Montgomery-Gibbs Executive Airport: Fire-Rescue Air Operations Facility Project – Phase II, San Diego, California

Biological Resource Report

WBS # S-18007.02.06

PTS # 625280

July 29, 2020

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1 SUMMARY

The City of San Diego Public Works Department proposes to construct a new, permanent Fire Rescue Air Operations Facility (Project) at Montgomery-Gibbs Executive Airport (MYF). The facility will accommodate the emergency helicopters for the crews that will provide 24 hour on-call services during 365 days per year. The project area would be approximately 3.719 acres, and the project would result in 1.957 acres of new impervious surfaces, including the hangars, fueling stations, heli-tender storage buildings, concrete aprons, ramps, and vehicle parking. The proposed project is located completely within the existing MYF and is primarily outside of the City's Multi-Habitat Planning Area (MHPA) boundary. The access road to the site is the only portion of the project located within the MHPA. Project activities associated with the road is limited to construction access, installation of BMP's, and patching of asphalt that is damaged by construction access.

Jurisdictional delineation of aquatic resources, identified six vernal pools within the Project footprint. The vernal pools are located within disturbed habitat and contained at least one vernal pool indicator species. Fairy shrimp protocol surveys were conducted by a permitted biologist. San Diego fairy shrimp (*Branchinecta sandiegonensis*) were observed in vernal pools within and adjacent to the Project footprint during surveys. Permanent impacts to 0.089 acre of the San Diego Mesa Hardpan Vernal Pools would occur from implementation of the proposed project. Approximately 0.087 acre of those impacts would occur to San Diego Mesa Hardpan Vernal Pools occupied by San Diego Fairy Shrimp.

Biological surveys for sensitive flora and fauna were conducted. Orcutt's brodiaea (*Brodiaea orcuttii*), a MSCP-covered species, was observed within the Project footprint and approximately 132 individuals will be impacted by this project. In addition, Graceful tarplant (*Holocarpha virgata* ssp. *elongata*), a CRPR 4.2 species, and Ashy spike-moss (*Selaginella cinerascens*), a CRPR 4.1 species, was observed within the Project footprint; neither species is a MSCP covered species. Both California gnatcatcher (*Polioptila californica*) and burrowing owl (*Athene cunicularia*), both MSCP covered species, were observed on the airport, outside of the Project footprint; significant impacts to these species are not expected.

2 INTRODUCTION

The City of San Diego Public Works Department proposes to construct a new, permanent Fire-Rescue Air Operations Facility (Project) at Montgomery-Gibbs Executive Airport. The facility will accommodate the emergency helicopters for the crews that will provide 24 hour on-call services during 365 days per year. The crews would provide fire suppression, emergency rescues from remote areas, advanced life support, and medical transport. Currently there is no available hangar space to store the Bell 212HP and 412EP helicopters.

This report summarizes the biological resources present within and adjacent to the proposed project area, analyzes potential impacts to sensitive resources, and proposes mitigation or minimization measures to compensate for potential impacts associated with this project. This analysis satisfies reporting requirements for the California Environmental Quality Act (CEQA), the Multiple Species Conservation Program (MSCP), the Vernal Pool Habitat Conservation Plan (VPHCP), and the City of San Diego's Environmentally Sensitive Lands (ESL) Regulations.

2.1 LOCATION

The project is located at Montgomery-Gibbs Executive Airport (MYF), east of Taxiway C, north of the air traffic control tower (Figure 1 and 2) and encompasses approximately 3.7 acres. The project is located adjacent to the MHPA, in the Kearny Mesa Community Planning Area (Council District 6).

2.2 PROJECT DESCRIPTION

This project encompasses approximately 3.7 acres and will provide new hangar space and a concrete apron to accommodate five helicopters, parking and shelter for a single Heli tender and two fueling tender vehicles. The total area of new hangar space will be approximately 32,000 SF, of which approx. 16,500 SF is existing disturbed and/or impervious area. The new hangar space includes a hangar support area for maintenance offices, overhaul, avionics and storage rooms. The new apron area will be approximately 65,000 SF of 5000 PSI concrete, of which approx. 9,300 SF is existing disturbed and/or impervious area. The project includes two above-ground fuel storage tanks, each with 12,000 gallon capacity (24,000 gallons total). This facility will support and accommodate 24 hour staffing that includes one battalion chief, two captains, two pilots, and four firefighters. Additionally, the proposed project will design and relocate existing utility connections (Sewer, Stormwater, Gas, Water, Power, etc.) within the main access roadway from Ponderosa Avenue and project site. The project will also introduce underground storm water retention features that will capture runoff from the proposed improvements and a parking pad that will be constructed as a separate project adjacent to the southern project boundary. The staging area for the project will be placed on existing paved and/or disturbed area, and is designed to be approximately 4,000 SF.

Construction access to the site will be via the airport perimeter gate at 4302 Ponderosa Avenue, and an unnamed road which leads directly to the site. The project will address any damages to the access road sustained from construction activities and utility relocation. The rehabilitation of the existing access road will include a two-inch overlay of asphalt material in any areas deemed necessary and will not impact any undisturbed areas.

3 REGULATORY CONTEXT

The following federal, state, and/or local regulations or policies apply to biological resources within the biological study area.

3.1 APPLICABLE FEDERAL REGULATIONS

Applicable federal regulations that apply to the proposed project are discussed in this section.

3.1.1 Federal Endangered Species Act

The federal Endangered Species Act (ESA) provides the legal framework for the listing and protection of species (and their habitats) that are identified as being endangered or threatened with extinction. Actions that jeopardize endangered or threatened species and the habitats upon which they rely are considered 'take' under the ESA. Section 9(a) of the ESA defines 'take' as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." The ESA is administered by the U.S. Fish and Wildlife Service (USFWS).

3.1.2 Rivers and Harbors Act & Clean Water Act

The Rivers and Harbors Act of 1899 and the Clean Water Act (CWA) regulate project activities within non-marine navigable waters and/or waters of the U.S. The discharge of any pollutant from a point source into navigable waters is illegal unless a permit under the CWA's provisions is acquired. Permitting for projects that include both permanent and temporary dredging and filling in Wetland and Non-Wetland Waters of the U.S. is overseen by the USACE under Section 404 of the CWA. Projects can be permitted on an individual basis or be covered by one of several approved nationwide permits or regional general permits. In addition, RWQCB issues Water Quality Certifications under Section 401 of the CWA for project activities that fill or dredge within Wetland and Non-Wetland Waters of the U.S. and State, including isolated waters such as vernal pools and other waters showing lack of connectivity to a Traditional Navigable Waters (TNW).

3.1.3 Migratory Bird Treaty Act

All migratory bird species that are native to the U.S. or its territories are protected under the federal MBTA, as amended under the Migratory Bird Treaty Reform Act of 2004. The MBTA prohibits the kill or transport of native migratory birds or any part, nest, or egg of any such bird unless allowed by another regulation adopted in accordance with the MBTA. No permit is issued under the MBTA, and the MBTA does not mandate specific protection. However, typical acceptable requirements include nesting bird surveys during the avian breeding season and avoidance measures if nesting birds are discovered within or adjacent to a project. In addition, the USFWS commonly places restrictions on disturbances allowed near active raptor nests.

3.2 Applicable State Regulations

Applicable state regulations that apply to the proposed project are discussed in this section.

3.2.1 California Environmental Quality Act

CEQA requires an environmental review for projects with potentially adverse impacts on the environment. Adverse environmental impacts are typically mitigated in accordance with state laws and regulations.

3.2.2 California Endangered Species Act

The California ESA is similar to the federal ESA in that it provides the legal framework for the listing and protection of species (and their habitats) that are identified as being endangered or threatened with extinction.

3.2.3 California Fish and Game Code

The California Fish and Game Code (CFGC, Sections 1600 through 1603) regulates project activities within rivers, streams, lakes, and riparian habitat. CFGC Section 1602 requires an entity to notify CDFW prior to commencing any activity that may do one or more of the following:

- Substantially divert or obstruct the natural flow of any river, stream, or lake;
- Substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or
- Deposit debris, waste, or other materials that could pass into any river, stream, or lake.

CDFW can issue a LSA Agreement for projects that substantially adversely affect CDFW jurisdictional resources. If the activity will not substantially adversely affect any CDFW jurisdictional resources, the entity may commence the activity without a LSA Agreement.

3.2.4 Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act regulates water quality for project activities in California. Pursuant to the Porter-Cologne Act, under Section 13000 et seq. of the California Water Code (CWC), the RWQCB issues Water Quality Certifications for project activities that fill or dredge within Wetland and Non-Wetland Waters of the U.S. and State, including isolated waters – such as vernal pools – and other waters showing lack of connectivity to a TNW.

3.3 Applicable City of San Diego Programs and Regulations

Applicable City programs and regulations are discussed in this section.

3.3.1 City of San Diego MSCP Subarea Plan

The Subarea Plan (1997) encompasses 206,124 acres within the MSCP Subregional Plan area. The Project study area is located within the Urban areas of the Subarea Plan. The Subarea Plan is characterized by urban land uses with approximately three-quarters either built out or retained as open space/park system. The City Multi-

Habitat Planning Area (MHPA) is a "hard line" preserve developed by the City in cooperation with the wildlife agencies, property owners, developers, and environmental groups. The MHPA identifies biological core resource areas and corridors targeted for conservation, in which only limited development may occur (City of San Diego 1997). The MHPA is considered an urban preserve that is constrained by existing or approved development and is comprised of habitat linkages connecting several large core areas of habitat. The Project is located primarily outside of the MHPA, the access road to the project is within the MHPA.

3.3.2 City of San Diego Biology Guidelines

The City of San Diego Development Services Department established the Biology Guidelines (revised 2018) presented in the Land Development Manual "to aid in the implementation and interpretation of the Environmentally Sensitive Lands Regulations (ESL), San Diego Land Development Code (LDC), Chapter 14, Division 1, Section 143.0101 et seq., and the Open Space Residential (OR-1-2) Zone, Chapter 13, Division 2, Section 131.0201 et seq." (City of San Diego 2018). The guidelines also provide standards for the determination of impact and mitigation under the California Environmental Quality Act and the California Coastal Act. Sensitive biological resources, as defined by the Environmentally Sensitive Lands Regulations, include lands within the MHPA, as well as other lands outside of the MHPA that contain wetlands; vegetation communities classifiable as Tier I, II, IIIA, or IIIB; habitat for rare, endangered, or threatened species; or narrow endemic species.

The City's definition of wetlands is broader than the definition applied by the U.S. Army Corps of Engineers (ACOE). The City uses the criteria listed in Section 320.4(b)(2) of the ACOE General Regulatory Policies (33 CFR 320–330) to apply an appropriate buffer around wetlands that serves to protect the function and value of the wetland. Guidelines that supplement the development regulation requirements described in this section are provided in the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2017).

The Project would be considered an Essential Public Project in that it would service the community at large and not just a single development project or property. Examples of Essential Public Projects include identified circulation element roads, major water and sewer lines, publicly owned schools, parks, libraries, and police and fire facilities.

3.3.3 City of San Diego Vernal Pool Habitat Conservation Plan

The City's Habitat Conservation Plan was developed to provide a framework for protection, restoration and management of vernal pool resources within the City's MSCP subarea, while streamlining the permitting process for threatened and endangered species associated with vernal pools. The VPHCP also expanded the area of the MHPA to conserve additional lands that include vernal pool resources.

Specifically, the City, in collaboration with the Wildlife Agencies, developed a conservation strategy to ensure compliance with Federal Endangered Species Act, the City's existing NCCP authorizations, and other applicable environmental regulations. This strategy requires higher levels of management and monitoring for vernal pool resources identified as having long-term value while lower levels of management and monitoring were to be provided for vernal pool resources with relatively low long-term value.

The purpose of the Final City of San Diego VPHCP is to: (1) preserve a network of vernal pool habitat in a matrix of open space; (2) protect the biodiversity of these unique wetlands; and (3) define a formal strategy for their long-term conservation, management, and monitoring (City of San Diego 2017). The Final VPHCP considers a seasonally flooded depression to be a vernal pool if it includes one or more indicator species (City of San Diego 2017) listed in Appendix A of the Final VPHCP (City of San Diego 2017). The Final VPHCP encompasses 206,124 acres within the MSCP Subregional Plan area in the southwestern portion of San Diego County (City of San Diego 2017).

During the implementation of the VPHCP, changes may arise due to new information, requests from private or public development seeking entitlements, or other modifications that are unforeseen. Changes that relate to mapping corrections, boundary line adjustments, or airport actions under the circumstances identified in Section 8.4.1 (mapping corrections), Section 8.4.2 (boundary line adjustments), or 8.4.3 (minor amendments) do not require a major amendment.

The Minor Amendment Process has been identified for two airports: Montgomery-Gibbs Executive Airport and Brown Field Airport. The Minor Amendment Process would allow impacts to vernal pool habitat and VPHCP covered species located within the legal boundaries of the airport properties while meeting health and safety requirements of the airports.

Approval of a Minor Amendment requires a project submittal by the Permittee (Real Estate Assets, Airports Division) to Wildlife Agencies (USFWS Field Office Supervisor and CDFW's NCCP Program Manager) for a consistency determination with the VPHCP. The consistency determination would be based on the VPHCP; the VPMMP; funding for the required management, monitoring, and reporting activities; and the City's ESL and Biology Guidelines. If a project is consistent with the VPHCP, the Wildlife Agencies will provide a Letter of Concurrence and the project will proceed in accordance with the VPHCP.Five plant and two crustacean species covered by the Final VPHCP include:

- Otay Mesa mint (Pogogyne nudiuscula)
- San Diego mesa mint (*Pogogyne abramsii*)
- Spreading navarretia (*Navarretia fossalis*)
- San Diego button-celery (*Eryngium aristulatum* var. *parishii*)
- California Orcutt grass (*Orcuttia californica*)
- Riverside fairy shrimp (*Streptocephalus woottoni*)
- San Diego fairy shrimp

4 METHODS AND SURVEY LIMITATIONS

Surveys for the Project were performed by qualified City biologists including Douglas Allen, Rebecca Alvidrez, Cindy Dunn, Maya Mazon, and Sean Paver and by consultants including Busby Biological and Recon Environmental. Surveys for the project encompassed a 11.7 acre survey area, which included the 3.7 acre project area and a 100-foot survey limit around the project footprint, referred to hereafter as the "survey area" A number of surveys were performed and included a biological reconnaissance survey, a general habitat assessment with vegetation mapping, a focused plant survey, protocol fairy shrimp surveys, vernal pool assessment, hydrology assessment, a focused burrowing owl habitat assessment, protocol California gnatcatcher surveys, and a jurisdictional delineation (Table 1). Surveys were completed during the day; therefore, nocturnal species may not have been observed. Biologist conducted biological surveys within the proposed project footprint and in order to assess the surrounding areas a 100-foot and 500 foot-survey limit around the project footprint were also surveyed for botanical, and burrowing owl habitat, respectively. The methods for each of these field surveys are described below.

Table 1: Survey Dates, Times, Weather Data, and Biologists Present			
Survey Type	Date of Survey	Weather Conditions	Biologists Present
Focused Burrowing Owl Habitat Assessment	May 13, 2016	61°F, wind speed 5-10mph, 40% cloud cover, no precipitation	Busby Biological (Darin Busby and Erik LaCoste)
	April 14, 2020	57°F, wind speed 0-10mph, 40% cloud cover, no precipitation	Sean Paver
Vernal Pool Assessment	January 10, 2018	62°F, wind speed 4-10mph, 40% cloud cover, no precipitation	Cindy Dunn and Sean Paver
Biological Reconnaissance Survey	January 17, 2018	72°F, wind speed 1-4 mph, 10% cloud cover, no precipitation	Cindy Dunn, Sean Paver and Rebecca Alvidrez
Hydrology Assessment	February 8, 2018	75°F, wind speed 4-12mph, 0% cloud cover, no precipitation	Cindy Dunn and Sean Paver
Focused Plant Survey	April 11, 2018	66°F, wind speed 5-9 mph, 5% cloud cover, no precipitation	Cindy Dunn, Rebecca Alvidrez, and Sean Paver
Focused Plant Survey	May 21, 2018	63°F, wind speed 6-10 mph, 80% cloud cover, no precipitation	Cindy Dunn, Rebecca Alvidrez and Maya Mazon
Jurisdictional Delineation and CRAM	June 25, 2018	70°F, wind speed 7-12mph, 0% cloud cover, no precipitation	Cindy Dunn, Maya Mazon, and Sean Paver
Jurisdictional Delineation	November, 1 2019	67°F, wind speed 0-10mph, 0% cloud cover	Andrew Smisek (RECON)
Focused Fairy Shrimp Survey*	January 10, 2018	62°F, wind speed 4-10mph, 40% cloud cover, no precipitation	Douglas Allen (TE-837448-7), Cindy Dunn and Sean Paver
	January 17, 2018	72°F, wind speed 1-4 mph, 10% cloud cover, no precipitation	Douglas Allen, Cindy Dunn, and Sean Paver
	January 24, 2018	73°F, wind speed 1-4mph, 10% cloud cover, no precipitation	Douglas Allen, Cindy Dunn, and Sean Paver
	February 28, 2018	60°F, wind speed 8-10 mph, 10% cloud cover, no precipitation	Douglas Allen and Cindy Dunn
	March 7, 2018	73°F, wind speed 6-9 mph, 40% cloud cover, no precipitation	Douglas Allen and Cindy Dunn
	March 12, 2018	64°F, wind speed 11-15mph, 15% cloud cover, no precipitation	Douglas Allen and Cindy Dunn
	March 19, 2018	69°F, wind speed 11-15mph, 15% cloud cover, no precipitation	Douglas Allen and Cindy Dunn
	March 26, 2018	64°F, wind speed 13-15mph, 10% cloud cover, no precipitation	Douglas Allen, Cindy Dunn, and Sean Paver
	July 11, 2018	75°F, wind speed 5-10mph, 5% cloud cover, no precipitation	Douglas Allen, Cindy Dunn, and Sean Paver
	November 30, 2018	63°F, wind speed 5-10mph, 60% cloud cover, 0.01-inch of precipitation	Douglas Allen, Cindy Dunn, and Sean Paver
	December 7, 2018	67°F, wind speed 5-10mph, 5% cloud cover, no precipitation	Douglas Allen, Cindy Dunn, and Sean Paver
	December 11, 2018	61°F, wind speed 0-5mph, 5% cloud cover, no precipitation	Douglas Allen, Cindy Dunn, and Sean Paver
	December 14, 2018	68°F, wind speed 0-5mph, 85% cloud cover, no precipitation	Douglas Allen, Cindy Dunn, and Sean Paver
	January 14, 2019	59°F , wind speed 11-15mph ,100% cloud cover, light rain	Douglas Allen, and Sean Paver
	January 18, 2019	62°F, wind speed 5-10mph, 50% cloud cover, no precipitation	Sean Paver
	January 20, 2019	60°F, wind speed 5-10mph, 40% cloud cover, no precipitation	Douglas Allen, Cindy Dunn, and Sean Paver
	January 21, 2019	57°F, wind speed 11-15mph, 25% cloud cover, no precipitation	Douglas Allen, and Sean Paver
	February 5, 2019	57°F, wind speed 11-15mph, 100% cloud cover, no precipitation	Sean Paver
	February 12, 2019	59°F, wind speed 0-5mph, 40% cloud cover, no precipitation	Sean Paver
	February 19, 2019	59°F, wind speed 5-10mph, 0% cloud cover, no precipitation	Sean Paver
	February 26, 2019	46°F, wind speed 5-10mph, 40% cloud cover, no precipitation	Sean Paver
	March 5, 2019	61°F, wind speed 5-10mph, 0% cloud cover, no precipitation	Sean Paver

	March 12, 2019	50°F, wind speed 5-10mph, 50% cloud cover, no precipitation	Sean Paver
	March 20, 2019	64°F, wind speed 10-20mph, 75% cloud cover	Sean Paver
	March 29, 2019	67°F, wind speed 0-10mph, 0% cloud cover	Sean Paver
Protocol California Gnatcatcher Survey	April 1, 2020	55°F, wind speed 0-5mph, 100% cloud cover, no precipitation	Cindy Dunn and Sean Paver
	April 14, 2020	57°F, wind speed 0-10mph, 40% cloud cover, no precipitation	Cindy Dunn and Sean Paver
	April 21, 2020	57°F, wind speed 0-10mph, 60% cloud cover, no precipitation	Cindy Dunn and Sean Paver

*Multiple visits were made to perform protocol fairy shrimp surveys, please refer to the fairy shrimp survey report for additional details.

4.1 Biological Reconnaissance Survey, Vegetation Mapping, and General Habitat Assessment

A desktop survey was completed to determine potential for sensitive plant and wildlife by using the following databases: online aerial satellite imagery (SANDAG 2017; Google 2016), City Multiple Species Conservation Program (MSCP) Subarea Plan (City 1997), U.S. Fish and Wildlife (USFWS) species occurrence data (USFWS 2016a) and critical habitat portal (USFWS 2016b), SanBIOS database (County of San Diego 2016), California Department of Fish and Wildlife (CDFW) *California Natural Diversity Database* (CNDDB; CDFW 2016a), *Special Vascular Plants, Bryophytes, and Lichens List* (CDFW 2016b), California Native Plant Society (CNPS) *Electronic Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2016), the Jepson *On-Line Interchange for California Floristics* (UC Berkeley 2016) and *Special Animals List* (CDFW 2016c).

City biologists conducted a biological reconnaissance survey and vegetation mapping to document the existing biological resources within the project footprint. In addition, 100-foot survey limit was surveyed for potential to support sensitive plant species and a 500-foot survey limit for its potential to support sensitive wildlife species. City biologists recorded all plant and wildlife species observed directly and/or detected indirectly through sign (e.g., scat, tracks, burrows, vocalization) within the survey areas. City biologists conducted the biological reconnaissance survey on foot, mapping vegetation communities and land cover types by hand onto aerial imagery with a 1 inch equals 80 feet scale and noting dominant plant species within these vegetation communities. Digital photographs of representative areas were taken during the reconnaissance survey. The hand-drawn vegetation community and land cover type boundaries were digitized in the office using GIS software (Figure 3). Vegetation community classifications follow Holland (1986) as modified by Oberbauer et al. (2008). Wildlife and plant species lists were created using the nomenclature of Laudenslayer (1991) and Simpson and Rebman (2015), respectively.

4.2 FOCUSED PLANT SURVEY

A desktop survey was completed to determine potential for sensitive plant species to occur within the project footprint and associated 100-foot survey limit by using the City's Multiple Species Conservation Program (MSCP) Subarea Plan (City 1997), U.S. Fish and Wildlife (USFWS) species occurrence data (USFWS 2016a) and critical habitat portal (USFWS 2016b), SanBIOS database(County of San Diego 2016) and California Department of Fish and Wildlife (CDFW) *California Natural Diversity Database* (CNDDB; CDFW 2016a). Focused plant surveys were conducted following the California Native Plant Society's Botanical survey Guidelines (2018) with plant names following Simpson and Rebman (2015). The California Native Plant Society (CNPS) *Electronic Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2016), and the Jepson *On-Line Interchange for California Floristics* (UC Berkeley 2016) were used in order to determine appropriate survey dates along with local precipitation data and regional botanical knowledge. Location information was recorded using Collector for ArcGIS on an EOS Arrow Lite GPS receiver.

4.3 FOCUSED BURROWING OWL HABITAT ASSESSMENT

A focused burrowing owl habitat assessment was performed by Busby Biological Services in 2016 (Busby 2016) and can be found in Appendix G. An updated assessment was performed by Biologist Sean Paver April 2020 and confirmed the conditions documented by Busby in 2016 remained the same. The Burrowing Owl Habitat Assessment included the Proposed Project impact area and a 500-foot survey limit, to identify locations of suitable habitat for the species. The habitat assessment consisted of an analysis of species occurrence data, desktop evaluation of available site data and aerial imagery, and a field evaluation to further investigate and map suitable burrowing owl habitat. Busby obtained prior burrowing owl occurrence data for the Burrowing Owl Habitat Assessment Area and an approximately 3-mile buffer from the CDFW *California Natural Diversity Database* (CDFW 2016a). Other special-status species resources were reviewed, including the Proceedings of the California Burrowing Owl Symposium (Barclay et al. 2007); San Diego County Breeding Bird Atlas (Unitt 2004); North American Breeding Bird Survey, Results Analysis 1966-2012 (Sauer et al. 2014); the San Diego Natural History Museum Bird Atlas Project (SDNHM 2016); and other regional and site-specific relevant information, data, and literature. Busby evaluated aerial imagery of the Burrowing Owl Habitat Assessment Area to determine presence of suitable habitat such as patches of open or other potentially suitable burrowing owl breeding and/or foraging habitat. Potentially suitable habitat was later evaluated during the focused field evaluation and unsuitable habitat was excluded. Busby used the results of the background research and desktop evaluation as guidance during the field evaluation conducted within the Burrowing Owl Habitat Assessment Area. All habitat within the Burrowing Owl Habitat Assessment Area was visited to determine the potential to support breeding and/or foraging burrowing owl. Representative photographs were taken of the Burrowing Owl Habitat Assessment Area. The following criteria categories were used to evaluate the suitability of the Burrowing Owl Habitat Assessment Area:

- Dominant vegetation and land use
- Presence of adjacent foraging habitat
- Vegetation height and shrub density
- Presence or absence of friable soils
- Presence and quantity of burrows and burrow complexes
- Other evidence of fossorial animal use and burrow features
- Topography and hydrological features

This data was used to assess the overall potential for the Burrowing Owl Habitat Assessment Area to support burrowing owl, taking into consideration the species occurrence data and the evaluation criteria. Habitat within the Burrowing Owl Habitat Assessment Area was either classified as not expected to support burrowing owl or as having a low, moderate, or high potential to support burrowing owl.

4.4 PROTOCOL-LEVEL SURVEY FOR SAN DIEGO FAIRY SHRIMP

Vernal pools have been previously identified on MYF and areas adjacent to the project footprint. Historical occurrences of San Diego Fairy Shrimp have been recorded in these pools. Protocol fairy shrimp surveys were conducted to determine the presence/absence of this species within and adjacent to the project footprint. Precipitation events were monitored from January 2017 until the vernal pools dried out in late March 2018 and again in November 2018 through March 2019, so that the status of the vernal pools and fairy shrimp could be recorded. Protocol-level focused surveys for the federal-listed San Diego Fairy Shrimp were conducted once appropriate conditions were established. Previous biological survey results from Recon Environmental, Inc. (2016, Recon), who surveyed the majority of the impact area have been incorporated herein where applicable, i.e., where resources occurred within 100-feet of the project impact area.

4.5 JURISDICTIONAL DELINEATION OF WETLANDS AND WATERS

A desktop survey for jurisdictional wetlands and waters was conducted using the following databases: online aerial satellite imagery (Google 2016), SanBIOS database (County of San Diego 2016), USGS topographic maps (USGS 1996) and U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil survey maps (USDA

2016), and USFWS National Wetlands Inventory (USFWS 2018).

A focused jurisdictional delineation and mapping was conducted on foot within the biological survey area (BSA) on June 25, 2018 and again in November 2019, to determine if there are resources found to be potentially jurisdictional by USACE pursuant to Section 404 of the CWA, RWQCB pursuant to Section 401 of the CWA and State Porter-Cologne Water Quality Control Act, CDFW pursuant to CFGC Section 1600, and/or the City pursuant to the City Biology Guidelines and the San Diego Municipal Code. The assessment was conducted by walking meandering transects throughout the BSA and evaluating the existing topography and vegetation for potentially jurisdictional resources.

Potentially jurisdictional USACE and RWQCB resources were assessed by identifying the hydrologic, vegetative, and soil characteristics following the technical guidelines provided in the following manuals: USACE *Wetlands Delineation Manual* (USACE 1987), USACE *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0; USACE 2008), and USACE *Updated Datasheet for the Identification of the Ordinary High Water Mark in the Arid West Region of the Western United States* (USACE 2010). Potentially jurisdictional CDFW resources were assessed for the presence of a defined bed and bank and any associated riparian habitat pursuant to criteria outlined in CFGC Section 1600 *et. seq.* Finally, potentially jurisdictional City wetland resources were assessed for the dominance of hydrophytic plant species pursuant to the definition of wetlands as outlined in the City Biology Guidelines. A hand-held GPS device and an aerial imagery map with a 1 inch equals 175 feet scale were used to record the locations of photograph points, sample points, and potentially jurisdictional resources.

4.5.1 Vernal Pools

According to historical records and the City of San Diego's Vernal Pool Habitat Conservation Plan (VPHCP, 2017) the presence of vernal pools have been recorded adjacent to the project footprint. During the determination of jurisdictional resources within the project footprint and a 100-foot survey limit, surveys for vernal pool indicator species were conducted using the methods established in the City of San Diego's VPHCP 2017. The City requires the presence of at least one vernal pool indicator species to be considered a vernal pool. Precipitation events were closely followed at the documented adjacent vernal pools as a reference for appropriate survey periods for vernal pool species. Previously undocumented vernal pools were mapped using an EOS Aero Lite sub-meter GPS receiver and digitized using ESRI ArcGIS software (Figure 4).

5 SURVEY RESULTS

5.1 GENERAL PHYSICAL CHARACTERISTICS

MYF is located on Kearny Mesa and is relatively flat, with elevations ranging between 400 to 420-feet above mean sea level. MYF is developed with an airfield, associated buildings, and parking areas. Areas of undeveloped land occur between runways, in clearance zones and on the periphery of the airfield. The areas adjacent to the runways are routinely mowed in accordance with FAA requirements. Undeveloped areas within MYF are well known to support vernal pools, and pools have been well-documented on MYF (VCHCP, 2017). Within the Project footprint, undeveloped land located northeast and northwest of the existing facilities building are routinely mowed and were historically used for overflow parking and storage. Elevations within the Project footprint range from approximately 414 to 416-feet above mean sea level. Soils within MYF and the Project footprint are Redding gravelly loam (USDA 2020).

5.2 BOTANICAL RESOURCES

This section describes vegetation observed within the survey area. The vegetation within the Project footprint is primarily disturbed and developed but supports some areas of San Diego mesa hardpan vernal pools. Table 2 breaks

down the vegetation community within the Project footprint and the survey area by acreage. The survey area adjacent to the Project footprint is composed of non-native grassland, developed, disturbed habitat, Diegan coastal sage scrub and San Diego mesa hardpan vernal pools (Figure 3). A breakdown of species observed within each vegetation community can be found in Appendix B. Six vernal pools are located within the Project footprint.

5.2.1 Non-Native Grassland (Tier IIIB)

Non-native grassland is an herbaceous vegetation type that is typically dominated by *Bromus*, *Fescue*, *Avena* and *Lolium* species with other non-native herbs being co-dominant to subdominant. Soils are often clay based but occupy areas with drier site conditions and poorer soils. Trees and shrubs may be present in trace amounts. Within the survey area non-native grassland is located within the 100-foot survey limit north of the project footprint and east of the airport road. The dominant grasses in the Project footprint were red brome (*Bromus madritensis* ssp. *rubens*) with wild oat (*Avena barbata)* occurring to a lesser extent.

5.2.2 Disturbed Habitat (Tier IV)

Disturbed Habitat areas typically have heavily compacted soils following intense levels of disturbance such as grading or agriculture. These areas may contain sparse remnants of native vegetation but are dominated by at least 50% cover of invasive broad-leaved non-native plant species. The disturbed habitat onsite is located within the project footprint and extends into the 100-foot survey limit. The area within the Project footprint is regularly mowed and was historically used for overflow parking. The disturbed habitat is dominated by red-stemmed filaree (*Erodium cicutarium*), cheeseweed (*Malva parviflora*), and red brome.

5.2.3 Developed (Tier IV)

Developed areas have been constructed upon or otherwise physically altered to an extent that native vegetation is no longer supported. Developed land is characterized by permanent or semi-permanent structures, pavement or hardscape, and landscaped areas that often require irrigation. Areas where no natural land is evident due to a large amount of debris or other materials being placed upon it may also be considered Urban/Developed (e.g., car recycling plant, quarry). The developed areas are within the Project footprint and extend outward into the 100-foot survey limit. Developed areas within the project footprint include a facilities building, access road, and parking lot.

5.2.4 San Diego Mesa Hardpan Vernal Pools (Wetland)

San Diego Mesa Hardpan Vernal Pools areas are shallow, ovoid clay hardpan lenses interspersed within flat areas or Mima mounds. Vernal pools have seasonally hydrologic conditions and retain water for about two weeks. During these times of inundation a plethora of existing, dormant flora and fauna reanimates. Locally, vernal pools range from three to 20 meters in diameter in length and 0.4 to 1.2 meters in height (Zedler et al, 1979). Hardpan vernal pools are typically surrounded by grassland on marine terraces with fine textured, grey soil. Vernal pools can also be identified by 'indicator' plant species that are restricted to the habitat. Six vernal pools are located within the Project footprint.. The vernal pools within the project footprint are located in disturbed habitat and contained the following vernal pool indicator species: wooly marble (*Psilocarphus brevissimus*) and/or prairie plantain (*Plantago elongata*) and San Diego fairy shrimp. Additional vernal pools were also observed within the survey area, outside the project footprint, east of the airport road; these vernal pools were documented by the City of San Diego in 2003. These vernal pools are located in a non-native grassland and contained the following vernal pool indicator species: San Diego mesa mint (*Popogyne abramsii*), cupidate downingia (*Downingia cuspidata*), and San Diego fairy shrimp.

5.2.5 Diegan Coastal Sage Scrub (Tier II)

Diegan Coastal Sage Scrub are found in areas with low moisture and low growing, soft-woody subshrub no taller than 1 meter in height. The area may have steep xeric slopes or contain clay-rich soils that slowly release water. Flora is most active during the winter and early spring as they are typically facultative drought-deciduous. Diegan coastal sage scrub located within the survey area exists outside of the project footprint east of the airport tower road, and contains the following indicator species: California buckwheat (*Eriogonum fasciculatum*), coyote bush

(*Baccharis pilularis*), laurel sumac (*Malosma laurina*).

Table 2: Vegetation Communities Observed within the Survey Area

Vegetation Type	Tier	Area (acres)
Diegan Coastal Sage Scrub	Tier II	2.999
Non-Native Grasslands	Tier IIIB	0.762
Developed	Tier IV	3.704
Disturbed	Tier IV	3.910
San Diego Mesa Hardpan Vernal Pool	Wetland	0.553
Total		**11.694**

5.3 WILDLIFE RESOURCES

Animal observance on-site was low due to the developed nature of the area, and airport activity. Bird species noted in the Survey area included Mourning Dove (*Zenaida macroura*), Northern Mockingbird (*Mimus polyglottos*), California Towhee (*Melozone crissalis*), house finch (*Haemorhous mexicanus*), Red-tailed Hawk (*Buteo jamaicensis*), Common Raven (*Corvus corax*), and California gnatcatcher. A list of all species observed can be found in Appendix B.

5.4 RARE, THREATENED, ENDANGERED, ENDEMIC AND/OR SENSITIVE SPECIES OR MSCP-COVERED SPECIES

Three sensitive plant species were observed within the Project footprint, Ashy spike-moss, Orcutt's brodiaea, and graceful tarplant. In addition to the three plant species, San Diego fairy shrimp were also detected within the Project footprint. A California gnatcatcher was observed foraging in habitat adjacent to the project footprint and San Diego mesa mint was observed within the 100-foot survey limit. A burrowing owl was incidentally observed on the edge of the airport, well outside the project footprint.

5.4.1 Ashy spike-moss

This is a California Rare Plant Rank 4.1 plant, meaning that it is defined as 'seriously threatened in California' (California Native Plant Society, 2001). This spike-moss occurs in chaparral and coastal scrub in sunny spots or under shrubs. It is commonly found at elevations less than 550 meters. This species was observed within the Project footprint within disturbed habitat at the northern half of the site. A map showing the distribution and quantities of the species within the survey area can be found in Figure 5.

5.4.2 Orcutt's brodiaea

This is a California Rare Plant Rank 1B.1 plant, meaning that it is defined as 'rare or endangered in California and elsewhere' and 'seriously endangered in California' (California Native Plant Society, 2001) and is also a MSCP-covered species. This Brodiaea family species occurs within mesic, clay soils in a variety of vegetation communities including closed-cone coniferous forest, chaparral, cismontane woodland, meadows and seeps, valley and foothill grasslands and vernal pools below 1600 meters (California Native Plant Society, 2001 and Keck, 2012a). This species was observed within the Project footprint and 100-foot survey limit in disturbed habitat and San Diego Mesa Hardpan Vernal Pools. A map showing the distribution and quantities of the species within the survey area can be found in Figure 5.

5.4.3 Graceful tarplant

This is a California Rare Plant Rank 4.2 plant, meaning that it is defined by CNPS as 'limited distribution in California' and 'fairly endangered in California' (California Native Plant Society, 2001). This Sunflower family species occurs within chaparral, cismontane woodland, coastal scrub and valley and foothill grasslands below 900 meters (California Native Plant Society, 2001 and Keck, 2018b). This species was observed within the Project footprint and 100-foot survey limit in disturbed habitat and San Diego Mesa Hardpan Vernal Pools. A map showing the distribution and quantities of the species within the survey area can be found in Figure 5.

5.4.4 San Diego mesa mint

This is a Federally- and State-endangered, California Rare Plant Rank 1B.1 (California Native Plant Society, 2001), VPHCP-covered and narrow endemic species. This Mint family species occurs in vernal pools that occur at elevations between 100-200 meters. This species was observed within the 100-foot survey limit in San Diego Mesa Hardpan Vernal Pools. A map showing the distribution and quantities of this species within the 100-foot survey limit can be found in Figure 5.

5.4.5 San Diego fairy shrimp

This species was listed as endangered by the USFWS on February 3, 1997 and is a Vernal Pool Habitat Conservation Plan- covered species. A member of the family Brachinectidae and order Anostraca, immature fairy shrimp exist in the soil of vernal pools and other non-vegetated ephemeral pools (2-12 inches in depth) in a dormant state known as a cyst until the pool is inundated with seasonal precipitation. The juvenile fairy shrimp reach maturity within 7-14 days of rainfall filling the pool and measure approximately 16mm in length with 11 pairs of legs. After mating, the eggs are laid and remain as a cyst in the soil until the next inundation (Eriksen and Belk, 1999). Development of the species is closely tied to water temperature and chemistry along with a host of other environmental cues. Seasonal rainfall between January and March typically trigger fairy shrimp (Simovich and Hathaway 1996). This species has been previously documented on MYF in vernal pools and road ruts near the project area *(*Recon Environmental Inc*, 2008).* This species was observed within the 100-foot survey limit and within five vernal pools within the Project footprint (VP 4, VP 6, VP 7, VP 9, VP 14) in San Diego Mesa Hardpan Vernal Pools. Critical habitat for this species occurs within the survey area, but outside of the project footprint. A map showing the distribution of this species within the survey area can be found in Figure 4 and 5 and quantities observed are documented in Appendix C.

5.4.6 Burrowing owl

This species was designated a Species of Special Concern by the California Department of Fish and Wildlife and is a MSCP-covered species. A member of the family Strigidae this species is small with long legs and prefers open, flat, sparsely vegetated expanses with well-drained soils as they are ground dwelling. Burrowing owls naturally occur in grasslands, shrub steppe and desert landscapes; however, they also inhabit agricultural areas, ruderal grassy fields, vacant lots and pastures. They inhabit burrows excavated by other species, natural rock cavities, debris piles, culverts and pipes (Gervais et al 2008). Burrowing owls are sustained on a diet of arthropods, small rodents, birds, amphibians, reptiles and carrion (Haug et al, 1993). Breeding season for this species is generally February 1 through August 31 although nesting has been observed as early as December and a peak in active nests between April 15 and July 15 (Thomsen 1971 and Gervais et al 2008). The species has been previously observed on MYF, as recently as April 2018. The historical occurrences are limited to the southwest and southeast corners of MYF, with the closest known occurrence being more than 1800-feet from the project footprint. Suitable foraging habitat exists for the Burrowing Owl within and adjacent to the project area, flat, low growing vegetation, mowed regularly. No burrowing owls or active burrows have been observed within or near the project footprint. No potential burrows or ground squirrels have been observed within the survey area.

5.4.7 California coastal gnatcatcher

This species was Federally-listed as Threatened on March 25, 1993, is designated as a Species of Special Concern by the California Department of Fish and Wildlife, and is a MSCP-covered species. A member of the Sylviidae family this songbird is small (~4.5 inches) with a blue-grey back and a greyish white underside. The tail feathers are long and black with characteristic white outer tail feathers. This species is strongly associated with sage scrub but also inhabits chaparral, grassland and riparian areas adjacent or intermixed with sage scrub. Breeding typically occurs between March 1 and August 15 with a peak in active nests between mid-March through mid-May. California gnatcatchers are known to occur on MYF, and are typically found in the south – southeastern area of the airport. During a site visit (2019), one was briefly observed approximately 100-feet east of the project footprint, foraging within the California buckwheat. Another was detected during protocol surveys (April 2020) approximately 350-feet southeast of the project footprint. A map showing the distribution of this species within the survey area can be found in Figure 5 and quantities observed are documented in Appendix C.

The table in Appendix C summarizes the potential for other sensitive species occurrence on site that were not detected during surveys. "Sensitive" meaning species that are Federally- or State-listed, CDFW Species of Special Concern (SSC), California Native Plant Society's California Rare Plant Rating (CRPR), Multiple Species Conservation Plan-covered, and Narrow Endemic Species (City of San Diego 1997). The table was created using information from CNDDB records.

5.5 JURISDICTIONAL DELINEATION OF WETLANDS AND WATERS

Six depressional features that meet the City's definition of a vernal pool wetland were found within the project footprint. These features were determined to be potentially wetland waters of the U.S. under the federal jurisdiction of the USACE. Under the Porter-Cologne Water Quality Control Act, these features may also be potential waters of the state, which are under the jurisdiction of the RWQCB. Consultation with state and federal permitting agencies will be required prior to project implementation. Impacts associated with the project are provided in Table 3, below.

Table 3. Jurisdictional Features

Habitat	Feature	Identification	Jurisdiction	Occupancy	Acreage
San Diego Mesa Hardpan Vernal Pool	Vernal Pool	FOVP #4	City/RWQCB/ USACE	San Diego Fairy Shrimp	0.032
San Diego Mesa Hardpan Vernal Pool	Vernal Pool	FOVP #6	City/RWQCB/ USACE	San Diego Fairy Shrimp	0.013
San Diego Mesa Hardpan Vernal Pool	Vernal Pool	FOVP #7	City/RWQCB/ USACE	San Diego Fairy Shrimp	0.028
San Diego Mesa Hardpan Vernal Pool	Vernal Pool	FOVP #9	City/RWQCB/ USACE	San Diego Fairy Shrimp	0.003
San Diego Mesa Hardpan Vernal Pool	Vernal Pool	FOVP #14	City/RWQCB/ USACE	San Diego Fairy Shrimp	0.011
San Diego Mesa Hardpan Vernal Pool	Vernal Pool	FOVP #16	City/RWQCB/ USACE	Indicator Plants	0.002
				Total	**0.089**

*Values may vary slightly due to rounding errors.

5.5.1 Functional Assessment

A qualitative assessment of the vernal pools was performed using the California Rapid Assessment Method (CRAM). The assessment was performed using the guidelines of the Vernal Pool Module for Individual Pools. The individual module was selected because of the lack of connectivity each of the pools had with other pools or systems. Because of the similarity in conditions and location, the four largest pools were assessed. The scores for the four pools were relatively low. This was to be expected as all pools are located in the same general area, are subject to the same disturbances, and lacked the typical qualities associated with high quality vernal pools. See Table 4 for a summary of the scores and Appendix D for the detailed report.

Table 4. Vernal Pool CRAM Scores

Components of CRAM	Vernal Pool 4	Vernal Pool 6	Vernal Pool 7	Vernal Pool 9
Attribute 1: Buffer and Landscape Context	65	68	83	79
Attribute 2: Hydrology	58	58	75	67
Attribute 3: Physical Structure	25	25	25	25
Attribute 4: Biotic Structure	33	29	38	33
Overall AA Score	**45**	**45**	**55**	**51**

6 PROJECT IMPACT ANALYSIS

6.1 BIOLOGICAL IMPACTS

6.1.1 Direct Impacts

6.1.1.1 Vegetation Communities/Land Uses

The Fire-Rescue Air Operations Facility Project proposes the construction of permanent helicopter hangars with a surrounding apron, a fueling station, and parking. Construction is anticipated to result in direct impacts on 3.719 acres of land (includes 0.7 acre for access road/staging), of which 0.089 acre are vernal pool wetland habitat and 3.63 acres are developed/disturbed habitat (Figure 3). Impacts to 0.089 acre of vernal pool habitat are considered significant and require mitigation.

Table 5. Direct Impacts to Vegetation Communities

Vegetation Type	Direct Impacts (acres)*
Developed (Tier IV)	1.747
Disturbed (Tier IV)	1.883
San Diego Fairy Shrimp Occupied Vernal Pool	0.087
Indicator Species Occupied Vernal Pool	0.002
Subtotal	0.089
Total	**3.719**

6.1.1.2 Critical Habitat

Critical habitat for spreading navarretia overlaps with the project footprint and is anticipated to be directly impacted. Approximately 1.014 acres (0.039 acres of San Diego Mesa Hardpan Vernal Pool, 0.637 acres of disturbed habitat, and 0.338 acre of existing road) of spreading navarretia critical habitat will be impacted by project construction. San Diego fairy shrimp critical habitat is located adjacent to the project footprint and will not be impacted. Impacts to critical habitat are covered under the VPHCP and are discussed in section 6.5.

*6.1.1.3 **Sensitive Species***

Ashy spike-moss, Orcutt's brodiaea, graceful tarplant, and San Diego fairy shrimp were documented within the project footprint. These individuals would be directly impacted with the implementation of this project. California gnatcatcher, burrowing owl, and San Diego mesa mint were documented outside the project footprint, and will not be directly impacted by this project.

6.1.1.3.1 Ashy spike-moss

Ashy spike-moss was detected within the project footprint and approximately 6 individuals will be impacted by this project. This species is a California Rare Plant Rank (CRPR) 4.1 species. CNPS List 4 is a watch list for species that have a limited distribution. This species is still relatively common in San Diego County. Species on CNPS lists 1 or 2 must be considered in Project CEQA analysis; lists 3 and 4 have no such mandates, but CNPS recommends that they be disclosed. Ashy spike-moss is not an MSCP covered species; the primary targets of the MSCP were high sensitivity plants and animals, most with listing under state and federal endangered species acts. However, as a regional conservation program the MSCP also protects 'non-covered' species such as ashy spike-moss through habitat acquisition and preservation efforts. Pursuant to the City's Biology Guidelines, "In general, it is accepted that securing comparable habitat at the required ratio will mitigate for the direct impact to most sensitive species. Species specific analysis for sensitive species not covered by the MSCP may be required as part of the CEQA process. It is expected that the majority of CEQA sensitive species not covered by the MSCP will be adequately mitigated through the habitat based mitigation described in Section III of these Guidelines." Because ashy spike-moss occurs throughout San Diego and is being conserved through the MSCP program, Project impacts on this species would not be significant.

6.1.1.3.2 Orcutt's brodiaea

Orcutt's brodiaea was detected within the project footprint and approximately 133 individuals will be impacted by this project. This is a California Rare Plant Rank 1B.1 plant, meaning that it is defined as 'rare or endangered in California and elsewhere' and 'seriously endangered in California' (California Native Plant Society, 2001) and is also a MSCP-covered species. This species is only known to occur in limited distribution within San Diego County, but is fairly prevalent within the undeveloped areas of the survey area. A map showing the distribution and quantities of the species within the survey area can be found in Figure 5. This project will impact approximately 132 individuals. This is an MSCP covered species and the MSCP conditions of coverage for this species require conservation of the 4 major populations and 100% conservation of the San Vincente population. There are no Area Specific Management Directives for MYF or Orcutt's brodiaea within the Urban subarea. The project footprint is not located within one of the four major populations for this species, and impacts to this species will occur outside the MHPA. Therefore this species will be adequately conserved through implementation of the MSCP program and impacts to this species would not be significant.

6.1.1.3.3 Graceful tarplant

Graceful tarplant was detected within the project footprint and approximately 38 individuals will be impacted. This species is a California Rare Plant Rank (CRPR) 4.2 species. CNPS List 4 is a watch list for species that have a limited distribution. This species is still relatively common in San Diego County. Species on CNPS lists 1 or 2 must be considered in Project CEQA analysis; lists 3 and 4 have no such mandates, but CNPS recommends that they be disclosed. Graceful tarplant is not an MSCP covered species; the primary targets of the MSCP were high sensitivity plants and animals, most with listing under state and federal endangered species acts.

However, as a regional conservation program the MSCP also protects 'non-covered' species such as graceful tarplant through habitat acquisition and preservation efforts. Pursuant to the City's Biology Guidelines, "In general, it is accepted that securing comparable habitat at the required ratio will mitigate for the direct impact to most sensitive species. Species specific analysis for sensitive species not covered by the MSCP may be required as part of the CEQA process. It is expected that the majority of CEQA sensitive species not covered by the MSCP will be adequately mitigated through the habitat based mitigation described in Section III of these Guidelines." Because graceful tarplant occurs throughout San Diego and is being conserved through the MSCP program, Project impacts on this species would not be significant.

6.1.1.3.4 San Diego fairy shrimp

This species is listed as endangered by the United States Fish and Wildlife Service and is a Vernal Pool Habitat Conservation Plan covered species. This species was documented on MYF in vernal pools within the project footprint and survey area. This species was observed within five vernal pools within the Project footprint (VP 7, VP 9, VP 11, VP 12, VP 14, and VP16) in San Diego Mesa Hardpan Vernal Pools. A map showing the distribution of this species within the project footprint and survey area can be found in Figure 4, and quantities observed are documented in Appendix C. This species is a VPHCP covered species, and impacts to this species are considered significant and will be mitigated in accordance with the VPHCP.

6.1.1.3.5 Burrowing owl

This species was designated a Species of Special Concern by the California Department of Fish and Wildlife and is a MSCP-covered species. The MSCP Subarea plan requires impacts to this species be avoided within the MHPA, and outside of the MHPA impacts to the species should be avoided to the maximum extent practicable. Suitable foraging habitat exists for the Burrowing Owl within and adjacent to the project footprint. No suitable burrows were detected within the project footprint. No burrowing owls were detected near the project footprint during survey/site visits for this project or during a focused habitat assessment performed by Busby in 2016 (Busby 2016). An incidental observation of burrowing owl did occur while driving to MYF; an owl was observed wintering along John J. Montgomery Drive, approximately 2500-feet from the project footprint. The owl was observed at this location multiple times from November 2017 to April 2018. This project will directly impact 1.833 acres of disturbed habitat that can be considered suitable foraging habitat for burrowing owl. Direct impacts to this species would be avoided.

6.1.2 Indirect Impacts

6.1.2.1 Sensitive Species

California gnatcatcher, San Diego fairy shrimp, and San Diego mesa mint were documented outside the project footprint, but within the survey area and have the potential to be indirectly impacted by this project.

6.1.2.1.1 California coastal gnatcatcher

This species is Federally-listed as Threatened, is designated as a Species of Special Concern by the California Department of Fish and Wildlife, and is a MSCP-covered species. California gnatcatchers are known to occur on MYF, and are typically found in the south – southeastern area of the airport. During a site visit in 2019, one was briefly observed approximately 100-feet east of the project area, foraging within the California buckwheat. During protocol surveys conducted April 2020 one was observed approximately 350-feet southeast of the project footprint. The project footprint does not contain appropriate nesting habitat and is composed of low quality foraging habitat. To comply with the MHPA Land Use Adjacency Guidelines and avoid indirect impacts to California gnatcatchers in the MHPA, Measures BIO-2 and BIO-4 will be implemented during construction. No significant impacts to California coastal gnatcatcher are anticipated as a result of this project.

6.1.2.1.2 San Diego fairy shrimp

Vernal pools occupied by San Diego fairy shrimp were observed within the survey area. Vernal pools located outside the project footprint have the potential to be indirectly impacted by runoff, erosion, dust, and other activities associated with the project. To comply with the MHPA Land Use Adjacency Guidelines and the VPHCP avoidance and minimization measures will be implemented in accordance with the VPHCP to prevent indirect impacts to vernal pools and San Diego fairy shrimp (Measure BIO-2).

6.1.2.1.3 San Diego mesa mint

This is a Federally- and State-endangered, California Rare Plant Rank 1B.1 (California Native Plant Society, 2001), MSCP-covered, VPHCP covered, and narrow endemic species. This species was observed within the 100-foot survey limit in San Diego Mesa Hardpan Vernal Pools. A map showing the distribution and quantities of this species within the survey area can be found in Figure 5. The MSCP conditions of coverage for this species require the Preserve management plan must include measures to: 1) protect against detrimental effects; 2) maintain surrounding habitat for pollinators; and 3) maintain pool watershed areas. This species will not be directly impacted by this project, but due to its proximity to the project footprint there is a potential for this species to be indirectly impacted. To ensure direct and indirect impacts to this species are avoided and to ensure compliance with the conditions of coverage and VPHCP, Measure BIO-2 will be implemented.

6.1.2.1.4 Burrowing Owl

The habitat within the survey area has the potential to provide suitable foraging habitat for burrowing owl. No potential or active burrows were detected during a focused habitat assessment performed by Busby in 2016 (Busby 2016) or in April 2020 by City biologist. Noise and other construction activities have the potential to indirectly impact burrowing owls that may be foraging in the area. To prevent and minimize indirect impacts to foraging burrowing owls during construction, Measure BIO-2 and BIO-5 will be implemented.

6.2 Wetlands and Jurisdictional Resources

Implementation of this project will impact six vernal pools, totaling 0.089 acre of impacts. No other wetlands or jurisdictional resources will be impacted by this project. These vernal pools are located outside of the MHPA, and impact of the vernal pools is consistent with the requirements of the VPHCP. Mitigation for impacts to 0.089 will occur in accordance with VPHCP and is described in section 6.5, therefore a wetland deviation is not required. The project is considered an Essential Public Project and therefore consistent with the requirements of the City's Biology Guidelines, VPHCP, and ESL Regulations. Consistency with these requirements is described in more detail below.

6.2.1 Wetland Buffers

The existing conditions within the survey area have approximately 24 vernal pools with watersheds that overlap existing development. The existing minimum buffer distance between vernal pool watersheds and development for these 24 vernal pools is 0-feet. The existing minimum buffer between development and vernal pool basins, ranges between 0-feet to 200-feet. A number of these vernal pools are likely the result of the adjacent developments and the runoff produced by the existing impervious surfaces.

Development of the helicopter facility will covert 6 vernal pools and undeveloped area into impervious surfaces. Development of the facility will occur within 20-feet of adjacent vernal pools not being directly impacted by this project. To determine what, if any, impacts would occur to the adjacent vernal pools, the watersheds of the pools were mapped using LIDAR data. A topographic map with 3-inch contour lines was created from the LIDAR data and used to determine the watersheds of vernal pools within and adjacent to the proposed helicopter facility (Figure 6). Due to the extremely flat terrain, some pools were grouped within a single watershed. Based on the results of the data, no watersheds would be directly impacted by the development of the helicopter facility. To prevent indirect

impacts to the vernal pools and associated watersheds near the helicopter facility, the project has been designed to capture and retain all storm water flows onsite. Even though construction of the facility occurs within 20 feet of adjacent vernal pools, impacts to their watersheds has been avoided. Construction of the helicopter facility will not reduce the minimum buffer between the vernal pool watershed and development of any remaining vernal pools; all buffers between watersheds and development were 0-feet and will remain the same. The development of the helicopter facility will reduce the minimum buffer between the vernal pool basin and development to one vernal pool; the minimum buffer distance would be reduced from 22-feet to 20-feet.

The road that will be used for construction access and that will be repaired following construction of the facility, has a number of vernal pools directly adjacent (0 to 20-feet). The road will be patched and/or repaved following construction, but existing slopes and contours will be retained to prevent modification of the vernal pool watersheds that may overlap with the road.

The City's Biology Guidelines requires that a wetland buffer shall be maintained around all wetlands as appropriate to protect the functions and values of the wetland. Typically, wetlands have a very large watershed and impacts to the buffer of that wetland would directly impact the watershed. The wetlands located within and near the project footprint are vernal pools. Vernal pools typically have their own individual watershed and therefore it is necessary to ensure the watershed is protected in order to provide an adequate buffer. Impacts to the buffer/watershed could affect the functions and values of wetland. Functions and values of a wetland, as defined by the U.S. Army Corps of Engineers are:

- Biological Functions
    - Food chain production
    - Habitat and nesting
    - Spawning
- Hydrologic Functions
    - Natural Drainage
    - Sedimentation patterns
    - Salinity
    - Shielding from wave action or storm damage
- Water Quality Functions
    - Water storage
    - Ground water recharge
    - Water purification

Each of these functions for a vernal pool are affected by changes or impacts to the wetland and its watershed. As shown on Figure 7, Development of the helicopter facility will not impact the watersheds of any adjacent vernal pools. The helicopter facility is also designed to capture and retain all runoff onsite, thus preventing runoff that may affect the functions of adjacent vernal pools. The development of the helicopter facility will not change the existing hydrologic patterns of the adjacent vernal pools, therefore it will not affect the biological functions, hydrologic functions, or water quality functions of the vernal pools (wetlands).
As previously mentioned, vernal pools are located directly adjacent to the access road that will be used to construct the helicopter facility. Following completion of the helicopter facility, the access road would be repaired and/or repaved. There are no curbs or gutters along the access road, and the road's current design has a slight peak running down the middle of the road to allow water to drain off to either side. This means, the road is part of the watershed for the adjacent vernal pools. The road will maintain its existing slope and contours following repair, therefore maintaining the existing conditions, existing buffer, and existing hydrologic flow patterns. During repair of the road, work would occur within the paved road, parts of which act as the watershed for adjacent vernal pools. To prevent impacts to the functions and values of the vernal pools (wetlands) during construction, avoidance and minimization measures, as required by section 5.2.1 of the VPHCP, will be implemented. This will include the use of straw wattles, gravel bags, and/or silt fencing along the road.

This project will maintain and protect the existing watersheds of the existing vernal pools, therefore maintaining an adequate buffer to the wetlands (vernal pools) to preserve the existing functions and values provided by these wetlands.

6.3 MHPA LAND USE AGENCY GUIDELINES

The project lies within the City's MSCP Subarea and primarily occurs adjacent to lands designated as MHPA under the MSCP (Figure 2). Projects occurring adjacent to the City's MHPA, must adhere to the City's MHPA land use adjacency guidelines as outlined in section 1.4.3 of the City's MSCP Subarea Plan. The guidelines and analyses of project conformance are as follows:

6.3.1 Drainage

All new and proposed development adjacent to the MHPA must not drain directly into the preserve, and must prevent the release of toxins, chemicals, petroleum products, exotic plant materials, and other elements that might degrade or harm the natural environment or ecosystem processes within the MHPA.

The design of the project incorporates the use of retention basins and permanent storm water Best Management Practices (BMP) to capture and treat all storm water flows, up to a 100 year storm event, captured within the Project footprint. These project design features will prevent toxins and other materials from entering the MHPA and will result in an improvement over current conditions. The project will also comply with the City's Landscape Regulations to prevent exotic plant materials from entering the MHPA. The project would not result in a significant impacts to drainages.

6.3.2 Toxins

Land uses such as recreation and agriculture that use chemicals or generate byproducts that are potentially toxic or harmful to wildlife, habitat, or water quality must incorporate measures to reduce the impact of application or drainage of such materials into the MHPA.

The proposed project would not involve recreation or agriculture, and the project would not use chemicals or generate toxic or harmful byproducts. The proposed project would incorporate permanent storm water BMP's to prevent the drainage of toxins or harmful materials into the MHPA. There would not be a change to the baseline conditions and the project would not result in a significant impact due to toxins.

6.3.3 Lighting

Lighting must be directed away from the MHPA and, if necessary, adequately shielded to protect the MHPA and sensitive species from night lighting.

This project involves the construction of hangars and will include some exterior lighting. All lighting will be shielded and directed away from the MHPA. In addition, this project is located on an airport adjacent to the runway, the FAA has specific requirements regarding lighting which are more stringent than the adjacency requirements of the MHPA. As a result of these requirements, lighting from the project would not result in significant impacts.

6.3.4 Noise

Uses adjacent to the MHPA must be designed to minimize noise that might impact or interfere with wildlife utilization of the MHPA.

The proposed project is located on an airport adjacent to a runway. Ambient noise levels are much higher at the project site and within the adjacent MHPA than typically found elsewhere. The project will construct hangars and concrete pads for aircraft storage and maintenance. This land use is consistent with the existing use of the area and will not result in an increase of noise within the MHPA and will not interfere with the existing wildlife utilization of the MHPA. During construction, heavy equipment such as dozers, excavators, and loaders will be utilized. Construction noise is not expected to exceed the existing ambient noise levels on the airport, but to ensure noise impacts to sensitive/listed species is avoided, mitigation measures will be implemented during the breading season to avoid indirect impacts.

6.3.5 **Barriers to Incursion**

New development adjacent to the preserve may be required to provide barriers along MHPA boundaries to redirect public access to appropriate locations and reduce domestic animal predation in the preserve.

The project is located on an airport, which has restricted access and prevents access to the public. This project will not increase access to the MHPA, or the occurrence of domestic animals near the MHPA. To help prevent any accidental access to the MHPA during airport operation, a barrier will be installed along the project boundaries after completion of the project. This barrier would consist of 3 to 4-foot tall poles connected by rope or chain, and would be primarily designed to prevent vehicle entry into the MHPA. The barrier design will require approval by the FAA prior to installation. As a result of the restrictive access and the installation of the barrier, no impacts to the MHPA would occur as result of this project.

6.3.6 **Invasive Species**

No invasive plant species shall be introduced into areas adjacent to the MHPA.

The proposed project does not include the installation of any ornamental landscaping. Any areas where temporary impacts occur would be revegetated in accordance with the City's Landscape Standards, and would only include native species. Therefore, the project would not result in a significant impact due to invasive species.

6.3.7 **Brush Management**

New residential development located adjacent to and topographically above the MHPA must be set back from slope edges to incorporate Zone 1 brush management areas on the development pad and outside of the MHPA. Zone 2 may be located in the MHPA upon granting of an easement to the City (or other acceptable agency) except where narrow wildlife corridors require it to be located outside of the MHPA.

New residential development is not proposed with this project, and installation of the hangar and concrete pad does not require additional brush management.

