SANTA BARBARA AIRPORT
TAXIWAY H EXTENSION PROJECT

DELINEATION OF WATERS OF THE UNITED STATES
and
STATE OF CALIFORNIA

Prepared for:

City of Santa Barbara
Public Works Department-Engineering Division
601 Firestone Road
Santa Barbara, CA 93117

Prepared by:

Kevin Merk Associates, LLC
P.O. Box 318
San Luis Obispo, California 93406

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1.0 INTRODUCTION

Kevin Merk Associates, LLC (KMA) conducted a delineation of potential waters of the United States and State of California for the Taxiway H Extension project on the Santa Barbara Airport located in Santa Barbara County, California. The approximately 52.5-acre study area was developed to cover all potential disturbance areas associated with the proposed project. The site is located north of Runway 7-25, south of Carneros Creek and Hollister Road, east of Airport offices and tarmac, and west of Tecolotito Creek. The Airport is located on the coastal plain south of the Santa Ynez Mountains. It was developed in a portion of the Goleta Slough, and is surrounded by the City of Goleta, with the University of Santa Barbara and remaining portion of the Goleta Slough present along the southern boundaries. Please refer to Figures 1 and 2 for site location information. For detailed location and land use information, please refer to the Final Airport Master Plan (Coffman Associates, 2017).

The investigation was conducted in support of the proposed project to identify the location and extent of wetland areas that meet the jurisdictional criteria for the following federal, state and local agencies:

- U.S. Army Corps of Engineers (Corps or USACE) jurisdiction as waters of the United States, including wetlands, pursuant to Section 404 of the Clean Water Act (1972, as amended) and Sections 9 and 10 of the Rivers and Harbors Act (1899);
- Regional Water Quality Control Board (RWQCB) jurisdiction under Section 401 of the Clean Water Act, and waters of the state under the Porter-Cologne Water Quality Act and California Water Code;
- California Department of Fish and Wildlife (CDFW) jurisdiction under the California Fish and Game Code Section 1600 *et seq*.;
- California Coastal Commission (CCC) jurisdiction under the California Coastal Act; and
- City of Santa Barbara (City) Local Coastal Plan.

The preliminary jurisdictional determination used standard Corps and Coastal Act methodologies as detailed in Section 3.0 below. As part of the investigation, KMA reviewed relevant background documents from previous studies on the Santa Barbara Airport and surrounding environs, recent and historic aerial photographs of the site, regional and site-specific topographic maps, U.S. Department of Agriculture soils data, and the U.S. Fish and Wildlife Service National Wetlands Inventory data to better characterize the nature and extent of potential regulatory agency jurisdictional features within the study area.

2.0 REGULATORY OVERVIEW AND DEFINITIONS

2.1 Federal Regulatory Authority

The U.S. Army Corps of Engineers under provisions of Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act, has jurisdiction over "waters of the United States" and authorization to issue permits for the discharge of dredged or fill material into "waters of the U.S." The limits of USACE jurisdiction over these features has been highly contested over the years with many court rulings ultimately determining the extent of their regulatory jurisdiction under these Acts. "Waters of the U.S." are defined to include: all waters used in interstate or foreign commerce, including all waters subject to the ebb and flow of the tide; all interstate waters and wetlands; all other waters such as intrastate lakes, rivers, streams, mudflats, sandflats, wetlands, sloughs, wet

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1 in = 15,000 ft

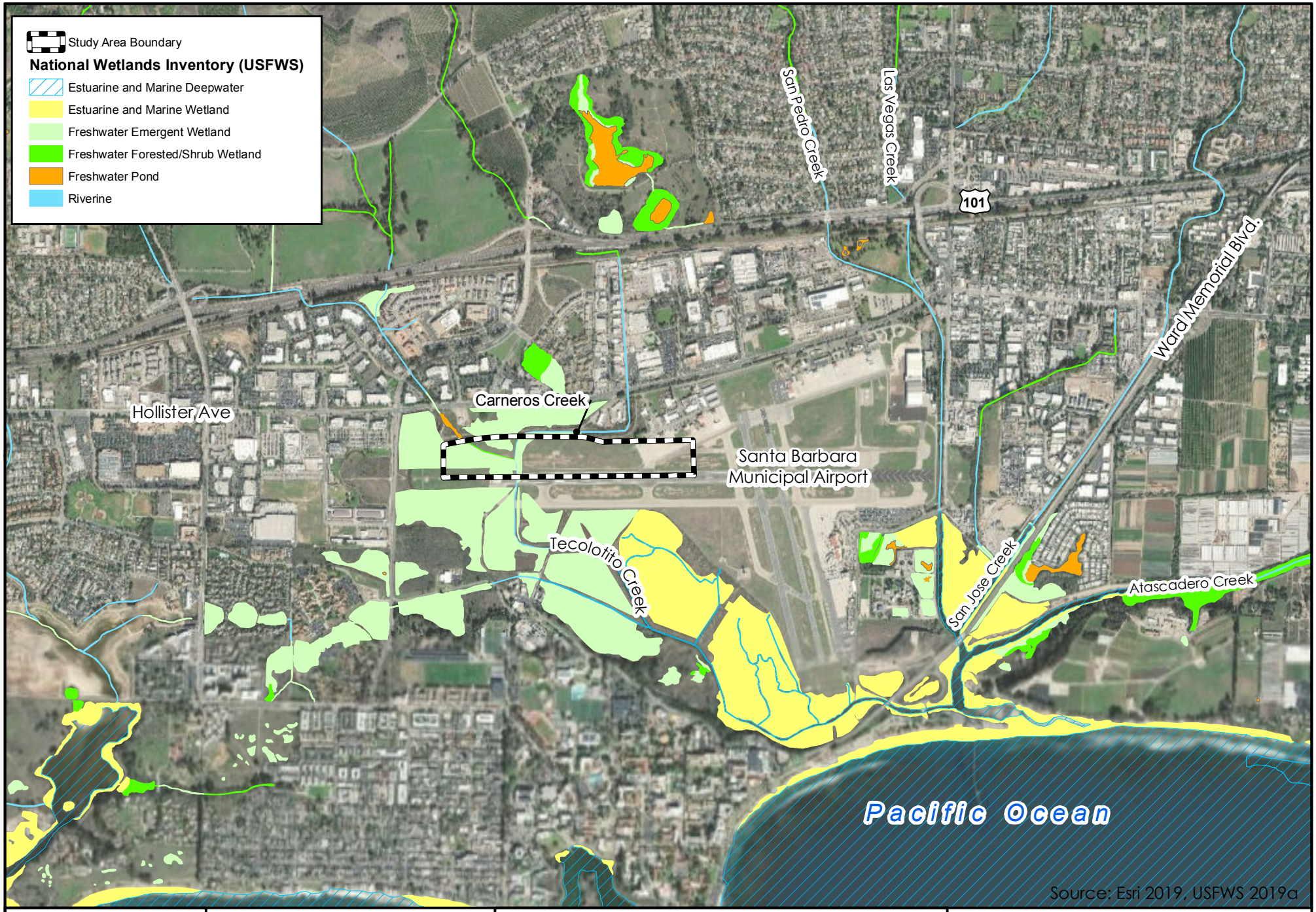
0 0.75 1.5 3 Miles

Taxiway H Extension Project

Santa Barbara Airport

Figure 1

Site Location



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N W E S

1 in = 2,000 ft

0 650 1,300 2,600 Feet

Taxiway H Extension Project

Santa Barbara Airport

Figure 2

Aerial Overview

meadows, playa lakes, or natural ponds, that could affect interstate or foreign commerce; all impoundments of waters otherwise defined as "waters of the U.S."; tributaries of waters otherwise defined as "waters of the U.S."; territorial seas; and wetlands adjacent to "waters of the U.S." Waters generally not considered to be Corps-jurisdictional include non-tidal drainage and irrigation ditches excavated on dry land, artificially-irrigated areas, artificial lakes or ponds excavated on dry land used for irrigation or stock watering, small artificial water bodies such as swimming pools, and water filled depressions (51 Fed. Reg. 41, 217 1986).

The current Corps' Clean Water Act section 404 regulatory jurisdiction has evolved over the years. In 2001, the Supreme Court (Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers) ruled that the Corps exceeded its statutory authority by asserting Clean Water Act jurisdiction over "an abandoned sand and gravel pit in northern Illinois, which provides habitat for migratory birds." The Supreme Court determined that "non-navigable, isolated, intrastate" waters were not subject to federal jurisdiction based solely on the use of such waters by migratory birds (i.e., solely invoking the "Migratory Bird Rule" was insufficient justification) (Guzy and Anderson 2001).

The Supreme Court further addressed the extent of the Corps' jurisdiction in the consolidated cases Rapanos v. United States and Carabell v. United States (June 19, 2006), referred to as "Rapanos." In Rapanos, a sharply divided Court issued multiple opinions, none of which garnered the support of a majority of Justices. This created substantial uncertainty as to which jurisdictional test should be used in routine jurisdictional determinations. The Ninth Circuit Court of Appeal, which encompasses California, answered this in Northern California River Watch v. City of Healdsburg (August 11, 2006). In this case, the Court held that Justice Kennedy's opinion in Rapanos provided the controlling rule of law. Under that rule, wetlands or other waters that are not in fact navigable are subject to Corps jurisdiction if they have "a (significant nexus) to waters that are navigable in fact." As Justice Kennedy explained, whether a "significant nexus" exists in any given situation will need to be decided on a case-by-case basis, depending on site-specific circumstances. The U.S. Environmental Protection Agency (EPA) and Corps subsequently developed an instructional guidebook on how to apply these rulings for all future jurisdictional determinations (U.S. Army Corps of Engineers and U.S. Environmental Protection Agency 2007) as well as a memorandum providing guidance to implement the U.S. Supreme Court's decision in Rapanos (Grumbles and Woodley 2007).

