulevard, was considered part of the Ballona Wetlands until the late 1990s, when a residential development project was constructed there. Thus, Area D is not currently part of the Ballona Wetlands evaluated for the Conceptual Restoration Plan.

Nagano et al. (1981)

Nagano et al. conducted the most comprehensive terrestrial invertebrate survey of the Reserve to date. The goal of the survey was to collect and catalogue the terrestrial invertebrates of the Reserve. The survey methods included nets, traps, soil sifting and berlese funnels. The greatest arthropod diversity was in the sand dunes of Area B. The brackish and freshwater marshes were extensively sampled, but less diverse. The coastal sage and bluff habitats were not sampled (Johnston et al. 2011).

Mattoni (1991)

Mattoni conducted surveys in Area B, tracing a continuous survey transect through all the habitat types present. Observed butterflies, dayflying moths, dragonflies, beeflies, robber flies, other large flies and obvious bee and wasp species were recorded. In addition, pitfall traps and targeted surveys (for certain tiger beetles and several flies) were used. Species distribution was found to be highly nonrandom (Johnston et al. 2011). Figure D6-1 depicts sample areas for this study.

Boland and Zedler (1991)

Boland and Zedler conducted terrestrial invertebrate surveys of Area B from March through November 1990 as part of a broad ecology study sponsored by the National Audubon Society. The terrestrial invertebrates were sampled using pan traps. Five habitats were surveyed for terrestrial invertebrates: western salt marshes, central salt marshes, eastern salt marshes, salt pans, and old agricultural fields. The contents of the traps were identified to family. Large invertebrates were sampled using circular quadrats, and large animals (primarily snails) were counted. Pitfall traps were found to be dominated by amphipods, spiders, and insects (*Collembola, Diptera, Homoptera*, and *Hymenoptera*), with higher numbers of invertebrates found in the wet pickleweed sites than in the dry pickleweed sites. The nonnative milk snail (*Otala lacteal*) was common throughout the study area, reaching a peak density of approximately one individual/m^2 (Johnston et al. 2011). Figure D6-1 depicts sample areas for this study.

Hawks Biological Consulting (HBC) (1996)

Hawks Biological Consulting (HBC) conducted special interest insect species and habitat surveys in Areas A, B, C, and D, though they focused their efforts in the dune habitat of Area B with 20 pitfall traps. Additional field survey techniques included: walks (collection and observation), beating sheets, sweep nets, and an aspirator. Sixteen insect orders were collected from Areas A, B, and C. HBC also found three unlisted species of interest: the western mudflat tiger beetle (*Cicindela trifasciata sigmoidea*), two undescribed species of Jerusalem cricket (*Stenopelmatus* new species), and one undescribed species of sand roach (*Arenivage* new species) (Johnston et al. 2011). Figure D6-1 depicts sample areas for this study.

Sapphos Environmental Inc. (2000)

Sapphos Environmental Inc. assessed habitats for the El Segundo blue butterfly (*Euphilotes battoides allyni*) in October and November 2000 by walking belt-transects to identify areas that could support native coastal dune vegetation. No suitable habitat for the El Segundo blue butterfly was identified in Areas A, C, and D while a portion of Area B [identified as suitable habitat by the United States Fish and Wildlife Service (USFWS 1998 and 2008)] was confirmed as suitable by Sapphos Environmental Inc (Johnston et al. 2011).

Figure D6-1 depicts survey sites from previous reports: Boland and Zedler 1991 (blue), Mattoni 1991 (green), and HBC 1996 (pink) (reproduced from Johnston et al. 2011).

Arnold (2007)

Walking surveys were conducted in the Ballona Outdoor Learning and Discovery (BOLD) southwestern portion of Area B to assess habitat suitability for special status species. The survey concluded that the wandering skipper and mudflat tiger beetle have the greatest likelihood of using the BOLD project area. A single adult wandering skipper was observed at the BOLD site, along with small cabbage white butterfly larva *(Pieris rapae*), buckeye butterfly (*Junonia coenia*), Argentine ant, honey bee (*Apis mellifera*), and an unidentified species of ground-nesting bee. The cabbage white butterfly, Argentine ant, and honey bee are nonnative species (Johnston et al. 2011).

The Friend of Ballona Wetlands (2008-2011)

Walking surveys for butterflies conducted by the Friends of Ballona Wetlands (FBW) found 13 species in 2008, seven species in 2009, 18 species in 2010, and 15 species in 2011 in the salt marsh in the western portion of Area B in July of each year; four additional species were found in habitats adjacent to the salt marsh. The FBW recorded the presence of one of the special status butterflies, the wandering skipper (Johnston et al. 2011).

Johnston et al. (2009-2010)

Between 2009 and 2010, Johnston et al. conducted terrestrial invertebrate surveys for the Baseline Assessment Program (BAP) on the Reserve. The objective for the first year of the BAP invertebrate assessment was to extrapolate aerial arthropod productivity (as biomass) using length-fresh weight regressions for each habitat. Results showed the brackish marsh habitat had the lowest average total aerial arthropod productivity at 3.50 ± 0.59 mg/m^2/day). The high salt marsh had approximately twice the productivity of the brackish marsh, at 7.14 ± 1.37 mg/m2/day, but approximately half of the total average productivity of the low salt marsh, mid salt marsh, and salt pan habitats (14.9 ± 3.96, 14.9 ± 3.07, and 14.7 ± 4.12 mg/m^2/day, respectively), which all expressed similar productivity results. The upland grassland had the highest aerial arthropod productivity and the highest level of variability between transects at 29.0 ± 11.1 mg/m^2/day. In addition to the aerial arthropod surveys, ancillary observations of the nonnative milk snail (*Otala lacteal*) were common throughout the Reserve, especially on nonnative and upland vegetation. The snail was not surveyed quantitatively but was noted during sampling events. Finally, several terrestrial invertebrates were observed as incidental catch during the herpetofauna pitfall surveys. Individuals of the beetles (Order: Coleoptera) and other invertebrates were not collected at this time, and therefore were not taxonomically identified to species or retained as voucher specimens. No special status species were identified on the aerial arthropod surveys; however, species-level taxonomic classifications were not conducted for the purposes of these surveys. Monarch butterfly presence was confirmed on 11 October 2010 during tree surveys in Area B, south of Culver Boulevard. Additionally, ancillary observations of the wandering skipper were visually confirmed in the lower marsh habitat of western Area B during vegetation surveys. Figure D6-2 depicts sample areas for this study.

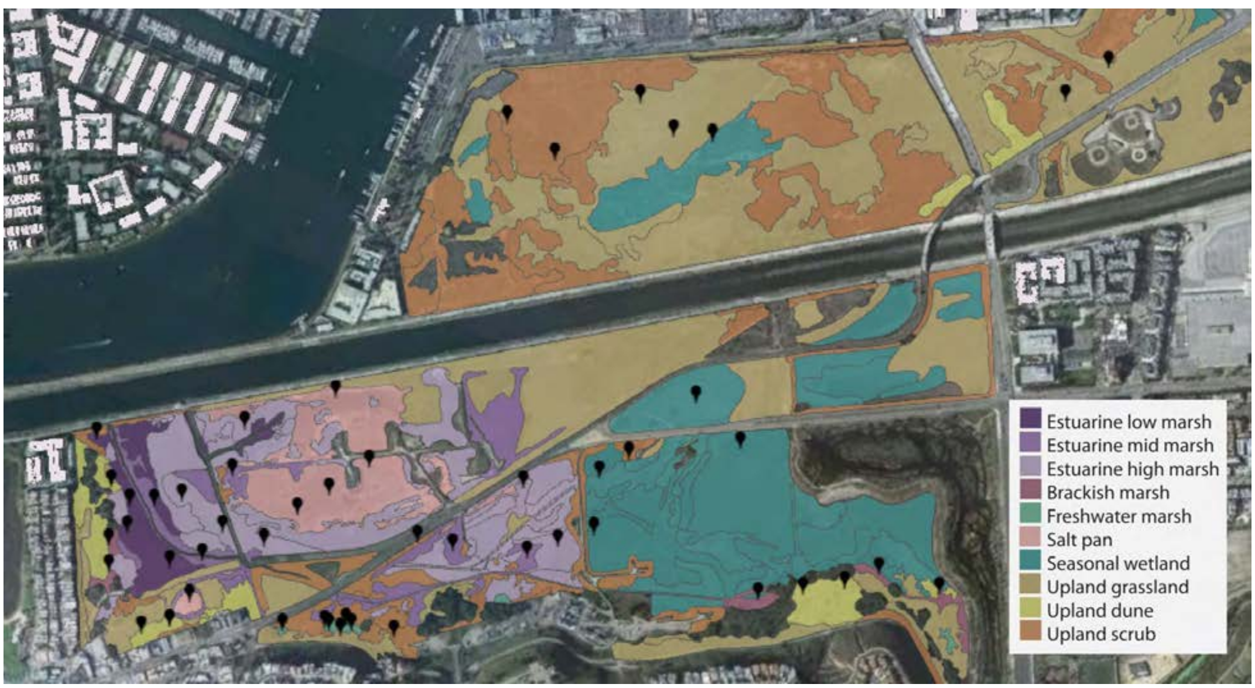


Figure D6-2 depicts BAP insect transects throughout the Reserve by habitat type (reproduced from Johnston et al. 2011). Please note that the habitat types presented here are associated with mapping and habitat categorizations developed in 2007 (CDFW 2007) and are only presented here as the backdrop for survey locations.

Cooper (2011)

Approximately 30 individuals of the federally endangered El Segundo Blue Butterfly, Euphilotes battoides allyni, were observed on 19 July 2011 while conducting bird surveys (D. Cooper, Cooper Ecological, pers. comm. 2011). The individuals were observed in the western dune habitat on dune buckwheat, *Eriogonum parvifolium*, which was planted as part of the Friends of Ballona Wetlands dune restoration project. The last sighting of the El Segundo blue butterfly in the area was an anecdotal observation in 1986 of one male in Playa Del Rey (Johnston et al. 2011).

Johnston et al. (2010-2011)

Between 2010 and 2011, Johnston et al. conducted terrestrial invertebrate surveys for the BAP on the Reserve. The objective for the second Baseline year of the BAP invertebrate assessment was to extrapolate aerial arthropod productivity (as biomass) using length-fresh weight regressions for each habitat and to note observations of special status species. Results showed the salt pan habitat had the lowest average aerial arthropod productivity (mean ± standard error) at 5.18 ± 2.03 mg/m^2/day. The seasonal wetland had the highest average total aerial arthropod productivity and the highest level of variability between transects at 59.95 ± 23.91 mg/m^2/day. These results suggest that the seasonal wetland and freshwater marsh habitats had higher relative proportions of larger invertebrate size classes during the second baseline year in the seasons they were assessed. In addition to the aerial arthropod surveys, ancillary observations of the nonnative milk snail (*Otala lacteal*) were common throughout the Reserve, especially on nonnative and upland vegetation. The snail was not surveyed quantitatively but was noted during sampling events. The low marsh, mid marsh, and high marsh habitats were sampled during the same time periods in both years, so productivity can be compared across years. The mid marsh habitat had the highest difference in relative aerial arthropod invertebrate productivity between both baseline years. Both the low and mid marsh habitat types had higher invertebrate productivity in the first baseline year; the high marsh had slightly higher average invertebrate productivity in the second baseline year. No special status species were identified in the aerial arthropod surveys; however, species-level taxonomic classifications were not conducted. Ancillary observations of the wandering skipper (*Panoquina errans*) and monarch butterfly (*Danaus plexippus*) were visually confirmed in the marsh habitats of western Area B during vegetation surveys (Johnston et al. 2012). Figure D6-2 depicts sample areas for this study.

Psomas (2013)

The El Segundo Blue butterfly (*Euphilotes battoides allyni*) (ESB) was determined to be present at the Reserve as a result of presence/absence surveys. Surveys were conducted during the 2013 flight season. A total of 199 butterflies were observed as a result of presence/absence surveys along an established survey route. During the survey period the numbers of adult male and female ESB observed ranged from 0 to 65 on any given survey date. Adults were estimated to emerge the week of June 16 and peak the week of July 7. By August 27 no ESB were observed.

This page intentionally left blank

APPENDIX D7
Summary of Fish Studies

This page intentionally left blank

Appendix D7

Summary of Fish Studies in the Study Area (1981 to 2011)

The following summarizes the results of fish studies performed in the study area between 1981 and 2013. Table D7-1 provides a summary of the fish studies conducted in the study area. This table is then followed by a summary of the survey results.

Table D7-1. Summary of the Fish Studies in the Study Area (modified from PWA 2006a to include later studies reported by Johnston et al. 2011, 2012)

Year	Author	Geographic Extent	Description
1981	Swift and Frantz	Area B	Fish survey for Biota of the Ballona Region report
1991	Allen	Ballona Creek and Low Marina Del Rey	Fish survey for Playa Vista EIR
1991	Boland and Zedler	Area B	Fish and invertebrate research sponsored by the National Audubon Society
1991	Soltz	Area B	Fish survey for Playa Vista EIR
1993	Swift et al.	Southern California	Journal article. 'The status and distribution of the freshwater fishes of Southern California'. Bulletin of the Southern California Academy of Sciences
1996	Haglund et al.	Area B, Ballona Creek, Marina Del Rey	Fish survey performed for Impact Sciences
2001	MEC-Weston	Area B	Vegetation, fish, birds, and benthic infauna study, provided monitoring data for USACE 1135
2003	MEC-Weston	Area B	Vegetation, fish, birds, and benthic infauna study, provided monitoring data for USACE 1135
2004	MEC-Weston	Area B	Vegetation, fish, and bird study, provided monitoring data for USACE 1135
2005	LA City	Area B	Fish and macroinvertebrates in the Reserve
2009	Merkel and Associates	Area B, Fiji Ditch, Ballona Creek	Study of the fish species in the lower Ballona Creek area for a US Army Corps of Engineers Feasibility Report
2009-2010	Johnston et al. (2011)	Area B, Fiji Ditch, Ballona Creek	Baseline fish surveys
2010-2011	Johnston et al. (2012)	Area B, Fiji Ditch, Ballona Creek	Baseline fish surveys

Swift and Frantz (1981)

In 1981, Swift and Frantz conducted the first detailed study of the Ballona Wetlands fish community. This was the first ever study of an upper marsh fish community in Southern California and serves as a baseline for future marshes, as well as providing a wealth of information about likely conditions in the past. Prior to modifications of the region, when the Los Angeles River emptied into the Ballona Wetlands during flood events, the fish assemblage would have included all the species known to have inhabited the River. Most of these species are currently absent from the project area and have been since the 1950s. The course of the Los Angeles River has been maintained to the south and away from Ballona Creek since 1884 (PWA 2006a).

Allen (1991), Boland and Zedler (1991), Stolz (1991), and Haglund et al. (1996)

In 1991 and 1996, several fish surveys of the Ballona Wetlands, Ballona Creek, and the adjacent Marina del Rey were conducted (Johnston et al. 2011).

MEC-Weston (2001, 2003, and 2004)

The channels within Area B of the Reserve were sampled in July of 2004 to provide data on fish populations using the wetlands after implementation of the USACE 1135 project, which was a restoration of the tide-gates to increase tidal flushing of Area B. Prior to the tide-gate restoration project, baseline conditions were documented in 2001. The same methods used during the 2001 baseline study were implemented during four seasonal post-restoration surveys in 2003. The July 2004 was intended to provide further information on the development of fish populations under post-restoration conditions.

Fish were sampled at eight stations in Ballona Wetlands on July 15, 2004. The stations were located as close as practicable to the sampling stations established during the 2001 baseline study and the 2003 post-restoration study previously used by MEC-Weston (2001, 2004). The 2004 survey was scheduled to coincide with neap tidal conditions in order to avoid extremes in water depth and current velocity. Fish were collected using a standard beach seine. Two replicate hauls, spaced approximately 10 yards apart, were taken at each station (Johnston et al. 2011).

LA City (2005)

In September 2005, the City of Los Angeles surveyed fish and macroinvertebrates in the Reserve at eight stations within the tide channels and compared their results to surveys conducted in 2001, 2003, and 2004 by MEC-Weston. They found six species; the most abundant was the non-native western mosquitofish (2,719 individuals). California killifish (*Fundulus parvipinnis*) was the second most abundant (721 individuals), and the combination of the two species represented 91% of the total catch. The other species collected, in order of decreasing abundance, were topsmelt (*Atherinops affinis*), longjaw mudsucker (*Gillichthys mirabilis*), arrow goby (*Clevelandia ios*), and sailfin molly. The sailfin molly is also a non-native species, and was found in the upper channel stations only. Overall, fish diversity was slightly lower than previous survey years, and fish abundance roughly reflected the survey abundances of 2003, but not 2004 (Johnston et al. 2011). Figure D7-1 depicts sample locations for this study.

Figure D7-1 depicts City of Los Angeles fish survey stations in 2005 (reproduced from Johnston et al. 2011).

Merkel & Associates (2009)

Merkel & Associates conducted a study of the fish species in the lower Ballona Creek area for a U.S. Army Corps of Engineers Feasibility Report. They included surveys in Ballona Creek, the tide channels of Area B, and the first reported surveys from within the Fiji Ditch. They conducted daytime surveys in August, nighttime surveys in October, and both day and night surveys in early December (Johnston et al. 2011). Figure D7-2 depicts sample locations for this study.

Figure D7-2 depicts Merkel and Associates 2009 fish survey stations (reproduced from Johnston et al. 2011).

Johnston et al. (2009–2010)

Surveys were conducted three times during the Baseline Year: September 2009, April 2010, and June 2010. When possible, survey events occurred at least 72 hours after the last storm or rainfall event that produced more than 0.5 inch of rain. Surveys were conducted at three sites: Ballona Creek, Fiji Ditch, and the tidally influenced channels of the western portion of Area B. Three permanent survey stations were positioned in the Fiji Ditch, and three in the tidal. Five survey stations were positioned within Ballona Creek, using 250-meter trawling transects along the length of the Creek. During the September surveys, three methods (i.e. beach seines, minnow traps, and shrimp/otter trawls) were employed at various stations. After the first round of surveys in September 2009, it was determined that minnow traps were not an effective method to evaluate a high species richness, as they only caught California killifish and longjaw mudsuckers, which were adequately represented using the beach seine method. Beach seines were found to be effective for benthic and demersal fish as well as pelagic fish. For each event, fish were surveyed during an incoming, semidiurnal spring tide once during the day and once again at night to provide a comparison of diurnal versus nocturnal fish activity and abundance. Fishing was conducted with a minimum of 12 hours between survey times at each station (Johnston et al. 2011). Figure D7-3 depicts sample locations for this study.

Figure D7-3 shows fish survey stations for Johnston et al. studies between 2009 and 2011. Red lines indicate individual stations (reproduced from Johnston et al. 2011).

Johnston et al. (2010–2011)

Beach seine surveys were conducted three times during the second Baseline Year: September 2010, April 2011, and June 2011. Shrimp trawls in Ballona Creek were conducted twice, once in July and once in September 2011. No minnow traps were used for fish surveys in the second baseline year. When possible, survey events occurred at least 72 hours after the last storm or rainfall event that produced more than 0.5 inch of rain to ensure there were no significant reductions in salinity. For each event, fish were surveyed during an incoming, semidiurnal spring tide once during the day and once again at night to provide a comparison of diurnal versus nocturnal fish activity and abundance. Surveys were conducted at the same stations as the first Baseline year (Johnston et al. 2012). Figure D7-3 depicts sample locations for this study.

This page intentionally left blank

APPENDIX D8
Summary of Reptile and Amphibian Studies

This page intentionally left blank

Appendix D8

Summary of Reptile and Amphibian Studies in the Study Area

The following summarizes the results of reptile and amphibian studies performed in the study area between 1981 and 2011. Table D8-1 provides a summary of the reptile and amphibian studies conducted in the study site. This table is then followed by a summary of the survey results.

Table D8-1. Summary of Benthic Invertebrate Surveys and Reports in the Study Area (modified from PWA 2006a to include later studies reported by Johnston et al. 2011, 2012)

Year	Author	Geographic Extent	Description
1981	Hayes and Guyer	Areas A and B	Herpetofauna survey for Biota of the Ballona Region report
1991	Frank Hovore and Associates	Areas A and B	Amphibian, reptile, and mammal survey for Playa Vista EIR
1996	Impact Sciences, Inc.	Areas A and B	Amphibian and reptile survey
2007	Sustaita et al.	Area B	Herpetofauna surveys conducted on the BOLD project site
2009	Johnston et al.	Area B	Herpetofauna and mammal surveys conducted for the Early Action Plan (EAP)
2009-2010	Johnston et al.	Areas A, B, and C	Year 1 Baseline Assessment Program
2010-2011	Johnston et al.	Areas A, B, and C	Year 2 Baseline Assessment Program

Hayes and Guyer (1981), Frank Hovore and Associates (1991), and Impact Sciences, Inc. (1996)

Reptile and amphibian surveys conducted between 1981 and 1996 in the study area documented a total of nine species (Johnston et al. 2011).

Sustaita et al. (2007)

The Ballona Outdoor Learning & Discovery (BOLD) Report summarized findings from two herpetofauna surveys conducted on the BOLD project site using over 180 trapping nights in the southwestern portion of Area B, near Gordon's lot entranceway. The surveys were conducted in spring and late summer of 2005. Herpetofauna were classed as either common or uncommon (Johnston et al. 2011). Figure D8-1 depicts sample locations for this study.

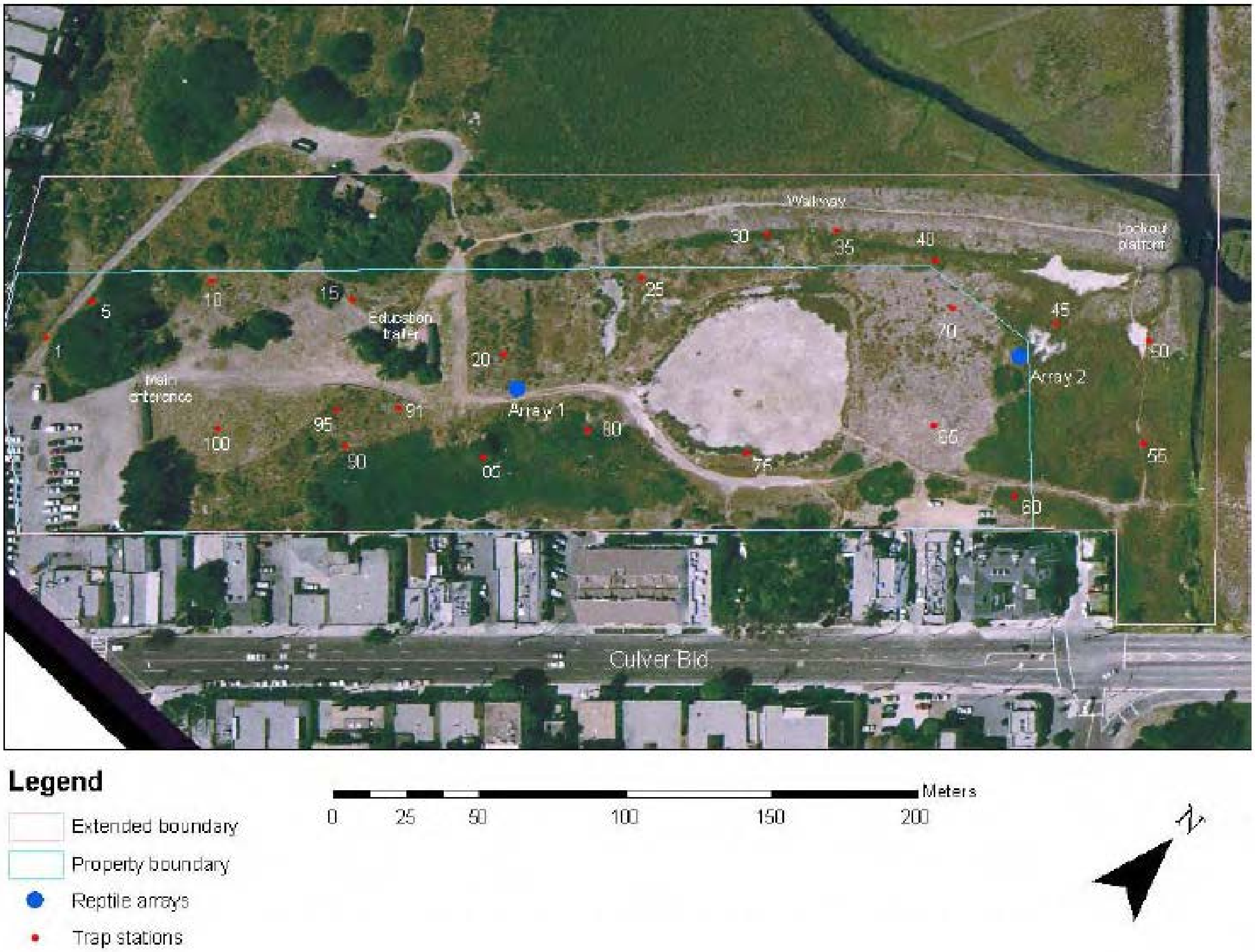


Figure D8-1 depicts the BOLD site boundaries and survey locations (reproduced from Johnston et al. 2011).

Johnston et al. (2009)

For the Reserve's Early Action Plan (EAP), Johnston et al. conducted a survey for herpetofauna in the portion of Area B located directly adjacent to Gordon's lot. Surveys conducted during June 2009 utilized pitfall trap and driftnet arrays as well as comprehensive area searches (Johnston et al. 2011). Figure D8-2 depicts sample locations for this study.

Figure D8-2 depicts survey locations for herpetofauna and mammal surveys within EAP project site. Note: pitfall and driftnet arrays are in blue; green lines indicate mammal transects (reproduced from Johnston et al. 2011).

Johnston et al. (2011)

Herpetofauna surveys were conducted in three habitat types: seasonal wetland, upland grassland, and upland scrub. Surveys were conducted during three seasons (early fall, spring, and early summer) of the Baseline year (September 2009 to September 2010). Early fall surveys occurred from 2 November to 12 November 2010; spring surveys occurred from 30 March to 12 April 2010; early summer surveys occurred from 24 June to 5 July 2010. Pitfall traps and driftnet fence arrays were used in several of the major habitat types. Herpetofauna surveys occurred for ten consecutive days and nights, when possible. Additionally, site-wide searches involving board and cover flipping, and targeted surveys for the California legless lizard, were conducted (Johnston et al. 2011). Figure D8-3 depicts sample locations for this study.

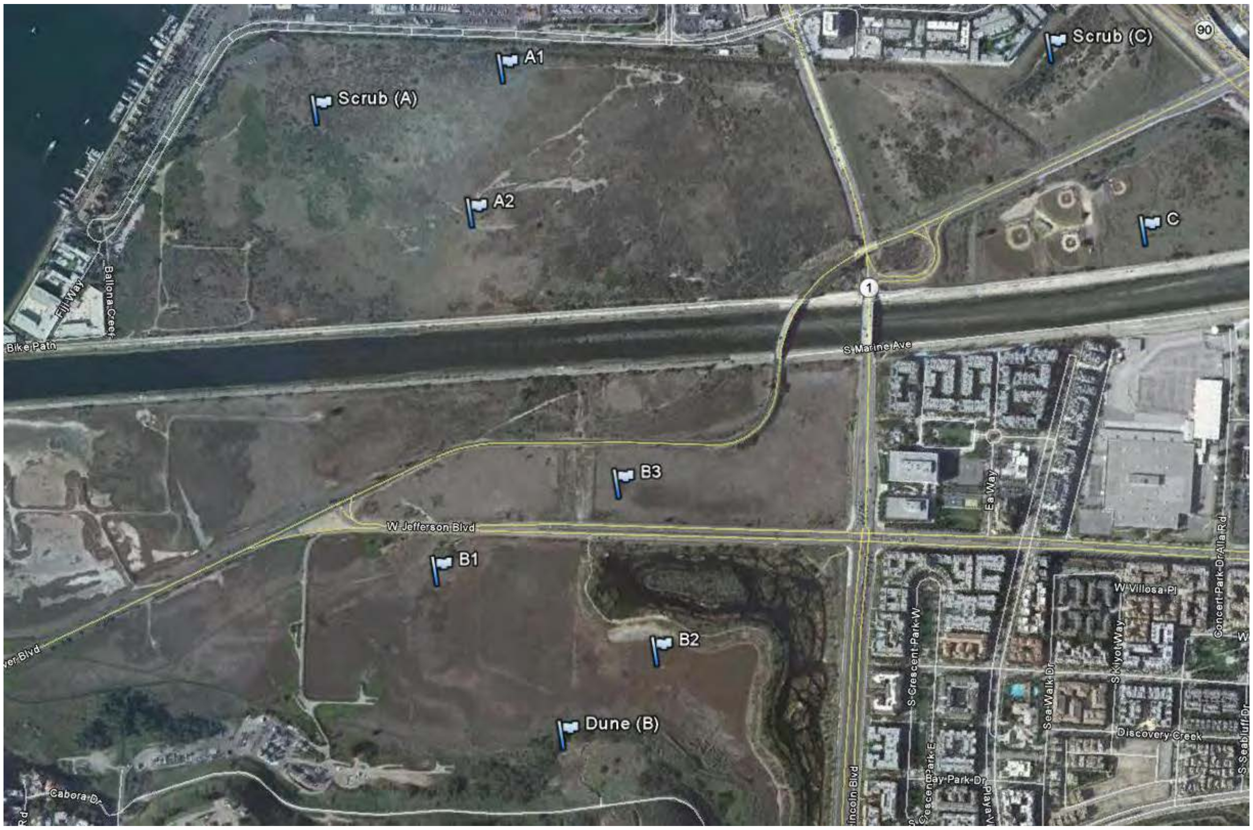


Figure D8-3 depicts survey locations for herpetofauna surveys for BAP (reproduced from Johnston et al. 2011).

The Ballona freshwater marsh, located immediately adjacent to the Reserve, is regularly surveyed for purposes of measuring biological performance criteria. Detected herpetofauna species within the Ballona freshwater marsh are communicated to the BAP team (Johnston et al. 2011).

Johnston et al. (2012)

Nineteen arrays with approximately 10 boards per array were placed in the three Areas of Ballona (190 total boards). Two of the arrays in Area A were placed in upland grassland habitat, and one array was placed in upland scrub habitat. Five arrays in Area B were placed in upland dune habitat, two in high marsh, one in grassland, and three in transition areas between habitats. Four arrays in Area C were placed in grassland, and one array was placed in dune habitat. Boards were preferentially placed greater than 5 meters apart to ensure proper coverage of the location. Boards were checked on a weekly basis during the fall season (October to December 2010) and again in the spring season (February to May 2011). Surveys were preferentially conducted two days after a rain event to achieve optimal soil moisture (Johnston et al. 2012). Figure D8-3 depicts sample locations for this study.

The Ballona freshwater marsh, located immediately adjacent to the Reserve, is regularly surveyed for purposes of measuring biological performance criteria Detected herpetofauna species within the freshwater marsh are communicated to the BAP team (Johnston et al. 2012).

APPENDIX D9
Summary of Bird Studies

This page intentionally left blank

Appendix D9

Summary of Bird Studies in the Study Area

A summary of the bird studies conducted in the study area between 1898 and 2015 is provided in Table D9-1.

Table D9-1. Summary of the Bird Studies in the Study Area (modified from PWA 2006a to include later studies reported by Johnston et al. 2011 and 2012 as well as other available reports)

Year	Author	Geographic Extent	Description
1898	Grinnell	References to Ballona Region	Birds of the Pacific Slope of Los Angeles County
1912	Willet	References to Ballona Region	Birds of the Pacific Slope of Southern California
1933	Willet	References to Ballona Region	Revised List of the Birds of Southwestern California
1943	von Bloaker	El Segundo and Playa del Rey	The Fauna and Flora of the El Segundo Sand Dunes: Birds of El Segundo and Playa del Rey
1944	Grinnell and Miller	References to Ballona Region	The Distribution of the Birds of California
1981	Dock and Schriber	Ballona Region	The Birds of Ballona
1987	Massey, B.W.	Ballona Wetlands	Census of Belding's Savannah Sparrow
1989	Massey, B.W.	Ballona Wetlands	Counts of Belding's savannah sparrows
1992	Corey	Ballona Wetland	Bird survey of Ballona Wetland, Playa del Rey, California (1990-1991)
1996	Keane Biological Consulting	Areas A, B, and C	Bird surveys as part of environmental documentation for the proposed Playa Vista development
1996	National Audubon Society	Ballona Creek, Ballona Lagoon, and the western portion of the North Wetland of Area B	Dan Kahane, Art Pickus, and Richard Barth conducted weekly surveys from 1993 to 1998
1997	Hamilton	Area B	Bird surveys in riparian habitat
1998	Almdale	Ballona Lagoon	Birds of Ballona Lagoon
1998	Keane Biological Consulting	Areas A, B and C	Bird surveys as part of environmental documentation for the proposed Playa Vista development

Year	Author	Geographic Extent	Description
2001	Keane Biological Consulting	Areas A, B and C	Bird surveys as part of environmental documentation for the proposed Playa Vista development
2001	Keane Biological Consulting	Portion of Area B	Bird surveys conducted to provide baseline information for the evaluation of a tide-gate modification project by the USACE
2003	Keane Biological Consulting	Freshwater Marsh	Breeding bird survey results
2004	Keane Biological Consulting	Portion of Area B	Follow-up surveys to assess changes in the Belding's savannah sparrow population as a result of increased tidal inundation
2004	Cooper	Freshwater Marsh	2004 Breeding bird survey at Playa Vista
2005	Keane Biological Consulting	Portion of Area B	Follow-up surveys to assess changes in the Belding's savannah sparrow population as a result of increased tidal inundation
2005	Cooper	Freshwater Marsh	2004-05 winter bird survey at Playa Vista, Playa
2005	Froke	Marina del Rey	Report on the Marina del Rey Heronry
2006	Keane Biological Consulting	Portion of Area B	Follow-up surveys to assess changes in the Belding's savannah sparrow population as a result of increased tidal inundation
2006	Cooper	Ballona Valley	Annotated Checklist of Birds of Ballona Valley (based on notes from local bird experts dating back to 1970)
2007	Keane Biological Consulting	Portion of Area B	Follow-up surveys to assess changes in the Belding's savannah sparrow population as a result of increased tidal inundation
2007	Cooper	Area B	Birds of the BOLD Project Site
2008	Cooper	Ballona Wetlands and Freshwater Marsh	Identifies species whose future reestablishment may be used to evaluate restoration success
2008	Keane Biological Consulting	Portion of Area B	Follow-up surveys to assess changes in the Belding's savannah sparrow population as a result of increased tidal inundation
2009	Keane Biological Consulting	Portion of Area B	Follow-up surveys to assess changes in the Belding's savannah sparrow population as a result of increased tidal inundation
2003 – 2010	Read and Strecker	Ballona Freshwater Marsh	Ballona Freshwater Wetlands Annual Report of Monitoring, Operation, and Maintenance
2009-2010	Johnston et al.	Area A,B, and C	Year 1 Baseline Assessment Program
2010	Cooper	Areas A, B, C	Survey for Belding's Savannah Sparrow
2010-2011	Johnston et al.	Area A,B, and C	Year 2 Baseline Assessment Program
2010	Cooper	Area B	Survey for Least Bell's Vireo

Year	Author	Geographic Extent	Description
2011	Ryan Ecological Consulting	Area A and B	Survey for Light-Footed Clapper Rail
2011	Cooper	Area A and C	Survey for Coastal California Gnatcatcher
2011	Hamilton	Marina del Rey	Surveys for nesting herons, egrets, and cormorants (i.e., colonial waterbirds0 throughout Marina del Rey.
2015	Cooper, D. S.	Area B	Memo: Rapid-assessment survey of nesting Belding's Savannah Sparrow

This page intentionally left blank

APPENDIX D10
Summary of Mammal Studies

This page intentionally left blank

Appendix D10

Summary of Mammal Studies in the Study Area

Table D10-1 provides a summary of the mammal studies conducted in the Study area between the 1960s and 2015.

Table D10-1. Summary of the Mammal Studies in the Study Area (modified from PWA 2006a to include an earlier study reported by Zedler, J. B. 1982 and later studies reported by Johnston et al. 2011, 2012).

Year	Author	Geographic Extent	Description
Early 1960s	Zelder, J. B. 1982	Ballona Creek Marshes	Zeldler summarizes Coulombe, H. N. (1965), which is an ecological study of a southern California salt marsh rodent fauna at Mugu Lagoon and Ballona Creek Marshes.
1981	Friesen et al.	Area A and B	Mammal survey for Biota of the Ballona Region report
1991	Frank Hovore and Associates	Areas A, B, and C	Amphibian, reptile, and mammal survey for Playa Vista EIR
1996	Impact Sciences	Areas A, B, and C	Mammal survey
2000	Erickson	Area B	Survey for sensitive species of small mammal for Playa Capital Co.
2001	Psomas and Associates	Area B	Sensitive Species Assessment and Surveys for Playa Vista, Phase One
2007	Sustaita et al.	Area B	Ballona Outdoor Learning and Discovery (BOLD) Report
2009	Johnston et al.	Area B	Herpetofauna and mammal surveys for the Early Action Plan (EAP)
2009-2010	Johnston et al.	Areas A, B, and C	Year 1 Baseline Assessment Program
2010-2011	Johnston et al.	Areas A, B, and C	Year 2 Baseline Assessment Program
2015	Molioo, T.	Freshwater marsh, southern Eucalyptus grove, Area B	Memorandum: chiropteran fauna surveys summary

Zedler, J. B. (1982)

Zedler, J.B. summarizes a mammal study conducted in the 1960s (Coulombe, H. N. 1965. An ecological study of a Southern California salt marsh rodent fauna. M. S. Thesis, Univ. Calif. Los Angeles). Coulombe's study entails an extensive trapping in the early 1960s of Mugu Lagoon and

Ballona Creek marshes. Detected mammals included western harvest mouse, south coast marsh vole, saltmarsh shrew, house mouse, Botta's pocket gopher, San Diego black-tailed jackrabbit, and desert cottontail on Ballona wetlands and described California ground squirrel, striped skunk, gray fox, and domestic cat as occurring "nearby."

Friesen et al. (1981), Frank Hovore and Associates (1991), Impact Sciences (1996), Erickson (2000), and Psomas and Associates (2001)

Mammal surveys used a variety of mammal sampling methods, including: Sherman live traps, pitfall traps, scent station monitoring, track station monitoring, and observational site searches (Johnston et al. 2011).

Three species of bat were also evaluated for potential occurrence. None were detected within the project area in 2000 or 1981, although no specialized survey methods were used to determine presence or absence. Other sensitive-species of bat that may have occurred historically include California leaf-nosed bat (Macrotus californicus californicus), pallid bat (Antrozous pallidus pacificus), and western mastiff bat (Eumops perotis californicus). A bat survey was performed by Impact Sciences in 1996 which included examination of potential bat roost sites for guano, staining, and other indications of bats, as well as use of a hand-held bat detector. No evidence of bats in Areas A, B, or C was uncovered, although a high frequency echo-location was picked up in an adjacent area (Johnston et al. 2011).

It has also been speculated that at some point in the past, the edges of the marsh may have been used by marine mammals. Several species of cetaceans have been observed to occasionally come ashore for short periods or stand along the beaches adjacent to the wetlands (Johnston et al. 2011).

Sustaita et al. (2007)

Two mammal surveys were conducted on the Ballona Outdoor Learning & Discovery (BOLD) project site in the southwestern portion of Area B near the Culver Gateway during 400 trapping nights; one in spring and one in late summer of 2005 (Johnston et al. 2011). Figure D10-1 depicts the sample locations for this study.

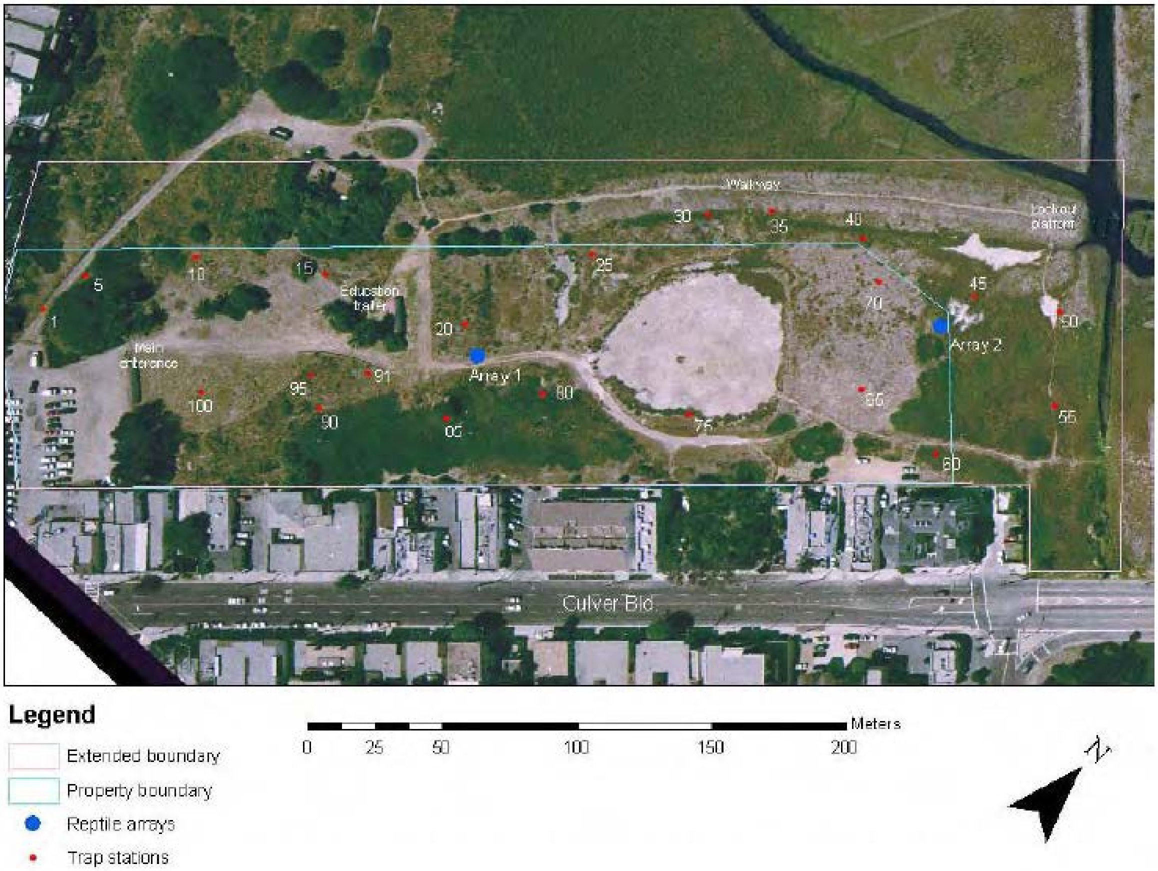


Figure D10-1 depicts the BOLD site boundaries and survey locations (reproduced from Johnston et al. 2011).

Johnston et al. (2009)

Johnston et al. surveyed for mammals in the southwestern portion of Area B directly adjacent to the Culver Gateway, within the Early Action Plan (EAP) designated area. Sampling was conducted over three nights from June 1 to June 4, 2009 (Johnston et al. 2011). Figure D10-2 depicts the sample locations for this study.

Figure D10-2 depicts survey locations for herpetofauna and mammal surveys within EAP project site. Note: pitfall and driftnet arrays are in blue; green lines indicate mammal transects (reproduced from Johnston et al. 2011).

Johnston et al. (2009–2010)

The Baseline Assessment Program surveyed small mammals throughout the Reserve using baited Sherman live traps deployed in both array and transect forms. Sampling was conducted during fall 2009 and early summer 2010 of the Baseline year. During the fall sampling event, arrays were placed throughout the site. During the summer, targeted transects were located throughout the upland scrub habitats (Johnston et al. 2011). Figure D10-3 depicts the sample locations for this study.

Medium and large mammal sampling was conducted using baited Scout Guard camera stations. A total of 12 “Critter Cam” stations were spread throughout the site between February and September 2010. Five Critter Cam stations were in Area A, five were in Area B, and two were in Area C (Johnston et al. 2011). Figure D10-4 depicts the camera location for this study.

Figure D10-3 depicts mammal survey locations within the Reserve. Note: Green boxes indicate mammal arrays; red lines indicate 100 m transects (reproduced from Johnston et al. 2011).

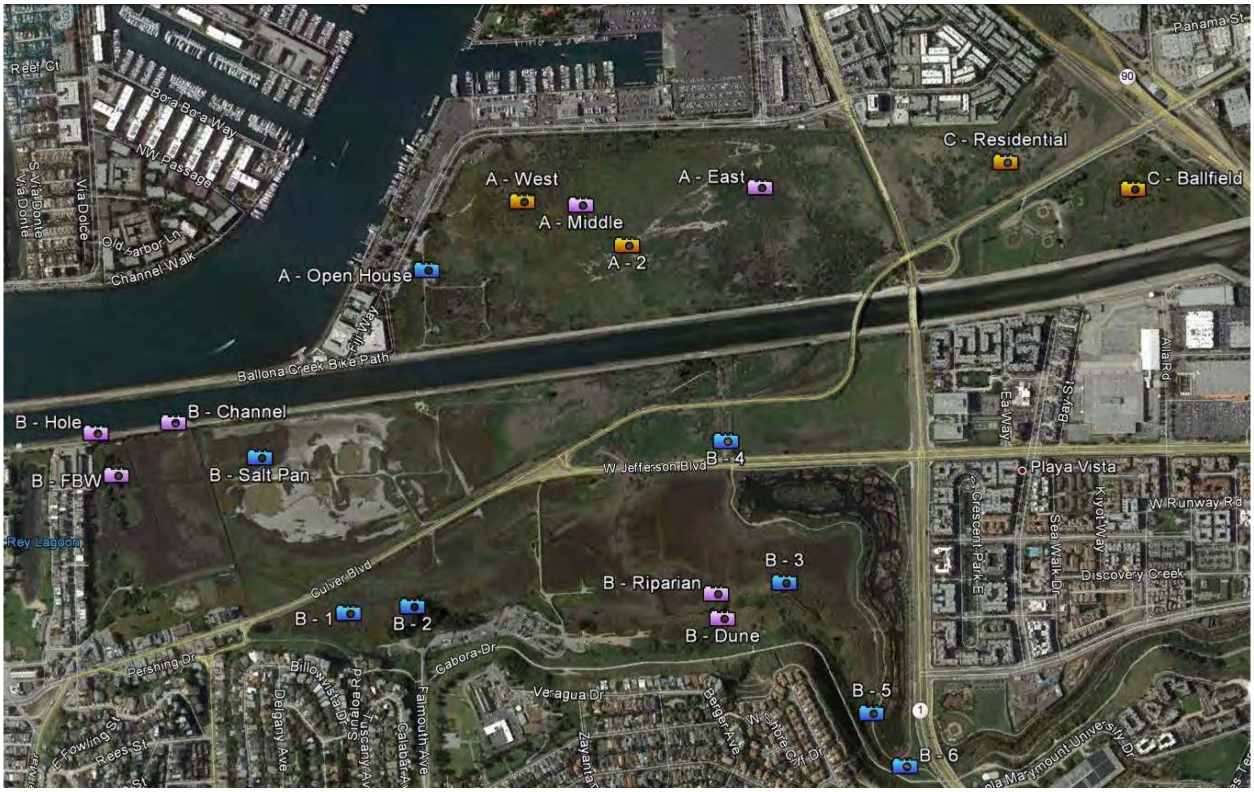


Figure D10-4 depicts camera stations throughout the Reserve for the first Baseline year (pink), second Baseline year (blue), and stations monitored both years (gold) (reproduced from Johnston et al. 2012).

Johnston et al. (2010–2011)

The Baseline Assessment Program surveyed small mammals in the salt marsh habitats of Area B using baited Sherman live traps deployed as seven transects of approximately 100 meters each with 10 to 15 meters between traps, based on habitat type and terrain, for a total of 360 trap nights. Transects occurred in vegetation dominated by pickleweed, saltgrass, and some nonnative grasses. Five were deployed in the marsh habitats north of Culver Blvd and two were deployed south of Culver and west of the Gas Company Road. Surveys were conducted during late August and early September, 2011, primarily to assess the presence of the South Coast marsh vole (*Microtus californicus stephensi*), a California Species of Special Concern that was identified in surveys during the first baseline year (Johnston et al. 2012). Figure D10-5 depicts the sample locations for this study.

Figure D10-5 depicts seven small mammal transect locations within the Reserve next to the tide gates (left) and the Gas Company Road (right) (reproduced from Johnston et al. 2012).

Medium and large mammal sampling was conducted using baited Scout Guard camera stations. Twelve Critter Cam stations were spread throughout the site during the second Baseline year for a total deployment of 631 days. Three Critter Cam stations were in Area A, seven were in Area B, and two were in Area C (Johnston et al. 2012). Figure D10-4 depicts the camera location for this study.

Surveys to assess vertebrate mortality (roadkill) along roadways bisecting the Reserve were conducted semi-monthly throughout the second baseline year. Each individual was identified to the lowest possible taxon along three transects, ranging from “unidentifiable” in broad size classes to species-level data (Johnston et al. 2012). Figure D10-6 depicts survey routes for this study.

Figure D10-6 depicts vertebrate mortality survey transects bisecting and adjacent to the Reserve (reproduced from Johnston et al. 2012).

Molioo, T. (2015)

Chiropteran fauna surveys were conducted within the Ballona Wetlands Ecological Reserve in Fall 2014. Three survey locations were examined for suitable habitat of resident and migratory chiropteran species. Survey locations were surveyed with the utilization of non-invasive acoustic monitoring devices that detect and record echolocation calls in flight and an ultrasonic SM3 detector deployed for six nights total to determine if chiropteran species were present during the studies. Results suggest that due to a relatively high level of bat activity on the Reserve, resident bats occur on the Reserve. Four species were detected during the surveys: silver-haired bat (*Lasionycteris noctivagans*), hoary bat (*Lasiurus cinereus*), Yuma myotis (*Myotis yumanensis*), and Mexican free-tailed bat (*Tadarida brasiliensis*). Results of the study suggest that bat occupancy, particularly maternity roosts, will need to be considered prior to any disturbance or removal of roosting habitat in native and non-native trees, and riparian scrub habitat in areas such as the freshwater marsh, eucalyptus grove, and West Area B. to avoid direct impacts to bats.

APPENDIX D11
Special-Status Plants

This page intentionally left blank

Appendix D11

Occurrence Determination: Special-Status Plants

Table D11-1. Occurrence Determination: Special-Status Plant Species.

Scientific Name	Common Name	Status	Habitat Requirements	Occurrence Determination
Abronia maritima	Red sand-verbena	CRPR 4.2 S3?	Coastal dunes. Elevation range: 0 – 325 feet. Blooms: February – November (CNPS 2014).	**Low**. Historically present in the study area; the study area contains restored coastal dune habitat that that is potential habitat for this species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in 2010 and 2011, did not observe this species.
Aphanisma blitoides	Aphanisma	CRPR 1B.2 S3	Coastal bluff scrub, coastal dunes, coastal scrub. Typically located on bluffs and slopes near the ocean on sandy or clay soils. Elevation range: 1 – 990 feet. Blooms: March – June. (CNDDB 2014; CNPS 2014)	**Low**. Present in the project region but not known from the study area; the study area contains restored coastal dune and coastal scrub habitat, but not the drier, steeper bluffs that provide suitable microsite conditions for the species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in April 2011, did not observe this species.
Arenaria paludicola	Marsh sandwort	FE SE CRPR 1B.1 S1	Marshes and swamps. Typically located in dense mats of emergent marsh vegetation. Elevation range: 485 – 3965 feet. Blooms: May – August. (CNDDB 2014; CNPS 2014)	**Low**. Present in the project region but not known from the study area; closely associated with freshwater wetland habitat, which is not present in the study area; multiple surveys of the study area conducted since 1979, including focused rare plant surveys in July 2010, did not observe this species.

Scientific Name	Common Name	Status	Habitat Requirements	Occurrence Determination
Astragalus brauntonii	Braunton's milk-vetch	FE, CRPR 1B.1 S2	Closed-cone coniferous forest, chaparral, coastal scrub, valley and foothill grassland. Often in recent burns or disturbed areas on gravelly clay soils overlying granite or limestone. Elevation range: 10 – 2075 feet. Blooms: January – August. (CNDDB 2014; CNPS 2014)	**Low**. Present in the project region but not known from the study area; primarily a chaparral species, and the habitats in the study area do not provide suitable microsite conditions for the species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in July 2010 and April 2011, did not observe this species.
Astragalus pycnostachyus var. *lanosissimus*	Ventura marsh milk-vetch	FE SE CRPR 1B.1 S1	Coastal salt marsh, coastal dune, coastal scrub. Typically located within reach of high tide protected by barrier beaches and near seeps on sandy bluffs. Elevation range: 1 – 115 feet. Blooms: June – October. (CNDDB 2014; CNPS 2014)	**Low**. Historically present in the study area; the study area contains dune and grassland habitat adjacent to wetlands that that is potential habitat for this species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in July and October 2010, did not observe this species.
Astragalus tener var. *titi*	Coastal dunes milk-vetch	FE SE CRPR 1B.1 S1	Coastal prairie. Located on moist, sandy depressions within coastal prairie. Elevation range: 1 – 165 feet. Blooms: March – May. (CNDDB 2014; CNPS 2014)	**Low**. Historically present in the project region but not known from the study area; primarily a coastal prairie species, which did not occur in the study area; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in April 2011, did not observe this species.
Atriplex pacifica	South Coast saltscale	CRPR 1B.2 S2	Coastal scrub, coastal bluff scrub, playas, chenopod scrub. Located on alkali soils. Elevation range: 0 – 460 feet. Blooms: March – October. (CNDDB 2014; CNPS 2014)	**Low**. Historically present in the project region but not known from the study area; the study area contains restored coastal dune and coastal scrub habitat, but not the drier, steeper bluffs that provide suitable microsite conditions for the species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in 2010 and 2011, did not observe this species.
Atriplex parishii	Parish's brittlescale	CRPR 1B.1 S1	Alkali meadows, vernal pools, chenopod scrub, playas. Typically located on alkali flats with finely textured soils. Elevation range: 80 – 6160 feet. Blooms: June – October. (CNDDB 2014; CNPS 2014)	**Low**. Historically present in the project region but not known from the study area; suitable habitat does not occur in the study area; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in July and October 2010, did not observe this species.
Atriplex serenana var. davidsonii	Davidson's saltscale	CRPR 1B.2 S2?	Coastal bluff scrub, coastal scrub. Located on alkaline soils. Elevation range: 30 – 650 feet. Blooms: April – October. (CNPS 2014)	**Low**. Historically present in the project region but not known from the study area; the study area contains coastal scrub habitat, but not the drier, steeper bluffs that provide suitable microsite conditions for the species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in 2010 and 2011, did not observe this species.

Scientific Name	Common Name	Status	Habitat Requirements	Occurrence Determination
Calandrinia breweri	Brewer's calandrinia	CRPR 4.2 S3.2?	Chaparral, coastal scrub. Located on sandy or loamy soils, often in disturbed areas. Elevation range: 30 – 3695 feet. Blooms: March – June. (CNPS 2014)	**Low**. Present in the project region but not known from the study area; primarily a chaparral species, and the habitats in the study area do not provide suitable microsite conditions for the species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in April 2011, did not observe this species.
Calochortus catalinae	Catalina mariposa lily	CRPR 4.2 S3.2	Found in chaparral, cismontane woodland, coastal scrub, and valley and foothill woodland. Elevation range: 15- 700 meters. Blooming period: February- June. (CNPS 2014)	**Low**. Present in the project region but not known from the study area; primarily a chaparral species, and the habitats in the study area do not provide suitable microsite conditions for the species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in April 2011, did not observe this species.
Calochortus clavatus var. *gracilis*	Slender mariposa lily	CRPR 1B.2 S2	This is a perennial herb that typically blooms from March to June and occurs in chaparral, coastal scrub, and valley and foothill grassland communities. It is found in shaded foothill canyons that range from (about 360 to1000 meters) 1180 to 3280 feet. It is limited in distribution to Los Angeles County. (CNDDB 2014; CNPS 2014)	**Low**. Present in the project region, but the study area is outside of the species' range; primarily a chaparral species, and the habitats in the study area do not provide suitable microsite conditions for the species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in April 2011, did not observe this species.
Calochortus plummerae	Plummer's mariposa lily	CRPR 4.2 S4	Coastal scrub, chaparral, valley and foothill grassland, cismontane woodland, lower montane coniferous forest. Located on rocky and sandy sites derived from granitic or alluvial material; often occurs following fires. Elevation range: 320 – 5510 feet. Blooms: May – July. (CNDDB 2014; CNPS 2014)	**Low**. Present in the project region, but the study area is outside of the species' range; primarily a chaparral species, and the habitats in the study area do not provide suitable microsite conditions for the species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in 2010 and 2011, did not observe this species.
Calystegia peirsonii	Peirson's morning-glory	CRPR 4.2 S3.2	This perennial herb typically blooms in May or June, and is found in chaparral, chenopod scrub, cismontane woodlands, coastal scrubs, valley and foothill grassland, and even lower elevation conifer forests at (30 to 1500 meters) elevation 98 to 4920 feet. It is typically restricted to rocky slopes (Hickman 1993), and is known only from Los Angeles County. (CNDDB 2014; CNPS 2014)	**Low**. Present in the project region, but the study area is outside of the species' range; primarily a chaparral species, and the habitats in the study area do not provide suitable microsite conditions for the species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in 2010 and 2011, did not observe this species.
Calystegia binghamiae	Santa Barbara morning-glory	CRPR 1B.1 S1	Marshes and swamps and riparian scrub. Historically associated with wetland and marshy places, but possibly in drier situations as well. Possibly located on silty loam and alkaline. Elevation range: 0 – 65 feet. Blooms: April – May.	**Low**. Present in the project region but not known from the study area; closely associated with freshwater wetland habitat, which is not present in the study area; multiple surveys of the study area conducted since

Scientific Name	Common Name	Status	Habitat Requirements	Occurrence Determination
			(CNPS 2014)	1979, including focused rare plant surveys in April 2011, did not observe this species.
Camissoniopsis lewisii (=*Camissonia lewisii*)	Lewis's evening primrose	CRPR 3 S1S3	Coastal bluff scrub, cismontane woodland, coastal dunes, coastal scrub, valley and foothill grassland on sandy or clay soils. Elevation range: 0 – 975 feet. Blooms: March – May, sometimes June. (CNPS 2014)	**Confirmed Present**. First observed in the study area in 1889; several populations were mapped on the study area in Areas A, B, and C during focused rare plant surveys in 2011.
Centromadia parryi subsp. *australis*	Southern tarplant	CRPR 1B.1 S2	Marshes and swamps margins, valley and foothill grassland. Often located on disturbed sites near the coast on alkali soils. Elevation range: 0 – 1385 feet. Blooms: May – November. (CNDDB 2014; CNPS 2014)	**Low**. First observed in the study area in 1890, and most recently reported in 1995 to occur east of the Area C ball fields (PWA 2006). Rare plant surveys in 2010 and 2011 did not detect this species in the Project area,.
Cercocarpus betuloides var. *blancheae*	Island Mountain-mahogany	CRPR 4.3 S3.3	Found in closed-cone coniferous forest and chaparral habitat. Elevation range: 30-600 meters Blooming period: February – May. (CNPS 2014)	**Confirmed Absent**. Present in the project region, but the study area is outside of the species' range; primarily a chaparral species, and the habitats in the study area do not provide suitable microsite conditions for the species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in 2010 and 2011, did not observe this species.
Chaenactis glabriuscula var. *orcuttiana*	Orcutt's pincushion	CRPR 1B.1 S1	Coastal bluff scrub, coastal dunes. Located on sandy soils. Elevation range: 0 – 330 feet. Blooms: January – August. (CNPS 2014)	**Confirmed Present**. First documented from Ballona wetlands in 1979, although there are records from Playa del Rey from as early as 1918; mapped in the study area in Area B during focused rare plant surveys in 2011.
Chenopodium littoreum	coastal goosefoot	CRPR 1B.2 S2	Coastal dunes. Elevation range: 30 – 95 feet. Blooms: April – August. (CNDDB 2014; CNPS 2014)	**Low**. Historically present in the study area; the study area contains restored coastal dune habitat that that is potential habitat for this species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in 2010 and 2011, did not observe this species.
Chloropyron maritimum subsp. *maritimum (=Cordylanthus maritimus* ssp. *maritimus)*	Salt marsh bird's-beak	FE SE CRPR 1B.2 S1	Coastal dune, marsh & swamp, coastal salt marsh, wetland. Located on the higher zones of salt marshes. Elevation range: 0 – 100 feet. Blooms: May – October. (CNDDB 2014; CNPS 2014)	**Low**. Known historically from a 1901 collection from the study area; tidal wetlands (Marsh Plain) in Areas A and B are potential habitat for this species; occurrence considered to be extirpated, based on surveys at Ballona wetlands in 1980, 1982 and 1983; floristic rare plant surveys in July and October 2010 did not observe this species.