6.3.8 **Grading/Land Development**

Manufactured slopes associated with project development must be included in the project footprint.

No manufactured slopes are associated with the proposed project.

6.4 MHPA – COMPATIBLE LAND USES

The access road leading from Ponderosa Ave to the project area crosses through the MHPA. This existing road will provide construction access to the project area. Following completion of construction, it may be necessary to repair the access road. Repair work would include filling in pot holes/cracks, grinding the damaged surface, and/or installing a 2-inch overlay. All work would be restricted to the existing road surface and the road would not be widen or expanded.

Roads are considered a compatible use of the MHPA if they comply with Section 1.4.2 of the City's MSCP Subarea Plan. The majority of the policies and guidelines described in Section 1.4.2 apply to new access roads in the MHPA. This project will use an existing road within the MHPA and only those policies and guidelines related to existing roads are discussed below.

- *Temporary construction areas and roads, staging areas, or permanent access roads must not disturb existing habitat unless determined to be unavoidable. All such activities must occur on existing agricultural lands or in other disturbed areas rather than in habitat. If temporary habitat disturbance is unavoidable, then restoration of, and/or mitigation for, the disturbed area after project completion will be required.*

  The access road is existing and will not be widened or extended. Avoidance and minimization measures, as required by section 5.2.1 of the VPHCP, will be implemented during construction to ensure impacts to adjacent vernal pools is avoided. No impacts to existing habitat will occur as a result of this project.

- *Construction and maintenance activities in wildlife corridors must avoid significant disruption of corridor usage.*

Environmental documents and mitigation monitoring and reporting programs covering such development must clearly specify how this will be achieved, and construction plans must contain all the pertinent information and be readily available to crews in the field. Training of construction crews and field workers must be conducted to ensure that all conditions are met. A responsible party must be specified.
The access road is located on the airport, which is surrounded by development; the project area is not located in a wildlife corridor.

A project biologist will be assigned to the project and will provide training to construction crews.

- *For the most part, existing roads and utility lines are considered a compatible use within the MHPA and therefore will be maintained. Exceptions may occur where underutilized or duplicative road systems are determined not to be necessary as identified in the Framework Management Section 1.5 (MSCP Subarea Plan).*

  The existing road is the only road that provides access to the Fire-Rescue Air Operations Building and FAA Control Tower; the road is not underutilized or duplicative.

6.5 VPHCP CONSISTENCY ANALYSIS

The VPHCP identifies seven vernal pool associated species as covered species and allows for limited impacts to these species for VPHCP-covered projects and activities. In addition, the VPHCP mandates the conservation and management of the covered species and their habitats in perpetuity. The VPHCP's overall conservation strategy for the covered species is to allow impacts to degraded vernal pools with low long-term conservation value in exchange for restoration, enhancement, preservation, and long-term management and monitoring of vernal pools with long-term conservation value in the MHPA.

The biological goal of the VPHCP is to contribute to the recovery of the VPHCP covered species and ensure continued persistence of the covered vernal pool species population identified in the VPHCP and the City's existing Natural Community Conservation Plan (MSCP).

During development of the VPHCP, a Minor Amendment Process was developed for the two airports owned and operated by the City; Montgomery-Gibbs Executive Airport and Brown Field Airport. The Minor Amendment Process would allow for impacts to vernal pool and VPHCP covered species located within the legal boundaries of the airport properties while meeting health and safety requirement of the airports.

For the Minor Amendment, the VPHCP requires submittal of the project to USFWS and CDFW for review to determine if the project is consistent with the VPHCP. The consistency determination would be based on the VPHCP; the Vernal Pool Maintenance and Monitoring Program (VPMMP); MSCP; and the City's ESL and Biology Guidelines. Once it is determined the project is consistent with the VPHCP, the Wildlife Agencies will provide a Letter of Concurrence and the project will proceed in accordance with the VPHCP approval of a Minor Amendment.

Because this project is located on MYF, it must go through the minor amendment process identified in the VPHCP and described above. The City has initiated this process with the wildlife agencies, and the consistency analysis submitted to the agencies is included in Appendix E. Additionally, consistency with the VPHCP is discussed below.

The proposed project is considered an essential City project and will provide essential fire services for most of coastal San Diego County. These types of development projects are considered a covered project within the City's VPHCP The project is located outside of the MHPA, and will impact six vernal pools. These vernal pools were not previously identified and are not included in the baseline existing conditions analysis for the VPHCP and VPMMP, and were not included as part of the MYF (N 5-6) complex. The management goal for MYF complex is to maintain existing habitat conditions and existing focal species population status.

This project will result in impacts to San Diego fairy shrimp and spreading navarretia critical habitat, both covered by the VPHCP. The VPHCP allows the impact of heavily degraded pools, outside the MHPA, in exchange for the preservation and restoration of high quality pools in the MHPA. The VPHCP identifies a total of 55 acres of critical habitat in the MYF Subunit 3D, of which 14 acres are identified as being not conserved. This project will impact 0.676 acres of Critical Habitat, outside the MHPA, and identified as not being conserved. The VPHCP states: "Although some overall loss of Critical Habitat will occur for each of the three covered species (see Chapter 6), the additional lands to be added to the MHPA are of higher biological value and are arranged in a configuration that maintains long-term viability of the VPHCP covered species. Management, maintenance, enhancement, and/or restoration of conserved vernal pool complexes containing Critical Habitat, as described in the VPMMP (see Chapter 7 and Appendix D), would result in a net biological benefit for all three species and their Critical Habitats." Impacts to spreading navarretia critical habitat is consistent with the VPHCP and would be offset through the long-term implementation of the VPHCP.

The VPHCP Conservation Objectives for San Diego fairy shrimp (SDFS) states "Restoration is not necessary for this covered species, as the populations of this species are adequately conserved under the VPHCP." The population of SDFS within the Montgomery Field Complex is currently stable and this project will not impact any of the conserved vernal pools occupied by this covered species. Additionally, as more surveys are completed within the Complex under the VPMMP, additional occupied pools are expected to be identified.

This project proposes to restore and re-establish vernal pools within the South Otay 1-Acre Complex (J13N). This restoration work will address the Conservation/Restoration Objectives for the J13N Complex and Conservation/Restoration Objectives for spreading navarretia, San Diego button-celery, California Orcutt grass, and Riverside fairy shrimp. The restoration project will establish viable populations of these species and will offset the impacts to pools on MYF with the restoration and re-establishment of vernal pools with higher function and value. To ensure compliance and consistency with the VPHCP, Mitigation Measures BIO-1, BIO-2, and BIO-3 have been included. Inclusion of these mitigation measures will also ensure the project complies with Section 5.2.1 of the VPHCP (Avoidance and Minimization Measures; further discussion of consistency with this section is included below. In addition, the project has been designed to capture onsite storm water and ensure runoff does not drain into adjacent pools, in accordance with the requirements of the VPHCP.

The following table outlines the conservation objectives of the VPHCP and describes how the project is consistent with these objectives and will meet the goals of the VPHCP.

Table 6: VPHCP Conservation Objectives

Objectives	Conserve	Manage	Restore	Consistency
Vernal Pools Objectives (Habitat Based)	Conserve in perpetuity at least 2,409 vernal pools (totaling approximately 37.5 acres of basin surface area) at 68 vernal pool sites (within 53 vernal pool complexes) in the MHPA in a configuration that maintains long-term viability of the VPHCP covered species.	Manage in perpetuity 59 vernal pool sites within the MHPA through implementation of the VPHCP Vernal Pool Management and Monitoring Plan or Site-Specific Management Plans (that are consistent with the VPHCP goals and objectives).	Restore 19 vernal pool sites (within 12 complexes) to a "Level 1" (stewardship) management condition within the MHPA through implementation of the VPHCP Management and Monitoring Plan or Site-Specific Management Plans (that are consistent with the VPHCP goals and objectives).	This project proposes to impact six vernal pools (0.089 acre) outside of the MHPA and proposes to re-establish and restore vernal pools inside the MHPA at a 2:1 ratio in a configuration that maintains long-term viability of VPHCP covered species. The mitigation associated with this project will increase the number of pools and basin surface area of conserved vernal pools within the MHPA. The restoration project will restore the J13N complex from a Level 3 to a Level 1 management condition. The J13N complex will be managed in perpetuity in accordance with the VPMMP.

Table 6: VPHCP Conservation Objectives				
Objectives	**Conserve**	**Manage**	**Restore**	**Consistency**
Species-Specific Objectives	Conserve occupied complexes identified in Appendix A of the VPMMP to stabilize covered species' populations.	Manage specific sites identified in Appendix A of the VPMMP to maintain the covered species populations consistent with the VPMMP (Appendix D).	Restore specific complexes identified in Appendix A of the VPMMP to enhance covered species populations to ensure long-term viability.	This project will impact pools located within Montgomery Field Complex (N 5-6) and will impact pools occupied with SDFS. The pools being impacted are located outside of the MHPA, were not previously identified, and were not included as part of the Montgomery Field Complex. The VPHCP Conservation Objectives for SDFS states "Restoration is not necessary for this covered species, as the populations of this species are adequately conserved under the VPHCP." The population of SDFS within the Montgomery Field Complex is currently stable and this project will not impact any of the conserved vernal pools occupied by covered species. Additionally, as more surveys are completed within the Complex under the VPMMP, additional occupied pools are expected to be identified. This project proposes to restore and re-establish vernal pools within the Otay 1-Acre Complex (J13N). This restoration work will address the Conservation/Restoration Objectives for the J13N Complex and Conservation/Restoration Objectives for spreading navarretia, San Diego button-celery, California Orcutt grass, Otay mesa mint and Riverside fairy shrimp. The restoration project will establish viable populations of these species.
Otay Mesa Mint	Conserve 369 vernal pools occupied by Otay Mesa mint within four sites.	Manage all conserved complexes/sites consistent with the VPMMP.	Establish viable populations of Otay Mesa mint within the J13E, J13N, J16–18, J20–21, J27, and J28 complex series.	This project will not impact any vernal pools occupied by Otay Mesa mint, and all existing, occupied, and conserved vernal pools will continue to be managed consistent with the VPMMP. To offset impacts associated with this project, restoration of vernal pools at the J13N Complex will occur. The restoration will incorporate Otay Mesa Mint to establish a viable population at J13N.

Table 6: VPHCP Conservation Objectives				
Objectives	**Conserve**	**Manage**	**Restore**	**Consistency**
San Diego Mesa mint	Conserve 335 vernal pools occupied by San Diego mesa mint within 19 sites.	Manage 12 sites as identified in Appendix A of the VPMMP and consistent with the VPMMP.	Restoration is not necessary for this covered species, as the populations of this species are adequately conserved under the VPHCP.	This project will not impact any vernal pools occupied by San Diego Mesa mint, and all existing, occupied, and conserved vernal pools will continue to be managed consistent with the VPMMP.
Spreading navarretia	Conserve 94 vernal pools occupied by spreading navarretia within seven sites.	Manage all conserved complexes/sites consistent with the VPMMP.	Establish viable populations of spreading navarretia within J11E, J11W, J12, J13E, J13 N, J16–18, J20–21, J27, J28, and R1.	This project will not impact any vernal pools occupied by spreading navarretia, and all existing, occupied, and conserved vernal pools will continue to be managed consistent with the VPMMP. To offset impacts associated with this project, restoration of vernal pools at the J13N Complex will occur. The restoration plan will restore and incorporate spreading navarretia to establish a viable population at J13N.
San Diego button-celery	Conserve 722 vernal pools occupied by San Diego button-celery within 24 sites.	Manage 22 sites as identified in Appendix A of the VPMMP and consistent with the VPMMP.	Establish a viable population of San Diego button-celery within J13E and J13N.	This project will not impact any vernal pools occupied by San Diego button-celery, and all existing, occupied, and conserved vernal pools will continue to be managed consistent with the VPMMP. To offset impacts associated with this project, restoration of vernal pools at the J13N Complex will occur. The restoration will restore and incorporate San Diego button-celery to establish a viable population at J13N.
California Orcutt grass	Conserve 58 vernal pools occupied by California Orcutt grass within three sites.	Manage all conserved complexes/sites consistent with the VPMMP.	Establish viable populations of California Orcutt grass within J11E, J11W, J12, J13E, J14, J16-18, J20–21, J21, J27, and J28E.	This project will not impact any vernal pools occupied by California Orcutt grass, and all existing, occupied, and conserved vernal pools will continue to be managed consistent with the VPMMP. To offset impacts associated with this project, restoration of vernal pools at the J13N Complex will occur. The restoration will restore and incorporate California Orcutt grass to establish a viable population.

Table 6: VPHCP Conservation Objectives				
Objectives	**Conserve**	**Manage**	**Restore**	**Consistency**
Riverside fairy shrimp	Conserve 131 vernal pools occupied by Riverside fairy shrimp within 7 sites.	Manage all conserved sites consistent with the VPMMP.	Establish viable populations of Riverside fairy shrimp within J11E, J11W, J12, J13E, J13N, J14, J16-18, J20–21, J21, J27, and J28E.	This project will not impact any vernal pools occupied by Riverside fairy shrimp, and all existing, occupied, and conserved vernal pools will continue to be managed consistent with the VPMMP. To offset impacts associated with this project, restoration of vernal pools at the J13N Complex will occur. The restoration plan will incorporate Riverside fairy shrimp to establish a viable population.
San Diego fairy shrimp	Conserve 465 vernal pools occupied by San Diego fairy shrimp within 38 sites.	Manage 33 sites as identified in Appendix A of the VPMMP and consistent with the VPMMP.	Restoration is not necessary for this covered species, as the populations of this species are adequately conserved under the VPHCP.	This project will impact pools occupied with SDFS. The pools being impacted are located outside of the MHPA, were not previously identified, and were not included as part of the Montgomery Field Complex. The population of SDFS within the Montgomery Field Complex is currently stable and this project will not impact any of the conserved vernal pools occupied by SDFS. Additionally, as more surveys are completed within the Complex under the VPMMP, additional occupied pools are expected to be identified.

The VPHCP requires indirect impacts to conserved vernal pools to be minimized by requiring development projects adjacent to the Preserve or MHPA to comply with the Land Use Adjacency Guidelines and the Avoidance and Minimization Measures in Section 5.2.1 of the VPHCP. Compliance with the Land Use Adjacency Guidelines is addressed above in section 6.3 of this document. Compliance with the requirements of Section 5.2.1 of the VPHCP is discussed below:

The following avoidance and minimization measures are specific to the design of the project. The measures not discussed below are requirements specific to construction and are included as a requirement under Mitigation Measure BIO-3.

1. Any development adjacent to the MHPA shall be constructed to slope away from the extant pools to be avoided, to ensure that runoff from the project does not flow into the pools.

   The project has been designed to capture all runoff onsite and prevent any runoff from flowing into adjacent pools in the MHPA.

2. Covered projects shall require temporary fencing (with silt barriers) of the limits of project impacts (including construction staging areas and access routes) to prevent additional vernal pool impacts and prevent the spread of silt from the construction zone into adjacent vernal pools. Fencing shall be installed in a manner that does not impact habitats to be avoided. Final construction plans shall include photographs that show the fenced limits of impact and all areas of vernal pools to be impacted or avoided. If work inadvertently occurs beyond the fenced or demarcated limits of impact, all work shall

cease until the problem has been remedied to the satisfaction of the City. Temporary construction fencing shall be removed upon project completion.

The project will be required to install temporary fencing and this requirement has been included in the mitigation measures and is shown on the construction plans.

8. Permanent protective fencing along any interface with developed areas and/or use other measures approved by the City to deter human and pet entrance into on- or off-site habitat shall be installed. Fencing shall be shown on the development plans and should have no gates (accept to allow access for maintenance and monitoring of the biological conservation easement areas) and be designed to prevent intrusion by pets. Signage for the biological conservation easement area shall be posted and maintained at conspicuous locations. The requirement for fencing and/or other preventative measures shall be included in the project's mitigation program.

   The project is located within a secure facility and is not accessible by the public. Mitigation measures have been included that require the construction of a barrier along the project footprint to prevent unauthorized access into the MHPA and environmentally sensitive areas.

While this project will result in impacts to vernal pools and San Diego fairy shrimp, these impacts are consistent with the objectives of the VPHCP and will result in the restoration and conservation of vernal pools and habitat with higher biological value. This project is consistent with the overall goals and objectives of the VPHCP, MSCP, VPMMP, and City's Biological Guidelines and will result in the overall increase of vernal pool basin area and the establishment of VPHCP species as required by these documents.

6.6 Cumulative Impacts

Cumulative impacts include both the potential regional (long-term, additive) effects of a project and the ways a project, in combination with other Projects and conditions in a region, may affect an ecosystem or one of its components beyond the Project limits and on a regional scale. Because the Project would be consistent with the City of San Diego's MSCP and VPHCP and regional conservation plans, there would be no cumulatively significant biological impacts.

7 Mitigation and Monitoring

The following mitigation requirements are required in conformance with the City of San Diego's California Environmental Quality Act Significance Determination Thresholds, Biology Guidelines 2018, and Land Development Code. Conformance with these requirements also achieves project conformance with the City's VPHMP, state/federal biological regulations, and would reduce potential impacts from the Fire-Rescue Air Operations Facility Project to below the level of significance.

7.1 Habitat Mitigation

Pursuant to the City's Biology Guidelines (City of San Diego, 2018), project impacts to Tiers I-III habitats and wetlands are considered significant and mitigation shall be provided. Required mitigation ratios and acreages are outlined in Table 7. Impacts to lands designated as Tier IV, such as disturbed and developed habitat, are not significant and will not require mitigation.

BIO-1 Habitat Mitigation - Impacts to San Diego Mesa Hardpan vernal pool will be mitigated in accordance with the *Vernal Pool Mitigation Plan for La Media Road Widening & Fire Rescue Air Operations Phase II* (RECON 2020) and pursuant to the City's VPHCP and Biology Guidelines. The re-establishment and restoration of vernal pools, at the

location known as the South Otay 1-acre parcels, will occur to satisfy the required mitigation requirements. The *Vernal Pool Mitigation Plan for La Media Road Widening & Fire Rescue Air Operations Phase II* (RECON 2020) has been prepared in accordance with requirements of the VPHCP and Biology Guidelines and is included as Appendix H. The mitigation plan includes the seeding of sites with inoculum from nearby vernal pools to help re-establish populations of button celery, spreading navarretia, California Orcutt grass, San Diego Fairy Shrimp, and Riverside Fairy Shrimp. Inoculum from the impacted pools at MYF will not be used at the Otay 1-acre parcels site.

Table 7. Required Mitigation for Impacts to Vegetation Communities

Vegetation Type	Direct Impacts (acres)*	Mitigation Ratio	Required Mitigation
Developed (Tier IV)	1.747	0:1	0
Disturbed (Tier IV)	1.883	0:1	0
San Diego Mesa Hardpan Vernal Pool (Wetland)	0.089	2:1	0.178
Total	**3.719**	**--**	**0.147**

*Values may vary slightly due to rounding errors.

7.2 BIOLOGICAL RESOURCE PROTECTION MEASURES

Implementation of Measures **BIO-2, BIO-3**, **BIO-4, BIO-5, BIO-6, and BIO-7** are required to ensure compliance with the City's MHPA Land Use Adjacency Guidelines and VPHCP, and would ensure potential impacts from construction are avoided and minimized.

BIO-2 Project Biologist - Prior to the pre-construction meeting and the start of any project work the owner/permittee shall provide a letter to the City's Mitigation Monitoring Coordination (MMC) section stating that a Project Biologist (Qualified Biologist), as defined in the City of San Diego's Biological Guidelines (2018), has been retained to implement the project's biological monitoring program. The biologist(s) shall be knowledgeable of vernal pool species biology and ecology, and burrowing owl biology and ecology. The letter shall include the names and contact information of all persons involved in the biological monitoring of the project. The project biologist will perform the following duties:

I. Prior to Construction

A. **Pre-Construction Meeting** – The Qualified Biologist(s) shall attend the pre-construction meeting, discuss the project's biological monitoring program, and arrange to perform any follow up mitigation measures and reporting including site-specific monitoring, restoration or revegetation, and additional fauna/flora surveys/salvage.

B. **Biological Documents** – The Qualified Biologist shall submit all required documentation to MMC verifying that any special mitigation reports including but not limited to, maps, plans, surveys, survey timelines, or buffers are completed or scheduled per City Biology Guidelines, MSCP,VPHCP, ESL Ordinance, project permit conditions, CEQA, endangered species acts (ESAs), and/or other local, state, or federal requirements.

C. **Biological Construction Mitigation/Monitoring Exhibit** – The Qualified Biologist shall present a Biological Construction Mitigation/Monitoring Exhibit (BCME), which includes the biological documents in B above. In addition, it includes: restoration/revegetation plans, plant salvage/relocation requirements (e.g., coastal cactus wren plant salvage, burrowing owl exclusions, etc.), avian or other wildlife surveys/survey schedules (including general avian nesting and USFWS protocol), timing of surveys, wetland buffers, vernal pool buffer,

avian construction avoidance areas/noise buffers/ barriers, other impact avoidance areas, and any subsequent requirements determined by the Qualified Biologist and the City ADD/MMC. The BCME shall include a site plan, written and graphic depiction of the project's biological mitigation/monitoring program, and a schedule. The BCME shall be approved by MMC and referenced in the construction documents.

D. **Resource Delineation** – Prior to construction activities, the Qualified Biologist shall supervise the placement of orange construction fencing (or equivalent) along the limits of disturbance adjacent to sensitive biological habitats and verify compliance with any other project conditions as shown on the BCME. The Qualified Biologist shall oversee the installation of erosion control measures within and upslope of vernal pools. This phase shall include flagging plant specimens and delimiting buffers to protect sensitive biological resources (e.g., habitats/flora and fauna species, including nesting birds) during construction. Appropriate steps/care should be taken to minimize attraction of nest predators to the site.

E. **Education** – Prior to commencement of construction activities, the Qualified Biologist shall meet with the owner/permittee or designee and the construction crew and conduct an on-site educational session regarding the need to avoid impacts outside of the approved construction area and to protect sensitive flora and fauna. At a minimum, training shall include (1) the purpose for resource protection; (2) a description of the vernal pool species and their habitat(s); (3) the conservation measures that must be implemented during project construction to conserve the vernal pool species, including strictly limiting activities, and vehicles, equipment, and construction materials to the fenced project footprint to avoid sensitive resource areas in the field (i.e., avoided areas delineated on maps or on the project site by fencing); (4) environmentally responsible construction practices as outlined in measures 5, 6 and 7; (5) the protocol to resolve conflicts that may arise at any time during the construction process; and (6) the general provisions of the project's mitigation monitoring and reporting program (MMRP), the need to adhere to the provisions of Federal Endangered Species Act (FESA), and the penalties associated with violating FESA.

F. **Avian Protection Requirements** – To avoid direct impacts to avian species identified as a listed, candidate, sensitive, or special status species in the MSCP, removal of habitat that supports active nests in the proposed area of disturbance should occur outside of the breeding season for these species (February 1 to September 15). If removal of habitat in the proposed area of disturbance must occur during the breeding season, the Qualified Biologist shall conduct a pre-construction survey to determine the presence or absence of nesting birds on the proposed area of disturbance. The pre-construction survey shall be conducted within 10 calendar days prior to the start of construction activities (including removal of vegetation). The applicant shall submit the results of the pre-construction survey to City Development Services Department for review and approval prior to initiating any construction activities. If nesting birds are detected, a letter report or mitigation plan in conformance with the City's Biology Guidelines and applicable state and federal law (i.e., appropriate follow up surveys, monitoring schedules, construction and noise barriers/buffers, etc.) shall be prepared and include proposed measures to be implemented to ensure that take of birds or eggs or disturbance of breeding activities is avoided. The report or mitigation plan shall be submitted to the City for review and approval and implemented to the satisfaction of the City. The City's MMC Section and Qualified Biologist shall verify and approve that all measures identified in the report or mitigation plan are in place prior to and/or during construction.

II. During Construction

A. **Monitoring** – All construction (including access/staging areas) shall be restricted to areas previously identified, proposed for development/staging, or previously disturbed as shown on "Exhibit A" and/or the BCME. The Qualified Biologist shall monitor construction activities as needed to ensure that construction activities do not encroach into biologically sensitive areas, or cause other similar damage, and that the work plan has been amended to accommodate any sensitive species located during the pre-construction surveys.

The Qualified Biologist shall periodically monitor the work area to ensure that work activities do not generate excessive amounts of dust.

B. **Monitoring (Vernal Pools)** - The Qualified Biologist shall inspect the fencing and erosion control measures within and upslope of vernal pool preservation areas a minimum of once per week and daily during all rain events to ensure that any breaks in the fence or erosion control measures are repaired immediately.

C. **Subsequent Resource Identification** – The Qualified Biologist shall note/act to prevent any new disturbances to habitat, flora, and/or fauna on site (e.g., flag plant specimens for avoidance during access, etc.). If active nests or other previously unknown sensitive resources are detected, all project activities that directly impact the resource shall be delayed until species specific local, state, or federal regulations have been determined and applied by the Qualified Biologist.

D. **Stop Work** – Halt work, if necessary, and confer with the City to ensure the proper implementation of species and habitat protection measures. The biologist shall report any violation to the City with 24 hours of its occurrence.

E. **Reporting** – Submit regular (e.g. weekly) letter reports to MMC and the City representative during project construction. In addition, the Qualified Biologist shall document field activity via the Consultant Site Visit Record (CSVR). The CSVR shall be e-mailed to MMC on the first day of monitoring, the first week of each month, the last day of monitoring, and immediately in the case of any undocumented condition or discovery.

III. Post Construction Measures

A. **Final Report** - Submit a final report following completion of construction. The final report shall include as-built construction drawings with an overlay of habitat that was impacted and avoided, photographs of habitat areas that were avoided, and other relevant summary information documenting that authorized impacts were not exceeded and that general compliance with all conservation measures was achieved. In the event that impacts exceed previously allowed amounts, additional impacts shall be mitigated in accordance with City Biology Guidelines, ESL and MSCP, VPHCP, State CEQA, and other applicable local, state, and federal law. The Qualified Biologist shall submit a final BCME/report to the satisfaction of the City ADD/MMC within 30 days of construction completion.

BIO-3: Vernal Pool Minimization and Avoidance Measures

The following Measures are required to prevent potential impacts to Vernal Pools from construction activities and are pursuant to Section 5.2.1 of the VPHCP:

1. Any development adjacent to the MHPA shall be constructed to slope away from the extant pools to be avoided, to ensure that runoff from the project does not flow into the pools.

2. Covered projects shall require temporary fencing (with silt barriers) of the limits of project impacts (including construction staging areas and access routes) to prevent additional vernal pool impacts and prevent the spread of silt from the construction zone into adjacent vernal pools. Fencing shall be installed in a manner that does not impact habitats to be avoided. Final construction plans shall include photographs that show the fenced limits of impact and all areas of vernal pools to be impacted or avoided. If work inadvertently occurs beyond the fenced or demarcated limits of impact, all work shall cease until the problem has been remedied to the satisfaction of the City. Temporary construction fencing shall be removed upon project completion.

3. Impacts from fugitive dust that may occur during construction grading shall be avoided and minimized through watering and other appropriate measures.

4. A qualified monitoring biologist that has been approved by the City shall be on-site during project construction activities to ensure compliance with all construction measures identified in the CEQA environmental document. The biologist shall be knowledgeable of vernal pool species biology and ecology. The biologist shall perform the following duties:

    a. Oversee installation of and inspect the fencing and erosion control measures within or upslope of vernal pool restoration and/or preservation areas a minimum of once per week and daily during all rain events to ensure that any breaks in the fence or erosion control measures are repaired immediately.

    b. Periodically monitor the work area to ensure that work activities do not generate excessive amounts of dust.

    c. Train all contractors and construction personnel on the biological resources associated with this project and ensure that training is implemented by construction personnel. At a minimum, training shall include (1) the purpose for resource protection; (2) a description of the vernal pool species and their habitat(s); (3) the conservation measures that must be implemented during project construction to conserve the vernal pool species, including strictly limiting activities, and vehicles, equipment, and construction materials to the fenced project footprint to avoid sensitive resource areas in the field (i.e., avoided areas delineated on maps or on the project site by fencing); (4) environmentally responsible construction practices as outlined in measures 5, 6 and 7; (5) the protocol to resolve conflicts that may arise at any time during the construction process; and (6) the general provisions of the project's mitigation monitoring and reporting program (MMRP), the need to adhere to the provisions of FESA, and the penalties associated with violating FESA.

    d. Halt work, if necessary, and confer with the City to ensure the proper implementation of species and habitat protection measures. The biologist shall report any violation to the City within 24 hours of its occurrence.

    e. Submit regular (e.g., weekly) letter reports to the City during project construction and a final report to the City following completion of construction. The final report shall include as-built construction drawings with an overlay of habitat that was impacted and avoided, photographs of habitat areas that were avoided, and other relevant summary information documenting that authorized impacts were not exceeded and that general compliance with all conservation measures was achieved.

5. The following conditions shall be implemented during project construction:

    a. Employees shall strictly limit their activities, vehicles, equipment, and construction materials to the fenced project footprint.

    b. The project site shall be kept as clean of debris as possible. All food-related trash items shall be enclosed in sealed containers and regularly removed from the site.

    c. Disposal or temporary placement of excess fill, brush, or other debris shall be limited to areas within the fenced project footprint.

6. All equipment maintenance, staging, and dispensing of fuel, oil, coolant, or any other such activities shall occur in designated areas within the fenced project impact limits. These designated areas shall be located in previously compacted and disturbed areas to the maximum extent practicable in such a manner as to prevent any runoff from entering the vernal pools or their watersheds and shall be shown on the construction plans. Fueling of equipment shall take place within existing paved areas greater than 100 feet from the vernal pools or their watersheds. Contractor equipment shall be checked for leaks prior to operation and repaired as necessary. A spill kit for each piece of construction equipment shall be on-site and must be used in the event of a spill. "No-fueling zones" shall be designated on construction plans.

7. Grading activities immediately adjacent to vernal pools shall be timed to avoid wet weather to minimize potential impacts (e.g., siltation) to the vernal pools unless the area to be graded is at an elevation below the pools. To achieve this goal, grading adjacent to avoided pools shall comply with the following:

    a. Grading shall occur only when the soil is dry to the touch both at the surface and 1 inch below. A visual check for color differences (i.e., darker soil indicating moisture) in the soil between the surface and 1 inch below indicates whether the soil is dry.

    b. After a rain of greater than 0.2-inch, grading shall occur only after the soil surface has dried sufficiently as described above, and no sooner than 2 days (48 hours) after the rain event ends.

    c. To prevent erosion and siltation from storm water runoff due to unexpected rains, best management practices (i.e., silt fences) shall be implemented as needed during grading.

    d. If rain occurs during grading, work shall stop and resume only after soils are dry, as described above.

    e. Grading shall be done in a manner to prevent runoff from entering preserved vernal pools.

    f. If necessary, water spraying shall be conducted at a level sufficient to control fugitive dust but not to cause runoff into vernal pools.

    g. If mechanized grading is necessary, grading shall be performed in a manner to minimize soil compaction (i.e., use the smallest type of equipment needed to feasibly accomplish the work).

8. Prior to project construction, topsoil shall be salvaged from the impacted vernal pools or road ruts with fairy shrimp on-site consistent with the requirements of the approved restoration plan (e.g., free of versatile fairy shrimp [*Branchinecta lindahli*]). Vernal pool soil (inoculum) shall be collected when dry to avoid damaging or destroying fairy shrimp cysts and plant seeds. Hand tools (i.e., shovels and trowels) shall be used to remove the first 2 inches of soil from the pools. Whenever possible, the trowel shall be used to pry up intact chunks of soil, rather than loosening the soil by raking and shoveling, which can damage the cysts. The soil from each pool shall be stored individually in labeled boxes that are adequately ventilated and kept out of direct sunlight in order to prevent the occurrence of fungus or excessive heating of the soil and stored off-site at an appropriate facility for vernal pool inoculum. Inoculum from different source pools shall not be mixed for seeding any restored pools, unless otherwise approved by the City and Wildlife Agencies. The collected soils shall be spread out and raked into the bottoms of the restored pools. Topsoil and plant materials salvaged from the upland habitat areas to be impacted shall be transplanted to, and/or used as a seed/cutting source for, the upland habitat restoration/creation areas to the maximum extent practicable as approved by the City.

    For this project, vernal pool soil will be collected and provided to the Airport Biologist for storage. The inoculum will not be used at the Otay 1-acre mitigation site for this project. The inoculum will be held by the Airport for use in a future vernal pool restoration project. The inoculum shall be packaged appropriately for long term storage (1 to 2 years).

9. Permanent protective fencing along any interface with developed areas and/or use other measures approved by the City to deter human and pet entrance into on- or off-site habitat shall be installed. Fencing shall be shown on the development plans and should have no gates (accept to allow access for maintenance and monitoring of the biological conservation easement areas) and be designed to prevent intrusion by pets. Signage for the biological conservation easement area shall be posted and maintained at conspicuous locations. The requirement for fencing and/or other preventative measures shall be included in the project's mitigation program.

In addition to the measures listed above, the following project specific measures shall be implemented to protect vernal pools:

A. **Culvert Inlet Protection** – Prior to the start of any construction work, storm drain inlet protection BMP's shall be installed at the culvert/drainage on the south corner of the building. The BMP's shall be installed to prevent any silt, toxins, or construction debris from entering the drainage and the adjacent vernal pools.

B. **Vehicles and Construction Equipment** – All construction equipment shall be washed/cleaned prior to entering the project area and after exiting the project area to prevent the spread of invasive species and fairy shrimp cysts.

BIO-4: California Gnatcatcher

Prior to the issuance of any grading permit, Notice to Proceed (NTP), or Pre-construction meeting, the City Deputy Director (or appointed designee) shall verify that the Multi-Habitat Planning Area (MHPA) boundaries and the following project requirements regarding the coastal California gnatcatcher are shown on the construction plans:

No clearing, grubbing, grading, or other construction activities shall occur between March 1 and August 15, the breeding season of the coastal California gnatcatcher, until the following requirements have been met to the satisfaction of the city manager:

A. A qualified biologist (possessing a valid endangered species act section 10(a)(1)(a) recovery permit) shall survey those habitat areas within the MHPA that would be subject to construction noise levels exceeding 60 decibels [dB(A)] hourly average for the presence of the coastal California gnatcatcher. Surveys for the coastal California gnatcatcher shall be conducted pursuant to the protocol survey guidelines established by the U.S. Fish and Wildlife service within the breeding season prior to the commencement of any construction. If gnatcatchers are present, then the following conditions must be met:

   I. Between March 1 and August 15, no clearing, grubbing, or grading of occupied gnatcatcher habitat shall be permitted. Areas restricted from such activities shall be staked or fenced under the supervision of a qualified biologist; and

   Ii. Between March 1 and August 15, no construction activities shall occur within any portion of the site where construction activities would result in noise levels exceeding 60 dB (A) hourly average at the edge of occupied gnatcatcher habitat. An analysis showing that noise generated by construction activities would not exceed 60 dB (A) hourly average at the edge of occupied habitat must be completed by a qualified acoustician (possessing current noise engineer license or registration with monitoring noise level experience with listed animal species) and approved by the city representative at least two weeks prior to the commencement of construction activities. Prior to the commencement of construction activities during the breeding season, areas restricted from such activities shall be staked or fenced under the supervision of a qualified biologist; or

   iii. At least two weeks prior to the commencement of construction activities, under the direction of a qualified acoustician, noise attenuation measures (e.g., berms, walls) shall be implemented to ensure that noise levels resulting from construction activities will not exceed 60 dB(A) hourly average at the edge of habitat occupied by the coastal California gnatcatcher. Concurrent with the commencement of construction activities and the construction of necessary noise attenuation facilities, noise monitoring* shall be conducted at the edge of the occupied habitat area to ensure that noise levels do not exceed 60 dB (A) hourly average. If the noise attenuation techniques implemented are determined to be inadequate by the qualified acoustician or biologist, then the associated construction activities shall cease until such time

that adequate noise attenuation is achieved or until the end of the breeding season (August 16).

* Construction noise monitoring shall continue to be monitored at least twice weekly on varying days, or more frequently depending on the construction activity, to verify that noise levels at the edge of occupied habitat are maintained below 60 dB (A) hourly average or to the ambient noise level if it already exceeds 60 dB (A) hourly average. If not, other measures shall be implemented in consultation with the biologist and the City representative, as necessary, to reduce noise levels to below 60 dB(A) hourly average or to the ambient noise level if it already exceeds 60 dB(A) hourly average. Such measures may include, but are not limited to, limitations on the placement of construction equipment and the simultaneous use of equipment.

B. If coastal California gnatcatchers are not detected during the protocol survey, the qualified biologist shall submit substantial evidence to the city manager and applicable resource agencies which demonstrates whether or not mitigation measures such as noise walls are necessary between March 1 and August 15 as follows:

I. If this evidence indicates the potential is high for coastal California gnatcatcher to be present based on historical records or site conditions, then condition A.iii shall be adhered to as specified above.

Ii. If this evidence concludes that no impacts to this species are anticipated, no mitigation measures would be necessary.

BIO-5: Burrowing Owl

Implementation of Measure BIO-5 would reduce potential impacts from construction and ensure significant impacts are avoided.

I. Prior to Start of Construction:

A. The Applicant Department or Permit Holder and Qualified Biologist must ensure that initial pre-construction/take avoidance surveys of the project "site" are completed between 14 and 30 days before initial construction activities, including brushing, clearing, grubbing, or grading of the project site; regardless of the time of the year. "Site" means the project site and the area within a radius of 450 feet of the project site. The report shall be submitted and approved by the City MSCP staff prior to construction or BUOW eviction(s) and shall include maps of the project site and BUOW locations on aerial photos.

B. The pre-construction survey shall follow the methods described in CDFG 2012, Staff Report -Appendix D *(please note, in 2013, CDFG became California Department of Fish and Wildlife or CDFW).*

C. 24 hours prior to commencement of ground disturbing activities, the Qualified Biologist shall verify results of preconstruction/take avoidance surveys. Verification shall be provided to the City's Mitigation Monitoring and Coordination (MMC) Section. If results of the preconstruction surveys have changed and BUOW are present in areas not previously identified, immediate notification to the City and WA's shall be provided prior to ground disturbing activities.

II. During Construction:

A. Best Management Practices shall be employed as BUOWs are known to use open pipes, culverts, excavated holes, and other burrow-like structures at construction sites. Legally permitted active construction projects which are BUOW occupied and have followed all protocol in this mitigation section, or sites within 450 feet of occupied BUOW areas, should undertake measures to discourage BUOWs from recolonizing previously occupied areas or colonizing new portions of the site. Such measures include, but are not limited to, ensuring that the ends of all pipes and culverts are covered when they are not being worked on, and covering rubble piles, dirt piles, ditches, and berms.

B. **On-going BUOW Detection** - If BUOWs or active burrows are not detected during the pre-construction

surveys, Section "A" below shall be followed. If BUOWs or burrows are detected during the pre-construction surveys, Section "B" shall be followed. Neither the MSCP subarea plan nor this mitigation section allows for any BUOWs to be injured or killed outside **or** within the MHPA; in addition, impacts to BUOWs within the MHPA must be avoided.

a. **Post Survey Follow Up if Burrowing Owls and/or Signs of Active Natural or Artificial Burrows Are <u>Not</u> Detected During the Initial Pre-Construction Survey -** Monitoring the site for new burrows is required using CDFW Staff Report 2012 Appendix D methods for the period following the initial pre-construction survey, until construction is scheduled to be complete and is complete *(NOTE - Using a projected completion date (that is amended if needed) will allow development of a monitoring schedule).*

i. If no active burrows are found but BUOWs are observed to occasionally (1-3 sightings) use the site for roosting or foraging, they should be allowed to do so with no changes in the construction or construction schedule.

ii. If no active burrows are found but BUOWs are observed during follow up monitoring to repeatedly (4 or more sightings) use the site for roosting or foraging, the City's Mitigation Monitoring and Coordination (MMC) Section shall be notified and any portion of the site where owls have been sites and that has not been graded or otherwise disturbed shall be avoided until further notice.

iii. If a BUOW begins using a burrow on the site at any time after the initial pre-construction survey, procedures described in Section B must be followed.

iv. Any actions other than these require the approval of the City and the Wildlife Agencies.

b. **Post Survey Follow Up if Burrowing Owls and/or Active Natural or Artificial Burrows are detected during the Initial Pre-Construction Survey -** Monitoring the site for new burrows is required using Appendix D CDFG 2012, Staff Report for the period following the initial pre-construction survey, until construction is scheduled to be complete and is complete *(NOTE - Using a projected completion date (that is amended if needed) will allow development of a monitoring schedule which adheres to the required number of surveys in the detection protocol).*

i. This section (B) applies only to sites (including biologically defined territory) wholly outside of the MHPA – **all direct and indirect impacts to BUOWs within the MHPA <u>SHALL</u> be avoided.**

ii. If one or more BUOWs are using any burrows (including pipes, culverts, debris piles *etc.*) on or within 300 feet of the proposed construction area, the City's MMC Section shall be contacted. The City's MMC Section shall contact the Wildlife Agencies regarding eviction/collapsing burrows and enlist appropriate City biologist for on-going coordination with the Wildlife Agencies and the qualified consulting BUOW biologist. No construction shall occur within 300 feet of an active burrow without written concurrence from the Wildlife Agencies. This distance may increase or decrease, depending on the burrow's location in relation to the site's topography, and other physical and biological characteristics.

1. **Outside the Breeding Season** - If the BUOW is using a burrow on site outside the breeding season (i.e. September 1 – January 31), the BUOW may be evicted after the qualified BUOW biologist has determined via fiber optic camera or other appropriate device, that no eggs, young, or adults are in the burrow and written concurrence from the Wildlife Agencies for eviction is obtained prior to implementation.
2. **During Breeding Season** - If a BUOW is using a burrow on-site during the breeding season (Feb 1-Aug 31), construction shall not occur within 300 feet of the burrow until the young have fledged and are no longer dependent on the burrow, at which time the BUOWs can be evicted. Eviction requires written concurrence from the Wildlife Agencies prior to implementation.

c. **Survey Reporting During Construction -** Details of construction surveys and evictions (if applicable) carried out shall be immediately (within 5 working days or sooner) reported to the City's MMC

Section and the Wildlife Agencies and must be provided in writing (as by e-mail) and acknowledged to have been received by the required Agencies and DSD Staff member(s).

III. **Post Construction**:

A. Details of the all surveys and actions undertaken on-site with respect to BUOWs (i.e. occupation, eviction, locations etc.) shall be reported to the City's MMC Section and the Wildlife Agencies within 21 days post-construction and prior to the release of any grading bonds. This report must include summaries off all previous reports for the site; and maps of the project site and BUOW locations on aerial photos.

BIO-6: Revegetation of Temporary Impacts

Following completion of all construction work, any areas where soils were temporarily disturbed and not developed, shall be revegetated for erosion control, in accordance with the City's Landscape Standards and biological guidelines. A native low-grow upland seed mix shall be applied via hydroseed to all areas temporarily impacted. The Project Biologist will be responsible for developing the seed palette and must submit to MMC and the City's Representative for approval. Revegetated areas will be maintained and monitored for a minimum of 25-months to ensure successful erosion control.

BIO-7: Installation of Barrier

Following completion of all construction work, a barrier shall be installed along both sides of the access road from Ponderosa Ave to the control tower parking lot to prevent unauthorized access into the MHPA and adjacent sensitive habitat. The barrier shall also be installed along the north-eastern boundary of the project footprint. The barrier design shall prevent vehicle access into environmentally sensitive areas and may consist of poles 3 to 4 feet tall with a rope or chain ran between the poles. The design of the barrier must be approved by Airport staff prior to installation and the installation must be monitored by a qualified vernal pool biologist. Signage for environmentally sensitive areas shall be posted and maintained at conspicuous locations along the barrier.

8 ACKNOWLEDGEMENTS

The following biologist contributed to the fieldwork and/or the preparation of this report.

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Figure 1: Project Site Location on USGS Map

Fire Rescue Air Operations Phase II

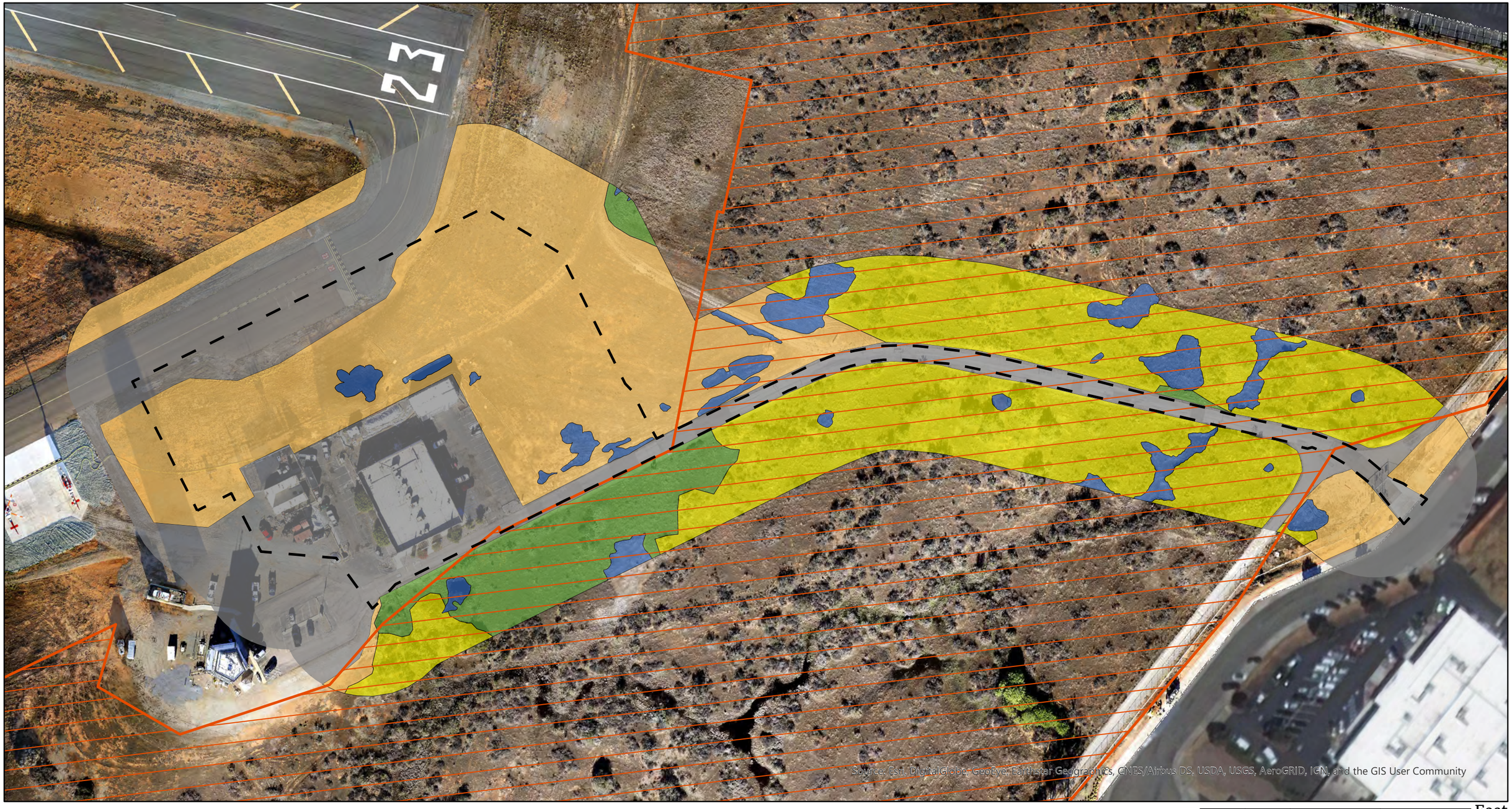
FIRE-RESUCE AIR OPERATION - PHASE II

FIGURE 2: Project Location and 100-Foot Survey Limit

Project Footprint
MHPA
100-Foot Survey Limit

0 50 100 200 300 Feet

SD Public Works



FIRE-RESCUE AIR OPERATION - PHASE II

FIGURE 3: Vegetation Types

Feet
0 50 100 200 300

- Project Footprint
- San Diego Mesa Hardpan Vernal Pool
- Developed
- Diegan Coastal Sage Scrub
- Disturbed
- Non-Native Grassland
- MHPA

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FIRE-RESCUE AIR OPERATION - PHASE II

FIGURE 4a: Vernal Pool Locations and Vernal Pool Species Present

SD Public Works

FIRE-RESCUE AIR OPERATION - PHASE II

FIGURE 4b: Vernal Pool Locations and Vernal Pool Species Present

Feet

0 50 100 200 300

- Project Footprint
- Drainage
- Vernal Pool with Indicator Plants
- Vernal Pool - San Diego Fairy Shrimp Occupied
- Vernal Pool - San Diego Fairy Shrimp & Mesa Mint Occupied
- Vernal Pool - San Diego Mesa Mint Occupied

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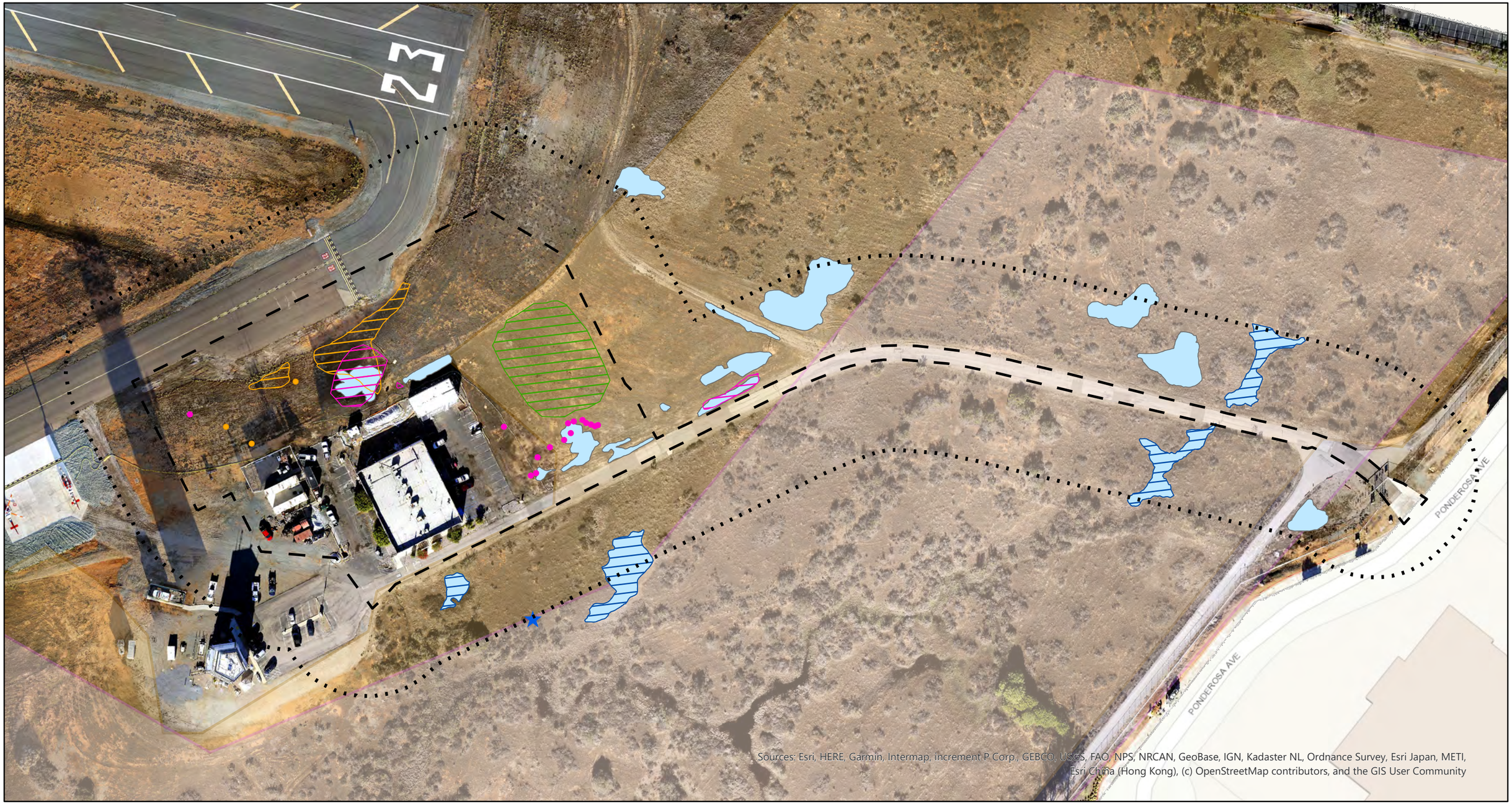
FIRE-RESCUCE AIR OPERATION - PHASE II

FIGURE 5a: Sensitive Species Locations within the 100-Foot Survey Limit



Feet
0 50 100 200 300

Project Footprint
100-Foot Survey Limit

Sensitive Species Observed
Ashy spike-moss
Graceful tarplant
Orcutt's brodiaea
Graceful tarplant
Orcutt's brodiaea
San Diego Mesa Mint
California Gnatcatcher
San Diego Fairy Shrimp

USFWS Critical Habitat
San Diego Fairy Shrimp Critical Habitat
Spreading Navarretia Critical Habitat

SD Public Works

FIRE-RESCUE AIR OPERATION - PHASE II

FIGURE 5b: Sensitive Species Locations within the 100-Foot Survey Limit

Feet
0 50 100 200 300

Project Footprint
100-Foot Survey Limit

Sensitive Species Observed
Ashy spike-moss
Graceful tarplant
Orcutt's brodiaea
Graceful tarplant
Orcutt's brodiaea
San Diego Mesa Mint
California Gnatcatcher

San Diego Fairy Shrimp

USFWS Critical Habitat
San Diego Fairy Shrimp Critical Habitat
Spreading Navarretia Critical Habitat

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FIRE-RESUCE AIR OPERATION - PHASE II

FIGURE 6: Vernal Pool Watersheds and Buffers

Feet

0 50 100 200 300

- Project Footprint
- 100-Foot Survey Limit
- Vernal Pool Watershed
- Drainage
- Vernal Pool with Indicator Plants
- Vernal Pool - San Diego Fairy Shrimp Occupied
- Vernal Pool - San Diego Fairy Shrimp & Mesa Mint Occupied
- Vernal Pool - San Diego Mesa Mint Occupied

SD Public Works

APPENDIX A

PHOTO DOCUMENTATION

Appendix A: Photopoint Locations

Fire Rescue Air Operations Phase II

Photo 1. View of Non-Native Grassland (Tier IIIB) facing southwest.

Photo 2. View of Disturbed Habitat (Tier IV) facing southwest.

Photo 3. View of Developed Land (Tier IV) facing northwest.

Photo 4. View of San Diego Mesa Hardpan Vernal Pool (wetland) facing southwest, outside the project footprint.

Photo 5. View of Diegan Coastal Sage Scrub (Tier II) in the background facing east.

Photo 6. Orcutt brodiaea (*Brodiaea orcuttii*) observed within the Project Area.

Photo 7. Graceful tarplant (*Holocarpa virgate* ssp. *elongata*) observed within the Project Area.

Photo 8. Ashy spike-moss (*Selaginella cinerascens)* observed within the Project Area.

Photo 9. Vernal Pool 4 (FOVP4) observed during inundation on March 19, 2018 within the Project Area facing north.

Photo 10. Vernal Pool 4 (FOV4) and 6 (FOVP6) observed during inundation on January 10, 2018 within the Project Area facing northeast.

Photo 11. Vernal Pool 7 (FOVP7) observed within the Project Area facing southeast. No sustaining inundation occurred at this vernal pool.

Photo 12. Vernal Pool 9 (FOVP9) observed within the Project Area facing southwest. No sustaining inundation occurred at this vernal pool.

APPENDIX B

FLORA AND FAUNA LIST

Appendix B
Flora and Fauna List

Flora List

Scientific Name	Common Name	Vegetation Community
LYCOPHYTES		
SELAGINELLACEAE	**Spike-Moss Family**	
Selaginella cinerascens	ashy spike-moss	D
ANGIOSPERMS (EUDICOTS)		
ANACARDIACEAE	**SUMAC OR CASHEW FAMILY**	
Malosma laurina	laurel sumac	DCSS
APIACEAE	**CARROT FAMILY**	
Daucus pusillus	rattlesnake weed	DCSS
ASTERACEAE	**SUNFLOWER FAMILY**	
Baccharis pilularis	coyote brush	DCSS, NNG
*Centaurea melitensis**	tocalote	D, NNG
*Cotula coronopifolia**	brass-buttons	VP
Deinandra fasciculata	fascicled tarweed	DCSS
*Dimorphotheca sinuata**	blue-eye cape-marigold	D, NNG, VP
Holocarpha virgata subsp. *elongata*	graceful tarplant	NNG, VP
*Hypochaeris glabra**	smooth cat's-ear	D, NNG
Psilocarphus brevissimus[VP]	woolly marbles	VP
BRASSICACEAE	**MUSTARD FAMILY**	
Lepidium nitidum	shining peppergrass	D, NNG
CAMPANULACEAE	**BELLFLOWER FAMILY**	
Downingia cuspidata[VP]	cupidate downingia	VP
CRASSULACEAE	**STONECROP FAMILY**	
Crassula connata	pygmy-weed	D
EUPHORBIACEAE	**SPURGE FAMILY**	
Chamaesyce polycarpa	golondrina	D, NNG
FABACEAE	**LEGUME FAMILY**	

Appendix B
Flora and Fauna List

Acmispon americanus var. *americanus*	Spanish clover	D, VP
Acmispon glaber	deerweed	DCSS, D, NNG
Acmispon parviflorus	lotus micranthus	D, NNG, VP
Lupinus bicolor	miniature lupine	D
GERANIACEAE	**GERANIUM FAMILY**	
*Erodium cicutarium**	red-stemmed filaree	D, NNG, VP
*Erodium moschatum**	white-stemmed filaree	D, NNG, VP
LAMIACEAE	**MINT FAMILY**	
Pogogyne abramsii[VP]	San Diego mesa mint	VP
LYTHRACEAE	**LOOSESTRIFE FAMILY**	
*Lythrum hyssopifolia**	hyssop loosestrife	D, VP
MALVACEAE	**MALLOW FAMILY**	
*Malva parviflora**	cheeseweed	D, NNG
OROBANCHACEAE	**BROOM-RAPE FAMILY**	
Castilleja exserta	purple owl's-clover	D, VP
PLANTAGINACEAE	**PLANTAIN FAMILY**	
Plantago elongata[VP]	prairie plantain	VP
Plantago erecta	western plantain	D, NNG
POLYGONACEAE	**BUCKWHEAT FAMILY**	
Eriogonum fasciculatum	California buckwheat	DCSS, NNG
ROSACEAE	**ROSE FAMILY**	
Adenostoma fasciculatum	chamise	DCSS
ANGIOSPERMS (MONOCOTS)		
CYPERACEAE	**SEDGE FAMILY**	
Eleocharis sp.	spike-rush	VP
POACEAE	**GRASS FAMILY**	
Avena sp.*	wild oat	DCSS, D, NNG, VP
Bromus madritensis subsp. *rubens**	red brome	D, NNG, VP
*Hordeum murinum**	glaucous foxtail barley	D, NNG, VP

*Pennisetum setaceum**	fountain grass	D
THEMIDACEAE	**BRODIAEA FAMILY**	
Brodiaea orcuttii	Orcutt's brodiaea	D, VP
Muilla maritima	common muilla	D, VP

*Non-Native Species, [VP] Vernal Pool Indicator Species
Vegetation Communities: San Diego Mesa Claypan Vernal Pool (VP), Developed (Dev), Diegan Coastal Sage Scrub (DCSS), Disturbed (D), Non-Native Grassland (NNG)

Fauna List

Scientific Name	Common Name
CLASS BRACHIOPODA	**BRACHIOPODS**
Brachinecta sandiegonensis	San Diego fairy shrimp
CLASS INSECTA	**INSECTS**
PIERIDAE	**WHITES & SULPHURS**
Phoebis sennae marcellina	southern cloudless sulfur
NYMPHALIDAE	**BRUSH-FOOTED BUTTERFLIES**
Danaus plexippus	Monarch butterfly
Nymphalis antiopa	Mourning cloak
LYCAENIDAE	**GOSSAMER WINGS**
Icaricia acmon	Acmon blue
CLASS AVES	**BIRDS**
ACCIPITRIDAE	**HAWKS, KITES, EAGLES**
Buteo jamaicensis	red-tailed hawk
COLUMBIDAE	**PIGEONS & DOVES**
Zenaida macroura	mourning dove
STRIGIDAE	**TRUE OWLS**
Athene cunicularia	burrowing owl
CORVIDAE	**JAYS & CROWS**

Appendix B
Flora and Fauna List

Corvus corax	common raven
POLIOPTILIDAE	**GNATCATCHERS**
Polioptila californica	California gnatcatcher
MIMIDAE	**MOCKINGBIRDS, THRASHERS**
Mimus polyglottos	northern mockingbird
EMBERIZIDAE	**EMBERIZIDS**
Melozone crissalis	California towhee
FRINGILLIDAE	**FINCHES**
Haemorhous mexicanus	house finch

APPENDIX C

POTENTIAL TO OCCUR TABLE

FLORA AND FAUNA

Appendix C

Potential to Occur Table: Sensitive Flora and Fauna

Species	Designation (ESA/CESA/CRPR CDFW)	Potential to Occur/Comments
Flora		
singlewhorl burrobrush (*Ambrosia monogyra*)	--/--/2B.2	Absent. Appropriate habitat is not present within the project site and individuals, if present, would have been observed as this is a perennial shrub.
San Diego goldenstar (*Bloomeria clevelandii*)	--/--/1B.1	Not expected. Appropriate habitat exists within the site; however, if present, the species would have been observed as the survey was completed within the appropriate blooming period.
Orcutt's brodiaea (*Brodiaea orcuttii*)	--/--/1B.1/MSCP	Present within the Project footprint and the 100-foot survey buffer within San Diego Mesa Claypan Vernal Pools and Disturbed Habitat. Number of individuals observed is 132 individuals.
wart-stemmed ceanothus (*Ceanothus verrucosus*)	--/--/2B.2/MSCP	Absent. Appropriate habitat is not present within the project site and individuals, if present, would have been observed as this is a perennial evergreen shrub.
summer holly (*Comarostaphylis diversifolia* ssp. *diversifolia*)	--/--/1B.2	Absent. Appropriate habitat is not present within the project site and individuals, if present, would have been observed as this is a perennial evergreen shrub.
San Diego Button-Celery (*Eryngium aristulatum* var. *parishii*)	FE/SE/1B.1/NE/ MSCP/VPHCP	Not expected. Appropriate habitat exists within the site; however, if present, the species would have been observed as several surveys have been completed within the appropriate blooming period (Recon Environmental, Inc., 2008; City of San Diego, 2003).
San Diego barrel cactus (*Ferocactus viridescens*)	--/--/2B.1/MSCP	Absent. Appropriate habitat is present; however, individuals, if present, would have been observed as this species is a perennial stem succulent.
graceful tarplant (*Holocarpha virgata* ssp. *elongata*)	--/--/4.2	Present. 40 individuals were observed within the Project Footprint.
decumbent goldenbush (*Isocoma menziesii* var. *decumbens*)	--/--/1B.2	Absent. Appropriate habitat is not present within the project site and individuals, if present, would have been observed as this is a perennial shrub.

