# *DRAFT*

# *ENVIRONMENTAL ASSESSMENT*

## *Volume 1: Main Report (Chapter 1 – Chapter 5)*

PHOENIX SKY HARBOR INTERNATIONAL AIRPORT (PHX)
COMPREHENSIVE ASSEST MANAGEMENT PROJECT

Phoenix International Airport
Phoenix, Maricopa County, Arizona

*Prepared for:*
**CITY OF PHOENIX AVIATION DEPARTMENT**

**U.S. DEPARTMENT OF TRANSPORTATION**
**FEDERAL AVIATION ADMINISTRATION**
As lead Federal Agency pursuant to the National Environmental Policy Act of 1969

*Prepared by:*
Landrum and Brown, Incorporated

**July 2023**

**This Environmental Assessment becomes a Federal document when evaluated, signed and dated by the Responsible FAA Official.**

**Responsible FAA Official** **Date**

## GENERAL INFORMATION ABOUT THIS DOCUMENT

**WHAT'S IN THIS DOCUMENT?** This document contains a Draft Environmental Assessment (EA) for the Phoenix Sky Harbor International Airport (PHX) proposed near term (0-5 year) improvements from the Comprehensive Asset Management Plan (CAMP) (Proposed Project). This document discloses the analysis and findings of the potential impacts associated with the City of Phoenix's Proposed Project Alternative and the No Action Alternative. As required by Council of Environmental Quality (CEQ) "Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act" (40 CFR 1501.5(f)) and Department of Transportation interim policy on page limits issued at the time this Draft EA was developed, this document is limited to 75 pages excluding figures, tables, and appendices. The proposed improvements analyzed in the Draft EA include:

1. Multiple airfield Improvements to increase safety and efficiency, including:
    - Realign perimeter fence outside of the Runway Object Free Area (ROFA)
    - Mark and sign vehicle service road (VSR) hold points to increase pilot awareness within ROFAs
    - Construct Taxiway Design Group (TDG) 6 fillet improvements to accommodate TDG 6 aircraft
    - Expand Center Hold Bay
    - Close Taxiway A5
    - Reconstruct Taxiway A6
    - Install Runway Status Lights (RWSL)
    - Remark, repaint, or otherwise designate various connector taxiways and apron pavements to meet Airplane Design Group VI standards
    - Paint taxiway islands to enhance pilots' visual awareness that it is a non-movement area
    - Construct blast pad and add paint markings to identify the end of Runway 26
    - Relocate non-movement line to prevent aircraft from penetrating instrument departure surface
    - Demolish excess pavements to enhance pilots' visual awareness of runways and taxiways
    - Reconstruct Taxiway F8 to accommodate TDG 6 aircraft
    - Paint portion of blast pad up to threshold or displaced thresholds of Runways 7L, 25R, and 8
    - Paint "TAXI" marking on the east and west ends of Taxiway F
    - Shift Taxiway C10 to eliminate direct access between the Terminal 4 North apron and Runway 8/ 26
    - Construct Taxiway F5
    - Close Taxiway H5
    - Close Taxiway H6
    - Construct Taxiway H9 (to replace Taxiways H5 and H6)
    - Install Centerline Lights on the full length of all three runways
    - Construct Crossfield Taxiway U
2. Construct Terminal 3, North Concourse 2
3. Construct Terminal 3 - Terminal 4 Connector
4. Construct South Apron Hold Pad and Cargo Complex C Replacement
5. Relocate American Airlines' C-Point Cargo Facility and Vehicle Gate
6. Relocate Facilities and Services parking and equipment storage yard

This document discloses the analysis and findings of the potential impacts of the Proposed Project and the No Action Alternative.

**BACKGROUND**. The Project consists of several elements, including airfield improvements to enhance safety and operational management; and new concourse and terminal facilities with new contact gates and upgraded passenger processing capabilities. The new gates are not intended to replace the gates from the former Terminal 2 demolished in 2020. The Terminal 2 gates were relocated to Terminal 3 upon completion of the Terminal 3 Modernization Program and completion of Terminal 4, Concourse S1. The new concourse, terminal facilities, and gates proposed in this EA are needed to enhance the passenger experience, provide a better level of service, and accommodate forecast passenger demand.

**WHAT SHOULD YOU DO?** Read this Draft EA and provide comments, if applicable. Beginning July 7, 2023, the Draft EA will be available for public review on the City of Phoenix Aviation Department website (https://www.skyharbor.com/about-phx/comprehensive-asset-management-plan/NEPA-EA) and at the following libraries:

- Burton Barr Central Library, 1221 North Central Avenue , Phoenix, Arizona 85004
- Harmon Branch Library, 1325 South 5th Avenue, Phoenix, Arizona 85003
- Saguaro Branch Library, 2808 North 46th Street, Phoenix, Arizona, 85008
- City of Phoenix Aviation Admin Building, 2485 E Buckeye Rd, Phoenix, AZ 85034

If you have any substantive comments on the Draft EA, you may submit your comments electronically at the above website, or written comments may also be submitted by mail to the following address:

Mr. Jordan D. Feld, Deputy Aviation Director
City of Phoenix, Aviation Department
2485 E. Buckeye Road
Phoenix, Arizona 85034

A virtual public hearing on the Draft EA will be held to provide an opportunity for interested members of the public to make oral comments concerning the Proposed Project and information contained in the Draft EA, or listen to comments provided by others. The virtual public meeting and public hearing will be held on Thursday, August 10, 2023, from 5:30 p.m. to 7:30 p.m. Mountain Standard Time via Zoom web-conferencing.

The cutoff date for comments is Friday, August 25, 2023. Comments must be received by **5:00 p.m. Mountain Standard Time**. Please allow enough time for mailing. The City of Phoenix must **receive** your comments by the deadline, they cannot simply be postmarked by that date.

***PRIVACY NOTICE: Before including your address, phone number, e-mail address, or other personal identifying information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.***

**WHAT HAPPENS AFTER THIS?** The City of Phoenix will prepare written responses to substantive comments received on the Draft EA and prepare a Final EA for transmittal to the FAA. Following review of the Final EA, the FAA will either issue a Finding of No Significant Impact (FONSI) or decide to prepare an Environmental Impact Statement (EIS).

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# Introduction and Purpose & Need

# 1 Introduction and Purpose & Need

## 1.1 Introduction

Phoenix Sky Harbor International Airport (PHX, or the Airport) is a large hub international airport located 5 miles east of the City of Phoenix's central business district, as shown on **Exhibit 1-1**. The Airport is situated on approximately 3,000 acres within the City of Phoenix, in Maricopa County, Arizona bordered by Interstate 10 (I-10) to the west, Air Lane to the north, State Route 143 and South 44th Street to the east, and the Salt River to the south.

In 2019, the City of Phoenix Aviation Department (City) prepared a Comprehensive Asset Management Plan (CAMP) to guide the management and development of facilities at the Airport over the next 20 years. The CAMP is available for review at: www.skyharbor.com/camp. In 2022, the City updated the CAMP and identified the following short-term (0 to 5-year) goals.

- Improve airfield efficiency on the west side of the Airport.
- Provide comfortable and operable terminals.

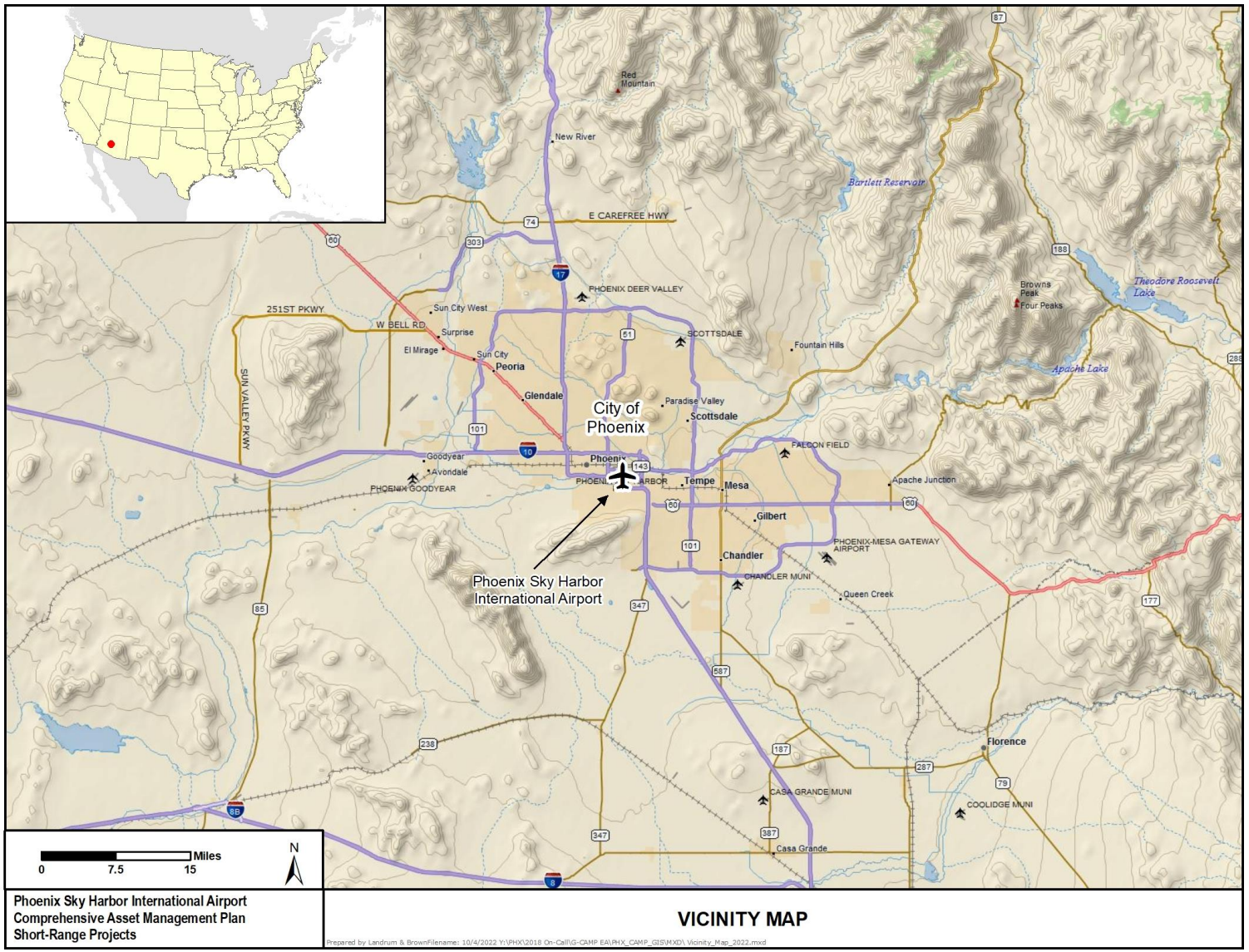
This Environmental Assessment (EA) evaluates the effects of the proposed federal actions related to the Proposed Project summarized below on the surrounding environment and has been prepared pursuant to the requirements of Section 102(2)(c) of National Environmental Policy Act of 1969 (NEPA) (Title 42 United States Code [U.S.C.] Sections 4321-4370); the President's Council on Environmental Quality [CEQ] Regulations) (Title 40, Code of Federal Regulations [C.F.R.] Sections 1500-1508 [2020], as well as in accordance with FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*[1] and FAA Order 5050.4B*, National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*[2]. FAA is the lead federal agency under NEPA for airport development actions and the City is the project sponsor and owner/operator of the Airport.

Federal actions subject to NEPA review can include airport layout plan (ALP) approval and approval of certain funding sources, among others.[3] With respect to the improvements that comprise the proposed short-term (0-5 years) CAMP project components, the federal actions include approval of the ALP of only those portions of the Proposed Project that meet the criteria established in 49 U.S.C. § 47107(a)(16)(B); FAA's decision on an application to impose and use Passenger Facility Charges (PFC) for the Proposed Project; and approval of potential eligibility for federal grants under the Airport Improvement Program (AIP).

This EA identifies the potential environmental impacts of the Proposed Project at PHX,[4] which includes the requested federal actions[5] described in Section 1.2.2. The EA assesses the impact categories required by FAA Orders 1050.1F and 5050.4B in relationship to the Proposed Project and reasonable alternatives; demonstrates how identified impacts can be eliminated or mitigated; and provides the context for public involvement and comment.

[1] U.S. Department of Transportation, Federal Aviation Administration, *Order 1050.1F, Environmental Impacts: Policies and Procedures*, effective July 16, 2015.
[2] U.S. Department of Transportation, Federal Aviation Administration, *Order 5050.4B, National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, effective April 28, 2006.
[3] 49 U.S.C. § 47107(a)(16)
[4] This EA identifies the potential environmental impacts of the entire Proposed Project at PHX. The EA does so because the FAA has concluded that, though the federal actions do not include approvals as to all portions of the Proposed Project, the effects of the entire Proposed Project are caused by the federal actions identified here**.**
[5] As described in FAA Order 1050.1F, Proposed Projects and decisions by FAA officials are subject to NEPA review, except as provided in Paragraph 2-1.2. Specific FAA actions subject to NEPA review can include, but are not limited to, grants, loans, contracts, leases, construction and installation actions, procedural actions, research activities, rulemaking and regulatory actions, certifications, licensing, permits, plans submitted to the FAA that require the FAA's approval, and legislation proposed by the FAA. Although emergency actions are subject to NEPA review, special procedures may apply. The FAA will not approve a Proposed Project until any required NEPA review has been completed.

**Exhibit 1-1: Vicinity Map**



## 1.2 Background

The City of Phoenix Aviation Department, as owner and operator of Phoenix Sky Harbor International Airport (PHX), proposes various short-term (0-5 year) airfield and terminal improvements to meet FAA airport design standards and improve operational flexibility, and provide improved terminal and concourse facilities to improve passenger quality-of-service. Construction of the Proposed Project is anticipated to begin in 2023.

The City developed the CAMP in 2019 to provide a roadmap to meet future demand at the Airport. The process began with an inventory of existing conditions, including the physical and operational characteristics of the Airport and its immediate environs, which provided the basis for the facility requirements. Aviation activity forecasts were developed and approved by the FAA. From the forecasts, the City developed multiple planning activity levels (PALs) which corresponded to annual passenger activity levels in millions of annual passengers (MAP). The PALs (shown in **Table 1-1** below) were used to establish future requirements for airfield, terminal/gates, and support facilities. This EA is based on the requirements associated with PAL 2, as that represents short-term needs over an approximately 5 year period from the present.

**Table 1-1: Aviation Activity Forecast Summary**

| | Historical | | Forecast (in CAMP) | | | | |
|---|---|---|---|---|---|---|---|
| | 2016 | 2017 | (PAL 1) | Base Year + 10 Years | (PAL 2) | Base Year + 15 Years | (PAL 3) |
| **Enplaned Passengers** | | | | | | | |
| Domestic | 20,686,980 | 20,939,437 | 23,443,363 | 25,355,185 | **25,878,349** | 28,155,399 | 31,965,611 |
| International | 986,438 | 1,039,656 | 1,266,721 | 1,457,421 | **1,506,398** | 1,706,129 | 2,015,188 |
| Total | 21,673,418 | 21,979,092 | 24,710,084 | 26,812,606 | **27,384,747** | 29,861,529 | 33,980,799 |
| Millions of annual passengers (MAP) | 43 | 44 | 49 | 54 | **55** | 60 | 68 |
| **Aircraft Operations** | 440,771 | 443,392 | 444,189 | 458,603 | **464,326** | 488,333 | 526,508 |

Notes: Additional forecast information can be found in Appendix A of this EA
MAP represents passenger enplanements and deplanements
Source: CAMP Baseline Forecast Review (2018); approved by FAA on July 5, 2018 (Appendix A)
Comprehensive Asset Management Plan, 2019. Table 3-25, Table 4-1

There are currently two terminals at PHX (Terminal 3 and Terminal 4) arranged in a pier-style concept centrally located between Runway 8-26 and Runway 7L-25R. Terminal 1 was constructed in 1952 and demolished in 1991. Terminal 2 was opened in 1962 and demolished in 2020. The Terminal 2 gates were relocated to Terminal 3 upon completion of the Terminal 3 Modernization Program. A summary of existing terminal gate facilities is included in **Table 1-2**.

| **Table 1-2: Existing Terminals and Gates Terminals** | **Number of Existing Gates** | **Notes** |
|---|---|---|
| Terminal 1 | 0 | Terminal 1 was demolished in 1991 |
| Terminal 2 | 0 | Terminal 2 was demolished in February 2020. The 10 aircraft gates were relocated to the new Terminal 3 North Concourse and are currently in operation. |
| Terminal 3 | 25 | Terminal building and two concourses (one north, one south). The new North Concourse opened in February 2020. |
| Terminal 4 – North | 59 | Terminal 4 – North has 4 separate concourses |

| | | |
|---|---|---|
| Terminal 4 – South | 32 | Terminal 4 – South has 4 separate concourses |
| *Total:* | *116* | |

Source: Comprehensive Asset Management Plan, 2019

Based on the forecast of aircraft operations, fleet mix changes, and volumes of passengers associated with PAL2, additional terminal facilities and gates are needed to accommodate demand at a satisfactory level of service.

## 1.3 Description of the Proposed Project

The CAMP proposed various projects to address short-term needs at PHX. These projects are collectively referred to as the Proposed Project. The Proposed Project would not change the number of PHX's runways, configuration or length of runways at PHX, aircraft fleet mix, number of aircraft operations, timing of operations, or airspace use around the Airport. The following section describes the Proposed Project and clarifies the project elements requiring FAA approval and those not requiring FAA approval.

### 1.3.1 Proposed Project Elements Subject to FAA Approval

Recent changes in federal law have required the FAA to revisit whether FAA approval is needed for certain types of airport projects. Section 163(d) of the FAA Reauthorization Act of 2018 limits the FAA's review and approval authority to those projects that materially impact the safe and efficient operation of aircraft at, to, or from an airport; adversely affect the safety of people or property on the ground adjacent to an airport as a result of aircraft operations; or adversely affect the value of prior federal investments to a significant extent. For this EA, the projects requiring FAA approval include the airfield and terminal/concourse facilities.

The proposed improvements that do not materially impact the safe and efficient operation of aircraft at, to, or from an airport; adversely affect the safety of people or property on the ground adjacent to an airport as a result of aircraft operations; or adversely affect the value of prior federal investments to a significant extent are not subject to FAA ALP change approval. In addition, any improvements that are not eligible for Airport Improvement Program (AIP) or Passenger Facility Charge (PFC) funding are not subject to FAA approval. For this EA, the project elements not requiring FAA approval include the Airport tenant and support facilities.

### 1.3.2 Proposed Project Elements

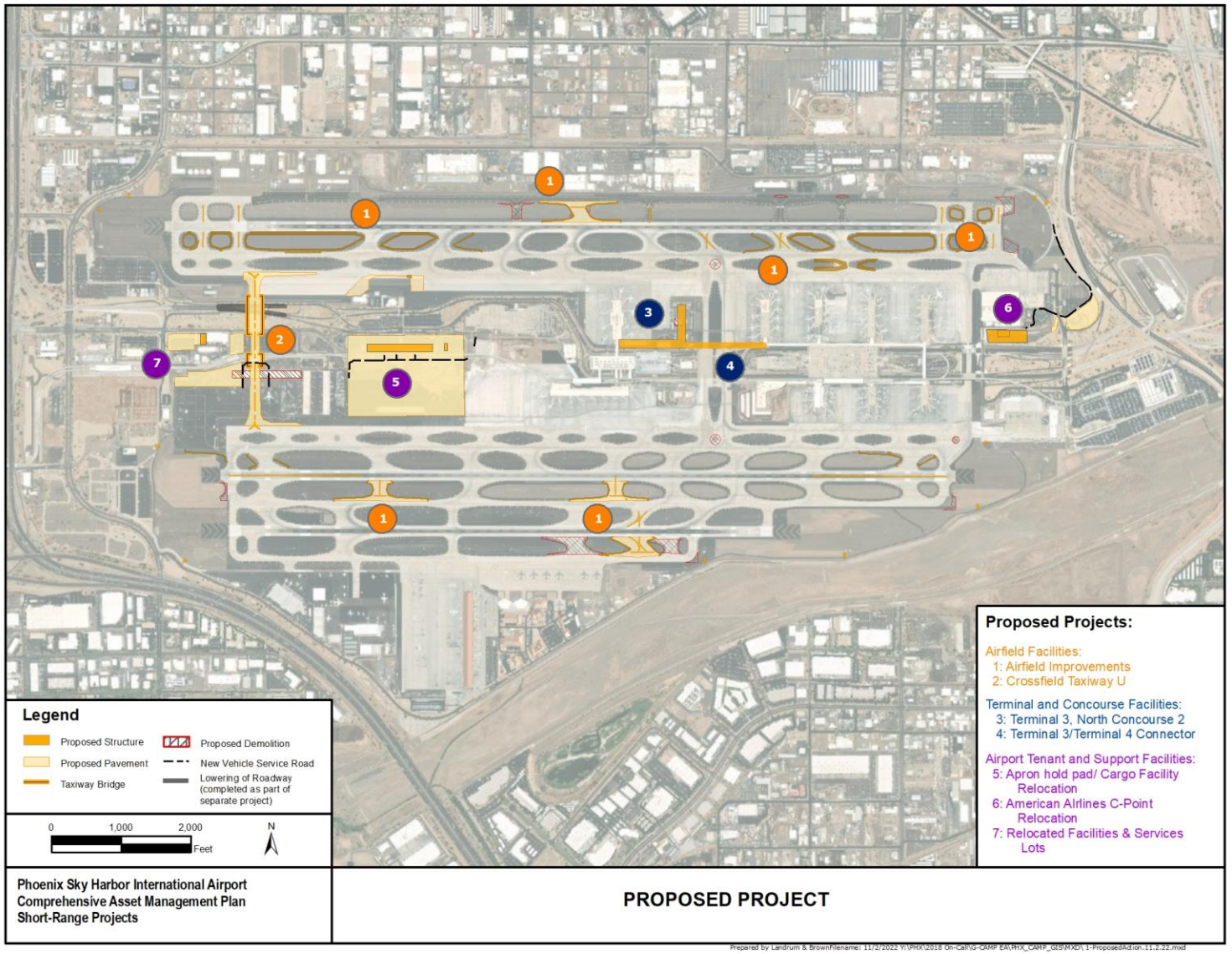
The Proposed Project elements are listed in **Table 1-3**, and depicted on **Exhibit 1-2**.