Scientific Name	Common Name	Status	Habitat Requirements	Occurrence Determination
Chorizanthe parryi var. *fernandina*	San Fernando Valley spineflower	FC SE CRPR 1B.1 S1	Coastal scrub, valley and foothill grassland. Located on sandy soils. Elevation range: 490 – 4000 feet. Blooms: April – July.	**Low**. Known historically from a 1901 collection from the study area but considered to be extirpated; annual grassland and upland scrub on the study site are potential habitat for this species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in July 2010 and April 2011, did not observe this species.
Cistanthe maritima (=*Calandrinia maritime*)	Seaside cistanthe	CRPR 4.2 S3.2	Coastal bluff scrub, coastal scrub, valley and foothill grassland. Located on sea bluffs and sandy sites. Elevation range: 15- 975 feet. Blooms: February - August. (CNDDB 2014; CNPS 2014)	**Low**. Historically present in the project region but not known from the study area; the study area contains coastal scrub habitat, but not the drier, steeper bluffs that provide suitable microsite conditions for the species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in July 2010 and April 2011, did not observe this species.
Convolvulus simulans	Small-flowered morning-glory	CRPR 4.2 S3.2	Chaparral, coastal scrub, valley and foothill grassland. Located in openings on wet clay soils and serpentine seeps. Elevation range: 95 – 2275 feet. Blooms: March – July. (CNDDB 2014; CNPS 2014)	**Low**. Present in the project region, but not known from the study area; primarily a chaparral species, and the habitats in the study area do not provide suitable microsite conditions for the species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in July 2010 and April 2011, did not observe this species.
Deinandra minthornii	Santa Susana tarplant	Rare CRPR 1B.2 S2.2	This deciduous shrub can be found at elevations from (280 to 760 meters) 919 to 2493 feet in rocky chaparral and coastal scrub communities of Ventura and Los Angeles counties. The typical blooming period is July to November. (CNPS 2014)	**Low**. Present in the project region, but the study area is outside of the species' range; primarily a chaparral species, and the habitats in the study area do not provide suitable microsite conditions for the species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in 2010 and 2011, did not observe this species.
Deinandra paniculata	Paniculate tarplant	CRPR 4.2 S3.2	Coastal scrub, valley and foothill grassland, vernal pools. Typically located on vernally mesic sites. Sometimes in vernal pools or on mima mounds near them. Elevation range: 80 – 3055 feet. Blooms: April – November. (CNDDB 2014; CNPS 2014)	**Low**. Not reported from the project region; the study area is outside of the species' range; typical habitat for this species does not occur in the study area; floristic rare plant surveys in 2010 and 2011 did not observe this species in the study area. Surveys in 1991 and 2002 reporting the species to be present in the study site appear to be based on misidentified fascicled tarplant, which is common in the project region and known to occur in the study area.

Scientific Name	Common Name	Status	Habitat Requirements	Occurrence Determination
Dichondra occidentalis	Western dichondra	CRPR 4.2 S3.2	Chaparral, cismontane woodland, valley and foothill grassland, coastal scrub. Located on sandy loam, clay, and rocky soils. Elevation range: 160 – 1625 feet. Blooms: January – July. (CNDDB 2014; CNPS 2014)	**Low**. Known to occur in the project region (Santa Monica Mountains); the study area contains coastal scrub habitat that may be suitable habitat; however this species is generally known to occur at higher elevations. Surveys of the study area in 1991 and 2002 reported the species to be present, although focused rare plant surveys in July 2010 and April 2011 did not observe this species in the study area.
Dithyrea maritima	Beach spectaclepod	ST CRPR 1B.1 S2.1	Coastal dunes, coastal scrub. Located at sea shores on sand dunes and sandy places near the shore. Elevation range: 10 - 165 feet. Blooms: March – May.	**Low**. Known historically from the study area and last observed in the project region in 1934; dune and nonnative dune habitats in Area B are potential habitat for this species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in April 2011, did not observe this species.
Dudleya cymosa subsp. *ovatifolia*	Santa Monica dudleya	FT CRPR 1B.2 S1	Chaparral, coastal scrub. Located in canyons on sedimentary conglomerates on primarily north-facing slopes. Elevation range: 485 – 5430 feet. Blooms: March – June. (CNDDB 2014; CNPS 2014)	**Low**. Present in the project region, but the study area is outside of the species' range; occurs on rock outcrops, which do not occur in the study area; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in July 2010 did not observe this species.
Dudleya multicaulis	Many-stemmed dudleya	CRPR 1B.2 S2	Chaparral, coastal scrub, valley and foothill grassland. Located in heavy, often clay soils or grassy slopes. Elevation range: 45 – 2560 feet. Blooms: April – July. (CNDDB 2014; CNPS 2014)	**Low**. Present in the project region, but the study area is outside of the species' range; occurs on clay soils and sandstone outcrops, which do not occur in the study area; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in July 2010 and April 2011 did not observe this species.
Dudleya virens subsp. *insularis*	Island green dudleya	CRPR 1B.2 S2.2	Coastal bluff scrub, coastal scrub. Located on rocky sites. Elevation range: 15 – 975 feet. Blooms: April – June. (CNDDB 2014; CNPS 2014)	**Low**. Present in the project region but not known from the study area; the study area contains restored coastal scrub habitat, but not the drier, steeper bluffs and rock outcrops that provide suitable microsite conditions for the species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in July 2010 and April 2011, did not observe this species.
Erysimum suffrutescens (=*Erysimum insulare* subsp. *suffrutescens*)	Suffrutescent wallflower	CRPR 4.2 S3.2	Coastal bluff scrub, coastal scrub, valley and foothill grassland. Located on coastal dunes and bluffs. Elevation range: 0 – 490 feet. Blooms: January – July. (CNDDB 2014; CNPS 2014)	**Confirmed Present**. First observed in the project region in the late 1800s and often observed in the region in subsequent years; observed during multiple surveys of the study area conducted since 1979; several populations were mapped on the study area in Areas A,

Scientific Name	Common Name	Status	Habitat Requirements	Occurrence Determination
				B, and C during focused rare plant surveys in 2011.
Helianthus nuttallii subsp. *parishii*	Los Angeles sunflower	CRPR 1A SH	Coastal salt and freshwater marshes and swamps. Elevation range: 30 – 5445 feet. Blooms: August – October. (CNDDB 2014; CNPS 2014)	**Low**. Known historically in the project region but not known from the study area; wetlands in the study area may be potential habitat for the species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in July and October 2010, did not observe this species.
Hordeum intercedens	Vernal barley	CRPR 3.2 S3S4	Coastal dunes, coastal scrub, valley and foothill grassland, vernal pools. Located on saline flats and depressions. Elevation range: 15 – 3240 feet. Blooms: March – June. (CNPS 2014)	**Low**. Historically present in the study area but not observed since 1901; although primarily found in alkali grasslands and vernal pools, the margins of salt pan habitat in the study area may be potential habitat for the species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in April 2011, did not observe this species.
Horkelia cuneata subsp. *puberula*	Mesa horkelia	CRPR 1B.1 S2.1	Chaparral, cismontane woodland, coastal scrub. Located on sandy or gravelly sites. Elevation range: 225 – 2,625 feet. Blooms: February – September. (CNDDB 2014; CNPS 2014)	**Low**. Present in the project region, but the study area is outside of the species' range; primarily a chaparral species, and the habitats in the study area do not provide suitable microsite conditions for the species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in July 2010 and April 2011, did not observe this species.
Juglans californica	Southern California black walnut	CRPR 4.2 S3.2	This deciduous tree blooms from March to August in alluvial soils of cismontane woodland, chaparral, coastal scrub, between 164 to 2,952 feet elevation. Known from Los Angeles, Orange, Riverside, Santa Barbara, San Bernardino, San Diego, and Ventura counties. (CNPS 2014)	**Low**. Present in the project region, but the study area is outside of the species' range; primarily a woodland or chaparral species, and the habitats in the study area do not provide suitable microsite conditions for the species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in July 2010 and April 2011, did not observe this species.
Juncus acutus subsp. *leopoldii*	Southwestern spiny rush	CRPR 4.2 S3.2	Coastal dunes, meadows and seeps, coastal salt marshes. Located on mesic, alkaline seeps, and coastal salt. Elevation range: 10 – 2925 feet. Blooms: May – June. (CNPS 2014)	**Low**. Known historically in the project region but not known from the study area; wetlands in the study area may provide suitable habitat for the species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in July 2010, did not observe this species.

Scientific Name	Common Name	Status	Habitat Requirements	Occurrence Determination
Lasthenia glabrata subsp. *coulteri*	Coulter's goldfields	CRPR 1B.1 S2.1	Coastal salt marshes, playas, valley and foothill grassland, vernal pools. Typically located on alkaline soils in playas, sinks, and grasslands. Elevation range: 1 – 3955 feet. Blooms: February – June. (CNDDB 2014; CNPS 2014)	**Low**. Historically present in the study area but not observed since 1934; wetlands in the study area may provide suitable habitat for the species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in April 2011, did not observe this species.
Leptosyne maritima	sea dahlia	CRPR 2B.2 S2.2	Found in coastal bluff scrub and coastal scrub habitat. Located on a variety of soil types, including sandstone. Elevation range: 5-150 meters. Blooming period: March-May. (CNDDB 2014; CNPS 2014)	**Low.** Does not occur in the project region; study area is outside of the species' range; the study area contains coastal scrub habitat, but not the drier, steeper bluffs that provide suitable microsite conditions for the species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in 2010 and 2011, did not observe this species.
Monardella hypoleuca subsp. *hypoleuca*	White-veined monardella	CRPR 1B.3 S2S3	Found in chaparral and cismontane woodland. Located on dry slopes. Elevation range: 50-1525 meters. Blooming period: April- December. (CNDDB 2014; CNPS 2014)	**Low**. Present in the project region, but the study area is outside of the species' range; no habitats on site suitable for the species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in 2010 and 2011, did not observe this species.
Mucronea californica	California spineflower	CRPR 4.2 S3	Chaparral, cismontane woodland, coastal dunes, coastal scrub, valley and foothill grassland. Located on sandy soils. Elevation range: 0 – 4550 feet. Blooms: March – August. (CNDDB 2014; CNPS 2014)	**Low**. Known historically in or near the study area until 1934; restored coastal dune and coastal scrub habitat underlain by sandy substrate may provide habitat for this species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in 2010 and 2011, did not observe this species.
Nama stenocarpum	Mud nama	CRPR 2B.2 S1S2	Marshes and swamps. Located on lake shores, streams banks, and intermittently wet areas. Elevation range: 15 – 1620 feet. Blooms: January – July. (CNDDB 2014; CNPS 2014)	**Low**. Known historically in the project region (last seen in 1924) but not known from the study area; ruderal and brackish marsh margins may provide potential habitat for this species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in July 2010 and April 2011, did not observe this species.
Nasturtium gambelii	Gambel's watercress	FE ST CRPR 1B.1 S1	Brackish and freshwater marshes and swamps. Located on lake and stream margins at or immediately above the water line. Elevation range: 15 – 1075 feet. Blooms: April – October. (CNDDB 2014; CNPS 2014)	**Low**. Known historically in the project region (last seen in 1904) but not known from the study area; closely associated with freshwater wetland habitat, which is not present in the study area; multiple surveys of the study area conducted since 1979, including focused rare plant surveys in July 2010, did not observe this species.

Scientific Name	Common Name	Status	Habitat Requirements	Occurrence Determination
Navarretia fossalis	Spreading navarretia	FT CRPR 1B.1 S1	Vernal pools, chenopod scrub, marshes, swamps, and playas. Located on hardpan soils in swales, depressions, and pools. Elevation range: 95 – 4225 feet. April – June. (CNDDB 2014; CNPS 2014)	**Low**. Known historically in the project region (last seen in 1906) but not known from the study area; no potential habitat for this species in the study area; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in April 2011, did not observe this species.
Navarretia prostrata	Prostrate navarretia	CRPR 1B.1 S2	Found in mesic conditions within coastal scrub, meadows and seeps, valley and foothill grassland (alkaline), and vernal pools. Elevation range: 45 – 2270 feet. Blooms: April – July. (CNDDB 2014; CNPS 2014)	**Low**. Known historically from coastal plains in the project region (last seen in 1944) but not known from the study area; no potential habitat for this species in the study area; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in April 2011, did not observe this species.
Nemacaulis denudata var. *denudata*	coastal wooly-heads	CRPR 1B.2 S2.2	Coastal dunes. Elevation range: 0 – 325 feet. Blooms: April – September. (CNDDB 2014; CNPS 2014)	**Low**. Not known to occur in the project region or study area, although the study site is within the species' range; the study area contains restored coastal dune habitat that that is potential habitat for this species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in July 2010 and April 2011, did not observe this species.
Orcuttia californica	California Orcutt grass	FE SE CRPR 1B.1 S1	Vernal pools. Elevation range: 45 – 2145 feet. Blooms: April – August. (CNPS 2014)	**Low**. Known historically from coastal plains in the project region (last seen in 1946) but not known from the study area; no potential habitat for this species in the study area; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in July 2010 and April 2011, did not observe this species.
Pentachaeta lyonii	Lyon's pentachaeta	FE SE CRPR 1B.1 S2	Chaparral, valley and foothill grassland. Located on the edges of openings at the ecotone between chaparral and grassland. Elevation range: 95 – 2050 feet. Blooms: March – August. (CNDDB 2014; CNPS 2014)	**Low**. Known historically in the project region (last seen in 1884) but not known from the study area; no potential habitat for this species in the study area; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in July 2010 and April 2011, did not observe this species.
Phacelia hubbyi	Hubby's phacelia	CRPR 4.2 S3.2	Found in gravelly, rocky, talus soil in chaparral, coastal scrub, and valley and foothill grassland habitat. Elevation range: 0 – 3,280 feet. Blooming period: April - July. (CNDDB 2014; CNPS 2014)	**Low**. Known in the project region from the Palos Verdes Hills and the Santa Monica Mountains but not known from the study area; no potential habitat for this species in the study area; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in July 2010 and April 2011, did not observe this species.

Scientific Name	Common Name	Status	Habitat Requirements	Occurrence Determination
Phacelia ramosissima var. *austrolitoralis*	South coast branching phacelia	CRPR 3.2 S3.2	Chaparral, coastal dunes, coastal scrub, coastal salt marshes. Located on sandy, sometimes rocky soils. Elevation range: 20 – 975 feet. Blooms: March – August. (CNPS 2014)	**Confirmed Present**. First recorded from the study area in 1901, this species has been observed in the study area on multiple occasions, including focused rare plant surveys in July, October, and April 2011.
Phacelia stellaris	Brand's star phacelia	FC CRPR 1B.1 S1	Coastal scrub, coastal dunes. Located in open areas. Elevation range: 1 – 1300 feet. Blooms: March – June. (CNDDB 2014; CNPS 2014)	**Low**. Known historically in or near the study area until 1932; restored coastal dune and coastal scrub habitat underlain by sandy substrate may be suitable habitat for this species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in April 2011, did not observe this species.
Potentilla multijuga	Ballona cinquefoil	CRPR 1A SX	Perennial herb found in brackish meadows and seeps. Elevation range: 0 – 10 feet. Blooms: June – August. (CNDDB 2014; CNPS 2014)	**Low**. This species is known from only a single location. It was originally collected on the flats of Ballona (now called Venice) in the 1890. No further observations of the species were made, and it is presumed to be extinct. Multiple surveys of the study area conducted since 1979, including focused rare plant surveys in July 2010, did not observe this species.
Pseudognaphalium leucocephalum	White rabbit-tobacco	CRPR 2B.2 S3.2	Riparian woodland, cismontane woodland, coastal scrub, chaparral. Elevation range: 0 – 6,825 feet. Blooms: July – December. (CNDDB 2014; CNPS 2014)	**Low**. Known historically in the project region until 1907; the study area is outside of the species' range; coastal scrub habitat in the study area may be suitable habitat for the species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in July and October 2010, did not observe this species.
Quercus dumosa	Nuttall's scrub oak	CRPR 1B.1 S2	This evergreen shrub blooms from February to August at elevations from 49 to 1,312 feet. It inhabits sandy soils and clay loam in coastal scrub, chaparral, and closed-cone coniferous forests. It can be found along the coasts of Santa Barbara, Orange, and San Diego counties. (CNPS 2014)	**Low**. Not known to occur in the project region or study area; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in July 2010 and April 2011, did not observe this species.

Scientific Name	Common Name	Status	Habitat Requirements	Occurrence Determination
Sidalcea neomexicana	Salt spring checkerbloom	CRPR 2B.2 S2S3	Alkali playas, brackish marshes, chaparral, coastal scrub, lower montane coniferous forest, Mojavean Desert scrub. Located on alkali springs and marshes. Elevation range: 45 – 4,960 feet. Blooms: March – June. (CNDDB 2014; CNPS 2014)	**Low**. Known historically in the project region from a single collection in 1890; the study area is outside of the species' range; brackish marsh in the study area may be suitable habitat for the species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in July 2010 and April 2011, did not observe this species.
Suaeda esteroa	Estuary seablite	CRPR 1B.2 S2	Coastal salt marshes and swamps. Located on clay, silt, and sand substrates. Elevation range: 0 – 15 feet. Blooms: May – January. (CNDDB 2014; CNPS 2014)	**Low**. Not known to occur in the project region or the study area; marshes in the study area may be suitable habitat for the species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in July and October 2010 did not observe this species.
Suaeda taxifolia	Wooly seablite	CRPR 4.2 S2S3	Coastal bluff scrub, coastal dunes, margins of coastal salt marshes. Elevation range: 0- 165 feet. Blooms: January – December. (CNDDB 2014; CNPS 2014)	**Confirmed Present**. The species is known to occur in the study area from multiple collections made from Playa del Rey and Ballona wetlands between 1901 and 1981. Coastal salt marsh and coastal dunes in the study area are habitat for this species habitat. Focused rare plant surveys in April, July, and October 2011 located this species in Area B.
Symphyotrichum (=Aster) defoliatum	San Bernardino Aster	CRPR 1B.2 S2	Meadows and seeps, marshes and swamps, coastal scrub, cismontane woodland, lower montane coniferous forest, grassland. Located in mesic grassland near ditches, streams, and springs. Elevation range: 5 – 6,630 feet. Blooms: July – November. (CNDDB 2014; CNPS 2014)	**Low**. Known historically in the project region (last seen in 1930) but not known from the study area; coastal scrub and grasslands habitats in the study area do not provide suitable habitat for this species; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in July and October 2010 did not observe this species.
Symphyotrichum (=Aster) greatae	Greata's aster	CRPR 1B.3 S2.3	Chaparral, cismontane woodland. Located in mesic canyons. Elevation range: 975 – 6535 feet. Blooms: June – October. (CNDDB 2014; CNPS 2014)	**Low**. Known historically in the project region (last seen in 1932) but not known from the study area; no chaparral or woodland habitat present in the study area; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in July and October 2010 did not observe this species.

Scientific Name	Common Name	Status	Habitat Requirements	Occurrence Determination
Thelypteris puberula var. *sonorensis*	Sonoran maiden fern	CRPR 2B.2 S2.2?	This rhizomatous perennial herb inhabits seeps and streams in meadows, from southern California south to Sonora, Mexico, and east to Arizona. Within California it is known from Santa Barbara, Los Angeles, Riverside, and San Bernardino counties, at elevations from about 164 to 2,001 feet. This fern is rare to uncommon in California, but more common outside of the state. (CNPS 2014)	**Low**. Not known to occur in the project region or study area; no suitable habitat present in the study area; multiple surveys of the study area conducted since 1979, including floristic rare plant surveys in July 2010 and April 2011, did not observe this species.

Shading
Indicates species with a low potential to occur in the study area because it is outside of the species range and/or no suitable habitat is present.

Confirmed Present
A qualified biologist or other reliable source has confirmed the presence of the species. Depending on the species and other information available, it may or may not be possible to determine, without further studies, what portions of the study area are currently in use.

High Potential
The study area is known to be within the range of the species, and contains potentially suitable habitat. Although no individuals or diagnostic sign were detected during the most recent fieldwork by a qualified observer (2010-2011), the species has been reported to occur in the study area within the last 30 years.

Moderate Potential
The study area provides suitable habitat for a particular species, and the species has been reported to occur in the study area within the last 30 years. However, various characteristics preclude the species from having a high potential to occur. For example, proper soils may be present, but the desired vegetation assemblage or density is not present, or reduced; or soils and vegetation are suitable, but the site is outside of the known elevation range of the species.

Low Potential
The species is not known to occur in the study area or has only been observed there historically (>30 years ago). Potentially suitable habitat may or may not be present. No individuals or diagnostic sign were detected by a qualified observer within the last 30 years.

NOTES:
Federal
FE = Endangered
FT = Threatened
FC = Candidate
State
SE = Endangered
ST = Threatened
CSC = Species of Special Concern
CFP = Fully Protected Species
Rare = Listed as rare under the California Native Plant Protection

CRPR – California Rare Plant Rank
1A. Presumed extinct in California
1B. Rare or Endangered in California and elsewhere
2A. Presumed extinct in California, extant and more common elsewhere
2B. Rare or Endangered in California, more common elsewhere
3. Plants for which we need more information - Review list
4. Plants of limited distribution - Watch list
Threat Ranks
.1 - Seriously endangered in California
.2 – Fairly endangered in California
.3 – Not very endangered in California

Note: The California Natural Diversity Database (CNDDB) uses the same ranking methodology originally developed by The Nature Conservancy and now maintained and recently revised by NatureServe. The state rank (S-rank) refers to the imperilment status only within California's state boundaries. It is a reflection of the overall status of an element through its state range. The state rank represent a letter + number score that reflects a combination of Rarity, Threat, and Trend factors, with weighting being heavier on Rarity than the other two.

S1 = Critically Imperiled - Critically imperiled in the state because of extreme rarity (often 5 or fewer

populations) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state.
S2 = Imperiled - Imperiled in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the state.
S3 = Vulnerable - Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the state.
S4 = Apparently Secure - Uncommon but not rare in the state; some cause for long-term concern due to declines or other factors.
S5 = Secure - Common, widespread, and abundant in the state.
SH = All sites are historical; the element has not been seen for at least 20 years, but suitable habitat still exists.
SX = All sites are extirpated.
Uncertainty about the rank of an element is expressed in two major ways:

- By expressing the ranks as a range of values: e.g., S2S3 means the rank is somewhere between S2 and S3.
- By adding a ? to the rank: e.g., S2? This represents more certainty than S2S3, but less certainty than S2.

This page intentionally left blank

APPENDIX D12
Special-Status Wildlife

This page intentionally left blank

Appendix D12-Special-status Species Occurrence Tables

Benthic and Terrestrial Invertebrates

Fish

Reptiles and Amphibians

Birds

Mammals

Special-status Benthic and Terrestrial Invertebrates

Common Name	Scientific Name	Status	Habitat Requirements	Likelihood of Occurrence
Belkin's Dune Tabanid Fly	*Brennania belkini*	S1S2	Found in exposed sandy substrates within southern foredune and southern dune scrub plant communities. Adults fly from late May to early July and breed only on coastal sand dunes (CNDDB 2014).	**Low potential**. Sand dunes are present south of Ballona Creek and east of Vista Del Mar Road. One adult was collected on the sand dunes and larvae were collected below the soil surface in 1980. No flies have been detected since the 1980's. (CNDDB 2014)
Busck's Gallmoth	*Carolella busckana*	SH	Type location for this species from El Segundo sand dunes. (CNDDB 2014)	**Less than reasonable**. Terrestrial invertebrate surveys did not detect this species. Last detection was in 1938 and 1939. Possibly extirpated in Los Angeles County. (CNDDB 2014)
Dorothy's El Segundo Dune Weevil	*Trigonoscuta dorothea dorothea*	S1	Distributed only along coastal southern California from Point Dume to Point Fermin and is associated with southern dune scrub plant community.	**Moderate potential**. Detected in 1995, 1996, and 2001 terrestrial invertebrate surveys is the dune system immediately west of Area B (CNDDB 2014). Not detected in 2009 and 2011 terrestrial invertebrate surveys. Dune scrub vegetation is present in Area B.
El Segundo Blue Butterfly	*Euphilotes battoides allyni*	FE S1	Historically ranged over the entire Los Angeles/El Segundo Dunes and the northwestern Palos Verdes Peninsula in southwestern LA County. Currently distributed on three remnant habitats within its former range supporting coastal sand dunes with coast buckwheat (*Eriogonum parvifolium*). All life stages depend on sea cliff buckwheat (*Eriogonum parvifolium*) and possibly loose sand.	**Confirmed Present**. Approximately 30 individuals were observed on 19 July 2011. Psomos (2013) reported 199 butterflies during presence/absence surveys. The individuals were observed in Area B's dune habitat on coast buckwheat, *Eriogonum parvifolium*, which was planted as part of the Friends of Ballona Wetlands dune restoration project.
El Segundo Flower-loving Fly	*Rhaphiomidas terminatus terminatus*	S1	Areas containing sandy substrates with a sparse cover of perennial shrubs and other vegetation constitute the primary habitat requirement for *Rhaphiomidas* flies. This subspecies was believed extinct since its last sighting in 1965; however, in 2001 a small colony was found on the upper Malaga sand dune in Los Angeles County, California (CNDDB 2014).	**Less than reasonable**. Not detected in previous terrestrial invertebrate surveys. Last documented observation was in 2001 in Redondo Beach quad (CNDDB 2014).
Gertsch's Socalchemmis Spider	*Socalchemmis gertschi*	S1	Found in sage scrub, chaparral, oak woodland, coniferous forest, generally in rocky outcrops or talus slopes (moveable rocks with spaces or cracks) in non-arid climates.	**Less than reasonable**. Not detected in previous terrestrial invertebrate surveys. Previously detected in Topanga Canyon in 1997 and in Brentwood in 1952. (CNDDB 2014)

Common Name	Scientific Name	Status	Habitat Requirements	Likelihood of Occurrence
Globose Dune Beetle	*Coelus globosus*	S1	Inhabitant of coastal sand dune habitat, typically foredunes and sand hummocks, from Bodega Head in Sonoma County, south to Ensenada, Mexico.	**Moderate Potential**. Detected in dunes in Area B in 1996 and 2001 (CNDDB 2014). Although this species was not detected in recent terrestrial invertebrate surveys (Johnston et al. 2011 and 2012), coastal sand dune habitat still present on the Reserve.
Henne's Eucosman Moth	*Eucosma hennei*	S1	Endemic to the Los Angeles/El Segundo Dunes in Los Angeles County. Species has been collected from and identified at the dunes in 1984.Larvae are stem and root borers of *Phacelia ramosissim.* (CNDDB 2014)	**Low Potential**. Last detection in 1984 in El Segundo dunes (CNDDB). No detected in previous terrestrial invertebrate surveys in the Project area; however, host plant present on the Project site.
Lange's El Segundo Dune Weevil	*Onychobaris langei*	S1	Occurs in southern foredune and southern dune scrub plant communities. Possible food plant is an evening primrose (*Oenothera* sp.) (CNDDB 2014).	**Moderate potential**. Detected in 1981, 1991, and 2001 terrestrial invertebrate surveys in the dune system immediately west of Area B. Although evening primrose species were not detected in floristic surveys after 2002, dune scrub vegetation remains present in Area B.
mimic tryonia (=California brackishwater snail)	*Tryonia imitator*	S2S3	Inhabits coastal lagoons, estuaries and salt marshes, from Sonoma County south to San Diego County (CNDDB 2014).	**Less than reasonable**. This species was reported from Ballona Creek in 1974. The original report was based on the presence of empty shells of this species and there have been no subsequent reports of this species, despite several benthic invertebrate surveys (CNDDB 2014; WRA 2013).
Monarch Butterfly	*Danaus plexippus*	S3	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves (e.g., eucalyptus, Monterey pine, and cypress). (CNDDB 2014)	**Confirmed Present**. Detected in marsh habitats of western Area B during vegetation surveys. Monarchs detected in October 2010 monarch surveys. Eucalyptus stands on the Reserve considered wintering sites.
Palos Verdes Blue Butterfly	*Glaucopsyche lygdamus palosverdesensis*	FE S1	Restricted to the cool, fog-shrouded, seaward side of Palos Verdes Hills, Los Angeles County. Larval host Southern California milkvetch *(Astragalus trichopodus* ssp. *locnhus)* which is typically found on clay soils on rocky slopes. Butterflies feed on milkvetch and deerweed.	**Less than reasonable**. Historical sightings in the CNDDB search include 2001 at Malaga Cove (approx. 10 miles to the south). Other sightings in CNDDB from 1980's considered possibly extirpated (CNDDB 2014). Not detected in previous terrestrial invertebrate surveys in the Project area.
Quino Checkerspot Butterfly	*Euphydryas editha quino*	FE S1	Habitat is characterized by patchy shrub or small tree landscapes with openings of several meters, between large plants or a landscape of open swales alternating with dense patches of shrubs. Egg deposition has been documented on erect or dwarf plantain (*Plantago erecta*), Patagonian plantain (*Plantago patagonica*), and white snapdragon (*Anterrhinum coulterianum*).	**Confirmed absent**. Host plant not present. Quino has been extirpated from Los Angeles County (CNDDB 2014). Not detected in previous terrestrial invertebrate surveys.

Common Name	Scientific Name	Status	Habitat Requirements	Likelihood of Occurrence
Riverside Fairy Shrimp	*Streptocephalus woottoni*	FE S1	Found in shallow depressions containing a clay hard pan soil layer. Discontinuously distributed along coastal southern California and northern Baja California. The species was found at Los Angeles International Airport (USFWS 2009b).	**Low potential**. No vernal pools present on the site. Previous studies determined that because of high salinities and inadequate depth and/or duration of ponding that the Project site did not support suitable habitat.
San Diego Fairy Shrimp	*Branchinecta sandiegonensis*	FE S1	Species found in deep vernal pools, road cuts, and depressions that retain water through the warm weather of late April and May. Distribution is limited to discrete localities from Los Angeles County (LAX), Orange County, Riverside, and San Diego Counties south to Baja California.	**Low potential**. No vernal pools present on the site. Previous studies determined that because of high salinities and inadequate depth and/or duration of ponding that the Project site did not support suitable habitat.
Sandy Beach (= Hairy Necked) Tiger Beetle	*Cicindela hirticollis gravida*	S1	Inhabits clean, dry, light-colored sand in the upper zone of the beach dunes, usually close to non-brackish water. Occurs along the coast of California from San Francisco Bay to northern Mexico. (CNDDB 2014)	**Less than reasonable**. Playa Del Ray, the beach west of the study area and south of Ballona Creek is a historical location for the species. According to CNDDB, last recoded sighting was in 1907 and the species is believed to be extirpated (CNDDB 2014).
Santa Monica shieldback Katydid	*Aglaothorax longipennis*	S1S2	Occurs nocturnally on chaparral and canyon stream bottom vegetation and also on introduced ice plant (*Mesembryantheum* sp.). Only one population is known and it was identified at the mouth of Big Rock Canyon in 1975. (CNDDB 2014)	**Less than reasonable**. Previous survey efforts did not detect the species. The only known population occurs in the Santa Monica mountains and was detected in 1975 and preferred habitat is not present in the Project area.
Senile Tiger Beetle	*Cicindela senilis frosti*	S1	Found in the middle to upper parts of salt marshes. The beetle has a bimodal flight period in early spring and late fall. (CNDDB 2014)	**Less than reasonable**. Not detected in previous terrestrial invertebrate surveys. Documented historical location is Manhattan Beach (1979). This species is believed to be extirpated from Los Angeles County-Manhattan Beach (CNDDB 2014).
Wandering (= saltmarsh) Skipper	*Panoquina errans*	S1	Distributed along a narrow coastal strip from Santa Barbara and Ventura to San Diego County. Often associated with host plant, saltgrass (*Distichlis spicata*) (CNDDB 20140.	**Confirmed present**. Detected in marsh habitats of western Area B during vegetation surveys. Detected in 2010 and 2011 in the salt marsh of Area B. Detected in Areas A and B during 1981, 1991, 1995, and 2001 surveys (CNDDB 2014). Host plant present during floristic surveys from 1991-2011.
Western S-banded Tiger Beetle	*Cicindela trifasciata sigmoidea*	SNR	Salty coastal habitats including salt marshes, tidal flats, beaches.	**Low potential**. Detected during sensitive insect survey (1996) and insect and related terrestrial arthropod survey (1981). Potential suitable habitat occurs on the Reserve.
Western Tidal Flat Tiger Beetle	*Cicindela gabbii*	S1	Found in salty coastal habitats including salt marshes, tidal flats, beaches. Species burrows in or uses soil.	**Low potential**. Potential suitable habitat occurs on the Reserve.

Shading Species which has less than reasonable potential for occurrence and impact.
Confirmed Present A qualified biologist or other reliable source has confirmed the presence of the species and there is no specific evidence that the species has subsequently become absent. Depending on the species and other information available, it may or may not be possible to determine, without further studies, what portions of the study area are currently in use.
High Potential The study area is known to be within the range of the species, and contains potential habitat with a high likelihood of occupancy. Although no individuals or diagnostic sign were detected during current fieldwork by a qualified observer, the species is likely to be present to some degree given the best available information. Depending upon regulatory status, local rarity, public interest, extent of habitat on the study area, and the nature of potential project impacts, a substantial basis may exist for either conducting focused surveys for the species or for assuming presence.
Moderate Potential The study area is within the range of the species, and contains potentially appropriate habitat. Neither individuals nor diagnostic sign were detected. It is nevertheless reasonable that some individuals may have been overlooked. The best available information on the species with regard to the study area is either very uncertain, or may be equally weighted for and against occurrence. Depending upon local and special legal status, extent of habitat, and the nature and sensitivity of the project, focused surveys for the species may be warranted or presence may be assumed.
Low Potential Occurrence of the species is reasonable but Less than reasonable because of some combination of facts. For example, 1) the study area was the subject of unsuccessful searches conducted under relevant and reasonable circumstances, 2) potential habitat present is marginal or minimal in extent, 3) the best available information suggests the species is absent from the study area, and/or 4) available information sheds no clear light on the species likelihood on the study area, but it is known to be rare at best in the vicinity. Neither the species nor any indication of its presence was detected. Although individuals may have been missed, it is Less than reasonable that substantial populations are present. Further evaluation should usually not be required for individual species except, in most cases, for biologically threatened or endangered species. Note however, that where several non-listed species hold this status, a higher likelihood of occurrence for “one or more” will generally hold. This is due both to the increased number of species and the fact that an array of possibilities often correlates with greater site biodiversity and lower relevant (but not readily detected) disturbance levels.
Less than reasonable Although occurrence may be remotely possible, the likelihood of occurrence is less than that required for any potentially applicable regulatory threshold. Further, the likelihood of meaningful value of the site to any population(s) of this taxon is less than reasonable. The species may or may not include the study area within its current, general range. However, no appropriate, or adequately extensive, or effectively connected habitat is present. Neither the species nor any indication of its presence was detected. In some cases this likelihood may indicate that based on the best available information, the study area has a very high probability of being outside of the species’ current range. In all of the above cases, the species may not be definitively ruled out but is strongly believed to be absent based on professional evaluation of all available evidence. In some cases, the species may occur on rare occasions and in low numbers, but with no more than brief, incidental use of the study area. That is, the site is also judged to lack any important function for the species. Certainly there are no substantial populations directly utilizing the study area at any time of year. Further evaluation should not normally be required
Confirmed Absent Confirmed to be absent on the study area as a formal and/or practical matter. Most often, this is a determination based on negative results of a focused survey for the species conducted in appropriate habitat at appropriate time(s) of year, using biologically sound methods and qualified personnel. In the remaining cases, it may be based on a simple study area examination, for species and study area contexts where it is easily determined that the species is absent; for example, a tidal marsh insect and a dry mountainside study area, or a disturbance-intolerant chaparral shrub where the study area is a long-standing, degraded grassland far from chaparral. The relevant fieldwork was also in all cases conducted within a time frame sufficiently recent to conclude that the species remains absent, based on study area

conditions and the species' known ecology. In most cases a specific, established survey protocol and/or guidelines have been followed.

NOTES:

Federal

FE = Endangered

FT = Threatened

FC = Candidate

State

SE = Endangered

ST = Threatened

CSC = Species of Special Concern

CFP = Fully Protected Species

WL= California Watchlist (formerly a Species of Special Concern; limited protection)

Note: The California Natural Diversity Database (CNDDB) uses the same ranking methodology originally developed by The Nature Conservancy and now maintained and recently revised by NatureServe. The *state rank* (S-rank) refers to the imperilment status only within California's state boundaries. It is a reflection of the overall status of an element through its state range. The state rank represent a letter + number score that reflects a combination of Rarity, Threat, and Trend factors, with weighting being heavier on Rarity than the other two.

S1 = Critically Imperiled - Critically imperiled in the state because of extreme rarity (often 5 or fewer populations) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state.

S2 = Imperiled - Imperiled in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the state.

S3 = Vulnerable - Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the state.

S4 = Apparently Secure - Uncommon but not rare in the state; some cause for long-term concern due to declines or other factors.

S5 = Secure - Common, widespread, and abundant in the state.

SH = All sites are historical; the element has not been seen for at least 20 years, but suitable habitat still exists.

SX = All sites are extirpated.

Uncertainty about the rank of an element is expressed in two major ways:

- By expressing the ranks as a range of values: e.g., S2S3 means the rank is somewhere between S2 and S3.
- By adding a ? to the rank: e.g., S2? This represents more certainty than S2S3, but less certainty than S2.

SNR = Unranked

Special-status Fish Species

Scientific Name	Common Name	Status	Habitat Requirements	Likelihood of Occurrence
Catostomus santaanae	Santa Ana sucker	FT CSC S1	As a freshwater fish, this species occurs in watersheds draining the San Gabriel and San Bernardino Mountains of southern California. Most abundant in unpolluted, clear water that is less than 72F, but can tolerate warmer water temperatures and turbid water conditions. Prefer gravel, cobble and cobble with sand substrates and riffle, runs and pools with riparian vegetation that provides shade and cover.	**Less than reasonable.** The lack of suitable freshwater conditions and absence of the species during past surveys suggests this species is not present. The Santa Ana sucker has been historically documented in the Los Angeles River so may have occurred in the distant past.
Eucyclogobius newberryi	Tidewater Goby	FE CSC S2S3	Found primarily in waters of coastal lagoons, estuaries, and marshes, and historically ranged from mouth of the Smith River, Del Norte County to northern San Diego County. The species is benthic in nature, living at the bottom of shallow brackish bodies of water, such as lagoons and in lower stream reaches where the water is fairly still but not stagnant. Prefer water with high dissolved oxygen levels and salinities less than 10 parts per thousand (ppt).	**Less than reasonable.** The species may have occurred historically; however, the species has not been detected during numerous studies over the last several decades.
Gasterosteus aculeatus williamsoni	Unarmored Threespine Stickleback	FE SE CFP S1	As a freshwater fish, this species is found in slow-moving or standing water with aquatic vegetation. Can be found in the shallow edges of streams in areas with dense vegetation.	**Less than reasonable.** The lack of suitable freshwater conditions and absence of the species during past surveys suggests this species is not present. There is no historic record of occurrence of this species near the study site.
Gila orcutti	Arroyo Chub	CSC S2	This freshwater fish inhabits sandy and muddy bottoms in flowing pools and runs of headwaters creeks and small to medium rivers. Often found in intermittent streams.	**Less than reasonable.** The lack of suitable freshwater conditions and absence of the species during past surveys suggests this species is not present. There is no historic record of occurrence of this species near the study site.

Scientific Name	Common Name	Status	Habitat Requirements	Likelihood of Occurrence
Oncorhynchus mykiss irideus	Southern California Steelhead	FE CSC S2	Migrate into fresh water streams when sandbars breach during winter and spring rains. Occur in coastal streams with water temperatures < 15°C. Need cool, clear water with in-stream cover. Spawn in tributaries to large rivers or streams directly connected to the ocean. Spawning habitat consists of gravel substrates free of excessive silt. Thrive when dissolved oxygen concentration is at least 7 parts per million. In streams, deep low-velocity pools are important wintering habitats. They have been extirpated from at least 11 southern California streams: San Luis Rey River, San Mateo Creek, Santa Margarita River, Rincon Creek, Maria Ygnacio River, Los Angeles River, San Gabriel River, Santa Ana River, San Onofre Creek, San Juan Creek, San Diego River, and Sweetwater River.	**Low Potential.** Although individuals have been periodically observed in Ballona Creek (Johnston et al. 2011), this creek and its tributaries are urbanized and provide no spawning conditions.
Rhinichthys osculus	Santa Ana Speckled Dace	CSC S1	Inhabits rocky riffles, runs and pools of headwaters, creeks and small to medium rivers.	**Less than reasonable.** The lack of suitable freshwater conditions and absence of the species during past surveys suggests this species is not present. There is no historic record of occurrence of this species near the study site.
Siphateles bicolor mohavensis	Mohave Tui Chub	FE SE CFP S1	Deep pools or shallow outflow streams of mineralized, alkaline waters. Formerly in mainstream Mohave River; now in lakes and mineral spring pools. Dominant plants in habitat include ditchgrass, bulrush, cattail, rush, and saltgrass). Capable of surviving low oxygen (1 mg oxygen/L) and high alkaline (pH 9-10) environments.	**Less than reasonable.** Suitable conditions for this species not present in the Project area. There is no historic record of occurrence of this species near the study site.

Shading Species which has less than reasonable potential for occurrence and impact.
Confirmed Present A qualified biologist or other reliable source has confirmed the presence of the species and there is no specific evidence that the species has subsequently become absent. Depending on the species and other information available, it may or may not be possible to determine, without further studies, what portions of the study area are currently in use.
High Potential The study area is known to be within the range of the species, and contains potential habitat with a high likelihood of occupancy. Although no individuals or diagnostic sign were detected during current fieldwork by a qualified observer, the species is likely to be present to some degree given the best available information. Depending upon regulatory status, local rarity, public interest, extent of habitat on the study area, and the nature of potential project impacts, a substantial basis may exist for either conducting focused surveys for the species or for assuming presence.
Moderate Potential The study area is within the range of the species, and contains potentially appropriate habitat. Neither individuals nor diagnostic sign were detected. It is nevertheless reasonable that some individuals may have been overlooked. The best available information on the species with regard to the study area is either very uncertain, or may be equally weighted for and against occurrence. Depending upon local and special legal status, extent of habitat, and the nature and sensitivity of the project, focused surveys for the species may be warranted or presence may be assumed.
Low Potential Occurrence of the species is reasonable but Less than reasonable because of some combination of facts. For example, 1) the study area was the subject of unsuccessful searches conducted under relevant and reasonable circumstances, 2) potential habitat present is marginal or minimal in extent, 3) the best available information suggests the species is absent from the study area, and/or 4) available information sheds no clear light on the species likelihood on the study area, but it is known to be rare at best in the vicinity. Neither the species nor any indication of its presence was detected. Although individuals may have been missed, it is Less than reasonable that substantial populations are present. Further evaluation should usually not be required for individual species except, in most cases, for biologically threatened or endangered species. Note however, that where several non-listed species hold this status, a higher likelihood of occurrence for "one or more" will generally hold. This is due both to the increased number of species and the fact that an array of possibilities often correlates with greater site biodiversity and lower relevant (but not readily detected) disturbance levels.
Less than reasonable Although occurrence may be remotely possible, the likelihood of occurrence is less than that required for any potentially applicable regulatory threshold. Further, the likelihood of meaningful value of the site to any population(s) of this taxon is less than reasonable. The species may or may not include the study area within its current, general range. However, no appropriate, or adequately extensive, or effectively connected habitat is present. Neither the species nor any indication of its presence was detected. In some cases this likelihood may indicate that based on the best available information, the study area has a very high probability of being outside of the species' current range. In all of the above cases, the species may not be definitively ruled out but is strongly believed to be absent based on professional evaluation of all available evidence. In some cases, the species may occur on rare occasions and in low numbers, but with no more than brief, incidental use of the study area. That is, the site is also judged to lack any important function for the species. Certainly there are no substantial populations directly utilizing the study area at any time of year. Further evaluation should not normally be required
Confirmed Absent Confirmed to be absent on the study area as a formal and/or practical matter. Most often, this is a determination based on negative results of a focused survey for the species conducted in appropriate habitat at appropriate time(s) of year, using biologically sound methods and qualified personnel. In the remaining cases, it may be based on a simple study area examination, for species and study area contexts where it is easily determined that the species is absent; for example, a tidal marsh insect and a dry mountainside study area, or a disturbance-intolerant chaparral shrub where the study area is a long-standing, degraded grassland far from chaparral. The relevant fieldwork was also in all cases conducted within a time frame sufficiently recent to conclude that the species remains absent, based on study area conditions and the species' known ecology. In most cases a specific, established survey protocol and/or guidelines have been followed.

NOTES:

Federal

FE = Endangered

FT = Threatened

FC = Candidate

State

SE = Endangered

ST = Threatened

CSC = Species of Special Concern

CFP = Fully Protected Species

WL= California Watchlist (formerly a Species of Special Concern; limited protection)

Note: The California Natural Diversity Database (CNDDB) uses the same ranking methodology originally developed by The Nature Conservancy and now maintained and recently revised by NatureServe. The *state rank* (S-rank) refers to the imperilment status only within California's state boundaries. It is a reflection of the overall status of an element through its state range. The state rank represent a letter + number score that reflects a combination of Rarity, Threat, and Trend factors, with weighting being heavier on Rarity than the other two.

S1 = Critically Imperiled - Critically imperiled in the state because of extreme rarity (often 5 or fewer populations) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state.

S2 = Imperiled - Imperiled in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the state.

S3 = Vulnerable - Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the state.

S4 = Apparently Secure - Uncommon but not rare in the state; some cause for long-term concern due to declines or other factors.

S5 = Secure - Common, widespread, and abundant in the state.

SH = All sites are historical; the element has not been seen for at least 20 years, but suitable habitat still exists.

SX = All sites are extirpated.

Uncertainty about the rank of an element is expressed in two major ways:

- By expressing the ranks as a range of values: e.g., S2S3 means the rank is somewhere between S2 and S3.
- By adding a ? to the rank: e.g., S2? This represents more certainty than S2S3, but less certainty than S2.

Special-status Reptiles and Amphibian Species

Scientific Name	Common Name	Status	Habitat Requirements	Likelihood of Occurrence
Amphibians				
Spea hammondii	Western Spadefoot Toad	CSC S3	Prefers open areas with sandy or gravelly soils, in a variety of habitats including mixed woodlands, grasslands, coastal sage scrub, chaparral, sandy washes, lowlands, river floodplains, alluvial fans, playas, alkali flats, foothills, and mountains. Pools which do not contain bullfrogs, fish, or crayfish are necessary for breeding. The known elevational range is from sea level to about 4,472 feet. Although they spend the great majority of their life outside water, they require temporary rain pools with water temperatures between 48° and 86° f. lasting upwards of 3 weeks. Vernal pools are occasionally occupied, but species must have access to friable soils for estivation during the dry season.	**Low potential.** Potentially suitable freshwater pools are limited on the Project site; however, other conditions such sandy soils, coastal sage scrub, and playas are present. This species has not been detected during any of the numerous studies conducted in the Project area over the past several decades.
Anaxyrus californicus	Arroyo Toad	FE CSC S2S3	Inhabits washes, arroyos, sandy river banks, riparian areas with willows, sycamores, oaks, cottonwoods. Specialized habitat needs, including exposed sandy stream sides with stable terraces for burrowing with scattered vegetation for shelter, and areas of quiet water or pools free of predatory fishes with sandy or gravel bottoms without silt for breeding. Adults typically breed in overflow pools adjacent to the inflow channel of third or greater-order predator-free streams. Adult estivation sites are typically in stream terraces or uplands with friable soils, usually near active use areas but potentially more than 1 kilometer away. Young toads require moderately vegetated sandbars.	**Confirmed absent.** No potentially suitable conditions found on the Project site. This species has not been detected during any of the numerous studies conducted in the Project area over the past several decades.

Scientific Name	Common Name	Status	Habitat Requirements	Likelihood of Occurrence
Rana draytonii	California Red-legged Frog	FT CSC S2S3	Occurs very locally on the western slopes of the Sierra Nevada and the coastal foothills the length of the state, up to about 4,920 feet. Inhabit pools of streams, marshes, and ponds. Adults feed on a wide variety of aquatic prey, and will move up to a mile through riparian communities under wet conditions, such as rainfall. They prefer shorelines with extensive vegetation, and are vulnerable to the introduction of exotic competitors.	**Confirmed absent.** No potentially suitable conditions found on the Project site. This species has not been detected during any of the numerous studies conducted in the Project area over the past several decades.
Reptiles				
Anniella stebbinsi (=*Anniella pulchra pulchra*)	Southern California legless lizard (=Silvery legless lizard)	CSC S3	Occurs in moist warm loose soil with plant cover; sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks. Leaf litter under trees and bushes in sunny areas and dunes stabilized with bush lupine and mock heather often indicate suitable habitat. Found under surface objects such as rocks, boards, driftwood, and logs. Sometimes found in suburban gardens in Southern California. Soil characteristics, as well as requirements for soil moisture and relatively cool microclimates (about 93° f. maximum) limit distribution.	**Confirmed present.** In 2013, the scientific community accepted the division of the existing one species of legless lizard into five species based on the five lineages (Papenfuss and Parham 2013), naming four new species and giving a new common name to the species now known as *Anniella pulchra*. The species that occurs in Southern California and is regularly observed on the Project site in Area B is now named Southern California Legless Lizard (*Anniella stebbinsi*).
Aspidoscelis tigris stejnegeri	Coastal Whiptail	S2S3	Habitats include disturbed coastal sage scrub-chaparral mix and cleared areas of chaparral with a sandy/rocky substrate.	**Low potential.** Potentially suitable conditions present; however, the species has not been detected during any of the numerous studies conducted in the Project area over the past several decades.
Diadophis punctatus modestus	San Bernardino Ringneck Snake	S2?	Elevation range for the species as a whole is from sea level to about 7000 feet (2100 m). Prefers moist, open, rocky areas within valley-foothill, mixed chaparral, and annual grassland habitats where it preys on salamanders, frogs, lizards, snakes, and earthworms.	**Confirmed present.** Observed in central Area B during year 2 Baseline Assessment Program (Johnston et al. 2012).

Scientific Name	Common Name	Status	Habitat Requirements	Likelihood of Occurrence
Phrynosoma blainvillii	Coast Horned Lizard	CSC S3S4	Found in a wide variety of vegetation communities, from grasslands and shrublands to woodlands, including coniferous forests. Critical factors are the presence of loose soils with a high sand fraction; an abundance of native ants or other insects, especially harvester ants (*Pogonomyrmex* spp.); and the availability of both sunny basking spots and dense cover for refuge.	**Low potential.** Limited potential to occur in Area B, as one of its key elements is sandy soils. However, it also prefers an abundance of native ant species and the region is dominated with Argentine ants, The native red ant *Pogonomyrmex*ant is still common on the dunes and elsewhere in sandy soils. Documented CNDDB observations are greater than five miles away predominantly near Santa Monica mountains.
Emys marmorata	Western Pond Turtle	CSC S3	Found in ponds, lakes, rivers, streams, creeks, marshes, and irrigation ditches, with abundant vegetation, and either rocky or muddy bottoms, in woodland, forest, and grassland. In streams, prefers pools to shallower areas. Logs, rocks, cattail mats, and exposed banks are required for basking. May enter brackish water and even seawater.	**Less than reasonable.** Not detected in previous surveys from 1981-2011 or in any published survey efforts. Last documented observation on CNDDB was in 1941 in the saltmarsh of Ballona Creek (CNDDB 2014). It is likely that this species inhabited the original freshwater marsh system, but is likely extirpated.
Thamnophis hammondi	Two-striped Garter Snake	CSC S2	Generally found around pools, creeks, cattle tanks, and other water sources, often in rocky areas, in oak woodland, chaparral, brushland, and coniferous forest. They will also inhabit large riverbeds if riparian vegetation is available, and even occur in artificial impoundments if both aquatic vegetation and suitable prey items are present.	**Low potential.** This species has never been observed in previous surveys from 1981-2011. Potentially suitable habitat on the Project site is marginal at best.
Thamnophis sirtalis ssp.	South Coast Garter Snake	CSC S1S2	Endemic to coastal southern California from the Santa Clara River valley south to northern San Diego County. Maximum known elevation is about 2,270 feet. Restricted to marsh and upland habitats near permanent water with good strips of riparian vegetation where adequate prey and refuge can be found.	**Low potential.** It is likely that this species inhabited the original freshwater marsh system. Not detected in previous surveys from 1981-2011 or in any published survey efforts. Last detection was in 2010 in Topanga quad.

Shading
Species which has less than reasonable potential for occurrence and impact.

Confirmed Present
A qualified biologist or other reliable source has confirmed the presence of the species and there is no specific evidence that the species has subsequently become absent. Depending on the species and other information available, it may or may not be possible to determine, without further studies, what portions of the study area are currently in use.

High Potential
The study area is known to be within the range of the species, and contains potential habitat with a high likelihood of occupancy. Although no individuals or

diagnostic sign were detected during current fieldwork by a qualified observer, the species is likely to be present to some degree given the best available information. Depending upon regulatory status, local rarity, public interest, extent of habitat on the study area, and the nature of potential project impacts, a substantial basis may exist for either conducting focused surveys for the species or for assuming presence.
Moderate Potential The study area is within the range of the species, and contains potentially appropriate habitat. Neither individuals nor diagnostic sign were detected. It is nevertheless reasonable that some individuals may have been overlooked. The best available information on the species with regard to the study area is either very uncertain, or may be equally weighted for and against occurrence. Depending upon local and special legal status, extent of habitat, and the nature and sensitivity of the project, focused surveys for the species may be warranted or presence may be assumed.
Low Potential Occurrence of the species is reasonable but Less than reasonable because of some combination of facts. For example, 1) the study area was the subject of unsuccessful searches conducted under relevant and reasonable circumstances, 2) potential habitat present is marginal or minimal in extent, 3) the best available information suggests the species is absent from the study area, and/or 4) available information sheds no clear light on the species likelihood on the study area, but it is known to be rare at best in the vicinity. Neither the species nor any indication of its presence was detected. Although individuals may have been missed, it is Less than reasonable that substantial populations are present. Further evaluation should usually not be required for individual species except, in most cases, for biologically threatened or endangered species. Note however, that where several non-listed species hold this status, a higher likelihood of occurrence for “one or more” will generally hold. This is due both to the increased number of species and the fact that an array of possibilities often correlates with greater site biodiversity and lower relevant (but not readily detected) disturbance levels.
Less than reasonable Although occurrence may be remotely possible, the likelihood of occurrence is less than that required for any potentially applicable regulatory threshold. Further, the likelihood of meaningful value of the site to any population(s) of this taxon is less than reasonable. The species may or may not include the study area within its current, general range. However, no appropriate, or adequately extensive, or effectively connected habitat is present. Neither the species nor any indication of its presence was detected. In some cases this likelihood may indicate that based on the best available information, the study area has a very high probability of being outside of the species’ current range. In all of the above cases, the species may not be definitively ruled out but is strongly believed to be absent based on professional evaluation of all available evidence. In some cases, the species may occur on rare occasions and in low numbers, but with no more than brief, incidental use of the study area. That is, the site is also judged to lack any important function for the species. Certainly there are no substantial populations directly utilizing the study area at any time of year. Further evaluation should not normally be required
Confirmed Absent Confirmed to be absent on the study area as a formal and/or practical matter. Most often, this is a determination based on negative results of a focused survey for the species conducted in appropriate habitat at appropriate time(s) of year, using biologically sound methods and qualified personnel. In the remaining cases, it may be based on a simple study area examination, for species and study area contexts where it is easily determined that the species is absent; for example, a tidal marsh insect and a dry mountainside study area, or a disturbance-intolerant chaparral shrub where the study area is a long-standing, degraded grassland far from chaparral. The relevant fieldwork was also in all cases conducted within a time frame sufficiently recent to conclude that the species remains absent, based on study area conditions and the species’ known ecology. In most cases a specific, established survey protocol and/or guidelines have been followed.
NOTES: **<u>Federal</u>** FE = Endangered FT = Threatened FC = Candidate **<u>State</u>**

SE = Endangered ST = Threatened CSC = Species of Special Concern CFP = Fully Protected Species WL= California Watchlist (formerly a Species of Special Concern; limited protection
Note: The California Natural Diversity Database (CNDDB) uses the same ranking methodology originally developed by The Nature Conservancy and now maintained and recently revised by NatureServe. The *state rank* (S-rank) refers to the imperilment status only within California's state boundaries. It is a reflection of the overall status of an element through its state range. The state rank represent a letter + number score that reflects a combination of Rarity, Threat, and Trend factors, with weighting being heavier on Rarity than the other two. **S1 = Critically Imperiled** - Critically imperiled in the state because of extreme rarity (often 5 or fewer populations) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state. **S2 = Imperiled** - Imperiled in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the state. **S3 = Vulnerable** - Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the state. **S4 = Apparently Secure** - Uncommon but not rare in the state; some cause for long-term concern due to declines or other factors. **S5 = Secure** - Common, widespread, and abundant in the state. **SH** = All sites are historical; the element has not been seen for at least 20 years, but suitable habitat still exists. **SX** = All sites are extirpated. Uncertainty about the rank of an element is expressed in two major ways: • By expressing the ranks as a range of values: e.g., S2S3 means the rank is somewhere between S2 and S3. • By adding a ? to the rank: e.g., S2? This represents more certainty than S2S3, but less certainty than S2.