Section 404 of the Clean Water Act established a program to regulate the discharge of dredged and fill material into "waters of the United States", which includes such waters as rivers, lakes, streams, and most wetlands. Specifically, waters of the United States include traditional navigable waters (TNWs); wetlands; tributaries to navigable waters of the United States, including adjacent wetlands, lakes and ponds; interstate waters and their tributaries; and, other features such as intermittent streams or tributaries that are not part of interstate or navigable waters where effects to these waters could affect interstate or foreign commerce. USACE defines wetlands as having three parameters or criteria: predominance of hydrophytic vegetation, hydric soils, and wetland hydrology. In 2017, President Donald Trump directed the Environmental Protection Agency to rescind the waters of the United States rule, and the EPA responded by suspending the rule. Subsequently, an injunction was issued that continued the waters of the United States rule in California as well as several other states.

The U.S. Environmental Protection Agency and the Department of the Army (Army) proposed a clear, understandable, and implementable definition of "waters of the United States" that clarified

federal authority under the Clean Water Act. Unlike the Obama administration's 2015 definition of "waters of the United States," the Trump administration's proposal contained what was referred to as "a straightforward definition that would result in significant cost savings, protect the nation's navigable waters, help sustain economic growth, and reduce barriers to business development". The agencies' proposal was the second step in a two-step process to review and revise the definition of "waters of the United States" consistent with President Trump's February 2017 Executive Order entitled "Restoring the Rule of Law, Federalism, and Economic Growth by Reviewing the 'Waters of the United States' Rule." The Executive Order stated that it is in the national interest to ensure that the nation's navigable waters are kept free from pollution, while at the same time promoting economic growth, minimizing regulatory uncertainty, and showing due regard for the roles of Congress and the states under the Constitution.

Under the agencies' proposal, traditional navigable waters, tributaries to those waters, certain ditches, certain lakes and ponds, impoundments of jurisdictional waters, and wetlands adjacent to jurisdictional waters would be federally regulated. The agencies believe this proposed definition appropriately identified waters that should be subject to regulation under the Clean Water Act while respecting the role of states and tribes in managing their own land and water resources. States and many tribes have existing regulations that apply to waters within their borders, whether or not they are considered "waters of the United States." The agencies' proposal gives states and tribes more flexibility in determining how best to manage their land and water resources while protecting the nation's navigable waters as intended by Congress when it enacted the Clean Water Act. Still, in California and other areas within the Arid West Region, drainage features and wetlands identified as potentially subject to Clean Water Act jurisdiction as waters of the United States would be evaluated by the USACE on a case-by-case basis to determine their regulatory status.

In tidal waters of the United States, USACE jurisdiction is defined as the landward limit of the high tide line. In nontidal waters of the United States, USACE jurisdiction extends to the Ordinary High Water Mark (OHWM), which is defined as "the line on the shore established by the fluctuations of water and indicated by physical characteristics, such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation or the presence of litter and debris." Identification of the OHWM is conducted by examining physical evidence of surface flow in the stream channel.

On April 21, 2020, the EPA and USACE published the Navigable Waters Protection Rule, which became effective on June 22, 2020 and finalized the revised definition of "waters of the United States" under the Clean Water Act. That definition included four categories of jurisdictional waters; provided exclusions for features that were not traditionally regulated; and, provided regulatory definition on terms. Waters of the United States were interpreted to encompass:

- Territorial seas and traditional navigable waters;
- Perennial and intermittent tributaries;
- Certain lakes, ponds, and impoundments of jurisdictional waters; and,
- Wetlands adjacent to other jurisdictional waters.

"Tributaries" are rivers, streams or other natural surface water channels that contribute perennial or intermittent flow to territorial seas or traditional navigable waters in a typical year. Channels that have been altered (i.e., channelized, directed through a culvert or tunnel, impounded by a dam) or relocated (i.e., through creation of a ditch) remained jurisdictional as long as they continued to contribute flow. "Perennial" means surface water that flows continuously year-round, and "intermittent" is defined below. "Lakes, ponds and impoundments" were jurisdictional if they

contributed surface water flow to territorial seas or traditional navigable waters. "Adjacent wetlands" abut a territorial sea or traditional navigable water, tributary, or lake, pond or impoundment of a jurisdictional water. These wetlands are also inundated by flooding from a jurisdictional feature but are physically separated from it by a natural berm, bank, dune or similar natural or artificial feature that allows a hydrologic connection. The final rule excluded from the definition of waters of the United States: groundwater; ephemeral features; diffuse stormwater runoff; ditches not connected to jurisdictional drainages or wetlands; prior converted cropland; artificially irrigated areas; lakes, ponds, depressions, mining pits and stormwater control features constructed in upland areas; groundwater recharge, water reuse and wastewater recycling structures constructed in upland areas; and, waste treatment systems.

Of particular importance is the distinction between "ephemeral" drainages and "intermittent" tributaries, and the former was defined as those features that "flow only in direct response to precipitation, including streams, swales, gullies, rills and pools." "Direct" meant flows solely caused by individual precipitation events, including multiple back-to-back storms. In contrast, "intermittent streams" typically flow for a longer period and have continuous flow during some months of the year but no flow during dry months. Further, "intermittent" flows are more than just in direct response to precipitation, and are related to seasonal input from elevated groundwater table or snowpack melt. These flows result from the accumulation of several weeks or months of precipitation (rain that elevates the groundwater table or snowpack). "Typical year" is defined as when precipitation and other climatic variables are within normal ranges (e.g., seasonally, annually) for the geographic area within a rolling thirty-year period.

USACE jurisdiction under the Clean Water Act up until January 2023 extended to the tributaries of navigable waters. Jurisdiction was recognized even when a tributary flowed for a significant distance before reaching a navigable water; was several times removed (i.e., is tributary to more tributaries); or flowed some distance through artificial features such as ditches, culverts, pipes, storm sewers, or ponds—waters with artificial features could potentially be considered jurisdictional. In addition, "other waters" could be determined to be waters of the United States on a case-specific basis by showing that, either alone or in combination with similarly situated other waters in the region, they had a significant nexus to a TNW, interstate water, or the territorial seas. A "significant nexus" was defined as a chemical, physical, or biological connection between tributaries and downstream other waters. At that time, hydrologic connection alone may not suffice in all cases to establish USACE jurisdiction, and there must be ecological significance of the connection such as influence on downstream water quality; transport of wood, sediment, nutrients, pesticides, or metals; functions such as storing and cleansing water; movement of organisms or their seeds or eggs; or hydrologic or biogeochemical interactions among surface or groundwater flows.

On August 29, 2023, the U.S. EPA and Department of the Army announced a final rule amending the 2023 definition of “waters of the United States.” The amendments conform with the U.S. Supreme Court’s May 25, 2023, decision in the case of Sackett v. Environmental Protection Agency (Sackett). While EPA’s and Army’s 2023 rule defining “waters of the United States” was not directly before the Supreme Court, the decision in Sackett made clear that certain aspects of the 2023 rule were invalid. Therefore, the agencies amended key components of the regulatory text to conform it to the Supreme Court’s Sackett decision. The final rule provided “clarity for protecting our nation’s waters consistent with the Supreme Court’s decision while advancing infrastructure projects, economic opportunities, and agricultural activities”.

The Sackett ruling changed key parts of the 2023 definition of "waters of the United States" removing some wetlands that previously fell under the USACE's jurisdiction. For example, the rule removes the significant nexus test from consideration when identifying tributaries and other waters as federally protected. It also revises the adjacency test when identifying federally jurisdictional wetlands, clarifies that interstate wetlands do not fall within the interstate waters category, and clarifies the types of features that can be considered under the "additional waters" category. In addition, the term "adjacent" was revised to mean having a continuous surface connection, and those wetlands separated from a TNW or relatively permanent water (RPW) by a berm or other manmade feature may be out of the USACE's Clean Water Act regulatory jurisdiction.

Waters of the U.S. determined by KMA to be under the jurisdiction of the EPA and Corps under the Clean Water Act have thus conformed to the instructional guidebook and the final rule amending the 2023 definition of "waters of the United States". Delineated wetland features that are not adjacent to (i.e., bordering, contiguous, or neighboring) a TNW or abutting an RPW that is tributary to a TNW may not be subject to federal jurisdiction. It is advised to note that the U.S. Supreme Court determined that jurisdictional waters of the U.S. especially in the Arid West shall be determined on a case-by-case basis, by the Corps (and EPA), based on a determination of whether a particular wetland or "other water" is hydrologically connected to a TNW.