Appendix C

Potential to Occur Table: Sensitive Flora and Fauna

little mousetail (*Myosurus minimus* ssp. *apus*)	--/--/3.1	Not expected. Appropriate habitat exists within the site; however, if present, the species would have been observed as several surveys have been completed within the appropriate blooming period (Recon Environmental, Inc., 2008; City of San Diego, 2003).
Prostrate Navarretia (*Navarretia fossalis*)	FT/--/1B.1/NE/ MSCP/VPHCP	Not expected. Appropriate habitat exists and the northeast portion of the Project Footprint and 100-foot survey buffer is mapped as critical habitat by USFWS. However, if present, the species would have been observed as several surveys have been completed within the appropriate blooming period (Recon Environmental, Inc., 2008; City of San Diego, 2003) within this specific area.
San Diego Mesa Mint (*Pogogyne abramsii*)	FE/SE/1B.1/NE/ MSCP/VPHCP	Absent. Individuals were observed within the 100-foot survey buffer but were not present within the project site. This species, if present, would have been observed.
Nuttall's scrub oak (*Quercus dumosa*)	--/--/1B.1	Absent. Appropriate habitat is not present within the project site and individuals, if present, would have been observed as this is a perennial evergreen shrub.
Munz's sage (*Salvia munzii*)	--/--/2B.2	Absent. Appropriate habitat is not present within the project site and individuals, if present, would have been observed as this is a perennial evergreen shrub.
oil neststraw (*Stylocline citroleum*)	--/--/1B.1	Not expected. Habitat for this species occurs within the site; however, if present, the species would have been observed as the survey was completed within the appropriate blooming period.
Fauna		
California glossy snake (*Arizona elegans occidentalis*)	--/SSC	Low. Historical occurrences are documented within Montgomery Airfield; however, habitat present is of low quality and would likely only be used for foraging as it lacks shrubs or rocks and is routinely mowed. This species is generally inactive during the day and in the winter and can actively disperse; therefore, impacts to this species is not expected.
orange-throated whiptail (*Aspidoscelis hyperythra*)	--/--/MSCP	Low. Historical occurrences are documented within Montgomery Airfield; however, no appropriate habitat occurs on the site and would likely only be used for foraging as it is routinely mowed. This species can actively disperse; therefore, impacts to this species is not expected.
burrowing owl (*Athene cunicularia*)	--/SSC/MSCP	Low/Moderate. Low to Moderate habitat does occur within and adjacent to the project site. Burrowing owl have been previously identified on the airport and have a potential to forage near the project area. One individual was observed offsite, within the airport grounds. Mitigation measures will be implemented to avoid impacts to this species.

Appendix C

Potential to Occur Table: Sensitive Flora and Fauna

San Diego fairy shrimp (*Branchinecta sandiegonensis*)	FE/-- /MSCP/VPHCP	Present. More than approximately 10,110 individuals observed within the 100-foot survey buffer.
pocketed free-tailed bat (*Nyctinomops femorosaccus*)	--/SSC	Absent. Appropriate habitat is not present within the site and the demolition of existing buildings is not within the scope of this project; therefore, impacts to this species is not expected.
coast horned lizard (*Phrynosoma blainvillii*)	--/SSC/MSCP	Not expected. Appropriate habitat is not present within the site as the soil is not sandy and is heavily compacted; therefore, impacts to this species is not expected.
coastal California gnatcatcher (*Polioptila californica californica*)	FT/SSC/MSCP	Present. One individual has been observed foraging within marginally suitable habitat east of the project area. No suitable habitat is located within the project site. Direct impacts to this species are not expected. Indirect impacts (noise), may occur as a result of construction activity. Mitigation measures will be implemented to avoid impacts to this species.
least Bell's vireo (*Vireo bellii pusillus*)	FE/SE/SSC/ MSCP	Low. Appropriate habitat is not present within or adjacent to the project site; therefore impacts to this species is not expected.

FE – Federally listed as Endangered
FT – Federally listed as Threatened
SE - State listed as Endangered
NE – City of San Diego Narrow Endemic Species
MSCP –Multiple Species Conservation Plan covered species
VPHCP – Vernal Pool Habitat Conservation Plan covered species

APPENDIX D

FAIRY SHRIMP PROTOCOL SURVEY REPORT

Montgomery-Gibbs Executive Airport: Fire-Rescue Air Operations Facility Hangers and Helicopter Parking Pad Project, San Diego, California

Fairy Shrimp Surveys: 2018/2019 Wet Season Survey Report

WGS # S-18007

September 2019

Prepared for:
United States Fish and Wildlife Service
2177 Salk Ave, Ste 250,
Carlsbad, CA 92008

Prepared by:
City of San Diego
Public Works Department
525 B Street, San Diego, CA 92101

Prepared By: _____
Sean Paver, Senior Planner/Biologist

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EXECUTIVE SUMMARY

The City of San Diego is proposing to construct a new, permanent Fire Rescue Air Operations Facility (Project) at Montgomery-Gibbs Executive Airport (MYF). The facility will accommodate the emergency helicopters for the crews that will provide 24 hour on-call services 365 days per year. The project area would be approximately 3.719 acres, and the project would result in 1.99 acres of new impervious surfaces, including the hangars, fueling stations, heli-tender storage buildings, concrete aprons, ramps, vehicle parking, and a helicopter parking pad to accommodate a S-70A Firehawk. The proposed project is located completely within the existing the active MYF airfield and is outside of, but adjacent to the City's Multi-Habitat Planning Area (MHPA) boundary.

The purpose of the surveys was to determine the current status and location of listed fairy shrimp. Wet and Dry season surveys were conducted during the 2017/2018 season. This survey report focuses on the 2018/2019 wet season. The areas where the surveys were performed include the project footprint and an approximately 100-foot survey area. In total, 27 features were identified to potentially support habitat for fairy shrimp within the survey area. Previous surveys on MYF have documented the presence of the federally endangered San Diego fairy shrimp (*Branchinecta sandiegonensis*; SDFS). This report presents the results of the 2018/2019 wet season surveys.

SDFS were detected in five of the six features within the project development footprint; in total 19 of the 27 features within the survey area were determined to be occupied.

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1.0 INTRODUCTION

This report presents the findings of the wet and dry season fairy shrimp survey conducted for the Montgomery-Gibbs Executive (MYF) Airport Fire Rescue Air Operations Facility Hangers Project (Project), located in the City of San Diego, California (Figure 1 and 2).

U.S. Fish and Wildlife (FWS) protocol fairy shrimp surveys were conducted to determine the current status of listed fairy shrimp in features located within and immediately adjacent to the proposed Project. These features had been reported as having the potential to support standing water, potential habitat for fairy shrimp. This report presents the results of the 2018/2019 wet season surveys.

1.1 Project Area

The Project is located on MYF, immediately east of State Route 163 (SR-163), north of Aero Drive, and South of Balboa Avenue, in the Kearny Mesa Community Planning Area (Council District 6) (City of San Diego 1997). Within the airfield the Project site is located, northern of runways 28R, east of Taxiway C, and north of the air traffic control tower (Figure 3). The project is located adjacent to the City of San Diego Multiple Habitat Planning Area (MHPA) (City of San Diego 1997). The topography of the survey area is relatively flat. It is developed with the current Fire-Rescue Air Operations, associated buildings, and parking areas. Areas of undeveloped land occur between Taxiway Charlie, and the existing air operations structures, within the project footprint (Figure 3). Vegetation communities documented within the vicinity of the study area include non-native grassland, disturbed habitat, developed, San Diego Mesa Hardpan Vernal Pools, and Diegan coastal sage scrub (Holland 1986, as modified by Oberbauer et al. 2008). A small drainage, that flows north to south, occurs approximately 149 feet (ft) east of the existing fire rescue air operations facility.

According to the City of San Diego's Vernal Pool Habitat Conservation Plan (City of San Diego 2017) the presence of vernal pools has been recorded adjacent to the project footprint. Focused, seasonally-appropriate protocol surveys for federally listed fairy shrimp species were performed within the Project Area and includes a 100-foot survey buffer. All topographically appropriate areas that appeared likely to support vernal pools were mapped using the Collector Application for ArcGIS and an EOS Arrow Lite GPS receiver, if observed during project surveys.

1.2 Background

The Project consists of the construction of a new, permanent Fire Rescue air operations facility at MYF. This facility will provide new hangar space and a concrete apron to accommodate five helicopters, parking, and shelter for a single Heli-tender and two fueling tender vehicles. The total

area of new hangar space will be approximately 32,000 square feet (sf). The new hangar space includes a hangar support area for maintenance offices, overhaul, avionics and storage rooms. The new apron area will be approximately 65,000 sf of 5000 per square inch (psi) concrete. The project includes two above-ground fuel storage tanks, each with a 12,000-gallon capacity (24,000 gallons total).

The Parking Pad portion of the Project will provide a new concrete parking pad to accommodate a S-70A Firehawk. The parking pad will be 14,400 sf (120 ft x 120 ft) of 5,000 psi concrete, with a 30-ft border of 2-inch crushed rock on the north and east ends, totaling approximately 8,100 sf. The crushed rock buffer is for dust control due to rotor downwash from the Fire Rescue aircraft.

The staging area for the project will be placed on existing paved and/or disturbed area. The designed size of the staging area is approximately 4,000 sf. In addition to the hangars and concrete apron, the project will also address any damages to the existing access road, from Ponderosa Avenue, sustained from construction activities. The rehabilitation of the existing access road will include a two-inch overlay of asphalt material in any areas deemed necessary and not impact any undisturbed areas.

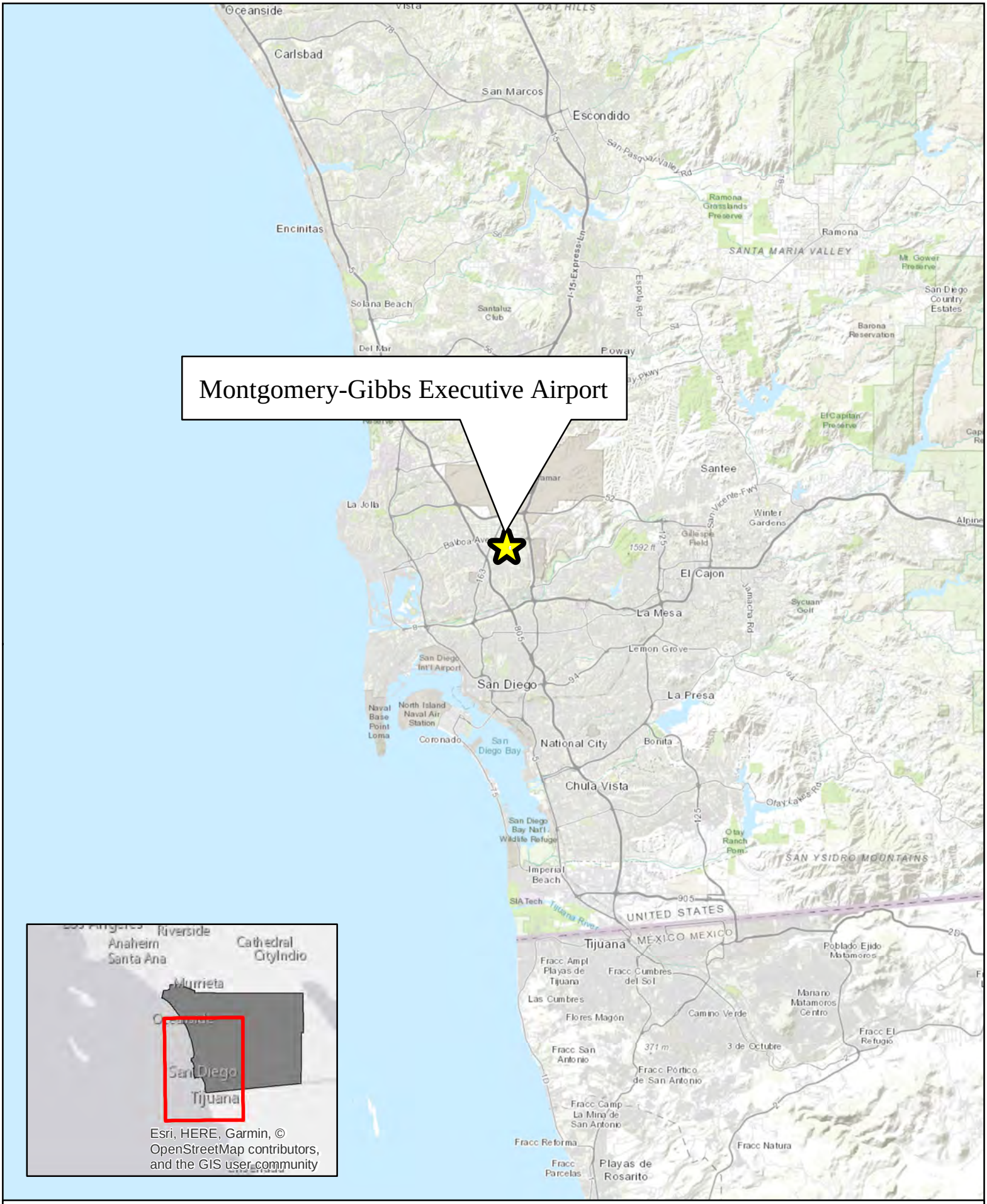
The total project area would be approximately 3.719 acres, and the project would result in 1.957 acres of new impervious surfaces.

In total, six features within the project foot print, and 21 features located immediately adjacent to the project location and within the 100-foot buffer, were the focus of wet season surveys during the 2018/2019 survey season (Figures 3 & 4). The results of these surveys are discussed in detail below. Wet season and dry season surveys were performed within the same area in 2017/2018. Those results are incorporated into the survey results discussed below. Features that were positively identified to be occupied in the 2017/2018 wet season were not sampled during 2018/2019 wet season surveys; visual surveys were conducted.

1.3 Species Information

San Diego fairy shrimp (*Branchinecta sandiegonensis*; SDFS) was listed as endangered by the United States Fish and Wildlife Service on February 3, 1997 (USFWS 2012) and is a Vernal Pool Habitat Conservation Plan- and MSCP-covered species. A member of the family Brachinectidae and order Anostraca, immature fairy shrimp exist in the soil of vernal pools and other non-vegetated ephemeral pools (2-12 inches in depth) in a dormant state known as a cyst until the pool is inundated with season precipitation. The juvenile fairy shrimp reach maturity within 7-14 days of rainfall filling the pool and measure approximately 16 millimeters in length with 11 pairs of legs. After mating the eggs are laid and remain as a cyst in the soil until the next inundation (Eriksen and Belk 1999). Development of the species is closely tied to water temperature and

chemistry along with a host of other environmental cues. Seasonal rainfall between January and March typically triggers the hatching of fairy shrimp cysts (Simovich and Hathaway 1996).



0 3 6 12 Miles

1:380,000

Figure 1
Regional Location
San Diego Fire Rescue Facility Branchiopod Surveys

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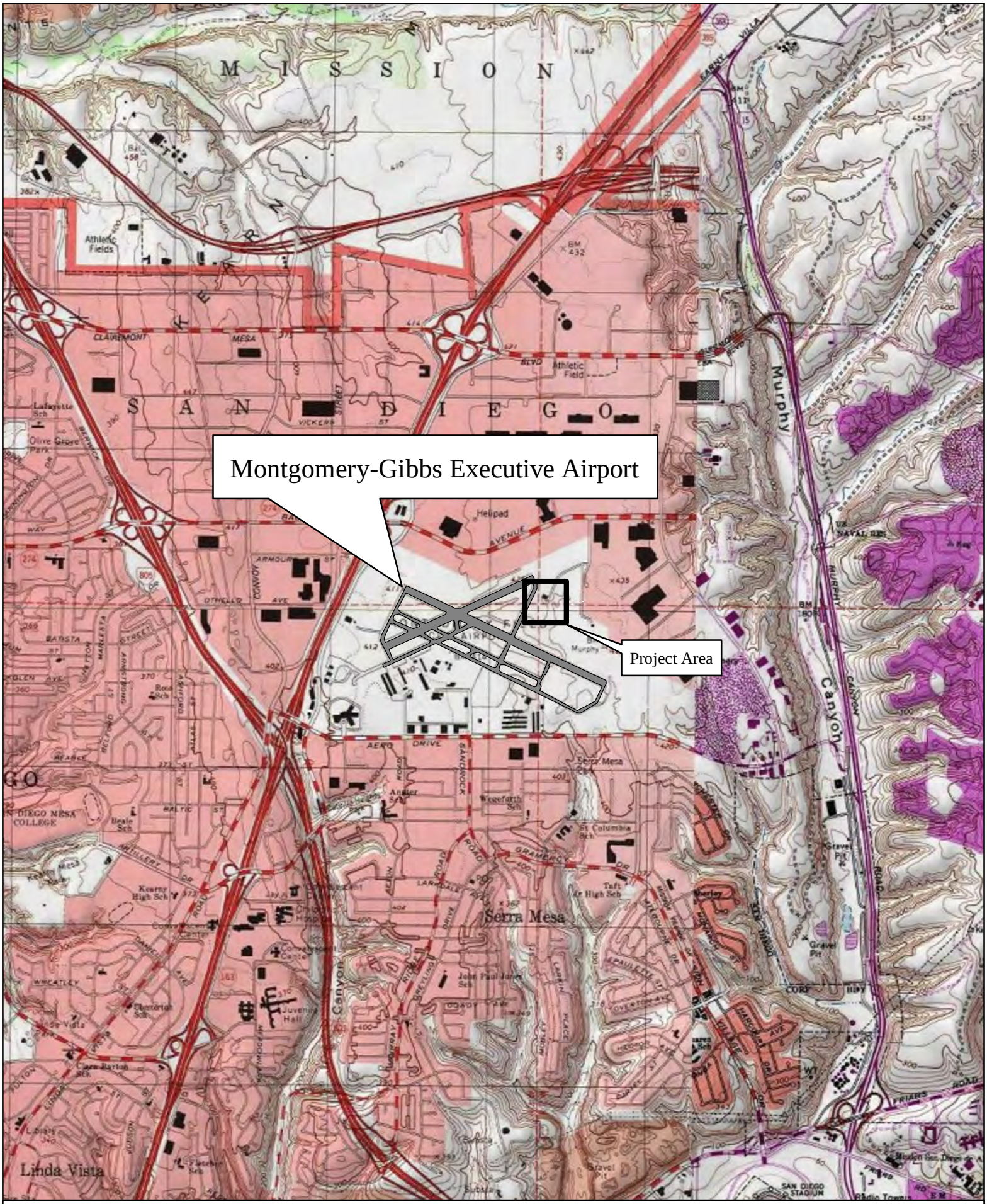

Figure 2
Project Vicinity
San Diego Fire Rescue Facility Branchiopod Surveys

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FIGURE 3: Feature Location and Branchiopod Survey Results

SD Public Works

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2.0 METHODS

All fairy shrimp surveys were conducted in accordance with the *Survey Guidelines for the Listed Large Branchiopods* (USFWS 2015). Prior to initiating the surveys, pre-notification letters were sent to the U.S. Fish and Wildlife Service-Carlsbad Field Office requesting permission to conduct protocol wet season surveys for the presence of listed fairy shrimp. When FWS permission was granted, permitted biologist Doug Allen (TE-837448-7) conducted wet season surveys, assisted by biologist, Sean Paver.

Table 1. 2018/2019 Precipitation Data (NWS 2019)

Rain Event Date	Precipitation Total (inches)
November 22, 2018	0.01
November 28, 2018	0.01
November 29, 2018	0.97
November 30, 2018	0.05
December 1, 2018	0.01
December 5, 2018	0.69
December 6, 2018	1.71
December 10, 2018	0.69
December 24, 2018	0.02
December 25, 2018	0.19
December 31, 2018	0.07
January 5, 2019	0.15
January 6, 2019	0.29
January 12, 2019	0.44
January 14, 2019	0.45
January 15, 2019	0.25
January 16, 2019	0.12
January 17, 2019	0.27
February 1, 2019	0.54
February 2, 2019	0.03
February 3, 2019	0.91
February 4, 2019	0.07
February 5, 2019	0.81
February 6, 2019	0.12
February 10, 2019	0.06
February 14, 2019	0.75
February 15, 2019	1.14
February 16, 2019	0.05
February 17, 2019	0.04
February 18, 2019	0.07
February 19, 2019	0.03
February 21, 2019	0.2
February 22, 2019	0.23
March 3, 2019	0.22
March 5, 2019	0.02
March 6, 2019	0.04
March 7, 2019	0.1
March 9, 2019	0.04
March 12, 2019	0.37
March 13, 2019	0.05
March 21, 2019	0.05
March 22, 2019	0.21
TOTAL	**12.54**

*Weather Conditions For: San Diego,Montgomery Field, CA. KMYF (NWS/FAA-SGX)

The 2018/2019 wet season protocol fairy shrimp surveys were conducted at the 27 features, identified within the project footprint and 100-foot buffer (Figures 3 & 4), to identify which features currently support listed fairy shrimp species. During the wet season surveys, the features were examined for live fairy shrimp, and if observed, shrimp were collected and identified to species level. If the presence of a listed species was confirmed, no additional sampling occurred for that feature. The field surveys commenced in November 2018 and were considered complete

in March 2019. Table 1 provides the sampling visits and associated activities. Below are brief descriptions of the wet season survey methods.

Table 2. 2018/2019 Sampling Visits for the Fire Rescue Air Operations Fairy Shrimp Surveys

Date	Survey Number	Activity
November 30, 2018	1	Checked for ponding after rain event; ponding observed
December 3, 2018	2	Checked to see if ponding still present; some ponding remaining
December 4, 2018	3	Checked to see if ponding still present; no ponding observed
December 7, 2018	4	Checked for ponding after rain event.
December 11, 2018	5	Checked for ponding after rain event. GPS pools.
December 14, 2018	6	Sampled inundated features.
December 20, 2018	7	Checked to see if ponding still present; ponding observed
December 21, 2018	8	Sampled inundated features.
December 26, 2018	9	Checked for ponding after rain event; ponding observed
December 28, 2018	10	Sampled inundated features.
December 31, 2018	11	Checked to see if ponding still present; no ponding observed
January 8, 2019	12	Checked for ponding after rain event; ponding observed
January 13, 2019	13	Checked for ponding after rain event; ponding observed
January 14, 2019	14	Sampled inundated features.
January 18, 2019	15	Checked for ponding after rain event.
January 20, 2019	16	Sampled inundated features.
January 21, 2019	17	Sampled inundated features.
January 25, 2019	18	Checked to see if ponding still present; no ponding observed
February 5, 2019	19	Checked for ponding after rain event; ponding observed
February 12, 2019	20	Sampled inundated features.
February 19, 2019	21	Checked for ponding after rain event; ponding observed
February 26, 2019	22	Sampled inundated features.
March 5, 2019	23	Checked to see if ponding still present; some ponding remaining
March 12, 2019	24	Checked for ponding after rain event; ponding observed
March 20, 2019	25	Checked to see if ponding still present; some ponding remaining
March 29, 2019	26	Checked to see if ponding still present; no ponding observed

2.1 Wet Season Surveys

Wet season sampling commenced after the first significant rainfall of the 2018/2019 rainfall season on November 29, 2018 (Table 1). The biologists visited pools after storm events of at least one third of an inch to document when a pool was inundated (held more than 3 centimeters of standing water). Early site visits assessed the water levels within the features to determine when they were inundated. After inundation, pools were visited once every week until the pools were no longer inundated. The purpose of these site visits was to assess the growth of fairy shrimp, as well as to evaluate if pools that had become dry were refilling after late season rain events. Surveys were reinitiated if pools refilled to above 3 cm. During each visit, portions of the pool bottom, edges and the vertical water column were sampled using a seine, dip net or aquarium net appropriate for the size of the pool. Mesh size was no larger than 1/8 inch. Sampling tools were examined and emptied at each feature. Voucher specimens of all listed vernal pool branchiopods captured, if present, were collected and all other specimens were returned to the pool.

Voucher specimens were collected only once for each individual features or feature sampled during a single wet season. No more than 20 specimens or less than 50% of the estimated population present in the water column were collected from each individual feature for feature during the 2018/2019 wet season survey. Voucher specimens were identified to species level using a dissecting microscope (AmScope SM-2BT, 0.7-4.5X). Voucher specimens were stored in screw-cap glass vials containing 90% ethyl alcohol. These species will be submitted to an FWS approved institution. If a federally-listed fairy shrimp was recovered from any of the features during the wet season sampling, the fairy shrimp survey for that feature was considered completed under the protocol guidelines.

3.0 RESULTS

Twenty-five of the 27 features surveyed during the 2018/2019 wet seasons were vernal pools with the indicator plant species (USACE 1997) wooly marbles (*Psilocarphus brevissimus*) present. Feature FOVP-5 is a drainage/swale that carries storm water runoff from the existing fire rescue operations facility into a jurisdictional drainage that flows roughly north to south, within the Diegan coastal sage scrub, approximately 149 ft east of the existing fire rescue air operations facility (Figure 3). Feature FOVP-5 did not have any vernal pool indicator plant species present during the surveys. Feature FOVP-17 was a shallow depression (less than 2 cm) that retained water after a large rain event, but dried out quickly. This feature did not contain any vernal pool indicator species and was not observed again in the survey period. Survey area photographs are provided in Appendix A. Below are the results for the 2018/2019 wet and dry season surveys. Results from the 2017/2018 wet and dry season surveys are incorporated into the result and those pools were not sampled during the 2018/2019 wet season.

3.1 Wet Season Surveys

All 27 surveying features remained inundated for at least one surveying event. After surveying 27 features, 19 of the 27 features were observed as being occupied by SDFS (Figure 3). SDFS were not detected in FOVP-16, FOVP-17, FOVP-20, FOVP-21, FOVP-22, FOVP-24, and FOVP-25; these features only held water long enough to be sampled one time. A summary of feature sampling is provided in Table 3.

Table 3. Summary of 2017-2019 Wet Season Fairy Shrimp Survey Results

Feature Number	Type of Feature	Fairy Shrimp Species	Estimated Number of individuals	Additional Notes
FOVP-1	Pool	SDFS	>10,000	SDFS detected during the2017/2018 wet season. No more sampling occurred. SDFS visually observed during 2018/2019 wet season.
FOVP-2	Pool	SDFS	10-100	SDFS detected during the 2017/2018 wet season. No more sampling occurred. SDFS visually observed during 2018/2019 wet season.
FOVP-3	Pool	SDFS	0-10	SDFS detected during the 2017/2018 wet season. No more sampling occurred. SDFS visually observed during 2018/2019 wet season.
FOVP-4	Pool	SDFS	1-10	SDFS detected during the 2018/2019 wet season. No more sampling occurred.
FOVP-5	Swale	None	N/A	No fairy shrimp detected during wet season surveys.

Feature Number	Type of Feature	Fairy Shrimp Species	Estimated Number of individuals	Additional Notes
FOVP-6	Pool	SDFS	10-100	SDFS detected during the 2018/2019 wet season. No more sampling occurred.
FOVP-7	Pool	SDFS	10-100x	SDFS detected during the 2018/2019 wet season. No more sampling occurred.
FOVP-8	Pool	SDFS	100-1000	SDFS detected during the 2018/2019 wet season. No more sampling occurred.
FOVP-9	Pool	SDFS	10-100	Cyst were detected during 2018 dry season sampling. No shrimp detected during wet season sampling. Cyst assumed to be SDFS.
FOVP-10	Pool	SDFS	100-1000	SDFS detected during the 2018/2019 wet season. No more sampling occurred.
FOVP-11	Pool	SDFS	10-100	SDFS detected during the 2018/2019 wet season. No more sampling occurred.
FOVP-12	Pool	SDFS	100-1000	SDFS detected during the 2018/2019 wet season. No more sampling occurred.
FOVP-13	Pool	SDFS	1000-5000	SDFS detected during the 2018/2019 wet season. No more sampling occurred.
FOVP-14	Pool	SDFS	100-1000	SDFS detected during the 2018/2019 wet season. No more sampling occurred.
FOVP-15	Pool	-	-	Merged with FOVP 14.
FOVP-16	Pool	None	N/A	No fairy shrimp detected during wet season surveys.
FOVP-17	-	None	N/A	No fairy shrimp detected during wet season surveys.
FOVP-18	Pool	SDFS	1000-5000	SDFS detected during the 2018/2019 wet season. No more sampling occurred.
FOVP-19A	Pool	SDFS	100-1000X	SDFS detected during the 2018/2019 wet season. No more sampling occurred.
FOVP-19B	Pool	SDFS	100-1000X	SDFS detected during the 2018/2019 wet season. No more sampling occurred.
FOVP-20	Pool	None	N/A	No fairy shrimp detected during wet season surveys.
FOVP-21	Pool	None	N/A	No fairy shrimp detected during wet season surveys.
FOVP-22	Pool	None	N/A	No fairy shrimp detected during wet season surveys.

Feature Number	Type of Feature	Fairy Shrimp Species	Estimated Number of individuals	Additional Notes
FOVP-23	Pool	SDFS	10-100	SDFS detected during the 2018/2019 wet season. No more sampling occurred.
FOVP-24	Pool	None	N/A	No fairy shrimp detected during wet season surveys.
FOVP-25	Pool	None	N/A	No fairy shrimp detected during wet season surveys.
FOVP-26	Pool	SDFS	1000X	SDFS detected during the 2018/2019 wet season. No more sampling occurred.

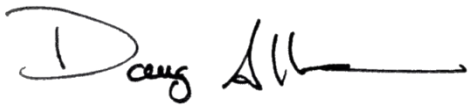
*N/A - Not Applicable

4.0 DISCUSSION

SDFS 2017/2018 wet and dry season surveys and 2018/2019 wet season surveys resulted in the detection of SDFS in 19 of 27 features found within the survey area. The proposed project will directly impact 6 features, 5 of which were identified to be occupied by SDFS. An additional 14 features occupied by SDFS were found adjacent to the project area. To prevent possible indirect impacts to these adjacent features, implementation of mitigation measures consistent with the City's VPHCP will be required.

5.0 CERTIFICATION

I certify that the information in this survey report and attached exhibits fully and accurately represent our work.



Doug Allen, Environmental Biologist III
(Permit No. TE-837488-7)

6.0 REFERENCES

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APPENDIX A

2018/2019 Photo Log

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APPENDIX A
2018/2019 PHOTOS

FOVP-1

	11/30/2018
	12/7/2018

	2/12/2019
	11/30/2018

	12/7/2018
	2/12/2019

FOVP-3

	11/30/2018
	2/5/2019

	2/19/2019
	3/29/2019

FOVP-4

	11/30/2018
	12/7/2019

	2/12/2019
	3/29/2019

	11/30/2018
	12/7/2019

	2/12/2019
	3/29/2019

FOVP-5 (Swale)

	6/25/2018
	1/8/2019

	2/19/2019
	3/29/2019

FOVP-6

	8/24/2018
	11/30/2018

	12/7/2018
	2/12/2019

	3/29/2019
	1/13/2019

	2/19/2019
	2/26/2019 In Vault Box

	2/26/2019

FOVP-7, FOVP-9, FOVP-14, FOVP-18

	11/30/2018
	12/7/2018

	12/11/2018
	2/12/2019

	3/29/2019
	12/14/2018 FOVP-14 100-1000

FOVP-8

	11/30/2018
	12/11/2018

	12/21/2018
	3/29/2019

FOVP-10, FOVP-11, FOVP-12

	11/30/2018 FOVP-10 FOVP-12
	12/7/2018 FOVP-10 FOVP-12

	12/11/2018 FOVP-10 FOVP-12
	3/29/2019 FOVP-10 FOVP-12

	12/11/2018 FOVP-10 FOVP-11 FOVP-1
	12/14/2018 FOVP-10 FOVP-11 FOVP-1

	2/12/2019 FOVP-10 FOVP-11 FOVP-1
	3/29/2019 FOVP-10 FOVP-11 FOVP-1

FOVP-13

	12/11/2018
	2/26/2019

	3/29/2019

FOVP-16

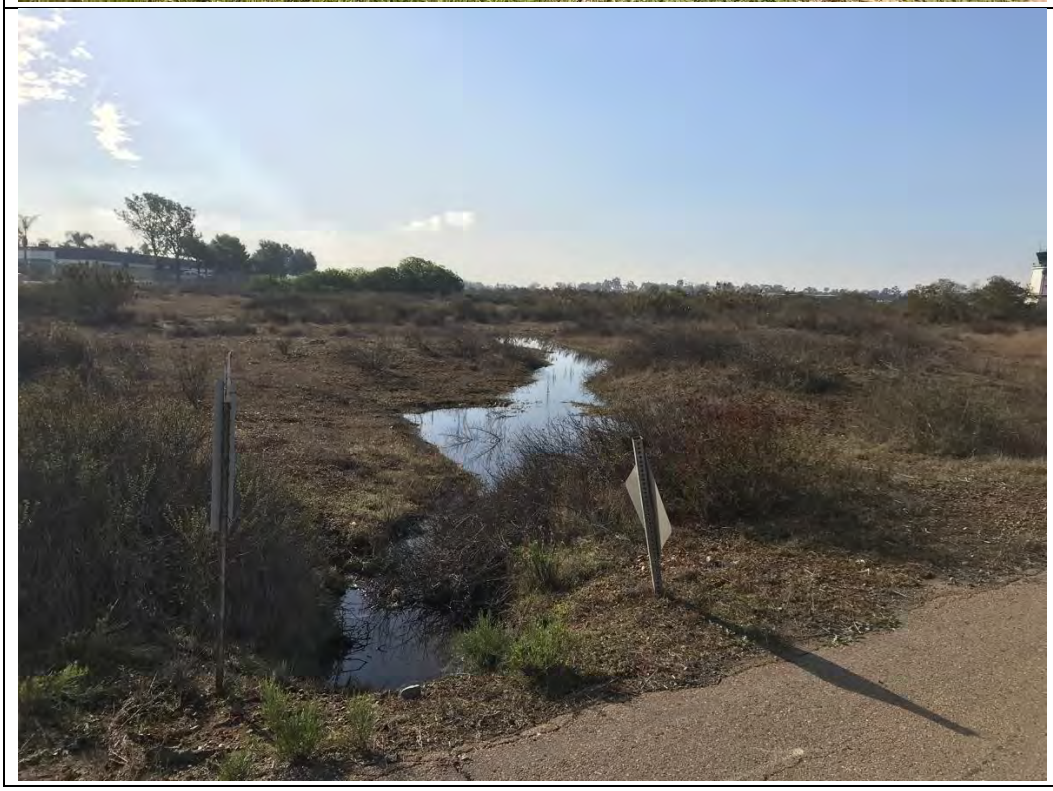
	12/8/2018
	12/11/2018

	2/12/2019
	3/20/2019

FOVP-19A & FOVP-19B

12/11/2018
FOVP-19A

2/26/2019
FOVP-19A

	3/29/2019 FOVP-19A
	12/11/2019 FOVP-19B

	2/26/2019 FOVP-19B
	3/29/2019 FOVP-19B

FOVP-21

	1/18/2019
	3/29/2019

FOVP-22

	2/26/2019
	3/5/2019

FOVP-23

	2/26/2019
	3/29/2019

FOVP-24

	2/26/2019
	3/5/2019

FOVP-25

2/26/2019

3/5/2019

FOVP-26

	2/26/2019
	3/5/2019

APPENDIX B

Sample Survey Data

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Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Fire Air Ops PH II	County: San Diego	Quad:	Township:	Range:	Section:

SURVEYOR / Permit Number: Doug; CINDY; SEAN

Date: 12/14/18 | Time: 13:00 | Weather Conditions: Mostly Cloudy

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
~~FOVP6~~		68°F	61°F	4"	6"	8 sq ft													Com Box - NONE
FOVP7		68°F	63°F	1/4"	1/2"	15 sq ft													1000 - 5000 Approx
FOVP10		68°F	62°F	1.5"	2"	21'x15'													1000X
FOVP 8		68°F	63°F	8"-10"	12"														1000X

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli)*.
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Fire Ops Phase II	County: San Diego	Quad:	Township:	Range:	Section:
SURVEYOR / Permit Number: Doug, Cindy, Sean					
Date: 12/21/18	Time: 9:35	Weather Conditions: 56°F, 100% cc, [redacted] 1–2 mph gust at 3–4			

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth ~~(cm)~~ in		Surface Area ~~(m x m)~~ (ft x ft)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
FOVP-8		56°	57°	2 in	4 in	60x40											X	standing water	SDFS present 1000 x
																			↑ more than last week

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Fire Op II	County: SD	Quad:	Township:	Range:	Section:

SURVEYOR / Permit Number: Doug Allen

Date: 12/28 | Time: 10:11 | Weather Conditions: 80% cc, 1-4 mph 52°F

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°F)		Depth (in)		Surface Area (ft)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air °F	Water °F	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			utility box
FOVP-6		62°	54°	2		2x4													
FOVP-4		62°	58°	tire 5-6 cut		39x30												3 days after rain	filled on 12/25 no sign of shrimp

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli).*
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: MYF - FIRE-OPS	County: SD	Quad:	Township:	Range:	Section:

SURVEYOR / Permit Number: DOUG ALLEN / SEAN PAIGE

Date: 1/14/19 Time: 9:30am Weather Conditions: Cloudy - light rain - 59°F

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°F)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
FOVP-4		59	52	6	8	40x54		BRSH										D	SDFS 1-10; Pulled 1 for ID
FOVP-6		59	53	2.5	6	50x10									X			D	Comm. Box - 3-Foot Deep

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool: UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed: G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: MYF - Rincons | **County:** San Diego | **Quad:** | Township: | Range: | Section:

SURVEYOR / Permit Number: Doug; Sean; Cindy

Date: 24 Jan 19 | **Time:** 9:30am | **Weather Conditions:** Cloud Cover 40%; 60°F wind 0-10

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C) Air	Temp (°C) Water	Depth (cm) Average	Depth (cm) Est. Max.	Surface Area (m x m) Present	Surface Area (m x m) Est. Max.	Crustaceans: Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Insects: Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae	Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
FDVP-16		60°F	59°F	<3cm	4cm	7'x13'				X	X								
FDVP-17		[illegible]	62°F	1cm	1.5cm	30'x18'													
FDVP-9		63°F	61°F	3.5cm	4.5cm	25'x11'				X									Connected to FDVP-7
FDVP-7		65°F	61°F	4cm	5.5cm	45'x50'		BRSD		X									10-100X
FDVP-14/15		66°F	61°F	3cm	4cm	66'x32'		BRSD		X									100X - overlapping [illegible]
FDVP-19		68°F	62°F	3cm	4cm	33'x52'		BRSD		X									10-100X
FDVP-12		64°F	63°F	3cm	4cm	85'x15'		BRSD		X	X								100X
FDVP-10																			Visual - Shrimp Observed
FDVP-11		72°F	64°F	3cm	4cm	85'x3'				X	X								
FDVP 12		74°F	63°F	15cm	25cm	200'x40'		BRSD		X	X						X		Culvert Connects 100-1000X
FDVP-13		74°F	63°F	5cm	12cm	30x60		BRSD											100X
FDVP-4		75°F	71°F	3.5cm	7cm	68'x12'		BRSD		X	X								1/10

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLi = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: MYF-FIRE	County: SD	Quad:	Township:	Range:	Section:

SURVEYOR / Permit Number: Sean + Doug

Date: 21 Jan 19	Time: 4:00 pm	Weather Conditions: Partly Cloudy ~25%, 57°F

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
FOVP 6		57F	52F	2.5cm	4cm	6x20'		[illegible]		X									1-10; Pulled 1 from 8x8 x 3 ft deep

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep: AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Fire OPS - MYF | **County:** San Diego | **Quad:** | **Township:** | **Range:** | **Section:**

SURVEYOR / Permit Number: Steve / Dave

Date: 26 Feb 19 | **Time:** 7:15am | **Weather Conditions:** Partly cloudy/HAZE (40%) 45°F Wind 0-5mph

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C)		Depth (cm)		Surface Area (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
FOVP-9		46°F	49°F	.5cm	1cm	5'x1'									X LARVAE				
FOVP-20		49°F	51°F	2.5cm	5cm	10'x10'				X									
FOVP-21		49°F	52°F	2.5cm	6cm	8'x10'				X									
FOVP-22		50°F	51°F	2.5cm	6cm	10'x4'				X									
FOVP-23		52°F	56°F	6cm	12cm	80'x20'		SSD		X									10-100
FOVP-24		54°F	56°F	1cm	3cm	3'x6'													
FOVP-25		55°F	54°F	2cm	5cm	12'x12'													
FOVP-26		55°F	50°F	5cm	12cm	40'x30'		SSD		X									1000-5000

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Montgomery-Gibbs Executive Airport: Fire-Rescue Air Operations Facility Hangers and Helicopter Parking Pad Project, San Diego, California

Fairy Shrimp Surveys: 2017/2018 Wet and Dry Season Survey Report

WGS # S-18007

September 2018

Prepared for:
City of San Diego

Prepared by:
Real Estate Assets Department
Airports Division
3750 John J. Montgomery Drive
San Diego, Ca 92123
858.573.1446

Prepared By: _____
Cindy Dunn, Environmental Biologist III

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EXECUTIVE SUMMARY

The City of San Diego is proposing to construct a new, permanent Fire Rescue Air Operations Facility (Project) at Montgomery-Gibbs Executive Airport (MYF). The facility will accommodate the emergency helicopters for the crews that will provide 24 hour on-call services 365 days per year. The project area would be approximately 3.035 acres, and the project would result in 1.99 acres of new impervious surfaces, including the hangars, fueling stations, heli-tender storage buildings, concrete aprons, ramps, vehicle parking, and a helicopter parking pad to accommodate a S-70A Firehawk. The proposed project is located completely within the existing the active MYF airfield and is outside of, but adjacent to the City's Multi-Habitat Planning Area (MHPA) boundary.

The purpose of the surveys was to determine the current status and location of listed fairy shrimp. The areas where the surveys were performed include nine basins with the potential to support standing water, which would provide potential habitat for fairy shrimp. Previous surveys of MYF have documented the presence of the federally endangered San Diego fairy shrimp (*Branchinecta sandiegonensis*; SDFS). This report presents the results of the 2017/2018 wet and dry season surveys.

SDFS were detected in three of the nine basins during the wet season sampling. Only *Branchinecta* sp. fairy shrimp cysts were detected in two more basins during the dry season sampling. The remaining four basins did not have cysts present.

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1.0 INTRODUCTION

This report presents the findings of the wet and dry season fairy shrimp survey conducted for the Montgomery-Gibbs Executive (MYF) Airport Fire Rescue Air Operations Facility Hangers and Helicopter Parking Pad Project (Project), located in the City of San Diego, California (Figure 1 and 2).

U.S. Fish and Wildlife (FWS) protocol fairy shrimp surveys were conducted to determine the current status of listed fairy shrimp in nine basins located within and immediately adjacent to the proposed Project. These basins had been reported as having the potential to support standing water, potential habitat for fairy shrimp. This report presents the results of the 2017/2018 wet and dry season surveys for the nine basins.

1.1 Project Area

The Project is located on MYF, immediately east of State Route 163 (SR-163), north of Aero Drive, and South of Balboa Avenue, in the Kearny Mesa Community Planning Area (Council District 6) (City of San Diego 1997). Within the airfield the Project site is located, northern of runways 28R, east of Taxiway C, and north of the air traffic control tower (Figure 3). The project is located adjacent to the City of San Diego Multiple Habitat Planning Area (MHPA) (City of San Diego 1997). The topography of the survey area is relatively flat. It is developed with the current Fire-Rescue Air Operations, associated buildings, and parking areas. Areas of undeveloped land occur between Taxiway Charlie, and the existing air operations structures, within the project footprint (Figure 3). Vegetation communities documented within the vicinity of the study area include non-native grassland, disturbed habitat, developed, San Diego Mesa Claypan Vernal Pools, and Diegan coastal sage scrub (Holland 1986, as modified by Oberbauer et al. 2008). A small drainage, that flows north to south, occurs approximately 149 feet (ft) east of the existing fire rescue air operations facility.

According to the City of San Diego's Vernal Pool Habitat Conservation Plan (City of San Diego 2017) the presence of vernal pools has been recorded adjacent to the project footprint. Focused, seasonally-appropriate protocol surveys for federally listed fairy shrimp species were performed within the Project Area and includes a 100-foot buffer. All topographically appropriate areas that appeared likely to support vernal pools were mapped using the Collector Application for ArcGIS and an EOS Arrow Lite GPS receiver, if observed during project surveys.

1.2 Background

The Project consists of the construction of a new, permanent Fire Rescue air operations facility at MYF. This facility will provide new hangar space and a concrete apron to accommodate five helicopters, parking, and shelter for a single Heli-tender and two fueling tender vehicles. The total area of new hangar space will be approximately 32,000 square feet (sf). The new hangar space includes a hangar support area for maintenance offices, overhaul, avionics and storage rooms. The new apron area will be approximately 65,000 sf of 5000 per square inch (psi) concrete. The project includes two above-ground fuel storage tanks, each with a 12,000-gallon capacity (24,000 gallons total).

The Parking Pad portion of the Project will provide a new concrete parking pad to accommodate a S-70A Firehawk. The parking pad will be 14,400 sf (120 ft x 120 ft) of 5,000 psi concrete, with a 30-ft border of 2-inch crushed rock on the north and east ends, totaling approximately 8,100 sf. The crushed rock buffer is for dust control due to rotor downwash from the Fire Rescue aircraft.

The staging area for the project will be placed on existing paved and/or disturbed area. The designed size of the staging area is approximately 4,000 sf. In addition to the hangars and concrete apron, the project will also address any damages to the existing access road, from Ponderosa Avenue, sustained from construction activities. The rehabilitation of the existing access road will include a two-inch overlay of asphalt material in any areas deemed necessary and not impact any undisturbed areas.

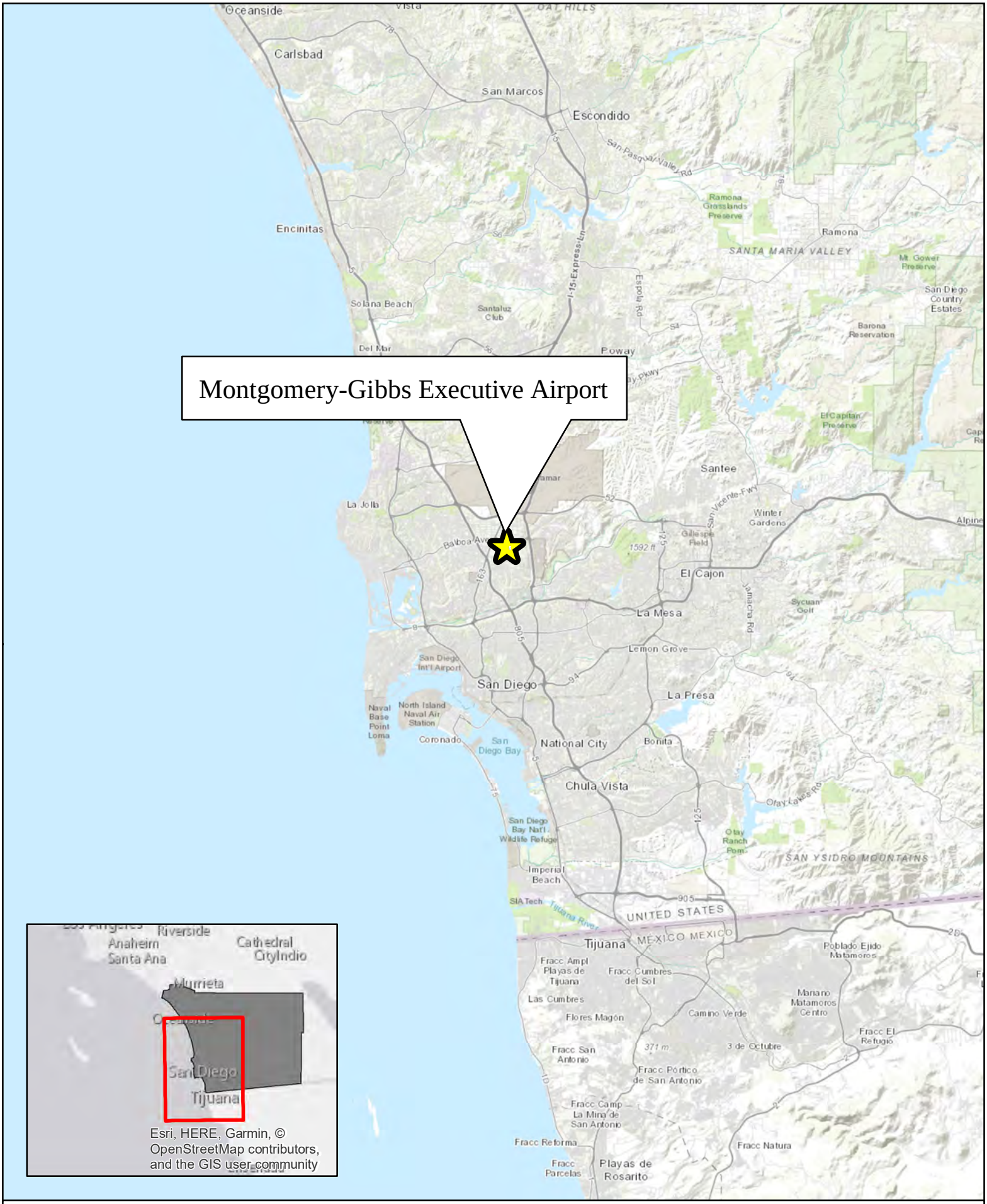
The total project area would be approximately 3.035 acres, and the project would result in 1.99 acres of new impervious surfaces.

In total, four basins within the project foot print, and five basins located immediately adjacent to the project location and within the 100-foot buffer, were the focus of wet and dry season surveys during the 2017/2018 survey season (Figures 3 & 4). The results of these surveys are discussed in detail below.

1.3 Species Information

San Diego fairy shrimp (*Branchinecta sandiegonensis*; SDFS) was listed as endangered by the United States Fish and Wildlife Service on February 3, 1997 (USFWS 2012) and is a Vernal Pool Habitat Conservation Plan- and MSCP-covered species. A member of the family Brachinectidae and order Anostraca, immature fairy shrimp exist in the soil of vernal pools and other non-vegetated ephemeral pools (2-12 inches in depth) in a dormant state known as a cyst until the pool is inundated with season precipitation. The juvenile fairy shrimp

reach maturity within 7-14 days of rainfall filling the pool and measure approximately 16 millimeters in length with 11 pairs of legs. After mating the eggs are laid and remain as a cyst in the soil until the next inundation (Eriksen and Belk 1999). Development of the species is closely tied to water temperature and chemistry along with a host of other environmental cues. Seasonal rainfall between January and March typically triggers the hatching of fairy shrimp cysts (Simovich and Hathaway 1996).



0 3 6 12 Miles

1:380,000

Figure 1
Regional Location
San Diego Fire Rescue Facility Branchiopod Surveys

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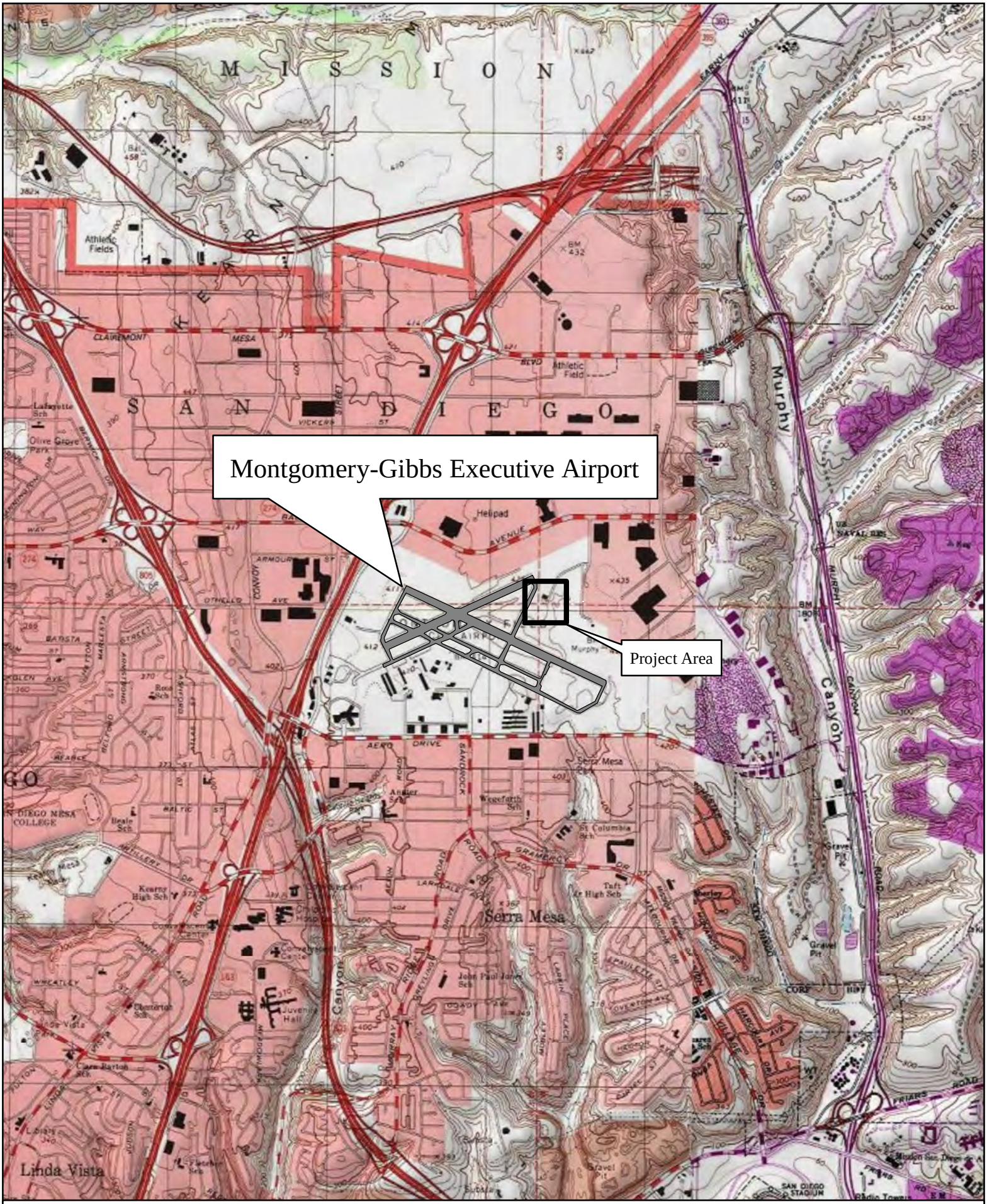

Figure 2
Project Vicinity
San Diego Fire Rescue Facility Branchiopod Surveys

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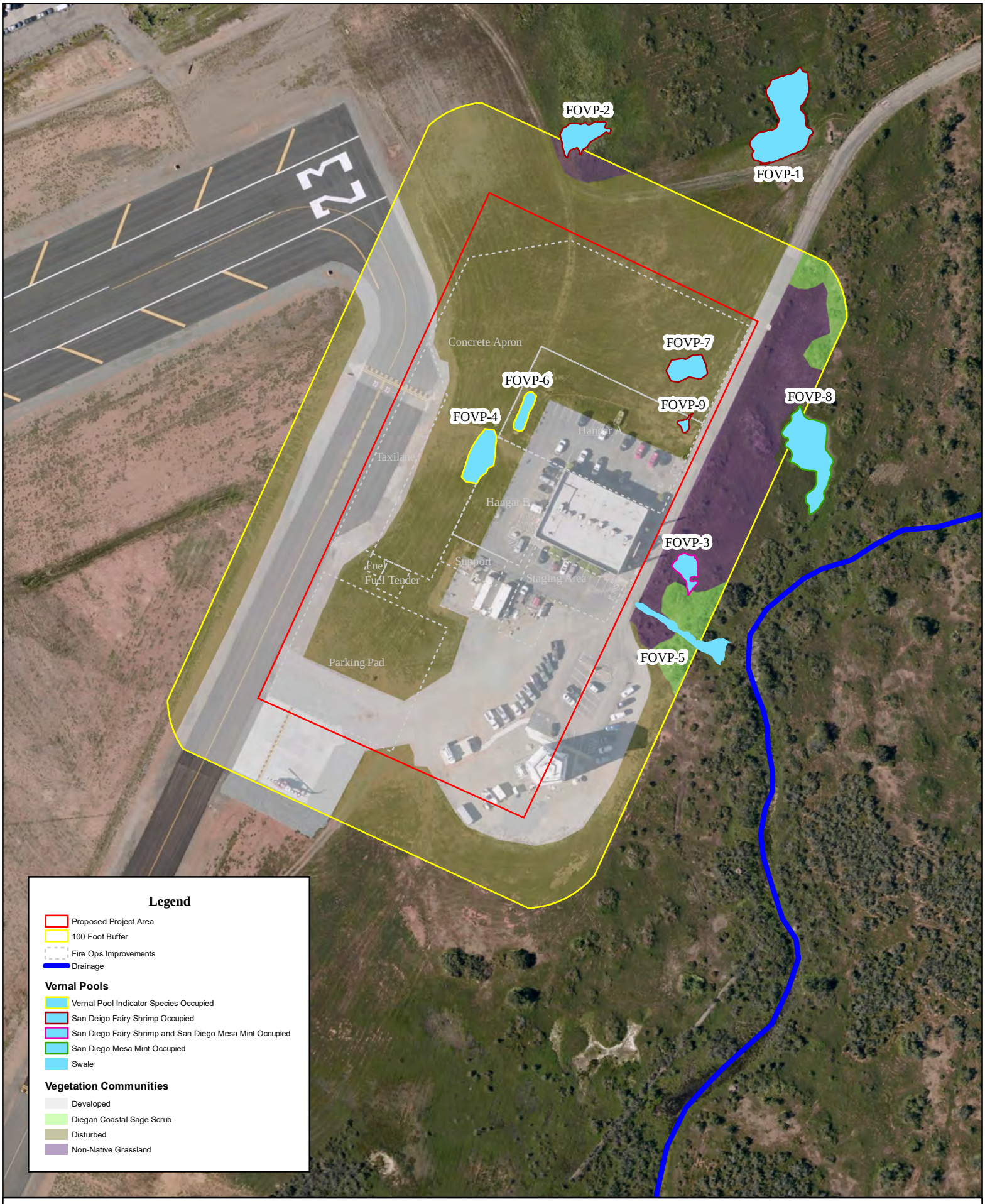

Figure 3
Wet Season Surveys
San Diego Fire Rescue Facility Branchiopod Surveys

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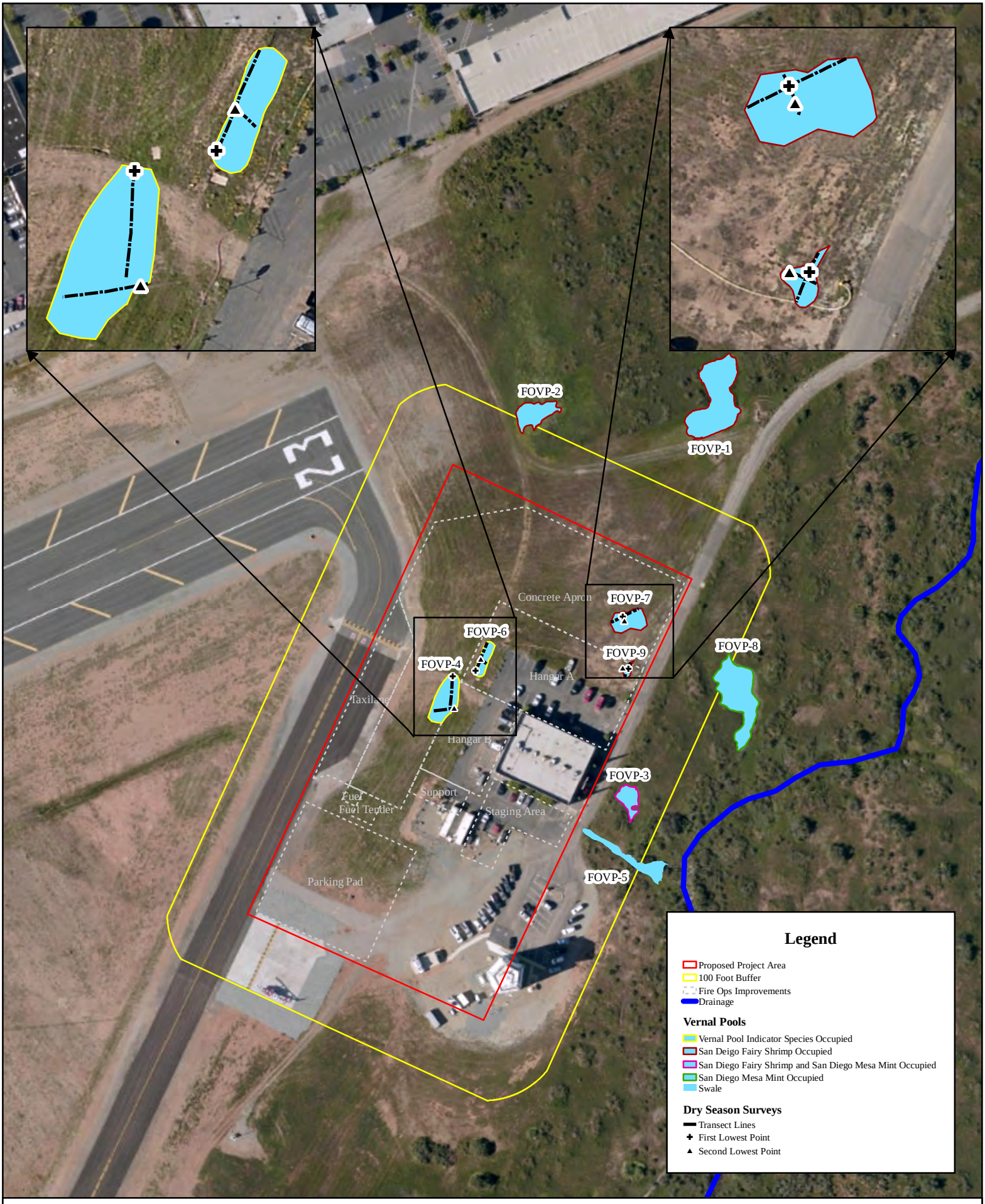

0 87.5 175 350 Feet

1:1,800

Figure 4
Dry Season Surveys
San Diego Fire Rescue Facility Branchiopod Surveys

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2.0 METHODS

All fairy shrimp surveys were conducted in accordance with the *Survey Guidelines for the Listed Large Branchiopods* (USFWS 2015). Prior to initiating the surveys, pre-notification letters were sent to the U.S. Fish and Wildlife Service-Carlsbad Field Office requesting permission to conduct protocol wet and dry season surveys for the presence of listed fairy shrimp. When FWS permission was granted, permitted biologist Doug Allen (TE-837448-7) conducted wet season and dry season soil sampling surveys, assisted by airport biologist, Cindy Dunn. Mr. Allen processed the dry season soil samples after collection.

