SANTA BARBARA AIRPORT, SANTA BARBARA, CALIFORNIA PROPOSED TAXIWAY B EXTENSION PROJECT

CONCEPTUAL HABITAT MITIGATION AND MONITORING PLAN

Prepared for:

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Federal Aviation Administration
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December 10, 2024

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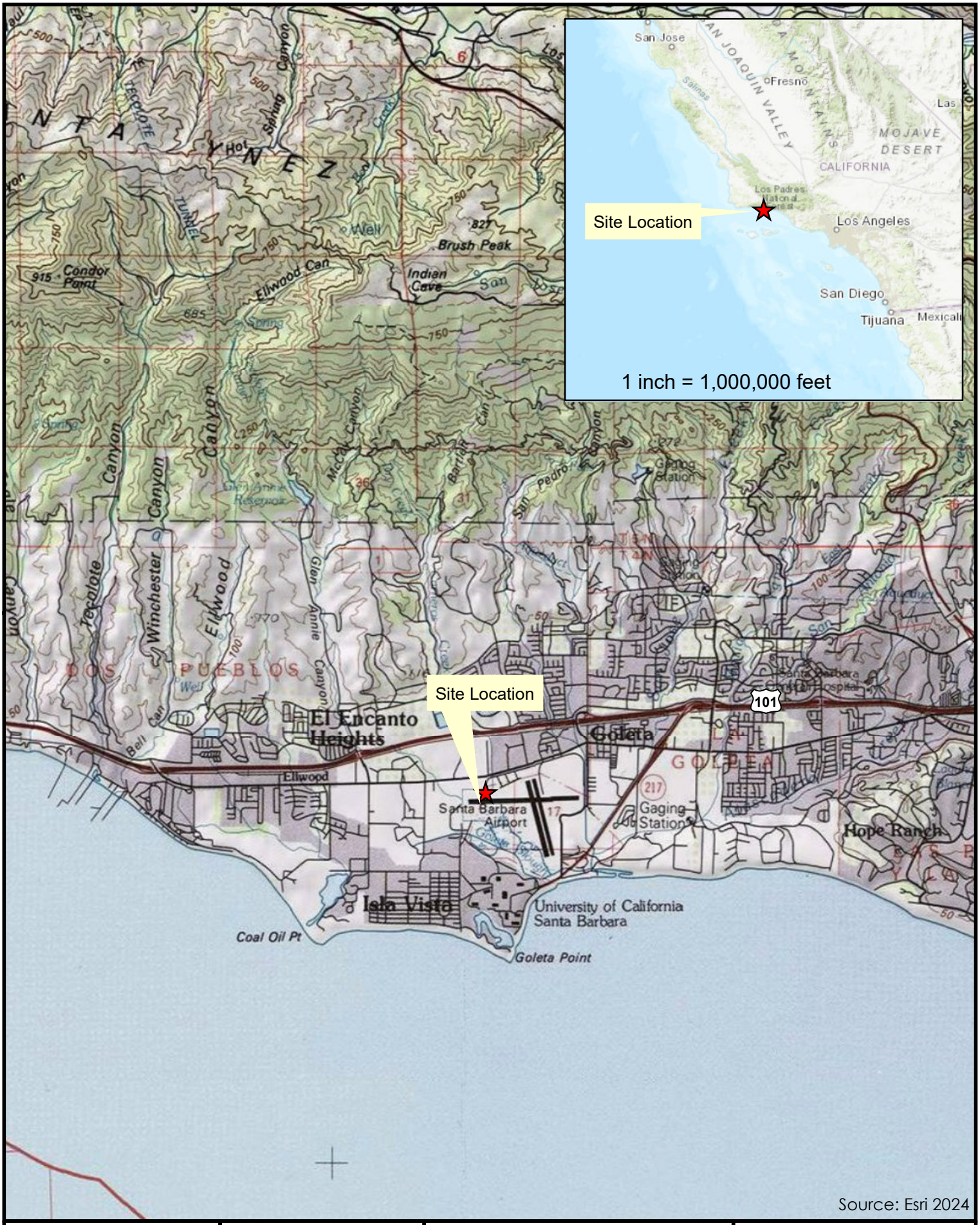
1.0 INTRODUCTION

Kevin Merk Associates, LLC (KMA) is providing this conceptual Habitat Mitigation and Monitoring Plan (HMMP) for the proposed Taxiway B (formerly Taxiway H) extension project on the Santa Barbara Airport to assist with local, state and federal permitting processes. As detailed in project plans (see Appendix A) and biological reports prepared for the project (KMA, 2020 and 2024), the proposed project would extend the Airport's existing partial parallel Taxiway B west 3,050 feet to the Runway 7-25 approach end, providing a full parallel taxiway on the north side of Runway 7-25. The project or action area was established to include the proposed development area and adjacent lands to be used for habitat mitigation (refer to the attached Figures 1 and 2). The action area was part of the historic Goleta Slough that was previously filled and graded for Airport construction. Topographic low areas have allowed wetland and moist grassland habitats to persist as shown on the Habitat Impact Map provided as Figure 3.

The development area is a generally flat terrace that was graded during runway construction to create a gentle swale-like basin with storm drain inlets in the lowest topographic points. Stormwater runoff from runways and developed areas is directed into the topographic low areas, where it is conveyed via pipes to Carneros Creek. Although storm drain system inlets are located throughout the area, the low areas collect seasonal surface water and maintain prolonged periods of saturated soils. Tidal and groundwater fluctuation also inhibits surface drainage during rain events. These areas support Pickleweed-Alkali Weed-Non-vegetated Flats wetland habitat encrusted with salts (Figure 3). Mesic (moist) grassland habitat surrounds the wetland areas and is dominated by non-native facultative species, such as Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), Italian ryegrass (*Festuca perennis*), and curly dock (*Rumex crispus*). The mesic grassland transitions to upland annual grassland composed of barnyard foxtail (*Hordeum murinum* ssp. *leporinum*), wild oat (*Avena barbata*), brome species (*Bromus diandrus* and *B. hordeaceus*), common beet (*Beta vulgaris*), summer mustard (*Hirschfeldia incana*) and bull mallow (*Malva nicaeensis*) (Figure 3). The action area, including portions of the site proposed for wetland habitat restoration north of Carneros Creek and south of Hollister Avenue, are regularly mowed, keeping vegetation height low and reducing available resources for wildlife. Maintaining low vegetation height and minimizing areas of prolonged ponded water that could be used by waterfowl are consistent with the Airport's wildlife hazard management program.

