SANTA BARBARA AIRPORT

MASTER PLAN

SBA
Santa Barbara Airport

COMBINED DRAFT 01/15/2025

Mead&Hunt

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INVENTORY

1.1 INTRODUCTION

The primary purpose of the inventory chapter within the Airport Master Plan is to provide an understanding of the framework in which the Santa Barbara Municipal Airport (hereafter "SBA" or "the Airport") functions. The chapter will provide an overview of the Airport's history, a description of the Airport's location in comparison to other airports, and a review of the Airport's facilities. It will be used as a baseline for future facility requirements analysis and serve as the canvas upon which improvement alternatives are prepared and evaluated. **Chapter 1** focuses on an inventory of infrastructure. Environmental considerations are inventoried in **Chapter 2** and airport activity is inventoried in **Chapter 3**.

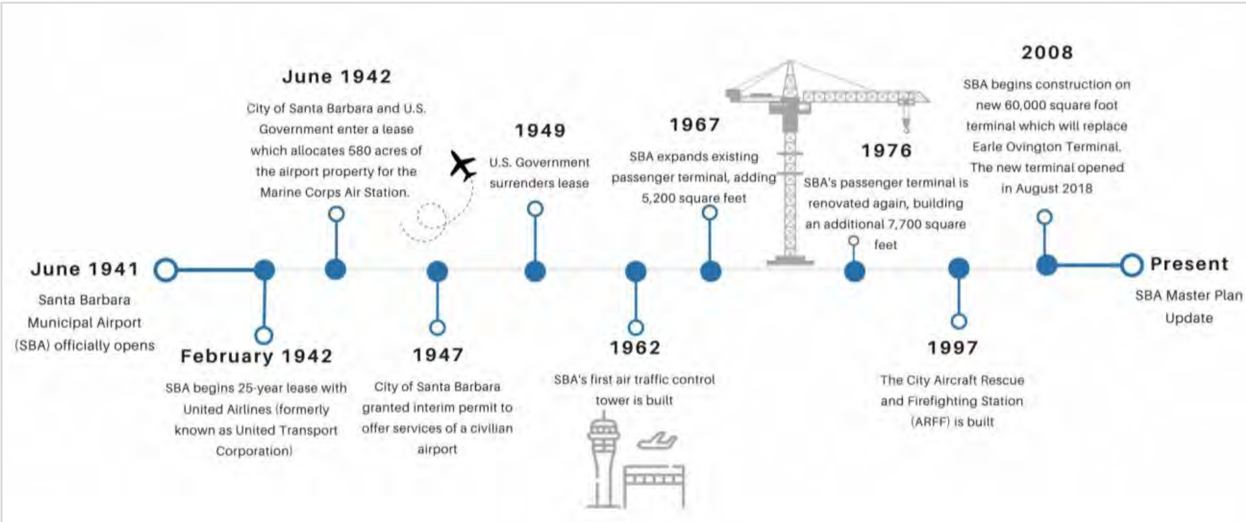
1.2 AIRPORT OVERVIEW

1.2.1.1 Airport History

Santa Barbara Municipal Airport (SBA) opened in June 1941. The following year, the Airport began a twenty-five-year lease with United Airlines that included the construction of a 7,000-square-foot passenger terminal. In June 1942, the City of Santa Barbara, and the U.S. Government entered a lease which allocated 580 acres of the Airport property for the Marine Corps Air Station. By the time the Marine Corps Air Station was completed, 5.5 million square-feet of asphalt runways, taxiways, aircraft parking aprons, and thirteen miles of paved roads were constructed. In 1947, the City was granted an interim permit to offer the services of a civilian airport. Two years later, the U.S. Government surrendered its lease, allowing the City of Santa Barbara to officially reclaim the airport.

Commercial air travel increased significantly in the 1960s due to increasingly affordable airline tickets, encouraging more emphasis on developing infrastructure at the Airport. As a result, SBA built its first air traffic control tower (ACTC) in 1962 and expanded their passenger terminal in 1967. Air travel continued to grow until a recession in the early 1990s.

Figure 1-1: Timeline of Santa Barbara Airport



Source: 2017 Santa Barbara Airport Master Plan

By the mid-2000s, it was determined that the original terminal building had outgrown its infrastructure once again, and a new 60,000 square foot terminal facility was built as a replacement. The new terminal was completed in August 2018 and features a classic Spanish colonial revival design and amenities on two main levels. Since the opening of the new terminal, SBA has experienced a 40% growth in passengers. In 2022, SBA is served by Alaska, American, Southwest, and United Airlines and hosts a wide array of general aviation and military users.

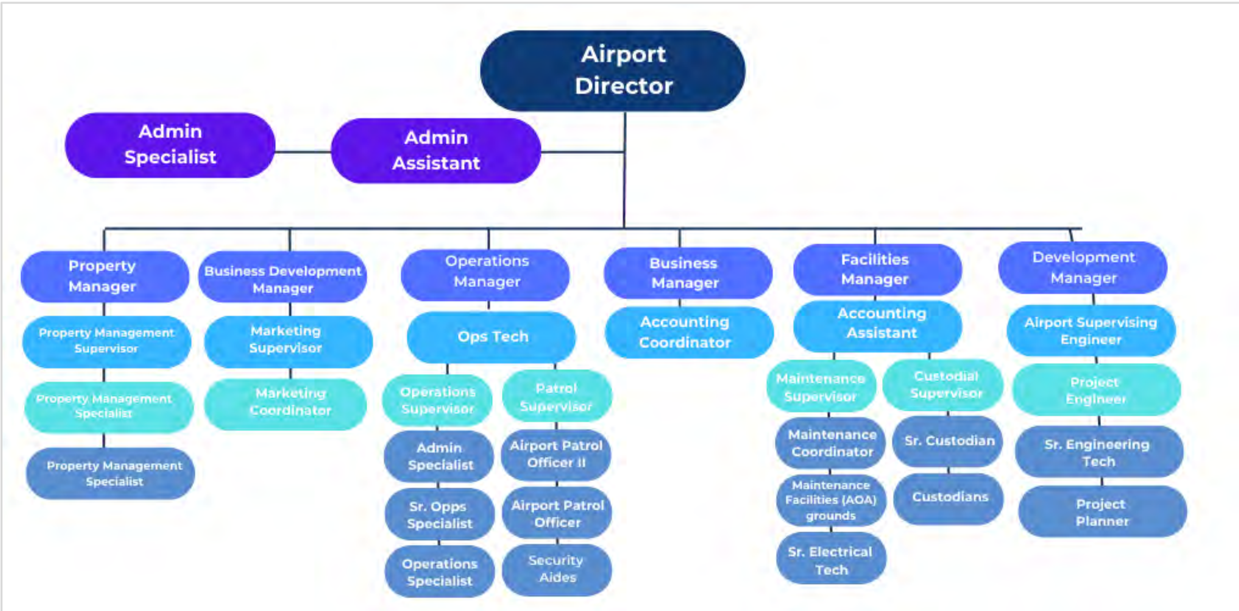
1.2.2 Operational Overview

The Federal Aviation Administration (FAA) categorizes airports with scheduled passenger airline service into five categories: Large Hub, Medium Hub, Small Hub, Non-Hub, and nonprimary commercial service. The criterion for each designation depends on the percentage of annual U.S. commercial enplanements, or passengers boarding a plane. Santa Barbara Airport is classified as a "Small Hub" airport, which is defined as an airport which receives between 0.25 percent - 1.0 percent of total annual U.S. commercial enplanements.

This classification, which is recorded in the FAA's *National Plan of Integrated Airport Systems* (NPIAS) makes the Airport eligible for federal funding under the Airport Improvement Program (AIP).

The Airport is owned and operated by the City of Santa Barbara. The airport director oversees the management of six operating divisions within the Airport Department. The operating divisions include: Property Management, Business Development, Business, Operations, Facilities, and Development.

Figure 1-2: **Santa Barbara Airport Organizational Chart**



Source: Santa Barbara Airport

In addition to the six Airport Divisions, there is a seven-member airport commission which advises the City Council on issues such as selection and appointment of an airport director, terms and conditions of leases, contracts, and agreements, pertaining to operation of the airport, rules and regulations related to operation and maintenance of the airport, and preparation of development plans, financial plans, and budget. The Commission consists of four members who must be electors of the City and three members who may be City or County residents.

1.2.3 Airport Location

While SBA is owned and operated by the City of Santa Barbara, it is immediately surrounded by the City of Goleta, University of California, Santa Barbara (UCSB) and unincorporated Santa Barbara County. The Airport is located on the coast, towards the southern end of Santa Barbara County. Santa Barbara Airport is ten miles north of downtown Santa Barbara, 100 miles north of Los Angeles, and 350 miles south of San Francisco.

1.2.4 Airport Property

The Airport occupies 952 acres and resides between the Santa Ynez Mountains and Pacific Ocean. The Goleta Slough is an ecological reserve that spans 430 acres inside the airport property boundary. It is an area of tidal marsh and wetlands, which drains into the Pacific Ocean. The Airport property includes 400 acres designated for aviation use and 100 acres designated for commercial / industrial use. The 60,000 square foot passenger terminal, which was completed in 2018, is in the southwest quadrant of the Airport.

Figure 1-3: **Airport Property Map**

Source: Mead & Hunt, Inc.

1.2.5 Airport Terminal

The Airport's original 7,000 square foot passenger terminal was completed in 1942. In 1967, this terminal was renamed to honor Earle Ovington, a local aviator. When the new terminal was completed, the original terminal was relocated to the east side of the Airport. The original terminal was also raised two feet in order to be above the 100-year floodplain. Currently, the terminal is 60,000 square feet and the Airport is pursuing Leadership in Energy and Environmental Design (LEED) certification.

The passenger terminal building consists of five gates with adjoining passenger holding areas, a 4,082 square foot ticketing and baggage screening area, a 3,900 square foot security checkpoint area, a 3,300 square foot baggage claim area with a 2,400 square foot inbound baggage room, three post-security concessions, two pairs of public restrooms, and a car rental counter. Gates 1 and 2 are located in the south departure holding area, which spans 2,800 square feet. The north departure holding area, which is 2,700 square feet, provides seating for gates 3, 4, and 5.

The passenger ticketing area is located immediately to the north of the terminal main entrance. Airline offices are located immediately behind the passenger ticketing area. Checked bags are transported on conveyor belts from the passenger ticketing area to the baggage screening rooms, which are located to the west of the ticketing counter. The security checkpoint is on the second floor of the airport, located directly in front of the escalators. There are three post-security concessions: the Costa Terraza Restaurant and Tapas Bar, The Coffee Bean, and Santa Barbara News and Gifts.

Baggage claim is located on the first floor in the southeast corner of the Airport. The rental car counter is also in the southeast corner of the first floor, offering 50 square feet of counter space. Currently the Airport is served by Hertz, Budget, Avis, National, Alamo, Advantage, and Enterprise.

1.2.6 Area Airports

Figure 1-4 shows all major airports within 100 miles of Santa Barbara Airport. Los Angeles International Airport (LAX) is the largest airport in the vicinity and is classified by the FAA as a Large Hub Airport. Other airports within 40 nautical miles of Santa Barbara Airport include Oxnard Airport (OXR), Santa Maria Airport (SMX), and Vandenberg Space Force Base (VBG).

The closest airport which is comparable to SBA in terms of size and annual enplanements is San Luis Obispo Regional Airport, which is over 60 nautical miles away.

Figure 1-4: **Airports within 100 Miles of SBA**

APPROXIMATE DISTANCE (MILES*) TO LOCAL AREA AIRPORTS

Code	Airport Name	Drive	Fly
OXR	Oxnard Airport	47	39
CMA	Camarillo Airport	52	45
VBG	Vandenberg Air Force Base	56	47
SMX	Santa Maria Airport	65	48
VNY	Van Nuys Airport	89	79
SBP	San Luis Obispo County Regional Airport	94	72
WHP	Whiteman Airport	101	82
LAX	Los Angeles International Airport	106	89
BUR	Hollywood Burbank Airport	106	86
WJF	General William J. Fox Airfield	120	95
LGB	Long Beach Airport	125	106
PRB	Paso Robles Municipal Airport	132	97
L45	Bakersfield Municipal Airport	154	78
MHV	Mojave Air and Space Port	160	106
BFL	Meadows Field Airport	162	82

*Driving and flying miles are shown as statute miles

Source: Mead & Hunt, Inc.

1.3 AIRFIELD AND AIRSPACE

1.3.1 Runway System

Santa Barbara has three runways: one primary runway (7/25) and two crosswind runways (15R/33L and 15L/33R). Runway, 7/25 is the primary runway, measuring 6,052 feet long and 150 feet wide. It runs east to west. The primary runway has a 20-foot-wide paved shoulder and a 200-foot blast pad on the western end of the runway. In 2008, this runway was shifted 800 feet to the west in order to take Fairview Avenue out of the Runway Safety Area (RSA) and Object Free Area (OFA). The crosswind runways, 15L/33R and 15R/33L, are oriented northwest to southeast. Runway 15L/33R measures 4,180 feet long and 75 feet wide, and runway 15R/33L measures 4,184 feet wide and 100 feet long. Runway attributes are shown in **Table 1-2** and **Figure 1-5.**

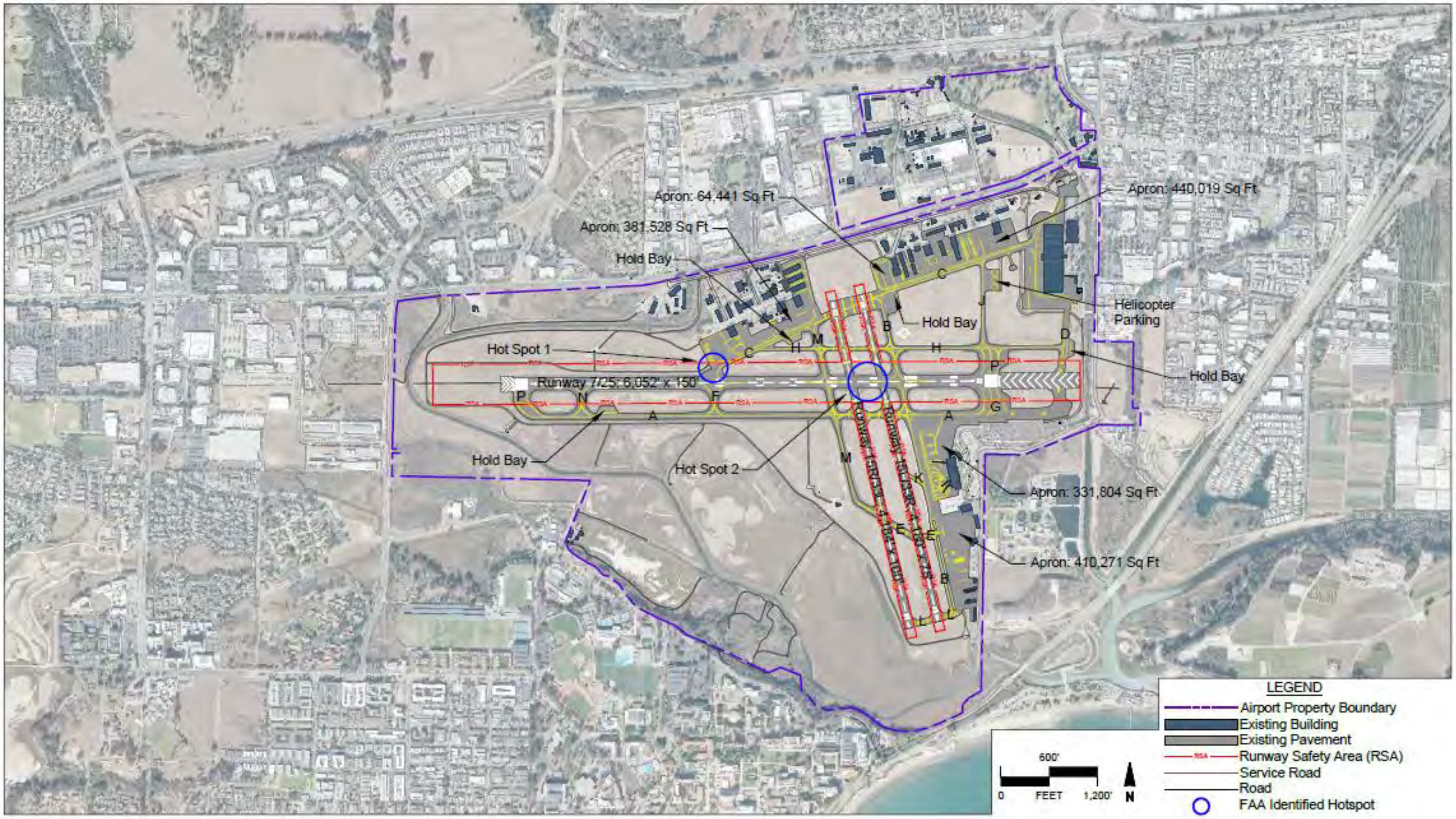
1.3.2 Runway Attributes

Table 1-2: **Runway Attributes**

	RUNWAY 7/25		RUNWAY 15L/33R		RUNWAY 15R/33L	
Dimensions	6052 ft. x 150 ft.		4180 ft. x 75 ft.		4184 ft. x 100 ft.	
	RUNWAY 7	**RUNWAY 25**	**RUNWAY 15L**	**RUNWAY 33R**	**RUNWAY 15R**	**RUNWAY 33L**
Pavement Type	Asphalt	Asphalt	Asphalt	Asphalt	Asphalt	Asphalt
Orientation	89°	269°	166°	346°	166°	346°
Latitude	34° 25' 38.9964" N	34° 25' 40.5035" N	34° 25' 50.8102" N	34° 25' 10.7491" N	34° 25' 49.9454" N	34° 25' 9.846" N
Longitude	119° 51' 16.7098" W	119° 50' 4.4836" W	119° 50' 25.3281" W	119° 50' 12.9814" W	119° 50' 29.533" W	119° 50' 17.1654" W

Source: ADIP

Figure 1-5: Airfield Runways and Taxiways



Source: Mead & Hunt, Inc

1.3.3 Pavement Conditions

In July 2021, The City of Santa Barbara conducted a pavement condition analysis of SBA's airside pavement. The inspection involved a visual assessment and a rating scale of 0 to 100. Conditions are rated according to the US Army Corps of Engineers Pavement Condition Index (PCI) methods described in the FAA Advisory Circular, AC 150/5380-6B, Guidelines and Procedures for Maintenance of Airport Pavements. A PCI of 100 represents new pavement in excellent condition. Numeric deductions are then made for measure pavement distress, with a failing PCI rating eventually at 0.

The airfield is divided into branches (taxiways, runways, vehicle lanes and aprons). Each branch is then divided into sections, those sections are then reviewed as part of the detailed PCI inspection every 36 months per FAA Part 139 requirements. Monthly inspections of the airfield operations area (AOA) are also conducted, and reports are filed to fulfill FAA requirements.

Runway 7/25, along with the NE Apron, AC Term Apron, and PCC Term Apron are in excellent condition. While Taxiway M, portions of Taxiway D, a segment of the North Ramp Road Apron and the PCC South GA apron are showing pavement distress and are under monitoring for maintenance and repair.

1.3.4 Taxiway System

Taxiways on the airfield are currently identified with a single letter A through H or with a letter and number, such as A1. Taxiway naming reflects the 2024 AMSL project.

Table 1-3: Taxiway Attributes

Taxiway Name	Taxiway Length	Location
Taxiway A	75 ft	Parallel taxiway to runway 7-25
Taxiway A1	250 ft	Exit / connecting taxiway from taxiway A to runway 25 threshold
Taxiway A3	90 ft	Exit / connecting taxiway from taxiway A to runway 7- 25
Taxiway A4	100 ft	Exit / connecting taxiway 800 feet east on runway 7 threshold
Taxiway A5	225 ft	Exit / connecting taxiway from taxiway A to runway 7 threshold
Taxiway B	50 ft	Partial parallel taxiway on north side on runway 7-25
Taxiway B1	90 ft	Exit / connecting taxiway from taxiway B to runway 25 threshold
Taxiway C	50 - 227 ft	Connecting taxiway for north general aviation ramp to runway 15R – 15L thresholds and taxiway A3
Taxiway D	50 - 90 ft	Partial – parallel taxiway on west side of runway 15R – 33L and connecting taxiway between crosswind runways connecting taxiway D to taxiway E
Taxiway E	40 - 90 ft	Parallel to runway 15L – 33R
Taxiway E1	75 ft	Exit / connecting taxiway from taxiway E to runway 33R threshold
Taxiway E2	60 ft	Connecting taxiway connecting taxiway E to taxiway D at runway 15L/33R
Taxiway E3	40 ft	Exit taxiway from runway 15L-33R to taxiway E
Taxiway F	50 ft	Connecting taxiway connecting taxiway C to taxiway B
Taxiway G	50 ft	Connecting taxiway connecting cargo apron to taxiway

Taxiway H	75 ft	Exit / connecting taxiway between runway ends 33L and 33R

Source: Santa Barbara 2024 AMSL Project

1.3.5 Hot Spots

A hot spot is a location on an airport movement area with a history or potential risk of collision or runway incursion. These areas require heightened attention by pilots and airport personnel who may be on the airfield.

At SBA, there are two hot spots. The first is the intersection between Taxiway C and Runway 7 and the second hot spot is where runway 7/25 and both crosswind runways intersect. Hot spots are displayed in **Figure 1-5: Airfield Runways and Taxiways**.

1.4 NAVIGATIONAL AIDS, LIGHTING SYSTEMS, AND SHELTERS

Airfield lighting helps pilots locate the runway and airport environment at night and in situations with low visibility. At SBA, the airfield lighting is categorized by their function.

1.4.1 Runway and Taxiway Lighting

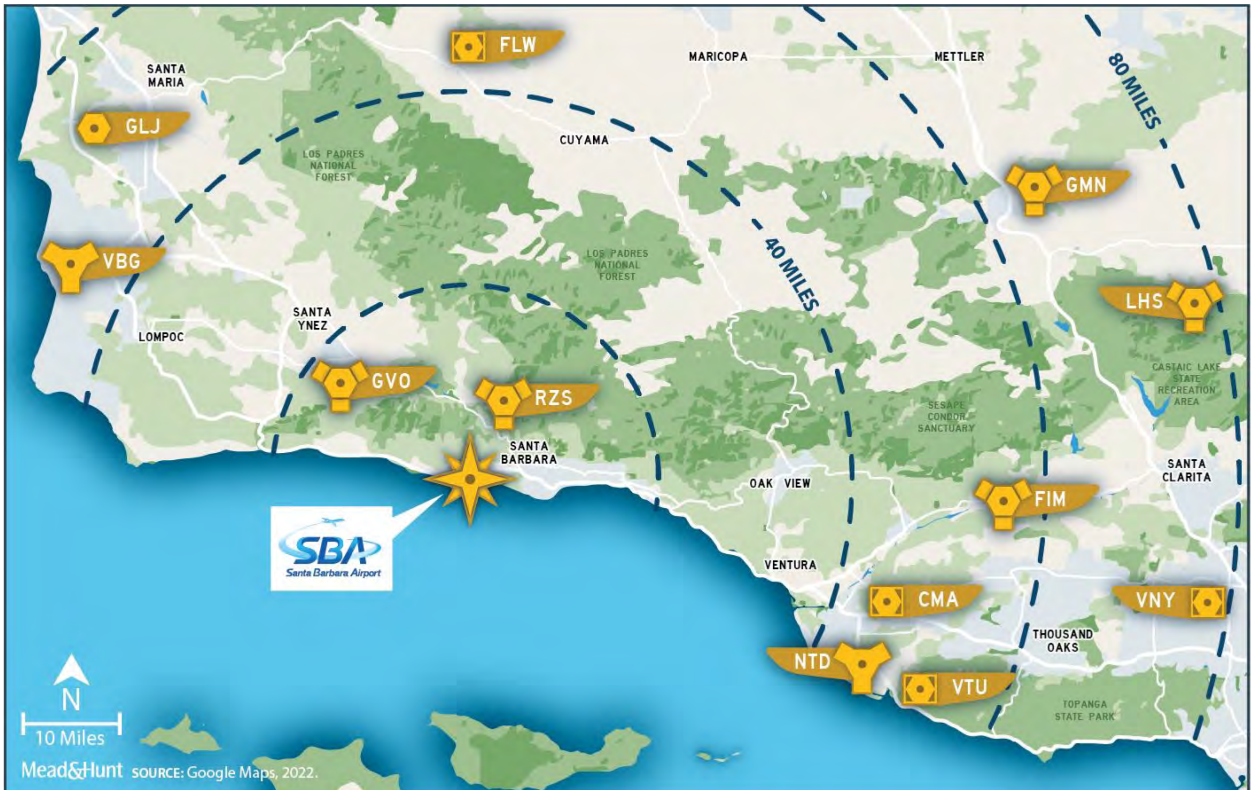
Runway 7 is equipped with Medium Intensity Approach Lights with Runway Alignment Indicators (MALSR). The approach lighting system begins at the runway end and extends into the approach for 1,400 feet, with lights every 200 feet along the runway centerline. No other runway ends have approach lighting systems. The crosswind runways do not have lighting. In addition to MALSR, the primary and crosswind runways all have Runway End Identifier Lights (REIL) and Precision Approach Path Indicator (PAPI) lights.

1.4.2 Navigational Aids (NAVAIDS)

Navigational Aids (NAVAIDS) are electronic or visual devices that provide guidance and positional information to aircraft. Pilots are able to translate those radio frequencies to point-to-point guidance and position information. NAVAIDs include ground-based electronic and visual systems and space-based global positioning system (GPS) satellites.

Electronic NAVAIDs can transmit information to aircraft systems and allow pilots to navigate and operate in weather that has reduced visibility. Visual NAVAIDS assist pilots with airport location, runway orientation, approach, and navigating in the terminal environment under visual conditions. At SBA, the available navigational aids are VOR and GPS (global positioning system). See **Figure 1-6** for specific information on NAVAIDS in the area around the Airport.

Figure 1-6: **Location of NAVAIDS near SBA**



NAVAID LOCATIONS NEAR SBA

ID	Name	Type	Distance*	Bearing	Frequency
RZS	San Marcos	VORTAC	06.1 nm	214.9°	114.90 MHz
GVO	Gaviota	VORTAC	13.9 nm	117.0°	113.80 MHz
CMA	Camarillo	VOR/DME	39.3 nm	289.3°	115.80 MHz
FLW	Fellows	VOR/DME	40.0 nm	178.3°	117.50 MHz
NTD	Point Mugu	TACAN	40.1 nm	297.2°	110.60 MHz
VGB	Vandenberg	TACAN	41.1 nm	116.4°	112.25 MHz
VTU	Ventura	VOR/DME	43.6 nm	295.6°	108.20 MHz
GLJ	Guadalupe	VOR	46.1 nm	133.1°	113.05 MHz
FIM	Fillmore	VORTAC	47.9 nm	275.3°	112.50 MHz
GMN	Gorman	VORTAC	53.6 nm	245.2°	116.10 MHz

*Map distancess are shown as statute miles, nautical miles (nm) are used in the table

KEY

VOR — TACAN — VOR/DME — VORTAC

Source: Mead & Hunt, Inc

1.4.3 Instrument Procedures on Airport Equipment

Instrument Approach Procedures (IAP) are a series of predetermined maneuvers by reference to flight instruments with specified protection from obstacles from the initial approach point to landing. IAP charts provide information to enable pilots to safely fly approaches in low visibility or otherwise challenging circumstances.

Instrument Flight Rules (IFR) and Visual Flight Rules (VFR) are the two sets of rules for flying aircraft. Pilots typically decide whether to use IFR or VFR based on weather conditions. Under VFR, an aircraft is flown similarly to driving a car – the pilot can visually see where they are going. Pilots using VFR are not able to fly though conditions with limited visibility, such as clouds or fog, and will need to divert if necessary. Under

IFR rules, pilots are authorized to fly in low visibility and zero visibility, however additional time is required when preparing a flight plan.

Table 1-4 summarizes the runway approach procedures at Santa Barbara Airport.

Table 1-4: **Approach Instrument Procedures**

Runway End	Procedure	Procedure Type	Aircraft Categories	Minimum Descent Altitude in ft. AGL (Above Ground Level)	Visibility Minimums
7	ILS	Precision	A, B, C, D	200	½ mi
	SLOC	Non-Precision	A, B	487	½ mi
			C	487	¾ mi
			D	487	1 mi
	CIRCLING	Non-Precision	A	787	1 mi
			B	787	1 ¼ mi
			C	787	2 ¼ mi
			D	987	3 mi
7 (RNAV)	LPV DA	Non-Precision	A, B, C, D	367	¾ mi
	LNAV/ VNAV DA	Non-Precision	A, B	853	2 mi
			C	547	1 mi
			D	547	1 ¼ mi
	LNAV MDA	Non-Precision	A, B	547	½ mi
			C	547	1 mi
			D	547	1 ¼ mi
	CIRCLING	Non - Precision	A	800	1 mi
			B	800	1 ¼ mi
			C	800	2 ½ mi
			D	1000	3 mi
25	VOR or GPS	Non-Precision	A, B	910	1 ¼ mi
			C	910	2 ¾ mi
			D	910	3 mi

Source: Mead & Hunt, Inc.

1.5 CARGO FACILITIES

1.5.1 Air Cargo

Air cargo describes the combined activities of air mail and air freight operations. The term includes a range of businesses which provide services that support the movement of air freight. Currently, Ameriflight (on behalf of UPS) and FedEx conduct operations out of SBA.

1.5.2 Cargo Facilities

Ameriflight and FedEx operate out of cargo facilities located in the northeastern quadrant of the airport, indicated in **figure 1-5**. FedEx uses the 10,000 square foot facility on the eastern side while Ameriflight uses the 83,000 square foot facility directly west of FedEx. Upon arrival, aircraft's cargo is off loaded on the north general aviation ramp. Ameriflight's cargo is then loaded into delivery trucks and send off for distribution. FedEx operates an on-site cargo handling facility. Cargo facilities are displayed in **Figure 1-5.**

1.6 SUPPORT FACILITIES

1.6.1 Air Traffic Control Tower

Air Traffic Control Towers (ACTC) coordinate takeoffs, landings, ground traffic and aircrafts in flight within five miles of the airport. Santa Barbara's first ACTC was built in 1962 as a response to the growing air traffic at SBA and was renovated in 1998. The new facility is now a combined ATCT and Terminal Radar Approach Control (TRACON) facility. A TRACON contains radar operations from which air traffic controllers direct aircraft during descent, departure, and approach phases of flight.

At SBA, the ACTC/TRACON is located on the north side of the airport (south of Hollister Ave.) and is approximately 9,500 square feet. It is operated daily from 6:00am – 11:00pm. The ATCT controls the class C airspace surrounding the Airport. Location of Air Traffic Control Tower is displayed in **Figure 1-5.**

1.6.2 Fuel Storage

The Airport has identified the need for fuel storage facilities. Currently Atlantic Aviation owns two 20,000-gallon Jet A fuel storage tanks and one (100LL) 12,000-gallon storage tank. Atlantic Aviation owns two 20,000-gallon Jet A fuel storage tanks and one (100LL) 12,000-gallon storage tank. The Airport noted two separate occasions in the past five years where the airport ran out of fuel due to road conditions. The amount of fuel on site would last the airport "a few days" before running out. See **Figure 1-5** for the locations of the on-site fuel farm and 100LL self-fueling station.

1.6.3 Aircraft Rescue and Firefighting (ARFF)

Aircraft Rescue and Firefighting (ARFF) is available for emergency response, mitigation, evacuation, and rescue of passengers and crew of aircraft in the case one is involved in an aviation accident. Airports with scheduled passenger flights (referred to as a Part 139 airport by the FAA) are required to have firefighters and firefighting apparatus on site and ready any time an aircraft operates. The ARFF was built in 1997 and is 8,000 square feet. Prior to the ARFF Santa Barbara County maintained firefighting infrastructure for the airport.

1.6.4 Airport Administrative Office

The SBA visitor center, and administrative building is located at 601 Firestone Road on the eastern side of the Airport, by general aviation facilities and FBOs.

1.7 ACCESS & CIRCULATION

The purpose of the preliminary traffic analysis is to evaluate potential circulation deficiencies in the immediate vicinity of SBA that may result from the growth in commercial and general aviation projected over the next twenty years and recommend potential improvements that may be needed.

The initial memorandum documents existing conditions in the preliminary traffic analysis study area, analyzing traditional level-of-service metrics often used in local traffic operations assessments, as opposed to vehicle miles traveled (VMT) based analysis which is necessary for environmental analysis of traffic impacts. The memorandum covers Task 5.6 Access and Circulation of the scope of work for the engagement between Walker Consultants and Mead & Hunt.

Based on the preliminary level of service analysis for existing conditions, the study intersections are operating at an acceptable level of service with plenty of intersection and roadway capacity to spare for existing conditions. **See Appendix A for full Access and Circulation Report.**

1.8 UTILITIES

Table 1-5: Utilities

UTILITY	PROVIDER
GAS	PACIFIC GAS & ELECTRIC
WATER	GOLETA WATER UTILITY
ELECTRIC	PACIFIC GAS & ELECTRIC
SEWAGE	GOLETA SANITARY DISTRICT
TRASH / RECYCLING	INTERNAL

Figure 1-7: **Figure 1: Santa Barbara Airport Water and Sewage Lines**

Source: Mead & Hunt, Inc.

1.9 NON-AERONAUTICAL PROPERTIES

1.9.1 Land Use & Zoning

The Non-Aeronautical Property is zoned as SP6-AIA (Airport Industrial Area Specific Plan) by the City of Santa Barbara (City of Santa Barbara 2022). The Santa Barbara Airport Industrial Area Specific Plan (City of Santa Barbara 2017) includes six zoning/land use districts. The Non-Aeronautical Property includes the following zoning/land use districts: A-C (Airport Commercial), (A-C-R (Airport Commercial Recreational Zone), and A-I-1 and A-I-2 (Airport Industrial 1 and 2).

Existing land uses within the Non-Aeronautical Property include commercial, industrial, and recreational (i.e., Twin Lakes Golf Course) uses, as well as a surface parking lot for airport use. San Pedro Creek traverses the Non-Aeronautical Property along of the eastern and southern boundaries of Twin Lakes Golf Course, and Las Vegas Creek flows through the middle of the Twin Lakes Golf Course. The Non-Aeronautical Property is composed of approximately 85.6 acres of land outside of public rights-of-way (i.e., roadways) that could be developed pursuant to the City's development standards.

The City of Santa Barbara General Plan directs readers to the City of Santa Barbara Coastal Plan for land use designations within the Non-Aeronautical Property. Pursuant to the City of Santa Barbara Coastal Plan: Airport and Goleta Slough (City of Santa Barbara 1982), the Non-Aeronautical Property is designated as "Major Public and Institution." The land use designations within the Non-Aeronautical Property pursuant to the Santa Barbara Airport Industrial Area Specific Plan are previously discussed under "Existing Zoning," as the zoning designations are synonymous with land use designations within the Specific Plan (City of Santa Barbara 2017).

See Appendix B for full Non-Aeronautical Properties Report.

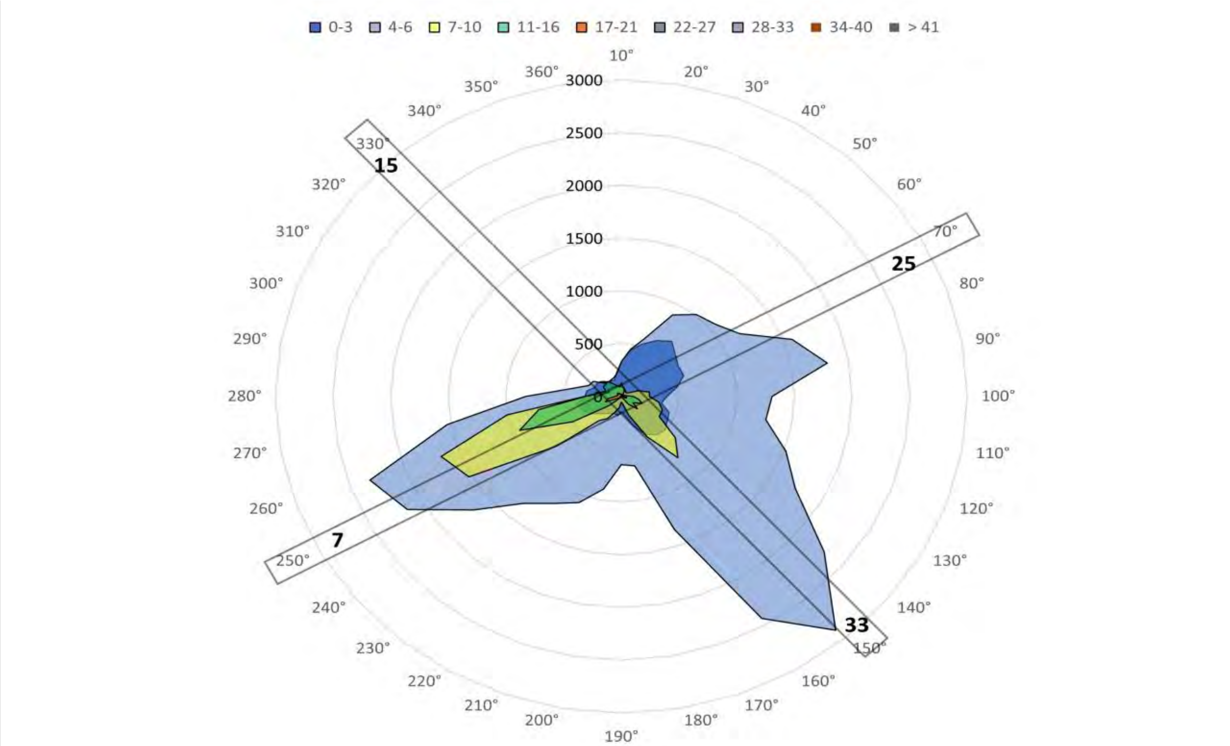
1.10 CLIMATE DATA

Wind direction and speed determine which runways are used at airports. Aircraft takeoff and land into the wind whenever possible. Understanding wind patterns at airports is instrumental in order to maintain runways and ensure efficiency of flights.

Santa Barbara has an average daily high temperature of 75 degrees Fahrenheit and an average low temperature of 40 degrees Fahrenheit. On average, the area accumulates 4 inches of precipitation annually, with an average of .34 inches per month. December through April tend to produce the most precipitation throughout the year. The average wind speed in Santa Barbara is four miles per hour, with April being the windiest month averaging wind speeds at five miles per hour. The velocity and direction of wind is important in aviation – particularly during takeoff and landing.

The following graphics, **Figure 1-14, Figure 1-15,** and **Figure 1-16,** display reported wind speeds on the primary and crosswind runways over the past year. Graphics are divided into three categories: All Weather, Visual Flight Rules (VFR), and Instrument Flight Rules (IFR). The FAA requires crosswind utilization of at minimum 95 percent to be eligible for ACI funding, as noted in **Table 1 -6 through 1-8,** all runways meet this requirement.

Figure 1-8: **All Weather Wind Rose**

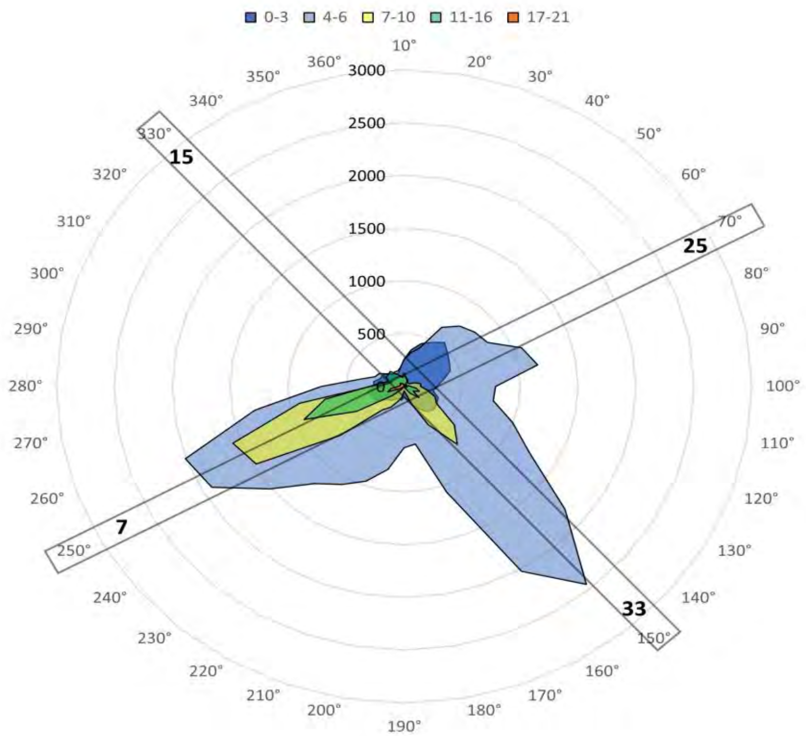


Source: Mead & Hunt

Table 1 – 6: All Weather Wind Utilization

All Weather				
Runway	**Crosswind Component (knots)**			
	10.5	**13**	**16**	**20**
15/33	96.17%	97.70%	99.38%	99.87%
7/25	98.55%	99.28%	99.82%	99.97%
Combined	99.84%	99.98%	100.00%	100.00%

Figure 1-9: **VFR Wind Patterns**

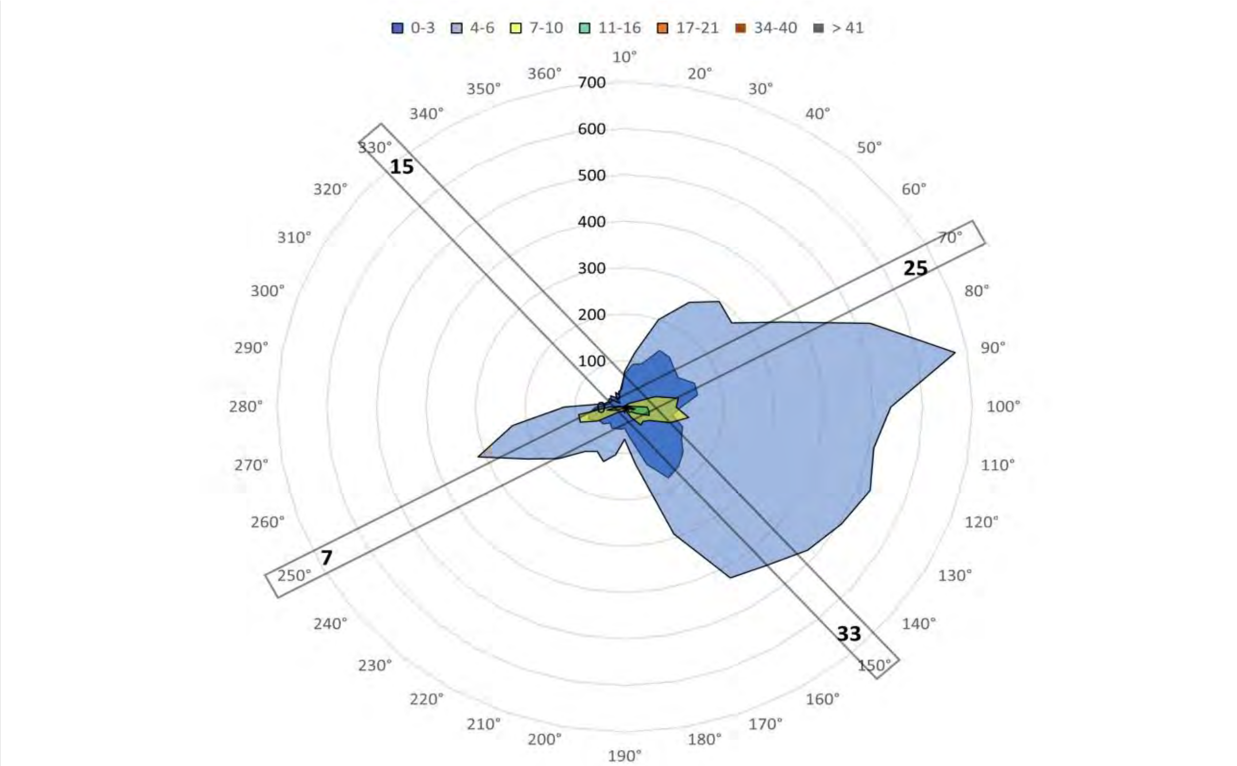


Source: Mead & Hunt

Table 1 – 7: VFR Weather Wind Utilization

VFR				
Runway	**Crosswind Component (knots)**			
	10.5	**13**	**16**	**20**
15/33	95.66%	97.37%	99.29%	99.85%
7/25	98.33%	99.17%	99.79%	99.97%
Combined	99.83%	99.98%	100.00%	100.00%

Figure 1-10: **IFR Wind Rose**



Source: Mead & Hunt

Table 1 – 8: IFR Weather Wind Utilization

IFR				
Runway	**Crosswind Component (knots)**			
	10.5	**13**	**16**	**20**
15/33	98.51%	99.18%	99.80%	99.97%
7/25	99.57%	99.80%	99.95%	99.99%
Combined	99.90%	99.98%	100.00%	100.00%

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ENVIRONMENTAL CONDITIONS

2.1 INTRODUCTION

The purpose of this Environmental Inventory chapter is to establish a baseline of existing environmental conditions on the Santa Barbara Airport. Airfield development projects, improvements or other projects will be analyzed in subsequent chapters of this Master Plan and the environmental conditions described here will be used to weigh the development options.

2.2 BIOLOGICAL RESOURCES

Section prepared by Rincon Consultants, Inc.

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2.2.1 Summary

This Environmental Inventory provides an assessment of biological resources located in the main Airport Property (Study Area) of the Santa Barbara Airport, including the areas identified as airfield and airspace, air cargo, support, non-aero support, and environmental inventory. The Study Area includes Goleta Slough, open areas, and portions of San Pedro Creek, Tecolotito Creek, and Carneros Creek that overlap with the Study Area. The Study Area is roughly bounded by Hollister Avenue to the north, Los Carneros Road to the west, Mesa Road and State Route 217 to the south, and Moffett Place, James Fowler Road, and South Fairview Avenue to the east. Portions of the property identified as General Aviation and Terminal Area are not included within the Study Area assessed in this report.

The entirety of the 752-acre Study Area is operated by the City of Santa Barbara and is largely comprised of development associated with Santa Barbara Airport facilities. The remainder of the Study Area is a large portion of the Goleta Slough State Ecological Reserve, creek segments, and various other habitats that have been modified by adjacent land use and development. The Study Area is located within the Coastal Zone, as designated by the California Coastal Commission.

The primary California Department of Fish and Wildlife (CDFW) sensitive natural community occurring in the Study Area is southern coastal salt marsh, which is present in Goleta Slough. In addition, creeks onsite have riparian corridors vegetated in part by arroyo willow thickets, which is a CDFW sensitive natural community. Furthermore, San Pedro Creek is federally designated critical habitat for southern California steelhead (National Marine Fisheries Service [NMFS] 2022).

There are 14 special-status plant species and 20 special-status wildlife species that have moderate or high probability of occurring in the Study Area or are considered present as they have been documented in the Study Area. Species reasonably anticipated to occur were determined based on the published ranges of the species, and the type, extent, and condition of habitat available at the site. Sensitive bird species that have been observed foraging or soaring in the Study Area but lack suitable nesting habitat are not presumed to be present.

2.2.2 Special-Status Plant Species

- Present
  - California seablite (*Suaeda californica*; Federally Endangered [FE], California Rare Plant Rank [CRPR] 1B.1)
  - Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*; CRPR 1B.1, Locally Rare [LR])
  - Leopold rush (*Juncus acutus* ssp. *leopoldii*; LR)
  - Parish's glasswort (*Arthrocnemum subterminale*; LR)
  - Santa Barbara honeysuckle (*Lonicera subspicata* var. *subspicata*; CRPR 1B.2)
  - Shore grass (*Distichlis littoralis*; LR)
  - Short-seeded waterwort (*Elatine brachysperma*; LR)
  - Southern tarplant (*Centromadia parryi* ssp. *australis*; CRPR 1B.1, LR)
- High Potential
  - Estuary seablite (*Suaeda esteroa*; CRPR 1B.2, LR)
- Moderate Potential:
  - Black-flowered figwort (*Scrophularia atrata*; CRPR 1B.2)

- Coulter's saltbush (*Atriplex coulteri*; CRPR 1B.2, LR)
- Davidson’s saltscale (*Atriplex serenana* var. *davidsonii*; CRPR 1B.2, LR)
- Nuttall’s scrub oak (*Quercus dumosa*; CRPR 1B.1)
- Saltwort (*Batis maritima*; LR)

2.2.3 Special-Status Wildlife Species

- Present
  - Tidewater goby (*Eucyclogobius newberryi*; FE, State Candidate [SC])
  - Steelhead, Southern California Distinct Population Segment (DPS) (*Oncorhynchus mykiss irideus*; FE, SC)
  - Western snowy plover (*Charadrius nivosus*; Federally Threatened, CDFW Species of Special Concern [SSC])
  - Great egret (*Ardea alba*; CDFW Special Animal [SA])
  - Great blue heron (*Ardea herodias*; CDFW SA)
  - Snowy egret (*Egretta thula*; CDFW SA)
  - Double-crested cormorant *(Nannopterum auritum*; CDFW Watch List [WL])
  - Belding’s savannah sparrow (*Passerculus sandwichensis beldingi*; State Endangered)
  - Black-crowned night heron (*Nycticorax nycticorax*; CDFW SA)
  - White-tailed kite (*Elanus leucurus*; CDFW Fully Protected)
- High Potential to Occur
  - Cooper's hawk (*Accipiter cooperii*; CDFW WL)
- Moderate Potential to Occur
  - Burrowing owl (*Athene cunicularia*; CDFW SSC)
  - California horned lark (*Eremophila alpestris actia*; CDFW WL)
  - Northern California legless lizard (*Anniella pulchra*; CDFW SSC)
  - Tricolored blackbird (*Agelaius tricolor*; State Threatened, CDFW SSC)
  - Western pond turtle (*Emys marmorata*; CDFW SSC)
  - Coast horned lizard (*Phrynosoma blainvillii*; CDFW SSC)
  - Coast patch-nosed snake (*Salvadora hexalepis virgultea*; CDFW SSC)
  - Two-striped garter snake (*Thamnophis hammondi*; CDFW SSC)
  - Crotch bumble bee (*Bombus crotchii*; SC)
  - Mimic tryonia (*Tryonia imitator*; CDFW SA)

2.2.4 Study Area Location

This Environmental Overview provides an inventory of biological resources present in the main Santa Barbara Airport Property (Study Area) and those with the potential to occur. The Study Area is roughly bounded by Hollister Avenue to the north, Los Carneros Road to the west, Mesa Road and State Route 217 to the south, and Moffett Place, James Fowler Road, and South Fairview Avenue to the east. Portions of the property identified as General Aviation and Terminal Area are not included within the Study Area assessed in this report. (**Figure 2-1**). The center of the Study Area is located at approximately 34.425901°N, -119.843672°W, Township 4N, Range 28W (no section) in the *Goleta, California* U. S. Geological Survey (USGS) quadrangle (**Figure 2-2**). The 752-acre Study Area is primarily occupied by Santa Barbara Airport facilities (structures and runways) and the Goleta Slough. The Study Area also includes segments of San Pedro Creek, Carneros Creek, and Tecolotito Creek. The Study Area is located within the Coastal Zone as designated by the California Coastal Commission (CCC). Although the Study Area is located in Goleta, the Santa Barbara Airport is under the jurisdiction of the City of Santa Barbara.

2.2.5 Regulatory Summary

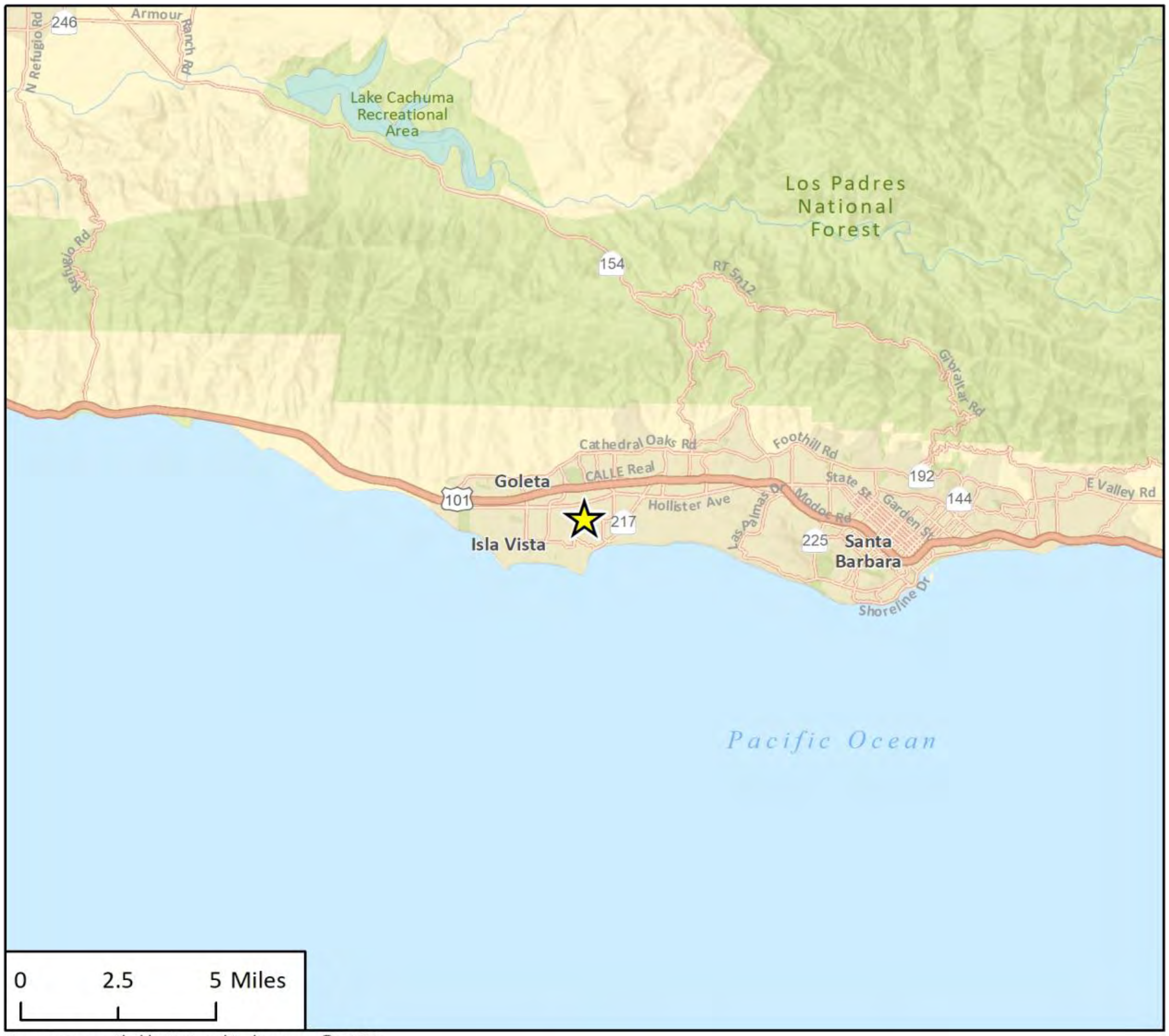
Regulated or sensitive biological resources studied and analyzed herein include special-status plant and wildlife species, nesting birds and raptors, sensitive plant communities, jurisdictional waters, including wetlands, wildlife movement, and regionally protected resources, such as protected trees. Regulatory authority over biological resources is shared by federal, State, and local authorities. Primary authority for regulation of general biological resources lies within the land use control and planning authority of local jurisdictions (in this instance, the City of Santa Barbara).

2.2.5.1 Environmental Statutes

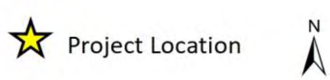
For the purpose of this report, sensitive biological resources were assessed based on the following statutes:

- National Environmental Policy Act (NEPA)
- California Environmental Quality Act (CEQA)
- Federal Endangered Species Act (ESA)
- California Endangered Species Act (CESA)
- Federal Clean Water Act (CWA)
- California Fish and Game Code (CFGC)
- Migratory Bird Treaty Act (MBTA)
- The Bald and Golden Eagle Protection Act
- Porter-Cologne Water Quality Control Act
- City of Santa Barbara Coastal Land Use Plan (2019)
- City of Santa Barbara General Plan (2011)
- Santa Barbara Municipal Code (2022)

Figure 2-1: Regional Location Map



Basemap provided by Esri and its licensors © 2022.



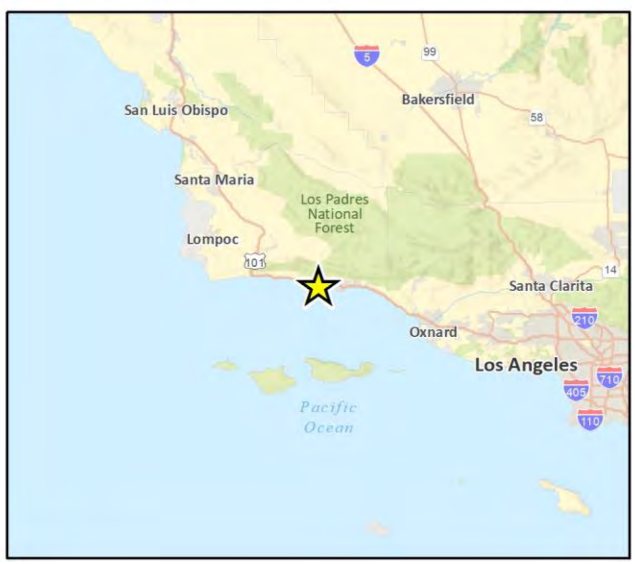
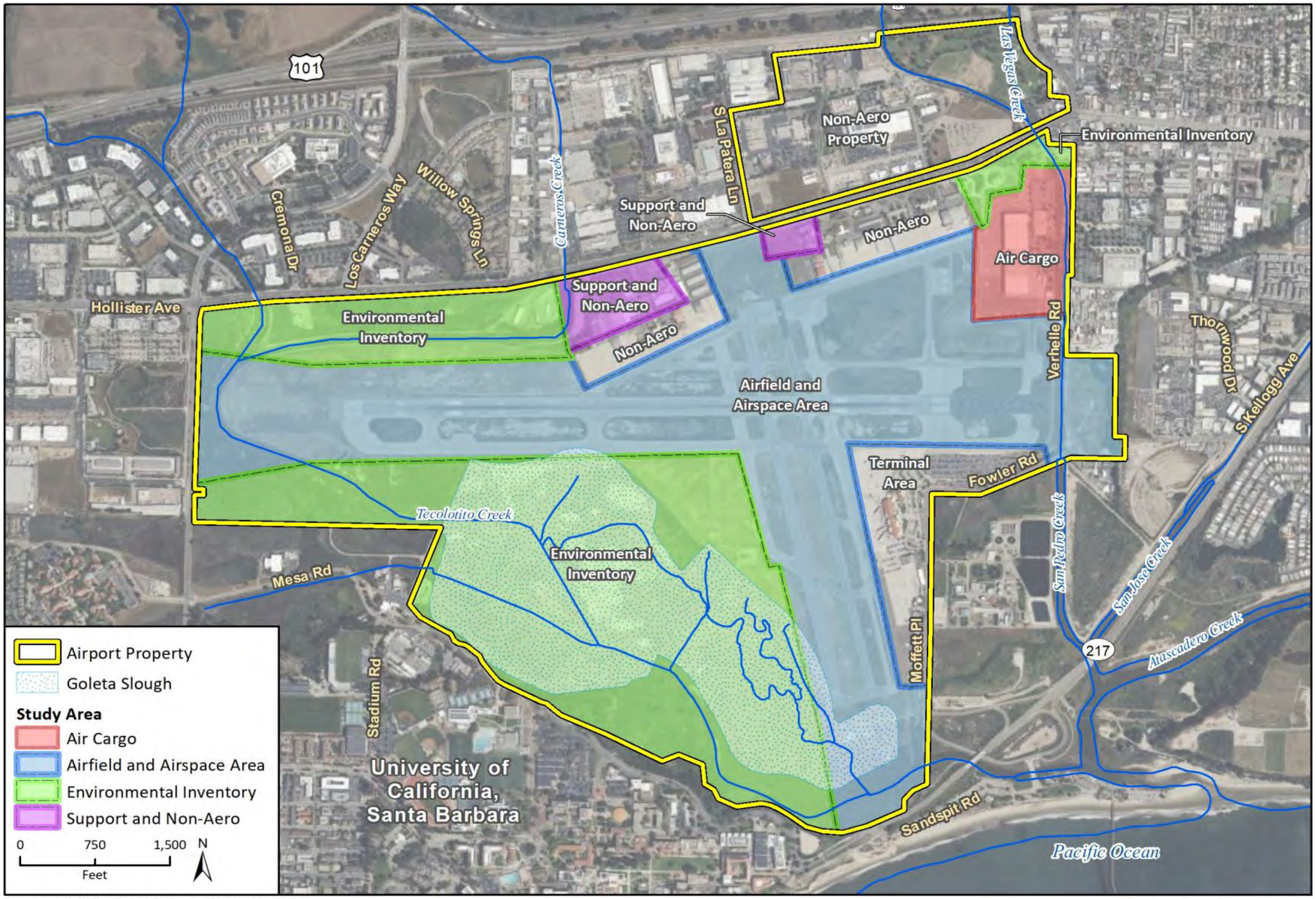


Figure 2-2: Study Area Location Map



Imagery provided by Microsoft Bing and its licensors © 2022
Additional data provided by City of Santa Barbara; National Hydrology Dataset, 2022.

Fig X Project Location_Environmental Inventory

2.2.6 Methodology

Regulated or sensitive biological resources studied and analyzed herein include special-status plant and animal species, nesting birds and raptors, sensitive plant communities, jurisdictional waters, including wetlands, wildlife movement, and locally protected resources, such as protected trees. Regulatory authority over biological resources is shared by federal, State, and local authorities. Primary authority for regulation of general biological resources typically lies within the land use control and planning authority of local jurisdictions (in this instance, the City of Santa Barbara).

Due to the extensive existing documentation of biological resources within the Study Area, no site visit was conducted in preparation of this assessment. The databases, reports, and online resources referenced when evaluating biological resources in the Study Area are detailed below.

2.2.6.1 Literature Review

Rincon Consultants, Inc. (Rincon) conducted a literature review to characterize the nature and extent of biological resources within and adjacent to the Study Area. The Goleta Slough Mouth Management Biological Technical Report (Rincon 2015), Goleta Slough Mouth Management Biological Assessment (Rincon 2016), Santa Barbara Airport Master Plan (Coffman and Associates, Inc. 2017a), and Program Environmental Impact Report on the Proposed Santa Barbara Airport Master Plan (Coffman and Associates, Inc. 2017b) were reviewed for biological information and potential updates with the use of the following resources.

The literature review included an evaluation of current and historical aerial photographs of the site (Google Earth Pro 2022), published datasets, regional and site-specific topographic maps, and climatic data as further described below. The California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Plants (CNPS 2022) was reviewed for records of California Rare Plant Rank (CRPR) 1 and 2 plant species within the *Goleta, California* USGS 7.5-minute quadrangle, and the five surrounding landward quadrangles (*Lake Cachuma, Little Pine Mountain, San Marcos Pass, Dos Pueblos Canyon, and Santa Barbara, California*), as the three southernmost quadrangles of a standard nine-quad search would be in the ocean. Within the same quadrangles, the California Natural Diversity Database (CNDDB) (California Department of Fish and Wildlife [CDFW] 2022a) was queried for records of special-status species and sensitive natural communities. The U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) (USFWS 2022a) was searched for a list of federally threatened and endangered species known to occur within or near the Study Area. The USFWS and NMFS Critical Habitat Portals (USFWS 2022b, NMFS 2022) were reviewed for information on designated critical habitat areas. The results of the literature review were further evaluated and are presented in **Appendix EC2: Special-Status Species Evaluation Table**.

To aid in characterizing the nature and extent of jurisdictional waters potentially occurring within the Study Area, resources including the most recent *Goleta, California* USGS 7.5-minute topographic quadrangle map, and the U.S. Department of Agriculture, Natural Resources Conservation Service (USDA, NRCS) Web Soil Survey (USDA, NRCS 2022a) were reviewed. Additionally, the National Hydrography Dataset (NHD) (USGS 2022) and National Wetlands Inventory (NWI) (USFWS 2022c) were reviewed to determine if any potential wetlands and/or other waters have been previously mapped within the Study Area. Lastly, the State Soils Data Access (SDA) Hydric Soils List (USDA, NRCS 2022b) was queried to determine if any of the soil map units within the Study Area are classified as hydric.

Several existing reports were referenced when assessing potential for sensitive species to occur and when mapping and describing vegetation communities present in the Study Area. These reports include Goleta Slough Mouth Management Biological Technical Report (Rincon 2015), Goleta Slough Mouth Management Biological Assessment (Rincon 2016), Santa Barbara Airport Master Plan (Coffman and Associates, Inc. 2017a), and Draft Special-Status Species Inventory for the Santa Barbara Airport Master Plan Update (Dudek 2012).

Definition of Special-Status Species

For the purposes of this report, special-status species include:

- Species listed as threatened or endangered under the FESA; including proposed and candidate species
- Species listed as candidate, threatened, or endangered under the CESA
- Wildlife species designated as Fully Protected by the CFGC, and Species of Special Concern, Special Animals, or Watch List by the CDFW
- Plant species listed as State Rare (SR) under the Native Plant Protection Act (NPPA)
- Plant species with CRPR of 1A, 1B, 2A and 2B per CNPS and CDFW
- Species designated as sensitive by the U.S. Forest Service or Bureau of Land Management, if the project would affect lands administered by these agencies
- Species designated as locally important by the Local Agency and/or otherwise protected through ordinance, local policy, or Habitat Conservation Plans (HCP)/NCCPs

2.2.7 Existing Conditions

2.2.7.1 Physical Characteristics

Topography and Geography

The weather in Santa Barbara County is typical of a Mediterranean climate. Summers are warm and dry while winters are cool and wet with most of the precipitation falling between November and March. The Study Area mainly includes Santa Barbara Airport facilities and runways as well as the Goleta Slough and its surrounding wetland, riparian, and tidal habitats. The Study Area is roughly bounded by Hollister Avenue to the north, Los Carneros Road to the west, Mesa Road and State Route 217 to the south, and Moffett Place, James Fowler Road, and South Fairview Avenue to the east. The Pacific Ocean is immediately south of State Route 217, adjacent to the Study Area. The Santa Ynez mountains are to the north, with the crest approximately 5 miles away. The Study Area is relatively flat, with slightly more elevational variability in the riparian area north of Mesa Road in the southern portion of the Study Area, and ranges between approximately 2 and 40 feet above mean sea level (amsl).

Water Quality, Aquatic Habitat, and Vectors

Goleta Slough is divided into multiple basins separated by artificial berms. As noted above, previous projects have partially restored tidal flow into the basins when the mouth of the slough is open (URS Corporation 2009). These projects were implemented when slough mouth management was still regularly occurring, and cessation of management has altered hydrology in the basins. When the slough mouth is closed for extended periods, tidal mixing does not occur. Lower dissolved oxygen and stagnation are reported when the slough is closed for extended periods (Padre and Associates 2010). Under the previous management strategy, until 2012, the mouth of the slough was opened any time sand buildup caused a closure lasting more than 2 weeks. Creation of a channel through the sandbar allowed tidal water to flow in and out of the slough. Without management, when sand closes the slough mouth, the slough can be cut off from tidal influence for extended periods. Changes in frequency of tidal mixing and reduced water movement can alter salinity, temperature, and dissolved oxygen. Water depth is also affected. While inundation can increase total area of aquatic habitat, prolonged inundation can have negative implications for wetlands and terrestrial vegetation as discussed further in Section 2.4. Aquatic habitat suitability values for tidewater goby in Goleta Slough and steelhead in the Slough and upstream have been based on extensive literature review of habitat criteria, USFWS designation of critical habitat, and observations of tidewater goby and steelhead in Goleta Slough, as discussed further in Sections 4 and 5.

Previous assessments of general water quality in Goleta Slough identified high levels of pathogens, priority organic pollutants, specifically organic chlorine pesticides, and excessive sediment loads (Padre and Associates 2010). The Slough was listed on the 2010 CWA Section 303(d) list of Water Quality Limited Segments requiring Total Maximum Daily Loads (TMDL) for pathogens and organic pollutants (State Water Resources Control Board 2010). Carneros and Tecolotito creeks are tributaries to Goleta Slough and are also listed for various water quality problems that include chloride, pathogens, *Enterococcus, Escherichia coli* (*E. coli*), fecal coliform, low dissolved oxygen, sodium, water temperature, pH, priority organics, electrical conductivity, and nitrate. Note, the listed reaches of tributary streams include the project area but also extend several miles upstream of the project site.

Watershed and Drainages

Goleta Slough, which comprises a large portion in the southern Study Area, receives water from five major streams. Atascadero, San Pedro, and San Jose creeks meet near the mouth of the slough on the east side. Carneros and Tecolotito creeks meet upstream to the west. The San Pedro Creek watershed (Hydrologic Unit Code [HUC] 180600130202) includes San Pedro, San Jose, Carneros, and Tecolotito creeks and their tributaries, and drains approximately 27.6 square miles, while the Atascadero Creek watershed (HUC 180600130201) includes Atascadero Creek and its tributaries and drains approximately 19.8 square miles. Combined watersheds of these creeks drain over 47.4 square miles according to the NHD (USGS 2022). The lower reaches of all these creeks have had regular previous management actions, including silt removal projects, and structures such as check dams, concrete lining, and sediment basins are present. Tecolotito and Carneros creeks had channel realignment projects implemented in 2006 (URS Corporation 2008, Padre and Associates 2010).

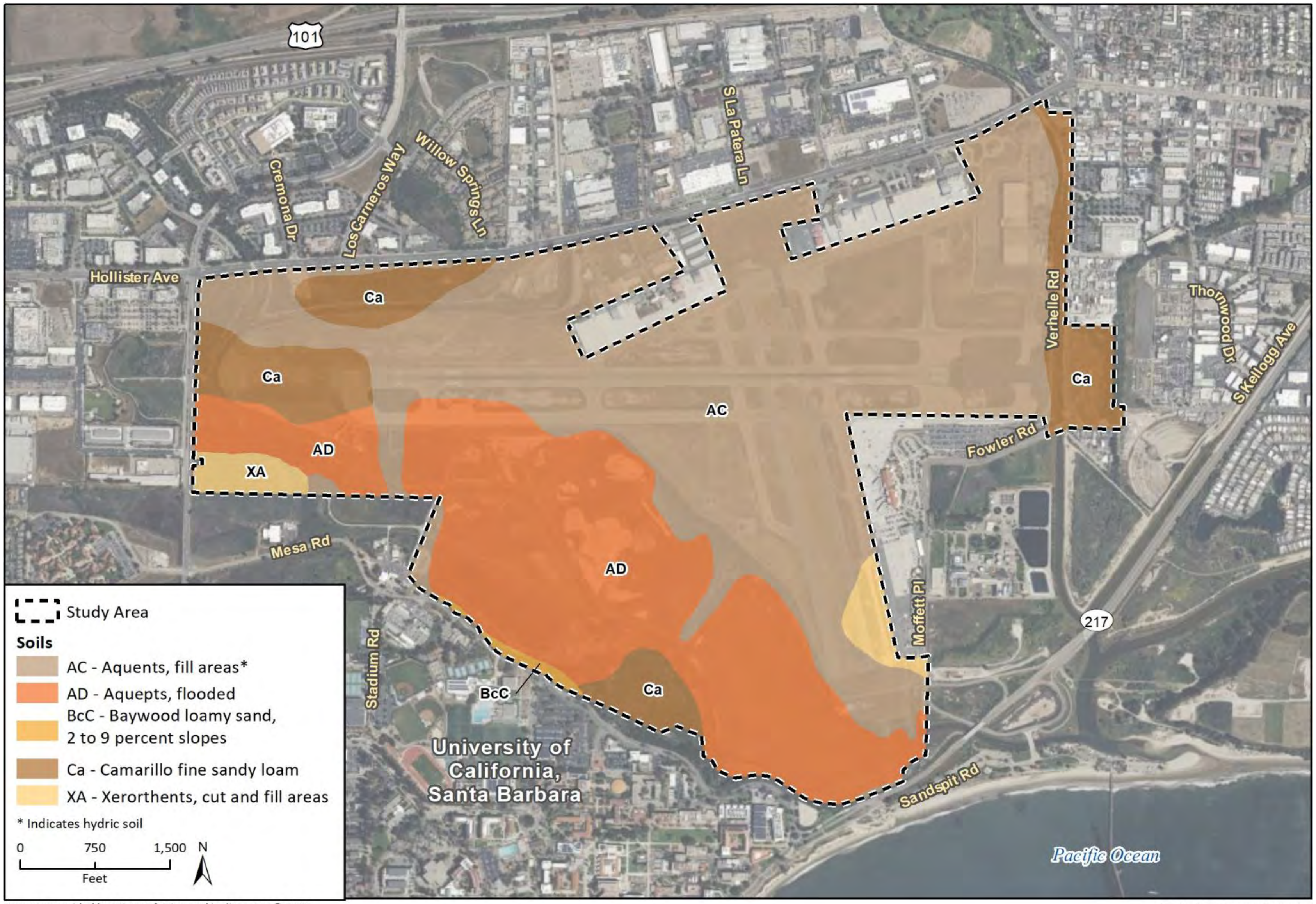
Soils

The Web Soil Survey (USDA, NRCS 2022a) depicts the following soil map units within the Study Area[1], as shown in **Figure 2-3**

- **Aquents, fill areas (AC)** is a poorly drained soil formed in disturbed landscapes on floodplains, often found in excavated areas and/or where fill has been imported. This soil typically has a uniform horizon between 0 to 60 inches. This soil is not prone to ponding or flooding and is not considered hydric. This soil is mapped in the developed airport facility portion of the Study Area and covers approximately 55 percent of the total Study Area.
- **Aquepts, flooded (AD)** is a very poorly drained soil formed from alluvium on the toeslopes of sloughs. This soil typically has one variable horizon between 0 to 60 inches, is frequently flooded, and is considered hydric. Within the Study Area this soil is mapped in the Goleta Slough, covering approximately 31 percent of the total Study Area.
- **Baywood loamy sand, 2 to 9 percent slopes (BcC)** is a somewhat excessively drained soil formed on the toeslope of dunes. This soil typically has a uniform horizon of loamy sand between 0 to 62 inches. This soil is not prone to ponding or flooding and is not considered hydric. This soil is mapped in a small portion of the Study Area north of Mesa Road between development and Goleta Slough, covering less than 1 percent of the total Study Area.
- **Camarillo fine sandy loam (Ca)** is a poorly drained soil found on the toeslopes of floodplains. It is formed from alluvium derived from calcareous sedimentary rock. A typical profile contains two horizons. The first occurs between 0 and 19 inches and contains fine sandy loam, and the second occurs between 19 and 57 inches and contains loam. This soil is not prone to flooding or ponding and is not considered hydric. This soil is mapped in small, disturbed portions of the northwestern and southern Study Area, covering approximately 11 percent of the total Study Area.
- **Xerorthents, cut and fill areas (XA)** is a well-drained soil formed on the backslopes and shoulders of terraces. This soil typically has one variable horizon between 0 to 6 inches and is composed of rock, concrete, asphalt, or other debris and fill. This soil is not prone to ponding or flooding and is not considered hydric. Within the Study Area, this soil is mapped in small portions of the airport runway and Goleta Slough, covering approximately 3 percent of the total Study Area.

[1] Published soil surveys are documented at a broad scale and they may not match the level of detail or refinement captured during formal jurisdictional delineation surveys.

Figure 2-3: **Soils Map**



Imagery provided by Microsoft Bing and its licensors © 2022
Additional data provided by Natural Resource Conservation Service Soil Survey Geographic, 2022.

2.2.7.2 Vegetation Communities and Other Land Cover

A total of four general physiognomic vegetation communities have been documented in the Study Area as identified by the *Manual of California Vegetation, Second Edition* (Sawyer et al. 2009) and Natural Communities List (NCL) (CDFW 2010): 1) grass and forb, 2) coastal scrub, 3) riparian scrub, and 4) woodland dominated communities. These vegetation communities and wildlife habitats are summarized in **Table 2-1** and described further below as described in the Special-Status Species Inventory for the Santa Barbara Airport Master Plan Update (Dudek 2012). In this inventory, the group non-vegetated habitats is equivalent to a general physiognomic and physical location type and associated wildlife habitat and is described at the end of the following section. Mapping of vegetation communities and land cover types within the Study Area is shown in **Figure 2-4**.

Table 2-1: **Summary of Vegetation Communities and Land Cover Types within the Study Area**

Physiognomic Category	General Habitat	Vegetation Community	Approximate Acreage	Approximate Percent Area
Herbaceous Alliances and Stands (Upland)	Grassland	Annual Brome Grassland (ABG)	91.8	12.2%
		Italian Rye Grass (IRG)	9.6	1.3%
	Forb Dominated	Ice Plant Mats (IPM)	0.1	<0.1%
		Black Mustard (UM)	3.3	0.4%
		Western Ragweed Meadows (WRM)	1.0	0.1%
Herbaceous Alliances and Stands (Wetland)	Grassland	Creeping Rye Grass Turfs (CRGT)	4.7	0.6%
		Harding Grass Swards (HGS)	0.7	0.1%
		Meadow Barley Patches (MBP)	4.7	0.6%
		Salt Grass Flats (SGF)[1]	8.1	1.1%
	Forb Dominated	Alkali Heath Marsh (ASH)[1]	1.6	0.2%
		Alkali Weed[1]	0.1	<0.1%
		California Bulrush Marsh (CBM)[1]	5.4	0.7%
		Broadleaf Cattail Marshes (BLC)	3.9	0.5%
		Curly Dock (CD)	2.1	0.3%
		Fennel Patches (FP)	0.1	<0.1%
		Giant Reed Breaks (GRB)	<0.1	<0.1%
		Pale Spike Rush Marshes (PSRM)	0.2	<0.1%
		Pickleweed Mats (PW)[1]	144.9	19.3%
		Poison Hemlock Patches (PH)	0.6	0.1%
		Salt Marsh Bulrush Marshes (MBR)[1]	1.5	0.2%
		Smartweed – Cocklebur Patches (CBR)	0.4	0.1%
		Western Rush Marshes (WRM)	1.0	0.1%
		Bristly Ox-Tongue (BOT)	0.7	0.1%

Physiognomic Category	General Habitat	Vegetation Community	Approximate Acreage	Approximate Percent Area
Shrubland Alliances and Stands (Upland)	Coastal Scrub	Blue Elderberry Stands (BES)	<0.1	<0.1%
		California Sagebrush Scrub (CSS)	0.3	<0.1%
		Coyote Brush Scrub (CYS)	27.5	3.7%
		Menzies's Golden Bush Scrub (MGBS)[1]	2.2	0.3%
		Poison Oak Scrub (POS)	1.8	0.2%
		Quailbush Scrub (QS)	19.8	2.6%
Shrubland Alliances and Stands (Wetland)	Riparian Scrub	Arroyo Willow Thickets (ARWT)[1]	12.8	1.7%
		Mulefat Thickets (MFT)	0.1	<0.1%
Woodlands and Tree Clusters	Woodland and Tree Clusters (planted or naturally occurring)	Coast Live Oak Woodland (CLOW)	3.0	0.4%
		Cypress stands (CYP)	3.6	0.5%
		Eucalyptus Groves (EG)	2.6	0.4%
		Myoporum Groves (MP)	0.3	<0.1%
Non-Vegetated Habitats		Mudflats (MDFT)	1.2	0.2%
		Saltflats (STFT)	13.3	1.8%
		Open Water (non-vegetated) (OW)	15.9	2.1%
		Dredge Spoil or Work Area (DRDG)	139.6	18.6%
		Developed (DVLP)	217.7	29.0%
		Bare Ground (BG)	4.8	0.6%

[1]CDFW Sensitive Natural Community (CDFW 2022b)

Source: Dudek 2012.

Grassland and Forb-Dominated Habitats (Upland)

The Study Area includes two grassland-dominated (annual brome grassland and Italian rye grass) and three forb-dominated (ice plant mats, upland mustard, and western ragweed meadows) upland vegetation communities.

Grassland Habitats (Upland)

Non-native Annual brome grasslands contain ripgut brome (*Bromus diandrus*) and soft brome (*Bromus hordeaceus*) as dominant or co-dominant species in the herbaceous layer. Annual brome grasslands are typically found on seasonally dry hillsides and valleys in the Central Valley, interior valleys of the Coast Ranges, and along the coast of central and Southern California, as well as some of the offshore islands. This mix of grasses and forbs is often found on gravelly to deep, fine-grained soils well suited for annual growth. Annual brome grasslands have open to continuous cover less than 2.5 feet in height; low cover of emergent trees and shrubs may be present. This community occurs from sea level to 7,218 feet amsl**.** Vegetation in this habitat type is composed primarily of non-native short to tall annual grasses and native and non-native broad-leafed forbs. Noxious weeds are also present in disturbed areas adjacent to this habitat type. Dominant grasses include soft brome, ripgut grass, foxtail chess (*Bromus madritensis*), wild oats (*Avena fatua*), Italian ryegrass (*Festuca perennis*), and rat-tail fescue (*Festuca myuros*). Flowering herbs include western verbena (*Verbena lasiostachys*), scarlet pimpernel (*Lysimachia arvensis*), common catchfly (*Silene gallica*), coast morning glory (*Calystegia macrostegia* ssp. *cyclostegia*), and doveweed (*Croton setiger*) (Sawyer et al. 2009).

Annual brome grassland occurs widely throughout the site, especially in areas along roadsides and areas within the airfield that received regular maintenance, such as mowing. At least one special-status plant species, southern tarplant (*Centromadia parryi* ssp. *australis*; CRPR 1B.1, Locally Rare [LR]) has the potential to occur in this community and has been documented at the airport.

Many of the annual brome grasslands within the Study Area are located where the value as wildlife habitat is suppressed under the draft Wildlife Hazard Management Plan (Santa Barbara Airport 2008). Many of these areas are mowed in fall and spring. Rodent control measures are implemented here, and animal carcasses are promptly removed to deter the presence of scavengers. Some of the larger mammals present on the site, such as the coyote (*Canus latrans*) and common raccoon (*Procyon lotor*), have the potential to use grassland habitats as movement corridors. Some small mammals, such as the California vole (*Microtus californicus*) and Botta's pocket gopher (*Thomomys bottae*), may occur here, but rodent control measures likely suppress their presence as well. This community is likely not attractive to large numbers of reptiles and amphibians. Some birds are found here, although wildlife hazard-management practices likely suppress their presence as well. Nesting waterfowl, especially mallards (*Anas platyrhynchos*) and gadwalls (*Anas strepera*), occasionally nest in grassland habitats when they are near water and grasses are relatively high. Birds of prey, especially the red-tailed hawk (*Buteo jamaicensis*), are encountered occasionally over these areas.

In this current condition, special-status species such as the white-tailed kite forage over these grasslands, although some areas adjacent to the airfield subject to rodent control measures are likely less often used. The state endangered Belding's savannah sparrow (*Passerculus sandwichensis beldingi*) forages here, especially where this community occurs near tidal areas. California horned larks (*Eremophila alpestris actia*) may nest in brome grasslands in the airfield.

Italian rye grass grasslands are dominated by non-native Italian ryegrass. These grasslands are found throughout California except in deserts and the Great Basin. Italian rye grass grasslands often occur in pastures, roadsides, fields, agronomic crops, vineyards, and orchards. They are found in fertile, well-drained soils, but also in saturated soils, from sea level to 3.280 feet amsl (DiTomaso and Healy 2007).
In the Study Area, Italian rye grass grasslands occur in isolated patches in the north-central and northeastern portions of the Airport continuous with annual brome grasslands, but in more mesic areas.
The larger mammals occurring on the site are able to travel through this habitat, and small mammals, such as the California vole and Botta's pocket gopher, occur here. Common Coast Range fence lizards (*Sceloporus occidentalis bocourtii*) and San Diego gopher snakes (*Pituophis catenifer annectens*) likely occur here. Bird species occurring in this community, including the white-tailed kite and foraging Belding's savannah sparrows, are the same as those occurring in annual brome grasslands.

Forb-Dominated Habitats (Upland)

Ice plant mats (*Carpobrotus* spp. Herbaceous Semi-Natural Alliance) contain non-native iceplant (*Carpobrotus edulis*), sea fig (*Carpobrotus chilensis*), or other ice plant taxa as the dominant or co-dominant species in the herbaceous layer. These species invade coastal bluff scrub, dune mat, dune scrub, and coastal prairies and compete with native plants. Ice plant semi-natural herbaceous stands have an intermittent to continuous canopy within the herbaceous layer less than 1.6 feet in height. Shrubs and emergent trees may be present at low cover. Ice plant mats occur on disturbed land, bluffs, coastal sand dunes, and coastal and alkaline terraces from sea level to 330 feet amsl (Sawyer et al. 2009).

In the Study Area, ice plant mats occur in stands of variable sizes in disturbed areas near access roads and dredge spoils work areas. This community forms stands along the upland edges of pickleweed mats in tidal basins, Tecolotito Creek, and Carneros Creek.

Very few wildlife species occur in ice plant mats. California ground squirrels (*Spermophilus beecheyi*) often inhabit this community, but rodent control measures may limit their numbers in the Study Area. This community provides poor nesting habitat for birds. Common reptiles such as the Coast Range fence lizard likely occur here. This community is not generally valuable to special-status wildlife species.

Upland mustards (*Brassica nigra* Herbaceous Semi-Natural Alliance) contain black mustard, common mustard (*Brassica rapa*), Saharan mustard (*Brassica tournefortii*), short-podded mustard (*Hirschfeldia incana*), or wild radish (*Raphanus sativus*) as the dominant species in the herbaceous layer. Upland mustard has an open to continuous canopy less than 10 feet in height in the herbaceous layer. Throughout California, upland mustard occurs in fallow fields, roadsides, grasslands, levee slopes, riparian areas, disturbed scrublands, and waste places from sea level to 4,920 feet amsl (Sawyer et al. 2009).

In the Study Area, upland mustard occurs along disturbed basin berms, roadside areas, and other disturbed habitats. The black mustard in this community here grows in very dense stands from which other herbaceous species are excluded. Dense, extensive mustard stands provide poor habitat for most wildlife, although the habitat value of upland mustard stands increases where it is patchy and adjacent to other communities that provide habitat value. California voles are common mammals that likely occur in this vegetation community. Larger mammals likely avoid this community, as passage through mustard stands is difficult. The Coast Range fence lizard is a common reptile species found in this community. Birds that sometimes nest in mustard fields include red-winged blackbirds (*Agelaius phoeniceus*), common yellowthroats (*Geothlypis trichas*), and song sparrows (*Melospiza melodia*). Where this community occurs in a mosaic of communities, white-tailed kites (FP) hunt the edges of mustard stands.

Western ragweed meadows contain native western ragweed (*Ambrosia psilostachya*) as the dominant or co-dominant species in the herbaceous layer. Western ragweed meadows occur in areas with moderate to heavy disturbance regimes, including overgrazed rangeland, roadsides, railroads, waste places, throughout North America. Western ragweed meadows occur from sea level to 4,265 feet amsl. Western ragweed meadows have an intermittent to continuous canopy within the herbaceous layer less than 3 feet in height. Throughout California, the western ragweed meadow provisional alliance occurs in intermittently wet and disturbed meadows, at the edges of salt and brackish marshes, and temporarily flooded depressions and lowlands from the coast inland to cismontane California. Soils are sandy to clay loams. Some species associated with the western ragweed provisional alliance include ripgut brome, soft brome, Bermuda grass (*Cynodon dactylon*), fillaree (*Erodium* spp.), gumweed (*Grindelia* spp.), foxtail barley (*Hordeum murinum*), arctic rush (*Juncus balticus*), wild hollyhock (*Sidalcea malviflora*), and blue-eyed grass (*Sisyrinchium bellum*) (Sawyer et al. 2009).

Western ragweed meadows occur in stands of variable sizes in transitional areas in various parts of the Study Area. Although western ragweed is widespread in the Study Area, locations where it is dominant are generally limited in extent. These areas provide limited cover for many animals and are most likely used as foraging habitat for animals inhabiting adjacent areas. Small mammals, such as California voles, may inhabit these areas. Coast Range fence lizards are likely common here, and California alligator lizards (*Elgaria multicarinata multicarinata*) may occur here as well. As the growth period for western ragweed is generally late, areas dominated by this annual generally do not provide good nesting habitat for songbirds.

However, many songbirds have the potential to forage here during the non-nesting season or where western ragweed meadows occur near suitable nesting habitat. Therefore, species common in the ecological reserve, such as resident song sparrows, California towhees (*Melozone crissalis*), and northern mockingbirds (*Mimus polyglottos*), as well as wintering white-crowned sparrows (*Zonotrichia leucophrys*), likely forage here.

Grassland and Forb-Dominated Habitats (Wetland)

The Study Area includes wetland grassland and forb-dominated habitats, including 15 vegetation communities. These include four grasslands (creeping rye grass turfs, Harding grass swards, meadow barley patches, and salt grass flats) and 11 forb-dominated communities (alkali heath marsh, California bulrush marsh, cattail marsh, curly dock, giant reed breaks, pickleweed mats, poison hemlock patches, salt marsh bulrush marsh, smartweed – cocklebur patches, western rush marsh, and bristly ox-tongue).

Grassland Dominated Habitats (Wetland)

Creeping rye grass turfs include native creeping rye grass (*Elymus triticoides*) as the dominant or codominant species in the herbaceous layer. The creeping rye grass alliance includes creeping rye grass with greater than 50 percent cover in the herbaceous layer (Sawyer et al. 2009). Creeping rye grass turfs occur in stands with approximately 75 percent creeping rye grass cover within the grassland species. Open to continuous creeping rye grass berm areas contain low percentages of salt grass, pickleweed, and Italian rye grass. Creeping rye grass turfs have an open to continuous canopy less than 3 feet in height in the herbaceous layer. In California, creeping rye grass turfs occur on poorly drained floodplains, mesic areas with flat to sloping topography, drainage and valley bottoms, and marsh margins. This species has adapted to become extremely saline tolerant. Soils are loams and clays (Sawyer et al. 2009). Creeping rye grass is a CDFW sensitive natural community. Species associated with the creeping rye grass turfs alliance include western ragweed, yerba mansa (*Anemopsis californica*), purple threeawn (*Aristida purpurea*), wild oat, bromes, onespike oatgrass (*Danthonia unispicata*), salt grass (*Distichlis spicata*), squirreltail (*Elymus elymoides*), barley (*Hordeum* spp.), Italian rye grass, arctic rush, Sandberg bluegrass (*Poa secunda*), and seaside arrowgrass (*Triglochin maritima*) (Sawyer et al. 2009).