**Table 1-3: Proposed Project Elements**

| Airfield Projects | FAA Approval Required |
|---|---|
| • Realign perimeter fence outside of the Runway Object Free Area (ROFA) | Yes |
| • Mark and sign vehicle service road (VSR) hold points to increase pilot awareness within ROFAs | Yes |
| • Construct Taxiway Design Group (TDG) 6 fillet improvements to accommodate TDG 6 aircraft | Yes |
| • Expand Center Hold Bay | Yes |
| • Close Taxiway A5 | Yes |
| • Reconstruct Taxiway A6 | Yes |
| • Install Runway Status Lights (RWSL) | Yes |
| • Remark, repaint, or otherwise designate various connector taxiways and apron pavements to meet Airplane Design Group VI standards | Yes |
| • Paint taxiway islands to enhance pilots' visual awareness that it is a non-movement area | Yes |
| • Construct blast pad and add paint markings to identify the end of Runway 26 | Yes |

| | |
|---|---|
| • Relocate non-movement line to prevent aircraft from penetrating instrument departure surface | Yes |
| • Reconstruct Taxiway F8 to accommodate TDG 6 aircraft | Yes |
| **Airfield Projects (*continued*)** | **FAA Approval Required** |
| • Paint portion of blast pad up to threshold or displaced thresholds of Runways 7L, 25R, and 8 | Yes |
| • Paint "TAXI" marking on the east and west ends of Taxiway F | Yes |
| • Shift Taxiway C10 to eliminate direct access between the Terminal 4 North apron and Runway 8/ 26 | Yes |
| • Construct Taxiway F5 | Yes |
| • Close Taxiway H5 | Yes |
| • Close Taxiway H6 | Yes |
| • Construct Taxiway H9 (to replace Taxiways H5 and H6) | Yes |
| • Install Centerline Lights on the full length of all three runways | Yes |
| • Construction of Crossfield Taxiway U<br>➢ Includes construction of taxiway bridges over Sky Harbor Boulevard and the PHX Sky Train<br>➢ Requires relocation portions of the Facilities and Services Complex parking and equipment storage lots to a new space<br>➢ Requires relocation of a portion of Air Cargo Complex C to a new space | Yes |
| **Terminal and Concourse Facilities** | **FAA Approval Required** |
| • Construction of Terminal 3, to provide a 6- gate North Concourse 2<br>➢ This would require relocation of the American Airlines C-Point cargo facility and vehicle gate located west of the Terminal 3 North Concourse to a new space (see Airport Tenant and Support Facilities) | Yes |
| • Construction of Terminal 3 - Terminal 4 Connector | Yes |
| **Airport Tenant and Support Facilities** | **FAA Approval Required** |
| • Construction of South Apron Hold Pad and Cargo Complex C Replacement to replace portions of Air Cargo Complex C demolished by the construction of Crossfield Taxiway U | No |
| • Relocation of American Airlines' C-Point Cargo Facility and Vehicle Gate demolished by the construction of Terminal 3, North Concourse 2 | No |
| • Relocation of Facilities and Services parking and equipment storage yard impacted by Crossfield Taxiway U | No |

**Exhibit 1-2: Proposed Project**



## 1.4 Proposed Federal Actions

For the City to implement the Proposed Project, the FAA would need to take the following actions.

1. Unconditional approval of the ALP to depict the Proposed Improvements Subject to FAA Approval pursuant to 49 U.S.C. § 47107(a)(16).[6]
2. Determinations under 49 U.S.C. §§ 47106 and 47107 that are associated with the eligibility of the Proposed Project for federal funding under the Airport Improvement Program and under 49 U.S.C. § 40117, as implemented by 14 CFR § 158.25, to use passenger facility charges collected at the airport to assist with construction of potentially eligible development items from the ALP.
3. Construction, installation, relocation and/or upgrade of visual aids including but not limited to, installation of Runway Status Lights, taxiway edge lighting, pavement marking and signage and associated utility lines. This equipment is necessary to ensure the safety of air navigation for aircraft operations at the airport.

## 1.5 Purpose & Need

### 1.5.1 FAA Purpose & Need

FAA's purpose and need is to ensure the components of the Proposed Project subject to FAA approval do not derogate aviation safety and meet FAA airport design standards at PHX.

### 1.5.2 City's Purpose & Need

The purpose of and the need for the Proposed Project is to develop and maintain safe and efficient airport facilities that are consistent with the airport sponsor's (City) goals and objectives. The City's *purpose* of the Proposed Project is to:

1. Enhance airfield safety and efficiency as well as correct existing deficiencies at the Airport and
2. Meet forecasted passenger demand at the Airport over the next 5 years

The City's *needs* for the Proposed Project are listed below, grouped by functional area:

1. Airfield Facilities
    a. Meet FAA Airport Design Standards and provide airfield improvements to enhance safety and more efficiently move aircraft on the Airport
2. Passenger Terminal and Concourse Facilities
    a. Accommodate projected passenger levels by providing additional gates and support space, and provide better connectivity between terminals
3. Airport Tenant and Support Facilities
    a. Relocate and/or replace Airport tenant and support facilities to accommodate airfield and passenger terminal and concourse needs

The individual needs are described in more detail in the following pages.

[6] The FAA Approval Authority Review – Phoenix Sky Harbor (PHX), Phoenix, AZ CAMP 2022 Section 163 Determination Letter dated April 15, 2022 is included in Appendix A.

### 1.5.3 Airfield Facilities

The City conducted a study to identify non-standard airfield geometry based on current FAA airport design standards, including taxiway pavement widths, safety clearances, centerline separations, and hold positions for aircraft. The study also identified areas where the airfield geometry does not meet taxiway design standards in Advisory Circular (AC) 150/5300-13A – Airport Design[7], which are intended to enhance safety by avoiding runway incursions, particularly in the high-speed areas of the runways. The identified deficiencies need to be reconfigured to meet current standards.

In addition to non-standard airfield geography, the study identified a lack of connectivity between the north and south airfield. Currently, aircraft seeking to move between the north and south airfield must taxi via Taxiways R, S, and T, all of which are located in the center or eastern portions of the airfield (east of Terminal 3), resulting in inefficient aircraft operations that contribute to delays. In addition, aircraft crossing the center of the airfield traverse the high-energy area of the runways where approaching/departing aircraft have less room for sudden maneuverability to avoid a potential runway incursion.

Crossfield connectivity in the western portion of the Airport is needed to increase airfield efficiency and enhance safety by reducing these high-energy runway crossings in the center portions of the runways. Additional north/south connectivity is also needed to provide air traffic controllers with greater flexibility to maneuver aircraft throughout the airfield and the ability to better sequence aircraft for departure.

### 1.5.4 Passenger Terminal and Concourse Facilities

The Airport currently has three terminals providing passenger service:[8]

1. Terminal 3 (25 aircraft gates)
2. Terminal 4 – North (59 aircraft gates)
3. Terminal 4 – South (32 aircraft gates)

Combined, the three terminals provide 116 existing aircraft gate positions, with 260,839 square feet of holdroom space.[9]

In 2018 the City prepared an aviation activity forecast in support of the CAMP Study to forecast future activity at the Airport over a 20-year planning horizon. This forecast was approved by the FAA on July 5, 2018.[10] As part of this analysis, the City analyzed multiple future planning activity levels (PALs) to determine the appropriate size and type of facilities needed to meet the projected demand. PALs were identified corresponding with the following projected annual passenger activity levels in million annual passengers (MAP).

The passenger terminal concourse facility needs were based on PAL 2 (55 MAP), as the proposed project was designed to address needs over an approximately 5 year period. It is important to note that aircraft activity is not, and would not be constrained by facilities, or lack thereof under any of the planning scenarios.[11]

The FAA-approved CAMP aviation activity forecasts were used to conduct a gating analysis to determine the number of gates and remote aircraft parking positions required to better accommodate projected future passenger levels at the Airport.[12] In addition, holdroom space requirements were calculated based on the seating capacity of the largest aircraft capable of using each gate. Holdroom requirements may increase even when the number of

[7] This was the current version at the time of the study. FAA released AC 150/5300-13B in March 2022. The project elements were reviewed and determined to be compliant with the updated order.
[8] Terminal 1 was demolished in 1991. Terminal 2 was demolished in February 2020. Prior to demolition, all Terminal 2 gates were relocated to the Terminal 3 North Concourse (which opened in February 2020).
[9] Holdrooms provide space for passenger preboarding activities, including seating and standing areas, airline agent gate podiums, boarding/deplaning queuing spaces, and access/egress space.
[10] Letter from Kyler Erhard (FAA) to Jordan Feld (PHX), July 5, 2018
[11] CAMP, Chapter 3.3.1 *Assumptions Underlaying the Forecast*
[12] CAMP, Chapter 4.3.1 *Aircraft Gate and Holdroom Requirements*

gates stays the same because aircraft fleet mixes could change. Future gate and holdroom requirements for each terminal are provided in **Table 1-4**. As shown in the table, up to seven widebody gates and approximately 54,000 square feet of holdroom space are needed in PAL 2.

**Table 1-4: Short Range (0-5 years) Gate and Holdroom Requirements**

| Terminal | | Existing | PAL 2 (55 MAP) | |
|---|---|---|---|---|
| | | | Need | *(Shortage - compared to existing)* |
| Terminal 3 | Number of Gates | 25 | 27 | *(2)* |
| | Holdroom Space (square feet) | 79,051 | 79,415 | *(364)* |
| Terminal 4 – North | Number of Gates | 59 | 64 | *(5)*[1] |
| | Holdroom Space (square feet) | 116,404 | 169,200 | *(52,796)* |
| Terminal 4 - South | Number of Gates | 32 | 25 | *(0)* |
| | Holdroom Space (square feet) | 65,381 | 65,905 | *(524)* |
| **Total** | **Number of Gates** | **116** | ***123*** | ***(7)*** |
| | **Holdroom Space (square feet)** | **260,839** | ***314,520*** | ***(53,684)*** |

[1] The five needed gates are widebody gates, which would be equivalent to 10 narrowbody gates (i.e., the narrowbody equivalent of a widebody aircraft is two, because the widebody aircraft require approximately the same length of ramp frontage as two narrowbody aircraft).

Notes: Numbers do not sum due to rounding.
Holdroom space requirements assumes the average of minimum and maximum area requirements calculated in the CAMP Existing conditions for Terminal 4 – South includes the recently completed Concourse S-1.

Source: CAMP, 2019 (Table 4-26)

In addition, to provide better connectivity between terminals, a post-security passenger tunnel and corridor connecting Terminals 3 and 4 is needed. Without this connection, passengers transferring between terminals to connecting flights must exit the secure area of the arrival terminal and clear security again at the departing terminal, increasing congestion at the security screening checkpoints and resulting in additional time requirements for passengers. A Terminal 3/4 connector would allow utilization of gates in both Terminal 3 and 4, and allow passengers to efficiently move between terminals. This would improve passenger level of service, and allow for Terminal 4 airlines to also utilize Terminal 3 gates.

### 1.5.5 Airport Tenant and Support Facilities

Replacement tenant and support facilities are needed to accommodate existing facilities that would be impacted by the construction of new airfield and passenger terminal/concourse facilities.

**Construction of South Apron Hold Pad and Cargo Complex C Replacement**
Cargo activity at the Airport is currently accommodated in two main locations: the South Air Cargo and West Air Cargo Complexes. The South Air Cargo Complex has one building that accommodates the integrated cargo carriers[13] as well as space for the U.S. Customs and Border Patrol (CBP) and the City's Aviation Department.

[13] Integrated cargo companies are companies that use their own aircraft, trucks, and other vehicles to transport cargo

The West Air Cargo Complex consists of three buildings (West Air Cargo Buildings A, B, and C) that are occupied by all-cargo air carriers[14], cargo handling companies, passenger airline cargo[15], Transportation Security Administration (TSA), and the City's Aviation Department. The proposed construction of Crossfield Taxiways U would require the demolition of 51,000 square feet of West Air Cargo Building C and 1.1 acres of the associated cargo apron. These facilities would be replaced to ensure cargo operations are not affected.

**Relocation of American Airlines' C-Point Cargo Facility and Vehicle Gate**
American Airlines currently operates an approximately 10,000 square foot cargo/mail sort facility west of the Terminal 3 North Concourse. A vehicle gate and access road providing access to the facility are also present in this location. The proposed construction of the Terminal 3 North Concourse 2 project requires demolition and relocation of this facility. Vehicle parking in this area would also be impacted and need to be replaced.

**Facilities and Services Building Replacement Parking**
The Phoenix Aviation Department's Facilities and Services Building complex is currently located off of Buckeye Road, approximately 300 feet west of the proposed alignment of Crossfield Taxiway U. This building complex includes employee parking areas, visitor parking, and an equipment parking lot. The construction of Crossfield Taxiway U would impact each of these parking areas. As a result, these lots would need to be relocated to other areas within the Facilities and Services complex.

## 1.6 Organization of Document

The format and content of this EA conforms to the requirements of Section 102(2)(c) of NEPA. The content of each chapter of this EA is summarized below.

- **Chapter 1 – Introduction and Purpose & Need** provides a brief description of PHX, a description of the Proposed Project and its purpose and need, a description of the Proposed Project, timeframes associated with the Proposed Project, and requested federal actions.
- **Chapter 2 – Alternatives** provides an overview of the identification and screening of alternatives considered as part of the environmental evaluation process.
- **Chapter 3 – Affected Environment** describes existing environmental conditions within the project study area.
- **Chapter 4 – Environmental Consequences and Mitigation Measures** discusses and compares the environmental impacts associated with the Proposed Project, including the federal action, feasible alternatives to the Proposed Project, and the No Action Alternative; and it also identifies avoidance, minimization, and mitigation options considered.
- **Chapter 5 – List of Preparers** provides a list and summary of qualification of those individuals that contributed to the preparation of this EA.

The appendices contain various reference materials, including technical information and records of coordination activities.

[14] All-cargo companies are companies that transport goods in packages and containers and do not carry passenger between airports
[15] Passenger airline cargo companies refer to airline carriers who transport cargo in the baggage compartments of commercial passenger aircraft (also referred to as "belly cargo")

# Chapter 2:
# Alternatives

# 2 Alternatives

## 2.1 Scope of the Alternatives Analysis

This chapter describes the alternatives to the airfield, terminal/concourse, and airport tenant/support facility components of the proposed Comprehensive Asset Management Plan (CAMP) short-term (0-5 year) projects. In addition, this chapter summarizes the screening process and evaluation criteria used to identify, compare, and evaluate alternatives and concept components.

Those alternatives and concept components that would reasonably satisfy the purpose and need, identified in Chapter 1 of this Environmental Assessment (EA), were next evaluated for construction and operational feasibility. All concept components that passed the multi-step screening process were grouped together to define the Proposed Project and potentially other feasible build alternatives to be carried forward for analysis of environmental consequences.

## 2.2 Alternatives Screening Process

A multi-step screening process was established to identify and evaluate a range of reasonable alternatives that are capable of achieving the purpose and need statements described in Chapter 1, Introduction and Purpose & Need.

> Step 1 – Does the alternative meet the Purpose & Need for the CAMP (identified separately for airfield facilities, passenger terminal and concourse facilities, and airport tenant and support facility needs)?
>
> Step 2 – In addition to Step 1, is the candidate alternative practical or feasible to implement from a technical and operational standpoint?[16]
>
> Step 3 – Would the candidate alternative result in a safe and efficient use of navigable airspace and minimize airfield operational impacts?

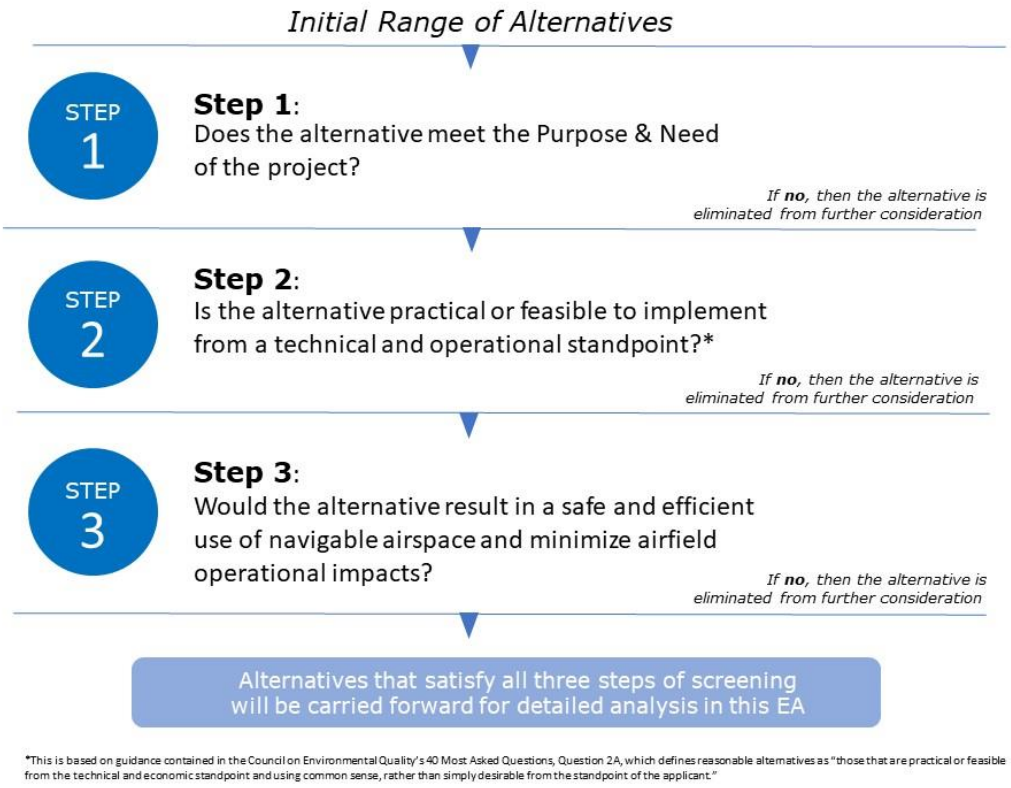
The alternatives that were not eliminated through this screening process were retained for a more detailed environmental evaluation in the EA process. The screening process for the CAMP alternatives is portrayed conceptually in **Exhibit 2-1**.

In addition, other modes of transportation such as intercity bus, passenger rail, and automobile transportation usage were not considered in the range of reasonable alternatives because the safety of the airfield would not be enhanced by these modes of travel, and passenger facility needs would not be addressed. The main purpose of the Proposed Project is to enhance the safety of aircraft operations and meet Federal Aviation Administration (FAA) Airport Design Standards, and secondly accommodate projected passenger levels at Phoenix Sky Harbor International Airport (PHX, or the Airport). The use of alternative modes of transportation to replace some or all of the air transportation activity at PHX does not meet the main purpose because the various places on the airfield that do not meet FAA airport design standards would not be corrected. Passenger rail service by AMTRAK via the Southwest Chief train uses passenger van service from PHX to about 145 miles north to Flagstaff, Arizona. Daily passenger service from PHX by intercity bus is provided by Greyhound. FAA and the City of Phoenix do not have the authority to compel PHX airport users to use alternative modes of transportation such as automobiles,

[16] This is based on guidance contained in the Council on Environmental Quality's 40 Most Asked Questions, Question 2A, which defines reasonable alternatives as "those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant."

intercity bus, or passenger rail service. The alternative of Use Other Modes of Transportation for this proposed project has been eliminated from further consideration in this EA.