To summarize, the jurisdictional status determination for each potential waters of the U.S. feature was originally evaluated in accordance with the Rapanos guidance and both the Clean Water Rule and Navigable Waters Rule. This updated analysis reviewed previous findings in relation to the current regulatory guidance pursuant to Sackett to determine if the original findings were still valid. For wetlands onsite containing all three wetland criteria that are connected by a swale or storm drain improvements to Carneros Creek, these areas were determined to fall under the Corps jurisdiction pursuant to the Clean Water Act. The wetland features are in close proximity to Carneros Creek and are hydrologically connected via a swale and onsite storm drainage system. The entire site is potentially problematic in that it is composed of fill over the Goleta Slough and tidal influence may play a role in the distribution of wetland habitat onsite. Areas supporting only one or two wetland criteria such as predominance of hydrophytic plants and wetland hydrology indicators, were determined to not fall under the Corps' Clean Water Act jurisdiction. These one and two parameter or criteria wetland areas were determined to meet the Coastal Act's definition of a wetland, and would be regulated as a coastal wetland or waters of the state subject to CCC, RWQCB and City of Santa Barbara requirements.

This report describes the features on the approximately 52.5-acre Taxiway H Extension project study area that exhibit the physical characteristics of wetlands, and therefore, documents the maximum areal extent of such features that may qualify as "waters of the United States" and be subject to USACE jurisdiction. Discussed above, the aforementioned federal rulings do not alter the extent of state jurisdiction over "waters of the State" (which are subject to CCC and RWQCB jurisdiction), or "rivers, lakes or streams" subject to CDFW jurisdiction. State and local regulatory authority over wetlands and other waters are discussed in the following section.

2.2 State Regulatory Authority

The CDFW has regulatory authority over any work within rivers, lakes and streams on public, private and agricultural lands in the State of California (California Fish and Game Code Sections 1601-1603). Features that are regulated by the CDFW include all rivers, streams, or lakes including man-made watercourses with or without wetlands, if they contain a definable bed and bank and support fish or wildlife resources or contribute to that support. CDFW jurisdiction also extends to

the outer drip-line of riparian vegetation associated with rivers, streams and lakes, and in some instances, can include areas within the larger floodplain. CDFW directly regulates wetland areas only to the extent that those wetlands are part of a river, stream or lake as defined above. Determining the limits of wetlands is not typically done pursuant to Section 1600 *et. seq.* since the riparian vegetation associated with the rivers, streams or lakes is also typically included within CDFW jurisdiction. Thus, defining the limits of CDFW jurisdiction based on riparian habitat would automatically include any wetland areas and may include additional areas that do not meet the USACE's criteria for wetland soils and/or hydrology (i.e.: where riparian vegetation canopy extends beyond the channel area of a stream away from frequently saturated soils).

With respect to wetlands, CDFW generally follows the recommendations of the U.S. Fish and Wildlife Service (USFWS); namely, that one or more positive indicators must be found for only one of the three wetland criteria (hydrophytic vegetation, hydric soil, and/or hydrology) to be considered a wetland. The California Fish and Game Commission concurred with the CDFW's recommendation to use the USFWS definition as the basis for wetland identification. The Commission determined that when all three wetland indicators (i.e., hydric soils, wetland vegetation, and wetland hydrology) are present, the presumption of wetland existence is conclusive. Where less than three indicators are present, policy application is to be supported by the demonstrable use of wetland areas by wetland associated fish or wildlife resources, related biological activity, and wetland habitat values (CDFW, August 4, 1994, *Department of Fish and Game Recommended Wetland Definition, Mitigation Strategies, and Habitat Value*).

The CCC in concert with CDFW and in partnership with coastal cities and counties, plans and regulates the use of land and water in the coastal zone. The Coastal Act includes specific policies (see Division 20 of the Public Resources Code) that address issues, including terrestrial and marine habitat protection. The policies of the Coastal Act constitute the statutory standards applied to planning and regulatory decisions made by the CCC and by local governments, pursuant to the Coastal Act. Because a CCC-approved Local Coastal Program is in place, the City of Santa Barbara issues its own permits for development or projects such as the proposed extension of Taxiway H within the coastal zone area under the City's jurisdiction.

The CCC, with the assistance of CDFW, is responsible for determining the presence of wetlands subject to regulation under the Coastal Act. As the primary wetland consultant to the CCC, the CDFW as stated above essentially relies on the USFWS wetland definition and classification system (Cowardin et al., 1979, *Classification of Wetlands and Deep Water Habitats of the United States*), with some minor changes in classification terminology, as the methodology for wetland determinations. The CDFW and the CCC require the presence of only one wetland parameter (e.g., wetland hydrology, hydric soils, or predominance of hydrophytic vegetation) for an area to qualify as a wetland. Section 30121 of the California Coastal Act (1976), the statute governing the CCC, broadly defines wetlands as:

"Lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, or fens."

However, the CCC Administrative Regulations (Section 13577 (b)) provide a more explicit definition:

"Wetlands are lands where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include

those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent or drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salt or other substance in the substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deepwater habitats."

2.3 Local Regulatory Authority

As discussed above, the City of Santa Barbara regulates land use at the Santa Barbara Airport through its LCP. The policies of the LCP and Coastal Act provide protection of all wetlands and natural drainage features, not just those with high biological value. These policies do not distinguish between natural or man-made wetland habitats**.** The City's LCP Policies C-1 through C-16 are applicable to the regulation of biological resources, including wetlands, within the Coastal Zone at the Airport. Protective policies are also incorporated into the City's *Santa Barbara General Plan* Policy ER12 that aims to protect, maintain and expand native plant and wildlife habitats including wetlands.

2.4 Criteria for Wetlands and Other Waters

Hydrophytic vegetation occurs in areas where frequency and duration of inundation and/or soil saturation exerts a primary controlling influence on plant species composition. Plant species are assigned a wetland indicator status according to the probability of occurrence in wetlands. More than 50 percent of the dominant plant species must have a wetland indicator status of Facultative, Facultative Wetland, or Obligate Wetland to meet the hydrophytic vegetation criterion. The National Wetland Plant List: 2014 Update of Wetland Ratings (NWPL), separates vascular plants into the following four basic categories based on plant species frequency of occurrence in wetlands:

- Obligate wetland (OBL). Occur almost always (estimated probability >99%) under natural conditions in wetlands.
- Facultative Wetland (FACW). Usually occur in wetlands (estimated probability 67%-99%), but occasionally found in non-wetlands.
- Facultative (FAC). Equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%).
- Facultative Upland (FACU). Usually occur in non-wetlands (estimated probability 67%-99%), but occasionally found in wetlands (estimated probability 1%-33%).
- Obligate Upland (UPL). May occur in wetlands in another region, but occur almost always (estimated probability >99%) under natural conditions in non-wetlands in the region specified.

An area is considered to have hydrophytic vegetation when greater than 50 percent of the dominant species in each vegetative stratum (tree, shrub, and herb) are assigned with the FAC, FACW, and/or OBL status categories. Any species not appearing on the NWPL is assumed to be an upland species, which almost never occurs in wetlands (<1%). Hydrophytic vegetation may also be considered to be present with a Prevalence Index of at least 3.0.

Hydric soils occur in areas that are saturated and/or inundated for a sufficient duration during the growing season to develop anaerobic or reducing conditions. Sufficient duration cannot be defined due to the vast differences in chemistry and mineral composition in soils from site to site and region to region, but can be as short as two weeks during the growing season. Field indicators of hydric soils include, but are not limited to observation of redoximorphic features (e.g.,

concentrations of oxidized minerals such as iron) and detection of hydrogen sulphide gas. Documentation of a soil as hydric must be verified in the field. Hydric soils were evaluated in accordance with *Field Indicators of Hydric Soils in the United States* (NRCS 2018).

Wetland hydrology typically occurs in areas subject to inundation and/or soil saturation with a frequency and duration long enough to cause the development of hydric soils and plant communities dominated by hydrophytic vegetation. If direct observation of wetland hydrology is not possible (as in seasonal wetlands) or records of wetland hydrology are not available (such as stream gauges), assessment of wetland hydrology is frequently supported by primary and secondary indicators such as surface soil cracks and drainage patterns.

Ordinary High Water Mark (OHWM) is the line on the shore or bank of a drainage feature that is established by fluctuations and/or flow of water. The OHWM is located through examination of physical characteristics such as a clear natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, and other appropriate physical characteristics that consider the nature of the surrounding area.

3.0 METHODS

KMA's principal biologist and wetland specialist, Kevin Merk, conducted the delineation of potential Corps "waters of the United States," CCC and RWQCB "waters of the State," and CDFW jurisdictional areas on the study area during several site visits in 2017 and 2018 to characterize the study area's vegetation, soils and hydrology. An initial site reconnaissance survey occurred on June 7, 2017 and the focused delineation occurred on April 19, 2018. The delineation used the routine methodology as detailed in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987) and refined in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0; U.S. Army Corps of Engineers, 2008). Field data were initially evaluated under the Clean Water Rule. That data was then reviewed in 2020 to ensure consistency under the Navigable Waters Rule, and was re-evaluated in 2024 to confirm the original findings are consistent with final rule amending the 2023 definition of "waters of the United States" pursuant to the Sackett decision.