Table 1.
2017-2018 Precipitation (NWS 2018)

Rain Event Date	Precipitation Total in inches*
11/1/2017	0.01
11/27/2017	0.01
12/20/2017	0.07
1/8/2018	0.22
1/9/2018	1.68
1/10/2018	0.04
2/13/2018	0.02
2/21/2018	0.06
2/22/2018	0.02
2/27/2018	0.36
3/3/2018	0.14
3/11/2018	0.48
3/14/2018	0.02
3/15/2018	0.16
3/17/2018	0.23
3/18/2018	0.02
3/22/2018	0.01
5/1/2018	0.02
5/2/2018	0.04
Total Rainfall	**3.61**

*Weather Conditions For: San Diego, Montgomery Field, CA. KMYF (NWS/FAA-SGX)

The 2017/2018 wet and dry season protocol fairy shrimp surveys were conducted at the nine basins, identified within the project footprint and 100-foot buffer (Figures 3 & 4), to identify which basins currently support listed fairy shrimp species. During the wet season surveys, the basins were examined for live fairy shrimp, and if observed, shrimp were collected and identified

to species level. If the presence of a listed species was confirmed, no additional sampling occurred for that basin. The field surveys commenced in January 2018 and were considered complete in July 2018. Wet season surveys were conducted from January 2018 to March 2018. In July 2015, after the wet season and once soils were dry, dry season sampling was conducted. Table 1 provides the sampling visits and associated activities. Below are brief descriptions of the wet and dry season survey methods.

Table 2.
Sampling Visits for the Fire Rescue Air Operations Fairy Shrimp Surveys

Date	Survey Number	Activity
January 10, 2018	0	Checked for ponding after rain event; ponding observed.
January 17, 2018	1	Sampled inundated basins.
January 24, 2018	2	Continued to sample inundated basin.
February 28, 2018	3	Checked for ponding after rain event; ponding observed.
March 7, 2018	4	Sampled inundated basins.
March 12, 2018	5	Checked for ponding after rain event; ponding observed.
March 19, 2018	6	Sampled inundated basins.
July 11, 2018	7	Conducted dry season sampling survey.
July 16, 2018	8	Conducted dry season sampling survey.
July 23, 2018	9	Conducted dry season sampling survey.

2.1 Wet Season Surveys

Wet season sampling commenced after the first significant rainfall of the 2017/2018 rainfall season on January 9, 2018 (Table 1). The biologists visited pools after storm events of at least one third of an inch to document when a pool was inundated (held more than 3 centimeters of standing water). Early site visits assessed the water levels within the basins to determine when they were inundated. After inundation, pools were visited once every week until the pools were no longer inundated. The purpose of these site visits was to assess the growth of fairy shrimp, as well as to evaluate if pools that had become dry were refilling after late season rain events. Surveys were reinitiated if pools refilled to above 3 cm. During each visit, portions of the pool bottom, edges and the vertical water column were sampled using a seine, dip net or aquarium net appropriate for the size of the pool. Mesh size was no larger than 1/8 inch. Sampling tools were examined and emptied at each basin. Voucher specimens of all listed vernal pool

branchiopods captured, if present, were collected and all other specimens were returned to the pool.

Voucher specimens were collected only once for each individual basins or feature sampled during a single wet season. No more than 20 specimens or less than 50% of the estimated population present in the water column were collected from each individual basin for feature during the 2017/2018 wet season survey. Voucher specimens were identified to species level using a dissecting microscope (AmScope SM-2BT, 0.7-4.5X). Voucher specimens were stored in screw-cap glass vials containing 90% ethyl alcohol. These species will be submitted to an FWS approved institution. If a federally-listed fairy shrimp was recovered from any of the basins during the wet season sampling, the fairy shrimp survey for that basin was considered completed under the protocol guidelines.

2.2 Dry Season Surveys

Dry season soil sampling was conducted on July 11, 2018. Of the nine basins surveyed for the 2017/2018 wet season, only those basins located directly within the proposed project footprint, that did not already produce fairy shrimp during the wet season surveys, were dry season soil sampled. Approximately 50 milliliter (ml) of dry soil was collected every meter along two transects that intersected with the two deepest points of each basin. The size and shape of the pools determine the amount of soil collected per basin (Figure 4). Samples were taken starting at the deepest portion of the basin and radiated along the transect to the edge, every meter. Each sample was stored in a separate bag and labeled with the basin identification number, date of collection, person collecting the soil sample, and the specific location within the basin from where it was taken.

Soil samples were processed per the U.S. Fish and Wildlife Service (FWS) May 31, 2015 Survey Guidelines for Listed Large Branchiopods (USFWS 2015). Doug Allen, who is authorized by the FWS to process dry samples for the presence of fairy shrimp cysts and culture cysts to identify to species level as special conditions of their 10(a)(1)(A) permits, conducted the soil processing. The dry soil samples were hydrated in filtered water and table salt (5% brine solution) for approximately 1 hour and was gently broken down by hand to reduce any persistent soil structures.

To ensure cysts would not be damaged, small aliquots (approximately 50 ml) of soil were gently washed with water through a graded series of U.S. standard eight-inch soil sieves ending in mesh sizes 300 micron (um) and 150 um. The sieves were thoroughly rinsed and visually inspected for cysts that may have adhered to the sieves for each soil sample location. Once the samples were sieved from the 300 um and 150 um sieves, they were examined under a dissecting microscope (AmScope SM-2BT, 0.7-4.5X) for the presence of cysts. This was done for each individual soil

sample. Any cysts found were removed from the soil and allowed to air-dry to be stored dry. The cysts were identified to genus level. All cysts were identified as *Branchinecta* sp. No cysts were hatched as the client assumed the cysts were SDFS, which is known to occur on MYF (City of San Diego 2017) and was already identify in pool adjacent to the proposed project site.

3.0 RESULTS

The eight of the nine basins surveyed during the 2017/2018 wet and dry seasons were all vernal pools with the indicator plant species (USACE 1997) wooly marbles (*Psilocarphus brevissimus*) present. Basin FOVP-5 is a drainage/swale that carries storm water runoff from the existing fire rescue operations facility into a jurisdictional drainage that flows roughly north to south, within the Diegan coastal sage scrub, approximately 149 ft east of the existing fire rescue air operations facility (Figure 3). Basin FOVP-5 did not have any vernal pool indicator plant species present during the surveys. Survey area photographs are provided in Appendix A. Below are the results for the 2017/2018 wet and dry season surveys.

3.1 Wet Season Surveys

After surveying the nine basins, only five basins (FOVP-1, FOVP-2, FOVP-3, FOVP-4, and FOVP-5) held water long enough to sample (Figure 3). The remaining four basins (FOVP-6, FOVP-7, FOVP-8, and FOVP-9) did not hold water long enough during the wet season. SDFS were observed swimming in three of these five basins (FOVP-1, FOVP-2, FOVP-3) during wet season surveys. A summary of basin sampling is provided in Table 3.

Table 3.
Summary of Wet Season Fairy Shrimp Survey Results

Basin Number	Type of Basin	Fairy Shrimp Species	Estimated Number of individuals	Additional Notes
FOVP-1	Pool	SDFS	>10,000	SDFS detected during the wet season. No more sampling occurred.
FOVP-2	Pool	SDFS	10-100	SDFS detected during the wet season. No more sampling occurred.
FOVP-3	Pool	SDFS	0-10	SDFS detected during the wet season. No more sampling occurred.
FOVP-4	Pool	None	N/A	No fairy shrimp detected during wet season surveys.
FOVP-5	Swale	None	N/A	No fairy shrimp detected during wet season surveys.
FOVP-6	Pool	None	N/A	Did not hold water; therefore, no sampling occurred.
FOVP-7	Pool	None	N/A	No fairy shrimp detected during wet season surveys.
FOVP-8	Pool	None	N/A	Did not hold water; therefore, no sampling occurred.
FOVP-9	Pool	None	N/A	Did not hold water; therefore, no sampling occurred.

*N/A - Not Applicable

3.2 Dry Season Surveys

After sampling the four basins located specifically within the project impact area (FOVP-4, FOVP-6, FOVP-7 and FOVP-9), only two basins (FOVP-7 and FOVP-9) had only *Branchinecta* sp. cysts present. The remaining two basins (FOVP-4 and FOVP-6) did not have any fairy shrimp cysts. The City of San Diego assumes that the cysts found in FOVP-7 and FOVP-9 are of the federally endangered SDFS since that is the only species of fairy shrimp currently known to exist on MYF. To ensure the negative finding of cysts in basins FOVP-4 and FOVP-6, additional soil samples were collected on July 16 and 23, and analyzed. No cysts were found in these additional samples. A summary of the 2018 dry season sampling is provided in Table 4.

Table 4.
Summary of Dry Season Fairy Shrimp Survey Results

Basin Number	Type of Basin	Number of Sample points	Fairy Shrimp Species	Estimated Number of Cysts	Additional Notes
FOVP-4	Pool	27	N/A	N/A	No cysts were present.
FOVP-5	Swale	N/A	N/A	N/A	This swale exists well outside of the project footprint and will not be impacted by construction activities. To avoid unnecessarily impacted a listed species this swale was not sampled.
FOVP-6	Pool	25	N/A	N/A	No cysts were present.
FOVP-7	Pool	11	SDFS	26	Cysts were present during dry season sampling. It is assumed that they are SDFS, therefore cysts were not hatched.
FOVP-8	Pool	N/A	N/A	N/A	This pool exists well outside of the project footprint and will not be impacted by construction activities. To avoid unnecessarily impacted a listed species this pool was not sampled.
FOVP-9	Pool	8	SDFS	14	Cysts were present during dry season sampling. It is assumed that they are SDFS, therefore cysts were not hatched.

*N/A = Not Applicable

4.0 DISCUSSION

SDFS were detected during wet season sampling in three of the nine basins. *Branchinecta* sp. fairy shrimp cysts were detected in two additional basins during dry season sampling. The City of San Diego will assume that any cysts found during these surveys are the endangered SDFS, as this is historically the only fairy species known to occur on MYF. The remaining four basins did not have cysts present. Below are discussions of the wet and dry season surveys.

Wet Season Surveys

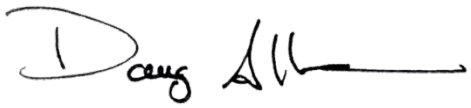
Four basins (FOVP-1, FOVP-2, FOVP-3, FOVP-4) became inundated during the wet season. Early in the wet season, FOVP-1, FOVP-2, and FOVP-3 were sampled once on January 10, 2018. The following week FOVP-1 remained inundated and was sampled a second time on January 17, 2018. FOVP-4 and FOVP-5 were sampled after on March 12, 2018. SDFS were documented in basins FOVP-1, FOVP-2, and FOVP-3.

Dry Season Surveys

Dry season surveys followed the wet season surveys. Basins FOVP-7 and FOVP-9 had cysts present; Basins FOVP-4 and FOVP-6 did not have cysts present. Basins FOVP-5 and FOVP-8 were not surveyed during the dry season because these basins were located within the buffer of the impact area and would not be directly impacted by construction activities. To prevent possible indirect impacts to basins FOVP-5 and FOVP-8 will be mitigated through the use of BMPs, orange construction fencing, and biological monitoring during construction.

5.0 CERTIFICATION

I certify that the information in this survey report and attached exhibits fully and accurately represent our work.



Doug Allen, Environmental Biologist III
(Permit No. TE-837488-7)

6.0 REFERENCES

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APPENDIX A

2018 Photo Log

	Photo 1 Basin FOVP-1 Facing West Photographer: C. Dunn January 17, 2018
	Photo 2 Basin FOVP-2 Facing Northeast Photographer: C. Dunn January 17, 2018
	Photo 3 Basin FOVP-3 Facing Northeast Photographer: C. Dunn January 17, 2018

	Photo 4 Basin FOVP-4 Facing Northwest Photographer: C. Dunn March 19, 2018
	Photo 5 Basin FOVP-5 Facing Northwest Photographer: C. Dunn March 19, 2018

	Photo 6 Basin FOVP-6 Facing Southwest Photographer: C. Dunn August 24, 2018
	Photo 7 Basin FOVP-7 Facing Northeast Photographer: C. Dunn August 24, 2018
	Photo 8 Basin FOVP-9 Facing Northeast Photographer: C. Dunn August 24, 2018

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APPENDIX B

Survey Sampling Data

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Fire Ops Facility	County: San Diego	Quad:	Township:	Range:	Section:

SURVEYOR / Permit Number: Doug Allen

Date: 1/17/18 | Time: 1410 | Weather Conditions: 77°F, High haze, 45% cc, 2-5 mph

Feature ID #	UTM (Northing, Easting, Datum)	Temp °F		Depth (cm)		Surface Area ft (~~m~~)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
FOVP - 1		77	77	7.5	20	75x86	150x100											dark pool	film on surface >100's FS Present/collected
FOVP - 2		68	75	5	10	15x20	30x40												10-100 FS present/collected
FOVP - 3		71	77	5	15	18x22	25x40												0-10 FS present/collected

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli)*.
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Fire Ops facility	County:	Quad:	Township:	Range:	Section:
SURVEYOR / Permit Number: Doug Allen					
Date: 1/24/18	Time: 1130	Weather Conditions: 87°, 10% cc, 2-4 mph			

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°C) °F		Depth (cm)		Surface Area (sq ft) (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
FOVP-1		86°	84°	4-7	20	33 x 15	150 x 100				✓								FS present collected >10000

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli)*.
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Appendix 1. U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods

Site or Project Name: Fire Ops Facility [redacted] **County:** SD **Quad:** **Township:** **Range:** **Section:**

SURVEYOR / Permit Number: Doug Allen

Date: 3/19/18 Time: 1:45 p Weather Conditions: 70°F [redacted] <10% cc, 2–8 mph

Feature ID #	UTM (Northing, Easting, Datum)	Temp (°F)		Depth (cm)		Surface Area ft (m x m)		Crustaceans					Insects				Platyhelminths (flatworms)	Habitat Condition	Notes / Voucher information
		Air	Water	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera	Diptera Culicidae	Diptera Chironomidae			
Fovp-4		70	82	5	7-8	30x20	522 gps											Mosquito Larvae	No FS
Fovp-5		70	82	3-7	1ft	[redacted] ←	3x2 3x1 9x3.5			✓								Mosquito Larvae	No FS

Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Abbreviations: Use first two letters of genus and species name (e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahli*).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

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APPENDIX E

VERNAL POOL HABITAT CONSERVATION PLAN

CONSISTENCY ANALYSIS

Vernal Pool Habitat Conservation Plan - Minor Amendment

Consistency Analysis

for

Fire-Rescue Air Operations – Phase II

Prepared for

U.S. Fish and Wildlife Service

California Department of Fish and Wildlife

City of San Diego – Planning Department MSCP

Prepared by

City of San Diego - Public Works Department

Senior Planner/Biologist: Sean Paver

December 17, 2018

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Tables

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1. Introduction

The City of San Diego (City) in partnership with U.S. Fish and Wildlife Service (USFWS) and California Department of Wildlife (CDFW), has entered into a planning agreement to protect, enhance, and restore vernal pool resources within the City's jurisdiction, while improving and streamlining the environmental permitting process for impacts to threatened and endangered species associated with vernal pools. The Vernal Pool Habitat Conservation Plan (VPHCP) allows for limited impacts to the seven covered species, from covered projects, while mandating the conservation and management of the covered species and their habitats in perpetuity.

During development of the VPHCP, a Minor Amendment Process was developed for the two airports owned and operated by the City; Montgomery-Gibbs Executive Airport and Brown Field Airport. The Minor Amendment Process would allow for impacts to vernal pool and VPHCP covered species located within the legal boundaries of the airport properties while meeting health and safety requirement of the airports.

For the Minor Amendment, the VPHCP requires submittal of the project to USFWS and CDFW for review to determine if the project is consistent with the VPHCP. The consistency determination would be based on the VPHCP; the Vernal Pool Maintenance and Monitoring Program (VPMMP); Multiple Species Conservation Program (MSCP); and the City's ESL and Biology Guidelines. Once it is determined the project is consistent with the VPHCP, the Wildlife Agencies will provide a Letter of Concurrence and the project will proceed in accordance with the VPHCP approval of a Minor Amendment.

2. Background

The City is proceeding with a project located on Montgomery-Gibbs Executive Airport (Airport) that will impact vernal pool habitat and a VPHCP covered species. This project, Fire-Rescue Air Operations – Phase II (Project) proposes to redevelop the area around an existing building on the Airport to support the Fire Departments fleet of helicopters (Figure 1). Redevelopment would include the installation of concrete helicopter-pads, aircraft hangars, fuel tank, and maintenance room. The project location was chosen based on location of the existing Fire-Operation facility and existing heli-pad, and the need to locate additional air operation facilities adjacent to these facilities; the site was also initially identified as an area that would potentially avoid impacts to environmental resources.

a. Project Description

The Fire-Rescue Air Operations Phase II portion of this project will provide new hangar space and a concrete apron to accommodate five helicopters, parking and shelter for a single Heli-tender and two fueling tender vehicles. The total area of new hangar space will be approximately 32,000 SF, of which approx. 16,500 SF is existing disturbed and/or impervious area. The new hangar space includes a hangar support area for maintenance offices, overhaul, avionics and storage rooms. The new apron area will be approximately 65,000 SF of 5000 PSI concrete, of which approx. 9,300 SF is existing disturbed and/or impervious area. The project includes two above-ground fuel storage tanks, each with 12,000 gallon capacity (24,000 gallons

total). The staging area for the project will be placed on existing paved and/or disturbed area. The designed size of the staging area is approximately 4,000 SF. In addition to the hangars and concrete apron, the project will also address any damages to the existing access road, from Ponderosa Avenue, sustained from construction activities. The rehabilitation of the existing access road will include a two-inch overlay of asphalt material in any areas deemed necessary and not impact any undisturbed areas. The primary project area is located outside of the MHPA, the access road to the project site is located partially within the MHPA.

b. Potential Impacts

The proposed project area has historically been disturbed through a number of activities including, regular mowing to comply with FAA requirements, temporary parking, access roads, and utilities. The habitat within the project area is a combination of existing development and disturbed habitat. The entire airport is located on a relatively flat mesa top with predominately clay soils. The flat terrain and clay soils provide the ideal conditions for the development of vernal pools, as such the airport has a number of existing pools and road ruts found throughout. Our project area had no previously documented vernal pools within the footprint. Biological survey and monitoring performed for this project discovered 6 vernal pools within the project footprint. These pools are heavily disturbed and meet the City's definition of a vernal pool (at least 1 indicator species) with the presence of wooly marbles (*Psilocarphus brevissmus*) in all pools and prairie plantain (*Plantago elongata*) in one pool. Wet and dry season protocol surveys were performed within the project area and a 100-foot buffer for San Diego fairy shrimp. During the 2017/2018 wet season, one pool within the project footprint held water long enough to only conduct one wet season survey. The remaining pools within the project footprint did not hold water for the required duration for any surveys to be performed during the wet season. Dry season surveys were performed within the project footprint and identified fairy shrimp cysts in 2 of the 4 pools. The cyst were not hatched, but are assumed to be San Diego fairy shrimp based on the known presence of San Diego fairy shrimp in the immediate area, and no previous observations of variable fairy shrimp (*Branchinecta lindahli*) on the airport. Additional wet season surveys were initiated for the 2018/2019 wet season. The preliminary results from these surveys have identified two additional vernal pools within the project footprint, both observed with fairy shrimp. As a result, this project proposes to impact 6 vernal pools, totaling 0.0735 acres, four of which are occupied by San Diego fairy shrimp (Figure 2). The four pools with SDFS are heavily disturbed, and are located where parking of vehicles use to occur. No other VPHCP covered species were detected within the project footprint. This project will also impact Spreading navarretia Critical Habitat; no spreading navarretia have be detected on the airport. A Biological Technical Report has been prepared for this project, and additional details beyond those discussed here can be found within the report.

c. Mitigation

To offset impacts to the vernal pools from this project, the City will restore and re-establish vernal pools located at the South Otay 1-acre parcels [(J13N)(Figure 3)]. This site was chosen for a number of reason including: existing vernal pools; topography; need for restoration; presence of VPHCP species; and location relative to airports. This site has existing, heavily degraded vernal pools, with VPHCP species such as San Diego button-celery, California Orcutt grass, and

spreading navarretia. Implementation of this restoration project will result in the restoration of 0.22 acres of existing pools, re-establishment of at least 0.0735 acres of pools, and is consistent with the VPHCP Conservation Objectives. A vernal pool restoration plan, in compliance with the VPHCP, is currently being prepared and will be provided for review once completed. The restoration project will include dethatching and weed treatment, grading, seed and inoculum collection, container plant installation, hydroseed, fence installation, and maintenance and monitoring. It is expected that seed and inoculum will be collected from the existing disturbed vernal pools within the J13N complex, and collected from nearby vernal pool complexes such as Cal Terraces and Goat Mesa to help establish viable populations of target VPHCP covered species.

3. Consistency Determination

This Consistency analysis will compare the goals and objectives of the VPHCP, with the proposed project and mitigation to determine if the project is consistent with VPHCP, VPMMP, City's Biological Guidelines, and MSCP, as required through the Minor Amendment process. The VPHCP's overall conservation strategy for the covered species is to allow impacts to degraded vernal pools with low long-term conservation value in exchange for restoration, enhancement, preservation, and long-term management and monitoring of vernal pools with long-term conservation value in the MHPA. The biological goal of the VPHCP is to contribute to the recovery of the VPHCP covered species and ensure continued persistence of the covered vernal pool species population identified in the VPHCP and the City's existing NCCP.

This project will achieve those goals and meet conservation objectives of the VPHCP. This project will impact degraded vernal pools with low conservation value, outside the MHPA, and restore vernal pools with long-term conservation value in the MHPA while contributing to the recovery of multiple VPHCP covered species. In addition, all of the general avoidance and minimization measures provided in the VPHCP will be implemented throughout the project.

a. VPHCP Conservation Objectives

The following table outlines the conservation objectives of the VPHCP and describes how the project is consistent with these objectives and will meet the goals of the VPHCP.

Table 1: VPHCP Conservation Objectives

Objectives	Conserve	Manage	Restore	Consistency
Vernal Pools Objectives (Habitat Based)	Conserve in perpetuity at least 2,409 vernal pools (totaling approximately 37.5 acres of basin surface area) at 68 vernal pool sites (within 53 vernal pool complexes) in the MHPA in a configuration that maintains long-term viability of the VPHCP covered species.	Manage in perpetuity 59 vernal pool sites within the MHPA through implementation of the VPHCP Vernal Pool Management and Monitoring Plan or Site-Specific Management Plans (that are consistent with the VPHCP goals and objectives).	Restore 19 vernal pool sites (within 12 complexes) to a "Level 1" (stewardship) management condition within the MHPA through implementation of the VPHCP Management and Monitoring Plan or Site-Specific Management Plans (that are consistent with the VPHCP goals and objectives).	This project proposes to impact four vernal pools (0.0735 acre) outside of the MHPA and proposes to re-establish and restore vernal pools inside the MHPA at a 2:1 ratio in a configuration that maintains long-term viability of VPHCP covered species. The mitigation associated with this project will increase the number of pools and basin surface area of conserved vernal pools within the MHPA. The restoration project will restore the J13N complex from a Level 3 to a Level 1 management condition. The J13N complex will be managed in perpetuity in accordance with the VPMMP.

Table 1: VPHCP Conservation Objectives				
Objectives	**Conserve**	**Manage**	**Restore**	**Consistency**
Species-Specific Objectives	Conserve occupied complexes identified in Appendix A of the VPMMP to stabilize covered species' populations.	Manage specific sites identified in Appendix A of the VPMMP to maintain the covered species populations consistent with the VPMMP (Appendix D).	Restore specific complexes identified in Appendix A of the VPMMP to enhance covered species populations to ensure long-term viability.	This project will impact pools located within Montgomery Field Complex (N 5-6) and will impact pools occupied with SDFS. The pools being impacted are located outside of the MHPA, were not previously identified, and were not included as part of the Montgomery Field Complex. The VPHCP Conservation Objectives for SDFS states "Restoration is not necessary for this covered species, as the populations of this species are adequately conserved under the VPHCP." The population of SDFS within the Montgomery Field Complex is currently stable and this project will not impact any of the conserved vernal pools occupied by covered species. Additionally, as more surveys are completed within the Complex under the VPMMP, additional occupied pools are expected to be identified. This project proposes to restore and re-establish vernal pools within the Otay 1-Acre Complex (J13N). This restoration work will address the Conservation/Restoration Objectives for the J13N Complex and Conservation/Restoration Objectives for spreading navarretia, San Diego button-celery, California Orcutt grass, Otay mesa mint and Riverside fairy shrimp. The restoration project will establish viable populations of these species.
Otay Mesa Mint	Conserve 369 vernal pools occupied by Otay Mesa mint within four sites.	Manage all conserved complexes/sites consistent with the VPMMP.	Establish viable populations of Otay Mesa mint within the J13E, J13N, J16–18, J20–21, J27, and J28 complex series.	This project will not impact any vernal pools occupied by Otay Mesa mint, and all existing, occupied, and conserved vernal pools will continue to be managed consistent with the VPMMP. To offset impacts associated with this project, restoration of vernal pools at the J13N Complex will occur. The restoration will incorporate Otay Mesa Mint to establish a viable population at J13N.

Table 1: VPHCP Conservation Objectives				
Objectives	**Conserve**	**Manage**	**Restore**	**Consistency**
San Diego Mesa mint	Conserve 335 vernal pools occupied by San Diego mesa mint within 19 sites.	Manage 12 sites as identified in Appendix A of the VPMMP and consistent with the VPMMP.	Restoration is not necessary for this covered species, as the populations of this species are adequately conserved under the VPHCP.	This project will not impact any vernal pools occupied by San Diego Mesa mint, and all existing, occupied, and conserved vernal pools will continue to be managed consistent with the VPMMP.
Spreading navarretia	Conserve 94 vernal pools occupied by spreading navarretia within seven sites.	Manage all conserved complexes/sites consistent with the VPMMP.	Establish viable populations of spreading navarretia within J11E, J11W, J12, J13E, J13 N, J16–18, J20–21, J27, J28, and R1.	This project will not impact any vernal pools occupied by spreading navarretia, and all existing, occupied, and conserved vernal pools will continue to be managed consistent with the VPMMP. To offset impacts associated with this project, restoration of vernal pools at the J13N Complex will occur. The restoration plan will restore and incorporate spreading navarretia to establish a viable population at J13N.
San Diego button-celery	Conserve 722 vernal pools occupied by San Diego button-celery within 24 sites.	Manage 22 sites as identified in Appendix A of the VPMMP and consistent with the VPMMP.	Establish a viable population of San Diego button-celery within J13E and J13N.	This project will not impact any vernal pools occupied by San Diego button-celery, and all existing, occupied, and conserved vernal pools will continue to be managed consistent with the VPMMP. To offset impacts associated with this project, restoration of vernal pools at the J13N Complex will occur. The restoration will restore and incorporate San Diego button-celery to establish a viable population at J13N.
California Orcutt grass	Conserve 58 vernal pools occupied by California Orcutt grass within three sites.	Manage all conserved complexes/sites consistent with the VPMMP.	Establish viable populations of California Orcutt grass within J11E, J11W, J12, J13E, J14, J16-18, J20–21, J21, J27, and J28E.	This project will not impact any vernal pools occupied by California Orcutt grass, and all existing, occupied, and conserved vernal pools will continue to be managed consistent with the VPMMP. To offset impacts associated with this project, restoration of vernal pools at the J13N Complex will occur. The restoration will restore and incorporate California Orcutt grass to establish a viable population.

Table 1: VPHCP Conservation Objectives				
Objectives	**Conserve**	**Manage**	**Restore**	**Consistency**
Riverside fairy shrimp	Conserve 131 vernal pools occupied by Riverside fairy shrimp within 7 sites.	Manage all conserved sites consistent with the VPMMP.	Establish viable populations of Riverside fairy shrimp within J11E, J11W, J12, J13E, J13N, J14, J16-18, J20–21, J21, J27, and J28E.	This project will not impact any vernal pools occupied by Riverside fairy shrimp, and all existing, occupied, and conserved vernal pools will continue to be managed consistent with the VPMMP. To offset impacts associated with this project, restoration of vernal pools at the J13N Complex will occur. The restoration plan will incorporate Riverside fairy shrimp to establish a viable population.
San Diego fairy shrimp	Conserve 465 vernal pools occupied by San Diego fairy shrimp within 38 sites.	Manage 33 sites as identified in Appendix A of the VPMMP and consistent with the VPMMP.	Restoration is not necessary for this covered species, as the populations of this species are adequately conserved under the VPHCP.	This project will impact pools occupied with SDFS. The pools being impacted are located outside of the MHPA, were not previously identified, and were not included as part of the Montgomery Field Complex. The population of SDFS within the Montgomery Field Complex is currently stable and this project will not impact any of the conserved vernal pools occupied by SDFS. Additionally, as more surveys are completed within the Complex under the VPMMP, additional occupied pools are expected to be identified.

b. Multiple Species Conservation Plan (MSCP) – Land Use Adjacency Guidelines

The project lies within the City's MSCP Subarea and occurs adjacent to lands designated as MHPA under the MSCP. Projects occurring adjacent to the City's MHPA, must adhere to the City's MHPA land use adjacency guidelines as outlined in section 1.4.3 of the City's MSCP Subarea Plan. The guidelines and analyses of project conformance are as follows:

Drainage

All new and proposed development adjacent to the MHPA must not drain directly into the preserve, and must prevent the release of toxins, chemicals, petroleum products, exotic plant materials, and other elements that might degrade or harm the natural environment or ecosystem processes within the MHPA.

The design of the project incorporates the use of retention basins and permanent storm water Best Management Practices (BMP) to capture and treat all storm water flows, up to a 100 year storm event, within the Project Site. These project design features will prevent toxins and other materials from entering the MHPA and will result in an improvement over current conditions. The project will also comply with the City's Landscape Regulations to

prevent exotic plant materials from entering the MHPA. The project would not result in a significant impacts to drainages.

Toxins

Land uses such as recreation and agriculture that use chemicals or generate byproducts that are potentially toxic or harmful to wildlife, habitat, or water quality must incorporate measures to reduce the impact of application or drainage of such materials into the MHPA.

The proposed project would not involve recreation or agriculture, and the project would not use chemicals or generate toxic or harmful byproducts. The proposed project would incorporate permanent storm water BMP's to prevent the drainage of toxins or harmful materials into the MHPA. There would not be a change to the baseline conditions and the project would not result in a significant impact due to toxins.

Lighting

Lighting must be directed away from the MHPA and, if necessary, adequately shielded to protect the MHPA and sensitive species from night lighting.

This project involves the construction of hangars and will include some exterior lighting. All lighting will be shielded and directed away from the MHPA. In addition, this project is located on an airport adjacent to the runway, the FAA has specific requirements regarding lighting which are more stringent than the adjacency requirements of the MHPA.

Noise

Uses adjacent to the MHPA must be designed to minimize noise that might impact or interfere with wildlife utilization of the MHPA.

The proposed project is located on an airport adjacent to a runway. Ambient noise levels are much higher at the project site and within the adjacent MHPA than typically found elsewhere. The project will construct hangars and concrete pads for aircraft storage and maintenance. This land use is consistent with the existing use of the area and will not result in an increase of noise within the MHPA and will not interfere with the existing wildlife utilization of the MHPA. During construction, heavy equipment such as dozers, excavators, and loaders will be utilized. Construction noise is not expected to exceed the existing ambient noise levels on the airport, but to ensure noise impacts to sensitive/listed species is avoided, mitigation measures will be implemented during the breading season to avoid indirect impacts.

Barriers to Incursion

New development adjacent to the preserve may be required to provide barriers along MHPA boundaries to redirect public access to appropriate locations and reduce domestic animal predation in the preserve.

The project is located on an airport, which has restricted access and prevents access to the public. This project will not increase access to the MHPA, or the occurrence of domestic animals near the MHPA. To help prevent any accidental access to the MHPA during airport

operation, a barrier will be installed along the project boundaries after completion of the project. This barrier would consist of 3 to 4-foot tall poles connected by rope or chain, and would be primarily designed to prevent vehicle entry into the MHPA. The barrier design will require approval by the FAA prior to installation. As a result of the restrictive access and the installation of the barrier, no impacts to the MHPA would occur as result of this project.

Invasive Species

No invasive plant species shall be introduced into areas adjacent to the MHPA.

The proposed project does not include the installation of any ornamental landscaping. Any areas where temporary impacts occur would be revegetated in accordance with the City's Landscape Standards, and would only include native species. Therefore, the project would not result in a significant impact due to invasive species.

Brush Management

New residential development located adjacent to and topographically above the MHPA must be set back from slope edges to incorporate Zone 1 brush management areas on the development pad and outside of the MHPA. Zone 2 may be located in the MHPA upon granting of an easement to the City (or other acceptable agency) except where narrow wildlife corridors require it to be located outside of the MHPA.

New residential development is not proposed with this project, and installation of the hangar and concrete pad does not require additional brush management.

Grading/Land Development

Manufactured slopes associated with project development must be included in the project footprint.

No manufactured slopes are associated with the proposed project.

c. MHPA – Compatible Land Uses

The access road leading from Pondarosa Ave to the project area crosses through the MHPA. This existing road will provide construction access to the project area. Following completion of construction, it may be necessary to repair the access road. Repair work would include filling in pot holes/cracks, grinding the damaged surface, and/or installing a 2-inch overlay. All work would be restricted to the existing road surface and the road would not be widen or expanded.

Roads are considered a compatible use of the MHPA if they comply with Section 1.4.2 of the City's MSCP Subarea Plan. The majority of the policies and guidelines described in Section 1.4.2 apply to new access roads in the MHPA. This project will use an existing road within the MHPA and only those policies and guidelines related to existing roads are discussed below.

Temporary construction areas and roads, staging areas, or permanent access roads must not disturb existing habitat unless determined to be unavoidable. All such activities must occur on existing agricultural lands or in other disturbed areas rather than in habitat. If temporary habitat disturbance is unavoidable, then restoration of, and/or mitigation for, the disturbed

area after project completion will be required.
The access road is existing and will not be widened or extended, no impacts to existing habitat will occur as a result of this project.

Construction and maintenance activities in wildlife corridors must avoid significant disruption of corridor usage. Environmental documents and mitigation monitoring and reporting programs covering such development must clearly specify how this will be achieved, and construction plans must contain all the pertinent information and be readily available to crews in the field. Training of construction crews and field workers must be conducted to ensure that all conditions are met. A responsible party must be specified.
The access road is located on the airport, which is surrounded by development; the project area is not located in a wildlife corridor. A project biologist will assigned to the project and will provide training to construction crews.

For the most part, existing roads and utility lines are considered a compatible use within the MHPA and therefore will be maintained. Exceptions may occur where underutilized or duplicative road systems are determined not to be necessary as identified in the Framework Management Section 1.5 (MSCP Subarea Plan).
The existing road is the only road that provides access to the Fire-Rescue Air Operations Building and FAA Control Tower; the road is not underutilized or duplicative.

d. City of San Diego Biological Guidelines

i. Overview - Development Regulations

The City of San Diego Biological Guidelines (Guidelines)have been formulated by the Development Services Department to aid in the implementation and interpretation of the Environmentally Sensitive Lands Regulations, San Diego Land Development Code, Chapter 14, Division 1, Section 143.0101 et seq, and the Open Space Residential (OR-1-2) Zone, Chapter 13, Division 2, Section 131.0201 et seq. Section III of the Guidelines (Biological Impact Analysis and Mitigation Procedures) also serve as standards for the determination of impact and mitigation under the California Environmental Quality Act (CEQA) and the Coastal Act.

These Guidelines are intended to prescribe the content of biology survey reports and will be used in the analysis and preparation of environmental documents. The Guidelines shall be used as part of the environmental review process to meet the requirements of the CEQA, the Multiple Species Conservation Program, Vernal Pool Habitat Conservation Plan and the City's Environmentally Sensitive Lands Regulations.

The intent of the biology survey is to identify biological resources on the project site, determine impacts, and recommend suitable mitigation measures. Mitigation and monitoring requirements pursuant to the Guidelines and CEQA shall ensure preservation of the native species and sensitive biological resources of San Diego.

A biological report and surveys have been prepared for this project in accordance with the Guidelines and includes identification of biological resources, impact analysis, and mitigation measures as required by the Guidelines. The mitigation measures proposed will ensure

preservation of the native species and sensitive biological resources of San Diego. The surveys and biological report were conducted and prepared by qualified biologist who meet the requirements of the Guidelines.

ii. Biological Impact Analysis and Mitigation

The guidelines provide specific mitigation requirements for impacts to sensitive habitats. Impacts to vernal pools outside the MHPA are authorized provided they are fully mitigated as identified in the VPHCP. Impacts to vernal pools outside the MHPA would not require a deviation provided they are fully mitigated consistent with the VPHCP. Mitigation for vernal pools shall be 2:1 for listed fairy shrimp or when no listed plant species are present, 3:1 for San Diego button-celery, and 4:1 when listed species with very limited distributions are present. While ratio is applied to the basin area, the mitigation site must include appropriate watershed to support restored and/or enhanced basins.

The project will impact 0.0735 acre of vernal pool located outside the MHPA. Four of the pools were determined to be occupied by San Diego fairy shrimp. In accordance with the VPHCP and Guidelines, mitigation for these impact will occur at 2:1 for a total of 0.147 acre. A minimum of 0.147 acre of vernal pool basin will be restored/reestablished and an appropriate area of watershed will be restored and conserved to support the vernal pool basins. A mitigation plan is currently being prepared in accordance with the requirements of the Guidelines, VPMMP and VPHCP, and will be provided for review.

iii. Supplemental Environmental Findings

Development on a site containing sensitive biological resources requires the approval of a Neighborhood Development Permit or Site Development Permit. The Development Permit process requires findings be made to ensure the project is consistent with the City's Land Development Code and applicable land use plan's. A development on a site containing sensitive biological resources requires that a set of six supplemental findings, related to biological resources, be made. These six findings are addressed below.

1. ***The site is physically suitable for the design and siting of the proposed development and the development will result in minimum disturbance to environmentally sensitive lands.***

   The site is physically suitable for the design and siting of the proposed development: The City has determined that there is a need to increase services for fire suppression, emergency rescues from remote areas, advanced life support, and medical transport. Currently there is no available hangar space to store the emergency helicopters and crew. The Project will provide new hangar space, a concrete apron to accommodate five helicopters, parking and shelter for a single Heli-tender and two fueling tender vehicles. The project design was created in consultation with several divisions: permit planning, environmental analysis, MSCP, Department of Development Services (DSD), and the airport biologist familiar with FFA regulations. This project is considered an Essential Public Project in that it would service the community at large and not just a single development project or property.

The Project has been proposed to be constructed at Montgomery-Gibbs Executive Airport. This is the most central of the City-owned airports and is located within an area surrounded by development, mostly in the form of businesses which will reduce disturbance to residents during evening and early morning hours. This location will also ensure that air support is equidistant to all service areas. Within the airport the project is proposed to be located in the northwest corner of the airport. This area currently harbors the existing Fire Air Operations building and can be accessed from a back entrance of the airport off of Ponderosa Road. The project proximity to the existing building and road will increase operation efficiency and may reduce incidental ESL impacts during construction. To operate efficiently, the project had to be located adjacent to the existing Fire-Rescue Air Operations facilities, adjacent to the runway, ad also had to comply with FAA sight requirements. The Project is located on a flat area, directly adjacent to the existing Air Operations facilities, and adjacent to the runway. The orientation of the design ensures an appropriate view corridor from the control tower in accordance with FFA regulations.

Siting of the development will result in the minimum disturbance to the environmentally sensitive lands: The total project footprint is approximately 3.476 acres, this includes the existing access road (0.546 acre). The project was designed to only impact Tier IV lands and avoid ESL to the maximum extent practicable. Out of the 3.476 total impact acres approximately 3.403 acres are within developed land and disturbed habitat. The disturbed habitat portion of the Project is located in the runway safety zone, this area is required by the FFA to be free of vegetation. The project site was chosen to avoid vernal pools identified in the baseline existing conditions analysis for the City's Vernal Pool Habitat Conservation Plan (VPHCP) and Vernal Pool Management and Monitoring Plan (VPMMP). However, six degraded vernal pools were newly identified within the project footprint during the biological reconnaissance survey. Approximately 0.0735 acres of the site are San Diego mesa hardpan vernal pools. Four of the vernal pools contain San Diego fairy shrimp (Branchinecta sandiegonensis – Federally Endangered, VPHCP-covered). One sensitive plant species was observed onsite, Orcutt's brodiaea (*Brodiaea orcuttii*). The project was designed to avoid impacts to the Multi-Habitat Planning Area (MHPA).

Direct impacts to vernal pools and San Diego fairy shrimp will be mitigated through offsite restoration of high quality habitat in compliance with the VPHCP. Orcutt's brodiaea is fairly common within the airport grounds and will be adequately conserved through the MSCP. Therefore, the design and siting of the Fire Operations Facility will result in minimum disturbance to environmentally sensitive lands.

2. *The proposed development will minimize the alteration of natural landforms and will not result in undue risk from geologic and erosional forces, flood hazards, and fire hazards.*

The project is located on flat terrain within a previously developed/disturbed area and will not affect natural landforms. Ninyo & Moore Geotechnical and Environmental Sciences Consultants has prepared a geotechnical evaluation of the project, and two addenda thereof, to analyze the geotechnical conditions at the subject site. The study was informed by review of background data, subsurface evaluation, and laboratory testing, and its objective was to offer recommendations for the design and earthwork construction of the

project. The report concluded that the potential for liquefaction, seismically induced settlement, tsunami, landsides, and flooding were not design considerations. The project is required to meet the 2013 California Building code and all applicable County of San Diego codes and ordinances, so it will not result in undue risk of fire hazards.

Therefore, the project as proposed will not alter natural land forms and will not result in undue risk from geologic and erosional forces, flood hazards, or fire hazards.

3. ***The proposed development will be sited and designed to prevent adverse impacts on any adjacent environmentally sensitive lands.***

The City has determined that there is a need to increase services for fire suppression, emergency rescues from remote areas, advanced life support, and medical transport. Currently there is no available hangar space to store the emergency helicopters and crew. The Project will provide new hangar space, a concrete apron to accommodate five helicopters, parking and shelter for a single Heli-tender and two fueling tender vehicles. The project design was created in consultation with several divisions: permit planning, environmental analysis, MSCP, Department of Development Services (DSD), and the airport biologist familiar with FFA regulations. This project is considered an Essential Public Project in that it would service the community at large and not just a single development project or property.

Environmentally sensitive lands (ESL) within the MHPA are located adjacent to the project to the northeast and east and will be avoided. The adjacent ESL is composed of Diegan coastal sage scrub with interspersed San Diego Mesa Hardpan Vernal Pools. Several of the vernal pool were identified in the baseline existing conditions analysis for the City's VPHCP and VPMMP and have been documented to be habitat for San Diego mesa mint (Pogogyne abramsii – Federal and State Endangered, CRPR 1B.1, VPHCP-covered and City Narrow Endemic), and/or San Diego fairy shrimp. California gnatcatcher (Polioptila californica – Federally threatened, State Species of Special Concern and MSCP-covered) was observed within the Diegan coastal sage scrub which may serve as foraging and/or nesting habitat for the species.

The Project was sited to avoid impacting the adjacent ESL and MHPA. Indirect impacts to the adjacent ESL will be minimized to less than significant by installing fencing along the limits of disturbance adjacent to sensitive habitat during construction, monitoring bird activity, and permanently installing a barrier with signage to prevent unauthorized access into the MHPA and adjacent sensitive habitat.

4. ***The proposed development will be consistent with the City of San Diego MSCP Subarea Plan and Vernal Pool Habitat Conservation Plan (VPHCP).***

The project site is within the existing boundaries of both the City of San Diego's MSCP Subarea, and the VPHCP, but will not impact the Multi-Habitat Planning Area. As described in Sections 3.a and 3.b of this document, the project is consistent with the City of San Diego MSCP Subarea Plan and VPHCP.

5. ***The proposed development will not contribute to the erosion of public beaches or adversely impact local shoreline sand supply.***

   This finding is not applicable to this project. The project is more than seven miles from the nearest beach or local shoreline. The project will not result in increased amounts of pollutants draining into the ocean because construction and permanent storm water best management practices will be implemented to collect and treat runoff from the project for pollutants as required by the current City of San Diego Storm Water Standards. The project is compliant with the regulations within the City's Storm Water Standards and consistent with the City's Storm Water Design Manual. Therefore the proposed improvements will not contribute to the erosion of public beaches or adversely impact local shoreline sand supply.

6. ***The nature and extent of mitigation required as a condition of the permit is reasonably related to and calculated to alleviate negative impacts created by the proposed development.***

   Approximately 0.0735 acres of sensitive wetlands, outside of the MHPA, in the form of vernal pools will be significantly impacted by the Project and will require mitigation. San Diego fairy shrimp and Orcutt's brodiaea, VCHCP- and MSCP-covered species respectively, will also be significantly impacted.

   Orcutt's brodiaea is a California Rare Plant Rank 1B.1 plant, meaning that it is defined as 'rare or endangered in California and elsewhere' and 'seriously endangered in California' (California Native Plant Society, 2001) and is also a MSCP-covered species. This species is only known to occur in limited distribution within San Diego County but is fairly prevalent within the airport. This species is an MSCP covered species and will be adequately conserved through implementation of the MSCP program. Therefore impacts to this species are less than significant.

   The VPHCP Conservation Objectives for San Diego fairy shrimp states "Restoration is not necessary for this covered species, as the populations of this species are adequately conserved under the VPHCP." The population of SDFS within the Montgomery Field Complex is currently stable and this project will not impact any of the conserved vernal pools occupied by this covered species.

   Impacts to San Diego Mesa Hardpan vernal pool will be mitigated in accordance with the City's VPHCP and Biology Guidelines at a ratio of 2:1(see table below). A detailed mitigation plan will be prepared in accordance with requirements of the VPHCP and Biology Guidelines and will be submitted to the wildlife agencies for their approval.
   The Project will comply with the mitigation requirements and biological resource protection measures as described in the Biological Technical Report and is reasonably related to, and calculated to alleviate, negative impacts created by the proposed development

4. Conclusion

While this project will result in impacts to vernal pools and San Diego fairy shrimp, these impacts are consistent with the objectives of the VPHCP and will result in the restoration and conservation of

vernal pools and habitat with higher biological value. This project is consistent with the overall goals and objectives of the VPHCP, MSCP, VPMMP, and City's Biological Guidelines and will result in the overall increase of vernal pool basin area and the establishment of VPHCP species as required by these documents.

Figure 1: Project Location
Fire-Rescue Air Operations - Phase II

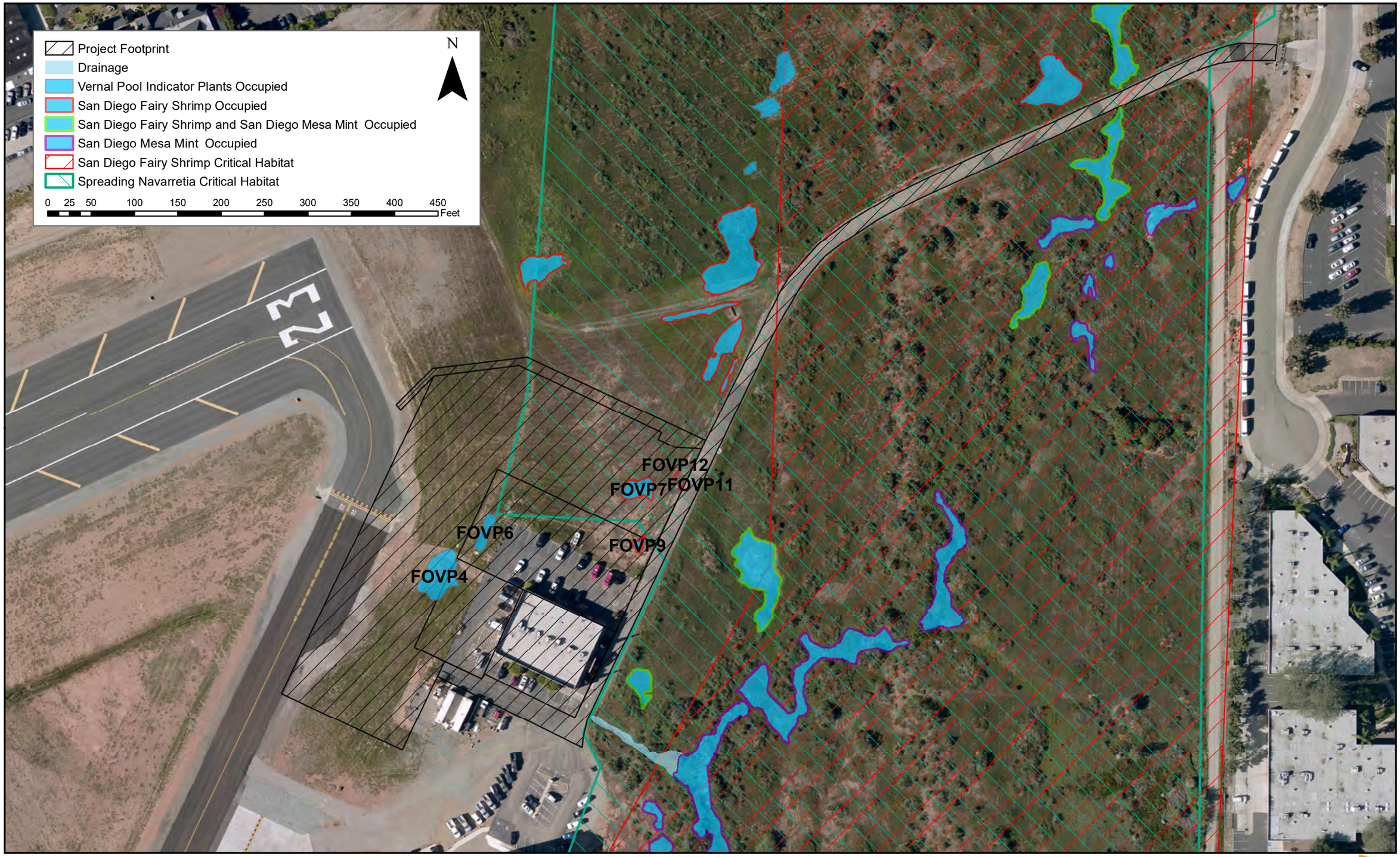

Figure 2: Vernal Pool Impacts
Fire-Rescue Air Operations - Phase II

Figure 3: South Otay 1-Acre Parcels Location
Fire-Rescue Air Operations - Phase II

APPENDIX F

CALIFORNIA RAPID ASSESSMENT METHOD REPORT

Montgomery-Gibbs Executive Airport: Fire-Rescue Air Operations Facility Project – Phase II, San Diego, California

California Rapid Assessment (CRAM) Report

December 17, 2018

Prepared for:

City of San Diego

Planning Department - MSCP

Development Services Department

Prepared by:

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2 INTRODUCTION

The City of San Diego Public Works Department proposes to construct a new, permanent Fire Rescue Air Operations Facility (Project) at Montgomery-Gibbs Executive Airport. The facility will accommodate the emergency helicopters for the crews that will provide 24 hour on-call services during 365 days per year. The crews would provide fire suppression, emergency rescues from remote areas, advanced life support, and medical transport. Currently there is no available hangar space to store the Bell 212HP and 412EP helicopters.

2.1 LOCATION

The project site is located at Montgomery-Gibbs Executive Airport, east of Taxiway C, and north of the air traffic control tower (Figure 1). The project is located adjacent to the MHPA, in the Kearny Mesa Community Planning Area (Council District 6).

2.2 PROJECT DESCRIPTION

This project is the second phase of a two phase project on the Fire Rescue Air Operations Facility at Montgomery-Gibbs Executive Airport. Phase I is remodeling the existing 31 year-old building (formerly Federal Aviation Administration [FAA]) located adjacent to air traffic control tower. The Fire-Rescue Air Operations Phase II portion of this project will provide new hangar space and a concrete apron to accommodate five helicopters, parking and shelter for a single Heli-tender and two fueling tender vehicles. The total area of new hangar space will be approximately 32,000 square feet (SF), of which approx. 16,500 SF is existing disturbed and/or impervious area. The new hangar space includes a hangar support area for maintenance offices, overhaul, avionics and storage rooms. The new apron area will be approximately 65,000 SF of 5000 pounds-per-square-inch (PSI) concrete, of which approx. 9,300 SF is existing disturbed and/or impervious area. The project includes two above-ground fuel storage tanks, each with 12,000 gallon capacity (24,000 gallons total). The staging area for the project will be placed on existing paved and/or disturbed area. The designed size of the staging area is approximately 4,000 SF. In addition to the hangars and concrete apron, the project will also address any damages to the existing access road, from Ponderosa Avenue, sustained from construction activities. The rehabilitation of the existing access road will include a two-inch overlay of asphalt material in any areas deemed necessary and will not impact any undisturbed areas.

Hangar foundations would require excavation up to four feet in depth. This would disturb previously undisturbed soils. The total area of ground disturbance would be approximately 2.929 acres, and the project would result in 1.957 acres of new impervious surfaces, including the hangars, fueling stations, heli-tender storage buildings, concrete aprons, ramps, and vehicle parking. Portions of the 0.546 acre access road would be repaired after construction, as necessary. The maximum height of the building would be 31 feet.

3 CALIFORNIA RAPID ASSESSMENT METHOD (CRAM) OVERVIEW

The overall goal of CRAM is to "provide rapid, scientifically defensible, standardized, cost-effective assessments of the status and trends in the condition of wetlands and related policies, programs, and projects throughout California" (CWMW 2013a). CRAM is a rapid assessment method that requires collecting Level 2 data (coarse data) for monitoring wetland conditions.

One of the benefits of CRAM is that it does not require an intensive watershed-level assessment to calibrate variable scores. Instead, CRAM has been calibrated throughout California and in various wetland types. CRAM is an ambient monitoring and assessment tool that can be performed on different scales, ranging from

an individual wetland to across a watershed or larger region. CRAM is designed to collect a coarse assessment of a site's ambient conditions, but it can also be used to measure progress toward meeting success criteria established for wetland function/condition, and can be repeated over the long term if necessary or desired. Level 3 (fine scale) data are not necessary to complete a CRAM assessment but are useful when determining many of the CRAM attribute scores and interpreting the final CRAM scores.

4 EXISTING CONDITIONS

Montgomery-Gibbs Executive Airport is located in Kearny Mesa. The land is flat characteristic of mesa environments and is developed with an airfield, associated buildings, and parking areas. Areas of undeveloped land occur between runways, in clearance zones and on the periphery of the airfield. The areas adjacent to the runways are routinely mowed and the undeveloped land located northeast and northwest of the existing facilities building are occasionally used for overflow parking. This area is well known to support vernal pools, and pools have been well-documented on the Montgomery-Gibbs Executive Airport (VCHCP, 2017).

The northeastern portion of the site where Hangar A and Concrete Apron are proposed to be located overlaps with critical habitat for spreading navarretia as designated by the United States Fish and Wildlife Services. The 100-foot survey buffer overlaps with critical habitat for San Diego fairy shrimp but does not overlap with the project footprint. The project footprint is adjacent to the MHPA, the access road is within the MHPA.

The vegetation within the Project Footprint is primarily disturbed and developed but supports some areas of San Diego mesa claypan vernal pools. The vernal pools onsite are located within the Project footprint in the areas proposed for the concrete apron and hangar A and B. These vernal pools are located in a disturbed area and contained the following vernal pool indicator species: wooly marble (*Psilocarphus brevissimus*) and/or prairie plantain (*Plantago elongata*) and San Diego fairy shrimp.

5 METHODS

On May 25, 2018, City staff CRAM practitioners (Sean Paver and Maya Mazon) conducted a CRAM evaluation of four vernal pools or assessment areas (AA) within the project impact area (FOVP-4, FOVP-6, FOVP-7, and FOVP-9). The CRAM practitioners walked the AAs and documented information used to score each metric. In addition, photographs were collected for each AA (Attachment B). After recording observations within the AA, the CRAM practitioners scored each CRAM metric/submetric and calculated the attribute scores and a final overall CRAM score (see Results section below) (CWMW 2013b)

The final CRAM score for each AA is composed of four main attribute scores (buffer and landscape context, hydrology, physical structure, and biotic structure), which are based on the metric and submetric scores (a measurable component of an attribute). CRAM practitioners assign a letter rating (A–D) for each metric/submetric based on a defined set of condition brackets ranging from an "A" as the theoretical best case achievable for the wetland class across California, to a "D," the worst case achievable. Each metric condition level (A–D) has a fixed numerical value (A=12, B=9, C=6, D=3), which, when combined with the other metrics, results in a score for each attribute. Each metric/submetric condition level (letter rating) has a fixed numerical value, which, when combined with the other metrics, results in a raw score for each attribute. That number is then converted to a percentage of the maximum score achievable for each attribute and represents the final attribute score, ranging from 25% to 100%. The final overall CRAM score is the sum of the four final attribute scores, ranging from 25% to 100%.

6 RESULTS

The results below represent the assessment of CRAM metrics and sub-metrics based on ambient conditions observed during the field visits in May (Table 1). Maps showing the locations of all four CRAM AA's are included as Attachment A and data sheets are included as Attachment C. The average CRAM score from the four AA's is 53 with individual scores varying from the lowest score of 45 to the highest score of 55.

Table 1 CRAM DATA SUMMARY

CRAM ATTRIBUTES	METRICS	SCORES			
		AA-1 [FOVP-4]	**AA-2 [FOVP-6]**	**AA-3 [FOVP-7]**	**AA-4 [FOVP-9]**
Buffer and Landscape Context	Aquatic Area Abundance	B (9)	B (19)	A (12)	A (12)
	Buffer Submetrics				
	- Percent of AA with Buffer	C (6)	B (9)	A (12)	C (6)
	- Average Buffer Width	B (9)	B (9)	B (9)	A (12)
	- Buffer Condition	C (6)	C (6)	C (6)	C (6)
	Attribute Score (Raw/Final)	**16/65%**	**16/68%**	**20/83%**	**19/79%**
Hydrology	Water Source	C (6)	C (6)	B (9)	B (9)
	Hydroperiod	B (9)	B (9)	B (9)	B (9)
	Hydrologic Connectivity	C (6)	C (6)	B (9)	C (6)
	Attribute Score (Raw/Final)	**21/58%**	**21/58%**	**27/75%**	**24/67%**
Physical Structure	Structural Patch Richness	D (3)	D (3)	D (3)	D (3)
	Topographic Complexity	D (3)	D (3)	D (3)	D (3)
	Attribute Score (Raw/Final)	**6/25%**	**6/25%**	**6/25%**	**6/25%**
Biotic Structure	Horizontal Interspersion and Zonation	D (3)	D (3)	D (3)	D (3)
	Plant Community Composition Submetrics				
	- Number of Co-dominant Species	B (9)	C (6)	C (6)	B (9)
	- Percent Non-native	D (3)	D (3)	B (9)	D (3)
	- Endemic Species Richness	D (3)	D (3)	D (3)	D (3)
	Plant Community Composition Metric Average	5	4	6	15
	Attribute Score (Raw/Final)	**8/33%**	**7/29%**	**9/38%**	**8/33%**
Overall AA Score		**45**	**45**	**55**	**51**

7 DISCUSSION

7.1 ATTRIBUTE 1: BUFFER AND LANDSCAPE CONTEXT

7.1.1 Metric 1: Aquatic Area Abundance

The Aquatic Area Abundance of an AA is assessed in terms of its spatial association with other areas of aquatic habitat, such as other wetlands, lakes, streams, etc. It is assumed that wetlands close to each other have a greater potential to interact ecologically and hydrologically, and that such interactions are generally beneficial. The aquatic area of abundance metric score is influenced by other wetlands within 500 meters to

the north, south, east, and west of the AA. Four lines are extended in the cardinal direction from the center of the AA, and the percentage of each line that intersection another aquatic resource is recorded (Attachment XX, Figures 1, 3, 5, & 7). The four AA's metric scores varied between A and B. Two of the AA's (FOVP-7, FOVP-9) shared same score, A, of which 31% (FOVP-7) and 30% (FOVP-9) of transects intersect other aquatic areas. Both of these vernal pools are located on the northern portion of the site. To the east of the project site are undisturbed areas of DCSS and large vernal pool complexes, separated by an access road from the project site (Attachment A, Figures 5, 7). AAs FOVP-4 and FOVP-6 have a metric score of B of which 15% (FOVP-4) and 20% (FOVP-6) of transects intersect other aquatic areas. Both of these AAs are located on the western portion of the site and are separated from the larger vernal pool complexes to the east by developed areas such as parking lots and buildings (Attachment A, Figures 1, 3).

7.1.2 Metric 2: Buffer Submetrics

7.1.2.1 Percent of AA with Buffer

This submetric is based on the relationship between the extent of buffer and the functions provided by aquatic areas. Areas with more buffer typically provide more habitat values, better water quality and other valuable functions. This submetric is scored by visually estimating from aerial imagery (with field verification) the percent of the AA that is surrounded by at least 5 meters of buffer land. One AA, FOVP-7, had the highest metric score of A. FOVP-7 is the only vernal pool that is surrounded on all sides by eligible buffer land (Attachment A, Figure 6). The other three AAs have developed lands to some degree within proximity that eliminate the amount of eligible buffer land calculated in the metric score.

