

ANDRÉE CLARK BIRD REFUGE BIOLOGICAL SITE ASSESSMENT



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List of Abbreviations

| Abbreviation | Definition |
|--------------|--|
| ACOE | Army Corps of Engineer |
| BCC | Bird of Conservation Concern |
| BMI | Benthic Macroinvertebrate |
| CDFW | California Department of Fish and Wildlife |
| CEQA | California Environmental Quality Act |
| City | City of Santa Barbara |
| CNDDDB | California Natural Diversity Database |
| CNPS | California Native Plant Society |
| dbh | diameter at breast-height |
| ESA | Endangered Species Act |
| KR&EC | Kisner Restoration and Ecological Consulting, Inc. |
| MHHW | Mean Higher High Water |
| OEC | on-site environmental coordinator |
| Project | Andrée Clark Bird Refuge Restoration Project |
| SBBG | Santa Barbara Botanical Garden |
| SSC | Species of Special Concern |
| USFWS | U.S. Fish and Wildlife Service |

1. SUMMARY

This report is a Biological Site Assessment submitted to the City of Santa Barbara's (City) Creek Division for the Andrée Clark Bird Refuge Restoration Project (Project). This report presents a detailed description of the biological resources currently found within the Project site. In addition, the potential impacts to these resources by the proposed Project are assessed and avoidance, minimization, and mitigation measures are included when necessary to reduce Project related impacts to a less than significant level. We have also included optional recommendations to expand the Project's habitat restoration benefits to plants and wildlife. The approximately 42-acre Project site is located at 1400 East Cabrillo Boulevard in Santa Barbara, California (Figure 1).

The Project would restore and enhance the water quality of the approximately 30 acres of open water at the Bird Refuge by replacing the existing weir under Cabrillo Boulevard with a weir that would allow for better management of water flow between the lagoon and ocean, improved flushing of nutrients and silt, and allow for adaptive management related to sea level rise and habitat conditions within the lagoon. Additionally, the creation of the approximately 0.3-acre low flow water bio-retention basin on open space within the Municipal Tennis Center would help treat runoff before it enters the lagoon.

The Project would also restore, create, and enhance 6 acres of native habitats along the perimeter of the lagoon, beach, and on the three islands. Select non-native vegetation on the islands' shores would be removed and replaced with native species and/or recontoured to provide better habitat for aquatic species and allow for more productive transition zones during short-term (berm breaches/drought) and long-term (sea level rise) water level fluctuations. Approximately 0.3 acre of intertidal salt-marsh would be created in the lagoon downstream of the weir and will be reshaped and re-contoured to provide better refugia for tidewater goby during breaching events. Approximately 0.83 acres of dune habitat will be restored around the beach side lagoon. The restored dunes will be fenced to discourage trampling but would allow public access and viewing from the perimeter. The Project also proposes periodic sand berm priming (mechanically lowering the beach berm) at the mouth of the lagoon prior to rain events to allow the lagoon to fill, overtop, and flow into the ocean.

1.1 PROJECT RELATED IMPACTS

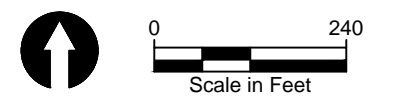
Project related grading could have potentially significant impacts to wetlands, tidewater goby (*Eucyclogobius newberryi*), southwestern pond turtle (*Actinemys marmorata*), and water quality; however, these potential short-term impacts can be mitigated and the long-term effects are expected to be beneficial to wetlands, the tidewater goby, southwestern pond turtle, and water quality. There are potential short-term impacts to riparian habitat, coast live oaks, native trees, special status plants, special status wildlife, common wildlife, and dune habitats. All of these potential impacts are minor and will be mitigated where feasible. Long-term effects to these habitats, plants, and wildlife are considered to be beneficial and the Project will restore and enhance the biological resources of this area.

1.2 FINDINGS

The long-term project related impacts for the Project to wetlands, riparian habitat, coast live oaks, native trees, special status plants and animals, common wildlife, dune habitat, and water quality are all *a beneficial impact (Class IV)* due to the restoration efforts associated with the Project. The short-term Project related impacts to wetlands, special status wildlife, and water quality are significant but mitigable (*Class II*); however, implementation of the Project restoration plan and proposed minimization and mitigation measures would reduce impacts to a less than significant level. The Project has no significant impacts to biological resources from noise, lighting, or cumulative Project related impacts other than the noise impacts described for special status species and common wildlife.

With regards to the Class II impacts, the wetlands and water quality could be significantly and adversely impacted by removal and replacement of the weir, recontouring and creation of wetland and associated habitats, and siltation after construction. These potential impacts will be avoided, minimized, and mitigated by the Project proposed minimization and mitigation measures and the temporary impacts to wetlands will be mitigated for at a ratio well over a 3:1 (approximately 0.75 acres of temporary wetland impacts and 2.6 acres of saltmarsh wetland, 0.9 acres willow scrub, 0.4 acres of woodland, 1.1 acres of coastal sage scrub, 0.37 acres of foredune, 0.5 acres backdune, and 0.06 wildflower restoration).

As for Class II impacts to sensitive wildlife, the tidewater goby is the only State or Federally listed plant or animal species known to occur on the Project site. Six special status bird species have been documented on the Project site and one turtle species that is “under review” for listing under the Endangered Species Act (ESA). Protective fencing and relocation of gobies and native fish and turtles outside of the work zones will avoid and/or minimize mortality. Potential direct and indirect impacts to sensitive wildlife species will be mitigated for by habitat restoration and enhancement and will benefit the species in the long-term.



AERIAL SOURCE: ESRI basemaps 2014.
HORIZONTAL DATUM: California State Plane Zone 5, NAD83, U.S. Feet.
VERTICAL DATUM: Mean Lower Low Water (MLLW).

Publish Date: 2017/06/08 12:01 PM | User: epipkin
 Filepath: \\social2\disneyland\AutoCAD Project Files_Projects\1214-Santa Barbara\1214-Andee Clark Bird Refuge\Sediment Char\1214-RP-005 LOCATION.dwg Project Location



Figure 1
Project Location

Conceptual Design
 Andrée Clark Water Quality and Habitat Improvement Project

2. PROJECT DESCRIPTION

2.1 PROJECT SITE HISTORY

Historically, the Bird Refuge was connected to Sycamore Creek (located to the west) via a lagoon on the beach. Construction of the railroad, highway, and Cabrillo Boulevard reduced the size of the Bird Refuge and restricted water flow. Except for a small remnant, the lagoon on the beach has been replaced by Cabrillo Boulevard and the East Beach volleyball courts. Under the historic configuration, there was more freshwater input (the Sycamore creek watershed is almost four times larger than the current Bird Refuge lagoon watershed). This resulted in more frequent breaching of the beach berm during rain events, which resulted in more frequent freshwater and tidal exchange.

Historical photographs and maps indicate that the Bird Refuge was never a full tidal wetland but was rather intermittent and tidal only during the rainy season. The beach berm would typically reestablish shortly after rain events and during the dry season would be completely cut-off to tidal exchange. In June/July, the lagoon would transition to a dry salt panne typical of Southern California salt flats such as the lower section of Devereux Slough. This would last until November or December depending on rainfall amounts.

True restoration of the Bird Refuge ecology is no longer feasible because it would require reconnection to Sycamore Creek. This is problematic due to Cabrillo Boulevard and the extremely popular recreational use of East Beach for volleyball courts. Also, the Bird Refuge currently provides important open water wetland bird habitat and, as sea level continues to rise, will allow for transition to a full tidal wetland with diverse habitat zones/elevations and areas available for migrating upland habitat.

Poor water quality conditions and strong odors at the lagoon have been problematic since the Bird Refuge was dredged and disconnected from Sycamore Creek. In the past ten years, the poor water quality (low dissolved oxygen levels, cyanobacteria blooms, poor water clarity, and strong odor) has continued to deteriorate due to the accumulation of nutrients, lack of flushing storm events, and drought conditions. Ocean going aquatic species such as mullet that used to inhabit the lagoon are no longer present. Lack of a properly functioning weir gate and permitting restrictions for management of the beach berm of the lagoon have significantly reduced water flow and habitat connection between the ocean and the beach lagoon and Bird Refuge. Without the proposed restoration Project, the habitat value and water quality conditions will continue to deteriorate.

2.2 PROJECT DESCRIPTION

Restoration of the physical and ecological processes at the Bird Refuge is a key component of the Project (Table 1). By installing a fully functioning weir gate and managing the beach berm, improved connectivity between the ocean and lagoon and Bird Refuge will be achieved. This will help mimic the historical condition, when Sycamore Creek was connected to the Bird Refuge, improving water quality and creating healthier conditions for aquatic life. It will also reestablish better migration corridors for marine fish and invertebrates between the ocean and lagoon. The

weir gates will allow for management of a more dynamic coastal wetland system that is closer to its historic condition. Water levels will fluctuate more often resulting in more varied and productive habitat conditions. Ultimately, approximately 6.4 acres of native habitat will be restored and enhanced and 0.2 acres of open water / intertidal mudflats will be created (Table 1).

Table 1. Areas of Proposed Habitat Restoration, Enhancement, and Creation

| Habitat Restoration/ Enhancement and Creation | Habitat Restoration/ Enhancement Area (Ac) | Habitat Creation Area (Ac) |
|--|---|---------------------------------------|
| Salt Marsh | 1.8 | |
| Salt Marsh (Beach) | 0.3 | |
| Salt Marsh (Island) | 0.4 | |
| Transition Zone | 0.4 | |
| Willow Scrub | 0.8 | |
| Willow Scrub (Island) | 0.1 | |
| Woodland | 0.4 | |
| Coastal Sage Scrub | 1.1 | |
| Foredune (Beach) | 0.4 | |
| Back Dune (Beach) | 0.5 | |
| Back Dune (Islands) | 0.1 | |
| Open Water/Intertidal Mudflat | | 0.2 |
| Native Wildflower | 0.1 | |
| Total | 6.4 | 0.2 |

2.3 PROJECT COMPONENTS

The environmental goals of the restoration Project are to improve wildlife habitat (aquatic, terrestrial, and avian), water quality, aesthetics, and reduce odors while maintaining current flood protection and passive recreation. In addition, the Project needs to be cost effective and acceptable to permitting agencies. The Project will consist of six primary components:

1. Construction of a low flow water treatment bio-retention basin and bio-retention swale.
2. Removal and replacement of the weir/dam and weir gate.
3. Restoration of approximately 1 acre of dune habitat (including approximately 0.1 acres of back dune habitat on the eastern island).
4. Periodic breach priming of the sand berm at the mouth of the beach side lagoon.
5. Expand beach lagoon and create refuge for tidewater gobies.
6. Restoration of native habitat around the perimeter of the lake and on the islands.

2.3.1 Low-flow Bio-Retention Basin

Construction of a low flow water treatment basin on open space within the Municipal Tennis Center on Old Coast Highway (Figure 2). The vegetated basin will be designed to remove nutrients from dry season low flow and improve water quality within the lagoon.

2.3.2 Replacement of Weir

Removal and replacement of the weir/dam and weir gate (Figure 2) at Cabrillo Boulevard. The weir currently blocks lagoon water from flowing into the ocean (except during very large rain events) and the existing weir gate is undersized and is not operational. Removal and replacement of the weir with new water control gates and improved debris racks would allow better management of water flow between the lagoon and ocean, and improved flushing of nutrients. It would also allow for adaptive management related to sea level rise and habitat conditions within the lagoon.

2.3.3 Restoration of Dune Habitat

Restoration of approximately 1 acre of dune habitat around the beach side lagoon (Figure 2). All plant species installed will be native to Southern California dunes. The restored dunes will be fenced to discourage trampling but will allow public access and viewing around the perimeter. Educational opportunities will be enhanced with the installation of interpretive signage explaining dune/wildlife habitat, and sea level rise. In addition, the beach lagoon will be reshaped and re-contoured to provide better refugia for tidewater goby during breaching events. If there are sandy soils available from the lagoon excavation, the sand will be added to the bird refuge in areas where the waters are at least two feet deep and outside of areas expected to have fast currents. The sands would be placed such that the sand is about twelve inches deep and have at least a foot of water above the sand. The two likely areas would be to the east of the weir and between the western and central saltmarsh wetland creation areas.

2.3.4 Sand Berm Priming

Periodic breach priming of the sand berm at the mouth of the beach side lagoon (Figure 2). The breach priming would involve mechanically lowering the beach berm (using a small front-end loader) prior to rain events to allow the lagoon to fill, overtop, and flow into the ocean. We anticipate breach priming would occur approximately 3-4 times per rainy season (depending on rain events). No modifications to the beach berm would be conducted during the dry season months (May-September).

2.3.5 Lagoon Expansion

The lagoon south of the weir would be expanded and an off-channel “backwater” would be created in the northeastern portion. This expansion will provide better habitat for aquatic species and allow for a resting area during heavy outflows and would create a more productive transition zone during short-term (berm breaches/drought) and long-term (sea level rise) water level fluctuations.

2.3.6 Habitat Restoration

Restoration of habitat around the perimeter of the lagoon and on the islands (Figure 2) will include removal of non-native plant species and replacement with native species, re-contouring along the lagoon shoreline in several locations and recontouring portions of the islands to improve foraging habitat for bird species which will provide better habitat for aquatic species and allow for more productive transition zones during short-term (berm breaches/drought) and long-term (sea level rise) water level fluctuations. Rock or boulder clusters will be positioned in restored areas to create a more diverse habitat for smaller animals.

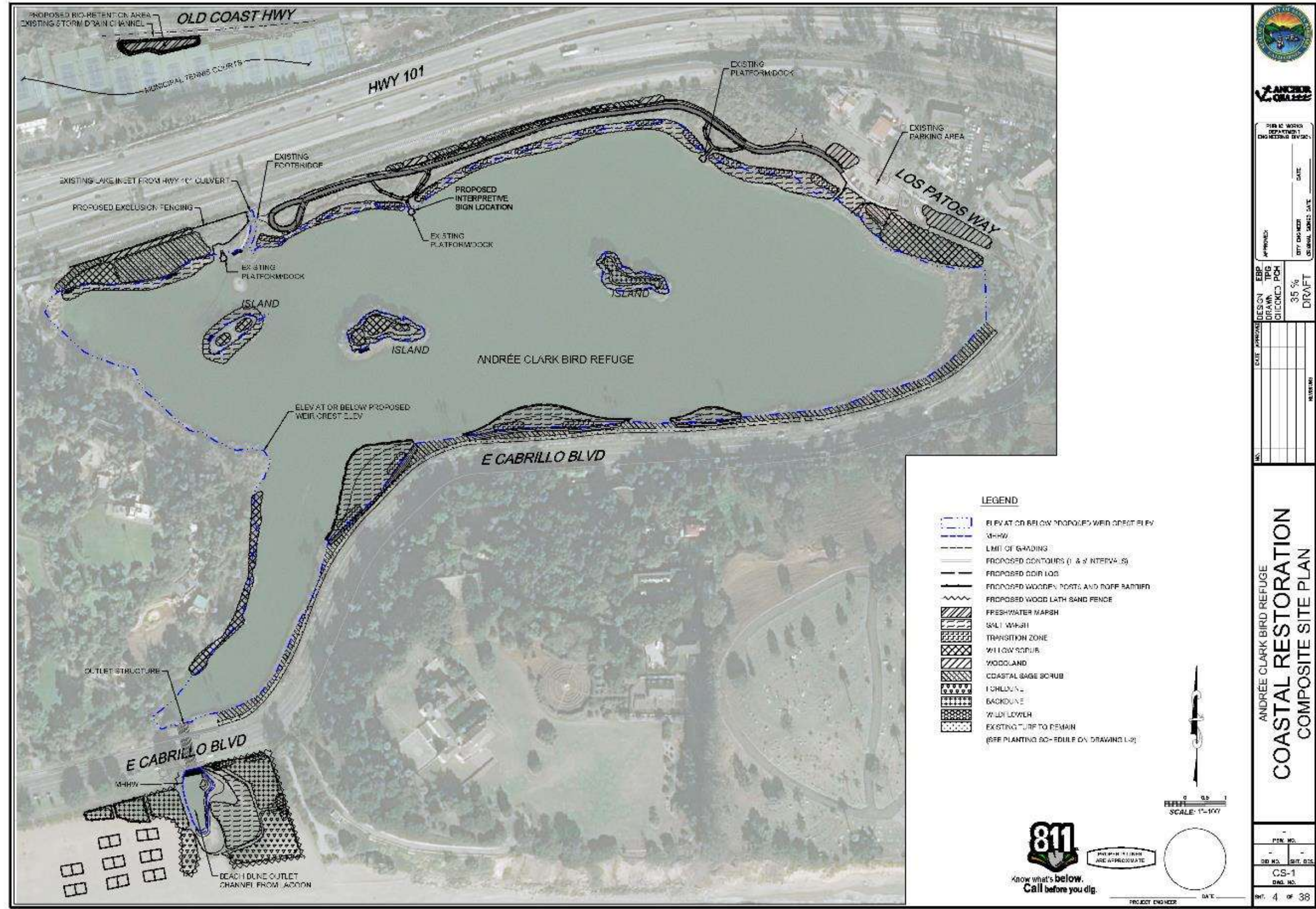


Figure 2. Proposed Construction Components

The proposed restoration efforts include: 1) removal of approximately 7 acres of non-native habitat including approximately 0.8 acres of non-native vegetation in the northwestern portion of the refuge, approximately 0.9 acres of non-native vegetation on the three islands, approximately 0.6 acres of non-native vegetation in the northeastern portion of the refuge, and approximately 1.2 acres of iceplant and non-native dominated habitat south of Cabrillo Boulevard; and 2) restoring and enhancing approximately 6.4 acres of habitat with native vegetation from local genetic stock (see Table 1).

Non-native tree removal is anticipated to include the removal of the following trees (Table 2). Plants with a diameter-at-breast-height (dbh) greater than four-inches are classified as a tree and those with a smaller dbh are classified as a shrub. Though non-native vegetation does have some habitat value to wildlife, they have less habitat value than a similar volume of native plants.