Permits issued by the Department of the Army under Title 33 CFR parts 325 and 332 (EPA 40 CFR part 230) must follow national regulations developed by the U.S. Army Corps of Engineers (USACE) and Environmental Protection Agency (EPA) requiring compensatory mitigation to offset unavoidable adverse impacts on wetlands, streams, and other aquatic resources to meet the goal of "no net loss" of acreage and function of these resources ("Mitigation Rule"). It is envisioned that this conceptual HMMP will be refined once the project moves to the permitting phase, and a final document will be prepared that follows the *Final Regional Compensatory Mitigation and Monitoring Guidelines for the South Pacific Division* (USACE 2015) and the *State Policy for Water Quality Control: State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State; Subpart J - Compensatory Mitigation for Losses of Aquatic Resources* (State Water Resources Control Board [SWRCB] 2021). The mitigation plan developed for this project is commensurate with the amount and type of impact to sufficiently replace lost aquatic resource functions. Mitigation ratios (area of habitat restoration/creation to area of habitat lost) are greater than 1:1 because mitigation sites often provide reduced functions in comparison with impacted resources (USACE 2015). For this project, a mitigation ratio for wetland impacts will be 4:1 to meet all agency requirements.



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1 inch = 8,000 feet

Proposed Taxiway B Extension Project

Santa Barbara Airport

Figure 1

Site Location Map

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N W E S

1 inch = 2,000 feet

Proposed Taxiway B Extension Project

Santa Barbara Airport

Figure 2

Aerial Overview Map

Habitat Types	Total (acres)	Perm. Impact (acres)	Temp. Impact (acres)
Annual Grassland	30.09	5.98	10.80
Big Saltbush - Menzies' Goldenbush	0.71	0.00	0.02
Coastal Scrub	4.33	0.00	0.79
Curly Dock - Alkali Mallow - Bulrush	4.15	0.00	0.46
Giant Reed	0.88	0.00	0.88
Introduced Perennial Grassland	2.08	0.00	2.08
Mediterranean Barley - Italian Ryegrass	6.32	1.92	4.34
Ornamental	0.42	0.00	0.00
Pickleweed - Alkali Weed and Non-Vegetated Flats	8.91	0.61	7.15
Riparian Scrub	12.38	0.00	0.36
Ruderal/Developed	35.62	1.95	3.90
Southern Tarplant	0.13	<0.01	0.11
Total Area	**106.02**	**10.46**	**30.89**

Action Area Boundary (106.02 acres)
Limits of Disturbance (41.46 acres)
Permanent Impact (10.46 acres)
Temporary Impact (30.89 acres)

Habitat Types
- Annual Grassland
- Big Saltbush-Menzies' Goldenbush
- Coastal Scrub
- Curly Dock - Alkali Mallow - Bulrush
- Giant reed
- Introduced Perennial Grassland
- Mediterranean Barley-Italian Ryegrass
- Ornamental
- Pickleweed-Alkali Weed and Non-Vegetated Flats
- Riparian Scrub
- Ruderal/Developed
- Southern Tarplant

Hydrologic Features
- Drain Inlets
- Drain Outlets
- Culvert

Hollister Avenue
Firestone Road
Sediment Basin
Sediment Basin
Carneros Creek
Tecolotito Creek
Pavement to remain 1.32 ac
Pavement to be removed 2.09 ac

Source: Esri 2024, Kimley-Horn 2020

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N W E S

1 in = 300 ft

300 150 0 300 Feet

Proposed Taxiway B Extension Project

Santa Barbara Airport

Figure 3

Habitat Impact Map

1.1 Goals and Objectives

The goal of the habitat mitigation or restoration program will be to provide compensatory mitigation for impacts to wetland habitats identified as wetland-waters of the United States anticipated to fall under the regulatory jurisdiction of the USACE, the Regional Water Quality Control Board (RWQCB), and the California Department of Fish and Wildlife (CDFW). The California Coastal Commission (CCC) and City of Santa Barbara (City) also have jurisdiction over the onsite wetlands including areas of mesic grasslands (one parameter coastal wetlands). The mitigation effort would compensate for all impacts to identified wetland habitats, and also include areas to mitigate impacts to a special status plant, southern tarplant (*Centromadia parryi* ssp. *australis*), observed in the action area. The mitigation program will include restoration of the areas temporarily disturbed during construction immediately adjacent to the project area, and create and enhance wetland areas to the north between Hollister Avenue and Carneros Creek. Creation of native wetland and moist grassland habitats will also occur where existing pavement is to be removed, and in areas of disturbed annual grassland that is currently functioning as upland habitat. Please refer to the attached Figures 3 and 4 for further detail.

For the mitigation area between Hollister Avenue and Carneros Creek to the north of Taxiway B, wetland habitat enhancement would occur by removing non-native species, such as giant reed (*Arundo donax*) and Harding grass (*Phalaris aquatica*). Minor contour grading will also occur to create topographic low areas for wetland creation, as well as to promote positive drainage toward Carneros Creek where existing culverts are located. Work in this area would also minimize seasonal standing water that attracts waterfowl consistent with the Airport's wildlife hazards abatement program. Please refer to the attached Draft Mitigation Drainage map prepared by Kimley-Horn included in Appendix A.

The area disturbed from non-native plant removal and minor contour grading would be seeded with native species characteristic of seasonal and perennial wetland habitat consistent with wetland areas impacted by the proposed taxiway project. Container plantings would also be installed in select areas north of Carneros Creek to further enhance wetland and riparian habitats in this area, especially following the removal of large swaths of giant reed. A set of management guidelines would be developed to assist Airport personnel with maintenance of the area, including seasonal removal of non-native vegetation, mowing, and trash/debris removal, as well as removal of sediment that may accumulate at the culverts. This habitat restoration effort would not only mitigate wetland habitat impacts from development of the proposed project, but would reduce flooding and wildlife hazards currently present in this area. It may also provide social benefits and education opportunities through the development of a walking trail along Hollister Avenue with educational signage.

2.0 PROJECT IMPACTS

The proposed project's overall area of disturbance is estimated to be approximately 59 acres; the civil design grading limits (i.e., areas of major construction) would be 20 acres (refer to the attached Site Plans). The proposed project would remove 0.8 acre of apron and replace it with taxiway and shoulder pavement. The Habitat Impact Map identifies approximately 10.46 acres of permanent habitat impacts associated with airfield improvements, impacting primarily non-native annual grassland habitats (Figure 3). This estimate also includes permanent and temporary impacts to ruderal/developed areas (i.e., existing pavement and base rock/gravel roads). Approximately 1.3 acres of existing Taxiway B pavement in the eastern part of the action area would remain, and is shown as permanently impacted by the project. Approximately 2.1 acres of pavement in this area, between the taxiway and runway, would be removed and replaced with native vegetation. This

area of pavement removal is shown as temporarily impacted on Figure 3. Overall, roughly 7.0 acres of taxiway and 3.0 acres of taxiway shoulder pavement would be constructed. The net increase of impervious surface from the proposed project is estimated to be 7.9 acres given the removal of 2.1 acres of pavement. A contractor staging area would be provided on the western end of the existing north GA ramp; haul routes would occur on existing paved areas and dirt roads already present on the Airport. A former landscaping nursery located south of Hollister Avenue would be repurposed as a staging area for the proposed habitat restoration activities along Hollister Avenue.