7.1.2.2 Average Buffer Width

The average width of the buffer adjoining the AA is estimated by average the lengths of eight straight lines drawn at regular intervals around the AA from its perimeter outward to the nearest non-buffer land cover or 250 meters, whichever is first encountered. It is assumed that the functions of the buffer do not increase significantly beyond an average width of about 250 meters. The maximum buffer width is therefore 250 meters. The minimum buffer width is 5 meters, and the minimum length of buffer along the perimeter of the AA is also 5 meters. Any area that is less than 5 meters wide and 5 meters long is too small to be a buffer. Three AAs, FOVP-4, FOVP-6, and FOVP-7, scored B with an average buffer width between 130 and 189 meters.

7.1.2.3 Buffer Condition

The condition of a buffer is assessed according to the extent and quality of its vegetation cover, the overall condition of its substrate, and the amount of human visitation. Evidence of direct impacts (parking lots, buildings, etc.) by people are excluded from this metric. All four AAs (FOVP-4, FOVP-6, FOVP-7, and FOVP-9) have a metric score of C due to the high amount of non-native vegetation on site compared to native vegetation. These vernal pools are impacted by activities of the current airport and SDFD operations. These pools are subject to routine mowing activities and are often subject to vehicular traffic. As a result, soils within the vernal pools are compacted.

7.2 ATTRIBUTE 2: HYDROLOGY

7.2.1 Metric 1: Water Source

Water sourced directly affect the extent, duration, and frequency of saturated or ponded conditions within an AA. Water sources include the kinds of direct inputs of water into the AA as well as any diversions of water from the AA. Diversions area considered a water source because they affect the ability of the AA to function as a source of water for other habitats while also directly affecting the hydrology of the AA. Natural, direct sources include rainfall, and ground water discharge. The AAs located on the northern portion of the project site, (FOVP-7, FOVP-9) scored B. These pools are located closer to the undisturbed natural areas with larger

vernal pool complexes; however, these pools are located close to developed areas that indirectly affect the hydrology. The AA's located on the western portion of the project site (FOVP-4, FOVP-6) are more directly influenced by the SDFD and airport operations. There is a hydrant system used by the SDFD operations that contribute unnatural water sources to these pools, and as a result, the metric score for FOV-P4 and FOVP-6 is C.

7.2.2 Metric 2: Hydroperiod

Hydroperiod is the characteristic frequency and duration of inundation or saturation of a wetland during a typical year. Vernal pools are ephemeral wetlands that form in shallow depressions underlain by bedrock or by an impervious, near-surface soil horizon. These depressions fill with rainwater and runoff during the winter and may remain inundated until spring or early summer, sometimes filling and emptying repeatedly during the wet season. All four AAs, FOVP-4, FOVP-6, FOVP-7, and FOVP-9, had a metric score of B. All four pools are within proximity of airport and SDFD facilities of which during wet seasons have greater inundation due to impervious surfaces compared to what would be expected in a more natural environment.

7.2.3 Metric 3: Hydrologic Connectivity

Hydrologic connectivity describes the ability of water to flow into or out of the wetland, or to inundate their adjacent uplands. It provides for the ecotone caused by the moisture gradient between the vernal pool and its surrounding upland. For an individual vernal pool, hydrological connectivity is scored by assessing the degree to which the rise and fall of surface water along the margin of the AA is restricted by unnatural features, such as levees and excessively high or steep banks, that truncate, foreshorten, or compress the ecotone relative to what is expected for the site given its natural topography. Three of the AAs, FOVP-4, FOVP-6, and FOVP-9, had a metric score of C of which at least 50 percent of the adjacent zones are limiting flood flows. The three AAs are located adjacent to developed areas associated with airport operations and SDFD facilities (i.e. runways, parking lots, helipads, etc.). FOVP-7 had a metric score of B. This AA is the northern most vernal pool of which is only limited by an access road to the east that is associated with general airport operations.

7.3 ATTRIBUTE 3: PHYSICAL STRUCTURE

7.3.1 Metric 1: Structural Patch Richness

Patch richness is the number of different obvious types of physical surfaces or features that may provide habitat for aquatic (including wetland) or riparian species. This metric is different from topographic complexity in that it addresses the number of different patch types, whereas topographic complexity helps evaluate the spatial arrangement and interspersion of the types. Physical patches can be natural or unnatural. All four AAs, FOVP-4, FOVP-6, FOVP-7, and FOVP-9, have a metric score of D. All four AAs had only one structural patch type, cobbles and boulders. All four AAs are heavily influenced by the SDFD and airport operations such as regular mowing, vehicular traffic, urban runoff, etc.; and as a result, lack diverse physical structures or features that provide aquatic habitat as compared to adjacent undisturbed vernal pools.

7.3.2 Metric 2: Topographic Complexity

Topographic complexity refers to the variety of elevation within a wetland due to micro-topographic features and elevation gradients. All four AAs, FOVP-4, FOVP-6, FOVP-7, and FOVP-9, have a metric score of D. All four AAs are located in areas impacted by regular airport and SDFD operations. Soils are compacted and as a result lack slopes.

7.4 ATTRIBUTE 4: BIOTIC STRUCTURE

7.4.1 Metric 1: Horizontal Interspersion and Zonation

Horizontal biotic structure refers to the variety and interspersion of plant "zones", plant monocultures or obvious multi-species association or assemblages that are arrayed along gradients of elevation, moisture, or other environmental factors. Interspersion is essentially a measure of the number of distinct plant zones and the amount of shared edge between them. All four AAs, FOVP-4, FOVP-6, FOVP-7, and FOVP-9, have a metric score of D. All four AAs are heavily influence by regular SDFD and airport operations. The pools are mowed regularly and are impacted by vehicular traffic. As a result, all four AAs have only one plant zone. These pools are similar in species makeup and lack variation.

7.4.2 Metric 2: Plant Community Composition Submetrics

7.4.2.1 Submetric A: Number of Co-dominant Species

This submetric considers all the plant species that comprise at least 10% relative cover within the pool as a whole. Only living vegetation in growth position is considered in this metric. Two AAs, FOVP-4 and FOVP-9, had a metric score of B, of which FOVP-4 had four co-dominant species and FOVP-9 had five co-dominant species. FOVP-6 and FOVP-7 had a metric score of C of which both AAs had three co-dominant species.

7.4.2.2 Submetric B: Percent Nonnative

This submetric considers all plant species that are considered co-dominant per Submetric A that are nonnative. Three AAs, FOVP-4, FOVP-6, and FOVP-9, had a metric score of D, of which roughly half of the co-dominant species were nonnative species. FOVP-7 scored a B of which only one out of the three co dominant species is considered nonnative. All four AAs have been impacted overtime by the daily operations and development of the airport and the regular SDFD operations have degraded these pools overtime through introduction of nonnative species that have encroached from ornamental landscaping and weedy nonnative species that proliferate from regular disturbances.

7.4.2.3 Submetric C: Endemic Species Richness

This submetric is based on the total number of co-dominant native plant species endemic to vernal pools that occur within the AA. All four AAs, FOVP-4, FOVP-6, FOVP-7, and FOVP-9 have metric scores of D, of which two of the AAs, FOVP-7 and FOVP-9 had only one co-dominant vernal pool endemic species observed within the AA. FOVP-4 and FOVP-6 had no co-dominant vernal pool endemic species observed within the AAs.

8 CONCLUSION

The project will directly impact all four vernal pools. These CRAM evaluations serve to provide baseline conditions of the existing vernal pools onsite that will be impacted by project activities and to inform mitigation strategies with the intent to mitigate for these pools offsite with vernal pools of similar or higher quality.

9 REFERENCES

California Wetlands Monitoring Workgroup (CWMW)
2013 California Rapid Assessment Method (CRAM) for Vernal Pools, User's Manual Version 6.1

Figure 1: Vernal Pool 4 Aquatic Area Abundance
Fire Rescue Air Operations Phase II

Figure 2: Vernal Pool 4 Buffer Width Estimate
Fire Rescue Air Operations Phase II

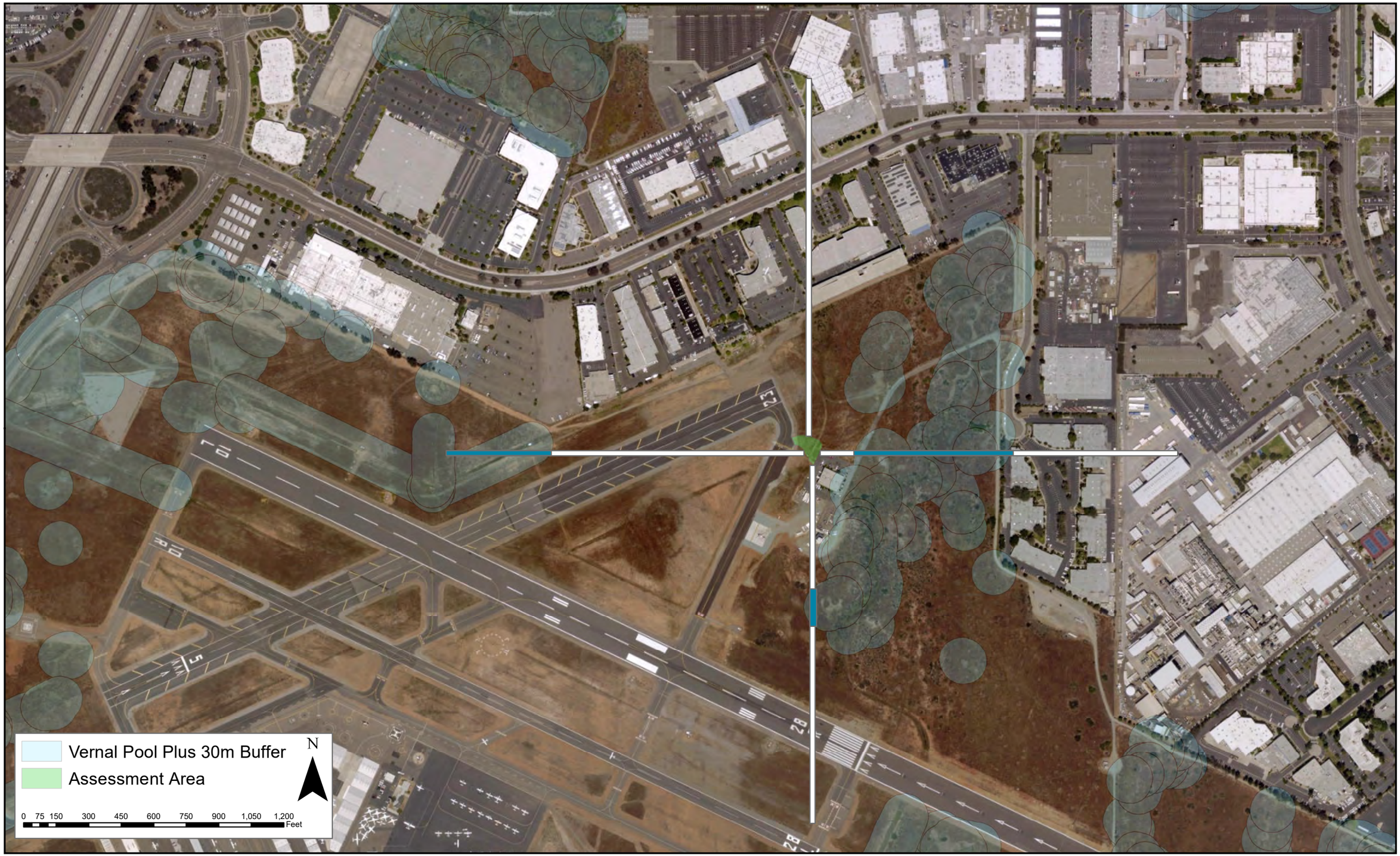


Figure 3: Vernal Pool 6 Aquatic Area Abundance

Fire Rescue Air Operations Phase II

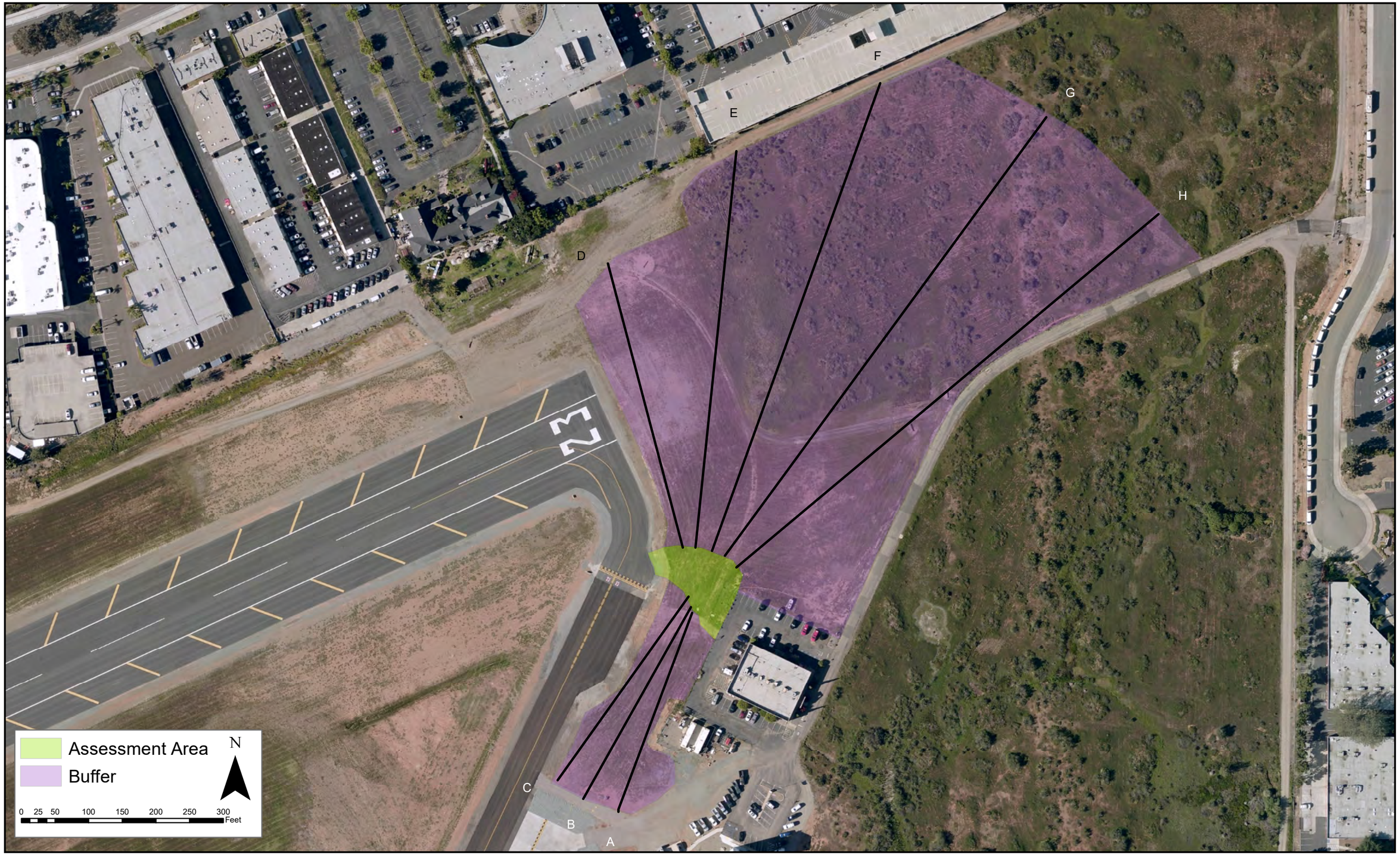


Figure 4: Vernal Pool 6 Buffer Width Estimate

Fire Rescue Air Operations Phase II

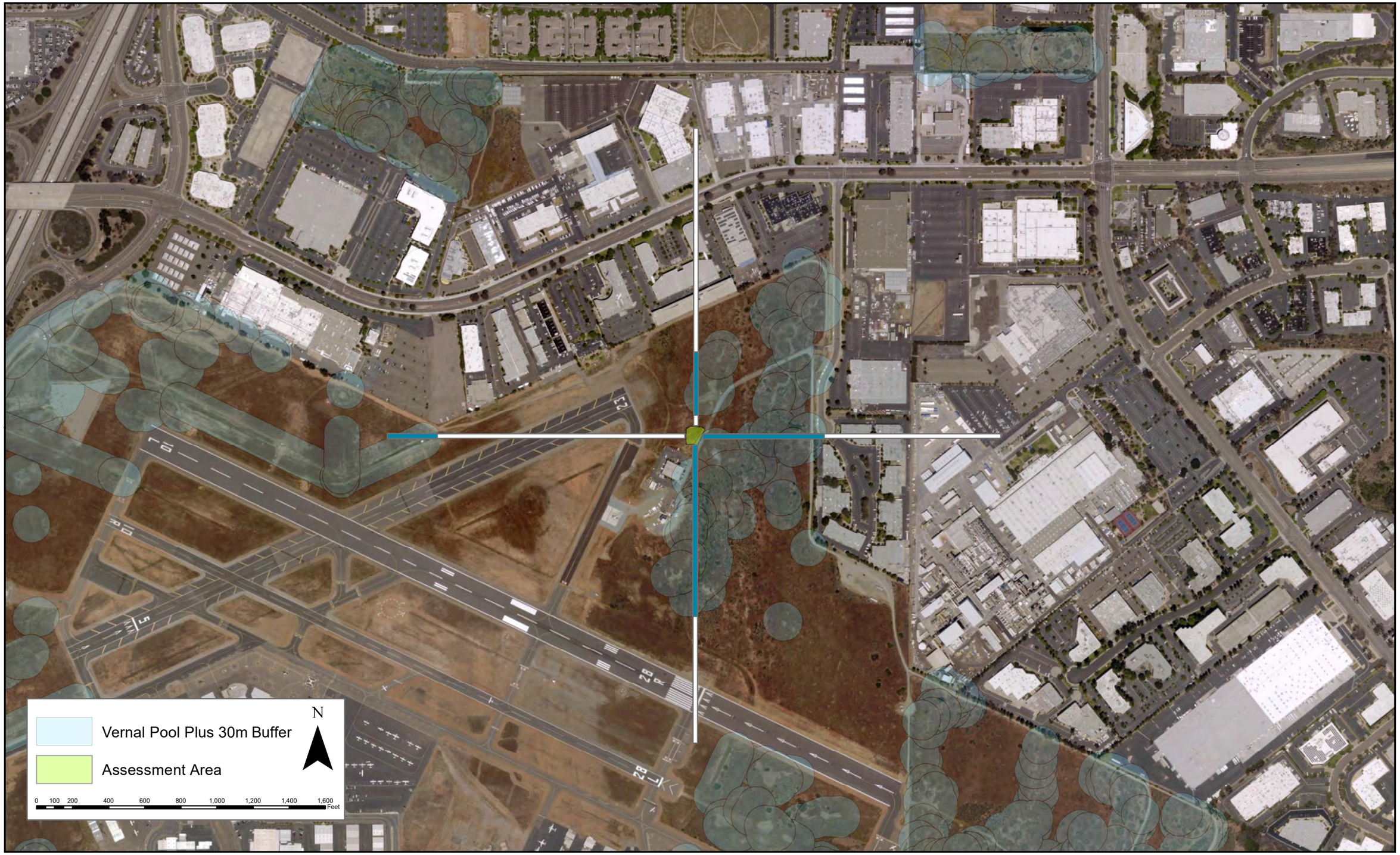


Figure 5: Vernal Pool 7 Aquatic Area Abundance
Fire Rescue Air Operations Phase II

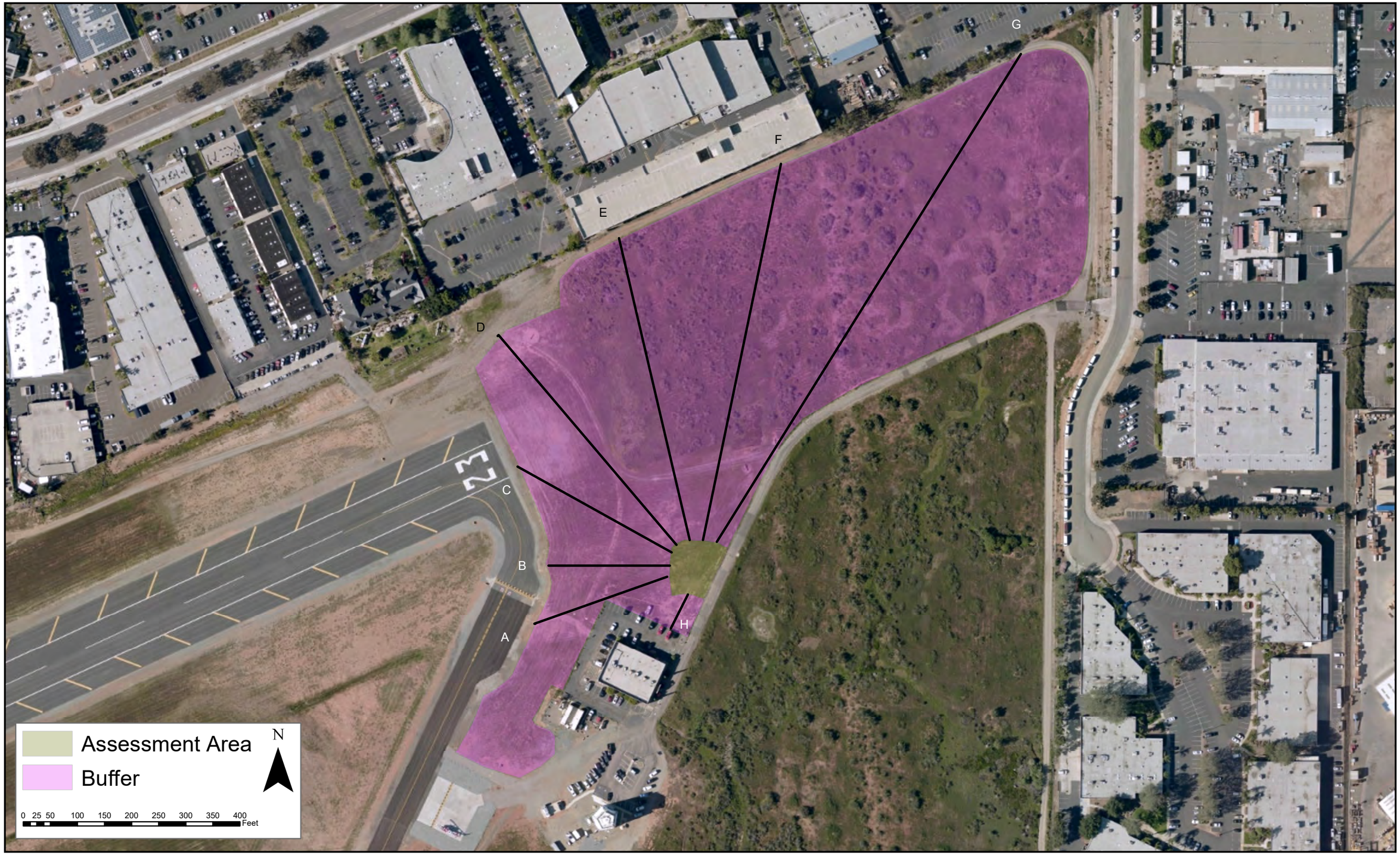


Figure 6: Vernal Pool 7 Buffer Width Estimate
Fire Rescue Air Operations Phase II

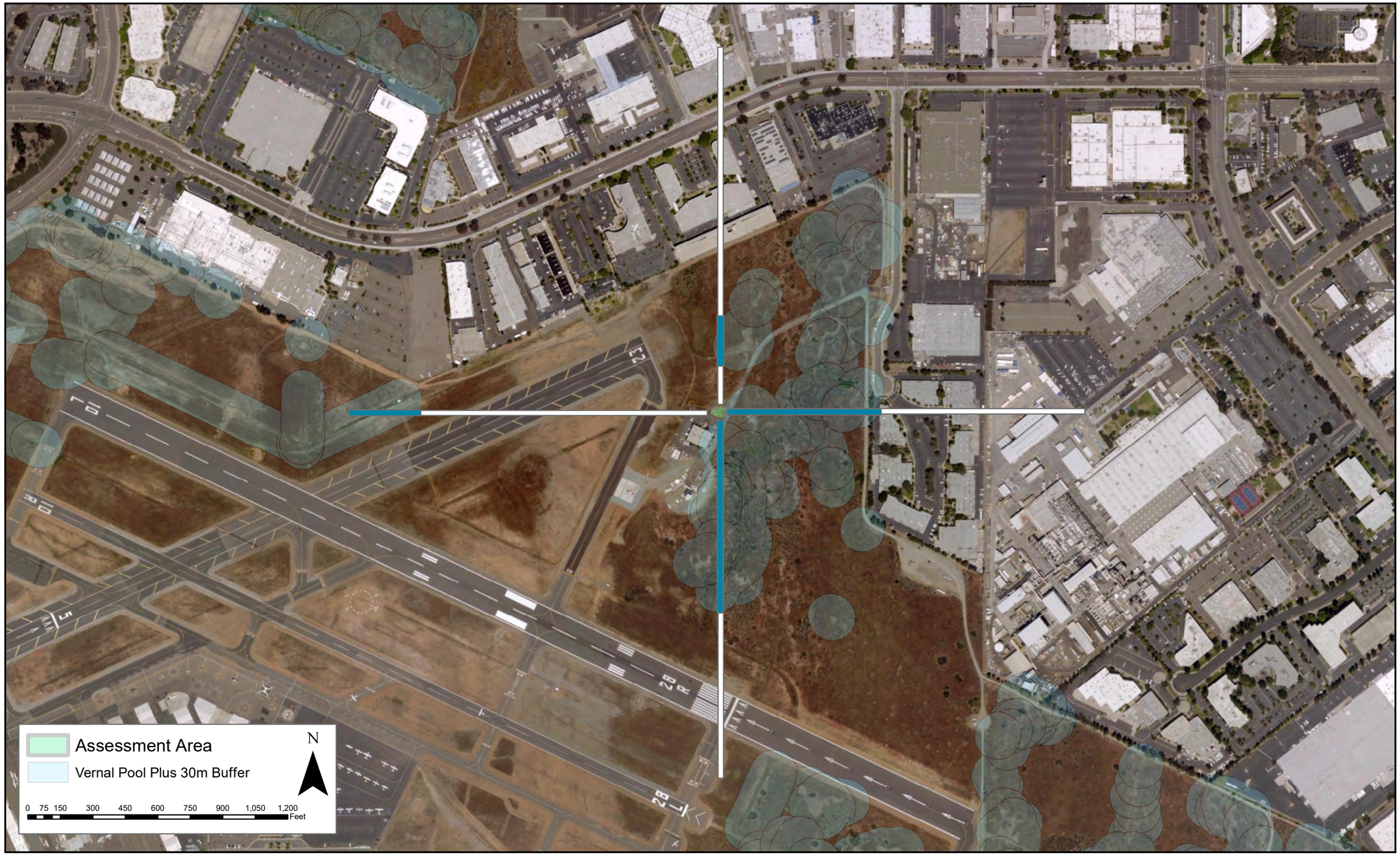


Figure 7: Vernal Pool 9 Aquatic Area Abundance
Fire Rescue Air Operations Phase II

Figure 8: Vernal Pool 9 Buffer Width Estimate
Fire Rescue Air Operations Phase II

APPENDIX A

CRAM DATA SHEETS

Basic Information: Individual Vernal Pool

Assessment Area Name: VERNAL POOL 4

Project Name: FIRE-RESCUE AIR OPERATIONS FACILITY HANGARS PROJECT

Assessment Area ID #: FOVP 4

Project ID #: S-15012 **Date:** 5/25/18

Assessment Team Members for This AA

SEAN PAVER, CINDY DUNN, MAYA MAZON, DOUGLAS ALLEN

AA Location:

Latitude: 32° 49' 04.46" N **Longitude:** 117° 08' 06.19" W **Datum:** WGS 1984

Wetland Category:

☒ Natural ☐ Constructed ☐ Restoration (Rehabilitation OR Enhancement)

If Created or Restored, does the action encompass:

☐ entire wetland ☐ portion of the wetland

What best describes the hydrologic state of the wetland at the time of assessment?

☐ ponded/inundated ☐ saturated soil, but no surface water ☒ dry

What is the apparent hydrologic regime of the wetland?

☐ long-duration ☐ medium-duration ☒ short-duration

Does the vernal pool system connect with the floodplain of a nearby stream?

☐ yes ☒ no

Photo Identification Numbers and Description:

	Photo ID No.	Description	Latitude	Longitude	Datum
1		North	32° 49' 04.21" N	117° 08' 08.15" W	WGS 1984
2		South	32° 49' 04.83" N	117° 08' 08.19" W	WGS 1984
3		East	32° 49' 04.44" N	117° 08' 06.79" W	WGS 1984
4		West	32° 49' 04.39" N	117° 08' 07.53" W	WGS 1984
5					
6					

Comments:

Scoring Sheet: Individual Vernal Pools

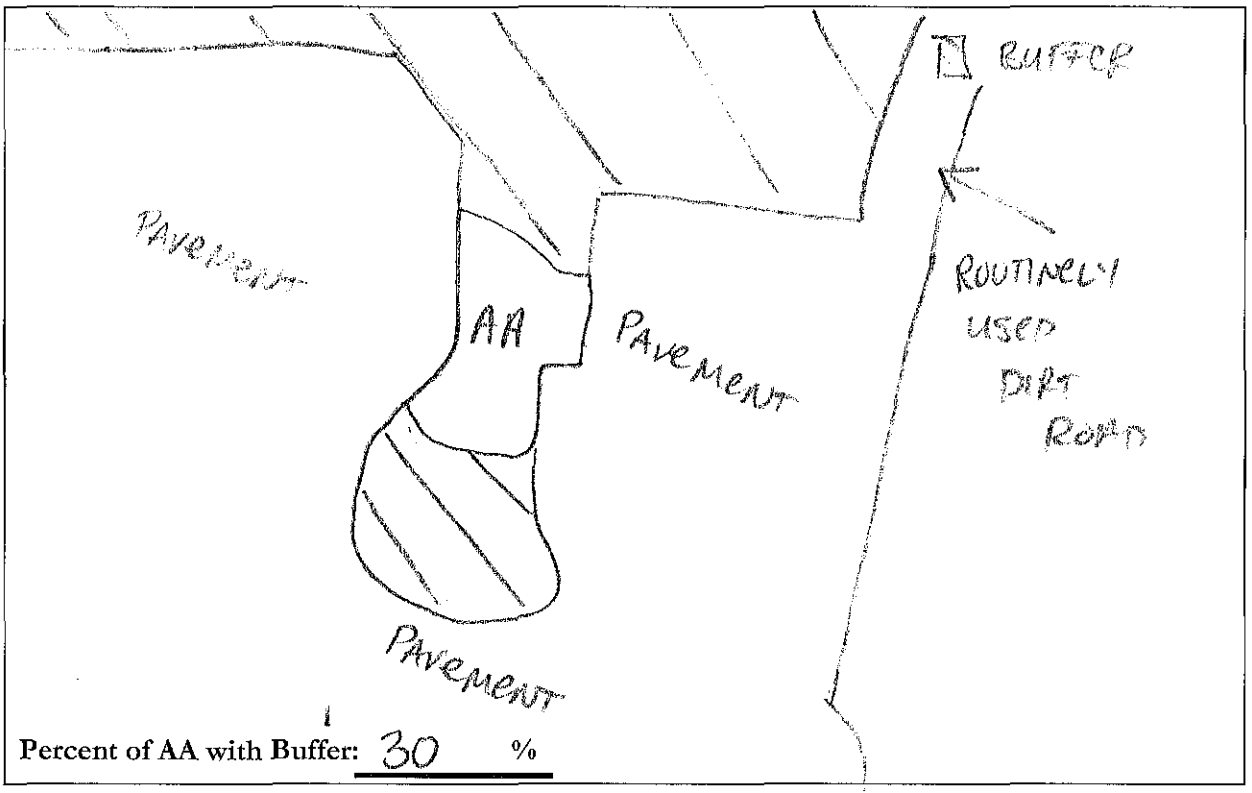
AA Name: VP04				Date: 5/25/18
Attributes and Metrics		Alpha.	Numeric	**Comments**
Attribute 1: Buffer and Landscape Context (pg. 7-15)				
(A) Aquatic Area Abundance		B	9	
	Alpha.	Numeric		
(B): Percent of AA with Buffer	C	6		
(C): Average Buffer Width	B	9		
(D): Buffer Condition	C	6		DISTURBED HABITAT, ROUTINELY MOWED (3x/yr)
Initial Attribute Score= A + [D x (B x C)$^{1/2}$]$^{1/2}$			16	**Final Attribute Score** = (Initial Score/24) x 100: 65
Attribute 2: Hydrology (pg. 8-18)				
Water Source		C	6	
Hydroperiod		B	9	observed at survey: Fire Hose leaking into pool (temporary)
Hydrologic Connectivity		C	6	
Initial Attribute Score= sum of metric scores		21		**Final Attribute Score** = (Initial Score/36) x 100: 58
Attribute 3: Physical Structure (pg. 19-22)				
Structural Patch Richness		D	3	
Topographic Complexity		D	3	
Initial Attribute Score= sum of metric scores		6		**Final Attribute Score** = (Initial Score/24) x 100: 25
Attribute 4: Biotic Structure (pg. 23-27)				
Horizontal Interspersion and Zonation		D	3	
	Alpha.	Numeric		
Plant Community submetric A: Number of Co-dominants	B	9		
Plant Community submetric B: Percent Non-native	D	3		
Plant Community submetric C: Endemic Species Richness	D	3		
Plant Community Composition Metric (*numeric average of submetrics A-C*)			7	
Initial Attribute Score= sum of metric scores		10		**Final Attribute Score** = (Initial Score/24) x 100: 33
Overall AA Score (Average of four Final Attribute Scores)				45

Worksheet 1: Aquatic Area Abundance Metric for Individual Vernal Pools.

Percentage of Each Transect Line Crossing Wetland or Other Aquatic Habitat	
Transect	Percent Crossing Aquatic Area
North	0 %
South	0 %
East	40 %
West	20 %
Average Percent Crossing Aquatic Area for all Four Transects ***Round to nearest integer***	15%

Worksheet 2: Percent of AA with Buffer

In the space provided below make a quick sketch of the AA, or on aerial the imagery, indicate where buffer is present, and record the total amount in the space provided.



Percent of AA with Buffer: 30 %

Worksheet 3: Calculating average buffer width of AA.

Transect	Buffer Width (m)
A	37
B	38
C	41
D	36
E	186
F	228
G	250
H	250
Average Buffer Width ***Round to nearest integer***	133

Worksheet 4: Structural Patch Type for Individual Vernal Pools.

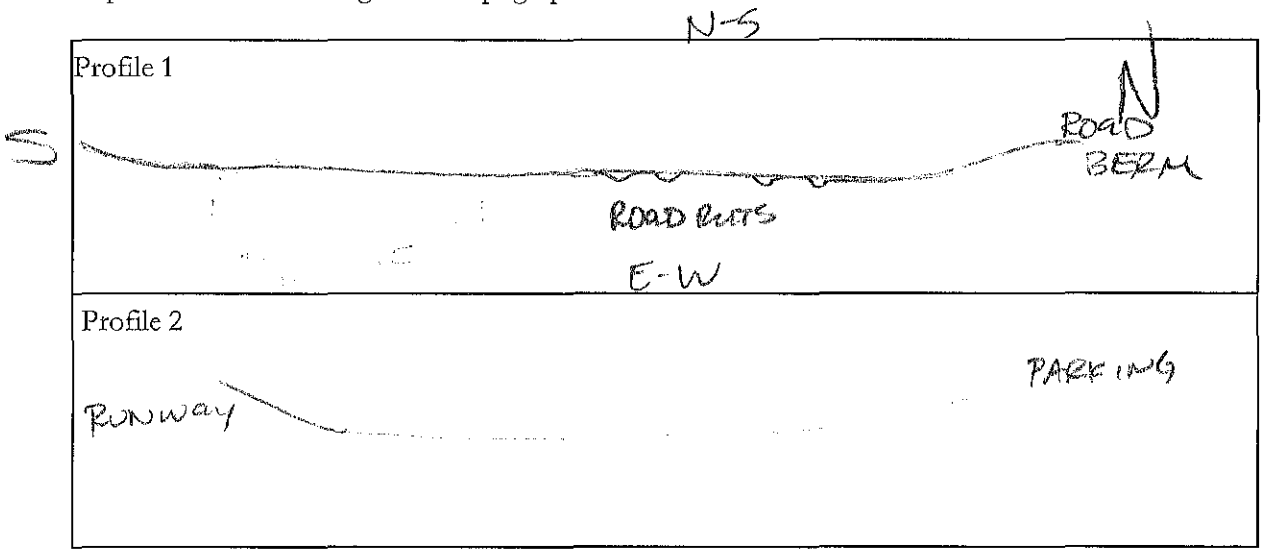
Identify each type of patch that is observed in the AA and use the total number of observed patch types in Table 15.

Structural Patch Type	Check for Presence
Adjacent shrub or tree cover	~~0~~
Animal mounds and burrows	~~0~~
Bare soil (minimum 3 m ^{2})	~~0~~
Cobble and boulders	1
Islands	~~0~~
Mima mounds	~~0~~
Patches of dense vegetation	~~0~~
Soil cracks	~~0~~
Within Pool Mounds	~~0~~
Total Possible	9
No. Observed Patch Types (use in Table 15)	1

<45%.

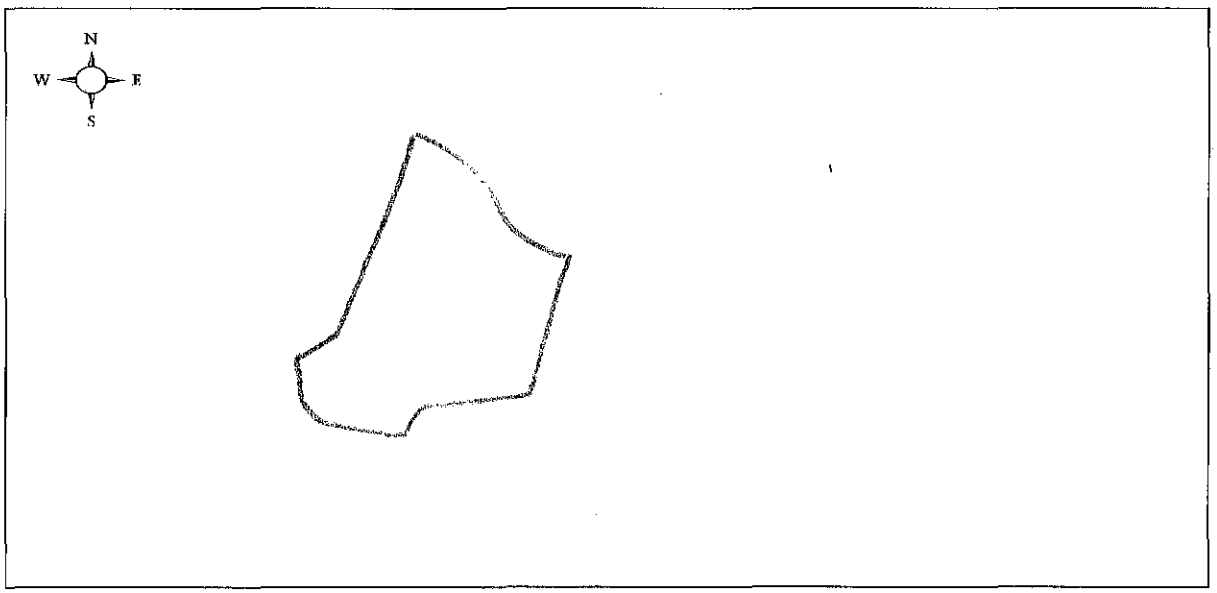
Worksheet 5: Sketches of Vernal Pool Profiles

Along the long axis of the pool and perpendicular to the long axis across the middle, make a sketch of the profile of the pool from its outside edge (1-3m landward or away from the saturated zone of the pool) to its deepest areas and back out to the opposite edge. Try to capture the major breaks in slope and the intervening micro-topographic relief.



Worksheet 6: Sketches of Vernal Pool Plant Zones

Make a sketch-map of the vernal pool boundary plus the approximate locations of obvious plant zones. Compare the sketch-map to Figure 5 to score the pool with regard to horizontal Interspersion and zonation. Make special note of amount of shared edge.



Worksheet 7a: Plant Community Composition Metric –
Co-dominant Plant Species in Individual Vernal Pool

Note: A dominant species represents ≥10% *relative cover*. Count species only once when calculating any Plant Community Composition sub-metric. Use Appendix I to determine if a species is non-native and/or endemic.

Co-dominant Species	Check if Endemic	Check if non-native
BROMUS DIANDRA	—	✓
DIENTANDRA FASCICULATA	—	—
ERODIUM CICUTARIUM	—	✓
HOLOCARPHA VIRGATA SSP. ELONGATA	—	—
Total Number of Co-dominants		4

Worksheet 7b: Plant Community Composition Metric – List of Unique Co-dominant Vernal Pool Endemic Plant Species

(A) Total number of co-dominant species (from worksheet 7a) (enter here and use in Table 19)	4
(B) Total number of co-dominant species that are non-native (from worksheet 7a)	2
Percent Non-native [(B)/(A) x 100] *Round to nearest integer* (enter here and use in Table 20)	50
Total number of co-dominant vernal pool endemic species based on Appendix I (enter here and use in Table 21)	0

Table 22: Wetland disturbances and conversions.

Has a major disturbance occurred at this wetland?	Yes	No		
If yes, was it a flood, fire, landslide, or other?	flood	fire	landslide	other
If yes, then how severe is the disturbance?	likely to affect site next 5 or more years	likely to affect site next 3-5 years	likely to affect site next 1-2 years	
Has this wetland been converted from another type? If yes, then what was the previous type?	depressional	vernal pool	vernal pool system	
	non-confined riverine	confined riverine	bar-built estuarine	
	perennial saline estuarine	perennial non-saline estuarine	wet meadow	
	lacustrine	seep or spring	playa	

Worksheet 8: Stressor Checklist.

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	Present and likely to have significant negative effect on AA
Point Source (PS) discharges (POTW, other non-stormwater discharge)	✓	LEAKING HOSE NO
Non-point Source (Non-PS) discharges (urban runoff, farm drainage)	✓	NO VEHICLE WASH, PAVEMENT RUNOFF
Flow diversions or unnatural inflows		
Dams (reservoirs, detention basins, recharge basins)		
Flow obstructions (culverts, paved stream crossings)		
Weir/drop structure, tide gates		
Dredged inlet/channel		
Engineered channel (riprap, armored channel bank, bed)		
Dike/levees		
Groundwater extraction		
Ditches (borrow, agricultural drainage, mosquito control, etc.)		
Actively managed hydrology		
Comments		

PHYSICAL STRUCTURE ATTRIBUTE (WITHIN 50 M OF AA)	Present	Present and likely to have significant negative effect on AA
Filling or dumping of sediment or soils **(N/A for restoration areas)**		
Grading/ compaction **(N/A for restoration areas)**	✓	VEHICLE OCCASIONAL NOT LIKELY
Plowing/Discing **(N/A for restoration areas)**		
Resource extraction (sediment, gravel, oil and/or gas)		
Vegetation management	✓	MOWING/3X/YR. MCS
Excessive sediment or organic debris from watershed		
Excessive runoff from watershed		
Nutrient impaired (PS or Non-PS pollution)		
Heavy metal impaired (PS or Non-PS pollution)		
Pesticides or trace organics impaired (PS or Non-PS pollution)	✓	SPRAY PREVENTION / NO BASIS
Bacteria and pathogens impaired (PS or Non-PS pollution)		
Trash or refuse	✓	NOT LIKELY
Comments		

BIOTIC STRUCTURE ATTRIBUTE (WITHIN 50 M OF AA)	Present	Present and Likely to Have Significant negative effect on AA
Mowing, grazing, excessive herbivory (within AA)	✓	mow 3x yr / yes
Excessive human visitation	—	
Predation and habitat destruction by non-native vertebrates (e.g., *Virginia opossum* and domestic predators, such as feral pets)	—	
Tree cutting/sapling removal	—	
Removal of woody debris	—	
Treatment of non-native and nuisance plant species	✓	NO
Pesticide application or vector control	✓	RAT TRAPS / NO
Biological resource extraction or stocking (fisheries, aquaculture)	—	
Excessive organic debris in matrix (for vernal pools)	—	
Lack of vegetation management to conserve natural resources	✓	NO NO TREATMENT / yes
Lack of treatment of invasive plants adjacent to AA or buffer	✓	yes
Comments		

BUFFER AND LANDSCAPE CONTEXT ATTRIBUTE (WITHIN 500 M OF AA)	Present	Present and likely to have significant negative effect on AA
Urban residential	—	
Industrial/commercial	✓	In airport in comm. area
Military training/Air traffic	✓	In airport
Dams (or other major flow regulation or disruption)	—	
Dryland farming	—	
Intensive row-crop agriculture	—	
Orchards/nurseries	—	
Commercial feedlots	—	
Dairies	—	
Ranching (enclosed livestock grazing or horse paddock or feedlot)	—	
Transportation corridor	✓	In airport
Rangeland (livestock rangeland also managed for native vegetation)	—	
Sports fields and urban parklands (golf courses, soccer fields, etc.)	—	
Passive recreation (bird-watching, hiking, etc.)	—	
Active recreation (off-road vehicles, mountain biking, hunting, fishing)	—	
Physical resource extraction (rock, sediment, oil/gas)	—	
Biological resource extraction (aquaculture, commercial fisheries)	—	
Comments		

Basic Information: Individual Vernal Pool

Assessment Area Name: VERNAL POOL 6

Project Name: FIRE OPS

Assessment Area ID #: FOVP 6

Project ID #: S-6012 **Date:** 5/25/18

Assessment Team Members for This AA

SEAN. PAVER, CINDY DUNN, MAYA MAYZON, DOUGLAS ALLEN

AA Location:
Latitude: 32°49' 05.22" N **Longitude:** 117° 08' 07.49" W **Datum:** WGS 1985

Wetland Category:
☒ Natural ☐ Constructed ☐ Restoration (Rehabilitation OR Enhancement)

If Created or Restored, does the action encompass:
☐ entire wetland ☐ portion of the wetland

What best describes the hydrologic state of the wetland at the time of assessment?
☐ ponded/inundated ☐ saturated soil, but no surface water ☒ dry

What is the apparent hydrologic regime of the wetland?
☐ long-duration ☐ medium-duration ☒ short-duration

Does the vernal pool system connect with the floodplain of a nearby stream?
☐ yes ☒ no

Photo Identification Numbers and Description:

	Photo ID No.	Description	Latitude	Longitude	Datum
1		North	32°49'05.86"N	117°08'07.22" W	WGS 1984
2		South	32°49'04.55"N	117°08'07.76"W	WGS 1984
3		East	32°49'05.19"N	117°08'07.11"W	WGS 1984
4		West	32°49'05.35"N	117°08'07.96"W	WGS 1984
5					
6					

Comments:

Scoring Sheet: Individual Vernal Pools

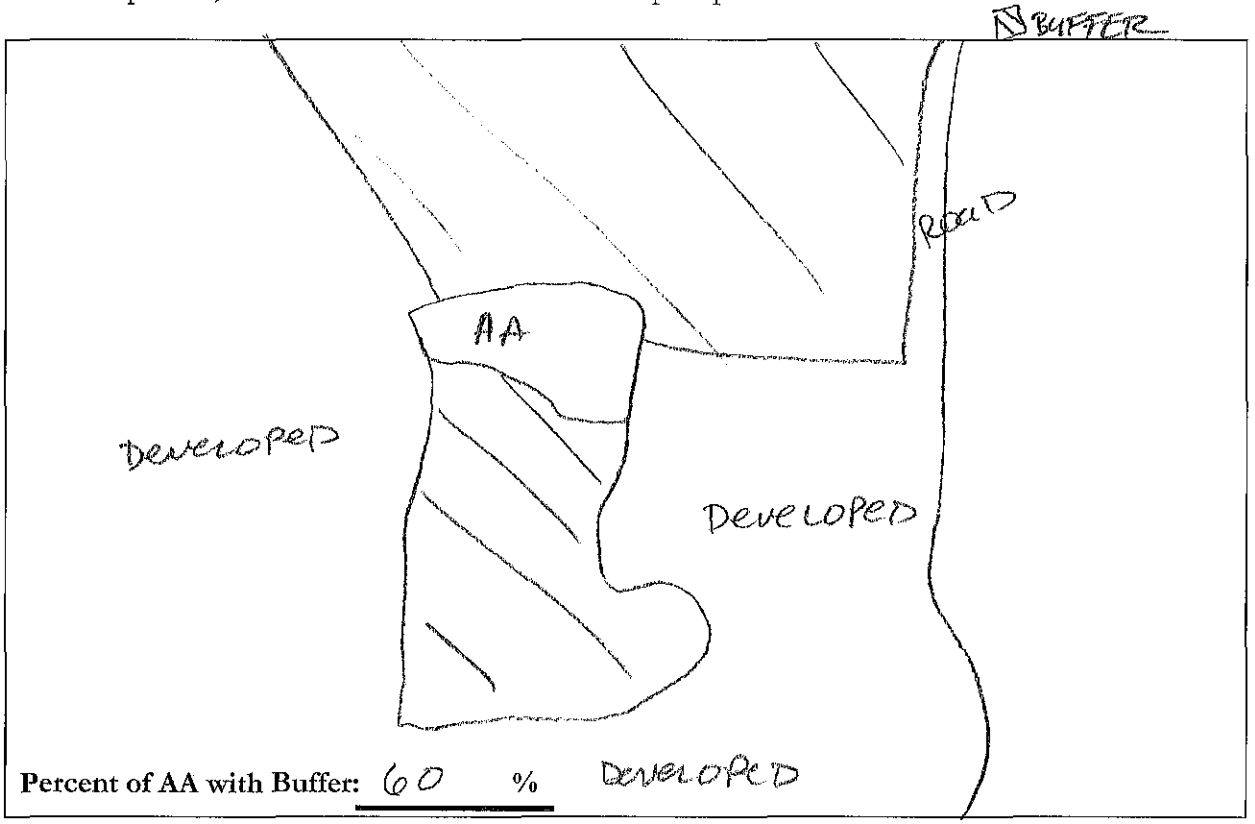
AA Name:				Date:	
Attributes and Metrics		Alpha.	Numeric	**Comments**	
Attribute 1: Buffer and Landscape Context (pg. 7-15)					
(A) Aquatic Area Abundance		B	9		
	Alpha.	Numeric			
(B): Percent of AA with Buffer	B	9			
(C): Average Buffer Width	B	9			
(D): Buffer Condition	C	6			
Initial Attribute Score= A + [D x (B x C)^{½}]^{½}			16	**Final Attribute Score = (Initial Score/24) x 100**	68
Attribute 2: Hydrology (pg. 8-18)					
Water Source		C	6		
Hydroperiod		B	9		
Hydrologic Connectivity		C	6		
Initial Attribute Score= sum of metric scores		21		**Final Attribute Score = (Initial Score/36) x 100**	58
Attribute 3: Physical Structure (pg. 19-22)					
Structural Patch Richness		D	3		
Topographic Complexity		D	3		
Initial Attribute Score= sum of metric scores		6		**Final Attribute Score = (Initial Score/24) x 100**	25
Attribute 4: Biotic Structure (pg. 23-27)					
Horizontal Interspersion and Zonation		D	3		
	Alpha.	Numeric			
Plant Community submetric A: Number of Co-dominants	C	6			
Plant Community submetric B: Percent Non-native	D	3			
Plant Community submetric C: Endemic Species Richness	D	3			
Plant Community Composition Metric (*numeric average of submetrics A-C*)			4		
Initial Attribute Score= sum of metric scores		7		**Final Attribute Score = (Initial Score/24) x 100**	29
Overall AA Score (Average of four Final Attribute Scores)				45	

Worksheet 1: Aquatic Area Abundance Metric for Individual Vernal Pools.

Percentage of Each Transect Line Crossing Wetland or Other Aquatic Habitat	
Transect	Percent Crossing Aquatic Area
North	0%
South	10%
East	45%
West	25%
Average Percent Crossing Aquatic Area for all Four Transects ***Round to nearest integer***	20%

Worksheet 2: Percent of AA with Buffer

In the space provided below make a quick sketch of the AA, or on aerial the imagery, indicate where buffer is present, and record the total amount in the space provided.



Percent of AA with Buffer: 60 %

Worksheet 3: Calculating average buffer width of AA.

Transect	Buffer Width (m)
A	106
B	104
C	96
D	147
E	181
F	229
G	250
H	250
Average Buffer Width ***Round to nearest integer***	170

Worksheet 4: Structural Patch Type for Individual Vernal Pools.

Identify each type of patch that is observed in the AA and use the total number of observed patch types in Table 15.

Structural Patch Type	Check for Presence
Adjacent shrub or tree cover	0
Animal mounds and burrows	0
Bare soil (minimum 3 m^2)	0
Cobble and boulders	1
Islands	0
Mima mounds	0
Patches of dense vegetation	0
Soil cracks	0
Within Pool Mounds	0
Total Possible	9
No. Observed Patch Types (use in Table 15)	1

Worksheet 5: Sketches of Vernal Pool Profiles

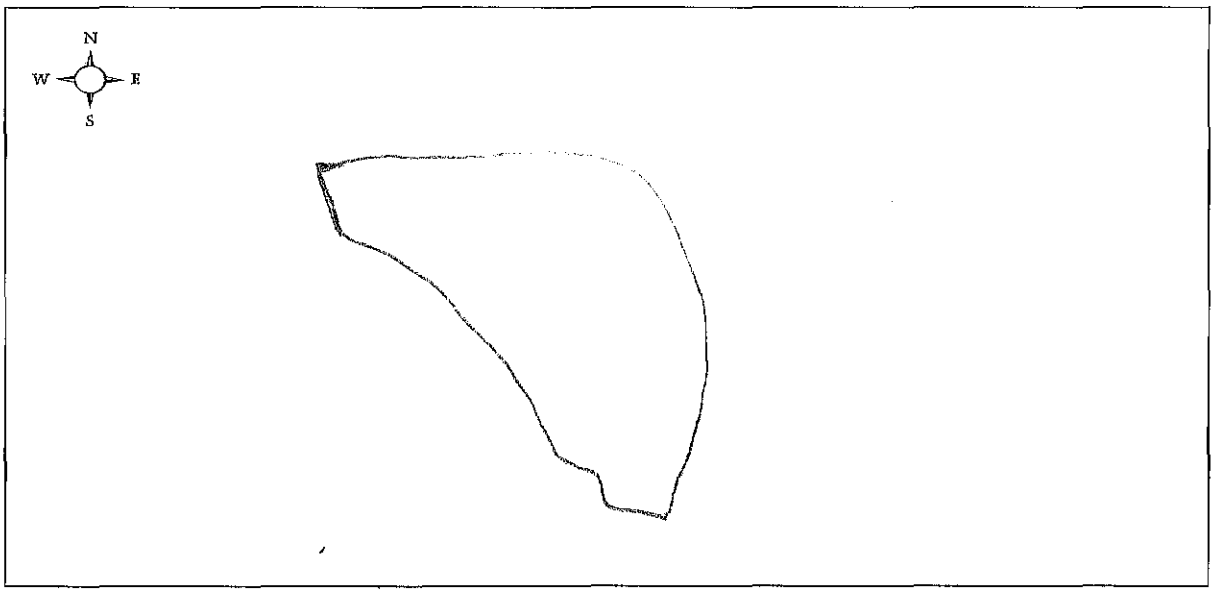
Along the long axis of the pool and perpendicular to the long axis across the middle, make a sketch of the profile of the pool from its outside edge (1-3m landward or away from the saturated zone of the pool) to its deepest areas and back out to the opposite edge. Try to capture the major breaks in slope and the intervening micro-topographic relief.

Profile 1 W → E

Profile 2 N → S

Worksheet 6: Sketches of Vernal Pool Plant Zones

Make a sketch-map of the vernal pool boundary plus the approximate locations of obvious plant zones. Compare the sketch-map to Figure 5 to score the pool with regard to horizontal Interspersion and zonation. Make special note of amount of shared edge.



Worksheet 7a: Plant Community Composition Metric –
Co-dominant Plant Species in Individual Vernal Pool

Note: A dominant species represents ≥10% *relative cover*. Count species only once when calculating any Plant Community Composition sub-metric. Use Appendix I to determine if a species is non-native and/or endemic.

Co-dominant Species	Check if Endemic	Check if non-native
BROMUS DIANDRUS	—	↘
DIENANDRA FASCICULATA	—	—
ERODIUM CICUTARIUM	—	↘
Total Number of Co-dominants	→	3

Worksheet 7b: Plant Community Composition Metric – List of Unique Co-dominant Vernal Pool Endemic Plant Species

(A) Total number of co-dominant species (from worksheet 7a) (enter here and use in Table 19)	3
(B) Total number of co-dominant species that are non-native (from worksheet 7a)	2
Percent Non-native [(B)/(A) x 100] *Round to nearest integer* (enter here and use in Table 20)	66
Total number of co-dominant vernal pool endemic species based on Appendix I (enter here and use in Table 21)	0

Table 22: Wetland disturbances and conversions.

Has a major disturbance occurred at this wetland?	Yes	No		
If yes, was it a flood, fire, landslide, or other?	flood	fire	landslide	other
If yes, then how severe is the disturbance?	likely to affect site next 5 or more years	likely to affect site next 3-5 years	likely to affect site next 1-2 years	
Has this wetland been converted from another type? If yes, then what was the previous type?	depressional	vernal pool	vernal pool system	
	non-confined riverine	confined riverine	bar-built estuarine	
	perennial saline estuarine	perennial non-saline estuarine	wet meadow	
	lacustrine	seep or spring	playa	

Worksheet 8: Stressor Checklist.

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	Present and likely to have significant negative effect on AA
Point Source (PS) discharges (POTW, other non-stormwater discharge)	—	
Non-point Source (Non-PS) discharges (urban runoff, farm drainage)	✓	NO (vehicle wash, pavement runoff)
Flow diversions or unnatural inflows	—	
Dams (reservoirs, detention basins, recharge basins)	—	
Flow obstructions (culverts, paved stream crossings)	—	
Weir/drop structure, tide gates	—	
Dredged inlet/channel	—	
Engineered channel (riprap, armored channel bank, bed)	—	
Dike/levees	—	
Groundwater extraction	—	
Ditches (borrow, agricultural drainage, mosquito control, etc.)	—	
Actively managed hydrology	—	
Comments		

PHYSICAL STRUCTURE ATTRIBUTE (WITHIN 50 M OF AA)	Present	Present and likely to have significant negative effect on AA
Filling or dumping of sediment or soils **(N/A for restoration areas)**	—	
Grading/ compaction **(N/A for restoration areas)**	✓	NOT LIKELY (vehicle occassional)
Plowing/Discing **(N/A for restoration areas)**	—	
Resource extraction (sediment, gravel, oil and/or gas)	—	
Vegetation management	✓	Yes (mowing - 3x/yr)
Excessive sediment or organic debris from watershed	—	
Excessive runoff from watershed	—	
Nutrient impaired (PS or Non-PS pollution)	—	
Heavy metal impaired (PS or Non-PS pollution)	—	
Pesticides or trace organics impaired (PS or Non-PS pollution)	✓	NO (SPRAY ON ADJACENT RUNWAY)
Bacteria and pathogens impaired (PS or Non-PS pollution)	—	
Trash or refuse	✓	NOT LIKELY
Comments		

BIOTIC STRUCTURE ATTRIBUTE (WITHIN 50 M OF AA)	Present	Present and Likely to Have Significant negative effect on AA
Mowing, grazing, excessive herbivory (within AA)	✓	Yes (mow-3x/yr)
Excessive human visitation	—	
Predation and habitat destruction by non-native vertebrates (e.g., *Virginia opossum* and domestic predators, such as feral pets)	—	
Tree cutting/sapling removal	—	
Removal of woody debris	—	
Treatment of non-native and nuisance plant species	✓	NO
Pesticide application or vector control	✓	NO (RAT TRAPS)
Biological resource extraction or stocking (fisheries, aquaculture)	—	
Excessive organic debris in matrix (for vernal pools)	—	
Lack of vegetation management to conserve natural resources	✓	Yes (NO TREATMENT OF NN SPECIES)
Lack of treatment of invasive plants adjacent to AA or buffer	✓	yes
Comments		

BUFFER AND LANDSCAPE CONTEXT ATTRIBUTE (WITHIN 500 M OF AA)	Present	Present and likely to have significant negative effect on AA
Urban residential	—	
Industrial/commercial	✓	In airport surrounded by comm. area
Military training/Air traffic	✓	In airport
Dams (or other major flow regulation or disruption)	—	
Dryland farming	—	
Intensive row-crop agriculture	—	
Orchards/nurseries	—	
Commercial feedlots	—	
Dairies	—	
Ranching (enclosed livestock grazing or horse paddock or feedlot)	—	
Transportation corridor	✓	In airport
Rangeland (livestock rangeland also managed for native vegetation)	—	
Sports fields and urban parklands (golf courses, soccer fields, etc.)	—	
Passive recreation (bird-watching, hiking, etc.)	—	
Active recreation (off-road vehicles, mountain biking, hunting, fishing)	—	
Physical resource extraction (rock, sediment, oil/gas)	—	
Biological resource extraction (aquaculture, commercial fisheries)	—	
Comments		

Scoring Sheet: Individual Vernal Pools

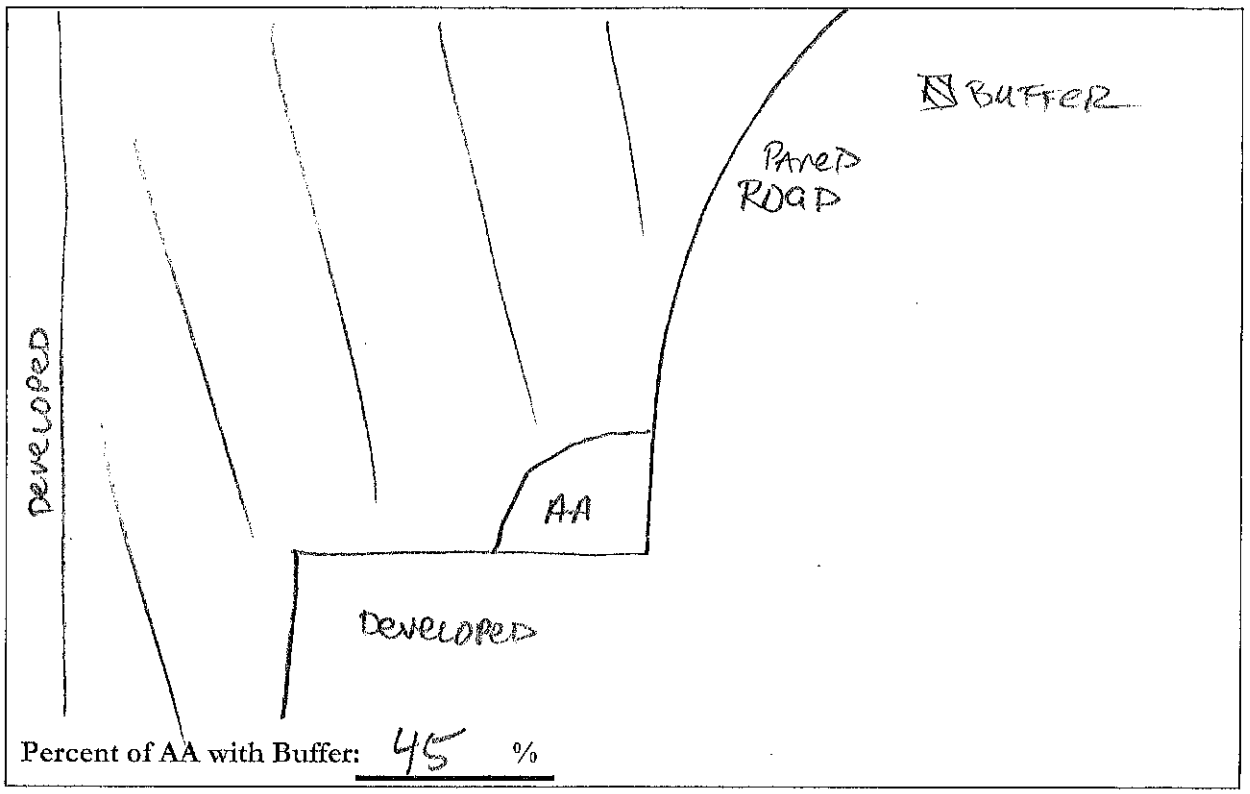
AA Name: FOUP9				Date: 5/25/18
Attributes and Metrics		Alpha.	Numeric	**Comments**
Attribute 1: Buffer and Landscape Context (pg. 7-15)				
(A) Aquatic Area Abundance		A	12	
	Alpha. / Numeric			
(B): Percent of AA with Buffer	C / 6			
(C): Average Buffer Width	A / 12			
(D): Buffer Condition	C / 6			
Initial Attribute Score= $A + [D \times (B \times C)^{1/3}]^{1/3}$			19	**Final Attribute Score = (Initial Score/24) x 100** 79
Attribute 2: Hydrology (pg. 8-18)				
Water Source		B	9	
Hydroperiod		B	9	NEARBY RUNOFF FROM BUILDINGS GOES TO VERNAL POOL
Hydrologic Connectivity		C	6	
Initial Attribute Score= sum of metric scores		24		**Final Attribute Score = (Initial Score/36) x 100** 67
Attribute 3: Physical Structure (pg. 19-22)				
Structural Patch Richness		D	3	
Topographic Complexity		D	3	
Initial Attribute Score= sum of metric scores		6		**Final Attribute Score = (Initial Score/24) x 100** 25
Attribute 4: Biotic Structure (pg. 23-27)				
Horizontal Interspersion and Zonation		D	3	
	Alpha. / Numeric			
Plant Community submetric A: Number of Co-dominants	B / 9			
Plant Community submetric B: Percent Non-native	D / 3			
Plant Community submetric C: Endemic Species Richness	D / 3			
Plant Community Composition Metric *(numeric average of submetrics A-C)*			5	
Initial Attribute Score= sum of metric scores		8		**Final Attribute Score = (Initial Score/24) x 100** 33
Overall AA Score (Average of four Final Attribute Scores)				51

Worksheet 1: Aquatic Area Abundance Metric for Individual Vernal Pools.