Table 2. Location, Number, and Sizes of Non-Native Trees Proposed for Removal

| Location | Number | Scientific name | Diameter at breast height |
|-----------------|---------------|----------------------------|----------------------------------|
| Eastern Island | 3 | <i>Myoporum laetum</i> | 4.5 inches |
| Eastern Island | 2 | <i>Myoporum laetum</i> | 5 inches |
| Eastern Island | 3 | <i>Myoporum laetum</i> | 5.5 inches |
| Eastern Island | 2 | <i>Myoporum laetum</i> | 6 inches |
| Eastern Island | 1 | <i>Myoporum laetum</i> | 8 inches |
| Eastern Island | 1 | <i>Myoporum laetum</i> | 11 inches |
| Middle Island | 7 | <i>Myoporum laetum</i> | 4.5 inches |
| Middle Island | 4 | <i>Myoporum laetum</i> | 5 inches |
| Middle Island | 3 | <i>Myoporum laetum</i> | 6 inches |
| Middle Island | 1 | <i>Myoporum laetum</i> | 7 inches |
| Middle Island | 1 | <i>Myoporum laetum</i> | 8 inches |
| Western Island | 4 | <i>Myoporum laetum</i> | 5 inches |
| Western Island | 9 | <i>Myoporum laetum</i> | 6 inches |
| Western Island | 1 | <i>Myoporum laetum</i> | 7 inches |
| Western Island | 1 | <i>Myoporum laetum</i> | 8 inches |
| Western Island | 3 | <i>Myoporum laetum</i> | 9 inches |
| Western Island | 1 | <i>Myoporum laetum</i> | 10 inches |
| Western Island | 2 | <i>Myoporum laetum</i> | 11 inches |
| Western Island | 2 | <i>Myoporum laetum</i> | 12 inches |
| Western Island | 1 | <i>Melaluca nesophilia</i> | 12 inches |
| Western Island | 1 | <i>Melaluca nesophilia</i> | 14 inches |
| Western Island | 1 | <i>Melaluca nesophilia</i> | 20 inches |

| | | | |
|-------------------|---|---------------------------|------------|
| Northwestern Area | 6 | <i>Myoporum laetum</i> | 4.5 inches |
| Northwestern Area | 3 | <i>Myoporum laetum</i> | 5 inches |
| Northwestern Area | 2 | <i>Myoporum laetum</i> | 6 inches |
| Northwestern Area | 1 | <i>Myoporum laetum</i> | 7 inches |
| Northwestern Area | 3 | <i>Myoporum laetum</i> | 8 inches |
| Tennis Court Area | 1 | <i>Acacia melanoxylom</i> | 24 inches |
| Eastern Shoreline | 1 | <i>Myoporum laetum</i> | 12 inches |
| Eastern Shoreline | 1 | <i>Myoporum laetum</i> | 8 inches |
| Eastern Shoreline | 1 | <i>Myoporum laetum</i> | 7 inches |
| Eastern Shoreline | 1 | <i>Myoporum laetum</i> | 6 inches |

2.3.7 Construction Techniques and Best Management Practices

There will be two temporary construction equipment and supply staging areas, one in the area south of E. Cabrillo Blvd. and east of the beach lagoon and one in an existing maintenance yard east of the Municipal Tennis Courts. The area east of the beach lagoon is proposed for restoration and currently supports non-native vegetation such as iceplant. All equipment will be stored, maintained, and fueled a minimum of 50 feet from waterways.

Surface water is typically present in the Bird Refuge and beach lagoon during the dry season; therefore, minor temporary workspace dewatering will be required for replacement of the existing weir and gate. A temporary barrier such as sheetpile or a cofferdam will be placed in the Bird Refuge adjacent to the weir and the existing culverts under E. Cabrillo Blvd. will be blocked on the south side of the road to allow the weir workspace to be dewatered. The dewatered area is anticipated to be approximately 500 square feet in size. Excavation will be shallow (less than 6 ft.) and, from preliminary site investigations, it is anticipated that ground water may be encountered during excavation. Surface water encountered within the work area will be removed from the work site. All discharged water will be clear and free of excessive sediment loads. Temporary dewatering of the weir work area may be required for approximately 2 months to allow demolition and construction activities to occur. Demolition of the existing weir is expected to take approximately 1 week.

Approximately, 100 cubic yards of large rock and boulders will be imported to the site to construct the bio-retention basin, basking habitat for turtles, and habitat and shoreline improvements at the beach lagoon, using semi-trailer end dump trucks. The grading and rock placement will be performed using equipment such as excavators, backhoes, scrapers, and front-end loaders. The total grading on the site will be approximately 5,800 cubic yards (2,400 cubic yards of cut and 2,360 cubic yards of fill). Approximately 400 cubic yards of soil and debris will be transported offsite for reuse, recycling, or disposal. Soil and debris will be transported using semi-trailer end dump trucks or 10-wheel dump trucks. Grading activities are expected to require 1 month for completion if all grading is performed concurrently. Alternatively, grading activities could be performed over several months if grading for individual project elements is performed in a sequential fashion.

During construction, silt fencing will be installed to prevent soil from entering the Bird Refuge or beach lagoon during construction. After construction is completed, all areas of disturbance will be restored and planted with native vegetation. Approximately 25,000 native plants (ranging in size from 5 gallon to 4” containers in addition to seeds) and a drip irrigation system will be installed at the site. Coir logs and vegetation will serve to prevent sediment from entering the Bird Refuge during winter rains.

Prior to construction, a biologist will perform a nesting bird, pond turtle, tidewater goby, and rare plant surveys. If any nesting birds are located within 100 feet of the active work site, Project construction will be delayed until the birds have fledged. If aquatic habitats will be impacted, tidewater gobies will be excluded from the area and gobies within the work area will be captured and relocated by an authorized biologist. The on-site environmental coordinator will monitor Project construction. If special status wildlife species are encountered, they will be moved outside the active construction area. The aquatic habitat at the site suffers from poor water quality. The severely degraded nature of the habitat significantly reduces the potential for many aquatic species to be present at the site

Existing native trees within the work site will be protected from heavy equipment during construction through the installation of protective fencing. The Project will result in the removal of non-native trees. Native trees will be protected and other native vegetation will be protected as feasible. Minimal impacts to native vegetation (e.g. arroyo willow, saltbush, California sunflower, California bulrush, salt grass, and beach primrose) may occur incidental to restoration efforts and sensitive native vegetation will be salvaged and replanted at the site as feasible.

2.4 PROPOSED PROJECT SCHEDULE

The City proposes to perform construction activities during the dry season from July through November 2020.

| | |
|---|--------------------------|
| Project Design (final plans and specifications) | December 2020 |
| Permitting (City, CEQA, ACOE, CDFW) | May 2020 – December 2020 |
| Project Bidding | June 2021 |
| Start Project Construction | July 2021 |
| Complete Project Construction | November 2021 |

3. BIOLOGICAL SITE ASSESSMENT METHODS

The Andrée Clark Bird Refuge has been the focus of many recent biological studies. These biological studies were used as the primary sources for the biological site assessment. The Project site is defined as the 42-acre refuge, the approximately 1.5-acre dune and beach lagoon areas, and the low-flow water treatment wetland. The Study Area for the literature review was defined as the Project site including a one-mile buffer.

3.1 LITERATURE REVIEW

A CDFW California Natural Diversity Database (CNDDDB) search was conducted in 2017 as part of the Alternatives Evaluation Report (Anchor 2017). The data from the CNDDDB was used to develop a list of potential sensitive plant and animal species that could be or have historically been found in this area. Numerous surveys and reports have been conducted in the Project area and these reports were used for the biological site assessment. Documents used for the biological site assessment included the following:

- Bird Refuge Biological Resource Assessment and Tree Protection Plan (SAIC 2003)
- Andrée Clark Bird Refuge Vegetation Maintenance and Restoration Project Biological Assessment (Cardno ENTRIX 2011)
- Biological Opinion for the Andrée Clark Bird Refuge Vegetation Removal (USFWS 2011)
- California Coastal Commission Staff Report (CCC 2012)
- Benthic Invertebrate Memo (Ecology Consultants 2017)
- Santa Barbara Bird Refuge eDNA Sampling Report Restoration Science 2018)
- Andrée Clark Bird Refuge Bird Survey Report 2017-2018 (KR&EC 2019)
- Andrée Clark Bird Refuge Water Quality and Habitat Improvement Project: Alternatives Evaluation (Anchor 2017)

3.2 BIOLOGICAL SURVEYS

3.2.1 Vegetation Survey

The vegetation communities and plant species within the Project site were acquired from the most recent documentation from the Anchor 2017 Alternatives Evaluation Report and spot checked by KR&EC biologists Johanna and David Kisner during the spring and summer of 2019. Plant nomenclature follows Jepson eFlora (Jepson Flora Project 2013). Representative photographs were taken of the vegetation communities observed. Due to the time of year the survey was conducted being outside the peak blooming period, plant species observed were limited, so the plant list does not represent all plant species that occupy the Project site.

3.2.2 Wildlife Surveys

Information on the wildlife at the Bird Refuge was gathered from various reports but the KR&EC (2019) report was the primary report used. Surveys for the KR&EC report included over 75 hours of field survey time and covered all of the Refuge except the west shore (which was inaccessible

due to the zoo and vegetation) and the sandy beach; no surveys were conducted at the proposed low-flow water treatment wetland. The wildlife at the Project site was assessed during 24 bird surveys that were conducted between January 2017 and October 2018 by David Kisner, principal ecologist of KR&EC. Three of the 24 surveys were conducted in the winter, three in the fall, and six during the breeding season (spring) in both 2017 and 2018. All birds detected by sight or sound were recorded along with any nest structures; any amphibians, reptiles, or mammals detected by sight, sound, or sign (e.g. footprint, scat, etc.) were recorded. Any additional information about the birds (e.g. age, sex, nesting activity) was also recorded. Additional information and observations of wildlife were also included in this report.

3.3 SITE PHOTOGRAPHS

Site photographs were taken in 2017 and 2018 as part of the KR&EC (2019) survey and have been used for this Biological Site Assessment. Photos were taken opportunistically of wildlife and habitat that was of interest. In addition, a photograph of the low-flow water treatment wetland area was taken in July 2019.

4. EXISTING CONDITIONS

4.1 OVERVIEW OF PROJECT SITE

The Andrée Clark Bird Refuge Restoration Project is located at 1400 East Cabrillo Boulevard in Santa Barbara, California within the Santa Barbara USGS 7.5-minute quadrangle. The City of Santa Barbara owns the 42-acre refuge. The Bird Refuge is bordered by the Union Pacific Railroad, Highway 101, Municipal Tennis Courts and the Montecito Club's golf course to the north, the Santa Barbara Cemetery to the southeast, the Clark's Santa Barbara Bellosguardo property and the Pacific Ocean to the south, and the Santa Barbara Zoo to the west.

Historically, the Andrée Clark Bird Refuge area was a salt marsh being filled with ocean waters during hightides or storms and receiving fresh water from within its watershed and from Sycamore Creek under certain conditions. Sycamore Creek flowed to the east along the area now occupied by Cabrillo Boulevard and could flow into the bird refuge. When Sycamore Creek was redirected south to the ocean, the watershed for the Bird Refuge was reduced by approximate 2,400 acres leaving the Bird Refuge an 817-acre watershed which now consists predominately of residential areas, a golf course, tennis courts, a portion of the Zoo, and a cemetery. The city purchased the salt marsh in 1909 as a park. In 1928, Huguette M. Clark donated \$50,000 to provide a refuge for migrating birds and named the lake for her deceased older sister (Redmon 2016).

The Bird Refuge has remained much as it was designed including the creation of the three islands and has poor water quality during the dry months when water levels decrease and become stagnant. Currently, the water quality can change dramatically leading to strong odors and strange colors (Appendix A – Photograph 1) with little aquatic life to an overabundance of aquatic invertebrates (Photograph 2). Based on the 2016 benthic macroinvertebrates (BMI) survey, the aquatic system consists of “a highly disturbed BMI community” compared to other local brackish water bodies (Ecology Consultants 2017).

4.2 VEGETATION COMMUNITIES

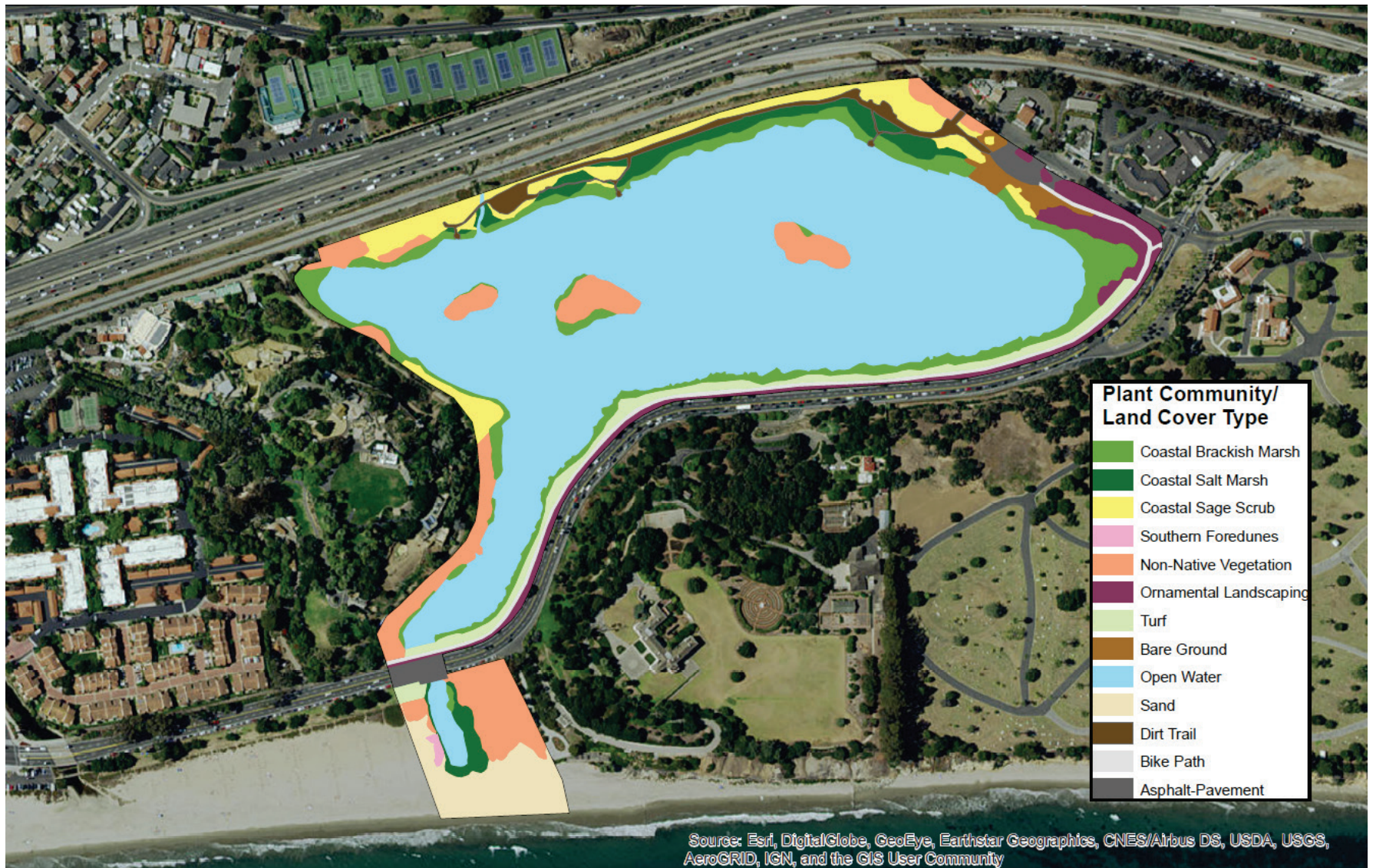
The Project site consists of seven vegetation communities as well as turf between the refuge and the bike path and ornamental landscaping between the bike path and Cabrillo Blvd. and the northeast corner of the site. The vegetation communities are shown in Figure 3 and described in Table 3 below. Representative photographs of some of these vegetation communities are provided in Appendix A. A list of plant species observed on site based on the *Andrée Clark Bird Refuge Water Quality and Habitat Improvement Project: Alternatives Evaluation* (Anchor 2017) is provided in Appendix B. Other species were observed that were not on this list including saltmarsh bulrush (*Bolboschoenus maritimus* subsp. *paludosus*). In addition, on the northwest side of the culvert at Cabrillo Blvd. there is a small freshwater marsh habitat that includes basket rush (*Juncus textilis*), *Eleocharis parishii*, umbrella sedge (*Cyperus eragrostis*), and black creeper (*Carex praegracilis*), which is not specified on the habitat map or the plant list. Looking at the 1896 habitat overlay (Anchor 2017) it appears that this area is a remnant of wetland vegetation that existed in this area historically. Small areas of arroyo willow scrub are also present within the areas identified

on the map as non-native vegetation on the west side of the refuge, along the mouth of the northwestern freshwater inlet, and in areas identified as coastal brackish marsh particularly in the northeast corner.