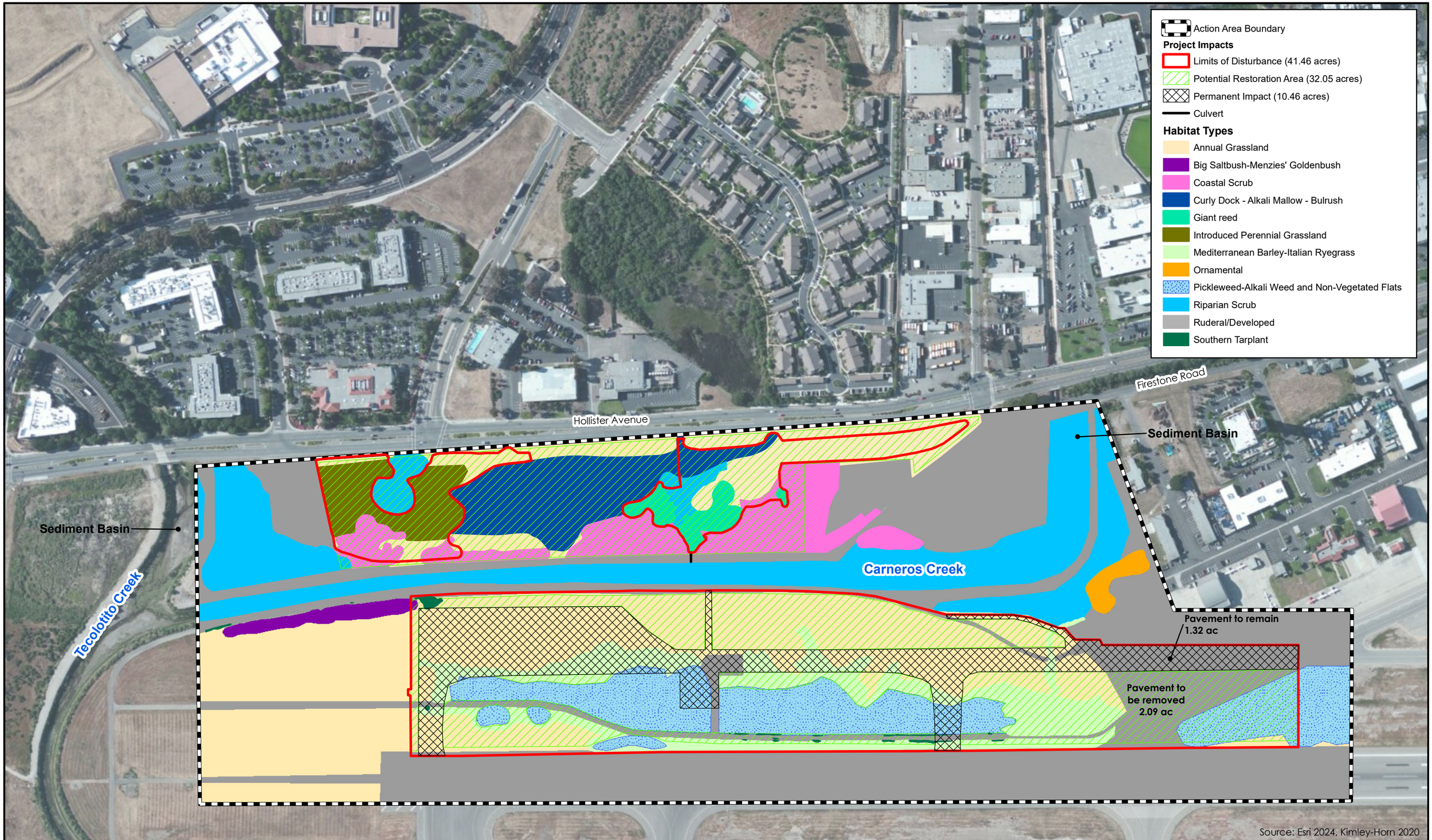
The attached Figure 4, Habitat Mitigation Overview Map, identifies approximately 32 acres of potential restoration area including those parts of the site that will only be temporarily impacted during construction. Figure 5, the Wetland Mitigation Concepts Map, provides further detail of the proposed habitat types that would be created and enhanced as part of the mitigation program. Temporary impacts would occur from minor grading and equipment access, and these areas would be restored using native species appropriate for airfield management practices. The existing acute-angled entrance to Runway 7-25 at the end of Taxiway C, included in ruderal/developed habitat, would have pavement/base rock removed and restored with native habitat. Temporarily disturbed ground will be returned to a natural grade and seeded with appropriate native species identified herein that can be managed consistent with current airport operations and maintenance to meet requirements established in the AC 150/5200-33C *Hazardous Wildlife Attractants on or near Airports.*

Table 1. Preliminary Wetland Habitat Impact Summary

Wetland Type	**Agency Jurisdiction***	**Permanent Impacts** (acre)	**Temporary Impacts** (acre)
Pickleweed-Alkali Weed and Non-Vegetated Flats	USACE, RWQCB, CDFW, City, CCC	0.61	7.15
Mediterranean Barley-Italian Ryegrass	City, CCC	1.92	4.34
Curly Dock-Alkali Mallow-Bulrush (in Mitigation Area)	USACE, RWQCB, CDFW, City, CCC	0	0.46
Giant Reed (in Mitigation Area)	USACE, RWQCB, CDFW, City, CCC	0	0.88

*The extent of Regulatory Agency jurisdiction has not been confirmed yet.

As currently planned, the project will permanently impact 0.61 acre of wetland habitat anticipated to be subject to the USACE jurisdiction pursuant to the federal Clean Water Act. The project will also temporarily impact approximately 7.15 acres of this perennial wetland habitat type that is adjacent to the development footprint. The Pickleweed-Alkali Weed-Non-vegetated flats would also fall under the



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N W E S

1 in = 300 ft

300 150 0 300 Feet

Proposed Taxiway B Extension Project

Santa Barbara Airport

Figure 4

Mitigation Overview Map

Action Area Boundary

Project Impacts

Limits of Disturbance (41.46 acres)

Permanent Impact (10.46 acres)

Culvert

Proposed Habitat Types

Created Freshwater Wetland (280,637 ft.^{2}/ 6.44 acres)

Created Mesic Grassland (423,316 ft.^{2}/ 9.71 acres)

Created Pickleweed-Alakli Weed Wetland (90,102 ft.^{2}/ 2.07 acres)

Enhanced Riparian (15,409 ft.^{2}/ 0.35 acre)

Enhanced Freshwater Wetland (19,759 ft.^{2}/ 0.45 acre)