The *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin, 1979), *Wetlands of the Central and Southern California Coast and Coastal Watershed: A Methodology for Their Classification* (Ferren et al., 1995), *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986), and the *Manual of California Vegetation*, second edition (Sawyer et al. 2009) were also utilized to assist in characterizing on-site wetlands, other waters, and other potential jurisdictional areas. In addition, KMA reviewed recent and historical aerial photographs depicting the study area (ESRI and Google Earth 2019), the U.S. Geological Survey (USGS) *Goleta, California* 7.5-minute topographic quadrangle (U.S. Geological Survey 1988), the *Soil Survey for Santa Barbara County, California* (Soil Conservation Service 1972), the Hydric Soils List for the South Coast Santa Barbara Area, California , and other available background information to better determine the nature and extent of Corps, RWQCB, CCC, and CDFW jurisdictional areas on the site.

All potential waters of the U.S. and State of California on the study area were mapped based on the presence of positive indicators for hydrophytic vegetation, hydric soils and wetland hydrology. The final determination of potential waters of the U.S. within the site was based on the presence of all three wetland criteria and direct hydrologic connectivity to Carneros Creek (an RPW). Where only one or two wetland criteria such as the predominance of hydrophytic plants and indicators of

wetland hydrology were present, the area was identified as not subject to the Corps' Clean Water Act jurisdiction, but was determined to be a coastal wetland subject to CCC/City and RWQCB regulatory requirements.

Data observation points were collected in areas of the site that represented potential "waters" and adjacent upland areas to characterize the extent of federal and State jurisdiction (i.e., identify the wetland edge). Potential wetlands primarily consisted of areas that exhibited a predominance of wetland plants and contained positive indicators for wetland hydrology. Although the study area was composed of fill soils placed during the construction of the Airport on the historic Goleta Slough, hydric soil indicators were present in the lowest topographic areas of the site that were composed of a predominance of obligate wetland species where seasonal ponded water and soil saturation persists for a long enough duration during the growing season.

Soil pits were excavated to a depth of 10-16 inches during the delineation to examine the soil for positive indicators of hydric soils and wetland hydrology. Colors of moist soils and redoximorphic features were compared with the Munsell® soil color chart and recorded on wetland determination data forms. Soils were not investigated in all areas of the site, and hydric soil indicators were presumed absent in areas composed of base rock along access roads. Information recorded at each data point location included plant species composition (to determine the presence/absence of hydrophytic vegetation), presence/absence of indicators of wetland hydrology, and in areas containing potential wetland habitat, indicators of hydric soils in accordance with *Field Indicators of Hydric Soils in the United States* (U.S. Department of Agriculture, Natural Resources Conservation Service 2006). Positive evidence of wetland hydrology was evaluated in the field, and included observable indicators such as the presence of oxidized rhizospheres, salt crust, surface soil cracks, and a shallow aquitard.

A data point was considered to be within a Corps-defined wetland (an "in" point) if the area contained all three wetland parameters (or criteria), which included a dominance of wetland plant species, positive wetland hydrology indicators, and presence of hydric soil indicators. Connection to an RPW, such as Carneros Creek, via the storm drainage system and onsite swale was also confirmed. If one or more of these parameters was not met, the area was considered to not be within a Corps-defined wetland. Areas containing one or two of the three wetland criteria such as the predominance of hydrophytes (i.e.: greater than 50% of wetland plants) and indicators of wetland hydrology were sufficient to meet the CCC/City wetland definition.

Federal, State and City jurisdictional areas were delineated in the field with a Trimble Ge-XH 6000 Global Positioning System (GPS). Mapped polygons were plotted on an aerial photograph overlaid with the study area boundary layer using ARC GIS 10. Current and historic aerial imagery of the site was also reviewed with the wetland polygons to confirm they accurately depict current site conditions.

4.0 RESULTS

A total of 11 data observation points were established to document potential waters of the U.S. and state of California including coastal wetlands on the site subject to federal, state and local jurisdiction. Based on the USFWS's *Classification of Wetlands and Deep Water Habitats of the United States* (Cowardin et al., 1979), wetland vegetation on the study area consisted of two primary types: Palustrine Emergent Wetland and Palustrine Scrub Shrub Wetland. The palustrine emergent wetland types were pickleweed (*Sarcocornia pacifica*; OBL)– alkali weed (*Cressa truxillensis*; FACW) association including non-vegetated flats with salt crust (also known as haline wetland),

Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*; FAC) – Italian ryegrass (*Festuca perrenis*; FAC) association (mesic grassland), and southern tarplant (*Centromadia parryi* ssp. *australis*; FACW) occurrences where this species formed greater than 50% areal cover in a given area. The Palustrine Scrub-Shrub Wetland area corresponds to the big saltbush (*Atriplex lentiformis*; FAC) – Menzies' goldenbush (*Isocoma menziesii* var. *vernonioides*; FAC) association. Upland areas consisted of non-native grasses consistent with the non-native grassland habitat type described by Holland (1986) and the wild oats and annual brome grasslands described by Sawyer et al (2009).

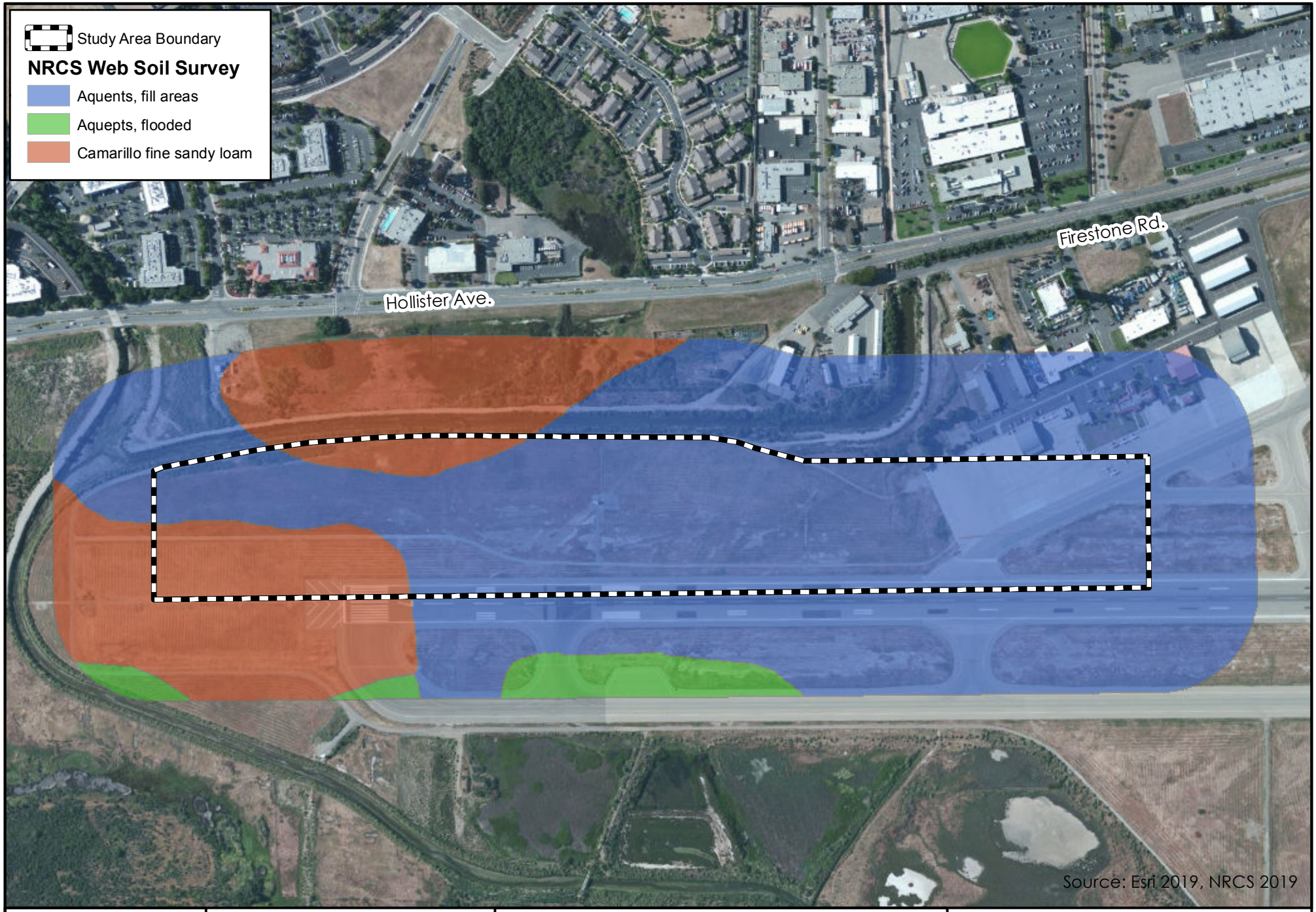
The site is a generally a flat terrace area with micro-topographic changes from wetland to upland habitats. The site was historically part of the Goleta Slough, and Airport development filled the Slough to construct the runways and infrastructure. Drainage improvements created a gentle basin-like feature in the study area with storm drain inlets in the lowest topographic part to direct stormwater runoff from runways and developed areas into Carneros Creek. A swale feature was also apparently constructed to direct surface runoff during storm events into Carneros Creek. Even with the drain inlets, the topographic low area still collects seasonal surface water, and along with the residual estuarine soils, wetland habitats persist. It is also possible that the identified wetland area is supported by tidal influence. The lowest topographic points are composed of patches of pickleweed - alkali weed wetland habitat along with non-vegetated flats encrusted with salt. This area was identified as a potential waters of the U.S. based on the presence of all three wetland criteria with the hydrologic connection to Carneros Creek via the storm drain system and constructed swale in the northeast part of the study area.