Table 3. Vegetation Communities and Land Cover Acreages at the Project Site

| Vegetation Community | Dominant Species | Acres |
|------------------------|--|--------------|
| Coastal Brackish Marsh | California bulrush (<i>Schoenoplectus californicus</i>), Saltmarsh bulrush (<i>Bolboschoenus maritimus</i> subsp. <i>paludosus</i>), southern cattail (<i>Typha domingensis</i>) | 1.44 |
| Coastal Salt Marsh | Pickleweed (<i>Salicornia pacifica</i>), Frankenia (<i>Frankenia salina</i>), Jaumea (<i>Jaumea carnosa</i>), and saltgrass (<i>Distichlis spicata</i>) | 3.63 |
| Freshwater Marsh | Black creeper (<i>Carex praegracilis</i>), basket rush (<i>Juncus textilis</i>), umbrella sedge (<i>Cyperus eragrostis</i>), <i>Eleocharis parishii</i> | 0.03 |
| Arroyo Willow Scrub | Arroyo willow (<i>Salix lasiolepis</i>) | 0.63 |
| Coastal Sage Scrub | Big saltbush (<i>Atriplex lentiformis</i>), coast bush sunflower (<i>Encelia californica</i>) | 2.24 |
| Southern Foredunes | Beach bur (<i>Ambrosia chamissonis</i>), Beach evening primrose (<i>Camissoniopsis cheiranthifolia</i>) | 0.1 |
| Non-native Vegetation | Freeway iceplant (<i>Carpobrotus edulis</i>), searocket (<i>Cakile maritima</i>), Myoporum (<i>Myoporum laetum</i>), Bermuda grass (<i>Cynodon dactylon</i>) | 2.93 |
| Ornamental Landscaping | NA | 1.47 |
| Turf | NA | 1.30 |
| Bare Ground | NA | 0.43 |
| Sand | NA | 1.50 |
| Dirt Trail | NA | 0.76 |
| Bike Path | NA | 0.79 |
| Asphalt/Pavement | NA | 0.50 |
| Open Water | NA | 26.80 |
| Total | NA | 44.55 |

Note: Calculations are from the 2017 *Alternatives Analysis*, except for freshwater marsh and arroyo willow scrub which were added later and areas were roughly calculated using aerial photos. Also, foredune habitat was more extensive in 2019 than was mapped in 2017, so this has been updated.



Filepath: \\social2\disneyland\PROJECTS\City_of_Santa_Barbara\Andree_Clark_Bird_Refuge_Feasibility_Analysis(151214-01.01)\Deliverables\Concept Design Report\Figures\Figure 4.docx



Figure 3
Habitats of Andree Clark Bird Refuge

Conceptual Design
Andree Clark Water Quality and Habitat Improvement Project

On the beach near the estuary there are patches of freeway iceplant (*Carpobrotus edulis*) on the west side, along with some small areas of southern foredune habitat dominated by beach bur (*Ambrosia chamissonis*) and beach evening primrose (*Camissoniopsis cheiranthifolia*) as indicated on Figure 3. Southern foredune habitat (not shown in Figure 3) was also observed in July 2019 at the southern end of the non-native vegetation area east of the lagoon. The non-native vegetation on the east side of the estuary consists of a large area that is dominated by Bermuda grass (*Cynodon dactylon*) and gradually shifts to areas dominated by saltgrass (*Distichlis spicata*) along the southern edges of the estuary. Small patches of coastal brackish marsh habitat dominated by California bulrush (*Schoenoplectus californicus*) and saltmarsh bulrush are present in the estuary primarily on the east side. California bulrush continues as a dominant species throughout much of the perimeter of the ponded area of the refuge and islands. It is intermixed with occasional patches of southern cattail (*Typha domingensis*) and saltmarsh bulrush. The islands are dominated by non-native species particularly myoporum (*Myoporum laetum*). Several non-native ornamental species are present along the western portion near the zoo. The north shore west of the parking lot consists of coastal salt marsh dominated by pickleweed (*Salicornia pacifica*), alkali heath (*Frankenia salina*), saltgrass, and jaumea (*Jaumea carnosa*). The northern perimeter of the Project site is dominated by big saltbush (*Atriplex lentiformis*) and coastal bush sunflower (*Encelia californica*) with a few arroyo willows. East of the parking lot consists of a mix a mix of iceplant and ornamental trees and shrubs. The low-flow wetland north of the tennis courts consists of a few cattails (*Typha* sp.) in the wetted channel and ornamental trees along the road with ruderal understory consisting of a mix of non-native grasses and weeds such as sow thistle (*Sonchus* sp.) and bristly ox-tongue (*Helminthotheca echioides*) that is kept mowed.

There are a few native trees within the Project site including a patch of arroyo willow on the western shore, a few scattered on the northern boundary and a stand in the northeastern corner, a patch of coast live oak on the northern Project boundary, and several Monterey cypress trees near Cabrillo Blvd. at the southern portion of the Project area. The general health of all the native tree species on site is good.

4.3 ENVIRONMENTALLY SENSITIVE HABITAT AREAS

Environmentally sensitive habitat areas (ESHA) are defined by the Coastal Act Section 30107.5 which states that ESHA is an “area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments”. City of Santa Barbara Policy 4.1-41 (2019) uses four “tests” to determine if an area or habitat meets the definition of ESHA and should be protected accordingly.

Under sub-section C of Policy 4.1-41, the City has defined the following habitat types as those “that usually meet the definition of ESHA”: estuaries and lagoons, wetlands, creeks and streams, riparian areas, southern coastal bluff scrub, southern foredune, and coastal sage scrub or chaparral that is adjacent to wetlands. By this definition, just over eight acres of the upland (coastal brackish marsh, coastal salt marsh, freshwater marsh, arroyo willow scrub, coastal sage scrub, and southern foredunes) and the 26.8 acres of open water of the Bird Refuge are ESHA. These eight acres and

the open water portions of the Bird Refuge also meet the first of the four tests in that these habitats and some of the species that require these habitats are, indeed, rare. The remaining parts of the Project Area do not meet the definition of ESHA, as described in the following paragraphs.

The second test to determine if an area is ESHA is the Especially Valuable Species or Habitats which seeks to assess if “areas may be valuable because of their “special nature,” such as being an unusually pristine example of a habitat type, containing an unusual mix of species, supporting species at the edge of their range, or containing species with extreme variation”. The remaining habitats at the Bird Refuge include non-native vegetation, ornamental landscaping, turf, bare ground, and sand. None of these habitats are valuable because of their “special nature” nor do they meet the other criteria.

The third test assesses the potential for human induce disturbance or degradation. Non-native vegetation, ornamental landscaping, turf, and bare ground are the results of human induced disturbance and/or degradation; bare sand can be a natural habitat but it is also very resilient to human induced disturbance and degradation.

Lastly, the fourth test is a question of habitat quality. The quality of the non-native vegetation, ornamental landscaping, turf, bare ground, and sand habitats in the Project Area are low; however, the location of these areas and “connectivity to other natural areas” can make these areas important. Reducing the “level of disturbance/degradation of the area”, “invasive, non-native species”, and “anthropogenic disturbance” would makes these areas biologically far more valuable, would increase the habitat quality, and could convert these areas to ESHA.

With regards specifically to the non-native vegetation and ornamental landscaping, City of Santa Barbara Policy 4.3-13 (2019) indicates that “development shall be sited and designed to preserve and protect, to the extent feasible, mature trees (trees four inches in diameter or greater at four feet six inches above grade in height) and trees important to the visual quality of the property”. Ornamental trees are not proposed to be removed and will be protected in place; 2.93 acres of non-native vegetation including 74 “mature non-native trees” are proposed to be removed as part of the restoration of the Bird Refuge and ESHA. Impacts to non-native trees are discussed in greater detail in Section 5.6 below.

4.4 SPECIAL STATUS PLANT SPECIES

In the Santa Barbara quadrangle California Native Plant Society (CNPS) Rare and Endangered Plant Inventory database (2017), CNDDDB search (2017), other literature searches, and field observations for the Project site, 27 sensitive plants were identified as having potential to occur (Table 4; Anchor 2017). Of the 27 CNPS listed species, no species are known to be present on site currently. Four species have moderate or high potential to occur because they historically occurred within five miles of the Project site or suitable habitat is present, southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*), vernal barley (*Hordeum intercedens*), Coulter’s saltbush (*Atriplex coulteri*) and Davidson’s saltscale (*Atriplex serenana* var. *davidsonii*). The remaining species have a low

potential to occur because of lack of suitable habitat or lack of records in or near the Project site. These species are listed in Table 4 along with associated habitats and CNPS ranking.

One locally rare species, listed on the Santa Barbara Botanic Garden's *Rare Plants of Santa Barbara County* (November 2012) slender aster (*Symphotrichum subulatum* var. *parviflorum*) is documented to occur at the refuge.

Table 4. Status of Potentially Occurring CNPS Special Status Plant Species in Andrée Clark Bird Refuge*

| Special Status Species | Status | Habitat | Potential to Occur On-Site |
|--|--|--|--|
| Black Flowered Figwort (<i>Scrophularia atrata</i>) | CNPS list 1B.2 Fed: None State: None | Perennial herb. Occurs in coastal strand, chaparral, coastal sage scrub and closed-cone pine forests up to 400 meters in elevation. | Low: This species has a low potential to occur due to lack of suitable habitat, high degree of disturbance, and the general lack of potential for this species to recruit to the site from nearby source populations. |
| Catalina Mariposa-Lily (<i>Calochortus catalinae</i>) | CNPS list 4.2 Fed: None State: None | Perennial herb (bulb). Occurs in open grassland, woodland and scrub with heavy soils up to 700 meters in elevation. | Low: This species has a low potential to occur due to lack of suitable habitat, high degree of disturbance, and the general lack of potential for species to recruit to the site from nearby source populations. |
| Coulter's Saltbush (<i>Atriplex coulteri</i>) | CNPS list 1B.2 Fed: None State: None | Perennial herb. Occurs in alkaline or clay soils, open sites, coastal sage scrub, and coastal bluff scrub up to 500 meters in elevation. | Moderate: This species has a moderate potential to occur due to the existence of potential habitat and presence of similar species. |
| Davidson's Saltscare (<i>Atriplex serenana</i> var. <i> davidsonii</i>) | CNPS list 1B.2 Fed: None State: None | Annual herb. Occurs in coastal bluff scrub and coastal scrub on alkaline soils from 200 meters in elevation. | Moderate: This species has a moderate potential to occur due to the existence of potential habitat adjacent to the site and the presence of similar species. |
| Gambell's Water Cress (<i>Nasturtium gambelii</i>) | CNPS list 1B.1 Fed: Endangered State: Threatened | Perennial Herb. Occurs in freshwater marshes, streamside banks, and along lake margins up to 350 meters in elevation. | Low: This rare species has a very low potential to occur due to a high degree of disturbance, and the general lack of potential for species to recruit to the site from nearby source populations which appear to be extirpated. |

| Special Status Species | Status | Habitat | Potential to Occur On-Site |
|---|--|--|--|
| Hoffmann's Bitter Gooseberry (<i>Ribes amarum</i> var. <i>hoffmannii</i>) | CNPS list 3 Fed: None State: None | Shrub. Occurs in canyons with chaparral between 10 and 2000 meters in elevation. | Low: This species has a very low potential to occur due to lack of suitable habitat and elevation. |
| Hoffmann's Sanicle (<i>Sanicula hoffmannii</i>) | CNPS list 4.3 Fed: None State: None | Perennial herb. Occurs on hills with chaparral, coastal sage scrub, and pine woodland up to 500 meters in elevation. | Low: This species has a very low potential to occur due to lack of suitable habitat and elevation relief and geographic range. |
| Island Mountain Mahogany (<i>Cercocarpus betuloides</i> var. <i>blancheae</i>) | CNPS list 4.3 Fed: None State: None | Shrub. Occurs in chaparral on Channel Islands up to 600 meters in elevation. | Low: This species has a very low potential to occur due to lack of suitable habitat. |
| Late-Flowered Mariposa-Lily (<i>Calochortus fimbriatus</i>) | CNPS list 1B.3 Fed: None State: None | Perennial herb. Occurs in dry open coastal woodland and chaparral up to 900 meters in elevation. | Low: This species has a low potential to occur due to lack of suitable habitat, high degree of disturbance, and the general lack of potential for species to recruit to the site from nearby source populations. |
| Mesa Horkelia (<i>Horkelia cuneata</i> var. <i>puberula</i>) | CNPS list 2.2 Fed: None State: None | Perennial herb. Occurs in dry sandy coastal chaparral between 70 and 900 meters in elevation. | Low: This species has a very low potential to occur due to lack of suitable habitat and elevation. |
| Nuttall's Scrub Oak (<i>Quercus dumosa</i>) | CNPS list 1B.1 Fed: None State: None | Shrub. Occurs in sandy soils near coast, sandstone, chaparral, coastal sage scrub up to 200 meters in elevation. | Moderate: This species has a moderate potential to occur due to the existence of potential habitat, presence of similar species, and potential to be spread by acorn woodpeckers. |
| Ocellated Humboldt Lily (<i>Lilium humboldtii</i> ssp. <i>ocellatum</i>) | CNPS list 4.2 Fed: None State: None | Perennial herb (bulb). Occurs in openings in chaparral, oak canyons, and yellow-pine forest up to 1800 meters in elevation. | Low: This species has a very low potential to occur due to lack of suitable habitat. |
| Ojai Fritillary (<i>Fritillaria ojaiensis</i>) | CNPS list 1B.2 Fed: None State: None | Perennial herb (bulb). Occurs on rocky slopes and river basins in chaparral, yellow-pine forest, mixed evergreen Forest between 300-500 meters in elevation. | Low: This species has a very low potential to occur due to lack of suitable habitat and elevation. |

| Special Status Species | Status | Habitat | Potential to Occur On-Site |
|--|--|---|--|
| Palmer's Spineflower (<i>Chorizanthe palmeri</i>) | CNPS list 4.2 Fed: None State: None | Annual Herb. Occurs in serpentine soils within chaparral, valley grassland, and foothill woodland between 60-700 meters in elevation. | Low: This species has a very low potential to occur due to species range, lack of suitable habitat and elevation. |
| Paniculate Tarplant (<i>Deinandra paniculata</i>) | CNPS list 4.2 Fed: None State: None | Annual herb. Occurs in sandy disturbed soils in valley grasslands, chaparral, and woodlands up to 1320 meters in elevation. | Moderate: This species has a moderate potential to occur due to the existence of potential habitat. |
| San Gabriel Ragwort (<i>Senecio astephanus</i>) | CNPS list 4.3 Fed: None State: None | Perennial herb. Occurs on steep rocky slopes in chaparral/coastal-sage scrub and oak woodland between 400-1500 meters in elevation. | Low: This species has a very low potential to occur due to lack of suitable habitat and elevation. |
| Santa Barbara Bedstraw (<i>Galium cliffonsmithii</i>) | CNPS list 4.3 Fed: None State: None | Perennial herb. Occurs in light shade within coastal canyons of chaparral and woodland, and along dry banks between 200-1220 meters in elevation. | Low: This species has a very low potential to occur due to lack of suitable habitat and elevation. |
| Santa Barbara Honeysuckle (<i>Lonicera subspicata</i> var. <i>subsicata</i>) | CNPS list 1B.2 Fed: None State: None | Shrub. Occurs in chaparral below 1000 meters in elevation. | Low: This species has a low potential to occur due to lack of suitable habitat, and the general lack of potential for species to recruit to the site from nearby source populations. |
| Santa Barbara Morning-glory (<i>Calystegia sepium</i> ssp. <i>binghamiae</i>) | CNPS list 1A Fed: None State: None | Perennial herb. Occurs in coastal salt marshes and along riverbanks up to 20 meters in elevation. | Low: While potential habitat and local herbarium specimen exist for this species, it is presumed to be extinct. |
| Santa Ynez False Lupine (<i>Thermopsis macrophylla</i>) | CNPS list 1B.3 Fed: None State: Rare | Perennial herb. Occurs in sandstone within chaparral and woodlands between 1000-1400 meters in elevation. | Low: This species has a very low potential to occur due to lack of suitable habitat and elevation. |
| Small-Flowered Morning-Glory (<i>Convolvulus simulans</i>) | CNPS list 4.2 Fed: None State: None | Annual herb. Occurs in sandy disturbed soils in clay substrates of valley grasslands, coastal sage scrub, and chaparral between 70-875 meters in elevation. | Low: This species has a very low potential to occur due to lack of suitable habitat and elevation. |
| Sonoran maiden fern (<i>Thelypteris puberula</i> var. <i>sonorensis</i>) | CNPS list 2B.2 Fed: None State: None | Fern. Occurs in meadows, seeps and along streams between | Low: This species has a very low potential to occur due to lack of |

| Special Status Species | Status | Habitat | Potential to Occur On-Site |
|--|--|--|--|
| | | 50-800 meters in elevation. | suitable habitat and elevation. |
| Southern California Black Walnut (<i>Juglans californica</i>) | CNPS list 4.2 Fed: None State: None | Tree. Occurs on hillsides and canyons in oak woodlands and along streams between 30-900 meters in elevation. | Low: This species has a very low potential to naturally occur due to lack of suitable habitat and elevation. |
| Southwestern Spiny Rush (<i>Juncus acutus ssp. leopoldii</i>) | CNPS list 4.2 Fed: None State: None | Perennial herb. Occurs in coastal salt marshes, alkali seeps, and coastal strand habitats up to 1000 feet in elevation. | High: This species has high potential to occur due to existence of local populations and ideal habitat. |
| Umbrella Larkspur (<i>Delphinium umbracolorum</i>) | CNPS list 1B.3 Fed: None State: None | Annual herb. Occurs in moist soils in oak woodlands between 400-1600 meters in elevation | Low: This species has a very low potential to naturally occur due to lack of suitable habitat and elevation. |
| Vernal Barley (<i>Hordeum intercedens</i>) | CNPS list 3.2 Fed: None State: None | Annual grass. Occurs in freshwater wetlands, vernal pools, dry saline streambeds, and alkaline flats up to 500 meters in elevation | High: This is species has high potential to occur due to existence of local herbarium specimen collected between the railroad and cemetery and the existence of ideal habitat. |
| White-Veined Monardella (<i>Monardella hypoleuca ssp. hypoleuca</i>) | CNPS list 1B.3 Fed: None State: None | Perennial herb. Occurs in oak woodland and chaparral up to 1500 feet in elevation. | Low: This species has a low potential to occur due to lack of suitable habitat, high degree of disturbance, and the general lack of potential for species to recruit to the site from nearby source populations. |

*Source Anchor 2017 -Data compiled from CNNDB, 2017 for Santa Barbara quadrangle, FWS.GOV, CNPS.org and Tidal Influence observations and literature review

Note: Each special status species was categorized based on the following criteria:

High: Both a historical record exists of the species within the Project site or its immediate vicinity (approximately 5 miles) and the habitat requirements associated with the species occur on the Project site;

Moderate: Either a historical record exists for the species within the immediate vicinity of the Project site (approximately 5 miles) or the habitat requirements associated with the species occur on the Project site;

Low: No records exist of the species occurring within the Project site or its immediate vicinity and/or habitats needed to support the species are of poor quality or absent; and

Absent: This category was not used because of limited access and seasonal constraints of the study.