Existing Habitat Types

Annual Grassland

Big Saltbush-Menzies' Goldenbush

Coastal Scrub

Curly Dock - Alkali Mallow - Bulrush

Mediterranean Barley-Italian Ryegrass

Ornamental

Pickleweed-Alkali Weed and Non-Vegetated Flats

Riparian Scrub

Ruderal/Developed

Southern Tarplant

Hollister Avenue

Firestone Road

Sediment Basin

Sediment Basin

Carneros Creek

Tecolotito Creek

Source: Esri 2024, Kimley-Horn 2020

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300 150 0 300 Feet

Proposed Taxiway B Extension Project

Santa Barbara Airport

Figure 5

Wetland Mitigation Concepts Map

RWQCB, CDFW, CCC and City jurisdictions pursuant to state and local regulations. While Mediterranean Barley-Italian Ryegrass is a common, non-native habitat, these two plants are facultative species, and this habitat area meets the definition as a coastal wetland subject to City and CCC requirements. The project would permanently impact 1.92 acres of one parameter wetland habitat characteristic of moist or mesic grasslands. Impacts to Curly Dock-Alkali Mallow-Bulrush (0.46 acre) and Giant Reed (0.88 acre) north of Carneros Creek, also anticipated to be subject to the USACE jurisdiction, will be temporary as part of the habitat restoration efforts. In addition, giant reed is a non-native species that is highly invasive in wetland and riparian habitats, and occurrences of this species north of Carneros Creek will be removed as part of the project. Minor contour grading will occur in this area to remove the non-native plant occurrences and prepare the site for seeding and planting. Assuming a 4:1 mitigation ratio (area restored to area impacted) will be used for this project to ensure the success of the restoration effort, a total of 2.44 acres of three parameter (or criteria) wetlands and 7.68 acres of one parameter wetlands will be required. Temporarily impacted wetland features will be restored in place at a 1:1 ratio. As shown on Figure 5, the Wetland Mitigation Concepts Map, ample area will exist on the project site post construction of the proposed Taxiway B extension to mitigate permanent and temporary impacts to wetland and mesic grassland habitats.

3.0 CONCEPTUAL MITIGATION PLAN

This conceptual Habitat Mitigation and Monitoring Plan has been developed to:

1) Provide habitat creation, restoration/re-establishment, rehabilitate and enhancement to increase wetland habitat surface area and biodiversity in the action area.
2) Ensure a no-net-loss of wetland habitats, including their functions and values, on the project site;
3) Repair drainage problems between Hollister Avenue and Carneros Creek;
4) Remove non-native and invasive plant species from the project site, and plant an appropriate assemblage of native species that can be easily managed by Airport personnel;
5) Avoid and minimize impacts to jurisdictional areas and special status species while meeting project goals and objectives; and,
6) Identify success criteria, monitoring methods, and management guidelines to ensure the success of the mitigation program.

It is envisioned the temporarily disturbed annual grassland and upland ruderal/developed areas around the new Taxiway B will become perennial wetland habitat with a native transition zone composed of moist grassland species. Habitat restoration activities in the northern part of the action area will create, restore/re-establish, rehabilitate and enhance wetland and upland habitats to compensate for those permanently lost as a result of the project. Temporarily disturbed areas will be restored at a 1:1 ratio and maintained to meet the goal of no-net-loss of surface area. With the appropriate seed application and planting, along with rigorous maintenance during the establishment period, the created and restored habitats will have better ecological functions and values than what currently exist once the project is completed. As stated above, habitat restoration activities will consist of a mix of native species that can be maintained consistent with the current management regime to meet requirements established in the FAA Advisory Circular (AC) 150/5200-33C *Hazardous Wildlife Attractants on or near Airports*.

3.1 Proposed Plant Palette

All disturbance areas will be stabilized post construction through seeding native species from the list shown in Table 2. All plant material to be used in the restoration effort will be custom collected

from the Goleta Slough area and applied along with appropriate erosion controls identified by the project engineer.

Table 2. Native Seed Mix

Scientific Name	Common Name	Application Rate (Lbs/acre)
Achillea millefolium	Common yarrow	1
Bromus carinatus var. *carinatus*	California brome	2
Carex barbarae	Santa Barbara sedge	2
Distichlis spicata	saltgrass	5
Eleocharis macrostachya	spikerush	3
Euthamia occidentalis	Western goldenrod	1
Hordeum brachyantherum	Meadow barley	5
Juncus effusus	Soft rush	2
Juncus phaeocephalus	Brown-headed rush	3
Leymus triticoides	Creeping ryegrass	5
Potentilla anserina ssp. *pacifica*	silverweed	1
Total		**30**

The seed mix was formulated by sampling vegetation in the Goleta Slough area and selecting key species that will establish without the need for prolonged supplemental irrigation. If the seed will be applied using hydroseeding techniques, it will be applied immediately following construction activities and prior to the start of fall rains. If seeding is delayed, weeds and dead or dried plant material occurring within the seeding area shall be removed from the surface prior to applying the hydroseed mix. The timeframe for hydroseed applications should not exceed one (1) hour from the time the native seed contacts the water until the entire batch is discharged onto the site. The following hydroseeding specifications are recommended:

- Conweb 1000 wood fiber mulch should be applied at a rate of 2000 pounds per acre;
- Ecology Controls M-Binder/Tack should be applied at a rate of 200 pounds per acre; and,
- AM 120 Mycorrhizal inoculum should be added at 60 pounds per acre.

At the discretion of the project restoration ecologist, organic fertilizer may be used. Fertilizer should be applied at a reduced rate of 100 pounds per acre (compared to a normal application rate of 200 pounds per acre) using Biosol Mix (7-2-3) organic fertilizer. Willow sprigging may also be used in the area north of Carneros Creek along the recontoured swales, but outside the flow line so as not to reduce flow rates. Arroyo willow (*Salix lasiolepis*) shrubs that are present onsite would be used as a source of propagules for any willow sprigging areas that would be identified in the field by the project team.

Select areas between Hollister Avenue and Carneros Creek will be identified for container plantings as part of the riparian restoration and wetland buffer zones, and will include the species as shown in Table 3.

Table 3. Riparian Plant Palette

Common Name	Scientific Name	Propagule Type*
California sycamore	*Platanus racemosa*	1-gallon container
Coast live oak	*Quercus agrifolia*	1-gallon container
Elderberry	*Sambucus nigra* ssp. *caerulea*	1-gallon container
Toyon	*Heteromeles arbutifolia*	1-gallon container

*1 gallon minimum container size. Larger container sizes may be used depending on availability.

3.2 Implementation Methods

A qualified restoration ecologist with experience implementing wetland and riparian habitat compensatory mitigation plans will direct the installation of propagules, and also oversee the maintenance of restoration plantings during the establishment period. Should willow sprigging be deemed appropriate, the restoration ecologist shall collect willow cuttings within the action area and install them following current industry standards. Seed application and willow stakes shall be installed after construction activities in the specific area are completed, and planting of container stock shall be conducted during the fall and winter following the completion of ground disturbance for the project or once irrigation is available at the mitigation site.