**Exhibit 2-1: Alternative Screening Process**




The use of technology such as telecommunications or video conferencing was not considered in the range of alternatives because while evidence indicates that the use of telecommunications and video-conferencing has increased to satisfy travel, these technologies would not enhance the safety of the PHX airfield.

## 2.3 No Action Alternative

Pursuant to Title 40, Code of Federal Regulations (CFR) § 1502.14(c)[2020]; FAA Order 1050.1F, paragraph 6-2.1(d); and FAA Order 5050.4B, paragraph 706(d), analysis of the No Action Alternative is required.

Under the No Action Alternative, the City would implement various elements of the airfield facility improvements identified in CAMP. Specifically, the recommendations requiring only painted markings, installation of lights, or pavement demolition, which require concurrence by the FAA's 14 CFR Part 139 Inspector. Other FAA airport design standards improvements would likely be addressed in future projects over the next 5 years. However, those improvements would require independent NEPA review and FAA approval.

Under the No Action Alternative, passenger terminal and concourse facilities would remain as they currently exist, without major improvement. Increases in future passengers and aircraft operations would continue at the same rate. However, passenger level of service would be greatly diminished, and airfield delays would increase as aircraft would be forced to wait for open gates.

The No Action Alternative would not meet the Purpose & Need for the Proposed Project, and many of the Airport's needs would continue to worsen as aircraft and passenger activity levels continue to rise. The No Action Alternative will be carried forward as the baseline for comparison to the Proposed Project.

As with the Proposed Project, the No Action Alternative would not result in changes to the Airport's runway configuration or length, aircraft fleet mix, number of aircraft operations, timing of operations, or airspace use around the Airport.

## 2.4 Range of Alternatives Considered

The needs defined in Chapter 1, Introduction and Purpose & Need provided the basis for formulating alternatives to address the needs of the project. The ultimate objective was to define preferred concepts for each area of need that would allow for logical and incremental development of facilities.

The approach used in this EA was to identify and evaluate alternative concepts individually for each of the three functional areas of need. As described in the preceding section, those needs include:

1. Airfield Facilities
2. Passenger Terminal and Concourse Facilities
3. Airport Tenant and Support Facilities

The alternatives development process was intended to capture a broad range of options at a high level and evaluate and refine these options through a systematic process to arrive at a preferred alternative.

Airfield improvement alternatives were limited to those identified in the CAMP completed in 2019 and revised in 2022. ***This planning effort does not include a runway extension or an additional runway at PHX (which would be outside the scope of the CAMP short-term development plan)***. For the other needs, the alternatives analysis first focused on the identification of options to expand existing facilities given the lack of available vacant Airport land for new development. When expansion of existing facilities was not feasible, other options were considered, such as relocating the facility to another area of the Airport.

Since the proposed CAMP short-term projects (0-5 year) would address more than one need, selection of some alternatives would influence the feasibility of other options. Other alternatives would require enabling projects in order to construct the proposed improvement (such as relocation of the Cargo C Complex, American Airlines C-Point Cargo Facility, and the Airport's Facilities and Services lots).

## 2.5 Alternatives Screening and Evaluation

The alternatives screening and evaluation process is broken down by each of the three needs. A summary of the alternatives considered, and the three-step screening process is provided in the following pages.

### 2.5.1 Airfield Facilities Alternatives

The FAA evaluated various proposed project components that could be implemented to address airfield requirements, safety, geometric criteria (such as taxiway pavement widths and centerline separations), and FAA design standards deficiencies.[17] Recommendations ranged from geometric options involving construction, reconfiguration, and demolition of pavement, to enhanced markings, signage, and lighting, education/outreach, and procedural modifications. During the CAMP process, the City reviewed and screened individual projects based on a number of factors (including economic viability, operational efficiency, and natural resource conservation) to identify projects that could be efficiently and effectively implemented together.

[17] As specified in FAA AC 150/5300-13B

The process of identifying a recommended alternative began with the development of individual projects that would provide one or more concepts to address airfield facility needs. The individual projects were reviewed and screened based on their ability to address these needs, their technical and operational feasibility, and their potential for operational impacts in order to identify individual projects that could be packaged together as a consolidated series of projects.

Two separate consolidated series of projects were identified that would address the Airport's airfield facilities needs which were identified as Airfield Facilities Alternatives #1 and #2. The following discussion describes each of the alternatives.

Airfield Facilities Alternative #1

Alternative #1 includes specific projects to meet facility requirements and mitigate airfield issues present at the Airport. The goal of this alternative was to address the airfield needs using a combination of geometry, marking, lighting, signage, procedural enhancements, and education to improve safety without compromising operational efficiency at the Airport. The proposed improvements are listed in **Table 2-1.**

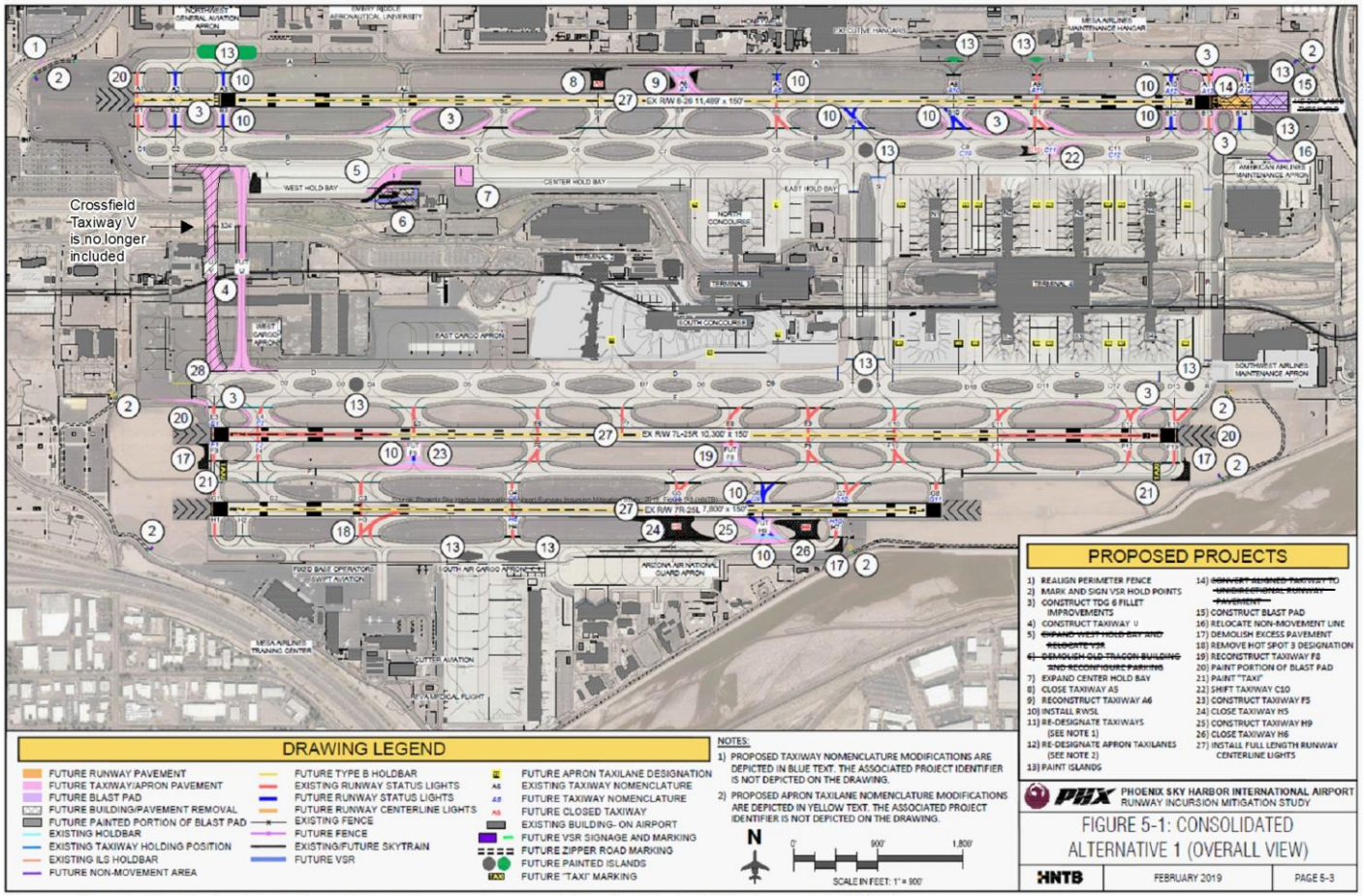
**Table 2-1: Airfield Facilities Alternative #1**

| Airfield Projects |
|---|
| • Realign perimeter fence outside of the Runway Object Free Area (ROFA) |
| • Mark and sign vehicle service road (VSR) hold points to increase pilot awareness within ROFAs |
| • Construct Taxiway Design Group (TDG) 6 fillet improvements to accommodate TDG 6 aircraft |
| • Expand Center Hold Bay |
| • Close Taxiway A5 |
| • Reconstruct Taxiway A6 |
| • Install Runway Status Lights (RWSL) |
| • Remark, repaint, or otherwise designate various connector taxiways and apron pavements to meet Airplane Design Group VI standards |
| • Paint taxiway islands to enhance pilots' visual awareness that it is a non-movement area |
| • Construct blast pad and add paint markings to identify the end of Runway 26 |
| • Relocate non-movement line to prevent aircraft from penetrating instrument departure surface |
| • Demolish excess pavements to enhance pilots' visual awareness of runways and taxiways |
| • Reconstruct Taxiway F8 to accommodate TDG 6 aircraft |
| • Paint portion of blast pad up to threshold or displaced thresholds of Runways 7L, 25R, and 8 |
| • Paint "TAXI" marking on the east and west ends of Taxiway F |
| • Shift Taxiway C10 to eliminate direct access between the Terminal 4 North apron and Runway 8/ 26 |
| • Construct Taxiway F5 |
| • Close Taxiway H5 |
| • Close Taxiway H6 |
| • Construct Taxiway H9 (to replace Taxiways H5 and H6) |
| • Install Centerline Lights on the full length of all three runways |
| • Construction of Crossfield Taxiway U<br>➢ The proposed construction of Crossfield Taxiway U would require the demolition of the West Air Cargo Building C and associated apron, which would need to be replaced as a result of either alternative. It would also impact employee, visitor, and equipment parking areas for the Facilities and Services complex. |

Source: Phoenix Sky Harbor International Airport Runway Incursion Mitigation Study, 2019, Table 5-1 (HNTB)

Airfield Facilities Alternative #1 is depicted on **Exhibit 2-2**.

**Exhibit 2-2: Airfield Facilities Alternative #1**




Source: Phoenix Sky Harbor International Airport Runway Incursion Mitigation Study, 2019, Figure 5-1 (HNTB)
(modified to include crossfield Taxiway U instead of Taxiway V and remove the demolition of the former TRACON buidling and Runway 8/26 aligned taxiway projects)

| | |
|---|---|
| Phoenix Sky Harbor International Airport<br>Comprehensive Asset Management Plan<br>Short-Range Projects | **AIRFIELD FACILITIES ALTERNATIVE #1** |

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Airfield Facilities Alternative #2:
Airfield Facilities Alternative #2 includes all of the proposed projects in Alternative #1, plus the additional projects/changes identified below in **Table 2-2**.

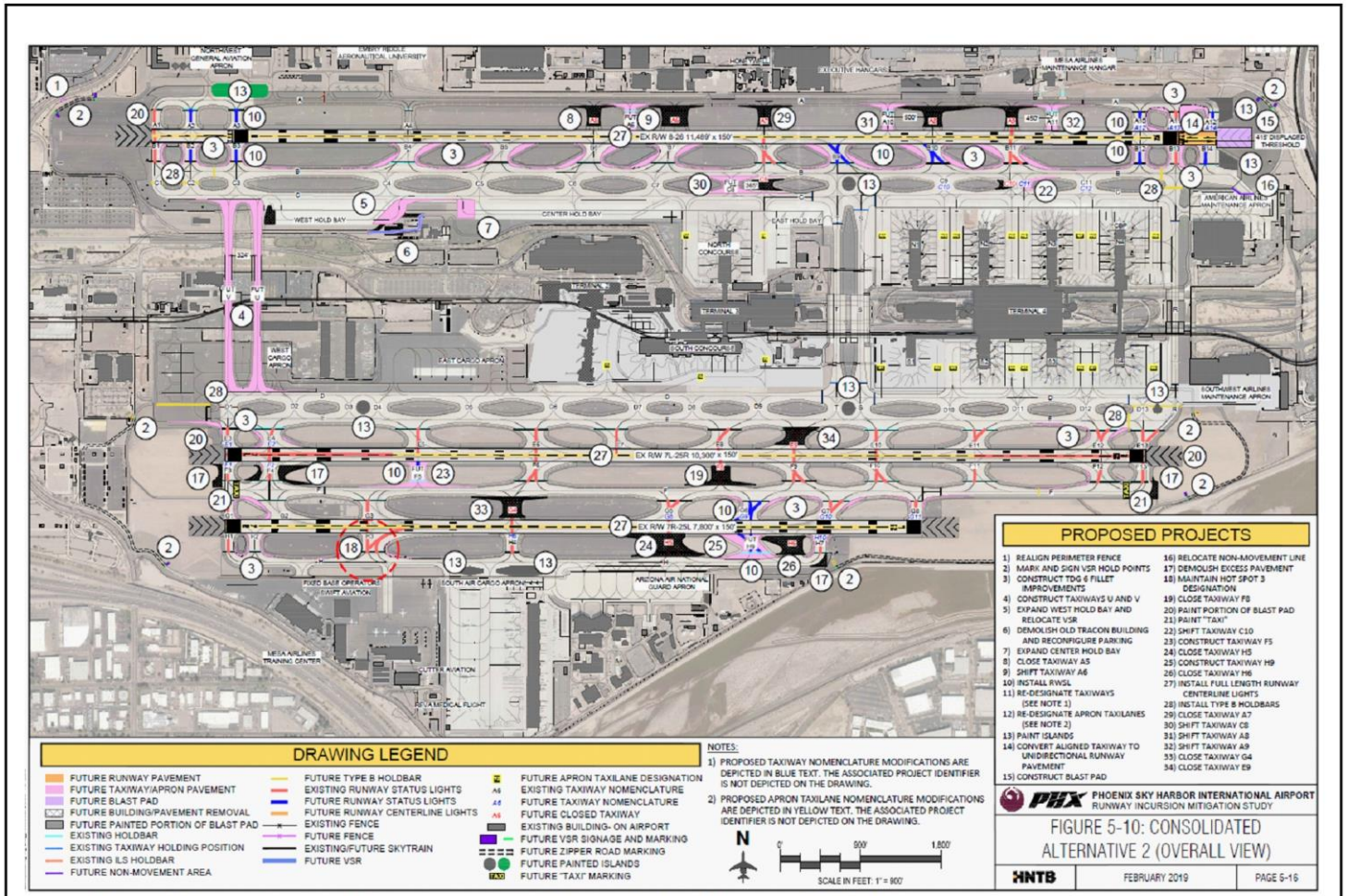
**Table 2-2: Airfield Facilities Alternative #2**

| Alternative #2 – Additional Proposed Improvements |
|---|
| • Construct Taxiways V to provide greater operational flexibility and reduce congestion on taxiways near the existing terminal area at the intersection of Taxiways D, E, S, and T |
| • Demolish the former Terminal Radar Approach Control Facilities (TRACON) building and reconfigure parking |
| • Shift Taxiway A6 to a standard 90-degree connector, eliminating a high energy crossing of Runway 8/26 and provide a northern exit point for aircraft landing on Runway 8/26 |
| • Convert aligned taxiway pavement into unidirectional Runway 26 pavement |
| • Maintain Hot Spot 3 designation to heighten awareness for Air Traffic Control and pilots navigating through this area |
| • Close Taxiway F8 to eliminate one high energy crossing of Runway 7L/25R associated with Hot Spot 2 |
| • Install Type B (Instrument Landing System) Holdbars at various locations for the protection of runway approach and departure areas (beyond the departure/arrival end of runways) |
| • Close Taxiway A7 to eliminate a high energy crossing of Runway 8/26 |
| • Shift Taxiway C8 365 feet west to eliminate direct access between aircraft parking apron and Runway 8/26 |
| • Shift Taxiway A8 500 feet west to eliminate direct access between tenant parking areas and Runway 8/26 |
| • Shift Taxiway A9 450 feet east to eliminate direct access between tenant parking areas and Runway 8/26 |
| • Close Taxiway G4 to eliminate a high energy crossing of Runway 7R/25L |
| • Close Taxiway E9 to eliminate a high energy crossing of Runway 7L/25R associated with Hot Spot 2 |

Source: Phoenix Sky Harbor International Airport Runway Incursion Mitigation Study, 2019, Table 5-2 (HNTB)

Alternative #2 is depicted on **Exhibit 2-3**.

**Exhibit 2-3: Airfield Alternative #2**




Source: Phoenix Sky Harbor International Airport Runway Incursion Mitigation Study, 2019, Figure 5-10 (HNTB)

| | |
|---|---|
| Phoenix Sky Harbor International Airport<br>Comprehensive Asset Management Plan<br>Short-Range Projects | **AIRFIELD FACILITIES ALTERNATIVE #2** |

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### 2.5.2 Alternatives Evaluation

Each alternative was evaluated based on the following three step approach:

- Step 1: Does the alternative meet the Purpose & Need for the CAMP?
  Both alternatives would meet the purpose and need of the project by meeting FAA Airport Design Standards and providing airfield improvements to enhance safety and more efficiently move aircraft.

- Step 2: Is the Alternative practical or feasible to implement from a technical and operational standpoint?
  Both alternatives were found to be practical and feasible from a technical standpoint. The estimated costs to construct Alternative #1 would be approximately $129 million.[18] The estimated costs to construct Alternative #2 would be approximately $199 million.[19]

- Step 3: Would the candidate alternative result in a safe and efficient use of navigable airspace and minimize airfield operational impacts?
  Both alternatives would reduce existing airfield hazards/safety risks and increase efficiency by providing new north-south airfield connectivity and improved aircraft circulation. However, the addition of a second crossfield taxiway (Taxiway V), as proposed in Alternative #2, would only provide benefit with new terminal facilities west of Terminal 3, which are not included in the Proposed Project. The addition of Type B Holdbars beyond the departure/arrival end of runways, as proposed in Alternative #2, would also result in operational impacts, introduce new routing restrictions for Air Traffic Controllers, and add runway queuing delays during instrument meteorological conditions.[20]

Conclusions:
Alternative #1 was rated equal to or higher than Alternative #2 for each evaluation step. Alternative #2 would result in additional impacts to airfield efficiency, and would cost approximately $70 million more than Alternative #1. Alternative #1 would fully meet the Purpose & Need to enhance airfield safety and efficiency as well as meet FAA Airport Design Standards over the next 5 years. Based on this analysis, Alternative #1 was identified as the recommended alternative, and will be carried forward for detailed environmental impact assessment as the Proposed Project for Airfield Facilities.

The No Action Alternative will also be carried forward for Airfield Facilities, as required by Council on Environmental Quality (CEQ) regulations, as a baseline for evaluating the Proposed Project.

### 2.5.3 Passenger Terminal and Concourse Facilities Alternatives

Passenger Terminal and Concourse Facilities Alternatives focused on the identification of alternatives that would align with long-term planning conducted during CAMP, which identified the construction of a New West Terminal as the preferred long-term concept. Terminal and concourse alternatives focused primarily on passenger processing capacity and concourse gate expansion opportunities, while also considering operational efficiency, aircraft fleet evolution, and flexibility to accommodate changing airline operational and business models. While the long-term development alternatives focused on ultimate terminal configurations that would accommodate needs through a twenty year planning horizon and beyond, the short-term (0-5 year) components of CAMP focused on Planning Activity Level (PAL 2) requirements, and sought to identify potential actions to address more immediate needs. The alternatives evaluated as part of the CAMP are neither dependent on the future construction of this new terminal to be fully utilized, nor would they be inconsistent with those plans.

[18] Based on PHX Runway Incursion Mitigation Report, 2019, Table 5-4. Estimates are in 2018 dollars, and assumes the replacement of crossfield Taxiway V for crossfield Taxiway U.
[19] Based on PHX Runway Incursion Mitigation Report, 2019, Table 5-4. Estimates are in 2018 dollars.
[20] Instrument meteorological conditions (IMC) are weather conditions requiring pilots to operate under instrument rather than visual references.

Two potential alternatives were identified to address short-term passenger terminal and concourse expansion needs. The following is a description of each alternative:

Terminal/Concourse Alternative #1: Terminal 3 North Concourse 2 and Connector

Alternative #1 addresses the PAL 2 gate requirements for Terminal 3 and 4 airlines by providing a new single-sided concourse east of the existing Terminal 3 North Concourse, with a connector to both Terminal 3 and Terminal 4. However, this Alternative does not meet the full need of seven widebody gates in PAL 2. As shown on **Exhibit 2-4**, this concourse would provide flexibility for seven narrowbody or five narrowbody and two widebody positions to help accommodate PAL 2 gate needs. This Alternative would also supplement gate capacity needs during the ongoing Terminal 4 gate modifications being done to accommodate evolving aircraft types and fleet mixes. This new concourse would meet holdroom requirements by providing approximately 75,000 square feet of passenger area (e.g., holdrooms, commercial areas, amenities, and passenger circulation corridors).