In addition to the above-listed criteria, potential for occurrence is also based on levels of disturbance to a site, proximity to existing developments, age of historical records, and the amount of development and disturbance that has occurred during the time subsequent to the latest record.

4.5 COMMON WILDLIFE

4.5.1 Fish

During the 2017 and 2018 bird surveys (KR&EC 2019), numerous mosquito fish (*Gambusia affinis*), a crayfish [likely red swamp crayfish (*Procambarus clarkia*)], and one larger fish [possible topsmelt (*Atherinops affinis*)] were detected. The mosquito fish population fluctuated dramatically from no fish seen during a three-hour survey to hundreds of individuals at each observation point (Appendix A – Photograph 5). One federally endangered fish, the tidewater goby, is known to occur at the refuge and is discussed further in Section 4.5.3. The crayfish was seen being eaten by a pied-billed grebe and the larger fish was seen jumping clear of the water from across the main body of the refuge.

4.5.2 Amphibians

No amphibians were detected during the 2017-2018 bird surveys - no tadpoles were seen swimming in the shallows, no adults were heard calling, nor footprints found in fresh mud. Amphibians, especially Baja California Treefrog (*Pseudacris regilla*) would be expected in this area but during approximately 75 hours of observation there were no observations. Likely the lack of sufficient freshwater for breeding is the reason for the absence of the amphibians in the area.

Other reports cited by Cardno ENTRIX indicate that there were “treefrog (*Pseudacris regilla*)” and “bullfrog (*Rana catesbeiana*)” (Barron 2011) found at the Bird Refuge. Western toad (*Anaxyrus boreas halophilus*) could be expected if there were sufficient freshwater habitat available for breeding and/or if individuals were able to enter the site from along the two freshwater creeks in the northwestern and northeastern portions of the site.

4.5.3 Reptiles

Three species of reptiles, Coast Range fence lizard (*Sceloporus occidentalis bocourti*), the non-native red-eared slider (*Trachemys scripta elegans*), and the native southwestern pond turtle were seen during the 2017-2018 bird surveys (KR&EC 2019; Appendix A – photographs 11 through 14). Cardno ENTRIX (2011a) observed “numerous” red-eared sliders and a few southwestern pond turtles. Based on the results of eDNA testing (Restoration Sciences 2018), pond turtle DNA was “undetected, and these turtles are therefore predicted to be absent or present in low abundances”.

Barron (2011) indicates that San Diego gopher snake (*Pituophis catenifer annectens*) has been observed at the bird refuge. Cardno ENTRIX spoke with Dr. Sweet who indicated that “non-native softshelled turtle (*Apalone* sp.) and snapping turtle (*Chelydra serpentina*) are also present” in the Bird Refuge.

4.5.4 Birds

During the 2017-2018 bird surveys, a total of 106 bird species were detected at the Bird Refuge with 99 species detected in the eleven count circles, an additional five species detected only as “fly-over”, and two more species detected before, between, or after point count surveys. Fifty-one different species of birds were detected in the open water areas and on the three islands (KR&EC 2019).

4.5.5 Mammals

Four species of mammals were detected and nine species of terrestrial mammals have the potential to be found on site (Table 5). Due to the level of disturbance along the beach portion of the Project Area, no healthy harbor seals (*Phoca vitulina*) or California sealions (*Zalophus californianus*) are expected to use this area. None of the species of mammals expected within the Project area are sensitive or special status wildlife species.

Table 5. Mammals Detected or Expected at Andrée Clark Bird Refuge

| Common Name | Scientific Name | Detection |
|----------------------------|--|---------------------|
| Virginia opossum | <i>Didelphis virginiana</i> | Probable |
| Ornate shrew | <i>Sorex ornatus</i> | Probable |
| Brush Rabbit | <i>Sylvilagus bachmani</i> | Observed |
| California Ground Squirrel | <i>Spermophilus beecheyi</i> | Probable |
| Eastern Fox Squirrel† | <i>Sciurus niger</i> | Observed |
| Botta's Pocket Gopher | <i>Thomomys bottae</i> | Mounds |
| Non-native rat† | <i>Rattus rattus</i> or <i>R. norvidicus</i> | Decapitated carcass |
| Deer mouse | <i>Peromyscus maniculatus</i> | Probable |
| Domestic Dog† | <i>Canis familiaris</i> | Observed |
| Gray Fox | <i>Urocyon cinereoargenteus</i> | Probable |
| Raccoon | <i>Procyon lotor</i> | Probable |
| Striped skunk | <i>Mephitis mephitis</i> | Probable |
| Bobcat | <i>Lynx rufus</i> | Possible |
| Long-tailed weasel | <i>Mustela frenata</i> | Probable |

† non-native species

4.6 SPECIAL STATUS WILDLIFE

Ten species of special status wildlife were identified within the Alternatives Evaluation (Anchor 2017) that have at least a moderate probability of occurring at the Andrée Clark Bird Refuge. In addition, eleven sensitive bird species were detected during the 2017-2018 surveys (KR&EC 2019) or were identified in Lehman's (1985) assessment of the bird refuge, and/or are species that could be found at the bird refuge following restoration activities. Table 6 summarizes the 21 special status wildlife species, their status, habitat requirements, and potential to occur on-site. The potential to occur was determined using the same criteria as that of Table 4, above.

Table 6. Sensitive Wildlife Species with at Least a Moderate Probability of Occurring at Andrée Clark Bird Refuge*

| Special status Species | Status | Habitat | Potential to Occur On-site |
|---|--|---|--|
| Globose Dune Beetle (<i>Coelus globosus</i>) ¹ | Federal: None State: None | Inhabits foredunes and sand hummocks immediately bordering the coast from Bodega Bay Head to Ensenada, Baja California | Moderate: This species has moderate potential to occur on the foredune habitat that exists within the project area. |
| Monarch Butterfly (<i>Danaus plexippus</i>) ¹ | Federal: None State: None | Perform annual migrations across North America and are commonly found clustering in Eucalyptus trees in the winter. | High: This species has high potential to occur on-site due to the presence of eucalyptus on-site and nearby. |
| Tidewater Goby (<i>Eucyclobobius newberryi</i>) ¹ | Federal: Endangered State: SSC | Inhabits benthic zone of shallow coastal lagoons and estuaries where brackish conditions occur. | Present: This species has been documented on numerous occasions in the beach lagoon and once in the brackish lake. |
| Silvery Legless Lizard (<i>Anniella pulchra pulchra</i>) ¹ | Federal: None State: SSC | Occurs in moist warm loose soil with plant cover. Moisture is essential. Occurs in sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, etc. | Moderate: This species has moderate potential to occur on the foredune and coastal sage scrub habitat areas that exists within the project area. |
| Western Pond Turtle (<i>Emys marmorata pallida</i>) ^{1 & 2} | Federal: under review for listing State: SSC | Occupies a wide variety of permanent and intermittent fresh-brackish water wetlands habitats up to 1500 meters in elevation. | Present: This species has been well documented existing on-site in the brackish lake. |
| California Brown Pelican (<i>Pelicanus occidentalis californicus</i>) ¹ | Federal: Delisted State: Delisted; Fully Protected | Forage in shallow estuarine and inshore waters and make extensive use of breakwaters, jetties, pilings, sandbars, cliffs and offshore rocks for roosting. | High: There is high potential for this species to occur roosting on-site due to the close proximity of the coastline. Unlikely to use site for foraging due to lack of prey. |
| Black-Crowned Night Heron nesting colony (<i>Nycticorax nycticorax</i>) ¹ | Federal: None State: None | Found in most wetland habitats across North America, including estuaries, marshes, streams, lakes, and reservoirs | Present: This species is regularly present on-site and has been observed nesting in Eucalyptus trees adjacent to the Zoo (Marine Research Specialists, 2011) |
| Cooper's Hawk (<i>Accipiter cooperii</i>) ^{1, 2, & 3} | Federal: None State: Watch List | Found in wooded habitats from deep forests to urban backyards. | High: This species has a high potential to occur on site as it is common to the area. |
| Merlin - wintering (<i>Falco columbarius</i>) ^{2 & 3} | Federal: None State: Watch List | Winters in open grasslands and coastal marshes. | Present: One individual was detected during the 2017-2018 bird surveys and "rare" in fall and winter (Lehman 1985). |
| American peregrine falcon | Federal: Delisted, BCC State: Delisted, | Found in a variety of open habitats especially near water and along the coast. | Present: One individual was detected during the 2017-2018 bird surveys. |

| Special status Species | Status | Habitat | Potential to Occur On-site |
|--|--|---|---|
| <i>(Falco peregrinus anatum)</i> ² | Fully Protected | | |
| Western Snowy Plover (<i>Charadrius alexandrinus nivosus</i>) ¹ | Federal: Threatened State: SSC | This species occurs on sandy beaches, salt pond levees and along the shores of large alkali lakes. It needs sandy or gravelly substrates for nesting. | High: Critical breeding habitat for this species overlaps with the project area on the beachfront. |
| Whimbrel - non-breeding ^{2&3} | Federal: BCC State: None | Often found along sandy beaches and salt marshes or flooded agricultural fields near the coast. | Present: 3 observed in fall (KR&EC 2019), “rare” in fall (Lehman 1985) and occasional records in eBird (2019) |
| Long-billed Curlew - non-breeding | Federal: BCC State: None | During migration and the winter, they’ll forage in marshes, mudflats, and grasslands. | Moderate: occasional observations in eBird (2019) |
| Marbled Godwit - non-breeding ³ | Federal: BCC State: None | Usually found along the coast around tidal mudflats, marshes, and ponds. | Present: “rare” in fall (Lehman 1985) and occasional records in eBird (2019) |
| Short-billed Dowitcher - non-breeding ³ | Federal: BCC State: None | Favor coastal flat, salt marshes and sandy beaches during the winter. | Present: “uncommon to rare” spring through fall (Lehman 1985) and present in Aug-Sept according to eBird (2019) |
| California Least Tern (<i>Sternula antillarum browni</i>) ¹ | Federal: Endangered State: Endangered | Summer migrant that nests along the coast on bare or sparsely vegetated, flat substrates such as sandy beaches, alkali flats, landfills, or paved areas. Forage on small fish in open ocean and embayments. | Moderate: This species has a moderate potential to occur foraging on-site during migration. Just one nesting site exists on the southern Santa Barbara Co. Coast at Coal Oil Point Reserve in Goleta, CA. |
| Allen's Hummingbird ^{2&3} | Federal: BCC State: None | Found in wooded groves, parks, and gardens with a plentiful supply of nectar. | Present: 1 seen spring and winter (KR&EC 2019), “uncommon to rare” spring through fall (Lehman 1985), and nearly year-round (e-bird 2019) |
| Oak Titmouse ^{2&3} | Federal: BCC State: None | Usually found in oak woodlands, along streams, and within parks. | Present: 3 observed in fall (KR&EC 2019) “uncommon” year-round (Lehman 1985) and present nearly year-round according to eBird (2019) |
| Belding's savannah sparrow (<i>Passerculus sandwichensis beldingi</i>) ⁴ | Federal: None State: Endangered | Pickleweed marshes and adjoining shrubs and along the wrack line. | Low to Moderate: no records on-site but stable populations in Goleta and Carpintaria Sloughs |
| Tricolored Blackbird nesting colony ⁴ | Federal: BCC State: SSC Candidate for: Endangered | Breeds in large cattail patches and forages in open grasslands, fields or cattle pens. | Low: “rare” fall through spring (Lehman 1985) but no records in eBird (2019). No known breeding activity in the region. |

| Special status Species | Status | Habitat | Potential to Occur On-site |
|-----------------------------------|----------------------------|--|--|
| Yellow Warbler ^{2&3} | Federal: BBC State: SSC | During migration and breeding, usually found in streamside woodlands and thickets. | Present: detected in spring and fall (KR&EC 2019), “uncommon” in spring and fall (Lehman 1985) and present mid-March to mid-November according to eBird (2019) |

BBC – Bird of Conservation Concern SSC – Species of Special Concern

1: Anchor (2019), 2: KR&EC (2019), 3: Lehman (1985), and 4: potential to occur following restoration.

Habitat, life history, and potential for occurrence at the Project site are discussed below (arranged in taxonomic order) for the sixteen special status bird species and five other special status wildlife potentially occurring on site. Additional special status bird species could sporadically be found at the Project site; however, these birds would likely be migrants passing through the region or residing in other areas near the Project site. No additional special status bird species are expected to be residing at the Project site and no additional species accounts (other than the ones described below) are discussed in this document.

4.6.1 Globose Dune Beetle (*Coelus globosus*)

The globose dune beetle was proposed for listing as threatened under the federal ESA in 1978, but ultimately was not listed. The species is found in the coastal strand from central California to Baja Mexico and on many of the Channel Islands (USFWS 1978). Currently this species has no formal state or federal designation but is considered vulnerable (facing a high risk of extinction in the wild) by International Union for Conservation of Nature (CDFW 2019). This species has been heavily impacted by development, heavy foot traffic, and the introduction of European beach grass within the coastal zone within California (USFWS 1978).

The adult and larval beetles feed on dead vegetative materials that collect under other shrubs and herbs (USFWS 1978). There are no records for the globose dune beetle within the Project area but the dune habitat is potentially suitable. Restoring and enhancing the dune habitat could be beneficial to the species.

4.6.2 Monarch Butterfly (*Danaus plexippus*)

The monarch butterfly is a local species of concern. The grove in Goleta near Ellwood is the southern most large wintering site for this species in the State. Within the Project area, there are no known large aggregates of monarchs but they are known to pass through the area and may form smaller autumnal clusters.

Monarch butterflies undergo a complete metamorphosis in approximately 30 days. Their eggs are laid on the leaves of a milkweed (*Asclepias* sp.) and hatch in three to five days. The caterpillar will eat the milkweed for 10 to 14 days and then form its chrysalis. In another nine to 14 days, the adult monarch butterfly will emerge from the chrysalis. Adults feed on nectar from a wide variety of plants. In the summer, the adults will live for two to six weeks but monarchs will live for six to nine months during the winter (Jepsen et al 2015).

Along the California coast, monarchs arrive at their overwintering sites as early as September to mid-October. The majority of the overwintering sites are located between the San Francisco Bay Area and northern Los Angeles County but range from Mendocino County to Baja California (Jepsen et al 2015). The majority of the overwintering groves used by monarchs along the California coast “are at low elevation (below 200 to 300 feet), within 1.5 miles of the Pacific Ocean ..., and in shallow canyons or gullies” (Jepsen et al 2015). Currently these sites are dominated by either blue gum (*Eucalyptus globulus*) or red gum eucalyptus (*E. camaldulensis*) but many overwintering sites also contain native trees including coast live oak; many sites are also orientated to the south, southwest, or west (Jepsen et al 2015). Starting in late-February or March, the monarchs begin to disperse and breed.

4.6.3 Tidewater Goby (*Eucyclobobius newberryi*)

Tidewater gobies are a small (up to 2.5 inches long) species of fish endemic to California. It is federally endangered, and a state species of special concern. They are found in coastal lagoons, estuaries, and marshes from Tillas Slough at the mouth of the Smith River (northern Del Norte County) to Agua Hedionda Lagoon (northern San Diego County). They primarily inhabit shallow brackish water that is fairly still but not stagnant with salinity ranging from 0 to 42 ppt, temperature from 8-25 degrees C, and a water depth of 25-200 cm. They can occur as much as 1 mile upstream from the estuary in fresh water and throughout the estuary, but can be flushed out to the ocean. Submerged aquatic vegetation and sandy substrate is preferred habitat. They live and complete their lifecycle in one year. Tidewater gobies breed year-round but peak breeding generally occurs from April through June. (USFWS, 2006)

As indicated by Cardno ENTRIX’s Biological Assessment (2011c), tidewater gobies are present and were first reported in the Bird Refuge outflow lagoon on the beach side of Cabrillo Boulevard (separated from the lake by a closed weir) in 1993 and 1995. A survey for tidewater goby was performed on April 5, 2011, which confirmed that tidewater gobies are present in the Bird Refuge lake as well near the Bird Refuge parking area, at the northeast end of the lake where there was a small beach and vegetation-free area. The population size and distribution of individual tidewater gobies in the lake is unknown, including whether the population persists over time or whether they only occur in the lake periodically, possibly entering from the lagoon during limited periods through the tidegate connection. The Restoration Science’s eDNA report (2018) indicated that the most concentrated area of tidewater goby is likely the weir outfall. According to the Cardno ENTRIX Biological Assessment (2011c), habitat for tidewater gobies in the Bird Refuge lake appears to be adequate enough to support foraging and possibly breeding, although the lake does not provide optimal breeding habitat due to a more silty/muddy substrate rather than the preferred sandy substrate and water that is stagnant and poor quality at times. Adults and juveniles could use benthic open water habitat as well as emergent vegetation habitat.

4.6.4 Silvery Legless Lizard (*Anniella pulchra pulchra*)

The scientific nomenclature has been changing for the California legless lizard (*Anniella pulchra*; California Herps 2015) with up to five species now recognized in California. The species of legless lizard expected to be found within this region is the “northern California legless lizard” (*A. pulchra*) and is a CDFW SSC (CDFW 2015, California Herps 2015).

Silvery legless lizards are usually found in sparsely vegetated habitats including coastal sand dunes, chaparral, pine and/or oak woodlands, desert scrub, grassland, and riparian areas. Within these habitats, the legless lizard requires sandy and/or loose loamy soils which will allow for burrowing (California Herps 2015).

Since this species is fossorial (lives underground for most of its life), it has been difficult to estimate their exact numbers and identify populations. This species is threatened by land conversion, development, habitat fragmentation, invasive plants and animals, and fire frequency. There are no known records for legless lizards at the Bird Refuge but the sandy dune habitat could support a small population of this elusive species.