Special-status Bird Species

Common Name	Scientific Name	Status(A)	Habitat Requirements/Regional Trends	Likelihood of Occurrence(B)
American Bittern	*Botaurus lentiginosus*	LAC(Part I) SBBW S3	Breeds in wetlands across most of the United States and Canada. Prefer dense beds of cattails and rushes in freshwater and brackish portions of estuaries. Winters from the southern United States southward into Mexico and the Caribbean. Primarily a winter visitant and uncommon along the coast, but can remain casually through summer.	**Less than reasonable** as breeder. **Moderate potential** as a forager as this species is reestablished as wintering at the adjacent Ballona freshwater marsh.
American Pipit	*Anthus rubescens*	SBBW	Breeds in arctic and alpine tundra. In migration and winter uses coastal beaches and marshes, stubble fields, recently plowed fields, mudflats, and river courses.	**Less than reasonable** as breeder. **Moderate potential** as a forager as this is a fairly common winter resident.
American White Pelican	*Pelecanus erythrorhynchos*	(Nesting colony) CSC SBBW S1	Primarily a transient through southern California, wintering only in small numbers at limited locations. It breeds in California only at a few far northern colony sites (mainly Siskiyou and Modoc counties). They are very rare at any season over open ocean. Winters uncommonly and locally. Occasional non-breeding individuals will summer on larger lakes and reservoirs.	**Less than reasonable** as breeder. **Less than reasonable** as a forager as this species is a rare winter visitor and transient.
Ashy Storm-petrel	*Oceanodroma homochroa*	(Nesting colony) CSC ABC:WLBCC BCC SBBW S2	Occurs year-round in offshore waters of the continental slope (200-2,000 m deep) from Cape Mendocino to northern Baja California, Mexico. Spends most of its time at sea, coming to land only to reproduce. Nests in natural cavities and sea caves, mainly talus but also larger rock.	**Less than reasonable** as breeder. **Less than reasonable** as a forager as this species is a vagrant.
Bald Eagle	*Haliaeetus leucocephalus*	(Nesting and wintering) Fed. Delisted SE CFP BCC LAC(Part II) SBBW S2	It eats mainly fish and carrion, and formerly nested locally along the coast of southern California. It is now a very localized winter resident and rare migrant, with only very rare breeding efforts in coastal southern California (e.g., Lake Skinner, Riverside County).	**Less than reasonable** as breeder. **Less than reasonable** as a forager as this species is a vagrant.

Common Name	Scientific Name	Status(A)	Habitat Requirements/Regional Trends	Likelihood of Occurrence(B)
Bank Swallow	*Riparia riparia*	(Nesting) ST LAC(Part II) SBBW S2S3	This species historically bred interruptedly along the entire coast of California, as well as in the Central Valley and Great Basin portions of the state. Currently the species breeds only in northern California, primarily in the Sacramento Valley and far northeastern portions of the state, with a few colonies in coastal counties from Monterey through Del Norte County. This species is uncommon to fairly common migrants in spring and fall at the Salton Sea in Riverside and Imperial counties and at other large lakes and wetlands in desert regions. They are rare migrants elsewhere in California.	**Less than reasonable** as breeder. **Less than reasonable** as a forager as this species is an occasional transient.
Belding's Savannah Sparrow	*Passerculus sandwichensis beldingi*	SE LAC(Part II) SBBW S3	Locally common non-migratory resident of coastal saltmarsh. It is an obligate breeder in middle elevation saltmarsh, nearly always characterized by pickleweed (*Salicornia* spp.), either in tidal situations or non-tidal alkaline flats nearby. Although the majority of its subsistence stems from the saltmarsh and closely adjacent mudflat, individuals, particularly post-breeding birds, can be found foraging in a wide variety of habitats including upper marsh, adjacent ruderal and ornamental vegetation, open beach and mudflat, and even dirt and gravel parking lots.	**Confirmed present** as a breeder and forager. Currently breeds in pickleweed saltmarsh habitat in the northwestern portion of Area B. Nested in Area A through the mid-1980's, but only marginal nesting habitat present in Area A. Forages in Areas A and B.
Bell's Sage Sparrow	*Amphispiza belli belli*	WL ABC:WLBCC BCC LAC(WL) SBBW S2?	Typically found in chaparral, sagebrush, and other open habitat with shrubs. A casual transient along the coast of southern California.	**Less than reasonable** as breeder. **Less than reasonable** as a forager as this species is not reported as occurring in Ballona Valley
Belted Kingfisher	*Megaceryle alcyon*	(Breeding) LAC(Part I)	Though widespread throughout North America and readily seen during the winter in Los Angeles County, this species is seldom encountered along our local rivers during the breeding season. Because they require earthen riverbanks in which to excavate nest burrows and appear to prefer nest sites that are within close proximity to foraging sites.	**Less than reasonable** for nesting. **Moderate potential** as a forager as this species is an uncommon transient and winter visitor.

Common Name	Scientific Name	Status[(A)]	Habitat Requirements/Regional Trends	Likelihood of Occurrence[(B)]
Black Oystercatcher	*Haematopus bachmani*	(Nesting) BCC S2	A permanent resident on rocky shores of marine habitats along almost the entire California coast, and on adjacent islands. Undisturbed, rocky coastlines required for feeding. Availability of foraging habitats depends on tidal cycle and ocean swell conditions.	**Less than reasonable** <u>for nesting</u> (although breeding confirmed on outer jetties, this is well beyond potential Project influences) **Less than reasonable** <u>as a forager</u> since this species is in small numbers on the outer jetties and the free-standing breakwater of Playa del Rey and rarely seen along lower Ballona Creek.
Black Skimmer	*Rynchops niger*	(Nesting colony) CSC ABC:WLBCC BCC LAC(Part II) SBBW S1S3	Forage for small fish and possibly crustaceans in calm shallows of harbors, lagoons, bays, estuaries, ponds, and river channels. In winter, flocks commonly roost on urban beaches well above the tide line or on mud flats in estuaries. Beach sites that are habitually used by skimmers are often associated with estuaries or protected harbors and are near the mouths of rivers or other drainage channels.	**Less than reasonable** <u>for nesting</u>. **Moderate potential** <u>as a forager</u> as this species is an irregularly uncommon mid-winter and spring visitor.
Black Storm-petrel	*Oceanodroma melania*	CSC SBBW S1	Nests in burrows, natural cavities, or rock crevices on islands. Presumably monogamous. Common to abundant post-breeding summer visitor in waters from Monterey Bay south during April to October, sometimes into January.	**Less than reasonable** <u>for nesting</u>. **Less than reasonable** <u>as a forager</u> as this species is a vagrant.
Black Swift	*Cypseloides niger*	(Nesting) CSC ABC:WLBCC BCC LAC(Part II) S2	Breeding distribution is very patchy, from southern Alaska southward through Costa Rica and Caribbean islands. Winter distribution is unknown, but presumed to be South America. In southern California the species is a rare breeder and migrant (May to early June; late Aug. through September). It breeds at mountain waterfalls in steep canyons at elevations from 1,800 to 6,400 feet (550 to 1950 m), with six known sites in the San Gabriel, San Bernardino, and San Jacinto mountains.	**Less than reasonable** <u>for nesting</u>. **Less than reasonable** <u>as a forager</u> as this species is probably a rare and irregular transient.

Common Name	Scientific Name	Status(A)	Habitat Requirements/Regional Trends	Likelihood of Occurrence(B)
Black Tern	*Chlidonias niger*	(Nesting colony) CSC SBBW S2	A marsh-breeding bird, the Black Tern nests in freshwater wetlands in Eastern Washington, mostly east of the Okanogan and Columbia Rivers. For nesting, it requires habitat with extensive, cover-providing, vegetation as well as open water. During migration, it uses large lakes and coastlines. In winter, it can be found along productive marine coastlines, lagoons and estuaries, especially off the Pacific Coast of Panama.	**Less than reasonable** <u>for nesting</u>. **Less than reasonable** <u>as a forager</u> as this species is a casual fall transient and extirpated as a non-breeding summer resident.
Black-bellied Plover	*Pluvialis squatarola*	SBBW	Nests in Arctic lowlands on dry tundra. Winters on coastal beaches and estuaries. May use flooded pasture and agricultural land.	**Less than reasonable** <u>for nesting</u>. **High potential** <u>as forager</u> as this species is a common non-breeding resident. This species is most numerous in fall and winter, but at least a few are present every month of the year.
Black-headed Grosbeak	*Pheucticus melanocephalus*	(Breeding) LAC(WL)	Breed in complex habitats with a diversity of plants and ready access to water. They avoid monotonous stretches of unbroken dry chaparral, desert, grassland, or dense coniferous forests, but inhabit edges where those habitats are disturbed or meet others. During migration they tend to seek out shrubs and trees rich in berries.	**Less than reasonable** <u>for nesting</u> as this species is considered extirpated as a breeder. **High potential** <u>as forager</u> as this species is a fairly common transient and rare (irregular?) summer resident.
Black-throated Sparrow	*Amphispiza bilineata*	LAC(WL)	Typically found in deserts with cactus, mesquite, and creosote bush, and also sagebrush; partial to rocky places. Breeds from northeastern California, southwestern Wyoming, and southeastern Colorado southward. Winters north to desert regions of southern United States.	**Less than reasonable** <u>for nesting</u>. **Less than reasonable** <u>as a forager</u> as this species is a vagrant.
Blue Grosbeak	*Passerina caerulea*	SBBW	Found along forest edge, fields, power-line cuts, riparian areas, hedgerows, and other areas with medium-sized trees and low shrub density. Nests irregularly in very small numbers in willow and mulefat thickets on the floor of the Ballona Valley.	**Less than reasonable** <u>for nesting</u>. **Moderate potential** <u>as forager</u> as this species is an uncommon transient and rare summer resident and spring transients.

Common Name	Scientific Name	Status(A)	Habitat Requirements/Regional Trends	Likelihood of Occurrence(B)
Bonaparte's Gull	*Larus philadelphia*	SBBW	Breeds around lakes and marshes in boreal forest. Winters along lakes, rivers, marshes, bays, and beaches along coasts. Local concentrations generally appear in November, although small numbers trickle through in fall (mainly seen offshore).	**Less than reasonable** for nesting in riparian habitat. **Moderate potential** as forager as this species is an irregularly common winter visitor and spring transient; rare in summer and fall (several thousand typically winter in Ballona Valley, but are absent some winters).
Brant	*Branta bernicla*	(Winter and staging) CSC LAC(Part II) SBBW S2?	An abundant small goose of the ocean shores, the Brant breeds in the high Arctic tundra and winters along both coasts. The species is a very locally common winter visitant along the coast.	**Less than reasonable** as breeder. **Moderate potential** as a forager as this species is an occasional spring transient and casual in summer and winter.
Brewer's Sparrow	*Spizella breweri*	(Nesting) ABC:WLBCC BCC LAC(WL) S3	Typically found in sagebrush and alpine meadows. Breeds in northern Rocky Mountains of Yukon and British Columbia, and in Great Basin south to southern California and New Mexico. Winters in southwestern states. Absent from Pacific Coast.	**Less than reasonable** for nesting. **Less than reasonable** as a forager as this species is a rare transient.
Burrowing Owl	*Athene cunicularia*	(Burrow sites and some wintering sites) CSC BCC LAC(Part II) SBBW S2	Level, open, dry, heavily grazed or low grassland or desert vegetation with available burrows. In coastal Southern California, a substantial fraction of Burrowing Owls are found in microhabitats highly altered by humans, including flood control and irrigation basins, dikes, banks, abandoned fields surrounded by agriculture, and road cuts and margins. Several factors in combination probably explain the species' distribution on local scales: vegetation density, availability of suitable prey, availability of burrows or suitable soil, and disturbance.	**Low potential** as breeder as this species is has not been observed during the breading season in the Project area for decades. **Moderate potential** as a forager as this species is a rare fall and winter visitor, but has been reported in Area A fairly regularly since 2005.

Common Name	Scientific Name	Status(A)	Habitat Requirements/Regional Trends	Likelihood of Occurrence(B)
California Black Rail	*Laterallus jamaicensis coturniculus*	ST CFP ABC:WLBCC BCC SBBW S1	Tidal salt marshes associated with heavy growth of tule and pickleweed; also occurs in brackish marshes or freshwater marshes at low elevations. Primarily restricted to the San Francisco Bay, with smaller numbers in wetlands from the Salton Sea area to Arizona. This species has essentially disappeared from coastal wetlands in coastal southern and central California, although small populations have recently been discovered about 100 miles south of the U.S. border in northwestern Baja California.	**Less than reasonable** as breeder. **Less than reasonable** as a forager as this species is deemed extirpated from the region.
California Brown Pelican	*Pelecanus occidentalis californicus*	(Nesting colony/ communal roosts) Fed/State Delisted CFP SBBW S1S2	This widely known pelican is the largest bird occurring regularly along our shorelines, with a wingspan of about 7 feet (about 2.1 meters). Foraging along the coast, in brackish lagoons, and up to 100 miles (160 kilometers) out to sea, it is not found inland except at the Salton Sea in Imperial and Riverside counties, locally in small numbers along the Colorado River, and occasionally following prey for short distances up larger rivers coastally. Nests on offshore islands.	**Less than reasonable** as breeder. **Moderate potential** as a forager as this species is abundant late summer and fall and winter resident. Hundreds of pelicans roost on the Playa del Rey breakwater and large numbers throughout Marina del Rey, Ballona Creek, and Ballona Lagoon. Low usage of Ballona Wetland channels for foraging due to shallowness.
California Gnatcatcher	*Polioptila californica californica*	FT CSC ABC:WLBCC LAC(Part II) SBBW S2	Generally prefers open sage scrub with California sagebrush (*Artemisia californica*) as a dominant or co-dominant species. Nest placement typically in areas with less than 40 percent slope gradient. Monogamous pairs tend to stay in the same locale. Both parents build nest, incubate, and care for young.	**Less than reasonable** for nesting as the species does not occur in the Project area at this time. **Low potential** as a forager as this species is does not occur in the Project area at this time. A couple individuals briefly used Project site in 2010-2011. Very limited potentially suitable habitat on the Project site. Scrub vegetation near Ballona freshwater marsh and Westchester Bluffs represent potentially suitable habitat adjacent to the Project site.

Common Name	Scientific Name	Status[(A)]	Habitat Requirements/Regional Trends	Likelihood of Occurrence[(B)]
California Gull	*Larus californicus*	(Nesting colony) WL S2	This medium-sized gull breeds in large colonies east of the Sierra Nevada mountains and in San Francisco Bay, and is one of about a dozen species of "seagulls" that winter in and migrate through coastal southern California. Concentrations occur along major rivers, lakes, open landfills, and at parks with duck ponds.	**Less than reasonable** as breeder. **High potential** as a forager as this species is a common winter residents and fall transient; fairly common spring transient, and uncommon summer lingerer.
California Horned Lark	*Eremophila alpestris actia*	WL LAC(Part I) SBBW S3	Breeds throughout coastal California and the San Joaquin Valley. This small bird breeds in bare and short-grass areas in open grassland, desert washes, wetland edges, above tree line in mountains, along dirt roads and other disturbed areas, and even in recently burned areas. It is well-adapted to certain types of human disturbance, such as agriculture and cattle grazing, though it cannot tolerate intensive activity at the nest site, which is located directly on the ground.	**Less than reasonable** as breeder. **Less than reasonable** as a forager as this species is considered extirpated as a perennial resident and now a casual fall transient.
California Least Tern	*Sternula antillarum browni*	(Nesting colony) FE SE CFP ABC:WLBCC LAC(Part II) SBBW S2S3	Nests on sandy upper ocean beaches, open barren sites, and occasionally uses mudflats. Forages on adjacent surf line, estuaries, or the open ocean. Colonies are located near the ocean shoreline (within 0.5 miles [about 800 meters]), typically on nearly flat, loose sandy substrates with lightly scattered short vegetation and debris, although some colonies have been located on hard-packed surfaces, even unused asphalt. Colony sites must provide access to the shoreline for juveniles, and must be relatively free of predators or the colony may abandon breeding efforts before completion.	**Less than reasonable** as breeder as the species has not nested successfully on the Project site since the 1970's and last documented attempt in 2001 failed. A large breeding colony (up to 200-300 pairs) within fenced-off "tern preserve" is located on Venice Beach just north of Ballona Creek mouth. **High potential** as a forager as this species is a fairly common summer resident, fishing offshore, along lower Ballona Creek., along tidal channels within the Project site, at Ballona Lagoon, and at the Ballona freshwater marsh.
California Quail	*Callipepla californica*	SBBW	California Quail are characteristic birds of coastal sagebrush, chaparral, foothills, and high desert of California and the northwestern United States.	**Less than reasonable** as breeder . **Less than reasonable** for foraging since considered extirpated as a breeding perennial resident.

Common Name	Scientific Name	Status[A]	Habitat Requirements/Regional Trends	Likelihood of Occurrence[B]
California Towhee	*Melozone crissalis*	LAC(WL)	Found in dense chaparral scrub that lines coastal slopes and foothills of California and southern Oregon. They also occur along streams and canyon bottoms adjacent to desert slopes, where they live amid manzanita, buckthorn, madrone, foothill pines, and a variety of oaks. As cities and suburbs sprang up in California, towhees moved right in to shrubby backyards and city parks.	**Confirmed present** as a breeder and forager as this species is a fairly common perennial resident in areas supporting scrub.
Caspian Tern	*Hydroprogne caspia*	(Nesting colony) BCC LAC(Part 1) S4	The largest tern, with the exception of Antarctica, this species occurs on all continents, breeding and/or wintering along coastlines and inland along rivers, lakes, and marshes. In North America, it breeds at scattered localities along the Pacific, Atlantic, and Gulf Coasts, and inland in the western interior, Prairie Provinces of Canada, and along the Great Lakes. It generally nests in colonies. Flat rocky islands, beaches, and sandy shores, sparsely vegetated and littered with driftwood, are typical breeding habitat for this species. Its nests range from mere scrapes in sand or gravel to clam shell or vegetation lined depressions with elaborately built-up rims that contain mollusk shells or crayfish appendages.	**Less than reasonable** as breeder. **Moderate potential** as a forager as this species is a common spring transient, fairly common non-breeding visitor in the summer and uncommon during the fall and winter. Dozens of Caspian Terns roost with other gull and tern species along the beach just south of Ballona Creek and on exposed mud within Ballona Creek during low tides.
Cassin's Auklet	*Ptychoramphus aleuticus*	(Nesting colony) CSC BCC SBBW S2S4	The breeding habitat is remarkably diverse, but nesting always occurs on offshore islands. Cassin's Auklets may nest on cliffs, flat grassy plains, slopes, or even in caves. Outside of the breeding season, the species is found at sea. Fairly common year-round in marine pelagic waters off California. Seen less regularly in fall and winter, especially in September and October.	**Less than reasonable** as breeder. **Less than reasonable** as a forager as this species is probably a rare winter visitor; one summer record. This species is probably regular offshore in very small numbers during winter storms.
Clark's Marsh Wren	*Cistothorus palustris clarkae*	CSC LAC(Part II) SBBW S2S3	Restricted to freshwater and brackish marshes dominated by bulrushes or cattails. Clark's Marsh Wren has a narrow distribution along the coast of southern California from the Los Angeles basin south to the Mexican border. Within this range, it is quite localized, though sometimes numerous. In winter (late Sep–early Apr), this resident subspecies is outnumbered in its range by Marsh Wrens of the migrant subspecies *C. p. pulverius*.	**Less than reasonable** as breeder. **Low potential** as a forager as a few individuals of this subspecies has been reported in the Ballona freshwater marsh during the winter.

Common Name	Scientific Name	Status(A)	Habitat Requirements/Regional Trends	Likelihood of Occurrence(B)
Common Gallinule (=Common Moorhen)	*Gallinula galeata* (=*Gallinula chloropus*)	SBBW	Breeds principally in permanently flooded, nontidal, deep marshes and slightly brackish or freshwater tidal marshes, where robust emergent grasslike plants about 1–4 m tall are interspersed with pools and channels that have floating-leaved and submerged plants, or with mudflats.	**Low potential** <u>as breeder</u> on the Project site; however, confirmed breeding on adjacent Ballona freshwater marsh. **Moderate potential** <u>as a forager</u> as the species is reestablished as an uncommon transient and recently breeding at the adjacent Ballona freshwater marsh.
Common Loon	*Gavia immer*	(Nesting) CSC S1	Breeds on quiet, remote freshwater lakes of the northern U.S. and Canada. From September to May, fairly common in estuarine and subtidal marine habitats along entire coast, and uncommon on large, deep lakes in valleys and foothills throughout state. Common migrant along coast, including offshore, in November and May.	**Less than reasonable** <u>as breeder</u>. **Moderate potential** <u>as a forager</u> as this species is fairly common winter resident and spring transient on salt water. Regular in very small numbers in summer and fall.
Common Poorwill	*Phalaenoptilus nuttallii*	LAC(WL)	In California, breeds in pinyon-juniper woodland, brushy slopes, chaparral, desert washes and hillsides, and sagebrush and shadscale flats; mainly in Upper Sonoran Life Zone to about 2,100 m.	**Less than reasonable** <u>as breeder</u>. **Less than reasonable** <u>as a forager</u> as this species is a casual transient.
Cooper's Hawk	*Accipiter cooperii*	(Nesting) WL S3	This medium sized hawk specializing in hunting small birds in closed quarters. This species is now a locally common breeder throughout the Los Angeles Basin in residential and even urban habitats if tall trees are present.	**High potential** <u>as breeder</u> as this species is a known local breeder, particularly in the residential areas. **Confirmed present** <u>as a forager</u> as this species is fairly common fall transient and winter visitor and uncommon summer resident and local breeder in residential areas.
Craveri's Murrelet	*Synthliboramphus craveri*	SBBW	This resident of warm, coastal waters only comes to shore during the breeding season, when it seeks out small arid coastal islands. A ground-nester, it requires rocky, vegetated coastal areas, where it builds its nest along cliffs, in crevices, or hidden among dense shrubs. Following the breeding season, the birds move out to sea for the autumn and winter months.	**Less than reasonable** <u>as breeder</u>. **Less than reasonable** <u>as a forager</u> as this species is a vagrant.

Common Name	Scientific Name	Status(A)	Habitat Requirements/Regional Trends	Likelihood of Occurrence(B)
Double-crested Cormorant	*Phalacrocorax auritus*	(Nesting colony) WL S3	Common inhabitants of seacoasts and inland waters, rarely observed out of sight of land. Cormorants are gregarious birds, often nesting in large numbers at diverse sites—on the ground on islands free from predators, in trees, or on various artificial structures. These colonies are conspicuous, not only because of the visible whitewash but also, downwind, because of the powerful reek of guano and rotting fish. In the U.S. and Canada, it is the only cormorant to occur in large numbers in the interior as well as on the coasts, and it is more frequently cited than the others as conflicting with human interests in fisheries. In California, most individuals nest coastally, especially from Cape Mendocino northward, and in lakes and marshes of Siskiyou, Modoc, and Lassen Cos.; small numbers in San Francisco Bay, Central Valley, and lower Colorado River; declining numbers on Salton Sea; and very locally elsewhere.	**Low potential** as breeder as this species was reported to have successfully nested in Marina del Rey in a cypress tree at the coast guard station. **High potential** as a forager as this species is a common winter resident. This species becomes scarcer through spring and into summer, though a handful are generally present year round, often along Ballona Creek.
Eared Grebe	*Podiceps nigricollis*	(Breeding) LAC(Part I)	Found at marshy lakes and ponds and open bays and ocean in winter. Breeds from British Columbia, southern Manitoba, and Dakotas south to California and New Mexico. Winters on Pacific, Gulf, and Atlantic (rare) coasts, occasionally on open water in interior Southwest and Texas. Also in Eurasia.	**Less than reasonable** as breeder. **High potential** as a forager as this species is a fairly common winter resident and transient. Small numbers linger through the spring, but are rare by mid-summer.
Elegant Tern	*Thalasseus elegans*	(Nesting colony) WL ABC:WLBCC LAC(Part I) SBBW S1	Only 5 colonies: 3 on coastal California; 2 insular in Gulf of California; all somewhat isolated, semitropical, and generally low, flat, and sandy, with little vegetation. (1) San Diego Bay, CA. (2) Bolsa Chica Ecological Reserve, Orange Co., CA: (3) Isla Montague, Gulf of California. (4) Isla Rasa, Gulf of California. (5) Los Angeles Harbor. Forages in bay-estuarine habitat, but rarely in fresh water.	**Less than reasonable** as breeder. **High potential** as a forager as this species is a common spring, summer and fall resident (both pre- and post-breeding) to the immediate coast and lower Ballona Creek. Roost by the hundreds on the saltpan of the Ballona Wetlands and on the sandy beach just south of the mouth of Ballona Creek in spring and late summer.

Common Name	Scientific Name	Status[A]	Habitat Requirements/Regional Trends	Likelihood of Occurrence[B]
Ferruginous Hawk	*Buteo regalis*	(wintering) WL BCC LAC(Part I) SBBW S3S4	This large relative of the common red-tailed hawk is primarily a winter visitor to California, with the bulk of its breeding range in the Great Basin to the east. Small numbers breed in the northeast corner of the state. Ferruginous hawks feed on a variety of prey, but mostly small mammals, hunting in open country from low perches.	**Less than reasonable** as breeder. **Less than reasonable** as a forager as this species is a casual winter visitor.
Fork-tailed Storm-petrel	*Oceanodroma furcata*	(Nesting colony) CSC SBBW S1	Breed on offshore rocks and islands that are largely free of mammalian predators. Birds nest primarily in natural crevices but also in earthen burrows dug by themselves or other species. Uncommon, sporadic late fall-early spring visitor on open ocean along the entire coast; occasionally in bays and harbors, particularly after storms.	**Less than reasonable** as breeder. **Less than reasonable** as a forager as this species is a vagrant.
Fulvous Whistling-duck	*Dendrocygna bicolor*	CSC LAC(Part II) SBBW S1	Species is migratory in northern portions of their range, but elsewhere they exhibit only local movements. Individuals feed almost exclusively on seeds, especially seeds of native moist-soil plants, which may be abundant in flooded ricefields. The species makes only limited use of undisturbed, nonagricultural habitats for nesting in the United States.	**Less than reasonable** as breeder. **Less than reasonable** as a forager as this species is considered extirpated.
Golden-crowned Kinglet	*Regulus satrapa*	LAC(WL)	This species breeds south through the local mountains at the highest elevations, and appears in fall and winter in adjacent foothill areas south into the Mojave Desert, irregularly along the coastal slope.	**Less than reasonable** as breeder. **Less than reasonable** as a forager as this species is a vagrant.
Grasshopper Sparrow	*Ammodramus savannarum*	(Nesting) CSC LAC(Part II) SBBW S2	A grassland bird, this species appears to prefer areas with significant grass cover and a few scattered shrubs for perching. They don't use habitats with dense shrub cover or sites that have been over-grazed. During migration and winter, they will use many types of open fields.	**Less than reasonable** as breeder. **Less than reasonable** as a forager as this species is a vagrant.

Common Name	Scientific Name	Status[(A)]	Habitat Requirements/Regional Trends	Likelihood of Occurrence[(B)]
Gray Flycatcher	*Empidonax wrightii*	(Breeding) LAC(Part I)	A fairly common summer resident at about 1700-2500 m (5500-8000 ft) in sagebrush and bitterbrush habitats east of Cascade-Sierra crest from the Oregon border south to Inyo, Grapevine and Panamint Mts., Inyo Co. Also breeds locally on desert slopes of southern Sierra Nevada and San Bernardino Mts., and probably on Clark Mt., San Bernardino Co. Preferred nesting habitat is extensive stands of large sagebrush, but also breeds where there is a mixture of brush, ponderosa pine, pinyon pine, juniper, and other woody plants. Uncommon spring (May) and fall (September) transient in scrub and woodland habitats throughout the Great Basin and southeastern deserts, and along the Colorado River.	**Less than reasonable** as breeder. **Low potential** as a forager as this species is an occasional transient and casual winter visitor.
Greater Sandhill Crane	*Grus canadensis tabida*	(Nesting and wintering) ST CFP LAC(Part II) SBBW S2	Sandhill cranes winter in Texas, California, Arizona, New Mexico and Mexico. In the early spring, the cranes begin the migration to their breeding grounds. Throughout the spring, the cranes can be seen resting and feeding along rivers and wetlands throughout the Great Plains and Pacific Northwest. During the late spring, summer and early fall, sandhill cranes can be seen at their breeding grounds. Some breed in Minnesota, Wisconsin and Michigan. Others breed in Oregon, Idaho and Alaska. Three subpopulations of sandhill cranes are non-migratory and found in Mississippi, Florida, and Cuba.	**Less than reasonable** as breeder. **Less than reasonable** as a forager as this species is considered extirpated.
Greater White-fronted Goose	*Anser albifrons*	LAC(Part I)	Breeding across the tundra from Nunavut to Siberia, across Russia, and in Greenland, this species has one of the largest ranges of any species of goose in the world. In North America, however, it is common only west of the Mississippi River, where it is found in large flocks in wetlands and croplands. Winters in agricultural fields, marshes, bays, and lakes.	**Less than reasonable** as breeder. **Less than reasonable** as a forager as this species is a rare transient and winter visitor.
Harlequin Duck	*Histrionicus histrionicus*	(Nesting) CSC SBBW S2	Rare to very uncommon from October to early April in marine waters along rocky coast from San Luis Obispo Co. north, with stragglers remaining through the summer. Usually nests along shores of shallow, swift rivers with plentiful aquatic invertebrates	**Less than reasonable** as breeder. **Less than reasonable** as a forager as this species is a vagrant.

Common Name	Scientific Name	Status[(A)]	Habitat Requirements/Regional Trends	Likelihood of Occurrence[(B)]
Hermit Thrush	*Catharus guttatus*	(Breeding) LAC(WL)	Occurs in coniferous and mixed forests; deciduous woodlands and thickets on migration and in winter. Breeds from central Alaska east to Newfoundland and south to southern California, northern New Mexico, Wisconsin, and Virginia. Winters from Washington and southern New England southward.	**Less than reasonable** as breeder. **Low potential** as a forager as this species is an uncommon winter resident on floor of Ballona Valley (more common in Westchester).
Hermit Warbler	*Setophaga occidentalis*	(Nesting) ABC:WLBCC LAC(WL) S3?	Breeds in coniferous forests of the Coast, Cascade, and Sierra Nevada mountain ranges of southern Washington, Oregon, and central and northern California. It usually builds its nest saddled on limbs well above ground and concealed by branches. Most individuals migrate along the Coast, Cascade, and Sierra Nevada mountain ranges, wintering in the pine-oak and pine forests of the mountains of Mexico and Guatemala, where it forages in mixed-species flocks.	**Less than reasonable** as breeder. **Low potential** as a forager as this species is an uncommon mid-spring transient, casual in fall and winter and is rare on Ballona Valley floor.
Indigo Bunting	*Passerina cyanea*	LAC(WL)	A small migratory species that breeds in eastern North America and winters primarily in Mexico and Central America, as well as in the Caribbean and sparingly in southern Florida.	**Less than reasonable** as breeder. **Less than reasonable** as a forager as this species is probably a casual transient and summer visitor.
Large-billed Savannah Sparrow	*Passerculus sandwichensis rostratus*	(Wintering) CSC LAC(WL) SBBW S2?	Breeding habitat is limited to open, low salt marsh vegetation, including grasses (*Spartina, Distichlis)*, pickleweed (*Salicornia* spp.), and iodine bush (*Allenrolfea* spp.), around the mouth of the Colorado River and adjacent coastlines of the uppermost Gulf of California; less typical breeding habitat is Frankenia-dominated scrub on the inland borders of beaches. Almost entirely restricted to shorelines within its California nonbreeding range. Accounts of wintering birds in coastal southern California from days of former abundance emphasized use of salt marshes, beaches, kelp wracks, wharves, docks, and city streets.	**Less than reasonable** as breeder. **Less than reasonable** as a forager as this species is a rare and highly localized fall and winter visitor. One or two have been present along the jetties in fall and early winter nearly annually. The Ballona Creek jetty is currently the only site in Los Angeles County that consistently supports this species.
Laughing Gull	*Leucophaeus atricilla*	(Nesting colony) WL SH	Primarily coastal gulls and are only rarely found far inland. Typically detected in saltmarshes, in mangroves, or on agricultural fields or landfills near the coast. They nest in saltmarshes, on islands including artificial ones created from dredge spoils, and on sandy beaches	**Less than reasonable** as breeder. **Less than reasonable** as a forager as this species is a vagrant.

Common Name	Scientific Name	Status[(A)]	Habitat Requirements/Regional Trends	Likelihood of Occurrence[(B)]
Least Bell's Vireo	*Vireo bellii pusillus*	(Nesting) FE SE ABC:WLBCC BCC LAC(Part II) SBBW S2	Nesting elevation ranges from below sea level to at least 4,100 feet. The subspecies winters in southern Baja California . Least Bell's Vireos select dense vegetation low in riparian zones for nesting.	**Confirmed present** as breeder and forager. In 2010 documented successful breeding along the southeastern corner of the Reserve (Area B) and adjacent Ballona freshwater marsh.
Least Bittern	*Ixobrychus exilis*	(Nesting) CSC BCC LAC(Part II) SBBW S1	This cryptic little bird, the smallest heron in the world, inhabits a variety of dense emergent wetlands, especially favoring extensive bulrush, but also occurring in cattail and even salt cedar when inundated or along the immediate edge of waterways. Both fresh, brackish, and occasionally salt water are used in coastal southern California. Principal food is said to be small fish, but it also takes crustaceans, amphibians, small mammals, and arthropods. It is rare and local in coastal southern California during the breeding season, and is even more rarely found in winter due to an uncertain combination of migration, increased secretiveness, and/or decreased vocalization.	**Low potential** as breeder on the Project site; however, reported as breeding on the adjacent Ballona freshwater marsh. **Low potential** as a forager as this species is reestablished as a rare and localized perennial visitor or resident, but essentially confined to the Ballona freshwater marsh.
Lesser Nighthawk	*Chordeiles acutipennis*	LAC(Part I)	This nighthawk still breeds (or summers) along the Santa Clara River and tributaries (e.g., Bouquet Canyon), Big Tujunga Wash (upstream of Hansen Dam), San Gabriel River (upstream of Santa Fe Dam), and San Antonio Wash (upstream of Arrow Highway). This species is a characteristic nesting species of Riversidean alluvial fan scrub. Now a scarce and local breeder at the outlying edges of the Los Angeles Basin, the migration of this bird tracks well inland in southern California, though small numbers regularly reach the coast, mainly in fall.	**Less than reasonable** as breeder. **Less than reasonable** as a forager as this species is a rare transient observed at the Ballona freshwater marsh.

Common Name	Scientific Name	Status[(A)]	Habitat Requirements/Regional Trends	Likelihood of Occurrence[(B)]
Light-footed Clapper Rail	*Rallus longirostris levipes*	FE SE CFP ABC:WLBCC LAC(Part II) SBBW S1	This subspecies of the large and widespread Clapper Rail is restricted to the lower elevations of coastal marshes with active tidal flow and dense pickleweed and/or cordgrass thickets from Hueneme, Ventura County (formerly to Santa Barbara County) south to Bahia de San Quintin, Baja California, Mexico. No substantial seasonal movements occur, although rare individuals wander away from known breeding locales.	**Confirmed absent** as breeder and forager (Ryan 2011)
Lincoln's Sparrow	*Melospiza lincolnii*	LAC(Part I)	This sparrow nests only in damp mountain meadows that support tall grasses, sedge, and corn lilies interspersed with low growing shrubs such as willow.	**Less than reasonable** as breeder. **Moderate potential** as a forager as this species is a common transient and fairly common winter resident.
Loggerhead Shrike	*Lanius ludovicianus*	(Nesting) CSC BCC LAC(Wintering-Part I) LAC(Breeding-Part II) SBBW S4	It forages in open country of many types (including non-intensive agricultural areas) and nests in small trees and large shrubs, often at the edges of such open areas. Like most birds of prey, this species generally occur in low densities. The species is widely distributed in southern California, with some seasonal movements evident.	**Low potential** as breeder. **High potential** as a forager as this species is an uncommon summer, fall and winter resident.
Long-billed Curlew	*Numenius americanus*	(Nesting) WL ABC:WLBCC BCC LAC(Wintering-Part I) SBBW S2	Breeds in open country from southeastern British Columbia eastward to central Nebraska, and southward to northeastern California and New Mexico. Winters from central California and coastal Texas southward through Mexico. Transients and wintering birds frequent coastal estuaries, agricultural fields, and less commonly sandy beaches.	**Less than reasonable** as breeder. **Low potential** as a forager as this species is only detected during migration. Extirpated as a winter resident; now an occasional transient.

Common Name	Scientific Name	Status(A)	Habitat Requirements/Regional Trends	Likelihood of Occurrence(B)
Long-eared Owl	*Asio otus*	(Nesting) CSC LAC(Wintering-Part I) LAC(Breeding-Part II) SBBW S3	Nests in conifer, oak, riparian, pinyon-juniper, and desert woodlands that are either open or are adjacent to grasslands, meadows, or shrublands. In southern California, long-eared owl breeds and roosts in riparian and oak forests, and hunts small mammals at night in adjacent open habitats.	**Less than reasonable** as breeder. **Less than reasonable** as forager as this species is a vagrant and has not been recorded in the Project area since the early 1980's (PWA 2006).
Lucy's Warbler	*Oreothlypis luciae*	(Nesting) CSC ABC:WLBCC BCC SBBW S2S3	Neotropical migrant that breeds in the southwestern United States and winters in western Mexico. This species nests almost entirely in the hot lower Sonoran desert of the southwestern United States and northwestern Mexico. It occupies the driest habitat of the 4 southwestern lowland-breeding warblers and has been called the "mesquite warbler" and "desert warbler".	**Less than reasonable** as breeder. **Less than reasonable** as forager as this species is a vagrant.
MacGillivray's Warbler	*Geothlypis tolmiei*	(Breeding) LAC(WL)	This long-distance neotropical migrant breeds at low to moderate elevations along the Rocky and Sierra mountains from the Northwest Territories and southeastern Alaska south to northeastern Mexico. Breeding populations throughout much of the United States can best be described as remote and disjunct, located in mountain ranges isolated by large regions of arid, sagebrush steppe, prairie grasslands, salt deserts, agricultural floodplains and livestock grazing.	**Less than reasonable** as breeder. **Low potential** as forager as this species is an occasional transient.
Marbled Murrelet	*Brachyramphus marmoratus*	(Nesting) FT SE ABC:WLBCC SBBW S1	This small seabird nests in trees in coastal, older forests throughout most of its range in North America and Asia. In summer, forages primarily in bays, inlets, fjords (rarely in protected harbors), and open ocean within 5 km of shore (Alaska 50 km). Usually in widely dispersed concentrations: singles or pairs of birds. Seems to prefer shallow water, usually <60 m deep, but known to forage in water up to 400 m deep in fjords and 300 km offshore, generally in areas with underwater sills, shelf edges, or strong tidal currents.	**Less than reasonable** as breeder. **Less than reasonable** as a forager as this species is a rare winter visitor to salt water and casual in late summer; seen at the deeper water at the mouth of Marina del Rey harbor.

Common Name	Scientific Name	Status(A)	Habitat Requirements/Regional Trends	Likelihood of Occurrence(B)
Merlin	*Falco columbarius*	(Wintering) WL S3	This is a medium-small falcon which breeds only to the north and east of California and winters here sparsely. Like larger falcons such as peregrine falcon, merlins specialize in hunting birds in open country, especially wetlands and extensive grasslands next to trees.	**Less than reasonable** as breeder. **Moderate potential** as a forager as this species is an uncommon transient and winter visitor throughout Ballona Valley and adjacent residential areas.
Mountain Plover	*Charadrius montanus*	(Wintering) Proposed FT CSC ABC:WLBCC BCC LAC(Part II) SBBW S2?	The species breeds on the Great Plains from New Mexico up to extreme southern Canada, and winters from California's Central Valley across northern Mexico to southern Texas. Small numbers are present in winter in the valleys of coastal southern California. The most commonly utilized winter habitat in California is freshly cultivated croplands, but based on habitat studies, heavily grazed native rangelands and, especially, natural alkali flats are the preferred habitats.	**Less than reasonable** as breeder. **Less than reasonable** as a forager as this species is considered extirpated from Ballona Valley.
Nashville Warbler	*Nashville Warbler*	(Breeding) LAC(WL)	A small, sprightly songbird of second-growth forests, this species breeds in both north-central North America and an isolated portion of the mountainous Pacific Northwest. It nests on the ground and feeds almost exclusively on insects.	**Less than reasonable** as breeder. **High potential** as a forager as this species is a fairly common spring and uncommon fall migrant. Frequently encountered in Westchester, this species occurs mainly during large waves of more common migrant warblers
Northern Harrier	*Circus cyaneus*	(Nesting) CSC LAC(Breeding-Part II) LAC(Wintering-WL) SBBW S3	This is a medium-small, lightly built bird of prey which hunts low to the ground mostly in open country, nesting on the ground. Prey diversity is high, though small mammals are most commonly taken. This is the only North American hawk that locates much of its prey by hearing as it quarters low over the vegetation. It was formerly a fairly common breeder in much of coastal southern California, but now is nearly extirpated in this role due to loss of native open habitats, especially marshes. It remains fairly common in open country with low human disturbance during migration and in winter.	**Less than reasonable** as breeder. **High potential** as a forager as this species is an occasional fall and winter visitor and is frequently observed foraging on the Reserve, particularly in the winter.

Common Name	Scientific Name	Status[A]	Habitat Requirements/Regional Trends	Likelihood of Occurrence[B]
Olive-sided Flycatcher	*Contopus cooperi*	(Nesting) CSC ABC:WLBCC BCC LAC(Part II) SBBW S4	Breeding habitat for this species is primarily late-successional conifer forests with open canopies. Breeding locales range from sea level to timberline but usually are at mid to high elevations (3018–6988 ft). These flycatchers are mostly associated with edges, openings, and natural and human-created clearings in otherwise relatively dense forests, but they also occupy semi open forests.	**Less than reasonable** as breeder. **Low potential** as a forager as this species is an occasional transient.
Osprey	*Pandion haliaetus*	(Nesting) WL S3	This large, distinctive hawk is highly adapted to a diet consisting almost entirely of fish. One of the most widespread bird species in the world, it was formerly a common and widespread breeder in southern California, but no longer breeds regularly in California anywhere south of the northern San Francisco Bay.	**Less than reasonable** as breeder. **High potential** as a forager as this species is an uncommon fall transient; rare visitor at all other times of year.
Pacific Golden-Plover	*Pluvialis fulva*	SBBW	Preferred wintering habitat seems to be large expanses of flat, damp ground near the coast with very short herbaceous vegetation. Breeds on Arctic tundra, especially in vegetation in low areas with few rocks. Winters in cultivated fields, pastures, salt marshes, airports, parks, lawns, golf courses, and clearings in wooded areas. On migration found in prairie, pastures, tilled farmland, golf courses, airports, mudflats, shorelines, and beaches.	**Less than reasonable** as breeder. **Less than reasonable** as a forager as this species was previously a fall transient and winter resident to the Reserve, but is currently extirpated.
Peregrine Falcon	*Falco peregrinus*	(Nesting) Fed/State Delisted CFP BCC SBBW S2	This species catch medium-sized birds in the air with swift, spectacular dives, called stoops. In cities they are masterful at catching pigeons. Elsewhere they feed especially on shorebirds and ducks. Often perching or nesting on skyscrapers, water towers, cliffs, power pylons, and other tall structures. Peregrines can be seen all over North America, but they are more common along coasts.	**Less than reasonable** as breeder. **Moderate potential** as a forager as this species is an uncommon transient and winter visitor. Frequently observed foraging on the Reserve.

Common Name	Scientific Name	Status(A)	Habitat Requirements/Regional Trends	Likelihood of Occurrence(B)
Prairie Falcon	*Falco mexicanus*	(Nesting) WL BCC LAC(Breeding-Part I) LAC(Wintering-WL) SBBW S3	A larger relative of the Merlin, the Prairie Falcon breeds primarily on cliffs in desert and semi-desert areas with low human disturbance, feeding on quail and other birds. It is nearly extirpated from coastal southern California as a breeder, occurring mainly as a sparse winter visitor throughout.	**Less than reasonable** as breeder. **Less than reasonable** as a forager as this species is casual in fall and (formerly) winter.
Purple Martin	*Progne subis*	(Nesting) CSC LAC(Part II) SBBW S3	This largest North American member of the swallow family frequents a variety of open or semi-open habitats, especially near water, and open woodland, as well as park-like settings within towns and farms. This martin is widespread across North America, from Canada to Mexico, and breeds from fairly high elevations in mountains to lowlands. They have declined from locally common in coastal southern California to nearly extirpated, with most of the few, small colonies that remain in mid-elevation forested mountain habitats.	**Less than reasonable** as breeder. **Low potential** as a forager as this species is probably a rare transient.
Red Knot	*Calidris canutus*	SBBW	Breeds in drier tundra areas, such as sparsely vegetated hillsides. Outside of breeding season, it is found primarily in intertidal, marine habitats, especially near coastal inlets, estuaries, and bays. Typically observed in small numbers with other shorebirds.	**Less than reasonable** as breeder. **Moderate potential** as a forager as this species is an occasional fall transient and winter visitor; rare in spring. Seen roosting with Black-bellied Plovers on flooded saltpans of the Reserve.
Red-breasted Nuthatch	*Sitta canadensis*	(Breeding) LAC(WL)	Occurs mainly in coniferous forests of spruce, fir, pine, hemlock, larch, and western red cedar. Eastern populations use more deciduous woods, including aspen, birch, poplar, oak, maple, and basswood. During irruptive winters, nuthatches may use habitats such as orchards, scrub, parks, plantations, and shade trees. This species is irregularly present in fall, winter and spring in groves of planted pines throughout the Los Angeles Basin.	**Less than reasonable** as breeder. **Low potential** as a forager as this species is probably a rare, irregular fall and winter visitor during "invasion years".

Common Name	Scientific Name	Status(A)	Habitat Requirements/Regional Trends	Likelihood of Occurrence(B)
Redhead	*Aythya americana*	(Nesting) CSC LAC(Part II) SBBW S3?	This diving duck, restricted to North America, breeds widely throughout the Prairie Pothole Region of the United States and Canada. It also nests in dense concentrations in marshes of the western United States. In contrast to its extensive breeding distribution, the Redhead in winter is concentrated mostly in coastal areas along the Gulf of Mexico, with hundreds of thousands of birds traditionally found in the Laguna Madre of Texas and the Laguna Madre of Tamaulipas, Mexico.	**Less than reasonable** as breeder. **High potential** as a forager as this species, once extirpated, is now reestablished as a winter resident and is now uncommon in fall and winter.
Rhinoceros Auklet	*Cerorhinca monocerata*	(Nesting colony) WL S3	Found both in coastal habitats and far from land. They often feed close to shore, especially where tidal currents near islands create upwellings and concentrations of food. Flocks may over-night in protected bays and forage farther out to sea during the day. Nesting islands have grass, shrubs or trees, with enough soil for the birds to burrow. Nests are typically located on slopes from which the birds can take flight easily.	**Less than reasonable** as breeder. **Less than reasonable** as a forager as this species probably a rare winter visitor and is much more common several miles offshore.
Royal Tern	*Thalasseus maximus*	LAC(Part I) SBBW	Fairly common, but localized winter visitor to offshore waters and coast of southern California, north to Santa Barbara County. While foraging, frequents pelagic waters well offshore, but also flies along beach lines, coastal estuaries, and lagoons. Usually nests on sandy beaches or dredging spoils. Prerequisites for colonies are isolation from land predators, good visibility, and nearby shallows for feeding. Ideal locations are at, or near, inlets between bays and oceans. Often nests near other species such as gulls, terns, or skimmers. Less commonly inshore while foraging. Roosts on tidal flats and beaches.	**Less than reasonable** for nesting. **Moderate potential** for foraging as this species is an uncommon fall, winter and spring visitor to immediate coast and lower Ballona Creek.
Ruby-crowned Kinglet	*Regulus calendula*	(Breeding) LAC(WL)	During migration and winter, this species occupies a variety of habitats and is often recognized by its constant wing-flicking. As a breeder, it inhabits spruce-fir forests of the northern and mountainous western United States and Canada. Its nest is hidden, often near the trunk and up to 30 meters above the ground.	**Less than reasonable** for nesting. **High potential** for foraging as this species is a fairly common winter resident.

Common Name	Scientific Name	Status(A)	Habitat Requirements/Regional Trends	Likelihood of Occurrence(B)
Scripps's (=Xantus's) Murrelet	*Synthliboramphus scrippsi (=Synthliboramphus hypoleucus)*	(Nesting colony) Federal Candidate ST ABC:WLBCC BCC S3	Scripps's (formerly Xantus's) Murrelet, along with the closely related Craveri's Murrelet, is one of the southernmost species in the Alcidae, a family that is predominantly northern in distribution. This small black and white seabird has a relatively limited breeding distribution on offshore islands from southern California to central Baja California, Mexico. Postbreeding dispersal is largely to the north, as far as is known. Llarge numbers of birds spend the late summer and fall over the outer continental shelf off central California, and small numbers occasionally occur in similar habitats north to Washington and southern British Columbia.	**Less than reasonable** for nesting. **Less than reasonable** for foraging as this species is a vagrant (regular well offshore).
Sharp-shinned Hawk	*Accipiter striatus*	(Nesting) WL S3	This small raptor specializes in hunting small birds, primarily in thickets, woodlands and forests. This small raptor is as frequently seen in residential neighborhoods as in native habitat, and unlike Merlin or American Kestrel, often perches in low, concealed spots (esp. willow clumps), waiting for small birds.	**Less than reasonable** as breeder. **Moderate potential** as a forager as this species is an uncommon winter resident.
Short-eared Owl	*Asio flammeus*	(Nesting) CSC ABC:WLBCC LAC(Part I) SBBW S3	This owl was once a locally uncommon breeder and a fairly common winter visitor and migrant in southern California. It is now apparently extirpated from the region as a breeder and only locally rare at other times. It is a medium-sized owl, hunting at all times of day and night primarily for small rodents. It is a ground-nester in marshes and open fields of native, or at least undisturbed, vegetation with limited predators,	**Less than reasonable** as breeder. **Low potential** as a forager as this species is currently a casual transient. One reported on the Reserve in 2006, 2008, and in 2009 as a road-kill.
Snow Goose	*Chen caerulescens*	LAC(Part I)	This medium-sized goose is one of the most abundant species of waterfowl in the world, breeding in large, often dense colonies north of the tree line from extreme northeastern Russia (Wrangel Island), along the coast and islands of arctic and subarctic North America to northwestern Greenland. During migration and on the wintering grounds, they often congregate in very large flocks.	**Less than reasonable** as breeder. **Less than reasonable** as a forager as this species is a casual winter visitor and transient (extirpated as a winter resident)

Common Name	Scientific Name	Status[A]	Habitat Requirements/Regional Trends	Likelihood of Occurrence[B]
Sora	*Porzana carolina*	(Breeding) LAC(Part I)	The most abundant and widely distributed North American rail, the Sora breeds and winters primarily in freshwater marshes dominated by emergent vegetation, but it also occurs in brackish coastal marshes during migration. It is more often heard than seen.	**Less than reasonable** as breeder. **Moderate potential** as a forager as this species is reestablished as a fairly common transient and winter resident at Ballona freshwater marsh (extirpated as a breeding perennial resident).
Spotted Sandpiper	*Actitis macularius*	(Breeding) LAC(WL)	The most widespread-breeding sandpiper in North America, this species is found east-west across the continent and north-south from the southern edge of the Arctic to the southern states. This species has colonized this broad range by capitalizing on generalist habits; i.e., individuals feed on a great variety of animal matter and occupy almost all habitats near water, everything from the shorelines of wild rivers and lakes to urban and agricultural ponds and pools. Migrate singly or in small groups to their wintering grounds, which extend from the extreme southern United States to southern South America.	**Less than reasonable** as breeder. **Moderate potential** as a forager as this species is a fairly common transient and uncommon winter visitor.
Summer Tanager	*Piranga rubra*	(Nesting) CSC LAC(Part II) SBBW S2	An uncommon (formerly common) summer resident and breeder in desert riparian habitat along lower Colorado River; also occurs very locally elsewhere in southern California deserts. Found in additional desert and other localities in migration. Breeds in mature, desert riparian habitat dominated by cottonwoods and willows.	**Less than reasonable** as breeder. **Less than reasonable** as a forager as this species is a probably a casual transient and winter visitor.
Swainson's Hawk	*Buteo swainsoni*	(Nesting) ST ABC:WLBCC BCC LAC(Part II) SBBW S2	This slim relative of the common red-tailed hawk nests today primarily in low-intensity agricultural areas of the western United States, migrating through Central America to Argentina and Brazil each fall and spring.	**Less than reasonable** as breeder. **Less than reasonable** as a forager as this species is rarely recorded along the coast.

Common Name	Scientific Name	Status(A)	Habitat Requirements/Regional Trends	Likelihood of Occurrence(B)
Swainson's Thrush	*Catharus ustulatus*	LAC(Breeding-Part I) SBBW	Nearctic-Neotropical migrant that breeds as far north as Alaska and northern Canada and winters primarily in South America. One of the most characteristic birds of montane fir forests over much of its range, Swainson's Thrush fills a different niche in coastal California, where it inhabits riparian woodlands.	**Less than reasonable** as breeder. **Low potential** as a forager as this species is probably an occasional late spring transient on floor of Ballona Valley (uncommon in Westchester) and rare in fall.
Tricolored Blackbird	*Agelaius tricolor*	(Nesting colony) CSC ABC:WLBCC BCC LAC(Part II) SBBW S2	Range is restricted to the Central Valley and surrounding foothills, throughout coastal and some inland localities in southern California, and scattered sites in Oregon, western Nevada, central Washington, and western coastal Baja California. Breed in dense colonies and may travel several kilometers to secure food for their nestlings; males defend small territories within colonies and mate with 1 to 4 females. They are itinerant breeders, nesting more than once at different locations during the breeding season.	**Less than reasonable** as breeder. Nearest historical nesting miles inland near Torrance. **Low potential** as a forager as this species, with the exception of a regular wintering flock of several dozen birds in the vicinity of Westchester Park, is a casual visitor to the Ballona Valley.
Tufted Puffin	*Fratercula cirrhata*	(Nesting colony) CSC SBBW S2	Puffins breed on offshore rocks and islands or, rarely, steep mainland cliffs that are largely free of mammalian predators and human disturbance. They nest either in earthen burrows or rock crevices, usually on steep slopes, cliffs, or cliff tops. Crevices are used mostly when suitable soil for burrowing is unavailable; they are the primary nest sites in central and southern California.	**Less than reasonable** as breeder. **Less than reasonable** as a forager as this species is a vagrant.
Turkey Vulture	*Cathartes aura*	(Breeding) LAC(Part I)	As a carrion eater, the species needs a large area for foraging, but the foraging areas do not necessarily need to be suitable for nesting. For western populations, nesting birds require remote, rocky locations with caves, cliff ledges, and piles of large boulders.	**Less than reasonable** as breeder. **Moderate potential** as a forager as this species is extirpated as a winter resident; now an uncommon transient.
Vaux's Swift	*Chaetura vauxi*	(Nesting) CSC SBBW S3	Occurs rarely and irregularly in winter in southern California. Requires trees, snags, chimneys, or smokestacks with large hollows or cavities for nighttime roosting. Roost sites are found in a variety of forested and urban environments. They are fairly common as spring and fall migrants in southern California.	**Less than reasonable** as breeder. **Moderate potential** as a forager as this species is an uncommon transient, occurring both in spring and fall, and occasionally in large numbers, especially on overcast days.

Common Name	Scientific Name	Status(A)	Habitat Requirements/Regional Trends	Likelihood of Occurrence(B)
Vermilion Flycatcher	*Pyrocephalus rubinus*	(Nesting) CSC SBBW S2S3	A rare, local, yearlong resident along the Colorado River, especially in vicinity of Blythe, Riverside Co. Nesters inhabit cottonwood, willow, mesquite, and other vegetation in desert riparian habitat adjacent to irrigated fields, irrigation ditches, pastures and other open, mesic areas in isolated patches throughout central southern California.	**Less than reasonable** as breeder. **Less than reasonable** as a forager as this species is a vagrant.
Vesper Sparrow	*Pooecetes gramineus*	LAC(Part I)	A ground-dwelling species, it prefers dry grass fields, with some shrubs or similar structure, and is found in open habitats, including old fields, shrubsteppe, grasslands, and cultivated crop fields. In many areas the species responds quickly to changes in habitat; it is often the first species to occupy reclaimed mine sites and will abandon old farm fields as they return to forest.	**Less than reasonable** as breeder. **Low potential** as a forager as this species is an occasional fall transient.
Virginia Rail	*Rallus limicola*	LAC(Part I)	Secretive freshwater marsh bird that is more often heard than seen. A habitat generalist, this species probes mudflats and shallow water with its long, slightly decurved bill searching for invertebrates, small fish, and the occasional seed. Vagrancy and generalist habits allow it to exploit a highly ephemeral niche.	**Moderate potential** as breeder (recently breeding confirmed at Ballona freshwater marsh). **High potential** as a forager as this species was once considered extirpated, but is now reestablished as an uncommon transient and rare winter visitor.
Virginia's Warbler	*Oreothlypis virginiae*	(Nesting) WL ABC:WLBCC BCC S2S3	A rare to uncommon, very local, summer resident along the eastern slope of southern Sierra Nevada and in several desert ranges. Breeds in arid, shrubby, mixed conifer, pinyon-juniper, montane chaparral, and possibly montane riparian habitats from about 2200-2800 m (7000-9000 ft). A rare fall migrant (late August-late September) in brushy habitats along the coast from Los Angeles Co. south, and a very rare spring and fall transient in wooded habitats in deserts.	**Less than reasonable** as breeder. **Low potential** as a forager as this species is a rare fall transient.