In the Study Area, creeping rye grass turfs occur on restored creek berms and on the sloped banks of the tidal areas. The larger mammals commonly found in the Study Area, such as the common raccoon, striped skunk (*Mephitis mephitis*), and coyote, have the potential to travel through creeping rye grass turfs and even forage on small vertebrates and insects here. Dense growth of creeping rye grass may deter some smaller vertebrate species, but it likely provides cover for others. Small mammals such as the California vole may inhabit these areas. Some bird species, such as the common yellowthroat and song sparrow, especially where some shrubs occur within this community, have the potential to nest here. Among special-status wildlife species, Belding's savannah sparrows (SE) likely forage within this community, particularly where it occurs near pickleweed mats.

Harding grass swards include the non-native invasive Harding grass (*Phalaris aquatica*) as the dominant species. There are three membership rules for the Harding grass swards alliance: 1) Harding grass swards include Harding grass with greater than 20 percent absolute cover as the dominant grass in grasslands; 2) Harding grass swards include Harding grass with greater than 50 percent relative cover in the herbaceous layer; 3) Harding grass swards include Harding grass at greater than 15 percent absolute cover and greater than 75 relative cover when compared to native species in the herbaceous layer. Harding grass swards have an intermittent to continuous canopy less than 5 feet within the herbaceous layer. Some emergent shrubs, such as coyote brush (*Baccharis pilularis*) and wedgeleaf ceanothus (*Ceanothus cuneatus*), may be present. They occur in and along arroyo and lake margins, ditches, washes, rivers, watercourses, and seasonally wet and alkaline sites (Sawyer et al. 2009).

Harding grass swards occur north of the Santa Barbara Airport fence line along Hollister Avenue near the intersection with Los Carneros Road. In addition, one isolated patch is located in the southeastern portion of the site, just east of a large coyote brush scrub area. Species occurring in association with Harding grass swards include black mustard, bromes, and Italian ryegrass.

Where this community occurs near Hollister Avenue, it is part of an emergent wetland complex that includes several other wetland communities. Also, some Harding grass swards within or near the Hollister Avenue right of way are routinely mowed. Mammals such as the common raccoon and striped skunk may occur here, but inundation of the area in some years may limit populations of smaller terrestrial vertebrates, including rodents and reptiles. Baja California treefrogs (*Pseudacris hypochondriaca hypochondriaca*) are found in the wetland complex and may occur in other parts of the Study Area where this community occurs. Some predatory bird species, such as the great egret (*Ardea alba)* and snowy egret (*Egretta thula*), have the potential to hunt for treefrogs in these areas. Wilson's snipes (*Gallinago delicata*) are common here in winter and early spring, under wet conditions. This community is not suitable nesting habitat for most bird species. One special-status predatory bird species, the white-tailed kite (FP), is well suited to hunting in Harding grass swards.

Meadow barley patches contain native meadow barley (*Hordeum brachyantherum*) as the dominant or co-dominant species in the herbaceous layer. There are two membership rules for the meadow barley patch alliance: 1) meadow barley patches are meadow barley with greater than 30 percent relative cover in the herbaceous layer; 2) meadow barley patches are areas where meadow barley is characteristically present, usually with other wetland plants that may be at high cover. The meadow barley patches alliance inhabits coastal California and the Sierra Nevada Mountains. This alliance is found along stream terraces, in moist to wet meadows and sites adjacent to springs and seeps. Meadow barley patches have a continuous canopy within the herbaceous layer less than 3.5 feet in height. Meadow barley patches occur from sea level to 4,264 feet amsl. Some species associated with the meadow barley patches alliance include sedge (*Carex* spp.), California oatgrass (*Danthonia californica*), tufted hairgrass (*Deschampsia caespitosa*), annual hairgrass (*Deschampsia danthonioides*), needle spikerush (*Eleocharis acicularis*), fringed willowherb (*Epilobium ciliatum*), Hall's willowherb (*Epilobium hallianum*), velvet grass (*Holcus lanatus*), arctic rush, brownhead rush (*Juncus phaeocephalus*), Italian rye grass, lotus (*Lotus* spp.), California burclover (*Medicago polymorpha*), pullup muhly (*Muhlenbergia filiformis*), fowl blue grass (*Poa palustris*), Kentucky blue grass (*Poa pratensis*), California buttercup (*Ranunculus californicus*), dock (*Rumex* spp.), arrowleaf ragwort (*Senecio triangularis*), and clover (*Trifolium* spp.) (Sawyer et al. 2009). Meadow barley patches are a CDFW Sensitive Natural Community.

In the Study Area, meadow barley patches occur in low-lying grassland areas that tend to remain moist for extended periods of time. Patches of meadow barley grassland occur south of Runway 7-25 near the ASR and south of Tecolotito Creek near Los Carneros Road. Surrounding communities are annual brome grassland, pickleweed mats, and alkali heath marshes. One special-status species occurring in the Study Area that may occur in this community is southern tarplant.

Wildlife species found in this community are similar to those occurring in annual brome grassland. Belding's savannah sparrows were found in this community near the southern boundary of the Study Area in March 2012; this species likely forages here in the non-nesting season, and possibly the nesting season. Another special-status bird species, the white-tailed kite likely forages in meadow barley patches. Other birds of prey that may forage here include the red-tailed hawk and American kestrel (*Falco sparverius*).

Salt grass flats contain native salt grass as the dominant or co-dominant species in the herbaceous layer. There are two membership rules for the salt grass flats alliance: 1) salt grass flats are areas where salt grass provides greater than 50 percent relative cover in the herbaceous layer and has a higher cover than any other single grass species; 2) salt grass flats are areas where salt grass provides greater than 30 percent relative cover in the herbaceous layer and *Sarcocornia* or *Salicornia* spp. if present, occurs in less than 30 percent relative cover. This is a CDFW Sensitive Natural Community. Salt grass flats have an open to continuous canopy less than 3 feet in height within the herbaceous layer. Throughout California, the salt grass flats alliance occurs in coastal marshes and in inland habitats including swales, playas, and terraces along washes that are typically intermittently flooded. Soils are alkaline, often deep, and have an impermeable layer making them poorly drained. Ground surfaces often have salt accumulations when the soil is dry. The salt grass flats alliance occurs throughout most of temperate North America. In California, salt grass flats are found in alkaline or saline environments from the coast to mountains and deserts. Salt grass flats occur from sea level to 4,920 feet amsl. Some species associated with the salt grass flats alliance include water beard grass (*Polypogon viridis*), beach bur (*Ambrosia chamissonis*), yerba mansa, fat-hen (*Atriplex prostrata*), saltwort (*Batis maritima*; LR), ripgut brome, brass buttons (*Cotula coronopifolia*), common spikerush (*Eleocharis palustris*), alkali heath, meadow barley, foxtail barley, marsh jaumea (*Jaumea carnosa*), arctic rush, Cooper's rush (*Juncus cooperi*), broadleaved pepperweed (*Lepidium latifolium*), creeping rye grass, California sea lavender (*Limonium californicum*), scratchgrass (*Muhlenbergia asperifolia*), strigose sicklegrass (*Parapholis strigosa*), western wheat grass (*Elymus smithii*), Sandberg bluegrass, Nuttall's alkaligrass (*Puccinellia nuttalliana*), pickleweed, alkali sacaton (*Sporobolus airoides*), and seaside arrowgrass (Sawyer et al. 2009).

In the Study Area, salt grass flats occur in stands of variable sizes in areas of slightly higher elevation than pickleweed. This community forms large stands along the upper edges of tidal pickleweed basins, Tecolotito Creek, and Carneros Creek. Alkali heath and creeping rye grass grow in patchy areas within the salt grass. In more upland areas, salt grass forms flats in depressed areas and among shrubs such as quailbush and coyote brush. Special-status plant species that have the potential to occur here include Coulter's goldfields (CRPR 1B.1, LR) and woolly seablite (*Suaeda taxifolia*).

This series hosts many of the same wildlife species found in other grassland habitats on the site: mammals such as the California vole and reptiles such as the Coast Range fence lizard. Brush rabbits (*Sylvilagus bachmani*) occur in this community when it is adjacent to scrub communities. Salt grass flats also occur adjacent to pickleweed mats, the favored nesting habitat of the state endangered Belding's savannah sparrow. This species often forages in salt grass flats and may even nest in this community when it is adjacent to tidal areas. Other songbird species common in the ecological reserve, including song sparrows and wintering white-crowned sparrows, often occur within this community. The State fully protected white-tailed kite likely forages over this community as well.

Forb Dominated Habitats (Wetlands)

Alkali heath marsh contains native alkali heath (*Frankenia salina*) as the dominant or co-dominant species in the herbaceous and subshrub layers. Alkali heath marshes occur where alkali heath is greater than 30 percent relative cover in the herbaceous layer, and sometimes where it is codominant with salt grass or other herbs or subshrubs. Alkali heath marshes occur in western California in coastal salt marshes, brackish marshes, alkali playas, and alkali meadows. These marshes have an open to continuous canopy with the herbaceous and subshrub layers less than 2 feet in height. Alkali heath marshes occur at elevations less than 985 feet amsl (Sawyer et al. 2009). Some species associated with the alkali heath marsh alliance include Parish's glasswort (*Arthrocnemum subterminale*), saltbush (*Atriplex* spp.), Pacific bentgrass (*Agrostis avenacea*), saltwort, alkali weed (*Cressa truxillensis*), salt grass, foxtail barley, goldfields (*Lasthenia* spp.), pepper grass (*Lepidium* spp.), California sea lavender, shore grass (*Distichlis littoralis*), and pickleweed (Sawyer et al. 2009). Alkali weed is a CDFW Sensitive Natural Community.

In the Study Area, alkali heath marshes occur in stands of variable sizes in areas of slightly higher elevation than pickleweed. This community forms large stands along the upper edges of tidal pickleweed basins, Tecolotito Creek, and Carneros Creek. Salt grass and creeping rye grass grow in patchy areas within the alkali heath. Special-status plant species occurring in this community include woolly seablite and estuary seablite (*Suaeda esteroa*; CRPR 1B.2, LR).

The density of the ground cover provided by the dominant species in alkali heath marsh and its tendency to occur in isolated patches and narrows strips at the edges of salt marsh dictate the usefulness of this community for wildlife. Many of the wildlife species found in both upland and wetland habitats likely occur. Skunks and common raccoons likely forage at the edges and in openings within this community. California voles are probably relatively common at the upland edges. Coast Range fence lizards, while largely limited to the more upland communities within the ecological reserve, venture into alkali heath marsh where it is adjacent to upland areas, and San Diego gopher snakes likely do as well. Baja California treefrogs can be plentiful here. One listed bird species, Belding's savannah sparrow (SE) may nest here where this community occurs at the edges of pickleweed mats. Common songbird species potentially occurring here include nesting common yellowthroats and song sparrows and wintering marsh wrens (*Cistothorus hiemalis*). Waterfowl species, including mallards, gadwalls, and cinnamon teal (*Anas cyanoptera*), may nest in alkali heath marsh where it occurs near open water.

California bulrush marsh contains California bulrush (*Schoenoplectus californicus*) as the dominant or co-dominant species in the herbaceous layer. It has a continuous or intermittent herb canopy of less than 13 feet in height. The California bulrush marsh alliance is California bulrush marsh greater than or equal to 10 percent absolute cover in the herbaceous layer. If present, hardstem bulrush (*Schoenoplectus acutus*) occurs in less than 50 percent relative cover, although it can be co-dominant with California bulrush. The California bulrush marsh alliance often occurs in brackish to freshwater marshes, bars, shores, and channels of river mouth estuaries. California bulrush marsh is widespread throughout California in emergent marshes. Soils have a high organic presence and are poorly aerated. This alliance occurs between sea level and 660 feet amsl. Species associated with the California bulrush marsh alliance include Indian hemp dogbane (*Apocynum cannabinum*), salt marsh bulrush (*Bolboschoenus maritimus*), common water hyacinth (*Eichhornia crassipes*), western goldentop (*Euthamia occidentalis*), floating primrose willow (*Ludwigia peploides*), dotted smartweed (*Persicaria punctata*), common reed (*Phragmites australis*), hardstem bulrush, narrowleaf cattail (*Typha angustifolia*), southern cattail (*Typha domingensis*), and broadleaf cattail (*Typha latifolia*). Emergent species may include common buttonbush (*Cephalanthus* *occidentalis*), California wild rose (*Rosa californica*), or arroyo willow (*Salix lasiolepis*) (Sawyer et al. 2009). California bulrush marsh is a CDFW sensitive natural community.

In the Study Area, California bulrush marshes are found in low-lying marsh areas and within Tecolotito and Carneros Creeks. The marshes are dominated by California bulrush with some cattails and salt marsh bulrush.

The density of ground cover within this community and its frequent inundation deter many mammals and other terrestrial vertebrates from occurring here. The principal vertebrate species occurring in this community are songbirds and aquatic vertebrates. Song sparrows, common yellowthroats, and red-winged blackbirds nest here. Marsh wrens forage and seek cover here from fall to spring, and a variety of other songbirds has the potential to forage here. American coots (*Fulica americana*) and pied-billed grebes (*Podilymbus podiceps*) likely nest within this community when it is inundated in spring. Virginia rails (*Rallus limicola*), soras (*Porzana carolina*), and, on rare occasions, least bitterns (*Ixobrychus exilis*; SSC) are found in this community. Snowy and great egrets hunt the edges of this habitat, particularly when Baja California treefrogs are common. Where this species occurs in the brackish waters of Carneros Creek, it may harbor the tidewater goby (FE), which likely seeks shelter and burrows among the bases of inundated cattails. A variety of aquatic invertebrates occur here as well.

Cattail marshes contain narrowleaf cattail, southern cattail, or broadleaf cattail as the dominant or co-dominant in the herbaceous layer. There are four membership rules for the cattail marsh alliance: 1) cattail marsh occurs where one or more of narrowleaf cattail, southern cattail, and broadleaf cattail is present in greater than 50 percent relative cover in the herbaceous layer; 2) cattail marsh occurs where broadleaf cattail is present in greater than 50 percent relative cover in the herbaceous layer; 3) cattail marsh occurs where narrowleaf cattail is present in greater than 50 percent relative cover at greater than 2 feet height in the herbaceous layer; 4) cattail marsh occurs where broadleaf cattail is present in greater than 50 percent relative cover in the herbaceous layer and common reed is not present. Throughout California, the cattail marsh alliance occurs in brackish or semi-permanently flooded freshwater marshes. Cattail marshes have a continuous or intermittent herbaceous canopy of less than 5 feet in height. This alliance occurs from sea level to 1,150 feet amsl (Sawyer et al. 2009).

In the Study Area, cattail marshes occur in the same areas as California bulrush marshes. Cattails, California bulrush, and salt marsh bulrush dominate these marshes. Some species associated with the cattail marsh alliance include creeping bentgrass (*Agrostis stolonifera*), Pacific potentilla (*Argentina egedii*), flatsedge (*Cyperus* spp.), salt grass, watergrass (*Echinochloa crus-galli*), pale spike rush (*Eleocharis macrostachya*), giant horsetail (*Equisetum telmateia*), rush (*Juncus* spp.), least duckweed (*Lemna minuta*), broadleaved pepperweed, water parsley (*Oenanthe sarmentosa*), gray willow weed, dotted smartweed, common reed, chairmaker's bulrush (*Schoenoplectus americanus*), California bulrush, and cocklebur (Dudek 2012).

Wildlife species occurring in cattail marshes marsh are similar to those occurring in the California bulrush marshes.

Curly dock patches are dominated by nonnative curly dock (*Rumex crispus*). Curly dock occurs throughout California from sea level to 8,203 feet amsl. Curly dock patches often occur in wetlands, ditches, roadsides, pastures, agronomic crops (especially perennial crops such as alfalfa), orchards, waste places, and other disturbed moist areas. It is seldom found on acidic soils. Established curly dock individuals can tolerate periods of drought (DiTomaso and Healy 2007).

In the Study Area, curly dock patches occur in slightly depressed non-tidal areas along Hollister Avenue and Los Carneros Road, and south of Tecolotito Creek adjacent to CDFW property.

As this alliance largely occurs in wetlands within the Study Area, some common terrestrial vertebrates may be largely absent here. Some small mammals, such as California voles, may sometimes occur here. In addition, reptiles such as the Coast Range fence lizard may also occur. Baja California treefrogs likely are found here. Some common songbird species, such as the common yellowthroat and song sparrow, have some potential to nest here, and these species and wintering Lincoln's sparrows (*Melospiza lincolnii*) forage here. Wilson's snipes, a ground dwelling wetland bird species, occur here from fall through early spring.

Giant reed breaks include nonnative giant reed (*Arundo donax*) as the dominant species in the herbaceous layer. In addition, giant reed breaks include giant reed as greater than 60 percent relative cover in the herbaceous and shrub layers. Throughout California, the giant reed break alliance occurs along low-gradient streams, riparian areas, ditches, and coastal marshes. This species is an introduced aggressive perennial grass that forms massive thickets of vegetation that can cover several hectares. Giant reed out-competes native plants, forms dense stands, and chokes riverbanks and stream channels. Giant reed breaks have a continuous canopy less than 25 feet in height. They grow to a height of approximately 20 feet and occur from sea level to 1,641 feet amsl (Sawyer et al. 2009).

In the Study Area, giant reed breaks occur in monoculture stands outside the Santa Barbara Airport fence line along Hollister Avenue near the intersection with Los Carneros Road.

Since giant reed breaks are relatively small within the Study Area wildlife using this community may reflect the species attracted to adjacent areas. The dense structure of giant reed breaks may restrict movements by some terrestrial vertebrates, but openings between clusters likely permit even some medium-sized mammals, such as common raccoons and striped skunks, to move through this community. Smaller vertebrates using adjacent communities, such as California voles and Coast Range fence lizards, likely occur here. Although giant reed is often considered poor nesting habitat for birds, some species that occur in the Study Area have been documented using this plant for nesting at other locations (Greaves 2009). These species include Anna's hummingbird (*Calypte anna*) and lesser goldfinch (*Spinus psaltria*).

Pickleweed mats contain native pickleweed (*Sarcocornia pacifica*) as the dominant or co-dominant species in the subshrub and herbaceous layers. There are three membership rules for the pickleweed mat alliance: 1) pickleweed mats are areas where pickleweed occurs in greater than 10 percent absolute cover and sometimes where a higher cover of short annual or perennial grasses is present (if salt grass is greater than or equal to 50 percent relative cover, stands are in the salt grass flats alliance); 2) pickleweed mats are areas where pickleweed occurs in greater than 50 percent relative cover in the herbaceous layer; 3) pickleweed mats are areas where pickleweed occurs in greater than 50 percent relative cover and salt grass occurs in less than 30 percent relative cover in the herbaceous layer. Pickleweed pats are a CDFW Sensitive Natural Community. Pickleweed mats have an intermittent to continuous canopy less than 5 feet in height. Throughout California, the pickleweed mats alliance occurs from coastal marshes to inland alkaline seeps. The pickleweed mat alliance inhabits coastal California from the Mexico border, to depressions of the San Francisco Bay region, to the Oregon border. Pickleweed mats occur from 0.5 to 8 feet amsl. Species associated with the pickleweed mats alliance include spear orache (*Atriplex patula*), fathen, saltwort, salt marsh bulrush, brass buttons, swamp pricklegrass, saltmarsh dodder (*Cuscuta salina*), salt grass, watergrass, alkali heath, Oregon gumweed (*Grindelia stricta*), marsh jaumea, rush, broadleaved pepperweed, California sea lavender, shore grass, gray willow weed, verrucose seapurslane (*Sesuvium verrucosum*), cordgrass (*Spartina foliosa*), seaside arrowgrass, cocklebur, and algae (Sawyer et al. 2009).

In the Study Area, pickleweed mats occur in low-lying tidal areas, previously tidal areas, and occasionally on the sloped banks of tidal areas. Pickleweed mats occur in large stands with approximately 95 to 100 percent cover of pickleweed. Intermittent, low-lying, tidal pickleweed areas contain low percentages of alkali heath, saltmarsh dodder, and bare ground. Pickleweed on sloped banks contain herbaceous cover of salt grass, alkali heath, and creeping rye grass. Coulter's goldfields (CRPR 1B.1, LR), woolly seablite (CRPR 4.2, LR), and estuary seablite (CRPR 1B.2, LR) are special-status species occurring within this community.

The large expanses of pickleweed found along water bodies in the Study Area likely inhibit movement of small mammals such as common raccoons and striped skunks. However, in locations such where pickleweed is less dense, these species are able to move about, as shown by scat and tracks found in these areas in February and March 2012. Smaller terrestrial vertebrates, such as California voles and Coast Range fence lizards, may be found at the edges of the larger expanses of pickleweed or within more patchy growth of this species. However, tidal areas supporting pickleweed are unsuitable for these species. Relatively few bird species inhabit pickleweed salt marsh, but this community is the preferred habitat for State endangered Belding's savannah sparrow, which is found here year-round and nests within this habitat. The light-footed clapper rail (*Rallus longirostric levipes*; FE, SE), a species heavily dependent on this community, formerly was resident within pickleweed mats in the Study Area, which was the northern limit of its range (Dudek 2012). In winter, marsh wrens are often found in pickleweed mats. Some birds of prey forage over pickleweed from time to time, including northern harriers (*Circus cyaneus*) and the State fully protected white-tailed kite.

Poison hemlock patches include nonnative poison hemlock (*Conium maculatum*) or other non-native invasive plants of the Umbelliferae are dominant or co-dominant with other non-native plants in the herbaceous layer. Poison hemlock patches include poison hemlock with greater than 50 percent relative cover in the herbaceous layer. Poison hemlock patches have an open to continuous canopy less than 7 feet tall in the herbaceous layer. Throughout California, the poison hemlock alliance occurs in moist locations of various topography and is tolerant of semi-shaded areas. Poison hemlock patches occurs from sea level to 3,280 feet amsl (Sawyer et al. 2009).

In the Study Area, poison hemlock patches occur in small stands near moist disturbed locations.

Bottae's pocket gophers and California voles are common mammals that may occur in this vegetation community. Larger mammals likely avoid this community, as the density of the vegetation makes passage is difficult. The Coast Range fence lizard is a common reptile likely found in this community. Birds that may nest in poison hemlock patches include common yellowthroats and song sparrows.

Salt marsh bulrush marsh includes native salt marsh bulrush as the dominant or co-dominant species (greater than 50 percent relative cover) in the herbaceous layer. Throughout California, the salt marsh bulrush marsh alliance occurs at low elevations in tidal brackish marshes with seasonal flooding, seasonally flooded mudflats, and sub-saline marshes and ditches. Salt marsh bulrush marshes have an intermittent to continuous herbaceous canopy less than 5 feet in height and occur from sea level to 8,200 feet amsl. Some species associated with the salt marsh bulrush marsh alliance include creeping bentgrass, Pacific potentilla, fat-hen, seacoast bulrush (*Bolboschoenus robustus*), leafy goosefoot (*Chenopodium foliosum*), brass buttons, salt grass, pale spike rush, least duckweed, pickleweed, verrucose seapurslane, salt marsh sand spurry (*Spergularia salina*), and broadleaf cattail (Sawyer et al. 2009). Salt marsh bulrush marsh is a CDFW Sensitive Natural Community.

In the Study Area, salt marsh bulrush marsh occurs in stands along the edges of cattail marshes and California bulrush marshes. The emergent hydrophytic salt marsh bulrush occurs in wet areas throughout the property and within upper portions of Tecolotito Creek and Carneros Creek.

Vertebrate species occurring within this community are similar to those occurring in California bulrush marshes. However, marine and brackish water species that are relatively unlikely to occur in cattails may be more likely to occur within salt marsh bulrush marsh. Where this species occurs along Carneros Creek, the FE tidewater goby (*Eucyclogobius newberryi*) may seek cover or burrow within this community.

Smartweed-cocklebur patches include native smartweed (*Persicaria lapathifolia*), cocklebur (*Xanthium strumarium*), or other knotweed species as dominant or co-dominant in the herbaceous layer. The smartweed-cocklebur patches alliance has an open to continuous canopy less than 5 feet tall in the herbaceous layer. Throughout California, cocklebur patches occur in particularly disturbed areas such as seasonally flooded streamsides and alluvial flats. Smartweed-cocklebur patches occur from sea level to 4,900 feet amsl. Some species associated with the smartweed-cocklebur patches alliance include devil's beggartick (*Bidens frondosa*), western filed dodder (*Cuscuta pentagona*), *Echinochloa* spp., pale spike rush, western goldentop, *Fallopia* spp., *Persicaria* spp., and common lippie (*Phyla nodiflora*) (Sawyer et al. 2009).

Within the Study Area, smartweedcocklebur patches occur only as areas dominated by cocklebur, in disturbed wetland and marsh areas. Wildlife species using cocklebur patches are similar to those using curly dock. However, cocklebur patches provide poor structure for nesting songbirds such as the common yellowthroat and song sparrow, which nest within curly dock patches.

Western rush marshes include native, common (sometimes "western") rush (*Juncus patens*) as dominant species in the herbaceous layer. The western rush marsh alliance has an intermittent to continuous canopy less than 2.5 feet tall in the herbaceous layer. Throughout California, western rush marshes occur on seasonally saturated soils on flats, gentle slopes, or depressions. Western rush marshes occur from sea level to 5,250 feet amsl. Some species associated with the western rush marsh alliance include Pacific potentilla, coast carex (*Carex obnupta*), coastal burnweed (*Senecio minimus*), velvet grass, toad rush (*Juncus bufonius*), dune rush (*Juncus lescurii*), brownhead rush, Italian rye grass, Pacific woodrush (*Luzula comosa*), white clover (*Trifolium repens*), and cow clover (*Trifolium wormskioldii*) (Sawyer et al. 2009).

Within the Study Area, western rush marshes occur in disturbed wetland and marsh areas. Seasonal saturation of this community may limit its use by many terrestrial vertebrates. Common yellowthroats and song sparrows likely nest here. Other songbirds, such as California towhees and white-crowned sparrows likely forage here in dry conditions. Baja California treefrogs occur here.

Bristly ox-tongue patches are dominated by nonnative bristly ox-tongue (*Helminthotheca echioides*). These patches occur throughout California except in deserts and the Great Basin. Most commonly, bristly ox-tongue occurs in seasonally wet places near the coast of southern California. Bristly ox-tongue often occurs in waste places, roadsides, pastures, fields, crop fields, vineyards, orchards, gardens, landscaped areas, and other disturbed open places. Bristly ox-tongue thrives on clay soils, especially those high in calcium. This species occurs from sea level to 1,4800 feet amsl (DiTomaso and Healy 2007).

In the Study Area, bristly ox-tongue patches occur in slightly depressed non-tidal areas along Hollister Avenue and Los Carneros Road, and south of Tecolotito Creek adjacent to CDFW property. Wildlife species using bristly ox-tongue are similar to those using cocklebur patches and curly dock. Wet conditions probably limit the use of these areas for some terrestrial vertebrates, including reptiles and small mammals that occur in more upland areas. Baja California treefrogs occur within the wetland habitats where this community occurs. Nesting songbirds include common yellowthroats and song sparrows. Birds present during the non-nesting season include Wilson's snipe, marsh wren, and Lincoln's sparrow.

Scrub Communities

There are two general habitat types: upland coastal scrub and riparian scrub. The following section describes the scrub communities that were observed in the Study Area.

Upland Coastal Scrub Communities

Upland scrub communities, or coastal scrub, are a general habitat type in the more general scrub community physiognomic group. The Study Area includes seven individual vegetation communities: blue elderberry stands, California sagebrush scrub, coyote brush scrub, Menzies's golden bush scrub, poison oak scrub, and quailbush scrub. Each vegetation community is described below.

Blue elderberry stands include native blue elderberry (*Sambucus nigra* ssp. *caerulea*) as the dominant species (greater than 50 percent cover) in the shrub canopy. Throughout California, the blue elderberry stand alliance occurs on stream terraces and in bottomlands; localized areas occur in upland settings. Soils are usually gravelly alluvium and intermittently flooded. Blue elderberry stands have an open to continuous shrub canopy less than 26 feet in height that may be two tiered. The herbaceous ground layer is variable and usually grassy. Blue elderberry stands occur from sea level to 985 feet amsl. Some species associated with the blue elderberry stand alliance include California sagebrush (*Artemisia californica*), coyote brush, mulefat, bigpod ceanothus (*Ceanothus megacarpus*), bush monkey flower (*Diplacus aurantiacus*), Oregon ash (*Fraxinus latifolia*), sawtooth goldenbush (*Hazardia squarrosa*), toyon (*Heteromeles arbutifolia*), laurel sumac (*Malosma laurina*), tree tobacco (*Nicotiana glauca*), fuchsia flowered gooseberry (*Ribes speciosum*), lemonade berry (*Rhus integrifolia*), blackberry (*Rubus* spp.), narrowleaf willow (*Salix exigua*), arroyo willow, poison oak, and California wild grape (*Vitis californica*). In addition, emergent tree species such as black walnut (*Juglans californica*), Fremont cottonwood (*Populus fremontii*), coast live oak (*Quercus agrifolia*), and valley oak (*Quercus lobata*) may be present (Sawyer et al. 2009).

In the Study Area, blue elderberry stands occur in limited upland areas of variable size across the entire project site.

As blue elderberry occurs in limited patches within the Study Area, wildlife using this community is partly dictated by adjacent communities, which are generally other scrub communities. Brush rabbits may occur within these areas, and some species of small mammals may occur here as well. Coast Range fence lizards likely occur within this community and within adjacent communities. Songbirds with the potential to nest within this community include the mourning dove, bushtit (*Psaltriparus minimus*), northern mockingbird, and song sparrow.

California sagebrush scrub contains native California sagebrush as the sole or dominant shrub species. It has a continuous or intermittent shrub canopy of less than 7 feet in height with a variable ground layer. There are three membership rules for the California sagebrush scrub alliance: 1) California sagebrush scrub is present where California sagebrush occurs in greater than 60 percent relative cover in the shrub canopy; 2) California sagebrush scrub is present where California sagebrush is three times the cover of coyote brush and other shrub species; 3) California sagebrush scrub occurs where California sagebrush provides greater than 60 percent cover in the shrub canopy, although laurel sumac or bush monkey flower sometimes occurs in greater than 30 percent relative cover. The California sagebrush scrub alliance often occurs on steep, north-facing slopes and rarely in flooded low-gradient deposits along streams in shallow alluvial or colluvial-derived soils. Soils are alluvial or colluvial derived and shallow (Sawyer et al. 2009). California sagebrush scrub generally grows in areas with a long summer dry season with approximately 14 inches of annual precipitation that generally falls between November and April. California sagebrush scrub occurs along the central and south coast of California, as well as on the Channel Islands. Inland, this alliance occurs along the base of the Transverse and Peninsular ranges. In San Benito County, California, sagebrush scrub occurs in the central coastal interior mountains (NatureServe 2009). This alliance occurs between sea level and 3,940 feet amsl. Species associated with the California sagebrush scrub include chamise (*Adenostoma fasciculatum*), bush monkey flower, California encelia, goldenhills (*Encelia farinosa*), California buckwheat (*Eriogonum fasciculatum*), chaparral yucca (*Hesperoyucca whipplei*), Menzies's goldenbush (*Isocoma menziesii*), heartleaf keckiella (*Keckiella cordifolia*), coyote brush, deerweed (*Acmispon glaber*), western prickly pear (*Opuntia littoralis*), white sage (*Salvia apiana*), black sage (*Salvia mellifera*), purple sage (*Salvia leucophylla*), and poison oak (*Toxicodendron diversilobum*) (Sawyer et al. 2009).

In the Study Area, California sagebrush scrub occurs in the upland restoration berms of Tecolotito Creek and Carneros Creek. The herbaceous understory includes a sparse cover of various brome species as well as scarlet pimpernel and red-stemmed filaree.

Wildlife occupying California sagebrush scrub includes many species common to other scrub communities within the Study Area. Brush rabbits seek cover in these areas, and small mammals such as California voles likely occur here. Coast Range fence lizards and San Diego gopher snakes are reptiles that occur in scrub habitats. Songbirds nesting here include the mourning dove, northern mockingbird, California towhee, and song sparrow. White-crowned sparrows occur here in winter.

Coyote brush scrub includes native coyote brush as the dominant species (greater than 50 percent absolute cover) in the shrub layer. In addition, coyote brush scrub includes coyote brush as greater than 15 percent shrub cover over a grassy understory with coyote brush relative cover greater than 50 percent among shrub species. Coyote brush scrub also includes both quailbush and coyote brush with relative cover of both species between 30 percent and 60 percent in the shrub canopy. Coyote brush scrub has a variable shrub canopy less than 10 feet in height with a variable herbaceous ground layer. Throughout California, the coyote brush scrub alliance occurs on streamsides, stabilized dunes of coastal bars, river mouths, spits along the coastline, coastal bluffs, open slopes, ridges, and terraces. Soils are variable, from relatively heavy clay to sandy. The coyote brush scrub alliance inhabits the entire coast of California and extends into southern Oregon. Inland, this alliance occurs in the interior of the Coast Ranges and in the Transverse Ranges of the Los Padres National Forest in Southern California. Coyote brush scrub occurs from sea level to 4,920 feet amsl. Some species associated with the coyote brush scrub alliance include California sagebrush, blueblossom (*Ceanothus thyrsiflorus*), beaked hazelnut (*Corylus cornuta*), bush monkey flower, California buckwheat, seaside woolly sunflower (*Eriophyllum staechadifolium*), California coffeeberry (*Frangula californica*), coast silktassel (*Garrya elliptica*), salal (*Gaultheria shallon*), oceanspray (*Holodiscus discolor*), deerweed, yellow bush lupine (*Lupinus arboreus*), California wax myrtle (*Morella californica*), California blackberry (*Rubus ursinus*), white sage, purple sage, and poison oak (Sawyer et al. 2009).

In the Study Area, coyote brush scrub occurs in stands of variable sizes in upland areas spread across the entire project site. Some of the larger stands are dense and include partial coverage of quailbush. Herbaceous cover among coyote brush individuals includes salt grass and ripgut brome.

Coyote brush scrub provides shelter for brush rabbits and probably for other medium-sized mammal species such as the common raccoon and striped skunk. California voles may occur in this vegetation community. Common reptile species that occur here include the Coast Range fence lizard and San Diego gopher snake. Nesting songbirds occurring here include the mourning dove, bushtit, northern mockingbird, and song sparrow. Songbirds that may perch on shrubs within this community include the loggerhead shrike (*Lanius ludovicianus*) and black phoebe (*Sayornis nigricans*). Some birds of prey, such the white-tailed kite, may also perch in this community where it is adjacent to foraging habitat.

Menzies's golden bush scrub includes native Menzies's golden bush as the dominant or co-dominant species (greater than 50 percent relative cover) in the shrub layer. Menzies's golden bush scrub occurs in Southern California along the coast and in the Southern California mountains and valleys. It often occurs in sandy areas, including alluvial fans, arroyos, and stream terraces, with frequent disturbance. Menzies's golden bush scrub has an open to intermittent shrub canopy less than 3 feet in height with an open to continuous, diverse, and grassy herbaceous layer. It occurs from sea level to 3,937 feet amsl. Some species asciated with the Menzies's golden bush scrub alliance include California sagebrush, broom baccharis (*Baccharis sarothroides*), California matchweed (*Gutierrezia californica*), Virginia glasswort (*Salicornia europaea*), and (*Salicornia depressa*) (Sawyer et al. 2009). Menzies's golden bush scrub is a CDFW Sensitive Natural Community.

In the Study Area, this community occurs within restoration areas along the edges of tidal basins and along the banks of Tecolotito Creek and Carneros Creek. This community forms long, linear stands immediately upland of pickleweed and alkali heath in restoration areas. Wildlife using Menzies's golden bush scrub is, to some extent, dictated by adjacent habitats, including other scrub communities and salt marsh communities. Most mammals common to the ecological reserve likely occur here, including common raccoons, striped skunks, brush rabbits, and California voles. Common reptiles such as the Coast Range fence lizard and San Diego gopher snake also occur here. Songbirds foraging or nesting in adjacent habitats all likely occur here. Belding's savannah sparrows nesting in pickleweed or foraging in other parts of the reserve forage within this community, as do bushtits, common yellowthroats, California towhees, song sparrows, and wintering Lincoln's, white-crowned, and golden-crowned sparrows.

Poison oak scrub includes poison oak as the dominant shrub in the canopy. Poison oak scrub has a two-tiered, intermittent to continuous shrub canopy less than 13 feet in height with a variable ground layer (Sawyer et al. 2009). According to Holland (1986), this is a disturbance-related type maintained by frequent fires. The poison oak scrub alliance occurs along the majority of the California coast, in the Sierra Nevada Foothills, and the Mojave Desert. Poison oak scrub occurs in mesic hollows where salt-laden fog is present and on sheltered mesic and disturbed dry slopes farther inland. Elevations range from sea level to 2,360 feet amsl. Some species associated with the poison oak scrub alliance include California sagebrush, coyote bush, bush monkey flower, toyon, heartleaf keckiella, Lewis' mock orange (*Philadelphus lewisii*), laurel sumac, holly-leaf redberry (*Prunus ilicifolia*), thimbleberry (*Rubus parviflorus*), purple sage, black sage, and blue elderberry. Sparse emergent trees, such as black walnut and coast live oak, also may occur (Sawyer et al. 2009).

In the Study Area, this community occurs in stands along the southeastern boundary of the site, where it forms an intermittent shrub layer with an open herbaceous layer. Trees, including blue elderberry, are occasionally emergent. A continuous cover of poison oak with inclusions of coyote brush dominates the alliance in the Study Area. It also is adjacent to arroyo willow thickets and coast live oak woodland. As this community is most predominant adjacent to coast live oak woodland, arroyo willow thickets, and coyote brush scrub and the bluff bordering University of California at Santa Barbara (UCSB), wildlife found in this community is partly dictated by the mixing of poison oak scrub with these adjacent communities.

The density of this community, however, may dictate the ability of some medium-sized mammals, such as common raccoons and striped skunks, to pass through these areas. Some small mammals may occur here, including California vole, and some species of reptiles, such as the Coast Range fence lizard, inhabit these areas. Poison oak stands provide nesting habitat or cover for bird species including wrentit (*Chamaea fasciata*), common yellowthroat, spotted towhee (*Pipilo maculatus*), and California towhee. Wintering species such as the white-crowned sparrow and fox sparrow occur here, and poison oak is an important element in habitat for “Myrtle” yellow-rumped warblers (*Setophaga coronata*, coronata group).

Quailbush scrub includes native quailbush as greater than 50 percent of the relative cover in the shrub canopy. Quailbush scrub has an open to intermittent shrub canopy less than 16 feet in height with a variable herbaceous ground layer. Throughout Southern California, the quailbush scrub alliance occurs on gentle to steep slopes from coastal shrublands, alkali sinks, alkali meadows, flats, washes, and wetlands, and inland at desert washes and oases. It is often found in disturbed areas where soils are alkaline or saline clays. Some species associated with the quailbush scrub alliance include California sagebrush, coyote bush, mulefat, California sunflower, green molly (*Kochia americana*), laurel sumac, myoporum (*Myoporum laetum*), arrowweed (*Pluchea sericea*), honey mesquite (*Prosopis glandulosa*), lemonade berry, and tamarisk (*Tamarix* spp.) (Sawyer et al. 2009).

In the Study Area, this community occurs within restoration areas along the edges of tidal basins and along the banks of Tecolotito Creek and Carneros Creek. This community forms large stands in upland areas near gravel and paved access roads. Quailbush scrub forms an intermittent shrub layer with an open herbaceous layer where it grows in the Study Area. A continuous cover of quailbush with inclusions of coyote bush and salt grass herbaceous ground cover dominates the alliance in the Study Area. Woolly seablite (CRPR 4.2 species, LR) also may occur here.

Wildlife occurring in quailbush scrub is very similar to that occurring in coyote brush scrub. Because of the wetland affinities of quailbush and its overall greater proximity to other wetland vegetation, some wildlife species occurring in wetlands are more likely to occur in this community than in coyote brush scrub. Baja California treefrogs are more likely to be found in quailbush scrub than coyote brush scrub. One listed species, Belding’s savannah sparrow (SE) overall are more likely to forage and seek cover in quailbush scrub compared to coyote brush scrub.

Riparian Scrub Communities

Riparian scrub is a general habitat type in the more general physiognomic group scrub community, arroyo willow thickets and mulefat thickets. The vegetation communities are described below.

Arroyo willow thickets include native arroyo willow as the dominant or co-dominant shrub or tree in the canopy. Arroyo willow thickets have an open to continuous canopy less than 33 feet in height with a variable herbaceous ground layer. Arroyo willow thickets occur along stream banks and benches, on slope seeps, and on stringers along drainages. Some species associated with the arroyo willow thickets alliance include big leaf maple (*Acer macrophyllum*), coyote brush, mulefat (*Baccharis salicifolia*), common buttonbush (*Cephalanthus occidentalis*), American dogwood (*Cornus sericea*), wax myrtle, California sycamore (*Platanus racemosa*), black cottonwood (*Populus trichocarpa*), Fremont cottonwood, willows (*Salix* spp.), and blue elderberry (Sawyer et al. 2009). Arroyo willow thickets is a CDFW Sensitive Natural Community.

Arroyo willow thickets occur along the banks within the upper reaches of Carneros Creek and Tecolotito Creek as well as the upland areas near these creeks. In the Study Area, this community is dominated by arroyo willow and sometimes includes a low cover of coyote brush. There is a sparse herbaceous layer composed of black mustard, scarlet pimpernel, western verbena, California figwort (*Scrophularia californica*), and California pearly everlasting.

Wildlife use riparian habitats for a variety of purposes. Although arroyo willow thickets themselves are sometimes difficult for some animals to penetrate, some medium-sized mammals, such as the common raccoon, striped skunk, and coyote, may follow the riparian edges along creek beds near Hollister Avenue to move within or enter the site. Baja California treefrogs inhabit this community, and reptiles such as the Coast Range garter snake, California alligator lizard, and San Diego gopher snake may occur here. Arroyo willow thickets provide nesting, foraging, and wintering habitat for a variety of birds, including the Anna's hummingbird, Nuttall's woodpecker (*Picoides nuttallii*), bushtit, wrentit, ruby-crowned kinglet (*Regulus calendula*) yellow-rumped warbler, common yellowthroat, spotted towhee, song sparrow, house finch (*Carpodacus mexicanus*), and lesser goldfinch. Wilson's warblers (*Cardellina pusilla*) and warbling vireos (*Vireo gilvus*) are among species that use this habitat during migration. Some special-status bird species have been observed foraging in the Study Area within this community, including the yellow warbler (*Setophaga petechia*; SSC), yellow-breasted chat (*Icteria virens*; SSC), and least Bell's vireo (*Vireo bellii pusillus*; FE, SE).

Mulefat thickets include native mulefat as the dominant or co-dominant species in the shrub canopy. There are two membership rules for the mulefat thicket alliance: 1) mulefat thickets occurs where mulefat comprises greater than 50 percent relative cover in the shrub canopy; 2) mulefat thicket occurs where mulefat comprises greater than 30 percent relative cover in the shrub canopy with blue elderberry. Throughout California, the mulefat thickets alliance occur in canyon bottoms, irrigation ditches, floodplains, lake margins, and stream channels. It has a continuous two-tiered shrub canopy at less than 7 feet in height, or less than 16 feet with a sparse herbaceous layer. This alliance occurs on mixed alluvium soils between sea level and 4,100 feet amsl. Species associated with mulefat thickets include California sagebrush, willow baccharis (*Baccharis salicina*), coyote brush, tree tobacco, laurel sumac, arrowweed, blackberry, narrowleaf willow, arroyo willow, blue elderberry, and tamarisk. Sparse emergent trees, such as California foothill pine (*Pinus sabiniana*), California sycamore, Fremont cottonwood, oaks (*Quercus* spp.), and willows, may occur (Sawyer et al. 2009).

In the Study Area, mulefat thickets occur in stands of variable sizes spread across the entire project site. Some of the larger stands are fairly dense and include a sparse cover of herbaceous species. Mulefat thickets comprise approximately 9.22 acres, or 14.1 percent, of the vegetation cover in the Study Area.

As mulefat thickets occur in the Study Area in small patches adjacent to other scrub habitats, such as arroyo willow thickets, quailbush scrub, and coyote brush scrub, wildlife occurring in this community is similar to that occurring in these other scrub habitats. Mulefat thickets likely provide cover for brush rabbits and for small mammals such as California voles. Coast Range fence lizards and San Diego gopher snakes are common reptile species that occur in scrub habitats. Northern mockingbirds and song sparrows are common songbirds that nest in this community. One listed species, least Bell's vireo (FE, SE) often occurs in this community, although it has not been documented in mulefat scrub in the Study Area.

Woodlands and Tree Clusters

The tree-dominated physiognomic group in the Study Area includes two general habitat types: woodlands and tree clusters. Within these two general habitat types in the Study Area are three communities: coast live oak woodland, eucalyptus groves, and myoporum groves. The vegetation communities are described below.

Coast live oak woodland contains native coast live oak as the dominant or codominant species in the tree canopy. There are two membership rules for the coast live oak woodland alliance: 1) coast live oak woodland occurs where coast live oaks comprise greater than 50 percent relative cover in the tree canopy, or less than 3 percent where California bay (*Umbellularia californica*) trees are present; 2) coast live oak woodland occurs where coast live oaks comprise greater than 60 percent relative cover in the tree canopy. Coast live oak woodlands occur all along the California coast. Throughout California, the coast live oak woodland alliance occurs in alluvial terraces, canyon bottoms, stream banks, slopes, and flats. Coast live oak woodlands have an open to continuous tree canopy less than 98 feet in height, a sparse to intermittent shrub layer, and sparse or grassy herbaceous layer. Soils are deep, sandy or loamy, and include a high level of organic matter. Coast live oak woodlands occur from sea level to 3,940 feet amsl. In the Study Area, coast live oak woodlands occur in small, isolated stands in upland areas. This community occurs along the UCSB boundary and within the northern portion of the Study Area near Carneros Creek. Some species associated with the coast live oak woodland alliance include big leaf maple, boxelder (*Acer negundo*), Pacific madrone (*Arbutus menziesii*), California black walnut, California sycamore, Fremont cottonwood, blue oak (*Quercus douglasii*), valley oak, Engelmann oak (*Quercus engelmannii*), California black oak (*Quercus kelloggii*), arroyo willow, and California bay (Sawyer et al. 2009).

Coast live oak woodland provides a wide array of habitat values for wildlife. The shaded woodland north of Mesa Road has a sparse ground cover that is suitable for medium-sized mammals such as common raccoons, striped skunks, and coyotes to move around the Study Area. Small mammals such as Botta's pocket gophers likely live under the oak canopy. Amphibians and reptiles such as Baja California treefrogs and California alligator lizards likely live here. Nesting songbirds found here include Nuttall's woodpecker, Hutton's vireo (*Vireo huttoni*), western scrub-jay (*Aphelocoma californica*), oak titmouse (*Baeolophus inornatus*), bushtit, and house wren (*Troglodytes aedon*). The State fully protected white-tailed kite nest in this community within the Study Area. Other raptor species, including Cooper's hawks (*Accipiter cooperi*), red-shouldered hawks (*Buteo lineatus*), and red-tailed hawks, have the potential to nest here as well. Common wintering bird species found here include the ruby-crowned kinglet and yellow-rumped warbler.

Eucalyptus groves contain nonnative blue gum (*Eucalyptus globulus*), red gum (*Eucalyptus camaldulensis*), or other gum species as the dominant species in the tree canopy. Eucalyptus groves include Eucalyptus species with greater than 80 percent relative cover in the tree layer. The groves have an intermittent to continuous tree canopy less than 165 feet in height. Understory shrub and herbaceous layers are sparse to intermittent. Throughout California, the eucalyptus grove semi-natural woodland stands occur on naturalized upland and stream courses as planted trees, groves, and windbreaks. Eucalyptus groves occur from sea level to 985 feet amsl (Sawyer et al. 2009).

Eucalyptus groves occur along the southwestern portion of the Study Area, adjacent to UCSB. Stands occur along the slopes and upland areas near Mesa Road. This community comprises approximately 2.33 acres, or 3.6 percent, of the vegetation cover in the Study Area. Plant species occurring in the understory of this community include non-native grasses such as bromes and black mustard, and coyote brush.

Because of shade, and possibly the allelopatric (toxic) properties of eucalyptus leaf litter, little other vegetation is present in this community, and relatively little wildlife is found here. However, the relatively open ground under the canopy permits medium-sized mammals such as common raccoons and striped skunks to move easily through this community to access adjacent areas. Some bird species are adapted to this community. Yellow-rumped warblers feed on insects attracted to eucalyptus blossoms in the winter. Some birds of prey favor eucalyptus trees for nesting. Red-tailed hawks nest in eucalyptus north of Mesa Road. Cooper's hawks and great horned owls (*Bubo virginianus*) also have the potential to nest in this community. Monarch butterflies (*Danaus plexippus*; special animal [SA]) use this community for roosting in the region, but they are not known to use eucalyptus within the Study Area.

Myoporum groves contain nonnative myoporum as the dominant species in the tree canopy. Myoporum groves occur where Myoporum comprises greater than 60 percent relative cover in the tree layer. The groves have an open to continuous tree canopy less than 60 feet in height. Understory shrubs are infrequent or common and the herbaceous layer is simple to diverse. Throughout central and southern California, myoporum grove semi-natural woodland stands occur in coastal canyons, washes, slopes, riparian areas, and roadsides. Myoporum trees form dense single-species stands in coastal areas (Sawyer et al. 2009).

Myoporum groves occur in scattered small stands along the boundary of the Study Area. Myoporum groves provide shelter for medium-sized mammal species such as the brush rabbit, common raccoon, and striped skunk. California voles may occur in this vegetation community. Common reptile species such as the Coast Range fence lizard likely occur. Nesting songbirds occurring here likely include the mourning dove, bushtit, and northern mockingbird. Wintering loggerhead shrikes (SSC) and black phoebes are among birds that likely on myoporum. Some birds of prey, such the white-tailed kite, may also perch in this community where it is adjacent to foraging habitat.

Non-Vegetated Habitats

Remaining areas in the Study Area do not contain vegetation but still may provide habitat for wildlife. This section discusses four naturally occurring non-vegetated habitats and one habitat that does not occur naturally.

Naturally Occurring Habitats

Three naturally occurring non-vegetated habitats were identified in the Study Area.

Mudflats are not recognized in MCV2 or NCL. They are characterized as un-vegetated areas containing fine-grained sediment (mud) that are sometimes flooded. Mudflats occur in tidal areas and in freshwater lake and river systems. Mudflats are considered "special aquatic sites" and are protected under the Clean Water Act. Although mudflats are characterized in part by their absence of vegetation, some plant species do occur there, including around the margins.

Mudlfats are present within the Study Area in the low-lying areas of Goleta Slough. Special-status plant species that may occur around mudflats include Coulter's goldfields and woolly seablite.

Mudflats attract a variety of shorebirds. Species occurring here year-round include killdeer (*Charadrius vociferus*), greater yellowlegs (*Tringa melanoleuca*), long-billed curlew (*Numenius americanus*), least sandpiper (*Calidris minutilla*), and long-billed dowitcher (*Limnodromus scolopaceus*). Species occurring here seasonally include migrants such as the western sandpiper (*Calidris mauri*), Baird's sandpiper (*Calidris bairdii*), pectoral sandpiper (*Calidris malanotos*), dunlin (*Calidris alpina*), and short-billed dowitcher (*Limnodromus griseus*). Some duck species, particularly green-winged teal (A*nas crecca*), occasionally forage on mudflats. Herons and egrets, although more closely associated with shallow water, sometimes may be found in this habitat. Common raccoon tracks frequently are found on mudflats within the Study Area, and other mammals, such as coyotes, likely use these open areas for passage.

Saltflats are not recognized in MCV2 and NCL. These areas are characterized as un-vegetated areas containing fine-grained sediment (mud) that are frequently flooded, leaving a thin salt crust on the ground surface. Although this community is characterized in part by an absence of vegetation, some plant species may occur within this habitat or around its perimeter.

Saltflats are present within the study area in low-lying areas of Goleta Slough that experience occasional inundation. Species occurring here are essentially the same as those occurring in mudflats. Wildlife using saltflats within the Study Area are also essentially the same as those using mudflats.

The category "**open water**" encompasses a variety of aquatic habitats within the Study Area, including highly saline tidal areas, brackish waters, freshwater marshes, creeks with sandy or muddy bottoms, and combinations of the above.

Open water occurs in the Study Area along the Tecolotito Creek, Carneros Creek, and other connected side channels.

A wide variety of invertebrates, fish, and birds are found in these habitats. Dominant macroinvertebrates in tidal areas include crustaceans such as those of the genus *Corophium* and the class Ostrocoda, ringworms of the class Oligochaeta, mollusks of the family Physidae, and gastropods such as the California horned snail (*Certhidea californica*). Common fish occurring in brackish and saline waters include the yellow fin goby (*Acanthogobius flavimanus*), arrow goby (*Clevelandia ios*), longjaw mudsucker (*Gillichthys mirabilis*), fathead minnow (*Pimephales promelas*), topsmelt (*Atherinops offinis*), and California killifish (*Fundulus parvipinnis*). One listed fish species, the tidewater goby (FE), is also common in the Study Area in open water. Another listed fish species, the steelhead of the southern California DPS, may occasionally pass through the creeks at the airport. Baja California treefrogs are common around freshwater habitats of the ecological reserve.

Open water habitats attract bird species not found elsewhere in the ecological reserve, although some of these species will use vegetated areas when the latter areas are inundated. Waterfowl forage in a variety of open water habitats. Shallow waters, including fresh, brackish, and salt water, attract dabbling ducks such as gadwalls, mallards, and cinnamon teal, which are present for most of the year. These species may forage year-round in shallow water and bring their young here during the breeding season. Common wintering species using these areas include the American wigeon (*Anas penelope*), northern pintail (Anas acuta), northern shoveler (*Anas clypeata*), and green-winged teal. Shallower waters also attract great blue herons (*Ardea herodias*), great egrets, snowy egrets, and black-crowned night-herons (*Nycticorax nycticorax*). Black-necked stilts (*Himantopus mexicanus*), greater yellowlegs, lesser yellowlegs (*Tringa flavipes*), short-billed dowitchers, and long-billed dowitchers are among shorebirds that feed in very shallow water.

In slightly deeper waters are several species of diving ducks. Ruddy ducks (*Oxyura jamaicensis*) are present year-round when suitable habitat is available. Lesser scaup (*Aythya affinis*), ringnecked ducks (*Aythya collaris*), redheads (*Aythya americana*), and buffleheads (*Bucephala albeola*) are present from fall to spring. These species are often found in inundated areas north of Mesa Road. They also appear in tidal channels, including Tecolotito Creek. Sharing many of the same habitats are the pied-billed grebe and American coot. Some bird of prey species, such as the peregrine falcon (*Falco peregrinus*) sometimes hunt ducks, shorebirds, and other birds using open water goby

Bare ground areas within the Study Area are disturbed areas absent of vegetation. Within the Study Area, anthropogenic disturbances for access roads, non-native plant removal, and restoration projects dominate disturbed areas. Some areas characterized as bare ground within the Study Area include a small amount of vegetation.

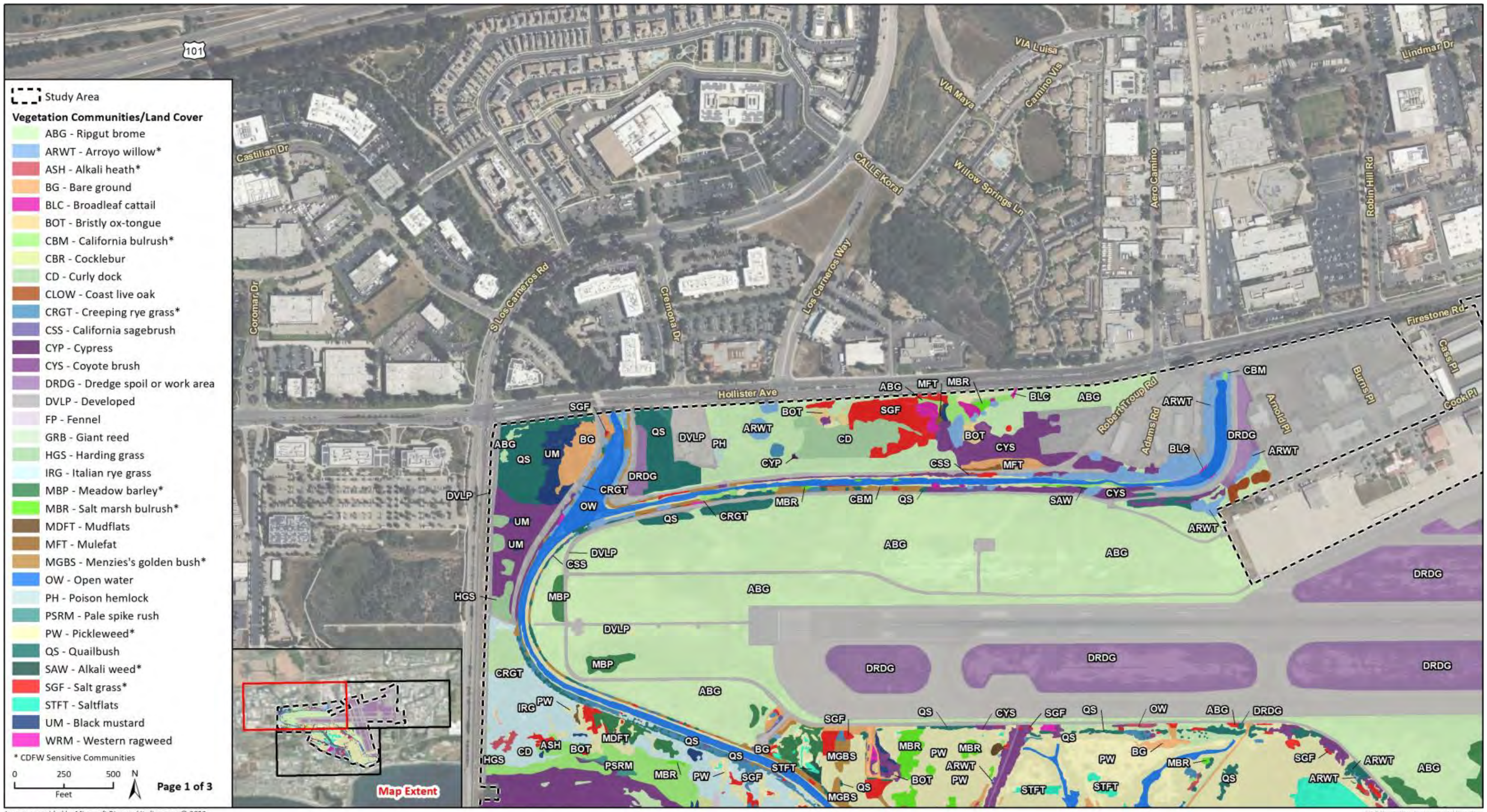
Bare Ground is sporadically present within the Study Area in disturbed, unvegetated uplands adjacent to waterways. One relatively disturbance tolerant special-status plant species, southern tarplant occurs in these areas and has been documented in the Study Area.

Bare ground within the Study Area is attractive to small mammals, such as the California ground squirrel, but this species is likely limited in these areas because of rodent control measures. Bird species found in these areas include the killdeer, which may nest as well as forage here. American pipits and western meadowlarks forage here from fall to spring. Birds of prey that forage over these areas include the northern harrier (from fall to spring) and red-tailed hawk.

Maintained/Frequently Disturbed Habitat

Dredge spoils and work areas are areas that are periodically modified by dredging or are subject to modifications such as grading. Dredge spoils are piled by County Flood Control around the airport in several locations, including near Tecolotito Creek and Carneros Creek. Other infield areas are subject to modification through grading for drainage purposes and to limit their use as wildlife habitat. Both areas are characterized by the presence of disturbance tolerant vegetation. One special-status plant species, southern tarplant occurs in dredge spoils areas. Dredge spoils piles are removed soon after dredging, and the ground that occupies these piles generally remains relatively free of vegetation, a condition favored by southern tarplant.

Figure 2-4: Vegetation Communities and Land Cover Map



Imagery provided by Microsoft Bing and its licensors © 2022

Figure 2-5: Vegetation Communities and Land Cover Map

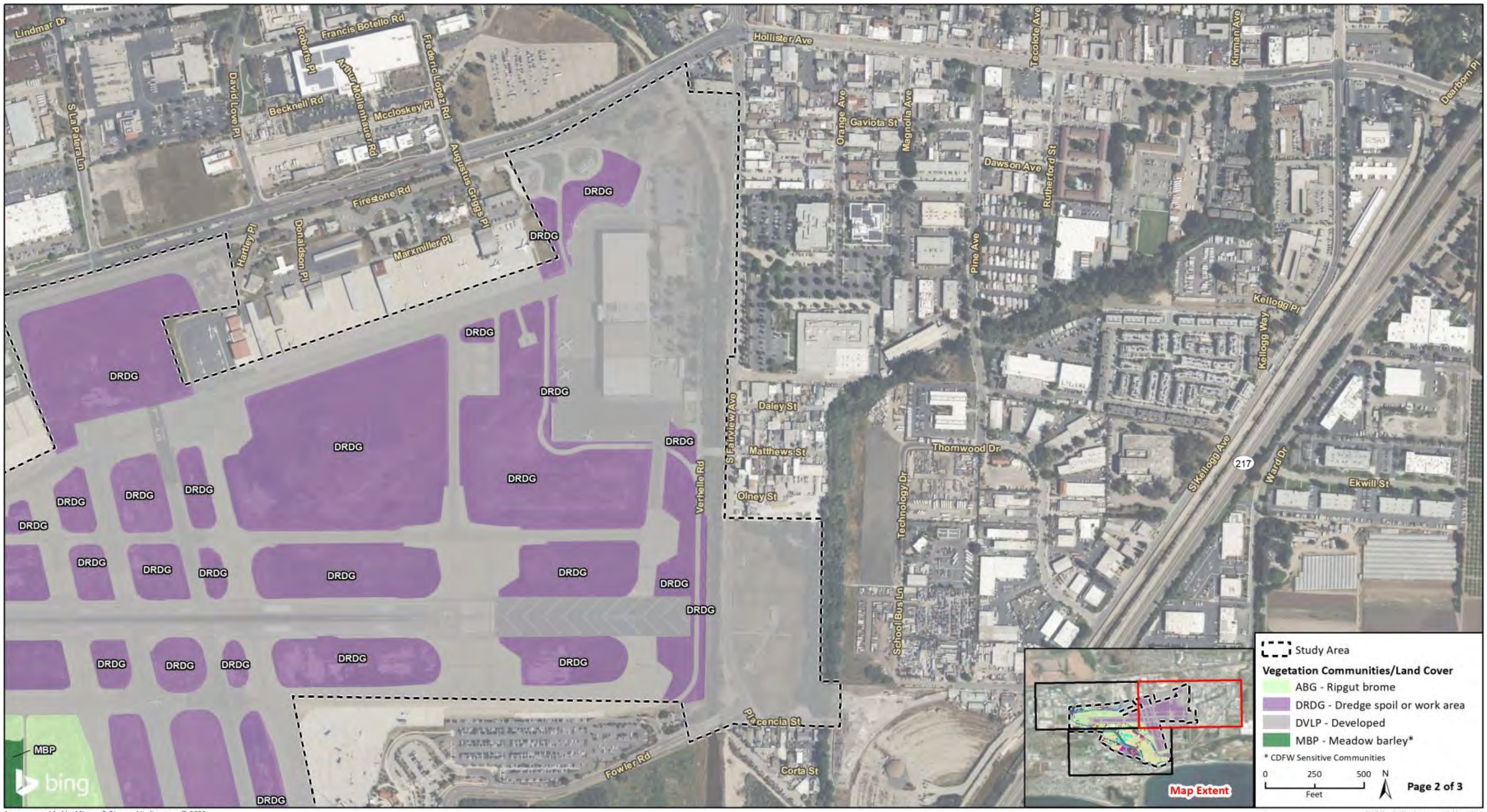


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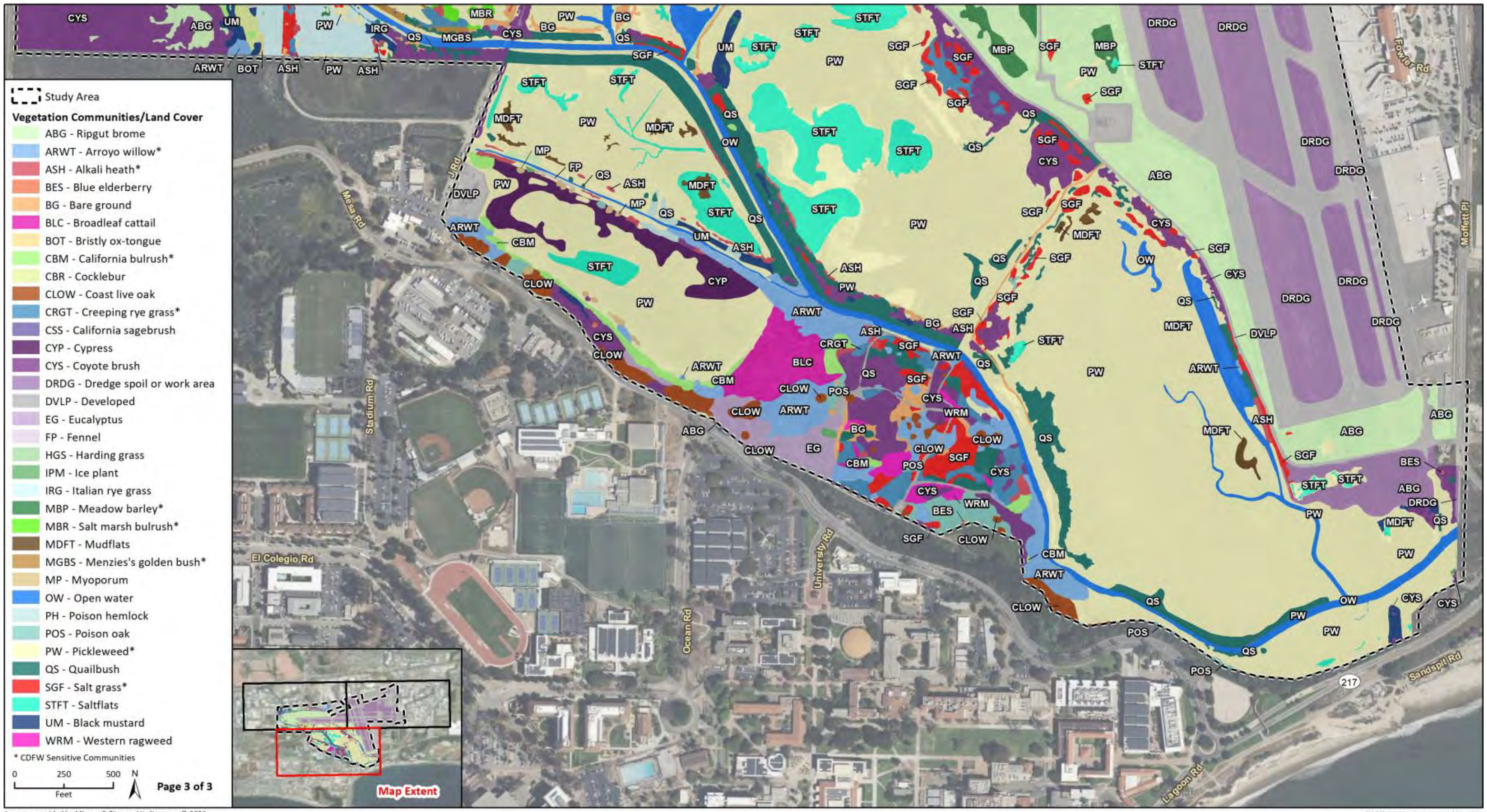
Figure 2-6: Vegetation Communities and Land Cover Map



2.2.7.3 General Wildlife

Goleta Slough, creeks within the Study Area, and the Airport contain habitat for numerous special-status and common species. Common wildlife species that are accustomed to urban environments may be found in the Study Area, including migratory birds, amphibians, aquatic species, and small mammals. Nesting birds and raptors have the potential to utilize riparian trees along creeks in the Study Area and the wooded areas north of Mesa Road for nesting and perching, while the slough and low vegetation in undeveloped areas provide foraging habitat (Dudek 2012).

Several species of raptors, such as the state fully protected white-tailed kite (*Elanus leucurus*) and the northern harrier often hunt within portions of wetland habitat. Sandpipers and plovers feeding in mudflats and other sparsely vegetated areas feed on invertebrates. During particularly wet periods, these species also may feed in seasonal pools that form in grassy areas near the airfield. The pickleweed marsh in Goleta Slough provides nesting habitat for the State endangered Belding's savannah sparrow and formerly hosted the federally endangered light-footed clapper rail (*Rallus longirostris levipes*), both species occurring at the extreme northern limit of their ranges. The brackish waters of Tecolotito and Carneros creeks, as well as other tidal channels within the slough, are occupied by the tidewater goby, a federally endangered species and a California Species of Concern. Steelhead of the southern California DPS, also a federally endangered species and a California Species of Concern, may occasionally pass through Goleta Slough in transit to upstream spawning areas. Scrub habitats and the small amount of woodland support a more upland assemblage of primarily common plant and wildlife species (Dudek 2012). Wildlife species that may use the vegetation habitats present in the Study Area are discussed in the Vegetation Communities and Other Land Cover section above.

2.2.8 Sensitive Biological Resources

Regulated or sensitive biological resources studied and analyzed herein include special-status plant and wildlife species, nesting birds and raptors, sensitive plant communities, and jurisdictional waters, including wetlands.[2]

For the purposes of this report, special-status species include:

- Species listed as threatened or endangered under the FESA; including proposed and candidate species
- Species listed as candidate, threatened, or endangered under the CESA
- Wildlife species designated as Fully Protected by the CFGC, and SSC, Special Animals, or Watch List by the CDFW
- Native Plant Protection Act (NPPA) – State Rare (SR)

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[2] Note that this study did not include field surveys, and the findings in this report are based on literature review as defined in the Methodology section. Standard data sources relied upon during the completion of this report, such as the CNDDB, may vary with regard to accuracy and completeness. In particular, the CNDDB is compiled from research and observations reported to CDFW that may or may not have been the result of comprehensive or site-specific field surveys. Although Rincon believes the data sources are reasonably reliable, Rincon cannot and does not guarantee the authenticity or reliability of the data sources it has used. Additionally, pursuant to our contract, the data sources reviewed included only those that are practically reviewable without the need for extraordinary research and analysis.

- CNPS CRPR 1A, 1B, 2A and 2B
- Species designated as sensitive by the U.S. Forest Service or Bureau of Land Management, if the project would affect lands administered by these agencies
- Species designated as locally important by the Local Agency and/or otherwise protected through ordinance, local policy, or HCPs/NCCPs

This section discusses special-status species and sensitive biological resources documented in the vicinity of the Study Area and evaluates the potential for the Study Area to support sensitive biological resources. The potential for each special-status species to occur in the Study Area was evaluated according to the following criteria:

- **No Potential.** Habitat on and adjacent to the site is clearly unsuitable for the species requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime), and species would have been identifiable on the site if present (e.g., oak trees). Protocol surveys (if conducted) did not detect species.
- **Low Potential.** Few of the habitat components (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime) meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site. Protocol surveys (if conducted) did not detect species.
- **Moderate Potential**. Some of the habitat components (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime) meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found on the site.
- **High Potential.** All the habitat components (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime) meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found on the site.
- **Present.** Species is observed on the site or has been recorded (e.g., CNDDB, other reports) on the site recently (within the last 25 years).

2.2.8.1 Special-Status Species

Based on the database and literature review, 28 special-status plant species and 53 special-status wildlife species may occur at or near the Study Area. Assessments for the potential occurrence of special-status species are based upon known ranges, habitat preferences for the species, species occurrence records from the CNDDB and other sources, species occurrence records from other sites in the vicinity of the Study Area, and previous reports for the Study Area. Species with moderate or high potential to occur in the Study Area are detailed below. A comprehensive list of sensitive species documented in the Study Area vicinity and their potential to occur within the Study Area is provided in **Appendix EC2**.

Special-Status Plant Species

Special-status plant species typically have specialized habitat requirements, including plant community types, soils, and elevational ranges. The literature review identified 30 special-status plant species that have been previously recorded within the vicinity of the Study Area. Of the 30 special-status plant species identified in the CNDDB review, 14 are not expected to occur because habitat on and adjacent to the Study Area is clearly unsuitable for the species' based on a variety of factors, including the disturbance history of the site, lack of suitable soils or habitat, elevation of the site, or inappropriate hydrologic conditions. Two of these species have a low potential to occur based on site conditions in the Study Area. Of these 30 special-status plant species, 14 are either assumed present or have a moderate or high potential to occur. The species with low or no potential to occur are not expected to occur and are therefore omitted from further discussion. These species are not anticipated to occur based on a variety of factors, including the lack of suitable habitat, soils, and/or other required microhabitat conditions, and/or the Study Area location in relation to the species known geographic and/or elevational range. **Appendix EC2** contains additional justification on every species' potential to occur, their listing statuses, their habitat requirements, their potential to occur designations, and their habitat suitability/observation notes.

Sensitive plant species with moderate or high potential to occur or which have been documented in the Study Area are discussed below.

- Present
  - California seablite (*Suaeda californica*; Federally Endangered [FE], CRPR 1B.1)
  - Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*; CRPR 1B.1, Locally Rare [LR])
  - Leopold rush (*Juncus acutus* ssp. *leopoldii*; LR)
  - Parish's glasswort (*Arthrocnemum subterminale*; LR)
  - Santa Barbara honeysuckle (*Lonicera subspicata* var. *subspicata*; CRPR 1B.2)
  - Shore grass (*Distichlis littoralis*; LR)
  - Short-seeded waterwort (*Elatine brachysperma*; LR)
  - Southern tarplant (*Centromadia parryi* ssp. *australis*; CRPR 1B.1, LR)
- High Potential
  - Estuary seablite (*Suaeda esteroa*; CRPR 1B.2, LR)
- Moderate Potential:
  - Black-flowered figwort (*Scrophularia atrata*; CRPR 1B.2)
  - Coulter's saltbush (*Atriplex coulteri*; CRPR 1B.2, LR)
  - Davidson's saltscale (*Atriplex serenana* var. *davidsonii*; CRPR 1B.2, LR)
  - Nuttall's scrub oak (*Quercus dumosa*; CRPR 1B.1)
  - Saltwort (*Batis maritima*; LR)

California Seablite

California seablite, a FE and CRPR 1B.1 species is a creeping perennial herb and belongs to the pea family (Fabaceae). This species is found in the coastal dune communities of California and thrives in areas of moderate disturbance and shifting dune dynamics. It occurs in the mild maritime climate of the central California coast on partially stabilized dune communities. It is found in three disjunct areas: throughout the northern portion of the Monterey Peninsula in Monterey County, near Half Moon Bay, and from the northwest portion of Marin County at Point Reyes National Seashore to the Russian River, Sonoma County (Jepson Flora Project 2022).

Although this species has not been documented in the vicinity of the Study Area, it was planted for restoration in the marsh area of Goleta Slough in 2010 and is considered to be present in the salt marsh vegetation within the Study Area (AECOM 2018).

Coulter's Goldfields

Coulter's goldfields, a CRPR 1B.1 and LR species, is an annual herb that is found along the California coast from Marin to San Diego counties, the central valley, and the Mojave Desert within coastal salt marshes, playas, and vernal pools in alkaline soils. It is found at elevations up to approximately 3,300 feet amsl and blooms between April and May.

The Study Area is within this species known geographic and elevational range and this species was documented within the Goleta Slough in 1982 (CDFW 2022a). Additionally, suitable coastal salt marsh and alkaline playa habitat is located within this portion of the Study Area. Therefore, this species is considered present within the coastal salt marsh and mudflats within the Study Area.

Leopold Rush

Leopold's rush, a LR species, is a rhizomatous, perennial herb. This species is found in coastal dunes, meadows, seeps, and coastal salt marshes and swamps, usually in more mesic and alkaline conditions. This species can be found from 1 to 900 feet amsl and is known to bloom May through June.

This species has been documented within the Study Area in 1916 and more recently in University of California at Santa Barbara Lagoon in 1991. Additionally, it was planted for restoration in the marsh area of Goleta Slough in 2010 and is considered to be present within the Study Area (AECOM 2018).

Parish's Glasswort

Parish's glasswort is considered a LR plant species in Santa Barbara County (SBBG 2018). This bushy perennial herb is found in coastal salt marsh, alkali sink, coastal sage scrub, and wetland-riparian communities at sea level to 2,624 feet amsl and is known to bloom from May to September.

In Santa Barbara County, it is found in high salt marsh at Vandenberg Space Force Base, Goleta, and Carpinteria (Smith 1998), and a specimen was collected in the Study Area near Ward Memorial Boulevard in 1980 (Calflora 2012). This species was also planted in the Study Area for restoration in marsh areas near Goleta Slough in 2010 (AECOM 2018). Coastal sage scrub communities present in the Study Area are mostly quailbush scrub, coyote brush scrub, and Menzies's goldenbush scrub, which are not generally high quality coastal sage scrub. Riparian habitat occurs in relatively disturbed situations. This species is likely present in the Study Area in the vicinity of pickleweed mats, alkali heath marsh, salt grass flats, and saltflats.

Santa Barbara Honeysuckle

Santa Barbara honeysuckle, a CRPR 1B.2 species, is a perennial shrub that is found along the central coast between Santa Barbara to Ventura and along the Santa Ynez Mountains within coastal scrub, chaparral, and cismontane woodlands. It is found at elevations up to approximately 3,300 feet amsl and blooms between April and May.

The Study Area is within this species known geographic and elevational range and this species has been documented 18 separate times within the six-quadrangle search area; the closest observation was documented in 2013 and is located approximately 0.25 mile south of the Study Area (CDFW 2022a). Additionally, suitable coastal scrub and cismontane woodland habitat is located within the undeveloped upland portions of the Study Area. Therefore, this species has a high potential to occur within these portions of the Study Area.

Shore Grass

Shore grass is considered a LR plant species in Santa Barbara County (SBBG 2018). It occurs in coastal salt marsh and wetland-riparian from sea level to 16 feet amsl. This perennial herb is known to bloom from May to June.

Shore grass was collected in the Study Area in 1980 south of Runway 15-33, and in the vicinity of the Study Area in 1948 and 1964 (Calflora 2012, FAA and City 2001) and was planted in the Study Area for restoration in marsh areas near Goleta Slough in 2010 (AECOM 2018). Riparian habitats in the Study Area occur in disturbed situations where shore grass is probably unlikely to be found. However, coastal salt marsh communities in the Study Area, such as pickleweed mats, salt grass flats, and alkali heath, marsh may still provide good habitat for this species.

Short-Seeded Waterwort

Short-seeded waterwort is a LR species in Santa Barbara County (SBBG 2018). It occurs in many habitats, including wetland-riparian communities, saltflats, and vernal pools, from 165 to 1,640 feet amsl. It is an annual or perennial herb that is known to bloom from April to July.

Smith (1998) notes that it is found in vernal flats and pools at the Santa Barbara Airport. Although it may be unlikely to occur in riparian communities, which occur in degraded situations in the Study Area, it likely still occurs in other communities, including saltflats, meadow barley patches, and more open pickleweed mats, as occur adjacent to meadow barley patches and saltflats in the Study Area, and is considered present.

Southern Tarplant

Southern tarplant, a CRPR 1B.1 and LR species, is an annual herb that typically grows along the margins of wetland areas, marshes, grasslands, and vernal pools, and is most often found along the disturbed margins of marshes. This species geographic range includes coastal Southern California and occurs up to approximately 1,300 feet above sea level. Southern tarplant typically blooms between June and October.

The Study Area is within this species known geographic and elevational range and this species has been documented 14 separate times within the six-quadrangle search area; the closest observation was documented along the boundary of the Goleta Slough in 1989 (CDFW 2022a). Additionally, suitable wetland and upland edge habitat is present within the Study Area along with alkaline soils and anthropogenically induced disturbance. Therefore, this species this species considered present along the coastal salt marsh and wetland ecotonal areas within the Study Area.

Estuary Seablite

Estuary seablite, a CRPR 1B.2 and LR species, is a perennial herb that is found in coastal Southern California within coastal salt marshes at elevations up to approximately 15 feet amsl. This species grows in clay, silt, and sand and it blooms between May and October.

The Study Area is within this species known geographic and elevational range and this species was documented within the Goleta Slough in 1979 (CDFW 2022a). Additionally, suitable coastal salt marsh with loamy sand soil is located within this portion of the Study Area. Therefore, this species has a high potential to occur within the coastal salt marsh found within the Study Area.

Black-Flowered Figwort

Black-flowered figwort, a CRPR 1B.2 species, is a perennial herb that is found in the central coast and central coast ranges within chaparral, closed-cone coniferous forest, coastal dunes, coastal scrub, and riparian scrub at elevations between 35 to 1,640 feet amsl. This species grows on sand, and is most commonly found on diatomaceous shales, and soils derived from other calcium- and diatom-rich soils. Its preferred microhabitat includes the outer edges of swales and sand dunes, and it blooms between March and July.

The Study Area is within this species known geographic and elevational range and this species has been documented 5 separate times within the six-quadrangle search area; the closest observation was documented in 1958 and is located approximately 0.7 mile southwest of the Study Area (CDFW 2022a). Additionally, suitable coastal scrub and riparian scrub habitat is located within the undeveloped portions of the Study Area along with sandy soils. However, sand dunes are not present within the Study Area and diatom and calcium rich soils are likely not present. Therefore, this species has a moderate potential to occur within the coastal and riparian scrub vegetation communities found within the Study Area.

Coulter's Saltbush

Coulter's saltbush, a CRPR 1B.2 and LR species, is a perennial herb that is found in coastal Southern California and grows in coastal scrub, and valley and foothill grassland, and most commonly in coastal bluff scrub and coastal dunes, at elevations between 10 to 1,510 feet amsl. This species is typically, but not always, found in alkaline or clay soils and generally blooms between March and October (Jepson Flora Project 2022).

The Study Area is within this species known geographic and elevational range and this species has been documented three separate times within the six-quadrangle search area; the closest observation was documented near the UCSB Lagoon approximately 0.50 mile south of the Study Area in 2003 (CDFW 2022a). Additionally, suitable coastal scrub and grassland habitat is present within the Study Area along with alkaline soils; however, this species preferred habitat of coastal bluff scrub and coastal dunes are absent from the Study Area. Therefore, this species has a moderate potential to occur within the coastal scrub and grassland habitat found within the Study Area.

Davidson's Saltscale

Davidson's saltscale, a CRPR 1B.2 and LR species, is an annual herb that is found in coastal Southern California in alkaline soils within coastal scrub and most commonly on coastal bluffs. It is found up to approximately 650 feet amsl and typically blooms between April and October.

The Study Area is within this species known geographic and elevational range and this species has been documented two separate times within the six-quadrangle search area; the closest observation was documented along the coastal bluff south of UCSB, adjacent to the southern boundary of the Study Area, in 1948 (CDFW 2022a). Additionally, suitable coastal scrub habitat and alkaline soils are found within the Study Area. However, coastal bluffs are absent from the Study Area. Therefore, this species has a moderate potential to occur within the coastal scrub habitat found throughout the Study Area.

Nuttall's Scrub Oak

Nuttall's scrub oak, a CRPR 1B.1 species, is a perennial shrub that is found in coastal Southern California and the California peninsular ranges within chaparral and coastal scrub up to approximately 650 feet amsl. This species generally occurs on sandy soils, sandstone, and sometimes on clay loam. It blooms between March and May.

The Study Area is within this species known geographic and elevational range and this species has been documented eight separate times between 1944 to 2006 within the six-quadrangle search area; the closest observation is located approximately 5.5 miles east of the Study Area (CDFW 2022a). Additionally, suitable coastal scrub habitat with sandy soils is present within the undeveloped upland portions of the Study Area. However, the sandy soils within the Study Area are more specifically a fine sandy loam and a loamy sand (USDA, NRCS 2022a) and this species prefers sandy soils, sandstone, and clay loam. Therefore, this species has a moderate potential to occur within the undeveloped coastal scrub portions of the Study Area that contain sandy soil.

Saltwort

Saltwort is considered a LR plant species in Santa Barbara County (SBBG 2018). It is found in coastal salt marshes, coastal strands, and wetland-riparian, almost always in natural conditions. This shrub occurs from sea level to 35 feet amsl and is known to bloom from July to November.

Smith (1998) notes that it is found in large clumps in salt marshes and in broken ground in Santa Barbara County and cites an occurrence of a specimen collected in Goleta Slough in 1995; FAA and City (2001) indicate the species has occurred in the northern portion of Area A. Given the relatively recent occurrence of saltwort, it may still be found in the Study Area. Communities where it may still occur include pickleweed mats, alkali heath marsh, and salt grass flats

Special-Status Wildlife Species

Based on the literature review, 53 special-status wildlife species are known or have the potential to occur in the vicinity of the Study Area. Of these 53 species, 10 are present, one has a high potential to occur, 10 have a moderate potential to occur, 26 have a low potential, and the remaining six special-status species are not expected to occur. A comprehensive list of sensitive species documented in the Study Area vicinity and their potential to occur within the Study Area is provided in **Appendix EC2**.

Special-status species with a low potential to occur are omitted from further discussion, because these species are not expected to be present. Special-status species with moderate and high potential to occur within the Study Area, or which have been documented in the Study Area, are discussed below. Sensitive bird species that have been observed foraging in the Study Area but lack suitable nesting habitat are not considered to be present.

- Present
  - Tidewater goby (*Eucyclogobius newberryi*; FE, State Candidate [SC])
  - Steelhead, Southern California DPS (*Oncorhynchus mykiss irideus*; FE, SC)
  - Western snowy plover (*Charadrius nivosus*; Federally Threatened [FT], CDFW SSC)
  - Great egret (*Ardea alba*; CDFW Special Animal [SA])
  - Great blue heron (*Ardea herodias*; CDFW SA)
  - Snowy egret (*Egretta thula*; CDFW SA)
  - Double-crested cormorant *(Nannopterum auritum*; CDFW Watch List [WL])
  - Belding's savannah sparrow (*Passerculus sandwichensis beldingi*; State Endangered [SE])
  - Black-crowned night heron (*Nycticorax nycticorax*; CDFW SA)
  - White-tailed kite (*Elanus leucurus*; CDFW Fully Protected [FP])
- High Potential to Occur
  - Cooper's hawk (*Accipiter cooperii*; CDFW WL)
- Moderate Potential to Occur
  - Burrowing owl (*Athene cunicularia*; CDFW SSC)
  - California horned lark (*Eremophila alpestris actia*; CDFW WL)
  - Northern California legless lizard (*Anniella pulchra*; CDFW SSC)
  - Tricolored blackbird (*Agelaius tricolor*; State Threatened [ST], CDFW SSC)
  - Western pond turtle (*Emys marmorata*; CDFW SSC)
  - Coast horned lizard (*Phrynosoma blainvillii*; CDFW SSC)
  - Coast patch-nosed snake (*Salvadora hexalepis virgultea*; CDFW SSC)
  - Two-striped garter snake (*Thamnophis hammondi*; CDFW SSC)
  - Crotch bumble bee (*Bombus crotchii*; SC)
  - Mimic tryonia (*Tryonia imitator*; CDFW SA)

Special-Status Bird Species

Burrowing Owl

The burrowing owl is a CDFW SSC that is both migratory and a non-migratory resident in California. The species inhabits open, dry annual or perennial grasslands, deserts, and scrublands with low-growing, sparse vegetation and few shrubs. They prefer level to gentle topography and well-drained soils. The species may also occur in agricultural areas, ruderal grassy fields, vacant lots and pastures if the vegetation structure is suitable (short or sparse) and useable burrows and foraging habitat are present. The species is a subterranean nester and dependent on burrowing mammals such as the California ground squirrel. Natural rock cavities, debris piles, culverts, and pipes are also used for nesting and year-round roosting (CDFW 2012).

This species may utilize the margins of disturbed, vegetated spaces within the Study Area. Four CNDDB occurrences have been recorded within the six-quadrangle search area with the most recent occurring in 2001 on Ellwood Mesa, approximately 1.1 miles southwest of the Study Area. However, a more recent occurrence was documented in March 2021 approximately 1.3 miles southwest of project area on the Ellwood Mesa (iNaturalist 2022) The species has a moderate potential to occur in the Study Area.

California Horned Lark

The California horned lark is a CDFW WL species that inhabits grasslands, shores, and tundra. This species prefers open ground, typically avoiding areas with trees and bushes for both nesting and foraging. California horned lark can be found in a variety of locations that are relatively open, including short-grass prairies, extensive lawns (as on airports or golf courses), plowed fields, stubble fields, beaches, lake flats, and dry tundra of far north or high mountains, which provide suitable foraging habitat (Zeiner et al. 1990).

This species may utilize disturbed grassy locations within the Study Area for feeding and nesting. One CNDDB occurrence of California horned lark was recorded approximately 1 mile southwest of the Study Area in 2003 and the species has a moderate potential to occur in the Study Area.

Cooper's Hawk

The Cooper's hawk is a CDFW WL species that typically inhabits woodlands and forest edges but can also be found in urban parks and neighborhoods where trees are present. Nests are constructed 25 to 50 feet high in a variety of tree species, including pines, oaks, beeches, and spruces. Nests are made of sticks and are often lined with bark flakes and green twigs. Cooper's hawks are aerial predators that feed primarily on medium-sized birds, such as mourning dove (*Zenaida macroura*), American robin (*Turdus migratorius*), California quail (*Callipepla californica*), and European starling (*Sturnus vulgaris*). In addition to preying on adult birds, Cooper's hawks will also occasionally rob nests and hunt rabbits, rodents, and bats (Cornell Lab of Ornithology 2022).

This species may utilize the larger landscape/ornamental and landscape trees along roadways in the northeast corner of the Study Area and has been successful at nesting in residential areas. The nearest occurrence records for this species are 1.5 miles southeast and 1.3 miles southwest of the Study Area, recorded in 2009 and 2003, respectively. These occurrences were recorded in areas with large trees, adjacent to riparian areas and open grasslands with foraging habitat. This species has a high potential to occur in the Study Area.

Great Blue Heron

The great blue heron is a CDFW SA species and listed as a species of least concern under the International Union for Conservation of Nature (IUCN) (IUCN 2022). This species has a widespread range in North America, occurring near marshes, swamps, shores, and tideflats. The species nests in trees or shrubs near water, although they may nest on the ground if the location is free of predators. Great blue herons have an adaptable diet and are known to eat fish primarily, but also will feed on salamanders, turtles, snakes, insects, rodents, and birds. The species is known to forage in shallow water and grasslands (National Audubon Society 2022).