4.6.5 Southwestern Pond Turtle (*Actinemys pallida*)

Though the scientific nomenclature has been changing, the southwestern pond turtle (*Actinemys pallida*; California Herps 2015) or western pond turtle (*Emys marmorata*) is a CDFW SSC (CDFW 2015) and is “under review” for listing under the ESA since a petition was filed in April, 2012 (USFWS 2019). According to Stebbins (2003), it has declined in most of its range by approximately 75 - 80 percent.

The “western pond turtle” is the only native turtle to California. Stebbins (2003) describes the western pond turtle as “a thoroughly aquatic turtle of ponds, lakes, marshes, rivers, streams, and irrigations ditches” though he goes on to say that they can be “found in woodlands, grasslands, and open forests”. The pond turtle feeds on aquatic plants, insects, worms, fish, amphibian eggs and larvae, crayfish, and carrion (Stebbins 2003). Pond turtles are not mature until eight to ten years old. They mate in April and May and females lay their clutch of two to 11 eggs between April and August on the shore above the stream or pond. Predation by raccoons has dramatically reduced nest and yearling survivorship as raccoon populations have increased due to human alterations of the environment (pers. comm. Dr. Sweet). The red-eared slider (*Trachemys scripta elegans*), a non-native turtle common in the central coast area, competes with pond turtles for food and preferred basking locations. Red-eared sliders are currently well established in the refuge and other non-native turtles have been recorded at the refuge.

There are records of pond turtles at the Andrée Clark Bird Refuge; however, based on the observations and eDNA Study, the population likely only consists of a few individuals. This species is able to travel long distances along creek systems and is occasionally “relocated” by people but the “source” of this population is unknown.

4.6.6 California Brown Pelican (*Pelicanus occidentalis californicus*)

California brown pelicans breed along the West Coast from Washington south along Baja California and the Sea of Cortez. They can be found year-round from Monterey Bay south along Baja California and the Sea of Cortez (Audubon 2019). The brown pelican populations crashed due to DDT in the 1970’s and other pesticide use but have since rebounded, especially along the West Coast and have been “delisted” from both the ESA and California ESA but is still state fully protected (CDFW 2017).

In this area, California brown pelicans nest on the Channel Islands and frequent the mainland shores nearly year-round. They forage in the Pacific Ocean diving from great heights to crash headfirst into the waters. They will roost on piers, boats, and other structures near and/or over water and can become quite tame. Occasionally, they will roost on a quiet stretch of beach or in an estuary individually or with a mixed flock of birds.

Brown pelicans were not detected during the 2017-2018 bird surveys (KR&EC 2019) but are classified as “rare” between March 1st and May 31st and “uncommon” between June 1st and February 28th by Lehman (1985). Additionally, compiled data from eBird from 1998 to 2018 (eBird 2019) indicates that brown pelicans should be present nearly year-round.

4.6.7 Black-Crowned Night Heron - nesting colony (*Nycticorax nycticorax*)

Breeding black-crowned night herons are on the USFWS BCC list (CDFW 2015). This species can be found year-round in this area usually near marshes and estuaries. During the day, they can be found roosting, usually in small groups, in trees and large shrubs. During the evening and through the night, they will forage along the water’s edge.

Black-crowned night herons breed throughout most of the continental 48-states and are known for breeding separately or as part of a larger breeding colony with herons, egret, and ibis (Audubon 2019). The nests can be from ground level up to 150 feet high but are usually between 10 and 40 feet. As their name implies, night heron forage mostly between dusk and dawn and feed predominately on fish but will also take aquatic invertebrates, frogs, snakes, clams, mussels, and rodents.

No breeding evidence for black-crowned night herons was detected during 2017 or 2018 (KR&EC 2019) though up to two individuals were detected during the fall, spring, and winter. Historical records document breeding in 1981, 1987, 1994, 2003, 2004, and 2009; earlier records were from the central island and later records were from the western side of the Bird Refuge / Zoo.

The proposed development of more mudflats with more frequent tidal flushing would likely increase foraging opportunities in and around the refuge for black-crowned night heron. The removal of non-native vegetation would reduce breeding opportunities for a few years while the native vegetation becomes established and grows; however, based on historical breeding behavior, breeding by black-crowned night herons is irregular and has not occurred in the last ten years.

4.6.8 Cooper’s Hawk (*Accipiter cooperii*)

Cooper’s hawks breed throughout the majority of the lower 48 states. They breed within most of the wooded portions of California and can be found throughout the state during the winter (Sibley 2000). Cooper’ hawk populations appear to have declined due in part to hunting and DDT. The decline in Cooper’s hawks underwent a reversal following the ban of DDT in 1972 (Ehrlich et al 1988). Cooper’s hawks are on the CDFW Watch List (CDFW 2015).

Cooper’s hawk breed in wooded areas especially within riparian areas on a horizontal branch between 20 and 60 feet off the ground (Baicich and Harrison 1997). The male does the majority of the nest building and brings prey to the nest for the first three weeks while the female is brooding young (Baicich and Harrison 1997). Cooper’s hawk usually lay four or five eggs that are incubated

for 32 to 36 days; nestlings require between 27 and 34 days prior to fledging (Ehrlich *et al* 1988). Cooper's hawks prey almost exclusively on birds that are smaller than themselves but are known to take small mammals, reptiles, and amphibians (Ehrlich *et al* 1988).

A Cooper's hawk was seen during the fall and winter during the 2017-2018 surveys (KR&EC 2019). Based on the current vegetation structure in the area, there are no riparian trees with enough height and the proper structure for Cooper's hawks to breed within the Project site. Some of the coast live oaks in the surrounding area could be suitable nest trees. The Project site currently is a suitable year-round hunting ground.

4.6.9 Western Snowy Plover (*Charadrius nivosus nivosus*)

The western snowy plover is listed as federally threatened (CDFW 2015). Along the West Coast, snowy plovers can be found year-round on sandy beaches from southern Washington into Baja.

Pacific coast western snowy plovers typically forage for small invertebrates in wet or dry beach-sand, among tide-cast kelp, and within low foredune vegetation (USFWS 2007). Some plovers use dry salt ponds and river gravel bars. The breeding season in the United States extends from March 1 through September 30, although courtship activities have been observed during February. Clutches, which most commonly consist of three eggs, are laid in shallow scrapes or depressions in the sand. Pacific coast snowy plovers are polyandrous (i.e., a female may breed with more than one male), and share incubation duties. Females typically desert the brood shortly after hatching, leaving the chick rearing duties to the male. Females may reneest if another male is available and if time remains in the season to do so. Snowy plover chicks are precocial, leaving the nest within hours after hatching to search for food. Males attend the young until they fledge, which takes about a month. Females generally assist the male to care for the last brood of the season. Adult plovers do not feed their chicks, rather they lead them to suitable feeding areas. Adults will present a broken-wing or tail-drag display when a predator approaches a brood or nest.

The Pacific coast population of the western snowy plover breeds primarily on coastal beaches from southern Washington to southern Baja California, Mexico. The population breeds 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 (USFWS 2007). Suitable nesting habitat is distributed throughout the listed range, but may be widely separated by areas of rocky shoreline.

No snowy plovers were detected during the 2017-2018 bird surveys (KR&EC 2019) but eBird (2019) has two occurrences between 1998 and 2018 – one in February and one in August. The expansion of the estuary mouth and restoration of the dune habitat may improve the habitat quality for this species but there is still a lack of habitat quantity for a population to survive in this area.

4.6.10 California Least Tern (*Sternula antillarum browni*)

The California least tern is listed as state and federally endangered (CDFW 2015). This is the smallest tern in the United States. It breeds along the West Coast from San Francisco south along Baja California and the Sea of Cortez. They usually nest in colonies on the ground (sometimes on

flat gravel rooftops) in a scrape in the soil. They forage low over open water and hunt for small fish, crustaceans and invertebrates (Audubon 2019).

No least terns were detected during the 2017-2018 bird surveys (KR&EC 2019), eBird has no records, and Lehman (1985) records them as “casual” (less than five sightings ever). Considering that this species is detected at Devereux Slough during the spring and fall migrations, restoration efforts that increase available prey may result in more sightings of this species in the refuge.

4.6.11 Merlin - wintering (*Falco columbarius*)

Merlin breed mostly in the coniferous woodlands and prairie groves in Canada and the north-central US but they will winter in the western portion of the US and east and southeast coastal regions. During the winter the merlin will utilize more open areas including grasslands and coastal marshes and some have learned to survive in larger cities. Merlin hunt other birds but will also take large insects, mice, and bats (Audubon 2019).

One merlin was detected during the winter during the 2017-2018 bird surveys (KR&EC 2019) and they are “rare” between August 1st and February 28th (Lehman 1985). Compiled data from eBird from 1998 to 2018 (eBird 2019) indicates the merlin are present at the refuge between August and April. Improving habitat for small shorebirds will increase the foraging opportunities for this species.

4.6.12 American Peregrine Falcon (*Falco peregrinus*)

Peregrine falcons breed throughout the western portion of the United States. They breed within most of California where suitable cliffs or high ledges are available and they can be found throughout the state during the winter (Sibley 2000).

Peregrine falcon populations appear to have declined due in part to hunting and DDT. The decline in peregrine falcons underwent a reversal following the ban of DDT in 1972 (Ehrlich et al 1988). Peregrine falcons are on the USFWS BCC list and CDFW Fully Protected; in addition, the peregrine falcon was listed as endangered at a state level starting in 1971 and delisted in 2009, and listed as endangered at a federal level in 1970 and delisted in 1999 (CDFW 2015).

One peregrine falcon was seen in the winter during the 2017-2018 surveys (KR&EC 2019) and has a spotty distribution over the course of the year according to eBird (2019). Anywhere along the central coast of California that has sizeable populations of birds (shorebirds, ducks, pigeons, and gulls in particular) is likely to have periodic peregrine falcons during the winter months and year-round, if near a breeding site.

4.6.13 Whimbrel - non-breeding (*Numenius phaeopus*)

Non-breeding whimbrel are on the USFWS BCC list (CDFW 2015). In the western North America, whimbrel winter along coastal California south along Baja California and the Sea of Cortez. Whimbrels can be found in a variety of habitats including mudflats, sandy beaches, salt marshes, and flooded fields but are usually found on tidal flats or along the shore (Audubon 2019). Though they have long bills, they tend to pluck items from the surface or from just below the surface of the mud or sand. They feed on crabs, crustaceans, worms, and bivalves and, in this area, usually forage alone.

A high count of three whimbrels were seen in the fall (KR&EC 2019). They are classified as “rare” by Lehman (1985) in the August 1st to November 30th timeframe. Compiled data from eBird from 1998 to 2018 (eBird 2019) indicates whimbrel are only present at the refuge intermittently.

The development of more mudflats with more frequent tidal flushing would likely increase the likelihood of whimbrel visiting the refuge. Based on the size of the entire site and their more solitary nature, it is unlikely that large numbers of whimbrel would be present at any one time.

4.6.14 Long-billed Curlew - non-breeding (*Numenius americanus*)

Non-breeding long-billed curlews are on the USFWS BCC list (CDFW 2015). In the western North America, long-billed curlew winter along coastal California, mostly from the San Francisco Bay Area, south along Baja California and the Sea of Cortez and throughout most of Mexico. They will winter in farm fields, marsh, grasslands, sandy beaches, and mudflats in bays or estuaries (Audubon 2019). Long-billed curlews feed mainly on insects during the breeding season and they will feed on crustaceans, mollusks, marine worms, and invertebrates in the winter (Audubon 2019).

Long-billed curlews will winter along the coast and within the estuaries along the central coast. No curlews were seen during the 2017-2018 bird surveys (KR&EC 2019) and eBird (2019) indicates that the curlews are uncommon in the October to December time frame.

4.6.15 Marbled Godwit - non-breeding (*Limosa fedoa*)

Non-breeding marbled godwits are on the USFWS BCC list (CDFW 2015). In the western North America, marbled godwits winter along coastal California south along Baja California and the Sea of Cortez. They winter around tidal flats, marshes, ponds and along the coast (Audubon 2019). Godwits feed on mollusks, crabs, marine worms, and invertebrates in winter (Audubon 2019).

Marbled godwits will winter along the coast and within estuaries and bays along the central coast. No marbled godwits were seen during the 2017-2018 bird surveys (KR&EC 2019), are classified as “rare” between August 1st and November 30th by Lehman (1985), and eBird (2019) indicates that a few individuals may be present between February and early April and October and November.

4.6.16 Short-billed Dowitcher - non-breeding (*Limnodromus griseus*)

Non-breeding short-billed dowitchers are on the USFWS BCC list (CDFW 2015). In western North America, short-billed dowitchers winter along coastal California, mostly from the San Francisco Bay Area, south along Baja California and the Sea of Cortez. They seem to prefer tidal flats in protected bays or estuaries (Audubon 2019). Dowitchers feed in shallow water or on mudflats and probe their bills deep into the mud. They often feed in groups of a few to a couple dozen individuals and look like a group of miniature oil derricks.

No dowitchers were detected during the 2017-2018 bird surveys (KR&EC 2019); Lehman (1985) records the short-billed dowitchers as “rare” between March 1st and May 31st, and “uncommon” between June 1st and February 28th. Compiled data from eBird from 1998 to 2018 (eBird 2019) indicates the short-billed dowitchers are only present at the refuge between early August and mid-September.

The development of more mudflats with more frequent tidal flushing would likely increase the likelihood of short-billed dowitchers visiting the refuge. Based on the size of the entire site, it is unlikely that large numbers of dowitchers would be present at any one time or that individuals would over-winter.

4.6.17 Allen's Hummingbird (*Selasphorus sasin*)

Allen's hummingbird is on the USFWS BCC list (CDFW 2015 and USFWS 2008) and is on the Santa Barbara Audubon Society "Watch List" (SBAS 2015). Allen's hummingbirds are a migratory hummingbird that can be found in most of western California and southwestern Oregon during the breeding season (Sibley 2000). Their preferred habitats include chaparral, thickets, brushy slopes, and conifer forests (Ehrlich *et al* 1988).

Allen's hummingbirds lay up to two broods of two eggs which are incubated for 17 to 22 days; young begin to fly in another 22 to 25 days (Ehrlich *et al* 1988). The female Allen's hummingbird builds the nest, incubates the eggs, cares for, and feeds the nestlings and fledglings all without assistance from the male Allen's hummingbird.

There has been a recent increase in the number of Allen's hummingbirds that "over winter" on the central coast (pers. comm. Joan Lentz), but Andrée Clark Bird Refuge and surrounding area is not likely to be an important wintering location for this species. Allen's hummingbirds are known to occur in the area and are expected to be found within the Project area. Wintering and or nesting Allen's hummingbirds should be expected in most years at a relatively low level.

4.6.18 Oak Titmouse (*Baeolophus inornatus*)

Oak titmouse is regarded as a BCC by the USFWS while nesting (CDFW 2015 and USFWS 2008) and is on the Santa Barbara Audubon Society "Watch List" (SBAS 2015). The oak titmouse is a drab ashy-gray passerine with a small crest that can be found year-round in most of western California, southwestern most Oregon, and the northwestern most portion of Baja California (Sibley 2000). Their preferred habitats include oak woodlands, mixed riparian, and wooded suburban areas (Baicich and Harrison 1997).

Oak titmice breed in natural or woodpecker-made cavities or nest boxes which the female selects (Ehrlich *et al* 1988; Baicich and Harrison 1997). They lay a single brood of six to eight eggs, which are incubated for 14 to 16 days; young leave the nest cavity around 16 to 21 days (Baicich and Harrison 1997; Ehrlich *et al.* 1988).

Three oak titmice were detected during the spring wildlife surveys in 2017 and were likely a family group from the oaks on the mesa to the south (KR&EC 2019). One oak titmouse was detected in the winter of 2017 and was near the oaks on the mesa. Until there are suitable nesting cavities in the refuge area, oak titmice are expected to breed on the mesa and occasionally enter the refuge area; however, this area is not high quality habitat for this species.

4.6.19 Belding's Savannah Sparrow (*Passerculus sandwichensis beldingi*)

The Belding's savannah sparrow is a year-round resident associated with dense pickleweed in the coastal salt marshes of southern California. These birds breed between Goleta in Santa Barbara County, California and south to El Rosario, Baja California, Mexico within about 30 coastal

wetlands (Zembal and Hoffman, 2010). Belding's savannah sparrow was listed as endangered in 1974 by CDFW (CDFW 2015). Just over 100 territories were documented by Zembal and Hoffman (2010) within Santa Barbara County in a state-wide survey for Belding's savannah sparrows within potentially suitable coastal wetlands.

No Belding's savannah sparrows were detected at the Andrée Clark Bird Refuge during the 2017-2018 bird surveys (KR&EC 2019) and there were no CNDDDB records of this species in this area. This species has a low chance of occupying this area due to a lack of sizeable pickleweed mats; however, the restoration of both the dune habitat and the creation of more and healthier salt marsh habitat has a low chance of enabling some individuals to survive and potentially breed in the refuge.

4.6.20 Yellow Warbler (*Dendroica petechia*)

When breeding, yellow warblers are a California Species of Special Concern (SSC; CDFW 2015). Yellow warblers within central California breed in willow riparian woodlands which may also contain cottonwoods, maple, sycamore, and alder (Dunn and Garrett 1997). Yellow warblers are primarily threatened by loss of riparian habitat and brood parasitism by brown-headed cowbirds (*Molothrus ater*). Yellow warblers are neo-tropical migrants and breed in suitable habitat through most of North America and winter in Central and northern South America (Dunn and Garrett 1997).

Yellow warblers are primarily insectivores during the breeding season capturing insects by gleaning insects off of vegetation and bark and occasional hawking (Ehrlich *et al.* 1988). Yellow warblers nest in dense riparian vegetation or shrubs and woodlands adjacent to swampy areas. Female yellow warblers build their nests in an upright fork of a twig of a shrub or tree between one and 14 feet above the ground. Yellow warblers usually lay four to five eggs which are incubated for 11 to 12 days and fledge after an additional nine to 12 days (Ehrlich *et al.* 1988; Baicich and Harrison 1997).