3.3 Plant Sources

All plant material will be collected from the Goleta Slough area to maintain local genetics. Seed and cuttings will be collected under the direction of a qualified restoration ecologist. Cuttings will be taken from willows within the contour grading area south of Hollister Avenue using loppers, and any small plants suitable for salvage and transplantation will be excavated prior to construction activities. If possible, cuttings will be taken during the dormancy period. Cuttings for live willow stakes will be 2 to 3-feet long and ½ to 1-inch diameter. Cuttings for live stakes shall be cut on a diagonal on the bottom end for easier installation and identification of the appropriate end to be placed in the ground. Should plant and seed collection from the site be unavailable, container stock and seed will be purchased from a native plant nursery or seed purveyor approved by the restoration ecologist. An effort shall be made to obtain plant material originated from wild sources as close to the project region as possible.

3.4 Mitigation Area Preparation

Temporarily disturbed areas will be recontoured according to site plans (see attached), track-walked or scarified, and stabilized at the direction of the project engineer. The mitigation area will be prepared by removing all non-native plants and the contour grading to create appropriate field conditions. Once the final contours are established, the entire area will be seeded (possibly hydroseeded) with the identified mix in Table 2. Once the site has been seeded, container plants along with a temporary irrigation system will be installed in select locations to be determined during the permitting phase.

3.5 Installation Methods

As stated above, seed will be applied to the site either using hand broadcasting or hydroseed methods. Willow sprigging, should that be deemed appropriate, shall be done by using a driving

bar or piece of rebar to create a hole approximately 12-16 inches deep, and then insert the cutting into the ground where it will contact subsurface moisture sufficient to promote development. Willow sprigs will be located a sufficient distance away from the re-established swale system so that the shrub/tree can be maintained to not obstruct flows once they have matured.

Container stock of native trees and shrubs shall be installed in the late-fall or winter after the soil has become moistened from seasonal rainfall or at the discretion of the restoration ecologist when a temporary irrigation is available. Methods for installation are as follows:

- Trees shall be planted approximately 15 feet on center, and shrubs 3 to 5 feet on center. In an effort to create a natural looking plant community and avoid a plantation appearance, these distances may be adjusted and groupings of plantings may be used as appropriate based on field conditions and professional expertise of the restoration ecologist. Species requiring wetter conditions shall be located closer to the swales or topographic low areas.
- A 3-foot diameter area centered at each planting hole will be manually cleared of all vegetative growth. All planting holes will be dug using hand tools equal to the depth and twice the width of the rootball or rhizome.
- Rootball cages may be used if pocket gophers (*Thomomys bottae*) or California ground squirrels (*Otospermophilus beecheyi*) are observed in the area.
- A low nitrogen, slow-release fertilizer such as Osmocote and a mycorrhizal inoculant may be added to the new planting holes to promote establishment as determined by the restoration ecologist.
- Rootballs of container plants will be minimally disturbed when planting. The crown of the rootball will be at or slightly above the surrounding finished grade. Native soil will be backfilled around the roots and compacted. A water well (i.e., small basin) will be established around the plant to direct irrigation water toward the root system. The water well will be mulched with compost or woodchips. Each planting shall be watered deeply after installation and soil moisture maintained during the establishment period.
- The container plants will be tagged and numbered following installation, and then mapped to track their establishment during the monitoring program (see As-built Planting Plan below).

3.6 Herbivore Protection

Individual trees and shrubs may be individually caged or installed in planting tubes, based upon the recommendations of the restoration ecologist. The ecologist shall assess the growth and resilience of the plants during the monitoring visits and remove the protective materials when the plants have become sturdy enough to withstand mild herbivory and before they overgrow the containments.

3.7 As-built Planting Plan

An as-built planting plan shall be prepared that shows the location, species and tagged number of each container plant installed. The seeded areas and locations of willow sprigging, if used, will also be mapped. The as-built planting plan shall be used to identify individual container plants and seeded areas for the assessment of performance standards during monitoring visits (see below). Photo stations shall also be established during the preparation of the as-built planting plan for annual monitoring and the locations of these stations shown on the as-built planting plan.

3.8 Irrigation

All container plantings in the mitigation area shall be irrigated following installation and receive regular irrigation during a two-year establishment period. It may be that overhead spray irrigation will be preferred, but other irrigation methods such as a drip irrigation system or use of water bags may be used to ensure plant establishment. Depending on the winter rain season, irrigation may not be required from December through April when the ground is saturated. Watering should cease once the third-year winter rains start, but the irrigation schedule may need to be extended if drought conditions occur. Once the restoration ecologist determines the planted vegetation has successfully established and soil moisture levels are being maintained by natural rainfall, irrigation can cease. The plants selected for this mitigation effort can persist in wetland and riparian habitats without long-term irrigation, and all irrigation equipment may be removed at the end of the establishment period.

3.9 Mitigation Area Maintenance

The restoration ecologist shall direct the maintenance activities for the mitigation areas during a five year monitoring period following seed application and container planting to ensure the successful establishment of the target vegetation. Maintenance shall include the removal of non-native plants, repairs to herbivore protection/fencing, removal of trash and debris, removal of dead plant material, and adjustments to the irrigation regime during the two year establishment period. Weeds will be removed from at least a three-foot radius around planted trees and shrubs before the weeds grow higher than the planted vegetation and prior to seed set. Weed abatement techniques shall follow those described by Bossard et al. (2000) and conducted under the supervision of the restoration ecologist. Weeds shall be removed primarily by hand near the installed plants; however, some mechanical removal (i.e., weed whacking, mowing, etc.) will be used consistent with current Airport practices. Herbicide may be used on noxious weeds that are not adequately controlled through hand or mechanical methods through spot spraying and/or wicking. Herbicides shall not be used in any area where they could wash into the stream and application must follow manufacturer's guidelines, as well as state and federal regulations. If native species appropriate for the target wetland and riparian communities propagate naturally, these species can remain as long as they do not crowd out the mitigation plantings, and may be counted towards the final success criteria.

Maintenance activities will be conducted twice a month during the first year, and then reduced to monthly based on field observations and the professional judgment of the restoration ecologist. If the site meets performance criteria at the end of Year 1, maintenance activities may be reduced to four times per year during Years 2 and 3. Maintenance will occur three times per year in Years 4 and 5. During the initial stages of the program, the restoration ecologist shall inspect the site after large storm events and work with the Airport maintenance division to determine if supplemental planting or erosion/sediment controls are necessary. If areas of erosion are observed within the restoration area, biotechnical erosion control practices shall be employed to remedy the problem. Seeding with the native seed mix in Table 2 along with a suitable erosion control blanket or a weed-free rice straw mulch can be used to reduce erosion on slopes until the vegetation becomes established. Project engineers will also be consulted to ensure the onsite erosion potential is reduced and maintained at low levels while vegetation becomes established.

Weed control will be conducted within the mitigation area to remove non-native plants that compete with native plants for space, soil moisture, nutrients, and sunlight. Non-native species will be selectively removed to promote natural succession of native species. The non-native weed abatement program will be implemented throughout the mitigation area in order to reduce

regrowth as much as possible. The primary objective is to reduce the cover of non-native species and increase cover of native species. Weed control activities will be intensive during the first year to combat the weeds present in the identified mitigation site. Following successful removal of the majority of weeds on the site, weed abatement activities would be reduced at the direction of the restoration ecologist for the remainder of the monitoring period as shown in the below Table 5. Depending on the success of the weed abatement efforts during the monitoring period, weed removal and site maintenance would be reduced to an as-needed basis by Airport personnel.