This species may utilize the creeks, tide flats, and marshland in the Study Area for foraging and suitable nesting habitat is present in the Study Area. The nearest occurrence records for this species is 0.2 mile southeast of the Study Area, recorded in 2012 however anecdotal observations suggest great blue herons are commonly observed in the Goleta Slough and are relatively abundant on the Southern California coast. The species is present in the Study Area.

Great Egret

The great egret is a CDFW SA species and listed as a species of least concern under the IUCN (IUCN 2022). This species is a shorebird that inhabits marshes, ponds, shores, and mudflats. This species typically nests in trees or shrubs near water but can also nest in thickets further from water sources, or in low marshes. Great egrets forage in shallow shores of lakes, lakes marshes, lagoons, and estuaries. Their diet consists primarily of fish, but they will also hunt crustaceans, amphibians, snakes, and insects. They will also eat rodents and other small birds if foraging away from water (National Audubon Society 2022).

This species may utilize the creeks, tide flats, and marshland in the Study Area for foraging and suitable nesting habitat is present in the Study Area. The nearest occurrence records for this species is 0.2 mile southeast of the Study Area, recorded in 2012; however, anecdotal observations suggest great egrets are commonly observed in the Goleta Slough and are relatively abundant on the Southern California coast. The species is present in the Study Area.

Tricolored Blackbird

The tricolored blackbird is a ST species and CDFW SSC. The tricolored blackbird is found near freshwater habitats where it nests in emergent freshwater or riparian vegetation. This species prefers nesting in dense thickets of cattails and tules. Tricolored blackbirds require open water, protected nesting substrate, and foraging areas with insect prey within a few kilometers of the colony. The sites generally need to support flooded nesting vegetation and suitable foraging sites within a few kilometers (Shuford and Gardali 2008). Due to their highly colonial nature, nesting areas must be large enough to support a colony of about 50 pairs. This species feeds in grasslands and croplands near nesting areas. The tricolored blackbird commonly occurs throughout the eastern Santa Maria Valley, Central Valley and in the Southern Coast Ranges, Transverse, and Peninsular Ranges.

Three CNDDB occurrences have been recorded within the six-quadrangle search area. One occurrence which overlaps the Study Area documents tricolored blackbirds in the late 1970s. The species was last observed there in 1983 and the species has a moderate potential to occur in the Study Area. A more recent occurrence of an individual was documented in May 2021 near Coal Oil Point, approximately 1.6 miles from the Study Area (iNaturalist 2022). This species may occur as a transient in the Study Area, however since no suitable nesting substrate or areas of open water are present the species has a moderate potential to occur in the Study Area.

White-tailed Kite

The white-tailed kite is a CDFW FP species. A yearlong resident in coastal and valley lowlands, the species inhabits a wide range of habitats, mostly in cismontane California. The species prefers trees with dense canopies for cover. Their diet consists mostly of voles and other small, diurnal mammals, but the species occasionally feeds on birds, insects, reptiles, and amphibians. Typical foraging habitat is undisturbed, open grasslands, meadows, farmlands and emergent wetlands. Nesting is typically near top of dense oak, willow, or other tree stands, located near foraging areas. This species preferentially selects herbaceous lowlands with a range of woodland structure, and high density of voles, and substantial groves of dense, broad-leafed deciduous trees for nesting and roosting (Cornell Lab of Ornithology 2022).

The dense tree canopies that this species prefers are limited to closely grouped ornamental and riparian trees the Study Area. The landscaped areas within the Study Area provide foraging habitat for the species. Three CNDDB occurrences of white-tailed kite have been recorded within the six-quadrangle search area. In 2012 this species was observed foraging in the Study Area and is considered present.

Western Snowy Plover

The western snowy plover is a FT species and CDFW SSC. The Pacific coast population of the western snowy plover breeds primarily on coastal beaches from southern Washington to southern Baja California, Mexico. The population breeds above the high tide line on coastal beaches, sand spits, dune-backed beaches, sparsely vegetated dunes, beaches at creek and river mouths, and salt pans at lagoons and estuaries. Some inland birds regularly winter at agricultural waste-water ponds in San Joaquin Valley and at saline lakes in Southern California (Page et al. 1986). The plover forages on beaches, tide flats, river mouths, and lagoons, typically in shallow (1-2 cm deep) waters (Cornell Lab of Ornithology 2021). A CNDDB occurrence in January 2017 documented 82 individuals at a winter roosting site at the west end of Goleta Beach County Park, just south of the Study Area. Suitable foraging habitat is found within the Study Area while suitable nesting habitat is found adjacent to the southern boundary of the Study Area. The species is considered present in the Study Area.

Snowy Egret

The snowy egret is a CDFW SA species and listed as a species of least concern under the IUCN (IUCN 2022). This species is a shorebird that inhabits marshes, ponds, shores, and mudflats. This species typically nests in trees or shrubs near water but can also nest in thickets further from water sources, or in low marshes. Snowy egrets forage in shallow shores of lakes, lakes marshes, lagoons, and estuaries. Their diet consists primarily of fish, but they will also hunt crustaceans, amphibians, snakes, and insects. They will also eat rodents and other small birds if foraging away from water (National Audubon Society 2022).

This species may utilize the creeks, tide flats, and marshland in the Study Area for foraging and suitable nesting habitat is present in the Study Area. Snowy egrets are frequently observed near the southern boundary of the Study Area near Goleta Beach County Park with documented occurrences as recently as November 5, 2022 (iNaturalist 2022). The species is present in the Study Area.

Double Crested Cormorant

Double-crested cormorant is a CDFW WL species that frequents coasts, bays, lakes, and rivers. This species is the most generally distributed of the six North American cormorants and may be found in almost any aquatic habitat. Their diet consists of fish and other aquatic life, foraged mostly by diving from the surface and swimming underwater, propelled by feet (may sometimes use wings as well). Nesting occurs on the ground, coastal cliff edges, and in trees, shrubs, and in artificial structures along water body margins.

Suitable nesting and foraging habitat is present onsite, and a CNDDB occurrence from May 2012 documented an estimated 37 nests and 74 breeding birds 0.2 mile east of the southern boundary of the Study Area near Goleta Beach County Park. This species is present in the Study Area.

Belding's Savannah Sparrow

Belding's savannah sparrow is a SE species that inhabits coastal marshes, from Santa Barbara south through San Diego County. It is one of only two wetland dependent avian species that reside year-round in the coastal salt marshes of Southern California. This species forages for seeds insects, snails, and spiders throughout the marsh, within the vegetation, and along intertidal mudflats. Belding's savannah sparrows nest in the salt marsh vegetation (*Salicornia* genus) on and about the margins of tidal flats. Suitable nesting and foraging habitat are present within the Study Area and a CNDDB search indicated the species was recorded on site in 2016. This species is presumed extant in the Study Area.

Prairie Falcon

Prairie falcon is a CDFW WL species that frequent wide, open spaces from deserts to tundra for foraging. Prairie falcons typically nest on cliffs adjacent to grasslands and appear to be declining due to loss of foraging habitat. Due to their diet on non-aquatic birds, they have not been as affected by DDT as other raptors. Individuals breed in open country throughout the western United States wherever they can find bluffs and cliffs to build nests. A CNDDB query withing the six-quadrangle search area shows the species is presumed extant in the areas surrounding the Santa Ynez Mountains, approximately 4.4 miles from the Study Area. In 2011, an observation was recorded west of Lake Cachuma reservoir, approximately 16 miles northwest of the project area. While no closer documented occurrences have been recorded, the CNDDB search noted the species is known to forage far afield, even to marshlands and ocean shores. The species has a moderate potential to occur in the Study Area.

Black-Crowned Night Heron

The black-crowned night heron is a CDFW SA species and an IUCN Species of Least Concern that typically occurs in fresh and saltwater wetlands throughout the California coast. The species primarily eats small fish, earthworms, mussels, squid, crustaceans, frogs, other amphibians, aquatic insects, lizards, snakes, small rodents, small birds and eggs. The species nests colonially, usually in trees, occasionally in tule patches. Rookery sites are located adjacent to foraging areas including lake margins, mud-bordered bays, marshy spots. Suitable nesting and foraging habitat present onsite. Black-crowned night herons are commonly observed near the southern boundary of the Study Area near Goleta Beach County Park with documented occurrences as recently as October 24, 2022 (iNaturalist 2022). The species is present in the Study Area.

Special-Status Fish Species

Tidewater Goby

The tidewater goby is a FE and SC species. Tidewater goby populations are found in brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County to the mouth of the Smith River and typically sequestered into shallow lagoons and lower stream reaches. Although tidewater gobies have rarely been captured in the marine environment (Swift et al. 1989), individuals can disperse between lagoons and estuaries in close proximity. The tidewater goby is benthic in nature, and lives in habitats including brackish, shallow lagoons and lower stream reaches where the water is fairly still but not stagnant (Love and Passarelli 2020, Wang 1982, Irwin and Soltz 1984, Swift et al. 1989, Swenson 1999). They feed mainly on small invertebrates, including mysid shrimp (*Mysidopsis bahia*), gammarid amphipods (*Gammarus roeseli*), and aquatic insects, particularly the chironomid midge (family Chironomidae) larvae (Swenson 1995, Moyle 2002). Breeding occurs in slack, shallow waters of seasonally disconnected or tidally muted lagoons, estuaries, and sloughs. but can also occur on rocky, mud, and silt substrates (USFWS 2005). The project site is within federally designated critical habitat for this species. A CNDDB record search indicated one adult and four juveniles of this species were documented in 2011 within the Study Area, in Tecolotito Creek, during USFWS presence/absence surveys. This species is present in the Study Area.

Southern California Steelhead

Southern California steelhead is a FE and SC species. This species is one of six Pacific salmon species that are native to the west coast of North America and are currently the only species of this group that naturally reproduces within the coastal watersheds of Southern California. Juvenile steelhead born in freshwater migrate to saltwater to develop into adulthood before returning back to freshwater to breed. Steelhead employ several different life-history strategies that exploit all portions of a river system and therefore serve as an indicator of the health of Southern California watersheds. The steelhead population found in Goleta Slough is part of the southern California steelhead DPS which extends from the Santa Maria River in San Luis Obispo County to the U.S-Mexico border (NMFS 2006).

The Study Area includes a segment of San Pedro Creek, which is federally-designated critical habitat for southern California steelhead. Anecdotal data indicates that adult steelhead occurrence in Goleta Slough is necessarily limited to periods when the estuary is open, at which point adults are expected to use it as a migration corridor to the upper watershed as soon as water depth in the river allows. Timing of smolt outmigration also depends on when adequate flow conditions are present to connect the estuary to the ocean (Rincon 2016). Although steelhead must use the Goleta Slough as a migratory corridor, little information regarding steelhead use of the Slough as rearing habitat has been available. However, detailed information on rearing in other similar coastal lagoons suggests that the Slough currently provides potential rearing habitat for steelhead.

Recent observations of adult steelhead are limited to Atascadero and San Pedro creeks (Stoecker 2002 NMFS 2013 as cited in U.S. Army Corps of Engineers [USACE] 2014), however, fish sampling efforts conducted in the slough have failed to capture any steelhead. Due to occurrence reports and suitable habitat conditions, this species is presumed present within the Study Area.

Special-Status Reptile Species

Coast Horned Lizard

The coast horned lizard, commonly referred to as Blainville's horned lizard, is a CDFW SSC. Coast horned lizard occurs in grasslands, coniferous forests, woodlands, and chaparral, containing open areas and patches of loose soil. Coast horned lizard diets are specialized and almost exclusively consist of native ants (>94 percent by prey item [Suarez et al. 2000]). The species is commonly associated with open areas of sandy soil and low vegetation, often found near ant hills for feeding. The species ranges from the Baja California border west of the deserts and the Sierra Nevada, north to the Bay Area, and inland as far north as Shasta Reservoir (Nafis 2020).

The arroyo willow thickets in the Study Area may provide suitable habitat for this species. Multiple CNDDB occurrences have been recorded within the six-quadrangle search area, the most recent of which is from 2010 and is located in the Santa Ynez Mountains, approximately 4.5 miles northeast of the Study Area, and the species has a moderate potential to occur in the Study Area.

Northern California Legless Lizard

The northern California legless lizard is a CDFW SSC that is typically found in coastal dune, valley-foothill chaparral, and coastal scrub vegetation communities, and areas with sandy or loose organic soils or high amounts of leaf litter. Moisture is an essential component of their habitat requirements and individuals are often encountered buried in leaf litter where they lie barely covered in loose soil. The species ranges from northern Contra Costa County south to Ventura County, and in scattered locations in the San Joaquin Valley and on the desert side of the Tehachapi Mountains and part of the San Gabriel Mountain (Nafis 2021). This lizard usually forages for insect larvae, small adult insects, and spiders at the base of shrubs or other vegetation either on the surface or just below it in leaf litter and sandy soil. The nearest occurrence records for this species are 1.6 miles east of the Study Area near More Mesa and suitable habitat is present onsite. The species has a moderate potential to occur in the Study Area.

Western Pond Turtle

Western pond turtle is a CDFW SSC that is found in ponds, lakes, rivers, creeks, marshes, and irrigation ditches, with abundant vegetation. This species is omnivorous and feeds primarily on insects, crayfish, and other aquatic invertebrates. Plant foods include filamentous algae, lily pads, tule, and cattail roots. It requires basking sites of logs, rocks, cattail mats, or exposed banks and will estivate during summer droughts by burying itself in soft bottom mud. When creeks and ponds dry up in summer, some turtles will travel along the creek until they find an isolated deep pool, others stay within moist mats of algae in shallow pools, and many turtles move to woodlands above the creek or pond and bury themselves in loose soil. Western pond turtle is active from approximately February to November and will overwinter underground until temperatures warm up and the heavy winter flows of the creek subside before returning to the creek in the spring. Egg laying occurs in the sandy banks of creeks and this species can nest up to one-half mile in adjacent uplands if suitable habitat exists.

A CNDDB search returned three documented occurrences of western pond turtle within 1.1 miles of the Study Area since 2007. The most recent occurrence was documented in 2015 in Atascadero Creek, approximately 1 mile east of the Study Area. The site contains suitable habitat for both foraging and nesting and this species has a moderate potential to occur in the Study Area.

Coast Patch-Nosed Snake

The coast patch-nosed snake is a CDFW SSC. The coast patch-nosed snake range occurs from the northern Carrizo Plains in San Luis Obispo County, south through the coastal zone, south and west of the deserts, into coastal northern Baja California (Nafis 2020). The species is most common in semi-arid brushy areas and chaparral in canyons, rocky hillsides, and plains and require loose soils for burrowing. The species lays eggs between May and August (Stebbins 2003) and they are presumed to overwinter in small mammal burrows and/or woodrat middens during October through March. Their diet consists of mostly lizards, especially whiptails (*Aspidocelis* spp.), along with small mammals, and possibly small snakes, nestling birds, reptile eggs, and amphibians.

Seven CNDDB occurrences have been recorded within the six-quadrangle search area; however, no occurrence overlapped the Study Area. The last documented observation of the species within 5 miles of the Study Area occurred in 1979; however, suitable foraging habitat is present on site. This species has a moderate potential to occur in the Study Area.

Two-Striped Garter Snake

The two-striped garter snake is a CDFW SSC that occurs from Monterey County south along the coast, mostly west of the South Coast Ranges, into San Diego County west of the Peninsular Ranges. It is found from sea level to approximately 7,000 feet elevation. It is primarily an aquatic species that occurs near ponds, pools, creeks, cattle tanks, and other sources of water within oak woodland, chaparral, scrub communities, and coniferous forest habitats. The species occurs in rocky areas, as well. Depending upon weather conditions, two-striped garter snake can be active during January through November and typically breeds March through April.

A CNDDB record search showed five occurrences withing the six-quadrangle search area, with one occurrence in 2013 approximately 7.5 miles from the Study Area. In May 2020, a two-striped garter snake was observed in Hope Ranch approximately 2.5 miles from the Study Area (iNaturalist 2022). Both Tecolotito Creek and San Pedro Creek pass through the Study Area and offer potentially suitable foraging habitat when freshwater is present. This species has a moderate potential to occur in the Study Area.

Special-Status Invertebrate Species

Crotch Bumble Bee

Crotch bumble bee is a SC species (CDFW 2022). This species inhabits grassland and scrub areas, requiring a hotter and drier habitat than many other bumble bee species. Like other bumblebees, Crotch's bumblebees are social insects that live in annual colonies. Nests are often underground in abandoned rodent dens or above ground in tufts of grass, old bird nests, rock piles, or cavities in dead trees. This species visits a wide range of host plants and is therefore considered a dietary generalist. CNDDB search results returned three occurrences that overlap with the Study Area with numerous other occurrences documented approximately 1 mile or less from the Study Area from 2017-2022. Suitable habitat is present onsite, and this species has moderate potential to occur within the Study Area.

Mimic Tryonia

Mimic tryonia, a CDFW SA species, inhabits coastal lagoons, estuaries, and salt marshes, from Sonoma County south to San Diego County. It is found only in permanently submerged areas in a variety of sediment types and able to withstand a wide range of salinities. One CNDDB record documented in 1966 shows this species as present within the Study Area in Goleta Slough. There is moderate potential for this species to occur onsite.

Other Protected Species

Nesting Birds

The Study Area contains habitat that can support nesting birds, including raptors, protected under CFGC Section (§) 3503 and the MBTA (16 United States Code §§ 703–712). Potential nesting sites for raptors and other species of birds within the Study Area are located within the larger landscape/ornamental trees in the Twin Lake Golf Course, landscape trees along roadways, and in trees along the San Pedro Creek riparian corridor.

2.2.8.2 Sensitive Natural Communities and Critical Habitat

Plant communities are considered sensitive biological resources if they have limited distributions, have high wildlife value, include special-status species, or are particularly susceptible to disturbance. The CDFW ranks natural and sensitive communities using NatureServe's Heritage Methodology, the same system used to assign global and state rarity ranks for plant and wildlife species in the CNDDB (CDFW 2022b).

According to the literature review, three sensitive natural communities are present in the vicinity of the Study Area, of which one occurs within the Study Area. Southern Coastal Salt Marsh, a CDFW-sensitive natural community, occurs in Goleta Slough. Southern California steelhead stream CDFW-sensitive natural community is located 13 miles northwest of the Study Area along a tributary to the Santa Ynez River, and the southern vernal pool CDFW-sensitive natural community is located 16 miles northwest of the Study Area in ranchland northwest of Lake Cachuma.

The primary sensitive natural community occurring in the Study Area is Southern Coastal Salt Marsh. According to Dudek (2012), this sensitive natural community occurs in Goleta Slough in the form of four vegetation communities: alkali heath marsh, pickleweed mats, salt grass flats, and salt marsh bulrush. These communities, particularly pickleweed mats, provide the primary nesting habitat for the Belding's savannah sparrow, listed as endangered under the CESA.

Although the literature review did not indicate that CDFW-sensitive natural communities are present within the Study Area, aerial interpretation and vegetation mapping data indicates that arroyo willow thickets are present, and that they are the only CDFW-sensitive natural community present within the Study Area.

Extensive areas potentially under the jurisdictions of the USACE, Regional Water Quality Control Board (RWQCB), CDFW, and/or CCC occur in the Study Area. Prior to expiration of Santa Barbara County Flood

Control District permits for managing the slough mouth in late 2012, Dudek (2012) conducted a wetlands inventory within Santa Barbara Airport property.

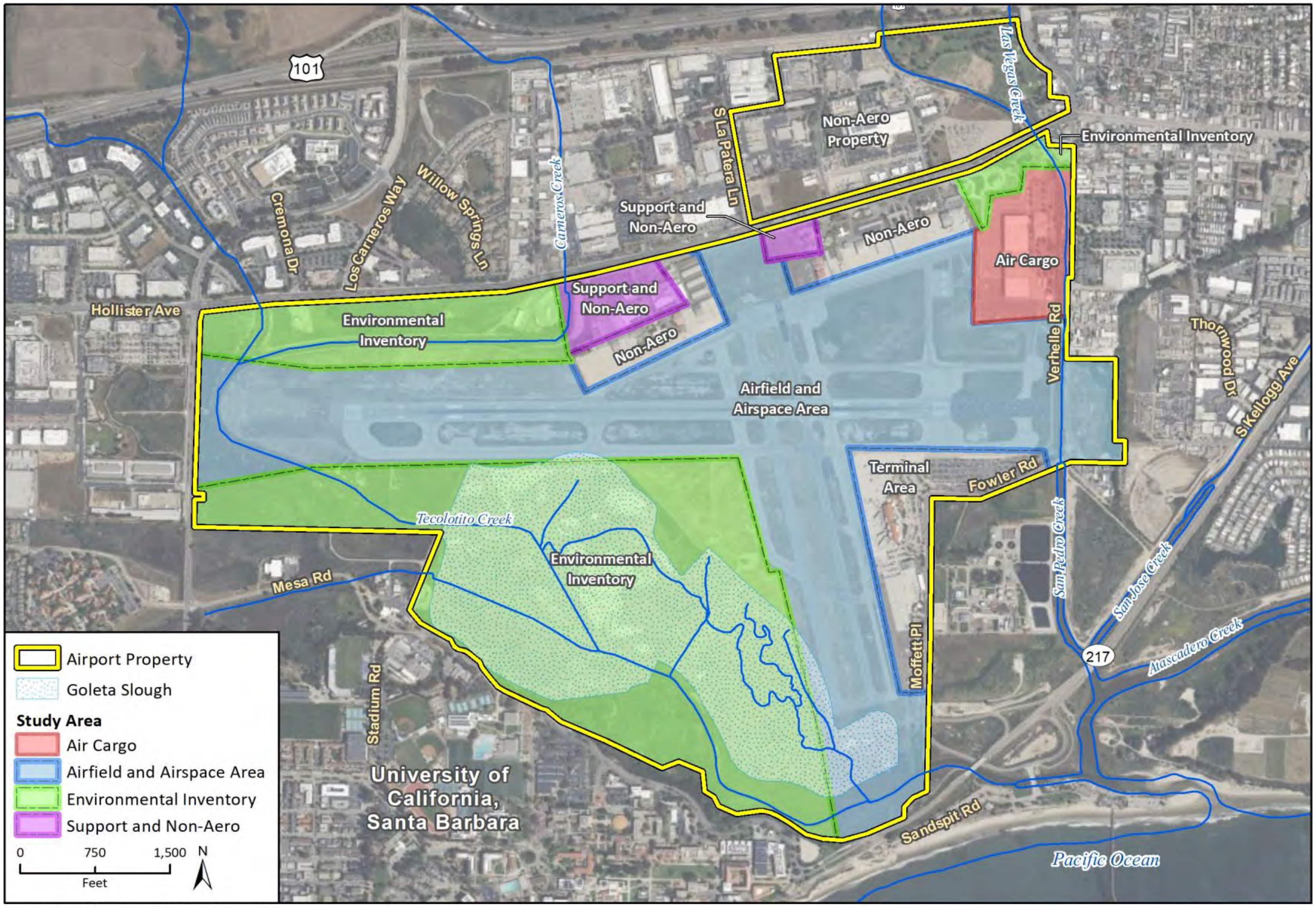
San Pedro Creek is federally designated critical habitat for southern California steelhead (NMFS 2022). Although the species has low potential to occur in the Study Area due to the highly disturbed nature of the surrounding habitat, this species may use the channel for migration during high flow events. According to the USFWS Critical Habitat Portal (USFWS 2022a), no other critical habitat exists within the Study Area or within the six-quadrangle search of the Study Area.

2.2.8.3 Jurisdictional Waters, Including Wetlands

Extensive areas potentially under the jurisdictions of the USACE, RWQCB, CDFW, and/or CCC occur in the Study Area as they are associated with Goleta Slough or other regulated waterways. The primary sensitive natural community occurring in the Study Area is Southern Coastal Salt Marsh. This sensitive natural community occurs in Goleta Slough in the form of four vegetation communities: alkali heath marsh, pickleweed mats, salt grass flats, and salt marsh bulrush (Dudek 2012). These communities, particularly pickleweed mats, provide the primary nesting habitat for the Belding's savannah sparrow, listed as endangered under the CESA.

Prior to expiration of Santa Barbara County Flood Control District permits for managing the slough mouth in late 2012, Dudek (2012) conducted a wetlands inventory within Santa Barbara Airport property. This inventory did not cover areas outside airport property. In addition, it was not intended as a formal jurisdictional delineation and was not submitted to the agencies as such. Additional Waters of the U.S. and State, as well as CDFW streambed/riparian habitat, occur within the Study Area along segments of San Pedro Creek, Carneros Creek, and Tecolotito Creek which have been modified by development within and upstream of the Study Area. Additional wetlands under the jurisdiction of the USACE and RWQCB also occur here. All of these areas would likely fall under the jurisdiction of the CCC. San Pedro Creek parallels South Fairview Avenue to the west within the Study Area. Carneros Creek flows through the northwest portion of the Study Area between the airport runways and Hollister Avenue before its confluence with Tecolotito Creek, which then flows south of the airport runways before meeting Goleta Slough in the southern Study Area. Potential jurisdictional waters mapped in the Study Area are shown in **Figure 2-7**.

Figure 2-7: **Potential Jurisdictional Waters Map**



Imagery provided by Microsoft Bing and its licensors © 2022
Additional data provided by City of Santa Barbara; National Hydrology Dataset, 2022.

Fig X Project Location_Environmental Inventory

2.2.8.4 Wildlife Movement

The Study Area is highly disturbed by development associated with the Santa Barbara Airport, which poses a challenge to wildlife movement, but Goleta Slough, vegetated areas, creeks, and riparian corridors provide usable corridors for a variety of wildlife species. Goleta Slough provides the primary wildlife movement corridor for avian, aquatic, and amphibian species. Trees and shrubs in the Study Area could provide habitat for migrating or nesting wildlife, including special-status bird species as described below. Carneros, Tecolotito, and San Pedro creeks could support local and regional terrestrial, aquatic, and amphibian wildlife movement. The riparian vegetation occurring along these creeks could also provide migration habitat for upland species and nesting birds; however, due to the constructed channelization of these creeks, intermittent flows, and disturbed creek habitat up and downstream of the work area, it is expected that the Study Area contains low quality, largely transitory corridor habitat for aquatic species and amphibians.

2.2.8.5 Resources Protected by Local Policies and Ordinances

The Study Area occurs within the jurisdiction of the City of Santa Barbara. The General Plans and Municipal Codes of the City of Santa Barbara include goals, policies, and ordinances intended to protect, preserve and enhance natural habitats and biological resources to varying degrees, including trees, riparian areas, and water resources (City of Santa Barbara 2011 and 2022).

Protected native trees within the Study Area are located primarily within the riparian corridor San Pedro Creek and in the uplands of Goleta Slough, north of Mesa Road. The City of Santa Barbara also requires permitting for trimming or removal of planted landscape trees, which are present in the Study Area. San Pedro Creek, Tecolotito Creek, and Carneros Creek are also waterbodies that area protected by the City of Santa Barbara. Additional regulatory details are provided in **Appendix EC1**.

In the event of proposed construction in the Study Area, a focused review of applicable local regulations will be conducted with consideration of the project components.

2.2.9 Limitations, Assumptions, and Use Reliance

This Biological Resources Assessment has been performed in accordance with professionally accepted biological investigation practices conducted at this time and in this geographic area. The biological investigation is limited by the scope of work performed. The findings and opinions conveyed in this report are based on findings derived from published potential jurisdictional resources, review of CNDDB RareFind5, and specified historical and literature sources. Standard data sources relied upon during the completion of this report, such as the CNDDB, may vary with regard to accuracy and completeness. In particular, the CNDDB is compiled from research and observations reported to CDFW that may or may not have been the result of comprehensive or site-specific field surveys. Although Rincon believes the data sources are reasonably reliable, Rincon cannot and does not guarantee the authenticity or reliability of the data sources it has used. Additionally, pursuant to our contract, the data sources reviewed included only those that are practically reviewable without the need for extraordinary research and analysis.

2.3 CULTURAL RESOURCES

Section prepared by Rincon Consultants, Inc.

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2.3.1 Summary

This Cultural Resources Inventory provides an inventory of cultural resources located in the Santa Barbara Airport Property (Study Area), which is generally located south of Hollister Avenue and Highway 101, west of Fairview Avenue and east of South La Patera Lane. The Study Area encompasses the Environmental Inventory, Air Cargo, Support and Non-aero, and Airfield and Airspace areas.

The majority of the approximately 830-acre Study Area is developed with the Santa Barbara Airport, consisting of buildings, structures, and runways. The southern portion of the Study Area is undeveloped wetlands and the Tecolotito Creek runs through the area south to the Pacific Ocean.

Twelve archaeological sites are located within the Study Area; one is listed on the National Register of Historic Places, one has been recommended as not eligible for inclusion on the National Register of Historic Places, and 10 have not been evaluated. Twenty-three built environment resources, including a segment of the Firestone Ditch, are located within the Study Area; two have been recommended eligible for National Register of Historic Places as an individual property through survey evaluation, four have been recommended as locally significant, 16 of the resources have been recommended ineligible for listing to the National Register of Historic Places, and one has not been evaluated. One other built environment resource that is of historical age (45 years) but has not been formally recorded or evaluated was identified within the Study Area during review of aerial imagery.

2.3.2 Study Area Location

This Cultural Resources Inventory provides an inventory of cultural resources present in the Santa Barbara Airport Property (Study Area), which is generally located south of Hollister Avenue and Highway 101, west of Fairview Avenue and east of South La Patera Lane. The Study Area encompasses the Environmental Inventory, Air Cargo, Support and Non-aero, and Airfield and Airspace areas. The majority of the approximately 830-acre Study Area is developed with the Santa Barbara Airport, consisting of buildings, structures, and runways. The southern portion of the Study Area is undeveloped wetlands and the Tecolotito Creek runs through the area south to the Pacific Ocean. Although the Study Area is located in Goleta, the Santa Barbara Airport, is under the jurisdiction of the City of Santa Barbara.

2.3.3 Regulatory Framework

This section discusses applicable state and local laws, ordinances, regulations, and standards governing cultural resources.

2.3.3.1 California Environmental Quality Act

Public Resources Code (PRC) Section 21084.1 were used as the basic guidelines for this cultural resources study. CEQA (§21084.1) requires lead agencies determine if a project could have a significant effect on historical or unique archaeological resources. As defined in PRC Section 21084.1, a historical resource is one listed in, or determined eligible for listing in, the California Register of Historical Resources (CRHR), a resource included in a local register of historical resources or identified in a historical resources

survey pursuant to PRC Section 5024.1(g), or any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant. PRC Section 21084.1 also states resources meeting the above criteria are presumed to be historically or culturally significant unless the preponderance of evidence demonstrates otherwise. Resources listed in the National Register of Historic Places (NRHP) are automatically listed in the CRHR and are, therefore, historical resources under CEQA. Historical resources may include eligible built environment resources and archaeological resources of the precontact or historic periods.

CEQA Guidelines Section 15064.5(c) provides further guidance on the consideration of archaeological resources. If an archaeological resource does not qualify as a historical resource, it may meet the definition of a "unique archaeological resource" as identified in PRC Section 21083.2. PRC Section 21083.2(g) defines a unique archaeological resource as an artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria: 1) it contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information, 2) has a special and particular quality such as being the oldest of its type or the best available example of its type, or 3) is directly associated with a scientifically recognized important prehistoric or historic event or person.

If an archaeological resource does not qualify as a historical or unique archaeological resource, the impacts of a project on those resources will be less than significant and need not be considered further (CEQA Guidelines Section 15064.5[c][4]). CEQA Guidelines Section 15064.5 also provides guidance for addressing the potential presence of human remains, including those discovered during the implementation of a project.

2.3.3.2 California Register of Historical Resources

The CRHR was established in 1992 and codified by PRC §§5024.1 and 4852. The CRHR is an authoritative listing and guide to be used by State and local agencies, private groups, and citizens in identifying the existing historical resources of the State and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change (Public Resources Code, 5024.1(a)). The criteria for eligibility for the CRHR are consistent with the NRHP criteria but have been modified for state use in order to include a range of historical resources that better reflect the history of California (Public Resources Code, 5024.1(b)). Unlike the NRHP however, the CRHR does not have a defined age threshold for eligibility; rather, a resource may be eligible for the CRHR if it can be demonstrated sufficient time has passed to understand its historical or architectural significance (California Office of Historic Preservation 2006). Further, resources may still be eligible for listing in the CRHR even if they do not retain sufficient integrity for NRHP eligibility (California Office of Historic Preservation 2006). Generally, the California Office of Historic Preservation recommends resources over 45 years of age be recorded and evaluated for historical resources eligibility (California Office of Historic Preservation 1995:2)

A property is eligible for listing in the CRHR if it meets one or more of the following criteria:

Criterion 1: Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage

Criterion 2: Is associated with the lives of persons important to our past

Criterion 3: Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values

Criterion 4: Has yielded, or may be likely to yield, information important in prehistory or history

2.3.3.3 Local Regulations

City of Santa Barbara Master Environmental Assessment Guidelines for Archaeological Resources and Historic Structures and Sites

The City's Master Environmental Assessment Guidelines (City of Santa Barbara 2002) defines significant archaeological resources to include, but not be limited to, the following:

1. Any "unique archaeological resource" as defined by CEQA §21083.2.g. Such "unique archaeological resources" are defined as:

   > *... an archaeological artifact, object, or site about which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria*:
   >
   > *(1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.*
   >
   > *(2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.*
   >
   > *(3) Is directly associated with a scientifically recognized important prehistoric or historic event or person.*

2. Any known significant archaeological site depicted on the City's Archaeological Resources Reports Location Map.

3. Any archaeological artifact, object, or site designated on the most current version of the following lists:
   a. National Historic Landmarks
   b. National Register of Historic Places
   c. California Registered Historical Landmarks
   d. California Register of Historical Resources
   e. City of Santa Barbara Landmarks
   f. City of Santa Barbara Structures of Merit

4. Any archaeological artifact, object or site meeting any or all the criteria established for a City Landmark and a City Structure of Merit (SBMC §22.22.040; Ord. 3900 ¶1, 1977), as follows:
   a. Its character, interest or value as a significant part of the heritage of the City, the State or the Nation;
   b. Its location as a site of a significant historic event;

c. Its identification with a person or persons who significantly contributed to the culture and development of the City, the State or the Nation;
d. Its exemplification of a particular architectural style or way of life important to the City, the State or the Nation;
e. Its exemplification of the best remaining architectural type in a neighborhood;
f. Its identification as the creation, design or work of a person or persons whose effort has significantly influenced the heritage of the City, the State or the Nation;
g. Its embodiment of elements demonstrating outstanding attention to architectural design, detail, materials or craftsmanship;
h. Its relationship to any other landmark if its preservation is essential to the integrity of that landmark;
i. Its unique location or singular physical characteristic representing an established and familiar visual feature of a neighborhood;
j. Its potential of yielding significant information of archaeological interest;
k. Its integrity as a natural environment that strongly contributes to the wellbeing of the people of the City, the State or the Nation.

5. Any archaeological artifact, object or site meeting any or all the criteria provided for the National Register of Historic Places and the California Historical Landmark lists:

National Register Criteria for Evaluation. The quality of significance in American history, architecture, archeology. engineering. and culture is present in districts, sites, buildings, structures, and objects of State and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and

a. That are associated with events that have made a significant contribution to the broad patterns of our history; or
b. That are associated with the lives of persons significant in our past; or
c. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
d. That have yielded, or may be likely to yield, information important in prehistory or history.

National Register Criteria Considerations. Ordinarily cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years shall not be considered eligible for the National Register. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

a. A religious property deriving primary significance from architectural or artistic distinction or historic importance.
b. A building or structure removed from its original location, but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event.
c. A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building directly associated with his productive life.
d. A cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events.
e. A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a mitigation master plan, and when no other building or structure with the same association has survived.

f. A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own historical significance.

g. A property achieving significance within the past 50 years if it is of exceptional importance.

6. Any archaeological artifact, object, or site associated with a traditional way of life important to an ethnic, national, racial, or social group, or to the community at large; or illustrates the broad patterns of cultural, social, political, economic, or industrial history.

7. Any archaeological artifact, object, or site that conveys an important sense of time and place or contributes to the overall visual character of a neighborhood or district.

8. Any archaeological artifact, object, or site able to yield information important to the community or is relevant to historical, historic archaeological, ethnographic, folkloric, or geographical research.

9. Any archaeological artifact, object, or site determined by the City to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the City's determination is based on substantial evidence in light of the whole record [Ref. State CEQA Guidelines §15064.5(a)(3)].

2.3.4 Cultural Setting

2.3.4.1 Prehistoric Setting

The Study Area is located in what is generally described as the Northern Bight archaeological region, one of eight organizational divisions of the state (Jones and Klar 2007, Moratto 1984). The Northern Bight encompasses the northern portion of the California Bight, which is marked by the curve of the coastline along central California. The Northern Bight archaeological region primarily includes the counties of Santa Barbara, Ventura, and portions of Los Angeles, extending from the coastline at Vandenberg Air Force Base inland to the Cuyama River Valley and south to the Santa Monica Mountains and the Los Angeles Basin. Following Glassow et al. (2007), the prehistoric cultural chronology for the Northern Bight is generally divided into six periods: Paleo-Indian Period (ca. 10,000 - 7000 BCE), Millingstone Period (7000 - 5000 BCE), Early Period (5000 - 2000 BCE), Middle Period (2000 BCE - 1 CE), Middle-Late Transition Period (1 - 1000 CE), and Late Period (1000 CE - Historic Contact). These periods are discussed in further detail below.

Paleo-Indian Period (ca. 10,000 - 7000 BCE)

The Paleo-Indian Period defines the earliest human occupation of the Northern Bight and describes the cultural trends and subsistence strategies of prehistoric populations from approximately 10,000 to 7000 BCE (Glassow et al. 2007). The Paleo-Indian Period in North America is largely recognized by projectile points associated with extinct large mammal remains, such as mammoth, bison, and dire wolves in the Southwest and Plains regions (Erlandson et al. 2007; Huckell 1996; Reed 1992; Slaughter et al. 1992). These projectile points have been classified as the Clovis style, which exhibit a lanceolate shape with a flute initiated from the base that extends as far as the midline (Hollenshead 2007; Justice 2002).

The earliest accepted dates for human occupation in California were recovered from archaeological sites on two of the Northern Channel Islands, located off the southern coast of Santa Barbara County. The earliest radiocarbon dates known for the region, calibrated to approximately 11,000 years before present (B.P.), were derived from human remains and rodent bones recovered from within the same deposits on Santa Rosa Island (Erlandson et al. 2007; Glassow et al. 2007; Johnson et al. 2002). Archaeological deposits from the Daisy Cave site on San Miguel Island establish the presence of people in this area approximately 10,000 years ago (Erlandson 1991; Erlandson et al. 2007). In nearby San Luis Obispo County, archaeological sites CA-SLO-1764 (Lebow et al. 2001), Cross Creek (CA-SLO-1979; Fitzgerald 2000), and CA-SLO-832 (Jones et al. 2001) yielded radiocarbon dates from approximately 9,000 years ago (Jones and Ferneau 2002).

Recent data from Paleo-Indian sites in southern California indicate that the economy was a diverse mixture of hunting and gathering, with a major emphasis on aquatic resources in many coastal areas (e.g., Jones and Ferneau 2002; Erlandson et al. 2007). Archaeological deposits at the Daisy Cave site yielded an assemblage of “the oldest known fishhooks in the Americas” (Erlandson et al. 2007: 57). Shell middens discovered on the mainland of California have yielded dates from 8000 to 7000 BCE (Erlandson et al. 2007).

A fluted projectile point fragment was recovered from site CA-SBA-1951 on the Santa Barbara Channel coastal plain (Erlandson 1994:44; Erlandson et al. 1987). Another fluted projectile point was reportedly found on the surface in Nipomo, San Luis Obispo County (Mills et al. 2005; Jones and Klar 2007). Large side-notched projectile points of the Central Coast Stemmed series in this area date to as early as 8,000 years ago (Justice 2002). Points of this type have been recovered along the Central Coast from sites such as Diablo Canyon (CA-SLO-2; Greenwood 1972), Cross Creek (CA-SLO-1797; Fitzgerald 2000), Little Pico Creek (CA-SLO-175; Jones and Waugh 1995), and the Honda Beach site (CA-SBA-530; Glassow 1996), among others. The Metcalf site (CA-SCL-178; Hildebrandt 1983), in southern Santa Clara Valley, yielded two large side-notched projectile points associated with charcoal dates ranging from 9,960 – 8,500 years ago.

Millingstone Period (7000 - 5000 BCE)

It is generally accepted that human occupation of California during the Paleo-Indian Period originated from small, dispersed occupations. Archaeological sites dating to the Millingstone Period, however, indicate a population increase (Glassow et al. 2007). The Millingstone Period, as described by Wallace (1955, 1978), is characterized by an ecological adaptation to collecting plant resources, such as seeds and nuts, suggested by the appearance and abundance of well-made milling (ground stone) implements, particularly in archaeological sites along the coast of California. The dominance of milling implements is generally associated with the horizontal motion of grinding small seeds and nuts and lends to the name Millingstone Period (Glassow et al. 2007).

Rogers (1929) originally identified the Millingstone Period along the Santa Barbara Channel in 1929. Excavations at the Tank Site (CA-LAN-1) in Topanga Canyon from 1947 to 1948 (Treganza and Bierman 1958) confirmed the presence of a significant number of milling implements that correspond with the Millingstone Period identified by Rogers in 1929. Wallace (1955, 1978) further defined the period, which was recognized on the Central Coast by Greenwood (1972). The Cross Creek site (CA-SLO-1797) is a Millingstone occupation site in San Luis Obispo County that returned radiocarbon dates ranging between 9,500 – 4,700 years ago. This site represents one of the oldest expressions of the pattern (Jones et al. 2007; Fitzgerald 2000:58).

Wallace (1955, 1978) and Warren (1968) identify ground stone implements including Millingstones (e.g., metates, milling slabs) and hand stones (e.g., manos, mullers). Millingstones occur in high frequencies for the first time in the archaeological record of the Central Coast region and become even more prevalent near the end of the Millingstone Period. Flaked stone assemblages, which include crude core and cobble-core tools, flake tools, large side-notched projectile points, and pitted stones (Glassow et al. 2007; Jones et al. 2007), and shell middens in coastal sites suggest that people during this period practiced a mixed food procurement strategy. Faunal remains identified at Millingstone sites point to broad-spectrum hunting and gathering of shellfish, fish, birds, and mammals, though large faunal assemblages are uncommon. This mixed food procurement strategy demonstrates adaptation to regional and local environments.

Along the Central Coast, Millingstone Period sites are most common on terraces and knolls, typically set back from the current coastline (Erlandson 1994:46). However, 42 sites have been identified in various settings, including rocky coasts, estuaries, and nearshore interior valleys (Jones and Klar 2007). The larger sites usually contain extensive midden deposits, possible subterranean house pits, and cemeteries. Most of these sites probably reflect intermittent use over many years of local cultural habitation and resource exploitation.

Early Period (5000 - 2000 BCE)

The Early Period of the Northern Bight is marked by a lower frequency of radiocarbon dated archaeological sites as well as changes in artifact forms. Differences in artifact forms, particularly in ground stone implements, likely represent changes in subsistence (Glassow et al. 2007). The material culture recovered from Early Period sites within the Central Coast region provides evidence for continued exploitation of inland plant and coastal marine resource as well as the incorporation of “newly important food resources” found in specific habitats (Glassow et al. 2007:197). In addition to the use of metates and manos, prehistoric populations began to use mortars and pestles, such as those recovered from the Sweetwater Mesa (CA-LAN-267) and Aerophysics (CA-SBA-53) sites (Glassow et al. 2007).

Artifact assemblages recovered from Early Period sites also include bipointed bone gorge hooks used for fishing, *Olivella* beads, bone tools, and pendants made from talc schist. Square abalone shell (*Haliotis* spp.) beads have been found in Monterey Bay (Jones and Waugh 1995:122). The frequency of projectile points in Early Period assemblages also increased, while the style began to change from lanceolate forms to side-notched forms (Glassow et al. 2007). This projectile point style trend, first identified by David Banks Rogers in 1929, was confirmed by Greenwood (1972) at Diablo Canyon. The projectile point trend is apparent at numerous sites along the California coast as well as a few inland sites (e.g. CA-SBA-210 and CA-SBA-530). In many cases, manifestations of this trend are associated with the establishment of new and larger settlements, such as at the Aerophysics site (Glassow et al. 2007; Jones et al. 2007).

Middle Period (2000 BCE - 1 CE)

The Middle Period describes a pronounced trend toward greater adaptation to regional or local resources as well as the development of socioeconomic and political complexity in prehistoric populations (Glassow et al. 2007). The remains of fish, land mammals, and sea mammals are increasingly abundant and diverse in archaeological deposits along the coast.

Shell fishhooks were introduced, and projectile points changed from side-notched dart points to contracting stem styles. Flaked stone tools used for hunting and processing—such as large side- notched, stemmed, lanceolate or leaf-shaped projectile points, large knives, edge modified flakes, and drill-like implements—occurred in archaeological deposits in higher frequencies and are more morphologically diverse during the Middle Period. Bone tools, including awls, are more numerous than in the preceding period, and the use of asphaltum adhesive became common.

Circular fish hooks that date from between 1000 and 500 BCE, compound bone fish hooks that date between 300 and 900 CE, notched stone sinkers, and the tule reed or balsa raft, indicative of complex maritime technology, became part of the toolkit during this period (Arnold 1995; Glassow et al. 2007; Jones and Klar 2005:466; Kennett 1998:357; King 1990:87–88).

Populations continued to follow a seasonal settlement pattern until the end of the Middle Period; large, permanently occupied settlements with formal architecture, particularly in coastal areas, appear to have been the norm by the end of the Middle Period (Glassow et al. 2007; Kennett 1998). Prehistoric populations began to bury the deceased in formal cemeteries with artifacts that may represent changes in ideology and the development of ritual practices (Glassow et al. 2007).

Middle-Late Transition Period (1 - 1000 CE)

The Middle-Late Transition period is marked by major changes in settlement patterns, diet, and interregional exchange. Prehistoric populations continued to occupy more permanent settlements, with the continued use of formal cemeteries and the burial of goods with the deceased. The manufacture of the plank canoe, or *tomol*, allowed prehistoric populations to catch larger, deep-sea fish (Glassow et al. 2007). Following the introduction of the plank canoe, groups began to use harpoons. The plank canoe appears to have influenced “commerce between the mainland coast and the Channel Islands” (Glassow et al. 2007:204). Middle-Late Transition Period sites indicate that populations replaced atlatl (dart) technologies with the bow and arrow, which required smaller projectile points. Projectile points diagnostic of both the Middle and Late periods are found within the Central Coast region (Jones and Ferneau 2002:217). These projectile points include large, contracting-stemmed types typical of the Middle Period, as well as small, leaf- shaped Late Period projectile points, which likely reflect the introduction of the bow and arrow.

Late Period (1000 CE - Historic Contact)

Late Period sites are distinguished by small, finely worked projectile points and temporally diagnostic shell beads. Although shell beads were typical of coastal sites, trade brought many of these maritime artifacts to inland locations, especially during the latter part of the Late Period. Small, finely worked projectile points are typically associated with bow and arrow technology, which is believed to have been introduced to the area by the Takic migration from the deserts into southern California.

Common artifacts identified at Late Period sites include bifacial bead drills, bedrock mortars, hopper mortars, lipped and cupped *Olivella* shell beads, and steatite disk beads. The presence of beads and bead drills suggest that low-level bead production occurred throughout the Central Coast region (Jones and Klar 2007).

Unlike the large Middle Period shell middens, Late Period sites are more frequently single- component deposits. There are also more inland sites, with fewer and less visible sites along the Pacific shore during the Late Period. The settlement pattern and dietary reconstructions indicate less reliance on marine resources than observed during the Middle and Middle-Late Transition periods, as well as an increased preference for deer and rabbit. An increase in the number of Late Period sites with bedrock mortar features suggests that nuts and seeds began to take on a more significant dietary role in Late Period populations.

2.3.4.2 Ethnographic Setting

The Study Area lies within Chumash ethnographic territory, which extends from Malibu, north beyond San Luis Obispo, and inland as far as 68 kilometers (42 miles) (Glassow 1996). The Chumash also inhabited the northern Channel Islands. The Chumash spoke six closely related languages, divided into two broad groups – Northern Chumash, consisting of only Obispeño, and Southern Chumash, including Purisimeño, Ineseño, Barbareño, Ventureño, and Island Chumash (Mithun 1999).

The Chumash are divided into three main groups, including Interior, Coastal, and Northern Channel Islands Chumash. The coastal Barbareño Chumash referred to themselves as the *Wal-wa-ren-na*, and "occupied the narrow coastal plain from Point Conception to Punta Gorda in Ventura County" (Grant 1978:509). Chumash villages generally ranged between 30 and 200 people, with the largest settlements numbering anywhere from 500 to 800 people (Glassow 1996:14). Grant (1978) describes a typical Chumash village along the Santa Barbara Channel as consisting of "several houses, a sweathouse, store houses, a ceremonial enclosure, gaming area, and a cemetery usually placed well away from the living area." Archaeological investigations have recognized separate areas within cemeteries for elites and non-elites (King 1969).

Permanent Chumash villages included hemispherical or rounded mud-covered (insulated) pole and thatch dwellings arranged in close groups (Brown 2001). Thatching was made from tule, Carrizo grass, wild alfalfa, and fern (Grant 1978). Smaller Chumash groups correspondingly occupied short- term special-purpose camps throughout the year to acquire seasonal resources (Glassow 1996). Cooking fires were centered within the dwelling to allow smoke to ventilate through a hole in the roof (Grant 1978).

The Chumash are well-known for their wooden plank canoe, or *tomol*. The *tomol* facilitated the procurement of marine resources and the trade network between the mainland and the Channel Islands. Sea mammals were hunted with harpoons, while deep-sea fish were caught using nets and hooks and lines. In addition to marine resources, the Chumash subsistence focused on acorns, pine nuts, prickly pear cactus, and other plant resources, land animals such as mule deer, antelope, quail, dove, and other waterfowl (Brown 2001). The Chumash also manufactured various other utilitarian and non-utilitarian items. Eating utensils, ornaments, fishhooks, harpoons, and other items were made using bone and shell. *Olivella* shell beads were especially important for trade.

Spanish explorers first arrived in the Santa Barbara Channel region in 1542; however, the impact of colonization started in 1770 with the establishment of the missions. Mission life led to severe population decline and culture loss (Johnson 1987). Although the Chumash languages are no longer commonly spoken (Timbrook 1990), many descendants of the Chumash still live in the region and a cultural revitalization has been ongoing since the 20th century (Glassow et al. 2007). Today, the Santa Ynez Band of Chumash Indians, whose reservation is approximately 30 kilometers (19 miles) northwest of the Study Area, is the only federally recognized tribe in the Santa Barbara area.

2.3.4.3 Historic Overview

The post-contact history of California is generally divided into three time periods: the Spanish period (1769-1822), the Mexican period (1822-1848), and the American period (1848-present). Each of these periods is briefly described below.

Spanish Period (1769 - 1822)

The Santa Barbara Channel region was first visited by the Cabrillo Expedition in October 1542 (Chesnut 1993). A second Spanish expedition, consisting of two ships under the command of Sebastian Vizcaino, arrived in the Santa Barbara area in 1602. For more than 200 years, Cabrillo, Vizcaino and other Spanish, Portuguese, British, and Russian explorers sailed the Alta (upper) California coast and made limited inland expeditions, but they did not establish permanent settlements (Bean 1968; Rolle 2003).

The Spanish began to permanently occupy Alta California in the late eighteenth century. While the Spanish funded expeditions to claim Alta California for the Spanish government, Franciscan missionaries traveled to proselytize and convert the local populations to Catholicism for the Church. Gaspar de Portolá established the first Spanish settlement, a military fort named El Presidio Reál de San Diego, in Alta California in May 1769. The Presidio of San Diego was the first of four presidios that would be established throughout Alta California for the Spanish government. A year later, in June 1770, Portolá established the El Presidio Real de San Carlos de Monterrey, a bay originally identified by the Spanish explorer Sebastian Vizcaino in the early seventeenth century. Juan Bautista de Anza established El Presidio Real de San Francisco in June 1776. The Spanish established El Presidio de Santa Bárbara, the fourth and final presidio, in Alta California in 1782. The presidio was a temporary structure until construction of a permanent adobe structure began in 1784.

Franciscan Father Junípero Serra founded Misión San Diego de Alcalá in June 1769. The San Diego Mission was the first of 21 missions founded by the Franciscans in the late eighteenth and early nineteenth centuries. Misión Santa Barbara was the tenth mission founded by the Spanish, and was founded in 1786, four years after the establishment of the presidio. The Chumash that lived in the vicinity of the project area came under the control of the Spanish at Mission Santa Barbara. Other missions established along the central coast include Misión San Luis Obispo de Tolosa, founded in 1772, and Misión La Purisima Concepción, founded in 1787 (Weber 1992).

Mission Santa Barbara was reconstructed twice to enlarge the church in 1789 and 1793. The Spanish began to rebuild the church again in 1812 following damage from a major earthquake. The presidio and the mission were constructed using large adobe bricks shaped by a form and then sun dried. Large ceramic roof tiles called *tejas* were created by molding the clay on timbers until fully dried, creating the long, rounded shape seen at both the presidio and mission. Some floors were lined with clay tiles called *ladrillos* formed from the same clay used for the roof tiles, but mostly remained dirt. Mission Santa Barbara benefitted from construction of a dam and aqueduct system that diverted water from Mission Canyon. The Spanish relied on Chumash labor to construct the buildings, dam, and aqueduct system. Spanish families began to settle the area, becoming Pueblo Santa Barbara. These settlers began to use the Goleta Valley for ranching and agriculture, and Pueblo Santa Barbara became a center for hide and tallow trade.

Mission life led to severe population decline and culture loss among the Chumash. The Spanish brought with them diseases for which the Chumash had no immunity. Living and working in close proximity spread diseases throughout the native populations and killed many. The Spanish also introduced domestic plants and animals for labor and food. These non-native species vastly altered the landscape, forcing the Chumash to adopt new foods and lifeways.

Mexican Period (1822 - 1848)

Mexico's revolution against Spain achieved success in 1821. News of the victory reached California in 1822, marking the beginning of the Mexican period. The hallmarks of the Mexican period are the secularization of the missions, completely accomplished by 1836, and a greater distribution of private land grants to prominent citizens, including retired military personnel. The Secularization Act of 1833 enabled Mexican governors in California to distribute former mission lands to individuals in the form of land grants. "The intention of the secularization of the California missions in 1834 was to transform the mission centers into Pueblos; the Indians, with their knowledge of trade and agriculture, would become Mexican citizens in these Pueblos," Grant (1978:507) explains. Mexican governors made more than 700 land grants between 1833 and 1846, putting most of the state's lands into private ownership for the first time (Shumway 2007). Forty land grants were issued in Santa Barbara County, where its fertile valleys were ideal for the ranching and agriculture prevalent during this period (Avina 1976; Tompkins 1976, 1987; Chesnut 1993).

Although Pueblo Santa Barbara thrived on hide and tallow trade, ranchers soon identified a more prosperous market in providing beef for the growing gold-mining population. Daniel Hill applied for a land grant in the mid-1840s and was granted the land that he would name Rancho La Goleta after the adjacent Goleta Slough, an estuary that historically formed an island (Mescalitan) surrounded by wetlands and marshes. Modugno (2015) explains that "the area around the east side of the slough had already been nicknamed La Goleta, or the schooner, because some schooners had run aground in that area, and at least one schooner had been built there." The Map of the Rancho La Goleta, published in the 1840s, indicates a wreck at the mouth of the slough just south of the rancho (University of California Berkeley n.d.).

American Period (1848 - Present)

The discovery of gold in northern California in 1848 led to the California Gold Rush, despite the first California gold being discovered in Placerita Canyon in 1842 (Guinn 1915). Southern California remained dominated by cattle ranches in the early American Period, though droughts and increasing population resulted in farming and a growth in urban professions that increasingly supplanted ranching through the late 19th century. By 1853, the population of California exceeded 300,000. Thousands of settlers and immigrants continued to immigrate into the state, particularly after the completion of the transcontinental railroad in 1869.

The American Period officially began with the signing of the Treaty of Guadalupe Hidalgo in 1848, in which the United States agreed to pay Mexico $15 million for the conquered territory of California, Nevada, Utah, and parts of Colorado, Arizona, New Mexico, and Wyoming. In 1850, several months before California was admitted as the 31st state, the County of Santa Barbara was incorporated. Following the admittance of California to the union, the Goleta Valley became an agricultural center and was known as a prominent walnut, avocado, and lemon-growing region. Oil and gas extraction also took place in the area, with multiple wells established near the Study Area by the 1930s (State of California, Department of Conservation 2017).

During this period, Santa Barbara Airport began with a 3,000-foot graded landing strip running southwest from the corner of Hollister and Fairview Avenues constructed in 1928 (Coffman Associates Inc. 2017).

Frederick Stearns II established Santa Barbara Airways in the mid-1930s, constructing two hangars, two runways, and the first radio equipment at the airport by 1938. Commercial air service started in 1932 with Pacific Seaboard Airlines, and expanded to include United Airlines in 1936. In the 1940s the airport was temporarily owned by the United States government, which expanded the airport with additional terminals and the Marine Corps Air Station (Coffman Associates Inc. 2017). After the war, ownership of the airport was returned to the City of Santa Barbara which continued to expand the airport into what it is today.

2.3.5 Methodology

As part of the Cultural Resources Inventory, Rincon reviewed historical topographic maps and aerial imagery of the Study Area including the Environmental Inventory, Air Cargo, Support and Non-aero, and Airfield and Airspace areas, and the surrounding area to develop an understanding of the context and history of the area. Rincon also conducted a California Historical Resources Information System (CHRIS) records search to identify any previous cultural resources studies or previously recorded resources within the Study Area. A further review of the National Register of Historic Places (NRHP), the California Register of Historic Resource (CRHR), the California Built Environment Resource Directory (BERD), the City of Goleta Local Register of Historic Resources, and the City of Santa Barbara Register of Historic Resources was undertaken to identify any further cultural resources. Applied Earthworks, Inc. prepared a historic structures report for the Santa Barbara Municipal Airport in 2014 (Morlet and Hamilton 2014) which was also reviewed as part of this effort.

2.3.6 Existing Conditions

2.3.6.1 Historical Topographic Maps and Aerial Imagery Review

Rincon completed a review of historical topographic maps and aerial imagery to ascertain the development history of the Study Area that encompasses the Environmental Inventory, Air Cargo, Support and Non-aero, and Airfield and Airspace areas. The earliest historical topographic map from 1943 depicted the project area with undeveloped wetlands (NETR Online 2022). Several buildings are shown at the southern end of Hollister Road and the Southern Pacific Railroad runs north of the area; Goleta is depicted to the east with a dense city center (NETR Online 2022). The airport is shown with several hangers and buildings north of the runways along Hollister Road in a 1947 aerial of the area (NETR Online 2022). The airport maintains this appearance until a 1984 aerial which shows two new buildings at the eastern side of the airport, along South Fairview Avenue, and the runway extended to the west and south (NETR Online 2022). The area surrounding the airport also develops with single-family tracts north of State Highway 101 and east around Goleta. Between 1994 and 2002, the airport underwent several alterations with the construction of several new buildings, driveways, and paved areas throughout the property and demolition of some buildings (NETR Online 2022). Since 2002, more buildings have been demolished and constructed along Hollister Avenue and the surrounding area has continued to expand with new single-family and multi-family tracts north and east of the airport and industrial development west of the airport.

2.3.6.2 Environmental Inventory Area

The Environmental Inventory area consists of 331 acres throughout the Santa Barbara Airport.

Known Cultural Resources Studies

The CHRIS records search and background research identified 40 cultural resources studies within the Environmental Inventory Area of the project (**Appendix EC1**). The studies within this area have been conducted over the last 40 years, from 1983 to 2017. The studies within the Environmental Inventory Area consist of 26 Phase I archaeological studies, four construction monitoring reports, two extended Phase I studies, two resource evaluation reports, one Phase II testing program report, two Phase III testing program reports, and three programmatic documents (two Environmental Impact Reports, and a Negative Declaration).

Known Cultural Resources

The CHRIS records search and background research identified 16 cultural resources within the Environmental Inventory Area. Resources recorded in the area are listed in **Table 2-2** below. A discussion of each resource is included below the table.

Table 2-2: Known Cultural Resources – Environmental Inventory Area

Primary Number	Trinomial	Resource Type	Description	Recorder(s) and Year(s)	Eligibility Status	Extant
P-42-000049	CA-SBA-49	Prehistoric Site	Habitation site with lithic scatter and shell midden, and burials	1929 (Rogers); 1967 (Chartkoff et al.); 1981 (Erlandson & Wilcoxon)	Unevaluated	N/A
P-42-000052	CA-SBA-52	Prehistoric Site	Habitation site with shell midden and associated cemetery	1925 (Rogers); 1960 (Klug); 1962 (Klug); 1981 (Erlandson & Wicoxon); 1986 (Hudson)	Listed on NRHP as of 1993	N/A
P-42-001694	CA-SBA-1694	Prehistoric Site	Lithic and shell scatter	1981 (Erlandson & Wilcoxon)	Unevaluated	N/A
P-42-003860	CA-SBA-3860H	Historic-Period Site	Historic Trash Scatter	2006 (Siowick & Armstrong)	Unevaluated	N/A
P-42-003862	CA-SBA-3862	Prehistoric Site	Shell scatter	2006 (Armstrong et al.)	Unevaluated	N/A
P-42-038754	–	Prehistoric Isolate	Groundstone fragment	2006 (Shock)	Unevaluated	N/A
P-42-041023	–	Historic Building	Building 248, Old Hangar	1994 (Stone/ Triem)	3S	Yes
P-42-041024	–	Historic Building	Building 249, Old Hangar	1994 (Stone/ Triem)	3S	Yes

Primary Number	Trinomial	Resource Type	Description	Recorder(s) and Year(s)	Eligibility Status	Extant
P-42-041065	–	Historic Building	Building No. 260, Squadron Headquarters	1994 (Stone/ Triem)	5B1	No
P-42-041067	–	Historic Building	Building No. 270, Sewer Pump Building, Sewer Lift Station	1994 (Stone/ Triem)	6Z	No
P-42-041076	–	Historic Building	Building No. 306, Public Works Shops	1994 (Stone/ Triem)	6Z	Yes
P-42-041081	–	Historic Building	Building No. 323, Small Arms and Pyro. Magazine	1994 (Stone/ Triem)	5B1	No
P-42-041082	–	Historic Building	Building No. 325, High Explosives Magazine	1994 (Stone/ Triem)	5B1	Yes
P-42-041085	–	Historic Building	Building No. 345, Public Works Storehouse, City Slicker Deli	1994 (Stone/ Triem)	6Z	Yes
P-42-041086	–	Historic Building	Building No. 347, Airport Maintenance Yard	1994 (Stone/ Triem)	6Z	Yes
P-42-041087	–	Historic Building	Building No. 349, Public Works Paint Shop, Paint Storage Building	1994 (Stone/ Triem)	5B1	Yes

Source: CCIC 2022

3S: Appears eligible for NR as an individual property through survey evaluation.

6Z: Found ineligible for NR, CR or Local designation through survey evaluation.

5B1 (No longer a status code. Now 5B): Locally significant both individually (listed, eligible, or appears eligible) and as a contributor to a district that is locally listed, designated, determined eligible or appears eligible through survey evaluation.

Archaeological Resources

P-42-000049

Rogers initially recorded resource P-42-000049 in 1929, and Chartkoff et al. later revisited the site in 1967. Chartkoff et al. (1967) recorded the resource as a shell midden habitation site with flakes, a hammerstone, and fire-cracked rock along a bluff overlooking the slough. They suggested that the resource was likely highly disturbed but did not provide the nature of disturbance in their reporting. Later, Erlandson and Wilcoxon (1981a) updated the record, stating that there were four burials previously identified within the resource boundaries by Orr, and the shell midden was deep and relatively high density. Erlandson and Wilcoxon also noted shellfish remains, utilized flakes, shell beads, and hopper mortars. The resource has not been previously evaluated for listing on the NRHP or CRHR.

P-42-000052

Recorded by Rogers in 1929 and excavated later by Orr in 1950, and Desautels, Karon, and West between 1967 and 1969, resource P-42-0005052 is a prehistoric habitation site consisting of a deep shell midden, two burials, hearths, various lithic tools, and faunal remains of whales, seals, deer, bear, elk, coyote, and mountain lion. Each of these records notes heavy disturbance to the resource due to construction, agricultural activities, the development of a motorcycle track, and looting. Erlandson and Wilcoxon (1981b) later remapped the resource and provided more precise boundaries, as well as noting that a total of three burials had been identified within the resource. Hudson (1986) then added to the previous reporting, stating that excavations occurred within the site boundaries between 1985 and 1986 as part of a road widening project; however, excavation records were not provided to the CCIC assuming additional work would be conducted in the future. No such records were provided in the CCIC search. An application for listing on the NRHP was completed for the resource in 1991 for its potential to provide knowledge regarding California's prehistory. Resource P-42-000052 was listed on January 25, 1993, NRHP number 92001755.

P-42-001694

Erlandson and Wilcoxon (1981c) recorded resource P-42-001694 as a low-density shell and lithic scatter within a prehistoric shell midden. Lithic materials consisted of quartzite and chert flakes, as well as Monterey and Franciscan chert debitage. Shell materials consisted of extremely weathered *Haliotis* shell. Due to the identification of fill and debris, Erlandson and Wilcoxon (1981c) were unable to determine the full extent of the resource, and they did not evaluate the resource for inclusion in the NRHP or CRHR.

P-42-003860

Resource P-42-003860 consists of a historic-period trash scatter, recorded by Slowick and Armstrong in 2006 during construction monitoring activities. Slowick and Armstrong (2006) described the resource as various rusted metal pieces and melted or broken glass. Complete beer and wine bottles, and chemical jars were also noted within the scatter. Many of the bottles contained ash and dark spots, suggesting they had been burned in a pile, which was further evidenced by the identification of charcoal throughout the deposit. Other materials identified included rodent bone fragments and firearm bullets. Slowick and Armstrong (2006) summarized that the deposit was likely a trash fire to dispose of chemicals, with an added social element due to the beer and wine bottles, as well as the possibility that firearms were discharged into the burn pile; however, it is unknown if the firearms were discharged prior to or after the burn attempt.

P-42-003862

Armstrong et al. (2006) recorded resource P-42-003862 as a prehistoric shell scatter. The identification of the site during a preconstruction site visit for a Southern California Gas pipeline installation led to site testing. Armstrong et al. described the resource as a surface shell scatter measuring 110 by 90 meters. Identified shell species within the included *Tivela*, *Chione*, *Ostrea*, *Saxidomus*, *Haliotis*, and *Mytilu*s. Opaque black chert flakes as well as a chert core were identified during backhoe trenching and screening.

Based on the various types and extent of the scatter, Armstrong et al. (2006) inferred that the resource was likely a collection and processing site. The resource has not been evaluated for listing on the NRHP or CRHR.

P-42-038754

In 2006, Shock identified and recorded a possible groundstone fragment during construction monitoring efforts. No other information for the resource was provided. As the resource is considered an isolated artifact, it is unlikely that it would be eligible for listing on the NRHP.

Built Environment Resources

The records search identified 10 built environment cultural resources within the Environmental Inventory Area. The 10 resources were recorded and evaluated by Mitch Stone and Judith Triem of San Buenaventura Research Associates in 1994 as part of the *Historic Resources Report, Santa Barbara Municipal Airport* (Stone and Triem 1994). Two resources were recommended eligible for the NRHP as an individual property through survey evaluation, both of which are still extant (P-42-041023 and P-42-041024). Though the two sites were recommended for listing, they are not currently listed on the NRHP. Four other resources were recommended locally significant both individually and as a contributor to a district. Two of the buildings are still extant (P-42-041082 and P-42-041087) and two have been demolished (P-42-041065 and P-42-041081). Currently, P-42-041082 and P-42-041087 are not listed on the County of Santa Barbara Historic Landmarks List or Places of Merit. Four resources were found ineligible for listing to the NRHP, CRHR, and locally; one is no longer extant (P-42-041067) and three are still standing (P-42-041076, P-42-041085, and P-42-041086).

2.3.6.3 Air Cargo Area

The Air Cargo Area consists of 30 acres throughout the Santa Barbara Airport.

Known Cultural Resources Studies

The CHRIS records search and background research identified 21 cultural resources studies within the Air Cargo Area (**Appendix EC1**). The studies within this area have been conducted over the last 40 years, from 1983 to 2009. The studies within the Air Cargo Area consist of 15 Phase I archaeological studies, three construction monitoring reports, one extended Phase I study, one resource evaluation report, and one programmatic document.

Known Cultural Resources

The CHRIS records search and background research identified one cultural resource within the APE. The resource is listed in **Table 2-3** below and discussed further below the table.

Table 2-3: **Known Cultural Resources – Air Cargo Area**

Primary Number	Trinomial	Resource Type	Description	Recorder(s) and Year(s)	Eligibility Status	Extant
P-42-041057	-	Historic Building	Building No. 244/245, Lucas Engineering	1994 (Stone/ Triem)	6Z	Yes
Source: CCIC 2022 6Z: Found ineligible for NR, CR or Local designation through survey evaluation.						

Built Environment Resources

The records search identified one built environment resource within the project area, P-42-041057, recorded and evaluated by Mitch Stone and Judith Triem of San Buenaventura Research Associates in 1994 as part of the Historic Resources Report, Santa Barbara Municipal Airport (Stone and Triem 1994). The building was recommended ineligible for listing to the NRHP, CRHR, and locally, and the building is still extant.

Additional Information

Within the Air Cargo Area, one building over 45 years of age was identified as not previously recorded and evaluated. Addressed as 495 South Fairview Avenue, the one-story commercial building sits just northeast of P-42-041057 and was constructed circa 1969 (UCSB 2022).

2.3.6.4 Support and Non-Aero Area

The Support and Non-Aero Area consists of 21 acres throughout the Santa Barbara Airport.

Known Cultural Resources Studies

The CHRIS records search and background research identified 20 cultural resources studies within the Support and Non-Aero Area (**Appendix EC1**). The studies within this area have been conducted over the last 40 years, from 1983 to 2013. The studies within the Support and Non-Aero Area consist of 11 Phase I archaeological studies, three construction monitoring reports, one resource evaluation report, one Phase II testing program report, and four programmatic documents.

Known Cultural Resources

The CHRIS records search and background research identified 12 built environment cultural resources within the Support and Non-Aero Area. Resources recorded in the area are listed in **Table 2-4** below. A discussion of each resource is included below the table.

Table 2-4: Known Cultural Resources – Support and Non-Aero Area

Primary Number	Trinomial	Resource Type	Description	Recorder(s) and Year(s)	Eligibility Status	Extant
P-42-003817	CA-SBA-3817	Historic Structure	Firestone Ditch	2003 (Bass & Farmer)	Unevaluated	Yes
P-42-041031	-	Historic Building	Building No. 305, Squadron Headquarters, Dynasen Inc.	1994 (Stone & Triem)	6Z	Yes
P-42-041032	-	Historic Building	Building No. 310, US Forest Service	1994 (Stone & Triem)	6Z	No
P-42-041034	-	Historic Building	Building No. 314, Storehouse Building, Atlas Fence Co.	1994 (Stone & Triem)	6Z	Yes
P-42-041035	-	Historic Building	HP39	1994 (Stone & Triem)	6Z	Yes
P-42-041074	-	Historic Building	HP06	1994 (Stone & Triem)	6Z	Yes
P-42-041075	-	Historic Building	HP39	1994 (Stone & Triem)	6Z	Yes
P-42-041078	-	Historic Building	HP39	1994 (Stone & Triem)	6Z	Yes
P-42-041083	-	Historic Building	HP06	1994 (Stone & Triem)	6Z	Yes
P-42-041084	-	Historic Building	HP06	1994 (Stone & Triem)	6Z	Yes
P-42-041088	-	Historic Building	HP39	1994 (Stone & Triem)	6Z	Yes
P-42-041089	-	Historic Building	HP39	1994 (Stone & Triem)	6Z	Yes

Source: CCIC 2022
6Z: Found ineligible for NR, CR or Local designation through survey evaluation.

Built Environment Resources

Within the Support and Non-Aero Area, 12 previously recorded built environment resources were identified through the records search. Eleven of the resources were recorded and evaluated by Mitch Stone and Judith Triem of San Buenaventura Research Associates in 1994 as part of the *Historic Resources Report,* *Santa Barbara Municipal Airport* (Stone and Triem 1994). These 11 resources, historic buildings formally and/or currently associated with the airport, were recommended ineligible for listing to the NRHP and CRHR. Ten of these 11 resources are still extant while one has been demolished (P-42-041032).

The Firestone Ditch (P-42-003817), which runs between Hollister Avenue and Firestone Road, was recorded in 2003 by B. Brass and R. Farmer of URS Corporation but not formally evaluated (Brass and Farmer 2003).

2.3.6.5 Airfield and Airspace Area

The Airfield and Airspace Area consists of 369 acres throughout the Santa Barbara Airport.

Known Cultural Resources Studies

The CHRIS records search and background research identified 47 cultural resources studies within the Airfield and Airspace Area (**Appendix EC1**). The studies within this area have been conducted over the last 40 years, from 1979 to 2017. The studies within the Airfield and Airspace Area consist of 25 Phase I archaeological studies, seven construction monitoring reports, four extended Phase I studies, three resource evaluation reports, three Phase II testing program reports, one Phase III testing program report, and four programmatic documents.

Known Cultural Resources

The CHRIS records search and background research identified six cultural resources within the Airfield and Airspace Area. Resources recorded in the APE are listed in **Table 2-5** below. A discussion of each resource is included below the table.

Table 2-5: Known Cultural Resources – Airfield and Airspace Area

Primary Number	Trinomial	Resource Type	Description	Recorder(s) and Year(s)	Eligibility Status	Extant
P-42-002579	CA-SBA-2579	Prehistoric Site	Lithic and shell scatter	1993 (Dugger)	Unevaluated	N/A
P-42-003742	CA-SBA-3742	Historic-Period Site	Household debris and burned fence posts	2004 (Gerber)	Unevaluated	No
P-42-003839	CA-SBA-3839	Prehistoric Site	Shell scatter and burials	2005 (Hacking, et.al); 2007 (Lebow)	6Y, due to secondary deposit	N/A
P-42-003861	CA-SBA-3861	Prehistoric Site	Shell scatter	2006 (Slowik)	Unevaluated	N/A
P-42-038755	–	Historic-Period Isolate	Glass jar	2006 (Slowik)	Unevaluated	N/A

Primary Number	Trinomial	Resource Type	Description	Recorder(s) and Year(s)	Eligibility Status	Extant
P-42-038756	–	Prehistoric Isolate	Franciscan chert flake	2006 (Slowik)	Unevaluated	N/A
Source: CCIC 2022 6Y: Determined ineligible for NRHP by consensus through Section 106 process – Not evaluated for CRHR or Local Listing						

Archaeological Resources

P-42-002579

In 1993, Dugger identified and recorded a low-density lithic scatter with shell and fish bone during subsurface testing. Lithic materials included Monterey chert flakes while shell materials consisted of *Chione* and *Protothaca*, and fish bones included that of sharks, rays, and porpoise. Dugger (1993) did identify disturbance to resource P-42-002579 due to airport and road construction. Dugger additionally inferred that the resource was likely a redeposit; however, Dugger did recommend further examination in daylight as project testing was conducted during the night. No further examination was provided for the resource. The resource has not been evaluated for listing on the NRHP or CRHR.

P-42-003742

Identified via aerial imagery and later backhoe trench testing, Gerber of Applied EarthWorks, Inc. (AE) recorded resource P-42-003742 as historic-period building remains and associated debris. Materials identified included burnt fence wood and laths, brick, China dish fragments, rusted metal, and a screw top bottle neck. Gerber (2004) stated that the resource lay under approximately 42 to 48 inches of artificial fill. Previous residents of the former residence are unknown as the land was part of a large holding by George Williams. No other information was provided for the resource. The resource has not been evaluated for listing on the NRHP or CRHR.

P-42-003839

Hacking et al. (2005) identified resource P-42-003839 during a Phase I archaeological survey and described the resource as shell beads, a stone bowl mortar, ornaments, shell fragments, lithic debitage, and human skeletal remains. The resource is eroded and highly disturbed due to a seasonal wetland and dense vegetation obscured the ground surface. Later, testing by AE in 2007 recovered human bone fragments from at least six individuals, associated mortuary materials, and groundstone artifacts (Lebow 2007). Given the level of disturbance and identification of the resource as a secondary deposit, Lebow (2007) stated that the resource lacked integrity and therefore was not eligible for listing on the NRHP. Although recommended ineligible for listing, Lebow indicated that excavations should be avoided within the area and recommended monitoring during topographic smoothing, the use of rubber-tired equipment within the boundaries, and the continued maintenance of the area with a rubber-tired mower to keep vegetation down.

P-42-003861

Slowick (2006a) identified resource P-42-003861 during construction monitoring and identified the resource as a low-density shell scatter. The shell species within the resource are identified as *Chione*, *Mytilus californianus*, and *Tivela*. Based on lack of stratigraphy in the cut area where the resource was identified, Slowick (2006) suggested that the resource was a secondary deposit from a nearby resource within the Santa Barbara Airport boundaries. No other information was provided for the resource. The resource has not been evaluated for listing on the NRHP or CRHR.

P-42-038755

Slowick (2006b) identified resource P-42-038755 during construction monitoring as an isolated glass jar. The jar is complete with a Hazel Atlas makers mark dating from 1923 to 1964. The jar measures 9.3 centimeters by 3.8 centimeters. As the resource is considered an isolated artifact, it is unlikely that it would be eligible for listing on the NRHP.

P-42-038756

Resource P-42-038756 consists of an isolated green Franciscan chert flake fragment identified by Slowick during construction monitoring in 2006c. As the resource is considered an isolated artifact, it is unlikely that it would be eligible for listing on the NRHP.

2.3.7 Cultural Resources sensitivity

Twelve archaeological sites are located within the Study Area that encompasses the Environmental Inventory, Air Cargo, Support and Non-aero, and Airfield and Airspace areas; one is listed on the NRHP (P-42-000052), one has been recommended as not eligible for inclusion on the NRHP (P-42-003839), and 10 have not been evaluated (P-42-000049, P-42-001694, P-42-003860, P-42-003862, P-42-038754, P-42-002579, P-42-003742, P-42-003861, P-42-038755, and P-42-038756). Twenty-three built environment resources, including a segment of the Firestone Ditch, are located within the Study Area; two have been recommended eligible for NRHP as an individual property through survey evaluation (P-42-041023 and P-42-041024), four have been recommended eligible for local listing (P-42-041065, P-42-041081, P-42-041082, and P-42-041087), 16 of the resources have been recommended ineligible for listing to the NRHP (P-42-041031, P-42-041032, P-42-041034, P-42-041035, P-42-041057, P-42-041067, P-42-041074, P-42-041075, P-42-041076, P-42-041078, P-42-041083, P-42-041084, P-42-041085, P-42-041086, P-42-041088, and P-42-041089), and one has not been evaluated (P-42-003817). One other built environment resource that is of historical age (45 years) but has not been formally recorded or evaluated were identified within the Study Area during review of aerial imagery.

Although the Study Area is not mapped within any of the City's six cultural resource sensitivity areas, the Environmental Inventory and Airfield and Airspace areas have an increased sensitivity for archaeological resources based on the results of the CHRIS records search.

The *City of Santa Barbara Master Environmental Assessment (MEA) - Guidelines for Archaeological Resources and Historic Structures and Sites* states preservation in place and avoidance are the preferred methods to mitigate effects on archaeological resources and, consequently, project redesign to avoid potential effects should be attempted whenever feasible. For proposed projects that involve suspected, but not necessarily confirmed, subsurface archaeological resources, the standard mitigation is monitoring of all ground disturbing activities by a qualified archaeologist. Damage or destruction of archaeological resources may be mitigated by implementation of a Phase 3 Data Recovery Program.

Two built environment resources have been recommended eligible for NRHP as an individual property through survey evaluation (P-42-041023 and P-42-041024) and could be potential constraints to future development within the Environmental Inventory area.

If a proposed project includes alteration or demolition of a known historic resource or resource over 50 years old, a Historic Structures/Sites Report should be prepared in accordance with Section 2.5 *Project Impact Evaluation Procedures* of the MEA. This will include field survey to identify on-site resources, preparation of a Historic Structures/Sites Report, summary of impacts, and recommendation of potential mitigation measures in accordance with those summarized in the MEA.

2.3.8 Limitations, Assumptions, and Use Reliance

This Cultural Resources Inventory was conducted in accordance with standard, accepted cultural resources practices conducted at this time and in this geographic area. The Cultural Resources Inventory is limited by the scope of work performed. The findings presented in this report are based on findings derived from the CHRIS CCIC records search, and specified historical and literature sources. Although Rincon assumes the data sources are reasonably reliable, Rincon cannot and does not guarantee the authenticity or reliability of the data sources it has used. Additionally, pursuant to our contract, the data sources reviewed included only those that are practically reviewable without the need for additional research and analysis.

- 3 -

AVIATION ACTIVITY FORECAST

3.1 INTRODUCTION

Aviation activity forecasts explored in this chapter are developed to assess and project future demand at Santa Barbara Airport ("SBA" or "the Airport"). SBA is located in the city of Santa Barbara, bordering the city of Goleta, near the University of California, Santa Barbara. The Airport borders the Goleta Slough, an area of coastal habitat and wetlands. SBA is located in Santa Barbara County, a part of the California Central Coast that is roughly halfway between the major cities of Los Angeles and San Francisco. SBA is a unique market for aviation activity due to the proximity to Los Angeles (100 miles) and San Francisco (300 miles). While these cities are within a few hours' drive time of Santa Barbara, many travelers consider flying due to traffic congestion.

The forecast uses the Federal Aviation Administration (FAA) fiscal year 2021 (October 1 to September 30) as the base year and is prepared for the next 20 years (2022-2041). Forecast results are reported in five-year intervals. The forecast encompasses a variety of methodologies that incorporate regression analysis, research, and industry knowledge. Each forecast category is evaluated against the 2022 FAA Terminal Area Forecast (TAF), which was published in February 2023. Data dating back to 2011 is used as the basis of historical trend analysis, with consideration of outliers such as those due to the impacts of the COVID-19 pandemic.

This forecast chapter is organized into the following sections:

- Community Profile
- Aviation Activity Profile
- Commercial Service Forecasts
- General Aviation Forecasts
- Critical Aircraft
- Summary

Many sections of this forecast chapter have unique terms and acronyms. They are defined within each section as they are first presented.

3.2 CHAPTER OVERVIEW

This chapter provides a 20-year projection of aviation activity at SBA. The forecasts consist of estimates for future activity levels that help guide the planning of airport development and improvement. The forecasts are used to determine facility requirements and the timing of implementing demand-based improvement projects at SBA. The forecast analysis includes consideration of the impact of regional socioeconomics and trends in the aviation market, both regionally and nationally. The geographic range of the socioeconomics analyzed in this study is based on the Santa Maria-Santa Barbara Metropolitan Statistical Area (MSA), which comprises the entirety of Santa Barbara County.

The forecasts include enplanements, operation counts, and the number of based aircraft at SBA. Enplanements consist of the total number of revenue passengers boarding aircraft at SBA. Airport operations include takeoffs and landings and are categorized into itinerant (different origin and destination airports) and local operations (aircraft takeoff and land at the same airport). Based aircraft are operational and air-worthy aircraft based at SBA for the majority of the year and are categorized by aircraft type. Growth rates in this chapter are presented in compound annual growth rate (CAGR), or the average annual growth rate. **Table 3-1** summarizes the results of the forecasts described in this chapter.

Table 3-1: SBA Forecast Summary

	Historical	Base Year	Forecast		
Fiscal Year	**2011**	**2021**	**2031**	**2041**	**21-'41 CAGR**
Enplanements	**370,233**	**342,669**	**732,500**	**878,700**	**4.8%**
Operations	**106,696**	**103,419**	**113,967**	**116,887**	**0.6%**
Air carrier	4,040	10,328	16,100	17,900	2.8%
Air taxi	22,730	12,311	14,100	13,700	0.5%
Itinerant general aviation	42,810	42,258	44,260	45,020	0.3%
Local general aviation	35,751	36,695	37,680	38,440	0.2%
Subtotal general aviation	78,561	78,953	81,940	83,460	0.3%
Military	1,365	1,827	1,827	1,827	0.0%
Based Aircraft	**202**	**141**	**167**	**185**	**1.4%**
Single-engine piston	145	104	115	115	0.5%
Jet	29	25	33	44	2.9%
Multi-engine piston	22	8	13	17	3.9%
Helicopter	6	2	4	7	6.5%
Other	0	2	2	2	0.0%

Sources: Mead & Hunt, 2022 FAA TAF, U.S. DOT T-100, Santa Barbara Airport

3.3 COMMUNITY PROFILE

A variety of local and regional socioeconomic factors were examined to determine their influence, if any, on aviation activity at SBA. These regional factors include area population, gross regional product, employment and income trends, and other factors such as tourism and traveler spending. This section assesses the primary characteristics unique to the MSA.

3.3.1 Population

Population data for the forecast is based on the MSA. The U.S. Office of Management and Budget defines MSAs as consisting of the county or counties (or equivalent entities) associated with at least one urbanized area with a population of at least 50,000, plus adjacent counties having a high degree of social and economic integration with the "core" as measured through commuting ties.[1] The MSA, also referred to as the geographic area, includes the entirety of Santa Barbara County in this forecast analysis.

Population records and projections for this forecast were sourced from the California Employment Development Department (CA EDD) Labor Market Division. **Table 3-2** shows the historical and projected population estimates for Santa Barbara County.

Table 3-2: Santa Barbara County Population History and Projections

Year	Population
Historical Census and Estimates	
2011	425,981
2016	446,157
2021	453,498
Forecast Period	
2026	463,045
2031	471,199
2036	477,040
2041	480,047
Compound Annual Growth Rates	
CAGR 2011-2021	0.6%
CAGR 2021-2041	0.3%

Source: California Employment Development Department
CAGR: Compound Annual Growth Rate – the average annual growth rate

3.3.2 Employment and Economy

Key industries in Santa Barbara County include agriculture and wine, tourism, and healthcare. Notable employers in Santa Barbara County include the University of California, Santa Barbara (UCSB) and Vandenberg Air Force Base (AFB). Tourism activity is prominent in south Santa Barbara County with beaches, shopping, and dining, while tourism in the Santa Ynez Valley is comprised of visits to "wine country" vineyards and wineries. Additionally, the area around UCSB is home to many tech-sector businesses that are involved in the Silicon Riviera[2], an organization based in Santa Barbara aiming to promote the Central Coast's technology and innovation industry.

Based on the California Department of Transportation's county-level economic forecasts, Santa Barbara County's labor market is expected to have fully recovered from the pandemic by the end of 2022. Most of the employment gains are attributed to leisure services, as the tourism industry is expected to be a major factor in leisure and hospitality job creation. Due to rising housing costs and the lack of available housing, many employees are commuting from outside the county, which affects socioeconomic data variables such as income per capita and employment.

[1] https://www.census.gov/programs-surveys/metro-micro/about/glossary.html
[2] https://www.siliconriviera.org/

Santa Barbara County economic data is sourced from the Woods & Poole Economics, Inc. (W&P) dataset. W&P provides data for the years between official censuses. This data was examined to determine what, if any, socioeconomics drivers may impact aviation demand at SBA. The main economic variables examined include gross regional product (GRP), income per capita, and employment. **Table 3-3** shows the historical and projected GRP, income per capita, and employment in SBA for the forecast period.

Table 3-3: **Santa Barbara County Economic Indicators**

Year	GRP (Millions)	Income Per Capita	Employment
Historical			
2011	$27,833	$60,631	250,715
2016	$31,214	$66,608	274,776
2021	$34,107	$73,900	288,834
Forecast			
2026	$37,262	$79,780	308,448
2031	$40,914	$86,377	324,590
2036	$44,727	$93,094	340,105
2041	$48,716	$99,939	355,129
Compound Annual Growth Rates			
CAGR 2011-2021	2.1%	2.0%	1.4%
CAGR 2021-2041	1.8%	1.5%	1.0%

Source: Woods & Poole Economics, Data presented in 2022 dollars.
CAGR: Compound Annual Growth Rate

3.4 AVIATION ACTIVITY PROFILE

Historical data for enplanements, operations, and based aircraft counts at SBA are reviewed in this section. The aviation activity profile provides context for historical airport activity trends and addresses the changes that have occurred. This data is used as a base for forecasting future activity at SBA.

3.4.1 Air Carrier Service

In 2022, SBA is served by four scheduled passenger-published air carriers: Alaska Airlines, American Airlines, Southwest Airlines, and United Airlines. Air carriers, such as SkyWest Airlines, Horizon Air, Mesa Airlines, and Envoy Airlines, operate some flights on behalf of the mainline carriers.

Non-stop service at SBA includes flights to: Dallas (DFW), Denver (DEN), Las Vegas (LAS), Los Angeles (LAX), Oakland (OAK), Phoenix Sky Harbor (PHX), Portland (PDX), Sacramento (SMF), San Francisco (SFO), Seattle (SEA), and seasonal Chicago (ORD) service.

Air cargo service includes Empire Airlines and West Air Inc., operating on behalf of FedEx, and Ameriflight, operating on behalf of United Parcel Service (UPS). Some air cargo is also transported on Alaska, Horizon, and American passenger flights.

3.4.1.1 Passenger Enplanements and Airline Operations

The TAF classifies a passenger enplanement as the total number of revenue passengers boarding aircraft, including both originations and transfer passengers. The enplanement counts do not include pilots, flight attendants, and non-revenue airline crew members.

The FAA classifies passenger enplanements based on the type of carrier operating the flight.

- **Air carrier enplanements:** The sum of domestic and international revenue passenger enplanements on mainline US commercial air carriers, plus international revenue passenger enplanements on mainline foreign-flag air carriers. Mainline air carriers provide service primarily using aircraft with 90 or more seats.
- **Commuter enplanements:** The sum of domestic and international revenue passenger enplanements on airlines whose primary function is feeding passengers to mainline carriers, regardless of aircraft size. Commuter airlines primarily operate aircraft with 89 or fewer seats.

Accordingly, revenue passengers on the American Airlines Airbus A319 to DFW are counted as air carrier enplanements while revenue passengers on the Mesa Airlines (American Eagle) Bombardier CRJ900 to PHX are counted as commuter enplanements.

The FAA also categorizes commercial operations into two categories; however, it is based on aircraft seat or payload capacity rather than operator type.

- **Air carrier operations:** Airport operations performed by aircraft with a seating capacity of more than 60 seats, or a maximum payload capacity of more than 18,000 pounds, carrying passengers or cargo for hire or compensation.
- **Air taxi/commuter operations:** Airport operations performed by aircraft with a seating capacity of 60 seats or less, or a maximum payload of 18,000 pounds or less, carrying passengers or cargo for hire or compensation – including both scheduled commuter and on-demand air taxi operations.