A fringe of mesic grassland is present surrounding the more obligate wetland area, and was composed of facultative species such as Mediterranean barley, Italian ryegrass, and curly dock (*Rumex crispus*). The mesic grassland area did not contain hydric soils or indicators of wetland hydrology, and therefore, did not meet the Corps' wetland definition. Since it was dominated by facultative wetland plants and represented a transition zone between the wetter, obligate dominated wetland habitat composed of pickleweed and alkali weed surrounding the non-vegetated haline flats, it was mapped as a coastal wetland composed of at least one wetland criterion, which in this case was the presence of greater than 50% areal cover of facultative grasses. The scrub-shrub wetland area identified along the perimeter access road also did not contain all three wetland criteria nor did the mapped southern tarplant occurrences.

Figure 1 is a site location map showing the study area on the USGS 7.5-minute topographic quadrangle map. Figure 2 is an aerial overview map showing the property and hydrologic features in its vicinity. Figure 3 is a soils map illustrating the soil map units present onsite and the immediate surrounding area, and Figure 4 is the wetland delineation map, which illustrates the extent of federal, state, and local jurisdictional wetland areas onsite. Appendix A contains the Wetland Determination Data Forms for the data points shown on Figure 4. Appendix B provides a photo plate with representative photographs of the study area, and Appendix C contains a list of plants observed in the study area during the course of the field investigation.

4.1 Site Overview

The study area consists of approximately 52.5 acres on the Santa Barbara Airport, north of Runway 7-25. The study area was developed to cover potential disturbance areas resulting from the extension of Taxiway H. Located in the southwest portion of the USGS Goleta 7.5-minute topographic quadrangle map in Section 18, Township 4 north, Range 28 west, the study area is



KEVIN MERK ASSOCIATES

N
W E
S

1 in = 500 ft

0 165 330 660 Feet

Taxiway H Extension Project

Santa Barbara Airport

Figure 3

Soil Map

Study Area Boundary (2,286,863 ft.^{2}/ 52.50 acres)

Palustrine Emergent Wetland

Mediterranean Barley-Italian Ryegress (275,309 ft.^{2}/6.32 acres)

Pickleweed-Alkali Weed and Non-Vegetated Flats (388,447 ft.^{2}/ 8.92 acres)

Southern Tarplant (5,528 ft.^{2}/ 0.13 acre)

Palustrine Scrub-Shrub Wetland

Big Saltbush-Menzies' Goldenbush (30,805 ft.^{2}/0.71 acres)

Data Points

Map Reference Points

Drain Inlets

Drain Outlets

Hollister Ave.

Firestone Rd.

Santa Barbara Municipal Airport

Carneros Creek

Tecolotito Creek

-119.844, 34.429

-119.857, 34.428

Source: Esri 2020

KEVIN MERK ASSOCIATES

1 in = 300 ft

December 7, 2020

0 0.035 0.07 0.14 Miles

Taxiway H Extension Project

Santa Barbara Airport

Figure 4

Wetland Delineation Map

situated at the upstream limits of estuarine habitat associated with the Goleta Slough as it segues into riverine habitat in both Tecolotito and Carneros Creeks to the west and north of the study area.

The proximity to the Goleta Slough and Pacific Ocean exhibit strong forces influencing plant distribution on the site, and it is possible that tidal fluctuation also contributes to the extent of wetland habitat types on the site. The construction of runways, roads, buildings, and associated facilities have affected the site's natural hydrology and historic soil composition, but residual wetland soils from the slough are still evident in the lowest topographic parts of the study area. Although disturbed from its historic condition, the site and it's developed features have been in place now for many years, and as such are considered normal for the site and would not fall into the atypical situation methodology. The following provides further detail regarding the vegetation, soils and hydrology of the study area.

4.2 Vegetation

4.2.1 Palustrine Emergent Wetlands

Three Palustrine Emergent Wetland types were identified in the study area and included: pickleweed – alkali weed association (haline wetland), mesic grassland dominated by Mediterranean barley and Italian ryegrass, and patches of southern tarplant. Extensive areas of non-vegetated, salt crusted flats are also present in the pickleweed – alkali weed association areas. Please refer to Data Observation Forms 3 and 6 for additional information regarding the pickleweed – alkali weed association. Pickleweed observed in the study area was *Sarcocornia pacifica*, which is an obligate wetland species, and alkali weed is a facultative wetland species. The dominance of these two species indicates increased soil moisture in the lower topographic areas possibly the result of a shallow aquitard (i.e., impermeable clay layer) and fluctuating groundwater from the site's position in the historic slough. Regular mowing by heavy equipment likely plays a role in soil compaction further reducing percolation of surface water. Other associates in this wetland type included salt sand spurry (*Spergula marina*; OBL), alkali heath (*Frankenia salina*; FACW), and salt grass (*Distichlis spicata*; FAC). The topographic low areas supporting this wetland association are seasonally flooded and contain sufficient soil moisture to support the predominance of obligate and facultative wetland species. In addition, the high salinity from residual slough soils and influence of the Pacific Ocean are other factors that support the persistence of halophytic wetland plants onsite.

The more obligate wetland area transitions into a mesic grassland as slight changes in topography occur (please refer to Data Observation Forms 4 and 7). The Mediterranean barley – Italian ryegrass association was mapped in this transition zone where higher seasonal soil moisture allows these facultative species to persist compared to the upland grasses that were dominant further north and west. While the mesic grassland habitat is generally consistent with the Italian ryegrass stands described in the Manual of California Vegetation (Sawyer et al., 2009), it was dominated by Mediterranean barley. The Mediterranean barley – Italian ryegrass association transitioned to a predominance of upland annual grassland composed of barnyard foxtail (*Hordeum murinum* ssp. *leporinum*; FACU) in the north and wild oats (*Avena barbata*; UPL) and mixed bromes (*Bromus diandrus* and *B. hordeaceus*; UPL and FACU) in the west.

A small drainage swale was also observed in the mesic grassland zone, apparently constructed to aid in surface drainage of the study area, which provides a direct surface connection to Carneros Creek. In this particular location, as detailed by Data Observation Form 2, creeping wild rye (*Leymus triticoides*; FAC) was present and formed the dominant cover in the bed and on the soft

banks of the swale. It generally was confined to the swale feature and Meadow barley and Italian ryegrass were dominant to the south and further north as the swale exited the study area.

Patches of southern tarplant were also observed in the study area, and since this species is a facultative wetland plant, the occurrences supporting greater than 50% areal cover of this species were mapped as Palustrine Emergent Wetland. Southern tarplant was observed along road margins in disturbed soils where competition from other vegetation was lower. Data Observation Form 10 characterizes the observed southern tarplant occurrences onsite.

4.2.2 Palustrine Scrub-Shrub Wetland

The Palustrine Scrub-Shrub Wetland type was composed of big saltbush (quail bush) and Menzies' goldenbush growing in a narrow strip in the northwest part of the study area. Please refer to Data Observation Form 9 for further detail. The shrubs, which were observed as a component of the riparian scrub habitat along Carneros Creek, occurred on the south side of a dirt perimeter road that appears to impound surface runoff when present and thereby allow the facultative shrubs to be maintained. Big saltbush is a fast growing shrub that tolerates poor soils, and goldenbush has wind dispersed seeds that can colonize disturbed areas relatively quickly. Both species are known to mix with halophytes such as alkali weed in this general area, and form much larger extensive riparian scrub habitat along Carneros Creek to the north and Tecolotito Creek to the west.

4.2.3 Upland Grassland

Upland grassland in the study area was characterized by Data Observation Forms 1, 5 and 8. To the north of the mapped wetland areas, barnyard foxtail formed the dominant cover, and to the west, wild oats was more prevalent. This was a non-native grassland habitat type consistent with the description by Holland (1986). Other associate species observed in upland grasslands on the site consisted of common beet (*Beta vulgaris*; UPL), summer mustard (*Hirschfeldia incana*; UPL) and mallow (*Malva nicaeensis*; UPL).

4.3 Soils

The upper 10-16 inches of the soil profile was examined at 10 of the 11 sample points to determine presence or absence of positive indicators for hydric soils and to determine if the soil map units described by the U.S. Department of Agriculture, Natural Resources Conservation Service (USDA, NRCS) were consistent with observed soil characteristics. The NRCS identified two soil map units as occurring on the study area, and include Aquents, fill areas and Camarillo fine sandy loam (refer to Figure 3). .

The majority of the study area is composed of the Aquents, fill areas which are disturbed soils on flood plains from the past and ongoing development activities on the site. Camarillo fine sandy loam is a soil derived from alluvium on flood plains. It can be poorly drained and non-saline to very slightly saline. Other areas of the Goleta Slough area with Camarillo fine sandy loam soil map unit are composed of wetland habitats, but on this site drainage is high in the area and it was composed of upland grasses with no signs of seasonal ponded water.