The new concourse and connectors would be constructed in two phases. The first phase would include the concourse initially served by bus, with a vehicle service road connection to the Terminal 3 North Concourse and Terminal 4 Concourse N1. The second phase would incorporate a post-security passenger corridor at the concourse level to Terminal 3, running below Taxiways T and S, and connecting to Terminal 4 Concourse N1. The site for the proposed concourse would require relocation of several existing facilities, including the American Airlines C-Point mail sort facility and vehicle Gate 141.

Terminal/Concourse Alternative #2: Terminal 3, South Terminal/Pier WS4

Alternative #2 would construct the first phase of the proposed West Terminal[21], which would include construction of the first south concourse pier (Pier WS4).[22] As shown on **Exhibit 2-5**, Pier WS4 would be constructed to accommodate four (4) widebody and two (2) narrowbody gates, and include approximately 160,000 square feet of passenger area. A secure walkway would be constructed to connect pier WS4 to the existing Terminal 3 south concourse. This would provide the ability for airlines based in the future West Terminal or Terminal 3 to use these gates. Existing gates F13, F14, and F15 (used for apron loading of small aircraft) would be closed due to the concourse connector.

[21] The FAA prepared an Environmental Impact Statement/Record of Decision in 2006 for the development of a new west terminal, among other projects. The City of Phoenix ultimately decided not to move forward with construction of the terminal.

**Exhibit 2-4: Passenger Terminal and Concourse Expansion Alternative #1: Terminal 3 North Concourse 2 and Connector**

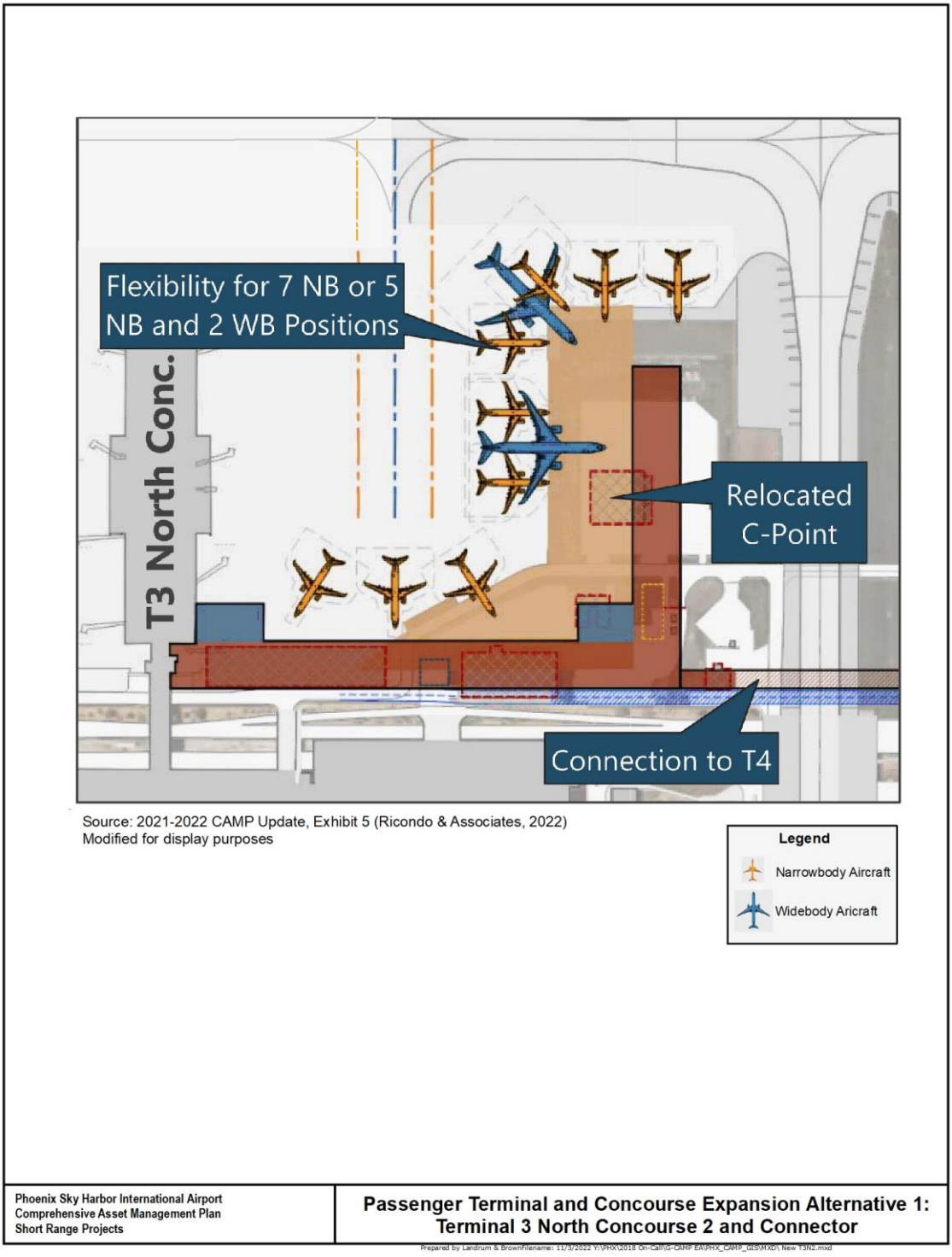
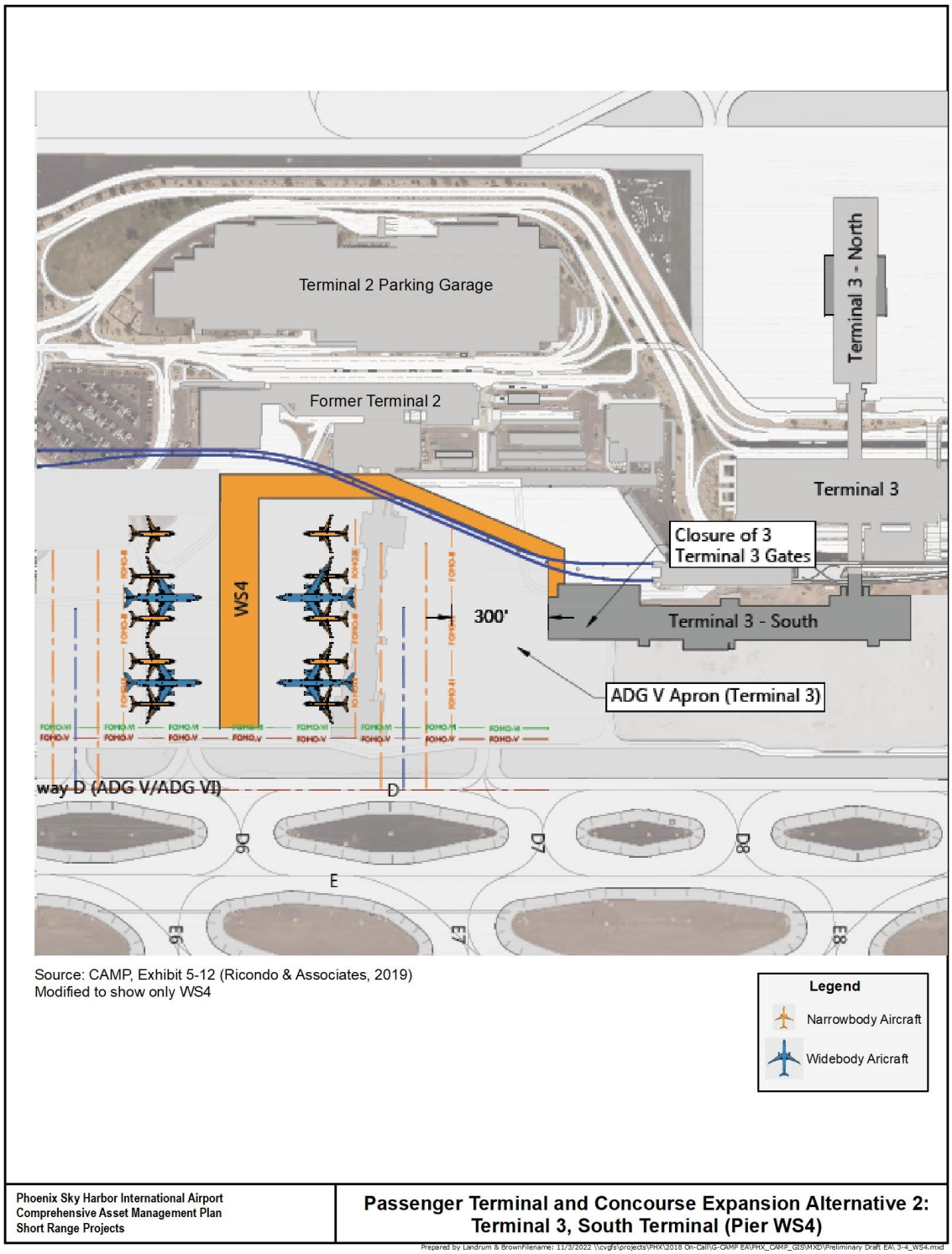


**Exhibit 2-5: Passenger Terminal and Concourse Expansion Alternative #2: Terminal 3, South Terminal/Pier WS4**



### 2.5.4 Alternatives Evaluation

Each alternative was evaluated based on the three step approach identified below:

- Step 1: Does the alternative meet the Purpose & Need for the CAMP?
  Both alternatives would meet the purpose and need of the project by accommodating projected passenger levels by providing additional terminal space and gates. However, neither Alternative would meet the full need of seven widebody gates in PAL 2. Alternative #1 would provide two of the five widebody gates ultimately needed for PAL 2, and provide additional flexibility at other concourses/terminals with five additional narrowbody gates. Alternative #2 would provide four widebody gates, and two additional narrowbody gates that would allow gate flexibility at other concourses/terminals. However, the net increase of gates would be less due to the required closure of three existing gates at the connection point. Each alternative would provide sufficient terminal space needed for PAL 2. Only Alternative #1 addresses the need for better connectivity between Terminals 3 and 4 by providing the terminal connector.

  Because Alternative #2 does not provide better connectivity between Terminals 3 and 4, this alternative does not meet the Purpose and Need for the project and therefore it has been dropped from further consideration and not carried through to screening steps 2 and 3.

Conclusions:
Alternative #2 would not satisfy the purpose and need for the project because it would not provide connectivity between Terminal 3 and 4. Therefore, Alternative #2 has been dropped from further consideration. Alternative #1 was identified as the recommended alternative, and will be carried forward for detailed environmental impact assessment as the Proposed Project for the passenger terminal and concourse facilities.

The No Action Alternative will also be carried forward for passenger terminal and concourse facilities, as required by CEQ regulations, as a baseline for evaluating the Proposed Project.

### 2.5.5 Airport Tenant and Support Facilities

Airport tenant and support facility needs include replacement and upgrade of necessary airport facilities are described in the following pages.

Airport Tenant and Support Facilities Alternative 1: South Hold Pad and Cargo Complex C Replacement
The construction of crossfield Taxiway U would impact 51,000 square feet of existing Air Cargo Complex ‘C’ and its adjacent Ground Support Equipment (GSE) storage space. There are no practical or feasible airfield facilities alternatives that would avoid these facilities. The existing facility is used by all-cargo and passenger cargo carriers. The new facility shown on **Exhibit 2-6** would allow for relocation of the entire existing 94,000-square foot facility and its adjacent apron GSE storage areas. Landside access for the facility would continue from the existing Buckeye Road alignment. The replacement facility would also provide new cargo apron space near the building, in a north facing direction with ground support access from apron to facility traversing below the elevated PHX Sky Train. The north facing aircraft apron would replace the existing south facing East Cargo Apron to allow for a south airfield hold pad for passenger aircraft awaiting an available gate at Terminal 3 or Terminal 4. Since the location of the remaining buildings are within the Air Cargo Complex and the requirement for airfield access, other on or off-airport alternatives were not evaluated.

Airport Tenant and Support Facilities Alternative 2: Relocation of American Airlines’ C-Point Cargo Facility and Vehicle Gate
The proposed construction of the Terminal 3 North Concourse 2 project would require demolition and relocation of American Airlines’ approximately 10,000 square foot cargo/mail sort facility west of the Terminal 3 North

Concourse. Airport Tenant and Support Facilities Alternative 2 would construct a new facility on top of a new parking structure next to the existing American Airlines Maintenance Hangar in the eastern portion of the Airport (see **Exhibit 2-7**). Vehicle parking in this area would be relocated onto an underutilized parking lot east of 42nd Street, and the East Cell Phone Lot would be relocated slightly south onto the site of the former clean natural gas (CNG) refueling station. A new vehicle service road (VSR) would connect to the existing VSR and be accessible through a new vehicle checkpoint gate. The Aircraft Operation Area (AOA) fencing would be rerouted along the new VSR. Since this is one of the few available parcels of land with airfield connectivity, and due to the presence of other American Airlines facilities in this area, no other on-airport areas were considered. Other off-airport development locations are not considered reasonable, and therefore were not evaluated.

Airport Tenant and Support Facilities Alternative #3: Facilities and Services Building Replacement Parking
The construction of crossfield Taxiway U would impact parking areas used by the Phoenix Aviation Department's Facilities and Services Building complex. The impacted lots would be relocated to other vacant areas within this complex. Airport Tenant and Support Facilities Alternative #3 would provide a new 0.3 acre covered visitor/vendor parking area, a new 2.2 acre employee parking lot, and a new 6.6 acre equipment yard (split into two parts). A 2.3 acre parking area on the opposite side of the new Crossfield Taxiway U would also remain from the current parking lot (see **Exhibit 2-8**). Because of the availability of vacant land, and the fact that the parking facilities must remain close to the buildings they serve, other on or off-airport alternatives were not considered.

### 2.5.6 Alternatives Evaluation

Each alternative was evaluated based on the three step approach identified below:

- Step 1: Does the alternative meet the Purpose & Need for the CAMP?
  All three alternatives would meet the Purpose and Need of the project by replacing facilities to accommodate airfield and/or terminal/concourse facility alternatives.

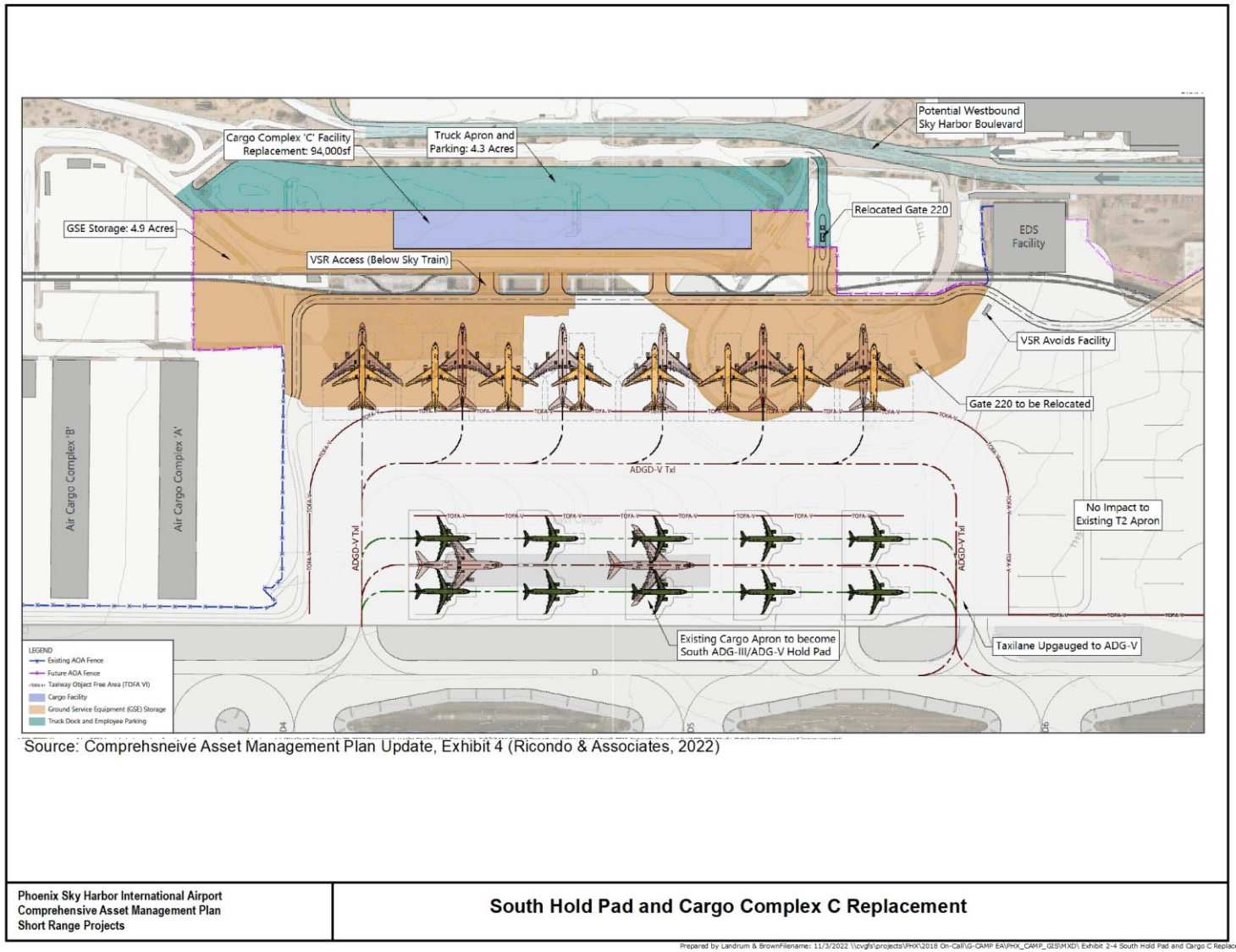
- Step 2: Is the alternative practical or feasible to implement from a technical and operational standpoint?
  All three alternatives were found to be practical and feasible from a technical and operational standpoint.

- Step 3: Would the alternative result in a safe and efficient use of navigable airspace and minimize airfield operational impacts?
  All three alternatives would safely and efficiently provide new tenant and support facilities to replace the existing facilities that would be impacted by the proposed airfield and terminal/concourse alternatives.

Conclusions:
Based on this analysis, all three alternatives satisfied the three step evaluation. Each alternative addresses a different need, and could be implemented with little overall impact to Airport operations or long-term development goals. Therefore, all three alternatives will be carried forward for detailed environmental impact assessment as the Proposed Project for Airport Tenant and Support Facilities.

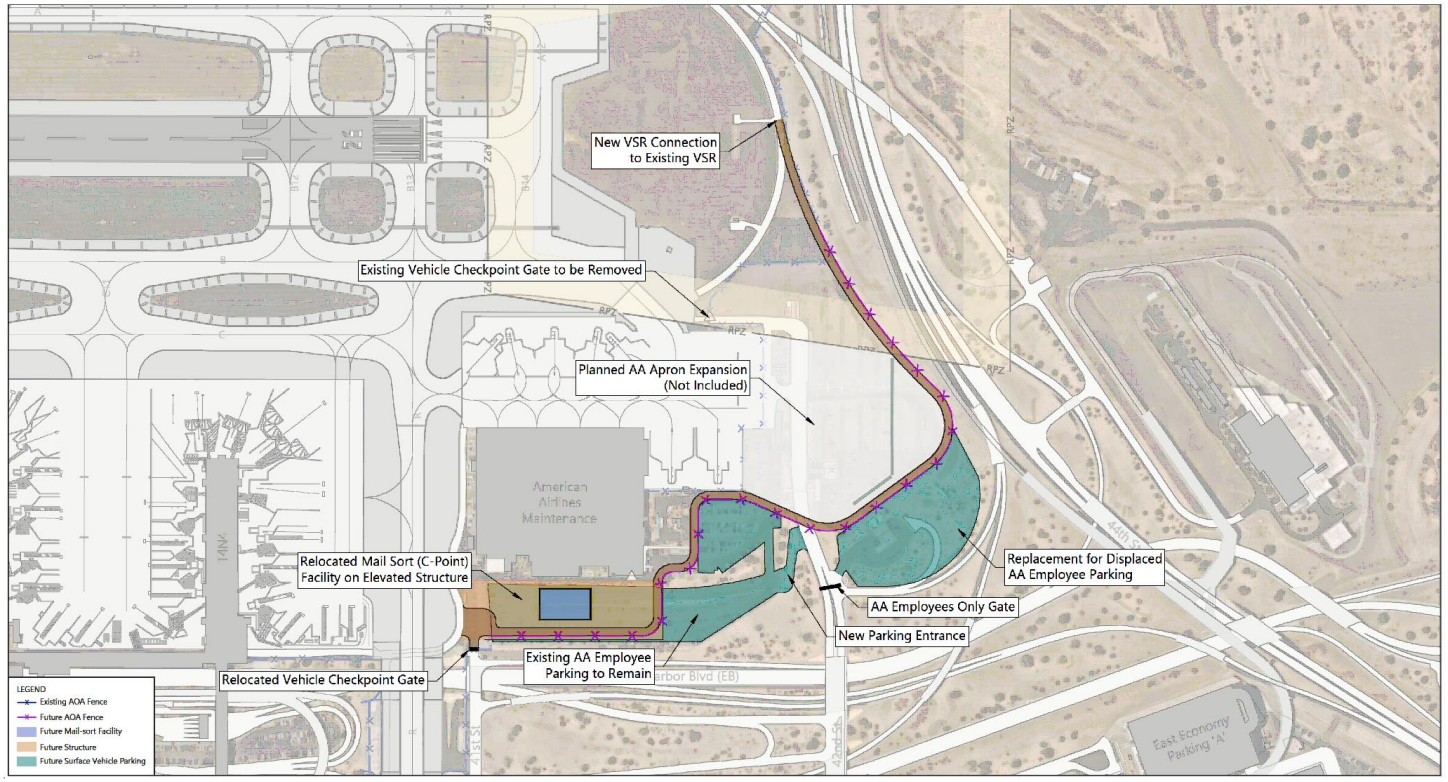
The No Action Alternative will also be carried forward, as required by CEQ regulations, as a baseline for evaluating the Proposed Project.