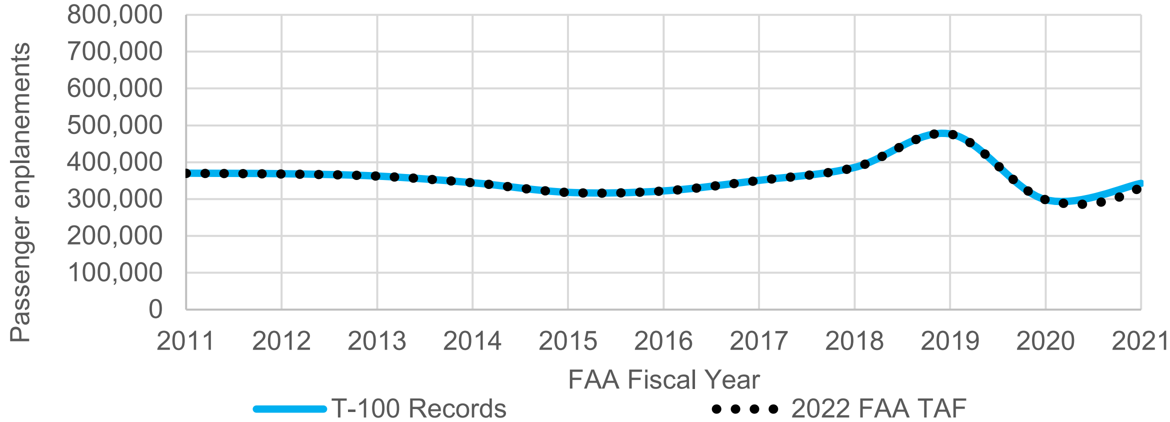
Historical enplanement and operation records at SBA are based on data from the United States Department of Transportation (U.S. DOT) T-100 database and records provided by SBA's air traffic control tower (ATCT). The T-100 form is filled out monthly by scheduled, charter passenger, and cargo airlines. This database provides a detailed record of passenger and cargo airline activity. The data used for enplanements and scheduled commercial service is based on T-100 records as they have detailed information about operations, airlines, and aircraft type. SBA ATCT records are used to verify T-100 information and to supplement operational data not captured in the T-100 records.

Enplanements

Enplanement records from the T-100 database compared against the TAF records from 2011 to 2021 are shown in **Figure 3-1**. SBA enplanements have decreased by an overall annual average of 0.8 percent since 2011. However, it is important to note that 2020 and 2021 aviation demand was severely impacted by the effects of the COVID-19 pandemic.

Prior to the pandemic, enplanements increased by an average of 3.2 percent annually between 2011 and 2019. At the time of this analysis, data for fiscal year (FY) 2022 has not been fully compiled; however, available Airport and T-100 records through May 2022 indicate that FY2022 enplanements have surpassed FY2021 results and exceed the pre-pandemic peak, which occurred in 2019.

Figure 3-1: Historic Passenger Enplanements at SBA (2011-2021)



Sources: 2022 FAA TAF, U.S. DOT T-100

Commercial Operations

Table 3-4 compares the historical data for commercial operations at SBA from the U.S. DOT's T-100 database against the 2022 TAF. T-100 air taxi operation records are noted to differ significantly from the 2022 TAF. Part of the difference may be due to the T-100 database not always capturing on-demand air taxi operations by charter airlines and private aircraft, as some operators have waivers and are exempt from submitting T-100 forms.

Table 3-4: Historical SBA Scheduled Commercial Operations vs 2022 TAF Comparison

Fiscal Year	Air Carrier Operations			Air Taxi Operations		
	T-100	TAF	% Difference from TAF	T-100	TAF	% Difference from TAF
2011	4,041	3,901	3.6%	18,574	22,334	-16.8%
2012	2,756	2,738	0.7%	20,200	23,534	-14.2%
2013	2,459	2,375	3.5%	19,785	24,128	-18.0%
2014	3,816	3,983	-4.2%	15,867	23,078	-31.2%
2015	4,231	4,099	3.2%	11,542	22,263	-48.2%
2016	6,171	5,611	10.0%	9,252	21,539	-57.0%
2017	8,065	7,761	3.9%	7,426	20,264	-63.4%
2018	7,224	6,897	4.7%	8,741	17,621	-50.4%
2019	9,695	9,188	5.5%	10,280	17,285	-40.5%
2020	8,216	7,782	5.6%	6,922	13,086	-47.1%
2021	10,664	10,328	3.3%	2,553	12,311	-79.3%
CAGR '11-'19	11.6%	11.3%	N/A	-7.1%	-3.2%	N/A
CAGR '19-'21	4.9%	6.0%		-50.2%	-15.6%	

Sources: U.S. DOT T-100, 2022 FAA TAF
CAGR: Compound Annual Growth Rate – the average annual growth rate

Additional commercial operations are sourced from SBA's ATCT. The additional operations are likely operations from private aircraft (for hire) flights to and from SBA. **Table 3-5** shows the comparison between T-100 and SBA records of air taxi operations.

Table 3-5: Historical SBA Air Taxi Operations – T-100 vs SBA Records

Fiscal Year	T-100 Air Taxi Ops	SBA ATCT Air Taxi	Difference from T-100
2011	18,574	22,730	-4,156
2012	20,200	24,281	-4,081
2013	19,785	24,313	-4,528
2014	15,867	23,072	-7,205
2015	11,542	22,263	-10,721
2016	9,252	21,539	-12,287
2017	7,426	20,264	-12,838
2018	8,741	17,621	-8,880
2019	10,280	17,285	-7,005
2020	6,922	13,086	-6,164
2021	3,617	12,311	-8,694
2022	4,269	13,875	-9,606

Sources: U.S. DOT T-100, SBA Records

COVID-19 Impacts and Recovery

Enplanements and operations at SBA declined in FY2020 and FY2021 due to the impacts of the COVID-19 pandemic. Based on T-100 records, enplanements fell over 37 percent between FY2019 and FY2020; however, FY2021 enplanements increased 15 percent from FY2020 levels, reaching 72 percent of FY2019 enplanement levels, with enplanements in FY2022 surpassing FY2019 levels by November 2022. T-100 records show that passenger air service operations also declined during this period, falling 24 percent between FY2019 and FY2020. Changes in air service operators within FY2020 include Frontier Airlines, Contour Airlines, Sun Country Airlines, and Delta Air Lines ending service at SBA. The total passenger air service operation counts are not expected to recover to FY2019 levels within the forecast period; however, the number of air carrier operations have increased between FY2019 and FY2021. This is attributed to increased air service offerings with new routes and the entrance of Southwest Airlines, which is operating three routes with large aircraft classified as air carrier operations.

3.4.2 General Aviation

The general aviation category covers flight activities that do not include passenger operations, cargo operations, and military operations. General aviation activities include, but are not limited to, flight training, recreational flying, private and corporate air transportation, emergency response, law enforcement, and flight testing.

3.4.2.1 Itinerant Operations

Itinerant operations are civil aircraft operations that originate and terminate at different airports. Itinerant operations comprised 54 percent of overall general aviation operations at SBA in FY2021 and have decreased an average of 0.1 percent per year between FY2011 and FY2021.

Outside of the outlier of FY2020, itinerant general aviation at SBA appears to have remained relatively stable in the past decade. This stability can partially be attributed to the presence of privately owned aircraft operating at the Airport and itinerant training operations from other airports in the surrounding area conducting operations at an airport with a control tower.

Table 3-6: Historic SBA Itinerant General Aviation Operations

Fiscal Year	SBA	Percent Change	U.S.	Percent Change
2011	42,810	-	33,679,459	-
2012	44,057	2.9%	33,549,130	-0.4%
2013	41,999	-4.7%	33,014,296	-1.6%
2014	44,676	6.4%	32,485,675	-1.6%
2015	45,825	2.6%	32,305,334	-0.6%
2016	42,678	-6.9%	31,949,705	-1.1%
2017	40,862	-4.3%	31,749,227	-0.6%
2018	42,700	4.5%	31,991,071	0.8%
2019	41,565	-2.7%	32,229,240	0.7%
2020	38,498	-7.4%	30,461,946	-5.5%
2021	42,258	9.8%	31,621,431	3.8%
CAGR 2011-2021	-0.1%	N/A	-0.6%	N/A

Sources: 2022 FAA TAF
CAGR: Compound Annual Growth Rate

3.4.2.2 Local Operations

Local general aviation operations are those that originate and terminate at the same airport. Local operations are generally performed by pilots practicing takeoffs and landings or for flight testing after a repair. Touch-and-go operations, where aircraft fly in a pattern of landing, slowing, and then accelerating to take off without leaving the runway, count as two operations and are included in local operations counts. Local general aviation operations are primarily determined by the amount of flight training occurring at an airport. An aircraft can generally perform more than six operations in an hour while practicing touch-and-go operations, depending on the traffic pattern. Major sources of local operations at SBA include the flight school and the flying club based at SBA.

Table 3-7: SBA Historic Local General Aviation Operations

Fiscal Year	SBA	Percent Change	National	Percent Change
2011	35,751	-	35,880,947	-
2012	31,897	-10.8%	35,685,307	-0.5%
2013	33,838	6.1%	35,471,486	-0.6%
2014	31,844	-5.9%	35,375,675	-0.3%
2015	33,009	3.7%	35,665,567	0.8%
2016	30,206	-8.5%	35,287,075	-1.1%
2017	24,550	-18.7%	35,307,222	0.1%
2018	27,602	12.4%	35,794,970	1.4%
2019	34,457	24.8%	36,507,450	2.0%
2020	33,362	-3.2%	35,824,624	-1.9%
2021	36,695	10.0%	36,952,140	3.1%
CAGR 2011-2021	0.26%	N/A	0.29%	N/A

Sources: 2022 FAA TAF
CAGR: Compound Annual Growth Rate

3.4.2.3 Based Aircraft

Based aircraft are those stored at SBA that do not include visiting itinerant aircraft. The FAA classifies based aircraft by the propulsion system, engine configuration, and weight. The main categories of based aircraft are single-engine piston (SEP), multi-engine piston (MEP), jets (turboprops and turbojets), helicopters, and other (experimental, light sport, glider, and ultralight aircraft).

Data for based aircraft at SBA are from the TAF and SBA records – the 2011 to 2020 records are sourced from the TAF, and the 2021 based aircraft count is from the 5010 form the Airport compiled and submitted. **Table 3-8** shows the historic based aircraft count in five-year increments from 2011 to 2021.

Table 3-8: **SBA Historic Based Aircraft Counts**

Fiscal Year	2011	2016	2021	2011-2021 CAGR
Single-engine piston	145	134	104	-3.3%
Jet	29	31	25	-1.5%
Multi-engine piston	22	16	8	-9.6%
Helicopter	6	6	2	-10.4%
Other	0	1	2	N/A
Total	**202**	**188**	**141**	-3.5%

Sources: 2011 to 2020 records from 2022 TAA TAF, 2022 based aircraft count from SBA FAA 5010 form
CAGR: Compound Annual Growth Rate

The number of based aircraft at SBA has declined an average of 3.5 percent annually in the past decade. This decline can be attributed to multiple factors, such as availability of hangar space at the Airport and, notably, the waitlists for hangar space at the Airport.

Industry-wide trends also indicate a decrease in general aviation aircraft through this period. Based on records in the 2022 FAA Aerospace Forecast, the national general aviation market for single- and multi-engine piston aircraft has been declining while turbine and light-sport fleets have been growing.

3.4.3 Military

No military aircraft are based at SBA, though military aircraft have operated at SBA, primarily for training purposes. Military activity is based on the demands of the U.S. Department of Defense rather than socioeconomic drivers; therefore, for planning purposes, military operations are assumed to remain flat throughout the forecast period.

3.4.4 Terminal Area Forecast

The TAF is the official forecast that the FAA releases annually for each airport in the FAA National Plan of Integrated Airport Systems (NPIAS). The TAF reports data and projections for the federal fiscal year (October 1 to September 30). The TAF contains forecasts for passenger enplanements, operations, and based aircraft. The TAF does not provide forecasts for operations by aircraft type, peak activity level, critical aircraft, or air cargo tonnage. The TAF data reported herein was published in February 2023 and is referred to in this chapter as the 2022 TAF. **Table 3-9** summarizes the TAF prepared for SBA.

Table 3-9: **2022 FAA TAF Summary**

Fiscal Year	2011	2021	2031	2041	2021-2041 CAGR
Enplanements	**369,800**	**337,592**	**734,175**	**872,782**	**4.9%**
Operations	**106,161**	**103,419**	**121,296**	**128,747**	**1.1%**
Air carrier	3,901	10,328	14,610	17,272	2.6%
Air taxi	22,334	12,311	16,142	17,918	1.9%
Itinerant GA	42,810	42,258	46,644	49,917	0.8%
Itinerant military	1,127	1,229	1,083	1,083	-0.6%
Local GA	35,751	36,695	42,305	42,045	0.7%
Local military	238	598	512	512	-0.8%
Based aircraft	**202**	**141**	**164**	**182**	**1.3%**
Single-engine piston	145	104	124	144	2.8%
Jet	29	25	26	26	9.1%
Multi-engine piston	22	8	10	10	6.1%
Helicopter	6	2	2	2	8.4%
Other	0	2	2	2	0.0%

Source: 2022 FAA TAF
CAGR: Compound Annual Growth Rate

3.5 COMMERCIAL SERVICE FORECASTS

This section discusses the methods, assumptions, and uncertainty associated with each of the enplanement, air cargo volume, and commercial operation forecasts. A preferred method is selected for each category and then compared against the TAF. The preferred method is selected based on factors including statistical validity, feasibility, past trends, professional judgment, and local market/airport characteristics.

3.5.1 Passenger Enplanements

3.5.1.1 Methods

Two main methods of forecasting were assessed for passenger enplanements at SBA. The first method is based on multivariable regression analysis, and the second method is based on the analysis of the current and past airlines operating at SBA and expected trends occurring with each airline's fleet, which affects airline seat capacity.

Regression Analysis Method

The passenger enplanement forecast evaluates historical trends and uses multivariable regression methods to project passenger enplanements. Variables highly correlated (those with a correlation coefficient (r) greater than 0.8) with passenger enplanements in the past are applied in the regression models. In the case of SBA, a strong correlation between enplanements and socioeconomics was found between 2015 and 2019.

The 2020 data were excluded from the analysis due to the impact of the COVID-19 pandemic. This period is marked by new airlines starting or resuming service at SBA, increasing the number of available routes to residents and visitors. For example, Alaska Airlines, American Airlines, and United Airlines all started regular or seasonal mainline service at SBA between April and August 2017.

Correlation describes how strongly related the rates of change between two variables are to each other. The stronger the correlation, the more linear their relationship is – a positive correlation means two variables increase together while a negative correlation means one variable decreases, while the other increases. The stronger the correlation, the closer the correlation coefficient approaches a value of 1.0 (strong positive correlation) or -1.0 (strong negative correlation), and having no correlation equals a correlation coefficient of 0.

The five most highly correlated variables for passenger enplanements at SBA between 2015 and 2019 are listed in **Table 3-10**. The strong correlation results indicate a relationship between the population and economy with passenger demand at SBA. This type of relationship between demand and socioeconomics can be attributed to factors such as wages and total income – people who earn more can afford to travel more or can choose to travel by air over other methods of transportation. A growing population and economy allow for more leisure travel by residents and/or allow businesses to afford more business-related flying.

These five independent variables were tested against the enplanement records using regression analysis. The validity of each test can be assessed in part by the R-squared (R^2) value, which describes how well the variables explain variance in the dependent variable (enplanements). R^2 is the percent of variance explained by the model.

Table 3-10: 2015-2019 SBA Enplanement Correlation Analysis

Variable	Correlation Coefficient
Population[1]	0.898
County employment[2]	0.961
County income per capita[2]	0.959
County gross regional product (GRP)[2]	0.915
County retail sales[2]	0.965

Sources: 1) California Employment Development Department, 2) Woods & Pool Economics

To account for the effects of the different but strongly correlated variables, multi-variable regression models were tested against historical enplanements. Multi-variable models allow the forecast to account for local (county employment and population) and national (GDP and national commercial passengers) forces. However, every variable added to a model increases the R^2 and never decreases it, which can lead to a high R^2 value, which could be misleading. Thus, the adjusted R^2 value is used to determine the level of confidence, as it accounts for this effect and mitigates the issue of not knowing if the R^2 value is higher due to the model being better or because it has more independent variables.

Table 3-11 shows the adjusted R^2 values of different variable combinations tested. Single-variable adjusted R-squared values are also shown for additional context.

Table 3-11: Regression Analysis

Variable(s)	Adjusted R-Squared Value
Population, employment	0.853
Income per capita, GRP, retail sales	0.922
Population, retail sales	0.885
Population	0.743
Employment	0.899

Source: California Employment Development Department, 2) Woods & Pool Economics

The regression method considers the forecasts of each variable to create the regression models. Each variable's projected value is used to produce the passenger enplanement forecast for the next 20 years. This analysis shows that multiple combinations of socioeconomic variables have resulted in good to strong adjusted R^2 values. Thus, the selection of the preferred variable combination for the multivariable regression forecast is determined by which combination of variables can best reflect SBA's community and market.

Based on the results of the regression analysis and consideration of the forecasts for each variable, the multivariable model based on population and employment was selected to model SBA passenger enplanement projections. When compared to the other combinations assessed, this combination accounts for both demographic and economic demand drivers that have historically correlated with enplanements at SBA.

Passenger Enplanement Regression Equation: $y = m_1(x_1) + m_2(x_2) + b$

y = Passenger Enplanements, b = Intercept from Regression Analysis

$$y = (15.43 \times County\ Employment) + (-3.01 \times County\ Population) - 2{,}571{,}940.23$$

This forecast results in an estimated 1,462,000 enplanements by 2041 with a 2021 to 2041 CAGR of 7.5 percent.

Unconstrained Growth and Enplanement per Capita

The multivariable regression method resulted in very strong probability of strong growth into the future. As with all forecasting methods in this chapter, it does not account for capacity constraints and assumes facilities will grow as needed to accommodate demand. If facilities are not developed to accommodate demand, this forecast assumes the demand remains regardless of whether it is actually realized. To account for factors such as market maturation that may result in growth rates decreasing over time, an enplanement per capita analysis was performed.

This second result from the regression forecast method examines the enplanement per capita at other airports that are expected to reach similar enplanement levels in the forecasting period. The airports were found using the FAA TAF website's search criteria in combination with population projections from the W&P dataset. Additionally, airports located in regions with a significantly higher population than Santa Barbara County were excluded. For example, any airport located in Los Angeles County would have significantly lower enplanement per capita due to the large population size.

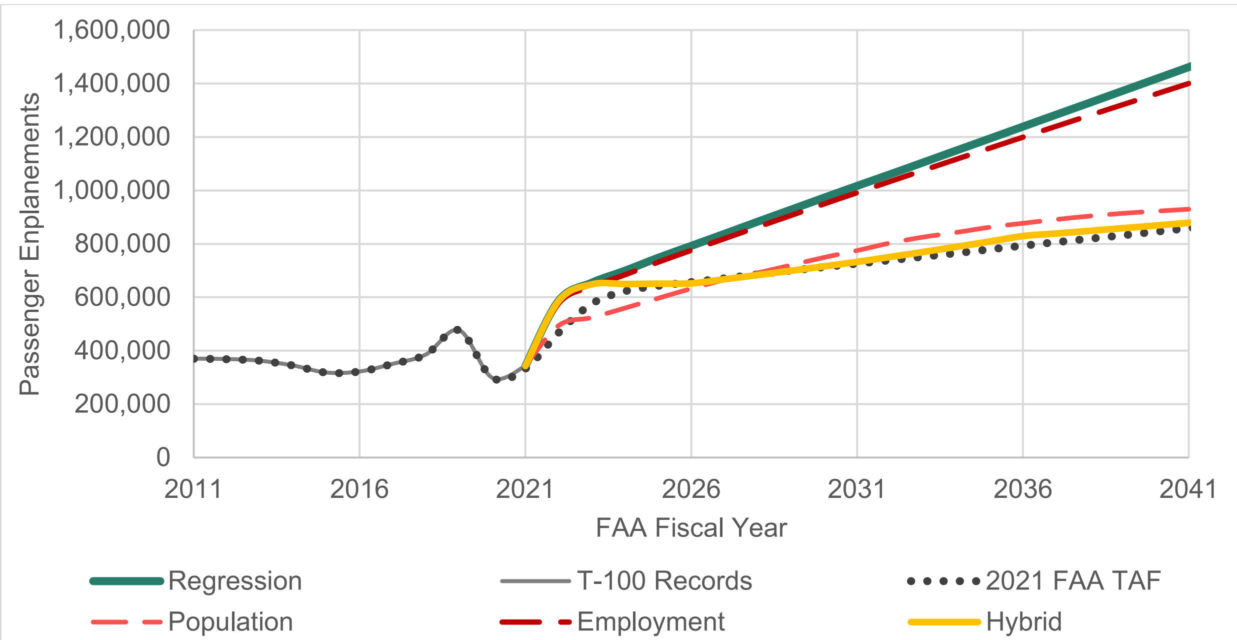
The results of this analysis indicated that enplanements per capita levels under 2.3 would be reasonable for the population size and enplanement expectations at SBA. The enplanement per capita forecast method caps the growth rate to 2.3 enplanements per capita by 2041, which would manifest in the lower CAGR between 2031 and 2041. This adjustment results in 1,104,000 enplanements in 2041 and a 20-year CAGR of 6 percent compared to the 7.5 percent of the unconstrained regression forecast.

Single-Variable Regression Analysis

Single-variable regression models were also tested as part of the regression analysis to assess how each variable may affect the multi-variable model. The variables included are the two used in the multivariable regression analysis: population and employment. The single-variable models show how each variable contributes to the two-variable model. The results show that employment projections are driving the majority of the high growth rate shown in the two-variable regression, having a 7.3 percent 20-year CAGR compared to the 5.1 percent CAGR of the population regression model.

The results of the regression analysis models are presented and compared against the 2022 FAA TAF in **Figure 3-2**.

Figure 3-2: **Regression Method Forecast Results**



Sources: Mead & Hunt, U.S.DOT T-100, 2022 FAA TAF

Airline Fleet Mix Analysis Method

This method is based on determining enplanement projections by developing forecasts for airline activity and fleet changes. Changes projected for airline activity are based on maintaining current routes, increasing frequency to existing markets, reducing the seasonality of service, and adding new market nonstop service to airline network hubs or destinations with strong origin-destination demand.

Changes in the airline's fleet mix are based on the airlines' aircraft deliveries and orders. Nationally, there has been a trend in retiring smaller capacity aircraft, 50-seat aircraft like the Bombardier CRJ200 or the ~60-seat CRJ700, in favor of the larger aircraft, such as the ~76-seat CRJ900 or Embraer 175. Airlines also up-gauge equipment if passenger demand is sufficient. This trend is due to a variety of reasons, including aircraft age, economic viability, capacity, network hub considerations, and pilot availability. Airlines such as United Express are also replacing older, smaller, 50-seat jets with newer, more efficient models.

The changes in airline fleet mix affects the classification of operations in the forecast due to the FAA's classification of operation type by aircraft size – operations by the larger, 76-seat aircraft would be classified as air carrier operations rather than commuter operations.

This forecast method examines the current aircraft operating at SBA and determines if the models are being retired and replaced by the incumbent airlines. The FY2022 flight schedule, as reported by the airlines, is used as a foundation for this forecast with the aircraft grouped by seat capacity into four different categories (as shown in **Table 3-12**).

Table 3-12: Airline Fleet Mix Analysis Method Aircraft Seat Capacity Groups

Seat Capacity Group*	Typical Aircraft Operating at SBA
1-59 seats	CRJ200
60-76 seats	CRJ700, CRJ900, E175
125-150 seats	A319, 737-700, A320
> 150 seats	737-800, 737 MAX 7/8

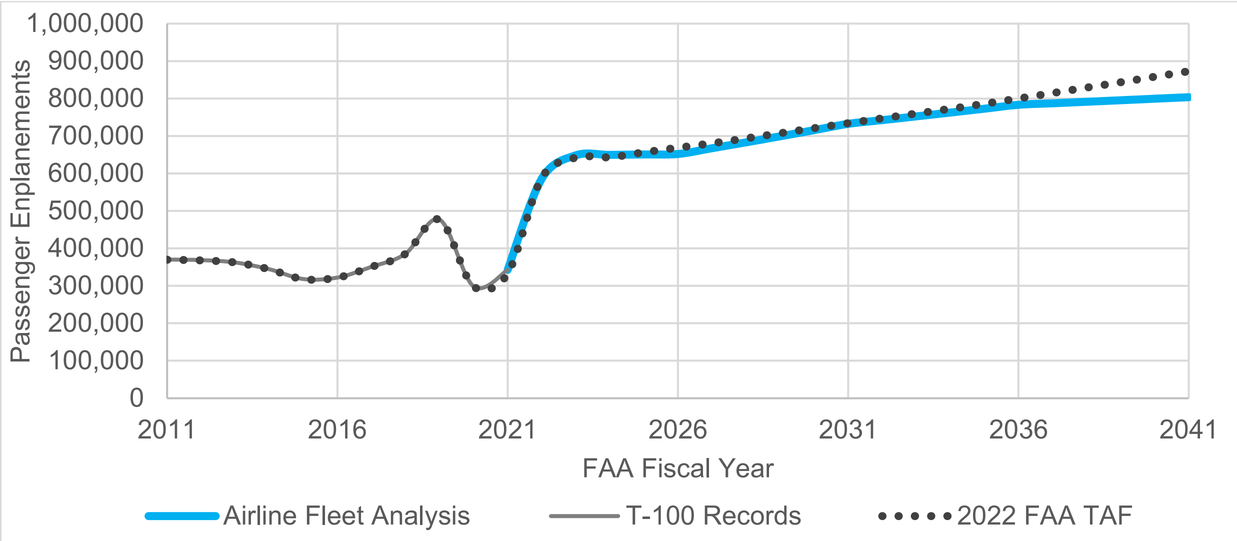
*Commercial service airlines did not operate aircraft with 76 to 125 seats in FY2022, so the category is excluded in this table. Currently, operating airlines are not currently expected to be replaced with aircraft of such gauge.
Sources: DiioMi, Santa Barbara Airport

The assumptions for this forecast method are as follows:

- Regional airlines are expected to up-gauge to 76-seat aircraft operations by 2036. This is based on airline aircraft orders and recent trends as reported in the 2022 FAA ASF.
- Southwest Airlines will replace the majority of 143-seat 737-700 operations at SBA with the 150-seat 737 MAX 7 as the 737-700 fleet is gradually retired through 2031.
- Aircraft seat configurations are not expected to change significantly over the forecast period; thus, the current seating capacity of each aircraft for each airline is assumed to remain constant as long as the aircraft is in service.
- Additional operations will result from the increasing frequency of current non-daily or seasonal routes, potential for up to three new carriers to enter the market within the forecast period, and the potential for up to five new routes or destinations.
- The forecast assumes an average annual load factor of 80 percent starting in FY2023. This load factor is based records provided by the airport, confirmation from T-100 data and an additional assessment of the FAA ASF projection – 85.1 percent average load factor for domestic operations by U.S. Commercial Air Carriers by FY2042, which is up from 83.2 percent in FY2022.

The results of the forecast are shown in **Figure 3-3** with the 2022 TAF enplanement levels shown for comparison. This forecast projects 804,000 total enplanements at SBA by 2041, or a 4.4 percent average annual growth rate through the forecast period.

Figure 3-3: Airline Fleet Mix Analysis Forecast Method Results



Sources: Mead & Hunt, U.S.DOT T-100, 2022 FAA TAF

Preferred Enplanements Forecast and TAF Comparison

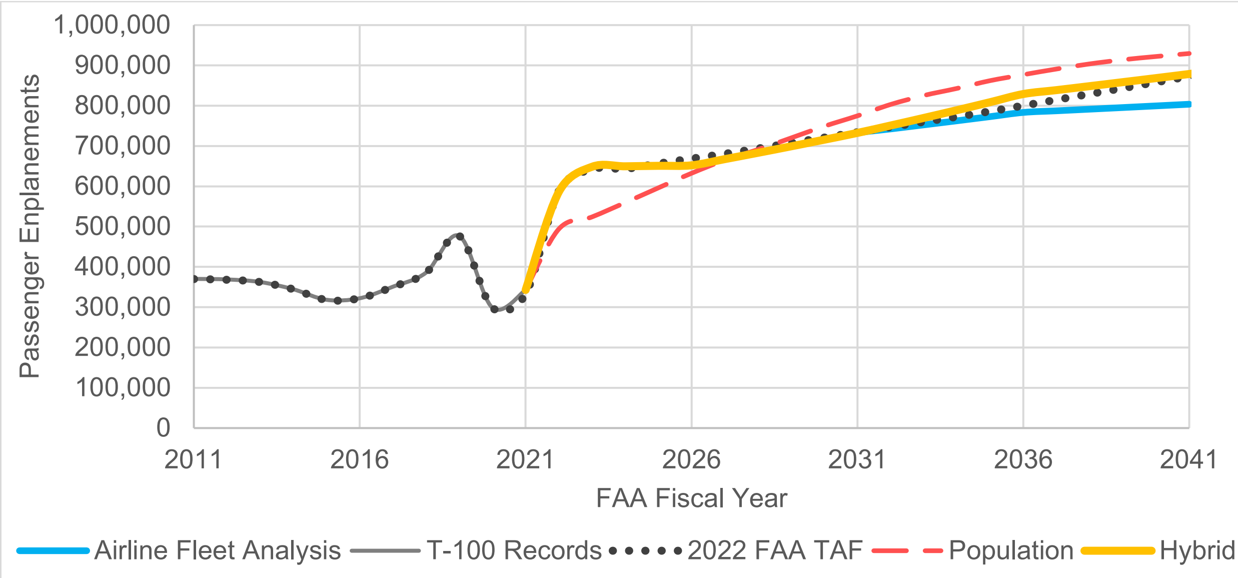
The preferred enplanements forecast is a combination of the airline operations analysis method and the population regression model. This hybrid forecast method is split into two sections: the short-term and the long-term. The short-term section projects out to 2031, during which air service at SBA continues to build up with additional routes, frequency, or additional airlines (based on the Airline Fleet Mix Analysis Forecast Method described above). The long-term projections are based on the population regression model from 2031 through the forecast period.

The hybrid method accounts for noted changes in airlines' fleet mixes in the coming years as well as assesses the existing and potential routes served by airlines at SBA in the short-term. In the long term, the strong correlation between Santa Barbara County's population counts and enplanements at SBA provides a model for forecasting enplanements as air service at SBA matures.

The multivariable regression methods result in greater growth rates and more than doubles enplanements at SBA in the 2022-2042 forecast period. While socioeconomic indicators have shown strong correlation with enplanements, due to external factors, such as the community's enjoyment of SBA being easily accessible and not as busy as larger airports, the more conservative market analysis method encompasses a more measured approach to accommodating increasing air travel demand with the preferences of the local community.

Figure 3-4 compares the preferred forecast against the 2022 FAA TAF. The projections from the airline fleet analysis method and population regression model are also shown for reference.

Figure 3-4: **Enplanement Forecast Results vs 2022 TAF**



Source: Mead & Hunt, U.S.DOT T-100, 2022 FAA TAF

Compared to the 2022 TAF, the preferred forecast exceeds the TAF in short-term growth until 2026, when the TAF projections coincide with the preferred forecast. This short-term variance is due to the relatively higher FY2022 enplanement levels expected in the preferred forecast. Based on airport records, FY2022 enplanements have exceeded the estimated FY2022 levels in the 2022 TAF by more than 10 percent. **Table 3-13** shows the difference between the 2022 TAF and the preferred forecast results.

Table 3-13: **Preferred Enplanement Forecast and 2022 FAA TAF Comparison**

Fiscal Year	TAF	Preferred Forecast	Difference from TAF	% Variance
2021	332,658	342,669	10,011	3.0%
2022	588,482	586,000	-2,503	-0.4%
2026	668,777	652,000	-16,748	-2.5%
2031	734,175	732,500	-1,700	-0.2%
2036	800,122	829,000	28,858	3.6%
2041	872,782	878,700	5,880	0.7%
CAGR '21-'41	4.9%	4.8%	N/A	N/A

Sources: Mead & Hunt, U.S.DOT T-100, 2022 FAA TAF

3.5.2 Commercial Aircraft Operations

Commercial aircraft operations are performed by scheduled and charter passenger airlines and cargo aircraft as well as Part-135 on-demand air taxi entities. Private business jet operations are counted as general aviation operations rather than commercial operations. This section combines the results of passenger enplanement and air cargo forecasts to determine the number of operations that will be occurring to meet the needs of passengers and cargo.

3.5.2.1 Commercial Passenger Service

The scheduled commercial operations were forecasted as part of the airline operations method for the enplanement forecast. The forecast analysis involved examining the FY2021 and FY2022 flight schedules provided by the airlines to determine the current fleet mix operating at SBA. Each aircraft model in the schedule was sorted by airline, seat capacity, and operation count. Airlines often differ in exact seat capacity due to the configurations used, such as number of first or business-class seats. For example, United Airlines' 737-700 is configured to 126 seats while Southwest Airlines' 737-700 is configured for 143 seats.

Each aircraft was assessed for routes served and potential for up-gauging and frequency increases. The information used for up-gauging was determined by each airline's aircraft orders and deliveries. Service frequency and operation count changes consisted of evaluating existing routes for changes from seasonal to year-round and potential new routes airlines may offer. New routes were evaluated by analyzing routes the airlines already serve at other airports and looking for potential new destinations, such as those formerly served by airlines that have left the SBA market, hubs that are not currently served such as Salt Lake City (SLC), or destinations based on current socioeconomic changes such as Austin, Texas – which would fall in line with the efforts to grow the tech businesses in Santa Barbara and the rest of the Central Coast.

Thus, the assumptions for this forecast method are the following:

- Regional airlines are expected to up-gauge to 76-seat aircraft operations by 2036. This is based on airline aircraft orders and recent trends as reported in the 2022 FAA ASF.
- Southwest Airlines will replace the majority of 143-seat 737-700 operations at SBA with the 150-seat 737 MAX 7 as the 737-700 fleet will be gradually retired through 2031.
- Aircraft seat configurations are not expected to change significantly over the forecast period; thus, the current seating capacity of each aircraft for each airline is assumed to remain constant as long as the aircraft is in service.
- Additional operations will result from the increasing frequency of current non-daily or seasonal routes, potential for up to three new carriers to enter the market within the forecast period, and the potential for up to five new routes or destinations.

Table 3-14 shows the projected operations per day by aircraft seat capacity group using these assumptions. The estimates are calculated based on the FY2022 airline schedule with the up-gauging, frequency changes, and potential new routes.

Table 3-14: Estimated Operations Per Day by Aircraft Seat Capacity

Seat Capacity Group*	2022	2026	2031	2036	2041
1-59 seats (CRJ-200)	5.5	4.2	2.0	0.0	0.0
60-76 seats (CRJ-700, E175)	15.4	16.6	19.5	20.1	21.1
125-150 seats (737-700, A319)	19.9	19.9	21.8	23.5	24.0
> 150 seats (B737 Max 7/8)	1.8	2.9	2.9	3.9	3.9

*Commercial service airlines did not operate aircraft with 76 to 125 seats in FY2022, so the category is excluded from this table. Currently, operating airlines are not currently expected to be replaced with aircraft of such gauge.
Sources: DiioMi, U.S. DOT T-100, Santa Barbara Airport

Table 3-15 provides a summary of the scheduled passenger operations forecast. The total number of scheduled passenger aircraft operations are expected to have a CAGR of 2.1 percent through the forecast period. Air carrier operations are expected to grow at an average of 2.6 percent annually. Air taxi operations by scheduled air carriers are expected to decrease and to be discontinued by 2036.

Table 3-15: Scheduled Passenger Aircraft Operations

Fiscal Year	Air Carrier	Air Taxi / Commuter	Total Scheduled Passenger Operations
2021	10,328	981	11,309
2022	12,384	1,998	14,382
2026	14,000	1,500	15,500
2031	16,100	730	16,830
2036	17,300	0	17,300
2041	17,900	0	17,900
CAGR '21-'41	2.8%	-99.9%	2.3%

Sources: 2022 FAA TAF, Mead & Hunt
CAGR: Compound Annual Growth Rate

Air Taxi Passenger Operations

Additional non-scheduled air taxi passenger operations are included in the U.S. DOT T-100 records and within SBA ATCT records. SBA's air taxi operations count is considered to capture the non-scheduled air taxi operations in the T-100 records.

The forecast for non-scheduled commercial passenger operations is based on the difference between the T-100 and SBA records, as shown in **Table 3-5**. The forecasted growth rate of the non-scheduled air taxi operations is based on the 2022 FAA Aerospace Forecast (ASF). The growth rates used are broken into three timeframes to capture the near- (2021-2026), mid- (2026-2031), and long-term (2031-2041) projections of the FAA ASF. **Table 3-16** shows the results of the non-scheduled air taxi operation forecast and the total passenger air taxi operations forecast.

Table 3-16: Passenger Air Taxi Operations Forecast

Fiscal Year	Non-Scheduled Air Taxi Operations	Total Air Taxi Operations
2021	8,700	9,675
2022	9,600	11,604
2026	11,700	13,300
2031	11,900	12,600
2036	12,000	12,000
2041	12,200	12,200
CAGR '21-'41	1.7%	1.2%

Sources: Mead & Hunt, U.S. DOT T-100, SBA ATCT

Total Commercial Passenger Operations Forecast

The total commercial passenger operations forecast is the sum of the scheduled and non-scheduled operation projections. **Table 3-17** shows the results of the commercial passenger operations forecast.

Table 3-17: Total Commercial Passenger Operations Forecast

Fiscal Year	Air Carrier Operations	Air Taxi / Commuter Operations	Total Passenger Aircraft Operations
2021	10,328	11,213	21,541
2022	12,384	12,775	25,159
2026	14,000	13,300	27,300
2031	16,100	12,600	28,700
2036	17,300	12,000	29,300
2041	17,900	12,200	30,100
CAGR '21-'41	2.8%	0.4%	1.7%

Sources: Mead & Hunt, U.S. DOT T-100, SBA ATCT

3.5.2.2 Scheduled Air Cargo

The air cargo operations and volume forecast is based on a combination of T-100 records, the FAA's Traffic Flow Management System Counts (TFMSC) data, and Airport-provided records. The cargo airlines operating at SBA include Ameriflight, operating for UPS, and FedEx operators, which include Empire Airlines and West Air Inc. The data obtained from the T-100 records only includes FedEx-related data as Ameriflight does not report to the U.S. DOT due to the company's operating certificate. Thus, Ameriflight operations were extrapolated from TFMSC records by cross-referencing Ameriflight's aircraft fleet with TFMSC's operation count by aircraft type.

The air cargo operations at SBA are categorized as air taxi/commuter operations due to the aircraft being used by the cargo airlines operating at the Airport. The projected air cargo activity is expected to be lower than the COVID-19 pandemic period of FY2020 and FY2021, but it will remain flat through the forecast period. Cargo volume is also projected to remain flat; however, it is anticipated that additional volume will be accommodated at the projected aircraft operation levels as not every flight utilizes the full payload capacity of the aircraft.

Table 3-18: Air Cargo Airline Activity

Year	Air Taxi/Commuter Cargo Aircraft Operations	Volume (Metric Tons)
Historical		
2011	1,193	1,822
2016	1,170	1,582
2021	1,098	1,537
Forecast		
2026	1,460	1,535
2031	1,460	1,535
2036	1,460	1,535
2041	1,460	1,535
CAGR 2011-2021	-0.8%	-1.7%
CAGR 2021-2041	1.4%	0.0%

Sources: Cargo volume data from Santa Barbara Airport, Operations data from U.S.DOT T-100 and FAA TFMSC
CAGR: Compound Annual Growth Rate

The flat projections are attributed to two main factors: SBA's driving distance to two large metro areas and the major difference in cost between ground cargo and air cargo.

First, SBA's location, which is within a 3-hour drive from the Los Angeles metro area and an average 6-hour drive to San Francisco, means that air cargo carriers can utilize the larger hub airports in northern and southern California for a large portion of cargo traveling to and from the region. Thus, it is mainly the packages requiring faster delivery times that would likely comprise SBA air cargo as other cargo can be transported via ground transportation.

Second, there has been a general nationwide trend over the past two decades of shifting to increased ground-freight methods due to the modern logistics models used by shipping companies. Companies like Amazon, FedEx, and UPS have developed nationwide systems to facilitate the growing demand for quick delivery times.

The delivery model allows for fewer flights between the origin and destination as ground transportation, using trucks and vans, is typically able to reach the final destination within a day after the cargo arrives at the processing facilities. This delivery method involves a hub-and-spoke model where packages can fly overnight from the origin to a facility near the destination and ground-transportation can provide last-mile delivery.

3.6 GENERAL AVIATION FORECASTS

The aviation operations forecast was based on the market share method, which compares the percentage market share SBA operations have against the larger market. The two markets used for comparison are the state of California and the FAA Western-Pacific (APW) Region, which encompasses multiple states and territories (California, Nevada, Arizona, Hawaii, American Samoa, Guam, and Marshall Islands). The markets were selected due to location and availability of general aviation operations data. The forecasts assume SBA's market share of general aviation activity will remain consistent through the forecast period.

A regression-based forecast was ruled out after initial correlation analysis did not result in any socioeconomic indicators showing strong correlation with general aviation operations at SBA. The low correlation coefficients indicate that socioeconomic variables would not likely be accurate demand drivers for SBA general aviation activity.

Based on the 2022 FAA TAF, general aviation operations at SBA between FY2011 and FY2021 averaged 0.95 percent of California's general aviation operations and 0.65 percent of the APW region's operations. SBA's market share in both geographic ranges has remained relatively consistent through this period and, thus, the market share being used in the forecast is held constant through the forecast period.

Table 3-19 shows the results of the market share forecast for total general aviation activity at SBA for each geographic market.

Table 3-19: SBA Total General Aviation Operations Forecast Results

Fiscal Year	California Market Share (0.95%)	APW Market Share (0.65%)
Historical		
2021	78,950	78,950
Forecast		
2022	76,530	76,240
2026	81,210	82,670
2031	81,940	83,480
2036	82,690	84,310
2041	83,460	85,180
CAGR 2021-2041	0.28%	0.38%

Source: Mead & Hunt, 2022 FAA TAF
CAGR: Compound Annual Growth Rate

The two forecasts differ by 1,720 operations, with the APW market share forecast having a higher growth rate. The preferred forecast is the California market share method. This is due to the smaller geographic area of California in comparison to the APW region. The California TAF is better suited to show nuances in the local trends in general aviation, and SBA's market share is also shown to be more consistent over the historic period when compared to the APW market share.

3.6.1 Itinerant General Aviation Operations

The itinerant general aviation operation forecast for SBA is based on the Airport's market share of California's itinerant general aviation operations. Between FY2011 and FY2021, SBA's market share averaged 1.1 percent of California's itinerant general aviation operations. This forecast method takes SBA's market share for the California market and applies it to the future operations for each market as projected in the 2022 FAA TAF.

Table 3-20 shows the results of the forecasts based on the California itinerant general aviation market.

Table 3-20: SBA Itinerant GA Operations Forecast Results

Fiscal Year	California Market Share (1.1%)
Historical	
2021	42,258
Forecast	
2022	41,220
2026	43,900
2031	44,260
2036	44,640
2041	45,020
CAGR 2021-2041	0.32%

Source: Mead & Hunt, 2022 FAA TAF
CAGR: Compound Annual Growth Rate

Compared to the 2022 TAF, the preferred forecast has a higher short-term growth in the next five years, but the overall FY2021 to FY2041 average annual growth rate is lower compared to the TAF estimates. **Table 3-21** compares the TAF and preferred forecast results.

Table 3-21: **Preferred Itinerant GA Operations Forecast and 2022 FAA TAF Comparison**

Fiscal Year	TAF	Preferred Forecast	Difference	% Variance from TAF
2021	42,258	42,258	0	0.0%
2022	43,881	41,220	-2,661	-6.1%
2026	45,089	43,900	-1,189	-2.6%
2031	46,644	44,260	-2,384	-5.1%
2036	48,253	44,640	-3,613	-7.5%
2041	49,917	45,020	-4,897	-9.8%
CAGR '21-'41	0.84%	0.32%	N/A	N/A

Source: Mead & Hunt, 2022 FAA TAF
CAGR: Compound Annual Growth Rate

3.6.2 Local General Aviation Operations

Local general aviation operations at SBA rely on the presence of flight training activity to remain consistent. The introduction of additional flight training, such as those due to increased flight school fleet, additional flight school tenants, existing tenants offering new flight training programs, or increased flight training activity at nearby airports, may result in increased numbers of touch-and-go operations. SBA's location and the ATCT makes the Airport an attractive airfield for practice for pilots from nearby non-towered airports who want experience flying at a towered airport. However, based on current information, there are no expected changes that would significantly increase or decrease training activity at SBA.

The local general aviation operation forecast is based on the difference between the total general aviation operations forecast and the itinerant general aviation operations forecast at SBA. This method was chosen as locally generated operations at SBA are assumed to have demand drivers more localized than that of itinerant general aviation.

The results of the local general aviation operations forecast are shown in **Table 3-22**

Table 3-22: **SBA Local General Aviation Operations Forecast Results**

Fiscal Year	Local GA Operations
2021	36,695
2022	35,320
2026	37,320
2031	37,680
2036	38,050
2041	38,440
CAGR '21-'41	0.23%

Source: Mead & Hunt, 2022 FAA TAF
CAGR: Compound Annual Growth Rate

The preferred forecast is based on which geographic location is better suited to describe the conditions more specific and local to SBA, making the California market share forecast the preferred forecast. **Table 3-23** compares the TAF and preferred forecast results.

Table 3-23: Preferred Local GA Operations Forecast and 2022 FAA TAF Comparison

Fiscal year	TAF	Preferred forecast	Difference	% Variance from TAF
2021	36,695	36,695	0	0.0%
2022	42,539	35,320	-7,219	-17.0%
2026	42,435	37,320	-5,115	-12.1%
2031	42,305	37,680	-4,625	-10.9%
2036	42,175	38,050	-4,125	-9.8%
2041	42,045	38,440	-3,605	-8.6%
CAGR 2021-2041	0.68%	0.23%	N/A	N/A

Source: Mead & Hunt, 2022 FAA TAF
CAGR: Compound Annual Growth Rate

3.6.3 Based Aircraft

Exploratory correlation analysis of based aircraft at SBA and Santa Barbara County socioeconomic indicators did not result in any strong correlations being found. Thus, socioeconomic variables were not considered further as demand drivers for based aircraft at SBA.

The forecast method used to project the based aircraft fleet at SBA is based on market share, in accordance with the methodology best suited to project general aviation aircraft operations. As noted above, the aviation operations forecast was based on the market share method, which compares the percentage market share SBA operations have against the larger market. The two markets used for comparison are the state of California and the national general aviation fleet as shown in the 2022 FAA ASF. The California-based aircraft fleet data is sourced from the 2022 FAA TAF. **Table 3-24** shows SBA's market share percentages of California, the APW Region, and National fleets by aircraft type.

Table 3-24: SBA Based Aircraft Fleet Market Share Percentages

Market	Single-Engine Piston	Jet	Multi-Engine Piston	Helicopter	Other
California	0.86%	2.49%	0.94%	0.67%	0.19%
APW Region	0.61%	1.71%	0.62%	0.40%	0.09%
National	0.10%	0.11%	0.12%	0.05%	0.00%

Source: National Fleet - 2022 FAA Aerospace Forecast, California Fleet and APW Fleet - 2022 FAA TAF

All aircraft types in the California based aircraft fleet are projected to grow through the forecast period. In contrast, the national GA fleet has been experiencing a decrease in single- and multi-engine piston aircraft while jet, helicopter, and other aircraft have been experiencing growth and are expected to continue to grow. **Table 3-25** shows the average annual growth rates by aircraft type for California, the FAA APW region, and the United States.

Table 3-25: California, Region, and National Based Aircraft Fleet FY2021-FY2041 CAGR

Market	Single-Engine Piston	Jet	Multi-Engine Piston	Helicopter	Other
California	0.85%	0.45%	1.31%	0.19%	0.00%
APW Region	1.02%	0.39%	1.45%	0.61%	0.00%
National	-0.91%	1.87%	-0.35%	1.54%	1.32%

Source: National Fleet - 2022 FAA Aerospace Forecast, California and APW Fleet – 2022 FAA TAF
CAGR: Compound Annual Growth Rate

Compared to the national GA fleet, the state and APW markets are expected to experience more growth in piston aircraft and relatively less growth in jet aircraft. Based on hangar waiting lists provided by the airport and information provided by airport tenants, aircraft included on the waitlist are jets and turboprops such as the those in the Gulfstream family or the Beechcraft King Air. Thus, the national market share is the preferred base to project the future based aircraft fleet at SBA. Additionally, piston aircraft waitlist data was included in the forecast by adding the aircraft over the next decade. This method assumes that additional facilities needed to accommodate the waitlist will be added within the next ten years.

The market share is applied to the 2022 FAA ASF general aviation fleet forecasts, resulting in the based aircraft estimates for FY2022 to FY2041. To incorporate the FY2021 based aircraft count obtained from SBA's 5010 form, the CAGR between FY2021 and FY2041 of the national market share forecast was calculated. An adjusted forecast is then calculated using this CAGR – this method results in the same number of based aircraft in FY2041, with the final forecast having a gradual increase to 185 total based aircraft. **Table 3-26** shows the results of the adjusted national market share of the based aircraft forecast.

Table 3-26: SBA Based Aircraft Forecast

Fiscal Year	Single-Engine Piston	Jet	Multi-Engine Piston	Helicopter	Other	Total
2021	104	25	8	2	2	141
2022	104	26	8	2	2	142
2026	109	29	11	3	2	154
2031	115	33	13	4	2	167
2036	115	38	15	5	2	175
2041	115	44	17	7	2	185
CAGR '21-'41	0.5%	2.9%	3.9%	6.5%	0.0%	1.4%

Source: Santa Barbara Airport, Mead & Hunt
CAGR: Compound Annual Growth Rate

The comparison between the 2022 TAF and preferred forecast results for based aircraft at SBA is shown in **Table 3-27.** Overall, the preferred total based aircraft count forecast is expected to be similar to the 2022 TAF projections, with the preferred forecast's CAGR being 0.05 percent above that of the 2022 TAF.

Table 3-27: Preferred Based Aircraft Forecast and 2022 FAA TAF Comparison

Fiscal Year	TAF	Preferred Forecast	Difference from TAF	% Variance
2021	141	141	0	0.0%
2022	144	142	-2	-1.3%
2026	154	154	0	-0.2%
2031	164	167	3	1.7%
2036	174	175	1	0.7%
2041	184	185	1	0.6%
CAGR '21-'41	1.34%	1.37%	N/A	N/A

Source: Mead & Hunt, 2022 FAA TAF
CAGR: Compound Annual Growth Rate

3.7 ELECTRIC AIRCRAFT AND ADVANCED AIR MOBILITY

The electric aircraft forecast for SBA is an estimate of potential activity levels by Electric Vertical Takeoff and Landing (eVTOL) aircraft. This analysis is based on regional-scale transportation rather than urban air mobility. Santa Barbara's location in the California central coast makes it a feasible destination from many areas in Southern California. Thus, the eVTOL aircraft used in this analysis would be those with a range of approximately 250 miles. This is on the longer-range side of currently available eVTOLs; however, the potential adoption and acceptance of new aviation technologies will depend heavily on the availability of infrastructure at the origin and destination, as well as how convenient it will be to get to and from vertiports at the origin and destination. Thus, long-range eVTOLs that are currently in testing would likely be available when infrastructures and policies for eVTOLs are in place.

The forecast for eVTOLs is based on an analysis conducted by Goyal et. Al (2021) in *Advanced Air Mobility: Demand Analysis and Market Potential of the Airport Shuttle and Air Taxi Markets*. The study used a multi-method approach, combining AAM travel demand modeling, Monte Carlo simulations, and constraint analysis of ten metropolitan regions including New York, Phoenix, Southern California counties, and the San Francisco Bay Area. The study concluded that AAM could capture 0.5 percent of the air taxi and airport taxi mode share. With an unconstrained estimate, such as assuming vertiports will be located in areas favorable to all travelers and costs were not a consideration, future eVTOL passengers would total approximately 14,822 in 2041. Assuming the eVTOL aircraft will have an average capacity of 4 passengers, that results in 3,705 annual eVTOL operations, or approximately 10 daily operations.

3.8 CRITICAL AIRCRAFT

The critical aircraft is defined as being the most demanding type or group of aircraft with similar characteristics that make regular use of the airport. Regular use is defined as more than 500 annual operations (a takeoff or landing), excluding touch-and-go operations. To determine the critical aircraft at SBA, operations data by aircraft type is provided by the Traffic Flow Management System Counts (TFMSC). The TFMSC only captures operations with filed flight plans, so aircraft used for flight training are not represented in the dataset.

Aircraft type is defined by the Airport Reference Code (ARC), which consists of the Aircraft Approach Category (AAC) and the Airport Design Group (ADG). These categories are defined by the aircraft dimensions and approach speed.

The critical aircraft at SBA for FY2022 is the Boeing 737-800 (ARC D-III), with 584 total operations based on TFMSC records. Additionally, TFMSC records show 394 operations by Gulfstream V/G500 and 288 operations by Gulfstream G650, both of which are categorized as D-III. The future fleet composition at SBA is unknown and is based on the airlines' aircraft orders that are currently being fulfilled or have yet to be fulfilled. Based on the aircraft currently operating at SBA and publicly available information regarding the airlines' fleet plans, newer Boeing 737 MAX aircraft models that are expected to replace their existing counterparts have similar physical features. Thus, the critical aircraft is expected to remain at ARC D-III through the forecast period.

3.9 SUMMARY

The forecast summary compared to the 2022 FAA TAF is presented in **Table 3-28** and **Table 3-29**. Highlights of the forecast are as follows:

- Santa Barbara County's population is expected to remain relatively steady throughout the 2022-2042 forecast period. The economy is projected to grow with income per capita, GRP, and total retail sales all growing faster than the population.

- The preferred enplanement forecast method is a hybrid method based on airline operations analysis where fleet mix, seat capacity, and serviced routes were assessed for the short term and a population regression model for the long-term forecast. This forecast projects enplanements at SBA to grow 4.8 percent between FY2021 and FY2041.
- Commercial passenger operations are expected to increase an average of 1.9 percent annually. Most of the growth is due to the increase in air carrier operations as airlines up-gauge from smaller aircraft and retire older 50-seat aircraft. Following national trends, regional airlines are expected to replace 50-seat aircraft with 76-seat aircraft by 2031.
- Cargo operations and volume are expected to remain steady into the future as ground transportation is preferred by cargo operators due to efficiency and SBA's proximity to the Los Angeles and San Francisco metro areas.
- Itinerant general aviation operations are projected to increase an average of 0.3 percent annually through the forecast period. The forecast is based on SBA's market share of total California itinerant general aviation operations.
- Local general aviation operations are projected to increase an at an average rate of 0.2 percent annually through the forecast period. The forecast is based on subtracting the projected total general aviation operations at SBA and the forecasted itinerant general aviation operations.
- SBA's based aircraft counts are forecasted using SBA's market share of the national general aviation fleet. All aircraft types are expected to grow through the forecast period. The total based aircraft count is expected to grow at a CAGR of 1.37 percent between FY2021 and FY2041.
- The current critical aircraft at SBA is the Boeing 737-800, which is ARC D-III. The future critical aircraft is expected to remain in the same ARC.

Table 3-28: Forecast/TAF Comparison

AIRPORT NAME: Santa Barbara Airport

	Year	Airport Forecast	TAF	AF/TAF (% Difference)
Passenger Enplanements				
Base yr.	2021	342,669	337,592	1.5%
Base yr. + 5yrs.	2026	652,000	668,777	-2.5%
Base yr. + 10yrs.	2031	732,500	734,175	-0.2%
Base yr. + 15yrs.	2036	829,000	800,122	3.6%
Commercial Operations				
Base yr.	2021	22,639	22,639	0.0%
Base yr. + 5yrs.	2026	28,800	28,750	0.2%
Base yr. + 10yrs.	2031	30,200	30,752	-1.8%
Base yr. + 15yrs.	2036	30,800	32,884	-6.3%
Total Operations				
Base yr.	2021	103,419	103,419	0.0%
Base yr. + 5yrs.	2026	111,847	117,869	-5.1%
Base yr. + 10yrs.	2031	113,967	121,296	-6.0%
Base yr. + 15yrs.	2036	115,317	124,907	-7.7%

NOTES: TAF data is on a U.S. Government fiscal year basis (October through September).

Source: Mead & Hunt, 2022 FAA TAF

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Table 3-29: TAF Forecast Worksheet

A. Forecast Levels and Growth Rates

AIRPORT NAME: Santa Barbara Airport — **Specify base year:** 2021

	Base Yr. Level	Base Yr. + 1yr.	Base Yr. + 5yrs.	Base Yr. + 10yrs.	Base Yr. + 15yrs.	Average Annual Compound Growth Rates Base yr. to +1	Base yr. to +5	Base yr. to +10	Base yr. to +15
Passenger Enplanements									
Air Carrier	320,131	513,640	596,160	706,070	829,000	60.4%	13.2%	8.2%	6.5%
Commuter	22,538	72,360	55,840	26,430	0	221.1%	19.9%	1.6%	-100.0%
TOTAL	342,669	586,000	652,000	732,500	829,000	71.0%	13.7%	7.9%	6.1%
Operations									
Itinerant									
Air carrier	10,328	12,384	14,000	16,100	17,300	19.9%	6.3%	4.5%	3.5%
Commuter/air taxi	12,311	13,875	14,800	14,100	13,500	12.7%	3.8%	1.4%	0.6%
Total Commercial Operations	22,639	26,259	28,800	30,200	30,800	16.0%	16.0%	4.9%	2.9%
General aviation	42,258	41,220	43,900	44,260	44,640	-2.5%	0.8%	0.5%	0.4%
Military	1,229	1,229	1,229	1,229	1,229	0.0%	0.0%	0.0%	0.0%
Local									
General aviation	36,695	35,320	37,320	37,680	38,050	-3.7%	0.3%	0.3%	0.2%
Military	598	598	598	598	598	0.0%	0.0%	0.0%	0.0%
TOTAL OPERATIONS	103,419	104,626	111,847	113,967	115,317	1.2%	1.6%	1.0%	0.7%
Instrument Operations	33,277	36,625	39,791	41,288	41,987	10.1%	3.6%	2.2%	1.6%
Peak Hour Operations	52	52	52	55	56	-0.9%	0.0%	0.6%	0.5%
Cargo/mail (enplaned+deplaned tons)	1,333	1,333	1,690	1,690	1,690	26.8%	26.8%	4.9%	2.4%
Based Aircraft									
Single Engine (Nonjet)	104	104	109	115	115	0.0%	0.9%	1.0%	0.7%
Multi Engine (Nonjet)	8	8	11	13	15	2.8%	7.0%	4.9%	4.2%
Jet Engine	25	26	29	33	38	2.9%	2.9%	2.9%	2.9%
Helicopter	2	2	3	4	5	6.5%	6.5%	6.5%	6.5%
Other	2	2	2	2	2	0.0%	0.0%	0.0%	0.0%
TOTAL	141	142	154	167	175	0.8%	1.7%	1.7%	1.5%

B. Operational Factors

	Base Yr. Level	Base Yr. + 1yr.	Base Yr. + 5yrs.	Base Yr. + 10yrs.	Base Yr. + 15yrs.
Average aircraft size (seats)					
Air carrier	112	111	111	111	113
Commuter	50	50	50	50	50
Average enplaning load factor					
Air carrier	64%	71%	80%	80%	80%
Commuter	76%	80%	80%	0%	0%
GA operations per based aircraft	560	551	527	490	485

Source: Mead & Hunt, 2022 FAA TAF

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- 4 -

FACILITY REQUIREMENTS

4.1 INTRODUCTION

This chapter identifies facility recommendations and requirements to accommodate the forecasted level of demand at SBA. The recommendations and requirements reflect the analysis of demand from the aviation activity forecasts presented in **Chapter 2 - Aviation Activity Forecasts**. These recommendations and requirements are developed in coordination with SBA management and stakeholders and under the guidance of the Federal Aviation Administration (FAA) Advisory Circulars (AC) 150/5070-6B, *Airport Master Plans* (AC 150/5070-6B); AC 150/5300-13B, *Airport Design* (AC 150/5300-13B); and AC 150/5060-5, *Airport Capacity and Delay* (AC 150/5060-5).

This chapter is organized as follows:

- Airfield System Capacity
- Runway Length Analysis
- Commercial Passenger Facilities
- General Aviation Facilities
- Apron
- Cargo Facilities
- Support Facilities
- Access and Circulation
- Terminal Parking Needs – Horizon Year 2041
- Utilities and Electrical Needs
- Non-Aeronautical Properties
- Summary

The airport has three primary components – the airfield and surrounding airspace, the airside facilities, and the landside facilities. Each component contributes to the safe, efficient, and secure operation of the airport as whole, providing an integrated environment for passengers, air carriers, tenants, staff, and contractors.

The FAA's design standards, presented in a series of ACs, heavily influence the design and construction of airside facilities. The primary AC that addresses airfield design is AC 150/5300-13B, *Airport Design* (AC-13B).

An early step in reviewing an airport's long-term needs is to assess capacity and delay issues in order to provide direction of airfield planning. An airport's annual capacity, known as the Annual Service Volume (ASV), is the number of flight operations an airfield can accommodate during a year. Existing and forecast annual demand is compared with the ASV to determine the percentage capacity at which the airport is operating and to gauge the timing of future airfield capacity improvements. As annual demand approaches ASV, average delays increase. A typical goal is to construct a new runway before delays begin. These are the primary considerations for the airside facilities analyzed in this chapter.

Facilities that support airside facilities but are not part of the aircraft movement area, such as terminal buildings, some hangars, aprons, access roads, and parking facilities, are considered Landside Facilities. The airport has two major initiatives currently underway, a Terminal Improvement Project (TIP) and a general aviation (GA) redevelopment. These two projects have significant impacts on the airport's capacity, safety, and security. Facility requirements related to elements currently included in these two initiatives are covered in this chapter and integrated within the context of the master plan; however, considerable sections of data and analysis from these initiatives are not included in this section. An example of the data sections not included involves the landside circulation element that covers parking, roads, circulation, and long-term landside programming—highly detailed attributes related to this, and other landside elements, may be found in the Corgan - July 2023 Terminal Improvement Project Preferred Concept - Basis of Design) in **Appendix XX**. For the General Aviation Redevelopment project, additional information may be found within the FBO Redevelopment Report from Jacobs in **Appendix XX (PENDING DATA)**.

4.2 AIRFIELD SYSTEM CAPACITY

This section provides details of each analysis done to calculate the ASV, capacity, and delay at SBA for the planning period of 2021 to 2041.

4.2.1 Airfield Geometry

The airport has three runways and multiple taxiways to provide access around the airfield. The three runways are 7/25, 15L/33R, and 15R/33L. Runway 7/25 has an orientation of east to west and is the longest and widest of the three runways – 6,052 feet in length and 150 feet wide. Runway 7/25 has two parallel taxiways (Taxiway A, the only full-length parallel taxiway, and Taxiway B) and eight taxiways that connect to the runway (Taxiways A1, A3, A4, A5, B1, C, D, and E,).

Runways 15L/33R and 15R/33L are parallel runways that intersect Runway 7/25 in a northwest to southeast orientation and have 363 feet of separation between centerlines. Runway 15L/33R is 4,180 feet long and 75 feet wide. Runway 15R/33L is 4,184 feet long and 100 feet wide. Runway 15R/33L has a parallel taxiway to the west, Taxiway D (not a full-length parallel taxiway). Runway 15L/33R has a full-length parallel taxiway, Taxiway E. Taxiways B, C, D and H connect to both 15/33 runways. Taxiway F connects between Taxiways B and C. Taxiway G connects to Taxiway B. Taxiways F and G do not connect to any runways. Taxiways E1, E2, and E3 connect from Taxiway E to Runway 15L/33R.

4.2.2 Critical Aircraft

The existing critical aircraft at SBA is the Boeing 737-800, and the future critical aircraft is a newer Boeing 737-800 MAX model. These aircraft are both commercial passenger jets with an Airport Reference Code (ARC) of D-III. The critical aircraft definition is included in **Chapter 2 - Aviation Activity Forecast**. Airfield design uses D-III standards for Runway 7/25, associated taxiways, and other areas expected to be used by the 737-800 and 737-800 MAX aircraft.

Vector Airport Systems (VAS) is an active data collection platform in use at SBA. VAS uses active and passive data collection methods to develop a full complement of data for all aircraft operations occurring at SBA. One primary element of the VAS system is an array of camera installation sites that capture imagery of aircraft operations. The system operates 24 hours per day and captures an image of each passing aircraft. This imagery is post-processed and integrated with the secondary VAS elements, external data streams such as composite radar return, and FAA System Wide Information Management Data (SWIM). SWIM Flight Data Publication Service (SFDPS) provides en-route flight data to National Airspace System (NAS) data consumers. SFDPS allows consumers to receive real-time data for analytics, business processes, research, and other activities. These data are post-processed and sewn together to provide a full situational awareness of each operation.

Based on the system design deployed at SBA, the VAS captures every operation except touch and go operations. Tail numbers are used to report specific aircraft data such as type, weight, propulsion, and other parameters associated with the FAA master aircraft record. A user can query this data to determine accurate and high-fidelity data on aircraft types using the airport for both normal operating times during the day or times late at night during tower closure.

The previous SBA ALP lists the existing critical aircraft for Runways 15L/33R and 15R/33L as the Beech Baron 58, a B-I (Small) aircraft. Based on VAS data, a total of 719 operations were conducted by either A-II (Small) or B-II (Small) aircraft in 2021. These operations exceed the FAA's 500-operation threshold for determining the critical aircraft, and the crosswind runways will be designated as B-II (Small). Per AC 150/5300-13B, A-II (Small) and B-II (Small) share the same design matrix. An appropriate aircraft to represent the crosswind runways for the existing B-II (Small) design is the Cessna Citation CJ2. There is no forecasted change to the critical aircraft of the crosswind runways.

4.2.3 Airfield Demand / Capacity Analysis

The airfield demand/capacity analysis evaluates the ability of the airfield to handle the expected number of aircraft operations. Consideration is given to annual and peak demand.

4.2.3.1 Analysis of Annual Service Volume (ASV)

The Airport's ASV and hourly capacity are calculated using the methodology the Federal Aviation Administration (FAA) documented in AC 150/5060-5, *Airport Capacity and Delay*. Calculations using this method require the mix index and runway-use configuration. The mix index is an equation (C+3D) that determines the percentage of aircraft operations that have a Maximum Takeoff Weight (MTOW) over 12,500 pounds. C represents the percent of aircraft over 12,500 but under 300,000 pounds. D represents the percent of aircraft over 300,000 pounds. Data was downloaded from VAS to determine weight categories for operations based on MTOW. **Table 4-1** shows the summary of data from VAS.

Table 4-1: **Operation Weight Categories**

Weight Category (MTOW)	Total Operations	Percent of Operations
Operations <12,500 pounds	46,255	74.4%
C (≥12,500 pounds, ≤ 300,000 pounds)	15,914	25.6%
D (>300,000 pounds)	0	0%
Total Operations	62,169	100%

Source: SBA January to December 2021 VAS Operations Data

Based on operations data from VAS, 25.6 percent of operations fell within weight category C. This percentage of operations represents the 2021 base year mix index for SBA and was used to determine the ASV. While operations data from VAS does not equal the total operations at SBA for 2021, the data provides insight into the larger and heavier aircraft that operate at SBA. The ASV mix calculation is shown in **Table 4-2**.

Table 4-2: **2021 ASV Mix Index Calculation**

Annual Service Volume Factors	Total Operations	Percent of Operations
Operations <12,500 pounds	76,944	74.4%
C (≥12,500 pounds, ≤ 300,000 pounds)	26,475	25.6%
D (>300,000 pounds)	0	0%
Total Operations	103,419	100%
Mix Index (C+3D)	26,475	25.6%

Source: SBA 2021 Operations Data

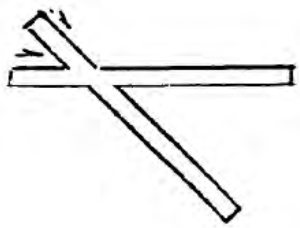
VAS data was extrapolated out to equal the 2021 base year operations forecast. Out of the 26,475 operations, the types of operations and totals for each can be broken out into the following categories:

- 10,328 Air Carrier Operations (SBA Forecast Summary)
- 12,311 Air Taxi Operations (SBA Forecast Summary)
- 3,836 General Aviation Operations (Remaining operations after accounting for Air Carrier and Air Taxi)

With the mix index calculated, the runway-use configuration can be determined from AC 150-5060-5 by selecting a configuration model that most closely matches the study airport. Based on the configuration of intersecting runways, the proper runway-use configuration to use for SBA is configuration 9. Configuration 10 is not used because the centerline separation between the 15/33 runways does not fall between 700 feet to 2,499 feet. Using the mix index and runway Configuration 9, the hourly capacity for operations per hour, and ASV can be determined (AC 150-5060-5). **Figure 4-1** below shows the runway-use configuration.

Figure 4-1: **Runway-use Configuration 9**

9.



0 to 20	98	59	230,000
21 to 50	77	**57**	200,000
51 to 80	77	56	**215,000**
81 to 120	76	59	**225,000**
121 to 180	72	60	265,000

Source: AC 150-5060-5, Figure 2-1

The mix index of 25.6 percent falls into the 21 to 50 percent mix index category. Runway-use configuration 9 calculations yield the following results:

- Hourly Capacity of 77 VFR Operations Per Hour
- Hourly Capacity of 57 IFR Operations Per Hour
- ASV of 200,000 operations Per Year

When determining the mix index for the 2041 forecast year, air carrier and air taxi operations are projected to make up 27 percent of operations based on the SBA forecast summary. VAS data was not extrapolated out for the 2041 forecast year because the air carrier and air taxi operations were greater than 25.6 percent, meaning the mix index will remain within the 21 to 50 percent category. This means the future ASV, VFR hourly capacity, and IFR hourly capacity will remain the same.

To confirm that the ASV output related to **Figure 4-1** above is accurate, two assumptions in the ASV calculation method need to be evaluated:

- IFR Weather Conditions
- Runway-use Configuration

4.2.3.2 IFR Weather Conditions

The ASV calculations mentioned above (**Section 2.3.1**) assume that IFR weather conditions occur roughly 10 percent (or less) of the time. **Table 4-3** shows wind data observation totals for SBA. Based on wind observation totals, IFR conditions happen 9.2 percent of the time. This satisfies the ASV calculation method assumptions.

Table 4-3: SBA Wind Observations

Weather Conditions	Total Observations	Percent of Observations
All Weather	100,430	49.90%
IFR	18,522	9.20%
VFR	82,329	40,90%
Total Observations	201,281	100%

Source: ADIP, SBA Wind Observations 2011 - 2020

Runway-use Configuration

The ASV calculations mentioned above (**Section 2.3.1**) assume that roughly 80 percent of the time the airport is operated with the runway-use configuration that produces the greatest hourly capacity. At SBA, aircraft operate on all three runways annually and there is no information for runway closures that would change the runway-use configuration for SBA to be below 80 percent of the time. This satisfies the ASV calculation method assumptions.

With both assumptions satisfied, the ASV based on runway-use configuration 9 is accurate for SBA.

4.2.3.3 Analysis of Capacity

As mentioned in the previous section, SBA falls into runway-use configuration 9, resulting in hourly capacities of 77 VFR and 57 IFR operations per hour. To confirm that these hourly capacities are accurate for SBA, six capacity assumptions from AC 150/5060-5 need to be evaluated. These six assumptions are:

- Runway-use Configuration
- Percent Arrivals
- Percent Touch and Go's
- Taxiways
- Airspace Limitations
- Runway Instrumentation

Runway-use Configuration

The configuration for SBA is one of AC 150/5060-5's predetermined runway-use configurations (number 9) and satisfies the assumption relating to hourly capacity in the AC.

Percent Arrivals

SBA has scheduled air carrier operations and air taxi operations. There are currently 202 based aircraft – aircraft that depart and return to the airport. Vector data also shows arrivals and departures being a near 50-percent split. Based on these factors, we can assume that arrivals equal departures and this satisfies the assumption relating to hourly capacity in the AC.

Percent Touch and Go's

There were a total of 36,695 local operations for SBA in 2021, and this segment of operations is forecasted to increase to 38,440 operations in 2041. All local operations are assumed to be touch-and-go operations. Touch-and-go operations make up approximately 35 percent of operations in 2021 and approximately 33 percent of operations in 2041. Touch-and-go operations for 2021 to 2041 fall within the 0 to 40 percent range for the 21 to 50 percent mix index category. This satisfies the assumption relating to hourly capacity in the AC.

Taxiways

Runways 7/25 and 15L/33R both have full-length parallel taxiways with ample entrance and exit taxiways. Runway 15R/33L has a partial-length parallel taxiway, but due to the runway-use configuration for SBA falling into configuration 9, the other runways should only be considered in this assumption. The airfield does have multiple points where taxiway crossings can be problematic due to the close separation of the 15/33 runways, but SBA has an ATCT that directs aircraft movement on the airfield. These factors satisfy the assumption relating to hourly capacity in the AC.

Airspace Limitations

Mountains to the north of SBA sometimes cause ATC to change landing clearances for aircraft during times of high traffic. However, the mountains do not limit aircraft operating at SBA. There is no curfew in effect at SBA. This satisfies the assumption relating to hourly capacity in the AC

Runway Instrumentation

The FAA specifies aircraft separation criteria and operational procedures based on aircraft size, availability of radar in the terminal area, availability of instrument procedures, and the presence of an ATCT. The presence of these facilities and procedures improves airfield capacity as traffic can be managed more efficiently. Runway 7/25 is equipped with an Instrument Landing System (ILS), and SBA has both an ATCT and radar. The ATCT operates between the hours of 6 A.M. to 11 P.M. This satisfies the assumption relating to hourly capacity in the AC.

With each of the six assumptions satisfied, the hourly capacities based on runway-use configuration 9 are accurate for SBA.

Recommendations

SBA is currently operating at 52 percent of its annual capacity. SBA is forecasted to handle 116,887 operations in 2041. The increase in operations will result in SBA operating at 58 percent of annual capacity. No major airfield change will be required for airport capacity purposes.

4.2.3.4 Analysis of Delay

Per AC 150-5060-5, delay is the difference between constrained and unconstrained operating time. As total operations increase, the amount of capacity left at an airport decreases and individual aircraft delay increases. The FAA recommends that planning for additional airfield capacity should start when annual demand reaches 60 percent of the ASV, and construction of additional airfield capacity should begin at 80 percent of ASV.

To determine delay, the following information is needed:

- Annual Demand
- Ratio of Annual Demand to ASV
- Average Delay Per Aircraft

Annual Demand

There were 103,419 operations in 2021, and operations are forecasted to increase to 116,887 annual operations in 2041.

Ratio of Annual Demand to ASV

The ASV for SBA is 200,000 annual operations. This results in the ratio of annual demand to ASV to be 0.52 for 2021, and 0.58 for 2041.

Average Delay Per Aircraft

The ratios of annual demand to ASV for 2021 and 2041 are used to determine average delay per aircraft using AC 150-5060-5. **Figure 4-2** shows the average delay per aircraft graph. The full band of the curve is used for SBA because most operations are GA. The average delay per aircraft in minutes for 2021 is 0.2 on the low band, and 0.5 on the high band. The average delay per aircraft in minutes for 2041 is 0.2 on the low band, and 0.7 on the high band.

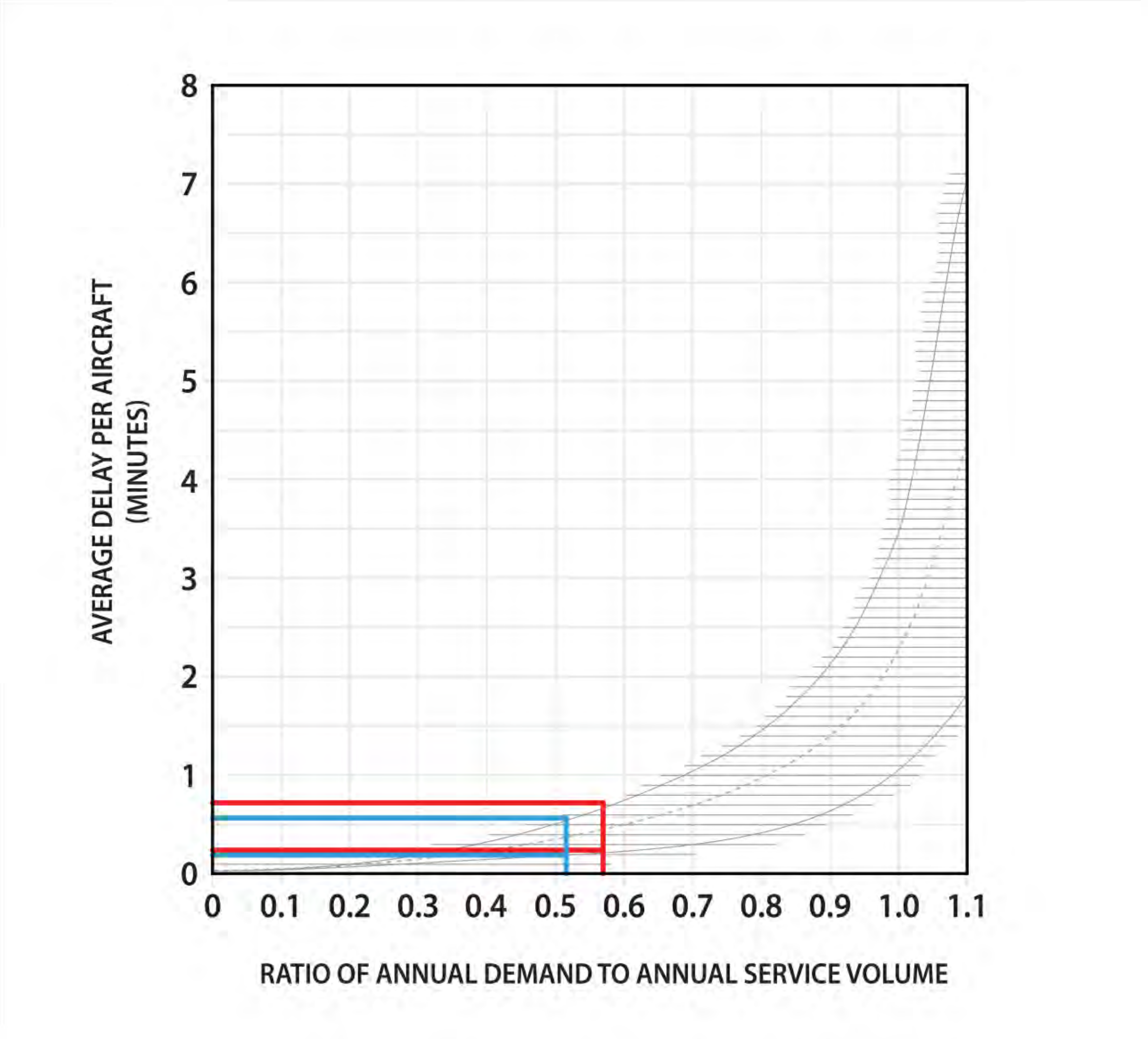
Using the previous information, the annual delay for SBA can be calculated. **Table 4-4** lists the breakdown of annual delay at SBA for 2021 and 2041.

Table 4-4: **SBA Annual Delay**

Year	Average Delay Per Aircraft (Minutes)		Annual Delay (Minutes)	
	Low	High	Low	High
2021	0.2	0.5	20,684	51,710
2041	0.2	0.7	23,377	81,821

Source: SBA 2021 Operations Data

Figure 4-2: Average Delay Per Aircraft



Source: AC 150-5060-5, Figure 2-2 Average Delay Per Aircraft for Long Range Planning – Adapted by Mead & Hunt, Inc. 2023
Note: Base Year 2021 (Blue), Forecast Year 2041 (Red)

Recommendations

All airports experience delay, and delay increases as total operations increase. There are no recommendations for major airfield improvements to increase capacity at SBA because the ratios of annual demand to ASV are under 60 percent for 2021 and 2041. Therefore, there are no recommendations to reduce delay as the range of delay is at acceptable levels for the planning period.

4.2.3.5 Crosswind Runway Justification

There are two elements to analyze for crosswind justification: capacity and crosswind component. The first element for analysis is capacity. As previously stated in the Analysis of Capacity section, the ASV for SBA is 200,000 annual operations. SBA currently operates at 52 percent of ASV and will operate at 58 percent of ASV in 2041. There are no recommendations for major airfield improvements for capacity because SBA has enough capacity to handle forecasted operations. Since SBA has two crosswind runways and capacity is not an issue, there is no justification for a crosswind runway based on capacity.

The second element for crosswind runway justification is crosswind component. Per AC 150-5300-13B, the desirable wind coverage for an airport is 95 percent of the time based on the total number of weather observations during the recording period of at least ten consecutive years. Primary runways are generally oriented to favor the prevailing wind, minimizing challenges associated with crosswinds. Small, light aircraft are more affected by crosswinds than larger, heavier ones. The allowable crosswind component for SBA is 16 knots, which is based on a RDC of D-III. The D-III design code is used because the critical aircraft for SBA are the Boeing 737-800 and 737-800 MAX aircraft. **Table 4-5** shows the crosswind component percentages at SBA.

Table 4-5: **SBA Crosswind Component Percentages**

Runway	Crosswind Components (knots)			
	10.5	13	16	20
All Weather				
15/33	96.17%	97.70%	99.38%	99.87%
7/25	98.55%	99.28%	99.82%	99.97%
Combined	99.84%	99.98%	100.00%	100.00%
IFR				
15/33	98.51%	99.18%	99.80%	99.97%
7/25	99.57%	99.80%	99.95%	99.99%
Combined	99.90%	99.98%	100.00%	100.00%
VFR				
15/33	95.66%	97.37%	99.29%	99.85%
7/25	98.33%	99.17%	99.79%	99.97%
Combined	99.83%	99.98%	100.00%	100.00%

Source: ADIP, SBA Wind Observations 2011 - 2020

No crosswind component falls below the 95 percent threshold. Therefore, there is no justification for a crosswind runway based on wind coverage.

Recommendations

There is no justification for a crosswind runway based on wind coverage or capacity. It is recommended that one of the crosswind runways be analyzed for an alternative use. Removal of one crosswind runway and reconfiguration of the parallel taxiways are discussed in length in the next chapter.

4.2.4 Airport Design Standards/Compliance

The FAA is responsible for the overall safety of civil aviation in the United States; therefore, FAA design standards and policy focus first on safety, with secondary goals including efficiency and utility. Design standards, which are presented in ACs, heavily influence the planning and design of airport facilities.

AC 5300-13B uses a coding system to determine standards for designing airports based on the operational and physical characteristics of the aircraft that operate or intend to operate at an airport. Two categories yield the Airport Reference Code (ARC): the Aircraft Approach Category (AAC), which is based on aircraft approach speed, and Airplane Design Group (ADG), which is based on the wingspan and tail height. The Runway Design Code (RDC) adds a third component to the ARC based on runway approach visibility minimums and is expressed as Runway Visual Range (RVR). The RDC, which is the FAA classification for the airfield design, determines the scale and setbacks of airfield facilities based on the design aircraft. RDC coding classifications are shown in **Table 4-6**.

Table 4-6: **Runway Design Code Designations**

Aircraft Approach Category (AAC)		
AAC	**Approach Speed**	
A	Approach Speed less than 91 knots	
B	Approach speed 91 knots or more but less than 121 knots	
C	Approach speed 121 knots or more but less than 141 knots	
D	Approach speed 141 knots or more but less than 166 knots	
E	Approach speed 166 knots or more	
Airplane Design Group (ADG)		
Group Number	**Wingspan (in feet)**	**Tail Height (in feet)**
I	< 49’	< 20’
II	49’ - < 79’	20’ - < 30’
III	79’ - < 118’	30’ - < 45’
IV	118’ - < 171’	45’ - < 60’
V	171’ - < 214’	60’ - < 66’
VI	214’ - < 262’	66’ - < 80’
Approach Visibility Minimums		
RVR (Feet)	**Flight Visibility Category (statue miles)**	
VIS	Runways designed for visual approach use only	
5,000	Not lower than 1 mile	
4,000	Lower than 1 mile but not lower than ¾ mile	
2,400	Lower than ¾ mile but not lower than ½ mile	
1,600	Lower than ½ mile but not lower than ¼ mile	
1,200	Lower than ¼ mile	

Source: AC 150/5300-13B

4.2.4.1 Runway 7/25 Design Standards

Runway design standards include runway safety areas (RSAs), runway object free areas (ROFAs), runway obstacle free zones (ROFZs), runway protection zones (RPZs), and setback distances for taxiways and other airport facilities. Runway length has additional design criteria and will be assessed in a separate section of this chapter. Design criteria for Runway 7/25 is shown in **Table 4-7**. **Figure 4-3** shows the surfaces for Runway 7/25 and areas requiring mitigation. **Figures 4-4** and **4-5** show the RPZs for Runway 7/25 and areas requiring mitigation.