The Aquents, fill areas are not listed as hydric soils on the Hydric Soils List for South Coastal Part of Santa Barbara County (Hydric Soils List accessed online), but did have remnant or residual elements of the estuarine soils from the Goleta Slough. The Camarillo fine sandy loam soil map unit present in the western part of the study area is identified as a hydric soil, however, it is within an

area that was previously disturbed by the extension of the runway. The area was dominated by upland grasses and weedy species and did not show any signs of seasonal saturation or indicators of hydric soils. In the northwest where the Palustrine Scrub-Shrub Wetland was observed, the soil had base rock and larger stones in place along the perimeter road where saturation appears to be high. This is apparently why the facultative shrubs and facultative wetland southern tarplant are able to persist at this location.

4.4 Hydrology

The study area is a terrace on the former upper reaches of the Goleta Slough. Soils were mixed and the area filled to construct the airport. The runway was recently extended and Carneros and Tecolotito Creeks were realigned to accommodate the extension project. The study area to the north of the runway functions as a basin handling surface runoff from the runway, tarmac and other paved developed areas. Inlet drains are in place throughout the area to collect surface runoff and direct it towards Carneros Creek. A small topographic drainage swale was also present in the northeastern part of the study area, and was apparently constructed to drain the infield area to Carneros Creek. An infield area in the eastern part of the study area was also included in the analysis, and this basin feature is connected to drainage ditches and swales to the southwest side of the runway via a drain inlet and piping. Ultimately, the entire study area is connected to Carneros Creek and the Goleta Slough, a tidally influenced feature connected to the Pacific Ocean (a TNW), by the storm drainage system and a constructed swale.

4.5 Types of Waters of the United States and State of California and Coastal Wetlands

The wetland areas identified on Figure 4 - the Wetland Delineation Map are comprised of one, two and three criteria wetlands. Based on the USFWS's *Classification of Wetlands and Deep Water Habitats of the United States* (Cowardin et al., 1979), wetland vegetation on the site consists of two primary categories: Palustrine Freshwater Emergent Wetland and Palustrine Scrub-Shrub Wetland. The Palustrine Emergent Wetland type present was separated into pickleweed – alkali weed association and non-vegetated flats, Mediterranean barley – Italian ryegrass association, and southern tarplant occurrences. Only the Palustrine Emergent Wetland pickleweed – alkali weed association and non-vegetated flats contained all three wetland criteria consisting of a predominance of hydryophytes (i.e., 50% or greater areal cover of wetland plants), presence of hydric soil indicators and positive indicators of wetland hydrology. As such, areas mapped as pickleweed – alkali weed and non-vegetated flats were identified as potentially subject to the regulatory authority of the Corps pursuant to section 404 of the federal Clean Water Act.

The Palustrine Emergent Wetland types consisting of Mediterranean barley – Italian ryegrass association and southern tarplant occurrences and Palustrine Scrub-Shrub Wetland (big saltbush – Menzies' goldenbush association) did not contain all three wetland criteria that define a federal wetland. These features within the study area had either one or two wetland criteria present consisting of a predominance of wetland plants and positive indicators of wetland hydrology. Therefore, these features do not constitute waters of the U.S., but do meet the state's and City's wetland definition since at least one wetland criterion was present. Areas mapped as Mediterranean barley – Italian ryegrass, southern tarplant and big saltbush – Menzies's goldenbush are state and City coastal wetlands.

Table 1. Summary of Potential Wetland Waters of the U.S.

Waters of the U.S.	Total Area (square feet/acres)
Palustrine Emergent Wetland Pickleweed – Alkali Weed Association (haline wetland)	**388,447/8.92**

Table 2. Summary of State/CCC/City Wetlands

State/CCC/City Wetlands	Total Area (square feet/acres)
Palustrine Emergent Wetland Pickleweed – Alkali Weed Association (haline wetland)	388,447/8.92
Palustrine Emergent Wetland Mediterranean barley – Italian Ryegrass Association	275,309/6.32
Palustrine Emergent Wetland Southern Tarplant Occurrences	5,528/0.13
Palustrine Scrub-Shrub Wetland Big Saltbush – Menzies's Goldenbush Association	30,805/0.71
Total State/CCC and City Wetlands	**700,089/16.07**

5.0 CONCLUSION

This report identifies potential federal, state and local jurisdictional boundaries within the Santa Barbara Airport Taxiway H Extension project study area as determined by KMA during an investigation conducted during the summer of 2017 and spring of 2018. The findings were reviewed in the fall 2020 to ensure consistency with the recent Navigable Water Rule, and have since been updated again to ensure consistency with current regulatory guidance resulting from the Sackett ruling. These jurisdictional boundaries are subject to review by the Corps, RWQCB, CCC and the City of Santa Barbara. This report should be submitted to the Corps and other agencies as part of an early consultation process prior to any permit applications being prepared for the proposed project. During the agency review process, the Corps and other agencies may request a site visit to verify the conditions and jurisdictional boundaries identified in this report, and may approve the report or request amendments to the report based on their findings.

As shown on Figure 4 – the Wetland Delineation Map, the pickleweed – alkali weed association and non-vegetated flats areas (approximately 8.92 acres) are considered to be potentially subject to Corps jurisdiction as wetland waters of the U.S. under the Clean Water Act. These areas contained all three wetland criteria and are hydrologically connected to Carneros Creek and Goleta Slough and the Pacific Ocean via storm drainage infrastructure and a constructed swale. The obligate dominated wetland area (i.e., pickleweed – alkali weed association) in addition to the other wetland

features identified onsite would also be expected to fall under the jurisdiction of the RWQCB and CCC as waters of the state and coastal wetlands. All Palustrine Emergent Wetland and Palustrine Scrub-Shrub Wetland features identified onsite, totaling 16.07 acres constitute wetlands under the California Coastal Act and City LCP based on the presence of at least one wetland criterion. KMA advises all interested parties to treat the information contained herein as preliminary pending written verification of jurisdictional boundaries by the appropriate regulatory agencies.

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APPENDIX A

Wetland Determination Data Forms

KMA

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Santa Barbara Airport Taxiway H Project City/County: Santa Barbara Sampling Date: 4/19/18

Applicant/Owner: City of Santa Barbara State: CA Sampling Point: 1

Investigator(s): Merk Section, Township, Range: 18, T4N, R28W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): <1

Subregion (LRR): C Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Aquents, fill areas NWI classification: None

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

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

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

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

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Data point characterizes upland grassland habitat adjacent to small drainage swale.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 20 ft circle)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 20 ft circle)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 20 ft circle)			
1. Hordeum murinum ssp. leporinum	65	Y	FACU
2. Avena barbata	10	N	UPL
3. Bromus hordeaceus	25	N	FACU
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 20 ft circle)			
1.			
2.			
	_____ = Total Cover		

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

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

Characterizes upland grassland adjacent to drainage swale constructed to drain study area.

SOIL

Sampling Point: 1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR3/2	100					FSL	Sandy loam

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

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

Wetland Hydrology Present? Yes _____ No ✓

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

Remarks:

No indicators of wetland hydrology observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Santa Barbara Airport Taxiway H Project City/County: Santa Barbara Sampling Date: 4/19/18

Applicant/Owner: City of Santa Barbara State: CA Sampling Point: 2

Investigator(s): Merk Section, Township, Range: 18, T4N, R28W

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): concave Slope (%): <1

Subregion (LRR): C Lat: Long: Datum:

Soil Map Unit Name: Aquents, fill areas NWI classification: None

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point characterizes small drainage swale dominated by creeping wild rye.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 20 ft circle)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 20 ft circle)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 20 ft circle)			
1. Leymus triticoides	85	Y	FAC
2. Hordeum marinum ssp. gussoneanum	10	N	FAC
3. Festuca perrenis	5	N	FAC
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 20 ft circle)			
1.			
2.			
	= Total Cover		

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

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

Characterizes swale constructed to drain study area. Paired with Data Point 1.

SOIL

Sampling Point: 2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-16	10YR3/2	100					FSL	Sandy loam

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

No hydric soil indicators observed, but some brick and asphalt present in profile.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ✓ No _____

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

Remarks:

Drainage swale has minor topographic relief and drains obligate wetland area composed of pickleweed and non-vegetated salt flats towards Carneros Creek.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Santa Barbara Airport Taxiway H Project City/County: Santa Barbara Sampling Date: 4/19/18

Applicant/Owner: City of Santa Barbara State: CA Sampling Point: 3

Investigator(s): Merk Section, Township, Range: 18, T4N, R28W

Landform (hillslope, terrace, etc.): terrace/slight basin Local relief (concave, convex, none): none Slope (%): <1

Subregion (LRR): C Lat: Long: Datum:

Soil Map Unit Name: Aquents, fill areas NWI classification: None

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Data point characterizes pickelweed - alkali weed and non-vegetated flats where periodic inundation and prolonged saturation occurs. Clay layer restricts drainage.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 20 ft circle)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 20 ft circle)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 20 ft circle)			
1. Sarcocornia pacifica	35	Y	OBL
2. Hordeum marinum ssp. gussoneanum	10	N	FAC
3. Festuca perrenis	5	N	FAC
4. Spergula marina	5	N	OBL
5. Cressa truxillensis	10	N	FACW
6.			
7.			
8.			
	65 = Total Cover		
Woody Vine Stratum (Plot size: 20 ft circle)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 35 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	40	x 1 =	40
FACW species	10	x 2 =	20
FAC species	15	x 3 =	45
FACU species	_____	x 4 =	_____
UPL species	_____	x 5 =	_____
Column Totals:	65 (A)		105 (B)

Prevalence Index = B/A = 1.6

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

Characterizes lowest topographic area with pickleweed and alkali weed wetland and non-vegetated flats with salt crust.