**Exhibit 2-6: South Hold Pad and Cargo Complex C Replacement Facility**




Source: Comprehsneive Asset Management Plan Update, Exhibit 4 (Ricondo & Associates, 2022)

**Exhibit 2-7: Relocation of American Airlines' C-Point Cargo Facility and Vehicle Gate**

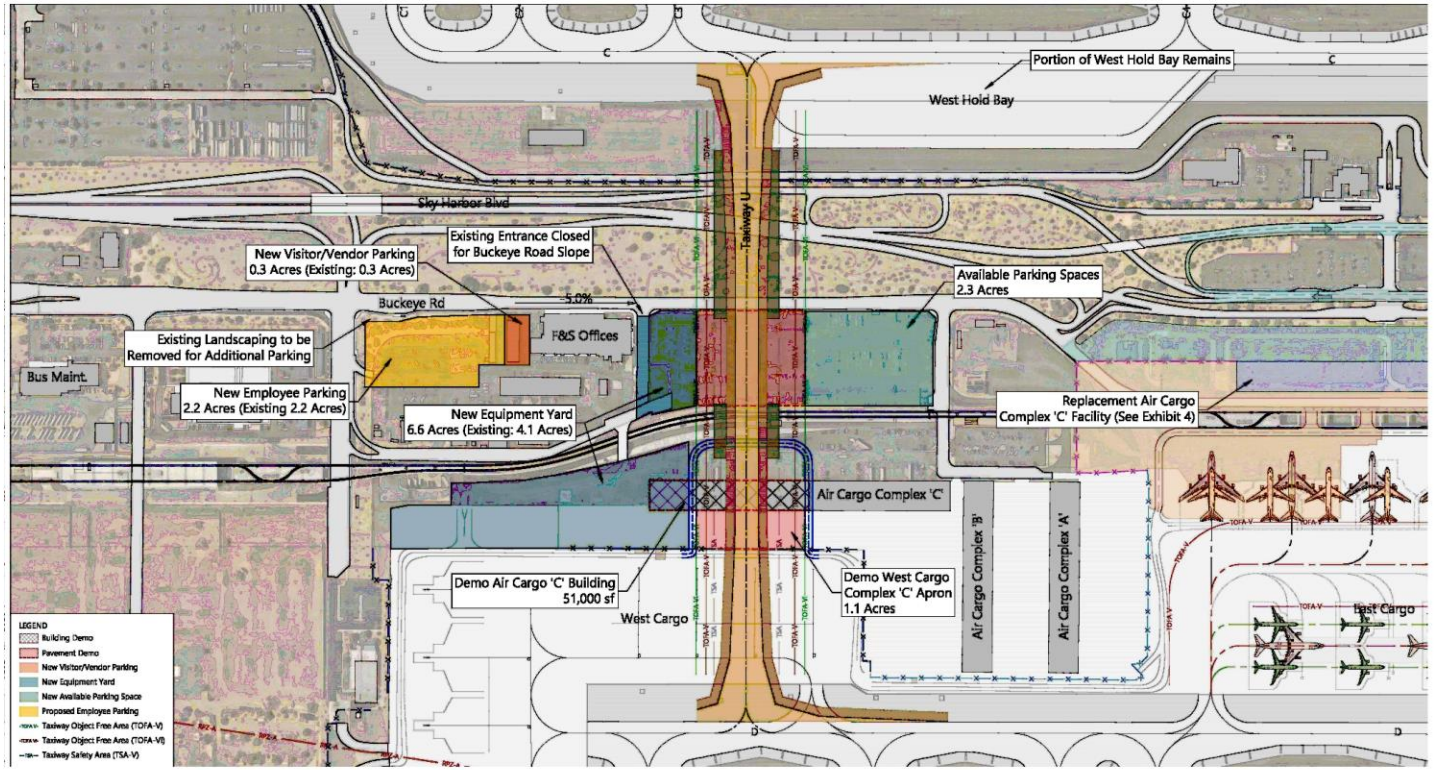



Source: Comprehsneive Asset Management Plan Update, Exhibit 3 (Ricondo & Associates, 2022)

| | |
|---|---|
| Phoenix Sky Harbor International Airport<br>Comprehensive Asset Management Plan<br>Short Range Projects | **Relocation of American Airlines' C-Point Cargo Facility and Vehicle Gate** |

Prepared by Landrum & BrownFilename: 11/3/2022 \\cvgfs\projects\PHX\2018 On-Call\G-CAMP EA\PHX_CAMP_GIS\MXD\ Exhibit 2-5 - C Point Relocation.mxd

**Exhibit 2-8: Facilities and Services Building Replacement Parking**




Source: Comprehsneive Asset Management Plan Update, Exhibit 2 (Ricondo & Associates, 2022)

| | |
|---|---|
| Phoenix Sky Harbor International Airport<br>Comprehensive Asset Management Plan<br>Short Range Projects | **Facilities and Services Building Replacement Parking** |

Prepared by Landrum & BrownFilename: 11/3/2022 \\cvgfs\projects\PHX\2018 On-Call\G-CAMP EA\PHX_CAMP_GIS\MXD\ Exhibit 2-2 FS Parking Optior

### 2.5.7 Off-Site Alternatives

The ability to use another airport as a feasible and practical alternative is largely based on the potential for that airport to accommodate most, if not all of the aircraft operations that are currently using PHX. Other nearby airports include:

Phoenix-Mesa Gateway
Phoenix–Mesa Gateway Airport (IWA) is an international airport in the southeastern area of Mesa, Arizona, 20 miles southeast of Phoenix. The airport, owned and operated by the Phoenix–Mesa Gateway Airport Authority, is a reliever airport for Phoenix Sky Harbor International Airport. The airport has three parallel runways: Runway 12L/30R (9,300 feet long by 150 feet wide), Runway 12C/30C (10,201 feet long by 150 feet wide), and Runway 12R/30L (10,401 feet long by 150 feet wide). The airport had 273,672 operations in the year ending in October of 2021.

Scottsdale Municipal Airport
Scottsdale Airport (SDL) is 9 miles north of downtown Scottsdale, in Maricopa County, Arizona. It is one of the busiest single-runway general aviation airports in the nation with 186,514 operations in 2019. The airport does not have commercial scheduled service. The airport has one Runway (Runway 3/21) that is 8,249 feet long and 100 feet wide. There are three FBOs located at the airport.

Deer Valley Airport
Phoenix Deer Valley Airport (DVT) is located 25 miles north of Phoenix Sky Harbor International Airport. DVT is designated as a general aviation reliever airport to PHX. The airport has no commercial airline activity and is a center for flight training, general aviation and business aviation. The airport has two runways, one measuring 8,200 feet in length and the other measuring 4,500 feet in length. Currently DVT is the second busiest general aviation airport in the United States.

Phoenix Goodyear Airport
Phoenix Goodyear Airport (GYR) is located 20 miles west of downtown Phoenix. The airport is designated as a general aviation reliever airport to Phoenix Sky Harbor International Airport. GYR has no commercial airline activity and is a center for flight training, aircraft maintenance, repair and overhaul, and aircraft storage. The airport has a single runway measuring 8,500 feet in length.

Glendale Municipal Airport
Glendale Municipal Airport (GEU) is located five miles west of downtown Glendale, five miles east of Luke Air Force Base, and 30 minutes northwest of downtown Phoenix. The Airport is 477-acres in size, and includes a modern two-story, 22,000 square-foot terminal, a Federal Aviation Administration (FAA) controlled tower, and complete airport services for general aviation and corporate jet traffic. The Airport has one runway (Runway 1/19) that is 7,150 feet in length and 100 feet wide.

Chandler Municipal Airport
Chandler Municipal Airport (CHD) is a general aviation reliever airport located 18 miles southeast of Sky Harbor International Airport. The Airport is 532.5 acres in size. CHD has a parallel runway system; Runway 4R-22L is the primary runway and is 4,870 feet long and 75 feet wide. Runway 4L-22R is the secondary runway oriented in a northeast/southwest manner and is 4,401 feet long and 75 feet wide.

Luke Air Force Base (AFB)
Luke AFB is a military installation located approximately 15 miles west of Phoenix. This airport is for military use only and is therefore closed to the public. Pilots must obtain special permissions prior to landing at Luke AFB. Luke AFB has two runways: Runway 03L/21R (10,012 feet in length) and Runways

03R/21L (9,904 feet in length). Since Luke AFB is not a public-use airport, relocating commercial aviation from PHX to Luke AFB is not possible and therefore is not a reasonable alternative.

Relocating passenger operations to one of the other nearby airports in the Phoenix area would avoid impacting PHX, however, none of these airports could accommodate the current or projected passenger demand that in theory would be diverted from PHX because none of these airports have the necessary passenger processing facilities or airfield capacity. It is also unlikely that these improvements could be planned, evaluated, designed, and constructed within the timeframe of the CAMP short-range projects. This would also not address the existing non-standard airfield geometry at PHX. Therefore, the use of another airport is not a reasonable alternative[23], and it will not be carried forward for further consideration.

## 2.6 Alternatives Carried Forward

Based on the analysis of the alternatives for the individual needs described above, the following alternatives are being carried forward for detailed analysis:

### 2.6.1 Proposed Project

Airfield Facilities
The City identified Airfield Facilities Alternative #1 as the preferred alternative, therefore this alternative will be carried forward for detailed analysis as part of the Proposed Project.

Terminal and Concourse Facilities
The City identified Terminal/Concourse Alternative #1 (Terminal 3 North Concourse 2 and Connector) as the preferred alternative, therefore this alternative will be carried forward for detailed analysis as part of the Proposed Project.

Airport Tenant and Support Facilities
The City identified Airport Tenant and Support Facilities Alternative #1 (South Hold Pad and Cargo Complex C Replacement), Airport Tenant and Support Facilities Alternative #2 (Relocation of American Airline's C-Point Cargo Facility and Vehicle Gate), and Airport Tenant and Support Facilities Alternative #3 (Facilities and Services Building Replacement Parking) as part of the Proposed Project, therefore each will be carried forward for detailed analysis as part of the Proposed Project.

### 2.6.2 No Action Alternative

The No Action alternative will be carried forward under 40 CFR 1502.14(c)[2020] for comparison to the Proposed Project, even though it does not meet the Purpose & Need for the Proposed Project.

[23] This is based on guidance contained in the Council on Environmental Quality's 40 Most Asked Questions, Question 2A, which defines reasonable alternatives as "those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant."

**Table 2-3: Alternatives Screening Summary**

| Alternative | Description | Evaluation Process | | | Retain for detailed impact evaluation |
|---|---|---|---|---|---|
| | | ***Step 1: Does it satisfy the Purpose & Need of the project?*** | ***Step 2: Practical or feasible to implement from an operational and technical standpoint?*** | ***Step 3: Results in safe and efficient use of navigable airspace and minimizes airfield operational impacts?*** | |
| **No Action** | Airport remains as it is today | No | N/A | N/A | **Yes** |
| **Airfield Facilities Alternatives** | | | | | |
| **Alternative #1** | Airfield Facilities Alternative #1 would construct multiple projects to meet facility requirements and mitigate airfield issues present at the Airport. | Yes | Yes | Yes | **Yes** |
| **Alternative #2** | Airfield facilities Alternative #2 would construct the projects proposed in Airfield Facilities Alternative #1, plus additional airfield projects. | Yes | Yes | No | No |
| **Terminal/Concourse Facilities Alternatives** | | | | | |
| **Alternative #1** | Terminal/Concourse Alternative #1 would construct a new single-sided concourse east of the existing Terminal 3 North Concourse, with a connector to both Terminal 3 and Terminal 4 | Yes | Yes | Yes | **Yes** |
| **Alternative #2** | Terminal/Concourse Alternative #2 would construct the first phase of the future West Terminal, which would include construction of the Pier WS4. | No | N/A | N/A | N/A |

| Alternative | Description | Evaluation Process | | | Retain for detailed impact evaluation |
|---|---|---|---|---|---|
| | | ***Step 1: Does it satisfy the Purpose & Need of the project?*** | ***Step 2: Practical or feasible to implement from an operational and technical standpoint?*** | ***Step 3: Results in safe and efficient use of navigable airspace and minimizes airfield operational impacts?*** | |
| **Airport Tenant and Support Facilities Alternatives** | | | | | |
| **Alternative #1** | Airport Tenant and Support Facilities Alternative #1 would reconstruct the south hold pad and provide a replacement 94,000-square foot facility and its adjacent apron GSE storage areas | Yes | Yes | Yes | **Yes** |
| **Alternative #2** | Airport Tenant and Support Facilities Alternative #2 would construct a new American Airlines cargo facility on top of a new parking structure next to the existing American Airlines Maintenance Hangar, relocate parking, and construct a new vehicle service road. | Yes | Yes | Yes | **Yes** |
| **Alternative #3** | Airport Tenant and Support Facilities Alternative #3 would provide a new 0.3 acre covered visitor/ vendor parking area, a new 2.2 acre employee parking lot, and a new 6.6 acre equipment yard (split into two parts). | Yes | Yes | Yes | **Yes** |

### 2.6.3 Federal Laws and Regulations Considered

The federal laws and statutes, executive orders, U.S. Department of Transportation (USDOT) and FAA orders, FAA Advisory Circulars, and other federal guidance considered during the preparation of this EA are listed in **Table 2-4.**

**Table 2-4: Listing of Federal Laws and Regulations Considered**

| Federal Laws and Statutes | |
|---|---|
| National Environmental Policy Act of 1969 | 42 U.S.C. 4321 et seq. |
| Clean Air Act of 1970, as amended | 42 U.S.C. 7401 et seq. |
| Bald and Golden Eagle Protection Act | 16 U.S.C. 668 et seq. |
| Endangered Species Act of 1973 | 16 U.S.C. 1531 et seq. |
| Fish and Wildlife Coordination Act of 1958 | 16 U.S.C. 661 et seq. |
| Magnuson-Stevens Fishery Conservation and Management Act of 1976, as amended | 16 U.S.C. 1801 et seq. |
| Migratory Bird Treaty Act | 16 U.S.C. 703 et seq. |
| Land and Water Conservation Fund Act of 1965 | 16 U.S.C. 4601 et seq. |
| Department of Transportation Act, Section 4(f) | 49 U.S.C. 303(c) |
| Farmland Protection Policy Act | 7 U.S.C. 4201 et seq. |
| Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Community Environmental Response Facilitation Act of 1992 | 42 U.S.C. 9601 et seq. |
| Federal Facilities Compliance Action | 42 U.S.C. 6961 |
| Hazardous Materials Transportation Act of 1975 | 49 U.S.C. 5101 et seq. |
| Oil Pollution Control Act of 1990 | 33 U.S.C. 2701 et seq. |
| Pollution Prevention Act | 42 U.S.C. 13101 et seq. |
| Resource Conservation and Recovery Act of 1976, as amended by the Solid Waste Disposal Act of 1980 | 42 U.S.C. 6901 et seq. |
| Toxic Substances Control Act | 15 U.S.C. 2601 et seq. |
| American Indian Religious Freedom Act | 42 U.S.C. 1996 |
| Antiquities Act of 1906 | 54 U.S.C. 320301 et seq. |
| Archaeological and Historic Preservation Act | 54 U.S.C. 312501 et seq. |
| Archaeological Resources Protection Act | 16 U.S.C. 470 et seq. |
| National Historic Preservation Act | 54 U.S.C. 300101 et seq. |
| Native American Graves Protection and Repatriation Act | 25 U.S.C. 3001 et seq. |
| Airport and Airway Improvement Act of 1982, as amended | 49 U.S.C. 47101 et seq. |
| Energy Independence and Security Act | 42 U.S.C. 17001 et seq. |
| Energy Policy Act | 42 U.S.C. 15801 et seq. |
| Aviation Safety and Noise Abatement Act of 1979 | 49 U.S.C. 47501 et seq.<br>(14 C.F.R. Part 150) |
| Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 | 42 U.S.C. 61 et seq. |
| Clean Water Act | 33 U.S.C. 1251 et seq. |
| National Flood Insurance Act | 42 U.S.C. 4001 et seq. |
| Rivers and Harbors Act | 33 U.S.C. 401 et seq. |
| Safe Drinking Water Act of 1974 | 42 U.S.C. 300 et seq. |
| Wild and Scenic Rivers Act | 16 U.S.C. 1271 et seq. |
| Federal Aviation Act of 1958, as amended | 49 U.S.C. 40101 et seq. |
| Protection of Historic and Cultural Properties | 36 C.F.R. Part 800 |

| | |
|---|---|
| **Executive Orders** | |
| Executive Order 13807, Establishing Discipline and Accountability in the Environmental Review and Permitting Process for Infrastructure | 82 FR 40463 (August 24, 2017) |
| Executive Order 13308, Superfund Implementation as amended | 68 FR 37691 (June 20, 2003) |
| Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds | 66 FR 3853 (January 17, 2001) |
| Executive Order 13175, Consultation and Coordination with Indian Tribal Governments | 65 FR 67249 (November 9, 2000) |
| Executive Order 13112, Invasive Species | 64 FR 6183 (February 8, 1999) |
| Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks | 62 FR 19885 et seq. (April 23, 1997) |
| Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations | 59 FR 7629 et. seq. (February 11, 1994) |
| Executive Order 12580, Superfund Implementation | 52 FR 2923 (January 23, 1987) |
| Executive Order 12088, Federal Compliance with Pollution Control Standards | 43 FR 47707 (October 13, 1978) |
| Executive Order 11988, Floodplain Management | 42 FR 26951 et. seq. (May 25, 1977) |
| Executive Order 11990, Protection of Wetlands | 42 FR 26961 et. seq. (May 24, 1977) |
| Executive Order 11593, Protection and Enhancement of the Cultural Environment | 36 FR 8921 et. seq. (May 13, 1971) |
| **U.S. Department of Transportation and FAA Orders** | |
| U.S. DOT, FAA Order 1050.1F: Environmental Impacts: Policies and Procedures | |
| U.S. DOT, FAA Order 5050.4B: National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions | |
| U.S. DOT Order 5650.2: Floodplain Management and Protection | |
| U.S. DOT Order 5660.1A: Preservation of the Nation's Wetlands | |
| U.S. DOT Order 5610: Environmental Justice in Minority and Low-Income Populations | |
| U.S. DOT Order 5650.1: Protection and Enhancement of the Cultural Environment | |
| **Advisory Circulars** | |
| FAA Advisory Circular 150/5020-1: Noise Control and Compatibility Planning for Airports | |
| FAA Advisory Circular 150/5200-33B: Hazardous Wildlife Attractants On or Near Airports | |
| FAA Advisory Circular 150/5300-13, Airport Design | |
| FAA Advisory Circular 150/5325-4B, Runway Length Requirements for Airport Design | |
| FAA Advisory Circular 150/5370-10G, Standards for Specifying Construction of Airports | |

# Chapter 3:
# Affected Environment

# 3 Affected Environment

In accordance with Federal Aviation Administration (FAA) Order 1050.1F,[24] FAA Order 1050.1F Desk Reference,[25] and FAA Order 5050.4B,[26] this chapter describes the existing conditions and resources within the geographic area that could potentially be directly or indirectly affected by the implementation of the Proposed Project. The President's Council on Environmental Quality (CEQ) regulations define direct effects as those "*which are caused by the action and occur at the same time and place."* The indirect effects are defined by CEQ regulations as those:

> *…which are caused by the action and are later in time and farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.*[27]

This chapter also identifies environmental resources that would not be affected by the Proposed Project and documents existing conditions for potentially affected resources. Potential direct, indirect, and cumulative effects of the Proposed Project are discussed in Chapter 4, *Environmental Consequences*.