Common Name	Scientific Name	Status(A)	Habitat Requirements/Regional Trends	Likelihood of Occurrence(B)
Western Meadowlark	*Sturnella neglecta*	LAC(Part I) SBBW	A common resident throughout most of the state, except in higher mountains. Occurs in herbaceous and cropland habitats with sufficient ground cover for concealment. Where such habitats form understory open wooded and brushy habitats also used. Among cultivated crops, particularly favors alfalfa. Feeds in open, grassy areas, gleaning food from ground or low plants; also turns over objects and probes in soft earth. Requires relatively dense, grassy habitat with vegetation tall enough to provide cover, along with a few low perches. Scattered trees and shrubs may be present, but not required.	**Confirmed present** as breeder. **Confirmed present** as a forager as this species is common winter resident, uncommon through summer. A minute breeding population (up to 3 pairs) persists on the Reserve.
Western Snowy Plover	*Charadrius alexandrinus nivosus*	(Nesting) FT CSC ABC:WLBCC BCC LAC(Part II) SBBW S2	Breeds primarily above the high tide line on coastal beaches, sand spits, dune-backed beaches, sparsely-vegetated dunes, beaches at creek and river mouths, and salt pans at lagoons and estuaries. In winter, found on beaches used for nesting and other beaches, in manmade salt ponds and on estuarine sand and mud flats.	**Less than reasonable** as breeder (Extirpated as a breeding perennial resident). **Low potential** as a forager as this species is a now an occasional transient and rare winter visitor.
Western Wood-Pewee	*Contopus sordidulus*	(Breeding) LAC(WL)	An inhabitant of open forest, forest edge, and riparian zones, this species is a widespread breeder in many of western North America's forested habitats. Its generalized foraging behavior and nest site selection reflect its common occurrence. This species is primarily a sit-and-wait predator, sallying from open perches and usually returning to the same or a nearby perch in pursuit of flying insects, especially flies, ants, bees, wasps, and beetles.	**Less than reasonable** as breeder. **Low potential** as a forager as this species is an occasional transient.
Western Yellow-billed Cuckoo	*Coccyzus americanus occidentalis*	(Nesting) Federal Candidate SE BCC LAC(Part II) SBBW S1	This Neotropical migrant is a relative of the roadrunner and an inhabitant of extensive riparian forests. It formerly occurred from southwestern British Columbia south to the highlands of northern Mexico and the Yucatan Peninsula, wintering in South America. It has declined from a fairly common, local breeder in much of California sixty years ago, to virtual extirpation, with only a handful of tiny populations remaining in all of California today.	**Less than reasonable** as breeder. **Less than reasonable** as a forager as this species is a vagrant.

Common Name	Scientific Name	Status(A)	Habitat Requirements/Regional Trends	Likelihood of Occurrence(B)
White-faced Ibis	*Plegadis chihi*	(Nesting colony) WL LAC(Part I) SBBW S1	Most southern California counties now have a few known nesting colonies. Breeding occurs in extensive, undisturbed marshes with emergent vegetation (e.g., bulrush or cattails, especially when mixed with scattered woody vegetation such as willows or tamarisk. Habitat for foraging and migration is varied, including flooded fields, marshes, estuaries, reservoirs, mudflats, and other open wetland areas.	**Less than reasonable** as breeder. **Low potential** as a forager as this species is now extirpated as a winter resident; but an uncommon fall transient (late Aug. – early Dec.) and occasional in spring.
White-tailed Kite	*Elanus leucurus*	(Nesting) CFP LAC(Part II) SBBW S3	Hunts in open country. It is found across most of California west of the Sierra Nevada and deserts, from north of the San Francisco Bay south into northern Baja California, Mexico. Separate populations also occur from southern Texas across lowland Mexico, and in southern Florida. This is a strongly lowland species, apparently rare anywhere in California above 2000 feet (610 m), though there are records of wanderers to over 10,000 feet (3050 m). Nests are flimsy, often not lasting to the next breeding season, and are located low in trees and large shrubs near foraging areas in savannahs and at edges between open habitat and woodland or forest areas.	**Less than reasonable** as breeder. **Confirmed present** as a forager as this species is a fairly common non-breeding resident from mid-summer to mid-winter and casual in spring. Two to three kites are expected at the Reserve from mid-summer (late June or July) through mid-winter (January), when they apparently vacate the area to breed elsewhere.
Willow flycatcher (other ssp.)	*Empidonax trailii*	(Nesting) SE ABC:WLBCC BCC LAC(Part II) SBBW S1S2	A broadly distributed species, breeding interruptedly across much of the United States and Canada. In California it is nearly restricted to the Sierra Nevada Mountains and a few populations scattered through southern California. Several subspecies are recognized. Southern California is within the range of the subspecies *E.t. extimus* (southwestern willow flycatcher) – *see the account below for more*. During migration, southern California is host to other subspecies of willow flycatcher passing between breeding areas farther north (Sierra Nevada north to Canada) and their winter range farther south (Central America). These migrants of other subspecies are found in a wide variety of habitats, and are uncommon to fairly common in spring and fall.	**Less than reasonable** as breeder. **Moderate present** as a forager during migration.

Common Name	Scientific Name	Status(A)	Habitat Requirements/Regional Trends	Likelihood of Occurrence(B)
Willow Flycatcher ("Southwestern")	*Empidonax traillii extimus*	(Nesting) FE SE ABC:WLBCC LAC(Part II) S1	Occurs in riparian habitats along rivers, streams, or other wetlands, where dense growths of willows, Baccharis spp., Arrowweed, buttonbush, tamarisk, Russian olive or other plants are present, often with a scattered overstory of cottonwood, etc. Throughout the range of *E.t. extimus*, these riparian habitats tend to be rare, widely separated, small and/or linear locales, separated by vast expanses of arid lands. Nests in thickets of trees and shrubs approximately 4 - 7 meters (13 - 23 feet) or more in height, with dense foliage from approximately 0 - 4 meters (13 feet) above ground, and often a high canopy cover percentage. Following modern changes in riparian plant communities, *E.t. extimus* still nests in native vegetation where available, but has been known to nest in thickets dominated by tamarisk and Russian olive. Virtually always nests near surface water or saturated soil	**Less than reasonable** as breeder as only a relatively small amount of marginal riparian habitat is supported on the Project site. **Less than reasonable** as a forager as this species is likely only to occur as a vagrant.
Wilson's Phalarope	*Phalaropus tricolor*	SBBW	Found mostly on fresh water, but during migration they can also be found in small numbers on salt water. They breed in shallow, prairie wetlands in the northern US and southern Canada. During migration, they inhabit shallow ponds, flooded fields, and sometimes mudflats. Winter on large, shallow ponds and saline lakes in southern South America.	**Less than reasonable** as breeder. **Low present** as a forager as this species is an uncommon and irregular early fall transient and rare spring transient.
Wilson's Warbler	*Cardellina pusilla*	(Breeding) LAC(Part I)	Lowland breeding populations in the west favor riparian woodlands with shrubby understory. Montane-breeding population of this warbler occupy riparian areas dominated by low willows and other shrubs, often within steep ravines on north-facing slopes.	**Less than reasonable** as breeder as there is no evidence of breeding in the valley. **High potential** as a forager since this species and Yellow Warbler are among the most common passerine migrants in the Ballona area in spring.

Common Name	Scientific Name	Status(A)	Habitat Requirements/Regional Trends	Likelihood of Occurrence(B)
Wood Stork	*Mycteria americana*	CSC S2?	The only stork and the largest wading bird that breeds in the United States, the Wood Stork is a distinctive wetland bird found primarily in the Southeast. This species is a tactile feeder, capturing food by feel. In south Florida, extensive wetlands and high concentrations of prey due to evaporative drawdowns during the dry season have historically supported large breeding colonies of this species. Current breeding range in U.S. limited to Florida, Georgia, and S. Carolina. Pair of wild storks has bred at San Diego Wild Animal Park, San Diego, CA. Regular postbreeding visitor to southern end of Salton Sea and adjacent portions of Imperial Valley of s. California (common), and Colorado River valley of s. California and Arizona (uncommon).	**Less than reasonable** as breeder. **Less than reasonable** as a forager since this species is a vagrant.
Yellow Warbler	*Dendroica petechia brewsteri*	(Nesting) CSC BCC LAC(Part II) SBBW S2	Generally occupy riparian vegetation in close proximity to water along streams and in wet meadows. Throughout their range, they are found in willows and cottonwoods and in California they are found in numerous other species of riparian shrubs or trees, varying by biogeographic region.	**Less than reasonable** as breeder. **High potential** as a forager since this species is a common transient both in spring and fall; occasional into early winter. During migration, this warbler is common in willow thickets as well as in tall ornamental trees, especially if flowering.
Yellow-breasted Chat	*Icteria virens*	(Nesting) CSC LAC(Part II) SBBW S3	Nesting habitat is usually restricted to the narrow border of streams, creeks, sloughs, and rivers and seldom forms extensive tracts. Blackberry, wild grape, willow, and other plants that form dense thickets and tangles are frequently selected as nesting strata.	**Less than reasonable** as breeder (extirpated as a breeder from Ballona Valley). **Low potential** as a forager since this species is a rare transient (detected in Ballona freshwater marsh).
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*	(Nesting) CSC LAC(Part II) SBBW S3S4	Most numerous in prairie wetlands, is a conspicuous breeding bird in deep-water, emergent wetlands throughout nonforested regions of western North America. Highly social, these large-bodied blackbirds are polygynous, nesting on grouped territories. Postbreeding birds eat mostly grains, often forming large flocks that forage in uplands and roost in wetlands. Flocks migrate to the southern United States and Mexico for the winter.	**Less than reasonable** as breeder (extirpated as a breeder from Ballona Valley). **Low potential** as a forager since this species is extirpated as a winter resident; now a fairly common spring and rare fall transient at Ballona freshwater marsh.

Shading = Species which has less than reasonable potential for occurrence and impact.

(A) Regulatory/Regional/Local Status

Federal

FE = Federal Endangered

FT = Federal Threatened

FC = Candidate

BCC = USFWS Bird Species of Conservation Concern

State

SE = State Endangered

ST = State Threatened

CSC = California Species of Special Concern

CFP = California Fully Protected Species

WL = California Department of Fish and Wildlife Watch List (The birds on this Watch List are 1) not on the current Special Concern list but were on previous lists and they have not been state listed under CESA; 2) were previously state or federally listed and now are on neither list; or 3) are on the list of "Fully Protected" species.).

Local

LAC= Los Angeles County Bird Species of Special Concern (may include species categorized as "Part 1", "Part 2", or "Watchlist"- Los Angeles County Sensitive Bird Species Working Group 2009)

SBBW = Special-status Bird Species of the Ballona Wetlands. Cooper, D.S. 2005.

Important note by Cooper, D.S.: The information is based on dozens of sources compiled by the author since 2003, including the unpublished field notes of Kimball Garrett, Art Pickus, Robert Shanman, and many others; the Los Angeles Audubon Society newsletter "The Western Tanager"; the "Southern California" section of North American Birds/Audubon Field Notes; historical publications (e.g. von Bloeker 1943); consulting reports (prepared by Keane Biological Consultants, among others), and 3000+ combined field hours (since 2003) of a network of c. 10 birders active in the Ballona Valley on a daily basis.

Other

ABC:WLBCC = American Bird Conservancy: United States Watchlist of Birds of Conservation Concern

NatureServe

The California Natural Diversity Database (CNDDB) uses the same ranking methodology originally developed by The Nature Conservancy and now maintained and recently revised by NatureServe. The *state rank* (S-rank) refers to the imperilment status only within California's state boundaries. It is a reflection of the overall status of an element through its state range. The state rank represent a letter + number score that reflects a combination of Rarity, Threat, and Trend factors, with weighting being heavier on Rarity than the other two.

S1 = Critically Imperiled - Critically imperiled in the state because of extreme rarity (often 5 or fewer populations) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state.

S2 = Imperiled - Imperiled in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the state.

S3 = Vulnerable - Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the state.

S4 = Apparently Secure - Uncommon but not rare in the state; some cause for long-term concern due to declines or other factors.

S5 = Secure - Common, widespread, and abundant in the state.
SH = All sites are historical; the element has not been seen for at least 20 years, but suitable habitat still exists.
SX = All sites are extirpated.

Uncertainty about the rank of an element is expressed in two major ways:

- By expressing the ranks as a range of values: e.g., S2S3 means the rank is somewhere between S2 and S3.
- By adding a ? to the rank: e.g., S2? This represents more certainty than S2S3, but less certainty than S2.

(B) Potential of Occurrence Definitions

Confirmed Present	High Potential	Moderate Potential	Low Potential	Less than reasonable	Confirmed Absent
A qualified biologist or other reliable source has confirmed the presence of the species and there is no specific evidence that the species has subsequently become absent. Depending on the species and other information available, it may or may not be possible to determine, without further studies, what portions of the study area are currently in use.	The study area is known to be within the range of the species, and contains potential habitat with a high likelihood of occupancy. Although no individuals or diagnostic sign were detected during current fieldwork by a qualified observer, the species is likely to be present to some degree given the best available information. Depending upon regulatory status, local rarity, public interest, extent of habitat on the study area, and the nature of potential project impacts, a substantial basis may exist for either conducting focused surveys for the species or for assuming presence.	The study area is within the range of the species, and contains potentially appropriate habitat. Neither individuals nor diagnostic sign were detected. It is nevertheless reasonable that some individuals may have been overlooked. The best available information on the species with regard to the study area is either very uncertain, or may be equally weighted for and against occurrence. Depending upon local and special legal status, extent of habitat, and the nature and sensitivity of the project, focused surveys for the species may be warranted or presence may be assumed.	Occurrence of the species is reasonable but Less than reasonable because of some combination of facts. For example, 1) the study area was the subject of unsuccessful searches conducted under relevant and reasonable circumstances, 2) potential habitat present is marginal or minimal in extent, 3) the best available information suggests the species is absent from the study area, and/or 4) available information sheds no clear light on the species likelihood on the study area, but it is known to be rare at best in the vicinity. Neither the species nor any indication of its presence was detected. Although individuals may have been missed, it is Less than reasonable that substantial populations are present. Further	Although occurrence may be remotely possible, the likelihood of occurrence is less than that required for any potentially applicable regulatory threshold. Further, the likelihood of meaningful value of the site to any population(s) of this taxon is less than reasonable. The species may or may not include the study area within its current, general range. However, no appropriate, or adequately extensive, or effectively connected habitat is present. Neither the species nor any indication of its presence was detected. In some cases this likelihood may indicate that based on the best available information, the study area has a very high probability of being outside of the species' current range. In all of the above cases, the	Confirmed to be absent on the study area as a formal and/or practical matter. Most often, this is a determination based on negative results of a focused survey for the species conducted in appropriate habitat at appropriate time(s) of year, using biologically sound methods and qualified personnel. In the remaining cases, it may be based on a simple study area examination, for species and study area contexts where it is easily determined that the species is absent; for example, a tidal marsh insect and a dry mountainside study area, or a disturbance-intolerant chaparral shrub where the study area is a long-standing, degraded grassland far from chaparral. The relevant fieldwork was also in all cases

			evaluation should usually not be required for individual species except, in most cases, for biologically threatened or endangered species. Note however, that where several non-listed species hold this status, a higher likelihood of occurrence for "one or more" will generally hold. This is due both to the increased number of species and the fact that an array of possibilities often correlates with greater site biodiversity and lower relevant (but not readily detected) disturbance levels.	species may not be definitively ruled out but is strongly believed to be absent based on professional evaluation of all available evidence. In some cases, the species may occur on rare occasions and in low numbers, but with no more than brief, incidental use of the study area. That is, the site is also judged to lack any important function for the species. Certainly there are no substantial populations directly utilizing the study area at any time of year. Further evaluation should not normally be required.	conducted within a time frame sufficiently recent to conclude that the species remains absent, based on study area conditions and the species' known ecology. In most cases a specific, established survey protocol and/or guidelines have been followed.

Special-status Mammal Species

Common Name	Scientific Name	Status	Habitat Requirements	Likelihood of Occurrence
American badger	*Taxidea taxus*	CSC S4	Commonly found in treeless areas including tallgrass and shortgrass prairies, grass-dominated meadows and fields within forested habitats, and shrub-steppe communities.	**Less than reasonable**. Not reported in any survey efforts. CNDDB records are not dated, but show the closest occurrence greater than nine miles away. Urbanized setting would likely preclude the species.
Big free-tailed bat	*Nyctinomops macrotis*	CSC S2	In Southern California, found in low-lying arid areas. Need high cliffs or rocky outcrops for roosting sites. Feeds principally on large moths.	**Low potential**. Roosting sites are lacking in the Project area; however, the species may occur in a foraging role.
California leaf-nosed bat	*Macrotus californicus*	CSC S2S3	This insectivorous bat is a maneuverable, low-flying forager that gleans and feeds on the ground and in the air. Roosts are in deep tunnels or caves, occasionally in buildings or bridges. It was formerly found throughout southern California, but is apparently now confined to lowland Sonoran Desert habitat below 900 m. It forages in desert wash vegetation within one to three miles of roosting sites. Historical habitats utilized in coastal areas appear to be poorly known.	**Low potential**. Roosting sites are lacking in the Project area; however, the species may occur in a foraging role.
Hoary bat	*Lasiurus cinereus*	S4?	The hoary bat is the most widespread North American bat. May be found at any location in California, although distribution patchy in southeastern deserts. This common, solitary species winters along the coast and in southern California, breeding inland and north of the winter range. Habitats suitable for bearing young include all woodlands and forests with medium to large-size trees and dense foliage. Hoary bats have been recorded from sea level to 4125 m (13,200 ft). During migration in southern California, males are found in foothills, deserts and mountains; females in lowlands and coastal valleys.	**Low potential**. Potentially suitable foraging and day roosting habitat are present within the Project area.
Pacific pocket mouse	*Perognathus longimembris pacificus*	FE CSC S1	It is an obligate resident of fine-grained sandy soils of Coastal Strand, Coastal Dunes, River and Marine Alluvium, and Coastal Sage Scrub in close proximity to the ocean, and has never been collected more than 2 miles (about 3 kilometers) from the coast or above 600 feet (about 180 meters) elevation. It appears that occurrences are closely associated with loose or friable soils that permit burrowing.	**Less than reasonable**. No detection in survey efforts from 1981-2011. The study area contains suitable habitat; however, the last noted detection detections was in 1938.

Common Name	Scientific Name	Status	Habitat Requirements	Likelihood of Occurrence
Pallid bat	*Antrozous pallidus*	CSC S3	This bat species is widely distributed in the southwestern United States and northern Mexico. They are locally common across most of California except in the far northwest and in higher portions of the Sierra Nevada. Habitats utilized include a wide variety of grasslands, shrublands, woodlands, and forests, including mixed conifer forest. They appear to be most common in open, dry, rocky lowlands. Roosts are in caves, mines, as well as crevices in rocks, buildings and trees. This is a colonial species that forages low over open ground, often picking up beetles and other species of prey off the ground.	**Low potential**. Potentially suitable foraging and day roosting habitat are present within the Project area.
Pocketed free-tailed bat	*Nyctinomops femorosaccus*	CSC S2S3	Occurs in a variety of arid areas in Southern California, including pine-juniper woodlands, desert scrub, palm oasis, desert wash, desert riparian. Prefers rocky areas with high cliffs for roosting.	**Low potential**. Roosting sites are lacking in the Project area; however, the species may occur in a foraging role.
San Diego black-tailed jackrabbit	*Lepus californicus bennetti*	CSC S3?	This subspecies is distributed along the coastal slope from around Point Conception south into Baja California. It requires extensive open spaces, such as grasslands or open sage scrub, usually in fairly level situations. It is generally not found in chaparral or woodland habitats. The presence of substantial available cover, either dense grasses or shrubs, appears to be important for day roosts and is often adjacent to more open foraging areas.	**Less than reasonable**. In the early 1990's there was a population at the Los Angeles airport. Detected in 1981 surveys in Areas A and B, however mammal surveys after 1981 report no detections of the species.
Silver-haired bat	*Lasionycteris noctivagans*	S3S4	Coastal and montane forests from the Oregon border south along the coast to San Francisco Bay, and along the Sierra Nevada and Great Basin region to Inyo Co. It also occurs in southern California from Ventura and San Bernardino, south to Mexico and on some of the Channel Islands. During spring and fall migrations this species may be found anywhere in California. Summer habitats include coastal and montane coniferous forests, valley foothill woodlands, pinyon-juniper woodlands, and valley foothill and montane riparian habitats. Summer range is generally below 2750 m (9000 ft). Roosts in hollow trees, snags, buildings, rock crevices, caves, and under bark. Primarily a forest dweller, feeding over streams, ponds, and open brushy areas.	**Low potential**. Roosting sites are lacking in the Project area; however, the species may occur in a foraging role.

Common Name	Scientific Name	Status	Habitat Requirements	Likelihood of Occurrence
South coast marsh vole	*Microtus californicus stephensi*	CSC S1S2	Occurs in the area of tidal marshes in Los Angeles, Orange, and southern Ventura Counties.	**Confirmed present**. Captured during small mammal surveys in marsh habitats containing saltgrass (*Distichlis spicata*). Recorded in Areas A and B in 1981, 1991, 1996, and 2001. Captured only in Area B in 2010. Visually detected in salt marsh habitat in Area B in 2011.
Southern California saltmarsh shrew	*Sorex ornatus salicornicus*	CSC S1	Occurs in coastal marshes in Los Angeles, Orange and Ventura counties. Based on other studies of shrews, may require dense ground cover, nesting sites above mean high tide and free from inundation.	**Moderate potential**. Last captured on the Reserve Area B in 1991. Although recent trapping efforts on the Reserve have not yielded additional captures; suitable habitat remains present.
Townsend's big-eared bat	*Corynorhinus townsendii pallescens*	Candidate as State Threatened (=CSC) S2S3	Occurs throughout the drier portions of California. It is non-migratory, and hibernates from approximately October through April. They take a variety of prey, but primarily larger insects, especially moths. Known roost sites have been in caves, lava tubes, mines, tunnels, buildings and other man-made structures. Foraging habitats include coniferous forests and pinyon-juniper woodlands, deciduous riparian woodlands, and desert lands.	**Low potential**. Roosting sites are lacking in the study area; however, the species may occur in a foraging role.
Western mastiff bat	*Eumops perotis californicus*	CSC S3?	Primarily a cliff dwelling species, where maternity colonies of 30 to several hundred (typically fewer than 100) roost generally under exfoliating rock slabs (e.g. granite, sandstone or columnar basalt). It has also been found in similarly crevices in large boulders and buildings. Roosts are generally high above the ground, usually allowing a clear vertical drop of at least 9.8 feet below the entrance for flight. Forages in broad open areas.	**Low potential**. Roosting sites are lacking in the Project area; however, the species may occur in a foraging role.
Western yellow bat	*Lasiurus xanthinus*	CSC S3	Some populations may be migratory, although some individuals appear to be present year-round. Species probably do not hibernate. Associated with water features in open grassy areas and scrub, as well as canyon and riparian situations. Thought to be noncolonial. Individuals usually roost in trees, hanging from the underside of a leaf and are commonly found in the southwestern U.S. roosting in the skirt of dead fronds in both native and non-native palm trees.	**Moderate potential**. Palm trees and other trees on and adjacent to the Project site may provide roosting sites. May also occur in a foraging role

Shading Species which has less than reasonable potential for occurrence and impact.
Confirmed Present A qualified biologist or other reliable source has confirmed the presence of the species and there is no specific evidence that the species has subsequently become absent. Depending on the species and other information available, it may or may not be possible to determine, without further studies, what portions of the study area are currently in use.
High Potential The study area is known to be within the range of the species, and contains potential habitat with a high likelihood of occupancy. Although no individuals or diagnostic sign were detected during current fieldwork by a qualified observer, the species is likely to be present to some degree given the best available information. Depending upon regulatory status, local rarity, public interest, extent of habitat on the study area, and the nature of potential project impacts, a substantial basis may exist for either conducting focused surveys for the species or for assuming presence.
Moderate Potential The study area is within the range of the species, and contains potentially appropriate habitat. Neither individuals nor diagnostic sign were detected. It is nevertheless reasonable that some individuals may have been overlooked. The best available information on the species with regard to the study area is either very uncertain, or may be equally weighted for and against occurrence. Depending upon local and special legal status, extent of habitat, and the nature and sensitivity of the project, focused surveys for the species may be warranted or presence may be assumed.
Low Potential Occurrence of the species is reasonable but Less than reasonable because of some combination of facts. For example, 1) the study area was the subject of unsuccessful searches conducted under relevant and reasonable circumstances, 2) potential habitat present is marginal or minimal in extent, 3) the best available information suggests the species is absent from the study area, and/or 4) available information sheds no clear light on the species likelihood on the study area, but it is known to be rare at best in the vicinity. Neither the species nor any indication of its presence was detected. Although individuals may have been missed, it is Less than reasonable that substantial populations are present. Further evaluation should usually not be required for individual species except, in most cases, for biologically threatened or endangered species. Note however, that where several non-listed species hold this status, a higher likelihood of occurrence for "one or more" will generally hold. This is due both to the increased number of species and the fact that an array of possibilities often correlates with greater site biodiversity and lower relevant (but not readily detected) disturbance levels.
Less than reasonable Although occurrence may be remotely possible, the likelihood of occurrence is less than that required for any potentially applicable regulatory threshold. Further, the likelihood of meaningful value of the site to any population(s) of this taxon is less than reasonable. The species may or may not include the study area within its current, general range. However, no appropriate, or adequately extensive, or effectively connected habitat is present. Neither the species nor any indication of its presence was detected. In some cases this likelihood may indicate that based on the best available information, the study area has a very high probability of being outside of the species' current range. In all of the above cases, the species may not be definitively ruled out but is strongly believed to be absent based on professional evaluation of all available evidence. In some cases, the species may occur on rare occasions and in low numbers, but with no more than brief, incidental use of the study area. That is, the site is also judged to lack any important function for the species. Certainly there are no substantial populations directly utilizing the study area at any time of year. Further evaluation should not normally be required
Confirmed Absent Confirmed to be absent on the study area as a formal and/or practical matter. Most often, this is a determination based on negative results of a focused survey for the species conducted in appropriate habitat at appropriate time(s) of year, using biologically sound methods and qualified personnel. In the remaining cases, it may be based on a simple study area examination, for species and study area contexts where it is easily determined that the species is absent; for example, a tidal marsh insect and a dry mountainside study area, or a disturbance-intolerant chaparral shrub where the study area is a long-standing, degraded grassland far from chaparral. The relevant fieldwork was also in all cases conducted within a time frame sufficiently recent to conclude that the species remains absent, based on study area

conditions and the species' known ecology. In most cases a specific, established survey protocol and/or guidelines have been followed.
NOTES: **Federal** FE = Endangered FT = Threatened FC = Candidate **State** SE = Endangered ST = Threatened CSC = Species of Special Concern CFP = Fully Protected Species WL= California Watchlist (formerly a Species of Special Concern; limited protection
Note: The California Natural Diversity Database (CNDDB) uses the same ranking methodology originally developed by The Nature Conservancy and now maintained and recently revised by NatureServe. The *state rank* (S-rank) refers to the imperilment status only within California's state boundaries. It is a reflection of the overall status of an element through its state range. The state rank represent a letter + number score that reflects a combination of Rarity, Threat, and Trend factors, with weighting being heavier on Rarity than the other two. **S1 = Critically Imperiled** - Critically imperiled in the state because of extreme rarity (often 5 or fewer populations) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state. **S2 = Imperiled** - Imperiled in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the state. **S3 = Vulnerable** - Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the state. **S4 = Apparently Secure** - Uncommon but not rare in the state; some cause for long-term concern due to declines or other factors. **S5 = Secure** - Common, widespread, and abundant in the state. **SH** = All sites are historical; the element has not been seen for at least 20 years, but suitable habitat still exists. **SX** = All sites are extirpated. Uncertainty about the rank of an element is expressed in two major ways: • By expressing the ranks as a range of values: e.g., S2S3 means the rank is somewhere between S2 and S3. • By adding a ? to the rank: e.g., S2? This represents more certainty than S2S3, but less certainty than S2.

APPENDIX D13
Species Accounts

This page intentionally left blank

Appendix D13 Species Discussions

State and Federally Listed Special-Status Plants

Beach spectaclepod (*Dithyrea maritima*): State listed as Threatened; CRPR List 1B.1. Beach spectaclepod is a perennial forb in the mustard family (Brassicaceae) that blooms from March to May. It typically occurs on seashores on sand dunes and sandy places near the shore in coastal dune and coastal scrub habitats at elevations ranging from 10 to 165 feet (CNDDB 2014[1]; CNPS 2014[2]). Observed associated species include sand verbenas (*Abronia* spp), beach primrose (*Camissoniopsis cheiranthifolia*), Trask's milk-vetch (*Astragalus traskiae*), coastal goldenbush (*Isocoma menziesii*), silver beach weed (*Ambrosia chamissonis*), iceplant, sea rocket (*Cakile maritima*), silver bird's-foot trefoil (*Lotus argophyllus*), silver bush lupine (*Lupinus albifrons*), and wire lettuce (*Stephanomeria virgata*)(CNDDB 2014[3]).

This species is known from seventeen USGS 7.5-minute quadrangles in Los Angeles, Santa Barbara, San Luis Obispo, and Ventura counties; however, it is presumed to be extirpated from 4 of the seventeen quadrangles (CNPS 2014[4]). There are four CNDDB (2014[5]) records in the project region, based on ten collection records in the Consortium of California Herbaria (CCH) (2014[6]) and CNPS file information. The nearest documented occurrence to the study site, based on a collection made in April 1903 from Playa del Rey, is less than 1 mile from the Reserve (CNDDB 2014[7]). The most recently documented observation of the species in the region was in April 1932 at El Segundo, approximately 4 miles south of the study site (CCH 2014[8]; CNDDB 2014[9]). Dune and nonnative dune habitats in Area B are potential habitat for this species. However, this species was not observed during the April 2011 rare plant survey (WRA 2011[10]) or during any other earlier surveys; therefore, it is presumed to be absent from the study area.

Coastal dunes milk-vetch (*Astragalus tener* var *titi*): Federally listed as Endangered; State listed as Endangered; CRPR List 1B.2. Coastal dunes milk-vetch is an annual herb in the pea family (Fabaceae) that blooms from March to May. Although the habitat requirements for coastal dunes milkvetch is poorly known, it is currently known from coastal prairie habitat (USFWS

---

1 CNDDB 2014
2 CNPS 2014
3 CNDDB 2014
4 CNPS 2014
5 CNDDB 2014
6 Consortium of California Herbaria 2014
7 CNDDB 2014
8 CCH 2014
9 CNDDB 2014
10 WRA 2011

2009a[11]) at elevations ranging from 1 to 165 feet (CNPS 2014[12]; CNDDB 2014[13]). Observed associated species include grasses, sedges (*Carex* spp), sea fig (*Carpobrotus edulis*), varied lupine (*Lupinus variicolor*), cut leaf plantain (*Plantago coronopus*), and Pacific Grove clover (*Trifolium polyodon*) (CNDDB 2014[14]).

This species is known from six USGS 7.5-minute quadrangles in Los Angeles, Monterey, and San Diego counties; however, it is believed to be extirpated in Los Angeles County (CNPS 2014[15]). There are two CNDDB (2014[16]) records in the project region, based on three collections from Los Angeles County (CCH 2014[17]). The nearest documented occurrence was a collection made in April 1903 at Hyde Park, approximately 3 miles east of the study site (CNDDB 2014[18]). The most recently documented observation of the species in the region was in 1930 near Santa Monica, approximately 4 miles northwest of the study site (CCH 2014[19]; CNDDB 2014[20]). Coastal prairie habitat does not occur in the Reserve, although this habitat historically extended from the Ballona Bluffs south to Palos Verdes (Mattoni and Longcore 1997[21]). This species was not observed during the April 2011 rare plant surveys (WRA 2011[22]) or during any other earlier surveys; therefore, it is presumed to be absent from the study area.

Salt marsh bird's-beak (*Chloropyron maritimum* ssp *maritimum*): State and Federally listed as Endangered; CRPR List 1B.2. Salt marsh bird's beak is an annual herb in the figwort family (Scrophulariaceae) that blooms from May to October. It typically occurs inin higher zones of coastal salt marsh habitats at elevations ranging from 0 to 100 feet (USFWS 2009b[23]; CNPS 2014[24]). Observed associated species include salt grass (*Distichlis spicata*), sea lavender (*Limonium californicum*), salt marsh dodder (*Cuscuta salina*), alkali weed (*Cressa truxillensis*), saltwort (*Batis maritima*), fleshy jaumea, and pickleweed (CNDDB 2014[25]).

This species is known from sixteen USGS 7.5-minute quadrangles in Los Angeles, Orange, Santa Barbara, San Bernardino, San Diego, San Luis Obispo, and Ventura counties; however it is believed to be extirpated from 3 of the 16 quadrangles (CNPS 2014[26]). There are three known occurrences in Los Angeles County, including one occurrence in the project region (CNDDB 2014[27]), based on six collections of the species (CCH 2014[28]). The nearest occurrence to the Reserve is in Santa Monica, based on a collection made in 1888 (CNDDB 2014[29]). A 1901

11 USFWS 2009a
12 CNPS 2014
13 CNDDB 2014
14 CNDDB 2014
15 CNPS 2014
16 CNDDB 2014
17 CCH 2014
18 CNDDB 2014
19 CCH 2014
20 CNDDB 2014
21 Mattoni and Longcore 1997
22 WRA 2011
23 USFWS 2009b
24 CNPS 2014
25 CNDDB 2014
26 CNPS 2014
27 CNDDB 2014
28 CCH 2014
29 CNDDB 2014

collection from Ballona Harbor is also attributed to the Santa Monica occurrence (USFWS 2009b[30]), although this collection is not cited in the CNDDB record (CNDDB 2014[31]). Tidal wetlands (Marsh Plain) in Area A and Area B are potential habitat for this species. However, the U.S. Fish and Wildlife Service (USFWS) (1984[32]) concluded that this occurrence was extirpated, based on surveys at Ballona wetlands in 1980, 1982, and 1983 that were unsuccessful in locating the species. The species was not observed during any subsequent surveys in the study area, including the rare plant surveys conducted in July and October 2010 (WRA 2011[33]). Therefore, salt marsh bird's-beak is presumed to be absent from the study area.

San Fernando Valley spineflower (*Chorizanthe parryi* var *fernandina*): State listed as Endangered and Federal Candidate; CRPR List 1B.1. San Fernando Valley spineflower is an annual herb in the buckwheat family (Polygonaceae) that blooms from April to July. It typically occurs on sandy soils in coastal scrub, and in valley and foothill grassland habitats at elevations ranging from 490 to 4,000 feet (CNPS 2014[34]). Observed associated species include California sage brush, California buckwheat *(Eriogonum fasciculatum*),), longstem buckwheat (*Eriogonum elongatum*), slender buckwheat (*E. gracile*), purple sage (*Salvia leucophylla*), goldenbush (*Ericameria* spp), four o'clock species (*Mirabilis* sp), and Madrid brome (*Bromus madritensis*) (CNDDB 2014[35]).

This species is known from fourteen USGS 7.5-minute quadrangles in Los Angeles and Ventura counties; however, it is believed to be extirpated from 9 of the 14 quadrangles, and from Orange County (CNPS 2014[36]). There are nineteen occurrence records from Los Angeles County, based on thirty-nine specimen collections, but only one occurrence is recorded in the project region (CNDDB 2014[37]; CCH 2014[38]). The nearest documented occurrence is from April 1901 at Ballona Harbor, less than 1 mile north of the study site, however, this occurrence is considered to be possibly extirpated (CNDDB 2014[39]).

The most recent occurrences reported from Los Angeles County are from August 2011 at the Newhall Ranch, approximately 30 miles north of the study site (CCH 2014[40]). Annual grassland and upland scrub are potential habitat for this species on the study site. This species was not observed during the July 2010 or April 2011 rare plant surveys (WRA 2011[41]) or during any other earlier surveys; therefore, it is presumed to be absent from the study area.

Ventura Marsh milk-vetch (*Astragalus pycnostachyus* var *lanosissimus*): Federally listed as Endangered; State listed as Endangered; CRPR List 1B.1. Ventura Marsh milk-vetch is a perennial herb in the pea family (Fabaceae) that blooms from June to October. It typically occurs near sandy bluff seeps, behind barrier beaches, and near high tide zones, in coastal dune, coastal

30 USFWS 2009b
31 CNDDB 2014
32 USFWS (1984
33 WRA 2011
34 CNPS 2014
35 CNDDB 2014
36 CNPS 2014
37 CNDDB 2014
38 CCH 2014
39 CNDDB 2014
40 CCH 2014
41 WRA 2011

scrub, and coastal salt marsh habitats at elevations ranging from 0 to 115 feet (CNPS 2014[42]; CNDDB 2014[43]). Observed associated species include coyote brush, mulefat, arroyo willow (*Salix lasiolepis*), sea fig, lollypop tree, and rabbit's-foot grass (CNDDB 2014[44]).

This species is reported from five USGS 7.5-minute quadrangles in Los Angeles, Orange, and Ventura counties; however, it is believed to be extirpated from both Los Angeles and Orange counties (CNPS 2014[45]). There are two CNDDB (2014[46]) records in the study region, based on eight collections from Los Angeles County (CCH 2014[47]). The nearest and most recent CNDDB (2014[48]) or CCH (2014[49]) documented occurrence is from July 1951 within the historic Ballona wetlands. Another occurrence at Santa Monica was last observed in 1900 (CNDDB 2014[50]; CCH 2014[51]). No other recent occurrences within the study region have been documented for this species. The only extant occurrence for Ventura Marsh milk-vetch is at Mandalay Beach in Ventura County, an area outside of the study region. Potential habitat for this species is present in dune and grassland habitat adjacent to wetlands. This species was not observed during the July or October 2010 surveys (WRA 2011[52]) or during any other earlier surveys; therefore, it is presumed to be absent from the study area.

Non-listed Special-Status Plants

Red Sand-verbena (*Abronia maritima*): CRPR 4.2. Red sand-verbena is a perennial herb in the four o'clock family (Nyctaginaceae) that blooms from February to October. It grows on coastal dunes below 328 feet (CNPS 2014[53]).

This species is known from at least thirty-two USGS 7.5-minute quadrangles and is distributed from San Luis Obispo County to San Diego County, including the Channel Islands. The CNDDB does not provide records of List 4 species; however, there are seventy specimen records of red sand-verbena from Los Angeles County, including multiple collections made between Santa Monica and Manhattan Beach (CCH 2014[54]). The species was initially documented in Ballona Harbor in 1901 and in Playa del Rey in 1902, and it was most recently documented in El Segundo in 2011 (CCH 2014[55]). Dune and nonnative dune habitats in Area B are potential habitat for this species. Both common sand-verbena and villose sand-verbena have been reported from the study site. However, red sand-verbena was not observed during the 2010 and 2011 rare

42 CNPS 2014
43 CNDDB 2014
44 CNDDB 2014
45 CNPS 2014
46 CNDDB 2014
47 CCH 2014
48 CNDDB 2014
49 CCH 2014
50 CNDDB 2014
51 CCH 2014
52 WRA 2011
53 CNPS 2014
54 CCH 2014
55 CCH 2014

plant surveys (WRA 2011[56]) or during any other earlier surveys; therefore, it is presumed to be absent from the study area.

Coastal Goosefoot (*Chenopodium littoreum*): CRPR 1B.2. Coastal goosefoot is an annual herb in the goosefoot family (Chenopodiaceae) that blooms from April to August. It grows on coastal dunes at elevations below 130 feet (CNPS 2014[57]). Reported associated species include coyote brush, California sage brush, California goldenbush (*Ericameria ericoides*), coastal bush lupine (*Lupinus arboreus*), California croton, common sand verbena, and lance-leaved dudleya (*Dudleya lanceolate*) (CNDDB 2014[58]).

This species is known from five USGS 7.5-minute quadrangles in Los Angeles, Santa Barbara, and San Luis Obispo counties (CNPS 2014[59]). There is a single occurrence in the project region, based on a 1904 collection from Playa del Rey (CNDDB 2014[60]; CCH 2014[61]). This occurrence is reported to be extirpated (CNDDB 2014[62]). The species was not observed during the 2010 and 2011 rare plant surveys (WRA 2011[63]) or during any other earlier surveys; therefore, it is presumed to be absent from the study area.

Los Angeles Sunflower (*Helianthus nuttallii* ssp *parishii*): CRPR 1A. Los Angeles sunflower is a perennial herb in the sunflower family (Asteraceae) that bloomed from August to October. It grows in coastal salt marsh and freshwater marshes at elevations between 15 and 5,500 feet (CNPS 2014[64]). Observed associated species are unreported.

This species is known from nine USGS 7.5-minute quadrangles in Los Angeles, Orange, and San Bernardino counties (CNPS 2014[65]). The species has not been observed since 1937 and is considered to be extinct (CNDDB 2014[66]; CNPS 2014[67]). There is one record of the species from the project region, and none from the study area. The occurrence from the project region was extirpated in 1903 (CNDDB 2014[68]). Marsh habitat in the study area is potential habitat for the species. The species was not observed during the 2010 and 2011 rare plant surveys (CNDDB 2014[69]). Marsh habitat in the study area is potential habitat for the species. The species was not observed during the 2010 and 2011 rare plant surveys (WRA 2011[70]) or during any other earlier surveys; therefore, it is presumed to be absent from the study area.

56 WRA 2011
57 CNPS 2014
58 CNDDB 2014
59 CNPS 2014
60 CNDDB 2014
61 CCH 2014
62 CNDDB 2014
63 WRA 2011
64 CNPS 2014
65 CNPS 2014
66 CNDDB 2014
67 CNPS 2014
68 CNDDB 2014
69 CNDDB 2014
70 WRA 2011

Vernal Barley (*Hordeum intercedens*): CRPR 3.2. Vernal barley is an annual herb in the grass family (Poaceae) that blooms from March to June. It grows in coastal dunes, coastal scrub, and grassland habitats, typically in saline flats, depressions and vernal pools (CNPS 2014[71]).

The species is known from the south coast ranges and southwestern California, although an accurate record of its occurrence in the counties and USGS 7.5-minute quadrangles has been limited by misidentification of this species as low barley (*Horteum depressum*), a more common species (CNPS 2014[72]). The CNDDB does not provide records of List 4 species; however, there are two historical records of the species from the project region, including a 1901 collection from Ballona Harbor (CCH 2014[73]). Although primarily found in alkali grasslands and vernal pools, the margins of salt pan habitat in the study area may be potential habitat for the species. The species was not observed during the 2010 and 2011 rare plant surveys (WRA 2011[74]) or during any other earlier surveys; therefore, it is presumed to be absent from the study area.

Southwestern Spiny Rush (*Juncus acutus* ssp *leopoldii*): CRPR 4.2. Southwestern spiny rush is a rhizomatous perennial herb in the rush family (Juncaceae) that blooms from June to August. It grows in alkali seeps in coastal dunes and meadows and in coastal salt marsh (CNPS 2014[75]). Wetlands in the study area may provide suitable habitat for the species.

This species is known from twenty-seven USGS 7.5-minute quadrangles in San Luis Obispo, Santa Barbara, Ventura, Los Angeles, Orange, and San Diego counties (CNPS 2014[76]). The CNDDB does not provide records of List 4 species; however, there are twenty-five specimen records from Los Angeles County, including four historical records from the project region (CCH 2014[77]). There are no records of the species from the study area. The species was not observed during the 2010 and 2011 rare plant surveys (WRA 2011[78]) or during any other earlier surveys; therefore, it is presumed to be absent from the study area.

Coulter's Goldfields (*Lasthenia glabrata* ssp *coulteri*): CRPR 1B.1. Coulter's goldfields is an annual herb in the sunflower family (Asteraceae) that blooms in April and May. It grows in vernal pools and on the margins of playa and coastal salt marsh, below 4,000 feet elevation (CNPS 2014[79]). Reported associated species include saltgrass, barley species, pickleweed species, alkali weed, alkali heath, bush seepweed, and saltscale species (CNDDB 2014[80]).

This species is known from sixty-seven USGS 7.5-minute quadrangles, primarily in southwestern California; it is presumed to be extirpated in 14 of the quadrangles (CNPS 2014[81]). There are five historical records in the project region (CNDDB 2014[82]; CCH 2014[83]). It was

71 CNPS 2014
72 CNPS 2014
73 CCH 2014
74 WRA 2011
75 CNPS 2014
76 CNPS 2014
77 CCH 2014
78 WRA 2011
79 CNPS 2014
80 CNDDB 2014
81 CNPS 2014
82 CNDDB 2014
83 CCH 2014

historically known to occur in Ballona Marsh, where it was last observed in 1934 and is believed to be extirpated (CNDDB 2014[84]). Wetlands in the study area appear to remain suitable habitat for the species. The species was not observed during the April 2011 rare plant surveys (WRA 2011[85]) or during any other earlier surveys; therefore, it is presumed to be absent from the study area.

California Spineflower (*Mucronea californica*): CRPR 4.2. California spineflower is an annual herb in the buckwheat family (Polygonaceae) that blooms from March to August. It grows in sandy soils in chaparral, woodland, coastal dunes, coastal scrub, and grassland habitats below 4,600 feet elevation (CNPS 2014[86]). Coastal dunes, coastal scrub, and grassland habitats in the study area are suitable habitat for this species.

This species is known from at least nine USGS 7.5-minute quadrangles, ranging from Kern and Monterey counties south to Riverside and San Diego counties (CNPS 2014[87]). There are multiple collection records from the project area. The species was historically collected at Ballona Marshes in 1899 and Playa del Rey in 1902; the most recent collections near the study area are from El Segundo in 1988 (CCH 2014[88]). The species was not observed during the April 2011 rare plant surveys (WRA 2011[89]) or during any other earlier surveys; therefore, it is presumed to be absent from the study area.

Mud Nama (*Nama stenocarpa*): CRPR 2B.2. Mud nama is an annual herb in the borage family (Boraginaceae) that blooms between March and October. It grows on lake shores, river banks, and intermittently wet areas of marshes, at elevations between 15 and 1,640 feet (CNPS 2014[90]). Reported associated species include purple redstem, annual salt marsh aster, common cocklebur, alkali mallow, common verbena, hyssop loosestrife, toad rush, and western marsh cudweed (CNDDB 2014[91]). Wetlands in the study area appear to be suitable habitat for this species. This species is known from at least eighteen USGS 7.5-minute quadrangles in Kings, Los Angeles, Orange, Riverside, Imperial, and San Diego counties; it is considered to be extirpated from three quadrangles and from Los Angeles and Imperial counties (CNPS 2014[92]). There are two historical records from the project region, where it was last observed in 1924 (CCH 2014[93]; CNDDB 2014[94]). There are no records of the species from the study area. The species was not observed during the 2010 and 2011 rare plant surveys (WRA 2011[95]) or during any other earlier surveys; therefore, it is presumed to be absent from the study area.

Brand's star phacelia (*Phacelia stellaris*): CNPS List 1B.1. Brand's star phacelia is an annual forb in the waterleaf family (Hydrophyllaceae) that blooms from March to June. It typically occurs in open areas in coastal dune and coastal scrub habitat at elevations ranging from 1 to

84 CNDDB 2014
85 WRA 2011
86 CNPS 2014
87 CNPS 2014
88 CCH 2014
89 WRA 2011
90 CNPS 2014
91 CNDDB 2014
92 CNPS 2014
93 CCH 2014
94 CNDDB 2014
95 WRA 2011

1,300 feet (CNDDB 2014[96]; CNPS 2014[97]). Observed associated species include pink sand verbena (*Abronia umbellata*), red sand verbena (*Abronia maritima*), beach primrose, silver beach weed, cottonheads (*Nemacaulis denudata*), California croton (*Croton californica*), and pygmy weed (*Crassula connata*) (CNDDB 2014[98]).

This species is known from eight USGS 7.5-minute quadrangles in Los Angeles and San Diego counties; however, it is presumed extirpated from five of the eight quadrangles (CNPS 2014[99]). There are three CNDDB (2014[100]) records in the project region and eight CCH (2014[101]) records from Los Angeles County. The nearest documented occurrence was based on a collection made in 1909 at Playa del Rey, within 1 mile of the study site (CNDDB 2014[102]). The most recently documented observation of the species in the region was in March 1932 at El Segundo, approximately 4 miles south of the study site (CCH 2014[103]; CNDDB 2014[104]). Dune and nonnative dune habitats in Area B are potential habitat for this species. However, this species was not observed during the April 2011 rare plant survey or during any other earlier surveys; therefore, it is presumed to be absent from the study area.

Ballona Cinquefoil (*Potentilla multijuga*): CRPR 1A. Ballona cinquefoil was a perennial herb in the rose family (Rosaceae) that bloomed from April to July. It grew in brackish meadows (CNDDB 2014[105]).

This species is known from only a single occurrence. It was originally collected in the 1890s at the Ballona wetlands (CNDDB 2014[106]; CCH 2014[107]). The species has not been observed since that time and is believed to be extinct. Habitat in the study area may no longer be suitable for the species. This species was not observed during the 2010 or 2011 rare plant surveys or during any other earlier surveys; therefore, it is presumed to be absent from the study area.

Estuary Seablite (*Suaeda esteroa*): CRPR 1B.2. Estuary seablite is a perennial herb in the goosefoot family (Chenopodiaceae) that is occasionally annual or persisting as a subshrub. It blooms from May to October. Habitat for the species is coastal salt marsh, at elevations below 15 feet (CNPS 2014[108]). Suitable habitat for the species is present in the study area.

This species is known from fifteen USGS 7.5-minute quadrangles in Santa Barbara, Ventura, Los Angeles, Orange, and San Diego counties; however, it is presumed extirpated from one of the quadrangles (CNPS 2014[109]). Although there are no records of the species from the project region, the study site is within the range of estuary seablite, and several collections are known

---

[96] CNDDB 2014
[97] CNPS 2014
[98] CNDDB 2014
[99] CNPS 2014
[100] CNDDB 2014
[101] CCH 2014
[102] CNDDB 2014
[103] CCH 2014
[104] CNDDB 2014
[105] CNDDB 2014
[106] CNDDB 2014
[107] CCH 2014
[108] CNPS 2014
[109] CNPS 2014

from Long Beach and Seal Beach (CNDDB 2014[110]; CCH 2014[111]). This species was not observed during the 2010 or 2011 rare plant surveys or during any other earlier surveys; therefore, it is presumed to be absent from the study area.

110 CNDDB 2014
111 CCH 2014

Special-Status Invertebrates

Riverside fairy shrimp (*Streptocephalus woottoni*): Federally listed as Endangered; State Rank= S1 Riverside fairy shrimp require vernal pool habitat to grow and reproduce. Their life cycle requires periods of inundation as well as dry periods. Suitable habitats for growth and persistence of Riverside fairy shrimp include areas that generally pond for two to eight months and dry down for a period during the late spring to summer months. Habitats include natural and created pools (usually greater than 12 inches (30 centimeters [cm]) deep) that support these longer inundation periods; some of these habitats are artificial pools (cattle watering holes and road embankments) that have been modified or deepened with berms. Artificial depressions, often associated with degraded vernal pool habitat, are capable of functioning as habitat and can support vernal pool species, including Riverside fairy shrimp. Suitable habitat for the Riverside fairy shrimp's normal growth and behavior requires an underlying soil series (typically clay soil inclusions with a subsurface claypan or hardpan component), which forms an impermeable layer that sustains appropriate inundation periods (water percolates slowly once filled) and provides necessary physiological requirements including, but not limited to, appropriate water temperature and water chemistry (mineral) regimes, a natural prey base, foraging opportunities, and areas for predator avoidance. Vernal pool habitat typically exhibits a range of conditions but remains within the physiological tolerance of the species. The general ranges of conditions include, but are not limited to: dilute, freshwater pools with low levels of total dissolved solids (low ion levels [sodium ion concentrations generally below 70 millimoles per liter (mmol/l)], low alkalinity levels [lower than 80 to 1,000 milligrams per liter (mg/l)], and a range of pH levels from slightly acidic to neutral [typically in range of 6.4–7.1]) (Federal Register 2012[112]). Area A, Area B, and Area C were evaluated by Glen Lukos Associates (GLA) in 2000 for habitat suitable for Riverside fairy shrimp, although the habitat assessment did not include either wet- or dry-season sampling (PWA 2006[113]). Wherever substantial ponding was observed during the May 2000 assessments, the water was measured for specific conductance and visual observations of any aquatic invertebrates and vegetation were collected. No ponds in Area A, Area B, or Area C were determined to be capable of supporting Riverside fairy shrimp due to high salinities or inadequate length or depth of ponding and, therefore, Riverside fairy shrimp was determined to be absent from the study area (GLA 2000[114]). Appendix 3.4N Table 3.4-9, Summary of GLA Habitat Assessment for Riverside and San Diego Fairy Shrimp (*Branchinecta sandiegonensis*), summarizes the results of the GLA habitat assessment for Riverside fairy shrimp.

[112] Federal Register 2012
[113] PWA 2006
[114] GLA 2000

San Diego fairy shrimp (*Branchinecta sandiegonensis*): Federally listed as Endangered; State Rank= S1 San Diego fairy shrimp require vernal pool habitat to grow and reproduce. Their life cycle requires periods of inundation as well as dry periods. The San Diego fairy shrimp is most often found in vernal pools or vernal pool complexes that have the appropriate temperature, water chemistry, depth, and duration. More specifically, San Diego fairy shrimp are found in vernal and ephemeral wetlands that range in ponding duration from seven days to two months and that range in depth from less than 2 inches (5 cm) to over 12 inches (30 cm). For the appropriate conditions to occur, the following factors are necessary: associated hydrology that provides water to fill the pools, and any soil type with a claypan or hardpan component that forms an impermeable layer and provides space for individual and population growth and normal behavior. Vernal pool hydrology (i.e., seasonal filling and drying of vernal pools) is an essential feature that governs the life cycle of the San Diego fairy shrimp; proper timing, duration, and depth of these hydrological processes is necessary for cyst hatching and successful reproduction of San Diego fairy shrimp. Temperature, water chemistry, and length of time vernal pools are inundated with water are factors that play an important role in the distribution and temporal appearance of the San Diego fairy shrimp. San Diego fairy shrimp hatch and reproduce in water at temperatures that range from 41 to 68°F (5 to 20 degrees Celsius [°C]), and do not hatch at temperatures greater than 77°F (25°C). This limitation keeps San Diego fairy shrimp from hatching during the summer months if the vernal pools were to fill with water. Also, San Diego fairy shrimp do not survive well in temperatures below 41°F (5°C). San Diego fairy shrimp typically inhabit dilute, freshwater pools with low levels of total dissolved solids (low ion levels [sodium concentrations below 60 mmol/l], low alkalinity levels [lower than 80 to 1,000 mg/l], and a range of pH levels from neutral to alkaline [8.0 to 10.3]) (Federal Register 2007[115]).

Area A, Area B, and Area C were evaluated by GLA in 2000 for habitat suitable for San Diego fairy shrimp, although the habitat assessment did not include either wet- or dry-season sampling (PWA 2006[116]). Wherever substantial ponding was observed during the May 2000 assessments, the water was measured for specific conductance and visual observations of any aquatic invertebrates and vegetation were collected. No ponds in Area A, Area B, or Area C were determined to be capable of supporting San Diego fairy shrimp due to high salinities or inadequate length or depth of ponding and, therefore, San Diego fairy shrimp was determined to be absent from the project area (GLA 2000[117]). Appendix 3.4N Table 3.4-9, Summary of GLA Habitat Assessment for Riverside and San Diego Fairy Shrimp, summarizes the results of the GLA habitat assessment for San Diego fairy shrimp.

[115] Federal Register 2007
[116] PWA 2006
[117] GLA 2000

This page intentionally left blank

APPENDIX D14
Ballona Creek Wetlands Ecological Reserve Preliminary Delineation of Wetlands and Non-Wetland Waters

This page intentionally left blank

Ballona Creek Wetlands Ecological Reserve Preliminary Delineation of Wetlands and Non-Wetland Waters

LOS ANGELES COUNTY,CALIFORNIA

Prepared For:

California State Coastal Conservancy
1330 Broadway, 13th Floor
Oakland, CA 94612-2530

WRA Contact:
Philip Greer
greer@wra-ca.com

Date:
August 2011

ENVIRONMENTAL CONSULTANTS

2169-G East Francisco Blvd., San Rafael, CA 94901 (415) 454-8868 tel (415) 454-0129 fax info@wra-ca.com www.wra-ca.com

List of Preparers:

Philip Greer, Senior Biologist, Principal
Amanda McCarthy, PhD, Plant Ecologist, Project Manager
Kate Allan, Wildlife Biologist
Bianca Dailey, Biologist
Sundaran Gillespie, Senior GIS Technician

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

1.0 INTRODUCTION

1.1 Study Background

The Ballona Wetlands site (Study Area) consists of approximately 605 acres of open space in the City of Playa Vista, Los Angeles County, California (Figure 1). The Study Area is bounded on all sides by urban development; Ballona Creek bisects the Study Area. Urban and industrial development, including the creation of Marina Del Rey, has altered the wetlands on-site from their natural state. Due to the straightening of tidal channels, development of oil and gas fields, and filling of wetlands with dredged materials, the value of wetlands in the Study Area have been progressively degraded. The State Coastal Conservancy, the California Department of Fish and Game (CDFG), and the State Lands Commission (SLC) are working with various stakeholders to develop a restoration plan for the Ballona Wetlands. The Ballona Wetlands area was delineated several times prior to the delineation conducted by WRA, Inc. (WRA) in 2010. Previous delineations of the Study Area include, Sanders (1987), Straw (1987), Newling and Theriot (1988), Sanders (1989) and Sanders (2000). WRA delineated the Ballona Wetlands Study Area at the request of the State Coastal Conservancy in an effort to update the current total of wetland and non-wetland water habitat present. This report presents the results of this delineation.

Between March 22 and 24, 2010, WRA conducted a routine delineation of waters in the Study Area to determine the presence of potential wetlands and non-wetland waters subject to federal jurisdiction under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act (RHA), as well as wetlands, non-wetland waters, and riparian habitat subject to state jurisdiction under the California Coastal Act (CCA), the Coastal Zone Management Act (CZMA), and Sections 1600-1616 of California Fish and Game Code. Although not delineated for this report, wetlands on the site are also subject to state jurisdiction under the Regional Water Quality Control Board through the Porter-Cologne Water Quality Control Act.

1.2 Regulatory Background

<u>Section 404 of the Clean Water Act</u>

Section 404 of the Clean Water Act gives the United States Environmental Protection Agency (EPA) and the United States Army Corps of Engineers (Corps) regulatory and permitting authority regarding discharge of dredged or fill material into “navigable waters of the United States [U.S.]”. Section 502(7) of the Clean Water Act defines navigable waters as “waters of the United States, including territorial seas.” Section 328 of Chapter 33 in the Code of Federal Regulations (CFR) defines the term “waters of the United States” as it applies to the jurisdictional limits of the authority of the Corps under the Clean Water Act. A summary of this definition of “waters of the U.S.” in 33 CFR 328.3 includes (1) waters used for commerce; (2) interstate waters and wetlands; (3) “other waters” such as intrastate lakes, rivers, streams, and wetlands; (4) impoundments of waters; (5) tributaries to the above waters; (6) territorial seas; and (7) wetlands adjacent to waters. Therefore, for the purposes of determining Corps jurisdiction under the Clean Water Act, “navigable waters” as defined in the Clean Water Act are the same as “waters of the U.S.” defined in the CFR, above. The limits of Corps jurisdiction under Section 404 as given in 33 CFR Section 328.4 are as follows: (a) *Territorial seas:* three nautical miles in a seaward direction from the baseline; (b) *Tidal waters of the U.S.:* high tide line or to the limit of adjacent non-tidal waters; and (c) *Non-tidal waters of the U.S.:* ordinary high water mark or to the limit of adjacent wetlands.