Table 4-7: **Runway 7/25 Design Standards Compliance**

Runway Design	FAA Standards	Runway 7/25	
	D-III[1]	7	25
Runway Width	100'	150'	
Shoulder Width	20'	20'	
Blast Pad Width	140'	200'	200'
Blast Pad Length	200'	148'	992'
Runway Protection			
Runway Safety Area (RSA)			
Length Beyond Departure End	1,000'	1,000'	
Length Prior to Threshold	600'	600'	
Width	500'	500'	
Runway Object Free Area (ROFA)			
Length Beyond Departure End	1,000'	1,000'	
Length Prior to Threshold	600'	600'	
Width	800'	800'	
Runway Obstacle Free Zone (ROFZ)			
Length Beyond End	200'	200'	
Width	400'	400'	
Precision Obstacle Free Zone (POFZ)			
Length	200'	200'	N/A
Width	800'	800'	N/A
Approach Runway Protection Zone (RPZ)			
Length	2,500' / 1,700'	2,500'	1,700'
Inner Width	1,000' / 500'	1,000'	500'
Outer Width	1,750' / 1,010'	1,750'	1,010'
Departure RPZ			
Length	1,700' / 1,700'	1,700'	1,700'
Inner Width	500' / 500'	500'	500'
Outer Width	1,010' / 1,010'	1,010'	1,010'
Runway Separation, Runway Centerline to:			
Holding position	250'	250'	250'
Parallel Taxiway	400'	413'	
Aircraft parking area	N/A	N/A	

Notes: 1 Visibility Minimums for Runway 7, 1/2-mile; for Runway 25, not lower than 1 mile.
Source: AC 150/5300-13B

Figure 4-3: **Surfaces for Runway 7/25**

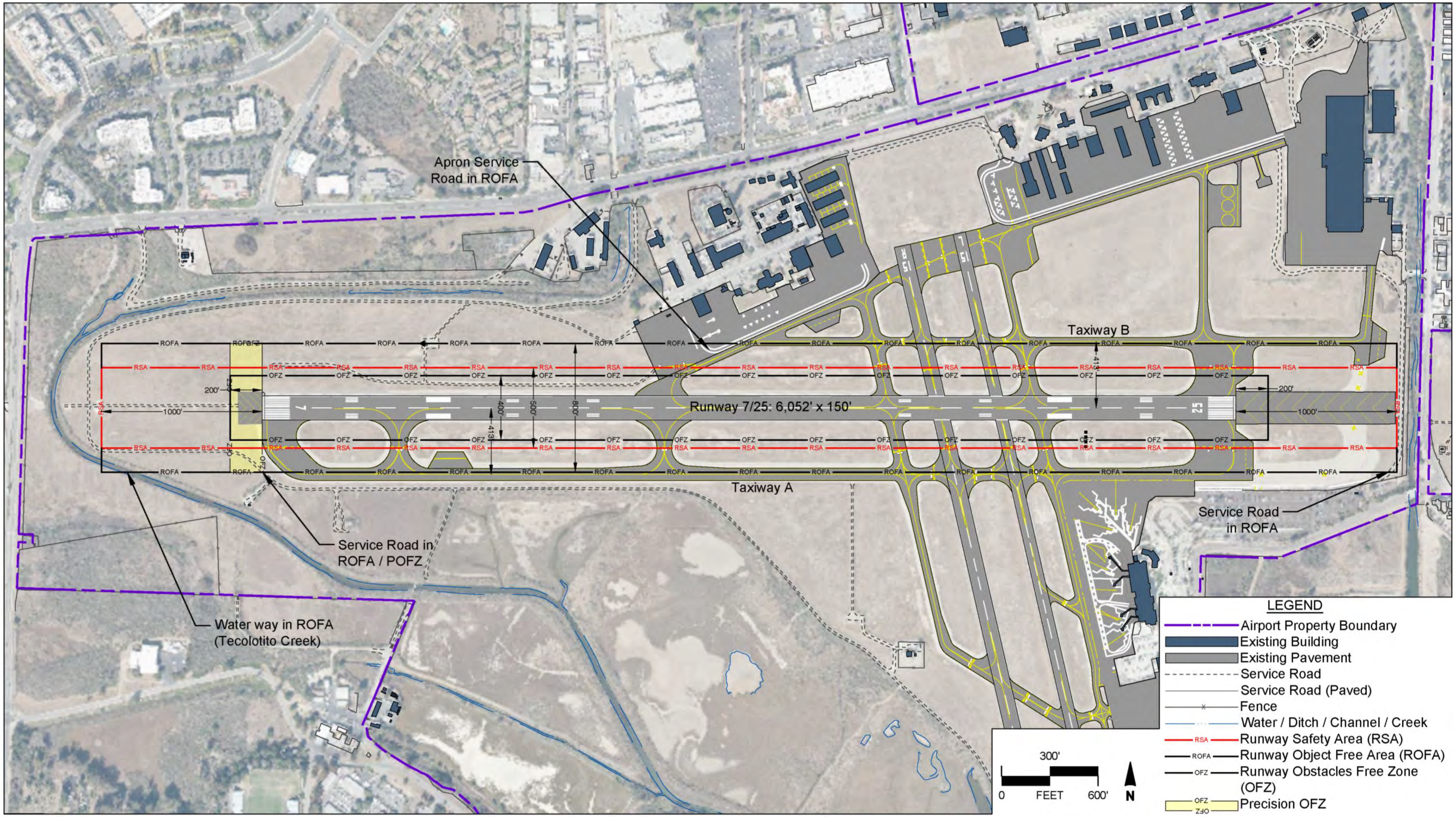


Figure 4-4: RPZ for Runway 7

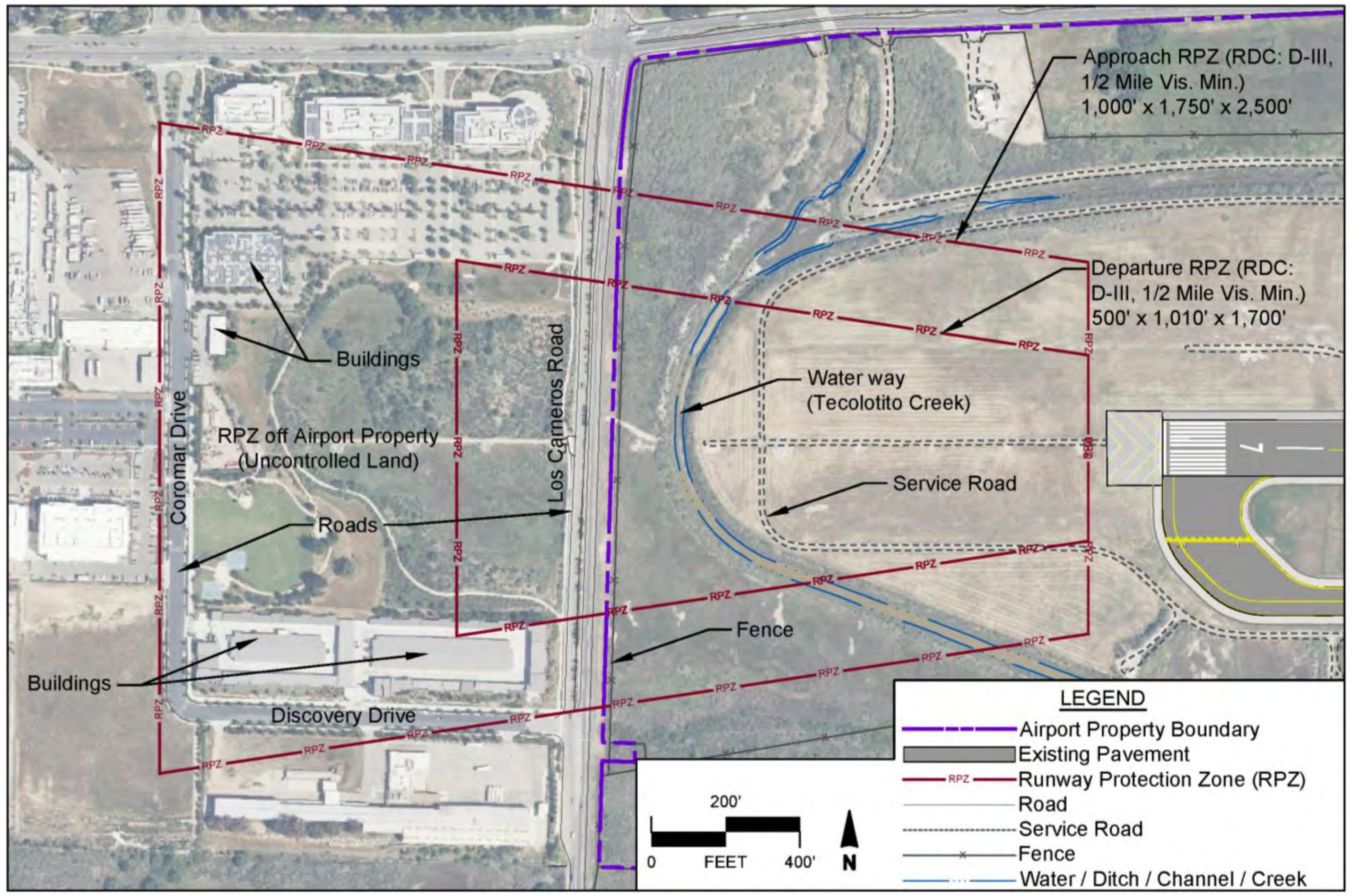
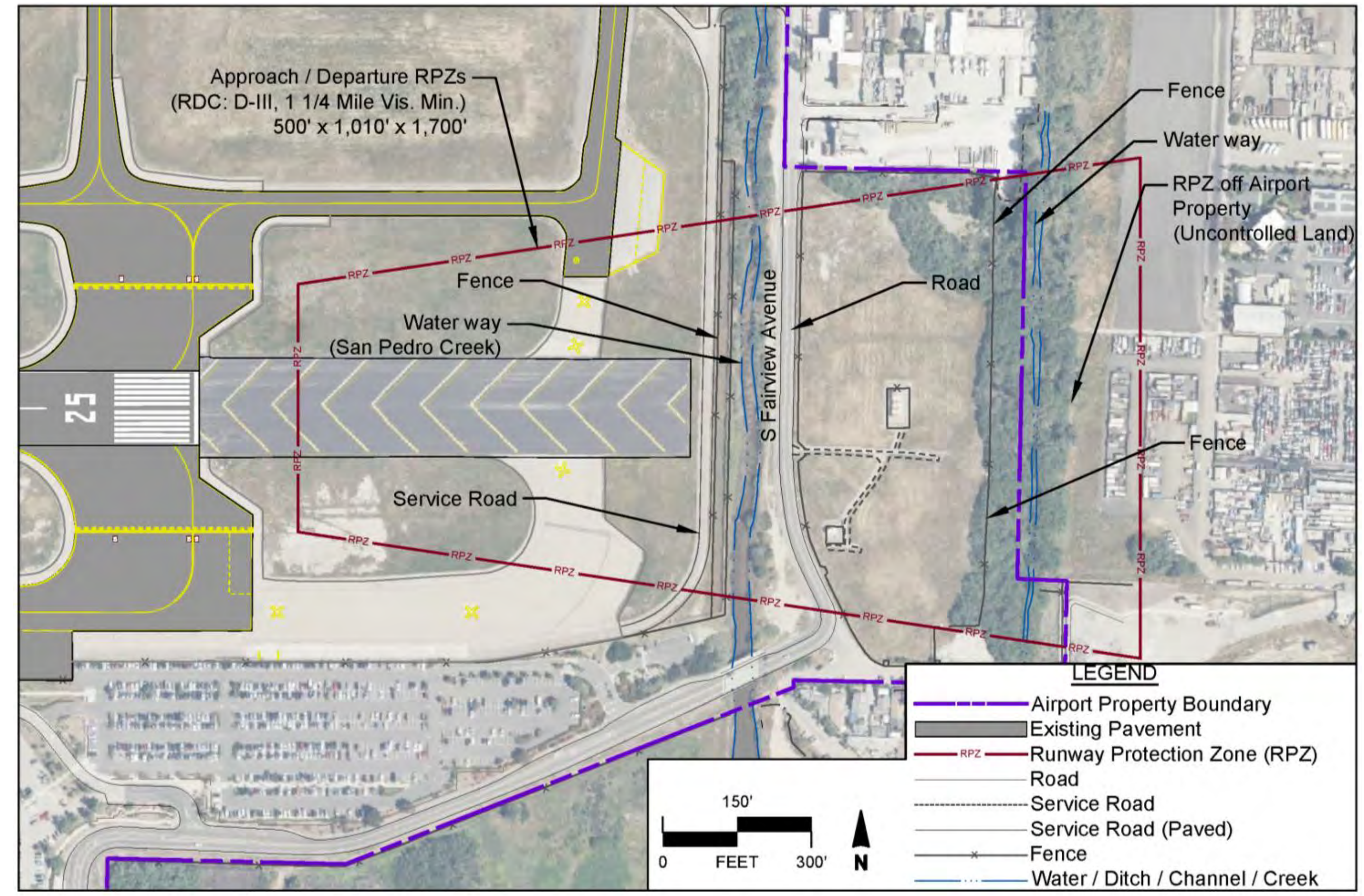


Figure 4-5: RPZ for Runway 25



Runway Design

Runway 7/25 is 150 feet wide, 6,052 feet long, and is classified as D-III. This classification means the runway can accommodate an aircraft with a wingspan between 79 and 118 feet, a tail height between 30 and 45 feet, and an approach speed between 141 and 166 knots. The FAA requirements for this design classification include a minimum runway width of 100 feet, shoulder width of 20 feet, and runway blast pad width of 140 feet length of 200 feet. Runway 7/25 is 50 feet wider than the minimum required width of a D-III runway. The shoulder width on Runway 7/25 measures 20 feet wide and meets the design standard. The Runway 7 blast pad measures 200 feet wide and 148 feet long. The Runway 7 blast pad is short of meeting the blast pad width standard by 52 feet and exceeds the design standard length by 60 feet. The Runway 25 blast pad is 992 feet long and 200 feet wide. The Runway 25 blast pad exceeds the width design standard by 60 feet and the length design standard by 792 feet.

Runway Safety Area

The FAA requires the RSA for runways with a D-III design classification to extend 1,000 feet beyond the departure end of the runway. The RSA extends 1,000 feet beyond the departure end, meeting this requirement. The FAA also requires the RSA to extend a minimum length of 600 feet prior to the runway threshold and have a minimum width of 500 feet. This RSA meets the minimum FAA requirements, extending 600 feet prior to the threshold and having a width of 500 feet. There are no penetrations to the RSA.

Runway Object Free Area

The Runway Object Free Area (ROFA) for Runway 7/25 extends 1,000 feet beyond the departure end, 600 feet prior to the threshold, and has a width of 800 feet, which meets the minimum FAA requirements. However, there are features that reside within the ROFA: a service road that directly abuts runway end 7; Tecolotito Creek, which is 794 feet away from Runway End 7; a service road that is 940 feet from Runway End 25; and an apron service road.

Runway Obstacle Free Zone

The FAA requires the Runway Obstacle Free Zone (ROFZ) to extend 200 feet beyond the runway end and measure 400 feet wide. The ROFZ for Runway 07/25 meets these requirements and has no penetrations.

Precision Obstacle Free Zone

Runway 7/25 has a precision obstacle free zone (POFZ) because of the instrument approach to Runway 7 having visibility minimums lower than 3/4 mile. The standard design for a POFZ is 200 feet long by 800 feet wide and begins at the landing threshold of a runway. The POFZ for Runway 7 is penetrated by a service road that also penetrates the ROFA.

Runway Protection Zones

The FAA requires that the RPZ for a D-III runway with an end that has minimums lower than 3/4 mile to have an inner width of 1,000 feet, an outer width of 1,750 feet, and a length of 2,500 feet. For minimums that are not lower than 3/4 mile, the RPZ must have an inner width of 1,000 feet, an outer width of 1,510 feet, and a length of 1,700 feet

The RPZs for both ends of Runway 7/25 meet design standards, but they have objects, roads, and land uses inside the boundaries of each RPZ that are not standard. See **Figures 4-4** and **4-5** for the Runway 7/25 RPZs.

The Runway 7 RPZ has the following items inside of the boundaries:

- Los Carneros Road
- Discovery Drive
- Coromar Drive
- Airport Service Road
- Water Way (Tecolotito Creek)
- Fences
- Buildings
- Uncontrolled Land (RPZ off Airport Property)

The Runway 25 RPZ has the following items inside of the boundaries:

- S Fairview Avenue
- Airport Service Road
- Water Ways
- Fences
- Uncontrolled Land (RPZ off Airport Property)

Runway Separation from Taxiway Centerline

The FAA requires the holding position line for a D-III runway to measure at least 250 feet from the runway centerline, and both runway ends have holding positions that are 250 feet from the runway centerline and meet FAA requirements. Additionally, the runway centerline to the parallel runway centerline is 413 feet, which meets the FAA 400-foot requirement.

Recommendations

The following list provides recommendations for Runway 7/25.

- Relocate service roads out of runway protection zones or to locations that maximize mitigation.
- Acquire easements for RPZs that are off airport property and modify or adapt land use, as needed, to comply with compatible uses and configurations for a runway protection zone.

4.2.4.2 Runway 15R/33L Design Standards

Runway design standards include RSAs, ROFAs, ROFZs, RPZs, and setback distances for taxiways and other airport facilities. Runway length has additional design criteria and will be assessed in **Section 3**. Design criteria for Runway 15R/33L is shown in **Table 4-8**. **Figure 4-6** shows the surfaces for Runway 15R/33L and areas requiring mitigation. **Figures 4-7** and **4-8** show the RPZs for Runways 15R/33L and areas requiring mitigation.

Table 4-8: **Runway 15R/33L Design Standards Compliance**

Runway Design	FAA Standards	Runway 15R/33L	
	A/B-II (Small)[1]	15R	33L
Runway Width	75’	100’	
Shoulder Width	10’	10’	
Blast Pad Width	95’	N/A	
Blast Pad Length	150’	N/A	
Runway Protection			
Runway Safety Area (RSA)			
Length Beyond Departure End	300’	300’	
Length Prior to Threshold	300’	300’	
Width	150’	150’	
Runway Object Free Area (ROFA)			
Length Beyond Departure End	300’	300’	
Length Prior to Threshold	300’	300’	
Width	500’	500’	
Runway Obstacle Free Zone (ROFZ)			
Length Beyond End	200’	200’	
Width	250’	250’	
Precision Obstacle Free Zone (POFZ)			
Length	N/A	N/A	N/A
Width	N/A	N/A	N/A
Approach Runway Protection Zone (RPZ)			
Length	1,000’	1,000’	1,000’
Inner Width	250’	250’	250’
Outer Width	450’	450’	450’
Departure RPZ			
Length	1,000’	1,000’	1,000’
Inner Width	250’	250’	250’
Outer Width	450’	450’	450’
Runway Separation, Runway Centerline to:			
Holding position	125’	125’	125’
Parallel Taxiway	240’	300’	
Aircraft parking area	N/A	300’	

Notes: 1 Visibility Minimums for Runway 15R/33L are Visual
Notes: 2 Per AC 150/5300-13B, A-II (Small) and B-II (Small) share the same design matrix
Source: AC 150/5300-13B

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Figure 4-6: **Surfaces for Runway 15/33**

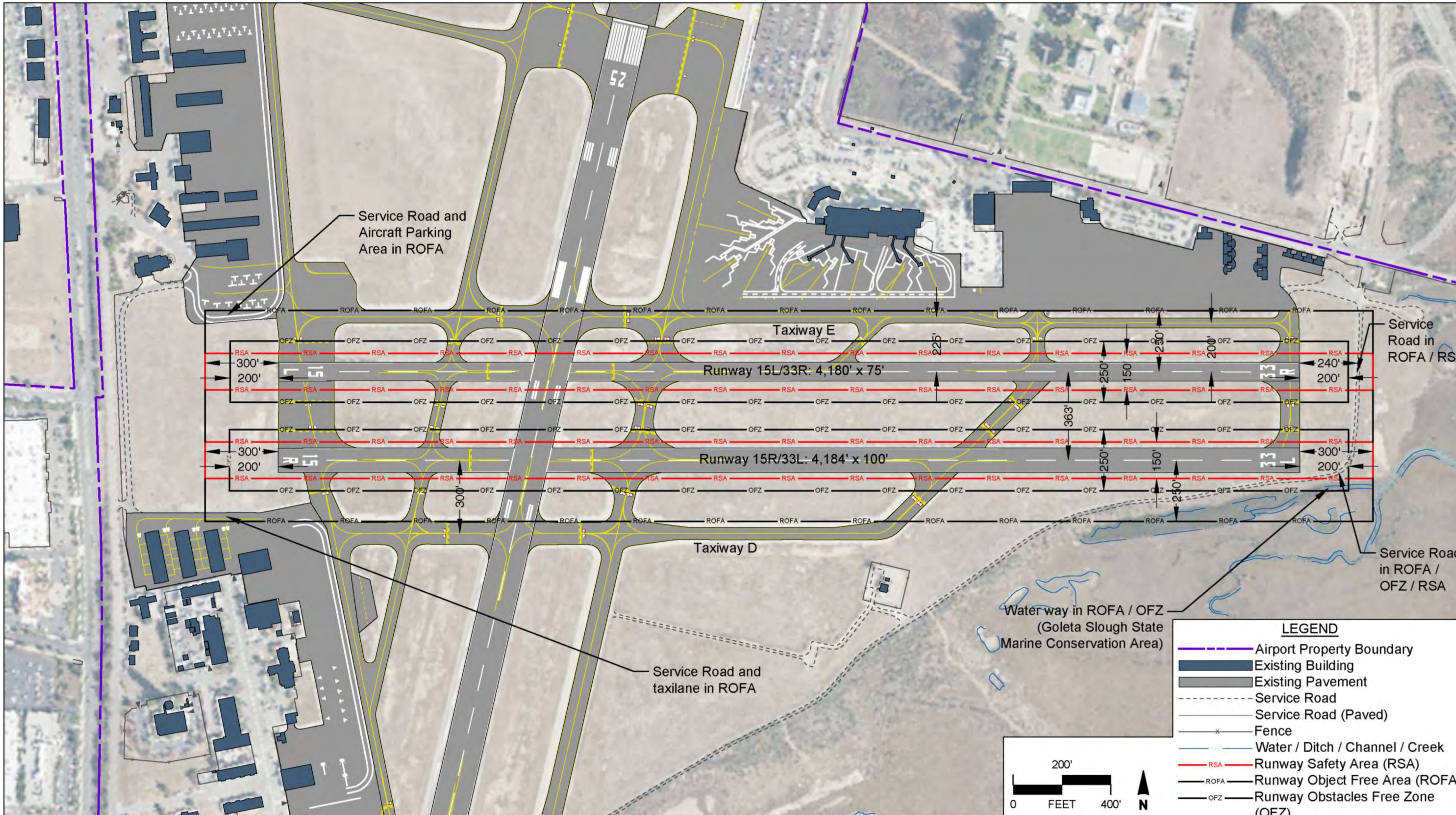


Figure 4-7: RPZ for Runway 15

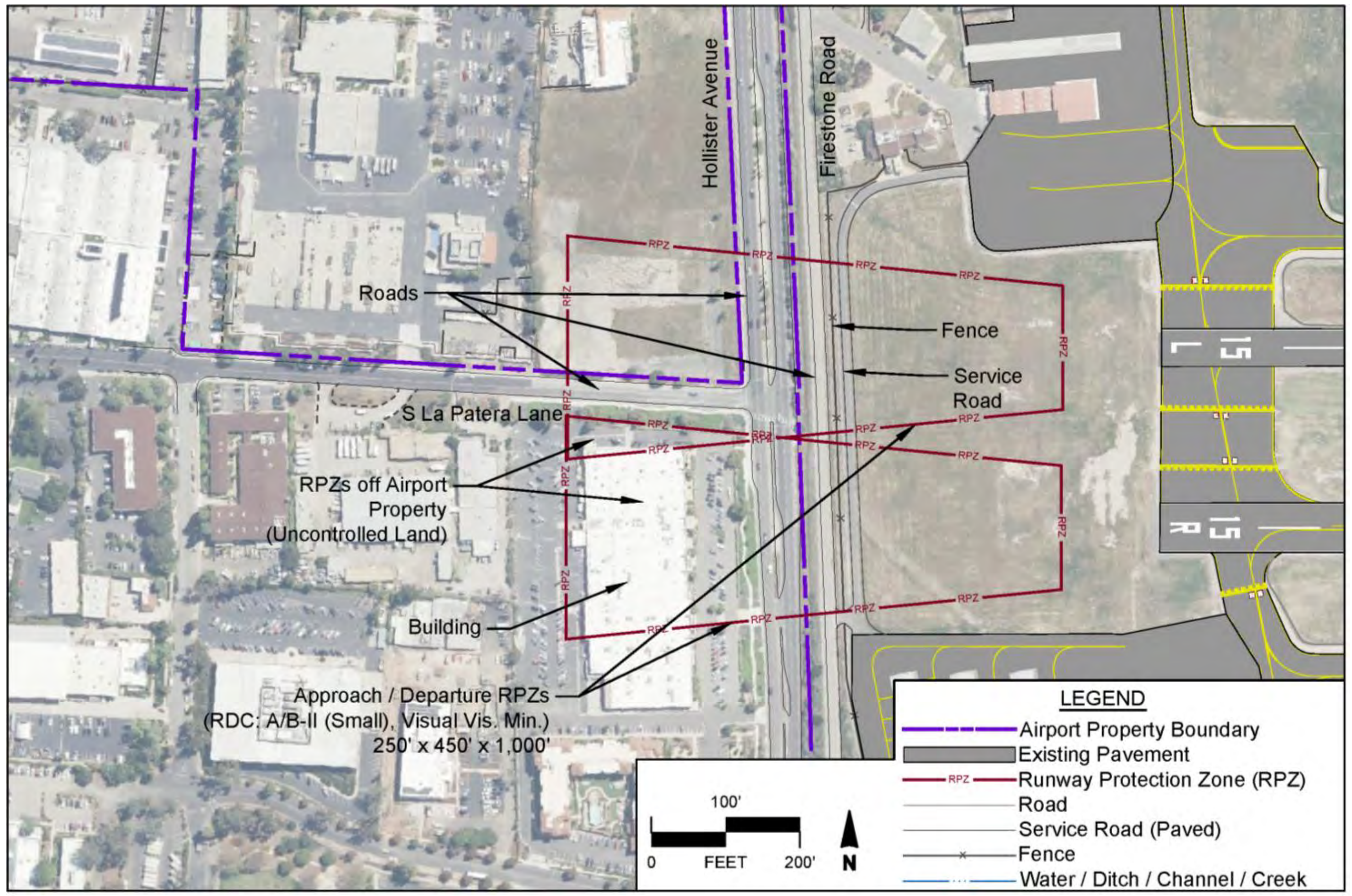
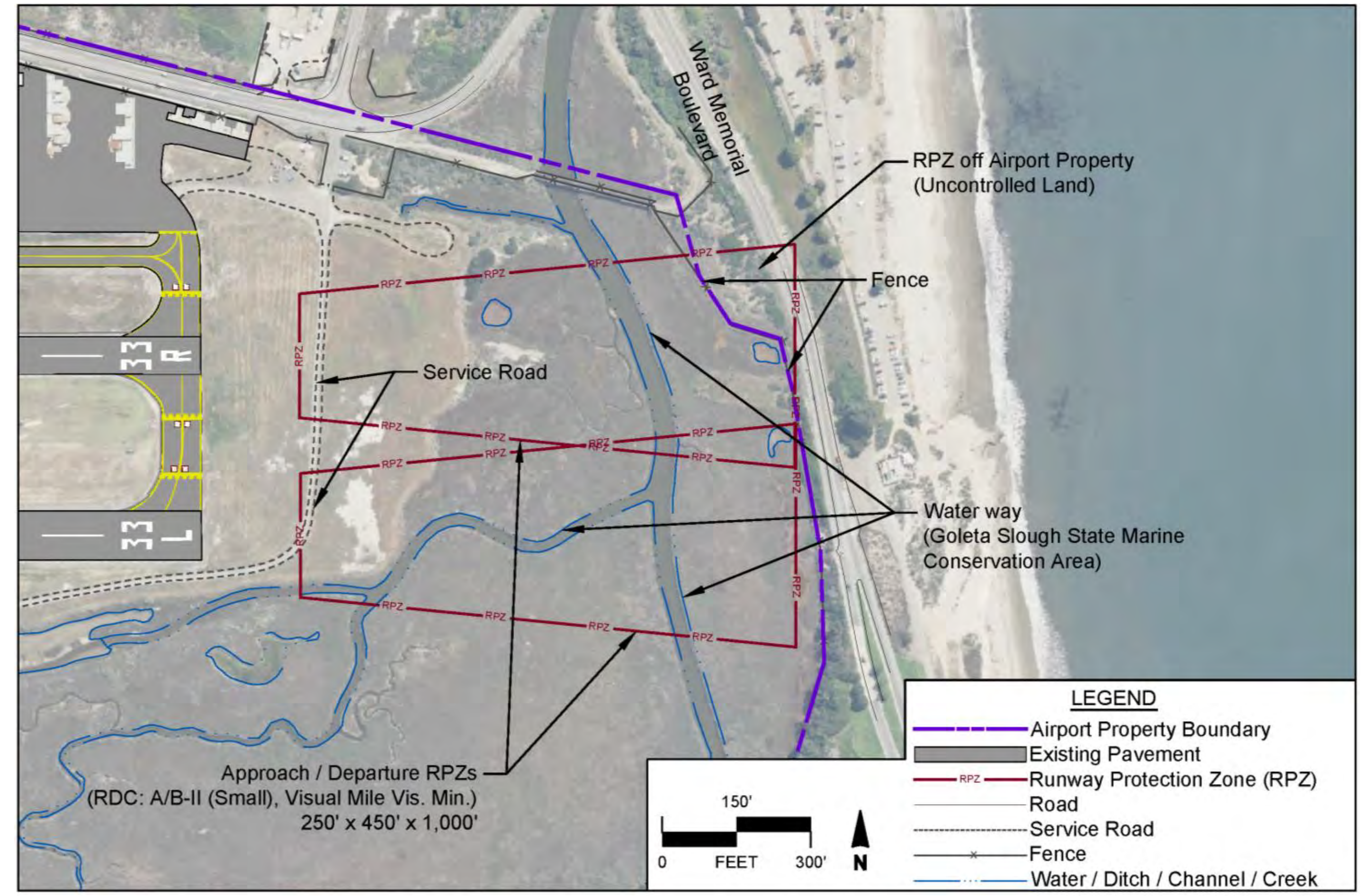


Figure 4-8: RPZ for Runway 33



Runway Design

Runway 15R/33L is 100 feet wide, 4,184 feet long, and classified as B-II (small). This classification means the runway can accommodate an aircraft with a wingspan between 49 and 79 feet, a tail height between 20 and 30 feet and an approach speed between 91 and 121 knots. The FAA design standard for a B-II runway is 75 feet wide, the runway is 25 feet wider than the minimum standard. This design classification requires a minimum shoulder width of 10 feet wide. The shoulder width on Runway 15R/33L measures 10 feet wide and meets the design standard. Runway 15R/33L, as a B-II runway is not required to have blast pads, no blast pads exist.

Runway Safety Area

The FAA requires the RSA for visual runways with a B-II (small) design classification to extend 300 feet beyond the departure end of the runway. The RSA extends 300 feet beyond the departure end, meeting this requirement. The FAA also requires the RSA to extend a minimum length of 300 feet prior to the runway threshold and have a minimum width of 150 feet. This RSA meets the minimum FAA requirements, extending 300 feet prior to the threshold and having a width of 150 feet. However, there is a service road that penetrates the RSA off the Runway 33L end.

Runway Object Free Area

The ROFA for Runway 15R/33L extends 300 feet beyond the departure end, 300 feet prior to the threshold, and has a width of 500 feet, which meets the minimum FAA requirements. However, there are features that reside within the ROFA: a service road west of Runway End 15R, a service road west of Runway End 33L, and a waterway (Goleta Slough State Marine Conservation Area) off Runway End 33L.

Runway Obstacle Free Zone

The FAA requires a runway with B-II (small) design code classification to have a ROFZ that extends 200 feet beyond the end of the runway with a width of 250 feet. Runway 15R/33L meets the design standards, but there are features that reside within the ROFZ: a waterway (Goleta Slough State Marine Conservation Area) and a service road are in the ROFZ off Runway End 33L.

Runway Protection Zones

The FAA requires that the RPZs for a B-II (small) runway with visual approaches have an inner width of 250 feet, an outer width of 450 feet, and a length of 1,000 feet. The RPZs for both ends of Runway 15R/33L meet design standards, but have objects, roads, and land uses inside the boundaries of each RPZ that are not standard. See **Figures 4-7** and **4-8** for the Runway 15R/33L RPZs.

The Runway 15R RPZ has the following items inside of the boundaries:

- Firestone Road
- Hollister Avenue
- S La Patera Lane
- Airport Service Road
- Fences
- Buildings
- Uncontrolled Land (RPZ off Airport Property)

The Runway 33L RPZ has the following items inside of the boundaries:

- Ward Memorial Boulevard
- Airport Service Road
- Waterway (Goleta Slough State Marine Conservation Area)
- Fences

Runway Separation from Centerline

The runway centerline is 125 feet from the holding position line on each runway end, which is the minimum distance for a B-II (small) runway. The runway centerline is also 413 feet from the parallel taxiway centerline (Taxiway D), and 363 feet from Runway 15L/33R centerline.

Recommendations

The following list provides recommendations for Runway 15R/33L.

- Relocate service roads out of runway protection zones or to locations that maximize mitigation.
- Acquire easements for RPZs that are off airport property and modify or adapt land use, as needed, to comply with compatible uses and configurations for a runway protection zone.

4.2.4.3 Runway 15L/33R Design Standards

Runway design standards include ROFZs, RSAs, ROFAs, RPZs, and setback distances for taxiways and other airport facilities. Runway length has additional design criteria and will be assessed in section 3. Design criteria for Runway 15L/33R is shown in **Table 4-9**. **Figure 4-6** (above) shows the surfaces for Runway 15L/33R and areas requiring mitigation. **Figures 4-7** and **4-8** (above) show the RPZs for Runway 15L/33R and areas requiring mitigation.

Table 4-9: **Runway 15L/33R Design Standards Compliance**

Runway Design	FAA Standards	Runway 15L/33R	
	A/B-II (Small)[1]	15L	33R
Runway Width	75'	75’	
Shoulder Width	10'	10’	
Blast Pad Width	95'	N/A	
Blast Pad Length	150'	N/A	
Runway Protection			
Runway Safety Area (RSA)			
Length Beyond Departure End	300'	300'	
Length Prior to Threshold	300'	300'	
Width	150'	150'	
Runway Object Free Area (ROFA)			
Length Beyond Departure End	300'	300'	
Length Prior to Threshold	300'	300'	
Width	500'	500'	

Runway Obstacle Free Zone (ROFZ)			
Length Beyond End	200’	200’	
Width	250’	250’	
Precision Obstacle Free Zone (POFZ)			
Length	N/A	N/A	N/A
Width	N/A	N/A	N/A
Approach Runway Protection Zone (RPZ)			
Length	1,000’	1,000’	1,000’
Inner Width	250’	250’	250’
Outer Width	450’	450’	450’
Departure RPZ			
Length	1,000’	1,000’	1,000’
Inner Width	250’	250’	250’
Outer Width	450’	450’	450’
Runway Separation, Runway Centerline to:			
Holding position	125'	125’	125’
Parallel Taxiway	240'	200’	
Aircraft parking area	N/A	328’	

Notes: 1 Visibility Minimums for Runway 15L/33R are Visual
Notes: 2 Per AC 150/5300-13B, A-II (Small) and B-II (Small) share the same design matrix
Source: AC 150/5300-13B

Runway Design

Runway 15L/33R is 100 feet wide, 4,184 feet long, and classified as B-II (small). This classification means the runway can accommodate an aircraft with a wingspan between 49 and 79 feet, a tail height between 20 and 30 feet and an approach speed between 91 and 121 knots. The FAA design standard for a B-II runway is 75 feet wide, the runway is 25 feet wider than the minimum standard. This design classification requires a minimum shoulder width of 10 feet wide. The shoulder width on Runway 15L/33R measures 10 feet wide and meets the design standard. Runway 15L/33R, as a B-II runway is not required to have blast pads, no blast pads exist.

Runway Safety Area

The FAA requires the RSA for visual runways with a B-II (small) design classification to extend 300 feet beyond the departure end of the runway. The RSA extends 300 feet beyond the departure end, meeting this requirement. The FAA also requires the RSA to extend a minimum length of 300 feet prior to the runway threshold and have a minimum width of 150 feet. This RSA meets the minimum FAA requirements, extending 300 feet prior to the threshold and having a width of 150 feet. However, there is a service road that penetrates the RSA off the Runway 33R end.

Runway Object Free Area

The ROFA for Runway 15L/33R extends 300 feet beyond the departure end, 300 feet prior to the threshold, and has a width of 500 feet, which meets the minimum FAA requirements. However, there are features that reside within the ROFA: a service road east of Runway End 15L and a service road east of Runway End 33R.

Runway Obstacle Free Zone

The FAA requires a runway with B-II (small) design code classification to have a ROFZ that extends 200 feet beyond the end of the runway with a width of 250 feet. Runway 15L/33R meets the design standards, but there is a feature that resides within the ROFZ: a service road in the ROFZ off Runway End 33R.

Runway Protection Zones

The FAA requires that the RPZs for a B-II (small) runway with visual approaches have an inner width of 250 feet, an outer width of 450 feet, and a length of 1,000 feet. The RPZs for both ends of Runway 15L/33R meet design standards, but have objects, roads, and land uses inside the boundaries of each RPZ that are not standard. See **Figures 4-7** and **4-8** for the Runway 15L/33R RPZs.

The Runway 15L RPZ has the following items inside of the boundaries:

- Firestone Road
- Hollister Avenue
- S La Patera Lane
- Airport Service Road
- Fences
- Buildings
- Uncontrolled Land (RPZ off Airport Property)

The Runway 33R RPZ has the following items inside of the boundaries:

- Ward Memorial Boulevard
- Airport Service Road
- Water Way (Goleta Slough State Marine Conservation Area)
- Fences
- Uncontrolled Land (RPZ off Airport Property)

Runway Separation from Centerline

The runway centerline is 125 feet from the holding position on each runway end, which is the minimum distance for a B-II (small) runway. The centerline is also 200 feet from the parallel taxiway (Taxiway E), and 363 feet from Runway 15R/33L. Taxiway E is 40 feet closer to the runway centerline then the minimum design standard.

Recommendations

The following list provides recommendations for Runway 15L/33R.

- Relocate service roads out of runway protection zones or to locations that maximize mitigation.
- Acquire easements for RPZs that are off airport property and modify or adapt land use, as needed, to comply with compatible uses and configurations for a runway protection zone.
- If Runway 15L/33R remains, Taxiway E should be relocated to meet separation standards (240')

4.2.5 Wind Coverage

Existing wind coverage is documented in **Chapter 1**. Runway 7/25 meets the minimum wind coverage requirements for runway alignment. There is no justification for runway 15L/33R or 15R/33L from a wind coverage analysis or requirements standpoint.

4.2.6 Taxiway Design Standards

AC 150/5300-13B provides taxiway design concepts and methodologies, which are described below. This section identifies taxiway system recommendations to meet expected demand and FAA standards.

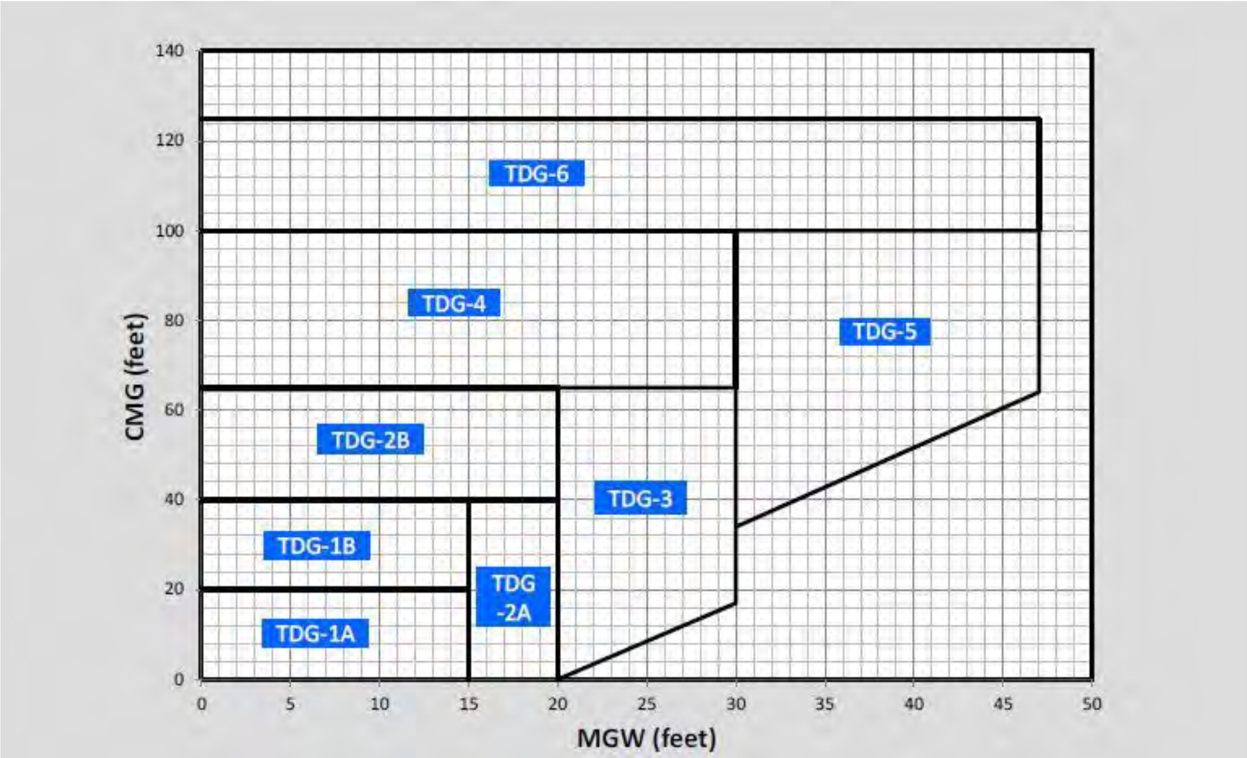
4.2.6.1 Overview of Standards

The Taxiway Design Group (TDG) criteria is defined in AC 150/5300-13B. The TDG considers the dimensions of the aircraft landing gear to determine taxiway widths and pavement fillets to be provided at taxiway intersections. The width of the main gear and wheelbase (the distance from nose gear to main gear) distinguishes the TDG classifications. The existing and future critical aircraft are both in TDG 3. TDG classifications are presented in **Figure 4-9**. TDG 3 standards are shown in **Figure 4-10**.

The existing airfield system has various TDG's as some taxiways do not serve the critical aircraft. **Table 4-10** shows the existing TDG standards for taxiways and compares them to AC 150/5300-13B TDG standards.

All taxiways, with the exceptions of Taxiways E and E3, meet or exceed TDG 3 standards. Taxiway E runs parallel to Runway 15L/33R and the terminal but does not meet the minimum runway centerline separation distance required for a A/B-II (small) runway design. Taxiway E will need upgrades to meet TDG 3 standards and will also need to be relocated to meet the minimum separation distance of 240 feet to comply with 150/5300-13B The sections of Taxiway E that do not meet the 50 foot TDG 3 standard are south of the Taxiway E/E2 intersection and north of the Taxiway E/E2 intersection as Taxiway E begins to turn towards the Terminal Apron. If relocation is not an option for Taxiway E, other options should be evaluated to rectify the nonstandard separation. Taxiway E3 connects Taxiway E to Runway 15L/33R, providing direct access from an apron to a runway. While the critical aircraft will not use Runway 15L/33R, Taxiway E3 will need to be removed or relocated to rectify the direct runway access configuration issue.

Figure 4-9: TDG Classifications



Source: AC 150/5300-13B

Figure 4-10: TDG Standards

Item	TDG							
	1A	**1B**	**2A**	**2B**	**3**	**4**	**5**	**6**
Taxiway/Taxilane Width [1]	25 ft (7.6 m)	25 ft (7.6 m)	35 ft (10.7 m)	35 ft (10.7 m)	50 ft (15.2 m)	50 ft (15.2 m)	75 ft (22.9 m)	75 ft (22.9 m)
Taxiway Edge Safety Margin [1]	5 ft (1.5 m)	5 ft (1.5 m)	7.5 ft (2.3 m)	7.5 ft (2.3 m)	10 ft (3 m)	10 ft (3 m)	14 ft (4.3 m)	14 ft (4.3 m)
Taxiway Shoulder Width [2]	10 ft (3 m)	10 ft (3 m)	15 ft (4.6 m)	15 ft (4.6 m)	20 ft (6.1 m)	20 ft (6.1 m)	30 ft (9.1 m)	30 ft (9.1 m)
Taxiway/Taxilane Centerline to Parallel Taxiway/Taxilane Centerline w/180 Degree Turn	See Table 4-6 and Table 4-7.							

Source: AC 150/5300-13B

Table 4-10: Existing Taxiway System Design Standards

Taxiway Name	TDG	Width	Taxiway Edge Safety Margin	Shoulder Width	Meet TDG 3 Standards?
Taxiway A	5 & 6	75 ft	14 ft	30 ft	Yes
Taxiway A1	6*	250 ft	14 ft	30 ft	Yes
Taxiway A3	6*	90 ft	14 ft	30 ft	Yes
Taxiway A4	6*	100 ft	14 ft	30 ft	Yes
Taxiway A5	6*	225 ft	14 ft	30 ft	Yes
Taxiway B	3	50 ft	10 ft	20 ft	Yes
Taxiway B1	6*	90 ft	14 ft	30 ft	Yes
Taxiway C	6*	50 – 227 ft	14 ft	30 ft	Yes
Taxiway D	3	50 - 90 ft	10 ft	20 ft	Yes
Taxiway E	2	40 – 90 ft	7.5 ft	15 ft	Varies
Taxiway E1	5	75 ft	14 ft	30 ft	Yes
Taxiway E2	3	60 ft	7.5 ft	15 ft	Varies
Taxiway E3	2	40 ft	7.5 ft	15 ft	No
Taxiway F	3	50 ft	10 ft	20 ft	Yes
Taxiway G	3	50 ft	10 ft	20 ft	Yes
Taxiway H	5	75 ft	14 ft	30 ft	Yes

Source: AC 150/5300-13B
Note *: TDG 7 was replaced with TDG 6. TDG 7 no longer exists in AC 150/5300-13B. The largest TDG is now 6.
Note: Orange cells indicates non-compliance with TDG 3 standards.

4.2.6.2 Taxiway Surfaces

The Taxiway Object Free Area (TOFA) and Taxiway Safety Area (TSA) are defined in the criteria of AC 150/5300-13B. These areas should provide separation from the taxiway centerline to an object. **Figure 4-11** displays the TOFAs, TSAs, and taxiway surface penetrations for SBA. Taxiway surface penetrations include the following:

- Apron parking inside of the TOFA/TSA on the south end of Taxiway E.
- Service Road penetrating the TOFA of Taxiway A.
- Apron service road penetrating the TOFA/TSA of Taxiway C near the intersection of Taxiway B.
- Apron service road penetrating the TOFA/TSA of Taxiway C near the intersection of Taxiway E.
- Apron parking inside of the TOFA of Taxiway C near the intersection of Taxiway F.

There are Vehicle Service Roads (VSR) in four TOFA/TSA locations. Based on FAA requirements, vehicles may operate within the TOFA provided they give right away to oncoming aircraft by either maintaining a safe distance from the aircraft or by exiting the TOFA. Any parking positions in the area where the TOFA and TSA overlap must be relocated out of the surfaces.

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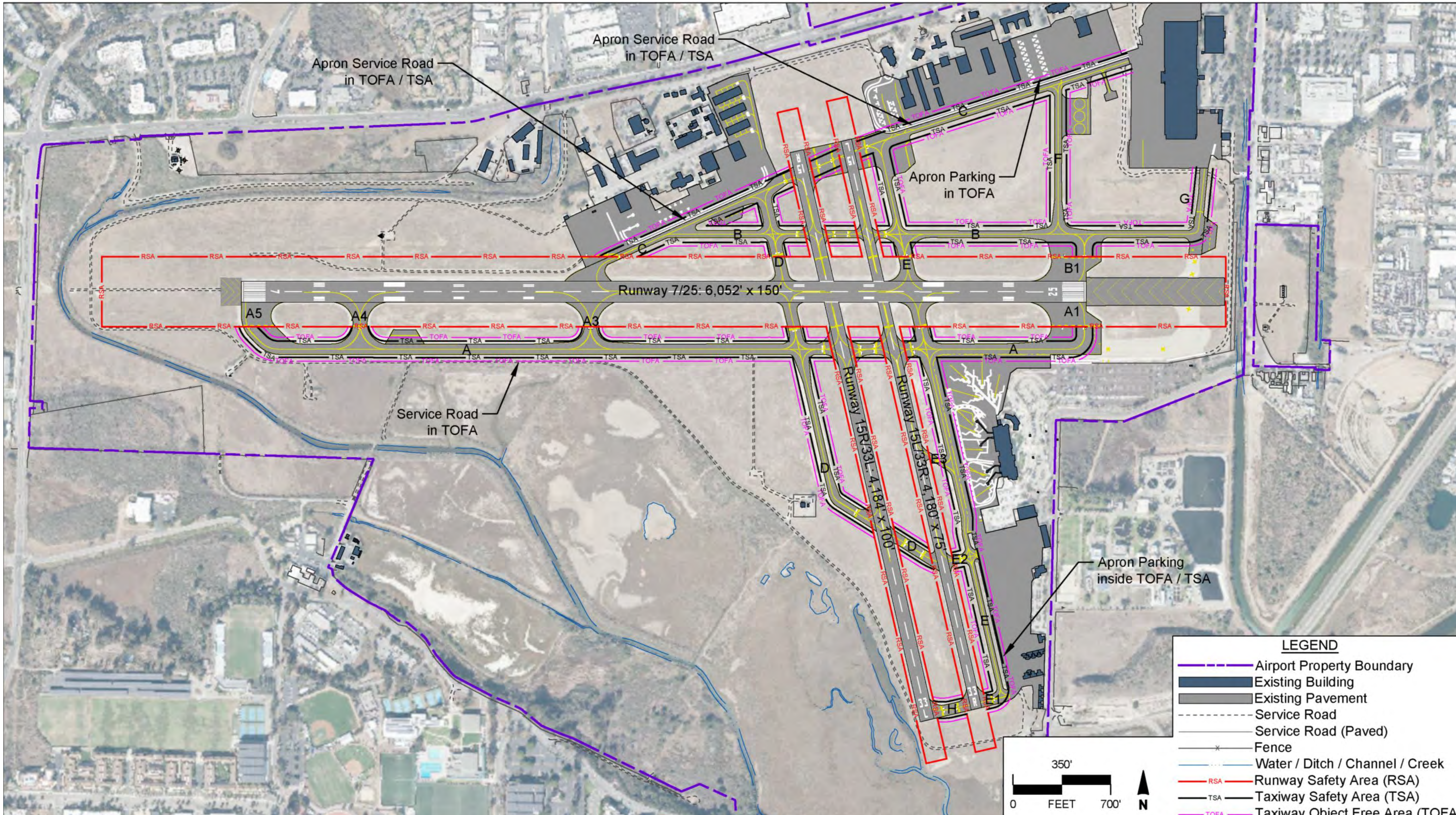
Figure 4-11: TOFAs, TSAs, and taxiway surface penetrations for SBA



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Runway Crossings

Risk of error can be reduced by limiting runway crossings, especially within the middle third of runways. FAA guidance identifies the middle third of a runway as the place where pilots are least able to maneuver to avoid collision. Solutions to this situation will be evaluated in **Chapter 4**. Middle-third runway crossings include the following:

- Intersection of Taxiways A3/C connecting to Runway 7/25.
- Taxiway A connecting to Runways 15R/33L and 15L/33R.
- Taxiway E connecting to Runway 7/25.
- Taxiway D connecting to Runway 7/25.
- Taxiway D connecting to Runway 15R/33L.

Taxiways A, E, and D have intersections with runways that are middle-third runway crossing, but these taxiways are the parallel taxiways to the runway system.

Visibility

Right-angle intersections provide the best visibility for a pilot. A right-angle turn clearly indicates the pilot is approaching a runway. The following taxiways do not have right-angle intersections:

- Taxiway A5 connecting to Runway 7/25.
- Taxiway C at intersections with Runway 7/25, 15R/33L, and 15L/33R.
- Taxiway D connecting to Runway 15R/33L.
- Taxiway D connecting between Runways 15R/33L and 15L/33R.
- Taxiway E3 connecting to Runway 15L/33R.

Taxiways A, B, E, and D have intersections with runways that are not right-angle intersections, but these taxiways are the parallel taxiways to the runway system.

Direct Access

Taxiways should not lead directly from an apron to a runway without requiring a turn. Direct access from the apron to the runway may lead to runway incursions. The design could cause confusion to a pilot that normally would be expecting a parallel taxiway but instead encounters a runway. The following taxiways provide direct access to a runway.

- Taxiway C connecting to Runway 7/25.
- Taxiway D connecting to Runway 7/25
- Taxiway F connecting to Runway 7/25
- Taxiway C connecting to Runway 15R/33L.
- Taxiway C connecting to Runway 15L/33R.
- Taxiway E3 connecting to Runway 15L/33R.
- Taxiway B connecting to Runway 15L/33R.

- Taxiway E1 connecting to Runway 15L/33R.

Recommendations

Taxiway recommendations are as follows.

All taxiways

- All taxiways will meet ADG-III taxiway standards for TOFA and Taxiway Safety Areas (TSAs) to provide clearance for commercial and jet GA aircraft.

Middle third of runway

- Intersection of Taxiways A3/C connecting to Runway 7/25 will be removed or relocated out of the middle third of the runway.
- Intersection of Taxiway A connecting to Runways 15R/33L and 15L/33R will remain as Taxiway A is the parallel taxiway to Runway 7/25.
- Intersection of Taxiway E connecting to Runway 7/25 will be removed or relocated out of the middle third of the runway.
- Intersection of Taxiway D connecting to Runway 7/25 will remain as Taxiway D is parallel to Runway 15R/33L.
- Intersection of Taxiway D connecting to Runway 15R/33L will remain as Taxiway D is parallel to Runway 15L/33R and helps to avoid environmental conditions west of Runway 15R/33L.

Visibility

- Intersection of Taxiway A5 connecting to Runway 7/25 will have geometry changed to have a right-angle turn.
- Intersection of Taxiway C connecting to Runway 7/25 will have geometry changed to have a right-angle turn. Intersection of Taxiway C connecting to Runways 15R/33L, and 15L/33R will change geometry to have right-angle turns.
- Intersection of Taxiway D connecting to Runway 15R/33L will have geometry changed to have a right-angle turn.
- Intersections of Taxiway D connecting between Runways 15R/33L and 15L/33R will have geometry changed to have right-angle turns, will be relocated, or be removed.
- Intersection of Taxiway E3 connecting to Runway 15L/33R will be relocated or removed.

Taxiway Surface Penetrations

- Aircraft parking that penetrates taxiway surfaces will be relocated to prevent aircraft from penetrating the taxiway surfaces. VSRs that penetrate TSAs will be relocated out of the TSAs. VSRs inside of TOFAs will be relocated where possible.

Direct Access

- All taxiways identified as having direct access from an apron to a runway will have direct access broken by relocating pavement, removing pavement, or adding nonmovement markings and paint .

Fillets

- All taxiways that do not meet TDG-3 fillet design will be updated to allow commercial and GA jet traffic the ability the move around the entire airfield.

Runway Centerline to Parallel Taxiway Centerline

- Taxiway E centerline to runway centerline separation will be increased to meet the minimum 240 feet separation or other means of resolving the nonstandard separation will be evaluated.

4.2.7 Pavement (Apron, Run-up Areas)

Existing pavement conditions are documented in **Chapter 1**. SBA has five run-up areas on the airfield: east of Taxiway A4, parallel to Taxiway C, at the intersection of Taxiways B and G, at the intersection of Taxiways C and E, and on Taxiway A1 at Runway End 25. The run-up areas parallel to Taxiway C, at the intersections of Taxiway B and G, and C and E do not provide enough separation for ADG 3 TOFAs.

4.2.7.1 Recommendations

The following list provides recommendations for the hold-bays.

- Relocate or redesign run-up areas that do not provide enough TOFA separation. If a run-up area will be relocated, then place the relocated run-up area where there will be no environmental impact and will be able to be accessed by aircraft.

4.2.8 Pavement Marking / Lighting / Signage

Existing runway and taxiway lighting is documented in **Chapter 1**. No deficiencies or additional improvements have been identified as necessary for lighting. Runway 7/25 has precision approach markings, and the 15/33 crosswind runways have visual approach markings. Taxiway pavement has edge markings and there are markings for Vehicle Service Roads (VSRs) on aprons. A VSR is a roadway, access lane, passageway, and/or other area designated for the movement of vehicles in the AOA. SBA has markings for aircraft parking at the terminal building and for parking on GA aprons. Hold bay areas have markings to show the boundaries around them. SBA has signage around the airfield to provide directions for pilots as they taxi.

4.2.8.1 Recommendations

The following is recommended for pavement marking, lighting, and signage.

- Relocation of any service roads, parking, hold bays, and Taxiway E will require new markings, lighting, and signage as needed to support any future relocation.

4.2.9 NAVAIDS

Existing NAVAIDS are documented in **Chapter 1**. The Airport would like to plan for installation of a Precision Approach Path Indicator (PAPI) on Runway 7.

4.2.9.1 Recommendations

The following list provides recommendations for NAVAIDS.

- Install a PAPI on the approach end of Runway 7.

4.2.10 Instrument Procedures

Existing instrument procedures are documented in **Chapter 1**. No deficiencies or additional flight procedures have been identified as necessary.

4.2.11 Communication Facilities and Equipment

The Airport is not served by any unified communication network. Voice communications are handled by a radio system with an on-site repeater for operations, maintenance, and safety personnel. Wireless communications for data (Wi-Fi) is only available in certain spots, such as administration and terminal facilities, which makes data associated with Wide Area Local Network (WLAN) only available in selected locations.

The airport's communication network is insufficient for moving about the airport (landside and airside) and recommendations include the addition of fiber optic networks that support Wi-Fi networks, and Local Access Points to bring high-speed data to handheld devices. The airport will require an additional study to define the needed infrastructure for communications and equipment associated with WLAN, Wi-Fi, and network connectivity. The airport completed the installation of fiber optic, high speed internet to the administration, security and operations facilities on January 11, 2024. However, the connection to other WLAN and Local Access Points described above remains a future communication priority.

4.2.12 Airport Traffic Control Tower (ATCT) Services

Existing ATCT conditions are documented in **Chapter 1**. FAA ATCT personnel have advised that the existing tower will likely require replacement due to its end of useful life within the 20-year planning period. A FAA-sponsored tower siting study should be conducted prior to final site selection.

FAA Order 6480.4B, *Airport Traffic Control Tower Siting Process*, establishes the requirements for determining Airport Traffic Control Tower (ATCT) locations based on the following criteria, in descending order of emphasis:

- Impacts to instrument approach procedures (Terminal Instrument Procedures - TERPS)
- Impacts to communications, navigation, and surveillance equipment
- Visibility performance
- Comparative Safety Assessment (CSA)
- Operational requirements
- Economic considerations

An abbreviated visibility performance will be utilized for three potential siting locations and will be analyzed within the **Alternatives Development Chapter**. This baseline level of siting analysis will serve as the planning framework for the Master Plan Timeline Horizon. It is recommended that the airport work with the FAA Air Traffic Organization to pursue an Airport Traffic Control Tower (ATCT) siting study within the near term.

4.2.13 Drainage and Storm Water Facilities

Based on the airport's proximity to the ocean and its mean sea level elevation of 13.4 feet, drainage and storm water facilities are critical.

The following is a list of potential required facility upgrades to meet current demands during normal seasonal periods:

- Correct adversely sloped pipe at Outfall 26 (outfall west of Runway 7/25)
- Correct standing water in pipes at Outfalls 10 and 12
- Correct standing water in Goleta Slough around outfalls
- Improve drainage capacity in Northwest corner of Airport
- Improve drainage capacity at West GA Apron
- Pavement encroachments over Taxiway A3 and West GA Apron
- Pavement encroachments over taxiway connection at east end of primary, taxiway connection at west end of primary, taxiway east of Runway 15L/33R (northern section)

As the airport considers final recommended design and development alternatives in the next chapter, the following items were taken into consideration from a drainage and storm water perspective:

- Probable taxiway removals/reductions/replacements
- Possible crosswind runway removal(s)
- Relocation of Air Traffic Control Tower along north central area
- Reduced taxiway connection at east end of primary
- Potential additional hangars in the northwest quadrant of the Airport
- Ongoing terminal addition
- Replace south apron areas with auto parking
- Long term future additional terminal expansion southward or south and west, including apron expansions westward
- Other potential apron expansion westward
- VTOL vertiports (6 options; two of which are north of Hollister)
- Potential of fuel farms expansion within existing drive circles
- Potential relocation of admin office to 495 Fairview
- Future electric charging stations (in north FBO area)
- AARF to remain with no change

There may be synergy between planned changes for future development alternatives, such as taxiway removals and other airfield modifications and changes required to meet current drainage and stormwater demands. These will be identified and evaluated within the **Alternatives Chapter** as well as directly and independently addressed through the pending airport drainage plan. **Appendix XX** depicts existing facilities including stormwater infrastructure network facilities and drainage sub basin topography.

4.2.14 Conclusion of Airfield System Capacity

The conclusions for this section are listed in **Table 4-11** below.

Table 4-11: **Conclusion of Airfield System Capacity**

Area	Conclusion
Airfield Geometry	Possible removal of one of the crosswind runways and minor taxiway connector reconfigurations.
Critical Aircraft	The critical aircraft will change from a Boeing 737-800 to the newer Boeing 737-800 MAX model.
Airfield Demand / Capacity	SBA is currently operating at 52 percent of its annual capacity. SBA is forecasted to handle 116,887 operations in 2041. The increase in operations will result in SBA operating at 58 percent of annual capacity. No major airfield change will be required for airport capacity purposes.
Airport Design	Relocate service roads out of runway protection zones or to locations that maximize mitigation. Acquire easements for RPZs that are off airport property and modify or adapt land use, as needed, to comply with compatible uses and configurations for a runway protection zone
Wind Coverage	Wind coverage analysis reveals no additional improvements required. There is no justification for the crosswind runways.
Taxiway Design	Taxiway specifications (Taxi Design Group) for SBA is TDG-3, and no change is recommended. Significant required changes to the taxiway layouts, crossings, and locations are identified. Design alternatives to address these modifications are outlined in the next chapter.
NAVAIDs	Site a future PAPI on the approach end of Runway 7
ATCT	FAA personnel have reported that the existing Airport Traffic Control Tower (ATCT) has reached the end of its useful life and should be replaced within the planning period.
Drainage and Storm Water	Drainage and stormwater facilities need considerable enhancement, design alternatives to address these modifications are outlined in the next chapter.

4.3 RUNWAY LENGTH ANALYSIS

This runway length analysis determines the length needed to meet existing and future aircraft demands at SBA. The analysis considers the amount of annual activity and aircraft design characteristics.

The assessment follows these steps:

- Identify the most demanding aircraft.
- Define applicable design guidance using AC 150/5325-4B*, Runway Length Requirements for Airport Design* (AC 5325-4B).
- Perform analysis and identify the recommended runway length.

4.3.1 Overview

The recommended runway length should be able to accommodate the takeoff and landing requirements of the design aircraft. The method for assessing runway length is determined by the aircraft category in AC 150/5325-4B, which is based on maximum takeoff weight (MTOW):

- Small aircraft (MTOW less than 12,500 pounds)
- Large aircraft (MTOW between 12,500 pounds and 60,000 pounds)
- Aircraft with MTOW greater than 60,000 pounds

Performance capabilities of individual aircraft are influenced by factors such as aircraft payload and fuel load, wind conditions, runway elevation, air temperature, and dew point. Runway length calculations are performed for each individual flight that occurs at SBA based on the specific characteristics of the flight and local airport conditions.

Aircraft performance information for small and large aircraft is determined by charts provided in AC 150/5325-4B. Aircraft with MTOW greater than 60,000 pounds have aircraft performance information provided by airport planning manuals (APMs) produced by the aircraft manufacturers.

4.3.2 Runway 7/25 Length Analysis

The Airport has expressed no desire to make modifications to the existing runway ends of Runway 7/25; however, the following analysis provides an examination of the critical aircraft and resulting length analysis.

The critical aircraft expected to use Runway 7/25 on a regular basis throughout the planning period is the 737-800. The *Boeing Airplane Characteristics for Airport Planning* manual for the 737-800 was used in this analysis. Using the average high temperature of the hottest month at SBA (75 degrees Fahrenheit) and the existing runway length of 6,052 feet results in a takeoff capability of approximately 93% of the 737-800's maximum certificated takeoff weight (MTOW). This means that for the majority of 737-800 operations at SBA, the existing Runway 7/25 length is sufficient. Airlines may, on occasion, need to make adjustments to their payloads in order to depart the airport during the hottest days for the longest haul flights.

4.3.3 Runway 15L/33R and 15R/33L Length Analysis

FAA AC 150/5325-4B specifies a different process for conducting length analysis for runways with critical aircraft with a maximum certificated takeoff weight of 12,500 pounds or less. This method calls for using a "family grouping" of aircraft and a "percent of fleet".
This method aims at providing a runway length recommendation for a variety of GA aircraft within the "family" represented by the critical aircraft. For SBA, the "100 percent of fleet" category is appropriate as the FAA defines this application as: "This type of airport is primarily intended to serve communities located on the fringe of a metropolitan area or a relatively large population remote from a metropolitan area."

Using the "100 percent of fleet" and "family grouping" of aircraft in conjunction with the 75-degree Fahrenheit average high temperature of the hottest month results in a recommended runway length of approximately 3,500 feet for the 15L/33R and 15R/33L runways. This resulting length recommendation is 684 feet shorter than the existing 15R/33L runway and 680 feet shorter than the existing 15L/33R runway.

4.3.4 Conclusion of Runway Length Analysis

For Runway 7/25, no changes to the runway length to accommodate the design aircraft are recommended at this time.

For Runways 15L/33R and 15R/33L, no changes are required; however, there may be benefits to a future runway length reduction to help resolve the incompatible service road location near the approach end of Runway 33L.

4.4 COMMERCIAL PASSENGER FACILITIES

4.4.1 Overview

A Terminal Improvement Project (TIP) was conducted, separate from this Master Plan, to analyze and synthesis a forecast of conditions based on available information. The report is a needs assessment to determine what improvements are needed to accommodate future demand in the terminal building. Data included in the TIP project includes the following:

- 2017 Masterplan
- Existing and forecast flight schedule
- Traffic studies
- Other information that was used to create a projected passenger volume throughout the day.

Per the TIP, the current prevalent aircraft type at SBA is the A319, which is operated by American Airlines (AA) and United Airlines (UA). The regional jets were up-gauged to 75-seat aircraft to reflect the announced changes that UA is making with their regional jet fleet. The 737-700 was retained for all Southwest (WN) departures. The WN fleet was not up-gauged as SW has not been deploying the 737-800 to all secondary markets. Alaska Airlines (AS) also operates at SBA with 76-seat regional jets. Passenger load affects various aspects of the terminal complex throughout the day and is driven by the Design Day Flight Schedule (DDFS). The existing DDFS is based on the schedule from August 4, 2022. The DDFS features AA, AS, WN, and UA and features 4 main departure and arrival peaks. Using the DDFS, peak hour deplanements were calculated to be 346 passengers, and peak hour enplanements were calculated to be 474 passengers. **Table 4-12** shows the breakdown of daily departures by the airlines. UA is the majority carrier by total departures and seats, followed by WN.

Table 4-12: Daily Departures

Airline - Aircraft	Number of Departures	Sum of Departure Seats
AS – E75L	4	304
AA – A319	4	512
AA – CRJ9	1	76
WN – B737	6	858
UA – A319	3	384
UA – A320	1	150
UA – B738	1	166
UA – CRJ2	3	150
UA – CRJ7	1	70
UA – CRJ9	1	76
Total	**25**	**2,746**

Source: SBA TIP Memorandum

SBA's proposed plan is to add three or four new gates for the terminal. A future DDFS was developed by adding two new operations to each of the four new gates, adding a total of eight new flights across the entire day. The new flights were added under a new entrant carrier and were added using an A319 aircraft with 128 seats, which is the most used aircraft from the existing schedule. A second change was made to up-gauge all 50-seat regional aircraft in the existing schedule to 76-seat regional aircraft. The changes lead to the peak hour deplanements changing from 346 to 496 passengers, and peak hour enplanements changing from 474 to 590 passengers.

The peak hour deplanements and enplanements form the basis to determine the types, locations, and quantity of space needed at various locations in the terminal. The existing spaces in the terminal are compared with forecasted demand to identify areas that are short of space and where improvements will be needed to meet demand.

4.4.2 Evaluation for Current Demand and Forecast

The following facilities requirements analysis is based on the Corgan - July 2023 Terminal Improvement Project Preferred Concept - Basis of Design (TIP) and is summarized here for the areas listed below. The TIP report provides an evaluation of each part of the terminal building to determine if existing space is sufficient to meet forecasted demand in passenger enplanements and deplanements.

The following areas inside of the terminal building were evaluated:

- Ticket Lobby
- Concessions
- Landside Circulation
- Security Screening Checkpoint
- Airside Circulation
- Holdroom

- Restrooms
- Baggage Claim Area
- Outbound Baggage (BHS and Makeup)
- Rental Car Lobby, Office, and Counter

4.4.2.1 Gates

The TIP adds two contact gates with passenger boarding bridges and two walk-out gates for a total of four gates. The TIP uses a design aircraft – the Airbus A320, which is a narrow-body aircraft similar in size and form to the critical design aircraft specified in the **Aviation Forecast Chapter**. The two walk-out gates utilize the ground floor (level 1), while the two contact gates utilize the second floor. Both gate enhancements have corresponding expansion to terminal facilities such as holdrooms, circulation space, and concessions that are independently summarized in the sections that follow.

4.4.2.2 Ticket Lobby

The ticket lobby includes the ticketing hall, ticketing counters, and kiosks. Requirements were calculated based on peak hour originating passengers, and assumptions were made to calculate the space needed to meet existing and future demand. Data used for calculations was sourced from International Air Transport Association (IATA) ADRM 11, and the following assumptions were made:

- All full-service counters are assumed to be dedicated full-service counter positions. All passengers with a bag will use a full-service counter.
- All kiosks are common-use, and only passengers without bags will use a kiosk.

Ticket Lobby Needs Assessment

Based on anticipated needs, SBA meets demand for physical check-in desks and kiosks to accommodate forecasted demand. Approximately 700 square feet of additional queue space is needed in the ticketing hall.

4.4.2.3 Concessions

Concessions includes the landside and secure-side areas of the terminal. Concessions can be broken down further into food and beverage and retail services. The existing footprint of concession areas in the terminal is 4,630 square feet, broken down into 3,680 square feet in the secure area of the terminal and 950 square feet in the landside area of the terminal. The following assumptions were made:

- The recommended split for square footage is 80 percent for secure-side and 20 percent for landside when accounting for total concessions square footage.
- Based on guidance from IATA ADRM 11, the recommended concession distribution for retail is 30 percent and food and beverage is 70 percent.

Concessions Needs Assessment

Based on anticipated needs, SBA will need a total concession footprint of 7,200 square feet. Secure-side concessions will require a total of 5,760 square feet, which would require an addition of 2,080 square feet to existing facilities. Landside concessions will require a total of 1,440 square feet, which would require an addition of 490 square feet to existing facilities. Based on the IATA guidance listed in the assumptions, the total square footage of retail concessions inside of the terminal building should be 2,160 square feet, and food and beverage should be 5,040 square feet.

4.4.2.4 Landside Circulation

The following initial recommendations are summarized within the TIP:

- No additional improvements along Fowler or Moffett are needed.
- Additional long-term parking stalls will be needed to meet future demand. The current amount of 757 stalls will need to be increased to 1,470 stalls.
- No additional short-term stalls are needed.
- Cell-phone lot was not considered.
- The number of lanes in the landside loop roadway currently provided is sufficient to accommodate forecast demand. An additional roadway lane on the inner curbside would allow double parking during peak periods and flexibility for future growth but is not required to accommodate forecast demand through 2033.
- Inner and outer curbs for taxis, TNC, limos, shuttles, and busses are all sufficient to meet current demand.

4.4.2.5 Security Screening Checkpoint

The Security Screening Checkpoint (SSCP) represents the passenger volume sum of check-in hall output and passengers who bypass check-in and go straight to SSCP. Data used for calculations was sourced from International Air Transport Association (IATA) ADRM 11. The existing area has three lanes and a square footage of 1,800 square feet, which includes two general boarding lanes that are 1,200 square feet and one pre-check lane that is 600 square feet. Assumptions for the SSCP are:

- Lanes process at a rate of 215 passengers per hour per lane for pre-check passengers.
- Lanes process at a rate of 150 passengers per hour per lane for regular passengers.
- Passengers are broken down into 30 percent pre-check and 70 percent general boarding.
- TSA recommends a minimum of 600 square feet of queue area per lane.

Security Screening Checkpoint Needs Assessment

Based on anticipated needs, SBA will need an expansion to the SSCP to accommodate two additional processing lanes and queue space. However, due to insufficient space to add additional SSCP lanes, there is only enough room to incorporate one additional lane in the terminal. Upon discussion with SBA, a resolution was made to increase the max allowable queue time for pre-check and general boarding lanes to 5 and 15 minutes, respectively. The increase in max queue time results in a decrease of additional lanes needed to meet demand. The increase in queue time changes future demand to one additional lane, for a total square footage of 2,400 square feet for the SSCP area, an increase of 600 square feet.

4.4.2.6 Holdroom

Holdrooms are provided at each gate or group of gates, this includes seating and standing areas for passengers and check-in podiums for airline agents. Holdroom requirements are based on a design aircraft type for each gate. The existing holdroom is 7,600 square feet, with 5,500 square feet for passengers to sit and stand and 2,100 square feet for check-in podiums and airline agents.

Assumptions for the holdroom are Gates will be split between regional jets and narrowbody jets.

- 8 future gates are needed, in total to meet demand. 4 as outlined in TIP, 4 additional for project activity level 2 and 3 outlined in Table 4-14.
- Holdroom requirements are based on formulas and level-of-service guidelines in IATA ADRM 11

Holdroom Needs Assessment

Based on anticipated needs, SBA will need to expand the holdroom by an additional 7,737 square feet and add an additional four gates for airline service. Two of the future gates will be designed for the A319 with 128 seats, and the remaining two gates will be designed for the E175 with 76 seats.

4.4.2.7 Restrooms

Restrooms include the total area of restrooms in the landside and secure side of the terminal. Based on the TIP there is a total square footage of 2,200 square feet of restrooms in the terminal. The TIP does not provide a breakdown on the square footage of restrooms that are for men or women or how square footages are split between the landside or secure-side of the terminal. A summary of the square footages based on the latest terminal floor plan breaks down these areas into the following:

- Secure Side
  - Men Restrooms: 8 fixtures, 4 sinks, total area of 445 square feet
  - Women Restrooms: 11 fixtures, 6 sinks, 608 square feet
  - Total: 19 fixtures, 10 sinks, 1,053 square feet
- Landside
  - Men Restrooms: 7 fixtures, 5 sinks, 361 square feet
  - Women Restrooms: 8 fixtures, 6 sinks, 465 square feet
  - Total: 15 fixtures, 11 sinks, 826 square feet
- Terminal Totals
  - Men Restrooms: 15 fixtures, 9 sinks, 806 square feet
  - Women Restrooms: 19 fixtures, 12 sinks, 1,073 Square feet
  - Total: 34 fixtures, 21 sinks, 1,879 square feet

There is a difference of 321 square feet between the 2019 Cap Study and the latest terminal floor plan. Assumptions for future restroom demand is as follows:

- The principal demand driver for concourse restrooms is arriving passengers.

- Restroom requirements are based on the peak 20-minute period for arriving passengers and toilet fixture and sink requirements are calculated using ACRP Report 130.
- 40 percent of arriving passengers use the secure-side restrooms, and landside restroom requirements are not subject to peak surging demand.

Restroom Needs Assessment

Based on anticipated needs, SBA will need to add an additional two fixtures and one sink for male restrooms and three fixtures and two sinks for female restrooms to accommodate added operations in the future schedule. Restroom expansions for fixtures and sinks should be sized for their "catchment" areas and checked against code requirements.

4.4.2.8 Baggage Claim Area

The baggage claim area consists of bag slides with hall area for passengers to wait for bags instead of carousel devices. The baggage claim area consists of a hall area, frontage, and Baggage Service Office (BSO). The hall area is 3,800 square feet, the frontage is 84 square feet, and the BSO is 300 square feet. Assumptions for future restroom demand are as follows:

- Requirements for baggage claim were based on the number of slides needed for the number of flights in the peak period.
- Hall area requirements were based on the maximum number of people arriving in a 20-minute period.
- Data was based on IATA ADRM 11.

Baggage Claim Area Needs Assessment

Based on anticipated needs, SBA will need an additional bag slide and 1,400 square feet of claim-hall area to meet future demand. There is no anticipated need for more frontage area or BSO expansion.

4.4.2.9 Outbound Baggage (Baggage Handling Systems and Makeup)

The existing outbound baggage area includes the makeup area and bag screening area. The makeup area, where bags are sorted and arranged according to their destination before being loaded onto the aircraft, is 8,450 square feet and the bag screening area is 2,400 square feet, a total area of 10,850 square feet. Assumptions for outbound baggage is as follows:

- Formulas for baggage inspections systems were provided by the Transportation Security Administration (TSA)
- Planning guidelines and design standards used in determining future demand on the baggage handling systems (BHS) and makeup areas.
- Outbound baggage makeup requirements are based on check baggage peak 4-hour periods and are calculated using formulas from ACRP Report 25.

Outbound Baggage (BHS and Makeup) Needs Assessment

Based on anticipated needs, SBA will need an additional 3,000 square feet of makeup area. However, it is possible that the increased demand can be accommodated with the existing area and operational solutions.

4.4.2.10 Rental Car

The rental car area contains the counters, offices, and queue area for the rental car agencies – a total of 1,140 square feet. The assumption for this area is that there is infrequent peaking of customers for the rental car agencies.

Rental Car Needs Assessment

Based on anticipated needs, SBA will not need any expansion to the existing rental car area. The infrequent peaking of customers is not sufficient to warrant an expansion of the area, and the existing area is sufficient to maintain an acceptable level of service.

4.4.2.11 Terminal Planning Considerations Beyond the TIP

There is a level of uncertainty associated with long-range demand forecasting and associated planning exercises performed as part of a master plan. As a result, planning activity levels (PALs) are identified to inform the future levels of passenger activity, air cargo tonnage, and aircraft operations at which facilities become congested and expansion would be required. PALs help to disassociate projects from specific years as realized activity levels may occur earlier or later than the forecast predicts. With PALs, airport management can accelerate or decelerate projects in the capital improvement program based on how demand occurs in the future. Three PALs were selected to represent near-, mid-, and long-term planning. PAL 1 corresponds to near-term aviation demand that is expected to occur in the 5-10-year time period; this correlates to the activity levels addressed and solved for in the TIP. PAL 2 correlates to expected demand in the 10-20-year range, and PAL 3 correlates to demand that is projected to occur beyond 20 years in the future. The aviation demand associated with each planning activity level is summarized in **Table 4-13**.

Table 4-13: Aviation Demand Associated with Each Planning Activity Level

	Existing	PAL1	PAL2	PAL3
Passenger Enplanements	**342,000**	**575,000**	**725,000**	**1,100,000**
Aircraft operations	103,419	173,877	219,236	332,634
Total Commercial Aircraft Operations	22,639	38,063	47,992	72,815
Annual Passengers	684,000	1,150,000	1,450,000	2,200,000
Passenger peak hour deplanements	474	794	1000	1,518
Passenger peak hour enplanements	346	582	733	1,113
Passenger RON Spots	2	2	2	2
Peak Hour Passenger Departures	33	55	70	106

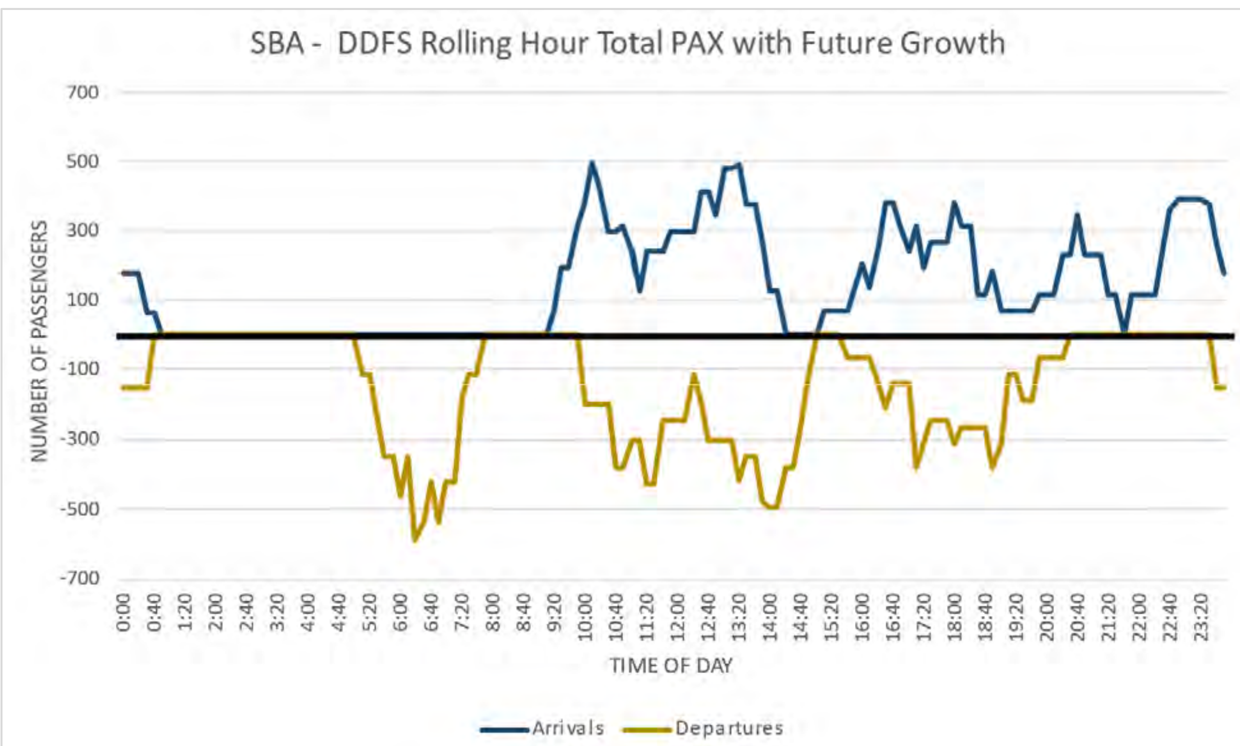
4.4.2.12 Future Flight Schedules

Detailed aircraft flight schedules provide a planning-level synopsis of future aviation activity (peak periods, time-of-day, departures and arrivals, fleet mix, etc.) and are used to generate the facility requirements contained in this chapter, especially as they relate to the passenger terminal, ground transportation, and air cargo needs.

Historical enplanement and operation records at SBA are based on data from the United States Department of Transportation (U.S. DOT) T-100 database and records provided by SBA's air traffic control tower (ATCT). The T-100 form is filled out monthly by scheduled, charter passenger, and cargo airlines. This database provides a detailed record of passenger and cargo airline activity. The data used for enplanements and scheduled commercial service is based on T-100 records as they have detailed information about operations, airlines, and aircraft type. SBA ATCT records are used to verify T-100 information and to supplement operational data not captured in the T-100 records.

For future flight schedules, the base-year 2021 ADPM schedule was grown based on forecast passengers and operations as well as interviews conducted with airlines serving the airport. The activity profiles associated with the expected passenger peak period volumes are shown in **Figure 4-12** (provided by Corgan in **Appendix XX**).

Figure 4-12: Passenger Peak Period Volumes for Estimated Future Flight Schedules



Source: Corgan Statistic Model

4.4.3 Summary of Requirements

Facility requirements are organized according to functional areas of the airport. As shown in **Table 4-14**, many airport facilities improvements will develop sufficient capacity to accommodate forecast activity levels throughout PAL 1. This is primarily due to the TIP recommendations as it is assumed that the airport will complete the recommended project initiatives.

However, a number of facilities will need to be modified or expanded throughout the planning period to accommodate future activity, improve Airport operational capabilities or levels of service, or meet key design standards. Notable elements contained within the Project Activity Levels Facility Requirements Summary include:

- **Airfield** – The existing airfield facilities provide sufficient capacity to accommodate baseline forecast aircraft operations through PAL 3. However, FAA personnel recommend refurbishment or replacement of the air traffic control facilities.
- **Passenger Terminal** – The existing passenger terminal requires expansion throughout the planning period to provide sufficient passenger security screening, passenger holdrooms, concessions, restrooms, and aircraft gates.
- **Ground Transportation and Landside Circulation** – The public parking lots are currently operating at high levels of occupancy throughout the year, and they are often full in peak months. While Transportation Network Companies (TNC) introduce some uncertainty regarding the relationship between passenger demand and parking demand, the airport should consider additional parking solutions as activity levels pass PAL 1.
- **Air Cargo** – Air Cargo is absent from the Project Activity Levels Facility Requirements Summary. Forecasted demand for air cargo is flat and does not necessitate cargo facility expansion. However, plans should be prepared to identify additional parking for air cargo aircraft should FedEx grow their operation or have fleet change modifications or should another integrated carrier like UPS come to the airport.
- **General Aviation** – Corporate and business aviation at the Airport is growing, and the rate of hangar occupancy associated with this industry is consistently in the 95% range. Tenants and entities routinely contact the Airport to inquire about space. Accordingly, the airport should be prepared to accommodate 142 based aircraft in the near term, 167 aircraft in the midterm, and 185 aircraft in the long term.
- **Rental Car** – Rental car support facilities appear to be capable of accommodating PAL 3 demand with only minor improvements over the planning period, as necessary.

Table 4-14: Facility Requirements - PAL

	Existing	PAL 1	PAL 2	PAL 3
Critical Aircraft	737-800	737-800 MAX	737-800 MAX	737 Max 9
Airport Reference Code	D-III	D-III	D-III	D-III
Runway Length	6062 X 150	6062 X 150	6062 X 150	6062 X 150
Passenger Terminal				
Ticket Lobby (Total square feet of counter + queue)	2200	2900	3650	5511
Ticket Counter (Total number of positions)	28	28	32	36
Kiosks (Total number of kiosks)	6	6	8	12
Landside Concessions (Total square feet)	950	1440	1820	2750
Airside Concessions (Total square feet)	3680	5760	7250	11000
Security Screening Check Point (Number of lanes)	3	3	3	5
Security Screening Check Point (Total square feet)	3840	7590	7590	12,650
Gates	4,1	6 contact 2 walk out	7,1	8
Holdroom Area	7600	20400	23800	27200
Airside Restrooms	19 fixtures, 10 sinks, 1053 square feet	22 fixtures, 11 sinks, 1210 square feet	25 fixtures, 12 sinks, 1375 square feet	29 fixtures, 14 sinks, 1595 square feet
Landside Restrooms	15 fixtures, 11 sinks, 826 square feet	17 fixtures, 12 sinks, 935 square feet	19 fixtures, 13 sinks, 1045 square feet	22 fixtures, 15 sinks, 1210 square feet
Bag Slides and Carousels	2 slides	2 slides 1 carousel	2 carousels	3 carousels
Bag Claim (Total square feet)	3841	7445	7445	9745
Outbound baggage Makeup/Baggage Handling (Total square feet)	10850	11300	14230	21500
Rental Car Counter & Office Area (Total square feet)	1140	1140	1436	2168
Rental Car Offices	4	5	6	9
Rental Car Ready/Return Spaces	151	190	239	360
General Aviation Based Aircraft	141	177	223	336
Totals				
Square Foot Sum (Total square feet)	31901	57975	67221	92524
Net Increase (Total square feet)	0	26074	9246	25303

* Denotes solution that includes a double wide pick up/drop off lane providing total capacity

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4.4.4 Conclusion of Commercial Passenger Facility

Most facilities within the passenger terminal will need to be updated, expanded, or enhanced to meet future needs. In general, the major areas of improvement are as follows:

- Short term and long-term parking facilities will need significant capacity upgrades.
- Landside circulation roadways, curbs, and waiting areas need modest upgrades for long-term capacity needs but will meet the demand in the mid-term (5-15 years).
- Gates, ticket counters/lobbies, and kiosks need considerable capacity upgrades to meet near-term demand.
- Security screening check point expansion is not required in the near-term but will require expansion to meet long-term demand. The SSCP queuing area requires significant expansion to meet short-, mid-, and long-term passenger needs.
- Rental car facilities meet current and mid-term demands but will need enhancement to meet long-term demand.
- Significant capacity building in the airside and landside concessions facilities is required to meet short-, mid-, and long-term demand.
- Baggage claim and restroom facilities both met short-term demand but will require modest enhancement to meet mid- and long-term demand.

Detailed development alternatives to meet capacity demands for the SBA Passenger Terminal are located in the TIP in **Appendix XX**. The TIP describes solutions for the short-term terminal and landside facility requirements. The Terminal Improvement Project currently underway programs some of the recommended facilities and it is anticipated that the airport will carry out these enhancements.

4.5 GENERAL AVIATION FACILITIES

General aviation facilities at Santa Barbara are struggling to meet current demand. **Figure 4-13** contains a list of typical general aviation services offered at an airport of commensurate size and capacity with similar demand. Recent reorganization of the airfield placing two Fixed Based Operators (FBO) in the north quadrant have affected the overall service offering for general aviation aircraft. The availability of fuel, hangars, ramp space, rest facilities, landside parking, and other amenities typically associated with FBOs are limited considering the sophisticated nature of the average clientele operating into and out of the airport. Discussions with one of the fixed based operators revealed a need for additional ramp parking spaces from mid-size to large turbine aircraft as well as enhanced fuel facilities to meet current fuel volume upload demands. Other facilities in need of improvement or enhancement are also requested, including client meeting areas, customer service areas, pilot lounge facilities, and administrative office spaces. Hangar space for visiting aircraft remaining overnight is also limited. This portion of service offerings for the FBO is growing as the size and complexity of the fleet mix continues to expand. Owners and operators of turbine aircraft are requesting secure storage of the aircraft overnight as opposed to leaving the aircraft tied down on the ramp. It is common to have two fixed based operators on an airport of this size. SBA has two FBOs, Atlantic and Signature. The airport is conducting a feasibility analysis to consolidate general aviation activities in the north quadrant. The Airport will release a Request for Proposals to FBOs in the near term to develop two FBO leaseholds as contemplated in the 2017 Master Plan. Hangars owned by an FBO, the airport, or a private developer may provide additional storage and services to the general aviation community. The exact location, facility size and orientation will be outlined within the alternatives chapter of this document.

Figure 4-13: Typical General Aviation Services

100 Low Lead Line Service	Catering Refrigeration	Nitrogen
Fuel System Icing Inhibitor (Prist)	Dishwashing	Oxygen
Jet A Line Service	Flight Planning	Potable Water
Volume Discount programs and contract fuel	Fuel Farm and bulk fuel handling, quality assurance and control	Sports Charter Handling
Aircraft Cleaning	GPU KVA	Taxi Service
Aircraft Detailing	GPU VDC	Tie Downs
Aircraft Lubricants	Helicopter Handling	Transient Hangar Space
Aircraft Maintenance	Hotel Booking	Transport Category Handling
Aircraft Parking	Ice	Vacuum Cart
Aircraft Parking Long Term	Laundry Service	VIP/Head of State Handling
Avionics Service	Lavatory Service	Water Service
Baggage Carts	Limousine Service	Wheelchairs
Catering	Medical/Ambulance Capabilities	Aircraft and client security

4.5.1 Hangars

General aviation requires two distinctly different hangar products: one would accommodate a small reciprocating/piston single engine or multi engine aircraft and the other, much larger hangar size would accommodate turbine aircraft ranging in operating weights above 12,500 pounds to 125,000 pounds. Typically, small general aviation hangars accommodating piston-driven aircraft are developed by a private company under a lease agreement with the airport and then marketed as such. Hangars providing coverage for larger turbine aircraft may be owned by private individuals, fixed based operators, the airport itself, or any combination thereof. Understanding the hangar business model and local marketplace is outside the current scope of this master plan; however, it is assumed that the demand for large turbine aircraft hangars is strong at the airport. During the outreach process, the general aviation community flying smaller piston aircraft was vocal about requesting updated hangars and amenities.

4.5.2 Aircraft Parking, Storage Services

Ramp and hangar parking capacity is not currently meeting demand. Additional facilities are required to meet demand for small piston engine aircraft through large turbine aircraft. As the fleet becomes more sophisticated, larger, and more costly, aircraft owners, pilots, and operators are moving away from ramp parking and tie down rental to hangars and storage arrangements that provide a higher level of environmental protection and security. Demand for exposed outdoor tie downs or shade hangars is not anticipated. Demand for temporary overnight ramp storage and hangars is expected to remain throughout the planning period. During the planning horizon, the preferred forecast anticipates a 1.37% growth in based aircraft, which equates to 142 based aircraft in the near term, 167 aircraft in the midterm, and 185 aircraft in the long term.

4.5.3 Legacy GA Support Facilities and Utilities

4.5.3.1 Historic Structures, Preservation, Challenges for Upkeep Overtime

Two types of historic structures currently exist on the airport – those protected by statute and those structures without protection simply existing in their current state. For the purposes of this chapter, there are no facility requirements of these structures except the demand to protect and repair those facilities. This means that the airport has no need currently identified need for these facilities that would require specialized enhancement or care. Some facilities, such as 521 Firestone Road and 404 Moffett Place, are not historically protected but may have future facility value and are in need of repair and updating. These structures may offer some capacity in the future for various needs but have no current planned use.

4.5.4 Emerging Technologies Such as Advanced Air Mobility, Electric VTOL, Electric Aircraft

4.5.4.1 Advanced Air Mobility General Overview

Trends revolving around Advanced Air Mobility (AAM) are creating the potential to introduce new modes of transportation for goods and people, new infrastructure such as vertiports, and new aircraft. The Federal Aviation Administration (FAA) defines AAM as a new transportation system that can help to increase access to areas that are underserved by the current aviation industry. AAM use-cases will vary depending on the diverse needs of the airport, community, and passengers. When the market matures, AAM will allow passengers access to point-to-point transportation, goods delivery, and emergency services through an integrated and connected multimodal transportation network.

4.5.4.2 Electric Aircraft Characteristics

There are several original equipment manufacturers (OEMs) that have conceptual aircraft in development and are waiting for certification. The conceptual aircraft fall into three general categories:

- **Short Take-off and Land (STOL) Aircraft:** Require a short runway for take-off and landing. Electric STOLs (eSTOLs) will have the capability to use existing taxiway and runway systems since they can operate like traditional aircraft.
- **Vertical Take-off and Land (VTOL) Aircraft:** Can take off, hover, and land vertically. Electric VTOLs (eVTOLs) will require a significant amount of energy to hover and potentially new air route corridors.
- **Conventional Take-off and Landing (CTOL) Aircraft:** Also known as horizontal takeoff and landing aircraft, conventional aircraft use fixed wings rather than rotors to take off and land and require runways. Electric CTOLs (eCTOLs) will have the capability to use existing taxiway and runway systems since they operate like traditional aircraft.

It is important to note that the majority of electric aircraft will be fully electrical or hybrid electric, but there are OEMs that have conceptual aircraft with propulsion systems comprised of petroleum and hydrogen.