Mowing would occur as part of the long-term management of the site and should be done once the ground is sufficiently dry to not disturb the soil. Weed whacking could occur at any time. Non-native plant species removal will be overseen by the project restoration ecologist and coordinated with the agencies as appropriate. All individuals involved with the program will be educated about special status wildlife issues, native and non-native plant identification, and habitat mitigation and restoration goals.

3.10 Debris Removal

Removal of trash and debris will occur on an as-needed basis during the monitoring and maintenance period. Maintenance of the mitigation area will continue as-needed beyond the five year monitoring period consistent with current Airport practices, and also include removal of accumulated sediment at culverts to ensure proper function.

4.0 MONITORING AND ADAPTIVE MANAGEMENT PLAN

The mitigation area shall be assessed annually for five years. If the success criteria are not met for a particular year, adaptive management measures shall be implemented. The success criteria defined herein shall be met at the end of the five-year monitoring period, or the monitoring period will be extended on an annual basis until the final success criteria are met.

4.1 Monitoring Methods

The restoration ecologist shall collect monitoring data of the mitigation area annually during the five-year monitoring period (see below). Monitoring visits will occur in the spring (April) and fall (September) of each year. The as-built planting plan shall be referenced to determine the locations of each of the installed container plants and seed application areas. Survivorship of each container plant installed onsite shall be determined, and the vigor of each container plant categorized as one of the following values:

- 1 - Excellent: vigorous, healthy plant with no necrotic or chlorotic leaves;
- 2 - Good: plant healthy with some signs of growth;
- 3 - Adequate: plant healthy, no signs of growth and some necrosis or other damage present;
- 4 - Poor: low vitality, or main stem dead but basal sprouts emerging; and,
- 5 - Dead: no potential for recovery.

Vegetative cover of seeded areas and willow cuttings shall be assessed using standard protocols (Daubenmire [1968] or Bonham [1989]). Natural recruitment of native plant species that are components of the target riparian plant community will be documented at a qualitative level. Desirable native species (e.g., coast live oak, willows, coyote brush, and California blackberry) will be counted towards the overall performance criteria for the program.

Photo stations recorded in the as-built plan shall be used to track the success of the program. Photographs shall be taken during each monitoring visit from each of the photo stations and same compass direction, and included in a photo plate in the annual reports.

4.2 Performance Standards

Annual performance standards have been developed to track the success of the mitigation effort and as a trigger for remedial actions. During each monitoring year, the percent cover, survivorship and plant vigor shall meet or exceed the following criteria identified in Table 4. Tracking these annual goals will ensure that the mitigation program meets the goals and objectives of the HMMP at the end of the five-year monitoring period.

Table 4. Annual Performance Standards

Performance Standards	Year 1	Year 2	Year 3	Year 4	Year 5
Survivorship of container stock	95%	90%	85%	80%	80%
Average vigor rating of container stock	1.5	1.5	1.5	1.5	1.5
Percent cover of willow stakes	20%	30%	40%	45%	50%
Percent cover of native species in seeded areas*	40%	50%	60%	65%	75%

*Exceptions may be made for alkaline wetland areas and non-vegetated flats.

4.3 Adaptive Management

If the performance standards are not met for any of the annual monitoring periods, the restoration ecologist shall advise the Airport that additional actions are needed. The frequency of site maintenance, removal of non-native plants and/or irrigation frequency may be recommended to be increased. Dead or dying plants, or those with low vigor, shall be replaced as needed. Additional seed may be applied to bare soil areas to meet project goals for percent cover. Additional erosion control methods may be required, and modifications to herbivore protection may also be needed should browse or burrowing damage be observed at plant locations. Adaptive management measures employed in the field shall be described in the annual monitoring reports and evaluated for their success.

Unanticipated events may also trigger the need for adaptive management techniques, such as fire, herbivory, or anthropogenic activities such as vandalism in the mitigation area. The restoration ecologist shall coordinate with the applicant on the course of action and corrective measures. Large-scale corrective measures that require replanting more than 25% of the remediation area would require coordination with the permitting agencies.

4.4 Reporting

Annual reports shall be prepared by the restoration ecologist and submitted to the Airport. The Airport will be responsible for ensuring that monitoring reports are submitted to the USACE, RWQCB, CDFW, CCC and City by December 31st of each year. The Year 1 report is to include the schedule of compensatory mitigation activities, as-built planting plan, and before and after photographs of the mitigation area taken from the established photo stations. The report shall

detail any modifications that were necessary which deviated from the procedures described within the final agency-approved HMMP and recommendations to attain the final success criteria.

Each of the annual monitoring reports will detail the maintenance activities conducted, methods and results of the monitoring effort, evaluation of performance standards for the revegetation areas, and any adaptive management measures taken. Tables will be provided showing the data collected for each container planting and the percent cover of willow stakes and seeded areas. A plate of photographs will show the progress of the site from the established photo stations. Qualitative observations should also be described, such as presence of plant diseases, pests, herbivory, foliar die-off, signs of water stress, and details of any significant events that affected the success of the program.

4.5 Final Success Criteria

In Year 5, the mitigation and monitoring program will be deemed a success if the mitigation area supports a minimum of 2.44 acres of three parameter wetland habitat and a minimum of 7.68 acres of one parameter wetland habitat (mesic grassland). The mitigation area shall have at least 80% survivorship of the installed container plants with average vigor rating of 2 or lower, and at least 75% cover of native species in the seeded areas (Table 4). If willow cuttings are used, those areas shall have at least 50% areal cover of the area originally planted. Additionally, there should be at least three consecutive years in which the performance standards have been met without significant human intervention (i.e., artificial irrigation, supplemental planting, or any significant site modifications other than seasonal weed removal). If the final success criteria are not met within the five-year monitoring period, then the monitoring effort shall be extended on an annual basis until the final success criteria have been met. The restoration ecologist shall develop a supplemental plan to address those aspects of the mitigation program that did not meet the success criteria, which would be submitted by the Airport to the USACE, RWQCB, CDFW, CCC and City.

4.6 Natural Recruitment of Native Plant Species

Natural recruitment of native plant species will be monitored at a reconnaissance or qualitative level and dominant species observed colonizing the mitigation areas will be described in the annual reports. Native grasses, forbs, shrubs, and trees that colonize the mitigation area during the monitoring program and become established will be counted towards the overall performance criteria for the program. The desirable target species for recruitment in the mitigation areas include native willows, coast live oak, coyote brush, California coffeeberry, and blue elderberry in addition to other native shrubs and herbaceous species. Additionally, native herbaceous wetland species that may colonize the site include various rushes (*Juncus* spp.) and sedges (*Carex* spp.).