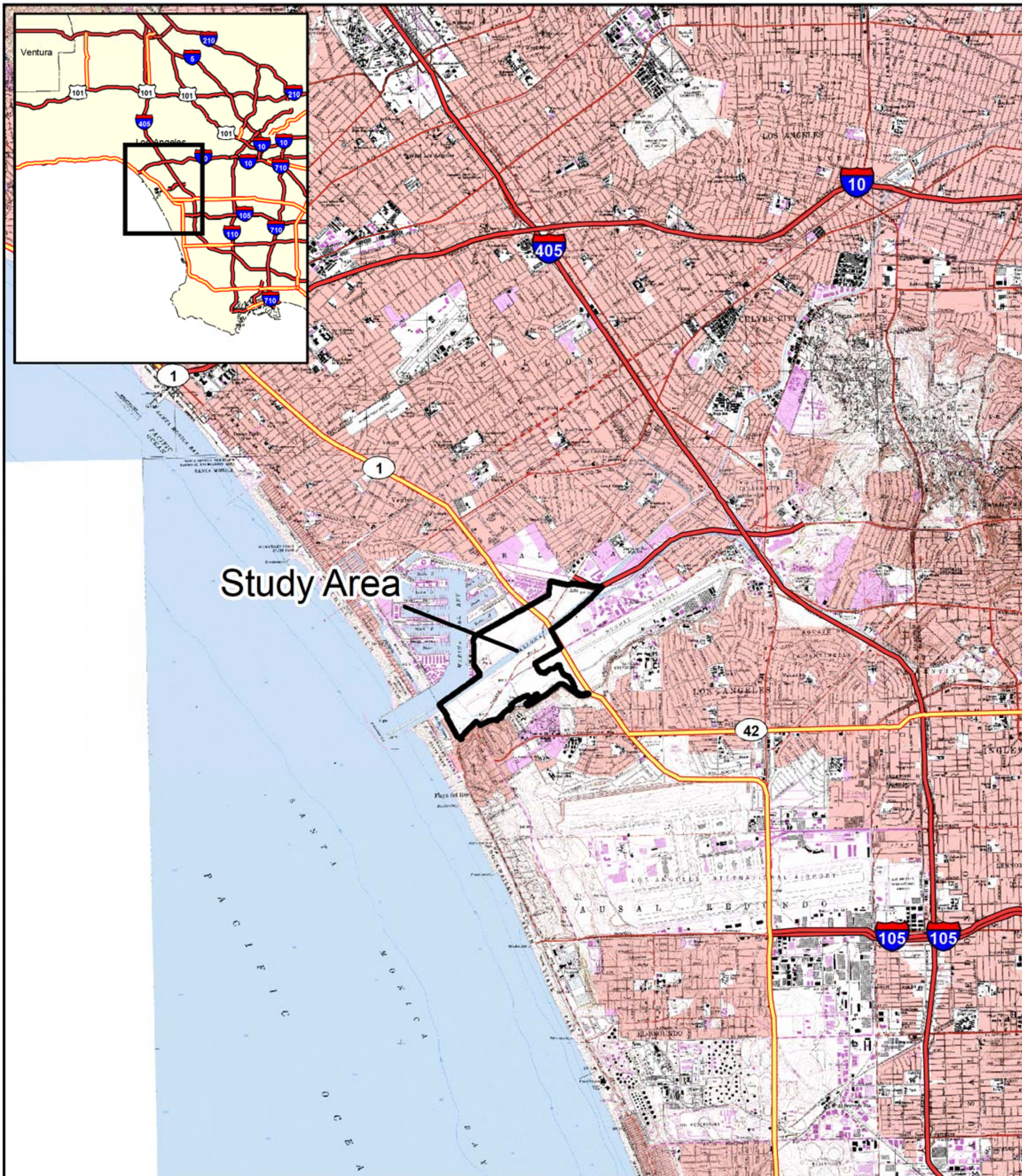


Figure 1. Location Map

Ballona Wetlands Restoration
Los Angeles County, CA

wra ENVIRONMENTAL CONSULTANTS

Date: April 2010
Map By: Sundaran Gillespie
Filepath:I:\Acad2000\00000\00016-3\gis\Arcmap\Location Map.mxd

Section 10 of the Rivers and Harbors Act

Section 10 of the Rivers and Harbors Act gives the Corps regulatory and permitting authority over any work in, over, or under "navigable waters of the U.S." (see definition above). Activities regulated by the Corps under Section 10 include the construction of any structure in or over any navigable water of the United States, the excavation/dredging or deposition of material in these waters, or any obstruction or alteration to a navigable water. Structure or work outside the limits defined for navigable waters of the U.S. require a Section 10 permit if the structure or work affects the course, location, condition, or capacity of the water body. Section 10 and Section 404 do overlap in some activities involving wetlands and non-wetland waters. Permits for activities regulated under both are processed simultaneously by the Corps.

California Coastal Act (CCA) and Coastal Zone Management Act (CZMA)

Wetlands found in the "coastal zone" are regulated under the CCA 1976 and the federal CZMA, and are within jurisdiction of the California Coastal Commission (CCC). Under the CCA, wetlands are defined as land within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens (Pub. Res. Code Section 30121). The CCC uses definitions similar to the federal government in defining wetland habitat.

In the California coastal zone, the CCC, with the assistance of the CDFG, is responsible for determining the presence of wetlands subject to regulation under the CCA. The local government also has a direct role in the identification and delineation process in areas with a certified local coastal program (LCP). Areas B and C, including adjacent sections of the Ballona Creek channel, are covered under the Playa Vista Specific Plan. This plan is intended to constitute the LCP for the portion of Ballona Wetlands located within the City of Los Angeles. Area A is part of Los Angeles County and was proposed to be included in the Marina Del Rey LCP; however, Area A was removed from the Marina Del Rey LCP prior to its certification and is currently not covered under a certified LCP.

For wetland development projects requiring Corps review, the applicant may, in some cases, need to obtain two delineation approvals: one for the coastal development permit and another for the Corps Section 404 permit.

Sections 1600-1616 of California Fish and Game Code

Streams and lakes, as habitat for fish and wildlife species, are subject to jurisdiction by CDFG under Sections 1600-1616 of California Fish and Game Code. Alterations to or work within or adjacent to streambeds or lakes generally require a 1602 Lake and Streambed Alteration Agreement. The term stream, which includes creeks and rivers, is defined in the California Code of Regulations (CCR) as follows: "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation" (14 CCR 1.72). In addition, the term stream can include ephemeral streams, dry washes, watercourses with subsurface flows, canals, aqueducts, irrigation ditches, and other means of water conveyance if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife (CDFG ESD 1994). Riparian is defined as, "on, or pertaining to, the banks of a stream;" therefore, riparian vegetation is defined as, "vegetation which occurs in and/or adjacent to a stream and is dependent on, and occurs because of, the stream itself" (CDFG ESD 1994) or other vegetation as defined by CDFG scientists (Rick Mayfield, pers.

comm. February 16, 2011). Removal of riparian vegetation also requires a Section 1602 Lake and Streambed Alteration Agreement from CDFG.

2.0 SUMMARY OF POTENTIAL JURISDICTIONAL AREAS

Appendix A depicts the extent of Corps jurisdiction within the Study Area based on a formal wetland delineation conducted by WRA in March 2010 and revised in July 2010 after a site visit with the Corps (with Aaron Allen and Spencer MacNeil, of the Corps). Appendix B depicts the extent of CCC jurisdiction delineated by WRA during the same site visit. The CCC map of waters was revised in September 2010 after a site visit with the CCC (Al Padilla and Jonna Engel of the CCC) and has since been approved by the CCC (Jonna Engel, pers. comm. March 29, 2011). Appendix C depicts the map of CDFG jurisdictional habitat, which was revised during the October site visit with CDFG (Dave Lawhead and Rick Mayfield of the CDFG) and has since been approved (Rick Mayfield, pers. comm. February 16, 2011). The acreage of potential Section 404, Section 10, CCA, and CDFG jurisdictional areas is summarized in Tables 1 through 3 below.

Table 1. Summary of Potential Corps Jurisdictional Areas Within the Study Area

Habitat Type	Size (acres)	"Potentially Isolated" Areas (acres)	**Potential Jurisdictional Waters of the U.S. (acres)**
Section 404 Wetlands	**153.2**	0	**153.2**
Section 404/10 Non-Wetland Waters	**83.0**	0	**83.0**
TOTAL	**236.2**	**0**	**236.2**

Table 2. Summary of Potential CCC Jurisdictional Areas within the Study Area

Habitat Type	**Potential Jurisdictional Wetlands (acres)**
CCC Wetlands	**278.5**
Vegetated Wetlands	195.5
Open Water	83.0
TOTAL	**278.5**

Table 3. Summary of Potential CDFG Jurisdictional Areas within the Study Area

Habitat Type	**Potential**
CDFG Streams, Lakes and Riparian Habitat	**150.0**

3.0 METHODS

Prior to conducting the 2010 field surveys, reference materials were reviewed, including results of previous wetland delineations of the Study Area with specific emphasis on Sanders 1987 and 2000, the Web Soil Survey of Los Angeles County (United States Department of Agriculture [USDA] 2010a), the United States Geologic Survey (USGS) 7.5-minute Venice quadrangle (USGS 1981), and aerial photos of the site.

A focused evaluation of indicators of wetlands and non-wetland waters was performed in the Study Area in March, 2010. The methods used in this study to delineate jurisdictional wetlands and non-wetland waters are based on the *U.S. Army Corps of Engineers Wetlands Delineation Manual* ("Corps Manual"; Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* ("Arid West Supplement"; Corps 2008a). The routine method for wetland delineation described in the Corps Manual was used to identify areas potentially subject to Corps Section 404 jurisdiction (three-parameter) and CCC jurisdiction (one-parameter) within the Study Area. Methods for delineating waters and riparian habitat potentially subject to CDFG jurisdiction were determined with CDFG staff scientists during a visit to the Study Area (pers. com. with Dave Lawhead and Rick Mayfield during the October 2010 site visit). A general description of the Study Area, including plant communities present, topography, and land use was also generated during the delineation visits. The methods for evaluating the presence of potential Corps jurisdictional wetlands and other waters of the U.S. employed during the site visit are described in sections 3.1 and 3.2. The methods for evaluating the presence of wetlands potentially under CCC jurisdiction are described in section 3.3, and methods for determining CDFG jurisdictional features is described in section 3.4.

For the purposes of this delineation, the minimum mapping unit used to delineate a wetland or upland island within a wetland was 10 feet by 10 feet; any individual wetland or upland island which constituted less than this minimum area was not mapped as a distinct feature.

According to the "Wetlands that Periodically Lack Indicators of Wetland Hydrology" section of the Arid West Supplement (Corps 2008a), 30-year WETS tables' data (Natural Resource Conservation Service [NRCS] 2009) can be used to make a determination as to whether the site meets the definition of typical climactic or hydrological conditions. Using data from WETS station CA5114, located near the Los Angeles Airport, it was determined that the normal annual rainfall for this area totals 13.20 inches, with a 30% chance that the rainfall will be greater than 15.64 inches and a 30% chance that the rainfall will be less than 9.34 inches. According to California Irrigation Management Information System (CIMIS) data provided by the Department of Water Resources Office of Water Use Efficiency (2010), the precipitation recorded in the vicinity of the Study Area (near Santa Monica, California, located north of the Study Area) totaled 14.59 inches during the 2009 to 2010 rainfall period (October to May each year). Therefore, rainfall during this period and prior to the field work conducted for this delineation was within the normal range for the area.

Delineations conducted by Sanders in 1987 and 2000 also followed the Corps routine method for delineating a wetland; however, all wetlands mapped during these surveys were classified into four categories of "waters of the United States" which included perennial waterbodies, wetlands, mudflats, and "other waters." As stated in the 2000 Sanders delineation report:

> *"Perennial waterbodies were defined as permanently inundated areas lacking rooted emergent vegetation. Wetlands were defined as areas having hydric soils, wetland hydrology, and 10 percent or greater aerial cover of hydrophytic vegetation. Mudflats were defined as areas having hydric soil conditions and wetland hydrologic conditions, but less than 10 percent areal cover by hydrophytic vegetation. 'Other waters' were defined as unvegetated areas that may temporarily or seasonally pond water, but are located in landscape positions that would not normally lead to an interpretation of mudflats."*

Delineation of such features during the 1987 and the 2000 delineations simply involved the application of the definitions stated above. In addition, they used topography to aid in the delineation of perennial waterbodies, mudflats, and "other waters." Topography was used in the sense that each of these categories generally occur at lower landscape positions than wetlands and exhibit less than 10 percent aerial plant cover (Sanders 2000).

Several additional factors were also considered in the determination of wetlands and non-wetland waters for the 2000 delineation. Results of previous wetland delineations, including Sanders (1987), Straw (1987), Newling and Theriot (1988), Sanders (1989), and the District's 1989 (Areas A, B, and C) wetland determination letter were consulted. Observed vegetation and hydrologic indicators were interpreted by analyzing rainfall data from 1987-1998 and comparing these data with the resulting hydrologic conditions (Sanders 2000). Finally, field observations from 1998 were considered in relation to "normal circumstances" as defined in the Corps regulations/memoranda and with regards to "normal environmental conditions". Of particular interest for "normal circumstances" was determining whether or not changes in vegetation and hydrology were induced by a change in physical site features. Similarly, weather patterns were reviewed to determine if any significant change in long-term climatic conditions had occurred which may have affected the conditions encountered at the time of the site visit.

Slight differences in methodology, changes in the physical and environmental conditions between field visits, and differences in the study area boundaries used are all factors which make it difficult to compare the results of this delineation report with previous delineation reports. A discussion of how the differences in methodology between the delineation presented here and delineations from previous years may have affected the comparison of results from each report is included in the Results section, below.

3.1 Potential Section 404 Waters of the U.S.

3.1.1 Wetlands

The Study Area was evaluated for the presence or absence of indicators of the three wetland parameters described in the Corps Manual (Environmental Laboratory 1987) and Arid West Supplement (Corps 2008a).

Section 328.3 of the CFR defines wetlands as:

"Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

Environmental Protection Agency, 40 CFR 230.3 and CE, 33 CFR 328.3 (b)

The three parameters used to delineate wetlands are the presence of: (1) hydrophytic vegetation, (2) wetland hydrology, and (3) hydric soils. According to the Corps Manual, for areas not considered "problem areas" or situations that are not "atypical situations":

"....[E]vidence of a minimum of one positive wetland indicator from each parameter (hydrology, soil, and vegetation) must be found in order to make a positive wetland determination."

Data on vegetation, hydrology, and soils collected at sample points during the delineation site visit was reported on Arid West Supplement data forms. We preliminarily used the CDFG Natural Community mapping of the Study Area to determine wetland boundaries (PWA 2006). Once an area was determined to be a potential jurisdictional wetland, the boundaries previously mapped by the CDFG were checked for accuracy to the existing conditions based upon hydric vegetation, hydric soils, and wetland hydrology; if the boundaries were not correct, the boundaries were delineated using GPS equipment and mapped on a topographic map. Areas of potential jurisdictional wetlands and non-wetland waters were measured digitally using ArcGIS software. Indicators described in the Arid West Supplement were used to make wetland determinations at each sample point in the Study Area and are summarized below.

<u>Vegetation</u>

Plant species identified on the Study Area were assigned a wetland status according to the U.S. Fish and Wildlife Service list of plant species that occur in wetlands (Reed 1988). This wetland classification system is based on the expected frequency of occurrence in wetlands as follows:

OBL	Always found in wetlands	>99% frequency
FACW(±)	Usually found in wetlands	67-99%
FAC	Equal in wetland or non-wetlands	34-66%
FACU	Usually found in non-wetlands	1-33%
UPL/NL	Upland/Not listed (upland)	<1%

The presence of hydrophytic vegetation was then determined based on indicator tests described in the Arid West Supplement. The Arid West Supplement requires that a three-step process be conducted to determine if hydrophytic vegetation is present. The procedure first requires the delineator to apply the "50/20 rule" (Indicator 1; Dominance Test) described in the manual. To apply the "50/20 rule", dominant species are chosen independently from each stratum of the community. Dominant species are determined for each vegetation stratum from a sampling plot of an appropriate size surrounding the sample point. Dominants are the most abundant species that individually or collectively account for more than 50 percent of the total vegetative cover in the stratum, plus any other species that, by itself, accounts for at least 20 percent of the total vegetative cover. If greater than 50 percent of the dominant species has an OBL, FACW, or FAC status, ignoring + and - qualifiers, the sample point meets the hydrophytic vegetation criterion.

If the sample point fails Indicator 1 and both hydric soils and wetland hydrology are not present, then the sample point does not meet the hydrophytic vegetation criterion, unless the site is a problematic wetland situation. However, if the sample point fails Indicator 1, but hydric soils and wetland hydrology are both present, the delineator must apply Indicator 2.

Indicator 2 is known as the Prevalence Index. The prevalence index is a weighted average of the wetland indicator status for all plant species within the sampling plot. Each indicator status is given a numeric code (OBL = 1, FACW = 2, FAC = 3, FACU = 4, and UPL = 5). Indicator 2 requires the delineator to estimate the percent cover of each species in every stratum of the community and sum the cover estimates for any species that is present in more than one stratum. The delineator must then organize all species into groups according to their wetland indicator status and calculate the Prevalence Index using the following formula, where A equals total percent cover:

$$PI = \frac{A_{OBL} + 2A_{FACW} + 3A_{FAC} + 4A_{FACU} + 5A_{UPL}}{A_{OBL} + A_{FACW} + A_{FAC} + A_{FACU} + A_{UPL}}$$

The Prevalence Index will yield a number between 1 and 5. If the Prevalence Index is equal to or less than 3, the sample point meets the hydrophytic vegetation criterion. However, if the community fails Indicator 2, the delineator must proceed to Indicator 3.

Indicator 3 is known as Morphological Adaptations. If more than 50 percent of the individuals of a FACU species have morphological adaptations for life in wetlands, that species is considered to be a hydrophyte and its indicator status should be reassigned to FAC. If such observations are made, the delineator must recalculate Indicators 1 and 2 using a FAC indicator status for this species. The sample point meets the hydrophytic vegetation criterion if either test is satisfied.

Hydrology

The Corps jurisdictional wetland hydrology criterion is satisfied if an area is inundated or saturated for a period sufficient to create anoxic soil conditions during the growing season (a minimum of 14 consecutive days in the Arid West region). Evidence of wetland hydrology can include primary indicators, such as visible inundation or saturation, drift deposits, oxidized root channels, and salt crusts, or secondary indicators such as the FAC-neutral test, presence of a shallow aquitard, or crayfish burrows. The Arid West Supplement contains 16 primary hydrology indicators and 10 secondary hydrology indicators. Only one primary indicator is required to meet the wetland hydrology criterion; however, if secondary indicators are used, at least two secondary indicators must be present to conclude that an area has wetland hydrology. The presence or absence of the primary or secondary indicators described in the Arid West Supplement was utilized to determine if sample points within the Study Area met the wetland hydrology criterion.

Due to the variable climate of the region, special consideration of the total amount of precipitation received must be given when determining whether the area exhibits wetland hydrology. During years of above normal precipitation, survey areas may falsely exhibit surface indicators such as watermarks, drift lines, or sediment deposits. These same areas during normal or below normal rainfall years may fail to exhibit these same indicators (Sanders 2000).

Reliance solely on the above mentioned indicators may lead to mistaken conclusions regarding the hydrology of site. For the purpose of this delineation, precipitation data for the area was reviewed prior to 2010 surveys as stated in section 3.0 above.

In addition to precipitation data, several other factors were considered in determining whether indicators of wetland hydrology were present in an effort to avoid making false determinations. Such factors include:

1. Presence/absence of oxidized root channels associated with living roots. Any oxidized rhizospheres associated with living roots, observed within 12 inches of the soil surface, was a positive indicator of wetland hydrology. Absence of such features was an indication that the site lacked wetland hydrology.

2. Historical rainfall patterns. Heavy rainfall years can often cause flooding in non-wetland areas thereby producing surface and subsurface indicators of wetland hydrology. Since the majority of the years are not categorized as extreme rainfall, relying solely on surface and subsurface indicators during these times would yield false indicators of wetland hydrology. Therefore, for the purpose of this delineation, the presence of surface indicators of wetland hydrology alone were not considered to be sufficient to make a determination as to whether wetland hydrology was present.

3. Changes in the sources of water available to a sampling location. Changes in the source(s) of water available to a given area were considered. If observed changes in the landscape were observed to have occurred since 2000, the effects of such changes on any potentially affected sampling location were identified; and

4. Water table observations for previous delineations. Water table levels in open boreholes dug at each sampling location were used in deciding which areas had wetland hydrology at the time of the 2010, 2000, and 1987 delineations. These 1987 water table observations were considered to be the most relevant data available for determining the hydrology of an area and were given greater weight in the 2000 Sanders delineation than the presence of surface indicators of wetland hydrology (Sanders 2000). For the present delineation, rainfall during and prior to the field work conducted was within the normal range for the area. Therefore, the present study used hydrology results from the 2000 delineation and collected additional hydrologic data to either a) support the conclusions of the 2000 report, or b) expand the areas determined to have wetland hydrology where strong indicators were present.

Soils

The NRCS defines a hydric soil as follows:

> *"A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part."*
>
> Federal Register July 13, 1994,
> U.S. Department of Agriculture, NRCS

Soils formed over long periods of time under wetland (anaerobic) conditions often possess characteristics that indicate they meet the definition of hydric soils. Hydric soils can have a hydrogen sulfide (rotten egg) odor, low chroma matrix color, generally designated 0, 1, or 2, used to identify them as hydric, presence of redox concentrations, gleyed or depleted matrix, or high organic matter content.

The Arid West Supplement provides a list of 23 of these hydric soil indicators which are known to occur in the Arid West region. Soil samples were collected and described according to the methodology provided in the Arid West Supplement. Soil chroma and values were determined by utilizing a standard Munsell soil color chart (GretagMacbeth 2000).

Hydric soils were determined to be present if any of the soil samples met one or more of the 23 hydric soil indicators described in the Arid West Supplement.

The Los Angeles Area Soil Survey (USDA 2010a) indicates that the Study Area has one native soil type: Delhi - Urban Land - Beaches. The soil description from the soil survey for this soil type is described in detail below. This soil is not on the hydric soils list for Los Angeles County (USDA 2010b). Although this soil type has been mapped in the Study Area, substantial amounts of fill material have been deposited on the native soils since the soil was last surveyed and it is unlikely that any native soils were encountered during the delineation field work conducted in March 2010.

Delhi - Urban Land - Beaches. The Delhi series consists of very deep, somewhat excessively drained soils. The soils formed in wind-modified material weathered from granitic rock sources. Delhi soils are found on floodplains, alluvial fans, and terraces. Delhi soils are on 0 to 15 percent slopes at elevations of 25 to 1,400 feet. When moist, the C horizon color is brown (10YR 5/3). A typical profile consists of sand, fine sand, loamy fine sand or loamy sand from 0 to 21 inches. The clay content ranges from 0 to 5 percent.

3.1.2 Other Waters of the U.S.

This study also evaluated the presence of “waters of the United States” other than wetlands potentially subject to U.S. Army Corps of Engineers jurisdiction under Section 404 of the Clean Water Act (i.e., non-wetland waters). Other areas, besides wetlands, subject to Corps jurisdiction include lakes, rivers and streams (including intermittent streams) in addition to all areas below the high tide line (HTL) in areas subject to tidal influence. Table 4 below shows the elevations of the HTL and mean high water (MHW) based on National Oceanic and Atmospheric Administration tidal elevation data and highest predicted tide for the Santa Monica station. MHW tidal elevation value is used to determine the extent of Section 10 waters of the U.S., which are described in Section 3.2 below.

Jurisdiction in non-tidal areas extends to the ordinary high water mark (OHW) defined as:

> “*...that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impresses on the bank, shelving, changes in the characteristics of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.*”
>
> Federal Register Vol. 51, No. 219,
> Part 328.3 (e). November 13, 1986

Identification of the ordinary high water mark followed the Corps Regulatory Guidance Letter No. 05-05, *Ordinary High Water Mark Identification* (Corps 2005).

Table 4. Tidal Elevations Relevant to Corps Jurisdiction at the Santa Monica Station, Santa Monica Bay, California (#9410840). Elevations are Relative to North American Vertical Datum (NADV) 88 Mean Lower Low Water (MLLW) Datum.

Tidal Benchmark	Elevation (MLLW datum)
HTL	7.0 feet
MHW	4.7 feet

3.1.3 Difficult Wetland Situations in the Arid West

The Arid West Supplement (Corps 2008a) includes procedures for identifying wetlands that may lack indicators due to natural processes (problem areas) or recent disturbances (atypical situations). "Problem area" wetlands are defined as naturally occurring wetland types that periodically lack indicators of hydrophytic vegetation, hydric soil, or wetland hydrology due to normal seasonal or annual variability. Some problem area wetlands may permanently lack certain indicators due to the nature of the soils or plant species on the site. "Atypical situations" are defined as wetlands in which vegetation, soil, or hydrology indicators are absent due to recent human activities or natural events.

The list of difficult wetland situations provided in the Arid West Supplement includes wetlands with problematic hydrophytic vegetation, problematic hydric soils, and wetlands that periodically lack indicators of wetland hydrology. In addition, the problem area and atypical situation sections of the Corps Manual (Environmental Laboratory 1987) were utilized to determine if any sample points taken within the Study Area met the criteria for a problem area or atypical situation. If any determination was based on less than three parameters, the rationale for the wetland determination was explained on the data sheets included in Appendix A. Although the Corps Manual (1987) and Arid West Supplement (2008a) were utilized in the wetland determination, they do not provide exhaustive lists of the difficult situations that can arise during delineations in the Arid West. As a result, WRA interpreted the gathered data using best professional judgment and our knowledge of the ecology of the wetlands in the region.

Problematic Vegetation

Given the Mediterranean climate of the region, precipitation levels often vary widely and can affect the structure and composition of plant communities. Due to the variability in climate in the arid west, wetlands may exhibit indicators of hydric soil and wetland hydrology but may lack hydrophytic vegetation, seasonally or year round. In addition, many wetlands in this region undergo season shifts in plant communities (Sanders 2000). Such areas require special procedures or additional analysis in identifying and delineating wetland boundaries.

A combination of field observations and review of scientific literature is recommended by the Corps in delineating wetlands with problematic vegetation. Such procedures and analysis should only be used when the area in question exhibits both hydric soils and wetland hydrology. The following procedure is taken from the Corps Regional Supplement for the Arid West (2008a):

(1) If possible, return to the site during the normal wet portion of the growing season and re-examine the site for indicators of hydrophytic vegetation.

(2) Examine the site for identifiable plant remains, either alive or dead, or other evidence that the plant community that was present during the normal wet portion of the growing season was hydrophytic.

(3) Use off-site data sources to determine whether the plant community that is normally present during the wet portion of the growing season is hydrophytic. Approriate data sources include early growing season aerial photography, NWI maps, soil survey reports, remotely sensed data, public interviews, and previous reports about the site. If necessary, re-examine the site at a later date to verify the hydrophtyuic vegetation determination.

After monitoring the vegetation within the Ballona Wetlands for over 11 years, Sanders (2000) observed that the timing and amount of precipitation experienced during the months of October through May had substantial effects on herbaceous vegetation communities throughout the study area. Monitoring data showed that the majority of herbaceous plant communities outside the saltmarsh and ditches (areas with perennial hydrology) undergo extreme changes in species composition in years of substantially different rainfall. During dry years, areas that did not exhibit any indicators of hydric soils or wetland hydrology were typically vegetated by upland grasses such as ripgut brome (*Bromus diandrus*, UPL), foxtail brome (*Bromus madritensis*, UPL), and wild oats (*Avena fatua*, UPL). During wet years, however, these same areas were found to sometimes support hydrophytic species such as alkali weed (*Cressa truxillensis*, FACW), rabbits foot-grass (*Polypogon monspeliensis*, FACW), bristly ox tongue (*Picris echioides*, FAC), perennial ryegrass (*Lolium perenne*, FAC), and alkali mallow (*Malvella leprosa*, FAC) (Sanders 2000). Based on the vegetation and community shifts observed over the past 11 years, such factors were given careful consideration when delineating each wetland boundary.

<u>Aggressive Invasive Plant Species</u>

Native and non-native aggressive, invasive FACU or UPL plant species often become established in wetlands due to their aggressive growth habits and adaptability to a wide range of habitats. Invasive species often exclude other species by competing successfully for space, sunlight, or other resources. Examples of invasive species in the region include pampas grass (*Cortaderia selloana*, UPL) and sea fig (*Carpobrotus edulis*, UPL).

The Corps has recommended the following procedure when the site has indicators of hydric soil and wetland hydrology but the plant community is dominated by FACU or UPL aggressive, invasive plant species. To use this procedure, there must be evidence of the species' invasive nature, such as published literature or listing of the species on a state or local list of invasive plants (e.g., the USDA Plants database http://plants.usda.gov/index.html). This procedure is taken from the Corps Regional Supplement for the Western Mountains, Valleys, and Coast Region (2008b):

(1) Examine a nearby reference site having similar soils, topography, and hydrologic conditions, and a similar plant community without or with reduced presence of the invasive species. Assume that the same plant community would exist on the original site, if invasive species were not prevalent.

(2) If feasible, remove the invasive species and reevaluate the vegetation during the next growing season. Take into consideration that many invasive species are very difficult to

remove and will resprout or reemerge next season. However, even temporary removal of the invasive plant may release other species.

(3) If an appropriate reference site cannot be located and the invasive species cannot be removed and the site reevaluated next season, make the wetland determination based on indicators of hydric soil and wetland hydrology.

Areas within the Ballona Wetlands that were dominated by aggressive, invasive vegetation, but met hydric soil and wetland hydrology criteria, were generally delineated as Corps and CCC jurisdictional wetlands during the March, 2010 surveys (i.e., areas dominated by pampas grass [UPL] and sea fig [UPL]). Areas that were dominated by invasive plant species, but did not meet hydric soil or wetland hydrology criteria, including small patches of habitat dominated by tree tobacco (*Nicotiana glauca*; FAC), were delineated as upland habitat, regardless of their indicator status.

3.1.4 Areas Exempt from Section 404 Jurisdiction

Some areas that meet the technical criteria for wetlands or waters may not be jurisdictional under the Clean Water Act. Included in this category are some man-induced wetlands, which are areas that have developed at least some characteristics of naturally occurring wetlands due to either intentional or incidental human activities. Examples of man-induced wetlands may include, but are not limited to, irrigated wetlands, impoundments, or drainage ditches excavated in uplands, wetlands resulting from filling of formerly deep water habitats, dredged material disposal areas, and depressions within construction areas.

In addition, some isolated wetlands and waters may also be considered outside of Corps jurisdiction as a result of the Supreme Court's decision in *Solid Waste Agency of Northern Cook County (SWANCC) vs. United States Army Corps of Engineers* (531 U.S. 159 (2001)). Isolated wetlands and waters are those areas that do not have a surface or groundwater connection to, and are not adjacent to a navigable "waters of the U.S.", and do not otherwise exhibit an interstate commerce connection.

3.2 Section 10 Waters of the U.S.

Historic Section 10 Waters

Historic Section 10 waters occur behind levees, are currently not exposed to tidal or muted-tidal influence, and meet certain criteria. These criteria include: 1) the area is presently at or below MHW; 2) the area was historically at or below MHW in its "unobstructed, natural state", and; 3) there is no evidence that the area was ever above MHW (Calvin Fong Memo, Corps, 1983). Procedures for determining Historical Section 10 jurisdiction behind levees are as follows:

1. First, determine present MHW for the area in question.

    a. Use surveyed elevation data from the prospective applicant.

    b. If elevation data are not available, use the survey technique for determining MHW on the outboard side of the dike and project the MHW line back to the area in question.

    c. Those areas behind dikes that are presently above MHW are not subject to Section 10 permit requirements (provided they were above MHW prior to 28 January 1972 or were filled to above MHW thereafter under Corps permit) because they are presently at or above MHW.

d. Those areas that are presently at or below MHW may be subject to Section 10 permit requirements. To determine whether these areas are subject to Section 10, two additional facts must be obtained (which are numbers 2 and 3 of the historical waters definition provided above).

2. The second step is to determine whether those areas presently at or below MHW were historically below MHW before the dikes were built.

   a. If available, use elevation data that were surveyed just prior to or just after the dikes were built. More often then not, this information is not available but potential sources include city and county planning commissions, public works departments, Caltrans, SLC, etc.

   b. If historic elevation data are not available, use the T-charts of 1850-90 to determine the location of the historic sloughs, if any, in those areas that are presently below MHW. The premise is that the historic sloughs were subject to the ebb and flow of the tides, and thus were below MHW.

   c. Those areas presently below MHW and historically below MHW as determined by elevation data or T-charts would be considered at or below MHW historically.

   d. Areas that were historically below MHW and filled above MHW (as shown by reliable data) but due to subsidence are now below MHW are not subject to Section 10 authority, but may be subject to Section 404 jurisdiction.

To accurately map Historic Section 10 waters, historic site topography is typically used in conjunction with tidal elevation data (Table 4). For the delineation presented here, Historic Section 10 waters were identified based on the Historical Conditions figure generated for the Ballona Wetlands Restoration Feasibility Report (PWA 2008). Data used to create this figure were derived from the U.S. Coast and Geodetic Survey Topographic Sheet of "West Beach to Vicinity of Santa Monica, 1876" (No. 1432b) (PWA 2008).

Current Section 10 Waters

Current Section 10 waters can occur in both tidal and fresh water systems. In tidal waters, Section 10 waters includes open water, mud flats, and adjacent special aquatic sites up to the limit of the mean high water mark (MHW) in areas currently exposed to fully tidal or muted-tidal action. In freshwater sites, Section 10 includes the lateral extent of the ordinary high water mark on opposing channel banks. Table 4 shows the elevations of the MHW based on National Oceanic and Atmospheric Administration tidal elevation data and highest predicted tide for the Santa Monica station. To accurately map Current Section 10 waters, site topography is typically used in conjunction with tidal elevation data (Table 4). For the delineation presented here, Current Section 10 waters were approximated by using areas that appeared to be below MHW based upon our understanding of tidal marsh topography and plant species salinity tolerances (i.e., open water or tidal waters). Current Section 10 waters are likely greater than this acreage on the site; additional Section 10 waters may be present in low elevation areas where levees restrict tidal waters. However, without detailed site topography, we can not accurately map Current Section 10 waters.

3.3 Coastal Zone Wetlands within CCC Jurisdiction

The CCC's regulations (California Code of Regulations Title 14 (14 CCR)) establish a "one parameter definition" that only requires evidence of a single parameter to establish wetland conditions and accepts wetland determinations based on the presence of one parameter-wetland vegetation, wetland soils, or, under certain conditions, wetland hydrology (using the Corps methods for each parameter). In contrast, the Corps generally uses a three parameter definition for delineating wetlands. Similar to the Corps, the CCC uses the following general decision rules for establishing the upland boundary of wetlands:

> *…the upland limit of a wetland shall be defined as:*
>
> > *a. the boundary between land with predominantly hydrophytic cover and land with predominantly mesophytic or xerophytic cover;*
> >
> > *b. the boundary between soil that is predominantly hydric and soil that is predominantly nonhydric; or*
> >
> > *c. in the case of wetlands without vegetation or soils, the boundary between land that is flooded or saturated at some time during years of normal precipitation, and land that is not.* (14 CCR Section 13577)

CCC wetland delineators commonly use the Corps Manual (1987) and the Arid West Supplement (2008) for guidance in defining each CCC wetland parameter (see Section 3.1). Therefore, wetlands which meet all three Corps criteria for wetlands (vegetation, soils, and hydrology) resulted in an overlap of CCC wetlands with Section 404 Corps wetlands; additionally, areas which only met one or two Corps criteria were considered to be CCC jurisdictional wetlands.

3.4 Streams, Lakes and Riparian Habitat within CDFG Jurisdiction

The CDFG has not published specific guidance for delineating jurisdictional features within tidally-influenced waters and habitats. The limits of CDFG jurisdiction within the Study Area were mapped to include open water and linear waters features, as well as the surrounding vegetation which "occurs in and/or adjacent to a stream and is dependent on, and occurs because of, the stream itself" (CDFG ESD 1994). Therefore, all channels, sloughs and open water were mapped as CDFG jurisdictional areas, as well as the vegetation communities surrounding these waters that were determined to occur in the Study Area due to the presence and proximity of the waters. Further guidance was provided by David Lawhead and Rick Mayfield of the CDFG during a site visit to the Study Area on October 26, 2010. During the site visit, the CDFG scientists idenitified areas under their jurisdiction based upon internal guidance at the CDFG. It was determined that all willow (*Salix* spp.) vegetation patches, slough channels, or areas with tidal flow and their "contributing watershed" area would be jurisdictional.

4.0 STUDY AREA DESCRIPTION

The Study Area contains approximately 605 acres of open space located in Los Angeles County, California (Figure 1). All lands within the Study Area are owned by the CDFG and the SLC. The SLC also owns the 24-acre freshwater marsh to the east of the Study Area. The freshwater marsh was created as part of a restoration effort between 2001 and 2003 and was not delineated for this report, which describes only those lands that are proposed for future restoration. Currently, the Ballona Wetlands are bounded on all sides by urban development; development activities within and adjacent to the wetland habitats have altered the natural topography, hydrology, vegetation communities, and soil composition within the Study Area.

4.1 Site History

Human Influence

The current structure of the Ballona Wetlands differs drastically from its original, historic state. Prior to the late 1890s, the Ballona Wetlands extent covered a total of 2,120 acres of wetlands, approximately 93 percent larger than what is present today. The extensive lagoons within the marsh provided ample space for duck hunting lodges and other resorts to provide hunting, sailing and rowing activities. Construction within the wetlands began in the 1880's with the construction of the Atcheson, Topeka, and Santa Fe Railways. Review of the 1896 U.S.G.S. Redondo quad map indicated that the Ballona Wetlands had since been reduced to 1,550 acres and about 34 percent was now comprised of a series of lagoons and interconnecting channels with some islands in the lagoons. The interconnecting lagoons connected to a 1.7 mile channel with the entire system emptying into the Pacific Ocean at Port Ballona. By this time, railways were fully assembled and a newly constructed roadway into Port Ballona was now present. During this period, hydrologic input to the Ballona marsh system was provided by three main sources; Ballona Creek, Centinela Creek, and artesian wells.

By 1924, the Ballona wetlands had been reduced to 1,150 acres as development adjacent to and within the marsh continued. An 18-mile speedway, currently known as Culver Boulevard, now extended through the marsh along with the Pacific Electric Railroad Line. By this time, the Ballona Creek had been partially channelized, though it still emptied into the northern wetlands. Most of the contributing hydrologic flow from Ballona Creek into the wetlands was cut off in 1938 when the Corps extended the creek channel to the ocean. Dredge materials from the construction of this creek extension were subsequently dumped into the adjacent marsh lands. Within two years, the entire natural inlet for the wetlands system was closed due to sedimentation.

Development and construction continued at a steady pace for the next three decades. Review of the 1950 Venice quad map indicated only approximately 550 acres of wetland habitat remained and this would further be reduced by discharge and dredge materials from the construction of Marina del Rey and its harbor (Henrickson 1991).

Specific human influences which have altered or degraded the Ballona Wetlands from their natural state within the last century include (from Sanders 2000):

> *a) One of the most influential human alterations of the Playa Vista area occurred when the Los Angeles River channel was diverted to Long Beach m the 1800s. This action significantly reduced the wetness of the floodplain, and enabled numerous other changes to be made;*
>
> *b) Ballona Channel with its concrete-bed banks was constructed through the floodplain,*

thereby channeling potential area runoff directly into Santa Monica Bay without allowing it to flow into and across the Playa Vista property;

c) Flap gates were constructed in the Ballona Channel levee at the western end of Area B that allows surface runoff to flow at low tide from the salt marsh into Ballona Channel. However, these flap gates have greatly reduced the movement of salt water into the marsh, which has resulted in significant degradation of the salt marsh;

d) Centinela Creek was channelized to prevent flows off the Westchester Bluffs and sheetflows from north of the creek from spreading across the floodplain, thereby enabling agricultural activities in portions of Playa Vista;

e) The storm drain along Jefferson Boulevard was constructed to outflow into the area immediately east of Gas Company Road, thereby reducing surface flows into the eastern portion of Area B, but increasing the wetness in western portions;

f) Numerous other smaller drainage ditches have been dug, especially associated with agricultural activities;

g) Large portions of Playa Vista have been filled. Area A now consists predominantly of filled material, having been filled in the late 1950's during construction of the Marina del Rey Small Craft Harbor;

h) Road construction has significantly altered flows. The landscape pattern produced by the interacting effects of Lincoln Boulevard, Jefferson Boulevard, Culver Boulevard, and Gas Company Road, as well as the old Red Line tram embankment, have produced several small drainage basins, some of which are totally isolated from other portions of Playa Vista;

i) Construction of oil/gas roads and well pads has further limited flows into or out of some areas; and

j) Farming activities have significantly affected the portion of Area B located east of Gas Company Road. Most of this portion of Area B was famed &om the 1930's until about 1985. During this time, the berm along the north side of Centinela Ditch was maintained, and only the most extreme storm events caused overtopping or breaching of the berm. Another major effect of the farming was to greatly reduce plant species diversity in the area. Farming activities consisted primarily of planting luna beans or barley.

Overall, human influences within and surrounding the Ballona Wetlands have resulted in much drier site conditions, deposition of non-native soils, and alteration of the vegetation community. Although portions of the property still support wetlands, many others do not.

Hydrologic Regimes

Historical factors influencing the present hydrology of Playa Vista as presented above have resulted in a great diversity of hydrologic regimes. The hydrologic regimes affecting wetland conditions within the study area have been described by Sanders (2000) and are presented in the following section:

In unfilled areas, hydrologic regimes are strongly influenced by water table levels and the presence/absence of ponding of water on the soil surface. In filled portions of the property (e.g., Area A), very few areas are subject to water table influences. The hydrology of filled portions of *these areas (as well as filled portions of Area B) is determined by the relative ability of a given area to pond water on the soil surface and hold the water in a ponded or saturated soil condition for long periods under conditions of normal rainfall.*

Under normal environmental conditions and normal circumstances, the vast majority of Playa Vista has not been influenced by storm tides or overbank flooding of streams. There is limited tidal influence in the western portion of Area B due to partially malfunctioning flap gates along the Ballona Creek Flood Control Channel. In addition, there is tidal influence on the ditch that borders the north side of Area A, but this influence is limited to the channel only. After agricultural activities ceased in Area B, breaches developed in the Centinela Ditch berm and storm runoff now enters into the adjacent field, thereby creating wetter conditions in a portion of the field. The major source of hydrologic input at Playa Vista under conditions of normal rainfall is direct precipitation and its associated runoff. Although little ponding occurs on the property during years within the range of normal rainfall, excessive ponding may occur during years of greatest rainfall, such as in 1997-1998, when rainfall was greatest for any year of record at Los Angeles International Airport. Straw (1987) calculated the average annual rainfall for the area to be 12.64 inches. Although three of the six wettest years of record have occurred since the wetland delineation in 1987, average annual rainfall has increased by only 0.02 inch to 12.66 inches (Straw, 2000). Abundant evidence exists in many portions of Playa Vista that ponding occurred during the 1997- 1998 rainfall year, both in areas that qualified as wetlands and in those that qualified as non-wetlands in 1987.

Another major element of the hydrology of Playa Vista is the recurring periodic low-rainfall years. During 47 of the 79 years of record (59.5%), annual rainfall has been less than the average of 12.66 inches (Straw, 2000). Moreover, low-rainfall years appear to occur in-groups of two to five. Although three of the six wettest rainfall years in the record have occurred during the 11 years since the original delineation, seven of the 11 years have experienced below average rainfall, including the five-year period from 1986-87 to 1990-1 991 during which the average annual rainfall was only 7.01 inches (Straw, 1999). Such periods of below normal rainfall have a profound effect on the composition of plant communities and distribution of indicators of wetland hydrology.

Except for the tidally-influenced ditch on the north side of Area A, the only source of available water in Area A, as well as for portions of Area B, is direct rainfall and the resulting local runoff. In areas lacking tidal influence and/or overbank flooding due to large storm events, the water table does not rise near enough to the surface to produce saturated soils in a major portion of the root zone (Fruit Growers Laboratory, 1982). Only closed depressions of such areas may have wetland hydrology, which results from surface runoff. Other areas (e.g., the ditch on the northern side of Area A) have wetland hydrology due to tidal flows or hgh water table levels for much of the effective growing season, especially the lowest unfilled areas. High water tables occur in these areas, and water table levels do not appear to drop significantly lower during dry years, presumably due to the area receiving the greatest amount of runoff that does occur, and, in some cases, the presence of tidal flows.

Some of Area B is inundated by surface water only during extreme flooding events (Straw, 1987). These areas do not receive and hold sufficient runoff during years of average rainfall to result in soil saturation for the requisite period to produce wetland hydrologic conditions (Shapiro and Associates, 1980). Sanders (1987) found water table levels to be deeper than 20 inches below the surface in much of the agricultural field during the time one would expect the highest water table levels of the year. However, depressional areas typically had water table levels nearer to the soil surface than 12 inches.

The height of the capillary fringe above the water table and its potential influence on wetland delineations became an issue after the 1987 wetland delineation at Playa Vista. Capillary fringe, defined as a zone of saturated soil above the water table produced as a result of adhesive forces, holding the water in capillary pores against the forces of gravity, was considered by some to be sufficient to cause areas with low water table levels to meet the wetland hydrology criterion. Williams (1982) conducted a theoretical study and concluded that soils could be saturated as much as five feet above the water table due to capillary rise. Three factors precluding achievement of the theoretical potential for soil saturation due to capillary action include coarse soil textures, limited duration of continuous exposure of potential capillary strata to the water table, and lack of vertical and horizontal uniformity of the soil profile. The three aforementioned factors, discussed in the following subparagraphs, significantly limit the potential for substantial saturation due to capillary rise in the majority of the study area.

> *a)Coarse soil textures. The potential for capillary rise in sandy soils (including soil strata exceeding three inches in &chess) is negligible. Depending on the coarseness of the texture, the maximum rise ranges from about 0.1 inch to 1.6 inches. The major reason is that there are few, if any, capillary- sized pores in coarse textured soils. On the other hand, fine-textured clay has significant potential for facilitating capillary rise, since most, if not all, pores are capillary size.*
>
> *b) Length of exposure of potential capillary strata to the water table. The duration of exposure to the water table of a stratum capable of facilitating capillary rise is critical in determining the potential for capillary rise. To achieve even a fraction of the potential rise due to capillary action, a fine-textured soil stratum must be exposed to the water table continuously for long periods, usually several months. Since the water table in large portions of Playa Vista occurs relatively near the surface for only a short period during the growing season before starting to decline (Fruit Growers Laboratory, 1982; Converse Consultants, 1982; McLaren Environmental Engineering, 1987), the theoretical potential for capillary rise cannot be achieved. Capillary tensions are broken as soon as a stratum begins to become dewatered, which occurs by April in most of the study area in years of normal rainfall. Saturation due to capillary rise is a significant consideration only in areas where the water table levels remains within 24 inches of the soil surface for most of the growing season. This limits the potential for capillary rise to be a factor in the delineation to only a few depressional areas.*
>
> *c) Lack of vertical and horizontal uniformity of the soil profile. A soil profile that consists of alternating fine- and coarse-textured strata has little potential for capillary rise unless the water table rises into a fine-textured stratum that is continuous into the major portion of the root zone. Coarse- textured strata block the potential for capillary rise, even where the coarse stratum is overlain by a fine-textured stratum capable of facilitating capillary rise.*

Considering the above factors and, in light of field observations at Playa Vista, Sanders (1987) concluded that capillary fringe could account for no more than 5 inches of soil saturation above the water table for portions of the property having clayey soils. For areas having sandy soils or significant sand lenses within the profile, the capillary fringe is less than 2.0 inches. The major factor limiting capillary fringe at Playa Vista appears to be the lack of a water table sufficiently near the surface long enough to provide time for significant rise by capillary action, except possibly in the western portion of Area B and in depressional areas elsewhere.

4.2 Current Conditions

Based on results from the present delineation, there are approximately 236.2 acres of Corps-jurisdictional (278.5 acres of CCC-jurisdictional) wetlands and non-wetland waters currently present within the Study Area. Roads and one large channel separate the Study Area into three distinct regions: Areas A, B, and C, which also coincide with previous study descriptions (Figure 1). Further descriptions of these individual areas are described below.

4.2.1 Area A

Area A encompasses approximately 150 acres and is bounded by Ballona Creek to the south, Lincoln Boulevard to the east, and Fiji Way to the north and west. Elevations in this area range from nine to 17 feet (based on the National Geodetic Vertical Datum [NGVD]). Dredged materials from the excavations of Ballona Creek and Marina Del Rey have been placed throughout Area A. Although largely undeveloped, this area contains a small parking area along the western boundary, a man-made drainage channel (Marina Ditch) along the northern boundary, and four monitoring wells installed by the Gas Company in the western portion of Area A. Historic tidal influence has been altered by the construction of a levee to contain Ballona Creek and by the deposition of dredged materials which have raised the elevations within Area A up to 17 feet (PWA 2006). The only tidally influenced hydrology within Area A occurs in the Marina Ditch; however, tidal influence does not reach beyond the channel. Other sources of hydrologic input include precipitation and stormwater runoff from adjacent lands.

Area A contains extensive amounts of dredge fill material, and native soils are not generally accessible using the soil sampling methods described in the Corps Manual (1987). Areas in which dredge materials were encountered during wetland delineations were considered “atypical situations”. In these areas, the rationale for the wetland determination was explained on the data sheets included in Appendix A.

4.2.2 Area B

The majority of Area B is composed of potentially jurisdictional wetlands characterized as emergent, estuarine marsh. Area B encompasses approximately 315 acres and is bounded by Ballona Creek to the north, Lincoln Boulevard to the east, urban development along Vista Del Mar to the west, and Cabora Drive to the south. Elevations in this area range from two to 50 feet NGVD. Area B contains the largest area of remnant unfilled wetlands, with abandoned agricultural lands to the southwest, and the freshwater marsh to the northeast. This area also contains several major roads with drainage culverts, as well as a Gas Company easement for oil wells, which includes one active oil well and supporting access roads. With the exceptions of areas surrounding the oil and gas platforms, the ground surface in Area B represents the original marsh surface (PWA 2006). Aggressive, invasive plants encountered in Area B include extensive patches of pampas grass (UPL) and sea fig (UPL). These species were observed within both upland and wetland habitats, and both are classified as highly invasive by the California Invasive Plant Council (Cal-IPC 2010). The western portion of this area is also tidally influenced; however, tidal influence has been limited by partially malfunctioning flap gates along the Ballona Creek Channel. Other sources of hydrologic input include precipitation and stormwater runoff from adjacent lands.

Area B contains limited amounts of dredge fill material, and native soils are not always accessible using the soil sampling methods described in the Corps Manual (1987). However, this area is the least disturbed of the three areas and currently contains the greatest extent of jurisdictional wetlands. Areas in which dredge materials were encountered during wetland delineations were considered “atypical situations”. In these areas, the rationale for the wetland determination was explained on the data sheets included in Appendix A.

4.2.3 Area C

Dredged materials from the excavations of Ballona Creek and Marina Del Rey have been placed throughout Area C, particularly in the southern portion (PWA 2006). Area C occupies approximately 85 acres and is bounded by Lincoln Blvd to the west, the Marina Freeway to the northeast, and Ballona Creek to the south. Elevations in this area range from four to 25 feet NGVD. Area C is mostly undeveloped with the exception of the ball fields, minor structures, and Culver Boulevard, which runs through the middle of this area. Natural hydrological sources for Area C include precipitation, surface run-off from adjacent lands, and channelized tidal flow. Playa Vista is directly connected to Areas A and C through a culvert under Fiji Way that allows tidal flow to enter the Marina Ditch; however, tidal influence is limited to the Marina Ditch channel and does not extend into the Area C wetlands.

4.2.4 Ballona Creek

Ballona Creek occupies approximately 55 acres of the Study Area. It has been channelized and is currently an open, lined, trapezoidal creek from its mouth at Santa Monica Bay to the intersection of Venice Boulevard and Pickford Street, approximately nine miles upstream. The creek’s bottom widths vary from 80 to 200 feet and depths vary from 19 to 23 feet from the top of the levee. The side slopes are composed of concrete, paving stones and riprap, but the channel bottom is not armored. Ballona Creek is tidally influenced, and the CDFG owns the portion of creek that flows through the Study Area.

5.0 RESULTS

Vegetation, soils and hydrology data collected during delineation site visits are reported on standard Corps Arid West Region data forms in Appendix A. Features which met less than three parameters were carefully evaluated considering problematic vegetation, including the presence of aggressive, invasive plant species, to determine the presence or absence of wetlands. Potential Section 404, Section 10, CCC, and CDFG jurisdictional areas are described in the following sections and depicted in Appendices A, B and C. Photos of representative portions of the Study Area and sample points are shown in Appendix D. A list of plant species observed in the Study Area during March 2010 site visits is included in Appendix E. The Study Area currently supports approximately 278.5 acres of CCC jurisdictional wetlands (Appendix B), of which 236.2 acres are considered potential Corps jurisdictional wetlands and waters of the U.S. (Appendix A), and 150.03 acres are considered potential CDFG jurisdictional habitat (Appendix C).

Small, fragmented patches of hydrophytic vegetation (i.e., alkali heath, *Frankenia salina* [FACW] and alkali weed [*Cressa truxillensis* var. *vallicola*, FACW]) were present throughout the Study Area; however, they did not meet the minimum mapping unit requirements (minimum of 10 feet by 10 feet) and were not delineated during the site visit. As a result, these patches are included in areas mapped as upland habitat. Likewise, small areas dominated by upland habitat occur within areas mapped as wetland habitat–we believe that this minimum mapping unit was suitable for the Study Area and that these “inclusions” of upland or wetland habitat within areas mapped as the opposite jurisdiction type are balanced within the Study Area. Areas that consisted of a mosaic of small patches of hydrophytes within upland habitat were generally mapped as upland habitat for the Corps and wetland habitat for the CCC. These areas were not mapped as wetlands for the Corps if three parameters indicative of wetland habitat were not present.

5.1 Potential Corps, CCC and CDFG Jurisdictional Wetlands and Waters

5.1.1 Wetlands

The Study Area contains approximately 153.2 acres of Corps jurisdictional wetlands, 278.5 acres of CCC jurisdictional wetlands, and 150.0 acres of CDFG jurisdictional habitat. Area B supports the majority of these wetland areas. Areas A and C support a mix of upland vegetation and scattered wetlands related to the heterogenous dredge fill material that makes up the soil substrate in these areas. Relative to the other two areas, Area B contains less dredge fill material and currently receives hydrological input from tidal waters. Acreages of wetlands and non-wetland waters (excluding Ballona Creek) within each area are summarized in the following sections.

All wetlands mapped and presented in Appendix A are likely to be considered jurisdictional by the Corps as they are directly connected to a navigable "waters of the U.S." (Ballona Creek and the Pacific Ocean) or are separated from these waters by man-made levees. Water can flow through the Study Area to Ballona Creek and ultimately into the Pacific Ocean.

Within the southwest portion of Area A and throughout Area C, large stands of mule fat (*Baccharis salicifolia*; FACW) meet the single parameter requirement to be considered potential CCC jurisdictional wetlands (i.e., meet the hydric vegetation indicator); however, these stands do not appear to be functioning as hydrophytic vegetation and do not demonstrate any indicators of hydric soils or wetland hydrology, are not riparian features, and do not meet three parameter wetlands so are not Corps jurisdictional wetlands. Mule fat stands are distributed over a variety of landforms (e.g., within earthen roads, on steep hillsides and berms, and within road embankments) which are unlikely to ever support wetland hydrology (see sample point 3u); roadside medians in the area are planted with mule fat (FACW), indicative of its weedy nature in the region. This species is used as an ornamental landscaping plant throughout the region, which may have resulted in the unusual distribution observed within the Study Area. Due to its unusual distribution, mule fat was considered to be an unreliable indicator or wetland vegetation in the Study Area. Therefore, mule fat stands were mapped within the Study Area, but are not considered to be Corps wetlands. In addition, isolated mulefat plants (i.e., not a contiguous stand of mulefat) are considered to be non-jurisdictional by the CCC (pers com. with Jonna Engel during the September 2010 site visit), while contiguous stands of mulefat are considered to be jurisdictional by the CCC. Mule fat stands are depicted in Appendix B and representative photographs are given in Appendix D.

Area A

The acreage of potential Section 404, CCC and CDFG jurisdictional areas, as well as potentially non-jurisdictional upland areas, in Area A is summarized in Table 5 below.

The portion of Area A mapped as CDFG jurisdictional habitat includes the Marina Ditch and the associated band of vegetation growing on its banks. No additional areas within Area A met the criteria for CDFG jurisdictional habitat, as confirmed by staff scientists (Rick Mayfield, pers.

comm. February 16, 2011).

Table 5. Summary of Potential Corps, CCC and CDFG Jurisdictional Areas within Area A

Jurisdictional Agency	Wetlands (acres)	Non-Wetland Waters (acres)	Potentially Non-Jurisdictional Uplands (acres)	**Total Potentially Jurisdictional Areas (acres)**
Corps	7.4	0.4	142.0	**7.8**
CCC	19.0		130.5	**19.0**
CDFG	3.8		145.7	**3.8**

In the central and northern portions of Area A, potential Corps/CCC wetlands are dominated by pickleweed species (*Salicornia virginica* and *S. subterminalis,* OBL), saltbush (*Atriplex lentiformis*, FAC), slenderleaf iceplant (*Mesembryanthemum nodiflorum*, FACU), annual bluegrass (*Poa annua*, FACW), and open mud flat areas. In the southwestern portion of Area A, there are concentrated patches of alkali heath (FACW), which also meet Corps wetland criteria. One large wetland occurs within the central portion of Area A and consists of intermixed mudflat and hydric vegetation, with no clear transition to pure upland habitat surrounding the wetland.

The topographic depression in the center of Area A was characterized along a four-point transect (sample points 10a through 10d) due to the complex, large transition zone surrounding the wetland. Sample points 10a and 10b met the criteria for soils, hydrology, and vegetation, and both sample points passed the FAC neutral test. Sample point 10c met criteria for hydric soils and hydrology only. Sample point 10d did not meet any of the wetland criteria and is considered to be an upland point. Therefore, the limits of Corps jurisdiction were delineated between sample points 10b and 10c, at which point hydric vegetation is no longer present, while the limits of CCC jurisdiction were delineated between sample points 10c and 10d, at which point there are wetland indicators of vegetation, soils, or hydrology (Appendix A). Corps/CCC wetlands on either bank of the Marina Ditch and outside the surrounding berms in Area A were dominated by mule fat (FACW), saltbush (FAC), pickleweed (OBL), and open mud flat.

Soils in Area A sporadically contained historic redoximorphic features from dredge spoils and are composed of fill material excavated to create Marina Del Rey. Soils were assumed to be hydric if evidence of ponding/saturation for long duration was present. Soils of heterogeneous dredge material with concentrated fine material were observed within wetlands.