4.5.4.3 AAM Use Cases at Airports

Commercial and GA airports have the potential to play major roles in the implementation and use-cases of AAM due to existing infrastructure such as air traffic control towers (ATCTs), fixed based operators (FBOs), terminals, hangars, runway systems, heliports, and parking aprons. Airports may need to identify designated areas for AAM facilities such as charging infrastructure, vertiports, and utility infrastructure. AAM has the potential to help airports obtain their sustainability and equity goals by providing another alternative for transportation using environmentally friendly modes of transportation.

4.5.4.4 Potential Benefits of AAM at Airports

Potential benefits of AAM at airports include:

- Reduction in emergency response times / natural disaster response capabilities.
- Increased range of access to various destinations (rural and urban).
- Economic opportunities.
- Increased utilization of GA infrastructure.
- Lower emissions and noise pollution to surrounding communities.

4.5.4.5 Electric Infrastructure

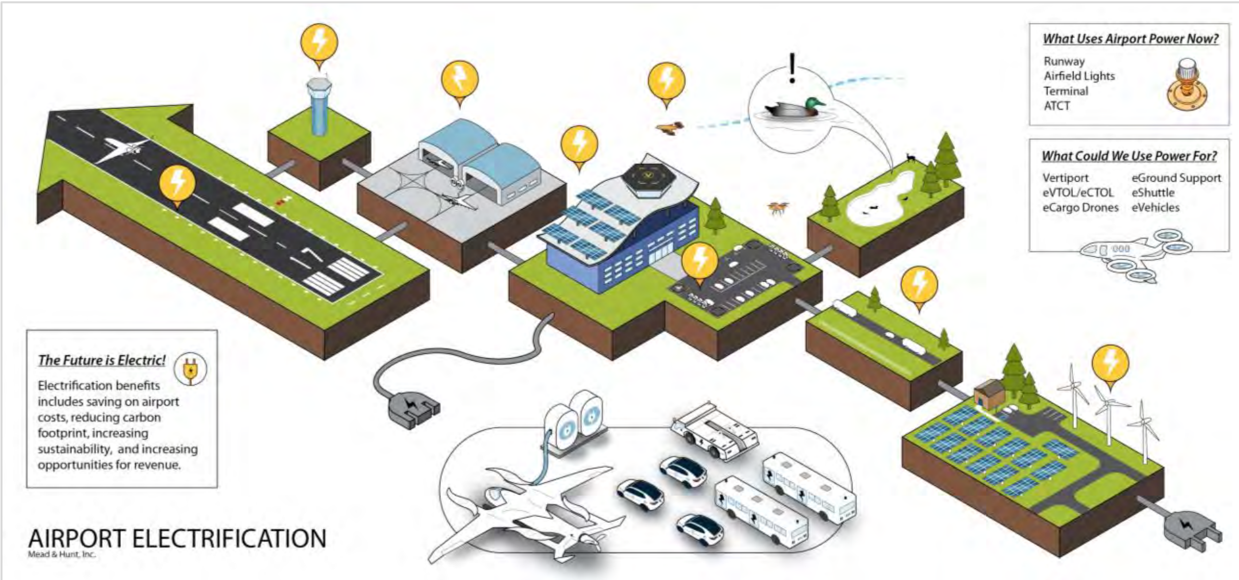
To replenish electric and hybrid-electric aircraft batteries, electric charging infrastructure will be required to support electric aircraft operations. Like their jet fuel counterparts, each aircraft, flight route, and mission will have different operating requirements and need different ground resources. Commercial aviation flies on a schedule and will need fast charging capabilities to meet short turnaround requirements. General aviation is less scheduled and charging needs will be on a more ad-hoc basis.

4.5.4.6 Fixed and Mobile Chargers

Small commuter aircraft and hybrid regional aircraft may benefit from electric power supplied to the aircraft from the gate. Gates can provide 400 hertz (Hz) power units connected to the grid or ground handlers operating mobile ground power units (GPUs) can be used for charging. Other general aviation facilities could elect to equip part of their aircraft stand with chargers. High density tie-down parking layouts could be supplied with built-in or pop-up charging stations. Airport hangars can be equipped with built-in, portable or battery pack equipped GPUs as well.

Commercial aircraft operations (commuter, light air cargo, and regional air carrier) will benefit from the installation of more powerful charging systems. A quick turn-around can be achieved by using higher-powered fast chargers.

Figure 4-14: **Airport Electrification**



Source: Mead & Hunt, 2022.

4.5.4.7 Implementation of Infrastructure

There are four key steps when it comes time to plan and build aircraft charging infrastructure:

1. Site Evaluation
2. Accounting for Environmental Impacts
3. Construction and Design
4. Operating AAM

Step 1 – Site Evaluation

Key considerations in the implementation of electric aircraft consist of the following:

- Proximity to electrical utility lines.
- Connectivity between the landing area and charging stations.
- Availability of facilities and services for operators and cargo.
- Sensitivity of impacted environmental resources.
- Compatibility with airspace surfaces for the charger and aircraft.

Some electric aircraft have wingspans of 50 feet or more. Setbacks and object free areas will need to be checked, and aircraft will need room to park when they are done charging.

Strategically placed chargers can boost airport revenue as operators spend money while the aircraft is charging. Siting chargers near an FBO or GA terminal are ways to provide many of the services aircraft operators may need. Installing automobile chargers in adjacent parking lots can help bring in additional airport revenue and leverage any investment in utility extension.

Step 2 – Accounting for Environmental Impacts

Construction on a federally obligated airport requires some level of environmental review. The FAA will determine its level of environmental oversight through the Section 163 process as described in the FAA Reauthorization Act of 2018. Chargers are generally unintrusive and environmental review is minimal; however, consideration should be given to extensions of utility lines to the charging site. There may be environmentally sensitive areas between where the utilities exist and where they need to be, which could lead to a more complicated project if the sensitive areas cannot be avoided.

Step 3 – Construction and Design

Building chargers follows the same principles as any other type of airport construction. FAA Form 7460-1 needs to be submitted for airspace review, a construction safety and phasing plan is needed, and notice should go out to any tenants and users that may be affected by construction activities. Once the charger is up and running, remember that FAA grant assurances apply, and revenue generated at the airport has to be reinvested in the airport.

Step 4 – Operating AAM

Going forward, open communication is important during the four steps to implementing electric aircraft charging infrastructure. The future of aviation is rapidly changing, and understanding the processes and procedures will lead to efficient electric aircraft operations alongside its implementation process.

4.5.5 Conclusion of General Aviation Facilities

The conclusions for this section are listed in **Table 4-15** below.

Table 4-15: **Conclusion of General Aviation Facilities**

Area	Conclusion
Hangars	The airport will need to construct a variety of general aviation hangar products to meet demand in the long term. Forecasts project an increase of 44 additional based aircraft within the planning period.
Legacy GA Support Facilities	The historic general aviation facilities are protected by statute and have not been considered in the facility requirement considerations of the airport.
GA Facilities	The non-historic general aviation facilities such as 521 Firestone Road and 404 Moffett Place need repair if the airport chooses to use them to meet administration, storage, or other business lease uses.
Emerging Technologies	The airport should consider planning vertiports and VTOL facilities as this technology develops. The airport will need to anticipate installation of e-charge facilities. Capacity for e-charging facilities will need to be considered on a case-by-case basis, no specific alternative for development of this technology is considered. The guidance outlined here gives the airport some framework to consider a future development process.

4.6 APRON

The commercial service apron located at the passenger terminal will require expansion to accommodate future gate expansion. In addition, overnight aircraft parking will require apron expansion and potential reconfiguration. Potential removal of the crosswind runway and changes to the parallel taxiway will be discussed within the **Alternatives Chapter**. Additional apron space and reconfiguration will be required. The airport is conducting a general aviation redevelopment study that will move current general aviation facilities into the north quadrant and likely precipitate future apron expansion needs in this area.

4.6.1 Conclusion of Apron

The conclusions for this section are listed below.

- Additional apron space and reconfiguration will be required to meet both future demand and accommodate future expansion of gate and RON spaces. As the long-term terminal expansion concepts are outside of the 20-year planning period, exact apron space needs are not provided in this Master Plan.

4.7 CARGO FACILITIES

The purpose of this section is to identify the facilities required to support air cargo operations at the airport. The movement of freight is often transported by dedicated cargo airlines, passenger airlines, freight forwarders, trucking, and custom brokers. SBA air cargo services include Empire Airlines and West Air, Inc., operating on behalf of FedEx, and Ameriflight, operating on behalf of United Parcel Service (UPS). Additional cargo is also transported on Alaska Airlines, American Airlines, and Horizon passenger flights. Air cargo operations at SBA are categorized as air taxi/commuter operations due to the aircraft being used. SBA is considered a small operation for air cargo, as the airport is within driving distance to Los Angeles and San Francisco, which have the means to operate a large portion of cargo traveling into the region. Cargo transported into SBA are often packages requiring a faster delivery time than what could be transported via ground transportation delivery services. SBA is part of a larger hub-and-spoke system servicing the region.

4.7.1 Cargo Buildings / Hangars

Primary air cargo facilities include the cargo apron, building space, and vehicle parking. Located on the eastern apron, FedEx is currently operating the only on-site cargo facility at SBA. FedEx leases approximately 50,000 square feet of the Ampersand hangar complex where primarily freight and mail are processed. Ameriflight aircraft, servicing UPS cargo, off-load on the north general aviation ramp into the UPS delivery trucks and are trucked off-site for processing.

The current air cargo facility processed approximately 1,537 tons of total cargo in 2021, which is approximately 67.7 pounds per square foot. Utilization of more than 1,000 pounds (0.5 tons) of cargo per square foot of building is considered to be in excess of the utilization ratio set forth by industry standards. SBA's current utilization rate is well below the average pound per square foot, which indicates that available cargo space is more than adequate to support the current and future need of air cargo tonnage. As indicated in the forecast, air cargo is anticipated to remain steady throughout the planning period; therefore, there is no need for additional cargo square footage.

4.7.2 Cargo Apron

The aircraft apron serves as a crucial maneuver area for loading and unloading air cargo as well as for parking aircraft. There is roughly 30,700 square yards of aircraft parking apron adjacent to the Ampersand complex, and both UPS and FedEx share the apron. FedEx primarily operated the Cessna 208 Caravan at the airport and Ameriflight (UPS) currently operates the Beechcraft 1900. FedEx has recently upgraded its regional cargo fleet in 2023 and 2024 to the Cessna 408 SkyCourier.. Configuration of the apron is underway to determine taxiing and parking options for the new model aircraft; however, no increase in air cargo apron area is warranted at this time as the demand and capacity will remain the same. **Figure 4-15** (on the next page) is an example of the potential parking and taxiing options being developed to accommodate the Cessna 408 aircraft.

Should air cargo operators alter the type of aircraft operating at SBA again, the existing apron will need to be reevaluated to accommodate the larger aircraft. According to the recent pavement condition report developed, the existing cargo apron is in satisfactory condition and, with regular maintenance, will continue to support a similar level of service.

4.7.3 Forecast

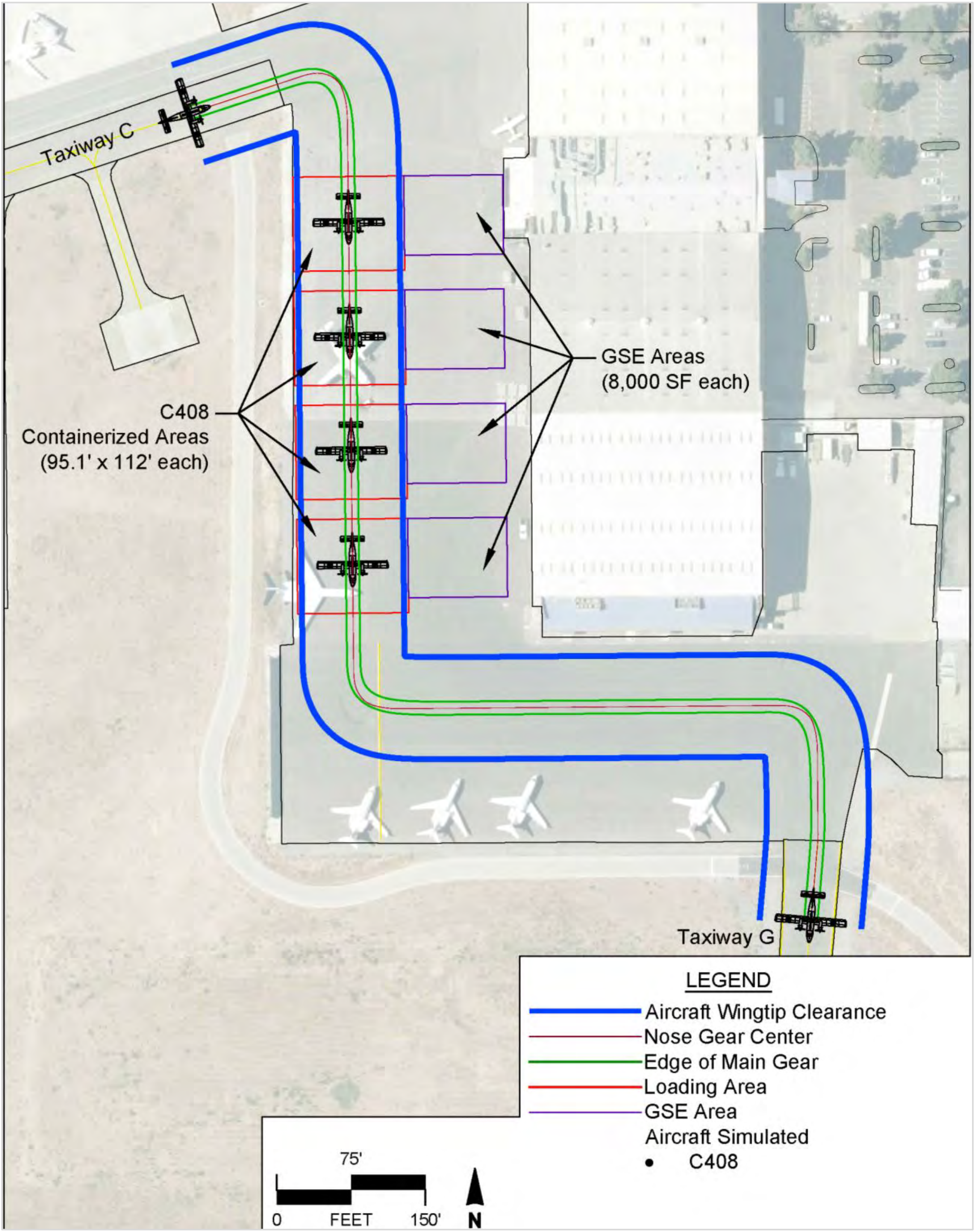
The projected air cargo activity is expected to be lower than the COVID-19 pandemic period of FY2020 and FY2021, but it will remain flat through the forecast period. Cargo volume is also projected to remain flat; however, it is anticipated that additional volume will be accommodated at the projected aircraft operation levels as not every flight utilizes the full payload capacity of the aircraft. Existing ramp space and facilities are projected to meet future demand; therefore, no significant facility upgrades for cargo are recommended.

4.7.4 Conclusion of Cargo Facilities

The conclusions for this section are listed below:

- The current facility meets near-, mid-, and long-term needs with no expected changes in demand.
- If cargo operators make changes to their aircraft fleet, the airport should consider apron enhancements.

Figure 4-15: Example Configuration for New FedEx Cessna 408



Source: Mead & Hunt

4.8 SUPPORT FACILITIES

4.8.1 Airport Administration

The airport is in need of additional airport administration office and facility space. The current administration building is in a prime airside facility area and is identified to be part of the FBO redevelopment leasehold RFP. The area most considered for future administration facilities is 495 Fairview Avenue at Building 245. Discussions regarding dispersed facilities for various disciplines may be supported based on the diverse facilities currently located on the airport. For example, safety and security personnel may be accommodated within the terminal, engineering and operations staff may be located either at the current building (495 South Fairview) or 404 Moffett Place, and other general administration staff may be located elsewhere.

4.8.1.1 Conclusion of Airport Administration

The conclusions for this section are listed below:

- The current airport administration facilities do not meet current needs.
- Two alternatives exist for future administration locations.

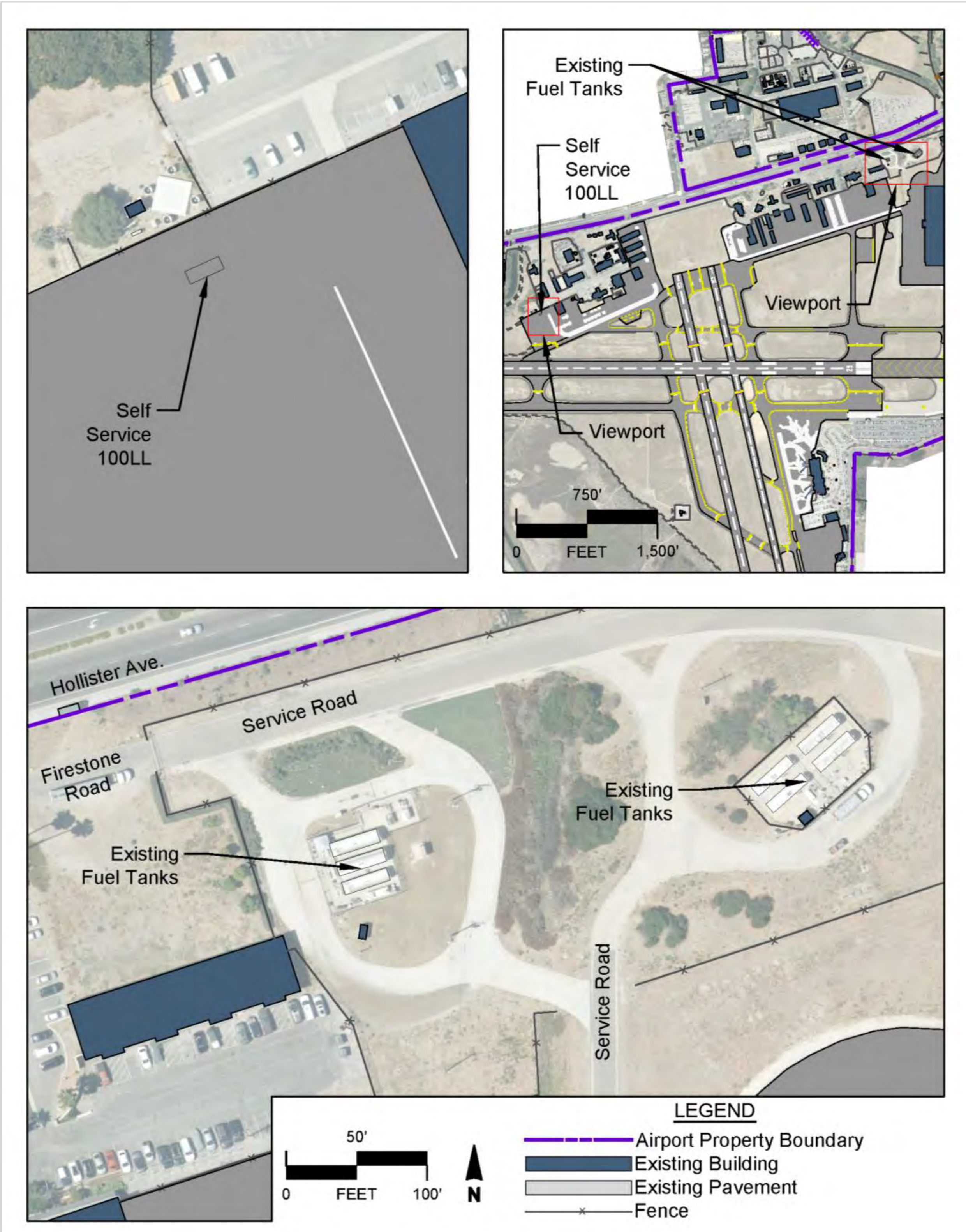
4.8.2 Fuel Storage

The fuel facilities at the airport are summarized below:

- Fuel Tank ownership – Owned by Atlantic and Signature
- Atlantic Aviation:
  - Two (2) 20,000-gallon Jet A fuel storage tanks
  - One (1) 12,000-gallon Avgas (100LL)
  - Smaller tanks for automotive fuel (MoGas) and diesel fuel
- Signature Flight Support:
  - Two (2) 12,000-gallon Jet A fuel storage tanks
  - Two (2) 10,000-gallon Jet A fuel tanks
  - One (1) 12,000-gallon 100LL self-serve station – owned and managed by MAG Aviation

The airport has identified the need for fuel storage facilities. Currently, the airport noted two separate occasions in the past five years where the airport ran out of fuel due to road conditions. When major disruptions to the Highway 101 corridor (fire, mudslides etc.) have occurred, the airport has run out of fuel and airlines had to ferry fuel in to accommodate flight schedules. During discussions with the airport, the amount of fuel on site would last the airport "a few days" before running out. Discussions with one FBO also supported the need for enhanced fuel facilities, including significant need for increase JET-A capacity based on increasing upload amounts to accommodate larger aircraft and the changing fleet mix. **Figure 4-16** shows the locations of the on-site fuel farm and 100LL self-fueling station. These sites could support inclusion of sustainable aviation fuels as well as traditional fuel.

Figure 4-16: On-Site Fuel Farm and 100LL Self-Fueling Station



Source: Mead & Hunt, Inc. 2023

4.8.2.1 Conclusion of Fuel Storge

The conclusions for this section are listed below:

- Fuel capacity does not meet current or projected demand and is subject to supply chain issues. The **Alternatives Chapter** should consider expansion of existing facilities. There is enough space in the immediate vicinity of existing fuel facilities that would allow for an expansion of double the existing fuel capacity. Further technical assessment, separate from this master plan, of the required fuel capacity which includes the projected demand from the FBO's, air service providers and based tenants will be required prior to a facility enhancement project.

4.8.3 Aircraft Rescue and Firefighting Buildings / Equipment

Code of Federal Regulations, Title 14, Chapter I, Subchapter G, Part 139 (CFR 139) prescribes rules governing the certification and operation of airports in the United States that serve either:

- Scheduled passenger-carrying operations of an air carrier operating aircraft configured for more than 9 passenger seats, and
- Unscheduled passenger-carrying operations of an air carrier operating aircraft configured for at least 31 passenger seats,

CFR 139 determines the ARFF index based on the length of the air carrier aircraft and the daily average departures of air carrier aircraft. According to CFR 139, if there are five or more average daily departures of air carrier aircraft in a single index group serving that airport, the longest index group with an average of five or more daily departures is the index required for the airport. If there are less than 5 daily departures, the next lower index from the longest index group with air carrier aircraft in it is the index required for the airport. The ARFF index associated aircraft lengths are summarized in **Table 4-16.**

Table 4-16: **ARFF Airport Index**

ARFF Index	Aircraft Length	Representative Aircraft
A	Less than 90 feet	Beech 1900, Brasilia EMB-120
B	at least 90 feet but <126 feet	EMB-175; Airbus A319/A320
C	at least 126 feet but <159 feet.	MD-80; 737-800 and 737-800 MAX; Airbus A321neo
D	at least 159 feet but <200 feet	B757; B767; Airbus A330
E	at least 200 feet	B747-400; B777;

Note: The ARFF Index is based on the length of transport aircraft that may operate at SBA.
Source: AC 150/52220-10E, June 2011

SBA is classified as ARFF Index B based on the aircraft that are at least 90 feet in length but less than 126 feet in length. Based on the November 23, 2020, revision to the Airport Certification Manual approved by the FAA on December 02, 2020, the longest aircraft with an average of five or more daily departures is the Bombardier CRJ-900 with a length of 119 feet. The critical aircraft is a Boeing 787-800, which would place the SBP Index in an ARFF Index C if operations exceed 5 daily departures. Currently, the airport experiences an average of less than 2 departures per day by aircraft in this category. Based on the aviation forecast, the 737-800 and 737-800 MAX will gain more operations in the future, but the 737-700 is currently more prevalent. The 737-700 aircraft length is 110 feet, which would remain in ARFF Index B.

4.8.3.1 Facility

The ARFF facility, Santa Barbara Fire Station 8, is located north of Clay Lacy Aviation and south of Firestone Rd. The facility can be accessed from Firestone Rd. The facility consists of 8,000 square feet and contains two bays.

4.8.3.2 Vehicle Class Requirements

ARFF Index B requires a Class 1 vehicle, or Class 2, Class 3, or Class 4 vehicle in lieu of Class 1. If the Class 4 vehicle has Dry Chemical/Halogenated agent, a Class 1 vehicle is not required for an Index B Airport. If the Class 4/5 vehicle does not have Dry Chemical /Halogenated agent, a Class 1 vehicle is required. SBA's existing ARFF vehicles are included in **Table 4-17**.

Table 4-17: **SBA Existing ARFF Vehicles**

Vehicle Number	ARFF 77		ARFF 79	
Type of Vehicle	Water/ Foam		Water/ Foam	
Manufacturer Name	Rosenbauer Panther		Oshkosh Striker 1500	
Manufacturer Year	2020		2003	
Agent*	**A**	**B**	**A**	**B**
Water (GAL)	1500	750 gpm	1500	750
AFFF (GAL)	210	3%	210	3%
Dry Chem #	450 lbs PPK	5 lps	450 lbs PPK	5 lps
Halotron	460 lbs	5 lps	460 lbs	5 lps

Note: Agent Legend- A = Quantity of extinguishing agent, B = Discharge rate in gal/min or lbs/sec
Source: Santa Barbra Airport – *Airport Certification Manual, Chapter 9- Aircraft Rescue & Firefighting – Index Determination (139.315)*, November 23,2020

The ARFF facility is staffed by the City of Santa Barbra Fire Department. In the event of an emergency response, both the City of Santa Barbara and the County fire departments respond.

4.8.3.3 Response Times

During a typical response, it takes one minute for fire fighters to dress and start the ARFF truck, leaving two minutes to reach the runway. The ARFF truck must maintain an average speed of 20 miles per hour to get there in two minutes.

4.8.3.4 ARFF Recommendation

The critical aircraft, the Boeing 737-800, is forecast to increase in annual operations at SBA. The airport should consider preparing to become an ARFF Index C airport when the 737-800 next generation (NG) or 737-800 maximum (MAX) reaches the five daily operations threshold. An additional study on the ARFF capacity and operational trends toward longer fuselage length aircraft should be considered to ensure the appropriate apparatus, facilities, equipment, and response times are present to meet demand.

4.8.3.5 Conclusion of ARFF Buildings / Equipment

The conclusions for this section are listed below:

- ARFF facilities meet current demand and the ARFF Index B is appropriate for the short- and mid-term period; however, the airport should undertake a study to identify timing and facilities related to upgrading the airport to ARFF Index C.

4.8.4 Airport Fencing

SBA has chain-link wildlife fencing around the airfield perimeter. Security gates provide access to Commercial and General Aviation hangars and controlled movement areas on the airfield. Existing pedestrian gates are configured with pin pads provide to provide secure airside facilities access. Vehicle gates are also configured with pin pads that provide access to the GA hangars and are used by airport staff to access the airport operations area (AOA). Perimeter fencing is used at airports primarily to secure the aircraft operational area. The physical barrier of perimeter fencing provides the following functions:

- Gives notice of the legal boundary of the outermost limits of a facility or security-sensitive area.
- Assists in controlling and screening authorized entries into a secured area by deterring entry elsewhere along the boundary.
- Supports surveillance, detection, assessment, and other security functions by providing a zone for installing intrusion-detection equipment and closed-circuit television (CCTV).
- Deters casual intruders from penetrating a secured area by presenting a barrier that requires an overt action to enter.
- Demonstrates the intent of an intruder by their overt action of gaining entry.
- Causes a delay to obtain access to a facility, thereby increasing the possibility of detection.
- Creates a psychological deterrent.
- Optimizes the use of security personnel while enhancing the capabilities for detection and apprehension of un- authorized individuals.
- Demonstrates a corporate concern for facility security.
- Limits inadvertent access to the air- craft operations area by wildlife.

Most of SBA's operations areas are enclosed by security fencing; however, the southwest portion of the airport, along the Goleta Slough area, is not equipped with security fencing. Security fencing in this area is necessary as airport staff have reported numerous incidents of unauthorized individuals accessing the operations area from the southwest. Alternatives for the installation of security fencing on the southwest side of the operations area will be analyzed in the following chapter. Other portions of the airport's perimeter, including the area east of the Runway 25 threshold, have inadequate fencing, which should be upgraded to FAA standards.

Conclusion of Airport Fencing

The conclusions for this section are listed below:

- Security fencing in the southwest portion of the airport is needed. Alternatives for fencing and security are developed in the next chapter.

4.8.4.1 Perimeter Service Road

Service roads are typically used to segregate vehicles from aircraft operational areas. At SBA, a perimeter service road (some portions paved and some compacted gravel) provides access to the airfield, navigational aid equipment, and landside areas for airport maintenance vehicles. The segregation of vehicle and aircraft operational areas is supported by the FAA, and it is recommended that an airport operator limit vehicle operations on the movement areas of the airport to only those vehicles necessary to support the operational activity of the airport. The airport should maintain the existing paved perimeter service road and segregated marked driving lanes on aircraft aprons through the planning period; however, runway surface protection standards should be accomplished through relocation.

Conclusion of Perimeter Access Road

The conclusions for this section are listed below:

- Relocate service roads out of runway surfaces or to locations that maximize mitigation.

4.8.5 Conclusion of Support Facilities

The conclusions for this section are listed below:

- The current airport administration facilities do not meet current needs.
- Fuel capacity does not meet current or projected demand and is subject to supply chain issues.
- ARFF facilities meet current demand and ARFF Index B is appropriate for the short- and mid-term period; however, the airport should undertake a study to identify timing and facilities related to upgrading the airport to ARFF Index C.
- Security fencing in the southwest portion of the airport is needed. Alternatives for fencing and security are developed in the next chapter.
- No structural changes to the perimeter access roads are required except the eventual relocation outlined previously.

4.9 ACCESS AND CIRCULATION

4.9.1 Introduction

Two complete analyses of access and circulation facility requirements are included in this Master Plan Update as **Appendix XX**, from Corgan which culminates in the year 2033 and focuses on the internal airport access and circulation, and **Appendix XX,** from Walker which begins analysis at year 2033 through horizon year 2041 and includes roads outside of the airport property. The findings summarized here include a comprehensive analysis of access and circulation on and off airport property.

4.9.2 Traffic Volumes - Horizon Year 2041

This analysis is based on projected activity growth at the airport as well as projected near-term growth and analysis provided by Corgan (**Appendix XX**). Enplanements at SBA are projected to increase from 342,669 in 2021 to 878,700 in 2041, an average annual growth rate of 4.8%. Based on projected 2022 enplanements of 585,395 in the Corgan analysis, there was a rapid recovery in 2022 as the travel industry rebounded from the COVID-19 pandemic. Enplanement growth is expected to be more rapid between 2022 and 2031 with lower annual growth between 2031 and 2041. The TIP prepared by Corgan projected a 2.7% annual growth in airport related traffic volumes between 2022 and 2033.

Since annual enplanement growth is projected to slow down over the latter half of the study horizon, Walker has assumed a blended growth rate of 2.0% per year over the planning horizon. Over the 19-year planning horizon this is equivalent to a 46% increase in peak hour traffic volumes, which would correspond to a roughly 46% increase in peak hour enplanements/deplanements. Traffic movements in the study area, such as through movements on Hollister Avenue, that do not carry airport traffic were assumed to grow by 1.0% per year to reflect ambient population growth and ongoing development in the Goleta area.

4.9.3 Terminal Area Roadway Capacity

ACRP report *Airport Curbside and Terminal Area Roadway Operations* provides an estimation method for the level of service (LOS) of airport terminal area access and circulation roadways. LOS calculations refer to the industry standard of estimating the level of service found in *Airport Curbside and Terminal Area Roadway Operations*. The first step in calculating LOS begins with selecting the free flow speed of the roadway. The terminal roadway is signed as 15 miles per hour. As such, using 15 miles per hour is an adequate quick estimation given the characteristics of the roadway. Service levels are shown in **Table 4-18**.

Table 4-18: **Service Levels for Airport Terminal Area Access and Circulation Roadways**

Free Flow Speed = 15 Miles Per Hour					
Criteria	Level of Service				
	A	B	C	D	E
Minimum Speed (mph)	15.0	15.0	15.0	15.0	15.0
Maximum Volume/Capacity Ratio	0.25	0.40	0.59	0.79	1.00
Maximum Services Flow Rate (vehicle/hour/lane)	310	500	740	990	1,250
Maximum Flow Rate (vehicle/hour/lane) (a)	250	400	600	800	1,010

(a) = flow rate adjusted to account for 0.95 heavy vehicle factor and 0.85 driver population factor.
Source: Airport Curbside and Terminal Area Roadway Operations Table 4.1 (NSF, 2010)

Table 4-19 summarizes the terminal area roadway level of service calculations using the quick estimation method. The existing number of lanes before and through the terminal area are currently operating at a LOS A. After 2033, LOS B is projected.

Table 4-19: **Existing and Projected Level of Service for SBA Terminal Roadway**

Scenario	Peak Hour Volume		Number of Lanes		Vehicles per Lane	LOS Flow Rate	LOS
Existing - Terminal Entrance to Passenger Loading Areas	427	/	2.0	=	214	250	A
Existing - Passenger Loading Areas to Terminal Exit	375	/	2.0	=	188	250	A
Future (2033) - Terminal Entrance to Passenger Loading Areas	574	/	2.0	=	287	400	B
Future (2033) - Passenger Loading Areas to Terminal Exit	504	/	2.0	=	252	400	B
Future (2041) - Terminal Entrance to Passenger Loading Areas	622	/	2.0	=	311	400	B
Future (2041) - Passenger Loading Areas to Terminal Exit	546	/	2.0	=	273	400	B

SBA does not need to expand terminal area roadway capacity over the planning horizon as the terminal area is projected to operate at LOS B.

The above analysis for the terminal area assumes a free flow facility; however, four uncontrolled crosswalks connect customer parking areas to the terminal and cross the terminal area roadway. The behavior of motorists and pedestrians in the crosswalk area would determine whether roadway capacity would decrease; however, even if the capacity would decrease, the resulting level of service would still likely be LOS C in front of the terminal – depending on the number of pedestrians.

4.9.4 Curbside Loading Capacity

Airport curbside operations have been evaluated using projected peak hour volumes, average dwell times, and typical space per vehicle requirements. The analysis is based on the assumption that arriving vehicles follow a Poisson distribution represented by an exponential probability function.

The curbside analysis is based on the existing volumes and dwell times contained the TIP. Curbside needs are assumed to increase linearly with the projected increase in passenger enplanements. This analysis has also assumed that the proportion of private vehicle drop-offs versus hired drop-offs remains consistent with 2022 levels. A shift to higher TNC, Taxi, and limousine use would increase curbside requirements for those functions and decrease requirements for private vehicles.

Table 4-20 summarizes the resulting curbside lane requirements for private vehicles and taxis/TNCs. The required length shown is for LOS C operations.

The curbside loading space for taxi/TNC/limo and shuttles/other is projected to remain at LOS C or better throughout the planning horizon. Passenger loading for private vehicles is projected to operate at LOS D in 2041.

Table 4-20: Future Curbside Lane Requirements

Vehicle Classification	Peak Hour Volume	Dwell Time (In Minutes)[1]	Space Required per Vehicle	Average Spaces	Required Spaces[2]	Required Length (feet)[3]	Available Length (feet)
Private Vehicle	363	3.2	25	19.43	27	675	600
Ground Transportation							
TNC(Uber/Lyft)	38	3.2	25	3.08	6	150	
Taxi	6	1.5	25	0.22	5	125	341
Limousine	3	2.4	25	0.18	1	25	
Shuttle Services	10	2.0	35	0.50	3		
Hotel/Motel shuttle	1	2.0	35	0.05			
Airline crew shuttle	1	5.1	35	0.13			
Parking shuttle	4	2.0	35	0.20		130	145
Charter Bus	-	2.0	55	0.00			
Other (airport operations, delivery, emergency)	5	1.6	25	0.20	1		

Notes:
1 = Recommended dwell times for hotel/motel shuttles, parking shuttles, and charter buses shown. Others based on observed existing dwell times. Source Corgan - July 2023 Terminal Improvement Project Preferred Concept - Basis of Design (TIP))
2 = Assumes shuttles share same curbside zone without delineation between types of shuttles
3 = LOS curbside requirements assumes 30% double parking along the private vehicle curbside during peak periods

The projection of future level of service conditions assumes that operation of the curb is utilized as efficiently as possible, meaning that monitoring of vehicle length of stay is occurring at the curb, that the entirety of the available curb is being used, that during peak periods vehicles are being directed into available curb space to allow for maximum use of the existing curb, and that when vehicles are parked too long they are told to move and/or are issued a citation to ensure maximum access and efficiency at the curb. The last item, citations, should be a matter of last resort assuming that adherence to curb policy is lacking.

4.9.5 Intersection Level of Service Analysis - Horizon Year 2041

Horizon Year 2041 weekday AM, and PM peak hour intersection analysis is shown in **Table 4-21.** Horizon Year 2041 weekday mid-day and Saturday mid-day peak hour intersection analysis is shown in **Table 4-22**.

As shown in **Table 4-21**, the study intersections are projected to continue to operate at an acceptable LOS during the weekday AM and PM peak hours for horizon year 2041 conditions.

As shown in **Table 4-22**, the study intersections are projected to continue to operate at an acceptable LOS during the weekday mid-day and Saturday mid-day peak hours for horizon year 2041 conditions with the exception of the following intersection:

- The stop-controlled eastbound left-turn movement at the Moffett Place/Terminal Exit intersection is projected to operate at LOS E during the weekday mid-day peak hour and LOS F during the Saturday mid-day peak hour.

Table 4-21: Intersection Analysis – Horizon Year 2041 Weekday AM/PM Peak Hour Conditions

Intersection			Control Type	Peak Hour	Horizon Year 2041		
					Movement	Delay[1]	LOS
1	Fairview Avenue	Hollister Avenue	Traffic Signal	Weekday AM	Intersection	31.9	C
				Weekday PM	Intersection	40.9	D
2	Terminal Entrance	James Fowler Road	Yield[2]	Weekday AM	Intersection Eastbound LT	1.8 7.9	A A
				Weekday PM	Intersection Eastbound LT	2.2 8.0	A A
3	Moffett Place	Terminal Exit	OWSC	Weekday AM	Intersection Eastbound LT Eastbound RT	3.5 13.2 9.7	A B A
				Weekday PM	Intersection Eastbound LT Eastbound RT	4.5 15.7 10.2	A C B
4	Moffett Place-Sandspit Road	SR-217 Southbound On/Off Ramps	TWSC	Weekday AM	Intersection Eastbound Lane Westbound Lane Southbound LT	5.9 11.3 10.5 7.4	A B B A
				Weekday PM	Intersection Eastbound Lane Westbound Lane Southbound LT	6.2 18.2 14.6 7.7	A C B A

Note: TWSC = Two-Way Stop-Control. OWSC = One-Way Stop-Control. RT = Right-Turn. LT = Left-Turn.
Delay shown in seconds per vehicle.
1= Overall average delay shown for One- and Two-Way Stop Controlled Intersection along with delay for stop-controlled movements.
Delay shown in seconds.

Table 4-22: Intersection Analysis – Horizon year 2041 Weekday Mid-Day and Saturday Mid-Day Peak Hour Conditions

Intersection			Control Type	Peak Hour	Horizon Year 2041		
					Movement	Delay[1]	LOS
1	Fairview Avenue	Hollister Avenue	Traffic Signal	Weekday Mid-day	Intersection	37.9	D
				Saturday Mid-day	Intersection	40.6	D
2	Terminal Entrance	James Fowler Road	Yield[2]	Weekday Mid-day	Intersection Eastbound LT	2.9 8.7	A A
				Saturday Mid-day	Intersection Eastbound LT	3.0 8.8	A A
3	Moffett Place	Terminal Exit	OWSC	Weekday Mid-day	Intersection Eastbound LT Eastbound RT	10.9 **39.0** 11.7	B **E** B
				Saturday Mid-day	Intersection Eastbound LT Eastbound RT	16.5 **56.2** 12.4	C **F** B
4	Moffett Place-Sandspit Road	SR-217 Southbound On/Off Ramps	TWSC	Weekday Mid-day	Intersection Eastbound Lane Westbound Lane Southbound LT	6.4 17.7 15.1 7.7	A C C A
				Saturday Mid-day	Intersection Eastbound Lane Westbound Lane Southbound LT	6.0 13.1 14.9 7.6	A B B A

Note: See notes for **Table 4-21**.

4.9.6 Roadway Segment Level of Service Analysis - Horizon Year 2041

Table 4-23 summarizes the horizon year 2041 conditions roadway segment analysis based on the existing roadway classifications and projected airport and ambient growth in the study area.

Table 4-23: **Roadway Segment Analysis – Horizon Year 2041 Conditions**

Roadway Segment	Classification	No. of Lanes	LOS C Capacity	2041 ADT
Moffett Place between Sandspit Road and Terminal Exit	Major Collector	2	14,300	9,809
James Fowler Road between Terminal Entrance and Fairview Avenue	Minor Arterial	2	14,300	9,991
Fairview Avenue south of Hollister Avenue	Minor Arterial	2	14,300	13,688
Fairview Avenue between Hollister Avenue and US-101	Major Arterial	4	34,000	26,516

As shown in the table, the roadways around the Airport are projected to continue to operate acceptably for Horizon Year 2041 conditions.

4.9.7 Potential Circulation Issues and Recommendations

Based on the preliminary level of service analysis for horizon year 2041 conditions, the stop-controlled eastbound left-turn movement at the Moffett Place/Terminal Exit intersection is projected to operate at LOS E during the weekday mid-day peak hour and LOS F during the Saturday mid-day peak hour.

Additionally, the projected 95th percentile eastbound left-turn queue during the Saturday mid-day peak period is 9 vehicles, which equates to approximately 225 feet assuming 25-feet per vehicle. A 225-foot queue would extend almost to the exit of the existing short-term parking lot and could begin to back up the terminal roadway during the busiest days. It would also impede access between the terminal drop-off/pick-up area and the proposed Southfield/Apron parking area.

The following preliminary recommendations are intended to address potential circulation issues at the airport exit that could then back up onto the terminal roadway:

- SBA should continue to periodically collect traffic counts at the airport exit and prepare traffic signal warrants. A traffic warrant is a structured method of evaluating the need for signalization using predefined criteria. The airport should discuss potential signalization of the airport exit with the appropriate jurisdiction if/when a traffic signal satisfies traffic signal warrant requirements as defined in the California Manual on Uniform Traffic Control Devices (CA MUTCD).
- The “Southfield Project + Apron Area” parking area should be designed in such a way that vehicles parking in this area must exit onto Moffett Place as opposed to connecting back to the terminal roadway and exiting at the existing airport exit. This would reduce future volumes at the airport exit and potentially delay or eliminate the need for future signalization.

4.9.8 Conclusion of Access and Circulation

The conclusions for access are listed below:

- SBA does not need to expand terminal area roadway capacity over the planning horizon as the terminal area is projected to operate at LOS B.
- The curbside loading space for taxi/TNC/limo and shuttles/other is projected to remain at LOS A throughout the planning horizon. Passenger loading for private vehicles is projected to operate at LOS C in 2033 and LOS D in 2041.
- The projection of future level of service conditions assumes that operationally, the curb is utilized as efficiently as possible, meaning that monitoring of vehicle length of stay is occurring at the curb, that the entirety of the available curb is being used, that during peak periods vehicles are being directed into available curb space to allow for maximum use of the existing curb, and that when vehicles are parked too long they are told to move and /or are issued a citation to ensure maximum access and efficiency at the curb. The last item, citations, should be a matter of last resort assuming that adherence to curb policy is lacking.

4.10 TERMINAL PARKING NEEDS – HORIZON YEAR 2041

Total passenger enplanements at SBA are projected to increase to 732,500 by 2031 and reach up to 878,700 by 2041. The correlation between enplanements and parking capacity is not entirely linear, though in general as enplanements increase, the demand for airport parking also rises. This is because more passengers mean more vehicles, and thus, more parking spaces are required.

Airports and air carriers add passengers through new routes, more frequent service, switching to larger aircraft types, and swapping out less popular routes for more popular ones. Each of these variables may differently impact peak hour passenger arrivals and departures and the amount of parking needed to accommodate long-term and short-term customers. In addition, policy changes, such as parking rate (price) increases, can substantially impact the mode split or the percentage of customers that choose to drive and park versus arriving via transportation network (TNC) company vehicles (Lyft and Uber, taxi, shuttle) or being picked up or dropped off.

The facilities addressed in this section include long-term parking, short-term parking, economy parking, and the cell-phone waiting lots.

4.10.1 Existing Public Parking

Table 4-24 (on the next page) shows the existing public parking supply.

There are currently 1,530 public parking stalls across five automobile parking facilities. The long-term parking lot is by far the largest facility with 764 stalls. The second largest facility is the economy lot with 561 stalls. The short-term lot contains 189 stalls, and lastly the two cell-phone lots (east located near the long-term lot, and south located near the intersection of Sandspit Road and Ward Memorial Boulevard) contain 11 stalls and 5 stalls respectively.

Table 4-24: **Existing Parking Facilities and Inventory**

Existing Inventory		
Parking Facility	**Stall Count**	**% of Total**
Long-Term	764	50%
Short-Term	189	12%
Economy	561	37%
Cell Phone (East)	11	1%
Cell Phone (South)	5	0%
Total	**1,530**	**100%**

Table Source: Santa Barbara Airport, 2023.

4.10.1.1 Existing Employee Parking

Currently, airport employees are directed to park in the Economy Lot. On average, there are about 100 employees that park in the lot and, at a maximum, approximately 200 employees park there. The airport is considering plans for additional employee parking as a part of the Southfield Redevelopment Project as it progresses.

4.10.2 Existing (Baseline) Demand

Table 4-25 and **Table 4-26** provide a summary of the parking demand statistics for the short-term and long-term parking areas, organized by month. The 95th percentile column represents roughly the 2nd busiest day of each month; for the full year, the 95th percentile would exclude roughly the 12 busiest days per year. For airport planning purposes, it is generally recommended to establish a design day based on a value somewhere between the 85th and 95th percentile (or similar value). For SBA, the 95th percentile is suggested.

Table 4-25: **Parking Peak Hour Demand by Month: Short-Term Lot**

Year	Month	Avg. Peak Hour Demand	95th Percentile Peak Hour Demand	Absolute Peak Demand
2022	Aug	189	189	189
2022	Sep	184	189	189
2022	Oct	187	189	189
2022	Nov	185	189	189
2023	Dec	188	189	189
2023	Jan	-	-	-
2023	Feb	184	189	189
2023	Mar	188	189	189
2023	Apr	187	189	189
2023	May	183	189	189
2023	Jun	185	189	189
2023	Jul	184	189	189
Avg.		**186**	**189**	**189**

Table Source: Santa Barbara Airport, 2023.

Table 4-26: Parking Peak Hour Demand by Month: Long-Term Lot

Year	Month	Avg. Peak Hour Demand	95th Percentile Peak Hour Demand	Absolute Peak Demand
2022	Aug	753	764	764
2022	Sep	665	738	764
2022	Oct	713	764	764
2022	Nov	724	764	764
2022	Dec	711	764	764
2023	Jan	-	-	-
2023	Feb	750	764	764
2023	Mar	721	764	764
2023	Apr	701	751	764
2023	May	714	764	764
2023	Jun	704	742	764
2023	Jul	687	737	757
Avg.		**713**	**756**	**763**

Table Source: Santa Barbara Airport, 2023.

The data indicate that both the short-term and long-term lots fill regularly during the peak hour. For instance, by examining the resulting 95th percentile of demand for both the short-term and long-term lots, the results are 189 in the short-term lot (i.e., the same as the parking supply), and the long-term lot is 756, which is eight (8) spaces shy of the long-term lot supply, 764. The following table shows the total number of days within the survey period in which the short-term lot is filled to capacity during the peak hour.

Table 4-27: Survey Days when the Short-Term Lot Filled at the Peak Hour

Year	Month	Total Survey Days	No. of Days Lot was Full at Peak Hour	% of Days Lot was Full at Peak Hour
2022	August	30	27	90%
2022	September	29	15	52%
2022	October	31	23	74%
2022	November	30	24	80%
2022	December	31	28	90%
2023	*January	-	-	-
2023	February	28	17	61%
2023	March	31	24	77%
2023	April	30	20	67%
2023	May	31	15	48%
2023	June	30	17	57%
2023	July	31	18	58%
	Total	**332**	**228**	**69%**

Note: *January data were omitted from the analysis due closure of the parking facilities from flooding and a parking lot re-striping project that impacted the data.

Table Source: Santa Barbara Airport, 2023.

Table 4-28: Survey Days when the Long-Term Lot Filled at the Peak Hour

Year	Month	Total Survey Days	No. of Days Lot was Full at Peak Hour	% of Days Lot was Full at Peak Hour
2022	August	30	19	63%
2022	September	29	2	7%
2022	October	31	10	32%
2022	November	30	9	30%
2022	December	31	6	19%
2023	*January	-	-	-
2023	February	28	17	61%
2023	March	31	10	32%
2023	April	30	2	7%
2023	May	31	5	16%
2023	June	30	2	7%
2023	July	31	0	0%
	Total	**332**	**82**	**25%**

Note: *January data were omitted from the analysis due closure of the parking facilities from flooding and a parking lot re-striping project that impacted the data.

Table Source: Santa Barbara Airport, 2023.

As shown in **Table 4-27**, of the 332 days in the survey period (August 2, 2022 – July 31, 2023), the short-term lot filled to capacity just over two-thirds (69%) of the time during the peak hour. This means that on most days, the short-term lot filled to capacity, with August and December being particularly busy months.

As shown in **Table 4-28**, of the 332 days in the survey period (August 2, 2022 – July 31, 2023), the long-term lot filled to capacity a quarter (25%) of the time during the peak hour.

Additionally, per airport staff, the period around the 2022 Thanksgiving holiday nearly resulted in the economy lot reaching full capacity due to the short-term and long-term lots being full. The airport had to encourage customers to find alternative ways to reach the airport.

4.10.3 Projected Future Parking Need (2041)

Table 4-29 provides a projection of short-term, long-term, and economy parking needs based on projected peak month enplanements through 2041.

Table 4-29: Projected Unadjusted Future Parking Demand

Year	Peak Month Enplanements	Proj. Design Day Short-Term Demand	Proj. Design Day Long-Term Demand	Proj. Design Day Economy Demand
2022/2023	60,046	206	824	429
2031	70,245	241	965	501
2041	84,266	289	1,157	601

Note: *Peak month enplanements are based on 2022 monthly enplanement shares derived from the SBA Airport Committee's Director's Reports.

Table Source: Walker Consultants, 2023

4.10.3.1 Projected Parking Needs and Surplus/Deficit

Tables **4-30** through **4-33** show the breakdown between short-term, long-term, economy, and the system-wide parking needs.

Table 4-30: Projected Short-Term Parking Need

Year	Projected Design Day Demand	Effective Supply Adjustment	Total Adjusted Parking Need	Current Supply	Surplus / Deficit
2022/2023	206	7%	222	189	(33)
2031	241	7%	259	189	(70)
2041	289	7%	311	189	(122)

Table Source: Walker Consultants, 2023

Table 4-31: Projected Long-Term Parking Need

Year	Projected Design Day Demand	Effective Supply Adjustment	Total Adjusted Parking Need	Current Supply	Surplus / Deficit
2022/2023	824	7%	886	764	(122)
2031	965	7%	1,038	764	(274)
2041	1157	7%	1,244	764	(480)

Table Source: Walker Consultants, 2023

Table 4-32: Projected Economy Parking Need

Year	Projected Design Day Demand	Effective Supply Adjustment	Total Adjusted Parking Need	Current Supply	Surplus / Deficit
2022/2023	429	7%	461	561	100
2031	501	7%	539	561	22
2041	601	7%	646	561	(85)

Table Source: Walker Consultants, 2023

Table 4-33: Projected System-Wide Parking Need

Year	Projected Design Day Demand	Effective Supply Adjustment	Total Adjusted Parking Need	Current Supply	Surplus / Deficit
2022/2023	1459	7%	1,569	1,514	(55)
2031	1707	7%	1,835	1,514	(321)
2041	2047	7%	2,201	1,514	(687)

Table Source: Walker Consultants, 2023

4.10.4 Conclusion of Terminal Parking Needs

Based on the effective supply factor adjustment, which accounts for the inevitable unavailability of some parking spaces in a parking system, as well as the need for a reasonable cushion of parking supply in other situations, SBA has a deficit of approximately 33 parking stalls in the short-term lot and 122 in the long-term lot. However, the economy lot is projected to have a surplus of 100 stalls.

By 2031, the short-term lot is projected to have a deficit of 70 stalls, long-term lot a deficit of 274 stalls, and economy lot a surplus of 22 stalls. Looking at it parking-system-wide, there is a projected deficit of 321 spaces by 2031.

Lastly, by 2041, the short-term lot deficit is projected to increase to 122 stalls, the long-term lot deficit to 480 stalls, and the economy lot to a deficit of 85 stalls. System-wide, the SBA public parking deficit is projected to be 687 stalls. This means that the airport will need to add 687 (total deficit) parking stalls to meet 2041 projected demand based on the assumptions used. However, if the Southfield Redevelopment Project adds 608 spaces to the long-term parking supply, and the rest of the supply (including economy lot) remains, then the projected 2041 deficit would only be 79 spaces (2,201 – 2,122 = 79 spaces).

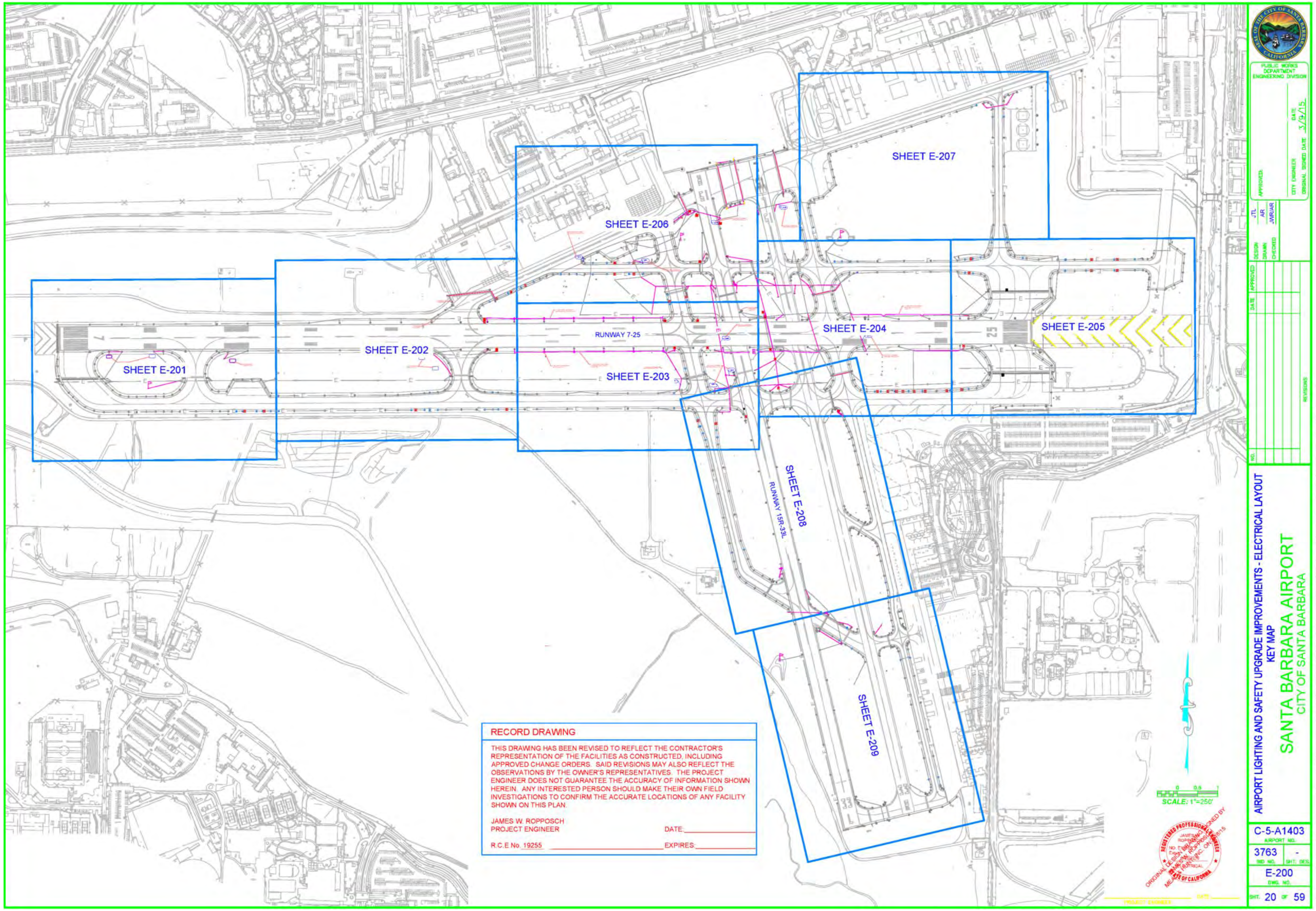
The concept of pricing plays a pivotal role in efficiently allocating the limited parking resources available. Short-term or premium parking spaces should be located in convenient and highly sought-after areas relative to longer-term parking as a best practice. Ultimately, the amount of parking to provide in short-term and long-term areas should be a function of price, which in turn allows the airport the flexibility to manage demand and the size of its parking facilities

4.11 UTILITIES AND ELECTRICAL NEEDS

The airport has sufficient utility infrastructure to meet current demands (for auto, GSE, Airport, etc.). Capacity needed for future project activity levels may be accommodated when the airport triggers development outlined in the TIP. Existing infrastructure near the AERO Hangar and the ATCT (old citrus plant) provide adequate transmission of electrical supply. On-field power distribution currently meets needs. Additional facilities needs for power will be handled as a condition within each development project, such as the terminal building expansion. The airport completed the final fiber optic high speed internet connection deployment on January 11, 2024. Bringing access to the airport administrative services, security and operations facilities.

Figure 4-17 is a guide to the airfield electrical system for a given area located within the Utilities Block Book (included in this report as **Appendix XX)**.

Figure 4-17: **Electrical Utility Guide Map**



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4.11.1 Conclusion of Utilities and Electrical Needs

The conclusions for this section are listed below:

- The airport has sufficient utility infrastructure to meet current demands.
- Additional facilities need for power will be handled as a condition within each development project.

4.12 NON – AERONAUTICAL PROPERTIES

The airport's non-aeronautical properties encompass approximately 104 acres located north of Hollister Ave. There are 40 separate legal parcels within this planning area with a mix of four different zone designations: A-C (Airport Commercial), A-C-R (Airport Commercial Recreation), A-I-1 (Airport Industrial 1), and A-I-2 (Airport Industrial 2). Combined, these zone designations allow for a broad mix of both commercial, industrial, and recreational uses; however, based on a combination of windshield surveys and review of aerial photography, there are 19 parcels that appear to be vacant or underdeveloped (underdeveloped parcels include those that are currently used for parking and/or storage) (Google Earth Pro 2023). There are also several parcels that are currently occupied by non-conforming uses (e.g., open storage yards located south of Francis Botello Road).

Given the City's expressed goals of maintaining economic self-sufficiency and maximizing revenue from tenant leases for the Airport Industrial Area, the wide range of uses allowed under the existing zone designations could be maximized through a turnover in tenants for more profitable uses and new leases. As such, the current distribution of land use and zoning designations (as amended in 2017 in the Santa Barbara Airport Industrial Area Specific Plan) is appropriate to allow redevelopment of this area and no changes to these designations are necessary to increase revenues from leases and thus maintain economic vitality (City of Santa Barbara 2017). In addition, the roadway network and infrastructure network are well-maintained and adequate to support future development throughout the area. Finally, the existing parcel sizes are adequate to support all potential future uses allowed under the existing zone designations and no subdivision of individual parcels is recommended.

4.12.1 Conclusion of Non-aeronautical Properties

The conclusions for this section are listed below:

- The current distribution of land use and zoning designations (as amended in 2017 in the Santa Barbara Airport Industrial Area Specific Plan) is appropriate to allow redevelopment of this area.
- Parcel size and infrastructure are adequate to support the uses allowed by zoning.
- Specific impacts related to traffic outlined within Santa Barbara Airport Industrial Area Specific Plan and other documents related to the City of Goleta are outside the scope of this study but should be carefully considered as development opportunities are evaluated.

4.13 SUMMARY

The conclusions for this chapter are listed in **Table 4-34** below.

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Table 4-34: Chapter 4 Summary of Findings

Section	Area	Finding
2 Airfield System Capacity	**Airfield Geometry**	No significant airfield system geometry changes recommended except the possible removal of one of the crosswind runways.
	Critical Aircraft	The critical aircraft will change from a 737-800, to the newer Boeing 737-800 MAX model.
	Airfield Demand / Capacity	SBA is currently operating at 52 percent of its annual capacity. SBA is forecasted to handle 116,887 operations in 2041. The increase in operations will result in SBA operating at 58 percent of annual capacity. No major airfield change will be required for airport capacity purposes.
	Airport Design	Relocate service roads out of runway surfaces or to locations that maximize mitigation. Acquire easements for RPZs that are off airport property and modify or adapt land use, as needed, to comply with compatible uses and configurations for a runway protection zone
	Wind Coverage	Wind coverage analysis reveals no additional improvements required. There is no justification for the crosswind runways.
	Taxiway Design	Taxiway specifications (Taxi Design Group) for SBA is a TDG 3 and no change is recommended. Significant required changes to the taxiway layouts, crossings, and locations are identified. Design alternatives to address these modifications are outlined in Chapter 5.
	NAVAIDs	Future installation of a PAPI on the approach end of Runway 7.
	ATCT	It is recommended that an update to the Airport Traffic Control Tower (ATCT), or replacement be considered and studied.
	Drainage and Storm Water	Drainage and stormwater facilities need considerable enhancement, design alternatives to address these modifications are outlined in chapter 5 and addressed through other comprehensive studies currently underway such as the Sea Level Rise Adaptation Plan and Vulnerability Assessment.
3 Runway Length Analysis	**Runway Length**	No changes to the runway length to accommodate the design aircraft are recommended at this time.

4 Commercial Passenger Facilities	**Parking / Roads**	An additional 122 short term, 480 long-term, and 85 economy parking spots will need to be added to meet the ultimate need in the long term. Landside circulation roadways, curbs, and waiting areas need modest upgrades for long term capacity needs but will meet the demand in mid-term 5-15 years.
	Terminal	Short term terminal capacity will be meet by the improvements outlined in the TIP. To meet ultimate long-term demand the airport requires 8 Gates, 36 ticket counters, 5511 square feet of lobby space, and 12 kiosks. Security screening check point expansion is not required in the near term but will require 3 additional lanes to meet long term demand. The SSCP queuing area requires significant expansion, ultimately up to 12,650 square feet to meet long-term passenger needs. Baggage claim requires 9745 square feet of total space to meet ultimate demand. Restroom facilities met short term demand but will require a 35% increase to meet long-term demand.
	Car Rental / Concessions Facilities	Rental car facilities meet current demands but will need to nearly double to meet long term demand with 2168 total square feet of office and counter space in 9 offices. The landside requires 2750 and the airside requires 11,000 total square feet of concessions space to meet long-term demand.
5 General Aviation Facilities	**Hangars**	The airport will need to construct a variety of general aviation hangar products to meet demand in the long term. Anticipated demand is to accommodate an additional 44 future based aircraft.
	Legacy GA Support Facilities	The historic general aviation facilities are protected by statute and have not been considered in the facility requirement considerations of the airport.
	GA Facilities	The non-historic general aviation facilities such as 521 Firestone Road and 404 Moffett Place need repair if the airport chooses to use them to meet administration, storage, or other business lease uses.
	Emerging Technologies	Airport should consider planning construction of vertiports to serve VTOLs as this technology develops. The airport will need to anticipate installation of e-charge facilities. Capacity for e-charging facilities will need to be considered on a case-by-case basis, no specific alternative for development of this technology is considered. The guidance outlined here gives the airport some framework to consider a future development process.
6 Apron	**Commercial Service Apron**	Additional apron space and reconfiguration will be required to meet both future demand and accommodate future expansion of gate and two RON positions.

7 Cargo Facilities	**Buildings / Hangars**	The current facility meets near, mid and long term needs with no expected changes in demand.
	Apron	If cargo operators, make changes to their aircraft fleet the airport should consider apron enhancements.
8 Support Facilities	**Airport Administration**	The current airport administration facilities do not meet current needs. Two alternatives exist for future administration locations, the Southfield redevelopment area and the other is along Moffet place near the exiting terminal place.
	Fuel Storage	Existing fuel capacity has limitations during times of high usage or distribution disruptions. Recommend doubling existing capacity.
	ARFF	ARFF facilities meet current demand and the ARFF Index B is appropriate for the short term, however the airport should undertake study work to identify timing and facilities required to upgrade the airport to ARFF Index C.
	Fencing	Security fencing in the southwest portion of the Airport is needed. Alternatives for fencing and security are developed in the next chapter.
	Perimeter Access Road	Relocate service roads out of runway surfaces or to locations that maximize mitigation.
9 Access and Circulation	**Terminal Area Roadway Curbside Loading**	SBA should continue to periodically collect traffic counts at the airport to understand demand however the terminal area roadway capacity over the planning horizon is sufficient. The curbside loading space for taxi/TNC/limo and shuttles is projected to meet demand over the planning horizon, however protocols must be placed to ensure the existing roadway elements are optimized, waiting times are reduced, and space is used most efficiently.
10 Terminal Parking Needs 2041	**Projected Future Parking Needs**	The Phase 2 Southfield Redevelopment Project could add 608 spaces to the long-term parking supply, reducing the projected 2041 deficit to 79 spaces.
11 Utilities and Electrical Needs	**Airfield Landside and Airside**	The airport has sufficient utility infrastructure to meet current demands. Additional facilities need for power will be handled as a condition within each development project.
12 Non – Aeronautical Properties	**Primarily north of Hollister Avenue**	The intended use of the nonaeronautical properties north of Hollister have appropriate zoning, access, utilities, and infrastructure for potential development however the cumulative impacts related to the City of Goleta must be specifically evaluated

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- 5 -

ALTERNATIVE DEVELOPMENT

5.1 INTRODUCTION

This chapter documents improvement alternatives and the recommended development plan to satisfy the facility requirements described in **Chapter 4** for Santa Barbara Airport (SBA). A description of factors, influences, concepts, and issues that will form the basis for the ultimate plan and program is provided in the following sections:

- Alternatives Approach
- Airfield System and Capacity
- Runway Length
- Commercial Passenger Facilities
- General Aviation Facilities
- Apron
- Cargo Facilities
- Support Facilities
- Access and Circulation
- Terminal Parking
- Utilities and Electrical
- Non-Aeronautical Properties
- Summary

5.2 ALTERNATIVES APPROACH

Alternatives for the major improvements identified in the Facility Requirements Chapter are systematically evaluated so that a preferred alternative can be identified. The combination of preferred alternatives will make up the 20-year preferred development concept for SBA, which is depicted in **Figure 5-26** at the end of this chapter. Ultimately, the preferred development concept will be depicted in finer detail on the Airport Layout Plan. The process used to develop, evaluate, refine, and select the preferred alternative and key considerations is described in the methodology section below.

Note: The Preferred Alternative for each section is marked with an asterisk in the title.

5.2.1 Methodology

Alternatives are developed and evaluated for meeting demand and facility requirement needs in accordance with Federal Aviation Administration (FAA) design standards. Initial alternatives were discussed at two input committee meetings and refinements were made based on feedback received. Each improvement identified in the Facility Requirements Chapter has its own evaluation criteria; however, this Master Plan also used seven "guiding principles" to conduct both the prior planning studies and the alternatives analysis.

Provide safe and secure facilities and operating environment for aviators and the general public.	**Safety and Security**
Continue to serve as a vital economic contributor to the region while maintaining the Airport's economic self-sufficiency.	**Economic Vitality**
Provide modern, quality facilities to serve a variety of aviation needs and services. Facilitate ground transportation options for travel to and from the Airport.	**Transportation Diversity**
Be a good neighbor by coordinating planning, being responsive to community concerns, and proactive in our environmental stewardship.	**Community**
Support sustainable design of airport facilities and the wise use of resources.	**Sustainability**
Assess future development as it relates to the Goleta Sough and other sensitive habitats.	**Environmental Preservation**
Preserve and enhance our archeological and historic resources.	**Cultural Resource Protection**

The guiding principles relevant to each alternative are discussed in their respective sections. The preferred alternative will reflect the results of the alternative evaluation using screening criteria for each facility requirement, airport development goals, and best planning practices.

The process of defining and evaluating alternatives is iterative, beginning with a comprehensive range of possibilities. The possible alternatives are then refined based on evaluation criteria, which may differ by functional area, and SBA development goals. These criteria may reflect a specific purpose or considerations for an area or variables associated with input from the community, airport leadership, users, or other stakeholders.

5.2.2 Alternatives Drainage Analysis and Implications

The preferred alternatives, discussed in the sections below, include analysis of their potential effect on airfield drainage and recommended drainage considerations. The SBA Drainage Master Plan, scheduled to be completed in 2024, evaluates the existing drainage conditions at the Airport and will evaluate the Preferred Alternative in greater detail regarding overall drainage impacts and specific drainage solutions.

FAA, State (Regional Water Quality Control Board), County, and City regulations regarding stormwater focus on public safety, protection of property and infrastructure, and protection of integrity of natural systems and waterways. The regulations provide hydrologic and hydraulic analysis and design requirements. FAA ACs specify guidelines for stormwater management to provide for safe passage of vehicles and operation of the facility without causing adverse onsite or offsite impacts. The FAA recommends further consideration of state and local regulations regarding water quantity and quality best management practices (BMPs) associated with stormwater runoff. State and local regulations include stormwater management requirements regarding the capture, treatment, retention (infiltration), and detention (discharge rate control) of runoff from development and redevelopment projects.

A general stormwater management recommendation that applies to all alternatives is to utilize existing stormwater outfalls around the perimeter of the Airport. For safety, FAA ACs state that airfield pavements must be protected from ponded water from frequent reoccurring storm events and that stormwater facilities must not be wildlife attractants by means of design including select vegetation or reducing long-duration standing water. Per state and local regulations, BMPs for treating, retaining, and controlling discharges of stormwater are required for each of these projects. Site soil maps and available geotechnical information point to low potential for infiltration, so some exemptions may apply, and discharge pipe and/or underdrain systems may be required for any retention-based facilities.

5.3 AIRFIELD SYSTEM AND CAPACITY

Airfield system and capacity alternatives start at a high level and address the runway system first. This section explains the analysis of the proposed runway consolidation preferred alternative and then presents taxiway geometric changes to accommodate the preferred runway configuration and improvements identified. The airside improvements discussed include a runway removal and associated taxiway improvements.

5.3.1 Runway Improvements - Crosswind Runway Justification

As a part of the Facility Requirements analysis of this Master Plan, a review of runway eligibility criteria contained in the FAA's Airport Improvement Program (AIP) Handbook concluded that SBA is not eligible for future FAA funding for three runways. This eligibility determination is based on crosswind coverage and total number of Airport operations expected within the 20-year planning period. However, the Airport is on the marginal limits of justification for a secondary runway based on the future operations forecast. Although this Master Plan is intended to be forward looking for only 20-years into the future, a significant asset like a runway should consider a slightly longer time frame. Given the Airport's growth history, it is reasonable to project that operations will continue to increase beyond the 20-year planning period and surpass the FAA's threshold for eligibility for a secondary runway; therefore, this Master Plan recommends planning for the FAA's continued funding of one crosswind runway, but not both.

Rwy Alternative No. 1

This alternative assumes that all runways remain at SBA throughout the planning period (see **Figure 5-1**). As mentioned above, SBA is not eligible for FAA funding on three runways; however, this lack of eligibility for funding does not necessarily require a runway closure in and of itself. SBA could choose to continue operating three runways throughout the planning period, but the Airport would be responsible for all on-going costs to keep an ineligible runway operational. The operational costs associated with continued operation of an ineligible runway would likely exceed 9 million dollars over the 20-year planning period.

Recommendation:

The estimated 9 million dollars would better serve the Airport users and traveling public if used elsewhere on the Airport. Therefore, due to FAA ineligibility and cost implication, Alternative #1 is not recommended as the preferred alternative.

Rwy Alternative No. 2 *

This alternative assumes that one of the crosswind runways is closed in the future, primarily due to the funding eligibility reasons (**Figure 5-2**). Given that the two parallel runways are almost identical in physical characteristics and serve the same role, the selection of which runway to close comes down to which closure would provide a net benefit to the long-term development of the Airport.

Closure or either crosswind runway would open potentially developable land under the existing RPZs off the approach ends to 15L and 15R. Closure of 15R/33L would not provide significant developable opportunities in the southwest quadrant of the Airport given the proximity to the Goleta Slough State Marine Conservation Area and the FAA's airport surveillance radar. Closure of 15L/33R will accommodate additional ramp space and taxiway/runway separation, and it will provide the airport with the flexibility to pursue other design alternatives in the southeast quadrant as well as potential expansion of general aviation facilities in the northeast quadrant.
The terminal and general aviation facilities will be discussed in **Sections 5.4** and **5.5** of this chapter.

Figure 5-1: **Rwy Alternative 1**

Figure 5-2: **Rwy Alternative 2**

Figure 5-3: **Rwy Alternative 3**

Recommendation:

Plan for the eventual closure of Runway 15R/33R as the preferred alternative. **Figure 5-26** at the end of this chapter depicts the preferred development concept. Taxiway improvements associated with this preferred alternative are addressed in **Section 5.2.2** of this chapter.

Closure of Runway 15L/33R is aligned with the following guiding principles of this Master Plan:

- **Economic Vitality:** The eventual closure of Runway 15L/33R will contribute to the long-term economic self-sufficiency of the Airport by eliminating future capital costs associated with maintaining the runway without federal grant contributions.
- **Sustainability:** The eventual closure of Runway 15L/33R supports the Sustainability guiding principle as it supports a "wise use of resources" with a net positive for long-term Airport development potential.

Rwy Alternative No. 3

This alternative explores the viability of closing both parallel runways. **Figure 5-3** depicts this runway configuration alternative. This alternative is not viable for the following reasons:

- **Separation of traffic:** Airport users, Airport management, and FAA air traffic control personnel generally agree that separating heavy airline or business jet traffic from lighter general aviation traffic is desired. Heavy airline aircraft generally require higher airspeed on approach/departure, which may exceed a lighter general aviation aircraft's capability.
- Having more than one runway available to separate aircraft based on their operational characteristics benefits all users – removing both crosswind runways would eliminate this existing benefit.
- **Future need and eligibility:** The Airport is on the cusp of eligibility for a secondary runway, which is different from a crosswind in that it must meet different eligibility requirements established by the FAA. The need for a secondary runway is based on total airport operations, whereas eligibility for a crosswind runway is based on wind conditions. Given the high likelihood of SBA exceeding the eligibility threshold for a secondary runway in the future, closing both 15L/33R and 15R/33L in the near-term does not pose any benefits.

Stormwater Management Recommendations for the Preferred Alternative

The following stormwater management recommendations apply to the closure and removal of Runway 15L/33R:

- Assumed values for affected impervious area are 15.1 acres of removed impervious surface, zero acres of replaced impervious surface, and 0.3 acres of new impervious surface.
- Recommended BMPs for this alternative include:
  - Vegetated buffer strips[1];
  - Integrated grading and inlet design for temporary surface retention and detention;

[1] Vegetated Buffer Strips are vegetated surfaces designed to treat sheet flow from adjacent pavements. See Treatment Control (TC)-31 of the California Stormwater Quality Association Stormwater Best Management Practice Handbook, 2003. California Stormwater Quality Association | CASQA

- Underground runoff storage in tanks, vaults, or pipes to release runoff at pre-project flowrates.

- The project will require new storm-drain pipes, catch basins, manholes, and other structures to accommodate new site grading.
- With a net reduction of impervious area and the relative affordability of vegetative buffer strips compared to other stormwater treatment options, the relative cost of stormwater management improvements for this project is expected to be small.

5.3.2 Taxiway Improvements

The ultimate taxiway configuration is driven by the selection of other recommended alternatives. Specifically, the ultimate runway configuration, general aviation hangar development, and long-term terminal expansion all drive the ultimate taxiway needs. Additionally, geometric revisions (discussed in **Chapter 4**) are accommodated to comply with current FAA design standards. This results in one consolidated recommended taxiway concept, which is presented in the Preferred Development Concept in (**Figure 5-26**) at the end of this chapter.

Major taxiway improvements incorporated into the preferred development concept include:

- Removal of portions of Taxiway E located north of Runway 7/25 and the southern Taxiway E connector to Runway 7/25. This removal will occur in conjunction with the closure of Runway 15L/33R. With the Runway closure, Taxiway E will no longer be designated as a parallel taxiway and the closure of these segments will eliminate a crossing of Runway 7/25 in the middle third of the runway.
- Removal of wide expanses of pavement where Taxiway C crosses 15L and 15R.
- Removal of the intersection of Taxiways A3/C connecting to Runway 7/25. This removal eliminates non-standard design, direct access from aircraft apron to runway, and a middle third of the runway crossing.
- Realignment of Taxiway F to bisect the future FBO leaseholds in the northeast quadrant of the Airport. This will allow greater flexibility of design layouts within the FBO leaseholds. This realignment will also have the added benefit of removing a direct access from Taxiway F to the Runway 25 end.
- Geometric change to the Taxiway A5 entrance to the Runway 7 end. This geometric change and realignment will meet current FAA standards and incorporate a bypass taxiway at the runway end.
- Removal of the non-standard angled Taxiway D connection to Runway 15R/33L and the non-standard portion of Taxiway D between Runway 15L/33R and 15R/33L and connecting to Taxiway E.
- Construction (long term) of a new taxiway to provide access to the remaining secondary runway (15R/33L) after 15L/33R is closed. This new taxiway will also allow for more flexible aircraft movement into and out of the expanded long term terminal concept (see **Section 5.4**).
- Numerous applications of green paint, indicating unusable pavement, are incorporated into the preferred development concept. These marking changes achieve design compliance at a lower capital cost and allow flexibility of removal for reuse as active airfield pavement in the future.

- Extension of Taxiway B to form a complete parallel taxiway supporting Runway 7/25 was identified as a future project in the prior Airport Master Plan. The Airport is moving forward with plans and permitting for its construction. As it has not yet been constructed, it is being brought forward as a future project in this Master Plan as well.

The recommended ultimate taxiway reconfiguration is aligned with the following guiding principles of this Master Plan:

- **Safety and Security:** Changes associated with the ultimate taxiway configuration are driven by updated FAA design standards that aim to improve safety and reduce the chance of pilot error.

Stormwater Management Recommendations for the Ultimate Taxiway Reconfiguration

The following stormwater management recommendations apply to the closure and removal of Runway 15L/33R:

- Assumed values for affected impervious area are 2.9 acres of removed impervious surface, zero acres of replaced impervious surface, and 9.8 acres of new impervious surface (5.6 acres of which is Taxiway B expansion and is not directly associated with this planning effort).
- Recommended BMPs for this alternative include:
  - Vegetated buffer strips;
  - Integrated grading and inlet design for retention and detention;
  - Underground storage in tanks, vaults, or pipes.
- The project will require new storm-drain pipes, catch basins, manholes, and other structures to accommodate new site grading.
- The Taxiway B expansion (not specifically addressed in this Plan) may impact the Environmental Inventory Area and require special permitting and design. As most of this project will entail new impervious surface, significant stormwater detention facilities may be required.
- As stand-alone or grouped endeavors, taxiway connector removal entails a net reduction of impervious area and the associated shoulder replacements can utilize new vegetative buffer strips, this is a BMP that is more affordable than other comparable BMPs. The relative cost of stormwater management improvements for taxiway connector removal is expected to be small.

5.4 RUNWAY LENGTH

The runway length assessment conducted in **Chapter 4** concludes that existing runway lengths are adequate for the critical aircraft throughout the planning period. No improvement alternatives were developed.

5.5 COMMERCIAL PASSENGER FACILITIES

5.5.1 Long-Term Terminal Building Reconfiguration Alternatives

A Terminal Improvement Project (TIP) was conducted, separate from this Master Plan, to analyze and synthesis a forecast of conditions. The report is a needs assessment to determine what improvements are needed to accommodate future demand in the terminal building. Detailed development alternatives and the demand drivers for the TIP are located in **Appendix XX**. The TIP concludes with solutions for the short-term and mid-term terminal and landside facility improvements needed at SBA. The TIP programing is underway, and it is anticipated that the Airport will carry out these enhancements to satisfy short-term and mid-term demand. **Figure 5-4** below depicts the TIP related improvements.

The remainder of the commercial passenger facilities alternatives analysis is based on a long-term scenario that is likely outside of the 20-year planning period. Other than the runway and taxiway system, the passenger terminal is one of the Airport's most significant users of Airport property, and consideration should be given to its long-term needs, even those beyond the 20-year planning period of this Master Plan. For that reason, the Facility Requirements chapter introduced the concept of Planning Activity Levels (PALs) to separate forecast passenger enplanements from specific years and provide a holistic planning perspective for the commercial passenger terminal building based on specific levels of enplaned passengers. PALs 1, 2, and 3 (presented in **Chapter 4**) were used to analyze terminal demand for two intermediate passenger enplanement levels and one long term level (PAL 3). PAL 3 assumes 1.1 million passengers are enplaned at SBA at a point beyond the 20-year planning period of this Master Plan.

In order to reserve space that may be needed, should that demand materialize, alternatives were developed to reconfigure the terminal area in a way that would accommodate that demand. Long-term terminal needs identified in **Chapter 4** are broadly stated as the Airport needing four additional boarding bridge gates, for a total of eight, and two remain overnight (RON) parking positions. The following seven alternatives explore various configurations to achieve those planning goals. Alternatives are shown in conjunction with the ongoing TIP project and the Southfield Redevelopment Project and assume the preferred runway alternative, closing Runway 15L/33R, has been completed.

Because this project is expected to fall outside of the planning period of this Master Plan, these alternatives are high-level space planning concepts to illustrate potential location and configuration of a terminal expansion and reconfiguration. As the airport approaches passenger enplanement levels beyond PAL 2, a study similar to the ongoing TIP should be undertaken to identify specific square footage needs and design concepts.

Terminal Building Alternative No. 1 (no build)

This alternative shows the planned improvements associated with the TIP and Southfield Redevelopment Project. This development alternative will accommodate passenger demand throughout the near- and mid-term, but passenger experience would suffer if enplanement levels approached or reached PAL 3 (1.1 million enplanements). Although there are improvement projects depicted in Alternative 1 (TIP and South Field Redevelopment), for the purposes of this Master Plan it is assumed that the Airport moves forward with those in the near term. Therefore, **Figure 5-4** is depicted as the baseline, or no build alternative, for development of long-term terminal building improvements in alternatives 2 through 7.

Terminal Building Alternatives Nos. 2 & 3

Figure 5-5 and **Figure 5-6** below depicts two similar alternatives, both with two additional boarding bridge gates and associated terminal hold room to accommodate PAL 3 enplanement demands. These alternative concepts convert two ground boarding gates associated with the current TIP project into boarding bridge gates for a total of eight.

- Advantages of these alternatives
  - Terminal expansion could occur in general alignment with the ongoing TIP project.
- Disadvantages of these alternatives
  - Significant disruption of the Southfield Redevelopment Project.
  - Further constrains the southeast quadrant of the Airport.
  - No dedicated RON parking positions are provided.

Recommendation:

Alternatives 2 & 3 are not recommended due to the disadvantages listed above.

Terminal Building Alternative No. 4

Figure 5-7 below depicts four additional boarding bridge gates and associated terminal hold room to accommodate PAL 3 enplanement levels. In an effort to lessen the impact on the Southfield Redevelopment Project, this alternative presents a pier concept, expanding the terminal west towards the closed Runway 15L/33R.

- Advantages of this alternative
  - Moves the terminal expansion away from the constrained southeast quadrant towards now-usable infield area that is opened with Runway 15L/33R closure.
- Disadvantages of this alternative
  - Design would require reconfiguration of boarding bridge gates constructed as a part of the TIP project.
  - Significant disruption of the Southfield Redevelopment Project.
  - No dedicated RON parking positions are provided.

Recommendation:

Alternative 4 not recommended due to disadvantages listed above.

Terminal Building Alternative No. 5

Figure 5-8 below depicts five additional boarding bridge gates and associated terminal hold room to accommodate PAL 3 enplanement levels. This alternative a variation of Alternative 4 with emphasis placed on reducing the impact to the Southfield Redevelopment Project.

- Advantages of this alternative
  - Moves the terminal expansion away from the constrained southeast quadrant towards now-usable infield area that is opened with Runway 15L/33R closure.
  - Less impact on the Southfield Redevelopment Project
- Disadvantages of this alternative
  - Design would require reconfiguration of boarding bridge gates constructed as a part of the TIP project and existing terminal.
  - No dedicated RON parking positions are provided.

Recommendation:

Alternative 5 not recommended due to disadvantages listed above.

Terminal Building Alternative No. 6

Figure 5-9 below depicts an entirely new terminal concourse with eight boarding bridge gates constructed west of the existing terminal building. This concept would allow for a uniform gate layout, minimal impact on the Southfield Redevelopment Project and could accommodate two RON parking positions.

- Advantages of this alternative
  - Least impact on the Southfield Redevelopment Project.
  - Moves the terminal expansion away from the constrained southeast quadrant towards now-usable infield area that is opened with Runway 15L/33R closure.
  - Uniform gate and parking concept.
  - Concept could retain the existing terminal "head of house."
- Disadvantages of this alternative
  - Construction phasing would make it difficult to ensure existing terminal gates are usable through the construction phase.

Recommendation:

Alternative 6 is not recommended due to disadvantages listed above.

Terminal Building Alternative No. 7 *

Figure 5-10 below depicts a variation of Alternative 6 with a shift of the new terminal concourse farther to the south. Eight new boarding bridge gates and two RON parking positions would be provided. This shift to the south would allow construction phasing to occur with minimal impacts to the existing terminal and remaining operational gates.

- Advantages of this alternative
  - Mostly free of impacts on the Southfield Redevelopment Project.
  - Moves the terminal expansion away from the constrained southeast quadrant towards now-usable infield area that is opened with Runway 15L/33R closure.

  - Uniform gate and parking concept.
  - Concept could retain the existing terminal "head of house."
  - Frees up re-use or re-development of the existing terminal area.
  - Construction phasing could begin at the southernmost end of the future concourse and would be the least impactful on the existing terminal gates for usability throughout the construction period.
- Disadvantages of this alternative
  - Cost to implement would likely be high

Recommendation:

Alternative 7 is the recommended long-term terminal expansion concept to accommodate PAL 3 enplanement levels. It is the recommended that space and broad conceptual design be brought forward into the preferred development concept and onto the ALP to reserve and protect this area of the Airport for terminal expansion purposes for long-term planning purposes.

The preferred long-term terminal expansion concept (Alternative 7) is aligned with the following guiding principles of this Master Plan:

- **Safety and Security:** Planning for the long-term expansion of the passenger terminal will provide the traveling public with safe and secure facilities that match expected levels of demand beyond the planning period.
- **Economic Vitality:** Planning for an airport terminal that continues to respond to the demands of the traveling public will allow the Airport to continue to be an economic driver in the region.

Stormwater Management Recommendations for the Preferred Long-Term Terminal Reconfiguration Alternative

The following stormwater management recommendations apply to Alternative 7, the preferred long term passenger terminal reconfiguration:

- Assumed values for affected impervious area are zero acres of removed impervious surface, 3.2 acres of replaced impervious surface, and 6.0 acres of new impervious surface.
- Recommended BMPs for this alternative include:
  - Underground filter treatment systems;
  - Integrated grading and inlet design;
  - Surface storage or underground storage in tanks, vaults, or pipes for retention and detention.
- The project will require new storm-drain pipes, catch basins, manholes, and other structures to accommodate new site grading.
- As this project is mostly composed of impervious surface and as this location has little to no current qualitative or quantitative stormwater management facilities, the relative cost of stormwater management improvements for this project is expected to be high.