5.0 SCHEDULE

The anticipated tasks and schedule for each year during the monitoring program are summarized in Table 5. The Year 1 schedule may be adjusted to accommodate the actual start date based upon completion of the project and seasonally appropriate conditions for planting.

Table 5. Mitigation Area Maintenance, Monitoring and Reporting Schedule

YEAR 1	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Maintenance	X	X	X	X	X	X	X	X	X	X	X	X
Monitoring				X					X			
Annual Report												X
YEAR 2	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**
Maintenance		X		X		X			X			
Monitoring				X					X			
Annual Report												X
YEAR 3	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**
Maintenance		X		X		X			X			
Monitoring				X					X			
Annual Report												X
YEAR 4	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**
Maintenance		X		X		X						
Monitoring				X					X			
Annual Report												X
YEAR 5	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**
Maintenance		X		X		X						
Monitoring				X					X			
Annual Report												X

6.0 FINANCIAL ASSURANCES

The Airport will be responsible to implement and monitor the mitigation plan. Once the HMMP is finalized following review and approval of all involved regulatory agencies, a more precise budget will be developed. For developing the conceptual HMMP, the mitigation budget estimated for site preparation (earthwork, weed abatement), custom seed collection, plant propagation, seed application, plant installation, irrigation system installation, maintenance (5 years), monitoring (5 years) and reporting (5 years) is $390,400. This equates to an estimated cost of $160,000 per acre for creation/re-establishment/enhancement of 2.44 acres of perennial wetland, and is expected to include the creation/re-establishment of upwards of 7.68 acres of one-parameter seasonal wetland. Financial assurance to carry out all of the components of the HMMP shall be provided by the applicant.

7.0 COMPLETION OF MITIGATION RESPONSIBILITIES

Once the final success criteria have been met as described in above, a final compliance report shall be prepared by the restoration ecologist requesting that the applicant be released from further mitigation and monitoring activities. The final report will be provided to the Airport for submittal to the USACE, RWQCB, CDFW, CCC, and City. The program will be considered to be complete once concurrence letters have been received from each agency that the mitigation program has met its objectives and no additional monitoring or corrective actions are required.

8.0 LONG-TERM MANAGEMENT

The mitigation area shall remain as protected open space consistent with local, state and federal policies. No future development in these areas is anticipated and the native habitats to be restored will remain as protected open space. The mitigation area will be managed by the Airport consistent with guidelines to be developed in the final HMMP along with current airport operations and maintenance to meet requirements established in the AC 150/5200-33C *Hazardous Wildlife Attractants on or near Airports.*

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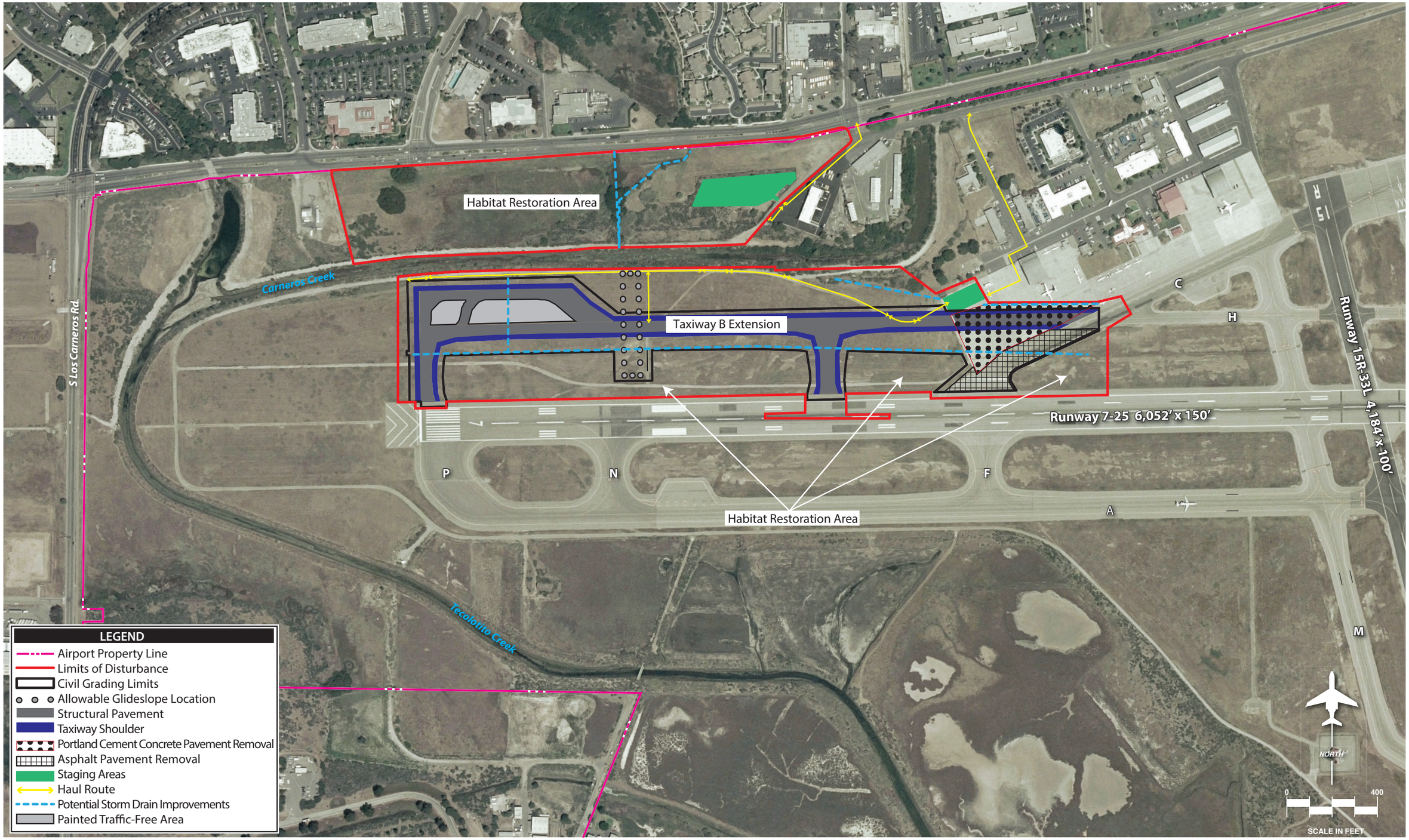
APPENDIX A