Indicators of wetland hydrology included soil cracking, salt crust, and biotic crust (algal matting). Natural hydrological sources for Area A include precipitation, surface run-off, stormwater flow from adjacent development, and tidal flow. Tidal flow enters Marina Ditch through a culvert connecting it to Marina Del Rey at the northern boundary of Area A. Open water was observed flowing through the Marina Ditch during the site visit only near the culvert at Fiji Way. Small puddles were observed further up the Marina Ditch, with most of the area consisting of dry ground with no saturation within the top six inches of soil.

Some additional habitat surrounding the Corps/CCC wetlands meets the criteria for at least one wetland parameter and therefore is mapped as a CCC wetland, but not as a Corps wetland. In Area A, these CCC wetland areas are dominated by ripgut brome and soft chess (*Bromus hordeaceus*, FACU). In addition, three small wetland polygons mapped in the southwestern corner of Area A represent concentrated groups of alkali heath patches which meet both the Corps and CCC criteria for wetlands.

Area B

The acreage of potential Section 404, CCC and CDFG jurisdictional areas, as well as potentially non-jurisdictional upland areas, in Area B is summarized in Table 6 below.

Table 6. Summary of Potential Corps, CCC and CDFG Jurisdictional Areas within Area B

Jurisdictional Agency	Wetlands (acres)	Non-Wetland Waters (acres)	Potentially Non-Jurisdictional Uplands (acres)	**Total Potentially Jurisdictional Areas (acres)**
Corps	143.4	27.2	171.7	**170.7**
CCC	172.3		142.7	**172.3**
CDFG	87.3		227.7	**87.3**

The portion of Area B mapped as CDFG jurisdictional habitat includes the tidal channels and their associated vegetation, as well as observed willow (*Salix* spp.) patches. The jurisdictional area extends laterally out from the tidal channels a substantial distance in some areas, particularly in the southwest of Area B, where the vegetation and landform was considered part of the “contributing watershed”. CDFG jurisdictional areas have been confirmed by staff scientists (Rick Mayfield, pers. comm. February 16, 2011).

Tidal channels provide hydrological input to a large portion of the wetlands in this area, and vegetation communities observed here were composed primarily of estuarine marsh species. Dominant vegetation in areas considered to be Corps/CCC jurisdictional wetlands includes bristly ox-tongue, alkali ryegrass (*Leymus triticoides*, FAC), annual bluegrass (FACW), brass buttons (*Cotula coronopifolia*, FACW), toad rush (*Juncus bufonius*, FACW), pickleweed species (*S. virginica, S. subterminalis, S. europaea,* OBL), saltgrass (*Distichlis spicata*, FACW), common cattail (*Typha latifolia*, OBL), narrowleaf willow (*Salix exigua*, OBL), arroyo willow (*Salix lasiolepis*, FACW), and Italian ryegrass (*Lolium multiflorum*, FAC).

Soils generally had high clay content, although several features along the southern and eastern boundaries were composed of sandy soils with limited pockets of fill material. Natural hydrological sources for Area B include precipitation, urban and stormwater run-off, tidal input from Ballona Creek, and potentially groundwater discharge adjacent to bluffs south of the Study Area. Tidal gates along Ballona Creek’s southern levee allow muted tidal flow to enter the wetlands. Although several major roads dissect Area B, drainage features bypass these barriers through a series of culverts.

Potential CCC wetlands encompass Section 404 wetlands, as well as additional surrounding habitat which meet the criteria for at least one wetland parameter. These additional CCC wetland areas are scattered throughout Area B and typically meet criteria for wetland hydrology or soils but lack indicators of wetland vegetation. For example, sample point 7U was taken in a basin in which biotic crust, a primary indicator of hydrology, was observed. This point represents a feature that showed indicators of hydrology, but lacked wetland soils and vegetation; it was considered a CCC jurisdictional wetland only.

Aggressive, invasive plants such as pampas grass (UPL) and sea fig (UPL) were observed throughout Area B. Individual stands of pampas grass were found in the southwestern, southeastern, and central sections of this area. These areas consistently met both wetland soils and hydrology parameters. Due to its lack of wetland indicator status and its ability to aggressively colonize areas, pampas grass was considered to be problematic vegetation. Where it occurred with hydric soils and wetland hydrology, such as at sample points 15W and 16W, it was delineated as part of the wetland habitat.

The same mapping criteria and methodology were applied to sea fig (UPL), which is also considered problematic vegetation due to its highly invasive nature. Sea fig was found throughout Area B, with a large concentration of the species occurring in the central portion, east of Culver Boulevard near sample point 13W. Areas dominated by sea fig were observed to be located in topographically low areas with highly saturated soils. These saturated soils appear to be contributing to the degradation of the sea fig-dominated community in this area, and may result in the re-colonization of hydrophytic vegetation such as alkali heath (FACW).

Area C

The acreage of potential Section 404, CCC and CDFG jurisdictional areas, as well as potentially non-jurisdictional upland areas, in Area C is summarized in Table 7 below.

Table 7. Summary of Potential Corps, CCC and CDFG Jurisdictional Areas within Area C

Jurisdictional Agency	Wetlands (acres)	Non-Wetland Waters (acres)	Potentially Non-Jurisdictional Uplands (acres)	**Total Potentially Jurisdictional Areas (acres)**
Corps	2.3	0.1	82.7	**2.4**
CCC	4.1		80.9	**4.1**
CDFG	3.6		81.4	**3.6**

The portion of Area C mapped as CDFG jurisdictional habitat includes the Marina Ditch and the associated band of vegetation growing on its banks. No additional areas within Area C met the criteria for CDFG jurisdictional habitat, as confirmed by staff scientists (Rick Mayfield, pers. comm. February 16, 2011).

Dominant vegetation in areas considered to be Corps/CCC jurisdictional wetlands includes bristly ox-tongue (FAC), curly dock (*Rumex crispus*, FACW), Italian ryegrass (FAC), pickleweed (OBL), saltbush (FAC), slenderleaf iceplant (UPL), and alkali heath (FACW). In the northeastern corner, the wetland area contains patches of bare ground with soil cracking, as well as a dominance of hydrophytic vegetation. Potential CCC wetlands also occur within the Marina Ditch's eastern portion and the drainage ditch along the northeastern boundary of Area C. The Marina Ditch is dominated by saltbush (FAC), and the drainage ditch is dominated by bristly ox-tongue (FAC), curly dock (FACW), Italian ryegrass (FAC), and black mustard (*Brassica nigra*, UPL). Although dominated by hydrophytic vegetation, these areas did not display indicators of wetland hydrology or soils.

The topography and hydrology of Area C have been significantly altered, resulting in the limited distribution of wetland areas observed during the site visit. Remnant wetlands exist along historic channels, in man-made drainage ditches, and in one depressional landform in the northwestern corner of the area. Open water in the Marina Ditch tapers off to the east, transitioning to a vegetated channel, which appears to follow a historic stream bed. The vegetated channel is dominated by saltbush (FAC) with sparse patches of pickleweed (OBL) scattered along its western section. Its eastern extent does not show signs of wetland hydrology and is therefore likely considered to be a jurisdictional feature under the CCC, but not under the Corps. The drainage ditch along the northeastern boundary is likely both a Corps and CCC jurisdictional feature, as it is dominated by herbaceous hydrophytic vegetation and shows indicators of wetland hydrology, including standing water. This ditch was delineated as a wetland feature despite the disturbed soils found at sample point 1W. The soils contained substantial amounts of fill material, which may not have been present for enough time to develop identifiable redoximorphic features, or which may be too saline to develop redoximorphic features.

As described above, small, sparse patches of hydrophytic vegetation were present throughout Area C; however, these areas did not meet the minimum mapping unit requirements and were not mapped during the site visit. In addition, as discussed above, mule fat was not considered to be a reliable indicator of wetland vegetation as it occurred only within upland habitat and was never observed with indicators of active wetland hydrology or hydric soils.

<u>Uplands</u>

Vegetation within upland habitat consists primarily of upland grass and herbaceous species. Grassland habitat consists of ripgut brome (*Bromus diandrus*, UPL), foxtail brome (*Bromus madritensis*, UPL), soft chess (FACU), California brome (*Bromus carinatus*, UPL), and areas dominated by thick stands of mustard (*Brassica* sp. and *Hirschfeldia incana*, UPL) or Garland daisy (*Chrysanthemum coronarium*, UPL), thickets of coyote brush (*Baccharis pilularis*, UPL) or California sagebrush (*Artemisia californica*, UPL), or are dominated by stands of laurel sumac (*Malosma laurina*, UPL) or acacia (*Acacia* sp., UPL). In addition, some upland habitat is dominated by sea fig, pampas grass, or slender leaved iceplant (*Mesembryanthemum nodiflorum*, FACU). Mule fat (FACW) also occurs in scattered locations within upland habitat in areas without any indicators of wetland hydrology and without hydric soils.

The border between upland and Corps/CCC jurisdictional wetland communities was determined primarily by vegetation type: areas dominated by upland vegetation species were not mapped as potentially regulated Corps jurisdictional wetlands. However, some areas considered to be upland habitat based on Corps criteria *are* considered to be potentially jurisdictional wetland habitat based on CCC criteria. Areas that were mapped as upland habitat for both the Corps and the CCC did not exhibit signs of active wetland hydrology such as a biotic crust (B4), saturation (A3), or soil cracking (B6). Areas that were mapped as upland habitat under the Corps, but as potential CCC wetlands were typically dominated by upland vegetation, but showed signs of wetland hydrology and/or hydric soils. In other areas, potential CCC wetlands supported sparse hydrophytic vegetation (i.e., alkali weed, FACW) within upland habitat and, in some areas, exhibited indicators of active wetland hydrology, but not hydric soils. Soils in the areas identified as upland habitat under both the CCC and the Corps criteria lacked hydric soil indicators.

The border between CDFG jurisdictional habitat and uplands was determined primarily using the topography surrounding linear channel features. Topography was used as an indicator of water flow, and areas determined to be outside the "contributing watershed" based on their topography were determined to be non-jurisdictional CDFG uplands.

5.1.2 Section 10 and Non-Wetland Section 404 Corps/CCC Waters

The Study Area contains "non-wetland waters" which are regularly inundated and which may be subject to tidal influence. All tidally influenced areas within the Study Area that occur below the HTL fall under Corps Section 404 jurisdiction; areas below MHW fall under Corps Current Section 10 jurisdiction; areas below the Top of Bank fall under CDFG jurisdiction. Ballona Creek, which covers approximately 55.3 acres, makes up the majority of tidal waters present in the Study Area. This feature is a channelized, historic creek that is directly connected to Santa Monica Bay and is tidally influenced throughout the Study Area. In addition, several tidal channels carry waters from Ballona Creek into Area B through culverts under the creek levee and under the major roads that bisect the Study Area. Tide gates at the culverts mute the tidal flow along the channels. Within the Study Area, Ballona Creek and its associated tidal channels were mapped as Current Section 10 tidal waters and CDFG jurisdictional habitat.

Open water in the Marina Ditch is also tidal. The ditch is a straight, unlined, trapezoidal, man-made channel which flows west from Area C, through a culvert under Lincoln Boulevard, and out to Marina Del Rey via a culvert under Fiji Way. It receives tidal influence from the Marina and appears to convey surface runoff and stormwater flow from adjacent lands. Open water was present throughout the portion of the Marina Ditch that runs through Area A and the western portion of Area C. Beyond its upstream boundary, the ditch continues as a vegetated wetland through Area C.

The Study Area contains additional "non-wetland waters", as defined by the Corps, which are irregularly inundated. The western portion of Area B contains large, unvegetated salt flats which are visible in aerial imagery. Tide gates connect the Area B tidal channels to Ballona Creek, and incoming tides bring water up the channels and over the flats, which become submerged daily (PWA 2006). This habitat lacks vegetation over more than 95 percent of its area; therefore, it does not meet the definition of a Corps jurisdictional wetland. It is an aquatic feature with direct connection to navigable, "waters of the U.S." and is under Corps jurisdiction as potential "non-wetland waters of the U.S." The elevation of this feature falls between MHW and HTL (PWA 2008); therefore, it is considered to be Section 404 waters, but not Current Section 10 waters.

Each of these features considered "non-wetland waters" under Corps jurisdiction also fall under CCC jurisdiction as potential wetlands. The features meet, at a minimum, the parameter for wetland hydrology; therefore, 83.0 acres of other waters was added to the 195.5 acres of vegetated CCC wetlands in calculating total wetland acreage under potential CCC jurisdiction (Table 2).

5.1.3 Historic Section 10 Waters of the U.S.

A depiction of historic conditions at the Ballona Wetlands Study Area was created for the Ballona Wetlands Feasibility Report (PWA 2008) based on topographical sheets (T-sheets) produced in the 1870s. The Historical Conditions figure of this report shows historic tidal sloughs in Areas A, B and C, and marsh/wetland habitat and sand islands scattered throughout the current Study Area. The historic tidal sloughs are assumed to have occurred below the MHW line and would therefore be considered potential Historic Section 10 waters. Current T-sheets for the Study Area are not available in digital format and therefore could not be used to confirm the current elevations of historic slough areas. Thus, areas which were mapped as tidal sloughs in the 1870s are assumed to be potential jurisdictional Historic Section 10 waters. Potential Historic Section 10 waters are depicted in Figure 2, which was adapted from the Historical Conditions figure discussed above.

5.2 Difficult Wetland Situations in the Arid West

The utilization of the site as a dredge material disposal area has resulted in the placement of fill throughout the Study Area, particularly in Areas A and C. The placement of fill may have accounted for the lack of hydric soil indicators observed at sample point 1W. Although this area did not meet the hydric soil indicators for problematic hydric soils, the hydric soil indicators may have not yet formed due to the placement of fill or manipulation of the soil in the past or due to the high salinity content of the soil. As a result, WRA classified soil samples composed mainly of fill material as problematic and looked for other wetland indicators in these areas. Areas that appeared to pond for long duration or showed other clear signs of wetland hydrology and vegetation were mapped as wetland habitat. In addition, soil samples which appeared to contain recent redoximorphic features such as oxidized rhizospheres within the fill material were also considered hydric. Based on this methodology, sample point 1W was determined to represent a wetland area potentially under Corps and CCC jurisdiction.

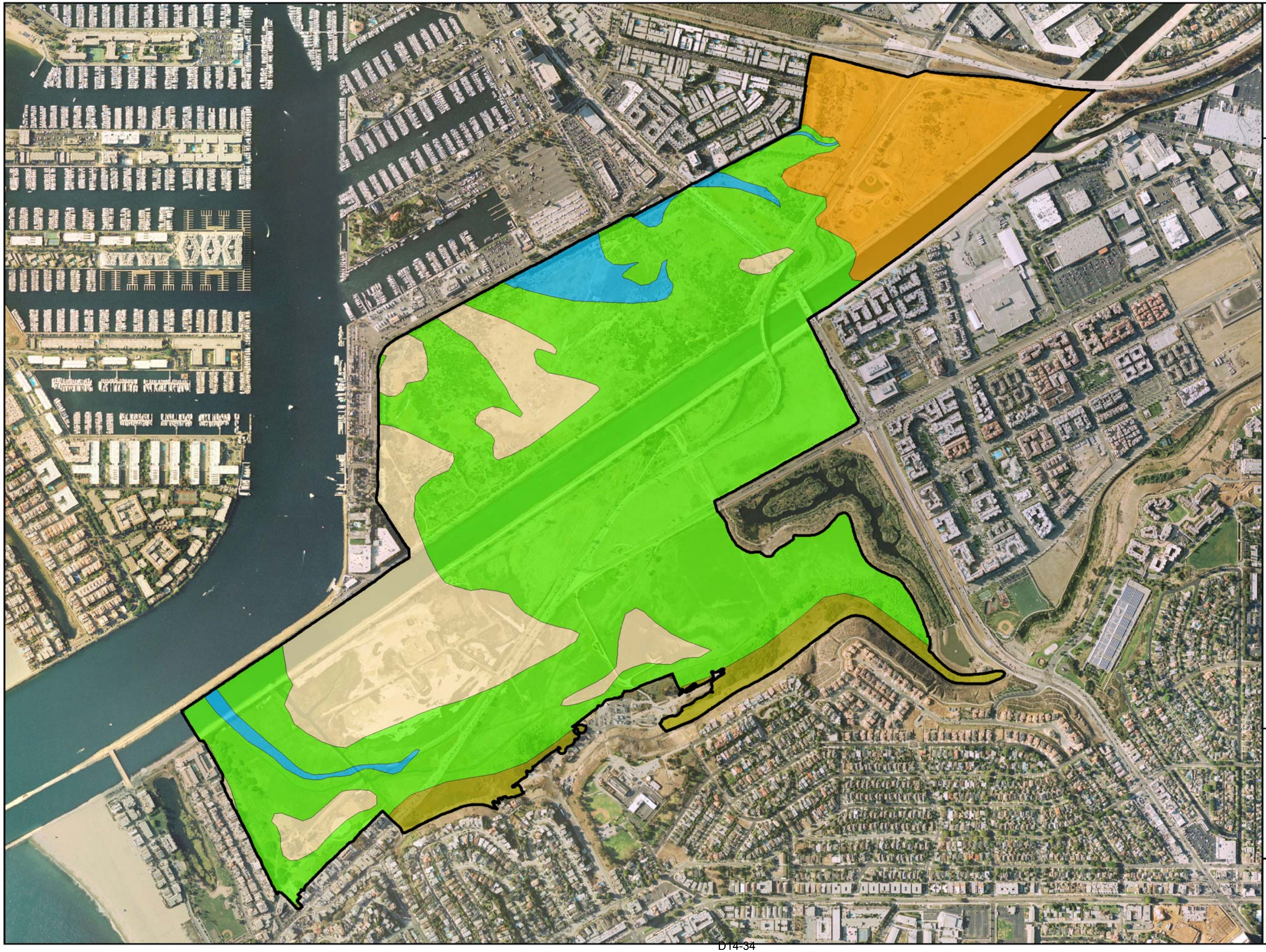
In addition to disturbed soils, the Study Area contains aggressive, invasive plant species that are considered problematic vegetation. Invasive species have been known to out-compete wetland-associated plant species, particularly in disturbed areas. Sea fig and pampas grass (UPL) were observed within the Study Area, and both are classified as highly invasive upland species (Cal-IPC 2010). These species appear to have invaded wetland habitats within the Study Area. Sample points 13W, 15W, and 16W were dominated by invasive upland species but displayed strong indicators of hydrology and hydric soils. In these areas, vegetation was not a useful indicator of wetland boundaries and was considered problematic. Areas within the Ballona Wetlands that were dominated by aggressive, invasive vegetation, but met hydric soil and wetland hydrology criteria, were delineated as Corps and CCC jurisdictional wetlands. Problematic vegetation was noted on data forms for sample points in which it occurred (Appendix A).

5.3 Areas Exempt from Section 404 Jurisdiction

Based upon our previous experience with the Corps and our understanding that wetland habitat separated from navigable waters by levees are regulated features, we believe that all of the features mapped without a delineated connection to a water or wetland feature (i.e., wetland features that appear to be “islands” within upland habitat) on the site have a nexus to a navigable water (sub-surface flow or Historic or Current Section 10) and are likely regulated under by the Corps (and the CCC); however, ultimate jurisdiction lies with the regulatory agency.

5.4 Comparison of Past and Present Delineation Results

As described above, several delineations of the study area have been conducted over the past three decades. The following discussion presents a comparison of the results of the Sanders 1987, Sanders 2000, and WRA 2010 delineations. The purpose of this comparison is to



wra
ENVIRONMENTAL CONSULTANTS
2169-G East Francisco Blvd.
San Rafael, CA 94901
(415) 454-8868 Phone
(415) 454-0129 Fax

Ballona Creek Wetlands Ecological Reserve

Marina Del Rey, California

Figure 2. Historic Habitat Features within the Project Area

Legend

- Project Area: (604.9 acres)
- Coastal Plain: (73.1 acres)
- Marsh: (372. 7 acres)
- Sand: (114.4 acres)
- Sand Hills: (24.8 acres)
- Potential Historic Section 10 Waters: (19.7 acres)

N W E S

0 365 730 1,460
Feet

Map Date: May 2010
Map By: Sundaran Gillespie
Filepath: I:\ACAD2000\00016-3\GIS\ArcMap\Historic.mxd

demonstrate any physical or environmental changes that may have occurred between delineation visits. Also, it will provide an explanation for the differences in acreages of wetlands and waters presented in the results for each delineation report.

The study area boundaries differed in each study: in 1987, Areas A, B, C and D were delineated, and Areas A, B and C were delineated for the present delineation. Only Area A and a large portion of Area B (excluding the approximately 61-acre area north and east of the Jefferson/Culver intersection, referred to as Area B2 in Appendix A) were delineated in 2000; therefore, the study area from 2000 is the only area where all three delineations overlap and can be compared. Acreages have been adjusted from the 1987 and 2010 reports to exclude Area C and D, as well as the northeastern corner of Area B, from the Ballona Wetlands Study Area total, and the results are presented for comparison in Table 8.

The main differences in wetland acreages between the 1987 and 2000 delineations have been attributed to the blockage of Centinela Ditch in the southern portion of Area B (referred to as Area B3 in Appendix A). Over the 13-year period between delineations, the ditch was blocked

Table 8. Comparison of Corps-jurisdictional wetland and waters acreages reported in 1987, 2000, and 2010.

Area	Delineation Report	Corps-jurisdictional Wetlands (acres)	Corps-jurisdictional Non-Wetland Waters (acres)	Non-Jurisdictional Uplands (acres)	Total Study Area (acres)
Area A	Sanders 1987	9.83	0	129.17	139
	Sanders 2000	8.08	0	130.92	139
	WRA 2010	7.4	0.4	142.0	150
Area B*	Sanders 1987	130.58	21.5	98.72	250.8
	Sanders 2000	116.81	21.9	112.09	250.8
	WRA 2010	143.4	27.2	171.7	254
Area C	Sanders 1987	1.80	0	83.2	85
	Sanders 2000	-	-	-	-
	WRA 2010	2.3	0.1	82.7	85
Combined Ballona Wetlands Study Area**	Sanders 1987	140.81	21.5	227.49	389.8
	Sanders 2000	124.89	21.9	243.01	389.8
	WRA 2010	157.03	27.6	219.18	403.81

* Excluding the approximately 61-acre area north of Jefferson Boulevard and east of the Jefferson/Culver intersection (Area B2).

** The total overlapping study area includes Area A and the majority of Area B, excluding Area B2 (Appendix A). Area A and the western portion of Area B are the only areas which overlap completely and can be compared across all three delineation reports; Area C and the eastern portion of Area B were not delineated in the Sanders 2000 study.

by the expansion of the alluvial fan east of Gas Company Road and south of Jefferson Boulevard. By 2000, the ditch no longer conveyed water under Gas Company Road west to the southwestern portion of Area B, and more water pooled immediately east of the road than in 1987. This change in hydrology resulted in a loss of approximately 13.77 wetland acres in southern Area B and a shift in the wetland vegetation to a more "water-tolerant" community consisting of common cattail and bulrush (*Scirpus robustus*, OBL) east of Gas Company Road. The remaining differences in wetland and waters acreages between 1987 and 2000 can largely be attributed to seasonal vegetation community shifts, which are discussed in Section 3.1.3.

The majority of differences in wetland and waters acreages between 2000 and 2010 can accounted for by shifts in vegetation communities and changes in methods applied, rather than major changes in topography or other physical conditions. The most pronounced increase in wetlands delineated from 2000 to 2010 occurs in Area B, west of the Jefferson/Culver intersection and south of Culver Boulevard (Area B3 in Appendix A). This area supports vast populations of problematic hydrophytic species, namely sea fig, which was likely mapped as uplands in 2000 due to differences in survey methodology and/or changes in the invasive status of problematic plant species over the 10-year time lapse. In addition to the areas of problematic vegetation observed in 2010, there were large saltgrass-dominated areas where the saltgrass was growing over a layer of dead sea fig, which was presumably the dominant species here in recent history. As described in Section 3.1.3 above, vegetation community shifts are common in this type of habitat and may lead to differences in wetland delineation results over years or even between seasons within the same year.

6.0 POTENTIAL CORPS, CCC, AND CDFG JURISDICTION

The Ballona Wetlands Study Area has 153.2 acres of potential Corps wetlands and 83 acres of non-wetland waters that will potentially be considered jurisdictional under Section 404 of the Clean Water Act (the ultimate jurisdictional determination lies with the regulatory agency, in this case, the Corps). Tidal waters are also considered potentially jurisdictional Current Section 10 waters, and the majority of the site may be considered Historic Section 10 waters under Section 10 of the Rivers and Harbors Act. The wetland areas were typically either seasonal wetlands or emergent marsh dominated by hydrophytic vegetation with FAC, FACW and OBL classified plants. They also contained hydric soil and wetland hydrology indicators. In addition, these areas are tributary to a navigable “waters of the U.S.” and therefore meet the definition of jurisdictional wetlands and waters under Section 404 of the Clean Water Act.

The Study Area contains 278.5 acres that will potentially be considered CCC jurisdictional wetlands under the California Coastal Act and the Coastal Zone Management Act. These wetland areas met one to three of the wetland parameters defined by the Corps. They include open water, Corps jurisdictional wetlands (which met all three wetland parameters), and areas that showed signs of wetland hydrology and/or hydric soils but were dominated by upland vegetation.

The Study Area contains 150.03 acres that are potentially jurisdictional features under Sections 1600 - 1616 of the California Fish and Game Code. These features include all willow (*Salix* spp.) vegetation patches, slough channels, or areas with tidal flow and their “contributing watershed” observed within the Study Area.

This delineation is based on conditions observed at the time of the field surveys conducted in March and October 2010.

7.0 REFERENCES

[CAL-IPC] California Invasive Plant Council. Invasive Plant Inventory. http://www.cal-ipc.org/ip/inventory/index.php. Accessed April 2010.

[CIMIS] California Irrigation Management Information System. 2010. Daily Precipitation Data Santa Monica Station (#99). Department of Water Resources Office of Water Use Efficiency. Wwwcimis.water.ca.gov.

Converse Consultants. 1982. Preliminary Conclusions on Wetland Soil Study, Quadrants I, II, and III, Playa Vista, California. Prepared for Howard Hughes Properties, Los Angeles, CA.

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Department of the Army, Waterways Experiment Station, Vicksburg, Mississippi 39180-0631.

Federal Register. November 13, 1986. Department of Defense, Corps of Engineers, Department of the Army, 33 CFR Parts 320 through 330, Regulatory Programs of the Corps of Engineers; Final Rule. Vol. 51, No. 219; page 41217.

Fruit Growers Laboratory. 1982. Soil Analyses – Summa Corporation's Culver City Property. Prepared for Howard Hughes Properties, Los Angeles, CA.

GretagMacBeth. 2000. Munsell Soil Color Charts, revised washable edition.

Henrickson. 1991. Botanical Resources of Playa Vista, DRAFT. Prepared for Maguire-Thomas Partners, Playa Vista, Los Angeles, CA.

McLaren Environmental Engineering. 1987. Water Level Measurements: 1986-1987. Prepared for Howard Hughes Partners, Los Angeles, CA.

[NRCS] National Resource Conservation Service. 2010. WETS Table Data Los Angeles County, California. ftp://ftp.wcc.nrcs.usda.gov/support/climate/wetlands/ca.

Newling, C. J. and R. F. Theriot. 1988. DOTS Technical Assistance to Los Angeles District, Playa Vista. Memorandum For Record, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS. 29 April 1988.

[PWA] Philip Williams & Associates, LTD. 2006. Ballona Wetland Existing Conditions Draft Report. Prepared for: California State Coastal Conservancy.

[PWA] Philip Williams & Associates, LTD. 2008. Ballona Wetlands Restoration Feasibility Study. Prepared for: California State Coastal Conservancy.

Reed, P. B., Jr. 1988. National list of plant species that occur in wetlands: California (Region 0). U.S. Fish and Wildlife Service Biological Report 88 (26.10).

Sanders, D. R., Sr. 1987. Determination of Waters of the United States in Areas A, B, and C of Playa Vista. Prepared for Howard Hughes Properties, Los Angeles, CA.

Sanders, D. R., Sr. 1989. Delineation of "Waters of the United States" in the Portion of Centinela Ditch Located Within Area D of Playa Vista. Letter Report from D.R. SANDERS AND ASSOCIATES, INC. to Mr. William L. Want, Utica, MS.

Sanders, D. R., Sr. 2000. Delineation of "Waters of the United States" of the Playa Vista Phase II Federal Project, Los Angeles, California. Prepared for Playa Capital Company, LLC, Los Angeles, CA.

Shapiro and Associates. 1980. Ballona Creek Wetlands Boundary Study. Prepared for Howard Hughes Properties, Los Angeles, CA.

Straw, W. Thomas. 1987. Hydrology of Areas A, B, and C of Playa Vista. Prepared for Howard Hughes Properties, Los Angeles, CA.

Straw, W. Thomas. 2000. Hydrologic Study of Areas A, B, and C at Playa Vista and the Hydrology of Playa Vista Area D. Prepared for Playa Capital Company, LLC, Los Angeles, CA.

[Corps] United States Army Corps of Engineers. 2005. Regulatory Guidance Letter No. 05-05. Ordinary High Water Mark Identification. December 7.

[Corps] United States Army Corps of Engineers. 2008a. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). September.

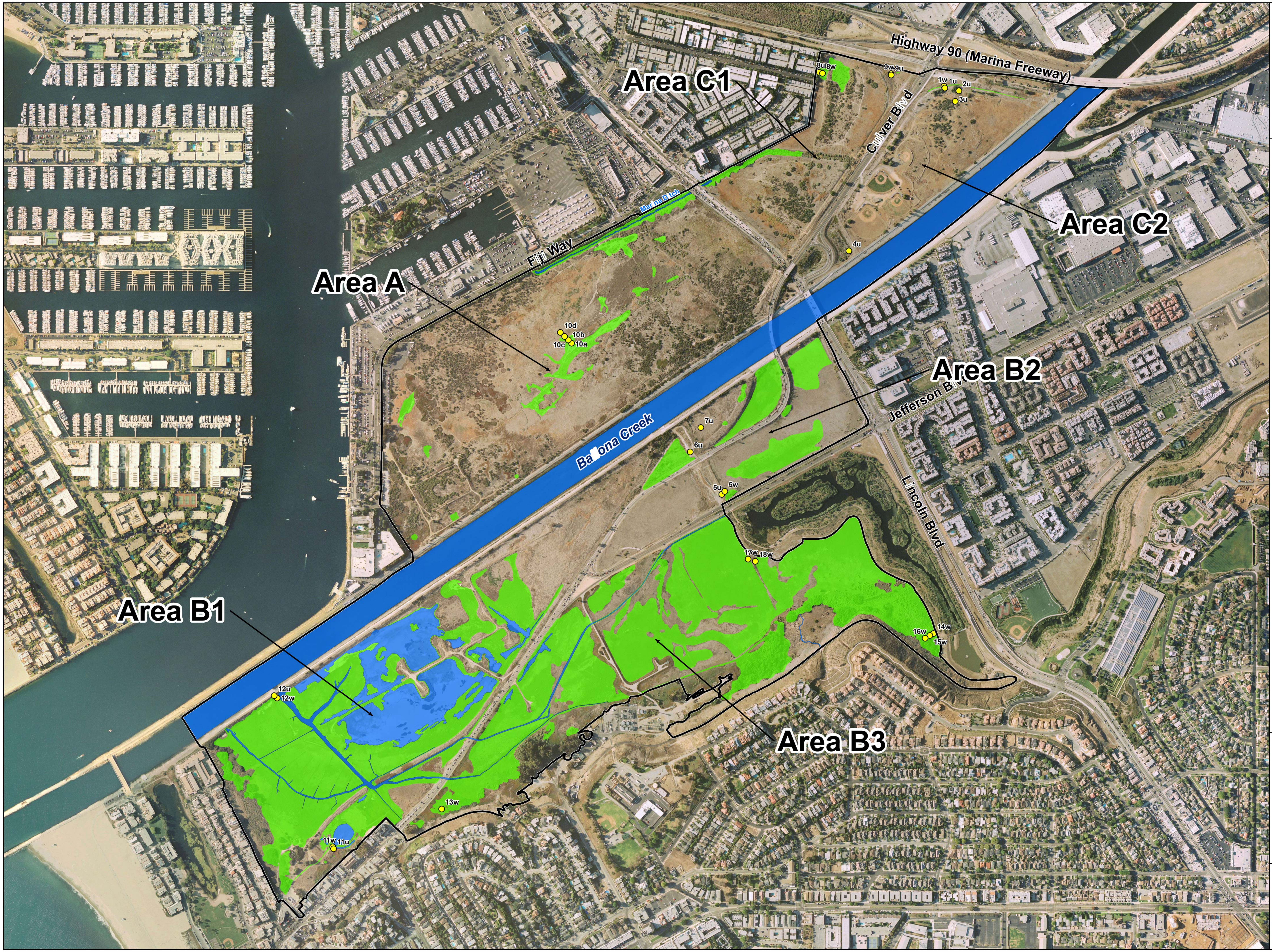
[Corps] United States Army Corps of Engineers. 2008b. Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region. April.

[USDA] United States Department of Agriculture, Natural Resources Conservation Service. 2010a. Web Soil Survey of Los Angeles County, California. In cooperation with the University of California Agricultural Experiment Station.

[USDA] United States Department of Agriculture, Natural Resources Conservation Service. 2010b. Official List of US Hydric Soils.

[USGS] United States Geological Survey. 1981. Venice. 7.5-minute topographic map.

Appendix A - Preliminary Section 404 Jurisdictional Map and Data Sheets



ENVIRONMENTAL CONSULTANTS
2169-G East Francisco Blvd.
San Rafael, CA 94901
(415) 454-8868 Phone
(415) 454-0129 Fax

Ballona Creek Wetlands Ecological Reserve

Marina Del Rey, California

Appendix A. Preliminary Delineation of United States Army Corps of Engineers Jurisdictional Areas

Legend

- Project Area: (604.9 acres)
- Sample Point
- Potential Non-Wetland Waters: (83.0 acres)
- Potential Wetland: (153.2 acres)
- Upland Area: (368.7 acres)

N
W E
S

0 400 800 1,600
Feet
1 inch = 400 feet

Map Date: April 2010
Map By: Sundaran Gillespie
Base Source: source, date
Filepath: I:\ACAD2000\00016-3\GIS\ArcMap\CorpsDelin.mxd

Appendix B - Preliminary California Coastal Act Jurisdictional Map

wra
ENVIRONMENTAL CONSULTANTS
2169-G East Francisco Blvd.
San Rafael, CA 94901
(415) 454-8868 Phone
(415) 454-0129 Fax

Ballona Creek Wetlands
Ecological Reserve

Marina Del Rey,
California

**Appendix B.
Preliminary Delineation
of California Coastal
Commission
Jurisdictional
Areas**

Legend

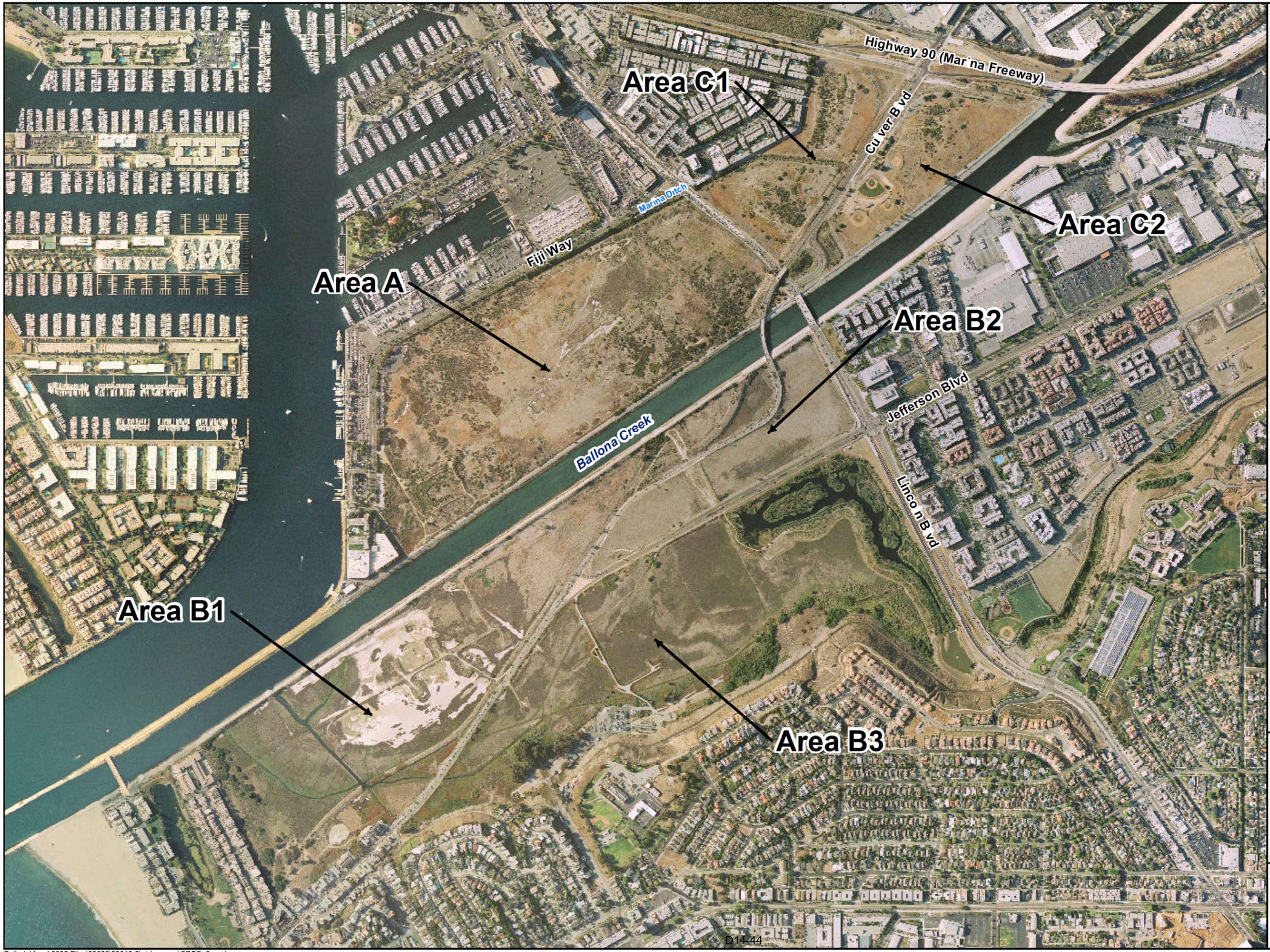
- Project Area: (604.9 acres)
- Sample Point
- Potential Non-Wetland Waters: (83.0 acres)
- Potential Wetland: (195.5 acres)
- Upland Area: (326.4 acres)

N
W E
S

0 400 800 1,600
Feet
1 inch = 400 feet

Map Date: April 2010
Map By: Sundaran Gillespie
Base Source: County of LA
Filepath: I:\ACAD2000\00016-3\GIS\ArcMap\CCCDelin.mxd

Appendix C - Preliminary Section 1602 Jurisdictional Map



wra
ENVIRONMENTAL CONSULTANTS
2169-G East Francisco Blvd.
San Rafael, CA 94901
(415) 454-8868 Phone
(415) 454-0129 Fax

Ballona Creek Wetlands Ecological Reserve

Marina Del Rey, California

Appendix C. California Department of Fish and Game Jurisdictional Areas

Legend

Project Area: (604.9 acres)

CDFG Jurisdiction: (150.03 acres)

N W E S

0 375 750 1,500

Feet

Map Date: January 2011
Map By: Sundaran Gillespie

Path: L:\Acad 2000 Files\00000\00016-3\gis\arcmap\CDFG_2.mxd

Appendix D - Representative Photographs of the Study Area

Top: Area A. Wetland sample point 10a was dominated by pickleweed, annual bluegrass, and mudflat.
Bottom: Area A. Upland sample point 10d was dominated by non-native upland grass species.

wra ENVIRONMENTAL CONSULTANTS

Top: Area A. Garland daisy dominated the berm surrounding Marina Ditch (foreground); saltbush and mudflat dominate wetlands outside the berm in the northeast.
Bottom: Patches of alkali heath were found throughout Areas A, B, and C.

wra
ENVIRONMENTAL CONSULTANTS

Top: Area B. Wetland sample point 12w occurs in estuarine marsh dominated by pickleweed species.
Bottom: Area B. Tidal channels bring muted tidal flow from Ballona Creek to estuarine marsh habitat in Area B.

wra ENVIRONMENTAL CONSULTANTS

Top: Area B. Sample points 17w and 18w represent the expansive central section of Area B, which is dominated by estuarine marsh.
Bottom: Area B. Soil pit from sample point 13w demonstrates wetland hydrology and is representative of pits throughout this Area.

WRA ENVIRONMENTAL CONSULTANTS

Top: Area B. Sample point 13w occurs in marsh habitat, bordered to the south by sand dunes. Between living plants, dead sea fig covered the ground.
Bottom: Area B. Near point 13w, saltgrass occurs with sea fig, which is considered problematic vegetation.

wra
ENVIRONMENTAL CONSULTANTS

Top: Area B. Sample point 11w represents a limited area adjacent to open water that was dominated by brass buttons and toad rush on sandy soils.
Bottom: Area B. Sample point 11u occurred on sand dunes which were dominated by non-native, invasive plant species.

wra
ENVIRONMENTAL CONSULTANTS

Top: Area B. Sample point 14w was dominated by cattail and surrounded to the north, west and south by pampas grass.
Bottom: Area B. Pampas grass, considered problematic vegetation, occurred with hydrophytic vegetation in wetland conditions throughout the Study Area.

wra ENVIRONMENTAL CONSULTANTS

Top: Area B. Sample point 7u occurred in a basin surrounded by berms and fields of mustard. Observations of biotic crust potentially qualify this area to be a CCC jurisdictional wetland.
Bottom: Area B. Sample point 6u was taken on an upland berm with disturbed soils containing substantial amounts of dredge fill.

wra
ENVIRONMENTAL CONSULTANTS

Top: Area C. Sample point 1w represents the drainage channel along the northeastern boundary of Area C.
Bottom: Area C. Mule fat stands were observed in upland habitat throughout the Study Area and were mapped as potentially non-jurisdictional features.

wra
ENVIRONMENTAL CONSULTANTS

Top: Ballona Creek, a tidally influenced and channelized water feature, runs through the middle of the Study Area.
Bottom: Main tidal channel in Area B connects to Ballona Creek through culverts under the creek's levee.

wra ENVIRONMENTAL CONSULTANTS

This page intentionally left blank

Appendix E - Plant Species Observed in the Study Area

Family	Scientific Name	Common Name	Wetland Indicator Status
Plant species documented from the Ballona Wetlands[1] Project Site. Species names given according to Hickman (1993) or Jepson Interchange (2010). Old names (Hickman 1993) are given in parentheses, as needed.			
DICOTS			
Aizoaceae	*Aptenia cordifolia*	Baby sun rose	UPL
Aizoaceae	*Carpobrotus chilense*	Sea-fig	UPL
Aizoaceae	*Carpobrotus edulis*	Sour-fig (Hottentot-fig)	UPL
Aizoaceae	*Delosperma litorale*	Seaside delosperma	UPL
Aizoaceae	*Malephora crocea*	Red-flowered iceplant	UPL
Aizoaceae	*Mesembryanthemum crystallinum*	Crystalline iceplant	UPL
Aizoaceae	*Mesembryanthemum nodiflorum*	Slender leaf iceplant	UPL
Aizoaceae	*Sesuvium verrucosum*	Western sea-purslane	FACW
Aizoaceae	*Tetragonia tetragonioides*	New Zealand spinach	UPL
Amaranthaceae	*Amaranthus albus*	White tumbleweed	FACU
Amaranthaceae	*Amaranthus californicus*	Amaranth/Ca. pigweed	FACW
Amaranthaceae	*Amaranthus deflexus*	Pigweed	UPL
Amaranthaceae	*Amaranthus tamariscanus*	Indehiscent pigweed	FACU
Amaryllidaceae	*Narcissus tazetta*	Paper white narcissus	UPL
Anacardiaceae	*Malosma laurina (Rhus laurina)*	Laurel sumac	UPL
Anacardiaceae	*Rhus integrifolia*	Lemonade berry	UPL
Anacardiaceae	*Schinus molle*	Peruvian pepper tree	UPL
Anacardiaceae	*Schinus terebinthifolius*	Brazilian pepper tree	UPL

[1] Species list adapted from 08/18/2006 Ballona Wetlands Floral Compendium

Family	Scientific Name	Common Name	Wetland Indicator Status
Apiaceae	*Apium graveolens*	Celery	FACW
Apiaceae	*Apium leptophyllum*	Marsh parsley	UPL
Apiaceae	*Conium maculatum*	Poison hemlock	FACW
Apiaceae	*Foeniculum vulgare*	Fennel	FACU
Apocynaceae	*Nerium oleander*	oleander	UPL
Araliaceae	*Hedera canariensis*	Algerian ivy	UPL
Asteraceae	*Ambrosia acanthicarpa*	Ragweed/Annual bursage	UPL
Asteraceae	*Ambrosia chamissonis*	Ragweed/Beach bur	UPL
Asteraceae	*Ambrosia psilostachya*	Western ragweed	FAC
Asteraceae	*Artemisia californica*	California sage brush	UPL
Asteraceae	*Artemisia douglasiana*	California/Douglas' mugwort	FACW
Asteraceae	*Artemisia dracunculus*	Dragon sagewort/Tarragon	UPL
Asteraceae	*Symphyotrichum subulatum* var. *ligulatum*	Marsh aster/Slender aster	UPL
Asteraceae	*Baccharis pilularis*	Coyote brush	UPL
Asteraceae	*Baccharis salicifolia*	Mule fat	FACW
Asteraceae	*Brickellia californica*	Brickellbush	FACU
Asteraceae	*Centaurea melitensis*	Tocalote	UPL
Asteraceae	*Centaurea repens*	Russian knapweed	UPL
Asteraceae	*Chaenactis glabriuscula*	Yellow chaenactis	UPL
Asteraceae	*Chamomilla suaveolens*	Pineapple weed	UPL
Asteraceae	*Chondrilla juncea*	Skelton weed	UPL

Family	Scientific Name	Common Name	Wetland Indicator Status
Asteraceae	*Chrysanthemum coronarium*	Garland daisy	UPL
Asteraceae	*Cichorium intybus*	Chicory	UPL
Asteraceae	*Cirsium vulgare*	Bull thistle	UPL
Asteraceae	*Conyza bonariensis*	Flax-leaved horseweed	UPL
Asteraceae	*Conyza canadensis*	Horseweed	FAC
Asteraceae	*Conyza coulteri*	Sticky conyza	FAC
Asteraceae	*Cotula australis*	Cotula	UPL
Asteraceae	*Cotula coronopifolia*	Brass buttons	FACW
Asteraceae	*Encelia californica*	California bush sunflower	UPL
Asteraceae	*Ericameria ericoides (Haplopappus e.)*	Goldenbush/Mock	UPL
Asteraceae	*Ericameria pinifolia (Haplopappus p.)*	Goldenbush	UPL
Asteraceae	*Euryops pectinatus*	Euryops daisy	UPL
Asteraceae	*Euthamia occidentalis (Solidago occidentalis)*	Western goldenrod	OBL
Asteraceae	*Filago sp.*	Filago	UPL
Asteraceae	*Gazania linearis (G. longiscapa)*	African daisy	UPL
Asteraceae	*Gazania scaposa*	African daisy	UPL
Asteraceae	*Gnaphalium bicolor*	Cudweed	UPL
Asteraceae	*Gnaphalium californicum*	California cudweed	UPL
Asteraceae	*Gnaphalium canescens* ssp. *beneolens*	Everlasting cudweed	UPL
Asteraceae	*Gnaphalium ramosissimum*	Pink cudweed	UPL
Asteraceae	*Gnaphalium stramineum (G. chilense)*	Chilean cudweed	FAC

Family	Scientific Name	Common Name	Wetland Indicator Status
Asteraceae	*Grindelia camporum (G. robusta)*	Gum plant	FACU
Asteraceae	*Hedypnois cretica*	Cretan weed	UPL
Asteraceae	*Helianthus annuus*	California sunflower	FAC
Asteraceae	*Deinandra fasciculata (Hemizonia f.)*	Common tarweed	UPL
Asteraceae	*Deinandra paniculata (Hemizonia p.)*	San Diego tarweed	FACU
Asteraceae	*Centromadia parryi australis (Hemizonia p.* ssp. *a.)*		
Asteraceae	*Heterotheca grandiflora*	Telegraph weed	UPL
Asteraceae	*Heterotheca villosa (Chrysopis v.)*	Hairy goldenaster	UPL
Asteraceae	*Hypochaeris glabra*	Smooth cat's ear	UPL
Asteraceae	*Jaumea carnosa*	Fleshy juamea	OBL
Asteraceae	*Lactuca eucra*	-	-
Asteraceae	*Lactuca serriola*	Prickly lettuce	FAC
Asteraceae	*Lactuca virosa*	Wild lettuce	UPL
Asteraceae	*Lessingia filaginifolia (Corethrogyne filaginifolia)*		
Asteraceae	*Malacothrix saxatilis*	Cliff aster	UPL
Asteraceae	*Osteospermum fruticosum (Dimorphotheca f.)*	FAC African daisy	UPL
Asteraceae	*Picris echioides*	Bristly ox-tongue	FAC
Asteraceae	*Senecio vulgaris*	Common groundsel	UPL
Asteraceae	*Silybum marianum*	Milk thistle	UPL
Asteraceae	*Solidago californica*	California goldenrod	UPL

UPL

Family	Scientific Name	Common Name	Wetland Indicator Status
Asteraceae	*Euthamia occidentalis (Solidago o.)*	Western goldenrod	OBL
Asteraceae	*Sonchus asper* ssp. *asper*	Prickly sow thistle	FAC
Asteraceae	*Sonchus oleraceus*	Common sow thistle	NI
Asteraceae	*Stephanomeria exigua*	Small wire lettuce	UPL
Asteraceae	*Stephanomeria virgata*	Tall stephanomeria	UPL
Asteraceae	*Taraxacum officinale*	Dandelion	FACU
Asteraceae	*Xanthium spinosum*	Spiny cocklebur	FAC
Asteraceae	*Xanthium strumarium*	Rough cocklebur	FAC
Bataceae	*Batis maritima*	Salt wort	OBL
Boraginaceae	*Cryptantha intermedia*	White forget-me-not/popcorn flower	UPL
Boraginaceae	*Heliotropium curassavicum (H. ocellatum)*	Salt heliotrope	UPL
Brassicaceae	*Brassica nigra*	Black mustard	UPL
Brassicaceae	*Brassica rapa*	Field mustard	UPL
Brassicaceae	*Cakile maritima*	Sea-rocket	FACW
Brassicaceae	*Coronopus didymus*	Lesser swine cress	UPL
Brassicaceae	*Erysimum insulare* ssp. *suffrutescens*	Island wallflower	UPL
Brassicaceae	*Guillenia lasiophylla*	California mustard	UPL
Brassicaceae	*Hirschfeldia incana (Brassica geniculata)*	Field mustard	UPL
Brassicaceae	*Lepidium latifolium*	Broad-leaved peppergrass	FACW
Brassicaceae	*Lepidium virginicum* var. *pubescens (L. pubescens)*	Tall peppergrass	FACU

Family	Scientific Name	Common Name	Wetland Indicator Status
Brassicaceae	*Lobularia maritima*	Sweet alyssum	UPL
Brassicaceae	*Raphanus sativus*	Wild radish	UPL
Brassicaceae	*Sinapis alba (Brassica cf. hirta)*	White mustard	UPL
Brassicaceae	*Sisymbrium altissimum*	Tumble-mustard	UPL
Brassicaceae	*Sisymbrium irio*	London rocket	UPL
Cactaceae	*Opuntia ficus-indica*	Indian-fig	UPL
Cactaceae	*Opuntia littoralis*	Coastal prickly pear	UPL
Caprifoliaceae	*Sambucus mexicana*	elderberry	FAC
Caryophyllaceae	*Polycarpon tetraphyllum*	Four-leaved allseed	UPL
Caryophyllaceae	*Spergula arvensis*	Spurry starwort	UPL
Caryophyllaceae	*Silene gallica*	Common catchfly/ windmill pink	UPL
Caryophyllaceae	*Spergularia bocconei*	Boccone's sand-spurrey	UPL
Caryophyllaceae	*Spergularia macrotheca*	Salt marsh sand-spurrey	FAC
Caryophyllaceae	*Spergularia marina*	Hairy sand-spurrey	OBL
Caryophyllaceae	*Spergularia villosa*	Sand-spurrey	UPL
Chenopodiaceae	*Atriplex californica*	California saltbush	FAC
Chenopodiaceae	*Atriplex lentiformis*	Saltbush	FAC
Chenopodiaceae	*Atriplex patula*	Spear oracle	FACW
Chenopodiaceae	*Atriplex rosea*	Tumbling oracle	FACU
Chenopodiaceae	*Atriplex semibaccata*	Australian saltbush	FAC
Chenopodiaceae	*Atriplex triangularis*	Spearscale	FACW

Family	Scientific Name	Common Name	Wetland Indicator Status
Chenopodiaceae	*Bassia hyssopifolia*	Bassia	FAC
Chenopodiaceae	*Beta vulgaris*	Beet	FACU
Chenopodiaceae	*Chenopodium album*	White goosefoot/ Lambs-quarters	FAC
Chenopodiaceae	*Chenopodium ambrosioides*	Mexican tea	FAC
Chenopodiaceae	*Chenopodium berlandieri*	Pitseed goosefoot	UPL
Chenopodiaceae	*Chenopodium botrys*	Jerusalem oak	FACU
Chenopodiaceae	*Chenopodium murale*	Shiny-leaf goosefoot	UPL
Chenopodiaceae	*Chenopodium pumilio*	Glomerate goosefoot	UPL
Chenopodiaceae	*Salicornia bigelovii*	Annual pickleweed	OBL
Chenopodiaceae	*Arthrocnemum subterminale*	Parish's pickleweed	OBL
Chenopodiaceae	*Sarcocornia pacifica (Salicornia virginica)*	Common pickleweed	OBL
Chenopodiaceae	*Salsola tragus*	Russian thistle	FACU
Chenopodiaceae	*Suaeda calceoliformis (S. depressa* var. *erecta)*	Horned sea-blite	FACW
Chenopodiaceae	*Suaeda esteroa*	Sea-blite	UPL
Chenopodiaceae	*Suaeda taxifolia*	Woolly sea-blite	FACW
Convolvulaceae	*Calystegia macrostegia* var. *cyclostegia*	Coast morning glory	UPL
Convolvulaceae	*Convolvulus arvensis*	Bindweed	UPL
Convolvulaceae	*Cressa truxillensis* var. *vallicola*	Alkali weed	FACW
Convolvulaceae	*Dichondra occidentalis**	Western ponysfoot	UPL
Crassulaceae	*Crassula argentea*	Jade plant	UPL

Family	Scientific Name	Common Name	Wetland Indicator Status
Crassulaceae	*Crassula connata*	Pygmy weed	FAC
Cucurbitaceae	*Citrullus lanatus*	Watermelon	UPL
Cucurbitaceae	*Cucurbita foetidissima*	Calibazilla	UPL
Cupressaceae	*Cupressus arizonica* ssp. *arizonica*	cypress	UPL
Cuscutaceae	*Cuscuta californica*	California dodder	UPL
Cuscutaceae	*Cuscuta indecora*	Big-seed alfalfa dodder	UPL
Cuscutaceae	*Cuscuta pentagona (C. campestris)*	Five-angled dodder	UPL
Cuscutaceae	*Cuscuta salina*	Saltmarsh dodder	UPL
Euphorbiaceae	*Chamaesyce albomarginata*	Rattlesnake weed	FACU
Euphorbiaceae	*Chamaesyce maculata*	Spotted spurge	UPL
Euphorbiaceae	*Chamaesyce polycarpa*	Smallseeded sandmat	UPL
Euphorbiaceae	*Chamaesyce serpens*	Matted sandmat	UPL
Euphorbiaceae	*Croton californicus*	California Croton	UPL
Euphorbiaceae	*Euphorbia esula*	Leafy spurge	UPL
Euphorbiaceae	*Euphorbia peplus*	Petty spurge	UPL
Euphorbiaceae	*Ricinus communis*	Castor bean	FACU
Fabaceae	*Acacia longifolia*	Australian wattle	UPL
Fabaceae	*Acacia decurrens*	Green wattle	UPL
Fabaceae	*Acacia neriifolia*	Wattle	UPL
Fabaceae	*Albizia lophantha (A. distachya)*	Albizia	UPL
Fabaceae	*Astragalus trichopodus*	Ocean locoweed	UPL

Family	Scientific Name	Common Name	Wetland Indicator Status
Fabaceae	*Bauhinia variegata*	Orchid tree	UPL
Fabaceae	*Ceratonia siliqua*	Carob	UPL
Fabaceae	*Hoffmannseggia glauca*	Pig nut, Hog-potato	FACU
Fabaceae	*Lotus purshianus*	Spanish clover/Bird's foot trefoil	UPL
Fabaceae	*Lotus scoparius*	Deerweed	UPL
Fabaceae	*Lotus strigosus*	Strigose lotus	UPL
Fabaceae	*Lupinus bicolor*	Miniature lupine	UPL
Fabaceae	*Lupinus chamissonis*	Coastal bush lupine	UPL
Fabaceae	*Lupinus excubitus* ssp. *hallii*	Hall's lupine	UPL
Fabaceae	*Lupinus longifolius*	Longleaf bush lupine	UPL
Fabaceae	*Lupinus succulentus*	Arroyo lupine	UPL
Fabaceae	*Lupinus truncatus*	Lupine	UPL
Fabaceae	*Medicago polymorpha (M. hispida)*	California burclover	UPL
Fabaceae	*Melilotus albus*	White sweetclover	FACU
Fabaceae	*Melilotus indica*	Sourclover	FAC
Fabaceae	*Phaseolus limensis*	Large lima bean	UPL
Fabaceae	*Spartium junceum*	Spanish broom	UPL
Fagaceae	*Quercus agrifolia*	Coast live oak	UPL
Fagaceae	*Quercus x virginica*	Hybrid live oak	UPL
Frankeniaceae	*Frankenia salina*	Alkali heath	FACW
Geraniaceae	*Erodium botrys*	Storksbill/broad-lobed filaree	UPL

Family	Scientific Name	Common Name	Wetland Indicator Status
Geraniaceae	*Erodium cicutarium*	Storksbill	UPL
Geraniaceae	*Pelargonium zonale*	Garden Geranium	UPL
Grossulariaceae	*Ribes malvaceum*	Chaparral currant	UPL
Hamamelidaceae	*Liquidambar styraciflua*	liquidambar	UPL
Hydrophyllaceae	*Phacelia ramosissima* var. *austrolitoralis*	Branching phacelia	UPL
Juglandaceae	*Juglans regia*	English walnut	UPL
Lamiaceae	*Marrubium vulgare*	Horehound	FAC
Lythraceae	*Ammannia sp.*	Red stem	OBL
Lythraceae	*Lythrum hyssopifolium*	Hyssop loosestrife	FACW
Malvaceae	*Malacothamnus fasciculatus*	Bush mallow/Chaparral	UPL
Malvaceae	*Malva nicaeensis*	Bull mallow	UPL
Malvaceae	*Malva parviflora*	Cheeseweed mallow	UPL
Malvaceae	*Malvella leprosa*	Alkali mallow	FAC
Moraceae F	*Ficus carica*	Edible fig	UPL
Moraceae	*Morus alba*	White mulberry	NI
Myoporaceae	*Myoporum laetum*	Lollypop tree	UPL
Myrtaceae	*Eucalyptus camaldulensis*	Red gum	UPL
Myrtaceae	*Eucalyptus globulus*	Blue gum	UPL
Myrtaceae	*Eucalyptus tereticornis*	Forest red gum	UPL
Myrtaceae	*Eucalyptus viminalis*	Manna gum	UPL
Myrtaceae	*Luma apiculata (Eugenia sp.)*	temu	UPL