Figure 5-4: Terminal Alternative 1

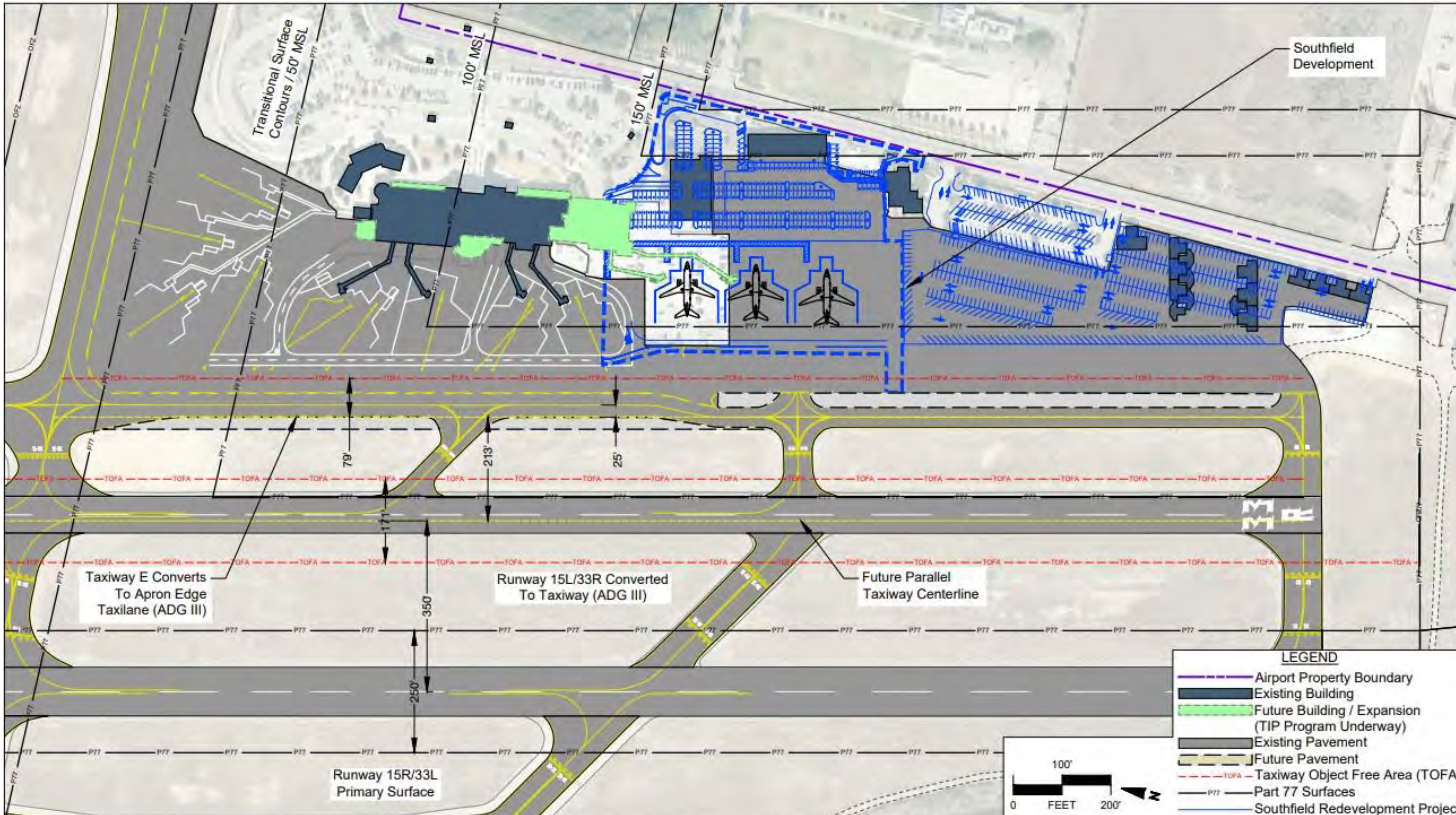


Figure 5-5: **Terminal Alternative 2**

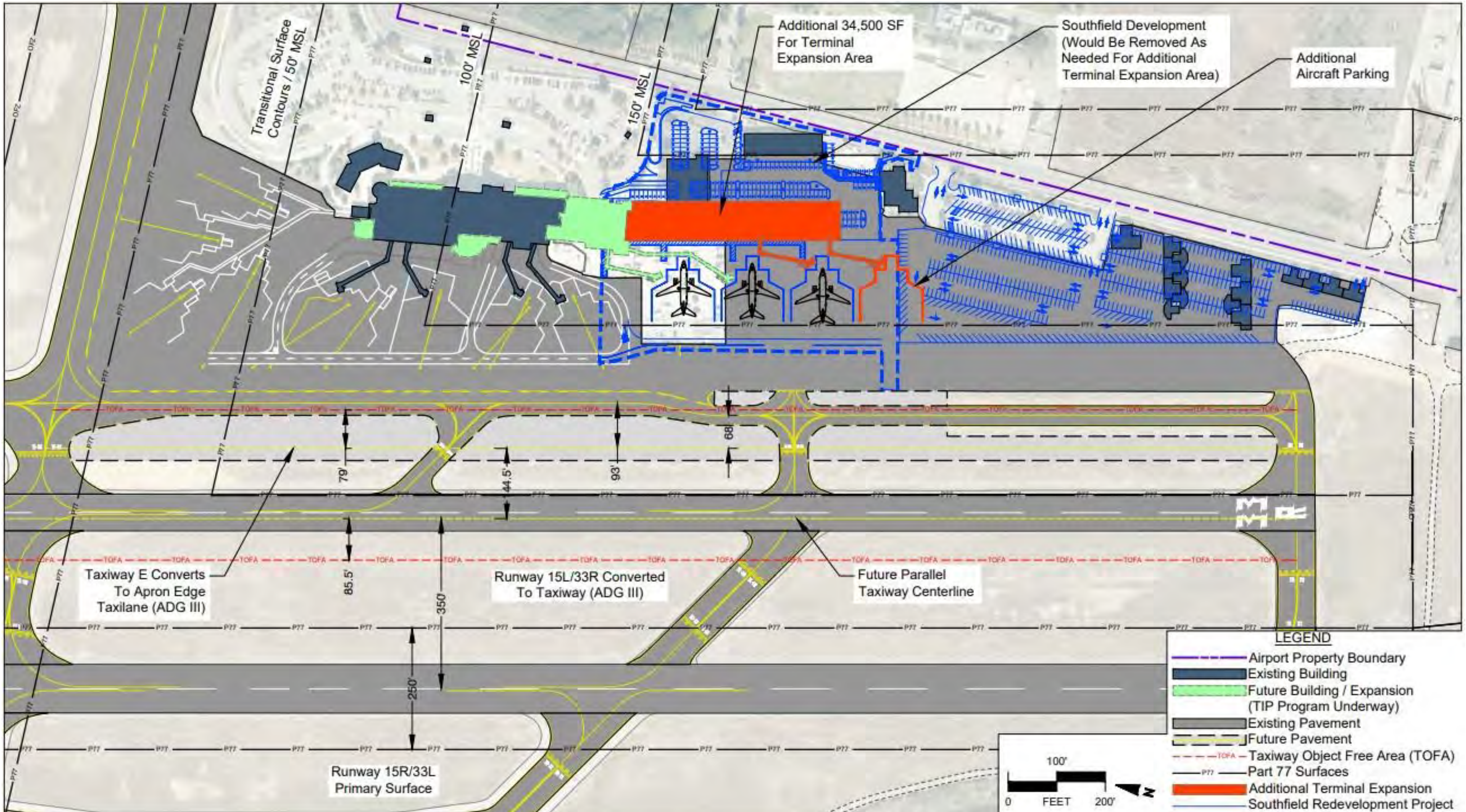


Figure 5-6: **Terminal Alternative 3**

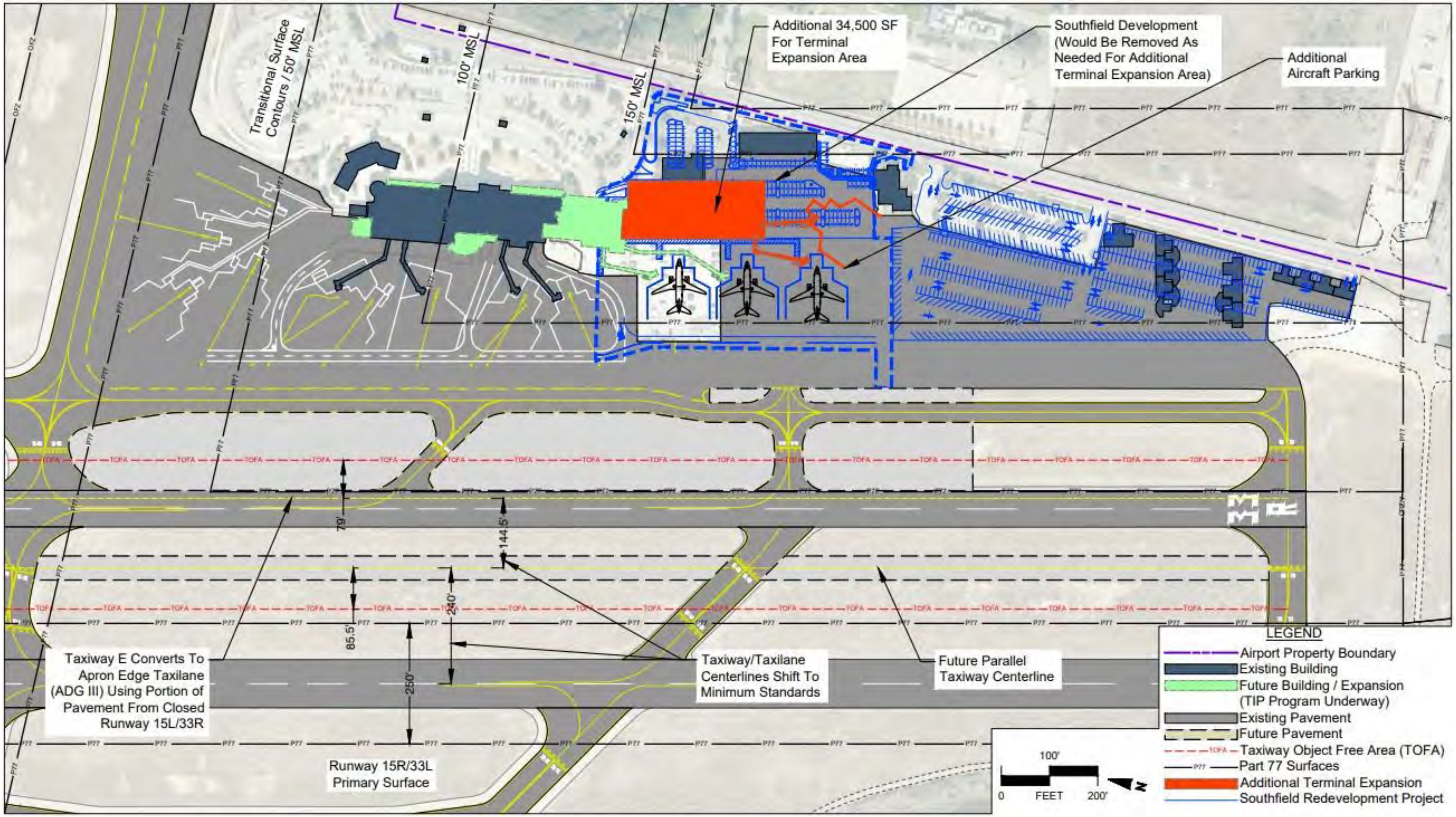


Figure 5-7: **Terminal Alternative 4**

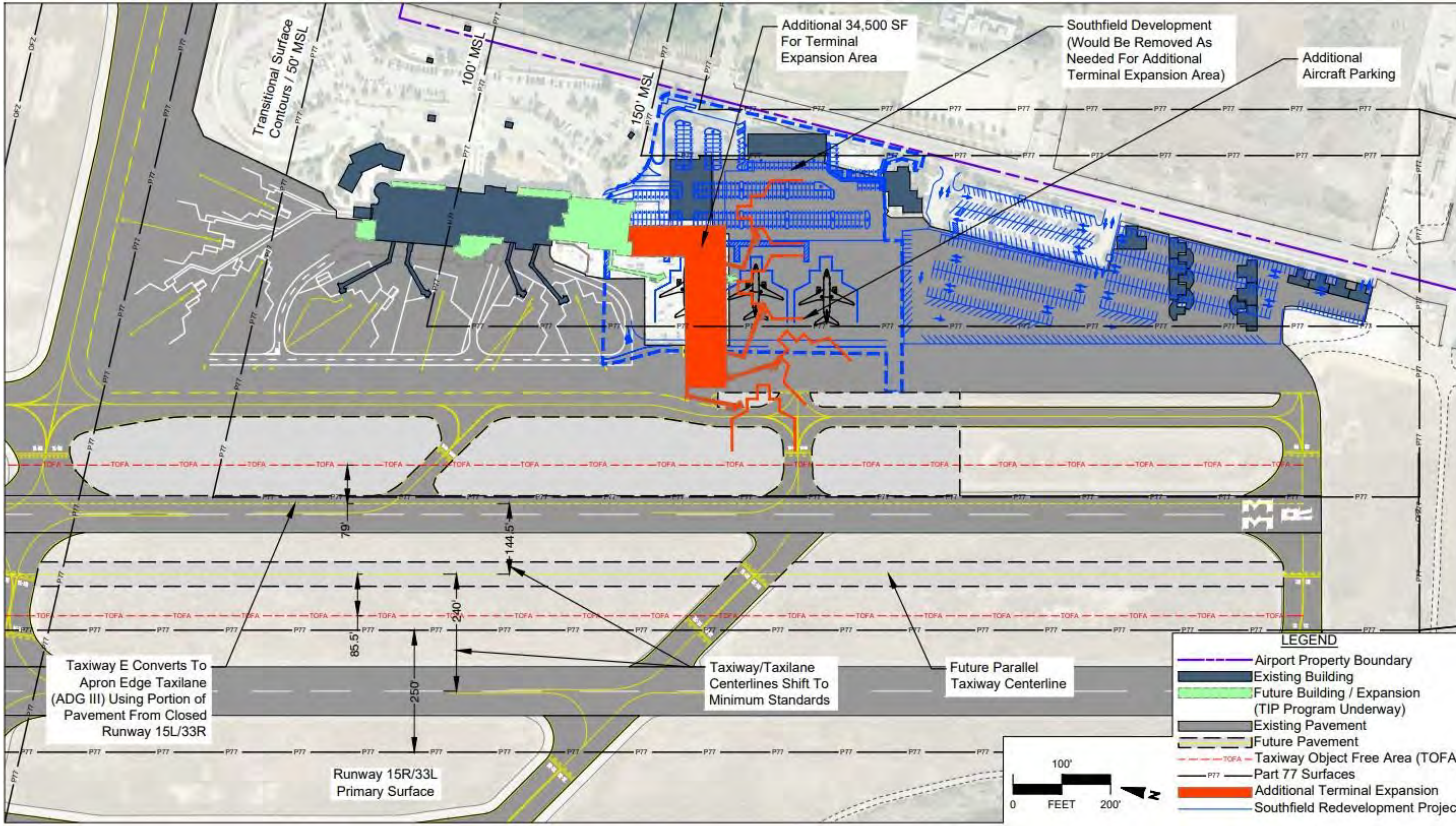


Figure 5-8: **Terminal Alternative 5**

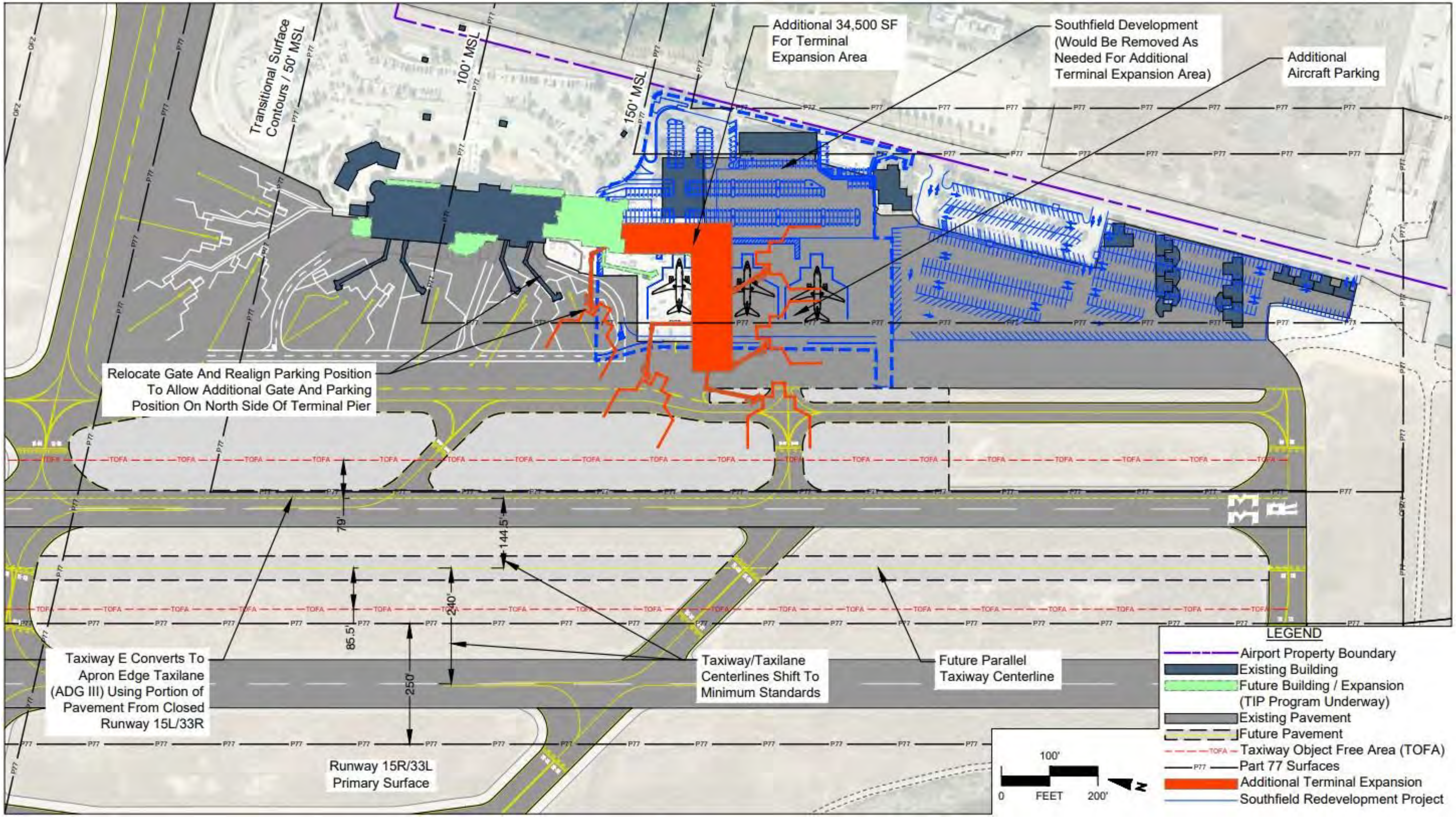


Figure 5-9: **Terminal Alternative 6**

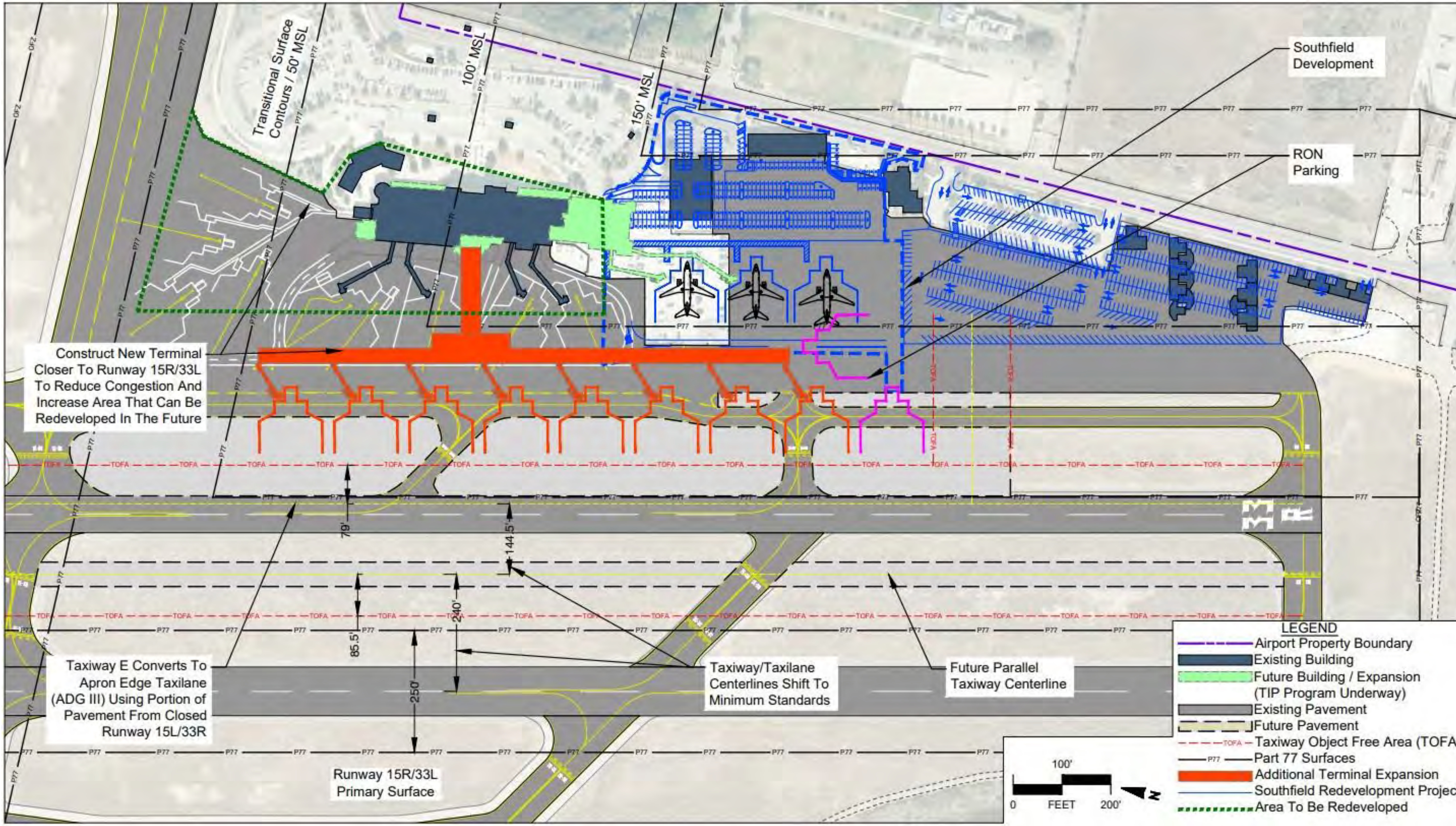
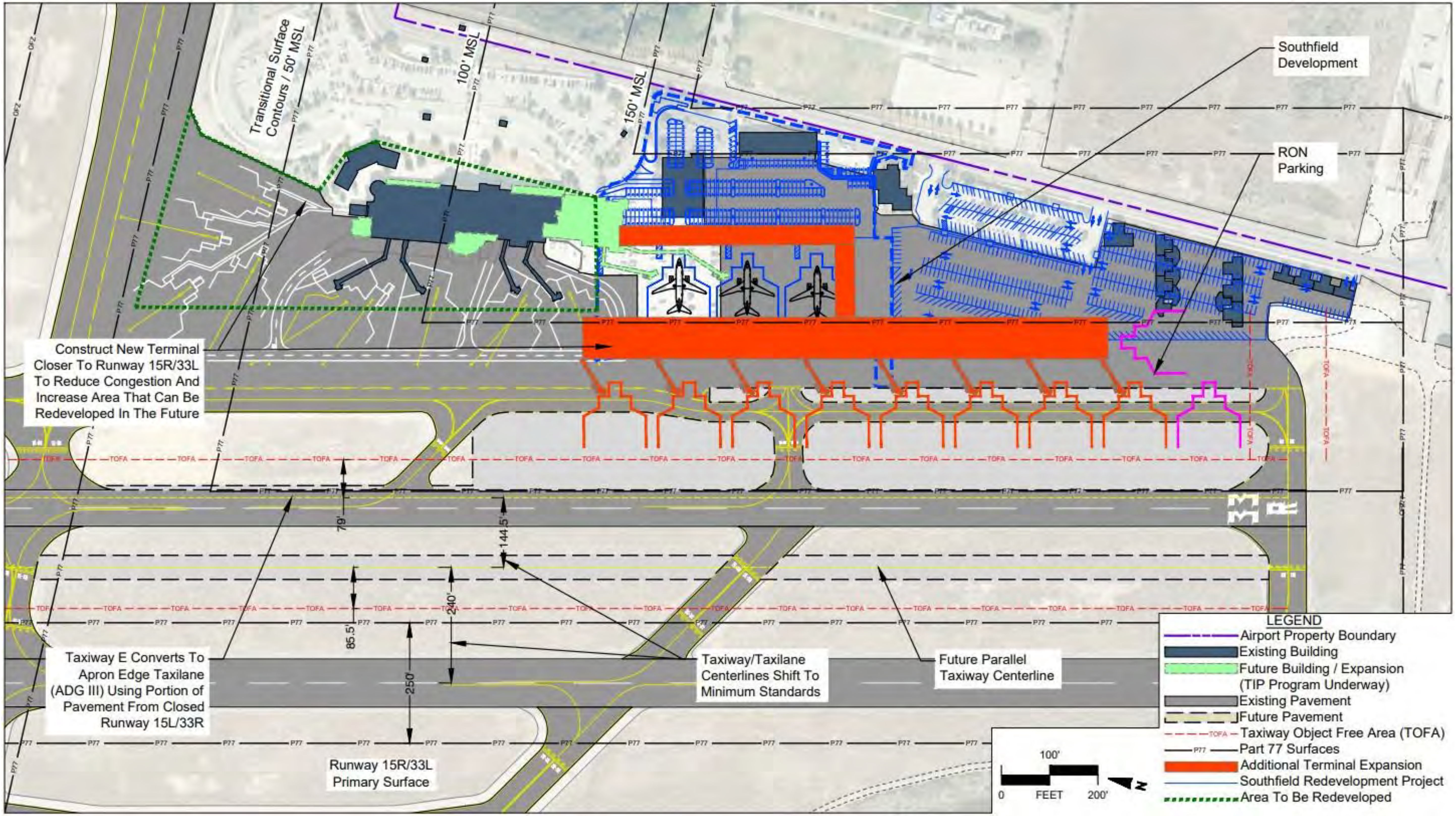


Figure 5-10: Terminal Alternative 7



5.5.2 Aircraft Rescue and Firefighting Buildings / Equipment

The critical aircraft, Boeing 737-800, is increasing in operations and SBA should consider preparing to become an Aircraft Rescue and Firefighting (ARFF) Index C when the 737-800 NG or 737-800 MAX reaches the five daily operations threshold. An additional study on the ARFF capacity and operational trends toward longer-fuselage-length aircraft should be considered to ensure the appropriate apparatus, facilities, equipment, and response times meet or exceed requirements. No development alternatives are proposed.

5.6 GENERAL AVIATION FACILITIES

5.6.1 General Aviation Hangars

The airport will need to construct a variety of general aviation hangar products to meet long-term demand. The FAA-approved aviation activity forecast presented in **Chapter 3** projects that an additional 11 single-engine aircraft, 19 jet aircraft, 9 multi-engine piston aircraft, and 6 helicopters will make SBA their home airport in the 20-year planning period. These projected increases should serve as a long-term guide for the Airport rather than a rigid requirement to be met; demand may materialize differently throughout the future and the Airport should remain nimble in the planning for GA storage facilities.

As the GA fleet at SBA becomes more sophisticated, larger, and more costly, aircraft owners, pilots, and operators are moving away from ramp parking and tie-down rentals in favor of hangars and storage arrangements that provide a higher level of environmental protection and security. Demand for exposed, outdoor tie-downs or shade hangars is not anticipated for based aircraft. Demand for temporary overnight ramp storage and hangars is expected to remain constant throughout the planning period.

The Airport has an FBO redevelopment project ongoing outside of this Master Plan effort. The redevelopment project will establish two new FBO leaseholds in the northeast quadrant of the Airport to accommodate the relocation of SBA's two existing FBOs. The boundaries for that redevelopment area are included in the hangar development alternatives shown below. The ultimate layout and facilities to be provided within the FBO redevelopment areas will be determined by the FBOs in conjunction with Airport management. It is expected that the ultimate configuration of the FBO redevelopment project will accommodate all future GA transient apron demand. The following alternatives provide potential concepts for development within these areas that is intended to facilitate design and discussion between the Airport and the FBOs once the new leases are in place. For this reason, the preferred development concept will show the future FBO redevelopment areas as broad zones to be improved and will not contain specific development recommendations.

Northeast Hangar Development Alternatives

NE Hangar Alternative No. 1

This concept depicts potential hangar development concepts for both inside and outside of the future FBO redevelopment areas in the northeast quadrant. As mentioned above, the concepts depicted inside the

FBO redevelopment area should serve as a guide for development discussions in conjunction with the FBOs that will eventually lease those areas.

Outside of the FBO redevelopment areas, two locations of Airport-owned hangar development are shown. A development of 36 T-Hangars could be accommodated under the approach to the existing Runway 15L end. This development concept would be contingent upon the closure of Runway 15L/33R. Additionally, five Airport-owned box hangars could be constructed east of the FBO redevelopment areas and north of Taxiway B.

NE Hangar Alternative No. 2

The second hangar development alternative for the northeast quadrant depicts similar facilities but in a slightly different configuration and orientation. The concept for development within the FBO redevelopment areas is shifted to provide aircraft access to the area in more north/south flow with direct access to Taxiway B, whereas Alternative 1 provides aircraft access to the area oriented east/west with direct access to Taxiway E and F.

Northwest Hangar Development Alternatives

NW Hangar Alternative No. 1

Three alternative development concepts are provided for GA hangar development in the northwest quadrant of the airfield. Consistent among all three is a T-hangar expansion concept that extends the existing T-hangar development located immediately northwest of Runway End 15R. Extending this development pattern east towards the ATCT would provide 15 additional hangars for small GA aircraft. Unique to Alternative 1 is the location of a large hangar to replace the existing Atlantic Aviation FBO facilities upon their relocation. This could serve as a potential 3rd FBO for the Airport or accommodate one large individual user.

NW Hangar Alternative No. 2

Alternative 2 for the northwest quadrant retains the T-hangar development concept from Alternative 1 but provides three large box hangars over the existing Atlantic Aviation FBO site. These could serve as hangars for individual users or as a home to aviation-related service providers or businesses. Any future hangars in the location of the existing Atlantic Aviation FBO site will be limited in height as the Part 77 Primary Surface runs through the middle of the existing apron.

NW Hangar Alternative No. 3

Alternative 3 is a slight variation of Alternatives 1 and 2 in that it would provide for four 80'x80' box hangars.

Combined Alternative *

The preferred hangar development alternative is a combination of Northeast Alternative 1 and Northwest Alternative 2, which are depicted together on the Preferred Development Concept (**Figure 5-26**). This gives the Airport maximum flexibility as to the type of hangars and locations to be developed. The hangars identified in the preferred development concept, in conjunction with development expected to occur within the FBO redevelopment areas, will provide for aircraft storage facilities sufficient to meet the expected demand throughout the planning period.

The preferred hangar development alternative is aligned with the following guiding principles of this Master Plan:

- **Safety and Security:** Additional hangar storage options will provide secure facilities and a secure operating environment for aviators throughout the planning period.
- **Economic Vitality:** The additional hangars and associated leases will contribute to the long-term financial self-sufficiency of the Airport and will contribute economically to the region.
- **Transportation Diversity:** Continuing to invest in GA users through these improvements demonstrates the Airport's intent to serve all types of aviation users at the Airport.

Stormwater Management Recommendations for the Preferred Hangar Development

The following stormwater management recommendations apply to the preferred hangar development alternative:

- Assumed values for affected impervious area are zero acres of removed impervious surface, 1.9 acres of replaced impervious surface, and 5.7 acres of new impervious surface.
- Recommended BMPs for this alternative include:
  - Bioretention facilities or underground filter treatment systems;
  - Integrated grading and inlet design;
  - Surface storage or underground storage in tanks, vaults, or pipes for retention and detention.
- The project will require new storm-drain pipes, catch basins, manholes, and other structures to accommodate new site grading.
- To protect natural waterways, hangars and maintenance bays require source-control BMPs with floor drains that connect to sanitary sewer.
- As this project is mostly composed of impervious surface and as this location havs little to no current qualitative or quantitative stormwater management facilities, the relative cost of stormwater management improvements for this project is expected to be high.

Figure 5-11: **NE Hangar Alternative 1**

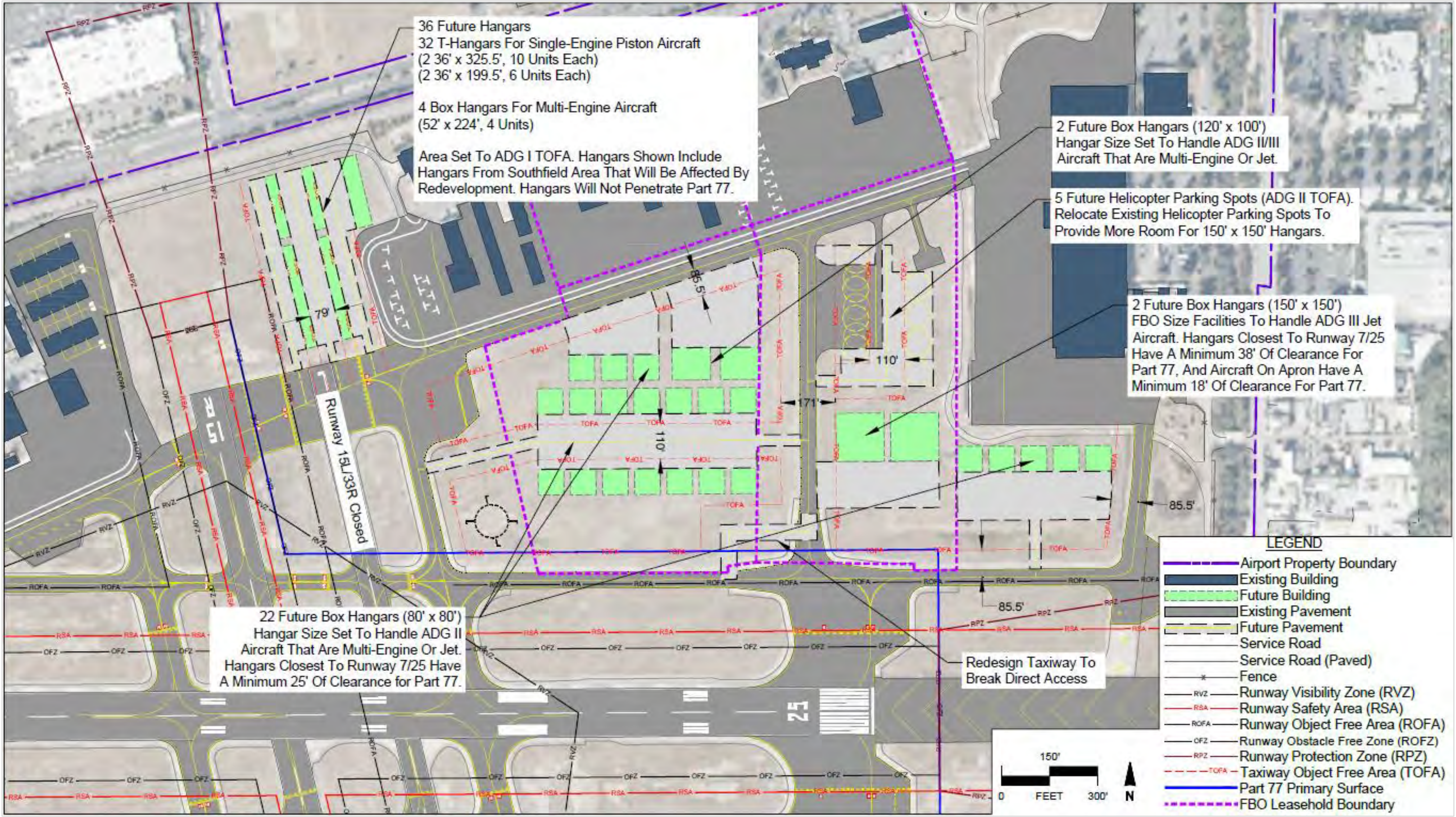


Figure 5-12: **NE Hangar Alternative 2**

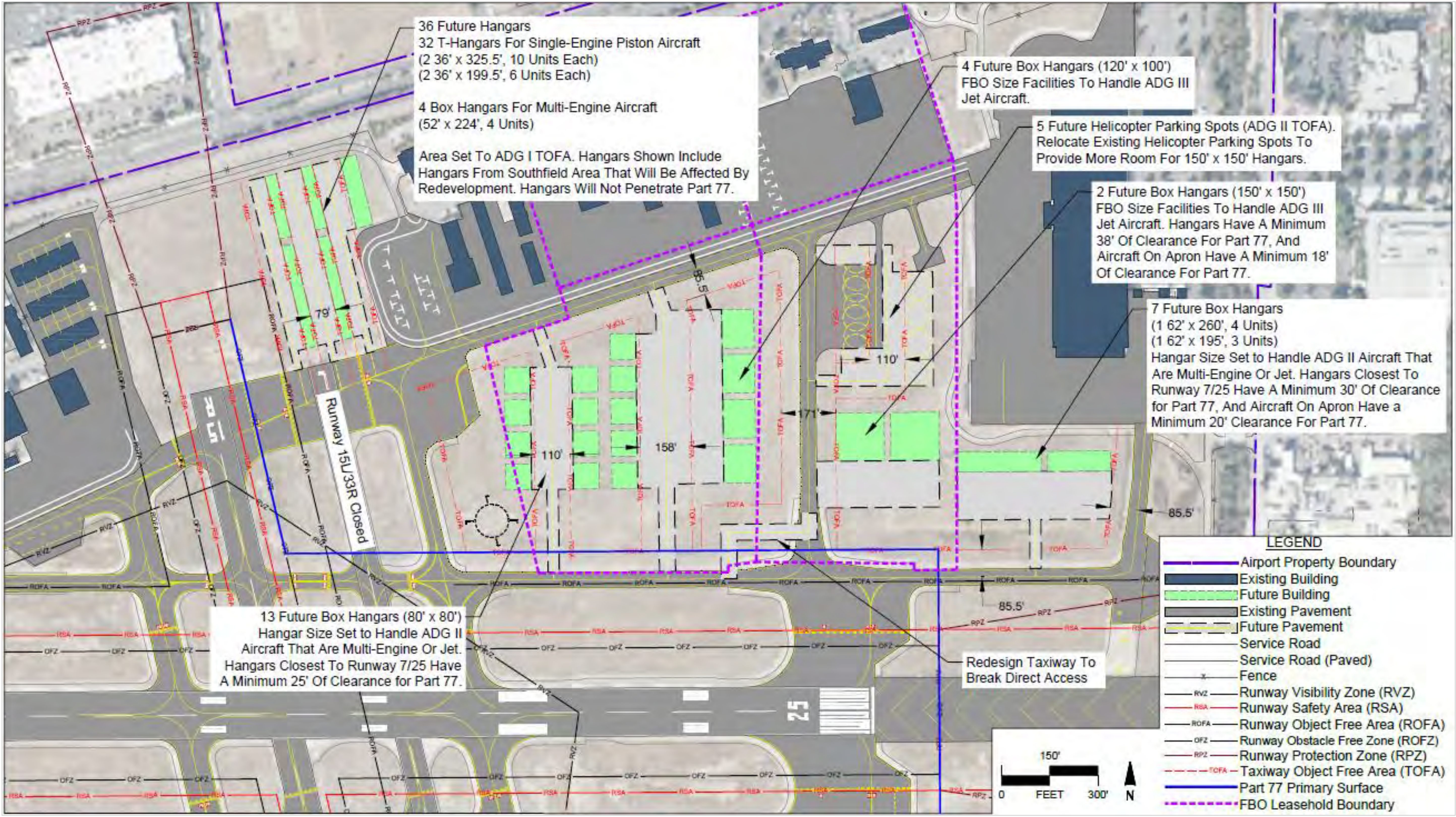


Figure 5-13: **NW Hangar Alternative 1**

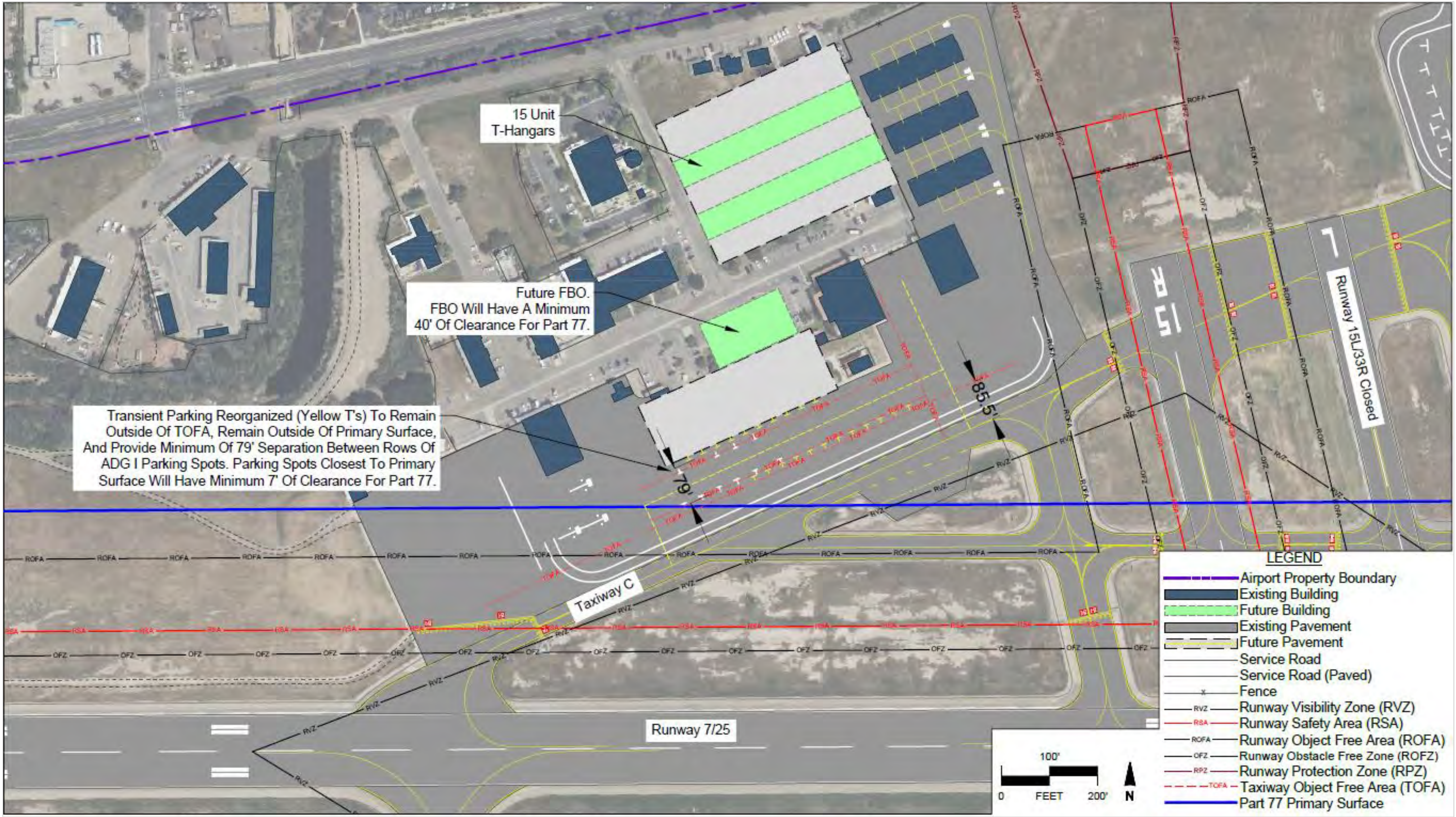


Figure 5-14: **NW Hangar Alternative 2**

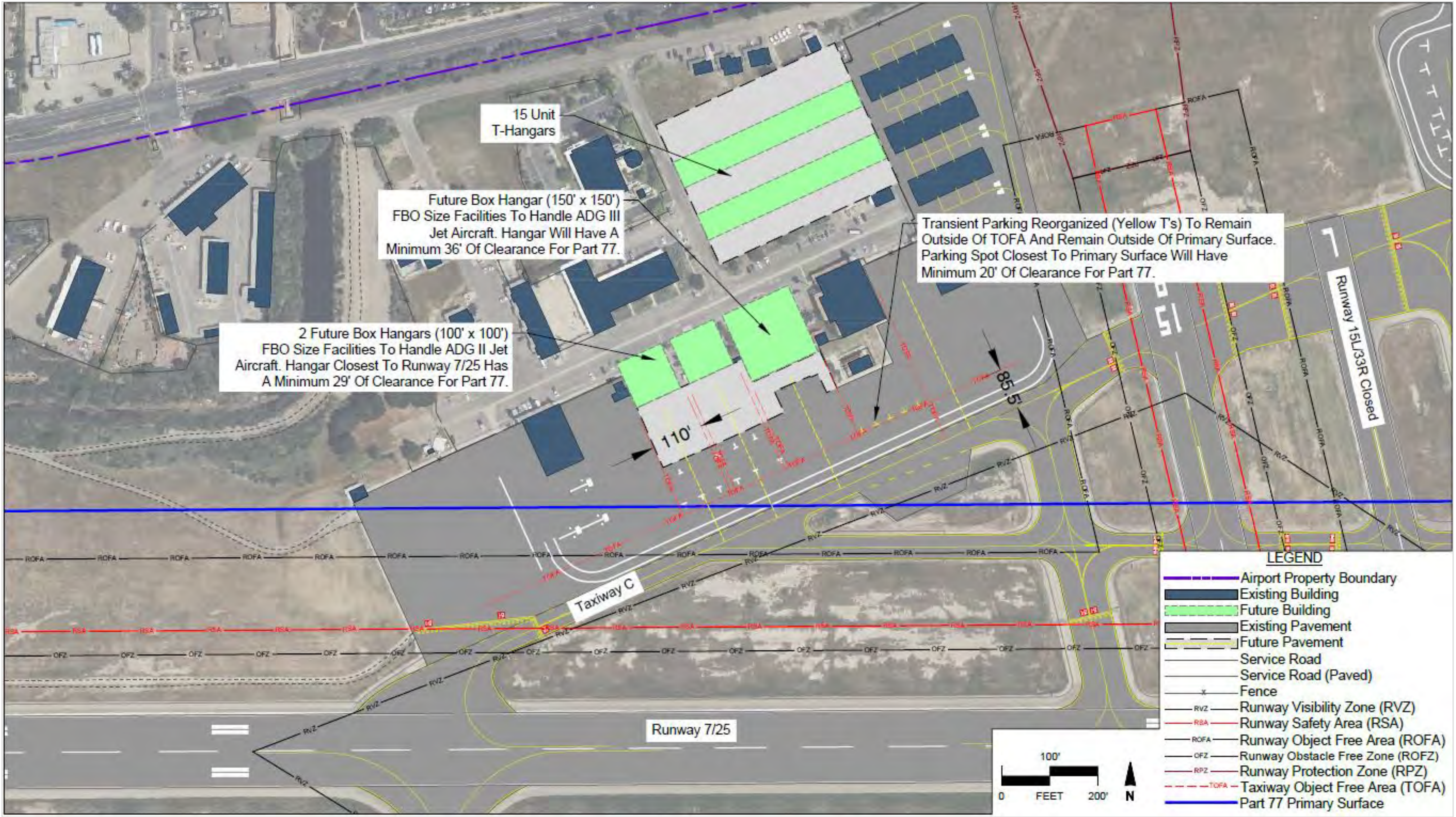
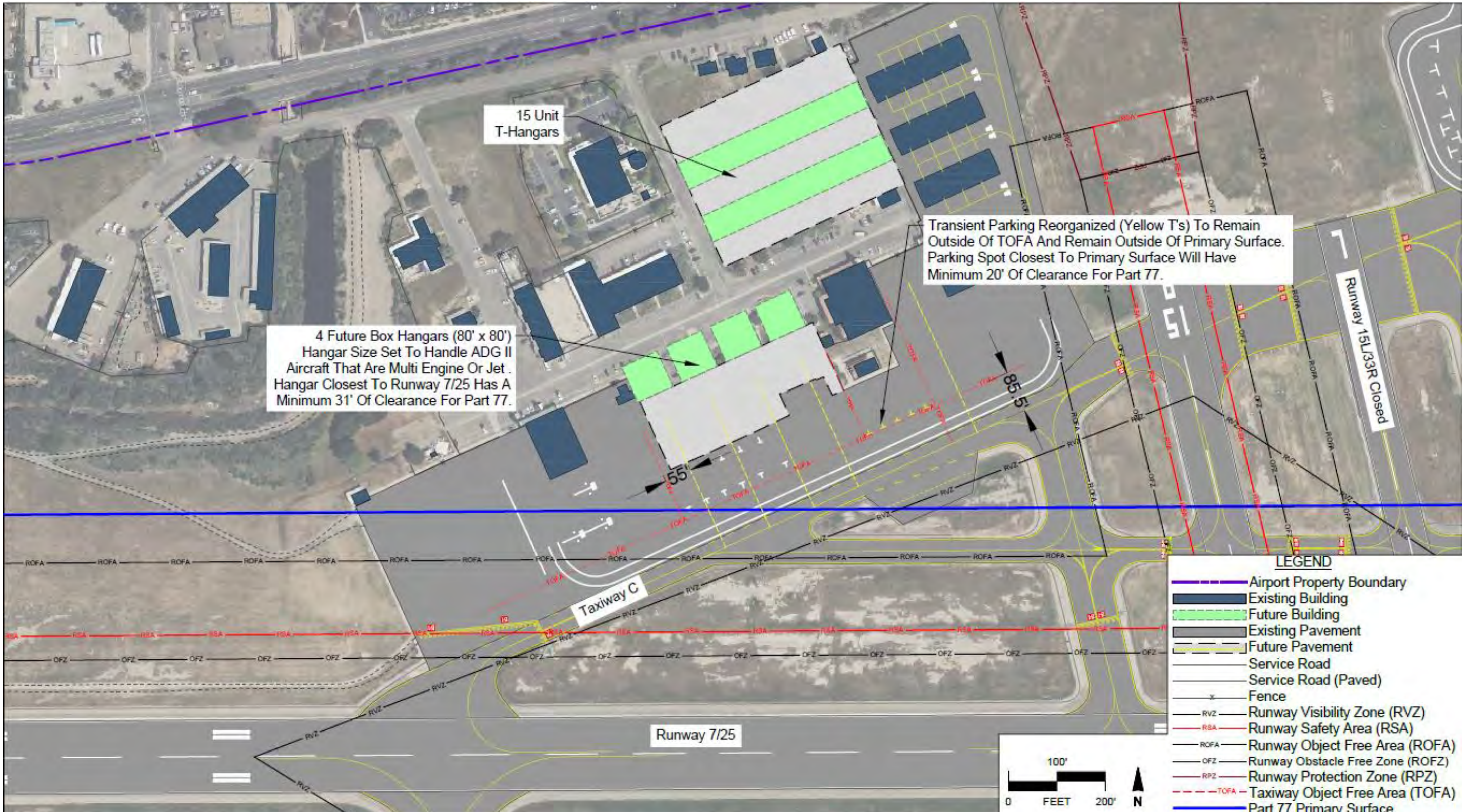


Figure 5-15: NW Hangar Alternative 3



5.6.2 Electric Aircraft and VTOL Infrastructure

The Airport should consider planning electric infrastructure and a vertiport to accommodate electric aircraft and electric vertical take-off and landing (eVTOL) aircraft to meet expected demand as the technology develops. The airport will need to anticipate installation of e-charge facilities. Capacity and location for e-charging facilities will need to be considered on a case-by-case basis; no specific alternative for locating charging infrastructure is proposed as it will be dependent upon the future FBO redevelopment of the northeast quadrant of the Airport. The guidance outlined in **Chapter 4** provides a framework to consider a future development process.

To accommodate anticipated future demand by eVTOL aircraft, a dedicated vertiport would help segregate these users from traditional fixed-wing operations. Similar to how fixed-wing aircraft of varying sizes have differing approach and departure requirements, eVTOL aircraft will likely operate in a manner that would benefit from separate facilities. Six sites, depicted and described below, were analyzed for potential vertiport locations. Utility infrastructure location and accessibility is critical to developing electric aircraft and vertiport facilities – the vertiport locations presented below have reasonable access to utility infrastructure that would support construction of facilities outlined in **Chapter 4**.

The FAA has established Engineering Brief No. 105, "Vertiport Design," (EB 105) to provide guidance for the design of vertiports. The alternatives evaluation uses the following criteria taken from the EB 105 for potential vertiport sites:

- **Preferred Approach and Departure Paths:** Preferred approach/departure paths should be aligned with the predominant wind direction as much as possible.
- **Availability of More Than One Approach and Departure Path:** Vertiports should have more than one approach/departure path available and they should be as close to reciprocal in magnetic heading as possible (e.g., 180 degrees and 360 degrees). To meet the FAA-recommended degree of separation requirements, a minimum of 135 degrees of separation is desired if reciprocal paths are not possible.
- **Flight Path Independence:** Approach and departure paths are independent from approach/departures from primary runway.

The following matrix summarizes the evaluations of the six sites using the three criterion above, as well as additional considerations. The rationale for the findings is discussed in each site's respective section below. **Figures 5-16** through **5-22**Error! Reference source not found. below depict the potential locations for the siting of a future vertiport at SBA.

Table 5-2: Site Evaluation Criterion

Site	1	2	3	4	5
Location	Adjacent to ATCT	Under Rwy 15L Approach	NW Industrial Park	Vacant Land Near E. Lot	Parking Lot in NE
Alignment with wind direction	◇	✕	✕	◇	✓
More than one path available (reciprocal)	✓	✓	✓	✓	✓
Paths are independent from approach / departures from primary runway	✓	✕	✕	✓	✓
Other factors	N/A	Requires closure of Rwy 15L/33R	Site occupied by existing tenant	Environmental concerns	Off-airport land use analysis

Does the site satisfy the criteria?

✓ Yes ✕ No ◇ Partially

Figure 5-16: **Vertiport Siting Location Options**

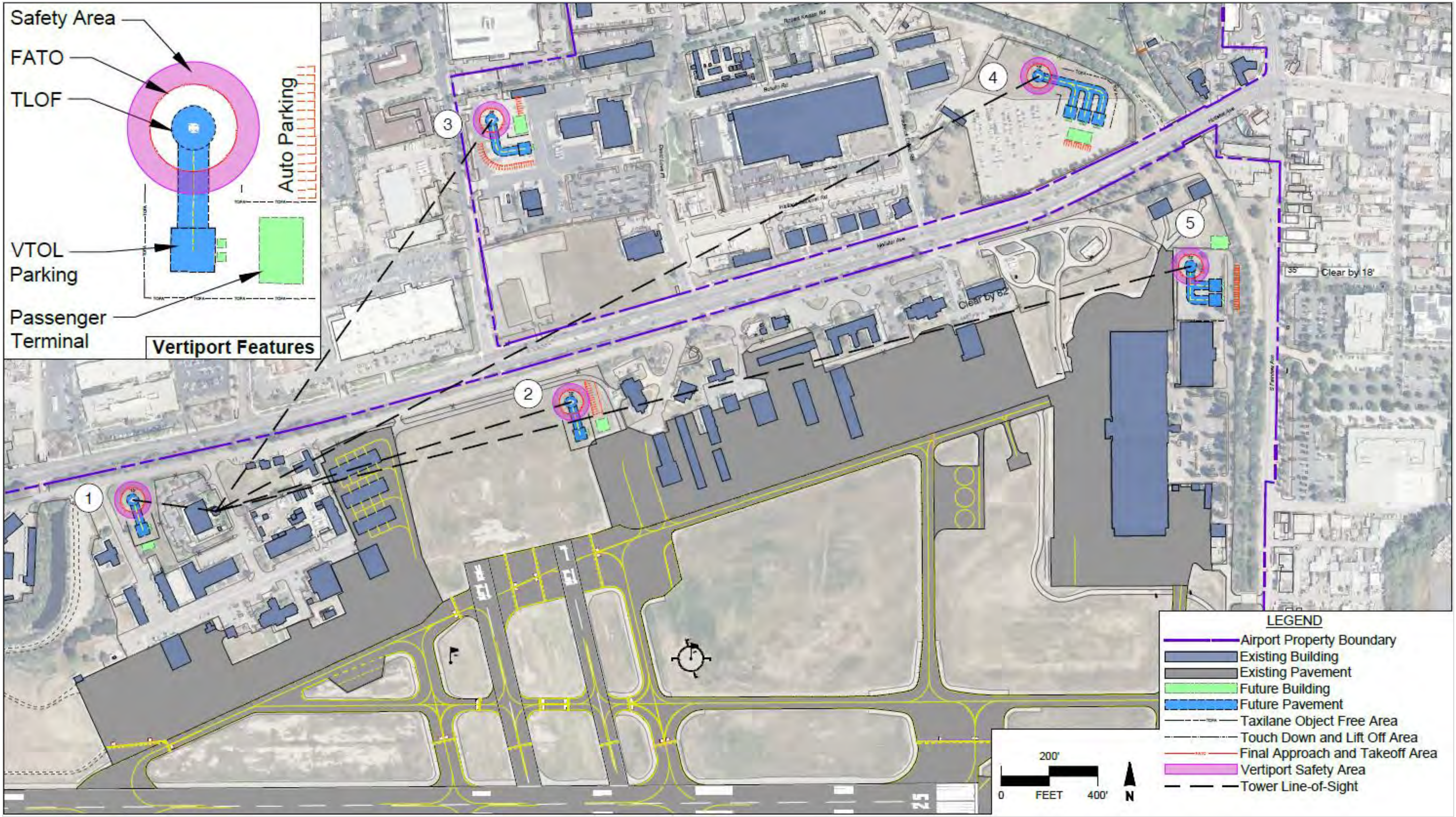


Figure 5-17: **Site 1 – Located immediately west of the existing Airport Traffic Control Tower (ATCT)**

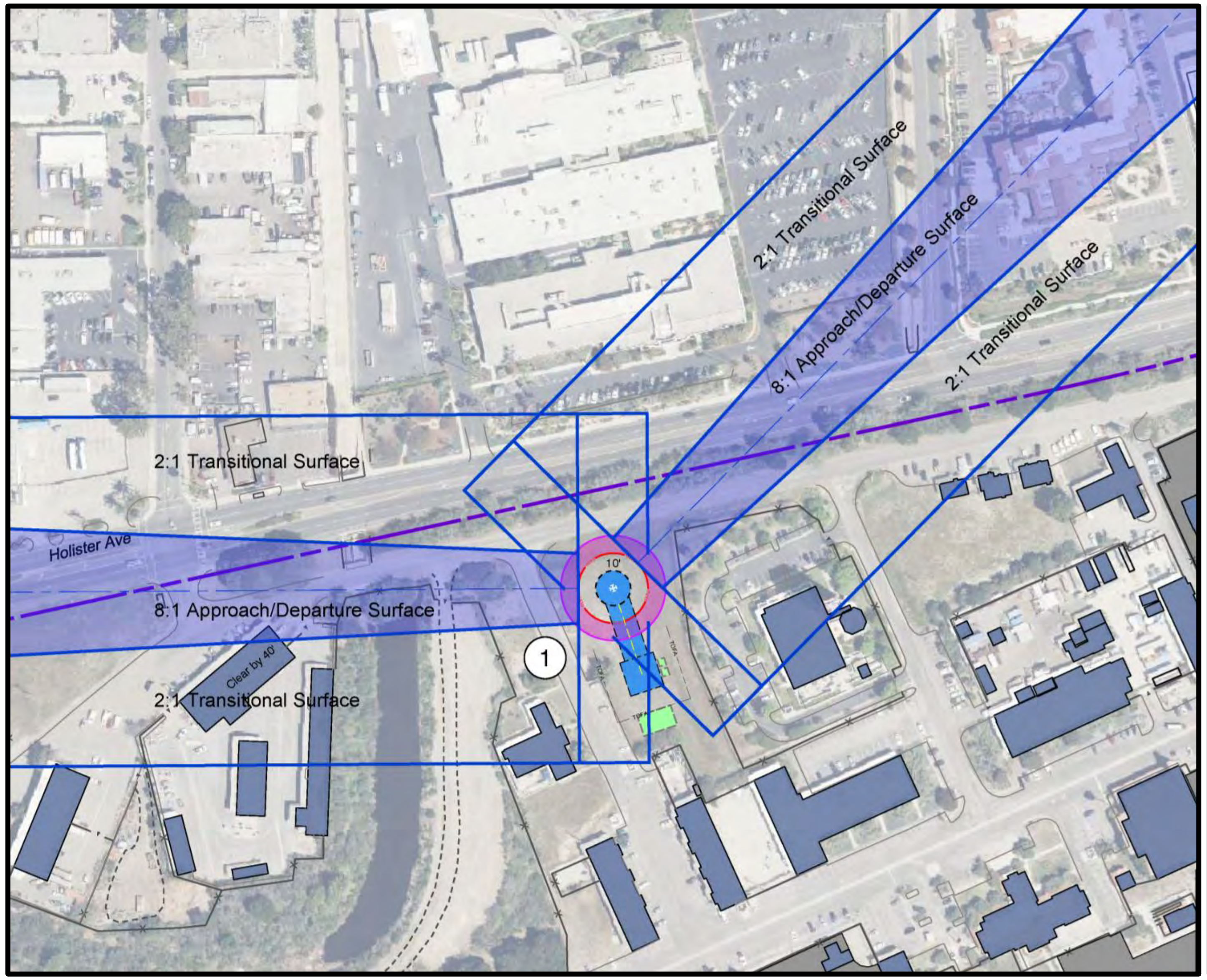


Figure 5-18: **Site 2 – Under the approach to Runway 15L**

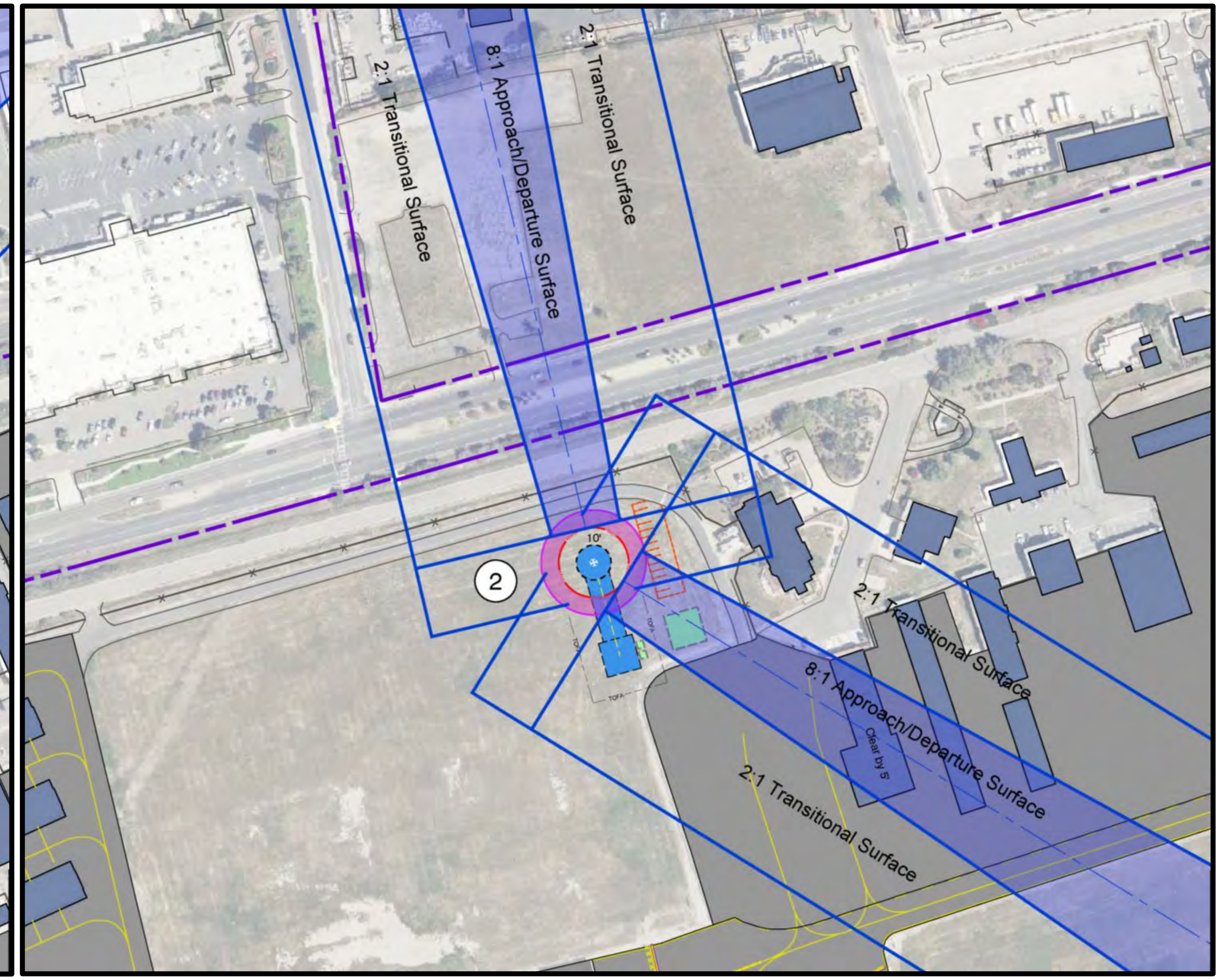


Figure 5-19: **Site 3 - Northwest corner of industrial park, north of Hollister Ave**

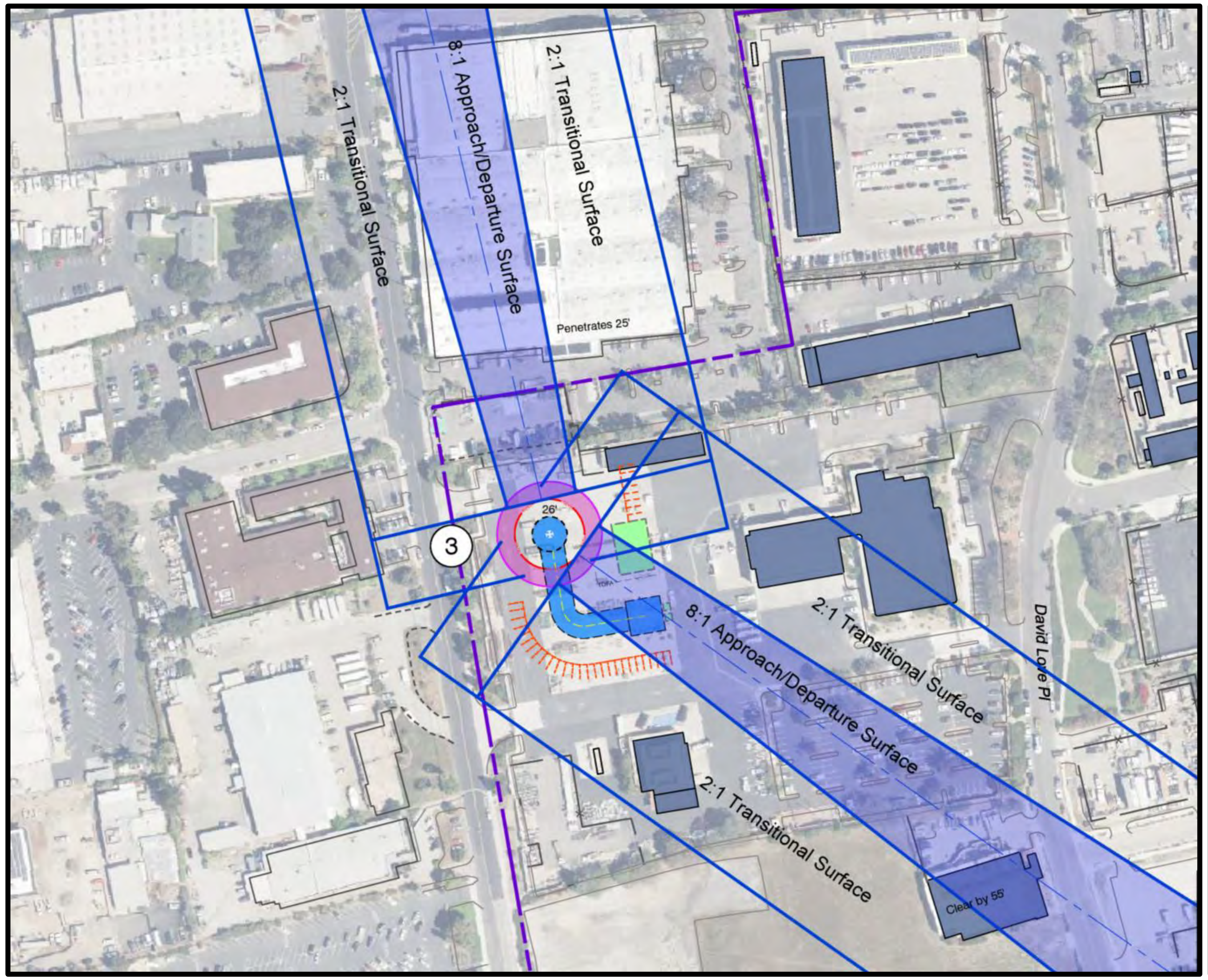


Figure 5-20: **Site 4 - Vacant land near economy parking lot, north of Hollister Ave**

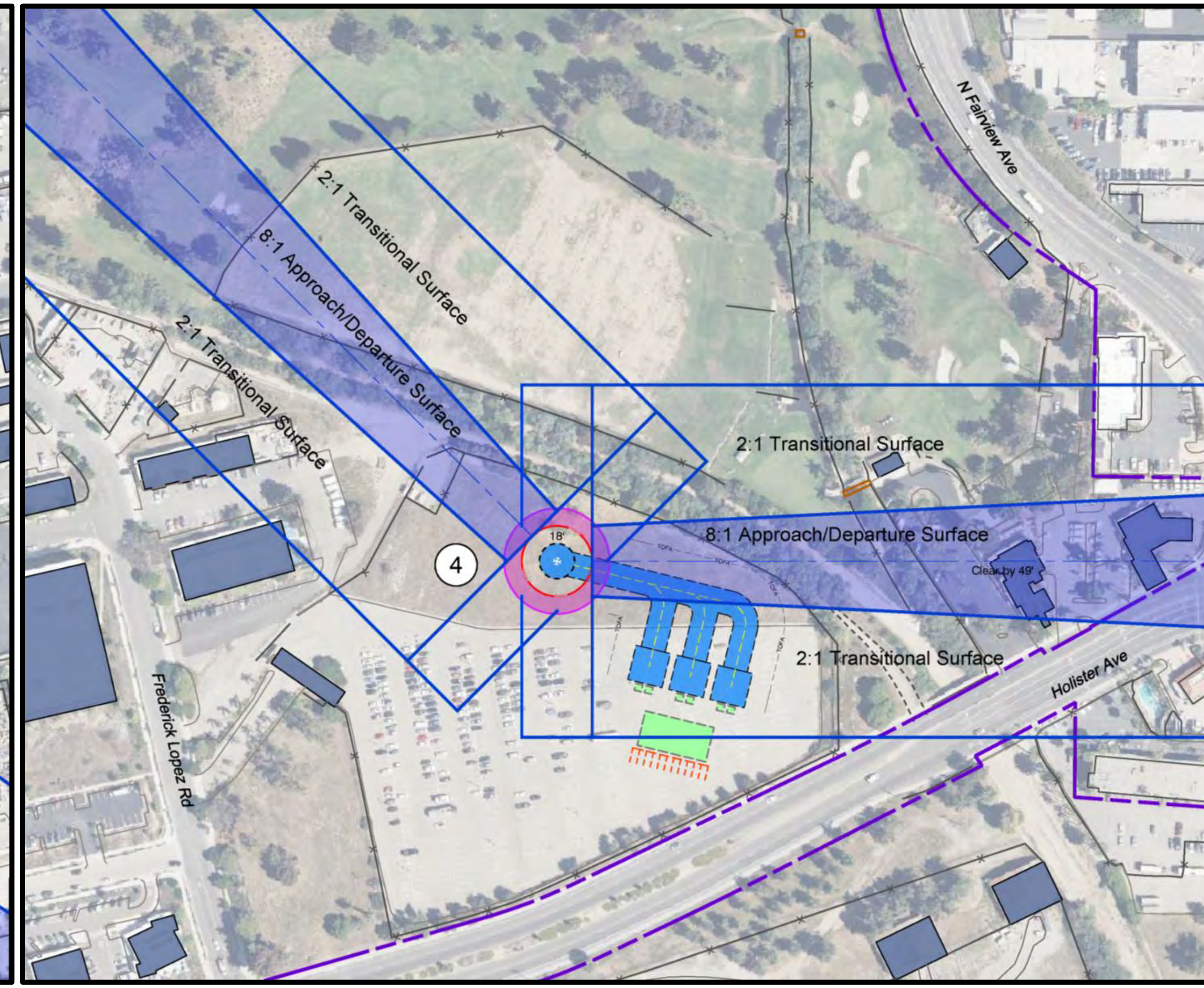


Figure 5-21: **Site 5 – Automobile parking lot in northeast corner of Airport – Preferred Alternative**

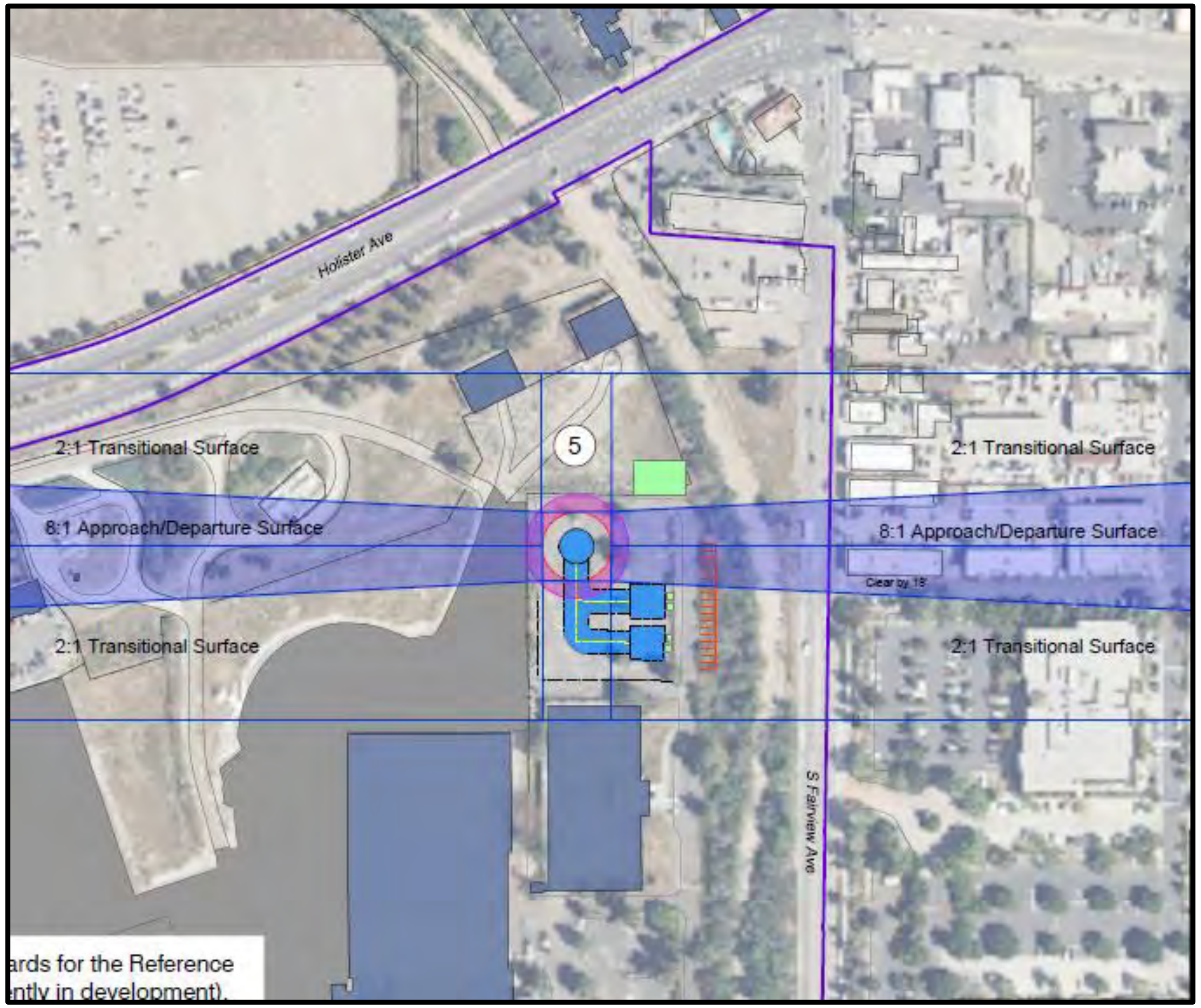
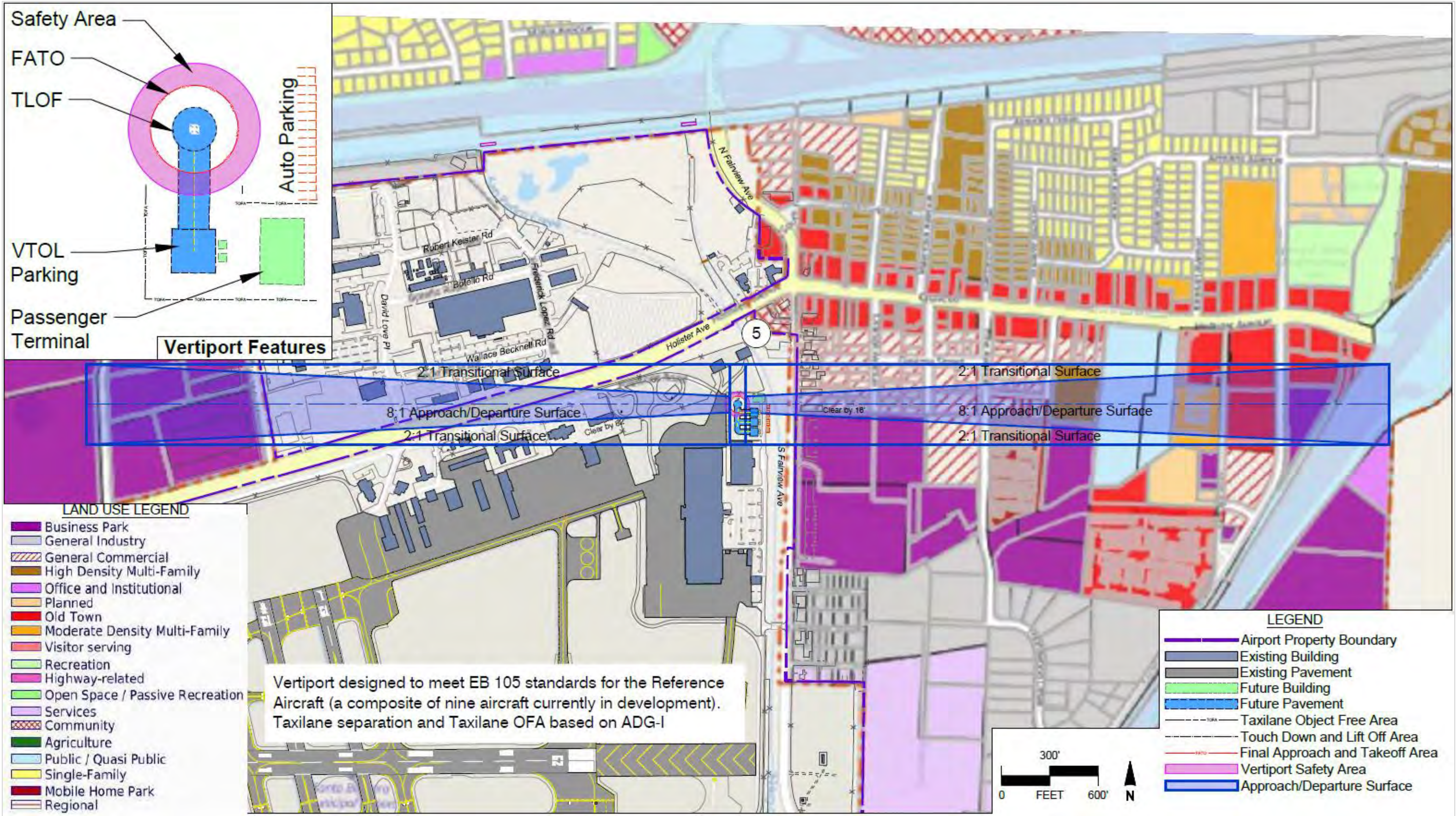


Figure 5-22: Vertiport Alternative No. 5 – Land Use Analysis



Vertiport Alternative No. 1

Site 1 is located immediately west of the existing Airport Traffic Control Tower (ATCT). Existing buildings (including the ATCT) preclude perfectly reciprocal approach/departure paths in alignment with the prevailing wind directions. However, more than one set of approach/departure paths is available, and this site does allow for the minimum 135-degree separation between approach and departure paths. These paths would be independent from the approach and departures of the primary runway.

Vertiport Alternative No. 2

Site 2 is located under the approach to Runway 15L. Two distinct approach departure paths that are separated by at least 135 degrees are possible. However, given the locations of existing buildings, they cannot be aligned with prevailing wind directions, and they are not independent from the primary runway.

Vertiport Alternative No. 3

Site 3 is located in the northwest corner of the industrial park and north of Hollister Ave. Two distinct approach departure paths that are separated by at least 135 degrees are possible. However, given the locations of existing buildings, they cannot be aligned with prevailing wind directions, and they are not independent from the primary runway.

Vertiport Alternative No. 4

Site 4 is located on vacant land near the economy parking lot and north of Hollister Ave. Two distinct approach departure paths that are separated by at least 135 degrees are possible. However, given the locations of existing buildings, they are only partially aligned with prevailing wind directions. The approach/departure paths would be independent from operations on the primary runway. Environmental concerns exist for this location due to the proximity to San Pedro Creek.

Vertiport Alternative No. 5 *

Site 5 is located in the automobile parking lot in northeast corner of the Airport. Two distinct approach and departure paths are possible in a reciprocal orientation. The paths would be aligned with the predominant wind direction and would also be allow operations independent of the primary runway. An off-airport land use analysis was conducted for the lands east of the Airport boundary (depicted below). The majority of the City of Goleta’s General Plan land uses under the eastern approach/departure surface are “business park” and “general commercial.” However, two areas of “High Density Multi-Family” and “Moderate Density Multi-Family” exist along the approach/departure surface. From an impact perspective, high- and medium-density residential are less impacted by aircraft overflight than single family or rural residential for comparison. Noise impacts from the proposed vertiport will be presented within the future 20-year noise contour map in the land use analysis to follow in **Chapter X**.

Preferred Alternative

Vertiport site 5 is the only site that meets all three of the critical evaluation criteria; therefore, it is recommended as the preferred alternative.

The recommended vertiport location is aligned with the following guiding principles of this Master Plan:

- **Safety and Security:** Providing a dedicated location for a vertiport at the Airport will establish a safe and secure location for new entrants to the aviation industry to operate.
- **Economic Vitality:** Planning accommodation for new entrants to the market will assist with marketing the Airport and will help the Airport to continue serving as an economic contributor to the region while maintaining the Airport's economic self-sufficiency.
- **Transportation Diversity:** Establishing a vertiport will accommodate a potential new user group at the Airport and a new mode of aviation transportation.

Stormwater Management Recommendations for the Preferred Vertiport Site

The following stormwater management recommendations apply to the preferred alternative (Site 5):

- Assumed values for affected impervious area are zero acres of removed impervious surface, 0.4 acres of replaced impervious surface, and 0.1 acres of new impervious surface.
- Recommended BMPs for this alternative include:
  - Bioretention facilities or underground filter treatment systems;
  - Integrated grading and inlet design;
  - Surface storage or underground storage in tanks, vaults, or pipes for retention and detention.
- The project will require new storm-drain pipes, catch basins, manholes, and other structures to accommodate new site grading.
- As this project is mostly composed of impervious surface and as this location has no current qualitative or quantitative stormwater management facilities, the relative cost of stormwater management improvements for this project is expected to be high.

5.7 APRON

Long-term apron demands are accommodated through the long-term terminal expansion alternatives presented in **Section 5.4**. The General Aviation apron demands are accommodated by the FBO redevelopment project discussed in **Section 5.5**.

5.8 CARGO FACILITIES

Chapter 4 concludes that current cargo facilities meet near-, mid-, and long-term needs with no expected changes in demand. No improvement alternatives are evaluated for the existing cargo facilities.

5.9 SUPPORT FACILITIES

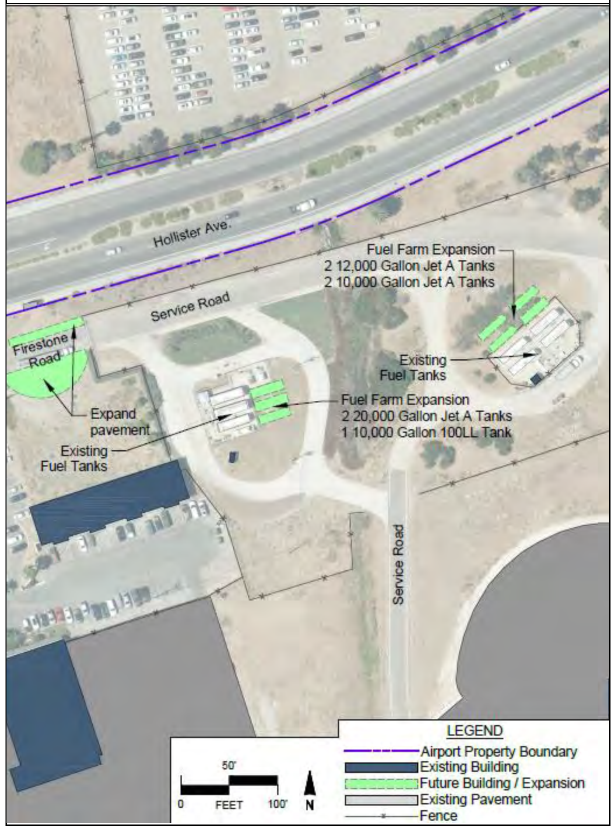
5.9.1 Airport Administration

The Airport is in need of additional airport administration office and facility space. Assessment of space requirements and discussion of dispersed facilities is being undertaken outside of this Master Plan. Two potential locations (495 South Fairview and 404 Moffett Place) will be depicted on the Airport Layout Plan.

5.9.2 Fuel Storage

An expansion of fuel storage facilities is identified in **Chapter 4**. The existing fuel storage location in the far northeast corner of the Airport is well suited in its location and ability to accommodate expansion – the Airport could accommodate storage solutions that would double the existing fuel capacity at the existing site. Additionally, the Airport would have the option of incorporating sustainable aviation fuels in this location as well. A conceptual graphic of expansion options is presented in **Figure 5-23**. The preferred and only alternative for fuel storage expansion uses the existing location. This is presented on the preferred development concept in **Figure 5-26**.

Figure 5-23: **Support Facilities**



The preferred fuel storage expansion is aligned with the following guiding principles of this Master Plan:

- **Safety and Security:** Establishing additional fuel capacity will allow the Airport to be more resilient against supply chain disruptions and would help ensure a safe and secure airport for all users.
- **Economic Vitality:** Additional fuel storage will allow the Airport to continue to receive fuel flowage fees, which contributes to the financial self-sufficiency of the Airport.
- **Transportation Diversity:** Continuing to serve all aviation users with a variety of fuels furthers the Airport's attractiveness to all aviation groups.
- **Sustainability:** The additional fuel storage concept allows the Airport to accommodate the sale of sustainable aviation fuels.

Stormwater Management Recommendations for the Recommended Fuel Expansion Alternative

The following stormwater management recommendations apply to the preferred fuel expansion alternative:

- Assumed values for affected impervious area are zero acres of removed impervious surface, zero acres of replaced impervious surface, and 0.1 acres of new impervious surface.
- Recommended BMPs for this alternative include:

  - Oil-water separation units;
  - Bioretention facilities or underground filter treatment systems;
  - Integrated grading and inlet design;
  - Surface storage or underground storage in tanks, vaults, or pipes for retention and detention.
- The project may require new storm-drain pipes, catch basins, manholes, and other structures to accommodate new site grading.
- This project does not include a large amount of impervious surface, but it will require more advanced water quality facilities such as oil-water separation units. The relative cost of stormwater management improvements for this project is expected to be high.

5.9.3 Airport Fencing

Chapter 4 identifies fencing improvements needed in the southwest portion of the Airport to meet FAA security requirements. Security fencing should be comprised of 8-foot-tall chain link fence with 12-inch extension arms and 3-strand barbed wire on top and a 3- to 4-foot concrete fence post footing for each post. This improvement will be identified on the Airport Layout Plan. No alternatives were developed.

5.9.4 Perimeter Service Roads

Chapter 4 identifies portions of perimeter service roads that should be relocated outside of runway surfaces where practical. These revisions will be identified on the Airport Layout Plan.

5.10 ACCESS AND CIRCULATION

5.10.1 Terminal Area and Roadway Capacity

As presented in **Chapter 4**, no terminal area or roadway improvements were identified as necessary throughout the 20-year planning period.

5.10.2 Curbside Loading Capacity Improvements

As described in **Chapter 4**, the curbside loading and unloading area located in the landside interface zone meets current and forecasted demand as configured. However, the first 190 feet of James Fowler Road (the Loop Road) are underutilized as drivers can't see the terminal and continue south, functionally utilizing approximately 345 feet of the curb after cross walks and shuttle staging is removed from the linear total of the curb length. Additionally, the curvature of the road prevents drivers from seeing where cars are stopped and parked, which adds to the compaction occurring in the last or southernmost portion of curb. To gain utilization of the curb and streamline the landside interface, the Airport may consider the three potential alternatives below.

Curbside Alternative No. 1

Develop signs, markings, way-finding, and messaging to gain utilization of approximately 190 feet of the northern curb. This would maximize the utilization while still combining pick-up and drop-off areas in the inner curb. This simple solution will accommodate most demand scenarios; however, peak periods may be impacted, and a marshal or parking attendant may be required for proper utilization.

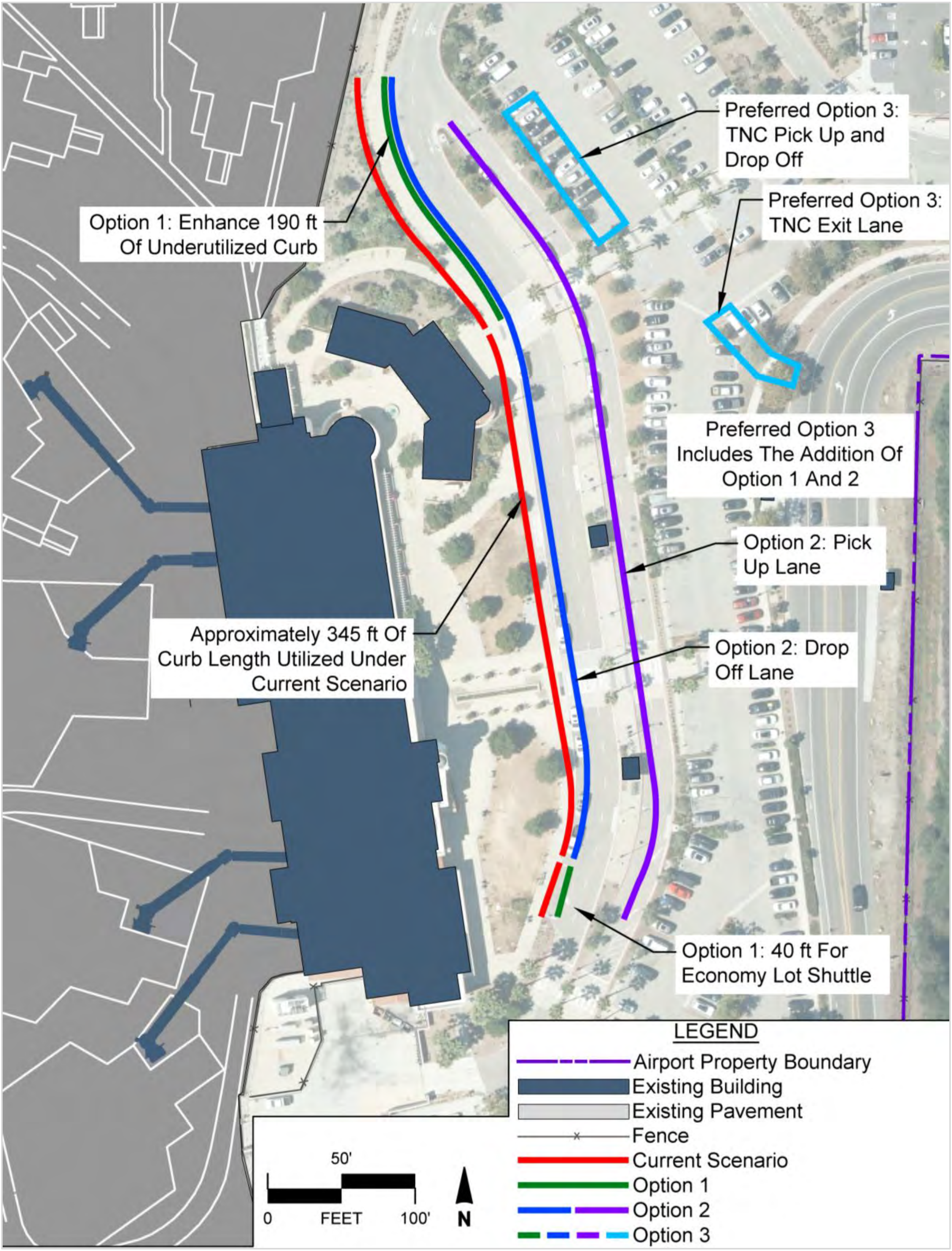
Curbside Alternative No. 2

Continues from Alternative 1 and additionally separates the inner and outer curb for pick-up and drop-off. This alternative also develops the outer curb for pick-up and allows drop-off to occur on the inner curb. Additional signs, markings, way-finding, and messaging will be required. In this scenario, TNC may utilize the northern portion of the inner loop for drop-off and the northern portion of the outer loop for pick-up.