Percentage of Each Transect Line Crossing Wetland or Other Aquatic Habitat	
Transect	Percent Crossing Aquatic Area
North	~~20%~~ 10%
South	~~75%~~ 55%
East	~~20%~~ 45%
West	~~0%~~ 10%
Average Percent Crossing Aquatic Area for all Four Transects *Round to nearest integer*	~~29%~~ 30%

Worksheet 2: Percent of AA with Buffer

In the space provided below make a quick sketch of the AA, or on aerial the imagery, indicate where buffer is present, and record the total amount in the space provided.



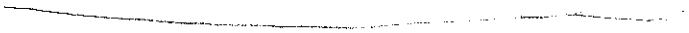
Percent of AA with Buffer: 45 %

Worksheet 5: Sketches of Vernal Pool Profiles

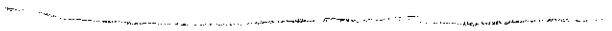
Along the long axis of the pool and perpendicular to the long axis across the middle, make a sketch of the profile of the pool from its outside edge (1-3m landward or away from the saturated zone of the pool) to its deepest areas and back out to the opposite edge. Try to capture the major breaks in slope and the intervening micro-topographic relief.

N-S

Profile 1

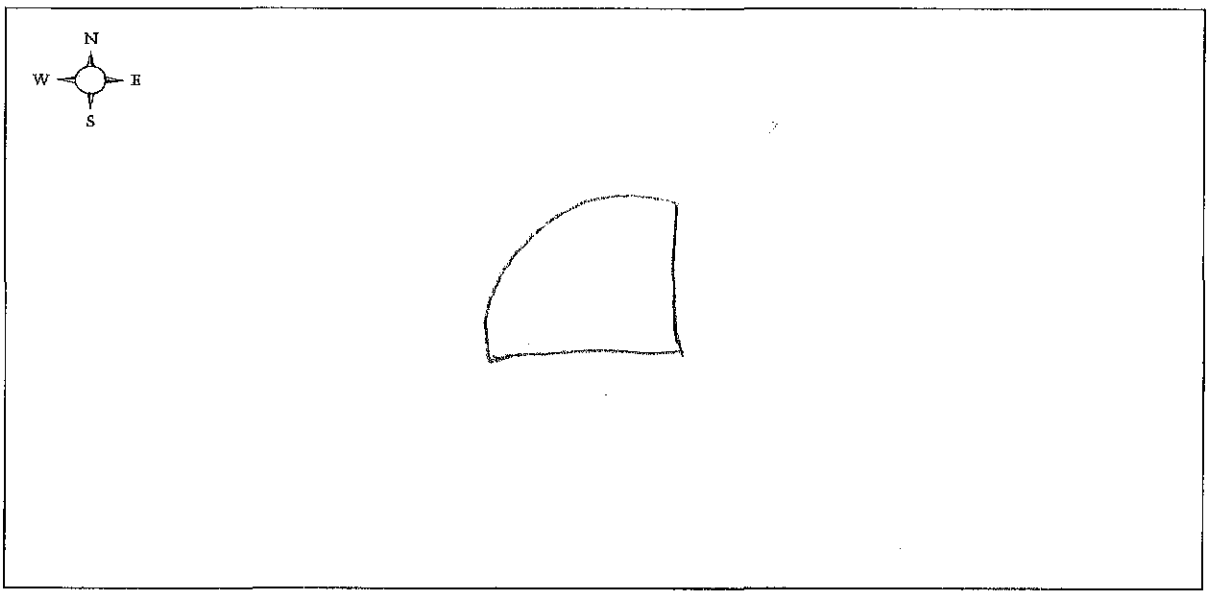


Profile 2 E-W



Worksheet 6: Sketches of Vernal Pool Plant Zones

Make a sketch-map of the vernal pool boundary plus the approximate locations of obvious plant zones. Compare the sketch-map to Figure 5 to score the pool with regard to horizontal Interspersion and zonation. Make special note of amount of shared edge.



Worksheet 7b: Plant Community Composition Metric – List of Unique Co-dominant Vernal Pool Endemic Plant Species

(A) Total number of co-dominant species (from worksheet 7a) (enter here and use in Table 19)	5
(B) Total number of co-dominant species that are non-native (from worksheet 7a)	3
Percent Non-native [(B)/(A) x 100] *Round to nearest integer* (enter here and use in Table 20)	60%
Total number of co-dominant vernal pool endemic species based on Appendix I (enter here and use in Table 21)	1

Table 22: Wetland disturbances and conversions.

Has a major disturbance occurred at this wetland?	Yes	No		
If yes, was it a flood, fire, landslide, or other?	flood	fire	landslide	other
If yes, then how severe is the disturbance?	likely to affect site next 5 or more years	likely to affect site next 3-5 years	likely to affect site next 1-2 years	
Has this wetland been converted from another type? If yes, then what was the previous type?	depressional	vernal pool	vernal pool system	
	non-confined riverine	confined riverine	bar-built estuarine	
	perennial saline estuarine	perennial non-saline estuarine	wet meadow	
	lacustrine	seep or spring	playa	

BIOTIC STRUCTURE ATTRIBUTE (WITHIN 50 M OF AA)	Present	Present and Likely to Have Significant negative effect on AA
Mowing, grazing, excessive herbivory (within AA)	✓	YES
Excessive human visitation	✓	YES
Predation and habitat destruction by non-native vertebrates (e.g., *Virginia opossum* and domestic predators, such as feral pets)		
Tree cutting/sapling removal		
Removal of woody debris		
Treatment of non-native and nuisance plant species		
Pesticide application or vector control		
Biological resource extraction or stocking (fisheries, aquaculture)		
Excessive organic debris in matrix (for vernal pools)		
Lack of vegetation management to conserve natural resources	✓	YES
Lack of treatment of invasive plants adjacent to AA or buffer	✓	YES
Comments		

ADJACENT TO PARKING

BUFFER AND LANDSCAPE CONTEXT ATTRIBUTE (WITHIN 500 M OF AA)	Present	Present and likely to have significant negative effect on AA
Urban residential		
Industrial/commercial		
Military training/Air traffic		
Dams (or other major flow regulation or disruption)		
Dryland farming		
Intensive row-crop agriculture		
Orchards/nurseries		
Commercial feedlots		
Dairies		
Ranching (enclosed livestock grazing or horse paddock or feedlot)		
Transportation corridor		
Rangeland (livestock rangeland also managed for native vegetation)		
Sports fields and urban parklands (golf courses, soccer fields, etc.)		
Passive recreation (bird-watching, hiking, etc.)		
Active recreation (off-road vehicles, mountain biking, hunting, fishing)		
Physical resource extraction (rock, sediment, oil/gas)		
Biological resource extraction (aquaculture, commercial fisheries)		
Comments		

Basic Information: Individual Vernal Pool

Assessment Area Name: VERNAL POOL 7

Project Name: FIRE OPS

Assessment Area ID #: FOVP 7

Project ID #: S-15012 **Date:** 5/25/18

Assessment Team Members for This AA

SEAN PAVER, CINDY DUNN, MAYA MAZON, DOUGLAS ALLEN

AA Location:

Latitude: 32°49'06.14" N **Longitude:** 117° 08' 05" W **Datum:** WGS 1985

Wetland Category:

☐ Natural ☒ Constructed ☐ Restoration (Rehabilitation OR Enhancement)

DEPRESSION MAY HAVE BEEN CAUSED BY VEHICLE COMPACTION

If Created or Restored, does the action encompass:

☐ entire wetland ☐ portion of the wetland

What best describes the hydrologic state of the wetland at the time of assessment?

☐ ponded/inundated ☐ saturated soil, but no surface water ☒ dry

What is the apparent hydrologic regime of the wetland?

☐ long-duration ☐ medium-duration ☒ short-duration

Does the vernal pool system connect with the floodplain of a nearby stream?

☐ yes ☒ no

Photo Identification Numbers and Description:

	Photo ID No.	Description	Latitude	Longitude	Datum
1		North	32°49'06.73"N	117° 08' 05.53" W	WGS 1985
2		South	32°49' 04.39"N	117° 08' 06.10" W	WGS 1985
3		East	32°49' 06.09"N	117°08' 06.77"W	WGS 1985
4		West	32°49' 05.72" N	117° 08' 04.61" W	WGS 1985
5					
6					

Comments:

Scoring Sheet: Individual Vernal Pools

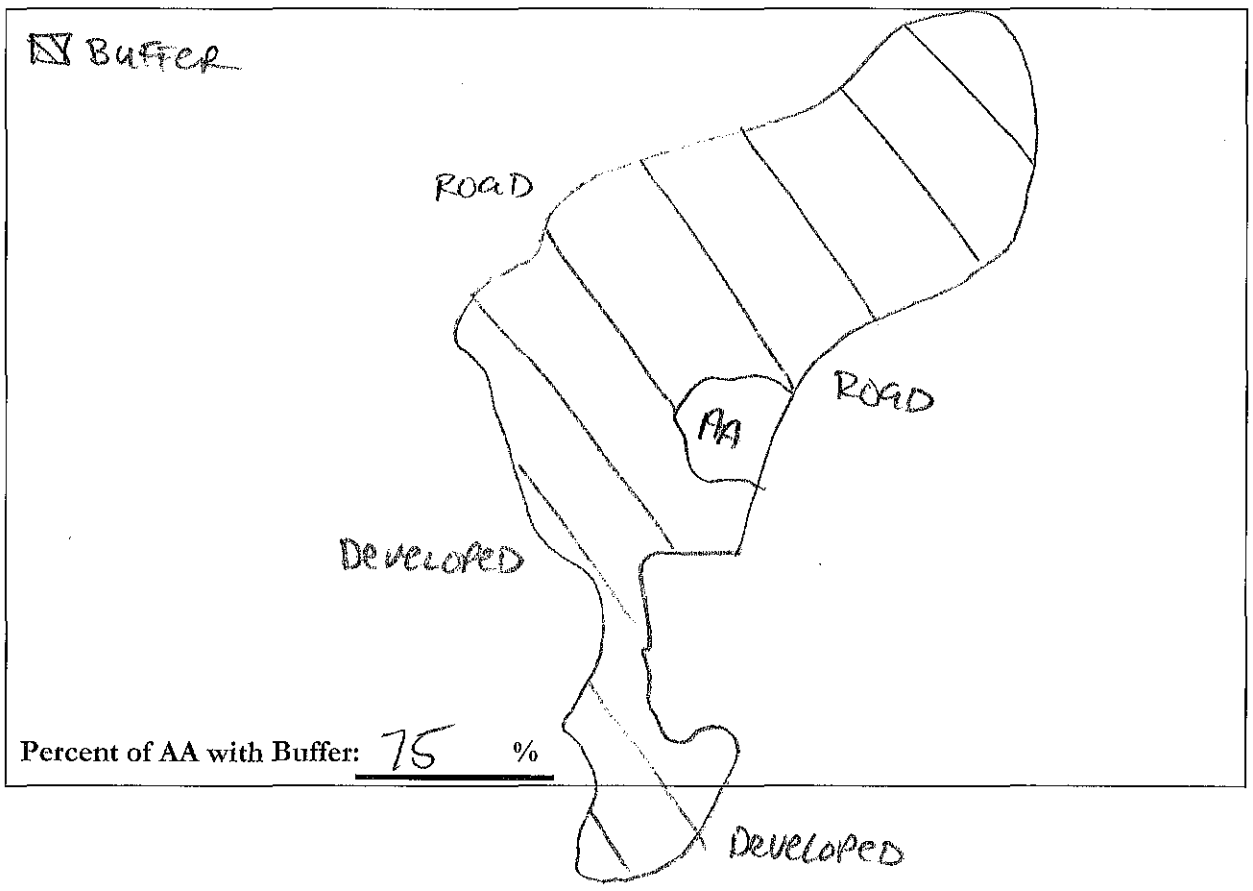
AA Name: FOVP7				Date: 5/25/16
Attributes and Metrics		Alpha.	Numeric	**Comments**
Attribute 1: Buffer and Landscape Context (pg. 7-15)				
(A) Aquatic Area Abundance		A	12	
(B): Percent of AA with Buffer	Alpha. A / Numeric 12			
(C): Average Buffer Width	B / 9			
(D): Buffer Condition	C / 6			
Initial Attribute Score= A + [D x (B x C)$^{1/2}$]$^{1/2}$			20	**Final Attribute Score = (Initial Score/24) x 100** 83
Attribute 2: Hydrology (pg. 8-18)				
Water Source		B	9	
Hydroperiod		B	9	NEAR BY RUNOFF FROM BUILDING GOES TO VERNAL POOL
Hydrologic Connectivity		B	9	
Initial Attribute Score= sum of metric scores		27		**Final Attribute Score = (Initial Score/36) x 100** 75
Attribute 3: Physical Structure (pg. 19-22)				
Structural Patch Richness		D	3	
Topographic Complexity		D	3	
Initial Attribute Score= sum of metric scores		6		**Final Attribute Score = (Initial Score/24) x 100** 25
Attribute 4: Biotic Structure (pg. 23-27)				
Horizontal Interspersion and Zonation		D	3	
Plant Community submetric A: Number of Co-dominants	Alpha. C / Numeric 6			
Plant Community submetric B: Percent Non-native	B / 9			
Plant Community submetric C: Endemic Species Richness	D / 3			
Plant Community Composition Metric (*numeric average of submetrics A-C*)			6	
Initial Attribute Score= sum of metric scores		9		**Final Attribute Score = (Initial Score/24) x 100** 38
Overall AA Score (Average of four Final Attribute Scores)				55

Worksheet 1: Aquatic Area Abundance Metric for Individual Vernal Pools.

Percentage of Each Transect Line Crossing Wetland or Other Aquatic Habitat	
Transect	Percent Crossing Aquatic Area
North	20%
South	60%
East	35%
West	10%
Average Percent Crossing Aquatic Area for all Four Transects *Round to nearest integer*	31%

Worksheet 2: Percent of AA with Buffer

In the space provided below make a quick sketch of the AA, or on aerial the imagery, indicate where buffer is present, and record the total amount in the space provided.



Percent of AA with Buffer: 75 %

Worksheet 3: Calculating average buffer width of AA.

Transect	Buffer Width (m)
A	80
B	70
C	95
D	153
E	174
F	217
G	322
H	21
Average Buffer Width *Round to nearest integer*	141

Worksheet 4: Structural Patch Type for Individual Vernal Pools.

Identify each type of patch that is observed in the AA and use the total number of observed patch types in Table 15.

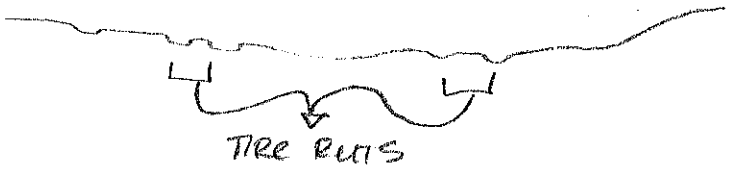
Structural Patch Type	Check for Presence
Adjacent shrub or tree cover	
Animal mounds and burrows	
Bare soil (minimum 3 m^2)	
Cobble and boulders	
Islands	
Mima mounds	
Patches of dense vegetation	
Soil cracks	
Within Pool Mounds	
Total Possible	9
No. Observed Patch Types (use in Table 15)	1

Worksheet 5: Sketches of Vernal Pool Profiles

Along the long axis of the pool and perpendicular to the long axis across the middle, make a sketch of the profile of the pool from its outside edge (1-3m landward or away from the saturated zone of the pool) to its deepest areas and back out to the opposite edge. Try to capture the major breaks in slope and the intervening micro-topographic relief.

N-S

Profile 1

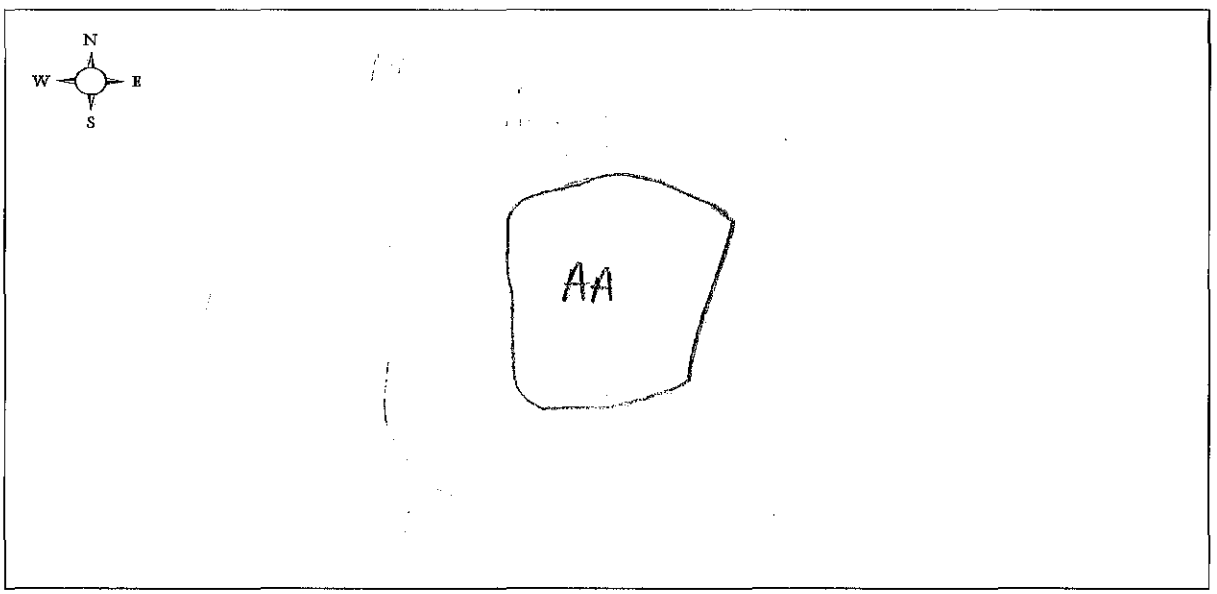


Profile 2

E → W

Worksheet 6: Sketches of Vernal Pool Plant Zones

Make a sketch-map of the vernal pool boundary plus the approximate locations of obvious plant zones. Compare the sketch-map to Figure 5 to score the pool with regard to horizontal Interspersion and zonation. Make special note of amount of shated edge.



Worksheet 7a: Plant Community Composition Metric –
Co-dominant Plant Species in Individual Vernal Pool

Note: A dominant species represents ≥10% *relative cover*. Count species only once when calculating any Plant Community Composition sub-metric. Use Appendix I to determine if a species is non-native and/or endemic.

Co-dominant Species	Check if Endemic	Check if non-native
ERODIUM CICUTARIUM	—	✓
Holocarpha virgata ssp. elongata	—	—
Psilocarphus brevissimus	✓	—
Total Number of Co-dominants		3

Worksheet 7b: Plant Community Composition Metric – List of Unique Co-dominant Vernal Pool Endemic Plant Species

(A) Total number of co-dominant species (from worksheet 7a) (enter here and use in Table 19)	3
(B) Total number of co-dominant species that are non-native (from worksheet 7a)	1
Percent Non-native [(B)/(A) x 100] *Round to nearest integer* (enter here and use in Table 20)	33
Total number of co-dominant vernal pool endemic species based on Appendix I (enter here and use in Table 21)	1

Table 22: Wetland disturbances and conversions.

Has a major disturbance occurred at this wetland?	Yes	No		
If yes, was it a flood, fire, landslide, or other?	flood	fire	landslide	other
If yes, then how severe is the disturbance?	likely to affect site next 5 or more years	likely to affect site next 3-5 years	likely to affect site next 1-2 years	
Has this wetland been converted from another type? If yes, then what was the previous type?	depressional	vernal pool	vernal pool system	
	non-confined riverine	confined riverine	bar-built estuarine	
	perennial saline estuarine	perennial non-saline estuarine	wet meadow	
	lacustrine	seep or spring	playa	

Worksheet 8: Stressor Checklist.

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	Present and likely to have significant negative effect on AA
Point Source (PS) discharges (POTW, other non-stormwater discharge)		
Non-point Source (Non-PS) discharges (urban runoff, farm drainage)	✓	NO
Flow diversions or unnatural inflows		
Dams (reservoirs, detention basins, recharge basins)		
Flow obstructions (culverts, paved stream crossings)		
Weir/drop structure, tide gates		
Dredged inlet/channel		
Engineered channel (riprap, armored channel bank, bed)		
Dike/levees		
Groundwater extraction		
Ditches (borrow, agricultural drainage, mosquito control, etc.)		
Actively managed hydrology		
Comments		

PARKING LOT

PHYSICAL STRUCTURE ATTRIBUTE (WITHIN 50 M OF AA)	Present	Present and likely to have significant negative effect on AA
Filling or dumping of sediment or soils **(N/A for restoration areas)**		
Grading/ compaction **(N/A for restoration areas)**	✓	YES
Plowing/Discing **(N/A for restoration areas)**		
Resource extraction (sediment, gravel, oil and/or gas)		
Vegetation management		
Excessive sediment or organic debris from watershed		
Excessive runoff from watershed		
Nutrient impaired (PS or Non-PS pollution)		
Heavy metal impaired (PS or Non-PS pollution)		
Pesticides or trace organics impaired (PS or Non-PS pollution)		
Bacteria and pathogens impaired (PS or Non-PS pollution)		
Trash or refuse	✓	NO
Comments		

HISTORICAL PARKING / DRIVING

BIOTIC STRUCTURE ATTRIBUTE (WITHIN 50 M OF AA)	Present	Present and Likely to Have Significant negative effect on AA
Mowing, grazing, excessive herbivory (within AA)	✓	Yes
Excessive human visitation	✓	YES
Predation and habitat destruction by non-native vertebrates (e.g., *Virginia opossum* and domestic predators, such as feral pets)	—	
Tree cutting/sapling removal	—	
Removal of woody debris	—	
Treatment of non-native and nuisance plant species	—	
Pesticide application or vector control	—	
Biological resource extraction or stocking (fisheries, aquaculture)	—	
Excessive organic debris in matrix (for vernal pools)	—	
Lack of vegetation management to conserve natural resources	✓	YES
Lack of treatment of invasive plants adjacent to AA or buffer	✓	YES
Comments		

ADJACENT TO PARKING

BUFFER AND LANDSCAPE CONTEXT ATTRIBUTE (WITHIN 500 M OF AA)	Present	Present and likely to have significant negative effect on AA
Urban residential	—	
Industrial/commercial	✓	In airport surrounded by comm. area
Military training/Air traffic	✓	In airport
Dams (or other major flow regulation or disruption)	—	
Dryland farming	—	
Intensive row-crop agriculture	—	
Orchards/nurseries	—	
Commercial feedlots	—	
Dairies	—	
Ranching (enclosed livestock grazing or horse paddock or feedlot)	—	
Transportation corridor	✓	In airport
Rangeland (livestock rangeland also managed for native vegetation)	—	
Sports fields and urban parklands (golf courses, soccer fields, etc.)	—	
Passive recreation (bird-watching, hiking, etc.)	—	
Active recreation (off-road vehicles, mountain biking, hunting, fishing)	—	
Physical resource extraction (rock, sediment, oil/gas)	—	
Biological resource extraction (aquaculture, commercial fisheries)	—	
Comments		

APPENDIX B

PHOTO DOCUMENTATION

Appendix B: CRAM Photopoint Locations

Fire Rescue Air Operations Phase II

Appendix B
Photo Documentation

Photo 1. Wet Season: Vernal Pool 4 (FOVP4) observed on March 19, 2018 within the Project Area facing west

Photo 2. Dry Season: Vernal Pool 4 (FOVP4) observed within the Project Area facing northwest.

Appendix B
Photo Documentation

Photo 3. Dry Season: Vernal Pool 4 (FOVP4) observed within the Project Area facing northeast.

Photo 4. Dry Season: Vernal Pool 4 (FOVP4) observed within the Project Area facing southeast.

Appendix B
Photo Documentation

Photo 5. Dry Season: Vernal Pool 4 (FOVP4) observed within the Project Area facing southwest.

Photo 6. Wet Season: Vernal Pool 6 (right-FOVP6) and Vernal Pool 4 (left-FOVP4) observed on January 10, 2018 within the Project Area facing northeast.

Appendix B
Photo Documentation

Photo 7. Dry Season: Vernal Pool 6 (FOVP6) observed within the Project Area facing northeast.

Photo 8. Dry Season: Vernal Pool 6 (FOVP6) observed within the Project Area facing south.

Appendix B
Photo Documentation

Photo 9. Dry Season: Vernal Pool 6 (FOVP6) observed within the Project Area facing southwest.

Photo 10. Dry Season: Vernal Pool 6 (FOVP6) observed within the Project Area facing northwest.

Appendix B
Photo Documentation

Photo 11. Dry Season: Vernal Pool 7 (FOVP7) observed within the Project Area facing northeast.

Photo 12. Dry Season: Vernal Pool 7 (FOVP7) observed within the Project Area facing southeast.

Appendix B
Photo Documentation

Photo 13. Dry Season: Vernal Pool 7 (FOVP7) observed within the Project Area facing southwest.

Photo 14. Dry Season: Vernal Pool 7 (FOVP7) observed within the Project Area facing northwest.

Appendix B
Photo Documentation

Photo 15. Dry Season: Vernal Pool 9 (FOVP9) observed within the Project Area facing northwest.

Photo 16. Dry Season: Vernal Pool 9 (FOVP9) observed within the Project Area facing southeast.

Photo 17. Dry Season: Vernal Pool 9 (FOVP9) observed within the Project Area facing southwest.

APPENDIX G

2016 BURROWING OWL HABITAT ASSESSMENT

SUMMARY REPORT

BUSBY
Biological Services

September 9, 2016

Ms. Esther Burkett
California Department of Fish and Wildlife
Wildlife Branch - Nongame Wildlife
1812 9th Street
Sacramento, CA 95811

RE: 2016 BURROWING OWL HABITAT ASSESSMENT SUMMARY REPORT FOR THE FIRE RESCUE AIR OPERATIONS FACILITY, MONTGOMERY FIELD AIRPORT, CITY OF SAN DIEGO, CALIFORNIA

Ms. Burkett:

Busby Biological Services, Inc. (BBS) was contracted by RECON Environmental, Inc. (RECON) to conduct a focused habitat assessment for burrowing owl (*Athena cunicularia*) for the proposed Fire Rescue Air Operations Facility Project (Proposed Project) at Montgomery Field Airport in the City of San Diego, California (Attachment 1: Figures 1 through 3). This survey summary report provides brief project background information, burrowing owl species and historical occurrence information, habitat assessment methods, and results/discussion.

1.0 PROPOSED PROJECT DESCRIPTION AND LOCATION

The City of San Diego (City) Public Works Department (PWD) proposes to construct a new, permanent Fire Rescue Air Operations Facility at Montgomery Field Airport to accommodate the emergency helicopters and crews that are on-call during all hours, every day of the year, to provide fire suppression, emergency rescues from remote areas, advanced life support, and medical transport. The Proposed Project is composed of the following two components: (1) Construction Site, where construction of the new, permanent Fire Rescue Air Operations facility will take place and (2) Demolition Site, where demolition of the existing, temporary Fire Rescue Air Operations building will take place (Attachment 1: Figure 3). The Proposed Project is still in the planning stages. However, conceptual drawings for the proposed new facilities have been prepared, and the City has requested a biological constraints analysis based on the conceptual Proposed Project design footprint.

The Construction and Demolition Sites of the Proposed Project are both located entirely within Montgomery Field Airport, on both developed and undeveloped lands within Assessor's Parcel Number (APN) 421-290-11-00 in the U.S. Geological Survey (USGS) La Jolla 7.5-minute quadrangle (USGS 1996) in the City of San Diego, County of San Diego, California (Attachment 1: Figures 1 and 2). Montgomery Field Airport is bounded to the north by commercial development along the south side of Balboa Avenue, to the east by

commercial development along the west side of Ruffin Road, to the south by Aero Drive, and to the west by Kearny Villa Road (Attachment 1: Figures 2 and 3).

The focused burrowing owl habitat assessment was conducted for the Proposed Project footprint as well as a 500-foot buffer around the footprint, collectively referred to as the Burrowing Owl Habitat Assessment Area in this report. The approximately 59-acre Burrowing Owl Habitat Assessment Area is composed of the approximately 36.9-acre Construction Site Assessment Area (i.e., the approximately 0.23-acre Proposed Project impact area and a 500-foot assessment buffer) and the approximately 22.1-acre Demolition Site Assessment Area (i.e., the approximately 0.23-acre Proposed Project impact area and a 500-foot assessment buffer).

2.0 BURROWING OWL SPECIES & HISTORICAL OCCURRENCE INFORMATION

The burrowing owl is a California Department of Fish and Wildlife (CDFW) Species of Special Concern and a City of San Diego Multiple Species Conservation Program (MSCP)-covered species. This section provides species-specific information about the burrowing owl range and migration patterns, habitat, breeding information, and population threats.

2.1 Burrowing Owl Range & Migration Patterns

The burrowing owl ranges from southwestern Canada and the western United States, south through Central America, and into the northernmost portion of South America as well as the southern half of South America. It can also be found on coastal islands off of Florida and Baja California, Mexico (Haug et al. 1993). The northernmost populations of this species are almost completely migratory, and wintering birds can be found south to southern Mexico.

The western subspecies of burrowing owl (*A. c. hypugaea*) includes the populations that occur in southern Alberta, Canada, and within the western United States. In California, the western burrowing owl is found throughout the state, with the exception of the northern coast and eastern Sierra Nevada Mountains (Shuford and Gardali 2008). This subspecies remains fairly common in the Imperial Valley, which is home to nearly 70 percent of the entire California population; however, this species is rapidly declining in the remainder of the California populations (Unitt 2004). While the northern populations are often migratory, southern California burrowing owls are only partially migratory as evidenced by reduced population sizes in winter, with some birds remaining on territories throughout the year.

The burrowing owl has disappeared and/or populations have declined in several southern California and San Francisco Bay area counties and in coastal areas throughout California, as they have in other regions throughout the United States and Canada (DeSante et al. 1997, Klute et al. 2003). During the late 1800s and early 1900s, the burrowing owl was widespread and common in San Diego County, primarily along the coast and into the grassy interior; however, by the 1970s, the burrowing owl was considered uncommon and declining in these areas (Unitt 2004; Bent 1961). The burrowing owl currently occupies

some historical sites in San Diego County (e.g., Naval Air Station North Island, south San Diego coastal area, and Otay Mesa) in much reduced numbers and is believed to be absent from many developed areas that it formerly occupied (e.g., north-central San Diego County, coastal areas, and the area around the City of San Diego) (Unitt 2004; Lincer and Bloom 2007). As of 2007, an estimated 41 to 46 pairs breed and 148 to 168 local individuals winter within San Diego County (Lincer and Bloom 2007). During the winter, local wintering burrowing owls are joined by migratory wintering burrowing owls to form a total estimated wintering population of approximately 300 to 370 individuals (Lincer and Bloom 2007).

2.2 Burrowing Owl Habitat

The burrowing owl is a ground-dwelling raptor that requires open, relatively flat terrain with burrows for nesting, roosting, and cover (CDFW 2012). This species can be found in a variety of habitat types that contain suitable burrowing and foraging habitat, including – but not limited to – native and non-native grassland, shrub steppe, shrubland with low density shrub cover, desert, agricultural, golf courses, drainage ditches, earthen berms, pasturelands, fallow fields, and even ruderal areas and vacant lots (Gervais et al. 2008, CDFW 2012). The burrowing owl is typically associated with areas containing well-drained, friable soils inhabited by fossorial mammals (Haug et al. 1993, CDFW 2012).

In California, the burrowing owl prefers habitat with short, sparse vegetation and few shrubs, level to gentle topography, and well-drained soils (Haug et al. 1993). In San Diego County, the burrowing owl typically inhabits coastal lowlands in grasslands, agricultural areas, and coastal dunes (Unitt 2004).

In addition to burrowing habitat, the burrowing owl requires ample foraging habitat surrounding its burrows. This species concentrates it foraging within approximately 2,000 feet of its burrow, which equates to an area of up to approximately 300 acres (Haug and Oliphant 1990, Rosenberg and Haley 2004); however, the burrowing owl is known to use much smaller patch sizes, especially when they are located adjacent to suitable breeding and/or foraging habitat. Preferred foraging habitat consists of dry, open, relatively flat expanses with short grasses and sparse shrub cover (Ehrlich et al. 1988).

Although the burrowing owl may dig its own burrows (Thomsen 1971, Barclay et al. 2007), this opportunistic species usually modifies or enlarges existing burrows that were previously used by mammals. In California, the burrowing owl frequently uses burrows of California ground squirrel (*Spermophilus beecheyi*) and round-tailed ground squirrel (*Citellus tereticaudus*), but it may also use dens or holes dug by American badger (*Taxidea taxus*), coyote (*Canis latrans*), and fox (*Vulpes* spp.; Ronan 2002, CDFW 2012). In addition to earthen burrows, the burrowing owl may also use natural rock cavities, debris piles, culverts, openings beneath cement or asphalt pavement, and pipes (Rosenberg et al. 1998) as well as artificial burrows (Smith and Belthoff 2003) for nesting, roosting, and cover (CDFW 2012).

2.3 Burrowing Owl Breeding Information

Burrowing owl breeding behaviors include a wide range of activities associated with site selection by males; breeding pair formation; copulation; egg laying, incubation, and hatching; and care of the young during fledging and post-fledging. In California, the burrowing owl breeding season typically occurs between February 1 and August 31; however, breeding outside this window has been documented under appropriate environmental conditions (CDFW 2012). The peak of the breeding season, when most burrowing owls have active nests, typically occurs between April 15 and July 15. In addition to its nest burrow, the burrowing owl may use satellite burrows to reduce predation and parasite infestation, particularly while caring for nestlings (CDFW 2012).

2.4 Burrowing Owl Population Threats

In California, the burrowing owl is threatened by a variety of factors, including habitat loss, control of burrowing rodents, and direct mortality. Population declines have been attributed to habitat loss, degradation, and fragmentation resulting most often from conversion of suitable habitat as a result of urbanization (Gervais et al. 2008). Burrowing rodent control programs, especially those targeting the California ground squirrel, threaten burrowing owl populations, because ground squirrel burrows are the burrows most often utilized by burrowing owl for nesting and cover. Thus, elimination of burrowing rodents has led to both recent and historical declines of burrowing owl populations in California and nationwide (Klute et al. 2003). Direct mortality from vehicle collisions (Haug et al. 1993, Gervais et al. 2008), agricultural drain/ditch maintenance, discing in fallow fields (Rosenberg and Haley 2004, Catlin and Rosenberg 2006), and wind turbine collisions as well as exposure to pesticides (Klute et al. 2003, Gervais et al. 2008) have all added to the decline of the burrowing owl in California. In areas of remaining open habitat close to or surrounded by developed areas, disturbance from human activity (e.g., walking, jogging, off-road activity, dog walking) and loose and feral pets are likely factors deterring the burrowing owl from these areas (Wesemann and Rowe 1985, Millsap and Bear 2000).

3.0 METHODS

The methods used for the burrowing owl habitat assessment follow guidelines set for by the California Department of Fish and Wildlife (2012) and are presented in this section.

3.1 Habitat Assessment Methods

Qualified BBS biologists conducted a focused habitat assessment during spring 2016 to identify locations of suitable habitat for the species within the Burrowing Owl Habitat Assessment Area. The habitat assessment consisted of an analysis of historical occurrence data, desktop evaluation of available site data and aerial imagery, and a field evaluation to further investigate and map suitable burrowing owl habitat. The following sections provide detail on the habitat assessment methods.

3.1.1 Historical Occurrence Data and Desktop Evaluation

BBS obtained historical burrowing owl occurrence data for the Burrowing Owl Habitat Assessment Area and an approximate 3-mile buffer from the CDFW *California Natural Diversity Database* (CNDDB; CDFW 2014a). BBS also reviewed other special-status species resources, including the CDFW Special Animals list (CDFW 2014b); Proceedings of the California Burrowing Owl Symposium (Barclay et al. 2007); San Diego County Breeding Bird Atlas (Unitt 2004); North American Breeding Bird Survey, Results Analysis 1966-2012 (Sauer et al. 2014); eBIRD (http://ebird.org); Gervais et al. (2008); the San Diego Natural History Museum Bird Atlas Project (SDNHM 2014); and other regional and site-specific relevant information, data, and literature.

In addition, BBS evaluated aerial imagery of the Burrowing Owl Habitat Assessment Area to determine if patches of open or other potentially suitable burrowing owl breeding and/or foraging habitat occur or if patches of fully developed, dense vegetation, or other potentially unsuitable burrowing owl habitat occur onsite. Potentially suitable and unsuitable habitat was later evaluated during the focused field evaluation, described below.

3.1.2 Focused Field Evaluation

BBS used the results of the background research and desktop evaluation as guidance during the field evaluation conducted within the Burrowing Owl Habitat Assessment Area. All potentially suitable and unsuitable habitat areas were visited to determine if they did or did not have potential to support breeding and/or foraging burrowing owl. Representative photographs were taken of the Burrowing Owl Habitat Assessment Area.

BBS used the following criteria categories to evaluate the suitability of the Burrowing Owl Habitat Assessment Area:

- dominant vegetation and land use
- presence of adjacent foraging habitat
- vegetation height and shrub density
- presence or absence of friable soils
- presence and quantity of burrows and burrow complexes
- other evidence of fossorial animal use and burrow features
- topography and hydrological features

BBS used this data to assess the overall potential for the Burrowing Owl Habitat Assessment Area to support burrowing owl, taking into consideration the historical occurrence data and the evaluation criteria. Habitat within the Burrowing Owl Habitat Assessment Area was either determined as not expected to support burrowing owl, or as having a low, moderate, or high potential to support burrowing owl.

4.0 RESULTS & DISCUSSION

The results of the habitat assessment for burrowing owl within the Burrowing Owl Habitat Assessment Area are presented in this section, as well as a brief discussion of our findings.

4.1 Habitat Assessment Results

This section provides a summary of the results of the historical occurrence data analysis as well as the results of the focused field evaluation.

4.1.1 Historical Burrowing Owl Occurrence within Vicinity of the Proposed Project

A search of the CNDDB (CDFW 2014a) showed that a single burrowing owl occurrence in the fall of 1993 was recorded within a 3-mile buffer of the Burrowing Owl Habitat Assessment Area. Specifically, the detection was made in an undeveloped area approximately 4,000-feet east of the Proposed Project area near the eastern extent of the Montgomery Field Airport runway. Because of the seasonal timing of this single occurrence, the CNDDB record may represent a migrant or wintering bird, though information on this record is inconclusive. Migrant wintering burrowing owls can utilize a variety of habitats not suitable for breeding individuals. In addition, RECON previously detected a single owl with an active burrow during breeding season surveys approximately 4,000 feet southwest of the Construction Site and approximately 2,500 feet west of the Demolition Site in the southwestern corner of Montgomery Field Airport (RECON 2008).

According to current literature, breeding burrowing owls are believed to be absent from the Burrowing Owl Habitat Assessment Area (Unitt 2004; Lincer and Bloom 2007). Currently, the closest known breeding occurrences are at Naval Air Station North Island, south San Diego coastal areas, and Otay Mesa (Unitt 2004; Lincer and Bloom 2007).

4.1.2 Desktop and Field Evaluation Results

During the initial desktop evaluation of the Burrowing Owl Habitat Assessment Area, BBS concluded that the area within and surrounding the Proposed Project area has potential burrowing owl habitat based on our understanding of the existing conditions onsite along with an interpretation of aerial imagery. Montgomery Field Airport is approximately 456 acres, composed of three asphalt runways, three helipads, hangars, various buildings, and undeveloped native habitat and disturbed land. Areas surrounding the Proposed Project area are fully developed, with light industrial building complexes north and east of Montgomery Field Airport, urban housing in the form of apartment complexes south of Montgomery Field Airport, and Highway 163 and commercial buildings to the west of Montgomery Field Airport. The closest large expanse of native habitat outside Montgomery Field Airport occurs approximately 1.25 miles to the north at U.S. Marine Corps Air Station Miramar.

On May 13, 2016, BBS biologists Darin Busby and Erik LaCoste conducted a field evaluation of the Burrowing Owl Habitat Assessment Area. No burrowing owls or burrowing owl sign were observed during the burrowing owl habitat assessment. Based on

the field assessment, BBS evaluated approximately 59 acres of potential burrowing owl habitat (Attachment 1: Figure 3). In general, the Burrowing Owl Habitat Assessment Areas consist of relatively flat topography; however, the Construction Site Assessment Area contains small, undulating mima mounds associated with vernal pools and a north-south running vernal swale in the northern, eastern, and southern extent of the 500-foot buffer. Redding gravelly loam, 2 to 9 percent slopes (RdC), occurs within the Burrowing Owl Habitat Assessment Area, which ranges in structure from compact, graded soils to somewhat friable and well drained soils (USDA 2016). Vegetation communities within the Burrowing Owl Habitat Assessment Area include disturbed habitat, non-native grasslands, San Diego Mesa vernal pool, herbaceous wetland, and Diegan coastal sage scrub. Small mammal burrows were found intermittently throughout the disturbed habitat, non-native grasslands, and Diegan coastal sage scrub. Representative photographs of the Burrowing Owl Habitat Assessment Area are included in Attachment 2: Burrowing Owl Habitat Assessment Photographs. Brief descriptions of each vegetation community within the Burrowing Owl Habitat Assessment Area are provided below.

Disturbed land occurs adjacent to the developed portions of the Construction Site Assessment Area and dominates the Demolition Site Assessment Area. The disturbed habitat consists of flat or nearly flat, open areas ranging from bare ground that has been graded or covered with gravel to a mix of sparse non-native, low-growing vegetation less than a foot in height. Where vegetated, dominant plants include tocalote (*Centaurea melitensis*), long-beak filaree (*Erodium botrys*), Russian thistle (*Salsola tragus*), fountaingrass (*Pennisetum setaceum*), deerweed, African daisy (*Dimorphotheca sinuate*), and Australian tumbleweed (*Salsola australis*). The vegetated areas appear to receive regular maintenance such as weeding or mowing.

Non-native grassland occurs throughout the Construction Site Assessment Area. The non-native grassland is similar to the disturbed areas, consisting of relatively flat terrain and low growing vegetation less than a foot in height; however, this community is dominated by non-native grasses and is more densely vegetated than the disturbed habitat. Dominant plants include long-beak filaree, foxtail chess (*Bromus madritensis*), ripgut grass (*Bromus diandrus*), Italian rye grass (*Festuca perennis*), fountaingrass, tocalote, African daisy, and deerweed (*Acmispon glaber*). Portions of the non-native grassland adjacent to buildings and the runways also appear to receive regular maintenance such as weeding or mowing.

San Diego Mesa vernal pools occur within the northern, eastern, and southern extent of the Construction Site Assessment Area. The San Diego Mesa vernal pools are dominated by low-growing, open vegetation less than a foot in height. Dominant plants include San Diego mesa mint (*Pogogyne abramsii*), Orcutt's brodiaea (*Brodiaea orcuttii*), woolly marbles (*Psilocarphus* sp.), deerweed, clustered tarweed (*Deinandra fasciculata*), and long-beak filaree. These areas do not appear to receive any type of regular vegetation maintenance.

Herbaceous wetland occurs east of the existing paved access road that extends southwest from Ponderosa Avenue, adjacent to the vernal pool/swale complex, within the Construction Site Assessment Area. This community appears to be supported by storm drain run-off and is dominated by low-growing vegetation less than a foot in height. Dominant plants include

flatsedge (*Cyperus* sp.), Italian rye grass, curly dock (*Rumex crispus*), and common sow-thistle (*Sonchus oleraceus*). This area does not appear to receive any type of regular vegetation maintenance.

Diegan coastal sage scrub occurs within the northern, eastern, and southern extent of the Construction Site Assessment Area. The Diegan coastal sage scrub consists of native shrubs typical of this vegetation community, such as California sagebrush (*Artemisia californica*), coyote bush (*Baccharis pilularis*), coast California buckwheat (*Eriogonum fasciculatum* var. *fasciculatum*), laurel sumac (*Malosma laurina*), clustered tarweed, and deerweed. In general, shrubs in the Diegan coastal sage scrub range in height between 2 and 8 feet with an open structure. However, a more heavily vegetated, north-south running vernal swale runs through the Diegan coastal sage scrub just east of the Proposed Project Area. Several vernal pools with low-growing, open vegetation are intermixed within the open Diegan coastal sage scrub. The Diegan coastal sage scrub does not appear to receive any type of regular maintenance.

In summary, with the exception of developed areas and the more densely vegetated, north-south running vernal swale in the Diegan coastal sage scrub just east of the Construction Site, the remaining portions of the Burrowing Owl Habitat Assessment Area contain potentially suitable habitat for breeding and resident burrowing owl as well as migrant wintering burrowing owl (Attachment 1: Figure 3). These areas with potentially suitable habitat contained at least four, of the following characteristics:

- flat or nearly flat topographical features
- vegetation communities and/or vegetation density suitable for burrowing owl
- friable soils with small mammal burrows
- adjacent open foraging or breeding habitat

4.2 SUMMARY & DISCUSSION

No burrowing owls were detected during the burrowing owl habitat assessment. However, an approximate total of 38.6 acres of potentially suitable habitat for breeding, migrant, or wintering owls occurs throughout the Burrowing Owl Habitat Assessment Area, including 28.5 acres of potentially suitable habitat within the Construction Site Assessment Area and 10.1 acres of potentially suitable habitat within the Demolition Site Assessment Area. These areas are considered potentially suitable habitat for burrowing owl, because they contain flat or nearly flat topographical features, vegetation communities and/or vegetation density suitable for burrowing owl, friable soils with small mammal burrows, and/or adjacent open foraging or breeding habitat. In addition, historical records indicate burrowing owl have been detected within Montgomery Field Airport (RECON 2008; CDFW 2014a). Therefore, burrowing owl have a low to moderate potential to occur within the Burrowing Owl Habitat Assessment Area, and focused, breeding season and/or non-breeding season burrowing owl surveys, as outlined in *Appendix D. Breeding and Non-breeding Season Surveys and Reports* from the *Staff Report on Burrowing Owl Mitigation* (CDFW 2012), are recommended to further evaluate the Project Site for the potential to support burrowing owl. These surveys must consist of the following:

- Breeding season surveys – four surveys, including 1) at least one survey between February 15 and April 15, and 2) a minimum of three surveys, at least three weeks apart, between April 15 and July 15, with at least one visit after June 15. If burrowing owl are not detected, non-breeding season surveys must occur.
- Non-breeding season surveys – four surveys, spread evenly, throughout the non-breeding season.

Please do not hesitate to contact me at erik@busbybiological.com or 760.500.8802, or Darin Busby at darin@busbybiological.com or 858.334.9508, if you have any questions.

Sincerely,

Erik LaCoste
Senior Biologist

ATTACHMENTS

Attachment 1: Figures
Attachment 2: Photographs

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ATTACHMENT 1 – Figures

Project Location

RECON

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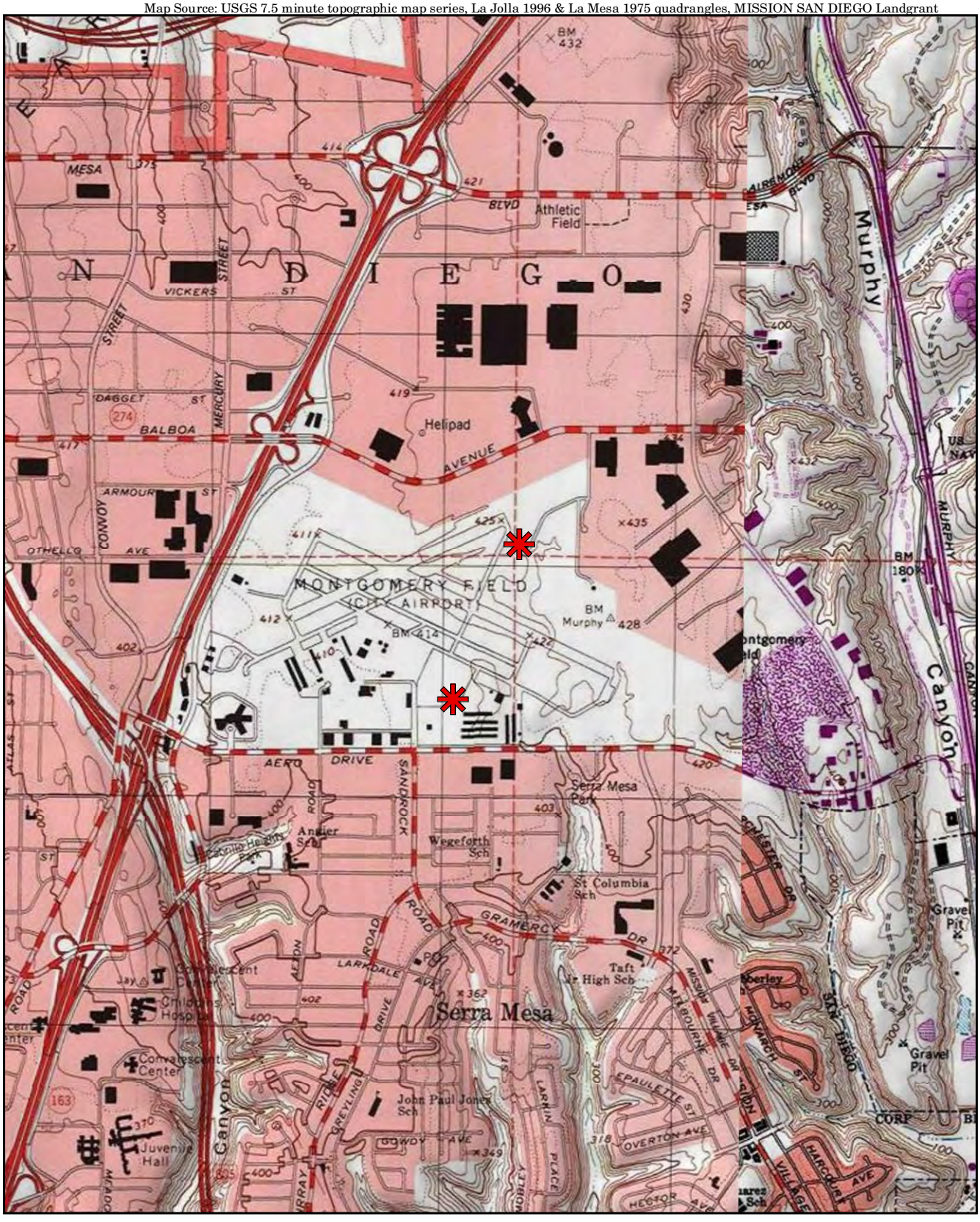
FIGURE 1

Regional Location

Map Source: USGS 7.5 minute topographic map series, La Jolla 1996 & La Mesa 1975 quadrangles, MISSION SAN DIEGO Landgrant



Project Locations

FIGURE 2
Project Vicinity on USGS Map

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Image Source: SANDAG (flown Nov 2014)

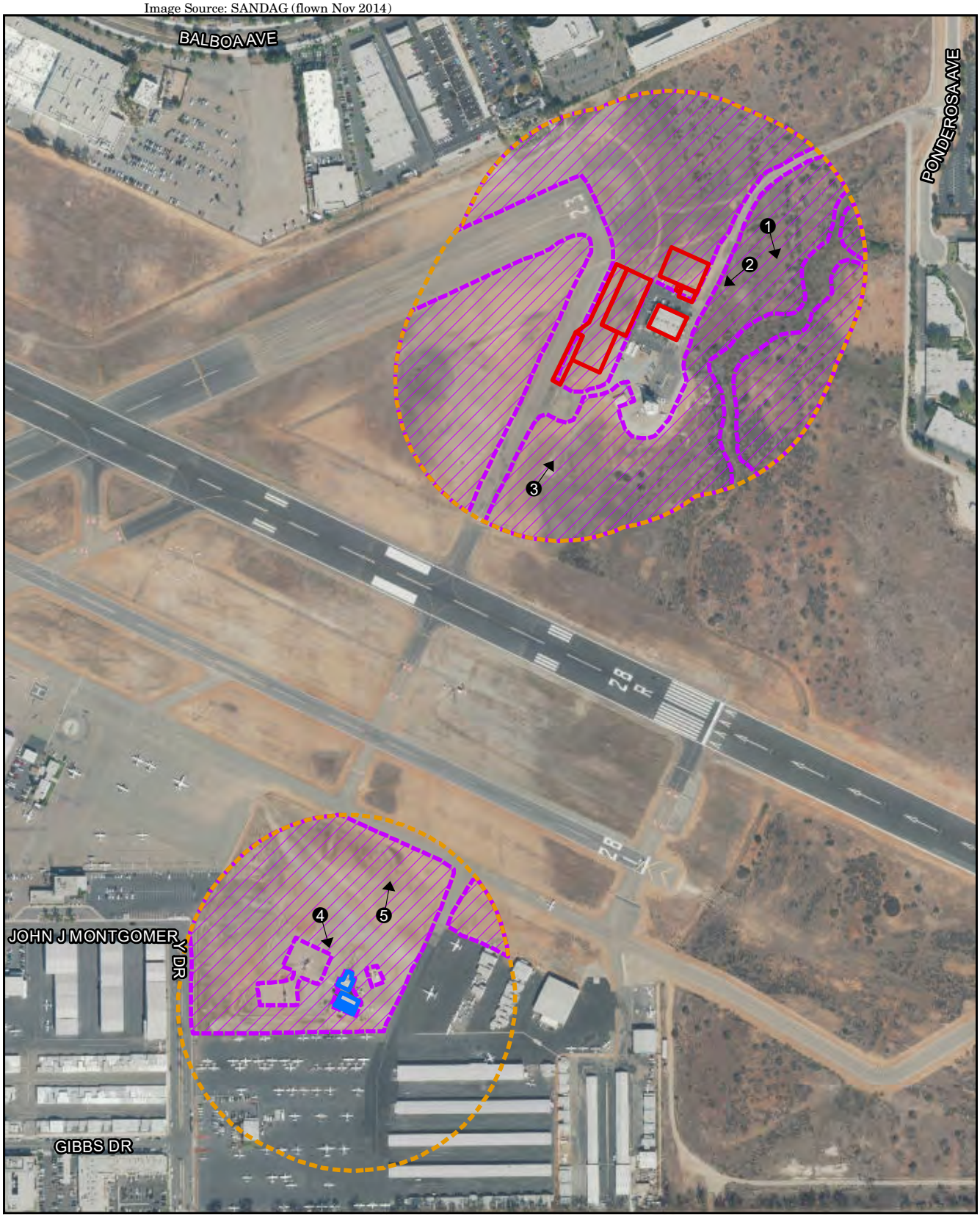

FIGURE 3

Burrowing Owl Habitat Assessment

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ATTACHMENT 2 – Photographs

	**Photograph 1.** Open Diegan coastal sage scrub. Burrowing owl have a low potential for occurrence due to density of shrubs. However, there is presence of small mammal burrows, relatively flat topography, and adjacent low-density vegetation (Facing southeast; May 13, 2016).
	**Photograph 2.** Non-native grasslands and open Diegan coastal sage scrub with exisiting building proposed for remodel in background at Construction Site Assessment Area. Burrowing owl have a low to moderate potential for occurrence due to presence of low-density vegetation, flat topography, adjacent suitable habitat, friable soils, and scattered small mammal burrows (Facing west; May 13, 2016).
	**Photograph 3.** Non-native grassland and disturbed habitat with exisiting building proposed for remodel in background at Construction Site Assessment Area. Burrowing owl have a low to moderate potential for occurrence due to presence of low-density vegetation, flat topography, adjacent suitable habitat, friable soils, and scattered small mammal burrows (Facing north; May 13, 2016).

Photograph 4. Developed land and disturbed habitat with proposed building to be demolised in background within Demolition Site Assessment Area. Burrowing owl have a low potential for occurrence in outlying disturbed habitat due to presence of low-density vegetation, flat topography, and adjacent suitable habitat (Facing southeast; May 13, 2016).

Photograph 5. Disturbed habitat in outlying areas surrounding Demolition Site Assessment Area. Burrowing owl have a low potential for occurrence in these outlying areas due to presence of low-density vegetation, flat topography, adjacent suitable habitat, and scattered small mammal burrows (Facing north; May 13, 2016).

APPENDIX H

VERNAL POOL MITIGAITON PLAN

Vernal Pool Mitigation Plan for the La Media Road Widening & Fire-Rescue Air Operations Phase II Project San Diego, California

Prepared for
City of San Diego
Public Works Department
525 B Street, Suite 750 MS 980A
San Diego, CA 92101

Prepared by
RECON Environmental, Inc.
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P 619.308.9333

RECON Number 9227
May 28, 2020

Meagan Olson, Restoration Ecologist

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Acronyms

Cal-IPC	California Invasive Plant Council
CDFW	California Department of Fish and Wildlife
City	City of San Diego
CRAM	California Rapid Assessment Method
DSD	Development Services Department
DSM	digital surface model
FAA	Federal Aviation Administration
MMC	Mitigation Monitoring and Coordination
MSCP	Multiple Species Conservation Program
MSS	maritime succulent scrub
PEP	Plant Establishment Period
PWD	Public Works Department
sUAV	small unmanned aerial vehicle
USFWS	U.S. Fish and Wildlife Service
VPHCP	City of San Diego Vernal Pool Habitat Conservation Plan

1.0 Introduction

This mitigation plan is intended to mitigate for impacts to vernal pool habitat for the La Media Road Widening Project and the Fire-Rescue Air Operations Phase II Project. Impacts from these projects are still being assessed and will be discussed in more detail in each project-specific biological technical report. Any additional mitigation credits not needed for these projects would be available for future City of San Diego (City) projects.

1.1 Project Location

The La Media Road Widening Project is located in the Otay Mesa neighborhood of the City, along La Media Road, south of Interstate 905. The Fire-Rescue Air Operations Phase II Project is located at Montgomery-Gibbs Executive Airport in the City in the Kearny Mesa Planning Area. The vernal pool mitigation site (mitigation site) is located in the City's Otay Mesa neighborhood, south of the southern terminus of Caliente Avenue, and approximately three miles west of the La Media Road Widening Project. The mitigation site was selected to support mitigation for both projects in an effort to create a larger preserve as opposed to two smaller mitigation sites. On-site mitigation for the Fire-Rescue Air Operations Phase II Project was not feasible due to Federal Aviation Administration (FAA) restrictions that limit restoration near airports. Additionally, the Fire-Rescue Air Operations Phase II Project and the mitigation site are both located within spreading navarretia (*Navarretia fossalis*) critical habitat and, although no spreading navarretia was impacted, the mitigation plan will aim to restore viable populations of this species.