## 3.1 Identification and Description of Study Areas and Study Years

For the purpose of assessing the potential direct and indirect effects of the Proposed Project and the No Action Alternative on environmental resources, two study areas were defined to describe existing conditions in the vicinity of the Airport. The General Study Area (GSA) depicts the area surrounding the Phoenix Sky Harbor International Airport (PHX or Airport). The Detailed Study Area (DSA) depicts the areas within the GSA that would be physically impacted with the development of the Proposed Project. The study areas are shown on **Exhibit 3-1** and described in more detail below.

The baseline year for identifying existing conditions in this chapter is 2020, unless otherwise noted. This year was selected to represent normal pre-COVID-19 operating conditions at the Airport. Temporary effects and ground disturbance effects associated with construction of the Proposed Project would occur from 2023 to 2028, as discussed in Section 1.1. Chapter 4, *Environmental Consequences*, analyzes the operational years that include the project completion year (2028) and five years after project completion (2033).

### 3.1.1 General Study Area

The GSA covers a large area (9,250 acres in size) so that potential indirect impacts to the surrounding communities that may result from the Proposed Project and No Action Alternative can be adequately assessed. The purpose of the GSA is to establish the study area for the quantification of impacts to resource categories that involve issues that are more regional in scope and scale, including noise, land use, socioeconomic impacts, and Section 4(f) resources. The GSA is primarily based on the United States Census block groups that are partially or entirely within the existing 65 decibel (dB) Day-Night Average Sound Level (DNL) aircraft noise contours. The GSA is generally defined on the ground by E. Van Buren Street to the north, N. Mill Avenue to the east, W. University Drive and the Salt River to the south, and S. Central Avenue to the west.

[24] U.S. Department of Transportation, Federal Aviation Administration, *Order 1050.1F, Environmental Impacts, Policies and Procedures*, effective July 16, 2015.
[25] U.S. Department of Transportation, Federal Aviation Administration – Office of Environment and Energy, *1050.1F Desk Reference, Version 2*, February 2020. Available: https://www.faa.gov/about/office_org/headquarters_offices/apl/environ_policy_guidance/policy/faa_nepa_order/desk_ref/media/desk-ref.pdf.
[26] U.S. Department of Transportation, Federal Aviation Administration, *Order 5050.4B*, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, effective April 28, 2006.
[27] President's Council on Environmental Quality (CEQ) Regulations 40 Code of Federal Regulations (CFR) Section 1508.8(b).

### 3.1.2 Detailed Study Area

The DSA is the area where direct physical impacts may result from the Proposed Project. The purpose of the DSA is to establish a study area for environmental resources that would be directly impacted by the Proposed Project, such as historic resources and hazardous materials. The DSA is roughly 2,000 acres in size and is defined by the Union Pacific Railroad (UPRR) to the north, the Salt River and Interstate 10 to the south, S. 44th Street to the east, and S. 24th Street to the west.

## 3.2 Resources Not Affected

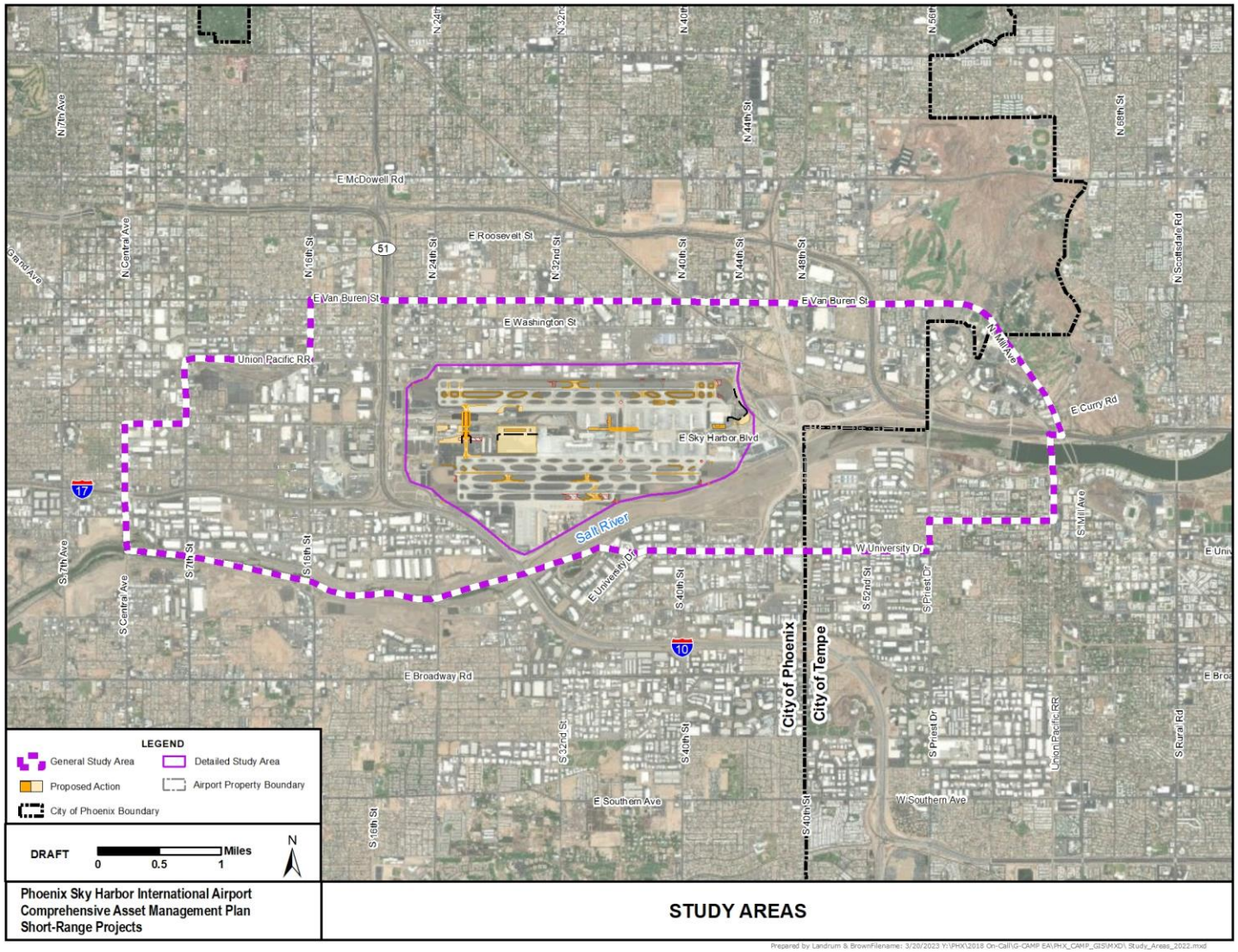
The No Action and Proposed Project do not have the potential to affect the categories identified in **Table 3-1** because the resources do not exist at the Airport and/or the nature of the project would not result in impacts to these resources. No discussion of the existing conditions or potential impacts related to these categories is included in this or the following chapter.

**Table 3-1: Resources Not Affected**

| Resources Not Affected | Rationale |
|---|---|
| Coastal Resources | • PHX is more than 300 miles east of the Pacific Ocean. There are no coastal zones within the GSA nor is the Airport located in a state with an approved Coastal Zone Management Program. |
| Farmlands | • There are no unique or prime farmlands present within the GSA. The area is almost entirely paved, except for small areas along roadways, the UPRR tracks, and between buildings. None of the GSA is currently being used for agriculture. |
| Water Resources (Wetlands, Floodplains, Surface Waters, Groundwater, Wild & Scenic Rivers) | • There are no jurisdictional wetlands or Waters of the U.S. located within the DSA. Based on a review of National Wetlands Inventory mapping, the nearest wetland area is located outside of the DSA, over 1,000 feet south of the Airport (on the south side of the Salt River).<br>• There are no designated 100-year floodplains present within the DSA according to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM).<br>• There are no surface waters located within the DSA. The nearest surface water is the Salt River, located just south of the DSA.<br>• There is groundwater below the DSA at depths between 50 to over 500 feet below ground surface; however, the groundwater would not be diminished or altered<br>• There are no Wild and Scenic Rivers located within the GSA. The Salt River channel has been highly modified in the vicinity of PHX. In the State of Arizona only the Verde River and Fossil Creek have been designated as Wild and Scenic Rivers; each is over 50 miles north of the Airport |

Sources: FEMA Flood Rate Insurance Maps (Panels 04013C2210L, 04013C2230L, 04013C2220L, and 04013C2240L). U.S. Fish & Wildlife Service, National Wetland Inventory Mapping (HU8_15060106).U.S. National Park Service, Interactive Map of NPS Wild and Scenic Rivers.

**Exhibit 3-1: Study Areas**



## 3.3 Resources Potentially Affected

The Proposed Project has the potential to include impacts to the following resource categories:

- Air Quality
- Biological Resources
- Climate
- Department of Transportation 4(f) Resources
- Hazardous Materials and Solid Waste
- Historic, Architectural, Archaeological, and Cultural resources
- Land Use
- Natural Resources and Energy Supply
- Noise and Compatible Land Use
- Socioeconomics, Environmental Justice, and Children's Health and Safety
- Visual Effects

The current conditions for each of these resource categories are described in the following sections.

### 3.3.1 Air Quality

Under the Clean Air Act (CAA), the United States Environmental Protect Agency (EPA) established a set of standards, or criteria, for six pollutants determined to be potentially harmful to human health and welfare.[28] The EPA considers the presence of the following six criteria pollutants to be indicators of air quality:

- Carbon monoxide (CO);
- Lead (Pb)[29];
- Nitrogen dioxide ($NO_2$);
- Ozone ($O_3$);
- Sulfur dioxide ($SO_2$); and
- Particulate matter ($PM_{2.5}$ and $PM_{10}$).

The EPA established primary standards (National Ambient Air Quality Standards, or NAAQS) for each of the criteria pollutants intended to protect public health, and secondary standards for the protection of public welfare (**Table 3-2**). Secondary standards capture factors such as preventing materials damage, preventing crop and vegetation damage, and assuring good visibility.

**Table 3-2: National Ambient Air Quality Standards**

| Pollutant | Primary/ Secondary | Averaging Time | Level | Form Of Measurement |
|---|---|---|---|---|
| Carbon Monoxide | Primary | 8 hour | 9 ppm | Not to be exceeded more than once per year |
| | | 1 hour | 35 ppm | |
| Lead | Primary and Secondary | Rolling 3-month average | 0.15 µg/$m^3$ (1) | Not to be exceeded |
| Nitrogen Dioxide | Primary | 1 hour | 100 ppb | 98$^{th}$ percentile of 1-hour daily maximum concentrations, averaged over 3 years |

[28] EPA, Code of Federal Regulations, Title 40, Part 50 (40 CFR Part 50) National Primary and Secondary Ambient Air Quality Standards (NAAQS), July 2011.

[29] In general, an analysis of lead is limited to projects that emit significant quantities of the pollutant. Additionally, in February 2020 the EPA concluded that lead concentrations at and near airports are typically well below the lead NAAQS. Therefore, because there are no large sources of potential lead emission associated with the Proposed Project an analysis of lead is not included in this EA. EPA. 2020a. Model-Extrapolated Estimates of Airborne Lead Concentrations at U.S. Airports. Washington, DC: U.S. Environmental Protection Agency. Final Report. EPA-420-R-20-003, February 2020.

| Pollutant | | Primary/ Secondary | Averaging Time | Level | Form Of Measurement |
|---|---|---|---|---|---|
| | | Primary and Secondary | 1 year | 53 ppb (2) | Annual Mean |
| Ozone | | Primary and Secondary | 8 hour | 0.070 ppm (3) | Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years |
| Particulate Matter | $PM_{2.5}$ | Primary | 1 year | 12.0 µg/m$^3$ | Annual mean, averaged over 3 years |
| | | Secondary | 1 year | 15.0 µg/m$^3$ | Annual mean, averaged over 3 years |
| | | Primary and Secondary | 24 hour | 35 µg/m$^3$ | 98$^{th}$ percentile, averaged over 3 years |
| | $PM_{10}$ | Primary and Secondary | 24 hour | 150 µg/m$^3$ | Not to be exceeded more than once per year on average over 3 years |
| Sulfur Dioxide | | Primary | 1 hour | 75 ppb (4) | 99$^{th}$ percentile of 1-hour daily maximum concentrations, averaged over 3 years |
| | | Secondary | 3 hour | 0.5 ppm | Not to be exceeded more than once per year |

(1) In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 µg/m$^3$ as a calendar quarter average) also remain in effect.

(2) The level of the annual $NO_2$ standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.

(3) Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O3 standards are not revoked and remain in effect for designated areas. Additionally, some areas may have certain continuing implementation obligations under the prior revoked 1-hour (1979) and 8-hour (1997) O3 standards.

(4) The previous $SO_2$ standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous $SO_2$ standards or is not meeting the requirements of a SIP call under the previous $SO_2$ standards (40 CFR 50.4(3)). A SIP call is an EPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the required NAAQS.

Notes: ppm is parts per million; ppb is parts per billion, and µg/m$^3$ is micrograms per cubic meter.

Source: EPA, https://www.epa.gov/criteria-air-pollutants/naaqs-table, accessed January 2023.

Areas of the country where air pollution levels consistently exceed the NAAQS may be designated nonattainment by the EPA. A nonattainment area is a homogeneous geographical area (usually referred to as an air quality control region or airshed) that is in violation of one or more NAAQS and has been designated as nonattainment by the EPA as provided for under the CAA. Each nonattainment area is required to have a State Implementation Plan (SIP), developed by the state that quantifies current conditions, projects future conditions through the date of prescribed attainment, and then identifies mitigation measures that are to be used to bring the area back into attainment.

A maintenance area describes the air quality designation of an area previously designated nonattainment by the EPA and subsequently re-designated attainment after emissions are reduced. Such an area remains designated as maintenance for a period up to 20 years at which time the state can apply for redesignation to attainment, provided that the NAAQS were sufficiently maintained throughout the maintenance period.

### 3.3.1.1 Affected Environment

*Maricopa County Air Quality Status*

The GSA is located within Maricopa County, Arizona, which EPA designated as serious non-attainment for particulate matter with an aerodynamic diameter of 10 microns or less ($PM_{10}$). Maricopa County is designated as moderate non-attainment for the 2008 8-Hour $O_3$ standard and moderate non-attainment for 2015 8-Hour $O_3$ standard. Additionally, Maricopa County operates under a maintenance plan for CO.

The Maricopa Association of Governments (MAG) serves as the regional air quality planning agency for the nonattainment area. MAG develops regional air quality plans to address air pollution problems and conducts the air quality conformity analyses for transportation programs. The following plans apply to the Airport:

- 2012 Five Percent Plan for $PM_{10}$[30]
- 2020 Eight-Hour Ozone Plan[31]
- 2013 Carbon Monoxide Maintenance Plan[32]

*Air Quality Monitoring in Region*

Air quality monitoring data for 2019 was reviewed to determine if the existing conditions are still consistent with EPA's nonattainment designations. **Table 3-3** summarizes air quality data collected for 2019 and 2020 at the monitoring stations closest to the Airport. Most pollutants are monitored at the Central Phoenix Station (Station ID 040133002) at 1645 E. Roosevelt Street in Phoenix. The closest monitoring station with $PM_{2.5}$ data is located at 33 West Tamarisk Avenue in Phoenix (Station ID 040134003). The data shows that there is a continued exceedance of the ozone standard (0.070 ppm) and the $PM_{10}$ standard (35 (µg/m3). The data for CO shows the monitor is below the standards and is maintaining its attainment status.

**Table 3-3 Summary of Pollutant Monitoring Data for 2019 and 2020 Nearest the Airport**

| Pollutant | 2019 Annual Monitoring Data | 2020 Annual Monitoring Data |
|---|---|---|
| **Carbon Monoxide (CO)[1]** | | |
| 2nd High 1-Hour Concentration (ppm) | 2.5 | N/A |
| 2nd High 8-Hour Concentration (ppm) | 1.8 | 1.9 |
| **Nitrogen Dioxide ($NO_2$)[1]** | | |
| 1-Hour Federal Design Value (ppb) | 52 | 54 |
| Annual Federal Design Value (ppb) | 15.7 | 15.9 |
| **Ozone ($O_3$)[1]** | | |
| 4th High 8-Hour Concentration (ppm) | 0.073 | 0.072 |
| **Particulate Matter ($PM_{2.5}$)[2]** | | |
| 1st High 24-Hour Concentration (µg/m$^3$) | 48.4 | 64.7 |
| Annual Federal Design Value (µg/m$^3$) | 7.5 | 10.5 |
| **Particulate Matter ($PM_{10}$)[1]** | | |
| 2nd High 24-Hour Concentration (µg/m$^3$) | 69 | 100 |
| **Sulfur Dioxide ($SO_2$)[1,3]** | | |
| 1st High 1-Hour Concentration (ppb) | 5 | 6 |
| 2nd High 24-Hour Concentration (ppb) | 2.3 | N/A |
| Annual Federal Design Value (ppb) | 0.45 | 0.25 |

Source: EPA, Annual Summary of Monitor Data, 2019 and 2020.
Key: µg/m$^3$ = micrograms per cubic meter, CO = carbon monoxide, $NO_2$ = nitrogen dioxide, $O_3$ = ozone, $PM_{10}$ = coarse particulate matter, $PM_{2.5}$ = fine particulate matter, ppb = parts per billion, ppm = parts per million, $SO_2$ = sulfur dioxide
Notes:
[1] Data from 1645 East Roosevelt Street monitoring station.

[30] https://www.azmag.gov/portals/0/Documents/EP_2012-06-06_FINAL-MAG-2012-Five-Percent-Plan-for-PM10-for-the-Maricopa-County-Nonattainment-Area.pdf
[31] https://www.azmag.gov/Portals/0/Documents-Ext/Air-Quality/2020-Eight-Hour-Ozone-Plan_Submittal-of-Marginal-Area-Requirements-for-the-Maricopa-Nonattainment-Area.pdf
[32] https://www.azmag.gov/portals/0/Documents/EP_2013-03-29_MAG-2013-Carbon-Monoxide-Maintenance-Plan-for-the-Maricopa-County-Area.pdf

[2] Data from 33 West Tamarisk Avenue monitoring station.
[3] 3-hour statistics are not available.

### *3.3.1.2 Sources of Emissions*

Sources of operational air pollutant emissions within the DSA are typical sources associated with commercial airports in urban areas and include aircraft operations, motor vehicle activities (including personal, delivery trucks, and buses) on airport roads and the surrounding roadway network, and industrial uses. Existing mobile sources of emissions include aircraft (landings, takeoffs, and taxiing), auxiliary power units (APU), and ground support equipment (GSE). Other mobile sources of emissions include automobiles and buses that carry passengers and employees to and from the airport. Stationary sources of emissions are associated with heating, cooling, lighting, and powering buildings, including the existing passenger terminal buildings, maintenance and cargo buildings, and hangars and buildings associated with general aviation. For the purpose of this analysis, only emissions sources that would be affected by the Proposed Project are evaluated. Since the Proposed Project would affect aircraft taxi times at the Airport, emissions from aircraft operations are included in this analysis. Although present at the Airport, APU and GSE usage was not modeled for air quality because these sources would not be affected by the Proposed Project. Likewise, passenger and cargo vehicle emissions were also not modeled, because no existing passenger parking facilities would be impacted by the Proposed Project, and no new parking would be constructed. Furthermore, any changes to the vehicle service roads would result in negligible changes to air quality emissions from passenger and cargo vehicles.

### *3.3.1.3 Existing Conditions Emissions Inventory*

An emissions inventory was developed to summarize the total relevant pollutants for 2020.[33] Emissions were evaluated using the FAA's Aviation Environmental Design Tool (AEDT) Version 3e. AEDT models aircraft performance in space and time to estimate fuel consumption, air quality emissions, and noise consequences at airports. Emissions from aircraft were only calculated when aircraft are operating below 3,000 feet in altitude above field elevation (AFE).[34] This includes aircraft takeoffs, landings, and taxi time. In order to calculate emissions from aircraft, information concerning operations was collected from FAA's Air Traffic Activity Data System (ATADS). According to FAA data, there were 444,029 total annual operations at the Airport in the existing year.[35] The taxi-in time of six minutes and 25 seconds was applied to all arriving operations and the taxi-out time of 19 minutes and one second was applied to all departing operations.[36] The types of aircraft and the number of operations modeled in AEDT are provided in **Appendix B, Air Quality and Climate**. **Table 3-4** summarizes the air quality emissions from aircraft in tons per year for 2020.