One yellow warbler was detected within the Project area during the spring and fall wildlife survey and this species is not known to winter in this region (KR&EC 2019). This species could breed in the area though the quality of habitat is not ideal; during spring and fall migration, yellow warblers should be present within the Project area.

4.6.21 Tricolored Blackbird nesting colony (*Agelaius tricolor*)

Tricolored blackbirds are found year-round in California and northwestern Baja, and breed in isolated spots in Washington and Oregon. They breed in large colonies in freshwater cattail or bulrush wetlands. They have declined due to loss of wetlands and land conversion. Tricolored blackbird nesting colonies are classified as state threatened (as of March 2019), state SSC, and a federal BCC (CDFW 2015).

At present, the cattail clusters at the Bird Refuge are likely too small for breeding tricolored blackbirds. In addition, there may be issues with competition for breeding areas and predation of eggs and nestlings by great-tailed grackles (*Quiscalus mexicanus*). No tricolored blackbirds were detected during the 2017-2018 surveys (KR&EC 2019), are classified as "rare" between August

1st and May 31st by Lehman (1985), and eBid (2019) has no records for this species. However, eBird (2019) does indicate that both red-winged blackbirds (*A. phoeniceus*) and great-tailed grackles are common year-round.

5. IMPACT– ASSESSMENT AND AVOIDANCE, MINIMIZATION, AND MITIGATION MEASURES

The Project related impact assessment was conducted assuming that all tasks of the Project description as described in Section 2.0 are implemented. The Project includes installation of a fully functional weir gate, management of the beach berm, creation of a low flow water treatment wetland, and restoration of dune and wetland habitats (Table 1) to improve water quality and wildlife habitat at the refuge particularly for birds and the federally endangered tidewater goby; as such it is clearly defined as a restoration project benefiting water quality, hydrology, natural habitats, and native plants and wildlife.

Project related impacts to wetlands, riparian habitat, native trees, dune habitat, special status plants, common wildlife, and special status wildlife are assessed below. Impacts to other common native vegetation will be minimal and is not discussed further in this report. The measures incorporated into the Project description to reduce Project related impacts are summarized for each impact. When applicable, additional mitigation measures are included to further reduce potential impacts.

The definition of “significance” was taken from §15065. Mandatory Findings of Significance from CEQA Guidelines (California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000–15387) and §21068. Significant Effect on the Environment of the Public Resources Code Sections 21000–21177. The significance of each identified impact was classified using the following categories.

- Class I - Significant adverse impacts that are unavoidable.
Significant impacts cannot be effectively mitigated and no feasible measures could be taken to avoid or reduce these adverse effects to an insignificant level. Even after all feasible mitigation measures are included the residual impact would be significant.
- Class II – Significant but mitigable impacts.
These impacts are potentially significant but can be reduced or avoided by the implementation of avoidance and/or mitigation measures. After implementation of feasible mitigation measures the residual impact would not be significant.
- Class III – Adverse but not significant impacts.
Though not significant, additional avoidance and minimization measures may be included for these impacts to further reduce the effect on the environment.
- Class IV –Beneficial impacts: Long-term effects are beneficial to the environment.

The permanent impacts of the Project are all beneficial (Class IV). All of the temporary impacts of the Project are considered Class II or III. Wetlands, water quality, pond turtle, and tidewater goby have Class II temporary impacts as identified and described below. All the other temporary impacts are Class III and described below.

5.1 WETLAND IMPACTS

The creation of the low-flow water treatment bio-retention basin and perimeter bio-retention swale, expansion of the lagoon, improvement of the existing pathways, replacement of the weir, restoration of the dune habitat, and periodic sand berm priming, is expected to result in creation and enhancement of 3 acres of wetlands, and temporarily directly impact approximately 0.8 acres of CDFW wetlands and ACOE wetlands present on site. In calculating the habitat areas and potential type conversions for the project, the elevation of the weir spillway in the lake was used because the lake water elevation is managed with the weir. All areas at or below the weir spillway elevation of 4.8 feet NGVD29 were assumed to be jurisdictional waters. The beach lagoon south of Cabrillo Blvd. is separated from the ocean by a seasonal sand berm, but periodically during the year the berm is breached during winter storms and the beach lagoon can connect with the ocean. Because of this connection, the Mean Higher High Water (MHHW) elevation (2.6 feet NGVD29) was used to calculate habitat areas and potential habitat type conversions. All areas at or below MHHW were assumed to be jurisdictional waters. The MHHW elevation is assumed to represent the typical high tide line elevation at the beach portion of the project area. Impacts to wetlands include direct impacts such as excavation and habitat conversion (changing one type of wetland to another type), and indirect impacts include potential erosion and pollution. The potential impacts and/or benefits to wetlands associated with each project component are described further below.

The low-flow water treatment wetland site has minimal hydrophytic vegetation including a few small patches of cattails and the flow channel is currently a stone-and-mortar slot-channel (Appendix A, Photograph 15). The proposed low-flow water treatment wetland would create an 0.08-acre (3,650 ft²) shallow wetland adjacent to the existing channel to remove nutrients from dry season low flow and improve water quality within the lagoon. This wetland would be periodically maintained and trimmed to remove trash and excess vegetation and to maintain water conveyance capacity.

The removal and replacement of the existing weir is expected to temporarily impact no more than 0.01 acres (500 ft²) of wetland. The footprint of the new weir is expected to be approximately the same size as the existing weir, so there will be no permanent loss of wetlands. The freshwater wetland feature to the west of the weir, perhaps a historic portion of Sycamore Creek, should be protected from disturbance and used as a source of plant materials for restoration efforts. The improved water circulation is expected to improve water quality and the overall health of the wetlands north of the weir.

The expansion of the beach lagoon, creation of 0.2 acres of open water/intertidal mudflat habitat near the mouth of the lagoon, and restoration of 0.9 acres of dune habitat will temporarily impact approximately 0.2 acres of wetlands and permanently remove approximately 1.5 acres of iceplant and non-native grassland and ruderal vegetation (Table 1).

Priming the sand berm south of the beach lagoon to allow the lagoon to fill, overtop, and flow into the ocean 3-4 times per rainy season would not directly impact any vegetated wetlands. The indirect effects of this action are difficult to assess due to the fluctuating water dynamics. It is

generally expected that the water in the lagoon would be less fresh and more tidally influenced when the berm is breached. Therefore, vegetation is generally expected to remain wetland species but shift from more freshwater species such as California bulrush to more saltmarsh species such as pickleweed, which is the historical habitat of the area. Due to some uncertainty in the vegetation response to the changes in water dynamics there is a potential impact to wetland vegetation but this can be mitigated as stated below.

The following minimization and mitigations measures are to be implemented prior to, during, and after Project construction:

Minimization Measure: All construction is to be conducted during the dry season, to minimize work in the open water and potential for erosion.

Minimization Measure: Temporary construction fencing will be placed as feasible in areas of wetland vegetation adjacent to the construction footprint to minimize impacts to existing native wetland plants on site.

Minimization Measure: During construction, silt fencing will be installed in areas where grading is near open water to prevent sediment from entering the refuge/lagoon.

Minimization Measure: All equipment will be stored, maintained, and fueled a minimum of 50 feet from open water.

Minimization Measure: After construction is completed, all areas of disturbance on the edges of the weir will be covered with coconut fiber matting and planted with native plants; the banks near the outflow will be stabilized using a layer of un-grouted rip-rap boulders and strategic plantings to reduce erosion. Coconut fiber matting will be placed on slopes greater than 3:1 above the MHHW elevations to control erosion.

Minimization Measure: Trimming of native trees to be retained will be conducted by a certified arborist.

Minimization Measure: The onsite environmental coordinator (OEC) will monitor construction activities in wetland areas to keep the disturbance area within the Project footprint and ensure the erosion control measures are functioning.

Mitigation Measure: Willow trees removed may be used by taking cuttings to propagate for revegetation. Native understory plant species impacted will be salvaged by collecting plant materials and soil for use in restoration to the extent feasible.

Mitigation Measure: Implement an adaptive management vegetation monitoring program to track wetland vegetation response to the changes in water dynamics to ensure there is no net loss of wetlands.

The potential Project impacts to wetlands are significant but are temporary in nature and with the implementation of the above minimization and mitigation measures are mitigable (Class II impact). With implementation of all the Project elements, the proposed Project would add an off-channel treatment bio-retention basin adjacent to a stone-and-mortar channel, improve water

quality, replace the existing weir and improve tidal connectivity, develop a more diverse hydrological and vegetative environment, and increase habitat and opportunities for special status plant and animal species to use the refuge, lagoon, and surrounding areas. The Project would be creating approximately 0.2 acres of open water/intertidal mudflat, restore and enhance approximately 0.9 acres of willow scrub, and restore approximately 2.5 acres of tidally influenced saltmarsh wetland habitat (Table 1). This can reasonably be classified as “habitat restoration” and a beneficial impact (Class IV).

5.2 RIPARIAN HABITAT IMPACTS

The creation of the low-flow water treatment wetland feature should have no impact on riparian vegetation. The existing stone and mortar channel has some native vegetation within the channel, predominately cattails, but this vegetation would likely not be affected by construction of the off-channel treatment wetland and would likely be removed by regular channel maintenance activities.

The replacement of the weir would require the temporary removal of no more than 0.01-acres (500 ft²) of wetland habitat adjacent to the existing weir with riparian vegetation consisting of one small willow. The loss of a small willow is not large enough to be considered a significant impact to riparian habitats.

Although the impacts to riparian habitats are not significant, the following minimization measures would keep the impacts to a minimum.

Minimization Measure: Temporary construction fencing will be placed, as feasible, in areas of riparian vegetation adjacent to the construction footprint to minimize impacts to existing riparian habitats on site.

Minimization Measure: Cuttings will be taken from willows needing trimming or removal. Cuttings will be installed either directly to restoration areas that have supplemental irrigation or will be propagated in a nursery for future outplanting in the restoration areas.

The potential impact to riparian habitat would be adverse but not significant (Class III). The potential Project impacts are temporary in nature and the Project would be restoring approximately 0.9-acres of riparian habitat. This can reasonably be classified as “habitat restoration” and a beneficial impact (Class IV).

5.3 DUNE HABITAT IMPACTS

Approximately 1.2 acres of southern foredune habitats, much of which is non-native vegetation, will be impacted south of Cabrillo Boulevard. These temporary impacts will be mitigated for by creating, restoring and/or enhancing approximately 0.4 acres of foredune habitat, and 0.5 acres of backdune habitat plus 0.1 acres of native wildflower habitats as part of the backdune area (Table 1). In addition, adjacent habitats including 0.3 acres of salt marsh near the beach lagoon and 0.2 acres of open water/intertidal mudflat below the MHHW elevation will be created and enhanced resulting in a more natural ecological system. Additionally, the Project will be installing sand

fencing and educational signs to reduce impacts to the restored areas, and revegetating the dune habitat with native plants from the local area.

Due to the existing levels of human disturbance (e.g. walkers, dogs, volleyballs, etc.) and non-native vegetation, the existing southern foredune habitat is of poor quality and is too small to support breeding by sensitive birds such as snowy plovers or least terns. Additionally, the coastal salt and brackish marsh habitats are very narrow and offer little habitat for native wildlife and native plant species. The proposed Project components in the estuary mouth area should dramatically increase the quantity and quality of salt marsh, foredune and backdune habitats. Additionally, though the level of human impact will be decreased, it is not likely to be reduced to a level that would allow for successful breeding by ground-nesting birds such as killdeer, snowy plovers, or least terns.

The expansion of the beach lagoon and periodic lowering of the beach berm (periodic berm priming) will increase the quality and quantity of habitat available for the shorebirds that specialize on these coastal interfaces. The revegetated and “fenced” dune habitat patches would likely be of use as a roosting area (especially in public “low-use” periods such as winter) and would allow easy access to the foraging areas along the beach or edges of the beach lagoon. Adaptive management of the water levels in the Bird Refuge could prove to be very beneficial to migratory birds, in particular.

Although the impacts to dune habitat are not significant, the following minimization measures would keep the impacts to a minimum.

Minimization Measure: If possible, protect existing native dune habitat areas by fencing these areas during construction. If the areas must be graded then the plant materials and/or seeds of the native vegetation present should be salvaged/collected for use in the dune restoration efforts.

The potential impact to dune habitat is less than significant with the implementation of the proposed restoration and creation of foredune and backdune habitats (Class III). The expansion of the salt marsh and wildflower habitats will help increase the habitat value of the area and diversify both the wildlife and plant species found in this area. The fencing and signage will help direct people away from sensitive habitats and educate people on the unique aspects of these rare habitats. The potential Project impacts are temporary in nature and the Project would be restoring approximately 0.9-acres of native dune habitat thus improving the quality and quantity of habitat available south of Cabrillo Boulevard. This can reasonably be classified as “habitat restoration” and a beneficial impact (Class IV).

5.4 COAST LIVE OAK TREE IMPACTS

No coast live oak trees are expected to be directly or indirectly impacted by the Project. Some oaks are within the Project area and these will be fenced during construction to be protected, if near work areas and/or laydown areas. Restoration will include some coast live oaks to increase diversity of the structure of the restoration plantings. If unanticipated impacts to oak trees occur, the following mitigation measures would reduce the impacts to a less than significant level.

Mitigation Measure: The City shall plant 10 coast live oak trees obtained from acorns collected from within 10 miles of the Project site for every oak tree removed, relocated or damaged with a dbh of four inches or greater. The trees shall be planted in one-gallon size containers or equivalent, gopher fenced and irrigated (drip irrigation on a timer) for a five-year maintenance period.

Mitigation Measure: Any encroachment within the critical root zone of native trees shall adhere to the following standards (tree is considered damaged if more than 20% encroachment into the critical root zone):

- i. Any paving shall be of pervious material (gravel, brick without mortar or turf block).
- ii. Any trenching required within the critical root zone of a protected tree shall be done by hand.
- iii. Any roots one inch in diameter or greater encountered during grading or trenching shall be cleanly cut and sealed.

The proposed Project is not expected to impact any coast live oaks. However, if there are unanticipated impacts to oak trees, implementation of the proposed mitigation measures would reduce any impacts to a less than significant level. Including coast live oaks in the planting palette for approximately 0.4 acres of woodland “habitat restoration” can reasonably be classified as a beneficial impact (Class IV).

5.5 NATIVE TREE IMPACTS

Potential impacts and mitigation for arroyo willow trees are discussed in Riparian Habitat Section 5.2. and potential impacts and mitigation to coast live oak trees are discussed in Coast Live Oak Trees Section 5.3. There are native trees including Mexican elderberry and California sycamore (*Platanus racemosa*) on the northern edge of the site that will be protected. No other impacts to native trees are anticipated. If native trees are removed, relocated or damaged with a dbh of four inches or greater the following mitigation would be implemented.

Mitigation Measure: The City shall plant 5 trees or shrubs obtained from material collected from within 10 miles of the Project site for every native tree or large shrub removed, relocated or damaged with a dbh of four inches or greater. They shall be in one-gallon size containers or equivalent, gopher caged and irrigated (drip irrigation on a timer) for a five-year maintenance period.

The potential impacts to Mexican elderberry and California sycamore are less than significant (Class III). The proposed Project would be protecting all native trees as feasible and restoring approximately 0.4-acres of native woodland habitat, which will include Mexican elderberry and California sycamore in the plant mix. This can reasonably be classified as “habitat restoration” and a beneficial impact (Class IV).

5.6 NON-NATIVE TREE IMPACTS

Section 2.3.6 and Table 2 describe the proposed removal of 74 “mature non-native trees” from the three islands, the northwestern portion of the Bird Refuge and from near the tennis courts. These trees consist of 70 *Myoporum laetum* (greater than four inches dbh), three *Melaluca nesophilia* trees, and one *Acacia melanoxylo*m tree. Fifty-four of these trees are found on the three islands, 15 are in the northwestern area, 4 are on the eastern shoreline, and the one *Acacia* tree is located near the tennis courts north of Highway 101.

The northwestern part of the Project Area and the islands are largely a monoculture of *Myoporum laetum* with several *Melaluca nesophilia*. The California Invasive Plant Council (2020) identifies *Myoporum laetum* as a “a prolific seeder and a fast-growing and poisonous species that can outcompete native species” and was classified as “high potential risk” by the Cal-IPC Plant Risk Evaluator (beta version 2020). Seed production for *Myoporum* has been estimated at 15,040 to 30,560 seeds per tree per year in South Africa where it has been introduced (Richards 1988). In addition, these non-native trees do not provide ecological benefits to sensitive species in the Project Area, such as tidewater goby, southwestern pond turtle, or breeding birds. The monocultures of non-native trees dominating the islands and northwestern part of the Project Area prevent establishment of more diverse native vegetation communities that would provide greater habitat complexity, better breeding opportunities, and more diverse foraging opportunities for native wildlife.

The Andree Clark Bird Refuge Bird Survey Report 2017-2018 (KR&EC 2019) found a significant positive correlation for both bird abundance and bird species richness with higher habitat quality. Reducing non-native plants, increasing plant species diversity, and increasing the total amount of vegetation would increase total habitat quality and should increase both abundance and species diversity of birds. This study was a year-round study and these results are expected to apply to wintering, migrant, and breeding bird species. The study did not document any bird breeding behavior on the three islands during the two breeding seasons and only two of the 34 confirmed breeding events used *Myoporum* as the nest structure species. Both nesting events were by Anna’s hummingbirds in the northwestern area of the Bird Refuge.

The removal of the 74 non-native trees will have a localized, temporary impact on wildlife within the areas of the tree removal that is less than significant. Since the tree removal is in six smaller areas (not one large area) and in some cases entails removal of only 1 to 4 trees, it is expected that wildlife will be able to shift to other nearby vegetated areas with little effort. Once the non-native trees are removed, native trees and understory vegetation will be planted and maintained until the native vegetation becomes established. The proposed native species should become established relatively quickly, minimizing the temporary disruption to wildlife. The western island is the exception since all of the non-native vegetation will be removed; this potential temporary, localized impact will be minimized with implementation of mitigation measures. These minimization and mitigation measures include planting a mix of native trees and understory species on the island following removal of non-native trees, having an OEC monitor vegetation removal, and relocating wildlife as needed (see Section 5.8). Impacts to breeding birds would be

minimized by conducting pre-activity surveys before tree removal activities (see Section 5.8). Native and non-native habitat in other parts of the Project Area would remain available to wildlife.