It is situated along a City-owned dirt road south of Dillon Canyon (Figures 1 through 3). The mitigation site is made up of eight City-owned one-acre parcels with an approximately 40-foot road easement that passes north to south through the center, bisecting the site into two four-acre areas. The City-owned parcels are dedicated Open Space as part of the City of San Diego Vernal Pool Habitat Conservation Plan (VPHCP) and managed by the City Park and Recreation Department. The City will be pursuing an easement vacation to dissolve the road easement and incorporate that area into the site. Figures 2 and 3 show the individual one-acre parcels with the road easement in the center while all subsequent figures display the mitigation site boundary as a whole, after road easement vacation.

1.2 Restoration Goals and Objectives

The goal of this plan is restoration of vernal pools as mitigation for 0.125 acre of impacts caused by the La Media Road Widening (three vernal pool basins) and 0.087 acre of impacts caused by the Fire-Rescue Air Operations Phase II project (six vernal pool basins). These impacts are being mitigated through the restoration of 0.814 acre (35,443 square feet) of vernal pool surface area, enhancement of 0.150 acre (6,524 square feet) of existing vernal pools, and restoration of 6.666 acres of adjacent upland watershed.

Project Location

FIGURE 1
Regional Location

RECON

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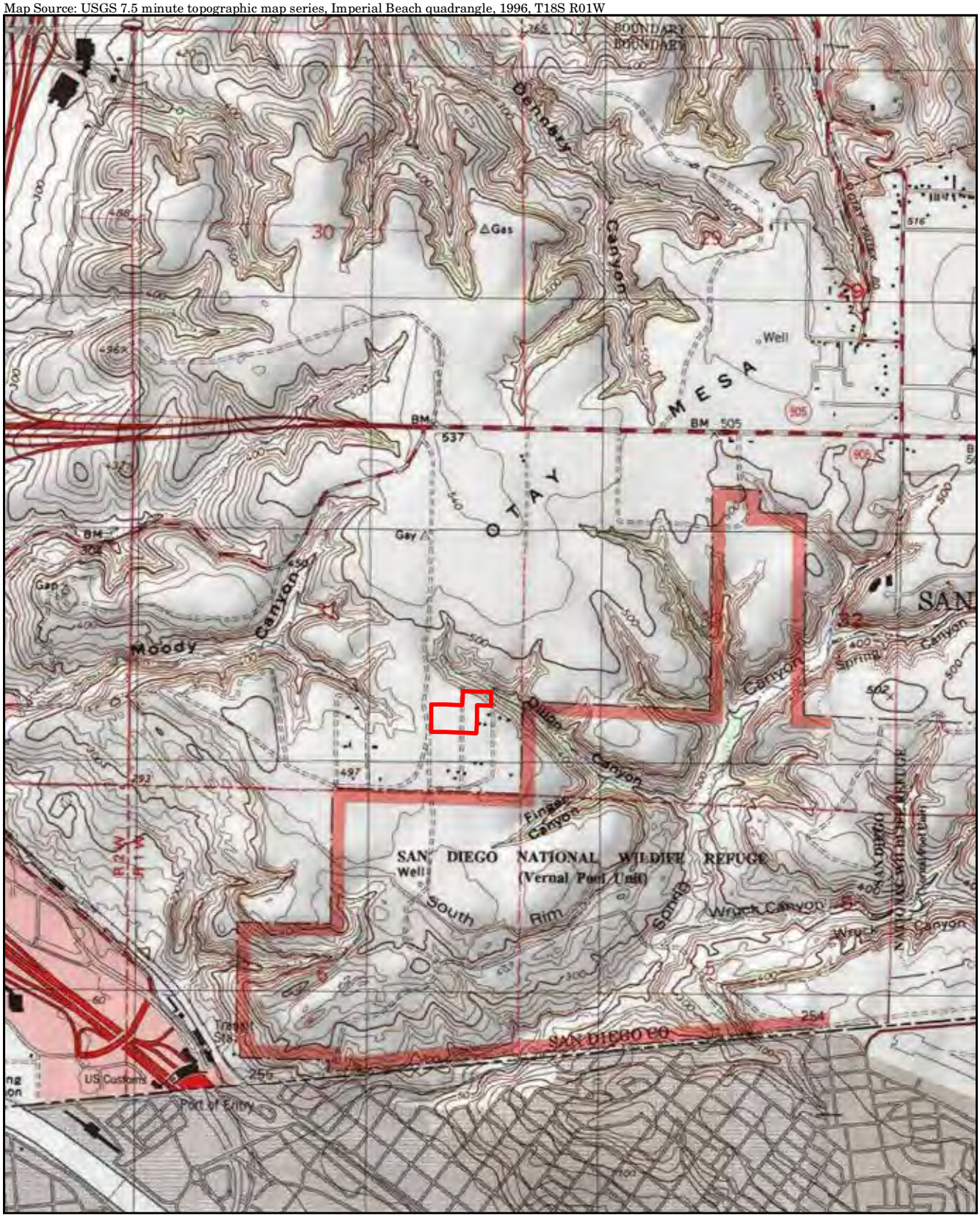
Map Source: USGS 7.5 minute topographic map series, Imperial Beach quadrangle, 1996, T18S R01W



Project Boundary

FIGURE 2

Mitigation Site Location on USGS Map

RECON

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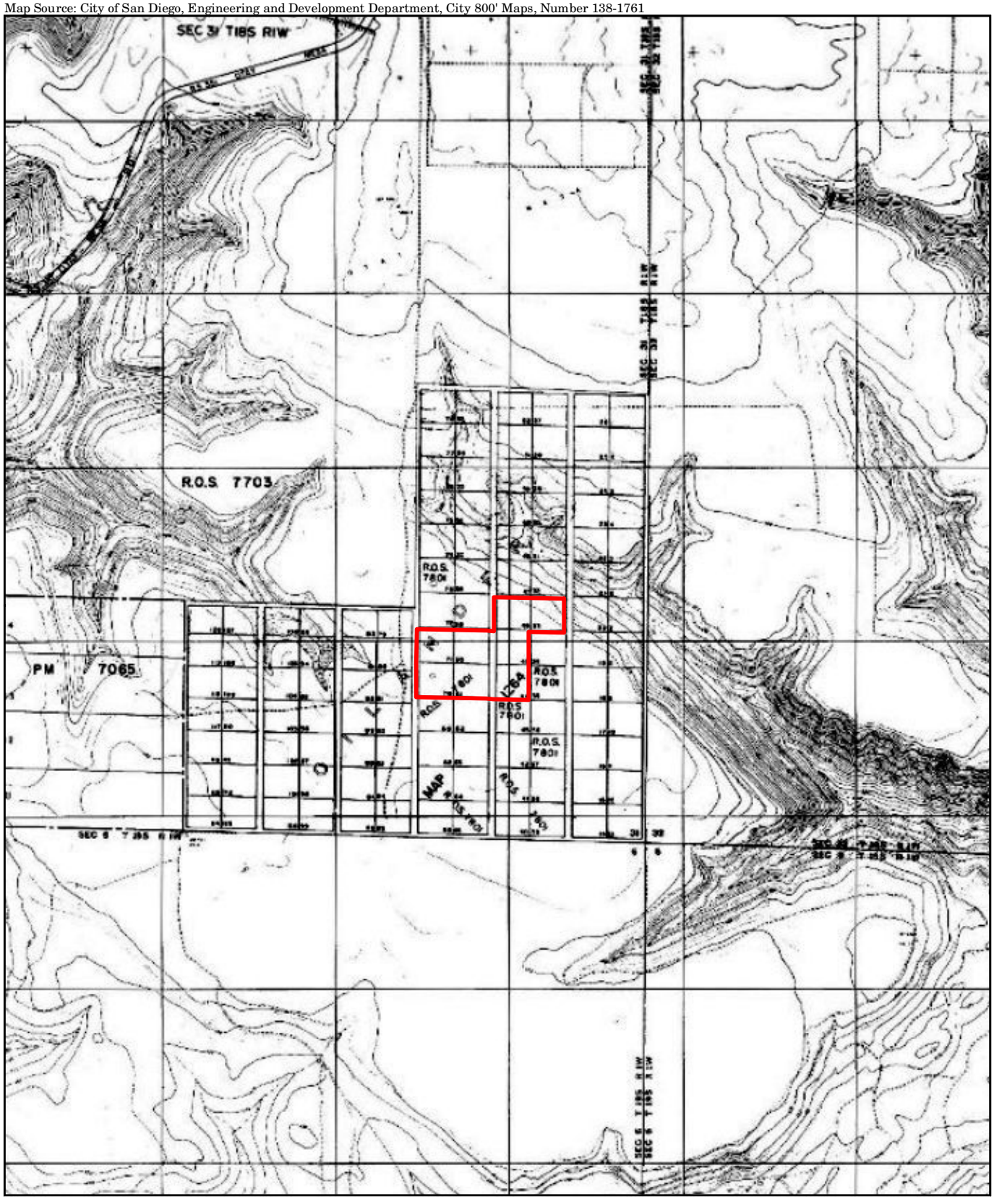
Map Source: City of San Diego, Engineering and Development Department, City 800' Maps, Number 138-1761



Project Boundary

FIGURE 3

Mitigation Site Location on City 800' Map

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2.0 Mitigation Site Existing Conditions

2.1 Mitigation Site Description

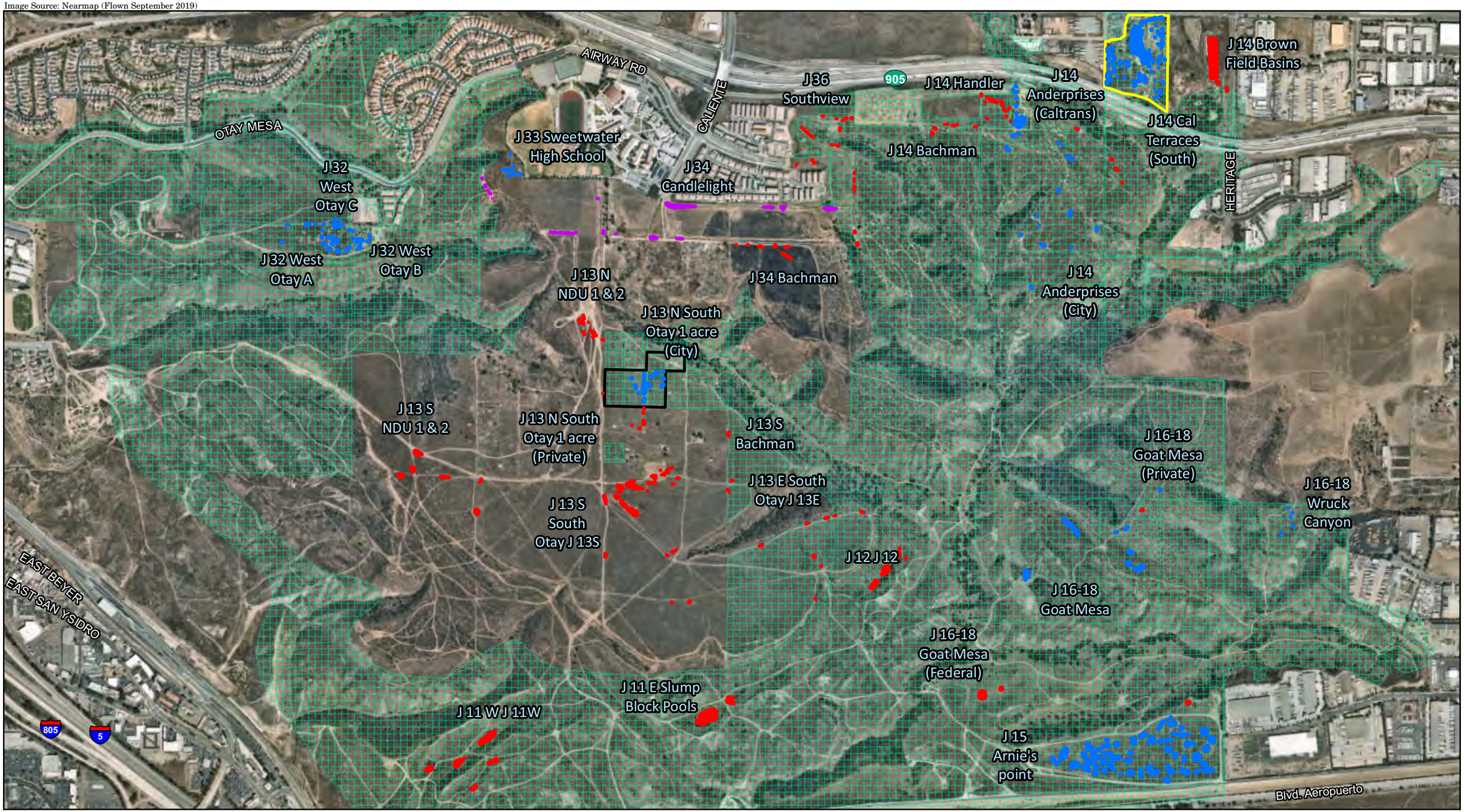
The VPHCP (City of San Diego 2017a) and Vernal Pool Management and Monitoring Plan (VPMMP; City of San Diego 2017b) identify the mitigation site as part of vernal pool complex J 13 N (Figure 4). The J 13 N complex was identified in the Recovery Plan for Vernal Pools of Southern California (U.S. Fish and Wildlife Service [USFWS] 1998) as necessary to stabilize populations of San Diego button-celery (*Eryngium aristulatum*), Otay Mesa mint (*Pogogyne nudiuscula*), spreading navarretia (*Navarretia fossalis*), Orcutt's grass (*Orcuttia californica*), San Diego fairy shrimp (*Branchinecta sandiegoensis*), and Riverside fairy shrimp (*Streptocephalus woottoni*).

Complex J 13 N comprises three sites: South Otay 1 acre (City), South Otay 1 acre (Private), and NDU 1 & 2 (see Figure 4). The VPHCP identifies 37 pools existing in the complex, of which 17 pools are located on the South Otay 1 acre (City) site, which is fully conserved and is owned and managed by the City Park and Recreation Department. The remaining 20 vernal pools are on the South Otay 1 acre (Private) and NDU 1 & 2 sites, which are on private non-conserved properties zoned for multi- and single-family residential development. It is assumed that these non-conserved properties will be developed in the future.

South Otay 1 acre (City) is an approximately 12-acre site comprising 12 one-acre parcels. The City acquired four one-acre parcels from The Environmental Trust as part the latter's bankruptcy proceedings, and the remaining eight one-acre parcels through a Federal Section Six Grant and City funds with the goal of establishing a vernal pool preserve. These 12 one-acre parcels were added to the MHPA pursuant to the VPHCP.

The mitigation site totals 7.63 acres and consists of undeveloped City land and is currently surrounded by undeveloped open space. The areas immediately north and immediately east of the mitigation site will be preserved as open space, while development areas for the Otay Mesa Southwest Village will occur approximately 400 feet to the north, providing at least a 400-foot buffer between development and the mitigation site. Future developments may occur immediately west of the mitigation site and a road is planned 50 feet to the south. All future development that may occur adjacent to the mitigation site would be required to adhere to Section 5.2.1 of the VPHCP, including being designed in a manner that prevents runoff from entering vernal pools. Due to the location of potential future development, the mitigation site was designed in a manner to provide adequate buffer between potential development and the vernal pools and their watersheds. The MHPA runs within Dillon Canyon to the northwest of the mitigation site (Figure 5). The mitigation site has been subjected to recent and historic disturbance and unauthorized activity (e.g., off-highway vehicle use, pedestrian traffic, and trash dumping).

Image Source: Nearmap (Flown September 2019)



Vernal Pools per VPHCP

- Conserved Pools
- Non-Conserved Pools per VPHCP
- Not Part of VPHCP

- Project Boundary
- Cal Terraces Reference Site
- Multi-habitat Planning Area

0 Feet 800

RECON

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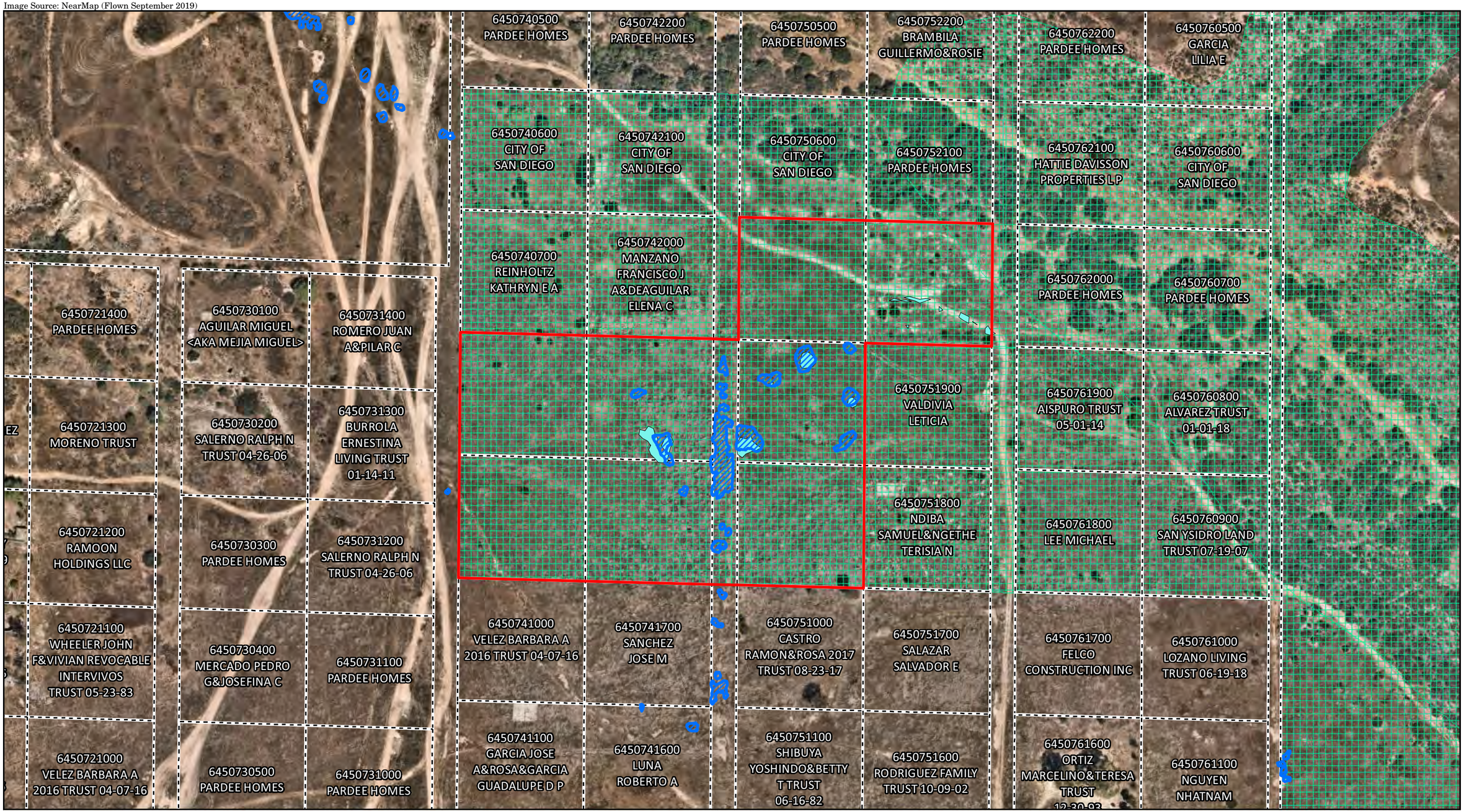
FIGURE 4

Regional Vernal Preservation Context

Image Source: NearMap (Flown September 2019)



Project Boundary
Parcel Boundary
Multi-Habitat Planning Area
Vernal Pools per RECON 2019
San Diego HCP Vernal Pools

0 Feet 150

RECON

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FIGURE 5

Mitigation Site Location and Surrounding Land Use

2.2 Soil Characteristics

Two soil series are mapped within the mitigation site: Huerhuero loam and Olivenhain cobbly loam (Figure 6; U.S. Department of Agriculture 1973). Huerhuero loam is the dominant soil, underlying most of the site. This soil series includes moderately well drained soils with clay subsoils. It occurs on gently sloping, undulating sites and often forms mima mounds in less disturbed areas. Olivenhain cobbly loams are present only in the northeast corner of the mitigation site, where the mesa ends and slopes north into a finger canyon. Olivenhain cobbly loams are well-drained, moderately deep soils with cobbly clay subsoils.

Both Huerhuero and Olivenhain soil series are known to support vernal pools, and vernal pools are present on the mitigation site (Bauder and McMillan 1998), so the soils are expected to be suitable for vernal pool restoration.

2.3 Hydrology

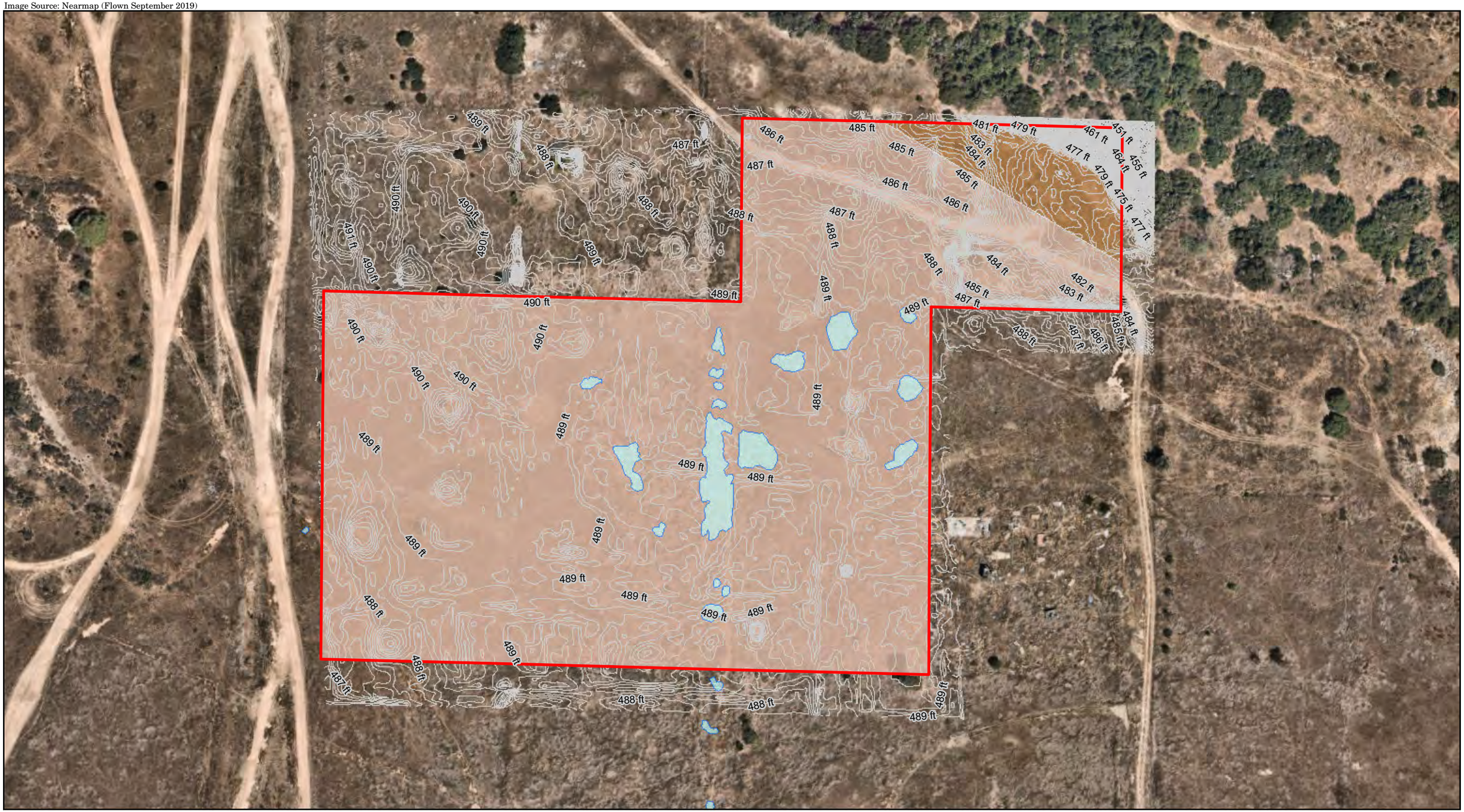
The vernal pool mitigation site is primarily flat and does not contain any drainages or streams; however, there are 17 existing vernal pools as mapped by the City's VPHCP within the site, including nine pools within the 1-acre parcels and eight within the road easement that will be vacated. During the 2019 vegetation mapping conducted by RECON, ten pools with vernal pool vegetation were mapped. Seven of those pools did not overlap with the City's existing VPHCP pools, for a total of 24 existing vernal pools (Figure 7).

In coastal southern California, annual precipitation is highly seasonal, with most of the rainfall occurring in the winter and early spring, from December through April. The first major rainfall event of the season typically functions to wet and recharge soils that dried during the summer drought. Thus, the first rainfall event rarely fills vernal pools, with surface ponding typically occurring from subsequent storms.

The formation of surface ponding in vernal pools requires very low permeability soils that create a perched water table, combined with topographic depressions to capture and hold precipitation. The shape and ponding capacity of the perched water table is influenced by soil permeability, overall site slope, and subsoil permeability (presence of sand, clay lenses, or holes in the hardpan). This surface shape ultimately determines the depth and duration of ponding.

The depth and duration of ponding is highly dependent upon the magnitude, number, and time between each storm, as well as climactic determinants of evaporation and transpiration (temperature, humidity, sunlight, and wind). A seasonal hydrologic regime characterizes the natural inputs to the vernal pools and other isolated waters of the U.S. and waters of the State on the site. The local watersheds of many these pools have been altered by vehicular activity, dumping, and historical agriculture.

Image Source: Nearmap (Flown September 2019)



0 Feet 100

Project Boundary
Vernal Pools per VPHCP
Topographic Contours

Soil Type

Huerhuero loam, 2 to 9 percent slopes
Olivenhain cobbly loam, 30 to 50 percent slopes

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FIGURE 6
Mitigation Site Soil Map

Image Source: Nearmap (Flown September 2019)

Project Boundary

Vernal Pools per VPHCP

Vegetation Community

- Vernal Pool (0.079 Acre)
- Diegan Coastal Sage Scrub (0.082 Acre)
- Non-Native Grassland (7.412 Acres)
- Disturbed Land (0.139 Acre)

Sensitive Plants

- Ashy Spike-Moss (*Selaginella cinerascens*)

Vernal Pool Indicator Plant Species

- Dwarf Pepper Grass (*Lepidiom latipes*)
- Dwarf Woollyheads (*Psilocarphus brevissimus*)

0 Feet 100

RECON

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FIGURE 7

Mitigation Site Location and Existing Biological Resources

2.4 Biological Conditions

RECON Environmental, Inc. (RECON) biologists conducted a general biological survey of the mitigation site on March 28, 2019, and a vernal pool survey following the California Rapid Assessment Method (CRAM) on May 3, 2019.

2.4.1 Vegetation Communities

The mitigation site is located on a large mesa characterized by non-native vegetation composed primarily of annual grasslands, with patches of native shrub habitat in the canyons. Dillon Canyon, which crosses the northeast corner of the mitigation site, supports grassland and Diegan coastal sage scrub. The area surrounding the project site generally contains flat topography intersected by finger canyons that lead south to the Tijuana River Valley (see Figure 2). There are four vegetation communities within the mitigation site: non-native grassland (7.412 acres), disturbed land (0.139 acre), vernal pool (0.079 acre), and Diegan coastal sage scrub (0.082 acre; see Figure 7).

Non-native grassland. Non-native grassland covers the majority of the mitigation site. Overall vegetation cover is dense, characterized by non-native annual grasses, such as rye grass (*Festuca perennis*), slender wild oat (*Avena barbata*), ripgut grass (*Bromus diandrus*), and wall barley (*Hordeum murinum*), as well as patches of black mustard (*Brassica nigra*), Russian thistle (*Salsola tragus*), and fennel (*Foeniculum vulgare*). A number of native herbs and annuals are present, including bluedicks (*Dichelostemma capitatum*), collar lupine (*Lupinus truncatus*), and common muilla (*Muilla maritima*). Additionally, there are occasional native shrubs, like California buckwheat (*Eriogonum fasciculatum*), broom baccharis (*Baccharis sarothroides*), and lemonade berry (*Rhus integrifolia*) present.

Disturbed land. Disturbed land, consisting of several dirt roads, occurs within the mitigation site, with one road in the northeast portion and one crossing the southwest corner of the site. These areas are only sparsely vegetated, with long-beak filaree (*Erodium botrys*) providing the majority of the cover, with scattered fascicled tarplant (*Deinandra fasciculata*), garland daisy (*Glebionus coronaria*), native pygmy weed (*Crassula connata*), and non-native grasses.

Vernal pools. The City's Vernal Pool Habitat Conservation Plan (VPHCP; City of San Diego 2017a) identifies 9 vernal pools within the mitigation site, plus an additional 8 vernal pools within the road easement bisecting the eight one-acre parcels (see Figure 7). During the general biological survey, RECON identified 11 vernal pool areas within the mitigation site based on the presence of vernal pool indicator plants, such as dwarf woollyheads (*Psilocarphus brevissimus* var. *brevissimus*), American pillwort (*Pilularia americana*), toad rush (*Juncus bufonius*), and pale spikerush (*Eleocharis macrostachya*). Five of the 11 RECON-identified pools are pools that are also identified in the VPHCP. In total, 23 pools have been observed on-site based on the presence of vernal pool vegetation.

Diegan coastal sage scrub. Diegan coastal sage scrub occurs in the northeast corner of the mitigation site, where the flat mesa slopes into Dillon Canyon. Vegetation in this area

is dominated by lemonade berry and black mustard, with lesser components of California sagebrush (*Artemisia californica*) and jojoba (*Simmondsia chinensis*).

2.4.2 Wildlife Species

Wildlife diversity is fairly low within the mitigation site, as may be expected for an area dominated by non-native grassland. The majority of the wildlife species detected are typical of grassland habitats and disturbed areas. A total of 12 birds were observed during the biological survey, including western meadowlark (*Sturnella neglecta*), common raven (*Corvus corax clarionensis*), American crow (*Corvus brachyrhynchos hesperis*), house finch (*Haemorhous mexicanus frontalis*), horned lark (*Eremophila alpestris*), white-crowned sparrow (*Zonotrichia leucophrys*), northern mockingbird (*Mimus polyglottos polyglottos*), red-tailed hawk (*Buteo jamaicensis*), Say's phoebe (*Sayornis saya*), mourning dove (*Zenaida macroura marginella*), cliff swallow (*Petrochelidon pyrrhonota tachina*), and wrentit (*Chamaea fasciata henshawi*). Additionally, three butterfly species were detected: painted lady (*Vanessa cardui*), west coast lady (*Vanessa atalanta rubria*), and Pacific Sara orangetip (*Anthocharis sara sara*). One crustacean species, seed shrimp (*Cladocera* sp.), was observed in the vernal pools, although fairy shrimp surveys were not conducted. Fairy shrimp species were not identified on-site by the VPHCP.

2.5 Cultural Resources

RECON archaeologists conducted a record search with the California Historical Resources Information System in March 2019. A total of 44 cultural resource records were found within the one-half mile search radius, including two records located between approximately 130 and 400 feet northwest of the mitigation site. These records consist of lithic scatters, including milling implement fragments. No cultural resource records, historic structures, or historic addresses are listed within or immediately adjacent to the mitigation site.

RECON conducted a field survey on March 19, 2019. No cultural material was observed during the survey; however, ground visibility was very low as a result of dense vegetation cover.

2.6 Rationale for Expecting Success

2.6.1 Regional Factors

The proposed mitigation site lies on a relatively flat portion of western Otay Mesa. The VPHCP identifies 28 distinct sites with vernal pool complexes in the vicinity. The mitigation site, identified as part of complex J 13 N on Figure 4, is on conserved land in the MHPA. Most of these complexes are located within the MHPA and several are on conserved lands; however, many of the vernal pool complexes closest to the mitigation site (red pools on Figure 4; J 11, J 13, J 13 S, J 34, and J 36) are on private property and may not be conserved. The complexes beyond these non-conserved areas (blue pools on Figure 4; J 32 and J 33 to the west and J 14, J 15, and J 16 to the east) are all conserved. Thus, the

mitigation site will connect to the vernal pool preserve area to the north and open space to the east, and be buffered by the open space in Dillon Canyon to the northeast. Even with the Otay Mesa Southwest Village development, the mitigation site will improve the number and quality of vernal pools in Complex J 13 N and maintain a stepping stone connection between the conserved complexes on western Otay Mesa.

Currently, most of the land in the project vicinity is undeveloped; however, the planned Otay Mesa Southwest Village, other developments, and a road are expected to develop portions of the surrounding land to the west and south. The Southwest Village development is expected to preserve the areas north and east of the restoration site as open space. The locations and proximity of the nearby developments were considered when developing this mitigation plan and the vernal pool basins were designed to have adequate watershed-to-basin ratios to support vernal pool flora and fauna, despite adjacent development plans. The watersheds of all vernal pool basins are either within the mitigation site or just outside the mitigation site (i.e., extending no further than 50 feet outside the mitigation site) but within areas not planned for development. Additionally, any development that may occur adjacent to the mitigation site will be required to comply with Section 5.2.1 of the VPHCP and the Land Use Adjacency Guidelines in the MSCP Subarea Plan (City of San Diego 1997). These guidelines apply to projects that are adjacent to the MHPA and include restrictions on drainage of urban runoff, release of toxic materials, lighting, noise, public access, invasive non-native species, brush management, and grading within the MHPA. As the mitigation site is within the MHPA, these guidelines would provide protections for the restored pools from indirect impacts. The design of this mitigation site provides sufficient buffers to adequately protect the proposed vernal pools and their watersheds.

2.6.2 Environmental Factors

The mitigation site contains soils that are highly suitable for vernal pool restoration (Bauder and McMillan 1998), and there are a large number of vernal pool complexes on the site and surrounding area (see Figure 4). It is situated within an area of designated critical habitat for listed fairy shrimp species and also within the City of San Diego's Multiple Species Conservation Plan (MSCP) hardline preserve. Moreover, vernal pool restoration on the site would add to the value of existing adjacent preserved open space areas (see Figure 4).

2.6.3 Design Factors

The proposed restoration includes an 8:1 watershed to basin ratio with additional watershed being provided by the preserved areas adjacent to the site. This ratio combined with the preserved areas adjacent to the site helps ensure that the basins will receive adequate hydrologic input to support vernal pool plant and animal species, assuming average or better rainfall. In addition, the planting and seeding palette for the vernal pool basins includes species with a wide range of hydrological and inundation requirements, and an emphasis on indicator species that are known to germinate and survive in lower rainfall years.

2.7 Consistency Analysis

This Mitigation Plan has been prepared in accordance with the mitigation measures included in the Biological Resources Report for the La Media Road Widening Project (RECON 2020) and the Montgomery-Gibbs Executive Airport: Fire-Rescue Air Operations Facility Project – Phase II (City of San Diego 2020) and the VPHCP. Table 1 includes a consistency analysis for this Mitigation Plan with the VPHCP Conservation Objectives.

3.0 Roles and Responsibilities

3.1 Project Proponent and Financially Responsible Party

The project proponent (City of San Diego Public Works Department [PWD]) will be responsible for retaining (1) a qualified vernal pool restoration specialist with over seven years of experience monitoring vernal pool habitat restoration to oversee the entire installation and monitoring of the mitigation program in coordination with City Development Services Department (DSD) staff and (2) a qualified installation/maintenance contractor with documented success in restoration of vernal pool habitat restoration and maintenance. Contact information for the City's PWD Project Manager is provided below:

Contact: Mr. Sean Paver
City of San Diego
Public Works Department
525 B Street, Suite 750
San Diego, CA 92101
Office: 619-533-3629

The City PWD will be responsible for financing the installation, five-year maintenance program, and biological monitor of the proposed mitigation described in the plan.

3.2 Responsible Agencies

The City DSD will be responsible for issuing any necessary permits and reviewing and approving this plan.

Contact: Mr. Mark Brunette
City of San Diego
Development Services Department
1222 First Avenue, MS 301
San Diego, CA 92101-4101
Office: 858-654-4237

Table 1
VPHCP Conservation Objectives Consistency Analysis

Objectives	Restoration Goals	Consistency
Vernal Pool Objectives (Habitat Based)	Restore 19 vernal pool sites (within 12 complexes) to a "Level 1" (stewardship) management condition within the MHPA through implementation of the VPHCP Management and Monitoring Plan or Site-Specific Management Plans (that are consistent with the VPHCP goals and objectives).	The La Media Road Widening Project proposes to impact three vernal pools (0.125-acre), one inside the MHPA and two outside the MHPA. The Fire Rescue Air Operations Phase II Project proposes to impact six vernal pools (0.089 acre) outside of the MHPA. The projects propose to reestablish and restore vernal pools inside the MHPA at a 2:1 ratio in a configuration that maintains long-term viability of VPHCP covered species. The mitigation associated with these projects will increase the number of pools and basin surface area of conserved vernal pools within the MHPA. The restoration project will restore the J13N complex from a Level 3 to a Level 1 management condition. The J13N complex will be managed in perpetuity in accordance with the VPMMP.
Species-Specific Objectives	Restore specific complexes identified in Appendix A of the VPMMP to enhance covered species populations to ensure long-term viability.	The La Media Road Widening Project will impacts pools that are occupied by SDFS but are not within a complex identified in the VPHCP. The Fire Rescue Air Operations Phase II Project will impact pools occupied by SDFS located within Montgomery Field Complex (N 5-6). The pools being impacted are located outside of the MHPA, were not previously identified, and were not included as part of the Montgomery Field Complex. The VPHCP Conservation Objectives for SDFS states "Restoration is not necessary for this covered species, as the populations of this species are adequately conserved under the VPHCP." The population of SDFS within Otay Mesa and the Montgomery Field Complex are currently stable and these projects will not impact any of the conserved vernal pools occupied by covered species. This project proposes to restore and re-establish vernal pools within the Otay 1-Acre Complex (J13N). This restoration work will address the Conservation/Restoration Objectives for the J13N Complex and Conservation/Restoration Objectives for spreading navarretia, San Diego button-celery, California Orcutt grass, Otay mesa mint and Riverside fairy shrimp. The restoration project will establish viable populations of these species.
Otay Mesa mint	Establish viable populations of Otay Mesa mint within the J13E, J13N, J16–18, J20–21, J27, and J28 complex series.	The La Media Road Widening Project and the Fire Rescue Air Operations Phase II Project will not impact any vernal pools occupied by Otay Mesa mint, and all existing, occupied, and conserved vernal pools will continue to be managed consistent with the VPMMP. To offset impacts associated with these projects, restoration of vernal pools at the J13N Complex will occur. The restoration will incorporate Otay Mesa Mint to establish a viable population at J13N.

Table 1 VPHCP Conservation Objectives Consistency Analysis		
Objectives	Restoration Goals	Consistency
San Diego Mesa mint	Restoration is not necessary for this covered species, as the populations of this species are adequately conserved under the VPHCP.	The La Media Road Widening Project and the Fire Rescue Air Operations Phase II Project will not impact any vernal pools occupied by San Diego Mesa mint, and all existing, occupied, and conserved vernal pools will continue to be managed consistent with the VPMMP.
Spreading navarretia	Establish viable populations of spreading navarretia within J11E, J11W, J12, J13E, J13 N, J16–18, J20–21, J27, J28, and R1.	The La Media Road Widening Project and the Fire Rescue Air Operations Phase II Project will not impact any vernal pools occupied by spreading navarretia, and all existing, occupied, and conserved vernal pools will continue to be managed consistent with the VPMMP. To offset impacts associated with this project, restoration of vernal pools at the J13N Complex will occur. The restoration plan will restore and incorporate spreading navarretia to establish a viable population at J13N.
San Diego button-celery	Establish a viable population of San Diego button-celery within J13E and J13N.	The La Media Road Widening Project and the Fire Rescue Air Operations Phase II Project will not impact any vernal pools occupied by San Diego button-celery, and all existing, occupied, and conserved vernal pools will continue to be managed consistent with the VPMMP. To offset impacts associated with this project, restoration of vernal pools at the J13N Complex will occur. The restoration will restore and incorporate San Diego button-celery to establish a viable population at J13N.
California Orcutt's grass	Establish viable populations of California Orcutt grass within J11E, J11W, J12, J13E, J14, J16-18, J20–21, J21, J27, and J28E.	The La Media Road Widening Project and the Fire Rescue Air Operations Phase II Project will not impact any vernal pools occupied by California Orcutt grass, and all existing, occupied, and conserved vernal pools will continue to be managed consistent with the VPMMP. To offset impacts associated with these projects, restoration of vernal pools at the J13N Complex will occur. The restoration will restore and incorporate California Orcutt grass to establish a viable population.
Riverside fairy shrimp	Establish viable populations of Riverside fairy shrimp within J11E, J11W, J12, J13E, J13N, J14, J16-18, J20–21, J21, J27, and J28E.	The La Media Road Widening Project and the Fire Rescue Air Operations Phase II Project will not impact any vernal pools occupied by Riverside fairy shrimp, and all existing, occupied, and conserved vernal pools will continue to be managed consistent with the VPMMP. To offset impacts associated with these projects, restoration of vernal pools at the J13N Complex will occur. The restoration plan will incorporate Riverside fairy shrimp to establish a viable population.
San Diego fairy shrimp	Restoration is not necessary for this covered species, as the populations of this species are adequately conserved under the VPHCP.	The La Media Road Widening Project will impact pools occupied by SDFS. One of the pools being impacted is located within the MHPA and the other two pools are located outside the MHPA, but none of the pools are located within a VPHCP identified complex. The Fire Rescue Air

Table 1 VPHCP Conservation Objectives Consistency Analysis		
Objectives	Restoration Goals	Consistency
		Operations Phase II Project will impact pools occupied with SDFS. The pools being impacted are located outside of the MHPA, were not previously identified, and were not included as part of the Montgomery Field Complex. The populations of SDFS on Otay Mesa and within the Montgomery Field Complex are currently stable and these projects will not impact any of the conserved vernal pools occupied by SDFS.

Due to the location of the mitigation site on City-owned preserve lands, the City's Parks and Recreation Department will be responsible for overseeing the establishment and development of habitat during the five-year maintenance and monitoring period and beyond. The primary avenue for the City's participation is through the permitting process; reviewing and commenting on this plan, the construction documents, and subsequent annual reports; and inspecting and commenting on significant milestones involved in the implementation of this plan.

Contact: Mr. Mark Berninger
City of San Diego
Parks and Recreation Department
Office: 619-685-1314
mberninger@sandiego.gov

3.3 Vernal Pool Restoration Specialist

Overall supervision of the installation and maintenance of this restoration effort will be the responsibility of a vernal pool restoration specialist. The vernal pool restoration specialist must have at least seven years of vernal pool restoration and maintenance experience and be approved by the wildlife agencies and the City. The vernal pool restoration specialist will oversee the efforts of the installation/maintenance contractor for the life of the restoration. Specifically, the restoration specialist will educate all construction and maintenance personnel about restoration goals and requirements; inspect plant material; directly oversee vernal pool grading, planting, seeding, weeding, and other maintenance activities; and conduct regular monitoring as well as annual assessments of the restoration effort. The restoration specialist will provide the PWD Project Manager and contractor with a written monitoring memo, including a list of items in need of attention, after qualitative monitoring visits (see Section 4.5 and 5.0 for discussion of qualitative monitoring). The restoration specialist will prepare and submit annual monitoring reports.

3.4 Installation/Maintenance Contractor

The City PWD Project Manager will hire a qualified restoration contractor with at least seven years of applicable restoration experience, i.e., vernal pool restoration, sensitive plant

species restoration, and native and non-native plant identification. The contractor will be a firm holding a valid C-27 Landscape Contracting License from the State of California, a valid Pest Control Business License, and a Qualified Applicator Certificate or Qualified Applicator License, with Category B, that will allow them to perform the required work for this restoration effort. The contractor may be from the same firm as the restoration specialist. The PWD Project Manager may change contractors at their discretion.

During the installation, the contractor will be responsible for initial weed control/dethatching, fencing/barrier installation, irrigation installation (if applicable), top soil salvage and translocation, and planting and seeding, as well as maintenance of the restoration site during the 120-day plant establishment period (PEP) and five-year maintenance period.

Following installation, the contractor will submit marked up as-built plans for all implementation activities to the PWD Project Manager. The contractor will be held responsible for meeting all PEP success criteria until formal sign-off of the PEP has been obtained from the restoration specialist, PWD Project Manager, City DSD staff, City MSCP staff, and wildlife agencies.

Following formal sign-off of the PEP, the contractor will be responsible for maintaining the mitigation site for a minimum of five years. During this period, the contractor will service the entire mitigation site according to the maintenance schedule (Section 5.0, below). Service will include, but not be limited to, weed control, irrigation maintenance (if applicable), trash removal, watering, dead plant replacement, re-seeding, and pest and disease management. All activities conducted will be seasonally appropriate and approved by the restoration specialist and PWD Project Manager. The contractor will meet with the restoration specialist and PWD Project Manager at the site when requested and will perform all checklist items in a timely manner as directed.

3.5 Grading Contractor

The installation contractor will hire a qualified grading contractor, if they are not capable of performing the grading themselves. The grading contractor will have at least five years of applicable vernal pool restoration experience working in and near vernal pools. The grading contractor must have demonstrated at least three projects with successful vernal pool creation, as determined by the basin's ability to hold water after rainfall events and support both vernal pool endemic plants and fairy shrimp species. The contractor will be a firm holding a valid A General Engineering or C-27 Landscape Contracting License from the State of California that will allow them to perform the required work for this restoration effort. The PWD Project Manager may change contractors at their discretion.

During installation, the grading contractor will be responsible for topographic reconstruction and implementation of any best management practices required during grading.

3.6 Vernal Pool Biologist

The vernal pool biologist will work closely with the vernal pool restoration specialist to direct vernal pool restoration. The vernal pool biologist and vernal pool restoration specialist may be the same person provided all qualifications are met. The vernal pool biologist will have at least five years of vernal pool restoration experience and will be approved by the City and wildlife agencies. The biologist will possess a Section 10(a)1(A) Recovery Permit for Conducting Surveys for Listed Large Branchiopod Species and will directly supervise all work to be conducted in or adjacent to vernal pools known to support sensitive species.

3.7 Native Plant Nursery

Seed collection and bulking and container plant propagation will be conducted by a nursery that specializes in native plants and contract seed collection and growing. The nursery will have the appropriate collection permits for sensitive plant species and will have demonstrated experience in the collecting and bulking of vernal pool plant species seed. The nursery will be responsible for providing brief updates on the progress of seed collection and bulking activities to the restoration specialist and City PWD Biologist.

4.0 Implementation Plan

This section describes the design of the compensatory mitigation and how it will be implemented. Implementation of mitigation efforts will be conducted under the direction of a qualified vernal pool restoration specialist as defined in Section 3.3. All restoration and enhancement activities will commence the first summer–fall season prior to, or concurrently with, the initiation of project impacts.

4.1 Avoidance and Minimization Measures

During mitigation implementation, avoidance and minimization measures will be implemented to avoid impacts to existing vernal pools and to ensure that the existing hydrology (rainwater runoff and subsurface flows) of the preserved vernal pools is maintained or enhanced during grading, construction, and implementation. The VPHCP includes avoidance and minimization measures that are specific for construction or development projects rather than mitigation projects; however, these measures have been adapted and modified to ensure the protection of existing resources at the mitigation site. These measures help ensure avoidance of negative impacts to the existing vernal pools and their watersheds.

General avoidance and minimization measures will be implemented as follows:

Mitigation Site Design

1. Any development adjacent to the MHPA shall be constructed to slope away from the extant pools to be avoided, to ensure that runoff from the project does not flow into the pools.

2. Vernal pool topsoil will not be salvaged from the vernal pools to be impacted at the La Media Road Widening Project and the Fire-Rescue Air Operations Phase II construction sites. Occurrences of versatile fairy shrimp (*Branchinecta lindahli*) have been reported at the La Media Road Widening Project and the Fire-Rescue Air Operations Phase II site is located at Montgomery-Gibbs Executive Airport in Kearny Mesa, a significant distance north of the mitigation site, which raises concerns regarding genetic integrity of fairy shrimp.

   Prior to mitigation site grading, topsoil will be salvaged from existing pools that will be expanded through grading as described in Section 4.3.6.

3. Permanent protective fencing along any interface with developed areas and/or use of other measures approved by the City of San Diego to deter human and pet access to on-site habitat will be installed. Fencing will be shown on the development plans and should have no gates (accept to allow access for maintenance and monitoring of the mitigation area) and be designed to prevent intrusion by pets. Signage for the mitigation area will be posted and maintained at conspicuous locations. The requirement for fencing and/or other preventative measures is further discussed in Section 4.3.4.

During Mitigation Implementation

1. Temporary fencing (with silt barriers) will be required at the limits of the mitigation site (including implementation staging areas and access routes) to prevent additional vernal pool impacts and the spread of silt from the mitigation construction zone into adjacent vernal pools outside of the mitigation site. Fencing will be installed in a manner that does not impact native vegetation and existing vernal pools. Final construction plans will include photographs that show the fenced limits of impact and all areas of vernal pools to be impacted or avoided. If work inadvertently occurs beyond the fenced or demarcated limits of impact, all work will cease until the problem has been remedied to the satisfaction of the wildlife agencies and the City. Temporary construction fencing will be removed upon project completion.

2. Impacts from fugitive dust that may occur during vernal pool grading will be avoided and minimized through watering and other appropriate measures.

3. The qualified vernal pool biologist that has been approved by the City will be on-site as needed during implementation activities to ensure compliance with all mitigation measures identified in the CEQA environmental document. The biologist will perform the following duties:

   a. Oversee installation of and inspect the fencing and erosion control measures within or upslope of vernal pool restoration and preservation areas as needed, including daily during all rain events to ensure that any breaks in the fence or erosion control measures are repaired immediately.

   b. Periodically monitor the work area to ensure that work activities do not generate excessive amounts of dust.

   c. Train all contractors and construction personnel on the biological resources associated with this project and ensure that training is implemented for construction personnel. At a minimum, training will include discussions of (1) the purpose for resource protection; (2) vernal pool species and their habitats; (3) the conservation measures that must be implemented during implementation to conserve the vernal pool species, including strictly limiting activities, vehicles, equipment, and construction materials to areas that require grading; (4) environmentally responsible construction practices as outlined in measures 4, 5, and 6 below; (5) the protocol to resolve conflicts that may arise at any time during the construction process; and (6) the general provisions of the project's mitigation monitoring and reporting program, the need to adhere to the provisions of the federal Endangered Species Act, and the penalties associated with violating the federal Endangered Species Act.

   d. Submit regular monthly letter reports to the City of San Diego Mitigation Monitoring and Coordination (MMC), City MSCP staff, and wildlife agencies during mitigation implementation and a final as-built report within 60 days following completion of construction. The final report will include as-built construction drawings with an overlay of habitat that was restored, final maximum extent of ponding for each vernal pool basin, general location of mounds, and other relevant summary information documenting that authorized impacts were not exceeded and that general compliance with all conservation measures was achieved.

4. The following conditions will be implemented during project implementation:

   a. Employees will strictly limit their activities, vehicles, equipment, and implementation materials to the fenced project footprint.

   b. The project site will be kept as clean of debris as possible. All food-related trash items will be enclosed in sealed containers and regularly removed from the site.

   c. Disposal or temporary placement of excess fill, brush, or other debris will be limited to areas within the fenced project footprint.

5. All equipment maintenance, staging, and dispensing of fuel, oil, coolant, and any other such activities will occur in designated areas as approved by the vernal pool biologist. These designated areas will be located in previously compacted and disturbed areas to the maximum extent practicable in such a manner as to prevent any runoff from entering the vernal pools or their watersheds and should be shown on the construction plans. Fueling of equipment will take place within existing disturbed areas greater than 100 feet from the vernal pools or their watersheds. Contractor equipment should be checked for leaks prior to operation and repaired as necessary. A spill kit for each piece of construction equipment should be on-site to be used in the event of a spill. "No-fueling zones" will be designated on construction plans.

6. Grading activities immediately adjacent to vernal pools will be timed to avoid wet weather to minimize potential impacts (e.g., siltation) to the vernal pools unless the area to be graded is at an elevation below the pools. To achieve this goal, grading adjacent to avoided pools will comply with the following:

    a. Grading will occur only when the soil is dry to the touch both at the surface and one inch below. A visual check for color differences (i.e., darker soil indicating moisture) in the soil between the surface and one inch below indicates whether the soil is dry.

    b. After a rain of greater than 0.2 inch, grading will occur only after the soil surface has dried sufficiently as described above and no sooner than two days (48 hours) after the rain event ends.

    c. To prevent erosion and siltation from storm water runoff due to unexpected rains, best management practices (i.e., silt fences) will be implemented as needed during grading.

    d. If rain occurs during grading, work will stop and resume only after soils are dry, as described above.

    e. Grading will be done in a manner to prevent runoff from entering preserved vernal pools.

    f. If necessary, water spraying will be conducted at a level sufficient to control fugitive dust but not to cause runoff into vernal pools.

    g. If mechanized grading is necessary, grading will be performed in a manner to minimize soil compaction (i.e., use the smallest type of equipment needed to feasibly accomplish the work).

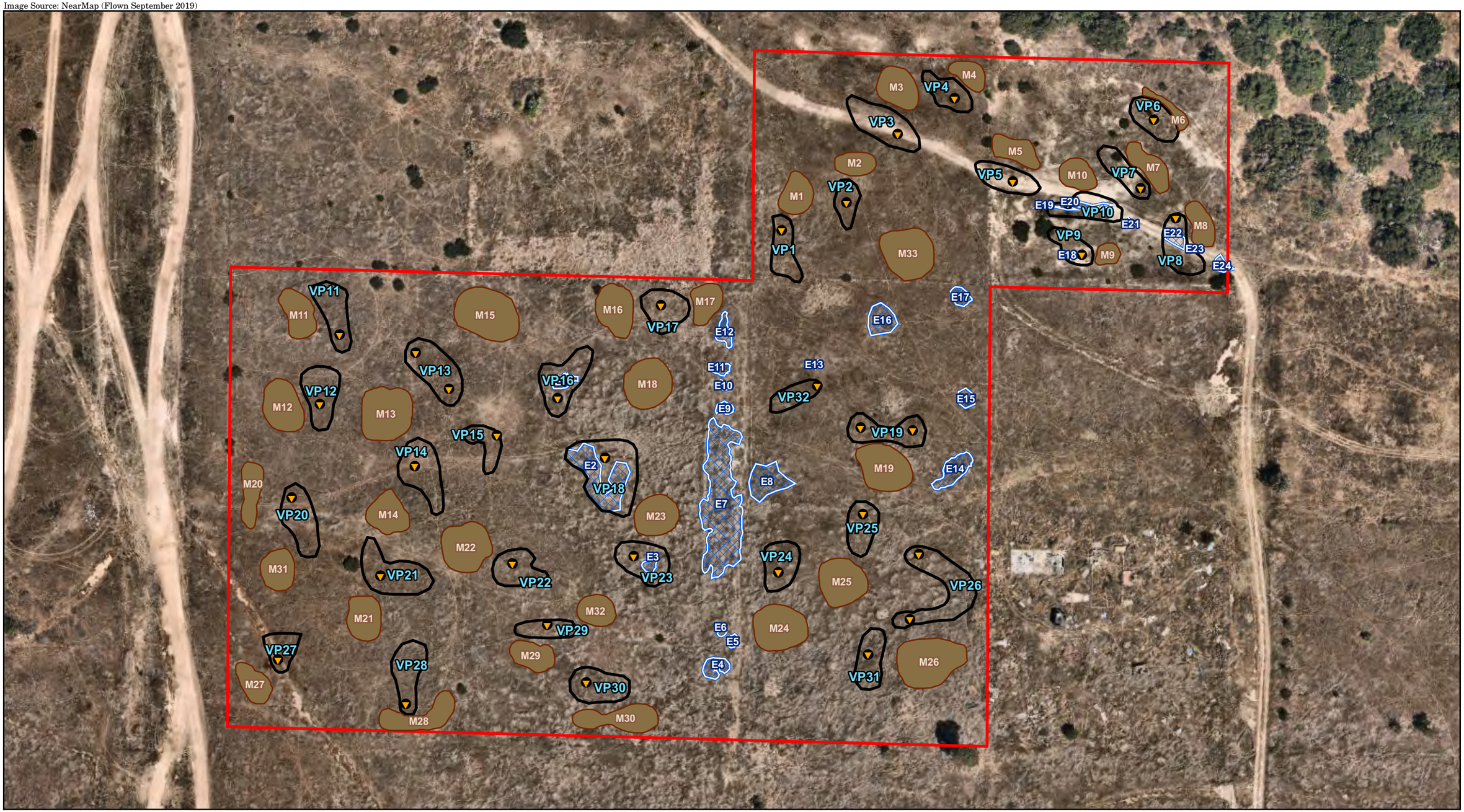
4.2 Preliminary Design and Engineering

This mitigation plan proposes restoration of 32 vernal pools and enhancement of 16 existing pools. The mitigation site contains a total of 24 existing vernal pools (labeled with an "E" on Figure 8). Existing pools are those that were either identified in the VPHCP or by RECON vegetation surveys conducted in 2019. The RECON vegetation surveys were used to refine the vernal pool boundaries presented in the VPHCP. In instances where the RECON boundaries differed from the VPHCP boundaries, the RECON boundaries were utilized. Eight of the 24 existing pools (E1, E2, E3, E18, E19, E20, E22, and E23) will be expanded and/or combined with other existing pools through minor grading. After grading, these eight existing pools will form five larger new pools with a new "VP" label (VP8, VP9, VP10, VP16, VP18, and VP23; see Figure 8 and Table 2). The existing basins will be enhanced and the extra acreage created/restored through expansion will count towards the City's mitigation credits. The remaining 15 existing pools that are not planned for grading will be enhanced through weeding, remedial seeding, and possible fairy shrimp inoculation. These pools will be referred to as "Enhanced Pools" and will keep the "E" label as shown on Figure 8. An additional 26 new pools will be created/restored through grading and are also labeled with a "VP" on Figure 8. For the purposes of this mitigation plan, all of the pools shown in Figure 8 will be collectively referred to as the "restored/enhanced pools", pools that will be graded will be referred to as "restored" and pools where no grading will take place will be referred to as "enhanced".

A hydrology study was prepared by Rick Engineering Company (2019) to confirm that each restored or enhanced vernal pool has sufficient watershed that a typical 1-year storm event would create 2 to 3 inches of ponding for a period of 14 days to support San Diego fairy shrimp or 21 days to support Riverside fairy shrimp. The hydrology study shows that all 32 proposed pools will, after a typical 1-year storm event, hold at least 2 to 3 inches of water for at least 14 days and 24 of the proposed pools will hold at least 2 to 3 inches of water for at least 21 days. Figure 9 shows the planned location of the vernal pools and their respective watersheds and flow patterns (this figure will be further refined as grading plans are prepared).

A minimum of 0.814 acre (35,443 square feet) of new vernal pool surface area will be restored through topographic recontouring/grading, soil translocation, seed collection and dispersal, and continued maintenance and monitoring. An additional 0.150 acre (6,524 square feet) of existing vernal pools (pools identified by the City's VPHCP or by vegetation surveys conducted in March 2019) will be enhanced through hand weeding, soil translocation, seed collection and dispersal, and continued maintenance and monitoring.