**Table 3-4: Aircraft Emissions Inventory – Existing Conditions (2020)**

| Emissions Source | Annual Emissions | | | | | |
|---|---|---|---|---|---|---|
| | CO | VOC | $NO_x$ | $SO_x$ | $PM_{10}$ | $PM_{2.5}$ |
| Aircraft Operations | 1,817.6 | 248.2 | 1,984.1 | 182.5 | 18.4 | 18.4 |

Source: Landrum & Brown, 2023

[33] The 2020 data was based on actual data obtained between March 2019 and February 2020. This represents the most recent 12-month from the initiation of the study that was not influenced by the temporary, but dramatic reduction in passenger levels due to the COVID-19 pandemic.
[34] FAA Aviation Emissions and Air Quality Handbook Version 3 Update 1Appendix D, § D.2.3.2 Mixing Height, January 2015. Available online at: https://www.faa.gov/regulations_policies/policy_guidance/envir_policy/airquality_handbook/media/Air_Quality_Handbook_Appendices.pdf.
[35] This is based on FAA Air Traffic Activity System (ATADS) between March 2019 and February 2020.
[36] City of Phoenix/Phoenix Sky Harbor International Airport, Runway Incursion Mitigation Study (HNTB). 2019

This emissions inventory was compared to the most recent Maricopa County Annual Emissions Inventory for non-road mobile sources.[37,38] Annual $PM_{10}$ emissions for Maricopa County were 1,543.8 tons per year. Aircraft constituted 17 percent of the total $PM_{10}$ emissions for Maricopa County, and aircraft at PHX account for only one percent of the total $PM_{10}$ emissions. Annual ozone precursor pollutant emissions for Maricopa County were 8,215 tons per year for VOCs, 17,431.5 tons per year for $NO_x$, and 110,238.9 tons per year for CO. Aircraft constituted percent of the total VOC emissions, 17 percent of the total $NO_x$ emissions, and 9 percent of the total CO emissions for Maricopa County. Aircraft at PHX account for only three percent of the total VOC emissions, 11 percent of the total $NO_x$ emissions, and two percent of the total CO emissions.

## 3.3.2 Biological Resources

### *3.3.2.1 Affected Environment*

*Biological Resources Study Area*

The GSA was used to identify biological resources, because of wildlife movement patterns between sources of water and habitat areas across the Airport; particularly between the Salt River bed and Grand Canal. In addition to airport use, the GSA consists of residential, commercial, and industrial buildings, vacant lots, sparsely-vegetated desert, riparian areas, and pooled water within the Salt River bed and the Phoenix canal system.[39]

*Vegetation*

Vegetation in the GSA is limited to fragmented areas between roadways and buildings. Because of the dryness and intense summer heat of the Phoenix area, the City of Phoenix (City of Phoenix or City) replaced grass turf areas at the airport with native desert xeriscaping. Desert xeriscape includes plant types native to southwestern deserts (e.g., cacti, yuccas, and dwarf varieties of desert trees,) and rocks, arranged in a simple uncluttered appearance. Vegetation is absent from the airport operations area (AOA) that includes the runway and taxiway system. Except for the Salt River bed, off-airport grounds within the GSA are sparsely vegetated, with fragmented areas of grass, shrubs, and trees scattered throughout areas of dirt, pavement, rocks, and landscaping stone.

*Wildlife*

The GSA is entirely developed, with only isolated areas of wildlife habitat present; primarily along the Salt River bed, Tempe Town Lake, and stormwater retention/detention basins. The Salt River bed is a natural flyway for birds even though it is mostly dry. Several pools of water and riparian areas are located within the riverbed, which provide resting areas for birds along their migration route.[40] Airport lands provide a low value to wildlife because of their proximity to the aircraft movement areas, adjacent roads, and developed areas. Wildlife species documented at the Airport in 2019 and 2020 include the species listed in **Table 3-5**, which collided with aircraft.

[37] Maricopa County Air Quality Department, *2017 Periodic Emissions Inventory for PM10,* November 2019. Available online at: https://www.maricopa.gov/DocumentCenter/View/53617/2017-Periodic-Emission-Inventory-PM10-PDF.
[38] Maricopa County Air Quality Department, *2017 Periodic Emissions Inventory for Ozone Precursors,* November 2019. Available online at: https://www.maricopa.gov/DocumentCenter/View/52917/2017-Periodic-Emission-Inventory-Ozone-PDF.
[39] Wildlife Habitat Assessment for Phoenix Sky Harbor International Airport (International Biodeterioration & Biodegradation, 2000)
[40] PHX Wildlife Hazard Management Plan, Section 3.3

**Table 3-5: Wildlife Strikes Documented at the Airport**

| Species | Documented Strikes | | Species | Documented Strikes | |
|---|---|---|---|---|---|
| | 2020 | 2019 | | 2020 | 2019 |
| American Kestrel | 1 | 0 | House wren | 0 | 1 |
| Barn owl | 0 | 1 | Loggerhead shrike | 1 | 0 |
| Brazilian free-tailed bat | 0 | 6 | Rock pigeon | 0 | 3 |
| Brewer's sparrow | 0 | 1 | Perching birds | 1 | 0 |
| Common grackle | 0 | 1 | Short-eared owl | 0 | 1 |
| Doves (various species) | 4 | 8 | Sparrows | 0 | 1 |
| European starling | 0 | 1 | Unknown bird species | 9 | 28 |
| Grebes | 0 | 1 | Western kingbird | 0 | 1 |
| Horned lark | 1 | 0 | Western meadowlark | 0 | 1 |

Source: FAA Wildlife Strike Database (1/1/2019 through 12/31/2019 and 1/1/2020 through 12/31/2020)

## *Federally-Listed Species*

The United States Fish and Wildlife Service (USFWS) (via the Information for Planning and Consultation [IPaC] online system) provided a list of threatened and endangered species, designated critical habitat, and candidate species that could occur within a 49-square-mile area that includes the airport. These species are listed in **Table 3-6**. It is important to note that just because these species are included on the list, they are not necessarily present or documented to have occurred within the GSA. No critical habitats were identified within the GSA. **Appendix C, Biological Resources**, includes a full copy of the IPaC Report.

**Table 3-6: Endangered Species Act Species**

| Common Name | Scientific Name | Federal Status |
|---|---|---|
| ***Mammals*** | | |
| Sonoran Pronghorn | *Antilocarpa americana sonoriensis* | Experimental Population, Non-Essential |
| ***Birds*** | | |
| California Least Tern | *Sterna antillarum browni* | Endangered |
| Southwestern Willow Flycatcher | *Empidonax traillii extimus* | Endangered |
| Yellow-billed Cuckoo | *Coccyzus americanus* | Threatened |
| Yuma Clapper Rail | *Rallus longirostris yumanensis* | Threatened |

Source: USFWS IPaC, July 2020.

The Arizona Game and Fish Department (AZGFD) provided an Environmental Online Review Tool Report on July 31, 2020. The report indicated five "Special Status Species" within three miles of the GSA. These areas are listed in **Table 3-7**. The full AZGFD Report is provided in Appendix C.

**Table 3-7: Special Status Species Documented within 3 miles of Project Vicinity**

| Common Name | Scientific Name | FWS[1] | USFS[2] | BLM[3] | SGCN[4] |
|---|---|---|---|---|---|
| Yellow-billed Cuckoo (Western DPS) | *Coccyzus americanus* | LT | S | - | 1A |
| American Peregrine Falcon | *Falco peregrinus anatum* | SC | S | S | 1A |
| Bald Eagle – Winter Population | *Haliaeetus leucocephalus* (wintering pop.) | SC | S | S | 1A |
| Bald Eagle | *Haliaeetus leucocephalus* | SC | S | S | 1A |
| Common Chuckwalla | *Sauromalus ater* | SC | S | S | - |

Source: Arizona Environmental Online Review Tool Report (Project HGIS-11709), July 2020
Notes:
1 United States Fish and Wildlife Service (USFWS): LT= Listed Threatened, SC = Species of Concern
2 U.S. Forest Service (USFS): S = Sensitive (taxa occurring on National Forests and designated sensitive by the Regional Forester)
3 Bureau of Land Management (BLM): S = Sensitive (Taxa occurring on BLM lands, and designated sensitive by the Arizona State Office)
4 Arizona Wildlife: SGCN = Species of Greatest Conservation Need (SGCN)
1A = Vulnerability in at least 1 of 8 categories and matches at least one of the following: Federally listed Threatened or Endangered, or candidate species; is specifically covered under a signed conservation agreement; recently removed from ESA and requires monitoring; or closed season species (i.e., no take permitted)
1B = Vulnerability in at least 1 of 8 categories but match none of the above criteria

### *Migratory Birds*

The USFWS IPaC online review identified 12 migratory bird species that may be expected within the GSA. These species are listed in **Table 3-8**.

**Table 3-8: Migratory Birds in Vicinity of the GSA**

| Common Name | Scientific Name |
|---|---|
| Bald Eagle | *Haliaeetus leucocephalus* |
| Bendire's Thrasher | *Toxostoma bendirei* |
| Burrowing Owl | *Athene cunicularia* |
| Costa's Hummingbird | *Calypte costae* |
| Elf Owl | *Micrathene whitneyi* |
| Gila Woodpecker | *Melanerpes uropygialis* |
| Golden Eagle | *Aquila chrysaetos* |
| Gray Vireo | *Vireo vicinior* |
| Lawrence's Goldfinch | *Carduelis lawrencei* |
| Le Conte's Thrasher | *Toxostoma lecontei* |
| Long-billed Curlew | *Numenius americanus* |
| Rufous-winged Sparrow | *Aimophila carpalis* |

Source: USFWS IPaC, July 2020.

## 3.3.3 Climate

Climate change is a change in the average climatic conditions of the earth, as characterized by changes in wind patterns, storms, precipitation, and temperature. Climate change is a global phenomenon that has local impacts.[41] Therefore, the affected environment for climate change effects is defined as the entire geographic area that could be either directly or indirectly affected by the Proposed Project. The study area consists of both the DSA and the GSA. The scientific community's understanding of the fundamental processes responsible for

[41] U.S. Department of Transportation, Federal Aviation Administration – Office of Environment and Energy, *1050.1F Desk Reference, Version 2*, Chapter 3. Climate, February 2020. Available: https://www.faa.gov/about/office_org/headquarters_offices/apl/environ_policy_guidance/policy/faa_nepa_order/desk_ref/media/desk-ref.pdf.

global climate change has improved over the past decade, and its predictive capabilities are advancing. Greenhouse gases (GHGs) include carbon dioxide ($CO_2$), methane ($CH_4$), nitrous oxide ($N_2O$), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride ($SF_6$). Increasing concentrations of GHGs in the atmosphere affect global climate. Anthropogenic (i.e., man-made) sources of GHG emissions are primarily associated with the combustion of fossil fuels, including aircraft fuel. GHGs result primarily from combustion of fuels, and there is a direct relationship between fuel combustion and metric tons of $CO_2$ ($MTCO_2$).

Consistent with FAA 1050.1F Desk Reference guidance, emissions are reported in metric tons of $CO_2$ equivalent ($CO_2e$).[42] On January 20, 2021, Executive Order (EO) 13990, *Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis*, was issued, which rescinded the 2019 CEQ GHG guidance. On January 6, 2023 the CEQ released updated interim *Guidance on Consideration of Greenhouse Gas Emissions and Climate Change*, which was available for public comment through March 10, 2023.

The Arizona Department of Environmental Quality (ADEQ) released the Arizona Climate Change Action Plan in 2006, that identified a set of 49 recommendations for reducing GHGs in Arizona. At the time of the Plan, Arizona had the fastest GHG growth rate in the United States, with an increase of nearly 56 percent between 1990 and 2005. The Plan identified the two largest sources of GHGs in Arizona as transportation (39 percent) and electricity production (38 percent).

The City published a Climate Action Plan for Government Operations in 2009. It defined how the City would achieve a goal to reduce GHG emissions from City operations to 5 percent below the 2005 levels by 2015. In 2012, three years ahead of schedule, the City achieved its goal with a 7.2 percent decrease from 2005 GHG emissions. In January 2014, the Phoenix City Council adopted a new goal to reduce GHGs by 15 percent by 2015 compared to 2005 emission levels for City operations. Other targets include a 30-percent community wide reduction by 2025 and a 90-percent community wide reduction by 2050. The City updated the Climate Action Plan in 2021 with a goal to reduce GHG emissions by a minimum of 50 percent by 2030 and to achieve net-zero emissions by 2050.

#### *3.3.3.1 Affected Environment*

##### *Existing Conditions GHG Emissions Inventory*

The City conducted a GHG emissions inventory for 2020 in accordance with FAA guidelines.[43] The GHG emissions inventory was prepared using the same data (see Appendix B) as developed for the criteria pollutant emissions inventory in the previous air quality section. **Table 3-9** summarizes the GHG emissions from aircraft for 2020.

**Table 3-9: GHG Emissions Inventory – Existing Conditions (2020)**

| Emissions Source | Annual GHG Emissions (Metric Tons Per Year) of CO2 |
|---|---|
| Aircraft | 446,059 |

Source: Landrum & Brown, 2023.

##### *City of Phoenix*

Domestic aviation, which includes airports, airlines, and other aviation stakeholders, contributes about three percent of total carbon dioxide emission in the United States.[44] According to the Airport's 2019 Airport Carbon and

[42] U.S. Department of Transportation, Federal Aviation Administration – Office of Environment and Energy, *1050.1F Desk Reference, Version 2*, Chapter 3. Climate, February 2020. Available: https://www.faa.gov/about/office_org/headquarters_offices/apl/environ_policy_guidance/policy/faa_nepa_order/desk_ref/media/desk-ref.pdf.
[43] FAA Order 1050.1F, Environmental Impacts: Policies and Procedures (including the Desk Reference); FAA Order 5050.4B, National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions; and FAA's Aviation Emissions and Air Quality Handbook Version 3 Update 1.
[44] Environment and Energy Study Institute (ESSI), October 2019

Emissions Reduction Toolkit (ACERT) inventory, over 90 percent of airport-controlled emissions comes from the purchase of electricity, while the remaining 10 percent is derived from the use of fuels for Airport-owned fleet vehicles and emergency generators. The City of Phoenix Aviation Department set a 10-percent carbon reduction target by 2020 using 2014 as the baseline year and met this goal in early 2017.[45]

The City of Phoenix most recently completed a GHG Emission Inventory in 2018 as part of their Climate Action Plan for Government Operations. Results show that City-wide GHG emissions from their operations were 1.7 percent below 2015 GHG levels and 5.4 percent below 2005 GHG levels.

*Level of Climate Preparedness*

FAA guidance[46] states that the affected environment should also discuss the current level of preparedness with respect to the impacts of climate change. This involves describing current measures in place within the study area to adapt to the impacts of climate change.

The City of Phoenix prepared an updated Climate Action Plan in 2021[47], among other GHG reduction goals, to establish a working plan to be able to continuously respond to the ever-changing and unique needs of the City of Phoenix as they address climate change. This document is an initial step on the path forward to mitigate those risks. Two of the major risks identified in this plan are extreme heat and drought. The City of Phoenix Aviation Department will continue to address these, and future risks through examination and updates to the PHX-DVT-GYR Design Manual.[48]

## 3.3.4 Department of Transportation Act Section 4(f) Resources[49]

### *3.3.4.1 Affected Environment*

*Department of Transportation (DOT) Act, Section 4(f) and Land and Water Conservation Fund Act of 1965 (LWCF) Section 6(f) Resources Study Area*

The GSA was used to identify DOT Section 4(f) and LWCF Section 6(f) resources for the purpose of this EA. Based on a review of records and GIS data from the City of Phoenix, City of Tempe, and Maricopa County, there are 13 park or recreation properties located within the GSA that are considered Section 4(f) resources. Previously documented Section 4(f) resources within and around the GSA are shown in **Exhibit 3-2** and listed in **Table 3-10**. National Register of Historic Places (National Register)-eligible historical and archaeological sites are discussed in Section 3.3.6.

[45] Phoenix Sky Harbor Airport Carbon Reduction Policy and Strategy
[46] 1050.1F Desk Reference (v2), Section 3.2 (page 3-4). February 2020.
[47] City of Phoenix Climate Action Plan, 2021 Edition. Available at: https://www.phoenix.gov/oepsite/Documents/2021ClimateActionPlanEnglish.pdf
[48] City of Phoenix Aviation Department PHX-DVT-GYR Design Manual, October 2018.
[49] Department of Transportation Act Section 4(f) was recodified under 49 U.S.C. § 303. For this EA, the resource is commonly referred to as "DOT Section 4(f)."

**Table 3-10: Section 4(f) Resources Located within the GSA**

| Map ID | Name | Resource Type | Official with Jurisdiction |
|---|---|---|---|
| P-1 | Barrios Unidos Park | Park/Recreation | City of Phoenix |
| P-2 | Green Valley Park | Park/Recreation | City of Phoenix |
| P-3 | Hilaria Rodriquez Park | Park/Recreation | City of Phoenix |
| P-4 | Lewis Park | Park/Recreation | City of Phoenix |
| P-5 | Nuestro Park | Park/Recreation | City of Phoenix |
| P-6 | Papago Park | Park/Recreation | City of Phoenix |
| P-7 | Park of the Four Waters | Park/Recreation/Historical Site | City of Phoenix |
| P-8 | Phoenix Municipal Stadium | Park/Recreation | City of Phoenix |
| P-9 | Pueblo Grande Museum | Park/Recreation/Historical Site | City of Phoenix |
| P-10 | Rio Salado (Phoenix) | Park/Recreation | City of Phoenix |
| P-11 | Tovrea Castle | Park/Recreation/Historical Site | City of Phoenix |
| P-12 | Rio Salado (Tempe) | Park/Recreation | City of Tempe |
| P-13 | Grand Canalscape | Park/Recreation | City of Phoenix |

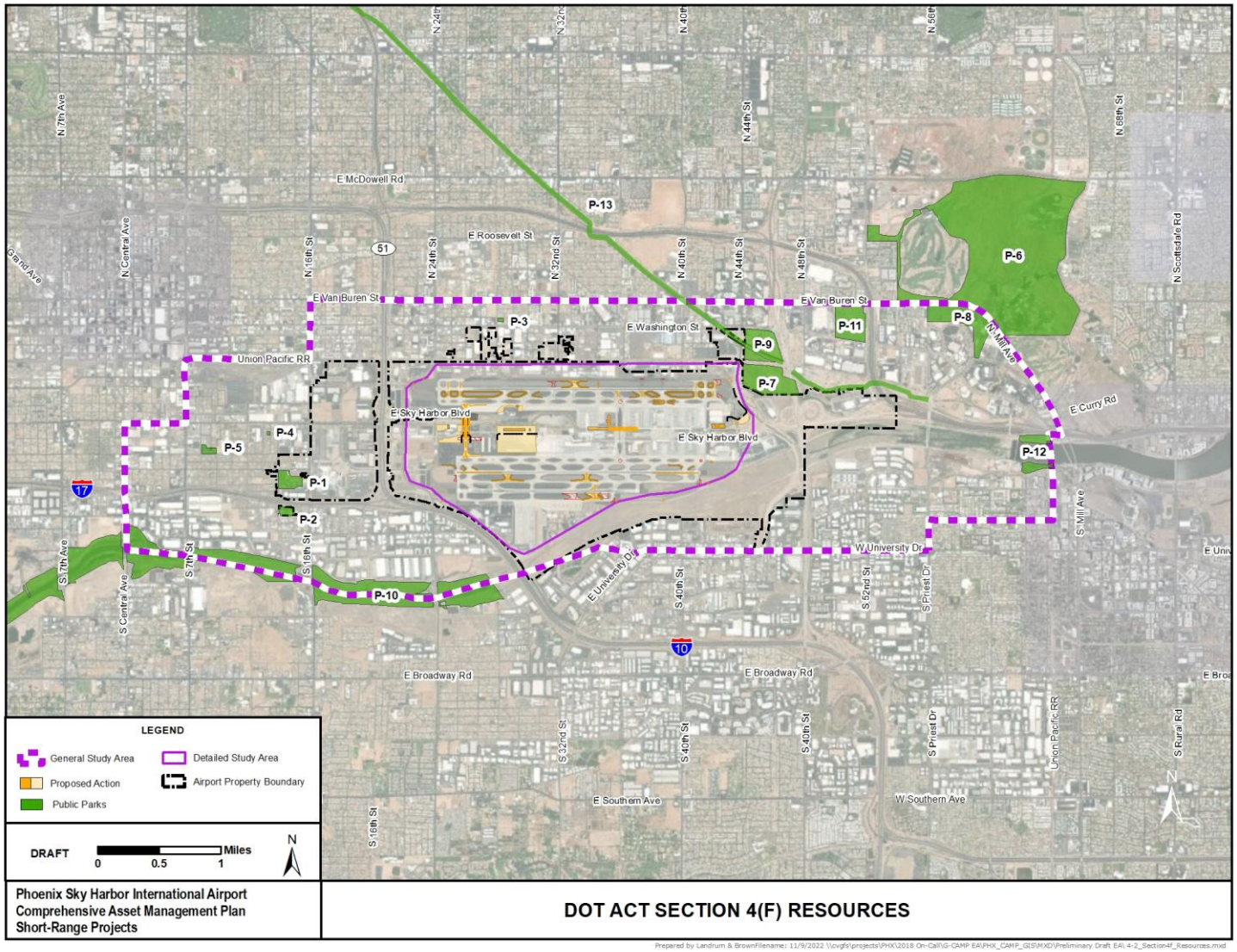
Source: City of Phoenix – Mapping Open Data, http://mapping-phoenix.opendata.arcgis.com/; City of Tempe Open Data, https://data.tempe.gov/datasets/park-boundaries

### *Section 6(f) Resources*

There are no properties within the GSA that were funded with LWCG Section 6(f) money; therefore, no further discussion of Section 6(f) will be included in this EA.[50]

[50] Trust for Public Land, Past Projects website: https://lwcf.tplgis.org/mappast/

**Exhibit 3-2: DOT Act Section 4(f) Resources**



## 3.3.5 Hazardous Materials, Solid Waste, and Pollution Prevention

### *3.3.5.1 Affected Environment*

Airport operations require the use of hazardous materials and similarly regulated substances including jet fuel, diesel fuel, compressed natural gas, propane, waste oil, fire retardants, and cleaning chemicals, as well as smaller amounts of other products such as lubricants, solvents, waste materials (such as used oils), and manufactured chemicals (such as paints, fire-fighting foam, and de-icing fluids). These materials are used on a routine basis in support of airport operations and to meet aviation safety requirements.