The restoration plan has been designed to replace non-native vegetation with native vegetation in key locations, rather than performing wholesale replacement throughout the Project Area. This approach ensures that existing native habitat and certain areas of non-native habitat remain available to wildlife throughout implementation of the project. For the islands, only the central portions of the eastern and middle island will have non-native trees removed and replaced with native vegetation so that the remainder of the existing non-native vegetation will not be disturbed. The central portions of the central and eastern islands will also benefit from shoreline restoration to improve access for wading birds by creating mudflat and salt marsh habitats. Removal of all vegetation on the western island will create mudflat and salt marsh habitat along the shores of the island to increase access to the island for larger and/or less graceful species such as ducks, gulls, terns, shorebirds and grebes which currently are blocked from accessing the islands by the dense growth of the *Myoporum*. Native trees will also be planted in the central portion of the island.

The four non-native trees proposed for removal on the eastern shoreline are within or adjacent to areas proposed for marsh habitat creation. The proposed marsh areas will provide increased habitat diversity for aquatic and avian species in the Project Area by creating gently sloping mudflat and salt marsh habitats that are currently rare in the Project Area. No other existing trees along the eastern shoreline will be removed. Similarly, the non-native trees proposed for removal and replacement in the northwest corner of the site represent a relatively small proportion of the total habitat area on the north side of the Project Area. Areas of native vegetation on the north side of the shore will remain available to wildlife.

None of the non-native trees proposed for removal are biologically valuable, such as a eucalyptus grove used by monarch butterflies. These non-native trees do not have a special role in the ecosystem, and the proposed native habitat restoration would enhance the habitat value of the Project Area and increase the biological functions and values of the Bird Refuge.

Mitigation Measure: The City shall plant one native tree obtained from material collected from the South Coast between Rincon Creek and Gaviota Creek for every non-native tree removed, relocated or damaged with a dbh of four inches or greater. They shall be in one-gallon size containers or equivalent, and irrigated (drip irrigation on a timer) for a five-year maintenance period.

The potential impacts to non-native trees are less than significant (Class III). The proposed Project would be removing 74 non-native trees and restoring approximately 0.4-acres of native woodland habitat and 0.9 acres of willow scrub habitat, both of which will include native willows in the plant mix. Non-native trees will be replaced 1:1 with native trees. This can reasonably be classified as “habitat restoration” and a beneficial impact (Class IV).

5.7 SPECIAL STATUS PLANT SPECIES IMPACTS

In the Santa Barbara quadrangle CNPS Rare and Endangered Plant Inventory database (2017), CNDDDB search (2017), other literature searches, and field observations for the Project site, 27 sensitive plants were identified as having potential to occur (Table 3; Anchor 2017). Of the 27 CNPS listed species, no species are known to be present on site currently. Two species, Coulter's saltbush and Davidson's saltscale, have moderate potential to occur because they historically occurred within five miles of the Project site or suitable habitat is present. One locally rare species, the slender aster, has been documented to occur on site.

There are potential impacts to Davidson's saltscale, Coulter's saltbush, slender aster, and seacoast bulrush. Potential impacts include removal of special status plants during grading or trampling during Project construction and restoration activities such as non-native tree removal or planting of native species. With the implementation of the minimization, and mitigation measures below, these impacts are less than significant.

Minimization Measure: Prior to construction, a rare plant survey should be conducted in the spring season during the blooming period of potential special status species to determine whether or not the special status species with potential to occur on site are present within the work zone or 10-foot buffer area. If special status plant species are found on site they will be avoided, if feasible, by clearly marking the area around the plants and the OEC will monitor construction crews to ensure the plants are protected. If the plants cannot be avoided, they will be replaced by collecting seeds and/or cuttings from the plants and/or relocation on site as appropriate, propagating in one-gallon size container plants in a nursery, and outplanting in the restoration areas. If special status plants are installed, they will be incorporated into the restoration monitoring plan to ensure survival.

The potential impact to special status plant species is potentially adverse but not significant (Class III). With the addition of special status plant species from the local area into the habitat restoration planting pallet the potential impacts would be reasonably be classified as "habitat restoration" and a beneficial impact (Class IV).

5.8 COMMON WILDLIFE SPECIES IMPACTS

Common wildlife species could be temporarily impacted by construction activities and may be wounded or killed by heavy equipment; however, minimization measures incorporated into the Project Description will reduce this impact. Coconut matting and other erosion control materials if containing plastic netting will entrap and kill wildlife; however, the minimization measure described below will avoid this impact. Additionally, birds that may be nesting in the area may be disturbed by noise from construction and/or maintenance activities or nests could be harmed by tree and vegetation removal; however, this temporary impact will be reduced by implementing the minimization measure below.

Minimization Measure: Impacts to nesting birds will be avoided by a pre-construction and/or pre-maintenance activity nesting bird survey. If any native nesting birds are located within 100 feet of the active work site, Project construction will be delayed until the birds have fledged.

Minimization Measure: Additionally, impacts to common wildlife species will be minimized by over-sight by the OEC who will monitor Project construction. If wildlife species are encountered, the OEC or designee will attempt to move the animal outside the construction site. At the OEC's discretion, construction can resume even if the animal has not been relocated (e.g. animal cannot be caught safely, animal cannot be located, etc.). Non-native wildlife will be removed from the site.

Minimization Measure: Ensure that all coconut matting and other erosion control material utilized for the Project does not contain plastic netting. Materials shall be all-natural fiber. Biodegradable plastic is not acceptable.

With implementation of the above minimization measures, the potential impact to common wildlife is less than significant. The potential Project impacts are temporary in nature and the Project would be restoring and enhancing approximately 6-acres of habitat thus improving wildlife habitat. This can reasonably be classified as "habitat restoration" and a beneficial impact (Class IV).

5.9 SPECIAL STATUS WILDLIFE SPECIES IMPACTS

Numerous special status wildlife species have the potential to be directly or indirectly impacted by the proposed Project. The following sections will address these impacts to these species and will include specific minimization and/or mitigation measures to reduce the potential impacts. An evaluation of the potential direct and indirect impacts to each animal or group of animals will be included in each section and summarized for all species at the end of this section. Unless stated otherwise, all impacts to special status species are considered temporary and adverse but not significant (Class III); long-term impacts are considered to be indirect and beneficial (Class IV) since the habitat will be restored and enhanced.

5.9.1 Globous Dune Beetles

Due to the level of disturbance to the dune habitat south of Cabrillo Boulevard, the globose dune beetle is not expected to be present in this area. In order to ensure that the beetles are not present, a biologist familiar with the globous dune beetle sign and habitat requirements will visually examine the area prior to disturbance. The creation of diverse foredune and backdune habitat would greatly increase the habitat value of this area, and the proposed fencing should decrease the level of disturbance to this habitat.

Minimization Measure: Impacts to globous dune beetles will be avoided by conducting a pre-construction and/or pre-maintenance activity beetle survey. If any globous dune beetles are found, they will be relocated to a safe area on-site or to the closest suitable habitat.

5.9.2 Monarch Butterfly

Transient monarchs may pass through the Project Site, but they are expected to be able to navigate around Project related disturbances (e.g. excavator moving dirt or removal of non-native trees) and should not be adversely affected by the proposed Project. Currently, there are no milkweed plants nor suitable stands of eucalyptus or oak groves within the Project site for breeding or wintering monarchs.

Minimization Measure: Including native narrow-leaf milkweed (*Asclepias fascicularis*) in the habitat restoration plant pallet will help mitigate for indirect impacts to monarch butterflies. Where appropriate, the City shall include native narrow-leaf milkweed and educational signage talking about monarchs, their life cycle, and the importance of milkweed to this species.

5.9.3 Tidewater Goby

Tidewater goby is likely most abundant in the beach lagoon and would be potentially impacted by vegetation and sediment removal activities associated with the widening of the lagoon, and could become stranded during dewatering activities associated with the weir replacement. In addition, there is potential for impacts to tidewater goby during recontouring of the islands and creating marsh lobes. Tidewater goby could potentially be injured by cutting and removal of emergent wetland vegetation where they may hide, particularly coastal brackish marsh habitat around the lagoon, islands, and edges of the refuge, where present in the work locations. Vibrations and noise underwater plus turbidity from the aquatic construction equipment would tend to disperse fish, including tidewater gobies, out of the work area.

The sand berm priming is not expected to impact tidewater goby directly because work will be conducted only in sand that is not inundated during low tide. The sand berm priming has the potential to shift the water to more tidal and less brackish which could reduce or shift preferred habitat for tidewater goby. Table 7 shows the areas of potential direct impacts to tidewater goby associated with project construction totaling 1.32 acres.

Table 7. Areas of Potential Impacts to Tidewater Goby

| Construction Work Area | Acres | Notes |
|------------------------------|-------------|---|
| Island Shores | 0.17 | includes 5-foot buffer around all islands |
| Marsh Lobes | 0.97 | includes 5-foot buffer around all lobes |
| Beach Lagoon Area | 0.17 | Area below MHHW in beach lagoon |
| Weir Construction Dewatering | 0.01 | 50 ft. by 10 ft area |
| TOTAL | 1.32 | |

Minimization Measure: Water-based sediment and vegetation removal activities associated with recontouring the islands, marsh lobes, and lagoon, shall be limited to August 1 through November

1, to avoid prime breeding season of tidewater goby, and take advantage of low water levels in the lagoon and minimize work within the water.

Minimization Measure: A Service-approved biologist shall conduct a worker environmental awareness training for all project personnel prior to the start of project activities. The training will include a description of tidewater goby and its habitat including a photograph of the species. It will describe the ESA and penalties if provisions of the Act are violated. It will outline the project boundaries and minimization and mitigation measures that all construction personnel must follow to avoid impacts to and protect the species.

Minimization Measure: Clearly define work limits, keep equipment within work zone, and keep work zone to a minimum within the water.

Minimization Measure: A preconstruction survey within the work zone for tidewater gobies shall be conducted within approximately one week prior to the commencement of vegetation/sediment removal activities, or dewatering. If gobies are present, the Service-approved biologist shall conduct fish rescue and relocation where feasible prior to the start of work in order to clear work areas of tidewater goby. It should be noted that it may not be feasible in some areas to conduct a fish survey or rescue if the water is too deep or the bottom is too muddy to be able to conduct seining. If this is the case at the weir location, the area may first need to be set up for dewatering and water levels reduced until seining can be conducted to relocate fish out of the work zone. In areas that will not be dewatered but seining is not feasible then attempts will be made to flush fish out of the area prior to working with heavy equipment.

Minimization Measure: A Service-approved biologist will capture, handle, and relocate tidewater gobies from the work area using ¼-inch seine and dip nets and aerated buckets of water from the refuge to a designated relocation area outside the work area. The relocation area will be located within suitable habitat and the shortest distance from the disturbance area. Areas with brackish water, emergent vegetation, and sandy substrate will be the preferred relocation areas. Relocation areas should be upstream of the weir construction or may be downstream once the weir construction is complete.

Minimization Measure: In work areas that will not be dewatered such as the islands, marsh lobes, and lagoon that may contain water, fish should be moved from the area using seine and dip nets where feasible, or flushed by walking or using vibrations/noise from construction equipment. Then a silt curtain will be deployed as feasible by securing with t-posts and zip ties and fastening weights to the bottom at approximately a 5-foot buffer from the construction boundary to reduce turbidity when working in the water. If turbidity is not an issue, block nets with ¼-inch mesh, weights tied to the bottom and secured with t-posts and zip ties may be used instead of silt curtains to keep fish out of work areas where feasible.

Minimization Measure: A Service-approved biologist shall monitor the dewatering efforts for the weir construction to minimize impacts to tidewater gobies. If sheet piles are used for the dewatering, it is assumed that the vibrations and noise would flush fish out of the area. However, as the area is dewatered, sufficient time will be allowed for the Service-approved biologists to

capture and relocate any tidewater gobies that may be trapped within the dewatering area prior to continuing work activities. Once the area is cleared of tidewater goby the qualified biologist shall conduct periodic inspections of the area and be present when the dewatering system is removed.

Minimization Measure: The results of any tidewater goby preconstruction survey or relocation will be documented and submitted in a report to the regulatory agencies.

Minimization Measure: Additionally, impacts to tidewater goby will be minimized from oversight by the OEC who will monitor Project construction. If special status wildlife species are encountered, the OEC or designee will stop work until the animal has moved outside the construction site. The OEC would contact a local expert if assistance is needed.

Mitigation Measure: Conduct a preconstruction survey of the refuge in areas of preferred tidewater goby habitat for which to compare with post construction monitoring for tidewater goby. Monitoring would also include sampling of water quality to ensure brackish water habitat has not been reduced from pre-project conditions. The results would be submitted in a minimum of three annual reports to the regulatory agencies for preconstruction and at least two years following construction.

With implementation of the above minimization and mitigation measures, the potential impacts to tidewater goby is significant but mitigable (Class II). The potential Project impacts are temporary in nature and the Project would be improving habitat for tidewater goby by improving water quality, increasing sandy substrate, increasing lagoon and marsh habitat by about 0.3 acres and allowing the refuge water to function closer to the historical conditions that more closely resemble tidewater goby habitat. This can reasonably be classified as “habitat restoration” and a beneficial impact (Class IV).

5.9.4 Silvery Legless Lizard

Legless lizards may be directly and indirectly impacted by soil disturbance within areas of loose sandy soils, the dune areas in particular. Removal of non-native vegetation would likely improve the habitat for this species, if legless lizards are present. Recolonization of this area by legless lizards is not likely to occur, if the species has been extirpated from this area, due to the species fossorial nature and a lack of connecting habitat that is suitable.

Minimization Measure: Impacts to legless lizards will be minimized by OEC monitoring of soil disturbance within the sandy dune habitat. If any legless lizards are detected, they will be captured by a qualified biologist and either relocated to a safe location and released immediately or secured in a 5-gallon bucket half-filled with sand until a safe location is available (not to exceed five days).

5.9.5 Southwestern Pond Turtle

The proposed activities may have both short-term and long-term effects on this species. The construction activities may require relocation of individuals. The restoration efforts will create better basking areas (approximately 15 cy of “basking boulders”), a more diverse native upland and more extensive wetlands. The changes at the mouth of the estuary and weir may change the salinity of the southern portion of the refuge but may also decrease siltation and increase the longevity of the freshwater portions of the estuary.

During construction, pond turtles could be found in the open water habitats or in the surrounding upland areas. There should be OEC monitoring in areas of heavy vegetation removal near wetland areas, especially in the northeastern and northwestern areas where there are the highest freshwater inputs. If pond turtles are found within the work area, they should be relocated into open water away from heavy equipment activities. If red-eared sliders are captured during construction activities, they should not be released in order to reduce competition for food and basking sites and improve conditions for the pond turtles.

With implementation of the above minimization and mitigation measures, the potential impacts to pond turtle is significant but mitigable (Class II). The potential Project impacts are temporary in nature and the Project would be improving habitat for pond turtles by improving water quality, decreasing competition with non-native turtles, increase and improving basking opportunities, and restoring and enhancing upland habitats. This can reasonably be classified as “habitat restoration” and a beneficial impact (Class IV).

Minimization Measure: A Service-approved biologist or OEC monitor shall conduct a worker environmental awareness training for all Project personnel prior to the start of Project activities. The training will include a description of the pond turtle and red-eared slider including a photograph of each species. It will outline the Project boundaries and minimization and mitigation measures that all construction personnel must follow to avoid impacts to and protect the pond turtles.

Minimization Measure: Impacts to pond turtles will be minimized by OEC monitoring of vegetation removal especially with the northeastern and northwestern portions of the Bird Refuge. Pond turtles will be relocated out of work areas and released back into the open water (ideally in the northwestern portion of the refuge) promptly. Any red-eared sliders captured during construction activities will not be released.

Minimization Measure: Impacts to pond turtles will be minimized by the installation of “reversed” silt fencing along the edges just outside the water. The silt fence will be set to allow turtles to push under to exit work areas but stop them from entering the work areas. The “reverse” silt fencing will be set with the loose tail of the silt fencing toward the water loosely anchored which allows wildlife to push under; animals approaching from the outside (water side) will be blocked by the silt fence and rarely would figure out how to push under the loose tail portion of the silt fence. The silt fence will be installed only in areas where turtles are anticipated, namely the north western portion and on the islands. If block nets and/or silt curtains are already employed, OEC will determine if “reverse” silt fence is needed.

5.9.6 Breeding Birds

The majority of potential direct impacts to special status bird species will be avoided because construction will begin at the end of the breeding season; however, the timing of maintenance activities should also be timed to minimize impacts to nesting birds. Some birds may still be breeding when construction begins, therefore the minimization measures described below will be implemented to reduce this potential impact. Restoration efforts will likely improve the habitat quality for all species of special status birds found on site. Restoration of the site with native

vegetation and with a more complex vegetative structure will likely improve the habitat value of the Project.

Minimization Measure: Impacts to nesting birds will be avoided by conducting a pre-construction and/or pre-maintenance activity nesting bird survey. If any native nesting birds are located within 100 feet of the active work site, Project construction will be delayed in that area until the birds have fledged.

5.9.7 California Brown Pelican

California brown pelicans are not expected to be impacted by construction activities. If a pelican is found within the work area, the following minimization measure should be employed.

Minimization Measure: The OEC will slowly approach the bird to determine if it is ill or injured. If ill or injured, an effort will be made to contact the Santa Barbara Wildlife Care Network or other appropriate wildlife care organization to capture and treat the bird. The OEC should not try to capture the bird unless directed by an appropriate organization. If healthy, the OEC should slowly approach the bird until it leaves the work zone.