Image Source: NearMap (Flown September 2019)



Project Boundary

E# Existing Pools to be Enhanced

VP# Restored Vernal Pools

Deepest Point of Pool

M# Mounds to be Established

0 Feet 100

RECON

M:\JOBS5\9227\common_gis\fig8_vpmit.mxd 11/21/2019 bma

FIGURE 8

Mitigation Site Restoration Plan

Table 2 Restored and Enhanced Vernal Pools										
Proposed Pool Number	Overlap with Existing Pool	Proposed Final Size (sq. ft.)	Existing Pool Size (total if multiple pools)	Increase in Size (sq. ft.)	Target Depth	Ponding Depth After 14 days[1]	Ponding Depth After 21 days[1]	Existing Native Species[2, 3]	Target Native Vernal Pool Species[4]	Existing Non-native Species[3]
VP1		971		971	12.0	3.4	2.7		CALMAR DOWCUS ERYARI MYOMIN NAVFOS ORCCAL TRISCI	
VP2		626		626	12.0	6.7	6.0		CALMAR ELEMAC ERYARI ORCCAL TRISCI	
VP3		1,560		1,560	12.0	2.9	2.2	PSIBRE	CALMAR DOWCUS ERYARI MYOMIN NAVFOS ORCCAL TRISCI	
VP4		853		853	8.0	2.9	2.2		DOWCUS MYOMIN NAVFOS	
VP5		980		980	12.0	8.0	7.3	PSIBRE	CALMAR ELEMAC ERYARI MALLEP ORCCAL TRISCI	
VP6		1,009		1,009	12.0	2.6	1.9		CALMAR DOWCUS ERYARI MYOMIN NAVFOS TRISCI	

Table 2 Restored and Enhanced Vernal Pools										
Proposed Pool Number	Overlap with Existing Pool	Proposed Final Size (sq. ft.)	Existing Pool Size (total if multiple pools)	Increase in Size (sq. ft.)	Target Depth	Ponding Depth After 14 days[1]	Ponding Depth After 21 days[1]	Existing Native Species[2, 3]	Target Native Vernal Pool Species[4]	Existing Non-native Species[3]
VP7		874		874	12.0	2.6	1.9		DOWCUS MYOMIN NAVFOS	
VP8	E22, E23	1,135	152	984	12.0	2.6	1.9		CALMAR DOWCUS ERYARI MYOMIN NAVFOS	
VP9	E18	699	12	687	12.0	3.0	2.3		DOWCUS MYOMIN NAVFOS ORCCAL	
VP10	E19, E20	1,047	240	807	8.0	2.7	2.0		CALMAR DOWCUS ERYARI MYOMIN NAVFOS ORCCAL TRISCI	
VP11		1,177		1,177	6.0	2.6	1.9		CALMAR DOWCUS ERYARI MYOMIN NAVFOS TRISCI	
VP12		1,262		1,262	12.0	2.7	2.0		CALMAR DOWCUS ERYARI MYOMIN NAVFOS ORCCAL TRISCI	

Table 2 Restored and Enhanced Vernal Pools										
Proposed Pool Number	Overlap with Existing Pool	Proposed Final Size (sq. ft.)	Existing Pool Size (total if multiple pools)	Increase in Size (sq. ft.)	Target Depth	Ponding Depth After 14 days[1]	Ponding Depth After 21 days[1]	Existing Native Species[2, 3]	Target Native Vernal Pool Species[4]	Existing Non-native Species[3]
VP13		1,606		1,606	12.0	3.0	2.4		CALMAR DOWCUS ERYARI MALLEP MYOMIN NAVFOS ORCCAL TRISCI	
VP14		1,505		1,505	12.0	2.6	1.9		CALMAR DOWCUS ERYARI MYOMIN NAVFOS TRISCI	
VP15		689		689	12.0	2.8	2.1		DOWCUS MYOMIN NAVFOS	
VP16	E1	1,470	192	1,278	8.0	4.4	3.7	PSIBRE	CALMAR ELEMAC ERYARI MALLEP ORCCAL TRISCI	
VP17		1,091		1,091	12.0	3.0	2.3		CALMAR DOWCUS ERYARI MYOMIN NAVFOS ORCCAL TRISCI	
VP18	E2	2,797	1,403	1,394	12.0	2.6	1.9	PSIBRE (5-10%), ERYARI, CRETRU (<1%), DEIFAS (<1%), ELEMAC (5-10%), MALLEP (5-10%),	CALMAR ELEMAC ERYARI MALLEP TRISCI	BROMAD (<1%), EROBOT (<1%), FESPER (50-75%), HORMAR (5-10%)

Table 2 Restored and Enhanced Vernal Pools										
Proposed Pool Number	Overlap with Existing Pool	Proposed Final Size (sq. ft.)	Existing Pool Size (total if multiple pools)	Increase in Size (sq. ft.)	Target Depth	Ponding Depth After 14 days[1]	Ponding Depth After 21 days[1]	Existing Native Species[2, 3]	Target Native Vernal Pool Species[4]	Existing Non-native Species[3]
VP19		1,235		1,235	12.0	2.7	2.0		CALMAR DOWCUS ERYARI MALLEP MYOMIN NAVFOS TRISCI	
VP20		1,346		1,346	12.0	3.7	3.0	LEPLAT	CALMAR ELEMAC ERYARI MALLEP ORCCAL TRISCI	
VP21		1,691		1,691	12.0	2.6	1.9		CALMAR DOWCUS ERYARI MYOMIN NAVFOS TRISCI	
VP22		1,059		1,059	12.0	2.6	1.9		CALMAR DOWCUS ERYARI MYOMIN NAVFOS TRISCI	
VP23	E3	1,249	118	1,131	12.0	2.7	2.0	PSIBRE	CALMAR DOWCUS ERYARI MYOMIN NAVFOS TRISCI	

Table 2 Restored and Enhanced Vernal Pools										
Proposed Pool Number	Overlap with Existing Pool	Proposed Final Size (sq. ft.)	Existing Pool Size (total if multiple pools)	Increase in Size (sq. ft.)	Target Depth	Ponding Depth After 14 days[1]	Ponding Depth After 21 days[1]	Existing Native Species[2, 3]	Target Native Vernal Pool Species[4]	Existing Non-native Species[3]
VP24		1,052		1,052	12.0	2.7	2.0		CALMAR DOWCUS ERYARI MYOMIN NAVFOS TRISCI	
VP25		947		947	12.0	2.8	2.1		DOWCUS MYOMIN NAVFOS	
VP26		2,128		2,128	12.0	2.7	2.0		CALMAR DOWCUS ERYARI MYOMIN NAVFOS TRISCI	
VP27		713		713	12.0	6.4	5.7	PSIBRE	CALMAR ELEMAC ERYARI MALLEP ORCCAL TRISCI	
VP28		1,203		1,203	12.0	4.3	3.6		CALMAR ELEMAC ERYARI MALLEP ORCCAL TRISCI	
VP29		695		695	12.0	5.8	5.1		CALMAR ELEMAC ERYARI MALLEP ORCCAL TRISCI	

Table 2 Restored and Enhanced Vernal Pools										
Proposed Pool Number	Overlap with Existing Pool	Proposed Final Size (sq. ft.)	Existing Pool Size (total if multiple pools)	Increase in Size (sq. ft.)	Target Depth	Ponding Depth After 14 days[1]	Ponding Depth After 21 days[1]	Existing Native Species[2, 3]	Target Native Vernal Pool Species[4]	Existing Non-native Species[3]
VP30		1,215		1,215	12.0	2.9	2.2		CALMAR DOWCUS ELEMAC ERYARI MYOMIN NAVFOS TRISCI	
VP31		1,020		1,020	12.0	2.8	2.1		CALMAR DOWCUS ERYARI MYOMIN NAVFOS	
VP32		655		655	12.0	2.9	2.2		DOWCUS MYOMIN NAVFOS	
	E4	280	280					PSIBRE	4	
	E5	74	74					PSIBRE	4	
	E6	53	53					PSIBRE	4	
	E7	3,300	3,300					PSIBRE (25-50%), NAVFOS, ORCCAL, ELEMAC (<1%), DEIFAS (1-5%), LEPNIT (<1%), LYSMIN (<1%), MALLEP (5-10%)	4	ATRSEM (<1%), BROHOR (<1%), BROMAD (<1%), EROBOT (1-5%), FESPER (50-75%), HORMAR (<1%), HYPGLA (<1%), LACSER (<1%), LYTHYS (<1%), MESNOD (<1%), PHAAQU (1-5%), PHAMIN (<1%), SALTRA (<1%), SONASP (<1%), SPEBOC (<1%)
	E8	750	750					PSIBRE	4	

Table 2 Restored and Enhanced Vernal Pools										
Proposed Pool Number	Overlap with Existing Pool	Proposed Final Size (sq. ft.)	Existing Pool Size (total if multiple pools)	Increase in Size (sq. ft.)	Target Depth	Ponding Depth After 14 days[1]	Ponding Depth After 21 days[1]	Existing Native Species[2, 3]	Target Native Vernal Pool Species[4]	Existing Non-native Species[3]
	E9	112	112						[4]	
	E10	61	61					PSIBRE	[4]	
	E11	116	116					PSIBRE	[4]	
	E12	222	222					PSIBRE	[4]	
	E13	29	29						[4]	
	E14	514	514						[4]	
	E15	180	180						[4]	
	E16	501	501						[4]	
	E17	203	203					PSIBRE	[4]	
	E21	23	23						[4]	
	E24	130	130						[4]	
TOTAL		**44,107**	**8,664**	**35,443**						
Created square feet				*35,443*						
Enhanced square feet				*8,664*						

[1]SOURCE: Rick Engineering 2019, depth of restored pools remaining after 1-year storm event
[2]SOURCE: VPHCP (City of San Diego 2017b and RECON 2019)
[3]Cover data only available for two pools, from City of San Diego 2019 surveys.
[4]CRAAQU, DESDAN, JUNBUF, LYSMIN, PILAME, PLAACA, PLAELO, POGNUD, PSIBRE targeted to be present in all pools.

Key for Species:
ATRSEM = *Atriplex semibaccata*
BROHOR = *Bromus hordeaceus*
BROMAD = *Bromus madritensis rubens*
CALMAR = *Callitriche marginata*
CRAAQU = *Crassula aquatica*
CRETRU = *Cressa truxillensis*
DEIFAS = *Deinandra fasciculata*
DESDAN = *Deschampsia danthonioides*
DOWCUS = *Downingia cuspidata*
ELEMAC = *Eleocharis macrostachya*
EROBOT = *Erodium botrys*
ERYARI = *Eryngium aristulatum*
FESPER = *Festuca perennis*
HORMAR = *Hordeum marinum*
HYPGLA = *Hypochaeris glabra*
JUNBUF = *Juncus bufonius*
LACSER = *Lactuca seriola*
LEPLAT = *Lepitium latifolium*
LEPNIT = *Lepidium nitidum*
LYSMIN = *Lysimachia minima*
LYTHYS = *Lythrum hyssopifolia*
MALLEP = *Malvella leprosa*
MESNOD = *Mesembryanthemum nodiflorum*
MYOMIN = *Myosurus minimus*
NAVFOS = *Navarettia fossalis*
PHAAQU = *Phalaris aquatica*
PHAMIN = *Phalaris minor*
PILAME = *Pilularia american*
PLAACA = *Plagiobothrys acanthocarpus*
PLAELO = *Plantago elongata*
POGNUD = *Pogogyne nudiuscula*
PSIBRE = *Psilocarphus brevissimus*
SALTRA = *Salsola tragus*
SONASP = *Sonchus asper*
SPEBOC = *Spergularia bocconi*
TRISCI = *Triglochin scilloides*

Image Source: NearMap (Flown September 2019)

Project Boundary
Existing Pools to be Enhanced
Restored Vernal Pools
Surface Flow
Drainage Basins
Parcel Boundary
Multi-Habitat Planning Area

0 Feet 100

RECON

M:\JOBS5\9227\common_gis\fig9_vpmit.mxd 5/27/2020 ccn

FIGURE 9

Restored Vernal Pool Watersheds and Flow Patterns

In addition, the mitigation will consist of 6.666 acres of upland watershed that will be restored to native maritime succulent scrub (MSS) habitat on the mima mounds and native herbs, grasses, and forbs in the interspaces. Otay Mesa historically supported MSS habitat and establishing MSS at this site is an appropriate goal. However, if on-site trends (i.e., low container plant survival, lack of recruitment) indicate that MSS habitat may not be appropriate, adaptive management measures (i.e., replanting and reseeding) will utilize species that are already performing well on-site. This may result in upland habitat that is more indicative of Diegan coastal sage scrub, such as that already present in the northeastern corner of the site. Restoration will occur through weed dethatching, barrier installation, native plant and seed introduction, and continued maintenance and monitoring. Implementation activities are described in more detail in Section 4.3, and ongoing maintenance and monitoring activities are discussed in Sections 5.0 and 7.0.

4.3 Implementation Activities

Implementation activities include seed collection and bulking, non-native weed dethatching, topographic recontouring/grading, barrier/signage installation, irrigation system installation, vernal pool soil salvage and translocation, and planting and seeding. The implementation schedule is shown in Table 3. Implementation will commence prior to or concurrently with the start of construction of the project.

All final specifications and topographic-based grading, planting, and watering plans will have 0.2-foot contours for the vernal pools, watersheds, and surrounding uplands (including adjacent mima mounds) at the restoration site. The basis for this fine-scale resolution is the micro-depth (i.e., several inches) of the vernal pools that will be restored. The grading plans will also show the watersheds of existing vernal pools and overflow pathways that hydrologically connect the restored pools in a way that mimics natural vernal pool complex topography and hydrology.

Table 3
Implementation Schedule

Task	Time of Year
Seed Collection and Bulking	Spring/Summer for vernal pool seed and annual upland seed, Summer/Fall for perennial upland seed
Non-native Weed Dethatching	Summer/Fall (prior to grading)
Topographic Recontouring/Grading	Summer/Fall (prior to start of wet season)
Barrier/Signage Installation	Fall (after grading)
Irrigation System Installation	Fall (after grading)
Vernal Pool Soil Salvage	Summer/Fall (prior to start of wet season)
Vernal Pool Soil Translocation	Winter[1]
Maritime Succulent Scrub Plant and Seed Installation	Winter
Vernal Pool Hand Seeding	Winter[1]
[1]After vernal pool hydrology accepted	

4.3.1 Seed Collection and Bulking

Seed collection should begin immediately and should be conducted within the mitigation site vicinity. Species recommended for collection are shown in Table 4 and will be used for container plant propagation, seed bulking, and hand seeding. The Species-Specific Objectives in the VPMMP (City of San Diego 2017b) for vernal pool complex J 13 N include protecting and managing populations of San Diego button celery, spreading navarretia, and Orcutt's grass and establishing viable populations of Otay Mesa mint. Collection of seed from these four species will be of particular importance during the mitigation project.

Seed should be collected first from existing on-site pools that support endemic vernal pool plant species. If adequate seed cannot be obtained on-site, then an alternate site located on Otay Mesa site will be used upon approval by the City. Nearby vernal pool complexes owned by the City that may be targeted for seed collection include Cal Terraces and Goat Mesa (see Figure 4). If seed cannot be obtained from within these parameters, seed collected within San Diego County at a similar elevation to the mitigation site or commercial sources may be acceptable with consultation with the restoration specialist and the City PWD Biologist and approval by the City and wildlife agencies. Care will be taken to avoid collection of soil during seed collection as fairy shrimp eggs may be mixed with the seed and soil. The sources and proof of local origin of all plant material and seed will be provided to the City prior to dispersal.

Seed bulking and plant propagation should begin as soon as possible by a qualified native plant nursery as defined in Section 3.7. Seed collected or procured for the project will be used for container plant propagation in the species and quantities discussed in Section 4.3.7. Container plants will be inoculated with mycorrhizae (mutualistic fungi) by using native soil that contains fungi and other microorganisms. Providing the necessary microorganisms can increase outplanted plants survival rates (Allen 1988). Seed bulking includes propagating container plants specifically for the purposes of seed production. Container plants will be sown and grown under ideal conditions, allowed to germinate and flower, and all resulting seed will be harvested, rough cleaned, and stored for hand seeding. Species that will be targeted for bulking are shown in Table 4.

Vernal pool species will be introduced to the site through either soil transfer or seed collection and dispersal. The hand-collected vernal pool seeds will be distributed in the newly established vernal pools according to the planting plan outlined in Section 4.3.9 or at the discretion of the restoration specialist.

Table 4 Plant Species Targeted for Collection	
Plant Species	Common Name
Upland Maritime Succulent Scrub Species	
Acmispon glaber[1]	Deerweed
Amsinkia menziesii[1]	Common fiddleneck
Artemisia californica[1]	California sagebrush
Artemisia chenopodifolia	San Diego bur-sage
Atriplex pacifica	South coast saltbush
Bahiopsis laciniata	San Diego sunflower (viguiera)
Bergerocactus emoryi	Golden cereus
Brodiaea terrestris[2]	Dwarf brodiaea
Bothriochloa barbinodis	Cane bluestem
Cylindropuntia prolifera[1]	Coast cholla
Dichelostemma capitatum[1, 2]	Blue dicks
Distichlis spicata[1]	Salt grass
Dodecatheon clevelandii[2]	Padre's shooting star
Encelia californica	California encelia
Eriogonum fasciculatum[1]	California buckwheat
Eriophyllum confertiflorum	Golden yarrow
Euphorbia misera	Cliff spurge
Ferocactus viridescens	Coast barrel cactus
Isomeris arborea	Bladderpod
Lasthenia californica[2]	Goldfields
Linanthus dianthiflorus[1, 2]	Ground pink
Lupinus bicolor[1]	miniature lupine
Lupinus truncatus[1]	collar lupine
Lycium californicum	California desert thorn
Microseris douglasii var. *platycarpa*[1, 2]	Silverpuffs
Muilla maritima[1, 2]	Common muilla
Opuntia littoralis	Coast prickly pear cactus
Plantago erecta[1, 2]	Dot-seed plantain
Simmondsia chinensis[1]	Jojoba
Sporobolus airoides	Alkali sacaton
Stipa pulchra[2]	Purple needlegrass
Trifolium willdenovii[1]	Tomcat clover
Vernal Pool Plant Species	
Callitriche marginata[3]	Water-starwort
Crassula aguatica[1, 3]	Stone-crop
Deschampsia danthonioides[2]	Annual hairgrass
Downingia cuspidata[2]	Toothed calico flower
Eleocharis macrostachya[1, 2]	Pale spikerush
Eryngium aristulatum var. *aristulatum*[1, 2,4,5]	San Diego button-celery
Juncus bufonius[1, 2]	Toad rush
Lysimachia minima[1]	chaffweed
Malvella leprosa[1]	Alkali mallow
Myosurus minimus[2]	Little mouse tail
Navarretia fossalis[4,5]	Spreading navarretia
Orcuttia californica[4,5]	California Orcutt's grass
Pilularia americana[1,3]	American pillwort
Plagiobothrys acanthocarpus[1, 2]	Adobe popcornflower
Plantago elongata[1, 2]	Plantain

Table 4 Plant Species Targeted for Collection	
Plant Species	Common Name
Pogogyne nudiuscula[2,5]	Otay Mesa mint
Psilocarphus brevissimus[1]	Dwarf woollyheads
Triglochin scilloides[3]	Flowering quillwort
SOURCE: VPHCP (City of San Diego 2017a) [1]Observed at mitigation site during 2019 vegetation surveys [2]To be bulked at a native plant nursery [3]To be targeted for introduction to the site via soil collection [4]Identified as occurring on-site per the VPHCP [5]Required per VPMMP Species – Specific Objectives (City of San Diego 2017b)	

4.3.2 Non-native Weed Dethatching

Prior to topographic recontouring and outside of the bird breeding season (February 15 through August 15), crews familiar with native and non-native plants will remove the accumulated weedy thatch throughout the mitigation site through the use of line trimmers and rakes. If dethatching must occur during the bird breeding season, a nesting bird survey will be conducted by a qualified biologist before work begins. Cut material will be raked into piles, removed from the site, and taken to a landfill or put into a green waste dumpster for disposal. Removal of the weedy thatch material will enable the project biologist and heavy equipment operator to see the soil surface so that the proper vernal pool elevations could be contoured. Removal of the thatch will also aid in preparing the site for container plant installation, creating space for hand seeding of native annual species, and reducing future weed growth, which could be aided by the mulching effect of the thatch.

4.3.3 Topographic Recontouring/Grading

Topographic recontouring, or grading, at the site will be implemented to create mound and basin topography typical of vernal pool habitats on Otay Mesa. The result will be the establishment of natural watershed topography with the ability to capture and retain precipitation for the restored/enhanced vernal pools.

The primary physical change accomplished by grading will be the redistribution of a portion of the soil surface to establish (i.e., excavate) new vernal pool basins and allow ponding and water retention. Excess material displaced by the excavation process will be used to construct low mounds as shown on Figure 8. Mounds will placed in a manner that enhances the local watershed of the complex by encouraging ponding of restored/enhanced pools and improving hydrologic connectivity between pools.

Existing vernal pools on-site will be either left as is or expanded (see Figure 8). Expansion of existing pools will include light grading along the pool's edges to improve the pool's ponding capabilities, erase tire ruts, and manipulate soil to create greater topographic complexity.

Grading activities will be timed to avoid wet weather in order to minimize potential impacts (e.g., siltation) to the existing vernal pools. To ensure that potential impacts to the

existing vernal pools are avoided, grading activities will be performed consistent with the following:

- Grading will occur only when the soil is dry to the touch at the surface and one inch below. A visual check for color differences (i.e., darker soil indicating moisture) in the soil between the surface and one inch below indicates the soil is dry.

- After a rain of greater than 0.2 inch, grading will occur only after the soil surface has dried sufficiently as described above and no sooner than two days (48 hours) after the rain event ends.

- Grading will commence only when no rain is forecasted during the anticipated grading period. If rain occurs during grading, work will stop and resume only after soils are dry.

- Grading will be done in a manner to prevent silt from entering the preserved vernal pools. To prevent erosion and siltation from storm water runoff due to unexpected rains, best management practices (e.g., silt fences or other means such as fiber rolls) will be implemented as needed during any recontouring work.

The grading will be conducted under the direction of a qualified vernal pool restoration specialist, as described in Section 3.3. Areas that are to remain unaffected by grading activities will be marked prior to implementation. The grading will be implemented using a small bulldozer or skidsteer, as deemed appropriate by the grading contractor. The machine operator will also be experienced in vernal pool restoration work.

After grading, cobble generated by grading activities will be placed within the vernal pool basins to provide topographic complexity to the basin bottoms. After grading and prior to container plant installation, the maximum potential ponding area of the newly established vernal pools will be surveyed to ensure that the boundary for each pool does not differ by more than 10 percent from the target areas. High resolution aerial photography will be captured using a professional small unmanned aerial vehicle (sUAV). Using industry standard photogrammetry software and procedures, a digital surface model (DSM) will be generated using the data collected by the sUAV. The as-built grading plans and report figures will include vernal pool boundaries and 0.2-foot contours, both of which will be derived from the DSM, and will be replotted at 1 inch equals 40 feet.

4.3.4 Barrier/Signage Installation

Protection of the mitigation site from human disturbance is essential for success. Of particular importance is protection of the mitigation site from pedestrians and off-road vehicles. Concurrent with topographic recontouring, a temporary fence will be erected and maintained around the perimeter of the mitigation site to bar unauthorized vehicle access. Once the topographic recontouring is complete, the mitigation site will be permanently fenced with chain-link and three-strand barbless wire fencing in consultation with the City. Chain-link will be installed on the north, west, and south project limits where adjacent

planned development presents an increase probability of trespassing. Three-strand barbless wire will be installed on the eastern limits and along the edge of Dillon Canyon to allow for wildlife movement through the site. In addition, signs will provide notice that the area is an ecological preserve, notify that trespassing is prohibited, and cite penalties for trespass violation, including liability for repair of any damage to soil or biological resources within the barrier. Signs in both Spanish and English will be mounted at approximately 200-foot intervals around the mitigation site.

4.3.5 Irrigation System Installation

If a point of connection to a reliable water source is available at the time of mitigation implementation, a temporary aboveground irrigation system will be installed within areas planned to receive container plants in the upland MSS habitat at the restoration contractor's discretion and with the approval of the City PWD Biologist. The irrigation system will be field fit to ensure adequate irrigation coverage to all installed container plants to the extent practicable with avoidance of overspray into the vernal pool basins. At no point will irrigation water that results in pooling of water be allowed to enter the vernal pool basins. The system will also be installed with hose bibs to allow for hand watering of container plants that cannot be watered by the system due to their proximity to vernal pools.

If a reliable point of connection is not available at the time of container plant installation, all container plants and germinating upland seed will be watered by water truck and hoses. The water truck will fill up at the closest fire hydrant using the appropriate water meter (mostly likely City of San Diego).

4.3.6 Salvage and Translocation of Vernal Pool Soil for Fairy Shrimp

Vernal pool soil will not be salvaged from the vernal pools to be impacted at the La Media Road Widening Project and the Fire-Rescue Air Operations Phase II construction sites. Occurrences of versatile fairy shrimp (*Branchinecta lindahli*) have been reported at the La Media Road Widening Project and the Fire-Rescue Air Operations Phase II site is located at Montgomery Field in Kearny Mesa, a significant distance north of the mitigation site, which raises concerns regarding genetic integrity of fairy shrimp.

The City owns and manages several nearby vernal pool complexes on Otay Mesa (i.e., Cal Terraces, Goat Mesa) where versatile fairy shrimp have not been observed or are known to be present in a few limited vernal pools. Soil from nearby vernal pools containing San Diego and Riverside fairy shrimp eggs will be collected and used to inoculate all of the restored/enhanced pools where fairy shrimp are not already present. Vernal pools known to support versatile fairy shrimp will not be targeted for collection of soil.

Necessary criteria for this mitigation plan include establishment of populations of Riverside fairy shrimp. Establishment of San Diego fairy shrimp is desirable but not required as they are adequately conserved under the VPHCP (City of San Diego 2017a). Following

topographic recontouring, the newly established vernal pools will be inoculated with shrimp egg–bearing soils collected from nearby pools only after the newly established vernal pools have demonstrated suitable hydrologic conditions (i.e., at least 14 to 21 days for San Diego fairy shrimp and 21 to 28 days for Riverside fairy shrimp). Fairy shrimp eggs will be introduced into these vernal pools following the guidelines listed below.

The following translocation guidelines will be adhered to for the fairy shrimp translocation effort:

- Egg-bearing soil (inoculum) will be collected when it is dry to avoid damaging or destroying fairy shrimp eggs, which are fragile when wet.

- A hand trowel or similar instrument will be used to collect the top two inches of soil from the pools. Whenever possible, soil will be collected in chunks. The trowel will be used to pry up intact chunks of sediment, rather than loosening the soil by raking and shoveling, which can damage the eggs. The soil from donor pools will be stored individually in labeled boxes with adequate ventilation and away from direct sunlight. Salvaged soil will be kept at an approved seed storage facility that provides the appropriate conditions of light and temperature.

- Prior to placing any salvaged egg-bearing soil into the restored/enhanced pools, the pools will have been surveyed for versatile fairy shrimp to the satisfaction of the wildlife agencies and the City. Versatile fairy shrimp are undesirable in vernal pools as they can be considered weedy and possibly hybridize with sensitive fairy shrimp species. The survey will consist of soil collection and testing for the presence of the versatile fairy shrimp. If the soil contains versatile fairy shrimp cysts, then inoculum will not be introduced until measures approved by the above agencies have been implemented to remove the versatile fairy shrimp from the pools.

- Salvaged soil will be dispersed into the bottoms of the restored/enhanced vernal pools to give the greatest chance for the material to be inundated during the rainy season. Inoculum will be placed in a manner that preserves, to the maximum extent possible, the orientation of the fairy shrimp eggs within the surface layer of soil (e.g., collected inoculum will be shallowly distributed within the pool so that eggs have the potential to be brought into solution upon inundation).

- Inoculum will not be introduced until the restored/enhanced vernal pool basins have demonstrated the ability to retain water for the appropriate amount of time to support San Diego fairy shrimp (i.e., at least 14 to 21 days) and Riverside fairy shrimp (i.e., at least 21 to 28 days), as approved by the wildlife agencies and the City.

- Inoculum from different source pools will not be mixed for translocation to any restored/enhanced vernal pools.

4.3.7 Maritime Succulent Scrub Plant and Seed Installation

Planting of the upland watersheds will occur following site preparation and after the first significant rain of the rain season. See Table 3 for the seeding and planting schedule.

Approximately 7.1 acres of watershed will be restored to MSS. The portion of the mitigation site to be restored currently supports non-native grassland and disturbed land. The areas immediately southeast and southwest of the mitigation site contain non-native grasslands with MSS. The restoration of native plant communities will be based on a principle of reestablishing suitable soil conditions (i.e., mycorrhizal fungi) and native seed banks, and reintroduction of native shrub and herbaceous species. The container plant palette for the MSS restoration are listed in Table 5 and includes species indicative of MSS habitat as well as species more typical of coastal sage scrub and grasslands to provide a plant palette that will readily establish on mounds and vernal pool interspaces.

All plant material will be installed in a way that mimics natural plant distribution. In general, larger shrub species will be installed on mounds with smaller shrubs and grass species installed in the pool and mound interspaces, at the direction of the restoration specialist (see Table 5). Bulbs will be installed within the same planting hole as the purple needlegrass (*Stipa pulchra*) and foothill needlegrass (*Stipa lepida*) container plants. Container plants will be installed using standard horticultural practices, using a hole at least twice the diameter of the root ball. All plants will be thoroughly watered in their pots before planting, as will the soil in all planting holes. Each container plant will be installed with a small two- to three-inch berm or planting basin approximately 24 inches in diameter around the edge of the plant to hold irrigation water.

Table 5 Container Stock for the Maritime Succulent Scrub Restoration			
Scientific Name	Common Name	Size	Number per Acre
Mound Installation			
Artemisia californica	California sagebrush	1-gallon	200
Atriplex pacifica	South coast saltbush	1-gallon	100
Bahiopsis laciniata	San Diego sunflower (viguiera)	1-gallon	200
Bergerocactus emoryi	Golden cereus	1-gallon or cuttings	50
Bothriochloa barbinodis[1]	Cane bluestem	1-gallon	100
Cylindropuntia prolifera	Coast cholla	1-gallon or cuttings	100
Encelia californica	California encelia	1-gallon	150
Euphorbia misera	Cliff spurge	1-gallon	200
Ferocactus viridescens	Coast barrel cactus	1-gallon	10
Lycium californicum	California desert thorn	1-gallon	100
Opuntia littoralis	Coast prickly pear cactus	1-gallon or cuttings	100
Simmondsia chinensis	Jojoba	1-gallon	250
		TOTAL	**1,560**
Interspace Installation			
Artemisia chenopodifolia	San Diego bur-sage	1-gallon	150
Brodiaea terrestris[2]	Dwarf brodiaea	bulb	25
Dichelostemma capitatum[2]	Blue dicks	bulb	50
Distichlis spicata	Salt grass	Rose-pot	1,000
Eriogonum fasciculatum	California buckwheat	1-gallon	100
Isomeris arborea	Bladderpod	1-gallon	125
Muilla maritima[2]	Common muilla	bulb	50
Sporobolus airoides	Alkali sacaton	1-gallon	300
Stipa lepida	Foothill needlegrass	1-gallon	750
Stipa pulchra	Purple needlegrass	1-gallon	1,500
		TOTAL	**2,550**

[1]To be installed on north sides of mounds
[2]Bulb species to be installed within the planting hole of purple or foothill needlegrass container plants

4.3.8 Hand Seeding

The site will be hand-seeded with native seed purchased from the approved native plant nursery. The areas to receive seed, the upland interspaces, and edges of mounds, will be lightly raked prior to a depth of 0.5-inch to ensure good soil to seed contact. All species of seed will be mixed together with an inert material, such as sand or rice hulls, and applied to the freshly raked areas through hand broadcasting. Seed will be applied during the late winter months, immediately prior to (within 48 hours) a forecasted rain event of 0.25 inch or more. Table6 includes a recommended seed list and appropriate quantities; this list may be adjusted based on the results of seed collection and in consultation with the restoration specialist and City PWD Biologist and approval by the City and wildlife agencies.

Table 6 Seed Mix for the Maritime Succulent Scrub Restoration		
Scientific Name	Common Name	Pounds per Acre
Acmispon glaber	Deerweed	1.0
Amsinkia menziesii	Common fiddleneck	0.25
Eriophyllum confertiflorum	Golden yarrow	2.0
Lasthenia californica	Goldfields	1.0
Linanthus dianthiflorus	Ground pink	0.5
Lupinus bicolor	Miniature lupine	1.0
Lupinus truncatus	Collar lupine	1.0
Malvella leprosa	Alkali mallow	0.25
Microseris douglasii	Silverpuffs	0.5
Plantago erecta	Dot seed plantain	2.0
Stipa pulchra	Purple needlegrass	4.0
Trifolium willdenovii	Tomcat clover	0.25
	TOTAL	**10.5**

4.3.9 Establishment of Vernal Pool Vegetation

Establishment of vernal pool habitat requires the reintroduction of vernal pool target plant species, in addition to the physical topographic recontouring described above. The establishment or enhancement of vernal pool habitat can be greatly accelerated by the active transport of propagules from donor sites into the new vernal pools and associated watershed (Scheidlinger et al. 1985). This will be accomplished by one or a combination of the following:

- The redistribution of topsoil containing seeds, spores, bulbs, and other propagules salvaged from on-site vernal pools. Table 4 identifies species to be targeted for seed or soil collection. Species that are more readily collected and dispersed by soil collection and are known to occur on-site include stone-crop (*Crassula aquatic*) and American pillwort (*Pilularia americana*). Additional species that are more readily collected and dispersed by soil collection but are not known to occur on-site include water-starwort (*Callitriche marginata*) and flowering quillwort (*Triglochin scilloides*). Soil containing these species will be collected from City-owned pools on Otay Mesa known to support these species and do not support versatile fairy shrimp.

- If necessary, the use of vernal pool soil from an off-site source approved by the wildlife agencies and the City.

- Collection and dispersal of vernal pool soil will follow the methods described in Section 4.3.6.

- The use of locally collected vernal pool seed from within Otay Mesa. Vernal pool seed will be directly dispersed in the basins or will be used for bulking at a native plant nursery per Section 4.3.1.

- The vernal pools will only be seeded and/or inoculated with soil after they have been shown to have hydrology adequate to support vernal pool species (i.e., hold water for seven consecutive days).

- Care will be taken when hand seeding vernal pool species to ensure that species are seeded into pools that have the appropriate hydrology to support the species. In addition, species that tend to more readily colonize will not be seeded with species that are more easily out competed.

- Pools and species to be hand seeded will be approved by the qualified restoration specialist.

In the event that natural rain is inadequate to support plant establishment during the initial reintroduction of vernal pool plants, artificial watering of the restored/enhanced pools and their watersheds may be done upon approval by the wildlife agencies and the City in order to establish plants but not hydrate shrimp. Any artificial watering will be done in a manner that prevents ponding in the pools. Only water identified and documented to be free of contaminants that could harm the pools or target species will be used.

Soil will be spread evenly over the surface, no more than 0.25-inch deep. If any ponding water is present at the time of soil inoculation, the soil will only be placed on the wet soil adjacent to the ponded areas. Soil will be placed into the bottoms of the restored/enhanced pools in a manner that preserves, to the maximum extent possible, the orientation of the plant seeds within the surface layer of soil (e.g., collected soil will be shallowly distributed within the pond so that seeds have the potential to be brought into solution upon inundation).

4.4 As-Built Reporting

At the completion of implementation, the installation will be approved by the City PWD Biologist; City DSD, MMC, and MSCP staff; and wildlife agencies. The installation/maintenance contractor will submit an as-built report that documents implementation activities and the dates they were completed. The report will include but not be limited to dates of on-site work, location and size of vernal pools basins, final plant and seed lists and quantities, and modifications to the mitigation site design that occurred through consultation with the restoration specialist and City PWD Project Manager. The report may be a brief letter report with photos of the final site design and figures with locations of site elements. Figures will include the results of the DSM created after vernal pool grading.

4.5 120-day PEP

The 120-day PEP will begin once the implementation activities are approved by the City, likely once all container plants and native seed have been installed. The PEP will last for 120 calendar days and will consist of all maintenance activities and methods discussed in Section 5.0. Regular (at least once per week) qualitative monitoring will be conducted to

assess native container plant establishment and non-native weed germination and make recommendations for maintenance activities, as needed (Table 7). At the end of the PEP, any dead container plants will be replaced in kind and the site will be free of non-native weed species. Year 1 will begin after successful completion of the PEP and any required remedial container plant installation has been completed. At the completion of the PEP, the restoration specialist will prepare a letter report for submittal to the City DSD, MMC, and MSCP staff, and wildlife agencies to document activities conducted during the PEP and the site progress towards final success criteria.

Table 7
Vernal Pool and Watershed Maintenance Schedule

Task	120-day PEP	Year 1	Year 2	Year 3	Year 4	Year 5
Weed Control (herbicide treatment)	As needed	Monthly[1]	Monthly[1]	5 to 6 times per year[1]	4 to 5 times per year[1]	4 times per year[1]
Weed Control (hand pulling – vernal pools)	As needed	3 times per year[1]	3 times per year[1]	2 times per year[1]	2 times per year[1]	2 times per year[1]
Watering	As needed	As needed	As needed	As needed	As needed	–
Supplemental Upland Planting/Seeding	At end of PEP	Fall/Winter	Fall/Winter	–	–	–
Vernal Pool Seeding	Winter	Winter	Winter	Winter	–	–
Trash Removal	As needed	As needed	As needed	As needed	As needed	As needed
Barrier/Sign Maintenance	As needed	As needed	As needed	As needed	As needed	As needed
Footpath Decompaction/ Hydroseeding	--	–	–	–	–	End of project
[1]Minimum frequency						

5.0 Maintenance Plan

Regular maintenance of the mitigation site will be required during the five-year maintenance and monitoring period to establish native container plants and control aggressive non-native weeds in the vernal pools and adjacent upland watershed habitats. The need for weeding is expected to decrease substantially by the end of the monitoring period provided successful habitat restoration has been achieved. Weeding activities will include herbicide application within the associated uplands. Herbicide has been used to control weeds safely and successfully in the vernal pool restoration programs on Otay Mesa and elsewhere. In these projects the success criteria for listed fairy shrimp have been met or exceeded with no negative effects on fairy shrimp noted. Maintenance activities will also include watering of planted container stock, hand weeding of the vernal pool basins, replanting and reseeding of native species, repair of fencing and signage, and trash removal. Maintenance activities will be performed per the schedule in Table 7.

5.1 Weed Control

Weed control will be performed consistent with the following:

- All weeding will be done by hand within and immediately adjacent to the preserved and newly established vernal pools. Use of herbicides within and immediately adjacent to restored pools will only be used under conditions approved by USFWS, RWQCB, and the City.

- All herbicide and pesticide use will be under the direction of a licensed qualified applicator and will be applied by personnel trained to apply herbicide. All weeding personnel will be educated to distinguish between native and non-native species to ensure that local native plants are not inadvertently killed.

- Herbicides will be applied on all areas that have been dethatched and at least three feet from the edge of the pools. Herbicide will only be applied when wind speed is less than five miles per hour, and spray nozzles will be of a design to maximize the size of droplets, to reduce the potential for drift of herbicide to non-target plants. Application of herbicide will not occur if rain is projected within 24 hours of the scheduled application.

- Weeding of the uplands will be done at a frequency and duration to ensure that weeds are not allowed to flower and set seed within the site. During the growing season this may be as frequently as weekly, depending on weather patterns. Any weeds that have set seed will be removed by hand and disposed of off-site.

- When vernal pools are ponding or close to saturation, weeds germinating along the basin edge will be cut using line trimmers by specially trained field personnel to ensure that germinating native species are not harmed. Cut material will be lightly raked away from the pools and care will be taken to not disturb the soil with raking activities.

- Herbicide treatment will be avoided within a 10-foot buffer from any concentrations of sensitive plant species.

5.2 Watering

Watering will be performed consistent with the following:

- Irrigation system operation or hand watering of container plants will be done in a manner to mimic natural rainfall, at a frequency and duration to encourage deep root establishment, but not enough to create runoff into the vernal pool basins.

- Irrigation system operation or hand watering will be carefully tapered off during the summer months to allow plants to experience their typical summer dormancy and

avoid potential root rot or excessive soil shrinking and swelling that can damage plant roots.

5.3 Supplemental Planting and Seeding

Remedial planting and seeding of the MSS uplands and remedial seeding of the vernal pool basins will be performed consistent with the following:

- Container plants will be replaced, as needed, within the upland watersheds. All dead plants will be replaced during years 1 and 2 after initial plant installation, unless their function has been replaced by natural recruitment.
- Areas of the site where native plants and seed struggle to recruit will be remedially seed during Years 1 and 2.
- Remedial seeding will be conducted to increase vegetative cover and native species richness.
- Vernal pool basins that do not support their target vegetation (see Table 2) are not demonstrating the desired vernal pool endemic coverage, or are not meeting native richness performance standards will be remedially seeded.
- Hand seeding of the vernal pool basins will be conducted in the winter, after the pools begin to pond after the start of the wet season.

5.4 Trash Removal and Barrier/Sign Maintenance

Trash removal and barrier/sign maintenance will be performed consistent with the following:

- Trash in the mitigation areas will be removed as necessary.
- All fencing and signs will be checked and repaired as necessary.
- Other site problems, such as vehicle damage and erosion, will be reported to the City or other adjacent landowners with recommendations for remedial measures.

5.5 Footpath Decompaction and Hydroseeding

Footpath decompaction and hydroseeding will be performed consistent with the following:

- At the completion of the five-year maintenance and monitoring period and prior to final sign-off, foot paths and access routes that may have developed within the site as a result of maintenance and monitoring activities will be lightly decompacted by hand tools or heavy equipment and hydroseeded with the species and quantities

shown in Table 7. Any footpath areas that have developed soil crusts will not be decompacted, and seed will only be applied in these areas by hand.

5.6 Maintenance Monitoring

Qualitative monitoring of the mitigation site to guide maintenance activities will be performed consistent with the following:

- After completion of the PEP, mitigation areas will be qualitatively monitored once a week by the vernal pool restoration specialist for the first two months, once every other week for the next four months, and monthly thereafter during the growing season. Monitoring will include, but not be limited to, assessment of container plant health, native seed germination, weed presence, and unauthorized trespassing. Monitoring results will be used to determine the timing and frequency of maintenance activities.

5.7 Adaptive Management Approach

An adaptive management approach will be implemented for the mitigation site in the event that areas of the site are not attaining the desired habitat values and functions. Adaptive management is defined, for the purposes of this project, as a flexible, iterative approach to the long-term management of biological resources that is directed over time by the results of ongoing monitoring activities and direct observation of environmental stressors that are producing adverse results within the mitigation site. Effects of any catastrophic events that affect the mitigation will receive prompt and appropriate corrective actions.

Adaptive management measures to be implemented will include the utilization of qualitative data gathered in the field throughout the five-year maintenance and monitoring period to assess the health and vigor of newly established vernal pools and restored upland watershed habitat within the mitigation sites. Following an event that causes damage to all or part of the mitigation sites, this data will be used in part to drive management considerations for the repair of the damaged areas. Achieving the key goals of the mitigation program and establishing self-sustaining native habitats will be the focus of all adaptive management decisions. Adaptive measures may include collection and dispersal of vernal pool plant seed, recontouring of vernal pool basins, reintroduction of additional soil inoculum, upland replanting or reseeding, additional weed control efforts, and others deemed appropriate through consultation with the City and wildlife agencies.

If an interim performance standard is not met for any of the restored/enhanced vernal pools or restored upland MSS habitat in any year or if the final performance standards are not met, the project proponent will prepare an analysis of the cause(s) of failure and, if deemed necessary by wildlife agencies and the City, propose remedial actions for approval. If any of the established/enhanced vernal pools or restored upland watershed habitat has not met a performance standard during the initial five-year period, the maintenance and monitoring obligations will continue until the above agencies deem the mitigation successful, or contingency measures are implemented. Mitigation will not be deemed successful until at

least two years after any contingency measures are implemented, as determined by the wildlife agencies and the City.

6.0 Performance Standards

The performance standards used to determine successful vernal pool mitigation include the achievement of standards for CRAM, hydrologic regime; vernal pool vegetation cover, plant species richness, and weed tolerance; and species-specific standards for fairy shrimp. Standards for hydrologic regime, vernal pool vegetation cover, plant species richness, weed tolerance, and fairy shrimp will be compared to the same values taken from a reference site.

A reference site will be used to define the target vegetation and establish target values for cover, species richness, wildlife usage, and weed abundance for the vernal pool and upland MSS restoration areas.

Each of the specified performance standards will be evaluated following the completion of seasonal field monitoring to determine if the final performance standards have been met and to assess the likelihood that any particular standard will be met (taking into account the seasonal conditions). The final assessment of success will be based on the combined performance over the monitoring period and an analysis of the trends established.

6.1 Location of Reference Site

The City-owned Cal Terraces vernal pool complex on Otay Mesa supports high-quality vernal pools surrounded by established upland MSS habitat. Cal Terraces is located within two miles northwest of the mitigation site and will serve as the reference site for this project (see Figure 4). Representative, high-quality reference vernal pools will be chosen from within Cal Terraces. The most functional vernal pools will be chosen at the time of the analysis to include the ranges of both physical and biotic characteristics that meet the performance standards. All reference vernal pools will support vernal pool vegetation, as defined below in the target vegetation and cover criteria. Any vernal pools to be used as reference pools for this mitigation project must be approved by the City. Cal Terraces will also serve as the reference site for the MSS habitat for the watershed restoration. Most vernal pool complexes on Otay Mesa are either restored vernal pools or severely degraded and while Cal Terraces is a restoration site itself, the site achieved all success criteria and was signed off by regulatory agencies in 2003. The site has remained high-quality vernal pool and MSS habitat for 17 years. Cal Terraces represents one of the older restoration sites and provides a high-quality example of what restoration sites should look like upon completion.

The VPHCP requires that vernal pool mitigation projects utilize reference pools from each of the three VPHCP subareas, however, due to the unique nature of Otay Mesa pools (endemic vernal pool plant species, clay pan substrate), one reference site located on Otay Mesa will be utilized for this project. Multiple vernal pools from the Cal Terrace reference site will be used to provide a variety of conditions for comparison to the restored pools.

6.2 California Rapid Assessment Methodology– Vernal Pools

CRAM is a wetland assessment method that combines landscape, hydrological, physical, and biological structure attributes, further separated into metrics and submetrics, into an index value. These indexed values (A=12, B=9, C=6, D=3) are repeatable, are scientifically defensible, and offer a window into overall wetland functionality (California Wetlands Monitoring Workgroup 2019).

CRAM will be used as an additional monitoring method to demonstrate mitigation site improvement and provide a more overall view of the mitigation system as whole. CRAM will not be used in lieu of quantitative monitoring efforts but in combination to demonstrate the functionality of the vernal pool systems within the mitigation site.

A vernal pool CRAM assessment was conducted for the mitigation site on May 3, 2019, and will be used to determine baseline conditions. The site was separated into two assessment areas and the average results of the assessments are shown in Table 8.

Table 8
CRAM Metric Goals for Five Years
Post-Establishment of Vernal Pools

CRAM Attribute	CRAM Metric and Submetrics	Average Current Score	Target CRAM Metric Goal
Buffer and Landscape Context	Aquatic Area Abundance	B	B
	Percent of AA with Buffer	A	B
	Average Buffer Width	A	B
	Buffer Condition	C	C
Hydrology	Water Source	A	A
	Hydroperiod	A	A
	Hydrologic Connectivity	A	B
Physical Structure	Structural Patch Richness	D	B
	Pool and Swale Density	D	C
	Topographic Complexity	D	B
Biological Structure	Horizontal Interspersion and Zonation	D	B
	A. Number of Codominant Species	D	B
	B. Percent Non-native	C	A
	C. Endemic Species Richness	D	C

In general, buffer and landscape context and hydrology attributes are expected to stay the same even after restoration activities are completed. CRAM metric and submetric scores for physical and biological are expected to change from the baseline as a result of both vernal pool restoration and completion of adjacent residential development. CRAM scores for physical structure and biological structure may be expected to increase, although buffer and landscape context scores may be expected to decrease as a result of the adjacent development. The goals for each metric are shown in Table 8; however, attainment of these goals will not confirm site success, nor should inability to achieve these goals determine site

failure. Rather, the measurement of these metrics will add to the qualitative discussion of the progress of the mitigation site.

CRAM assessments will use the Vernal Pool Module (version 6.1 or most recent) and be conducted a total of two times during the five-year maintenance and monitoring period to inform adaptive management: Year 0 (post-implementation) and Year 5 (prior to sign-off).

Although no official success standards will be applied to this project, CRAM scores will be used to evaluate form and function of the vernal pool mitigation site and therefore general achievement of non-wetland waters mitigation requirement of the project. When compared to the as-built condition, the results of the Year 5 CRAM surveys should show, at a minimum, the following:

- Physical form and structure suitable for ponding and hydrologic connectivity
- Development of hydrologic features within the system that provide evidence of expected function
- Continued improvement in biotic structure
- Overall trajectory toward improved rather than degraded condition

These attributes assess the areas adjacent to the assessment area and, therefore, are mostly outside the mitigation site and not within the control of this mitigation program.

The improvement of the physical structure and biological structure of the mitigation site will be the primary focus of mitigation as these attributes focus on the topography and biology within the assessment area, which is well within the control of this mitigation program.

6.3 Vernal Pool Hydrological Regime Performance Standards

The depth and duration of water in restored/enhanced vernal pools is highly dependent upon the magnitude and number of storm events, the time interval between each event, and the climactic determinants of evaporation and transpiration (temperature, humidity, sunlight, and winds) between each storm event in a given year. Annual rainfall in the region is remarkably variable. Therefore, the performance standards for hydrological characteristics depend on a comparison with control habitats representing the expression of performance standards during each monitoring year. In general, newly restored vernal pools pond earlier and longer than older, more established pools, and this variation should be taken into consideration when discussing the success of the restored/enhanced pools.

- The duration, periodicity, and depth of inundation for the restored/enhanced vernal pools will be considered successful if, prior to the end of the monitoring period, the vernal pools demonstrate hydrological patterns of duration, periodicity, and depth of inundation that fall within the range of the highest-functioning reference vernal pool.

- Total area of inundation of the restored/enhanced vernal pools must be equal to or greater than the area proposed in the mitigation plan 0.806 (35,128 square feet) during an average or above rainfall year.

- Each restored/enhanced vernal pool must be inundated, during an average or above rainfall year, for a duration and depth that supports vernal pool flora and fauna.

- Each restored/enhanced vernal pool must be inundated for a duration and depth that is within range of inundation for the reference vernal pools.

- The average depth and duration of inundation of the restored/enhanced pools must be within one standard deviation of the average depth and duration of the reference pools.

6.4 Vernal Pool Vegetation Performance Standards

The restored/enhanced vernal pools will be subject to the vegetation performance standards listed below. The upland watershed is restored to MSS and will be subject to the performance standards listed in Section 6.6.

Desired absolute vernal pool vegetation goals are shown in Table 9 and serve as a guide for monitoring annual changes and determining needs for adaptive management; however, the performance standards included in 6.4.1 through 6.4.3 will be utilized to determine ultimate project success and whether the site meets the objectives identified in the Site Specific Objectives of the VPMMP (City of San Diego 2017b).

6.4.1 Endemic Vernal Pool Plant Species Richness Performance Standards

The restored/enhanced vernal pools will support reproducing populations of a minimum number of endemic vernal pool plant species (see CRAM Vernal Pool modules) equivalent to that supported by the reference vernal pools (see Table 9). Equivalence is met when (1) the endemic vernal pool species richness (i.e., number of native vernal pool species) value for each of the restored/enhanced vernal pools is equal to or greater than the minimum value found in the reference vernal pools and (2) the average value of vernal pool species richness in the restored/enhanced vernal pools is equal to or greater than that of the average of the reference vernal pools.

Table 9
Vernal Pool Vegetation Performance Standards

Year	Native Species Richness	Endemic Vernal Pool Species Cover (%)	VPHCP Cover Species Presence (# of pools)	Non-native Cover (%)
1	2	5	• ERYARI – 4 • NAVFOS – 5 • ORCCAL – 2 • POGNUD – 10	• <5 • 0 Cal-IPC high or perennial species
2	3	10	• ERYARI – 8 • NAVFOS – 10 • ORCCAL – 4 • POGNUD – 15	• <5 • 0 Cal-IPC high or perennial species
3	4	20	• ERYARI – 11 • NAVFOS – 12 • ORCCAL – 6 • POGNUD – 20	• <5 • 0 Cal-IPC high or perennial species
4	5	30	• ERYARI – 12 • NAVFOS – 13 • ORCCAL – 8 • POGNUD – 25	• <5 • 0 Cal-IPC high or perennial species
5	6	40	• ERYARI – 20 • NAVFOS – 15 • ORCCAL – 10 • POGNUD – 30	• <5 • 0 Cal-IPC high or perennial species

Cal-IPC = California Invasive Plant Council
ERYARI = San Diego button-celery (*Eryngium aristulatum* var. *aristulatum)*
NAVFOS = spreading navarretia (*Navarretia fossalis)*
ORCCAL = California Orcutt's grass (*Orcuttia californica)*
POGNUD = Otay Mesa mint (*Pogogyne nudiuscula)*

6.4.2 Endemic Vernal Pool Vegetation Cover Performance Standards

For the restored/enhanced vernal pools the performance standards are as follows:

- The vernal pool endemic plant species cover of all restored/enhanced pools on average must be at least 70 percent of the average for the reference pools.
- For each of the restored/enhanced pools, the absolute vernal pool endemic species cover must be at least 50 percent of the average absolute cover of vernal pool endemic species for the reference pools.
- Vernal pool endemic species cover for each restored/enhanced vernal pool must increase in each successive year based on initial quantitative monitoring, except in years of extreme drought.

6.4.3 Vernal Pool Non-native Cover Performance Standards

The non-native cover performance standards are as follows:

- Within all of the vernal pools in the mitigation site (restored/enhanced), Cal-IPC List High or perennial weed species will not be present, and the relative cover of all other non-native species will not exceed five percent.

- The average absolute cover of non-native species in the restored/enhanced vernal pools must be less than the average absolute cover of non-native species of the reference pools.

6.5 Fairy Shrimp Performance Standards

The restored/enhanced vernal pools will support reproducing populations of Riverside and San Diego fairy shrimp (i.e., gravid females). Re-establishment of San Diego fairy shrimp is not a requirement of this project as they are adequately conserved under the VPHCP (City of San Diego 2017a); therefore, presence of San Diego fairy shrimp on-site is desirable and will be measured, but it is not required for project success. Success for fairy shrimp reintroduction will be determined by measuring the ponding of water, presence of viable eggs, hatched fairy shrimp, and gravid females within the restored/enhanced vernal pools as outlined below:

- The restored/enhanced vernal pools will pond for a period of time similarly to reference vernal pools during an average rainfall year and at an appropriate depth and quality to support San Diego and/or Riverside fairy shrimp.

- Protocol wet season sampling will be taken annually in the restored/enhanced vernal pools to determine presence and approximate quantities of hatched fairy shrimp and gravid females, by species (USFWS 1996).

- At the end of the monitoring period, Riverside fairy shrimp presence will be confirmed in 25 percent of the pools on-site.

- At the end of the monitoring period, San Diego fairy shrimp presence will be confirmed in 33 percent of the pools on-site.

6.6 Maritime Succulent Scrub Vegetation Performance Standards

The performance standards for the upland MSS areas will be based on a reference site that supports vernal pools and the upland habitat targeted for restoration in this mitigation plan. While achieving a fully mature system within five years may not be possible, the site should demonstrate that it is exhibiting a positive trajectory towards long-term viability.

The City-owned Cal Terraces vernal pool complex has been identified as the reference site for this mitigation site. The reference site will be used to establish target values for vegetation cover, species richness (number of different species present), wildlife usage, and weed abundance. Target values will be relative to the reference site where quantities observed for the mitigation site will be divided by those same values observed at the reference site to determine how the mitigation site is performing relative to the reference site. Yearly target values for the performance standards cover and species richness of MSS habitat are presented in Table 10.

Table 10
Maritime Succulent Scrub Performance Standards as a Relative Percentage of Reference Site Values

Year	Percent Cover–Native Shrub Species	Percent Cover–Native Herbaceous Species	Species Richness
1	10	5	30
2	20	10	40
3	30	20	50
4	50	40	60
5	70	60	85

6.6.1 Plant Survivorship, Vegetation Cover, and Species Richness Performance Standards

In combination with the performance standards included in Table 10, the standards listed below will also be evaluated annually and applied to the mitigation site. The plant survivorship, vegetation cover, and species richness performance standards are as follows:

- Container plant survival will be 80 percent of the initial plantings for Years 1 through 5. After Years 1 and 2, all dead plants will be replaced unless their function has been replaced by natural recruitment.
- At the end of the five-year maintenance and monitoring program, the upland habitat relative percent cover values will be 70 percent of the reference site for shrub cover and 60 percent of the reference site for herbaceous cover.
- At the end of the five-year maintenance and monitoring period, 85 percent of the upland plant taxa are shared with the reference site.

6.6.2 Non-native Weed Cover Performance Standards

The relative cover of all non-native species within the upland MSS will not exceed an absolute value of 10 percent and no Cal-IPC List High or perennial species will be present at the end of the five-year maintenance and monitoring period.

6.7 Photographic Documentation

Permanent photopoints will be located at each restored/enhanced vernal pool and at locations within the upland MSS. Representative photographs will be taken at each photopoint to visually document the progress of vegetation cover development over the monitoring period.

7.0 Monitoring Requirements

A minimum commitment of five years of monitoring of the vernal pool and upland MSS restoration areas will be completed. In addition to the qualitative monitoring discussed in Section 5.6, biological monitoring for performance standards will include quantitative hydrology monitoring, quantitative vegetation monitoring, USFWS protocol surveys (wet season), complete flora and fauna inventories, and photographic documentation. To minimize impacts to the soil surface of any vernal pools during restoration and monitoring activities, cobbles will be oriented within the restored vernal pools to serve as stepping stones. The monitoring schedule is presented in Table 11.

7.1 Vernal Pool Hydrology Monitoring

The success criteria for hydrological characteristics will be based on comparing performance measurements for the restored/enhanced vernal pools with those for reference vernal pools during each monitoring year. Hydrological characteristics to be monitored include depth, periodicity, and duration of inundation in both the restored/enhanced and reference pools. Precipitation will be based on records from the nearest reporting weather station. Field methods for the quantitative hydrological monitoring are described below.

- The restored vernal pools will be topographically mapped at 0.2-foot contour intervals.

- The water depth for restored vernal pools and reference pools will be measured every two weeks after initial ponding between November 1 and May 15 or until the standing water is gone. Water depth will be measured using a ruler placed in the low point of each pool.

- A water depth versus time chart will be prepared illustrating water depth at the deepest point and ponding periodicity of each restored/enhanced vernal pool and reference pool.

- Water measurements will also be taken annually in the restored/enhanced pools and reference pools to determine water quality (e.g., pH, temperature, total dissolved solids, salinity) of ponding.

Table 11 Vernal Pool and Maritime Succulent Scrub Monitoring Schedule						
Task	120-day PEP	Year 1	Year 2	Year 3	Year 4	Year 5
Qualitative Monitoring	Weekly	Every other week during growing season	Every other week during the growing season	Monthly during the growing season	Bi-monthly during the growing season	Bi-monthly during the growing season
Hydrology Monitoring	Every two weeks after initial ponding	Every two weeks after initial ponding	Every two weeks after initial ponding	Every two weeks after initial ponding	Every two weeks after initial ponding	Every two weeks after initial ponding
Vernal Pool Plant (quantitative)	None[1,2]	March (aquatic phase) and May (dry phase)[2]	March (aquatic phase) and May (dry phase)[2]	March (aquatic phase) and May (dry phase)[2]	March (aquatic phase) and May (dry phase)[2]	March (aquatic phase) and May (dry phase)[2]
Fairy Shrimp (wet season)	Protocol survey[2]	Protocol survey[2]	Protocol survey[2]	Protocol survey[2]	Protocol survey[2]	Protocol survey[2]
Photograph Documentation	Monthly	As-needed	Spring	Spring	Spring	Spring
Maritime Succulent Scrub Vegetation Monitoring (quantitative)	None[1]	Spring	Spring	Spring	Spring	Spring
[1]Quantitative monitoring to begin in Year 1. [2]Time dependent on rainfall.						

7.2 Vernal Pool Vegetation Monitoring

Monitoring tasks for vernal pool vegetation are as follows:

- The restored/enhanced vernal pools and reference pools will be sampled for plant species presence and estimated cover using a meander survey of at least a 15-minute duration per basin during the aquatic phase (e.g., March, dependent on weather patterns) and within 30 days of the disappearance of standing water (e.g., May, dependent on weather patterns). All species present will be noted and their cover estimated.

- The restored/enhanced vernal pools will be photographed from an established photopoint during the vegetation sampling period.

7.3 Vernal Pool Invertebrate Monitoring

Monitoring tasks for vernal pool invertebrates are as follows:

- Annually, the created/enhanced vernal pools will be sampled for aquatic invertebrates using pole-mounted dip-nets of appropriate mesh size to capture cladocerans, ostracods, branchiopods, and tadpoles following USFWS protocol survey methods (1996). The presence of hatched fairy shrimp and gravid females by species will be recorded.

7.4 Maritime Succulent Scrub Monitoring

It is anticipated that the MSS habitat will become established within the five-year maintenance and monitoring period, although full maturation of the community may take longer. Overall native cover (i.e., shrubs, herbaceous species) and species richness will be evaluated for these areas as well as for the reference site.

The native vegetation cover will be measured quantitatively using line-intercept sampling method in the spring, beginning in Year 2. This method involves the establishment of randomly placed transects, usually 10 meters long, to gather data to estimate native vegetation cover (i.e., shrub and herbaceous). Approximately two 10-meter transects will be sampled per acre. Species richness will be determined by lists of all plant species present within the restoration areas.

7.4.1 Invasive Non-native Plants

The presence of invasive non-native plant species will be monitored in the restored MSS areas. Information collected during monitoring visits will be used to schedule the maintenance crews to conduct maintenance activities.

7.4.2 Wildlife Usage

A list of wildlife species observed using the mitigation site will be prepared and included in the annual reports. Species lists for both restored/enhanced vernal pools and the MSS areas will be compiled annually.

7.5 Reporting

Annual reports that assess both the attainment of yearly interim and progress toward the final performance standards for the restored/enhanced vernal pools and restored upland MSS will be submitted to the City by December 1 of each year. The City will be responsible for submitting these reports to the appropriate wildlife agencies. The reports will also summarize the project's compliance with all applicable mitigation measures and permit conditions. A final monitoring report will be prepared and submitted to the City for use in the notification of completion and final acceptance of the mitigation effort.

8.0 Long-term Management

The mitigation site is within the City MSCP's Multi-Habitat Planning Area and the vernal pool complex is a VPHCP preserve area. After the successful restoration of the vernal pool basins and associated uplands, the vernal pool complex will be managed pursuant to the guidelines of the VPHCP and VPMMP (City of San Diego 2017a, 2017b).

The VPHCP provides the requirements of the long-term management of vernal pool complex K 13 N, including mitigation site. Management activities identified for J 13 N include a combination of habitat restoration and stewardship. These are identified as Level 3 and Level 1 management, respectively, in the VPHCP.

This mitigation plan is intended to address the Level 3 management (habitat restoration). As described in the VPHCP, the goal of this management level is to increase the populations of covered species, namely Otay mesa mint, spreading navarretia, San Diego button-celery, California Orcutt grass, Riverside fairy shrimp, and San Diego fairy shrimp.

Following successful completion of restoration, the mitigation site will be subject to stewardship management in perpetuity by the City of San Diego Park and Recreation Department Open Space Division. Stewardship activities identified in the VPHCP for the mitigation site are intended to maintain habitat conditions and covered species populations within the vernal pool complex. Management activities will include annual (or more frequent) trash and debris removal; fence and signage maintenance; monitoring and adaptive measures for edge effects; fire suppression and fire damage repair; access patrol, enforcement, and trespass damage repair; monitoring and repair of topographic damage; and weed control within and around the vernal pools.

9.0 Notification of Completion

If the final success criteria have been met at the end of the five-year maintenance and monitoring program, notification of these events will be provided with the Year 5 report. If the final success criteria have not been met by the end of the five-year maintenance and monitoring program, the Year 5 report will discuss the possible reasons and recommendations for remedial measures to cause the site to meet the criteria. If any of the established/enhanced/restored vernal pools or upland watershed habitats have not met the performance standards, the project proponent's maintenance and monitoring obligations will continue, until the wildlife agencies and City deem the mitigation program as successful or contingency measures must be implemented (see Section 8, Adaptive Management Plan).

Following receipt of the final annual report, the wildlife agencies and the City will be invited to visit the restoration site to confirm completion of the mitigation effort. The mitigation requirements will be deemed complete once the final success criteria are met and after written approval by the wildlife agencies and the City has been received.

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