SOIL

Sampling Point: 3

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR3/3	100					FSL	lots of roots
2-12	10YR3/2	95	5YR4/4	5			FSL	moist
12-14	2.5Y2/1	100					clay	restrictive layer
14-18	10YR3/3	100					FSL	sandy below clay layer

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: clay

Depth (inches): 12-14

Hydric Soil Present? Yes ✓ No ___

Remarks:

Sandy redox features present above darker restrictive clay layer.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks:

Topographic low area graded to drain towards inlets that direct surface water when present to Carneros Creek via storm drain pipe. Mowing and equipment may help compact soils and prevent drainage.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Santa Barbara Airport Taxiway H Project City/County: Santa Barbara Sampling Date: 4/19/18

Applicant/Owner: City of Santa Barbara State: CA Sampling Point: 4

Investigator(s): Merk Section, Township, Range: 18, T4N, R28W

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <1

Subregion (LRR): C Lat: Long: Datum:

Soil Map Unit Name: Aquents, fill areas NWI classification: None

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✓ No	**Is the Sampled Area within a Wetland?** Yes No ✓
Hydric Soil Present?	Yes No ✓	
Wetland Hydrology Present?	Yes No ✓	

Remarks:

Data point characterizes mesic grassland that is a transition zone between obligate wetland area and upland grassland to the north.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 20 ft circle)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 20 ft circle)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 20 ft circle)			
1.			
2. Hordeum marinum ssp. gussoneanum	85	Y	FAC
3. Festuca perrenis	5	N	FAC
4. Bromus hordeaceus	5	N	FACU
5. Bromus diandrus	5	N	UPL
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 20 ft circle)			
1.			
2.			
	= Total Cover		

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

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	90	x 3 =	270
FACU species	5	x 4 =	20
UPL species	5	x 5 =	25
Column Totals:	100 (A)		105 (B)

Prevalence Index = B/A = 3.15

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ✓ No

Remarks:

Characterizes transition zone dominated by Mediterranean barley surrounding pickleweed and alkali weed wetland.

SOIL

Sampling Point: 4

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR3/2	100					FSL	light colored sandy loam

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

No hydric soil indicators observed. Some remnant brick and asphalt present in profile characteristic of fill soils.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No ✓

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

Remarks:

slight change in topography between Data Point 3 and this area appears sufficient to have obligate wetland species drop out and facultative species predominate before trending into upland grassland.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Santa Barbara Airport Taxiway H Project City/County: Santa Barbara Sampling Date: 4/19/18

Applicant/Owner: City of Santa Barbara State: CA Sampling Point: 5

Investigator(s): Merk Section, Township, Range: 18, T4N, R28W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): <1

Subregion (LRR): C Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Aquents, fill areas NWI classification: None

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

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

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

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

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Data point characterizes upland grassland habitat adjacent to small drainage swale.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 20 ft circle)			
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 20 ft circle)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 20 ft circle)			
1. Hordeum murinum ssp. leporinum	75	Y	FACU
2. Avena barbata	10	N	UPL
3. Bromus hordeaceus	15	N	FACU
4.			
5.			
6.			
7.			
8.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: 20 ft circle)			
1.			
2.			
	100 = Total Cover		

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

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

Characterizes upland grassland adjacent to mesic grassland transition zone dominated by Mediterranean barley.

SOIL

Sampling Point: 5

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR3/2	100					FSL	Sandy loam

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

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

Wetland Hydrology Present? Yes _____ No ✓

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

Remarks:

No indicators of wetland hydrology observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Santa Barbara Airport Taxiway H Project City/County: Santa Barbara Sampling Date: 4/19/18

Applicant/Owner: City of Santa Barbara State: CA Sampling Point: 6

Investigator(s): Merk Section, Township, Range: 18, T4N, R28W

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <1

Subregion (LRR): C Lat: Long: Datum:

Soil Map Unit Name: Aquents, fill areas NWI classification: None

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

Data point characterizes haline wetland with pickle-weed and alkali weed as dominants.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 20 ft circle)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 20 ft circle)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 20 ft circle)			
1. Sarcocornia pacifica	30	Y	OBL
2. Cressa truxillensis	25	Y	FACW
3. Rumex crispus	15	N	FAC
4. Suaeda calceoliformis	10	N	FACW
5. Spergula marina	5	N	OBL
6.			
7.			
8.			
	85 = Total Cover		
Woody Vine Stratum (Plot size: 20 ft circle)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

Characterizes dense patch of pickleweed - alkali weed wetland. Non-vegetated flats with salt crust are nearby to the south.

SOIL

Sampling Point: 6

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR3/2	100					FSL	light colored sandy loam
10-14	5YR3/3	90	10YR2/1	10			clay	restrictive layer

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: clay

Depth (inches): 10-14

Hydric Soil Present? Yes ✓ No ___

Remarks:

Darker clay layer below 10 inches appears to restrict drainage and helps promote formation of hydric soil indicators and predominance of wetland plants.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks:

Slight basin topography collects water and given restrictive clay layer and high salt content from residual slough parent material, water persists at surface and haline hydrophytes persist in seasonally saturated soils. Drain inlets present, but soil saturation appears to persist through growing season.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Santa Barbara Airport Taxiway H Project City/County: Santa Barbara Sampling Date: 4/19/18

Applicant/Owner: City of Santa Barbara State: CA Sampling Point: 7

Investigator(s): Merk Section, Township, Range: 18, T4N, R28W

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): <1

Subregion (LRR): C Lat: Long: Datum:

Soil Map Unit Name: Aquents, fill areas NWI classification: None

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✓	No	**Is the Sampled Area within a Wetland?** Yes No ✓
Hydric Soil Present?	Yes	No ✓	
Wetland Hydrology Present?	Yes	No ✓	

Remarks:

Data point characterizes mesic grassland that is a transition zone between obligate wetland area to south and upland grassland to the north.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 20 ft circle)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 20 ft circle)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 20 ft circle)			
1.			
2. Hordeum marinum ssp. gussoneanum	65	Y	FAC
3. Festuca perrenis	25	N	FAC
4. Rumex crispus	5	N	FAC
5. Plantago lanceolata	5	N	FAC
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 20 ft circle)			
1.			
2.			
	= Total Cover		

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

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	100	x 3 =	300
FACU species	0	x 4 =	0
UPL species	0	x 5 =	25
Column Totals:	100 (A)		300 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ✓ No

Remarks:

Characterizes transition zone dominated by Mediterranean barley with Italian ryegrass surrounding pickleweed and alkali weed wetland west of glide slope antenna.

SOIL

Sampling Point: 7

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR3/2	100					FSL	light colored sandy loam

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No ✓

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

Remarks:

Similar to Data Point 4 where a slight change in topography is present. Obligate wetland species drop out and facultative species predominate before trending into upland grassland.
No indicators of wetland hydrology observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Santa Barbara Airport Taxiway H Project City/County: Santa Barbara Sampling Date: 4/19/18

Applicant/Owner: City of Santa Barbara State: CA Sampling Point: 8

Investigator(s): Merk Section, Township, Range: 18, T4N, R28W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): <1

Subregion (LRR): C Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Aquents, fill areas NWI classification: None

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

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

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

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

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Data point characterizes upland grassland habitat adjacent to small drainage swale.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 20 ft circle)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 20 ft circle)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 20 ft circle)			
1. Hordeum murinum ssp. leporinum	55	Y	FACU
2. Avena barbata	35	Y	UPL
3. Bromus hordeaceus	15	N	FACU
4.			
5.			
6.			
7.			
8.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: 20 ft circle)			
1.			
2.			
	100 = Total Cover		

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

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

Characterizes upland grassland adjacent to mesic grassland dominated by Mediterranean barley. Slightly more Avena barbata at this location compared to Data Point 5, and Avena becomes the dominant plant in upland grassland further west of study area.

SOIL

Sampling Point: 8

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-16	10YR3/2	100					FSL	Sandy loam

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

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

Wetland Hydrology Present? Yes _____ No ✓

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

Remarks:

No indicators of wetland hydrology observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Santa Barbara Airport Taxiway H Project City/County: Santa Barbara Sampling Date: 4/19/18

Applicant/Owner: City of Santa Barbara State: CA Sampling Point: 9

Investigator(s): Merk Section, Township, Range: 18, T4N, R28W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): <1

Subregion (LRR): C Lat: Long: Datum:

Soil Map Unit Name: Camarillo fine sandy loam NWI classification: None

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Data point characterizes patch of riparian scrub dominated by big saltbush and Menzies' goldenbush separated from riparian habitat along creek by perimeter road.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 20 ft circle)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 20 ft circle)			
1. Atriplex lentiformis	55	Y	FAC
2. Isocoma menziesii	35	Y	FAC
3. Baccharis pilularis	5	N	UPL
4.			
5.			
	95 = Total Cover		
Herb Stratum (Plot size: 20 ft circle)			
1. Cressa truxillensis	5	N	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	5 = Total Cover		
Woody Vine Stratum (Plot size: 20 ft circle)			
1.			
2.			
	100 = Total Cover		

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

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

Characterizes patch of riparian scrub (palustrine scrub-shrub wetland) in generally flat area along perimeter road where surface runoff collects. Alkali weed present at base of shrubs.