Family	Scientific Name	Common Name	Wetland Indicator Status
Nyctaginaceae	*Abronia umbellata*	Pink sand verbena	UPL
Oleaceae	*Fraxinus velutina*	Arizona/Velvet	FACW
Oleaceae	*Olea europaea*	Olive	UPL
Onagraceae	*Camissonia bistorta*	California sun cup	UPL
Onagraceae	*Camissonia cheiranthifolia* var. *suffruticosa*	Beach evening	UPL
Onagraceae	*Camissonia lewisii*	Lewis' evening primrose	UPL
Onagraceae	*Camissonia micrantha*	Miniture sun cup	UPL
Onagraceae	*Epilobium ciliatum*	Willow-herb	FACW
Onagraceae	*Oenothera elata* ssp. *hookeri*	Hooter's evening primrose	FACW
Onagraceae	*Oenothera elata* ssp. *hirsutissima*	Hairy evening primrose	FACW
Oxalidaceae	*Oxalis pes-caprae*	Bermuda buttercup	UPL
Papaveraceae	*Eschscholzia californica*	California poppy	UPL
Plantaginaceae	*Plantago lanceolata*	English plantain	FAC
Plantaginaceae	*Plantago major*	Common plantain	FACW
Plumbaginaceae	*Limonium californicum*	Sea lavender	OBL
Polygonaceae	*Eriogonum fasciculatum*	California buckwheat	UPL
Polygonaceae	*Eriogonum gracile*	Slender buckwheat	UPL
Polygonaceae	*Eriogonum parvifolium*	Dune buckwheat	UPL
Polygonaceae	*Polygonum arenastrum*	Common knotweed	FAC
Polygonaceae	*Polygonum lapathifolium*	Willow weed	OBL
Polygonaceae	*Rumex crispus*	Curly dock	FACW

Family	Scientific Name	Common Name	Wetland Indicator Status
Polygonaceae	*Rumex maritimus (Rumex fueginus)*	Golden dock	OBL
Polygonaceae	*Rumex salicifolius*	Willow dock	OBL
Primulaceae	*Anagallis arvensis*	Scarlet pimpernel	FAC
Ranunculaceae	*Clematis sp.*	clematis	UPL
Rosaceae	*Adenostoma fasciculatum*	Chamise	UPL
Rosaceae	*Heteromeles arbutifolia*	Toyon	UPL
Rosaceae	*Prunus persica*	Peach	UPL
Rosaceae	*Pyracantha sp.*	Firethorn	UPL
Rosaceae	*Rosa californica*	California rose	FAC
Rubiaceae	*Galium angustifolium*	Narrowleaf bedstraw	UPL
Salicaceae	*Populus fremontii*	Fremont cottonwood	FACW
Salicaceae	*Salix exigua (S. hindsiana)*	Narrow-leaved willow	OBL
Salicaceae	*Salix gooddingii*	Black willow	OBL
Salicaceae	*Salix laevigata*	Red willow	UPL
Salicaceae	*Salix lasiolepis*	Arroyo willow	FACW
Saururaceae	*Anemopsis californica*	Yerba mansa	OBL
Scrophulariaceae	*Verbascum virgatum*	Wand mullein	UPL
Scrophulariaceae	*Cordylanthus maritimus*	Bird's beak	OBL
Solanaceae	*Datura wrightii (D. meteloides)*	Jimsonweed	UPL
Solanaceae	*Lycium ferocissimum*	African boxthorn	UPL
Solanaceae	*Lycopersicon esculentum*	Tomato	UPL

Family	Scientific Name	Common Name	Wetland Indicator Status
Solanaceae	*Nicotiana glauca*	Tree tobacco	FAC
Solanaceae	*Petunia parviflora*	Wild Petunia	FACW
Solanaceae	*Solanum americanum (S. nodiflorum)*	Small-flowered nightshade	FAC
Solanaceae	*Solanum douglasii*	Douglas's Nightshade	FAC
Solanaceae	*Solanum nigrum*	Black nightshade	FACU
Solanaceae	*Solanum sarrachoides*	Hairy nightshade	UPL
Solanaceae	*Solanum xanti*	Chaparral nightshade	UPL
Tropaeolaceae	*Tropaeolum majus*	Garden nasturtium	UPL
Typhaceae	*Typha domingensis*	Southern Cattail	OBL
Typhaceae	*Typha latifolia*	Broad-leaved Cattail	OBL
Ulmaceae	*Ulmus parvifolia*	Chinese elm	UPL
Urticaceae	*Urtica dioica* ssp. *holosericea (U. holosericea)*	Hoary nettle	FACW
Urticaceae	*Urtica urens*	Dwarf nettle	UPL
Verbenaceae	*Verbena lasiostachys*	Common verbena	FAC
Verbenaceae	*Lantana camara*	Orange-flowered lantana	NI
Zygophyllaceae	*Tribulus terrestris*	Puncture vine	UPL
MONOCOTS			
Alismataceae	*Sagittaria montevidensis* ssp. *calycina*	Arrowhead	OBL
Arecaceae	*Phoenix canariensis*	Canary island date palm	UPL
Arecaceae	*Phoenix dactylifera*	Date palm	UPL
Arecaceae	*Washingtonia robusta*	Slender fan palm	UPL

Family	Scientific Name	Common Name	Wetland Indicator Status
Cyperaceae	*Carex praegracilis*	Clustered field sedge	FACW
Cyperaceae	*Cyperus eragrostis*	Galingale/Tall flat sedge	FACW
Cyperaceae	*Cyperus esculentus*	Yellow nutsedge	FACW
Cyperaceae	*Cyperus involucratus (C. alternifolius)*	Umbrella plant	OBL
Cyperaceae	*Eleocharis macrostachya*	Pale spike rush	OBL
Cyperaceae	*Eleocharis montevidensis*	Dombey's spike rush	FACW
Cyperaceae	*Schoenoplectus americanus (Scirpus a.)*	Olney bulrush	OBL
Cyperaceae	*Schoenoplectus californicus (Scirpus c.)*	California bulrush/Tule	OBL
Cyperaceae	*Bolboschoenus maritimus* ssp. *paludosus (Scirpus m.)*	Prairie burush	OBL
Cyperaceae	*Bolboschoenus robustus (Scirpus r.)*	Saltmarsh bulrush	OBL
Iridaceae	*Chasmanthe aethiopica*	Adams iris	UPL
Iridaceae	*Iris pseudacorus var. alba*	Horticultural iris	OBL
Juncaceae	*Juncus acutus* var. *leopoldii (J. a.* var. *sphaerocarpus)*	Spike-rush	FACW
Juncaceae	*Juncus balticus*	Wire rush	OBL
Juncaceae	*Juncus bufonius* var. *occidentalis (J. sphaerocarpus)*	rush	FACW
Juncaceae	*Juncus mexicanus*	Mexican rush	FACW
Juncaginaceae	*Triglochin maritima* (likely a misidentification of *T. concinnum)*	Arrow grass	OBL
Liliaceae	*Agave americana var. striata*	Giant agave	UPL
Liliaceae	*Agave attenuata*	Foxtail agave	UPL

Family	Scientific Name	Common Name	Wetland Indicator Status
Liliaceae	*Yucca gloriosa*	Spanish dagger	UPL
Liliaceae	*Aloe vera*	Medicinal aloe	UPL
Poaceae	*Agrostis viridis (A. semiverticillata)*	Bentgrass	OBL
Poaceae	*Agrostis stolonifera*	Redtop	FACW
Poaceae	*Arundo donax*	Giant reed grass	FACW
Poaceae	*Avena barbata*	Slender wild oat	UPL
Poaceae	*Avena fatua*	Wild oat	UPL
Poaceae	*Bromus catharticus (B. wildenovii)*	Rescue-grass	UPL
Poaceae	*Bromus diandrus*	Ripgut chess	UPL
Poaceae	*Bromus hordeaceus (B. mollis)*	Soft chess	FACU
Poaceae	*Bromus madritensis* ssp. *rubens*	Foxtail chess	UPL
Poaceae	*Bromus carinatus (B. marginatus)*	California brome	UPL
Poaceae	*Cortaderia selloana*	Pampas grass	UPL
Poaceae	*Cynodon dactylon*	Bermuda grass	FAC
Poaceae	*Digitaria sanguinalis*	Crabgrass	FACU
Poaceae	*Distichlis spicata*	Saltgrass	FACW
Poaceae	*Echinochloa crus-galli*	Barnyard grass	FACW
Poaceae	*Ehrharta erecta*	Upright veldt grass	UPL
Poaceae	*Festuca arundinacea*	Tall fescue	FAC
Poaceae	*Hordeum depressum*	Alkali barley	NI
Poaceae	*Hordeum murinum* ssp. *leporinum*	Wild barley	NI

Family	Scientific Name	Common Name	Wetland Indicator Status
Poaceae	*Hordeum vulgare*	Barley	UPL
Poaceae	*Lamarckia aurea*	Goldentop	UPL
Poaceae	*Leymus condensatus (Elymus c.)*	Giant ryegrass	FACU
Poaceae	*Leymus triticoides*	Alkali ryegrass	FAC
Poaceae	*Leptochloa uninervia*	Mexican sprangle top	FACW
Poaceae	*Lolium multiflorum*	Italian ryegrass	FAC
Poaceae	*Lolium perenne*	Perennial ryegrass	FAC
Poaceae	*Melica imperfecta*	Melic grass	UPL
Poaceae	*Monanthochloe littoralis*	Shoregrass	OBL
Poaceae	*Nassella cernua (Stipa cernua)*	Nodding Needlegrass	UPL
Poaceae	*Parapholis incurva*	Sickle grass	UPL
Poaceae	*Paspalum dilatatum*	Dallis grass	FAC
Poaceae	*Phalaris paradoxa*	Hood canary grass	UPL
Poaceae	*Piptatherum miliaceum (Oryzopsis miliacea)*	Smilo grass	UPL
Poaceae	*Poa annua*	Annual bluegrass	FACW
Poaceae	*Polypogon monspeliensis*	Rabbitsfoot grass	FACW
Poaceae	*Schismus barbatus*	Mediterranean grass	UPL
Poaceae	*Setaria gracilis (S. geniculata)*	Bristlegrass	FAC
Poaceae	*Sorghum halepense*	Johnsongrass	FACU
Poaceae	*Sorghum nutans*	Indian grass	UPL
Poaceae	*Stenotaphrum secundatum*	St. Augustine grass	FAC

Family	Scientific Name	Common Name	Wetland Indicator Status
Poaceae	*Vulpia myuros* var. *myuros (Festuca myuros)*	Fescue	UPL
Poaceae	*Vulpia myuros* var. *hirsuta (Festuca megalura)*	Foxtail fescue	UPL
Poaceae	*Spartina foliosa*	Cordgrass	OBL
Potamogetonaceae	*Ruppia maritima*	Ditch grass	OBL
Typhaceae	*Typha domingensis*	Southern Cattail	OBL
Typhaceae	*Typha latifolia*	Broad-leaved Cattail	OBL

APPENDIX D15
Jurisdictional Delineation Report, Potential Well Sites, Playa del Rey Storage Facility

This page intentionally left blank

December 10, 2013

Anthony A. Klecha
Principal Environmental Scientist
Southern California Gas Company
P.O. Box 30777
Los Angeles, CA 90030

Subject: Jurisdictional Delineation Report
Potential Well Sites, Playa del Rey Storage Facility

Dear Mr. Klecha:

This letter report documents the findings of a routine jurisdictional delineation conducted by ICF International (ICF) for the Southern California Gas Company (SoCalGas) at the Potential Well Sites at the Playa del Rey Storage Facility (project). The purpose of the delineation is to assess the limits of potential features subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), California Department of Fish and Wildlife (CDFW), and the California Coastal Commission (CCC) pursuant to Sections 404 and 401 of the Clean Water Act, Section 13260 of the Porter-Cologne Water Quality Control Act (California Water Code 13260[a]), Section 1602 of the California Fish and Game Code, and the California Coastal Act. Specifically, the delineation was conducted for the purpose of providing SoCalGas the location of potential jurisdictional resources within seven separate potential project footprints.

Project Location

The project site is located at an existing SoCalGas facility in Playa del Rey in Los Angeles County, California (Figure 1). The facility is found on the U.S. Geological Survey (USGS) 7.5-minute topographical map Venice quadrangle (dated 1964 and photorevised in 1981) within an un-sectioned portion of Township 2 South and Range 15 West (Figure 2). It is generally located northeast of the intersection of Falmouth Avenue and West 83rd Street (Figure 3).

Within the existing facility, the study area consists of seven separate potential project footprints. Sites 1 and 2 are located at the upper portion of the existing facility, located north of the intersection of Gulana Avenue and West 29th Street, and are approximately 150 feet above mean sea level (msl). Sites 3–7 are located at the lower portion of the existing facility, approximately 300 feet northwest of the upper facility, at the western terminus of Falmouth Street. These sites are located approximately 5 feet above msl. The coordinates for the approximate centerpoint for each of the seven potential sites are listed below (Table 1).

Table 1. Project Location on USGS 7.5 Minute Quadrangles

Site	Latitude	Longitude
1	33.962914°	-118.436739°
2	33.962875°	-118.437491°
3	33.963281°	-118.439935°
4	33.962849°	-118.440713°
5	33.964415°	-118.438851°
6	33.964864°	-118.436117°
7	33.965152°	-118.435449°

Methodology

The study area consisted of the seven separate potential project footprints, plus a 50-foot buffer around each footprint. However, where the potential project footprint or buffer extended into an area that had previously been subject to jurisdictional delineation by WRA Environmental Consultants (WRA), the study area for this delineation was reduced so that no overlap occurred. The findings for the previous delineation are documented in the Ballona Creek Wetlands Ecological Reserve Preliminary Delineation of Wetlands and Non-Wetland Waters, prepared by WRA and dated August 2011.

ICF senior biologist Paul Schwartz and senior regulatory specialist Megan Jameson conducted a routine jurisdictional delineation at the site on December 2, 2013, and Paul Schwartz conducted a follow-up visit on December 6, 2013. Prior to beginning the field delineation, a 200-scale color aerial photograph was analyzed to determine the locations of potential areas of USACE, RWQCB, CDFW and/or CCC jurisdiction. During the fieldwork, the study area was surveyed on foot. Jurisdictional limits were recorded onto a 200-scale color aerial photograph using visible landmarks and were mapped using a Trimble Yuma global positioning system (GPS) unit with a Trimble Pro XT receiver, which provided sub-meter accuracy. Common plant species observed were identified by visual characteristics and morphology in the field. Taxonomic nomenclature for plants follows *The Jepson Manual: Higher Plants of California*, 2nd edition (Baldwin et al. 2012).

Potentially jurisdictional features within the study area were evaluated for the presence of a definable channel and/or wetland vegetation, soils, and hydrology. The project area was analyzed for potential wetlands using the methodology set forth in the USACE 1987 Wetland Delineation Manual (Wetland Manual) (Environmental Laboratory 1987) and the 2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region Version 2.0 (Arid West Supplement) (USACE 2008a). Lateral limits of non-wetland waters were identified using field indicators of an Ordinary High Water Mark (OHWM) (USACE 2008b). Wetland indicator status for plants was determined using the Arid West 2013 Regional Wetland Plant List (USACE 2013).

For features potentially subject to USACE and RWQCB jurisdiction, non-wetland waters were delineated based on the presence of OHWM indicators. At each evaluation area, three criteria were considered to determine whether the sample point was within a wetland. The three criteria that must be fulfilled in order to classify an area as a jurisdictional USACE wetland (in normal conditions) are: (1) a predominance of hydrophytic vegetation, (2) the presence of hydric soils, and (3) the presence of wetland hydrology.

CDFW jurisdiction typically includes water features with a defined bed and bank and extent of associated riparian or wetland vegetation. Evaluation of potentially jurisdictional areas followed the guidance of relevant standard practices by CDFW personnel. Briefly, CDFW jurisdiction was delineated by measuring the outer width and length boundaries of potentially jurisdictional areas, consisting of the greater of either the top of bank measurement or the extent of associated riparian or wetland vegetation.

To identify CCC jurisdiction, the study areas were first evaluated for inclusion within the coastal zone. Sites 1 and 2 were not within the coastal zone; however, Sites 3–7 were within the coastal zone. Subsequently, CCC jurisdiction is identified using the same parameters listed above for USACE and RWQCB wetland determinations. However, while the USACE determines a feature to be a wetland only if it exhibits all three criteria (in normal conditions), the CCC determines a feature to be a wetland if it exhibits any of the three criteria. Therefore, any features within Sites 3–7 that exhibited any of the three USACE criteria listed above are considered a CCC wetland.

Environmental Setting

Sites 1 and 2 are located on top of the bluffs overlooking the Ballona Creek Wetland Ecological Reserve, approximately 150 feet above msl, and Sites 3–7 are located on the southern edge of the Ballona Reserve, approximately 5 feet above msl. Average annual rainfall for the study area (Santa Monica Pier, California) totals 12.62 inches per year (Western Regional Climate Center 2013).

The lower sites receive flows primarily through runoff from the adjacent bluffs and residential areas, both from rainfall and from nuisance flows such as irrigation. Furthermore, the lower sites are south of and adjacent to a low-lying, undeveloped area known as the Ballona Creek Wetlands, and north of the Ballona Creek Wetlands are the Ballona Channel and the Marina del Rey Marina. The upper facility is bounded on the north by a steep slope leading down to the lower facility and by residential properties to the south, east, and west. The lower facility is bounded by slopes along the southern side and the Ballona Creek Wetlands to the north, east, and west. The slope along the southern side of the lower facility supports the upper SoCalGas facility as well as residential properties at the east and west ends. The lower facility is adjacent to open areas mapped by the USFWS National Wetlands Inventory as Freshwater Emergent, Freshwater Forested/Shrub, and Estuarine and Marine, but the study areas specific to this delineation were not mapped as wetlands (USFWS 2013).

The SoCalGas facility has been in use since approximately the 1940s. Within the limits of the upper facility vegetation is limited to low-growing grasses such as Bermuda grass (*Cynodon dactylon;* FACU) and iceplant (*Carpobrotus edulis;* UPL) and intermittent trees such as eucalyptus (*Eucalyptus* sp.). Within the limits of the lower facility, vegetation is also limited to low growing grasses consisting chiefly of Bermuda grass, dallis grass (*Paspalum dilatatum;* FAC), and iceplant, with the exception of the southeast end of the facility. Within the southeast end of the lower facility, large stands of pampas grass (*Cortaderia selloana;* FACU) and arroyo willow (*Salix lasiolepis;* FACW) are found, as well as leafy spurge (*Euphorbia esula;* UPL), western goldentop (*Euthamnia occidentalis;* FACW), fennel (*Foeniculum vulgare;* UPL), and iceplant. Additional detail on the vegetation species identified at each site is provided below.

Results

Within the study areas for Sites 1, 2, and 3, no potential jurisdictional features were noted. Within Sites 4, 5, 6, and 7, features subject only to the jurisdiction of the CCC were identified based on the presence of hydrology and/or vegetation indicators (Table 2). Within Sites 4 and 6, the identified CCC jurisdiction was located within the 50-foot buffer; within Sites 5 and 7, the identified CCC jurisdiction was located within the proposed project footprint (Table 3). The findings for the study area at each site are listed, described in greater detail below, and shown in photos (attached Figures 4a–d and photo log).

The information and results presented herein document the investigation, best professional judgment, and conclusions of ICF. It is correct and complete to the best of our knowledge. However, all jurisdictional determinations should be considered preliminary until reviewed and approved by the regulatory agencies. In addition, it should be noted that the CCC generally requires 100-foot buffers to protect wetlands from effects of disturbance and to provide necessary habitat for species associated with wetlands (CCC 1994).

Table 2. Potential Agency Jurisdiction Within Study Area

Study Area Site #	USACE/RWQCB	CDFW	CCC Wetland
1	None	None	N/A
2	None	None	N/A
3	None	None	None
4	None	None	0.049 acre
5	None	None	0.012 acre
6	None	None	0.003 acre
7	None	None	0.088 acre

Table 3. Potential CCC Jurisdiction Within Proposed Project Footprint and Buffer Area

Study Area Site #	Proposed Project Footprint	Buffer Area	Total
4	N/A	0.049 acre	0.049 acre
5	0.012 acre	N/A	0.012 acre
6	N/A	0.003 acre	0.003 acre
7	0.004 acre	0.084 acre	0.088 acre

Site 1

The study area for Site 1 consists of a large open storage area, existing paved road, and surrounding disturbed, vegetated area. In addition to the open area, two structures are located within the study area: a tank and a brick building. The site slopes gently from east to west. The open storage area is covered with small rocks and is currently being used to store materials and equipment. Vegetation found in the study area consists of ruderal species such as iceplant, telegraph weed (*Heterotheca grandifolia;* UPL), rattlesnake weed (*Chamaesyce* sp.), acacia (*Acacia* sp.), castor bean (*Ricinus communis;* FACU), bermuda grass, fennel, and two eucalyptus trees.

No jurisdictional features were observed within the Site 1 study area (Figure 4a).

Site 2

The study area for Site 2 is located almost entirely within a developed portion of the existing gas facility that is already used for operations. The study area is mostly paved, except for small vegetated areas adjacent to roads and gates that support the same ruderal herbaceous species discussed above for Site 1.

No jurisdictional features were observed within the Site 2 study area (Figure 4a).

Site 3

The study area for Site 3 consists of an existing paved access road and two vegetated areas, one north and one south of the road. Each of the vegetated areas is occupied primarily by iceplant.

No jurisdictional features were observed within the Site 3 study area (Figure 4b; Wetland Data Form 3A).

Site 4

The study area for Site 4 consists of a paved, gravel and dirt access road and several adjacent vegetated open areas. The vegetated open areas within the fenced SoCalGas property consist primarily of ruderal species that include iceplant, pampas grass, bermuda grass, red-stemmed filaree (*Erodium cicutarium;* UPL), and telegraph weed. To the south of the SoCalGas property, within the study area, is an area with multiple slopes primarily covered in iceplant.

The east side of Site 4 is bound by a culvert and corrugated steel pipe that accepts flows from Falmouth Street and the adjacent residential neighborhood. The culvert is located between two headwalls, on a concrete pad, at the northern terminus of Falmouth Street, which is an asphalt road on a hill. The culvert opens into a large (18- to 24-inch) corrugated steel pipe that extends approximately 200 feet to the north, beyond the limits of the SoCalGas property. The corrugated steel pipe is located above the grade of the adjacent vegetated areas (between Sites 3 and 4) but is covered in vegetation and is not readily apparent without close examination.

At the time of the field visit, nuisance flows were running down Falmouth Street into the culvert and approximately 1–4 inches of sediment deposition was present, both at the initial debris blockers and at the entrance to the culvert. The deposited sediment was heavily vegetated with herbaceous species that can grow in one season. Species observed included dallis grass, umbrella sedge (*Cyperus esculentus;* FACW), leafy spurge, field mustard (*Hirschfeldia incana;* UPL), perennial ryegrass (*Festuca perenne;* UPL), wild radish (*Raphanus sativa;* UPL), horseweed (*Erigeron Canadensis;* FACU), and willow herb (*Epilobium ciliatum;* FACW). Although the vegetated areas met the hydrophytic vegetation requirements, the vegetation was growing atop of a few inches of sediment that was completely underlined by concrete. This area is generally considered a previously impacted area and would be scalped during a storm event. In addition, the immature form of the vegetation indicated that this wetland has only been established for one growing season, as no older, mature vegetation was observed and as any sediment and vegetation are probably regularly displaced by heavy flows following storm events. As such, this area was not determined to be a CCC jurisdictional wetland (Figure 4b; Wetland Data Form 4A). However, as noted previously in this report, all jurisdictional determinations should be considered preliminary until reviewed and approved by the regulatory agencies.

Along the south side of the Site 4 study area, outside the fenced limits of SoCalGas property, a low point that supports a large arroyo willow was identified at the bottom of the converging slopes. This area was mapped as an area of potential CCC jurisdiction based on the presence of hydrophytic vegetation (Figure 4b; Wetland Data Forms 4A-D) and is located entirely within the buffer area.

Site 5

The study area for Site 5 consists of a paved area currently being used for material storage and a flat vegetated area. The vegetated area consists primarily of ruderal species such as Bermuda grass and dallis grass.

Within the Site 5 study area, a low wet spot was identified that exhibited indicators of hydrology. As no OHWM was evident in this site and this low spot did not exhibit all three wetland criteria, it was determined to be a wetland only subject to CCC jurisdiction, based on the presence of hydrology indicators and hydric soil indicators (Figure 4c; Wetland Data Forms 5A and 5B) and is located entirely within the proposed project footprint.

Site 6

The study area for Site 6 consists of an existing gravel and dirt road and adjacent vegetated areas. Vegetation within this area consists primarily of iceplant, western goldentop, acacia, eucalyptus, and fennel.

A small area of potential CCC jurisdiction was mapped along the northeast corner of the Site 6 study area based on the presence of hydrophytic vegetation (western goldentop) (Figure 4d) and is located entirely within the buffer area.

Site 7

The study area for Site 7 consists of an existing gravel and dirt road and adjacent vegetated areas. Vegetation within this study area consists primarily of western goldentop, leafy spurge, arroyo willow, pampas grass, horseweed, and fennel.

Within the Site 7 study area, three polygons of potential CCC jurisdiction were mapped based on the presence of hydrophytic vegetation and/or hydric soils (Figure 4d; Wetland Data Forms 7A-C). At this site the features subject to CCC jurisdiction were located both in the proposed project footprint and the buffer area.

Conclusion

Four of the seven study areas assessed during this jurisdictional delineation were found to support one or more features subject to the jurisdiction of the CCC. No potential features that exhibited any indicators of USACE/RWQCB and/or CDFW jurisdiction were identified. Of those four sites, two sites had features subject to CCC jurisdiction within the proposed project footprint and three sites had features subject to CCC jurisdiction within the buffer area. As noted above, the information and results presented herein document the investigation, best professional judgment, and conclusions of ICF and are correct and complete to the best of our knowledge. However, all jurisdictional determinations should be considered preliminary until reviewed and approved by the regulatory agencies.

If you have any questions about the information in this report, please contact me at (949) 333-6633 or megan.jameson@icfi.com.

Sincerely,

Megan Jameson
Senior Regulatory Specialist

Figures:

- Figure 1: Regional Vicinity Map
- Figure 2: USGS Map
- Figure 3: Local Vicinity Map
- Figure 4a: Sites 1 & 2 – Jurisdictional Delineation Results
- Figure 4b: Sites 3 & 4 – Jurisdictional Delineation Results
- Figure 4c: Site 5 – Jurisdictional Delineation Results
- Figure 4d: Sites 6 & 7– Jurisdictional Delineation Results

Attachments:

- Photo Log
- Wetland Determination Data Forms

References

Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken, editors (Baldwin). 2012. The Jepson manual: Vascular Plants of California, second edition. University of California Press, Berkeley.

California Coastal Commission (CCC). 1994. Procedural Guidance for the Review of Wetland Projects in California's Coastal Zone. http://www.coastal.ca.gov/wetrev/wettitle.html

Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual.* Technical Report Y-87-1. Vicksburg, MS: U.S. Army Engineer Waterways Experimental Station.

U.S. Army Corps of Engineers (USACE). 2008a. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0). Vicksburg, MS: U.S. Army Engineer Research and Development Center. Report dated September 2008.

———. 2008b. *A Field Guide to the Identification of the OHWM in the Arid West Region of the Western United States: A Determination Manual*. Available: http://www.crrel.usace.army.mil/library/technicalreports/ERDC-CRREL-TR-08-12.pdf. August.

———. 2013. *Arid West 2013 Regional Wetland Plant List*. Cold Regions Research and Engineering Laboratory (CRREL).

U.S. Fish and Wildlife Service (USFWS). 2013. National Wetlands Inventory. <http://www.fws.gov/wetlands/Data/Mapper.html>. Accessed: December 2013.

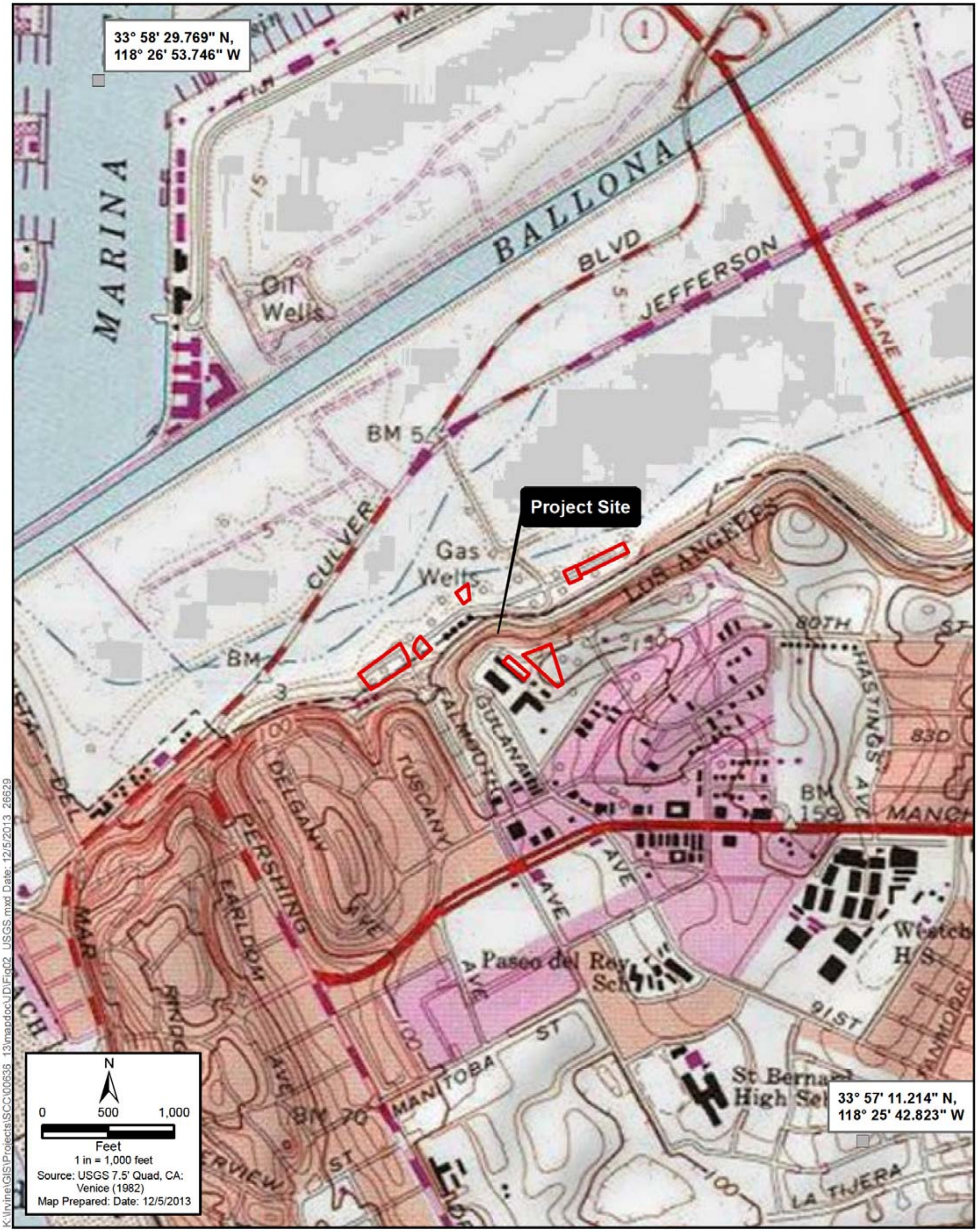
U.S. Geological Survey (USGS). (dated 1964 and photorevised in 1981). 7.5-Minute *Venice, California* quadrangle.

Western Regional Climate Center. 2013. Period of Record Monthly Climate Summary: Santa Monica Pier, California. Available: < http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7953 > Accessed: December 2013.

WRA Environmental Consultants (WRA), 2011. Ballona Creek Wetlands Ecological Reserve Preliminary Delineation of Wetlands and Non-Wetland Waters, Los Angeles County, California. Prepared for California State Coastal Conservancy.

Figures

Figure 1
Regional Vicinity Map
SoCal Gas Potential Well Sites, Playa del Rey



K:\Irvine\GIS\Projects\SCC\00636_13\mapdoc\UD\Fig02_USGS.mxd Date: 12/5/2013 26629

Figure 2
USGS Map
SoCal Gas Potential Well Sites, Playa del Rey

Figure 3
Local Vicinity Map
SoCal Gas Potential Well Sites, Playa del Rey

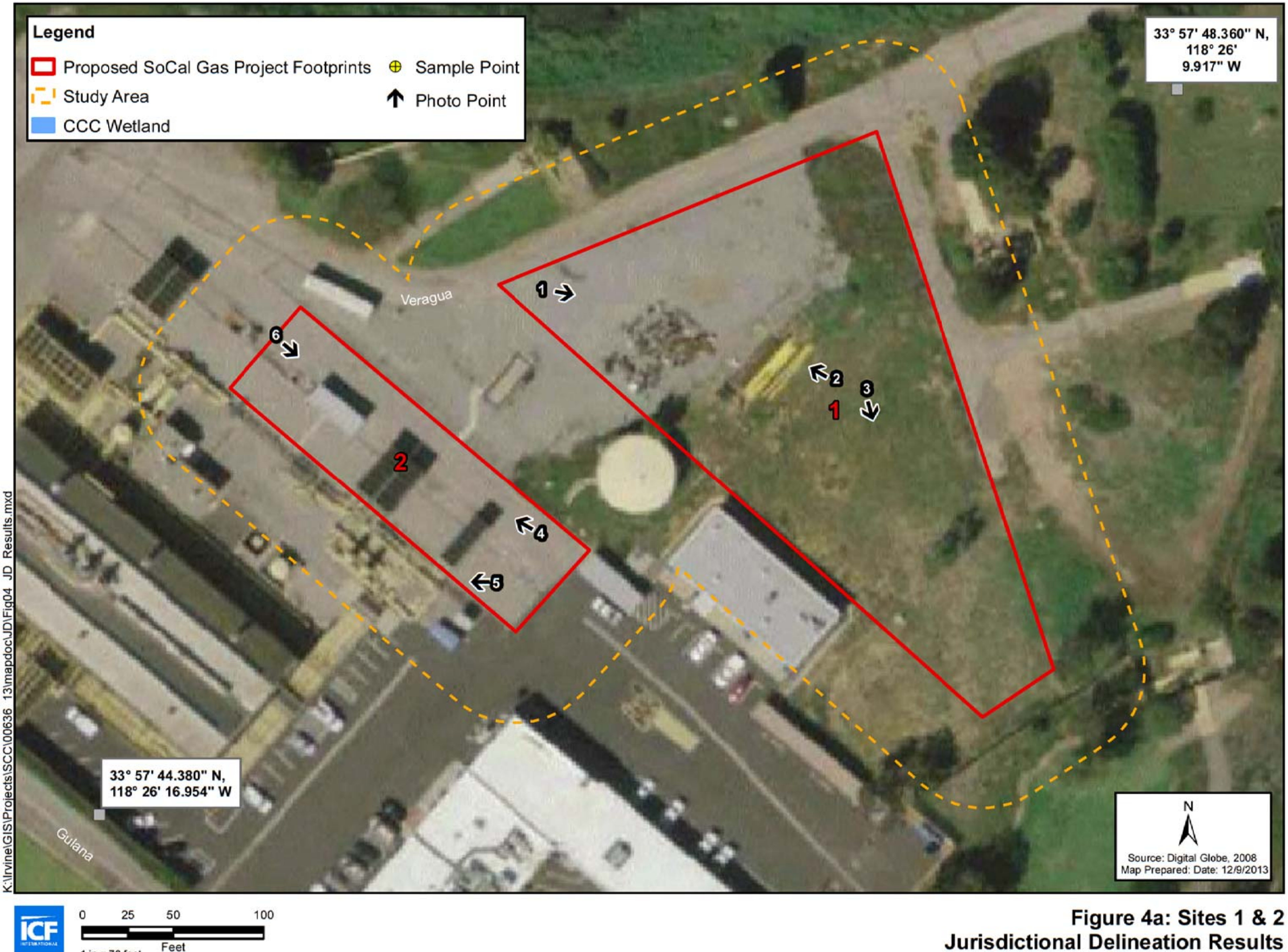


Figure 4a: Sites 1 & 2
Jurisdictional Delineation Results
SoCal Gas Potential Well Sites, Playa del Rey

Figure 4b: Sites 3 & 4
Jurisdictional Delineation Results
SoCal Gas Potential Well Sites, Playa del Rey

K:\Irvine\GIS\Projects\SCC\00636_13\mapdoc\JD\Fig04_JD_Results.mxd

Figure 4c: Site 5
Jurisdictional Delineation Results
SoCal Gas Potential Well Sites, Playa del Rey

Figure 4d: Sites 6 & 7
Jurisdictional Delineation Results
SoCal Gas Potential Well Sites, Playa del Rey

Photograph # 1

Photo Date 12/2/13

Location Site 1

Direction East

Comment Gravel storage yard

Photograph # 2

Photo Date 12/2/13

Location Site 1

Direction West

Comment Gravel storage yard

Photograph # 3

Photo Date 12/2/13

Location Site 1

Direction Southwest

Comment Open area

Photograph # 4

Photo Date 12/2/13

Location Site 2

Direction Northwest

Comment Paved, already-used part of the facility

Photograph # 5

Photo Date 12/2/13

Location Site 2

Direction West

Comment Paved, already-used part of the facility

Photograph # 6

Photo Date 12/2/13

Location Site 2

Direction Southeast

Comment Paved, already-used part of the facility

Photograph # 7

Photo Date 12/2/13

Location Site 3

Direction Northeast

Comment Vegetated area south of access road, at toe of slopes

Photograph # 8

Photo Date 12/2/13

Location Site 3

Direction East

Comment Vegetated area north of access road

Photograph # 9

Photo Date 12/6/13

Location Site 3

Direction Northwest

Comment Wetland data point 3A (non-wetland); vegetated area south of access road, at toe of slope

Photograph #	10
Photo Date	12/2/13
Location	Site 4
Direction	North
Comment	Deposited sediment and associated vegetation on asphalt road at mouth of culvert

Photograph #	11
Photo Date	12/2/13
Location	Site 4
Direction	North
Comment	Deposited sediment and associated vegetation on asphalt road at base of hill, outside culvert

Photograph #	12
Photo Date	12/2/13
Location	Site 4
Direction	North
Comment	Deposited sediment and associated vegetation on asphalt road at base of hill, outside culvert; wetland data point 4A (non-wetland)

Photograph # 13

Photo Date 12/2/13

Location Site 4

Direction East

Comment Gravel and dirt access road and open, vegetated area

Photograph # 14

Photo Date 12/2/13

Location Site 4

Direction South

Comment Gravel and dirt access road and open, vegetated area

Photograph # 15

Photo Date 12/6/13

Location Site 4

Direction Southwest

Comment Vegetated area adjacent to arroyo willow; wetland data point 4D (non-wetland)

Photograph #	16
Photo Date	12/6/13
Location	Site 4
Direction	Northeast
Comment	Vegetated area adjacent to arroyo willow; wetland data point 4C (non-wetland)

Photograph #	17
Photo Date	12/6/13
Location	Site 4
Direction	Northeast
Comment	CCC wetland located at toe of slope; arroyo willow; wetland data point 4B (CCC wetland)

Photograph #	18
Photo Date	12/2/13
Location	Site 5
Direction	South
Comment	Paved storage area

	**Photograph #**	19
	Photo Date	12/2/13
	Location	Site 5
	Direction	Northwest
	Comment	Vegetated area adjacent to paved facility
	**Photograph #**	20
	Photo Date	12/2/13
	Location	Site 5
	Direction	Southwest
	Comment	Vegetated area adjacent to paved facility
	**Photograph #**	21
	Photo Date	12/2/13
	Location	Site 5
	Direction	South
	Comment	CCC wetland feature in vegetated area adjacent to paved facility

Photograph # 22

Photo Date 12/2/13

Location Site 5

Direction South

Comment Wetland data point 5A (CCC wetland)

Photograph # 23

Photo Date 12/2/13

Location Site 5

Direction South

Comment Wetland data point 5B (non-wetland point)

Photograph # 24

Photo Date 12/2/13

Location Site 6

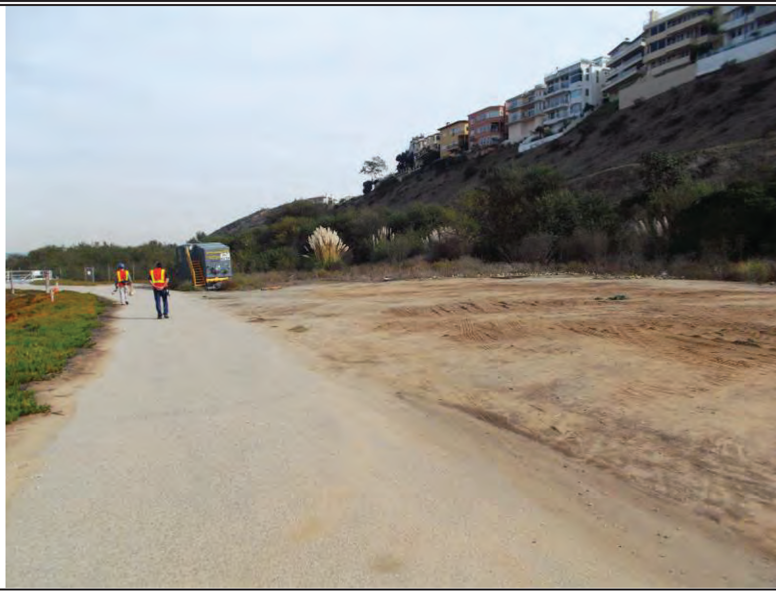
Direction Southeast

Comment Gravel and dirt access road and adjacent vegetated area

Photograph #	25
Photo Date	12/2/13
Location	Site 6
Direction	North
Comment	Gravel and dirt access road and adjacent vegetated area

Photograph #	26
Photo Date	12/2/13
Location	Site 6 (and Site 7 beyond)
Direction	Northeast
Comment	Gravel and dirt access road

Photograph #	27
Photo Date	12/2/13
Location	Site 6 (Feature 6-1)
Direction	North
Comment	CCC wetland feature adjacent to fence



Photograph # 28

Photo Date 12/2/13

Location Site 7

Direction Northwest

Comment Asphalt access road and adjacent unvegetated , dirt open area

Photograph # 29

Photo Date 12/2/13

Location Site 7

Direction South

Comment Vegetated area adjacent to unvegeted, dirt open area

Photograph # 30

Photo Date 12/2/13

Location Site 7

Direction Northeast

Comment Vegetated area adjacent to existing access road and bare dirt area

Photograph # 31
Photo Date 12/2/13
Location Site 7
Direction Northeast
Comment Wetland data point 7A (non-wetland)

Photograph # 32
Photo Date 12/2/13
Location Site 7
Direction South
Comment Wetland data point 7B (CCC wetland)

Photograph # 33
Photo Date 12/2/13
Location Site 7
Direction North
Comment Wetland data point 7C (non-wetland)

Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Potential Well Sites City/County: Playa Del Rey, Los Angeles Sampling Date: 12/6/13

Applicant/Owner: Southern California Gas Co. State: CA Sampling Point: 3A

Investigator(s): Paul Schwartz, Megan Jameson Section, Township, Range: Unsectioned, T2S, R15W

Landform (hillslope, terrace, etc.): toe of slope Local relief (concave, convex, none): none Slope (%): ~1%

Subregion (LRR): Mediterranean CA Lat: 33.963132 Long: -118.439735 Datum: NAD 83

Soil Map Unit Name: Not Available NWI classification: Not mapped as wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓

Is the Sampled Area within a Wetland? Yes ___ No ✓

Remarks:

Looking to ID presence/absence of CCC wetland only. No evidence of OHWM. No CCC wetland present.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
		= Total Cover	
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	
Herb Stratum (Plot size: 5')			
1. Carpobrotus edulis	20	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	20	= Total Cover	
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 60 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

20% litter in herb stratum

SOIL

Sampling Point: 3A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-16"	10YR 5/4	100					Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: None

Depth (inches): ______

Hydric Soil Present? Yes ______ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______

Water Table Present? Yes ______ No ✓ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ______ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Potential Well Sites City/County: Playa Del Rey, Los Angeles Sampling Date: 12/2/13

Applicant/Owner: Southern California Gas Co. State: CA Sampling Point: 4A

Investigator(s): Paul Schwartz, Megan Jameson Section, Township, Range: Unsectioned, T2S, R15W

Landform (hillslope, terrace, etc.): terrace of floodplain Local relief (concave, convex, none): None Slope (%): <1-2%

Subregion (LRR): Mediterranean CA Lat: 33.963993 Long: -118.440223 Datum: NAD 83

Soil Map Unit Name: Not Available NWI classification: Not mapped as wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No ✓

Are Vegetation ✓, Soil ✓, or Hydrology ✓ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ___
Hydric Soil Present?	Yes ___	No ✓
Wetland Hydrology Present?	Yes ✓	No ___

Is the Sampled Area within a Wetland? Yes ___ No ✓

Remarks:

Looking to ID presence/absence of CCC wetland only. Site consists of sediment deposited on top of asphalt and concrete in front of culvert entrance that has accumulated from neighborhood nuisance flows. Deposited sediment is now vegetated. While CCC vegetation and hydrology are present, bc it overlays a concrete/asphalt area, considered already impacted and is also regularly displaced by flows following storm events.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: limits of veg)			
1. Cyperus esculentis	25	Yes	FACW
2. Euphorbia esula	20	Yes	UPL
3. Festuca perenne	15	Yes	UPL
4. Paspalum dalatatum	15	Yes	FAC
5. Raphanus sativa	10	No	UPL
6. Erigeron canadensis	5	No	FACU
7. Hirshfeldia incana	5	No	UPL
8. Epilobium ciliatum	5	No	FACW
= Total Cover	100		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species	30	x 2 = 60
FAC species	15	x 3 = 45
FACU species	5	x 4 = 20
UPL species	50	x 5 = 250
Column Totals:	100 (A)	375 (B)

Prevalence Index = B/A = 3.75

Hydrophytic Vegetation Indicators:

- ✓ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

Veg cover is limited to where sediment has been deposited. Veg cover estimate reflect polygon only. Remainder of area is asphalt or concrete. All vegetation is immature herbaceous, indicating the site is probably new and regularly is washed away.

SOIL

Sampling Point: 4A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5) (**LRR C**)
- __ 1 cm Muck (A9) (**LRR D**)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Loamy Mucky Mineral (F1)
- __ Loamy Gleyed Matrix (F2)
- __ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)
- __ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- __ 1 cm Muck (A9) (**LRR C**)
- __ 2 cm Muck (A10) (**LRR B**)
- __ Reduced Vertic (F18)
- __ Red Parent Material (TF2)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ **No** ______

Remarks:

No soils taken. Only 1-4" sediment deposited on top of concrete and asphalt.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- __ Surface Water (A1)
- __ High Water Table (A2)
- ✓ Saturation (A3)
- __ Water Marks (B1) (**Nonriverine**)
- ✓ Sediment Deposits (B2) (**Nonriverine**)
- __ Drift Deposits (B3) (**Nonriverine**)
- __ Surface Soil Cracks (B6)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Water-Stained Leaves (B9)
- __ Salt Crust (B11)
- __ Biotic Crust (B12)
- __ Aquatic Invertebrates (B13)
- __ Hydrogen Sulfide Odor (C1)
- __ Oxidized Rhizospheres along Living Roots (C3)
- __ Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Tilled Soils (C6)
- __ Thin Muck Surface (C7)
- __ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- __ Water Marks (B1) (**Riverine**)
- __ Sediment Deposits (B2) (**Riverine**)
- __ Drift Deposits (B3) (**Riverine**)
- __ Drainage Patterns (B10)
- __ Dry-Season Water Table (C2)
- __ Crayfish Burrows (C8)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Shallow Aquitard (D3)
- __ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ______	No ______	Depth (inches): ______
Water Table Present?	Yes ______	No ______	Depth (inches): ______
Saturation Present? (includes capillary fringe)	Yes ✓	No ______	Depth (inches): ______

Wetland Hydrology Present? Yes ✓ **No** ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At time of survey, flowing water running running down the hill from the adjacent residential neighborhood into this point. Point occurs on asphalt and concrete at culvert entrance.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Potential Well Sites City/County: Playa Del Rey, Los Angeles Sampling Date: 12/6/13

Applicant/Owner: Southern California Gas Co. State: CA Sampling Point: 4B

Investigator(s): Paul Schwartz, Megan Jameson Section, Township, Range: Unsectioned, T2S, R15W

Landform (hillslope, terrace, etc.): toe of slope Local relief (concave, convex, none): concave Slope (%): <1%

Subregion (LRR): Mediterranean CA Lat: 33.962628 Long: -118.440552 Datum: NAD 83

Soil Map Unit Name: Not Available NWI classification: Not mapped as wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	✓	
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓

Is the Sampled Area within a Wetland? Yes ✓ No ____

Remarks:

Looking to ID presence/absence of CCC wetland only. No evidence of OHWM. CCC wetland present based on hydrophytic vegetation.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30')			
1. Salix lasiolepsis	65	Yes	FACW
2.			
3.			
4.			
= Total Cover	65		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5')			
1. Carpobrotus edulis	25	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
= Total Cover	25		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
= Total Cover	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	65	x 2 =	130
FAC species		x 3 =	
FACU species		x 4 =	
UPL species	25	x 5 =	125
Column Totals:	90 (A)		255 (B)

Prevalence Index = B/A = 2.8

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

Lots of leaf litter under willow.

SOIL

Sampling Point: 4B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16"	10YR 3/2	96	7YR 4/6	4	C	PL/M	SCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: None

Depth (inches): ______

Hydric Soil Present? Yes ___ No ✓

Remarks:

Approximately 10'' of leaf litter under willow.
SCL=Sandy Clay Loam
Almost meets F6.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No ✓	Depth (inches): ___
Water Table Present?	Yes ___	No ✓	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No ✓	Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Potential Well Sites City/County: Playa Del Rey, Los Angeles Sampling Date: 12/6/13

Applicant/Owner: Southern California Gas Co. State: CA Sampling Point: 4C

Investigator(s): Paul Schwartz, Megan Jameson Section, Township, Range: Unsectioned, T2S, R15W

Landform (hillslope, terrace, etc.): toe of slope Local relief (concave, convex, none): concave Slope (%): <1%

Subregion (LRR): Mediterranean CA Lat: 33.962580 Long: -118.440634 Datum: NAD 83

Soil Map Unit Name: Not Available NWI classification: Not mapped as wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓

Is the Sampled Area within a Wetland? Yes ___ No ✓

Remarks:

Looking to ID presence/absence of CCC wetland only. No evidence of OHWM. No CCC wetland present.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5)			
1. Chrysanthemum coranatum	35	Yes	UPL
2. Carpobrotus edulis	25	Yes	UPL
3. Bromus diandrus	5	No	UPL
4.			
5.			
6.			
7.			
8.			
= Total Cover	65		
Woody Vine Stratum (Plot size:)			
1.			
2.			
= Total Cover	0		

% Bare Ground in Herb Stratum 35 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- __ Dominance Test is >50%
- __ Prevalence Index is ≤3.0[1]
- __ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- __ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

SOIL

Sampling Point: 4C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-16"	10YR 3/2	100					SL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: None

Depth (inches): ______

Hydric Soil Present? **Yes** ______ **No** ✓

Remarks:

SL=Sandy Loam

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ______	No ✓	Depth (inches): ______
Water Table Present?	Yes ______	No ✓	Depth (inches): ______
Saturation Present? (includes capillary fringe)	Yes ______	No ✓	Depth (inches): ______

Wetland Hydrology Present? **Yes** ______ **No** ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Potential Well Sites City/County: Playa Del Rey, Los Angeles Sampling Date: 12/6/13

Applicant/Owner: Southern California Gas Co. State: CA Sampling Point: 4D

Investigator(s): Paul Schwartz, Megan Jameson Section, Township, Range: Unsectioned, T2S, R15W

Landform (hillslope, terrace, etc.): toe of slope Local relief (concave, convex, none): concave Slope (%): ~1%

Subregion (LRR): Mediterranean CA Lat: 33.962679 Long: -118.440394 Datum: NAD 83

Soil Map Unit Name: Not Available NWI classification: Not mapped as wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓

Is the Sampled Area within a Wetland? Yes ___ No ✓

Remarks:

Looking to ID presence/absence of CCC wetland only. No evidence of OHWM. No CCC wetland present.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5')			
1. Carpobrotus edulis	85	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
= Total Cover	85		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover	0		

% Bare Ground in Herb Stratum 60 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

15% litter in herb stratum

SOIL

Sampling Point: 4D

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-16"	10YR 3/2	100					SL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: None

Depth (inches): ______

Hydric Soil Present? Yes ___ No ✓

Remarks:

SL= Sandy Loam

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No ✓	Depth (inches): ___
Water Table Present?	Yes ___	No ✓	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No ✓	Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Potential Well Sites City/County: Playa Del Rey, Los Angeles Sampling Date: 12/2/13

Applicant/Owner: Southern California Gas Co. State: CA Sampling Point: 5A

Investigator(s): Paul Schwartz, Megan Jameson Section, Township, Range: Unsectioned, T2S, R15W

Landform (hillslope, terrace, etc.): terrace of floodplain Local relief (concave, convex, none): None Slope (%): <1%

Subregion (LRR): Mediterranean CA Lat: 33.964444 Long: -118.438816 Datum: NAD 83

Soil Map Unit Name: Not Available NWI classification: Not mapped as wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No ✓

Are Vegetation ✓, Soil ✓, or Hydrology ✓ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?		✓
Wetland Hydrology Present?	✓	

Is the Sampled Area within a Wetland? Yes ✓ No ___

Remarks:

CCC wetland only based on presence of wetland hydrology. No evidence of OHWM.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5')			
1. Cynodon dactylon	60	Yes	FACU
2. Paspalum dilatatum	5	No	FAC
3. Chamaesyce albomarginata	5	No	UPL
4. Medicago polymorpha	3	No	FACU
5. Euthamnia occidentalis	2	No	FACW
6. Erigeron canadensis	2	No	FACU
7.			
8.			
= Total Cover	77		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 23 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	2	x 2 =	4
FAC species	5	x 3 =	15
FACU species	65	x 4 =	260
UPL species	5	x 5 =	25
Column Totals:	77 (A)		304 (B)

Prevalence Index = B/A = 3.94

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

SOIL

Sampling Point: 5A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6"	10YR 3/2	100						Sandy clay loam
6-14"	10YR 4/4	95	7.5YR 4/6	5				Sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ✓ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ______	No ✓	Depth (inches): ______
Water Table Present?	Yes ______	No ✓	Depth (inches): ______
Saturation Present? (includes capillary fringe)	Yes ______	No ✓	Depth (inches): ______

Wetland Hydrology Present? Yes ✓ No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Soil cracking in area slightly lower than surrounding vegetated area.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Potential Well Sites City/County: Playa Del Rey, Los Angeles Sampling Date: 12/2/13

Applicant/Owner: Southern California Gas Co. State: CA Sampling Point: 5B

Investigator(s): Paul Schwartz, Megan Jameson Section, Township, Range: Unsectioned, T2S, R15W

Landform (hillslope, terrace, etc.): terrace of floodplain Local relief (concave, convex, none): None Slope (%): <1%

Subregion (LRR): Mediterranean CA Lat: 33.964404 Long: -118.438908 Datum: NAD 83

Soil Map Unit Name: Not Available NWI classification: Not mapped as wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No ✓

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓
Hydric Soil Present?	Yes ____	No ✓
Wetland Hydrology Present?	Yes ____	No ✓

Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks:

Looking to ID presence/absence of CCC wetland only. No evidence of OHWM. No CCC wetland present.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5')			
1. Cynodon dactylon	60	Yes	FACU
2. Cortaderia selloana	5	No	FACU
3. Erigeron canadensis	3	No	FACU
4. Paspalum dilatatum	2	No	FAC
5.			
6.			
7.			
8.			
= Total Cover	70		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species	2	x 3 = 6
FACU species	68	x 4 = 272
UPL species		x 5 =
Column Totals:	70 (A)	278 (B)

Prevalence Index = B/A = 3.97

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: 5B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3"	10YR 3/2	100						Sandy clay loam
3-12"	7.5YR 4/4	100						Sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

__ Histosol (A1)
__ Histic Epipedon (A2)
__ Black Histic (A3)
__ Hydrogen Sulfide (A4)
__ Stratified Layers (A5) (**LRR C**)
__ 1 cm Muck (A9) (**LRR D**)
__ Depleted Below Dark Surface (A11)
__ Thick Dark Surface (A12)
__ Sandy Mucky Mineral (S1)
__ Sandy Gleyed Matrix (S4)
__ Sandy Redox (S5)
__ Stripped Matrix (S6)
__ Loamy Mucky Mineral (F1)
__ Loamy Gleyed Matrix (F2)
__ Depleted Matrix (F3)
__ Redox Dark Surface (F6)
__ Depleted Dark Surface (F7)
__ Redox Depressions (F8)
__ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

__ 1 cm Muck (A9) (**LRR C**)
__ 2 cm Muck (A10) (**LRR B**)
__ Reduced Vertic (F18)
__ Red Parent Material (TF2)
__ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ________

Depth (inches): ________

Hydric Soil Present? **Yes** ___ **No** ✓

Remarks:

Very hard, compact soil but no concrete chunks or layers as in other areas.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

__ Surface Water (A1)
__ High Water Table (A2)
__ Saturation (A3)
__ Water Marks (B1) (**Nonriverine**)
__ Sediment Deposits (B2) (**Nonriverine**)
__ Drift Deposits (B3) (**Nonriverine**)
__ Surface Soil Cracks (B6)
__ Inundation Visible on Aerial Imagery (B7)
__ Water-Stained Leaves (B9)
__ Salt Crust (B11)
__ Biotic Crust (B12)
__ Aquatic Invertebrates (B13)
__ Hydrogen Sulfide Odor (C1)
__ Oxidized Rhizospheres along Living Roots (C3)
__ Presence of Reduced Iron (C4)
__ Recent Iron Reduction in Tilled Soils (C6)
__ Thin Muck Surface (C7)
__ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

__ Water Marks (B1) (**Riverine**)
__ Sediment Deposits (B2) (**Riverine**)
__ Drift Deposits (B3) (**Riverine**)
__ Drainage Patterns (B10)
__ Dry-Season Water Table (C2)
__ Crayfish Burrows (C8)
__ Saturation Visible on Aerial Imagery (C9)
__ Shallow Aquitard (D3)
__ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ______
Water Table Present? Yes ___ No ✓ Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ______

Wetland Hydrology Present? **Yes** ___ **No** ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No indicators noted.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Potential Well Sites City/County: Playa Del Rey, Los Angeles Sampling Date: 12/2/13

Applicant/Owner: Southern California Gas Co. State: CA Sampling Point: 7A

Investigator(s): Paul Schwartz, Megan Jameson Section, Township, Range: Unsectioned, T2S, R15W

Landform (hillslope, terrace, etc.): terrace of floodplain Local relief (concave, convex, none): None Slope (%): <1%

Subregion (LRR): Mediterranean CA Lat: 33.964939 Long: -118.435586 Datum: NAD 83

Soil Map Unit Name: Not Available NWI classification: Not mapped as wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No ✓

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓
Is the Sampled Area within a Wetland?		✓

Remarks:

Looking to ID presence/absence of CCC wetland only. No evidence of OHWM. No CCC wetland present.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5')			
1. Euphorbia esula	65	Yes	UPL
2. Foeniculum vulgare	10	No	UPL
3. Chrysanthemum coronarium	9	No	UPL
4. Cortaderia selloana	5	No	FACU
5. Erigeron canadensis	1	No	FACU
6.			
7.			
8.			
= Total Cover	90		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species	6	x 4 =	24
UPL species	84	x 5 =	420
Column Totals:	90 (A)		444 (B)

Prevalence Index = B/A = 4.93

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

SOIL

Sampling Point: 7A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12"	10YR 3/2	100						Sandy clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ___ No ✓

Remarks:

At 12" hit impenetrable surface (concrete?).