Curbside Alternative No. 3 *

Either of the first two alternatives may occur with a capacity building alternative that includes modification to the short-term parking area west of the loop road. TNC pick-up and drop-off may be accommodated by making modest modifications to the parking area. This would require development of staging, road connector, and pedestrian lanes to optimize the parking area. Parking revenue losses may be offset by TNC permit fees. This would allow capacity building and allow for either Alternative 1 or 2 to occur. This alternative is the preferred alternative.

Figure 5-24: Curbside Alternatives



5.11 TERMINAL PARKING

Parking need analysis, discussed in detail in **Chapter 4,** concluded that there is a system-wide parking deficit of 687 stalls. Additionally, the Airport plans to discontinue use of the remote economy parking lot on the north side of Hollister Ave (561 current parking stalls). The long-term parking demand in conjunction with the loss of parking stalls associated with the closure of the remote economy lot results in a net deficit of 1,248 parking stalls by the end of the 20-year planning period.

In the near-team, SBA is planning the Southfield Redevelopment Project outside of this Master Plan. Initial concepts for the Southfield Redevelopment Project include the addition of 608 parking stalls. If the Southfield redevelopment project is completed and the remote economy lot remains open, the system-wide parking deficit would decrease to 79 spaces needed to accommodate parking demand throughout the planning period.

Since the Airport intends to discontinue the use of the remote economy parking lot. The alternatives presented below are based on the most demanding scenario of a parking deficit of 1,248 parking stalls. This assumes the Southfield Redevelopment Project does not occur, or that the site is used for another purpose.

5.11.1 Parking Improvement Alternatives

Parking Alternative No. 1 (no build)

Alternative 1 is a no-build alternative that would incorporate technologies and systems such as valet and attendant assistance parking programs, automated parking guidance systems, transportation demand management, and parking rates that reflect availability. These no-build solutions would delay an over-crowded parking scenario but would not be able to offset the projected deficit of 1,248 parking stalls.

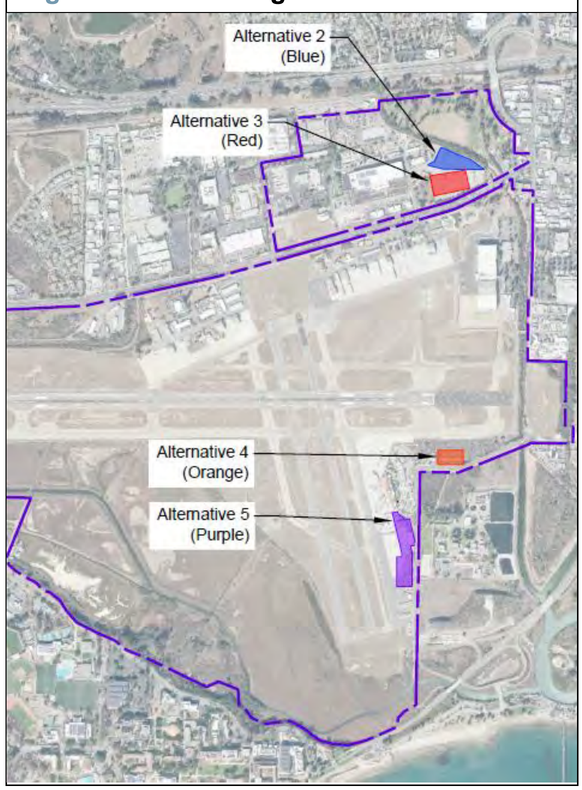
Recommendation:

Alternative 1 is not recommended as it would not resolve forecasted demand throughout the 20-year planning period.

Parking Alternative No. 2

As shown in **Figure 5-25**, Alternative 2 (blue) adds 281 parking spaces in the undeveloped area immediately adjacent to the existing remote economy parking lot. This site has environmental impacts associated with construction near San Pedro Creek and would not meet the projected parking deficit throughout the planning period.

Figure 5-25: **Parking Alternatives**



Recommendation:

Alternative 2 is not recommended due to potential environmental impacts, not meeting expected parking deficits, and the Airport's desire to discontinue using the remote economy parking lot.

Parking Alternative 3

As shown in **Figure 5-25**, Alternative 3 (red) adds between 318 and 354 parking stalls by means of constructing a parking garage on the existing remote economy parking lot.

Recommendation:

Alternative 3 is not recommended as the concept would not meet expected parking deficits and due to the Airport's desire to discontinue using the remote economy parking lot.

Parking Alternative 4

As shown in **Figure 5-25**, Alternative 4 (orange) adds less than 100 parking stalls by means of constructing a parking garage on a portion of the existing long-term parking lot. In this location, vertical clearance is limited by airspace surfaces associated with Runway 7/25. The structure concept would be limited to the southernmost area of the existing long-term parking lot, closest to James Fowler Road. This location could only accommodate a structure with two levels of parking and a comparatively small footprint.

Recommendation:

Alternative 4 is not recommended as the site is limited by Runway 7/25 airspace surfaces and the concept would not meet expected parking deficits.

Parking Alternative 5 *

Alternative 5 (purple), shown in **Figure 5-25**, proposes constructing a three-story parking garage immediately south of the existing terminal building. This would replace much of the Southfield Redevelopment project. This alternative would accommodate approximately 1,250 new parking stalls, which meets the long-term parking demand and accommodated parking relocation from the eventual closure of the remote economy parking lot.

Recommendation:

Move forward with Alternative 5 as the recommended alternative as it meets all long-term parking demand and is located in an area convenient to the traveling public.

The recommended parking improvement alternative is aligned with the following guiding principles of this Master Plan:

- **Transportation Diversity:** Establishing a multi-level parking garage in close proximity to the terminal building provides ground transportation options for the traveling public and Airport users throughout the planning period.

Stormwater Management Recommendations for the Preferred Parking Alternative

The following stormwater management recommendations apply to the preferred parking alternative:

- Assumed values for affected impervious area are zero acres of removed impervious surface, 7.3 acres of replaced impervious surface, and zero acres of new impervious surface.
- Recommended BMPs for this alternative include:
  - Bioretention facilities or underground filter treatment systems;
  - Integrated grading and inlet design;
  - Surface storage or underground storage in tanks, vaults, or pipes for retention and detention.
- The project will require new storm-drain pipes, catch basins, manholes, and other structures to accommodate new site grading.
- As this project is outside the airfield, it has more flexibility in site grading and in the use of vegetated BMPs; still, it is a highly impervious area, and some facilities may be placed underground to save usable project footprint. Therefore, the relative cost of stormwater management improvements for this project is moderately high.

5.12 UTILITIES AND ELECTRICAL

Chapter 4 concludes that the Airport has sufficient utility infrastructure to meet current and projected demands. Additional facility needs for power will be handled as a condition within each development project.

5.13 NON-AERONAUTICAL PROPERTIES

Chapter 4 concludes that the Airport's 104 acres of non-aeronautical zoned properties north of Hollister Ave are sufficient for the 20-year planning period of this Master Plan. No improvements are identified.

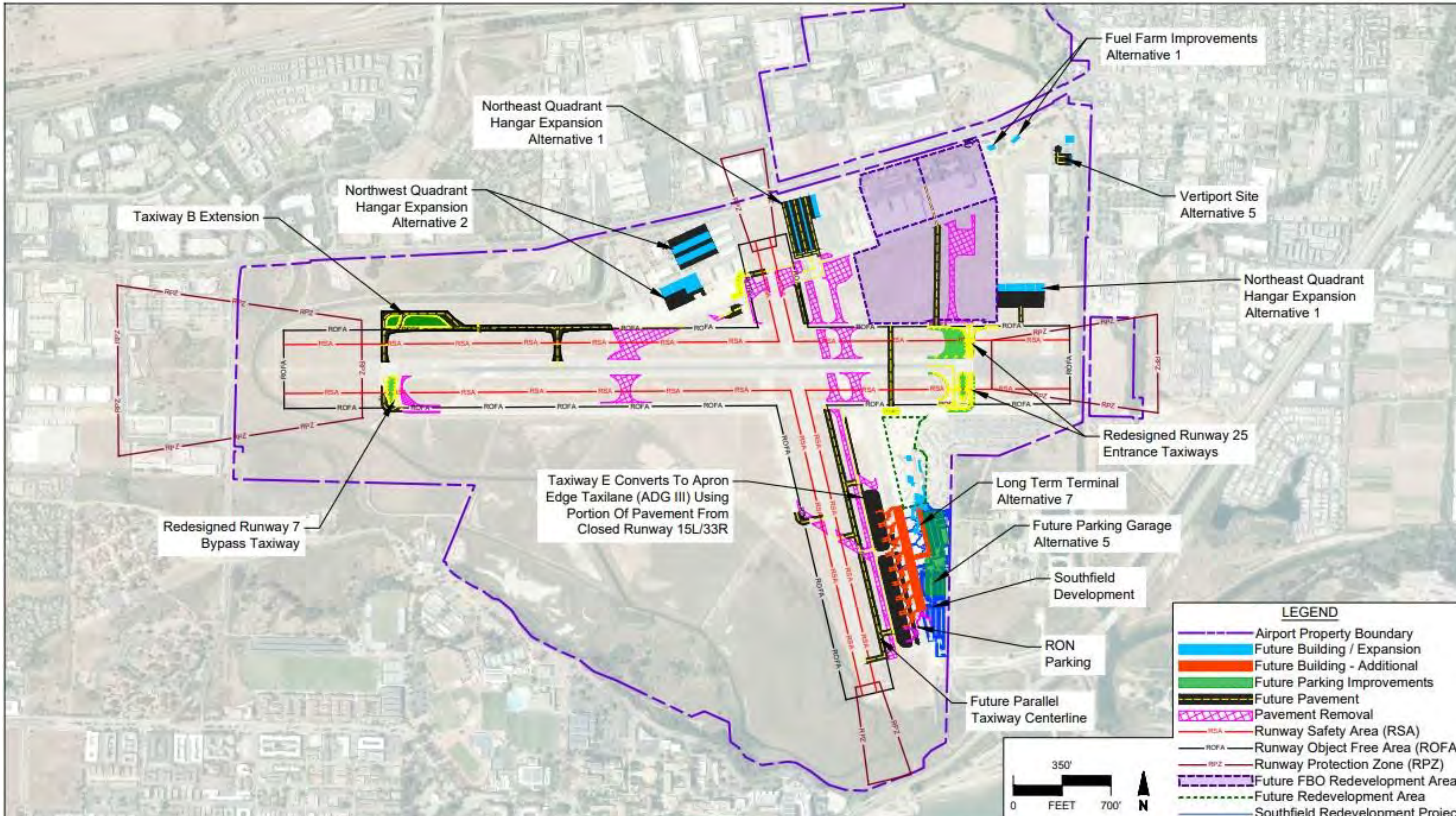
5.14 SUMMARY

The improvement alternatives evaluation process presented in this chapter explores the ways that SBA can meet the 20-year facility requirements through capital projects. The preferred alternatives will be used for land-use analysis, development of a capital improvement plan, and for the ALP. A summary of the preferred improvement alternatives is included below.

- Closure of Runway 15L/33R - **Runway Alternative 2**.
- Reconfiguration of airport taxiways to support the Runway closure and other long-term development plans - Depicted on the preferred development concept below.
- Planning for a long-term terminal expansion and reconfiguration project to accommodate enplanement levels beyond the 20-year planning period - **Terminal Building Alternative 7**.
- Expanded hangars for general aviation accommodation – **Combined Alternative**.
- Constructing eVTOL vertiport - **Vertiport Alternative 5**.
- Addition fuel storage capacity - Depicted on the preferred development concept below.
- Curbside loading improvements - **Curbside Alternative 3**.

- Expanding terminal parking facilities - **Parking Alternative 5**.

Figure 5-26: Preferred Development Concept



- 6 -

FINANCIAL FEASIBILITY ANALYSIS

6.1 INTRODUCTION

This chapter presents a financial analysis of the estimated costs of the capital improvements recommended in the Master Plan (MP) for Santa Barbara Airport ("SBA" or "the Airport"), as presented earlier in this document. This chapter describes the financial framework for the Airport, including the airline rates and charges methodology as specified in the Airline Operating Permit (AOP). It also includes an analysis of the Airport's historical revenues and expenses for Fiscal Years[1] (FYs) 2021 through 2023, and projections of revenues and expenses through FY2041. In addition, the recommended funding sources for the capital projects in the MP are presented. The financial projections reflect the anticipated effects of funding the MP Capital Improvement Program (CIP). The funding plan anticipates the use of Federal Aviation Administration (FAA) Airport Improvement Program (AIP) grants, Passenger Facility Charges (PFCs), Customer Facility Charges (CFCs), Airport funds, and bonds. The financial analysis uses the FAA-approved air traffic forecast contained in the Aviation Activity Forecast Chapter 3 as a basis for the financial projections presented in this chapter.

This chapter includes the following sections:

- Airport Financial Framework
- Proposed Capital Program
- Proposed Funding Plan
- Airline Rates and Charges
- Operation and Maintenance (O&M) Expenses
- Revenues
- Debt Service Coverage
- Signatory Airline Cost per Enplanement

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[1] The Airport's fiscal year is comprised of the 12 months, ending on June 30th. Except where otherwise indicated, all information is presented in terms of the Airport's Fiscal Year.

6.2 AIRPORT FINANCIAL FRAMEWORK

The Airport is owned and operated by the City of Santa Barbara, California (City). The Airport is a city proprietary fund that operates in accordance with generally accepted accounting principles (GAAP) as applied to governmental agencies. Financial statements are prepared each fiscal year based on GAAP and audited by independent certified public accountants. The Airport also maintains internal financial records, which contain a more detailed itemization of revenues and expenses, including details by cost center.

The financial projections reflect key provisions of and terms defined in, the Indenture of Trust dated April 1, 2019 (Indenture)[2]. The Indenture establishes priorities for the application of Revenues (as defined by the Indenture) to various funds and accounts, which are first deposited into the Revenue Fund and then flow to other funds and accounts to pay O&M (Operation and Maintenance) expenses and bond debt service, among other items. The Airport's outstanding bonds were issued pursuant to the Indenture, and this financial analysis assumes that all future bonds will also be issued in accordance with the Indenture. Specific terms from the Indenture used in this chapter are capitalized.

6.3 PROPOSED CAPITAL PLAN

The Facilities Implementation Plan presents the recommended capital improvements necessary to accommodate SBA's future needs. The recommended capital projects are presented in the following phases: Near-Term (2026 to 2030), Mid-Term (2031 to 2035), and Long-Term (2036 to 2045). **Table 6-1** summarizes the estimated project costs for the MP CIP.

As shown in **Table 6-1**, the total estimated project costs for the MP CIP are $180.0 million in 2024 dollars, or $218.7 million in year of expenditure (YOE) dollars. YOE of expenditure costs were calculated by escalating the total estimated project costs in 2024 dollars by approximately 2.4% annually to account for inflationary pressure.

Table 6-1: Master Plan Capital Improvement Program Project Costs

Time Period	Total Project Costs (2024 Dollars)	Total Project Costs (Year of Expenditure)
Near-term	$6,275,000	$6,634,035
Mid-term	$123,580,000	$145,660,215
Long-term	$50,100,000	$66,408,750
Total	**$179,955,000**	**$218,703,000**

Sources: Santa Barbra Airport, Mead & Hunt, Unison Consulting, Compiled by Unison Consulting.

[2] Information was obtained from the Series 2019 Bonds Official Statements

6.4 PROPOSED FUNDING PLAN

The recommended funding plan includes the following sources:

- FAA AIP Grants
- PFCs
- CFCs
- Airport Funds
- General Airport Revenue Bonds (GARBs)

6.4.1 FAA Airport Improvement Program Grants

FAA AIP grants are administered to develop and maintain infrastructure projects that increase the capacity, safety, and security at airports across the United States. The FAA issues either entitlement (passenger or cargo) or discretionary grants for projects. AIP passenger entitlement grants are awarded using an enplanement-based formula. The FAA awards AIP discretionary grants based on established funding priorities and the allocation of discretionary funds among nine FAA regions. The distribution of the funds to the FAA regions is based on considerations, including the number and types of airports in each region and the identified capital needs of those airports. This analysis assumes that the FAA AIP grant program will continue throughout the projection period.

Table 6-2 presents the projections for AIP passenger entitlement funds for SBA using the current enplanement-based formula[3], which is assumed to be in place for the entire forecast period. AIP entitlement funding amounts are based on passenger traffic forecasts. Some projects, particularly terminal development, are only partially eligible for AIP funding. The entitlement funding amounts for those projects reflect the percentage of eligibility typical for such projects based on the team's airport funding experience. The maximum funding eligibility for airports such as SBA, a small hub as defined by the FAA, is 90 percent.

Based upon the current AIP enplanement-based formula, SBA is forecasted to receive $37.6 million during the 2025-2041 period. The MP funding plan assumes a total of $30.2 million of that $37.6 million to be used for MP projects.

Table 6-2: Projected Airport Improvement Program Entitlements

	Budget	Projected								Total	Total
	2024	2025	2026	2027	2028	2029	2030	2031	2032	2032 - 2036	2037 - 2041
Enplanements [1]	586,000	648,400	649,600	650,800	652,000	667,400	683,100	699,200	715,600	3,757,500	4,183,300
$15.60 for first 50,000 PAX	$ 780,000	$ 780,000	$ 780,000	$ 780,000	$ 780,000	$ 780,000	$ 780,000	$ 780,000	$ 780,000	$ 3,900,000	$ 3,900,000
$10.40 for next 50,000 PAX	520,000	520,000	520,000	520,000	520,000	520,000	520,000	520,000	520,000	2,600,000	2,600,000
$5.20 for next 400,000 PAX	2,080,000	2,080,000	2,080,000	2,080,000	2,080,000	2,080,000	2,080,000	2,080,000	2,080,000	10,400,000	10,400,000
$1.30 for next 500,000 PAX	111,800	192,920	194,480	196,040	197,600	217,620	238,030	258,960	280,280	1,634,750	2,188,290
Total AIP Entitlements	$ 3,491,800	$ 3,572,920	$ 3,574,480	$ 3,576,040	$ 3,577,600	$ 3,597,620	$ 3,618,030	$ 3,638,960	$ 3,660,280	$ 18,534,750	$ 19,088,290

Sources: Santa Barbra Airport, Mead & Hunt, Unison Consulting, Compiled by Unison Consulting.

[1] Based on enplanement from 2 fiscal years prior. For example, the 2024 AIP Entitlements are based on the 2022 enplanements.

[3] The formula can be found in the FAA's AIP Handbook. https://www.faa.gov/airports/aip/aip_handbook/?Chapter=4.

6.4.2 Passenger Facility Charges

PFCs are user fees imposed by an airport, collected for each enplaned passenger, and used for specific projects approved by the FAA. According to federal regulations, PFC projects must (1) preserve or enhance safety, security, or capacity of the national air transportation system; (2) reduce noise or mitigate noise impacts resulting from an airport; or (3) furnish opportunities for enhanced competition between or among air carriers. SBA is currently authorized by the FAA to collect a PFC of $4.50 per enplaned passenger.
Since the inception of the PFC program, SBA has received approval to collect and use a total of approximately $46.3 million in PFCs. SBA's most recent application was approved by the FAA on November 1, 2022. In FY2019, SBA issued $29.8 million in revenue bonds to refund the Series 2009 Bonds. PFCs are used to pay a portion of the annual debt service on Series 2019 Bonds.

Table 6-3 shows the projected PFC collections during the planning horizon based on the forecasts of passenger traffic presented in Chapter 3 of the MP. Also shown are the projected uses of PFCs, which include using PFCs on a pay-as-you-go basis for eligible costs of the MP CIP and outstanding General Airport Revenue Bond (GARB) debt service.

It is assumed that SBA will submit several PFC applications for approval to use PFCs for eligible costs, as needed, during the planning horizon. As with AIP, some projects are only partially eligible for PFC funding. For those projects, the PFC-eligible project costs reflect the typical percentage of eligibility.

The amount of PFCs available for the MP CIP funding is partially constrained by PFCs pledged to pay debt service on outstanding bonds through FY2038. Through FY2038, the annual debt service on the outstanding bonds for which PFCs are pledged averages 35.2 percent of projected annual PFCs in those years. The funding plan assumes $13.7 million of PFCs will be used for debt service payments on the Series 2019 Bonds through FY2038. The MP CIP funding plan includes $2.7 million in PFCs on a pay-as-you-go basis.

Table 6-3: Projected PFC Cash Flow

	Budget	Projected							Total	Total
	2024	2025	2026	2027	2028	2029	2030	2031	2032 - 2036	2037 - 2041
Enplanements	649,600	650,800	652,000	667,400	683,100	699,200	715,600	732,500	3,947,100	4,292,800
Ineligible Enplanements[1]	(125,075)	(125,306)	(125,537)	(128,502)	(131,525)	(134,625)	(137,783)	(141,037)	(759,981)	(826,542)
PFC Eligible Enplanements	524,525	525,494	526,463	538,898	551,575	564,575	577,817	591,463	3,187,119	3,466,258
PFC Fund Beginning Balance	$ 5,049,859	$ 6,453,373	$ 7,855,699	$ 8,957,246	$ 10,180,788	$ 11,710,606	$ 13,299,443	$ 14,949,870	$ 94,580,296	$ 144,986,657
PFC Revenue	2,302,665	2,306,918	2,311,172	2,365,761	2,421,414	2,478,484	2,536,618	2,596,524	13,991,453	15,216,871
Interest Received	10,100	12,907	15,711	17,914	20,362	23,421	26,599	29,900	189,161	289,973
PFC Paygo Applied to Projects	$ -	$ -	$ (311,806)	$ (246,788)	$ -	$ -	$ -	$ (1,447,409)	$ (676,017)	$ -
PFCs pledged to debt service:										
Currently outstanding Bonds	$ (909,250)	$ (917,500)	$ (913,530)	$ (913,345)	$ (911,958)	$ (913,068)	$ (912,790)	$ (912,975)	$ (4,567,003)	$ (1,824,655)
Total Debt Service	$ (909,250)	$ (917,500)	$ (913,530)	$ (913,345)	$ (911,958)	$ (913,068)	$ (912,790)	$ (912,975)	$ (4,567,003)	$ (1,824,655)
PFC Fund Ending Balance	**$ 6,453,373**	**$ 7,855,699**	**$ 8,957,246**	**$ 10,180,788**	**$ 11,710,606**	**$ 13,299,443**	**$ 14,949,870**	**$ 15,215,910**	**$ 103,517,890**	**$ 158,668,846**

Sources: Santa Barbra Airport, Mead & Hunt, Unison Consulting, Compiled by Unison Consulting.

6.4.3 Customer Facility Charges

CFCs are charges imposed by airports on rental car companies to support the development and/or operation of rental car facilities. SBA is authorized to collect $10 per rental car transaction. SBA will use

CFCs to partially fund the development of a parking garage that will also support rental car operation. SBA is restricted as a result of California Code, which limits CFCs to a maximum of $10 per contract[4].

The funding plan assumes that the SBA will use CFCs in a pay-go capacity to partially support the development of the shared-use parking garage. SBA estimates that approximately 20 to 25 percent of the parking garage will support rental car operations. The funding plan assumes that 20 percent, or $11.9 million, of the total project cost is CFC eligible.

Table 6-4 shows the projected CFC collections and use of CFCs during the planning horizon, based on the forecasts of passenger traffic presented in Chapter 3 of the MP.

Table 6-4: Projected CFC Cash Flow

	Budget	Projected							Total	Total
	2024	2025	2026	2027	2028	2029	2030	2031	2032 - 2036	2037 - 2041
Enplanements	649,600	650,800	652,000	667,400	683,100	699,200	715,600	732,500	3,947,100	4,292,800
Rental Car Transactions	90,323	90,490	90,656	92,798	94,981	97,219	99,500	101,849	548,819	596,887
PFC Fund Beginning Balance	$ 320,413	$ 1,224,282	$ 2,131,626	$ 3,042,454	$ 3,976,517	$ 4,934,277	$ 5,916,339	$ 6,923,168	$ 50,662,834	$ 19,931,106
CFC Revenue	903,228	904,896	906,565	927,977	949,807	972,193	994,997	1,018,495	5,488,193	5,968,867
Interest Received	641	2,449	4,263	6,085	7,953	9,869	11,833	13,846	101,326	39,862
CFC Funded Projects	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ (11,929,716)	$ -
CFCs pledged to debt service:										
Total Debt Service	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
CFC Fund Ending Balance	**$ 1,224,282**	**$ 2,131,626**	**$ 3,042,454**	**$ 3,976,517**	**$ 4,934,277**	**$ 5,916,339**	**$ 6,923,168**	**$ 7,955,509**	**$ 44,322,637**	**$ 25,939,835**

Sources: Santa Barbra Airport, Mead & Hunt, Unison Consulting, Compiled by Unison Consulting.

6.4.4 Airport Funds

SBA's Airport Fund receives annual deposits based on the revenues collected during the fiscal year, less funds used to meet SBA's obligations, including O&M expenses, debt service, and capital expenditures. As of the end of FY2023, SBA's Airport Capital Fund had a balance of approximately $4.5 million. The MP funding plan assumes a total of $6.0 million in project costs will be funded through the Airport Capital Fund. It is assumed $1.5 million of annual capital costs will be funded with SBA's capital fund. The projects are not yet defined, but SBA typically funds street and building improvements, hangar projects, and other projects not included in the Airport's capital program. Refer to **Table 6-5** for details regarding the Airport Fund over the planning horizon.

In addition to the MP CIP projects, SBA has a five-year Airport Capital Improvement Program (ACIP). SBA's current ACIP is anticipated to be funded primarily with discretionary AIP funding, which requires a local share. The local share is assumed to be financed using the Airport Capital Fund. These amounts are also reflected in **Table 6-5**. For more information regarding the projects and funding sources of SBA's ACIP, refer to **Table 6-9**.

[4] Information regarding California CFC limitations was obtained from https://codes.findlaw.com/ca/government-code/gov-sect-50474-3/

Table 6-5: Airport Capital Fund

	Budget	Projected							Total	Total
	2024	2025	2026	2027	2028	2029	2030	2031	2032 - 2036	2037 - 2041
Beginning Balance	$ 4,527,812	$ 6,789,938	$ 8,330,925	$ 8,293,901	$ 3,761,291	$ 4,340,427	$ 5,198,309	$ 6,045,305	$ 42,286,752	$ 32,006,000
Revenues	27,787,717	31,914,796	32,118,972	33,323,436	34,656,907	35,913,625	37,248,822	38,633,961	220,237,087	277,218,677
Less: O&M Expenses	(25,434,747)	(27,345,849)	(28,437,947)	(29,576,468)	(30,763,459)	(32,001,061)	(33,347,616)	(34,754,258)	(197,175,698)	(243,114,649)
Less: Debt Service	(2,460,500)	(2,471,500)	(2,469,000)	(2,468,500)	(2,464,750)	(2,467,750)	(2,467,000)	(2,467,500)	(12,343,250)	(4,931,500)
Less: New Debt Service	-	-	-	-	-	-	-	-	(3,885,415)	(19,706,036)
Less: Airport Funded Projects (MP)	-	-	-	-	-	-	-	-	(5,964,858)	-
Less: Airport Funded Projects (ACIP)	-	(572,075)	(662,580)	(5,224,422)	(261,520)	-	-	-	-	-
Less: Airport Funds Applied to Debt Service	-	-	-	-	-	-	-	-	-	-
Less: Assumed Future Capital Expenditures [1]	(1,500,000)	(1,500,000)	(1,500,000)	(1,500,000)	(1,500,000)	(1,500,000)	(1,500,000)	(1,500,000)	(7,500,000)	(7,500,000)
Add: COVID Relief Funds Landing Fees	2,960,406	598,115	-	-	-	-	-	-	-	-
Add: PFCs Used for Debt Service	909,250	917,500	913,530	913,345	911,958	913,068	912,790	912,975	4,567,003	1,824,655
Add: CFCs Used for Debt Service	-	-	-	-	-	-	-	-	-	-
Add: PFC and CFC Reimbursements	-	3,500,000	-	-	-	-	-	-	-	-
Annual Deposit to Capital Fund	$ 2,262,126	$ 1,540,987	$ (37,024)	$ (4,532,609)	$ 579,136	$ 857,882	$ 846,996	$ 825,178	$ (2,065,131)	$ 3,791,147
Ending Balance	**$ 6,789,938**	**$ 8,330,925**	**$ 8,293,901**	**$ 3,761,291**	**$ 4,340,427**	**$ 5,198,309**	**$ 6,045,305**	**$ 6,870,482**	**$ 40,221,621**	**$ 35,797,147**

Sources: Santa Barbra Airport, Mead & Hunt, Unison Consulting, Compiled by Unison Consulting.

[1] These future capital projects are not yet defined, but it is assumed that SBA will fund approximately $1.5 million, annually, worth of capital improvements with the Airport Capital Fund.

6.4.5 General Airport Revenue Bonds

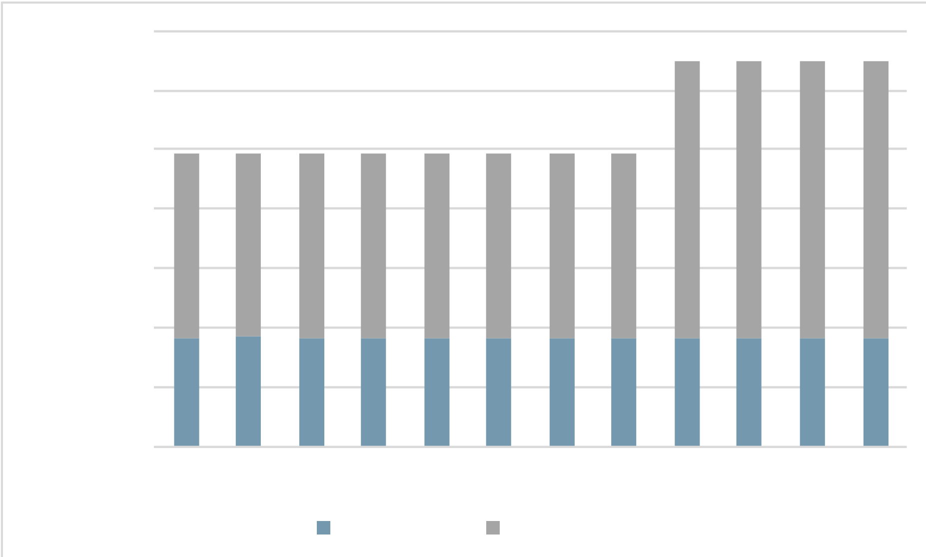
GARBs are debt instruments secured by the Airport's Revenues. As previously discussed, PFCs can be used to pay debt service for PFC-eligible portions of project costs. Currently, SBA has one outstanding GARB, Series 2019 Bonds. As discussed above, the debt service is partially paid using PFC funds. **Figure 6-1** depicts the total annual debt service compared to the amount of annual debt service for which Pledged PFCs are used. The funding plan assumes two future GARB issuances.

The bullets below summarize the GARB issuances required for the MP CIP.

- Series 2031 will be used to fund the fuel storage improvements which are not anticipated to be PFC or AIP eligible. The annual debt service is estimated to be approximately $777,000 beginning in FY2032 after a one-year period of capitalized interest.
- Series 2036 will be used to fund the parking garage, which is not anticipated to be PFC or AIP eligible. The parking garage project is anticipated to be partially funded through CFCs and Airport Capital Funds. The annual debt service is estimated to be $3.2 million beginning in FY2037 after a one-year period of capitalized interest.
- The GARB financing assumes a 30-year term, a 5.5 percent annual interest rate, and a 1.5 percent issuance cost. A one-year period of capitalized interest is anticipated for each bond series.

The projected debt service by series, depicted in **Figure 6-1**, is projected to increase from $2.5 million in FY2024 to $3.2 million in FY2032 before increasing again in FY2037 to $6.4 million. Projected debt service then decreases in FY2039 due to the Series 2019 Bonds maturing. Projected debt service is anticipated to remain flat throughout the remaining portion of the planning horizon. PFCs pledged to the Series 2019 Bonds partially offset the debt service, with an average of $0.9 million in PFCs applied annually, through FY2038. The funding plan conservatively assumes that the Fuel Storage Improvement project will be financed using GARBs. This project has the potential to attract private investment, requiring less investment from the Airport.

Figure 6-1: Total Debt Service and Total PFCs Pledged to Debt Service



Sources: Santa Barbara Airport, Mead & Hunt, Unison Consulting, Compiled by Unison Consulting.

Table 6-6: Projected Airport Debt Service

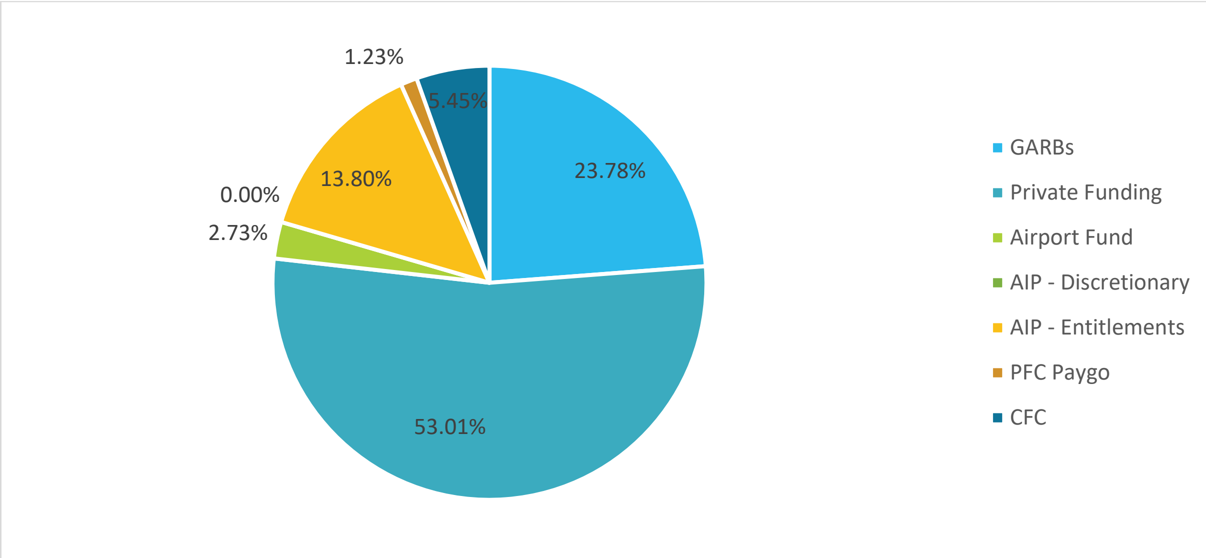
	Budget	Projected							Total	Total
	2024	2025	2026	2027	2028	2029	2030	2031	2032 - 2036	2037 - 2041
Series 2019	$ 2,460,500	$ 2,471,500	$ 2,469,000	$ 2,468,500	$ 2,464,750	$ 2,467,750	$ 2,467,000	$ 2,467,500	$ 12,343,250	$ 4,931,500
Total Outstanding Debt Service	$ 2,460,500	$ 2,471,500	$ 2,469,000	$ 2,468,500	$ 2,464,750	$ 2,467,750	$ 2,467,000	$ 2,467,500	$ 9,875,250	$ -
Assumed Future Series:										
Series 2031 - GARB	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,885,415	$ 3,885,415
Series 2036 - GARB	-	-	-	-	-	-	-	-	-	15,820,621
Total Debt Service	$ 2,460,500	$ 2,471,500	$ 2,469,000	$ 2,468,500	$ 2,464,750	$ 2,467,750	$ 2,467,000	$ 2,467,500	$ 13,760,665	$ 19,706,036
Less Pledged PFC:										
Outstanding Bonds	$ 909,250	$ 917,500	$ 913,530	$ 913,345	$ 911,958	$ 913,068	$ 912,790	$ 912,975	$ 4,567,003	$ 1,824,655
Future Bonds	-	-	-	-	-	-	-	-	-	-
Total Pledged PFCs	$ 909,250	$ 917,500	$ 913,530	$ 913,345	$ 911,958	$ 913,068	$ 912,790	$ 912,975	$ 4,567,003	$ 1,824,655
Net Debt Service	**$ 1,551,250**	**$ 1,554,000**	**$ 1,555,470**	**$ 1,555,155**	**$ 1,552,793**	**$ 1,554,683**	**$ 1,554,210**	**$ 1,554,525**	**$ 9,193,662**	**$ 17,881,381**

Sources: Santa Barbara Airport, Mead & Hunt, Unison Consulting, Compiled by Unison Consulting.

6.4.6 Funding Plan Summary

Figure 6-2 and **Table 6-7** summarize MP CIP project sources and uses of funds by project, reflecting the estimated costs in the year of expenditure. **Table 6-8** illustrates the MP sources and uses by project type.

Figure 6-2: Sources of Capital Funding for MP CIP



Sources: Santa Barbara Airport, Mead & Hunt, Unison Consulting, Compiled by Unison Consulting.

Table 6-7: Estimated Capital Costs and Funding Sources

Project Description	Project Category	Total Project Costs in 2024 $	Total Project Cost (Year of Expenditure)	AIP Entitlements	PFC Paygo	Airport Fund	GARBs	CFC	Private Funding
Near-Term (2025-2029)									
Terminal Curbside Improvements	Terminal	$75,000	$78,607	70,746	$7,861	$0	-	-	-
FBO Redevelopment	FBO	1,000,000	1,048,088	-	-	-	-	-	1,048,088
Taxiway Improvements (relocated txy F)	Airside	2,900,000	3,039,456	2,735,511	303,946	-	-	-	-
Redesigned Runway 7 Bypass	Airside	2,300,000	2,467,884	2,221,096	246,788	-	-	-	-
Total Near-Term		**$6,275,000**	**$6,634,035**	**$5,027,352**	**$558,595**	**$0**	**$0**	**$0**	**$1,048,088**
Medium-Term (2030-2034)									
Fuel storage improvements	Fuel	$8,700,000	$10,254,441	-	-	-	$10,254,441	-	-
Additional Hangars (box hangars north of Rwy 25 end)	Hangars	17,400,000	20,508,883	1,025,444	-	-	-	-	19,483,439
Additional Hangars (t-hangars under Rwy 15L appch)	Hangars	34,800,000	41,017,766	2,050,888	-	-	-	-	38,966,877
Additional Hangars (NW hangar expansion)	Hangars	50,400,000	59,405,040	2,970,252	-	-	-	-	56,434,788
Taxiway improvements (future parallel)	Airside	8,300,000	9,782,973	8,804,676	978,297	-	-	-	-
Taxiway Improvements (new taxiway crossing between A - B)	Airside	2,200,000	2,593,077	2,333,769	259,308	-	-	-	-
Taxiway Improvements (Connector improvements at 15R end)	Airside	1,600,000	1,885,874	1,697,287	188,587	-	-	-	-
Runway 15L/33R closure (marking removal and pavement disconnect)	Airside	180,000	212,161	190,945	21,216	-	-	-	-
Total Medium-Term		**$123,580,000**	**$145,660,215**	**$19,073,261**	**$1,447,409**	**$0**	**$10,254,441**	**$0**	**$114,885,104**
Long-Term (2035-2044)									
Taxiway Improvments (Demo C-A3 crossing)	Airside	$2,400,000	$3,181,257	$2,863,132	$318,126	$0	$0	$0	$0
Vertiport	Vertiport	2,700,000	3,578,915	3,221,023	357,891	-	-	-	-
Parking Garage	Parking	$45,000,000	59,648,578	-	-	5,964,858	41,754,004	11,929,716	-
Total Long-Term		**$50,100,000**	**$66,408,750**	**$6,084,155**	**$676,017**	**$5,964,858**	**$41,754,004**	**$11,929,716**	**$0**

Sources: Santa Barbara Airport, Mead & Hunt, Unison Consulting, Compiled by Unison Consulting.

Table 6-8: Sources and Uses of Capital Funding

Description	Near-Term	Mid-Term	Long-Term	Total
Sources of Capital Funding				
GARBs	$ -	$ 10,254,441	$ 41,754,004	$ 52,008,446
Private Funding	1,048,088	114,885,104	-	115,933,192
Airport Fund	-	-	5,964,858	5,964,858
AIP - Entitlements	5,027,352	19,073,261	6,084,155	30,184,768
PFC Paygo	558,595	1,447,409	676,017	2,682,020
CFC	-	-	11,929,716	11,929,716
Total Sources	**$ 6,634,035**	**$ 145,660,215**	**$ 66,408,750**	**$ 218,703,000**
Uses of Capital Funding				
Terminal	$ 78,607	$ -	$ -	$ 78,607
FBO	1,048,088	-	-	1,048,088
Airside	5,507,340	14,474,085	3,181,257	23,162,683
Fuel	-	10,254,441	-	10,254,441
Hangars	-	120,931,688	-	120,931,688
Vertiport	-	-	3,578,915	3,578,915
Parking	-	-	59,648,578	59,648,578
Total Uses	**$ 6,634,035**	**$ 145,660,215**	**$ 66,408,750**	**$ 218,703,000**

Sources: Santa Barbara Airport, Mead & Hunt, Unison Consulting, Compiled by Unison Consulting.

In addition to the MP CIP projects, SBA has a five-year ACIP. **Table 6-9** provides a listing of the ACIP projects, including the sources of funds for each. The below projects were included in this analysis to more accurately forecast key metrics including cost per enplanement (CPE) and coverage.

Table 6-9: Five-Year ACIP Estimated Capital Costs and Funding Sources

Project Description	Project Category	Total Project Costs	AIP Entitlements	AIP Discretionary	Airport Fund
ACIP (2025-2028)					
Master Plan Update Environmental	Other	$ 400,000	$ 362,640	$ -	$ 37,360
Bldg 257 Apron and Hangar 4 Apron Rehabilitation	Airside	275,000	-	249,315	25,685
Taxiway E, A3, A5 Rehabilitation (Design)	Airside	300,000	-	271,980	28,020
Taxiway E, A3 and A5 Rehabilitation (Const.)	Airside	5,150,000	-	4,668,990	481,010
ARFF PLACEHOLDER - PFC POSSIBLE	Airside	1,000,000	-	906,600	93,400
Part 150 Noise Study	Noise	1,200,000	1,087,920	-	112,080
Taxiway B Extension (Design)	Airside	4,114,000	-	3,729,752	384,248
Taxiway A, C, E2, B, E3, H Rehabilitation (Design) + (7-25 Redes)	Airside	780,000	-	707,148	72,852
Taxiway B Extension (Construction)	Airside	12,936,000	-	11,727,778	1,208,222
Taxiway C, B Rehabilitation (Construction)	Airside	3,000,000	-	2,719,800	280,200
Terminal Addition - South (Construction)	Terminal	40,000,000	-	36,264,000	3,736,000
Taxiway A, E2, E3, H Rehabilitation (Construction)	Airside	2,800,000	-	2,538,480	261,520
Total ACIP (2025-2028)		**$ 71,955,000**	**$ 1,450,560**	**$ 63,783,843**	**$6,720,597**

Sources: Santa Barbara Airport, Compiled by Unison Consulting.
Note: SBA's current ACIP is from FY2024 through FY2028. FY2025 and beyond are shown above.

6.5 AIRLINE RATES AND CHARGES

The AOP sets forth the procedures for calculating terminal building rentals, boarding bridge fees, remain overnight (RON) fees, and landing fees. The Airport uses a hybrid ratemaking methodology. The Terminal Cost Center requirement is calculated using a compensatory methodology with the Airport sharing revenues to reduce the airlines' costs. The Airfield cost center requirement is calculated using a residual methodology. The AOP will remain in effect until a new Signatory Lease and Operating Agreement is executed between the City of Santa Barbra and the airlines. For this analysis, it is assumed that the key provisions of the current airline rates and charges methodology will remain in effect throughout the planning horizon presented in this chapter.

SBA initially sets airline rates and charges for the year using budget amounts for expenses and projections for airline activity. At the Airport's discretion, a mid-year adjustment on or about February 1 can be made to keep expenditures and revenues on target. On April 1 of the fiscal year, SBA calculates the airline rates and charges using actual results. The difference between the fees collected by SBA and the actual results is billed or credited to the airlines and payable within 60 days.

6.5.1 Terminal Rental Rate[5]

SBA establishes an annual airline terminal building rental rate in accordance with the provisions set forth in the AOP. The rental rate is calculated by adding the allocation of the Airport maintenance and operating costs, council-mandated reserves, the building's debt service, and the amortization amount for Airport cash-funded capital projects. The total terminal cost is budgeted for each fiscal year. Revenue generated from Terminal passengers in the rental car, gift, and food and beverage concessions is deducted from the Total Terminal Cost, leaving a Terminal Building Requirement to be recovered from airline rentals. The rental rate charged to the airlines is calculated by dividing the amount to be recovered by the total terminal building square footage. The result of that calculation is the annual terminal building square footage rate. However, the terminal square footage rate can be negotiated and set annually for each fiscal year.

6.5.2 Boarding Bridge Fee

SBA establishes the boarding bridge fee in accordance with the provisions set forth in the AOP. The boarding bridge fee is calculated by adding the allocation of maintenance and operating costs, council-mandated reserves, and the debt service amount attributed to the boarding bridges. This represents the Boarding Bridge Requirement to be recovered. The fee charged to the airlines is calculated by estimating the number of times the airlines will use the boarding bridges during the year based on their schedules. Each use of the bridge is called a turn. The Passenger Boarding Bridge Requirement to be recovered is divided by the number of turns resulting in the fee charged for each use of the boarding bridge. This fee only applies to airlines that use the passenger boarding bridges.

The RON fee is set equal to the per-turn boarding bridge fee. Aircraft attached to the passenger boarding bridge will not be charged this fee.

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[5] Source: Airline Operating Permit Exhibit C Calculation of Airline Rates and Charges

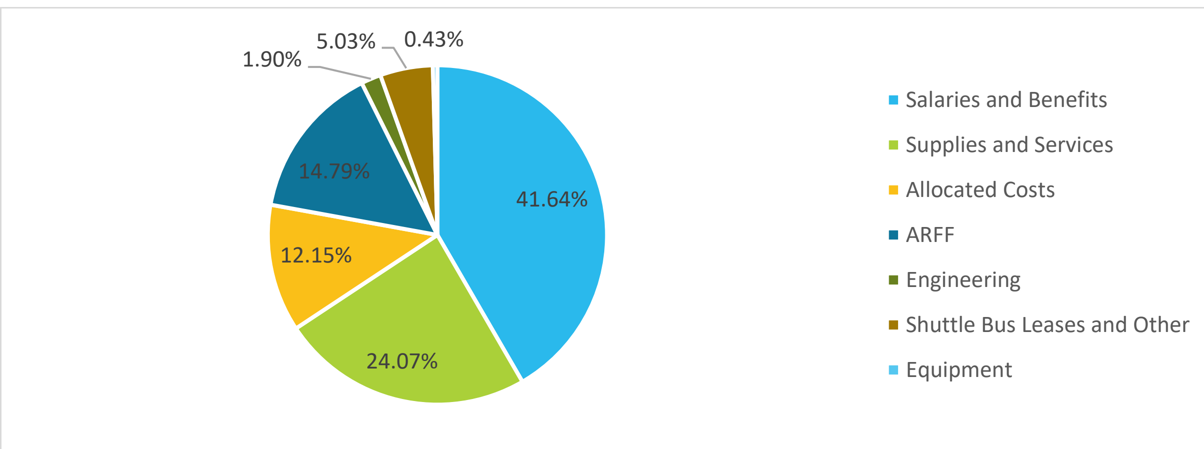
6.5.3 Airline Landing Fee[6]

SBA establishes the airline landing fee in accordance with the provisions set forth in the AOP. The Landing Fee is residual. The costs for maintenance and operation, the net debt service requirement, council-mandated reserves, and the amortization amount for Airport cash-funded capital projects are added together for a total Airport Cost Base amount each fiscal year. The Cost Base Amount is then reduced by the total revenue projected from Commercial/Industrial properties, all other non-airline revenues, the projected Airline terminal building space rental, and the boarding bridge fees. The remaining amount is the Airline Landing Fee Requirement. The projected airline landed weight is estimated by using the airline schedules each year. The weight used for each aircraft type is based on the published maximum gross landed weight. The landed weight is projected annually. The Airline Landing Fee Requirement amount is divided by the projected landed weight, which equals the landing fee rate (per 1,000 lbs. of landed weight). However, the landing fee rate can be negotiated and set annually for each fiscal year.

6.6 OPERATION AND MAINTENANCE EXPENSES

O&M expenses support the operation, maintenance, and repair of the Airport, excluding capital expenditures. O&M expenses are comprised of the following categories: Salaries and Benefits, Supplies and Services, Allocated Costs, ARFF, Engineering, Shuttle Bus Leases and Other, and Equipment. **Figure 6-3** depicts the categories of O&M expenses and their percentage of total expenses in FY2023.

Figure 6-3: FY2023 Percentage of Total O&M by Category



Sources: Santa Barbra Airport, Compiled by Unison Consulting.

[6] Source: Airline Operating Permit Exhibit C Calculation of Airline Rates and Charges

Table 6-10: Historical O&M Expenses

	2021	2022	2023	CAGR
Salaries and Benefits	$ 7,350,451	$ 8,652,543	$ 9,907,692	10.5%
Supplies and Services	3,532,470	5,274,746	5,726,582	17.5%
Allocated Costs	2,100,438	2,482,657	2,891,175	11.2%
ARFF	2,815,009	3,143,967	3,518,305	7.7%
Engineering	309,689	318,621	451,667	13.4%
Shuttle Bus Leases and Other	73,954	815,622	1,196,633	152.9%
Equipment	148,093	146,207	102,336	-11.6%
Total O&M Expenses	**$ 16,330,104**	**$ 20,834,363**	**$ 23,794,390**	13.4%

Sources: Santa Barbra Airport, Compiled by Unison Consulting.

Table 6-10 summarizes O&M expenses from FY2021 through FY2023 by category. O&M expenses grew $7.5 million or 45.7 percent over the period primarily driven by the recovery of passenger traffic following the COVID-19 pandemic and inflation.

Table 6-11 summarizes the projected O&M expenses through the planning horizon. O&M expenses are expected to grow at a compound annual growth rate (CAGR) of 3.6 percent during the forecast period, with Salaries and Benefits continuing to be the primary cost driver, averaging 50.3 percent through FY2041.

Table 6-11: Projected O&M Expenses

	Budget	Projected							Total	Total	CAGR
	2024	2025	2026	2027	2028	2029	2030	2031	2032 - 2036	2037 - 2041	2024 - 2041
Salaries and Benefits	$ 11,435,391	$ 12,586,231	$ 13,165,198	$ 13,770,797	$ 14,404,253	$ 15,066,849	$ 15,790,058	$ 16,547,981	$ 95,444,962	$ 120,658,917	4.8%
Supplies and Services	5,488,000	6,029,314	6,167,988	6,309,852	6,454,979	6,603,443	6,761,926	6,924,212	37,194,992	41,877,838	2.6%
Allocated Costs	3,478,483	3,680,773	3,850,089	4,027,193	4,212,443	4,406,216	4,617,714	4,839,365	27,912,346	35,286,027	4.5%
ARFF	3,477,034	3,157,196	3,302,427	3,454,339	3,613,238	3,779,447	3,960,861	4,150,982	23,941,913	30,266,714	3.7%
Engineering	471,562	712,473	745,247	779,528	815,386	852,894	893,833	936,737	5,402,885	6,830,180	6.6%
Shuttle Bus Leases and Other	776,000	792,500	810,728	829,374	848,450	867,964	888,795	910,126	4,888,953	5,504,471	2.2%
Equipment	176,720	255,806	261,690	267,708	273,866	280,165	286,889	293,774	1,578,074	1,776,753	4.2%
Appropriated reserves	131,556	131,556	134,582	137,677	140,844	144,083	147,541	151,082	811,572	913,749	2.1%
Total O&M Expenses	**$ 25,434,747**	**$ 27,345,849**	**$ 28,437,947**	**$ 29,576,468**	**$ 30,763,459**	**$ 32,001,061**	**$ 33,347,616**	**$ 34,754,258**	**$ 197,175,698**	**$ 243,114,649**	4.1%

Sources: Santa Barbra Airport, Unison Consulting, Compiled by Unison Consulting.

6.6.1 Salaries and Benefits

Personnel Costs are expenses comprised of the salaries, wages, and fringe benefits paid to individuals employed by the Airport to operate and maintain the terminal, airfield, roadways, and other facilities. Salaries and Benefits are projected to increase from $11.4 million in FY2024 to $26.4 million in FY2041, a compound annual growth rate of 4.8 percent. The increase accounts for inflationary factors, higher demand for skilled workers, and the likely need for additional staffing due to the redevelopment efforts.

6.6.2 Supplies and Services

Supplies and Services are comprised of expenses related to contractual services, utilities, materials, and other items supporting the operation and repair of airport facilities. They are projected to increase from $5.5 million in FY2024 to $8.8 million in FY2041, a compound annual growth rate of 2.6 percent. The increase accounts for inflationary factors, higher demand for skilled workers, and the likely need for additional resources as a result of the redevelopment efforts.

6.6.3 Allocated Costs

Allocated Costs are services or functions provided by the City of Santa Barbra from which the Airport derives some form of benefit. These services include, but are not limited to, public safety, human resources, finance, treasury, legal, and oversight. Allocated costs are projected to increase from $3.5 million in FY2024 to $7.7 million in FY2041, a compound annual growth rate of 4.5 percent. The increase accounts for inflationary factors and higher demand for skilled workers.

6.6.4 Airport Rescue and Firefighting

Airport Rescue and Firefighting (ARFF) expenses comprise the salaries, fringe benefits, equipment, and supplies used to provide ARFF services at the Airport. ARFF expenses are projected to increase from $3.5 million in FY2024 to $6.6 million in FY2041, a compound annual growth rate of 3.7 percent. The increase accounts for inflationary factors and higher demand for skilled workers.

6.6.5 Engineering

Engineering expenses are comprised of the salaries, fringe benefits, equipment, and contractors that Airport uses to provide engineering services as needed. Engineering expenses are projected to increase from $0.5 million in FY2024 to $1.5 million in FY2041, a compound annual growth rate of 6.6 percent. The increase accounts for inflationary factors and higher demand for skilled workers.

6.6.6 Shuttle Bus Leases and Other

Shuttle Bus Leases and Other expenses are comprised of the cost to provide on-airport bus services, primarily between the economy parking lot and the terminal area. Shuttle Bus Leases and Other expenses are projected to increase from $0.8 million in FY2024 to $1.2 million in FY2041, a compound annual growth rate of 2.2 percent. The increase accounts for inflationary factors and higher demand for skilled workers.

6.6.7 Equipment

Equipment expenses are comprised of costs related to machinery, vehicles, and other items used in the operation and repair of airport facilities. Equipment expenses are projected to increase from $0.2 million in FY2024 to $0.4 million in FY2041, a compound annual growth rate of 4.2 percent. The increase accounts for inflationary factors and higher demand for skilled workers.

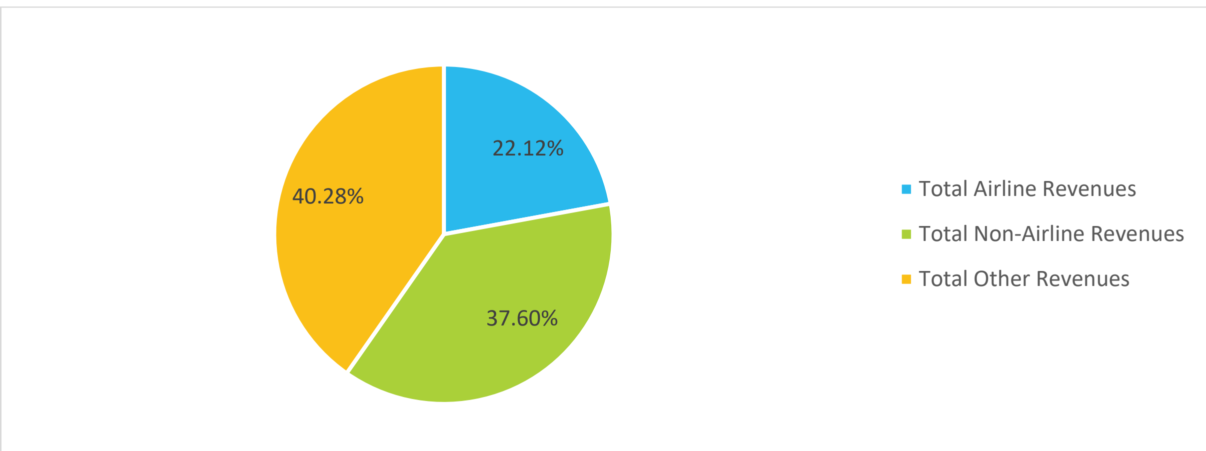
6.7 REVENUES

Airport Revenues include all rentals, rates, fees, and other charges for the use of the Airport or services rendered by the Airport or City of Santa Barbra with the following exclusions[7]:

- Grants from federal, state, or other governmental sources in which the use is limited to airport facilities or property
- Proceeds from bonds or other borrowings obtained by the City of Santa Barbra
- Money received from Net Rent Lease
- CFC and PFC Revenues
- Insurance proceeds (other than business interruption)
- Proceeds received by the City of Sant Barbra for sale or disposition for all or part of the Airport

Operating Revenues comprise the following major categories: Airline Revenues, Non-Airlines Revenues, and Other Revenues. **Figure 6-4** depicts the categories of Operating Revenues and their percentage of total Operating Revenues in FY2023.

Figure 6-4: FY2023 Percentage of Total Revenue by Category



Sources: Santa Barbra Airport, Compiled by Unison Consulting.

[7] Information was obtained from the Series 2019 Bonds Official Statements Appendix D (D-2)

Table 6-12: Historical Revenues

	2021	2022	2023	CAGR
Airline Revenues				
Terminal Space Rentals	$ 2,801,609	$ 2,932,011	$ 2,932,011	1.5%
Landing Fees - Airlines	1,198,364	1,958,035	2,176,965	22.0%
Boarding Bridge Fees	118,785	241,812	203,868	19.7%
Airline Jet Fuel Flowage Fees	114,613	276,222	375,529	48.5%
Remain Overnight Fees	53,751	81,072	71,856	10.2%
Landing Fees - Other	68,193	70,186	51,148	-9.1%
Total Airline Revenues	**$ 4,355,315**	**$ 5,559,338**	**$ 5,811,377**	**10.1%**
Non-Airline Revenues				
Commercial & Industrial	$ 5,100,127	$ 5,155,216	$ 4,979,046	-0.8%
Non-Commercial Aviation	4,404,611	5,062,706	4,899,149	3.6%
Total Non-Airline Revenues	**$ 9,504,738**	**$ 10,217,922**	**$ 9,878,195**	**1.3%**
Other Revenues				
Rental Car	$ 1,705,062	$ 2,927,754	$ 3,504,358	27.1%
Public Parking	2,054,878	4,795,948	5,879,672	42.0%
Employee Parking	32,279	45,350	71,175	30.2%
Concessions - Restaurant and Retail	80,952	341,995	530,692	87.2%
Ground Transportation	105,274	341,079	527,869	71.2%
Concessions - Other	20,214	27,462	66,897	49.0%
Total Other Revenues	**$ 3,998,659**	**$ 8,479,588**	**$ 10,580,663**	**38.3%**
Total Operating Revenues	**$ 17,858,712**	**$ 24,256,848**	**$ 26,270,235**	**13.7%**

Sources: Santa Barbra Airport, Compiled by Unison Consulting.

Table 6-12 summarizes operating revenues from FY2021 through FY2023 by category. Operating revenues grew by $8.4 million or 47.1 percent over the period, primarily driven by other revenues due to the recovery of passenger traffic following the COVID-19 pandemic.

Table 6-13 summarizes of the projected operating revenues from the planning horizon. Operating revenues are expected to grow at a compound annual growth rate of 4.4 percent during the forecast period, growing from a projected $27.0 million in FY2024 to $58.5 million in FY2041.

Table 6-13: Projected Revenues

	Budget	Projected							Total	Total	CAGR
	2024	2025	2026	2027	2028	2029	2030	2031	2032 - 2036	2037 - 2041	2024 - 2041
Airline Revenues											
Terminal Space Rentals	$ 2,932,127	$ 3,331,155	$ 4,273,530	$ 4,421,774	$ 4,651,455	$ 4,840,361	$ 5,047,668	$ 5,264,127	$ 29,733,196	$ 35,481,622	5.4%
Landing Fees - Airlines	2,697,064	3,192,084	3,510,673	3,113,413	3,638,134	4,110,304	4,615,606	5,146,712	33,055,395	61,080,206	9.6%
Boarding Bridge Fees	234,005	267,737	271,461	275,132	278,724	282,971	287,300	291,916	1,536,193	1,148,770	-1.7%
Airline Jet Fuel Flowage Fees	480,649	485,456	498,666	502,129	505,592	510,786	517,712	522,907	2,623,190	2,711,495	0.7%
Remain Overnight Fees	100,000	150,000	126,710	127,096	127,481	127,991	128,614	129,112	648,676	658,758	1.6%
Landing Fees - Other	56,621	57,187	57,779	57,954	58,130	58,363	58,647	58,874	295,790	300,388	0.4%
Total Airline Revenues	**$ 6,500,466**	**$ 7,483,620**	**$ 8,738,820**	**$ 8,497,497**	**$ 9,259,516**	**$ 9,930,774**	**$ 10,655,547**	**$ 11,413,647**	**$ 67,892,440**	**$ 101,381,240**	**7.2%**
Non-Airline Revenues											
Commercial & Industrial	$ 5,500,077	$ 6,352,589	$ 6,498,699	$ 6,648,169	$ 6,801,076	$ 6,957,501	$ 7,124,481	$ 7,295,469	$ 39,189,284	$ 44,123,211	2.9%
Non-Commercial Aviation	4,689,174	5,193,120	5,312,562	5,434,751	5,559,750	5,687,624	5,824,127	5,963,906	32,036,490	36,069,881	2.7%
Total Non-Airline Revenues	**$ 10,189,251**	**$ 11,545,709**	**$ 11,811,260**	**$ 12,082,919**	**$ 12,360,826**	**$ 12,645,125**	**$ 12,948,608**	**$ 13,259,375**	**$ 71,225,774**	**$ 80,193,093**	**2.8%**
Other Revenues											
Rental Car	$ 3,400,352	$ 3,603,788	$ 3,511,674	$ 3,594,618	$ 3,679,179	$ 3,765,893	$ 3,854,224	$ 3,945,247	$ 21,259,092	$ 23,121,033	1.9%
Public Parking	5,955,677	6,929,201	6,459,829	7,386,060	7,559,810	7,737,988	7,919,485	8,106,516	48,793,044	59,434,479	4.0%
Employee Parking	67,980	70,019	70,054	70,267	70,480	70,762	71,107	71,382	358,633	364,208	0.4%
Concessions - Restaurant and Retail	284,968	534,027	410,516	469,377	480,419	491,742	503,276	515,162	3,100,754	3,777,007	5.7%
Ground Transportation	573,944	661,402	619,343	708,146	724,805	741,888	759,289	777,221	4,678,085	5,698,344	4.0%
Concessions - Other	81,100	89,210	85,387	97,630	99,927	102,282	104,681	107,153	644,954	785,615	3.9%
Total Other Revenues	**$ 10,364,021**	**$ 11,887,647**	**$ 11,156,804**	**$ 12,326,099**	**$ 12,614,620**	**$ 12,910,555**	**$ 13,212,062**	**$ 13,522,681**	**$ 78,834,563**	**$ 93,180,686**	**3.4%**
Total Operating Revenues	**$ 27,053,738**	**$ 30,916,976**	**$ 31,706,884**	**$ 32,906,516**	**$ 34,234,962**	**$ 35,486,455**	**$ 36,816,217**	**$ 38,195,703**	**$ 217,952,777**	**$ 274,755,019**	**4.4%**

Sources: Santa Barbara Airport, Mead & Hunt, Unison Consulting, Compiled by Unison Consulting.

6.7.1 Airline Revenues

Airline revenues consist of terminal space rentals, airline landing fees, boarding bridge fees, airline jet fuel flowage fees, RON fees, and other landing fees. Airline revenues grew from $4.4 million in FY2021 to $5.8 million in FY2023, representing a compound annual growth rate of 10.1 percent over the same period.

Airline revenues are projected to increase at a compound annual growth rate of 7.2 percent from FY2024 through FY2041 to $22.6 million. Airline Landing Fees are the primary driver of the increase due to the facility improvements included within the MP CIP and SBA's ACIP.

6.7.1.1 Terminal Space Rentals

Terminal space rentals grew from $2.8 million in FY2021 to $2.9 million in FY2023, representing a compound annual growth rate of 1.5 percent over the same period. Terminal space rentals comprised 50.5 percent of Airline Revenues and 11.2 percent of Operating Revenues in FY2023.

As shown in **Table 6-14,** Terminal space rentals are expected to increase from $2.9 million in FY2024 to $7.6 million in FY2041, representing a compound annual growth rate of 5.5 percent over the same period. The increase is driven primarily by the expiration of COVID-19 relief grants in FY2025, followed by inflationary pressure on O&M expenses. Terminal square footage is assumed to remain unchanged over the forecast period.

6.7.1.2 Airline Landing Fees

Airline landing fees grew from $1.2 million in FY2021 to $2.2 million in FY2023, representing a compound annual growth rate of 22.0 percent over the same period. Airline landing fees comprised 37.5 percent of Airline Revenues and 8.3 percent of Operating Revenues in FY2023.

As shown in **Table 6-15** Airline landing fees are expected to increase from $2.7 million in FY2024 to $14.1 million in FY2041, representing a compound annual growth rate of 9.6 percent over the same period. The primary driver of the increase is the facility improvements included within the MP CIP and SBA's ACIP. The landed weights are forecasted to increase by 20.4 percent between FY2024 and FY2041.

6.7.1.3 Boarding Bridge Fees

Boarding bridge fees grew from $0.1 million in FY2021 to $0.2 million in FY2023, representing a compound annual growth rate of 19.7 percent over the same period. Boarding bridge fees comprised 3.5 percent of Airline Revenues and 0.8 percent of Operating Revenues in FY2023.

As shown in **Table 6-16**, Boarding bridge fees are expected to decrease from $0.2 million in FY2024 to $0.2 million in FY2041, representing a compound annual growth rate of -1.7 percent over the same period. The decrease is driven primarily by the debt service of the existing bonds maturing in FY2038. The projected signatory rental rate per turn is projected to decrease from $36.0 in FY2024 to $20.6 in FY2041. Aircraft turns are assumed to increase by 28.2 percent over the forecast period.

6.7.1.4 Airline Jet Fuel Flowage Fees

Airline jet fuel flowage fees grew from $0.1 million in FY2021 to $0.4 million in FY2023, representing a compound annual growth rate of 48.5 percent over the same period. Airline jet fuel flowage fees comprised 6.5 percent of Airline Revenues and 1.4 percent of Operating Revenues in FY2023.

Airline jet fuel flowage fees are expected to increase from $0.48 million in FY2024 to $0.55 million in FY2041, representing a compound annual growth rate of 0.7 percent over the same period. The increase is driven primarily by the projected increase in commercial operations over the forecast period. Refer to **Table 6-13** for details of the projected revenues.

6.7.1.5 All Other Airline Revenues

RON fees and other landing fees offset each other, remaining relatively flat at $0.1 million between FY2021 and FY2023, representing a compound annual growth rate of 0.3 percent over the same period. The combined fees comprised 2.1 percent of Airline Revenues and 0.5 percent of Operating Revenues in FY2023.

The combined fees are expected to increase from $0.1 million in FY2024 to $0.2 million in FY2041, representing a compound annual growth rate of 1.2 percent over the same period. The increase is driven primarily by the projected increase in operations over the forecast period. Refer to **Table 6-13** for details of the projected revenues.

Table 6-14: Projected Terminal Space Rentals

	Budget	Projected							Total	Total	CAGR
	2024	2025	2026	2027	2028	2029	2030	2031	2032 - 2036	2037 - 2041	2024 - 2041
O&M Expenses	$ 11,445,636	$ 12,305,632	$ 12,797,076	$ 13,309,411	$ 13,843,557	$ 14,400,478	$ 15,006,427	$ 15,639,416	$ 88,729,064	$ 109,401,592	4.1%
Existing Net Debt Service	1,241,000	1,243,200	1,244,376	1,244,124	1,242,234	1,243,746	1,243,368	1,243,620	6,220,998	2,485,476	-100.0%
Future Debt Service	-	-	-	-	-	-	-	-	-	-	0.0%
Amortization	441,337	463,147	181,114	181,114	181,114	181,114	181,114	178,895	804,238	558,046	-7.4%
Future Amortization (MP)	-	-	-	-	-	-	-	-	-	-	0.0%
Future Amortization (ACIP)	-	-	-	-	124,533	124,533	124,533	124,533	622,667	622,667	0.0%
Total Costs	$ 13,127,973	$ 14,011,979	$ 14,222,566	$ 14,734,649	$ 15,391,438	$ 15,949,871	$ 16,555,443	$ 17,186,464	$ 96,376,967	$ 113,067,780	3.4%
Less:											
COVID Relief Funds	$ 2,001,500	$ 1,950,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-100.0%
Rental Car Revenue[1]	3,122,885	3,216,572	3,178,463	3,253,537	3,330,074	3,408,560	3,488,509	3,570,896	19,241,888	20,927,156	1.8%
Concessions Revenue[2]	366,068	623,237	495,903	567,007	580,346	594,024	607,957	622,315	3,745,708	4,562,622	5.3%
Terminal Requirement	$ 7,637,520	$ 8,222,170	$ 10,548,200	$ 10,914,104	$ 11,481,019	$ 11,947,287	$ 12,458,977	$ 12,993,254	$ 73,389,371	$ 87,578,003	5.1%
Total Terminal Square Feet	67,586	67,586	67,586	67,586	67,586	67,586	67,586	67,586	337,930	337,930	0.0%
Signatory Terminal Rental Rate	$ 113.00	$ 121.65	$ 156.07	$ 161.48	$ 169.87	$ 176.77	$ 184.34	$ 192.25	$ 217.17	$ 259.16	5.1%
Airline Rented Square Feet	25,947	27,382	27,382	27,382	27,382	27,382	27,382	27,382	136,910	136,910	0.3%
Airline Terminal Revenue	**$ 2,932,127**	**$ 3,331,155**	**$ 4,273,530**	**$ 4,421,774**	**$ 4,651,455**	**$ 4,840,361**	**$ 5,047,668**	**$ 5,264,127**	**$ 29,733,196**	**$ 35,481,622**	**5.4%**

Sources: Santa Barbara Airport, Mead & Hunt, Unison Consulting, Compiled by Unison Consulting.

[1] Rental Car Revenue excludes QTA Ground Rent.

[2] Concessions Revenue excludes Ground Transportation revenues.

Table 6-15: Projected Airline Landing Fees

	Budget	Projected							Total	Total	CAGR
	2024	2025	2026	2027	2028	2029	2030	2031	2032 - 2036	2037 - 2041	2024 - 2041
O&M Expenses	$ 25,434,747	$ 27,345,849	$ 28,437,947	$ 29,576,468	$ 30,763,459	$ 32,001,061	$ 33,347,616	$ 34,754,258	$ 197,175,698	$ 243,114,649	4.1%
Existing Net Debt Service	1,551,250	1,554,000	1,555,470	1,555,155	1,552,793	1,554,683	1,554,210	1,554,525	7,776,248	3,106,845	-100.0%
Future Debt Service	-	-	-	-	-	-	-	-	3,885,415	19,706,036	0.0%
Amortization	2,262,126	2,113,062	568,348	568,348	568,348	559,422	548,536	526,718	2,464,636	2,397,029	-8.3%
Future Amortization (MP)	-	-	-	-	-	-	-	-	-	1,192,972	0.0%
Future Amortization (ACIP)			57,208	123,465	272,308	298,460	298,460	298,460	1,435,091	201,146	0.0%
Total Costs	$ 29,248,123	$ 31,012,911	$ 30,618,972	$ 31,823,436	$ 33,156,907	$ 34,413,625	$ 35,748,822	$ 37,133,961	$ 212,737,087	$ 269,718,677	3.8%
Less:											
Commercial & Industrial[1]	$ 4,000,077	$ 4,852,589	$ 4,998,699	$ 5,148,169	$ 5,301,076	$ 5,457,501	$ 5,624,481	$ 5,795,469	$ 31,689,284	$ 36,623,211	3.7%
All Other Nonairline Revenue	15,787,174	18,078,587	16,881,454	18,177,770	18,596,315	19,025,350	19,468,794	19,924,845	113,155,363	131,714,226	3.1%
Airline Terminal Building Rent	2,932,127	3,331,155	4,273,530	4,421,774	4,651,455	4,840,361	5,047,668	5,264,127	29,733,196	35,481,622	5.4%
Loading Bridge Fees	234,005	267,737	271,461	275,132	278,724	282,971	287,300	291,916	1,536,193	1,148,770	-1.7%
Airline Jet Fuel Flowage Fees	480,649	485,456	498,666	502,129	505,592	510,786	517,712	522,907	2,623,190	2,711,495	0.7%
Remain Overnight Fees	100,000	150,000	126,710	127,096	127,481	127,991	128,614	129,112	648,676	658,758	1.6%
COVID Relief Funds	2,960,406	598,115	-	-	-	-	-	-	-	-	-100.0%
Landing Fee Requirement	$ 2,753,685	$ 3,249,271	$ 3,568,452	$ 3,171,368	$ 3,696,264	$ 4,168,666	$ 4,674,252	$ 5,205,586	$ 33,351,186	$ 61,380,594	9.5%
Airline Landed Weight	863,224	987,787	994,455	997,478	1,000,501	1,004,502	1,009,393	1,013,305	5,090,975	5,170,107	1.0%
Signatory Landing Fee	$ 3.19	$ 3.29	$ 3.59	$ 3.18	$ 3.69	$ 4.15	$ 4.63	$ 5.14	$ 6.55	$ 11.87	8.4%
Airline Landing Fee Revenue	**$ 2,753,685**	**$ 3,249,271**	**$ 3,568,452**	**$ 3,171,368**	**$ 3,696,264**	**$ 4,168,666**	**$ 4,674,252**	**$ 5,205,586**	**$ 33,351,186**	**$ 61,380,594**	**9.5%**

Sources: Santa Barbara Airport, Mead & Hunt, Unison Consulting, Compiled by Unison Consulting.

[1]$1.5 million of Commercial & Industrial revenues are excluded annually to contribute to capital improvements in the industrial area.

Table 6-16: Projected Boarding Bridge Fees

	Budget	Projected						Total	Total	CAGR
	2024	2025	2026	2027	2028	2029	2030	2032 - 2036	2037 - 2041	2024 - 2041
O&M Expenses	$ 178,911	$ 89,027	$ 92,582	$ 96,289	$ 100,153	$ 104,182	$ 108,566	$ 641,924	$ 791,483	-0.2%
Existing Net Debt Service	178,394	178,710	178,879	178,843	178,571	178,788	178,734	894,268	357,287	-100.0%
Future Debt Service	-	-	-	-	-	-	-	-	-	0.0%
Amortization	-	-	-	-	-	-	-	-	-	0.0%
Future Amortization								-	-	0.0%
Total Costs	$ 357,305	$ 267,737	$ 271,461	$ 275,132	$ 278,724	$ 282,971	$ 287,300	$ 1,536,193	$ 1,148,770	-4.0%
Less:										
COVID Relief Funds	$ 123,300	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-100.0%
Loading Bridge Requirement	$ 234,005	$ 267,737	$ 271,461	$ 275,132	$ 278,724	$ 282,971	$ 287,300	$ 1,536,193	$ 1,148,770	-1.7%
Aircraft Turns	6,501	7,437	7,595	7,648	7,701	7,780	7,885	39,954	41,299	1.4%
Signatory Per Turn Fee	$ 36.00	$ 36.00	$ 35.74	$ 35.97	$ 36.19	$ 36.37	$ 36.43	$ 38.45	$ 27.82	-0.7%
Boarding Bridge Fee Revenue	**$ 234,005**	**$ 267,737**	**$ 271,461**	**$ 275,132**	**$ 278,724**	**$ 282,971**	**$ 287,300**	**$ 1,536,193**	**$ 1,148,770**	**-1.7%**

Sources: Santa Barbara Airport, Mead & Hunt, Unison Consulting, Compiled by Unison Consulting.

6.7.2 Non-Airline Revenues

Non-airline revenues consist of commercial and industrial revenues and non-commercial aviation revenues. Non-airline revenues grew from $9.5 million in FY2021 to $9.9 million in FY2023, representing a compound annual growth rate of 1.3 percent over the same period.

Non-airline revenues are projected to increase at a compound annual growth rate of 2.8 percent from FY2024 through FY2041 to $16.8 million. The increase is driven primarily by annual rent escalations that are assumed to be in line with the consumer price index (CPI).

6.7.2.1 Commercial and Industrial

Commercial and industrial revenues decreased slightly from $5.1 million in FY2021 to $5.0 million in FY2023, representing a compound annual growth rate of -0.8 percent over the same period. In FY2023, commercial and industrial revenues comprised 50.4 percent of non-airline revenues and 19.0 percent of operating revenues.

Commercial and Industrial Revenues are expected to increase from $5.5 million in FY2024 to $9.2 million in FY2041, representing a compound annual growth rate of 2.9 percent over the same period. The increase is driven primarily by annual rent escalations that are assumed to be in line with the consumer price index (CPI). Refer to **Table 6-13** for details of the projected revenues.

6.7.2.2 Non-Commercial Aviation

Non-commercial aviation revenues grew from $4.4 million in FY2021 to $4.9 million in FY2023, representing a compound annual growth rate of 3.6 percent over the same period. Non-commercial aviation revenues comprised 49.6 percent of non-airline revenues and 18.6 percent of operating revenues in FY2023.

Non-Commercial Aviation Revenues are expected to increase from $4.7 million in FY2024 to $7.6 million in FY2041, representing a compound annual growth rate of 2.7 percent over the same period. The increase is driven primarily by annual rent escalations that are assumed to be in line with the consumer price index (CPI). Refer to **Table 6-13** for details of the projected revenues.

6.7.3 Other Revenues

Other revenues consist of rental car revenues, public parking revenues, employee parking revenues, concession revenues, and ground transportation revenues. Other revenues grew from $4.0 million in FY2021 to $10.6 million in FY2023, representing a compound annual growth rate of 38.3 percent over the same period.

Other revenues are projected to increase at a compound annual growth rate of 3.4 percent from FY2024 through FY2041 to $19.1 million. The increase is driven primarily by public parking revenues and rental car revenues.

6.7.3.1 Rental Car Revenues

Rental car revenues grew from $1.7 million in FY2021 to $3.5 million in FY2023, representing a compound annual growth rate of 27.1 percent over the same period. Rental car revenues comprised 33.1 percent of Other Revenues and 13.3 percent of Operating Revenues in FY2023.

Rental car revenues are expected to increase from $3.4 million in FY2024 to $4.7 million in FY2041, representing a compound annual growth rate of 1.9 percent over the same period. The increase is driven primarily by the projected increase in passenger traffic plus an inflationary factor over the forecast period. Refer to **Table 6-13** for details of the projected revenues.

6.7.3.2 Public Parking Revenues

Public parking revenues grew from $2.1 million in FY2021 to $5.9 million in FY2023, representing a compound annual growth rate of 42.0 percent over the same period. Public parking revenues comprised 55.6 percent of Other Revenues and 22.4 percent of Operating Revenues in FY2023.

Public parking revenues are expected to increase from $6.0 million in FY2024 to $12.2 million in FY2041, representing a compound annual growth rate of 4.0 percent over the same period. The increase in public parking revenues is driven by the increase in passenger traffic over the forecast period, in addition to rate increases occurring every 5 years beginning in 2027. The rate increases are determined by the cumulative impact of inflation over the previous 5 years. Refer to **Table 6-13** for details of the projected revenues.

6.7.3.3 Concession Revenues

Concession revenues grew from $0.2 million in FY2021 to $1.1 million in FY2023, representing a compound annual growth rate of 76.1 percent over the same period. Concession revenues comprised 10.7 percent of other revenues and 4.3 percent of operating revenues in FY2023.

Concession revenues are expected to increase from $0.4 million in FY2024 to $0.9 million in FY2041, representing a compound annual growth rate of 5.3 percent over the same period. The increase is driven primarily by the projected increase in passenger traffic plus an inflationary factor over the forecast period. Refer to **Table 6-13** for details of the projected revenues.

6.7.3.4 Employee Parking Revenues

Employee parking revenues grew by a compound annual growth rate of 30.2 percent from FY2021 to FY2023 to $0.1 million. In FY2023, employee parking revenues comprised 0.7 percent of other revenues and 0.3 percent of operating revenues.

Employee parking revenues are expected to increase from approximately $68,000 in FY2024 to $73,000 in FY2041, representing a compound annual growth rate of 0.4 percent over the same period. The increase is driven primarily by the projected increase in total operations over the forecast period. Refer to **Table 6-13** for details of the projected revenues.

6.7.3.5 Ground Transportation Revenues

Ground transportation revenues grew by a compound annual growth rate of 70.2 percent from FY2021 to FY2023 to $527.9 thousand because of recovering passenger activity. In FY2023, ground transportation revenues comprised 5.0 percent of other revenues and 2.0 percent of operating revenues.

Ground transportation revenues are expected to increase from $0.6 million in FY2024 to $1.2 million in FY2041, representing a compound annual growth rate of 4.0 percent over the same period. The increase is driven primarily by the projected increase in passenger traffic over the forecast period. Refer to **Table 6-13** for details of the projected revenues.

6.8 PROJECTED DEBT SERVICE COVERAGE

SBA currently has one series of outstanding debt, the Series 2019 Bonds. The Series 2019 Bonds are secured under the Indenture, dated as of April 1, 2019, by and between the Santa Barbra Finance Authority (the Authority) and the Trustee. The following information are excerpts from the Series 2019 Bonds Official Statements providing details on the security and payment of the Bonds.

"The Series 2019 Bonds are limited obligations of the Authority payable solely from, and secured solely by, revenues of the Authority, consisting primarily of base rental payments payable to the Authority by City under the facility lease and Series 2019 installment payments received by the Authority from the City under the Series 2019 installment payment contract. The obligation of the City to pay base rental payments and the obligation of the City to make Series 2019 installment payments from airport revenues are independent legal obligations…Pursuant to the site lease, the City will lease to the Authority the real property upon which the facilities are located. The base rental payments to be made by the City pursuant to the facility lease are payable by the City from its general fund and any other legally available funds of the City, including its airport fund, to the Authority in an amount equaling the debt service of the Series 2019 Bonds for the use by the City of the facilities. The Series 2019 installment payments to be made by the City pursuant to the Series 2019 installment payment contract are payable by the City in an amount equaling the debt service for the Series 2019 Bonds, but solely from airport revenues, which includes all charges received for and all income and receipts derived by the City from the, ownership, operation, and use of an otherwise pertaining to the airport, or any part thereof[8]."

"In accordance with the trust agreement, all revenues are irrevocably pledged to and will be used for the punctual payments of the principal of and interest on the Bonds and will not be used for any other purposes while any of the Bonds remain outstanding; provided, however, that out of the Revenues may be applied such sums as are permitted under the Trust Agreement. This pledge constitutes a first lien on the revenues in accordance with the terms of the trust agreement.[9]"

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[8] Information obtained from the Series 2019 Bonds Official Statements dated March 27, 2019, "Security and Sources of Payment for the Bonds", page 11.

[9] Information obtained from the Series 2019 Bonds Official Statements dated March 27, 2019, "Pledge Under the Trust Agreement" page 12.

Additional bonds may be issued on a parity with the Series 2019 Bonds subject to the terms of the trust indenture, which include the following but are not limited to the following[10]:

- Proceeds of the sale of additional bonds are used to refund outstanding bonds or acquire (through purchase or lease) additional facilities.
- Proceeds or from other sources deposited in a reserve fund
- Facility lease is amended as needed so the base rental payments payable by the City in each Fiscal Year shall at least equal the debt service, including the additional bonds
- Series 2019 installment payment contract is amended so the installment payments payable by the City in each Fiscal Year shall at least equal the debt service, including the additional bonds

It is assumed that GARBs will require a minimum debt service coverage ratio of 1.25 times the debt service each year.

Table 6-17 presents the projected debt service coverage calculation throughout the planning horizon. Debt service coverage is projected to remain at or above 1.25 times debt service through FY2041, thereby meeting or exceeding both the Rates and Charges Covenant and the Additional Bonds Test specified in the Indenture.

[10] Information obtained from the Series 2019 Bonds Official Statements dated March 27, 2019 Appendix D, “Issuance of Bonds” page D-49.

Table 6-17: Projected Debt Service Coverage

	Budget	Projected															
	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
Total Revenues	$ 27,787,717	$ 31,914,796	$ 32,118,972	$ 33,323,436	$ 34,656,907	$ 35,913,625	$ 37,248,822	$ 38,633,961	$ 40,850,059	$ 42,383,598	$ 43,986,418	$ 45,664,752	$ 47,352,260	$ 52,513,433	$ 54,272,894	$ 54,694,551	$ 56,776,963	$ 58,960,836
Less: O&M Expenses	25,434,747	27,345,849	28,437,947	29,576,468	30,763,459	32,001,061	33,347,616	34,754,258	36,223,762	37,759,033	39,363,114	41,039,190	42,790,598	44,620,830	46,533,543	48,532,569	50,621,918	52,805,790
Net Revenues	$ 2,352,970	$ 4,568,947	$ 3,681,025	$ 3,746,968	$ 3,893,448	$ 3,912,564	$ 3,901,206	$ 3,879,703	$ 4,626,297	$ 4,624,564	$ 4,623,304	$ 4,625,562	$ 4,561,662	$ 7,892,604	$ 7,739,351	$ 6,161,982	$ 6,155,045	$ 6,155,045
Add: PFCs Applied to Debt Service	909,250	917,500	913,530	913,345	911,958	913,068	912,790	912,975	913,530	912,513	911,773	914,918	914,270	913,623	911,033	0	0	0
Total Revenues Available for Coverage	$ 3,262,220	$ 5,486,447	$ 4,594,555	$ 4,660,313	$ 4,805,406	$ 4,825,632	$ 4,813,996	$ 4,792,678	$ 5,539,827	$ 5,537,077	$ 5,535,077	$ 5,540,479	$ 5,475,932	$ 8,806,226	$ 8,650,384	$ 6,161,982	$ 6,155,045	$ 6,155,045
Debt Service	$ 2,460,500	$ 2,471,500	$ 2,469,000	$ 2,468,500	$ 2,464,750	$ 2,467,750	$ 2,467,000	$ 2,467,500	$ 3,246,083	$ 3,243,333	$ 3,241,333	$ 3,249,833	$ 3,248,083	$ 6,410,457	$ 6,403,457	$ 3,941,207	$ 3,941,207	$ 3,941,207
Debt Service Coverage	**1.33**	**2.22**	**1.86**	**1.89**	**1.95**	**1.96**	**1.95**	**1.94**	**1.71**	**1.71**	**1.71**	**1.70**	**1.69**	**1.37**	**1.35**	**1.56**	**1.56**	**1.56**

Sources: Santa Barbra Airport, Mead & Hunt, Unison Consulting, Compiled by Unison Consulting.

Table 6-18: Projected Cost Per Enplanement

	Budget	Projected							Total	Total	CAGR
	2024	2025	2026	2027	2028	2029	2030	2031	2032 - 2036	2037 - 2041	2024 - 2041
Terminal Space Rentals	$ 2,932,127	$ 3,331,155	$ 4,273,530	$ 4,421,774	$ 4,651,455	$ 4,840,361	$ 5,047,668	$ 5,264,127	$ 29,733,196	$ 35,481,622	5.4%
Landing Fees - Airlines	2,697,064	3,192,084	3,510,673	3,113,413	3,638,134	4,110,304	4,615,606	5,146,712	33,055,395	61,080,206	9.6%
Boarding Bridge Fees	234,005	267,737	271,461	275,132	278,724	282,971	287,300	291,916	1,536,193	1,148,770	-1.7%
Airline Jet Fuel Flowage Fees	480,649	485,456	498,666	502,129	505,592	510,786	517,712	522,907	2,623,190	2,711,495	0.7%
Remain Overnight Fees	100,000	150,000	126,710	127,096	127,481	127,991	128,614	129,112	648,676	658,758	1.6%
Landing Fees - Other	56,621	57,187	57,779	57,954	58,130	58,363	58,647	58,874	295,790	300,388	0.4%
Total Airline Revenue	$ 6,500,466	$ 7,483,620	$ 8,738,820	$ 8,497,497	$ 9,259,516	$ 9,930,774	$ 10,655,547	$ 11,413,647	$ 67,892,440	$ 101,381,240	7.2%
Enplanements	649,600	650,800	652,000	667,400	683,100	699,200	715,600	732,500	3,947,100	4,292,800	1.7%
Cost Per Enplanement	$ 10.01	$ 11.50	$ 13.40	$ 12.73	$ 13.56	$ 14.20	$ 14.89	$ 15.58	$ 17.20	$ 23.62	5.4%
Cost Per Enplanement (2024 $)	$ 10.01	$ 10.95	$ 12.16	$ 11.00	$ 11.15	$ 11.13	$ 11.11	$ 11.07	-	-	-

Sources: Santa Barbra Airport, Mead & Hunt, Unison Consulting, Compiled by Unison Consulting.

6.9 CONCLUSION

The following points highlight the financial feasibility of implementing the MP CIP projects:

- The funding plan assumes the use of AIP grants, CFCs, and PFCs, when available, to reduce the financial impacts MP CIP
- Debt service coverage is projected to exceed the anticipated 1.25 times debt service requirement through FY2041
- The airline CPE is projected to remain reasonable, below $26 (under $12 in 2024 dollars) through FY2041, which is similar to other small and medium-hub airports embarking on redevelopment programs