SOIL

Sampling Point: 9

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

Base rock and larger stone associated with access road occurs throughout this area and prevented the ability to dig a soils pit. Away from sample point, soils were sandy and light in color typical of Camarillo map unit.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No ✓

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

Remarks:

Slight impoundment by access road appears to collect surface runoff and hold it long enough to allow facultative shrubs characteristic of riparian scrub along Carneros Creek to persist. Otherwise, no indicators of wetland hydrology observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Santa Barbara Airport Taxiway H Project City/County: Santa Barbara Sampling Date: 4/19/18

Applicant/Owner: City of Santa Barbara State: CA Sampling Point: 10

Investigator(s): Merk Section, Township, Range: 18, T4N, R28W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): <1

Subregion (LRR): C Lat: Long: Datum:

Soil Map Unit Name: Camarillo fine sandy loam NWI classification: None

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

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

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

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

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Data point characterizes southern tarplant occurrence along perimeter road.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 20 ft circle)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 20 ft circle)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 20 ft circle)			
1. Centromadia parryi ssp. australis	75	Y	FACW
2. Parapholis incurva	5	N	FACU
3. Festuca perrenis	5	N	FAC
4. Hordeum marinum ssp. gussoneanum	5	N	FAC
5.			
6.			
7.			
8.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: 20 ft circle)			
1.			
2.			
	90 = Total Cover		

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	
FACW species	75	x 2 =	150
FAC species	10	x 3 =	30
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	90 (A)		200 (B)

Prevalence Index = B/A = 2.22

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

Characterizes southern tarplant occurrence along road edge.

SOIL

Sampling Point: 10

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR3/2	85					sand	base rock present @15%

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

No indicators of hydric soils observed. Ground was hard with more base rock below 10 inches, which inhibited digging.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No ✓

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

Remarks:

No indicators of wetland hydrology observed. Slight impoundment by access road appears to collect surface runoff and hold it long enough to allow southern tarplant patch to persist.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Santa Barbara Airport Taxiway H Project City/County: Santa Barbara Sampling Date: 4/19/18

Applicant/Owner: City of Santa Barbara State: CA Sampling Point: 11

Investigator(s): Merk Section, Township, Range: 18, T4N, R28W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): <1

Subregion (LRR): C Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Camarillo fine sandy loam NWI classification: None

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

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

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

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

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Data point characterizes upland grassland habitat next to riparian scrub and southern tarplant patch.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 20 ft circle)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 20 ft circle)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 20 ft circle)			
1. Hordeum murinum ssp. leporinum	45	Y	FACU
2. Avena barbata	45	Y	UPL
3. Bromus diandrus	10	N	FACU
4.			
5.			
6.			
7.			
8.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: 20 ft circle)			
1.			
2.			
	100 = Total Cover		

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

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

Characterizes upland grassland adjacent to riparian scrub and southern tarplant patch along perimeter road next to Carneros Creek. Paired with Data Point 10. Avena barbata becomes dominant further west and Hordeum is reduced in areal cover.

SOIL

Sampling Point: 11

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-16	10YR3/2	100					FSL	Sandy loam

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

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

Wetland Hydrology Present? Yes _____ No ✓

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

Remarks:

No indicators of wetland hydrology observed.

APPENDIX B

Photo Plate

KMA

Appendix B - Photo Plate

Photo 1. Westerly overview of palustrine emergent wetland (haline) pickleweed-alkali weed association and non-vegetated, salt encrusted flats in study area.

Photo 2. Westerly overview of pickleweed-alkali weed association and non-vegetated flats with salt crusts throughout topographic low areas of site. Note tire tracks from seasonal mowing.

Photo 3. Representative view of pickleweed-alkali weed association with cracked bare soils. Accumulated salts at surface are visible in the distance.

Photo 4. Representative view of transition zone between mesic grassland (beige coloration) and upland grassland composed of *Hordeum murinum* ssp. *leporinum* (darker green coloration).

Photo 5. Another view of non-vegetated haline flats ringed by palustrine emergent wetland that segues into mesic grassland dominated by Mediterranean barley and Italian ryegrass.

Photo 6. Northerly view of glide slope antenna road that bisects the wetland feature in the study area. Large patches of pickleweed are present in this area.

Photo 7. Southerly view from the disturbed pad surrounding the glide slope antenna showing mesic grassland with pickleweed and non-vegetated flats visible in distance.

Photo 8. Easterly view of transition zone between palustrine emergent wetland types with pickleweed-alkali weed association to the right and Mediterranean barley-Italian ryegrass association to the left.

Photo 9. Representative view looking west over mesic grassland with pockets of pickleweed wetlands between dirt road and Runway 7-25. Patches of *Centromadia parryi* ssp. *australis* also present along road edges in this area. Photo taken in June 2017.

Photo 10. Easterly view over west end of study area showing upland grassland habitat dominated by *Avena barbata*, *Bromus diandrus*, *Malva nicaeensis* and *Lactuca serriola*.

Photo 11. Westerly view of palustrine scrub-shrub wetland (some mowed) consisting of *Atriplex lentiformis* and *Isocoma menziesii* along perimeter road adjacent to Carneros Creek's riparian corridor. Refer to Data Points 9, 10 and 11 for further detail.

Photo 12. Northerly view of Data Point 2 and a small swale like drainage feature dominated by creeping wild rye. Swale was apparently constructed to help drain the area to the north.

Photo 13. Soils at Data Point 3 showing fine sandy loam texture in upper 12 inches with darker clay horizon between 12-14 inches that forms an impermeable, restrictive layer.

Photo 14. In some locations of wetland habitat, the soil was very hard with asphalt, brick and other imported materials from past construction activities apparently impeding surface drainage.

Photo 15. Representative photo of southern tarplant (*Centromadia parryi* ssp. *australis*) growing along road margins with less competition from other species. See Data Point 10 for further detail.

Photo 16. One of the drain inlets present in the study area that direct surface runoff to Carneros Creek, which is present just on the other side of the unpaved perimeter road.

Photo 17. Another drain inlet in the center of the palustrine emergent wetland characterized as pickleweed-alkali weed association and non-vegetated flats southeast of the glide slope antenna.

Photo 18. One of the drain outfall structures along Carneros Creek.

Photo 19. Larger drain outfall structure with one way flow control to prevent water from backing up into the site during high flow and rain events. Note pipe is partially submerged in April 2018.

Photo 20. Easterly view looking downstream in Carneros Creek north of study area showing the mix of estuarine and riverine wetland habitats.

APPENDIX C

List of Plants Observed

Appendix C – List of Plants Observed Onsite

Scientific Name	Common Name	Wetland Indicator Status
Ambrosia psilostachya	Western ragweed	FACU
Atriplex lentiformis	Big saltbush (quail bush)	FAC
Avena barbata	Slender wild oats	UPL
Baccharis pilularis var. *consanguinea*	Coyote brush	UPL
*Beta vulgaris**	Beet	UPL
*Brassica nigra**	Mustard	UPL
*Bromus diandrus**	Ripgut brome	UPL
*Bromus hordeaceus**	Soft chess	FACU
Centromadia parryi ssp. *australis*#	Southern tarplant	FACW
*Convolvulus arvensis**	Field bindweed	UPL
Conyza (=Erigeron) canadensis	Horseweed	FACU
Cressa truxillensis	Alkali weed	FACW
*Cynodon dactylon**	Bermuda grass	FACU
Distichlis spicata	Saltgrass	FAC
*Erodium cicutarium**	Red-stemmed filaree	UPL
*Festuca perrenis**	Italian ryegrass	FAC
Frankenia salina	Alkali heath	FACW
*Hirschfeldia incana**	Summer mustard	UPL
Hordeum marinum ssp. *gussoneanum**	Mediterranean barley	FAC
Hordeum murinum ssp. *leporinum**	Barnyard foxtail	FACU
Isocoma menziesii	Goldenbush	FAC
*Lactuca serriola**	Prickly lettuce	UPL
Leymus (=Elymus) triticoides	Creeping wild rye	FAC
*Malva nicaeensis**	Mallow	UPL
*Parapholis incurva**	Sickle grass	FACU
*Picris (=Helminthotheca) echioides**	Bristly ox-tongue	FAC
*Plantago lanceolata**	English plantain	FAC
*Polypogon monspeliensis**	Rabbitfoot grass	FACW
*Raphanus sativus**	Wild radish	UPL
*Rumex crispus**	Curly dock	FACW
Sarcocornia pacifica	Pickleweed	OBL
Sonchus asper ssp. *asper**	Prickly sow thistle	FAC
Spergula marina	Salt sandspurry	OBL
Suaeda calceoliformis	Horned seablite	FACW
*Vulpia myuros**	Rattail fescue	UPL

**=Non-native Species*

 # = Special Status Species (California Rare Plant Rank 1B.1)