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ______
Water Table Present? Yes ___ No ✓ Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No indicators noted.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Potential Well Sites City/County: Playa Del Rey, Los Angeles Sampling Date: 12/2/13

Applicant/Owner: Southern California Gas Co. State: CA Sampling Point: 7B

Investigator(s): Paul Schwartz, Megan Jameson Section, Township, Range: Unsectioned, T2S, R15W

Landform (hillslope, terrace, etc.): terrace of floodplain Local relief (concave, convex, none): None Slope (%): <1%

Subregion (LRR): Mediterranean CA Lat: 33.964858 Long: -118.435903 Datum: NAD 83

Soil Map Unit Name: Not Available NWI classification: Not mapped as wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No ✓

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ___	Is the Sampled Area within a Wetland?	Yes ✓ No ___
Hydric Soil Present?	Yes ___ No ✓		
Wetland Hydrology Present?	Yes ___ No ✓		

Remarks:

Looking to ID presence/absence of CCC wetland only. No evidence of OHWM. CCC wetland only, based on presence of hydrophytic vegetation.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5')			
1. Euthamnia occidentalis	45	Yes	FACW
2. Euphorbia esula	40	Yes	UPL
3. Foeniculum vulgare	13	No	UPL
4. Helminotheca echioides	2	No	FACU
5.			
6.			
7.			
8.			
= Total Cover	100		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

- ✓ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

SOIL

Sampling Point: 7B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10"	10YR 3/2	100						Sandy loam
10-12"	10YR 2/1	99	7.5YR 5/6	1				Sandy clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

__ Histosol (A1)
__ Histic Epipedon (A2)
__ Black Histic (A3)
__ Hydrogen Sulfide (A4)
__ Stratified Layers (A5) (**LRR C**)
__ 1 cm Muck (A9) (**LRR D**)
__ Depleted Below Dark Surface (A11)
__ Thick Dark Surface (A12)
__ Sandy Mucky Mineral (S1)
__ Sandy Gleyed Matrix (S4)
__ Sandy Redox (S5)
__ Stripped Matrix (S6)
__ Loamy Mucky Mineral (F1)
__ Loamy Gleyed Matrix (F2)
__ Depleted Matrix (F3)
__ Redox Dark Surface (F6)
__ Depleted Dark Surface (F7)
__ Redox Depressions (F8)
__ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

__ 1 cm Muck (A9) (**LRR C**)
__ 2 cm Muck (A10) (**LRR B**)
__ Reduced Vertic (F18)
__ Red Parent Material (TF2)
__ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ✓

Remarks:

At approximately 12" hit impenetrable chunks or surface (concrete?).

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

__ Surface Water (A1)
__ High Water Table (A2)
__ Saturation (A3)
__ Water Marks (B1) (**Nonriverine**)
__ Sediment Deposits (B2) (**Nonriverine**)
__ Drift Deposits (B3) (**Nonriverine**)
__ Surface Soil Cracks (B6)
__ Inundation Visible on Aerial Imagery (B7)
__ Water-Stained Leaves (B9)
__ Salt Crust (B11)
__ Biotic Crust (B12)
__ Aquatic Invertebrates (B13)
__ Hydrogen Sulfide Odor (C1)
__ Oxidized Rhizospheres along Living Roots (C3)
__ Presence of Reduced Iron (C4)
__ Recent Iron Reduction in Tilled Soils (C6)
__ Thin Muck Surface (C7)
__ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

__ Water Marks (B1) (**Riverine**)
__ Sediment Deposits (B2) (**Riverine**)
__ Drift Deposits (B3) (**Riverine**)
__ Drainage Patterns (B10)
__ Dry-Season Water Table (C2)
__ Crayfish Burrows (C8)
__ Saturation Visible on Aerial Imagery (C9)
__ Shallow Aquitard (D3)
__ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______

Water Table Present? Yes ______ No ✓ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ______ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No indicators noted.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Potential Well Sites City/County: Playa Del Rey, Los Angeles Sampling Date: 12/2/13

Applicant/Owner: Southern California Gas Co. State: CA Sampling Point: 7C

Investigator(s): Paul Schwartz, Megan Jameson Section, Township, Range: Unsectioned, T2S, R15W

Landform (hillslope, terrace, etc.): terrace of floodplain Local relief (concave, convex, none): None Slope (%): <1%

Subregion (LRR): Mediterranean CA Lat: 33.964882 Long: -118.435945 Datum: NAD 83

Soil Map Unit Name: Not Available NWI classification: Not mapped as wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No ✓

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No ✓
Hydric Soil Present?	Yes ___	No ✓
Wetland Hydrology Present?	Yes ___	No ✓

Is the Sampled Area within a Wetland? Yes ___ No ✓

Remarks:

Looking to ID presence/absence of CCC wetland only. No evidence of OHWM. No CCC wetland present.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 5')			
1. Euphorbia esula	60	Yes	UPL
2. Helminotheca echioides	15	No	FACU
3. Cortaderia selloana	10	No	FACU
4. Euthamnia occidentalis	5	No	FACW
5. Foeniculum vulgare	5	No	UPL
6.			
7.			
8.			
= Total Cover	95		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species	5	x 2 = 10
FAC species	25	x 3 = 75
FACU species		x 4 =
UPL species	65	x 5 = 325
Column Totals:	95 (A)	410 (B)

Prevalence Index = B/A = 4.32

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

SOIL

Sampling Point: 7C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10"	10YR 3/2	100						Sandy loam
10-12"	10YR 2/1	100						Sandy clay loam (alot of concret

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

__ Histosol (A1)
__ Histic Epipedon (A2)
__ Black Histic (A3)
__ Hydrogen Sulfide (A4)
__ Stratified Layers (A5) (**LRR C**)
__ 1 cm Muck (A9) (**LRR D**)
__ Depleted Below Dark Surface (A11)
__ Thick Dark Surface (A12)
__ Sandy Mucky Mineral (S1)
__ Sandy Gleyed Matrix (S4)
__ Sandy Redox (S5)
__ Stripped Matrix (S6)
__ Loamy Mucky Mineral (F1)
__ Loamy Gleyed Matrix (F2)
__ Depleted Matrix (F3)
__ Redox Dark Surface (F6)
__ Depleted Dark Surface (F7)
__ Redox Depressions (F8)
__ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

__ 1 cm Muck (A9) (**LRR C**)
__ 2 cm Muck (A10) (**LRR B**)
__ Reduced Vertic (F18)
__ Red Parent Material (TF2)
__ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ___ **No** ✓

Remarks:

At approximately 12" impenetrable. Alot of concrete chunks throughout.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

__ Surface Water (A1)
__ High Water Table (A2)
__ Saturation (A3)
__ Water Marks (B1) (**Nonriverine**)
__ Sediment Deposits (B2) (**Nonriverine**)
__ Drift Deposits (B3) (**Nonriverine**)
__ Surface Soil Cracks (B6)
__ Inundation Visible on Aerial Imagery (B7)
__ Water-Stained Leaves (B9)
__ Salt Crust (B11)
__ Biotic Crust (B12)
__ Aquatic Invertebrates (B13)
__ Hydrogen Sulfide Odor (C1)
__ Oxidized Rhizospheres along Living Roots (C3)
__ Presence of Reduced Iron (C4)
__ Recent Iron Reduction in Tilled Soils (C6)
__ Thin Muck Surface (C7)
__ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

__ Water Marks (B1) (**Riverine**)
__ Sediment Deposits (B2) (**Riverine**)
__ Drift Deposits (B3) (**Riverine**)
__ Drainage Patterns (B10)
__ Dry-Season Water Table (C2)
__ Crayfish Burrows (C8)
__ Saturation Visible on Aerial Imagery (C9)
__ Shallow Aquitard (D3)
__ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ______

Water Table Present? Yes ___ No ✓ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ___ **No** ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No indicators noted.

APPENDIX D16
Patterns of Vehicle-Based Vertebrate Mortality in the Ballona Wetlands Ecological Reserve, Los Angeles, CA

This page intentionally left blank

P.O. BOX 13336
LOS ANGELES, CA 90013

THE BAY FOUNDATION

(888) 301-2527
santamonicabay.org

Technical Memorandum:

Patterns of Vehicle-Based Vertebrate Mortality in the Ballona Wetlands Ecological Reserve, Los Angeles, CA

Prepared by: Karina Johnston[1], Ivan Medel[1], Patrick Tyrrell[2], and Sean Anderson[3]

[1] The Bay Foundation

[2] Friends of Ballona Wetlands

[3] Environmental Science and Resource Management Program, California State University Channel Islands

Submitted to: California State Coastal Conservancy
California Department of Fish and Wildlife

Date: November 26, 2014

Introduction

Roads have become ubiquitous features on our landscapes, with approximately 20% of all land within the conterminous United States within 150 meters of a roadway (Riitters and Wickham 2003). Within these areas, the movement of cars at medium and high speeds may negatively affect wildlife populations and behavior through direct mortalities, habitat fragmentation, and behavior change (Forman and Alexander 1998, Coffin 2007, Charry and Jones 2009). Traffic volume, or the number of cars on a stretch of road during a given time period, and speed have been associated as key parameters influencing the quantity of direct wildlife mortalities along a given roadway (S. Anderson, *unpublished data,* 2011). Vertebrate mortality surveys of frequently-traveled roadways help identify wildlife movement patterns and the impacts of habitat fragmentation on a given area.

Over the past decade, concerned stakeholders anecdotally noticed a high frequency of animal kills along the major roadways adjacent to the Ballona Wetlands Ecological Reserve ("BWER" or "Reserve") (L. Fimiani, *personal communication,* 2011). This memorandum was developed to quantify the vertebrate mortality along Reserve-adjacent roadways. Additionally, it will provide information and data to the ongoing CEQA process regarding wildlife-vehicle collisions and subsequent direct vertebrate mortality through surveys conducted along roads bisecting the BWER from 2010-2013.

City of Los Angeles traffic-count data across a 24-hour interval during the week calculated that approximately 20,000-60,000 cars travel along roadways bisecting and adjacent to the Reserve, including Culver Boulevard, West Jefferson Boulevard, and Lincoln Boulevard (CoLA 2014). High traffic volumes combined with 45 mile per hour (mph) speed limits may pose significant risks to wildlife within the BWER. Analyzing these data may help evaluate opportunities to minimize or reduce harm and impacts to fauna, as well as reducing hazards to drivers.

Specific survey goals included:

1) Comparison of vertebrate mortality along three road transects bisecting the Reserve,
2) Identification of animal type most vulnerable to vehicle-based mortality, and
3) Identification of locations demonstrating higher frequency wildlife-vehicle collisions ("hotspots").

These data and research summaries are a product of California State Coastal Conservancy grant 11-086 and volunteer time donated by the Friends of Ballona Wetlands.

Methods

The survey area was evaluated using three transects, each approximately one mile in length. These transects delineate the primary roads bisecting the Reserve (Figure 1). The "Lincoln Transect" (Transect 1) extended along Lincoln Boulevard from Loyola Marymount University Drive to Fiji Way; the "Culver-East Transect" (Transect 2) extended along Culver Boulevard from its intersection with West Jefferson Boulevard to the 90 Freeway; the "Culver/Jefferson Transect" (Transect 3) began on Culver Boulevard in Playa del Rey and extended to the intersection of Culver and Jefferson Boulevards, and then on to Lincoln Boulevard (Figure 1). Surveys were conducted biweekly from October 2010 through September 2013. Friends of Ballona Wetlands staff and The Bay Foundation staff and interns conducted surveys based on protocols developed by Sean Anderson's PIRatE Laboratory at California State University Channel Islands.

Transects were surveyed by resetting a vehicle's odometer at the start of each transect and subsequently driving each transect with a passenger noting the type of carcass, the odometer reading, and the direction of travel on a datasheet. Both lane directions of each transect were surveyed (e.g. Transect 1 was surveyed driving both north and south). Data are reported in miles, or frequency of mortality per tenth of a mile, based on the accuracy of the odometer survey method.

Figure 1. Map of survey transects bisecting the Ballona Wetlands Ecological Reserve.

The survey datasheet included several animal categories for all potential vertebrates found in the BWER. When possible, kills were identified to species (e.g. California kingsnake), but when damage prevented detailed identification, broader categories were used based on gross animal size. Large animals were coyote or larger sized. Medium size animals were raccoon or cat sized. Small sized animals were rabbit or squirrel sized. When a deceased animal was observed, its location was recorded using mileage measured from the beginning of each transect to a tenth of a mile and based on odometer accuracy. Occasionally, kills were also recorded using a handheld GPS, if there were unusual circumstances such as multiple adjacent kills or rare species. Importantly, the survey efforts provide realistic estimates of the overall kill rate via assessing the survey effort (number of surveys) and not merely the location of particular kills.

Supplemental site-specific data was provided by motion cameras located in the Reserve ("Critter Cams"). Detailed methods and protocols are available in the Ballona Wetlands Baseline Reports (Johnston et. al 2011, 2012) or in the draft Standard Operating Protocol (SMBRF 2014).

Error Avoidance and Assumptions

While the survey methodology provides informative data on the frequency of vehicle-based vertebrate mortality along the BWER-adjacent roads, there is also the potential for error within the quantification techniques. Care was taken to reduce observer effect error through the consistent use of the same surveyors for as many surveys as possible. If the regular surveyors were not available, trained substitutes conducted the survey. The protocols and surveyors underwent quality control and observer bias checks once annually through a trial run-through of each transect with all observers. Additional quality control was performed on the entered data though a third-party reviewer.

Errors relating to double-counting, or identifying the same kill on repeat surveys for a falsely-inflated count, was reduced by conducting a pilot study during the first month of the program. Surveys were conducted weekly for one month. Carcass removal rates vary significantly depending upon location and species (S. Anderson, *unpublished data*). For this study, every two weeks was determined to be an appropriate length of time for the kills to either be removed by county services, desiccated to the point of non-visibility, or consumed by scavengers. Additionally, errors were further reduced through specific recordings of the location and type of kill to allow for identification of repetitive counts. If the same type of kill was seen in consecutive surveys in the same location, best professional judgment based on the level of desiccation was used to determine if the kill was a repeat sighting, or new since the previous survey.

Error may still be incurred in three ways: 1) natural or anthropogenic removal of carcasses between surveys, 2) washing away or removal from a storm event, or 3) undercounting based on visibility restrictions or the movement of the animal off of the roadway after being hit but before mortality occurred. All of these potential contributors of error would result in underestimations of vehicle-based vertebrate mortalities. Regardless of such error, the data provide a robust, and possibly conservative estimate of kill rates to initiate discussions of the ecological and socioeconomic impacts of roads on Reserve wildlife.

Analysis Methods

Basic summary statistics were calculated for the data including averages, standard error, frequency graphs, and one-way ANOVAs. Polygon length boundaries used for map figures and geospatial analyses were identified by GPS, where end points were tagged for every one-tenth mile increment according to the vehicle's odometer along each transect. Polygons within map figures are 55 m wide for ease of viewing and are not accurate representations of road edges.

Results

A high rate of mortality was documented with kills found regularly and frequently along all three transects. In three years of surveys, a total of 654 kills were recorded during 70 surveys of each of the three transects. During the first survey year, 231 kills were recorded; 208 in the second survey year; and 215 in the third survey year. A significantly higher number of kills were found on both the Culver-East and the Culver/Jefferson Transects than the Lincoln Transect (ANOVA, $F = 31.48$, $p < 0.001$; Table 1).

Table 1. Frequency of kills by transect and averaged over the total number of surveys (± SE). The kill rates can be inferred as either kill rates per day (liberal) or per week (conservative).

Transect	**Total # of Kills / mile**	**# of Surveys**	**Average # per Survey**	**Standard Error**
1: Lincoln	106	70	1.51	0.148
2: Culver-East	297	70	4.24	0.309
3: Culver/Jefferson	251	70	3.59	0.245

These results for the BWER transects are an order of magnitude, or in some cases two orders of magnitude, higher than regional survey kill rates (i.e. kills per mile; S. Anderson, *unpublished data,* 2011). The highest mortality throughout the evaluation period was desert cottontail rabbits (*Sylvilagus audubonii*) for a total of 192 kills or approximately 30% of the aggregate mortality (Figures 2 and 3). It is probable that a significant portion of the “unknown” and “small mammal” category (i.e. too damaged to definitively identify) were also cottontails. This would indicate that an estimate closer to 50-70% of the total kills were actually cottontails. Other vertebrates frequently sighted included squirrels (family Sciuridae) and the Virginia opossum (*Didelphis virginiana*). Larger mammals like raccoons (*Procyon lotor)* and coyotes (*Canis latrans)* were rarely seen; however, there were several anecdotal reports of coyote kills that were removed before the next scheduled survey took place. It is therefore possible that the larger fauna were underestimated. Occasionally, birds were also recorded. Figure 2 lists each species or animal group that was identified along the transects. Species with only one kill (or 0.2% of the aggregate mortality) included cat, coyote, California kingsnake, and rat. Common species were similar to those frequently identified on Critter Cam stations within the Reserve, especially for the smaller fauna and cottontail rabbits (Johnston et al. 2011, 2012).

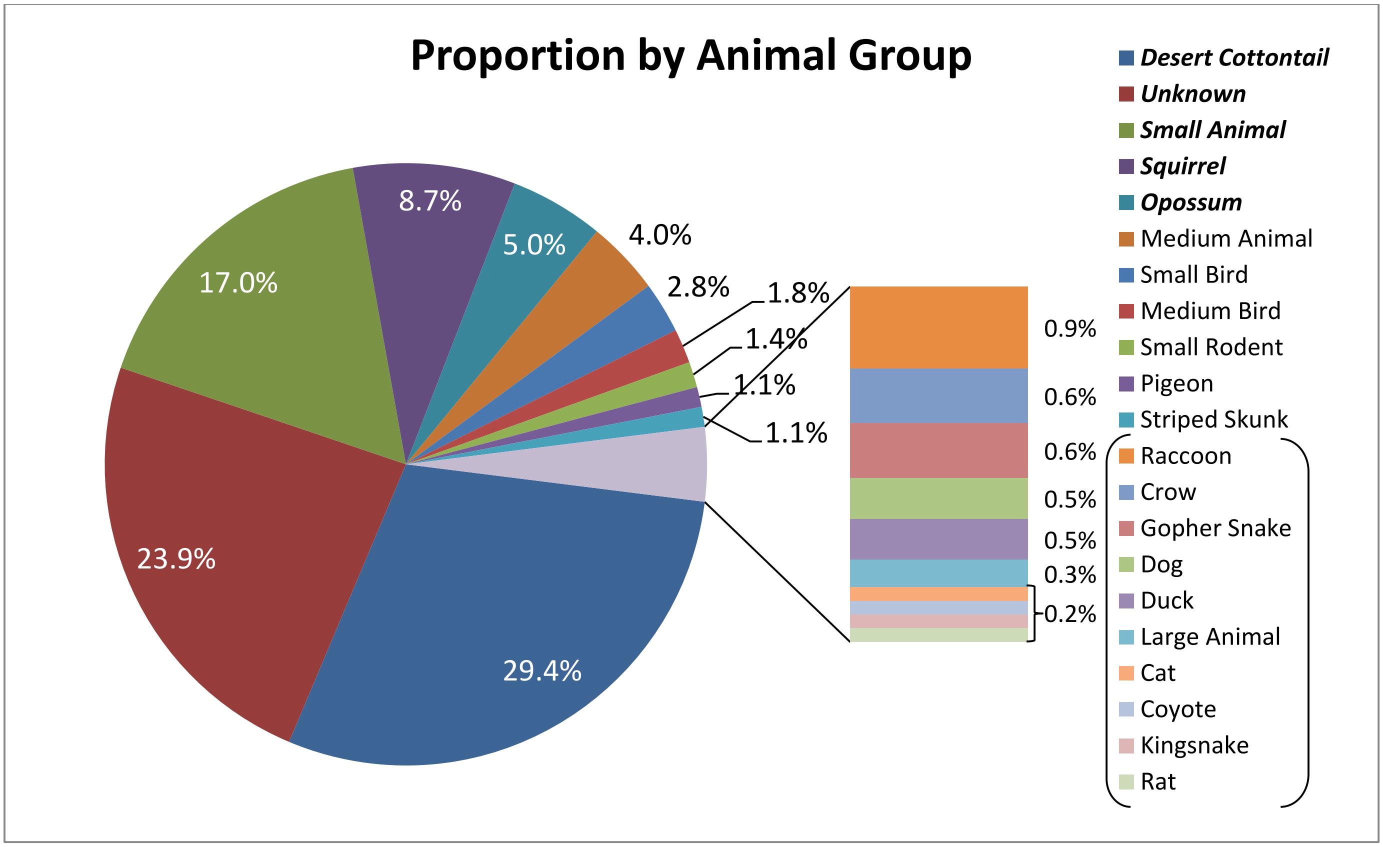


Figure 2. Proportion of animal mortality by group. Bold and italicized animal groups were the most common; animal groups in parenthesis each accounted for less than 1% of the total proportion.

Figure 3. Photographs of the most common vertebrate mortality species (desert cottontail rabbit) from Critter Cam stations within the Reserve.

When analyzed by month, the highest average mortality was seen during the warmer late spring and summer months from approximately May through June (Figure 4), consistent with broader regional patterns of kills (S. Anderson, *unpublished data,* 2014). The largest standard error was seen in January, due to one survey occurrence of a particularly high mortality count in 2010.

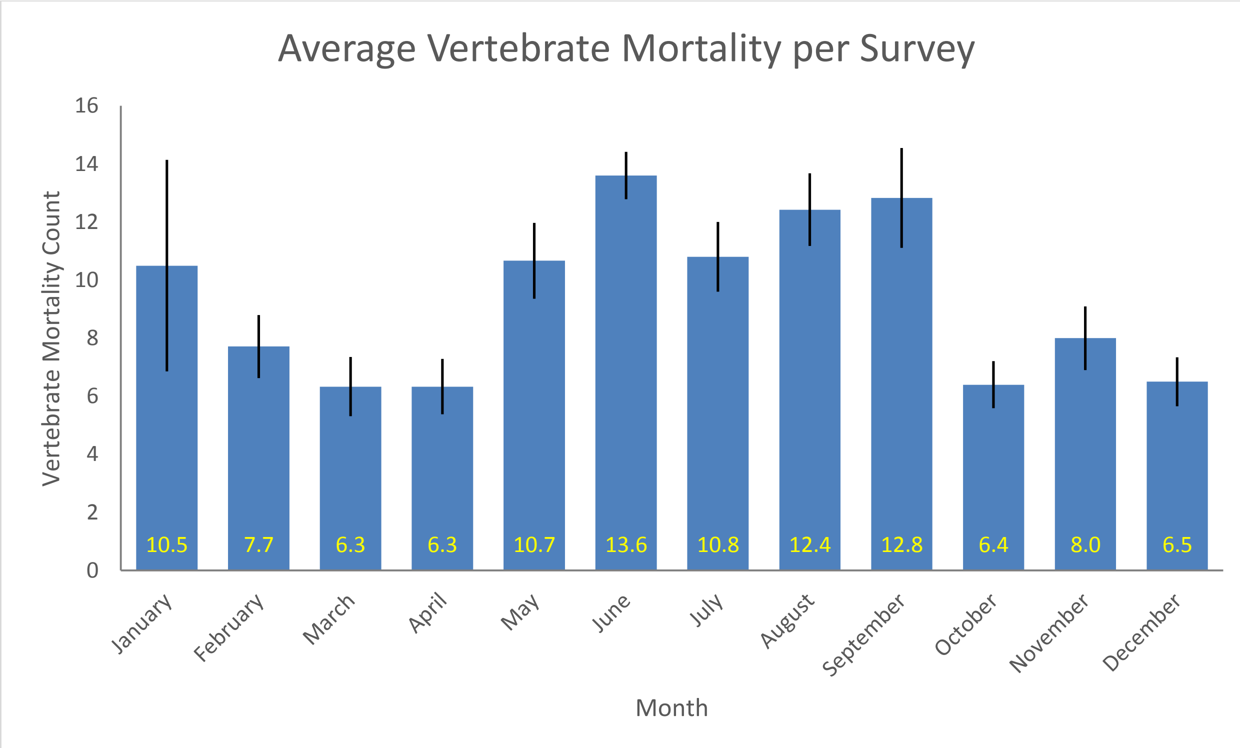


Figure 4. Vertebrate mortality counts averaged by total number of surveys for that month (± SE). Averages are analyzed using all three transects and all three years combined and are shown in yellow.

Figure 5 displays variable mortality rates (kills per tenth of a mile) based on transect, specific location, and side of the road. It also shows that the parallel sections of Culver and Jefferson along the perimeter of the "triangle" roughly in the center of the graph, are particularly hazardous to wildlife (Figure 5). This example location reinforces the trend that roads bisecting the Reserve with open space on both sides tend to display higher kill rates than Lincoln Boulevard, the third side of "triangle", which is bordered by urban development on one side.

Additionally, the bidirectional survey methodology allows us to independently assess the vulnerability of vertebrates along both directions of car travel within a given stretch of road. Animals using the road adjacent to the North Area C parcel (along eastern Culver Boulevard) seem to be more susceptible to traffic collisions than those along the opposite direction. A similar trend is noticeable for wildlife crossing eastern Culver Boulevard from the south-eastern corner of Area B towards the salt pan habitat (Figure 5). Reasons for the increased susceptibility along specific directional road segments such as visibility or barriers to Reserve access were not analyzed as part of this survey.

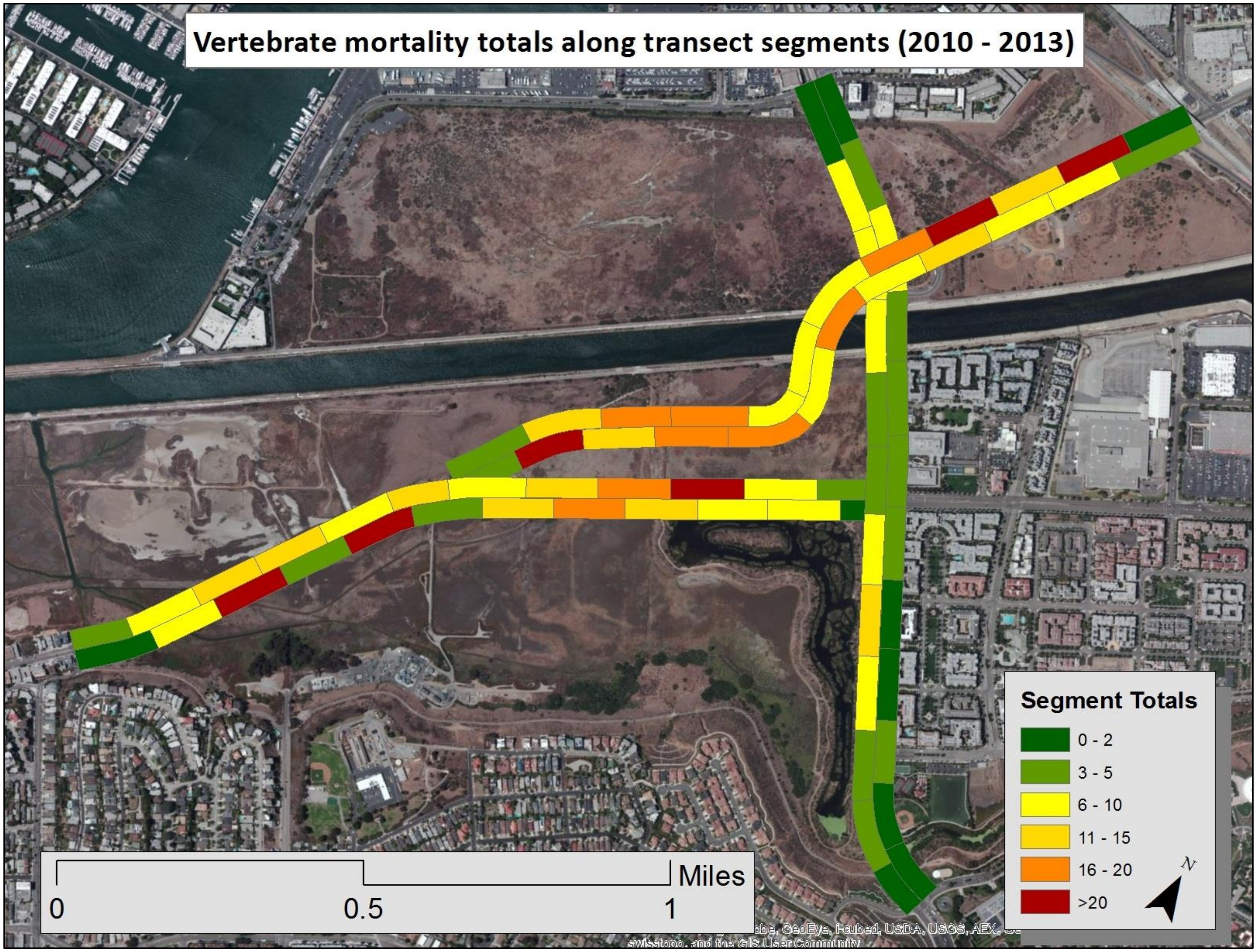


Figure 5. Map of total vertebrate mortality in 0.1-mile segments during the 2010-2013 surveys.

Conclusions

Roadways bisecting the BWER present a major obstacle to wildlife mobility, with specific segments of the roadways depicting higher kills rates than other segments. This survey, which identified roadway segments with higher kill rates and likely groups of impacted animals, could be used to inform future studies to identify or increase our understanding of the factors that differentiate the segments' kill rates. Examples of additional research and analysis could include an analysis of the data against high-resolution traffic patterns or wildlife cameras and an in-depth regional assessment for comparison. Additional data from municipalities tasked with roadkill removal would allow for an even higher degree of accuracy of the total mortality rates along the Reserve transects, especially for the larger fauna.

Additionally, underestimations of mortality may have occurred for some of the organism groups. Antworth el at. 2005 estimated that scavenging results in the removal of 60 – 97% of roadkill carcasses within the first 36 hours, with snakes exhibiting the highest disappearance rates. The results of this study may explain lower numbers of snakes identified on surveys, ultimately leading to an underestimation. The anthropogenic removal, particularly of larger wildlife species, also occurs through active collection by municipalities between surveys. While smaller carcasses (e.g. squirrels and rabbits) may go relatively unnoticed by passing motorists, the obstacle and dangers presented by carcasses of larger wildlife species (e.g. coyotes and dogs) is more noticeable and may prompt phone calls from drivers or immediate action by city workers. This process may help explain the lower relative frequency of observations of larger animals in the data.

The proximity of these major roadways to the Reserve, an undeveloped open space, increase the possibility of vehicle-related mortalities on wildlife and increase the potential costs and environmental effects associated with those incidences. The phenomenon of wildlife-vehicle collisions is not unique to the Reserve. In fact, wildlife vehicle collisions are an issue across the United States and even globally. Scientific literature exists on the topic and provides examples of potential measures for addressing it such as lowering speed limits and displaying cautionary signage. Measures such as those presented in the literature could be considered for the roadways within the Reserve.

Socioeconomic and Public Safety Concerns

In addition to the negative ecological effects, there are socioeconomic and public safety considerations associated with vertebrate mortality relating to collisions with wildlife and other vehicles. Nearly one quarter (26%) of Unites States drivers do not carry the necessary comprehensive insurance to cover vehicle damage as a result of collisions with larger wildlife species (IIS 2013). As a result, the socioeconomic ramifications associated with these situations results in these individuals incurring out-of-pocket expenses to repair wildlife-related vehicle damage.

A larger consideration involves drivers accidentally colliding with other motorists from last second evasive maneuvers to avoid wildlife collisions. Collisions between vehicles substantially increases the risk of bodily injury and vehicle damage when compared to collisions with wildlife (FWHA 2008, NHTSA 2014). In 2008, a study conducted by the U.S. Department of Transportation's Federal Highway

Administration estimated annual costs associated with wildlife-vehicles collisions to be $8,388,000,000 (FWHA 2008). Therefore, the interaction between vehicles and wildlife should be minimized where ever feasible and appropriate to reduce risks to both humans and wildlife.

Literature Cited

Anderson, S. Assistant Professor, Environmental Science and Resource Management, California State University, Channel Islands. *unpublished data,* 2011-2014.

Antwort, R.L, Pike, D.A. and E.E. Stevens. 2005. "Hit and Run: Effects of Scavenging on Estimates of Roadkilled Vertebrates." *Southeastern Naturalist* 4(4):647–656

Charry, B. and J. Jones. 2009. "Traffic Volume as a Primary Road Characteristic Impacting Wildlife: A Tool for Land Use and Transportation Planning." *Proceedings of the 2009 International Conference on Ecology and Transportation* (142): 159 – 172.

Coffin, A. 2007. "From Roadkill to Road Ecology: A Review of the Ecological Effects of Roads." *Journal of Transport Geography* (15): 396 – 406.

(CoLA) City of Los Angeles, Bureau of Engineering, "Navigate L.A. Map." Accessed 2014, http://navigatela.lacity.org/index01.cfm

Fimiani, Lisa. 2010. Executive Director, Friends of Ballona Wetlands; *personal communication*

Forman, R.T.T. and L.E. Alexander. 1998. "Roads and their Major Ecological Effects." *Annual Review of Ecology and Systematics* (29): 207 – 231.

(FWHA) Federal Highway Administration. 2008. "Wildlife-Vehicle Collision Reduction Study. Report FWHA 08 – 034." Prepared for United States Congress.

(IIS) "Auto Insurance: Cost and Expenditures." Insurance Information Institute, accessed 2014, http://www.iii.org/fact-statistic/auto-insurance.

Johnston, K.K., E. Del Giudice-Tuttle, I.D. Medel, S. Bergquist, D.S. Cooper, J. Dorsey, and S. Anderson. 2011. "The Ballona Wetlands Ecological Reserve Baseline Assessment Program: Year One Report." Santa Monica Bay Restoration Commission. Prepared for the California State Coastal Conservancy.

Johnston, K.K., Del Giudice-Tuttle, E., Medel, I.D., Piechowski, C.J., Cooper, D.S., Dorsey, J., and Anderson, S. 2012. "The Ballona Wetlands Ecological Reserve Baseline Assessment Program: Year Two Report." Santa Monica Bay Restoration Commission. Prepared for the California State Coastal Conservancy.

(NTHSA) National Traffic and Highway Safety Administration, National Center for Statistics and Analysis. 2014. "Traffic Safety Facts: 2012 Data." Publication DOT HS 812 070.

Riitters K.H. and J.D. Wickham. 2003. "How Far to the Nearest Road?" *Frontiers in Ecology and the Environment* 1(3):125-129.

(SMBRF) Santa Monica Bay Restoration Foundation. 2014. "Standard Operating Procedures: Motion Wildlife Camera Surveys." Prepared for the United Stated Environment Protection Agency. *Unpublished protocols.*

APPENDIX D17
Biological Assessment

This page intentionally left blank

BIOLOGICAL ASSESSMENT

FOR THE

BALLONA WETLANDS RESTORATION PROJECT

LOS ANGELES COUNTY, CALIFORNIA

July 11, 2017

1.0: INTRODUCTION

In accordance with 50 CFR § 402.14(c), this document provides the necessary information in support of the U.S. Army Corps of Engineers' (Corps) request to initiate informal consultation with the U.S. Fish and Wildlife Service (USFWS), and request their concurrence that the proposed project may affect, but is not likely to adversely affect, five federally listed species (El Segundo blue butterfly, California least tern, Coastal California gnatcatcher, Least Bell's vireo, and Light-footed Ridgway's rail) potentially found within the Project site.

1.1 SUMMARY OF PROPOSED ACTION

This Ballona Wetlands Restoration Project (Project) is a major Federal action for which discretionary permits would be required from the Corps for compliance with Section 404 of the Clean Water Act and Sections 10 and 14 of the Rivers and Harbors Act, among other authorities. Corps approval also would be required to modify the Operation, Maintenance, Repair, Replacement and Rehabilitation plan (OMRR&R, Los Angeles District, Corps of Engineers 1999) to reflect any approved changes to existing LACDA project infrastructure within the Project site. The proposed activities also would require discretionary approvals from state or local agencies for activities that could result in a significant impact on the physical environment. Therefore, environmental review of the Project is required under both NEPA and CEQA. The proposed activities are described in greater detail in the Executive Summary, as well as in Chapters 1 and 2, of the Ballona Wetlands Restoration Project (BWRP) Environmental Impact Statement/ Environmental Impact Report (EIS/EIR).

The Ballona Reserve has been subject to multiple jurisdictional delineations, most recently in August 2011 (Appendix D14 of BWRP EIS/EIR: WRA Delineation Report). A jurisdictional delineation also was conducted for the SoCalGas Property in 2013 (ICF 2013). A Preliminary Jurisdictional Determination was issued by the Corps for the Project site (Corps 2012). In the BWRP EIS/EIR, Table 3.4-5, Wetland and Nonwetland Potential Jurisdictional Resources, summarizes the potential aquatic features within the Project site under the jurisdiction of the Corps. Table 3.4-5 also summarizes the potential resources under the jurisdiction of the RWQCB and the California Coastal Commission (CCC).

After permits and funding are acquired and a contractor to implement the project is hired, restoration could commence immediately pending any biological constraints. Phase 1 is expected to be completed approximately 6.5 years later. Phase 2 would end approximately two years after completing Phase 1.

1.2 PURPOSE OF THE BIOLOGICAL ASSESSMENT

The purpose of this document is to provide the USFWS with the information required for the preparation of a biological opinion. This Biological Assessment describes the direct and indirect effects of the proposed project to the federally listed species discussed above, and their designated critical habitats, in accordance with Section 7 of the Endangered Species Act of 1973, as amended (ESA 16 U.S.C. 1531 *et seq.*). This document supports the Corps' request for the initiation of informal consultation with the USFWS for effects associated with the Project to those species listed above. The geographic scope of this assessment includes the BWRP site, as well as the LA-2 and LA-3 offshore disposal sites.

1.3 HISTORY OF CONSULTATION TO DATE

Although Section 7 consultation has not been initiated previously, representatives from the Corps and USFWS have met with the applicant, CDFW, periodically to discuss the proposed project. Furthermore, under NEPA, agencies other than the NEPA lead agency that have jurisdiction by law or special expertise with respect to the environmental effects anticipated from the Project may participate in the NEPA process as cooperating agencies (40 CFR §§1501.6, 1508.5). The United States Fish and Wildlife Service (USFWS) participated in the development of the Draft EIS/EIR for the Ballona Wetlands Restoration Project as a Cooperating Agency between January 5, 2015 and February 1, 2017 (USFWS 2017).

2.0: PROJECT DESCRIPTION

2.1 PROJECT LOCATION

The project site includes the Ballona Reserve and seven potential natural gas storage well relocation sites proposed within the SoCalGas Property located adjacent to the Ballona Reserve. The project site is located in southern California, south of Marina del Rey and east of Playa del Rey. It extends roughly from the Marina Freeway (State Route [SR] 90) to the east, the Westchester bluffs to the south, Playa del Rey to the west, and Fiji Way to the north. See Figure ES-1, Regional Location, in the BWRP EIS/EIR. CDFW manages and maintains primary ownership of the Ballona Reserve, with a smaller interest owned by the California State Lands Commission (CSLC). The Los Angeles County Department of Public Works-Flood Control District (LACFCD) owns and operates the Ballona Creek channel and levee system, which are features of the Federally-authorized Los Angeles County Drainage Area (LACDA) project.

2.2 ACTION AREA

Given waters of the U.S. occur throughout the site, and to account for potential noise effects, the entirety of the proposed project site, including upland areas, is included within the Action Area. In addition, to account for potential offshore disposal of dredged material, the offshore disposal sites LA-2 and LA-3 are also included within the Action Area.

2.3 PROJECT OVERVIEW

Seeking to restore wetland habitat and functions within the Ballona Reserve, CDFW is proposing a large-scale effort to restore, enhance, and establish native coastal wetland and upland habitats within the Ballona Reserve; these efforts would require incidental work on adjacent property. To implement the proposal, CDFW is working with the LACFCD to modify LACDA project features (e.g., the Ballona Creek channel and levee system) within the Ballona Reserve. The three main components of the Project are restoring wetlands and wetland functions within the Ballona Reserve, restoring and improving public access to the Ballona Reserve, and maintaining existing levels of flood risk management provided by the Ballona Creek channel and levee system. Aspects of the project that may affect federally-listed threatened or endangered species include extensive earth moving (grading) to attain elevations allowing for tidal influence, demolition of existing flood risk infrastructure (Ballona Creek channel levees), construction of new levees along the project perimeter, and also construction of attendant features such as a parking structure, new bridges (two), trails, and elevated pathways.

3.0: REGULATORY STATUS OF THE SPECIES

Discussions of the protection status, physical description, habitat association, behavior, geographic range, and other relevant information for the five species listed above can be found in Section 3.4. of the BWRP EIS/EIR (see Special-Status Biological Resources on pages 3.4-17 through 3.4-63).

4.0: ENVIRONMENTAL BASELINE

The historical wetlands ecosystem in the vicinity of the Ballona Reserve once spanned more than 2,100 acres and supported a great diversity of wetland types that stretched from Playa del Rey to Venice and inland to the Baldwin Hills (Dark et al. 2011; LACDPW 2013). By the mid-1900s, the Ballona wetlands was greatly reduced in extent and ecological function through the loss of most of its tidal salt marsh and freshwater marsh (Cooper 2008). The USEPA has determined all wetland habitats within the Ballona Reserve are impaired (USEPA 2012). Furthermore, a portion of the Ballona Reserve has been identified as “among the most degraded wetlands in California” using standardized wetland condition protocols (Johnston et al. 2015a). Therefore, CDFW proposes a large-scale restoration of the Ballona Reserve that would entail restoring, enhancing, and establishing native coastal wetland and upland habitats within the Ballona Reserve. Long term effects following completion of restoration activities would be beneficial and result in measureable improvements in the functions and values of habitat resources compared to existing conditions. The environmental baseline (affected environment) is described in greater detail in Section 3.4.2 of the BWRP EIS/EIR (pages 3.4-1 through 63).

5.0: EFFECTS OF THE ACTION AND DETERMINATION OF EFFECTS

The direct and indirect effects of proposed project implementation are expected to be beneficial overall, given the purpose of the Project is ecological restoration. The direct and indirect effects of the Project are described in greater detail in Section 3.4.6 of the BWRP EIS/EIR (see pages 3.4-77 through 81, 144 and 178).

FESA Species Effect Determinations to Support Section 7 Consultation

Following completion of a biological assessment (Appendix D17), the Corps has made a determination implementation of Alternative 1 may affect, but is not likely to adversely affect, the following Federally-listed species: El Segundo blue butterfly, light-footed Ridgway’s rail, coastal California gnatcatcher, California least tern, and least Bell’s vireo. As such, Section 7 consultation with USFWS is required.   In addition, the Corps has made a no effect determination regarding the following species: coastal dunes milk-vetch, salt marsh bird’s beak, Ventura marsh milk-vetch, Pacific pocket mouse, steelhead, green sea turtle, blue whale, fin whale, humpback whale, sei whale, sperm whale, gray whale, Guadalupe fur seal, leatherback turtle, loggerhead turtle, olive ridley sea turtle, and the scalloped hammerhead shark. As such, Section 7 consultation is not required for these species. The basis for each no effect determination is provided below. Table 1 below (also appearing in the EIS/EIR as Table 3.4-8) summarizes the impact determinations for Federally-listed species that could occur within the Project area, and the location of the analysis within the EIS/EIR.

El Segundo blue butterfly: No direct impacts to suitable or occupied habitat for El Segundo blue butterflies would occur. There is a limited potential for butterfly collisions with equipment during the flight season, and potential indirect impacts related to accumulation of fugitive dust, vibration, trail maintenance, and increased human activity. However, with implementation of Project Design Features and mitigation measures, Alternative 1 may affect, but is not likely to adversely affect El Segundo blue butterfly or its habitat.

Light-footed Ridgway's rail: This species has been observed foraging on the Project site, and has the potential to breed within the Project site. If site activities commence during the avian nesting season, the breeding success of light-footed Ridgway's rail could be impacted. Temporary disturbance of marsh habitat would occur during restoration activities. However, with implementation of Project Design Features and mitigation measures, Alternative 1 may affect, but is not likely to adversely affect light-footed Ridgway's rail or its habitat.

Coastal California gnatcatcher: This species is not expected to breed or forage on the Project site considering the habitat conditions onsite and the lack of recent observations of this species. However, since focused surveys for this species have not been conducted at the Ballona Reserve since 2011, although unlikely, potential impacts to nesting could occur if this species is confirmed present onsite. However, with implementation of Project Design Features and mitigation measures, Alternative 1 may affect, but is not likely to adversely affect coastal California gnatcatcher or its habitat.

TABLE 1: SPECIES EFFECT DETERMINATIONS TO SUPPORT SECTION 7 CONSULTATION – ALTERNATIVE 1

Species	Federal Listing Status	Location of Effects Analysis	Effect Determination
El Segundo blue butterfly	Endangered	1-BIO-1c	May Affect, Not Likely to Adversely Affect
California least tern	Endangered	1-BIO-1o	May Affect, Not Likely to Adversely Affect
Coastal California gnatcatcher	Threatened	1-BIO-1j	May Affect, Not Likely to Adversely Affect
Least Bell's vireo	Endangered	1-BIO-1k	May Affect, Not Likely to Adversely Affect
Light-footed Ridgway's rail	Endangered	1-BIO-1p	May Affect, Not Likely to Adversely Affect
Coastal dunes milk-vetch	Endangered	3.4.2.2 Environmental Setting, Special-Status Plant Species	No Effect
Salt marsh bird's-beak	Endangered	3.4.2.2 Environmental Setting, Special-Status Plant Species	No Effect

Species	Federal Listing Status	Location of Effects Analysis	Effect Determination
Ventura marsh milk-vetch	Endangered	3.4.2.2 Environmental Setting, Special-Status Plant Species	No Effect
Pacific pocket mouse	Endangered	3.4.2.2 Environmental Setting, Special-Status Mammals	No Effect
Steelhead	Endangered	3.4.2.2 Environmental Setting, Special-Status Fish	No Effect
Green sea turtle	Threatened	3.4.2.2 Environmental Setting, Special-Status Reptiles and Amphibians	No Effect
Blue whale	Endangered	3.4.6.1 Alternative 1: Full Tidal Restoration/Proposed Action, FESA Species Effect Determinations to Support Section 7 Consultation	No Effect
Fin whale	Endangered	3.4.6.1 Alternative 1: Full Tidal Restoration/Proposed Action, FESA Species Effect Determinations to Support Section 7 Consultation	No Effect
Humpback whale	Threatened	3.4.6.1 Alternative 1: Full Tidal Restoration/Proposed Action, FESA Species Effect Determinations to Support Section 7 Consultation	No Effect
Sei whale	Endangered	3.4.6.1 Alternative 1: Full Tidal Restoration/Proposed Action, FESA Species Effect Determinations to Support Section 7 Consultation	No Effect
Sperm whale	Endangered	3.4.6.1 Alternative 1: Full Tidal Restoration/Proposed Action, FESA Species Effect Determinations to Support Section 7 Consultation	No Effect
Gray whale, Western North Pacific DPS	Endangered	3.4.6.1 Alternative 1: Full Tidal Restoration/Proposed Action, FESA Species Effect Determinations to Support Section 7 Consultation	No Effect
Guadalupe fur seal	Threatened	3.4.6.1 Alternative 1: Full Tidal Restoration/Proposed Action, FESA Species Effect Determinations to Support Section 7 Consultation	No Effect

Species	Federal Listing Status	Location of Effects Analysis	Effect Determination
Leatherback turtle	Endangered	3.4.6.1 Alternative 1: Full Tidal Restoration/Proposed Action, FESA Species Effect Determinations to Support Section 7 Consultation	No Effect
Loggerhead turtle, North Pacific Ocean DPS	Endangered	3.4.6.1 Alternative 1: Full Tidal Restoration/Proposed Action, FESA Species Effect Determinations to Support Section 7 Consultation	No Effect
Olive ridley sea turtle	Threatened	3.4.6.1 Alternative 1: Full Tidal Restoration/Proposed Action, FESA Species Effect Determinations to Support Section 7 Consultation	No Effect
Scalloped hammerhead shark	Threatened	3.4.6.1 Alternative 1: Full Tidal Restoration/Proposed Action, FESA Species Effect Determinations to Support Section 7 Consultation	No Effect

California least tern: This species is not expected to breed or forage on the Project site considering the habitat conditions onsite and the lack of recent observations of this species. This species unsuccessfully attempted to breed in Area B in 2014, so potential impacts to nesting could occur if this species attempts to nest onsite again. However, with implementation of Project Design Features and mitigation measures, Alternative 1 may affect, but is not likely to adversely affect California least tern or its habitat.

Least Bell's vireo: This species is known to breed and forage in Southeast Area B. Potential impacts to nesting could occur if this species attempts to nest onsite again. However, with implementation of Project Design Features and mitigation measures, occupied habitat for this species would be avoided. Alternative 1 may affect, but is not likely to adversely affect least Bell's vireo or its habitat.

Coastal dunes milk-vetch, salt marsh bird's beak, and Ventura marsh milk-vetch: None of these plants were detected during floristic rare plant surveys last conducted at the Project site in April 2011. Coastal dunes milk-vetch and salt marsh bird's beak were last detected in the early 1900s and 1981, respectively, between 1 to 4 miles from the Ballona Reserve. The nearest and most recent documented occurrence of Ventura marsh milk-vetch was in 1951 within the historic Ballona wetlands (WRA 2011a). Therefore, Alternative 1 would have no effect on coastal dunes milk-vetch, salt marsh bird's beak or Ventura marsh milk-vetch.

Pacific pocket mouse: This species has not been observed on-site since 1938, despite surveys conducted in 1996, 2000, 2007, 2009, 2010, and 2011. Given the lack of any recent observations, Alternative 1 would not affect the Pacific pocket mouse.

Steelhead: Steelhead have only been observed once near the Project site; a 2008 sighting of two individuals upstream of the Project site. Furthermore, the existing Ballona Creek would provide only limited spawning habitat for this species. Therefore, given the lack of regular or recent observations, coupled with the limited ability of Ballona Creek to support steelhead reproduction, Alternative 1 would not affect steelhead.

Green sea turtle: This species has not been observed onsite. Given the lack of suitable habitat elements and in combination with Project Design Feature BIO-8: Biological Monitoring and Safety Zones to Protect Marine Mammals and Sea Turtles , Alternative 1 would not affect green sea turtles.

In addition, in consideration of the Project's potential inclusion of offshore disposal of dredged material, the Corps has made a determination that implementation of the Project would not affect the following Federally-listed species: blue whale (*Balaenoptera musculus*), fin whale (*Balaenoptera physalus*), humpback whale (*Megaptera novaeangliae*), sei whale (*Balaenoptera borealis*), sperm whale (*Physeter macrocephalus*), gray whale [Western North Pacific distinct population segment (DPS) (*Eschrichtius robustus*)], Guadalupe fur seal (*Arctocephalus townsendi*), leatherback turtle (*Dermochelys coriacea*), loggerhead turtle [North Pacific Ocean DPS (*Caretta caretta*)], olive ridley sea turtle (*Lepidochelys olivacea*), green turtle (*Chelonia mydas*), scalloped hammerhead shark (*Sphyrna lewini*). These species are highly mobile and unlikely to be affected by slow-moving dredge material transport vessels as they haul material to the LA-2 offshore disposal site. In addition, in the original site designation for LA-2 and the accompanying EIS which was prepared by EPA and the Corps, Section 1.1.3 of the General Introduction Chapter 1 describes the proposed action: designation of the site for offshore disposal, including transport to and discharge of dredged material at the LA-2 site (see 1.1.3: dredging operations). Furthermore, the EIS includes correspondence from NMFS providing a list of species that may be affected by the proposed action (same species listed above), and a subsequent letter from NMFS concurring with a determination those species would not be adversely affected. Although the EIS was finalized in 1987, no operational changes in the transport and discharge of dredged material to/from/at LA-2 have been identified that would require re-initiation of Section 7 consultation for these species by the Corps. In addition, the USEPA prepared a final site designation for LA-3 in July 2005 that included a re-evaluation of LA-2. The Final EIS also concluded no effect to listed species.

6.0: CUMULATIVE EFFECTS

Cumulative effects are effects resulting from future state or private actions, not involving federal actions, that are reasonably certain to occur in the Action Area of the federal action subject to consultation. Cumulative effects are described in Section 3.4.7 of the BWRP EIS/EIR (see pages 3.4-207 through 212).

7.0: MITIGATION MEASURE RECOMMENDATIONS

Proposed major mitigation measures to address potential impacts to federally-listed threatened or endangered species are listed below:

El Segundo blue butterfly: BIO-1b-ii (Biological Monitoring) and BIO-1b-iii (Noxious Weed Control Plan)(See BWRP EIS/EIR pages 3.4-88 through 89).

California least tern: Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1i-i (Nesting Bird and Raptor Avoidance)(See BWRP EIS/EIR pages 3.4-113 through 115).

Coastal California gnatcatcher: Mitigation Measure BIO-1j-i: Coastal California Gnatcatcher Avoidance (See BWRP EIS/EIR pages 3.4-102 through 104). To avoid indirect impacts of restoration on nesting coastal California gnatcatcher, work activities within 500 feet of coastal scrub vegetation shall be timed to avoid the season when nests may be active for this species (March 15 to June 30). If avoidance of work activities within this time period is not feasible, a focused survey for coastal California gnatcatchers shall be conducted in the season prior to initiation of work activities to determine their presence or absence within suitable habitat 500 feet of work limits. In accordance with the USFWS protocol for the coastal California gnatcatcher (USFWS 1997) focused surveys shall be conducted by a permitted biologist a minimum of: a) six (6) surveys at least on week apart between March 15-June 30; or b) nine (9) surveys conducted at least two weeks apart between July 1 to March 14. The results shall be submitted in a report to the Corps, USFWS, and CDFW. If occupied habitat and/or nesting individuals are determined to be present based on the focused survey, measures to avoid take of coastal California gnatcatchers and active nests, such as the creation of suitably-sized no-work buffers, shall be implemented prior to restoration activities.

Prior to construction or post-restoration maintenance activities during the breeding season, a preconstruction clearance and nest survey shall be performed by a qualified biologist within 7 days prior to work activities to determine the location of nests within 500 feet of work areas. Measures such as erecting a temporary barrier with stacked hay bales shall be implemented to reduce the amount of work noise and motion in proximity to active nests. If a nest is detected, work shall halt within 500 feet of the nest, and the nest shall be monitored on a weekly basis by a qualified biologist familiar with coastal California gnatcatchers, until he/she determines the nest is no longer active or the young have fledged.

Least Bell's vireo: Mitigation Measures BIO-1b-ii (Biological Monitoring), BIO-1b-iii (Noxious Weed Control), and BIO-1k (Least Bell's Vireo Avoidance)(See BWRP EIS/EIR pages 3.4-104 through 107).

Mitigation Measure BIO-1k: Least Bell's Vireo Avoidance. To avoid direct impacts of restoration on occupied habitat or potentially suitable habitat for least Bell's vireos, all willow riparian habitat shall be avoided. All aspects of Project design such as the establishment of tidal channels, and any associated habitat disturbance including vegetation trimming or removal, shall avoid all willow habitat in Southeast Area B.

To avoid indirect impacts of restoration on nesting least Bell's vireos, work activities within 500 feet of riparian vegetation shall be timed to avoid the season when nests may be active for this species (March 15 to September 15). If avoidance of work activities within this time period is not feasible, a focused survey for least Bell's vireos shall be conducted in the season prior to initiation of work activities to determine their presence or absence within suitable habitat 500 feet of work limits. The focused survey shall consist of eight site visits conducted 10 days apart during the period of April 10 to July 31 in compliance with the USFWS protocol. The results shall be submitted in a report to the Corps, USFWS and CDFW. If occupied habitat and/or nesting individuals are determined to be present based on the focused survey, measures to avoid take of least Bell's vireos and active nests shall be implemented prior to restoration activities.

Prior to construction activities during the breeding season, a preconstruction clearance and nest survey shall be performed by a qualified biologist within 7 days prior to work activities to determine the location of nests within 500 feet of work areas. Measures such as erecting a temporary barrier with stacked hay bales shall be implemented to reduce the amount of work noise and motion in proximity to active nests. If a nest is detected, work shall halt within 500 feet of the nest, and the nest shall be monitored on a weekly basis by a qualified biologist familiar with least Bell's vireos, until he/she determines the nest is no longer active or the young have fledged.

Post-restoration, willow habitat in Southeast Area B shall be monitored to ensure tidal habitats are not adversely affecting the survival or health of the willow thickets. The tidal range shall be managed to prevent salinity-related impacts to the willow thickets and ensure persistence of this habitat. Monitoring requirements and adaptive management actions for least Bell's vireos and occupied/suitable habitat for this species during restoration and post-restoration shall be identified in the Habitat Restoration and Monitoring Plan.

Light-footed Ridgway's rail: Mitigation Measures BIO-1b-ii (Biological Monitoring) and BIO-1i-i (Nesting Bird and Raptor Avoidance)(See BWRP EIS/EIR pages 3.4-115 through 117).

A complete list of proposed mitigation measures are described throughout Section 3.4.7 of the BWRP EIS/EIR.

8.0 PREPARERS AND REVIEWERS

Regulatory Division, U.S. Army Corps of Engineers, Los Angeles District:

Daniel P. Swenson, D.Env.

Aaron O. Allen, Ph.D.

9.0 REFERENCES CITED

See Section 3.4.8 (page 3.4-213) of the BWRP EIS/EIR.