Site Plans

KMA



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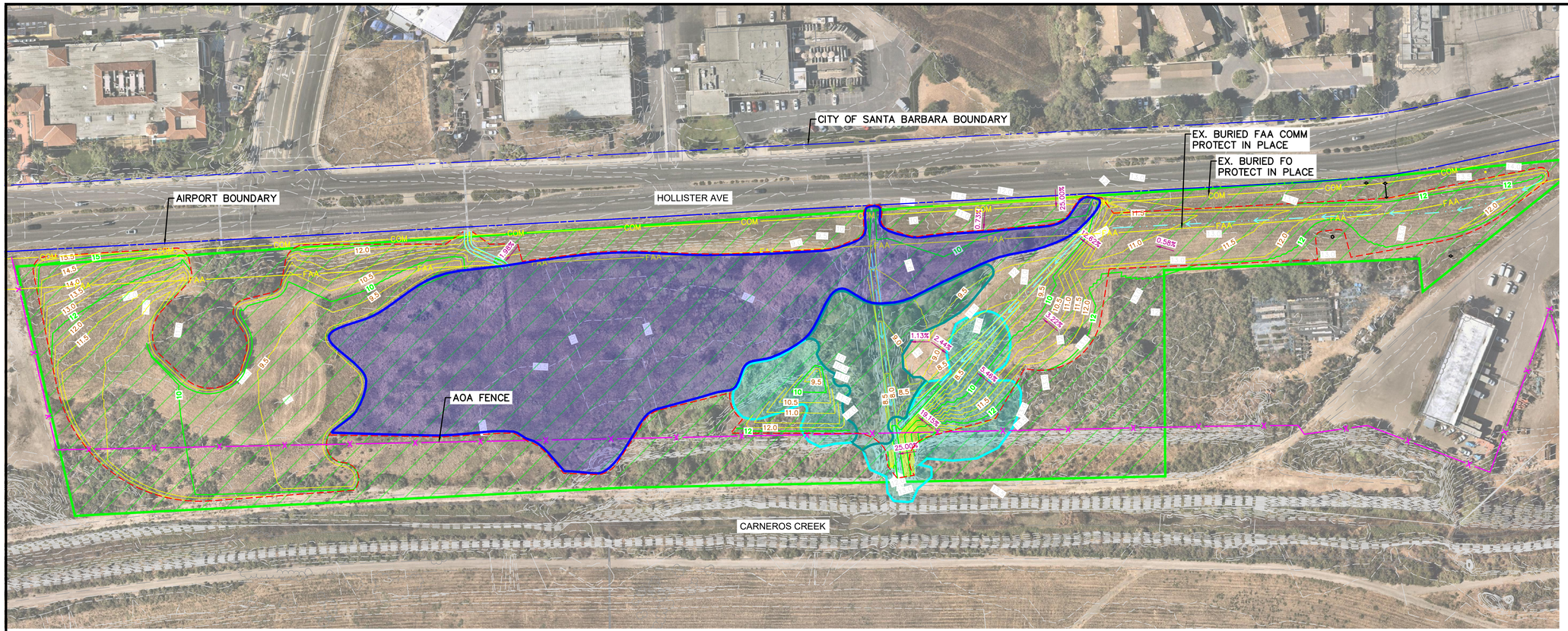
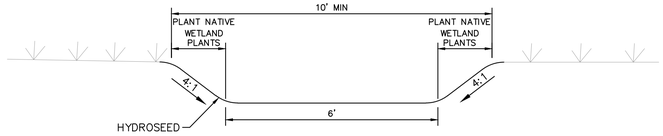
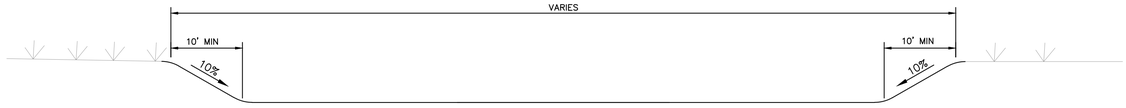




SWALE DETAIL
NTS



RETENTION BASIN DETAIL
NTS

LEGEND

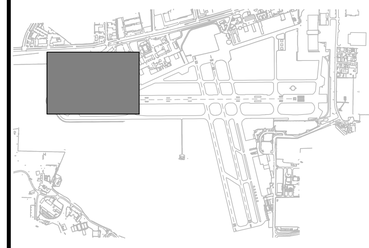
- POTENTIAL MITIGATION AREA
- APPROX WETLAND AREA
- RIPARIAN AREA
- ARUNDO DONAX AREA
- SWALE
- RETENTION BASIN BOUNDARY
- AIRPORT BOUNDARY
- CITY BOUNDARY
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR

NOTES

1. LOCATION OF COMMUNICATION LINE IS APPROXIMATE. VERIFICATION REQUIRED.

NORTH

GRAPHIC SCALE IN FEET
0 40 80 160



KEYMAP

811 Know what's below. Call before you dig.

NO.	DESCRIPTION	DATE	APPROVED

REVISIONS

DESIGN
DRAWN
CHECKED
FLD.BK.NO.
PAGE
ATLAS

Kimley»Horn

765 The City Drive, Suite 200
Orange, California 92868 (714) 939-1030

SANTA BARBARA MUNICIPAL AIRPORT
TAXIWAY H EXTENSION
ALTERNATIVE STUDY

MITIGATION DRAINAGE

CITY OF SANTA BARBARA
PUBLIC WORKS DEPARTMENT-ENGINEERING DIVISION
APPROVED : _____ DATE _____ ,20

SCALE
VERT. N/A
HOR. N/A

PROJ.NO. X-XX-XXXX-XXX
SHT. ___ OF 7 SHTS.
DWG.NO. C-X-AXXXX

APPENDIX B

Photo Plate

KMA

Appendix B. Photo Plate

Photo 1. View of mesic grassland in the proposed Taxiway B project area. This habitat is in a transition zone between the Pickleweed-Alkali Weed wetland and upland Annual Grassland that would be converted to native wetland and grassland habitats.

Photo 2. View of disturbed ground that would be converted to wetland habitat dominated by native species, including areas of southern tarplant.

Photo 3. Representative view of Pickleweed-Alkali Weed and Non-Vegetated Flats wetland that would be expanded onsite through creating swale-like topography adjacent to the proposed Taxiway B extension.

Photo 4. View of disturbed grassland dominated by non-native species in the project area that would be converted to mesic grassland and Pickleweed-Alkali Weed wetland by minor contour grading adjacent to the proposed Taxiway B extension.

Photo 5. View looking north of the proposed mitigation area between Carneros Creek and Hollister Avenue where existing wetland habitat would be expanded and enhanced through non-native plant removal, minor contour grading and introduction of native species.

Photo 6. View of Introduced Perennial Grassland and isolated arroyo willow shrubs in the near Hollister Avenue. Minor contour grading would remove the invasive Harding grass and create swale-like topography suitable for the creation of freshwater wetland habitat.

Photo 7. View of a pocket of native wetland habitat in an area of dense Harding Grass. Minor grading would remove the Harding grass and create suitable topography to expand wetland habitat north of Carneros Creek and south of Hollister Avenue.

Photo 8. Annual grassland in the northeast part of the mitigation area north of Carneros Creek would be graded to remove non-native species and support the creation of native wetland and mesic grassland habitats.

Photo 9. Representative view of a large patch of giant reed that would be removed to create areas for wetland expansion north of Carneros Creek.

Photo 10. An easterly view of annual grassland adjacent to Hollister Avenue that would be selectively graded to create swale-like topography suitable for the creation of freshwater wetland and mesic grassland habitats.