5.9.8 Black-Crowned Night Heron nesting colony

Breeding colonies for black-crowned night herons have been confirmed at the Bird Refuge and construction and de-vegetation efforts will be scheduled for outside of the bird breeding season. The three islands or along the western portion of the bird refuge are the areas with the highest probability of a nesting colony; these areas will be revegetated and/or will not be impacted during construction. If there is an impact to a black-crown night heron nesting colony, the impacts would be temporary and the overall habitat quality of the bird refuge would improve for this species.

5.9.9 Cooper's Hawk

Because construction will be timed to start after the breeding season, there are no anticipated impacts to this species.

5.9.10 Western Snowy Plover

No direct impacts to snowy plovers are anticipated since this species is not known nor expected to breed in this area. Additionally, construction will begin at the end of the breeding season and there will be pre-construction surveys for nesting birds. Wintering snowy plovers are more likely to be in the dune habitat area, though unlikely. Monitoring by the OEC will help ensure that sick or injured plovers are not directly impacted by construction. Overall, the restoration and enhancement of the estuary mouth and dune habitats will improve habitat quality for the snowy plovers.

5.9.11 California Least Tern

No direct impacts to least terns are anticipated since this species is not known nor expected to breed in this area. Additionally, this species is only expected to migrate through the central coast region and the least tern winter in the tropics. Monitoring by the OEC will help ensure that sick or injured terns are not directly impacted by construction. Overall, the restoration and enhancement of the estuary mouth and dune habitats will improve habitat quality for the terns.

5.9.12 Merlin - wintering

These winter visitors may be present in the area during construction activities. Since merlins are unlikely to remain in an area with a high human presence, there should be little or no impact from construction activities. The long-term impacts from the Project are likely to benefit this species by improving the habitat quantity and quality for various prey species including small birds.

5.9.13 American Peregrine Falcon

Peregrine falcons may use this site irregularly throughout the course of the year but are not likely to be present on a regular basis since they often have large territories. There are no anticipated direct impacts and the temporary impacts from construction would be minor. The long-term benefits from the improved quality and quantity of habitat for prey species (e.g. shorebirds and ducks) would improve foraging opportunities for this species at the refuge.

5.9.14 Long-billed Curlew, Marbled Godwit, and Short-billed Dowitcher

These shorebirds may winter within the Project area – likely south of Cabrillo Boulevard. There would be a short-term impact to the individuals who may winter in this area but the estuary mouth and dune habitat restoration areas are small. The restoration of these areas should have a long-term beneficial impact to these wintering shorebirds.

5.9.15 Allen's Hummingbird

Allen's hummingbirds could be in the Project area throughout the course of the year. The construction activities will be scheduled to avoid the breeding season and there will be pre-construction OEC monitoring prior to disturbance activities to protect nesting birds. Additionally, the majority of the habitat that this bird is likely to utilize is not going to be directly impacted. The restoration of the northern section of the Project area with native plants will increase the amount of area where these hummingbirds may breed and over winter.

5.9.16 Oak Titmouse

The oak titmice occasionally forage in the Project area but are more likely to be found on the mesa south of the Project area where oak trees are more abundant. The Project schedule and OEC monitoring should protect any oak titmice nests and the restoration of the site with more native vegetation should increase potential foraging opportunities.

5.9.17 Belding's Savannah Sparrow

Based on the habitat requirements and specialization of this sub-species of savannah sparrow, it is highly unlikely that a Belding's savannah sparrow would be found on-site prior to or during construction activities. There is a slim chance that this species may visit or even colonize the Bird Refuge if a large enough patch of pickleweed becomes established. Regular tidal flushing should help support a healthy pickleweed population and potential foraging opportunities for Belding's savannah sparrows.

5.9.18 Yellow Warbler

This neo-tropic migrant does not seem to breed in or near the Bird Refuge but does pass through in the spring and fall. Construction activities should have a minor, temporary impact on the species and the majority of the work would be in habitats that are not attractive to this species. The

restoration along the northern portion of the refuge with native shrubs and trees could mature into an area where this species could breed and would offer higher quality habitat during migration.

5.9.19 Tricolored Blackbird nesting colony

Currently, it is highly unlikely that this species would attempt to breed in the Bird Refuge because the cattails beds are too small, there would be competition with red-wing blackbirds and great-tailed grackles for the better breeding areas, and the grackles may predate the eggs and/or young tricolored blackbirds. With restoration and enhancement of the reed beds, there may be an opportunity for tricolored black birds to colonize the area but this is still highly unlikely to be used for breeding since there would still likely be grackles, red-wing blackbirds, and no large, suitable upland foraging areas.

5.10 WATER QUALITY IMPACTS

The creation of the low-flow water treatment wetland, replacement of the weir, and periodic sand berm priming, is expected to have a positive effect on water quality. The direct impacts to water quality could include siltation during construction, increased water temperature, and deoxygenation of the water. These impacts would be temporary and localized to active construction areas.

The proposed low-flow water treatment wetland would create an 0.08-acre shallow wetland to remove nutrients from dry season low flow and improve water quality within the lagoon. This wetland would be periodically maintained and mowed to remove trash and excess vegetation and to maintain water conveyance capacity.

The removal and replacement of the existing weir is expected to improve water circulation and water quality, and the overall health of the wetlands north of the weir. In order to facilitate the increased flushing, the Project proposes priming of the sand berm south of the beach lagoon to allow the lagoon to fill, overtop, and flow into the ocean up to four times per rainy season.

The proposed restoration efforts, specifically replanting with native wetland species, would likely improve water quality in the area. The native plants should be able to uptake pollutants and nutrients before they enter the refuge's water body and reduce siltation following storm events.

Minimization Measure: Impacts to water quality will be minimized by following the same minimization measures as outline in Section 5.1 Wetland Impacts.

The potential impact to water quality is significant but mitigable (Class II). The potential Project impacts are temporary in nature and the Project would be establishing a stronger and more frequent connection to the ocean and associated increase in volume of water leaving and entering the lagoon. As well, the new bioretention basin will improve water quality. The Project will also be restoring approximately 3.6 acres of riparian and wetland habitat thus improving water quality in this area. This can reasonably be classified as "habitat restoration" and a beneficial impact (Class IV).

5.11 NOISE IMPACTS

Since all work would occur during daylight hours, there are no known “sensitive receptors” such as a listed terrestrial animal species, and there are already loud noise sources (e.g. rail road, Highway 101, Cabrillo Boulevard, etc.), there are no anticipated significant noise impacts expected from the Project.

5.12 LIGHTING IMPACTS

Since all of the Project work would occur during the daylight hours and there is no proposed night lighting, there are no anticipated lighting impacts from the Project.

5.13 CUMULATIVE IMPACTS

Due to the beneficial nature of this habitat restoration Project on the environment, this Project would help to off-set impacts from other development in the region. There would be no “cumulative” effect on the environment associated with this Project and other projects in the area.

6. RECOMMENDED PROJECT ENHANCEMENTS AND MODIFICATIONS

With the Project elements already discussed the Project will be a substantial improvement for the native flora and fauna and water quality of the Bird Refuge. There are some unique opportunities to further enhance the benefits of this restoration Project with little additional effort. The following are some recommended restoration activities that may be incorporated in to the Project that would enhance the site for a variety of plants and wildlife that currently occupy the site and species that could potentially occupy the site with these improvements.

- Include special status plant species obtained from the local area into the plant palette, as is reasonable. Approach Santa Barbara Botanical Garden for additional local special status plant species that can be incorporated into the plant palette if feasible. The following are some potential species to be included:

| Scientific Name | Common Name |
|---|---------------------------|
| <i>Arthrocnemum subterminale</i> | Parish's glasswort |
| <i>Atriplex watsonii</i> | Watson's salt scale |
| <i>Centramadia parryi ssp. australis</i> | southern tarplant |
| <i>Distichlis littoralis</i> | shore grass |
| <i>Fragaria chiloensis</i> | beach strawberry |
| <i>Lasthenia glabrata ssp. coulteri</i> | Coulter's goldfields |
| <i>Hordeum depressum</i> | low barley |
| <i>Juncus acutus ssp. leopoldii</i> | southwestern spiny rush |
| <i>Juncus lescurii</i> | dune rush |
| <i>Lonicera subspicata var. subspicata</i> | Santa Barbara honeysuckle |
| <i>Malacothrix incana</i> | dunedelion |
| <i>Symphotrichum subulatum var. parviflorum</i> | slender aster |

- Actively remove non-native turtles from the site and include educational signage that explain the impact of non-native wildlife on the local flora and fauna.
- Remove the two non-native glossy privet (*Ligustrum lucidu*) trees (dbh ~8” and ~10”) located in the northern portion of the project area west of the Los Patos parking area. These trees are intermixed with the *Atriplex* shrubs and facilitate unpermitted camping within this area. Additionally, these two trees are near some willows, sycamore, and elderberry and the area these non-native trees occupy could be used for enhancing this small native grove.
- Create an ADA trail system east of the Los Patos parking area that includes a native plant demonstration garden with educational signs.

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APPENDIX A

André Clark Bird Refuge Photographs



Photograph 1. Water near Los Patos parking lot (January 15, 2018); odor coming from Bird Refuge was a VERY strong ammonia smell that would make eyes water and burn noses.



Photograph 2. An overabundance of aquatic invertebrates in the shallow water along northern portion of Bird Refuge (April 28, 2018).



Photograph 3. Northwestern portion of Bird Refuge; taller trees are off-site on the Zoo property.



Photograph 4. Eastern portion of eastern island showing how the *Myoporum* dominates the island and comes down to the water.



Photograph 5. Western portion of central island ringed by reeds with the center dominated by *Myoporum*. Ripples in foreground from numerous mosquito fish.



Photograph 6. Western portion of western island dominated by *Myoporum* with patches of reeds at the water's edge.



Photograph 7. Northern edge of Bird Refuge at a slightly low water level showing exposed mud on edges of reeds. Black-necked stilts foraging along water's edge.



Photograph 8. Estuary mouth under high water conditions showing iceplant in the foreground.



Photograph 9. Dune habitat on southeastern portion of beach area; nesting habitat for birds was severely impacted by heavy foot and bicycle traffic.



Photograph 10. Sand at mouth of estuary with illegal camper (with wheelchair).



Photograph 11. Red-eared slider (left) and pond turtle (right) sharing log near southwestern corner of Bird Refuge (October 5, 2018).



Photograph 12. Large pond turtle (middle) climbing out of water on western bank of Bird Refuge; turtles are competing for egress point and prime basking sites (May 10, 2018).



Photograph 13. Numerous red-eared slider basking on reeds on the central island (March 12, 2019).



Photograph 14. Lone pond turtle on northern edge of Bird Refuge sunning on a fallen *Myoporum* (May 17, 2018).



Photograph 15. Proposed area for low-flow wetland area north of Highway 101 and Municipal Tennis Courts.

APPENDIX B

Plant Species Observed at the Andrée Clark Bird Refuge

Native Plant Species of Andree Clark Bird Refuge

| Family | Genus species | Common Name |
|-----------------|---------------------------------------|------------------------|
| GYMNOSPERMS | | |
| Cupressaceae | <i>Hesperocyparis macrocarpa</i> * | Monterey Cypress |
| DICOTS | | |
| Adoxaceae | <i>Sambucus nigra ssp. caerulea</i> | Mexican Elderberry |
| Anacardiaceae | <i>Rhus integrifolia</i> | Lemonadeberry |
| Asteraceae | <i>Ambrosia chamissonis</i> | Beach Bur |
| | <i>Artemisia californica</i> | California Sagebrush |
| | <i>Baccharis pilularis</i> | Coyote Brush |
| | <i>Baccharis salicifolia</i> | Mulefat |
| | <i>Conyza canadensis</i> | Canadian Horseweed |
| | <i>Encelia californica</i> | Coast Bush Sunflower |
| | <i>Jaumea carnosa</i> | Fleshy <i>Jaumea</i> |
| | <i>Symphotrichum subulatum</i> | Salt Marsh Aster |
| | <i>Xanthium strumarium</i> | Cocklebur |
| Boraginaceae | <i>Heliotropium curassavicum</i> | Seaside Heliotrope |
| Caryophyllaceae | <i>Spergularia marina</i> | Sand Spurry |
| Chenopodiaceae | <i>Atriplex canescens</i> | Four Wing Saltbush |
| | <i>Atriplex lentiformis</i> | Quail Bush |
| | <i>Atriplex leucophylla</i> | Beach Salt Bush |
| | <i>Salicornia pacifica</i> | Common Pickleweed |
| Convolvulaceae | <i>Cressa truxillensis</i> | Alkali Weed |
| Fagaceae | <i>Quercus agrifolia</i> | Coast Live Oak |
| Frankeniaceae | <i>Frankenia salina</i> | Alkali Heath |
| Juncaceae | <i>Juncus mexicanus</i> | Mexican Rush |
| Malvaceae | <i>Abutilon palmerii</i> * | Palmer's Indian Mallow |
| Onagraceae | <i>Camissoniopsis cheiranthifolia</i> | Beach Evening Primrose |
| Platanaceae | <i>Platanus racemosa</i> | Western Sycamore |
| Polygonaceae | <i>Eriogonum giganteum</i> * | St. Catherine's Lace |
| Rosaceae | <i>Heteromeles arbutifolia</i> | Toyon |

| Family | Genus species | Common Name |
|-----------------|---|------------------------|
| Salicaceae | <i>Prunus ilicifolia</i> ssp. <i>lyonii</i> * | Catalina Island Cherry |
| | <i>Rubus ursinus</i> | California Blackberry |
| | <i>Salix exigua</i> | Sandbar Willow |
| | <i>Salix gooddingii</i> | Black Willow |
| | <i>Salix lasiolepis</i> | Arroyo Willow |
| MONOCOTS | | |
| Cyperaceae | <i>Bolboschoenus robustus</i> | Sturdy Bullrush |
| | <i>Schoenoplectus californicus</i> | California Bulrush |
| Poaceae | <i>Distichils spicata</i> | Salt Grass |
| | <i>Elymus condenstatus</i> | Giant Wild Rye |
| Typhaceae | <i>Typha domingensis</i> | Southern Cattail |

* California native, but not appropriate to region

Non-Native Plant Species of Andree Clark Bird Refuge

| Family | Genus species | Common Name |
|--------------------|---|----------------------|
| GYMNOSPERMS | | |
| Pinaceae | <i>Pinus canariensis</i> | Canary Island Pine |
| | <i>Pinus eldarica</i> | Afghan Pine |
| DICOTS | | |
| Aizoaceae | <i>Carpobrotus edulis</i> | Hottentot Fig |
| Apiaceae | <i>Apium graveolens</i> | Wild Celery |
| Apocynaceae | <i>Vinca major</i> | Bigleaf periwinkle |
| Araliaceae | <i>Hedera helix</i> | English Ivy |
| Asteraceae | <i>Lactuca serriola</i> | Prickly Lettuce |
| | <i>Silybum marianum</i> | Milk Thistle |
| | <i>Sonchus oleraceus</i> | Sow Thistle |
| Boraginaceae | <i>Echium candicans</i> | Pride of Madeira |
| Brassicaceae | <i>Cakile maritima</i> | Searocket |
| | <i>Hirschfeldia incana</i> | Shortpod Mustard |
| Chenopodiaceae | <i>Atriplex prostrata</i> | Fat-hen |
| | <i>Salsola tragus</i> | Russian Thistle |
| Euphorbiaceae | <i>Ricinus communis</i> | Castor Bean |
| Fabaceae | <i>Melilotus indicus</i> | Yellow Sweet Clover |
| | <i>Acacia</i> ssp. | <i>Acacia</i> |
| Fagaceae | <i>Quercus robur</i> | English Oak |
| Lamiaceae | <i>Marrubium vulgare</i> | Horehound |
| | <i>Rosmarinus officinalis</i> | Prostrate Rosemary |
| Malvaceae | <i>Malva parviflora</i> | Cheeseweed |
| Myrsinaceae | <i>Lysimachia arvensis</i> | Scalet Pimpernel |
| Myrtaceae | <i>Corymbia citriodora</i> | Lemon Scented Gum |
| | <i>Melaluca nesophila</i> | Pink <i>Melaluca</i> |
| | <i>Melaluca</i> ssp. | Paperbark Tree |
| | <i>Callistemon citrinus</i> 'Little John' | Lemon Bottlebrush |

| Family | Genus species | Common Name |
|------------------|--|--|
| Nyctaginaceae | <i>Bougainvillea spectabilis</i> | Great <i>Bougainvillea</i> |
| Oleaceae | <i>Olea europaea</i> | Olive Tree |
| Pittosporaceae | <i>Pittosporum undulata</i> | Australian Cheesewood |
| Plantaginaceae | <i>Plantago lanceolata</i> | Narrow Leaved Plantain |
| Polygonaceae | <i>Polygonum aviculare</i> | Prostrate Knotweed |
| Rosaceae | <i>Raphiolepis indica</i> | Indian Hawthorn |
| Scrophulariaceae | <i>Myoporum laetum</i> | Ngaio Tree |
| Tropaeolaceae | <i>Tropaeolum majus</i> | Garden Nasturtium |
| MONOCOTS | | |
| Agavaceae | <i>Agave attenuata</i> <i>Agave tequilana</i> | Fox Tail Agave Blue Agave |
| Aloeaceae | <i>Aloe</i> spp. | Aloe |
| Arecaceae | <i>Phoenix canariensis</i> <i>Washingtonia robusta</i> | Canary Island Palm Mexican Fan Palm |
| Asparagaceae | <i>Yucca schidigera</i> | Mojave Yucca |
| Asphodelaceae | <i>Phormium tenax</i> | New Zealand Flax |
| Cyperaceae | <i>Cyperis involucratus</i> | Umbrella Sedge |
| Poaceae | <i>Arundo donax</i> <i>Bromus diandrus</i> <i>Cynodon dactylon</i> <i>Hordeum vulgare</i> <i>Paspalum dilatitium</i> <i>Pennisetum clandestinum</i> <i>Polypogon monspeliensis</i> <i>Stipa milliacea</i> | Giant Reed Ripgut Brome Bermuda Grass Common Barley Dallis Grass Kikuyu Grass Rabbit's Foot Grass Smilo Grass |
| Strelitziaceae | <i>Strelitzia reginae</i> | Bird of Paradise |