#### *Hazardous Materials and Solid Waste Study Area*

The Study Area for hazardous materials, solid waste, and pollution prevention is defined as the DSA, with a buffer of 1,000 feet to account for potential offsite transport of contamination through air, surface water, or ground water. The Hazardous Materials Study Area is depicted on **Exhibit 3-3**.

#### *Hazardous Materials*

Current activities at the Airport that generate or involve the use of hazardous materials include aircraft fueling, and maintenance (of aircraft, ground service equipment, motor vehicles, buildings, and grounds). Activities that occur at the Airport also use hazardous materials and generate hazardous wastes from various City maintenance shop operations, and construction activities. In addition, many tenants who lease Airport buildings use hazardous materials and generate hazardous waste. These wastes are disposed of by the tenants, and the City does not take ownership of tenant's hazardous waste.

#### *National Priorities List Sites*

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires the preparation of a list of national priorities among known releases, or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States.[51] This list is referred to as the National Priorities List (NPL). The NPL is intended primarily to guide the EPA in:

- Determining which sites warrant further investigation to assess the nature and extent of the human health and environmental risks associated with a site;
- Identifying what CERCLA-financed remedial actions may be appropriate;
- Notifying the public of sites the EPA believes warrant further investigation; and
- Serving notice to potentially responsible parties that the EPA may initiate CERCLA-financed remedial action.

Within the Hazardous Materials and Solid Waste Study Area there is one active NPL site, two additional sites that were previously listed on the NPL, but have since been removed, and one fuel plume that is being actively tracked and monitored by the City of Phoenix Aviation Department. The known hazardous material sites are listed in **Table 3-11**.

[51] CERCLA, Section 105(a)(8)(B)

**Exhibit 3-3: Hazardous Materials and Solid Waste Study Area and Areas of Known Contamination**

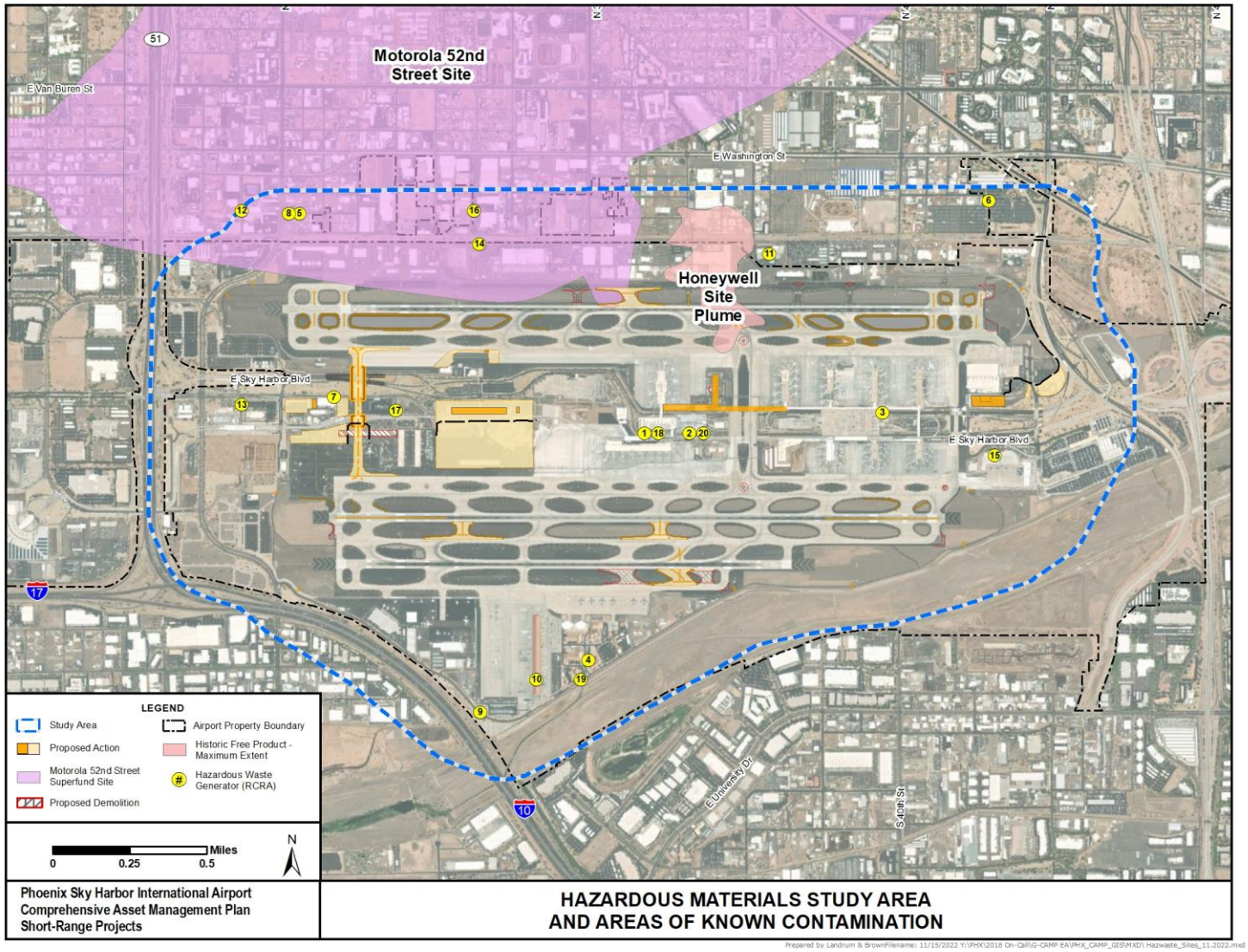


**Table 3-11: Known Hazardous Materials Sites**

| Name | Type | Description |
|---|---|---|
| The Motorola Inc. (52nd Street Plant) | NPL Site (Active) | This site is a large area of contaminated groundwater associated with manufacturing and energy production activities. Contaminants include volatile organic compounds (VOCs), such as trichloroethylene (TCE) and tetrachloroethene (PCE). Motorola's cleanup, operation and maintenance activities, and monitoring of this site are ongoing. The groundwater contamination plume of this site extends under the airport's northwest corner. The general boundary of the site is bounded by Palm Lane to the north, 52nd Street to the east, Buckeye Road to the south, and 7th Street to the west. In July 1994, the EPA signed a Record of Decision (ROD) identifying treatment methods for this site. In 2001, remedial actions began to address the groundwater contamination with the construction of an extraction and treatment system. |
| 161st Air National Guard Sky Harbor Airport Site | NPL Site (Removed) | This site was located in the southern portion of the Airport on the Arizona Air National Guard AZANG leasehold. In 2014 the Arizona Department of Environmental Quality (AZDEQ) determined that no further remedial action was necessary to address residual contamination. The site is no longer included on the NPL. |
| The Estes Landfill Site | NPL Site (Removed) | This site was located south of the Airport, bounded by the Salt River to the north, Magnolia Street to the south, 44th Street to the east, and 40th Street to the west. The site contained groundwater and soil contamination. Sampling done to evaluate potential public health risk did not indicate excess risk. A ROD was completed in 2017, with the final remedy for the site being monitored natural attenuation. This site is no longer listed on the NPL. |
| The Honeywell 34th Street leaking underground storage tank (LUST) site | Fuel plume | This is a fuel plume 80–100 feet below the surface, located in the north central portion of the Airport (as shown on Exhibit 3-3). In response, Honeywell installed a remediation system to mitigate the fuel plume. The wells associated with the remediation system are regulated by state agencies. Coordination with Honeywell and the regulatory agencies is required if any Honeywell monitoring wells would be affected by the Proposed Project. With ongoing remediation activities, it is expected that the maximum extent of free product is less than the mapped fuel plume. |

Sources: City of Phoenix; Arizona Department of Environmental Quality website (www.azdeq.gov/superfund)

Past fuel plumes tracked by the City of Phoenix Aviation Department included the Arizona Fueling Facilities Corporation (AFFC), the West Sky Harbor Fuel Remediation Plume, and a fuel plume associated with the 161st Air National Guard Site. Each of these fuel plumes received regulatory closure.

### *RCRA Hazardous Waste Generator Sites*

A review of the EPA's Resource Conservation and Recovery Act Information (RCRAInfo) found there are 20 hazardous waste generator sites within the Hazardous Materials and Solid Waste Study Area. These sites are depicted on Exhibit 3-3. Each of these sites handles hazardous waste and is required to provide information about their activities to state environmental agencies and the EPA. A list of the Hazardous Waste Generator Sites, including name, address, and RCRA identification number is provided in **Table 3-12**.

**Table 3-12: RCRA Hazardous Waste Generator Sites within the Hazardous Materials and Solid Waste Study Area**

| Map ID | Name | Address | RCRA ID |
|---|---|---|---|
| 1* | Alaska Airlines Phoenix | 3200 E Sky Harbor Blvd, Phoenix, Arizona, 85034 | AZR000039883 |
| 2* | American Airlines | 3400 E Sky Harbor Blvd, Phoenix, Arizona, 85034 | AZD982404444 |
| 3* | American Airlines Inc. Phoenix | 4000 E Sky Harbor Blvd, Phoenix, Arizona, 85034 | AZD982468035 |
| 4* | Arizona Air National Guard 161st Air refueling | 2001 S 32nd St, Phoenix, Arizona, 85034 | AZ6572890022 |
| 5 | B&L Recovery Inc | 2429 E Jackson St, Phoenix, Arizona, 85034 | AZD983469503 |
| 6 | City of Phoenix | 123 S 42nd St, Phoenix, Arizona, 85034 | AZR000507921 |
| 7* | City of Phoenix – Aviation Department Facilities and Services | 2515 E Buckeye Rd, Phoenix, Arizona, 85034 | AZD982480311 |
| 8 | CMR Manufacturing Inc. | 2421 E Jackson St, Phoenix, Arizona, 85034 | AZR000032342 |
| 9* | Cutter Aviation Phoenix Inc PHX Airport | 2802 E Old Tower Rd, Phoenix, Arizona, 85034 | AZR000005017 |
| 10* | Federal Express Corp. | 3002 E Old Tower Rd, Phoenix, Arizona, 85034 | AZR000037267 |
| 11 | Northstar Aerospace, Inc. | 401 S 36th St, Phoenix, Arizona, 85034 | AZD981620156 |
| 12 | Heligear Acquisition Co. | 300 S 23rd St, Phoenix, Arizona, 85034 | AZR000006205 |
| 13 | Laboratory Corporation of America | 1225 S 23rd St, Phoenix, Arizona, 85034 | AZD982373227 |
| 14 | Modern Industries, Inc. | 3001 E Air Ln, Phoenix, Arizona, 85034 | AZR000519538 |
| 15* | Southwest Airlines Co. Phoenix Airport | 4153 E Sky Harbor Blvd, Phoenix, Arizona, 85034 | AZD983479064 |
| 16 | Summit Research Labs, Inc. | 314 S 29th St, Phoenix, Arizona, 85034 | AZR000003194 |
| 17* | Transportation Security Administration (TSA) | 1249 S 27th St, Phoenix, Arizona, 85034 | AZR000516120 |
| 18* | United Airlines, Inc. | 3200 E Sky Harbor Blvd, Phoenix, Arizona, 85034 | AZR000037176 |
| 19* | United Parcel Service Plant Eng – PHX Airport | 3002 E Old Tower Rd, Phoenix, Arizona, 85034 | AZR000039289 |
| 20* | Western Airlines | 3400 E Sky Harbor Blvd, Phoenix, Arizona, 85034 | AZD981635808 |

* Airport tenant
Source: U.S. Environmental Protection Agency, RCRAinfo

## *Solid Waste and Recycling*

The City's Public Works Department collects and transports mixed recycling, glass, plastics, paper, tins, cardboard from its airport operations. It also collects and transports mixed recycling, metal, green waste and pallets from airline tenants. Carpet, batteries, tires, oils and fuels are picked up and recycled by multiple vendors. In 2019, the Airport reported 8,254.5 tons of solid waste and 1,726.1 tons of mixed recyclables. In 2020, solid waste decreased to 5,250.3 tons, and mixed recyclables were down to 1, 277.8 tons.[52]

Solid waste from the Airport is transferred to the Butterfield Landfill in Mobile, Arizona, 28 miles southeast of the Airport. The Butterfield Landfill is owned and operated by Waste Management. As of 2017, this landfill had a remaining capacity of 184 million cubic yards, and is not expected to reach capacity until the year 2110.[53]

[52] Data provided by the City of Phoenix, Aviation Department, 2022
[53] Maricopa Association of Governments Solid Waste Management Summary, 2017 (https://www.azmag.gov/Portals/0/Documents/MagContent/SWAC_2017_Solid-Waste-Management-Facilities-Summary.pdf?ver=2019-03-14-164324-820)

Recyclable materials are sorted at two City Materials Recovery Facilities (MRF), one in north Phoenix (approximately 22 miles north of the Airport), and one in south Phoenix (approximately six miles west of the Airport). Green organic material is diverted to the City's 27th Avenue Compost Facility for processing and composting.

The Aviation Department's 2015 Sustainability Management Plan established a goal to minimize the impact of airport operations on the environment and meet the City-wide goal of 40 percent waste diversion by 2020. This goal was achieved a year early in 2019 when the Airport diverted 40.2 percent of their total waste. In 2020, the City of Phoenix Airport system diverted 49.4 percent of waste from the landfill.[54]

*Pollution Prevention*

The AZDEQ issued an Arizona Pollutant Discharge Elimination System (AZPDES) Multi-Sector General Permit for the Airport as an industrial source.[55] The Airport maintains a Storm Water Pollution Prevention Plan (SWPPP), which addresses the pollution prevention requirements of the AZPDES permit.[56] The Airport also established Rule and Regulation 01-02 Stormwater Pollution Prevention and Enforcement for all Airport activities and tenants, which is intended to reduce, to the maximum extent practicable, the addition of pollutants to storm waters. These regulations and the Airport's SWPPP are designed to prevent violations of the AZPDES permit. The Airport also maintains a Spill Prevention Control and Countermeasures (SPCC) plan to address potential releases of oil, including prevention, controls and mitigation measures.

## 3.3.6 Historic, Architectural, Archaeological, and Cultural Resources

### *3.3.6.1 Affected Environment*

*Historic, Architectural, Archaeological, and Cultural Resources Area of Potential Effects*

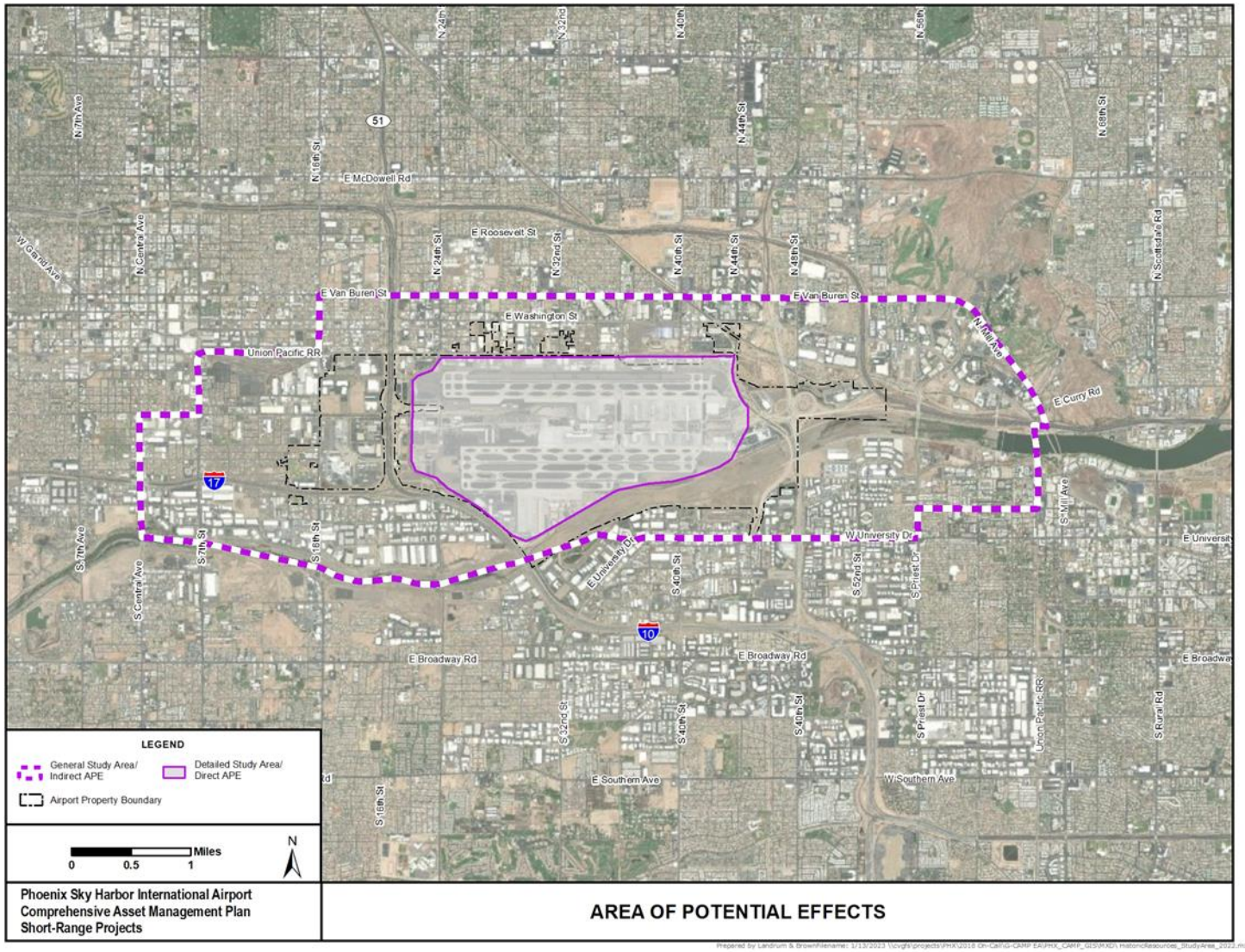
The FAA identified a direct Area of Potential Effects (APE) and an indirect APE. The direct APE envelops all ground-disturbing, land acquisition, building demolition, construction staging, and temporary ground operation re-routes (e.g., construction detours) required for the Proposed Project. The direct APE is identical to the DSA (as discussed in Section 3.1.2). The indirect APE encompasses the airport's existing 65 decibel (dB Day-Night Average (DNL noise contours which is where airport-induced, land-use changes have been acute in the past. The indirect APE is identical to the GSA. Additional information about the direct and indirect APEs is provided below, and each APE is depicted on **Exhibit 3-4**.

Prior to finalizing the direct and indirect APEs, the FAA consulted with the Arizona State Historic Preservation Office (SHPO), the City of Phoenix Historic Preservation Office, the City of Phoenix Archaeology Office, the City of Tempe Historic Preservation Officer, and the following Native American Tribes on this proposed undertaking:

- Ak-Chin Indian Community
- Fort McDowell Yavapai Nation
- Fort Mojave Indian Tribe
- Gila River Indian Community
- Hopi Tribe of Arizona
- Pascua Yaqui Tribe
- Salt River Pima-Maricopa Indian Community
- Tohono O'odham Nation
- Tonto Apache Tribe
- White Mountain Apache Tribe
- Yavapai- Apache Nation of Camp Verde Indian Reservation
- Yavapai-Prescott Indian Tribe
- Pueblo of Zuni

[54] Sustainability Management Plan Update Report, January 2022. This includes all three airports in the City of Phoenix system (Sky Harbor International Airport, Deer Valley Airport, and Goodyear Airport.
[55] https://www.skyharbor.com/docs/default-source/default-document-library/stormwater_2010_msgp_permit-(2).pdf?sfvrsn=d4be8588_2
[56] https://www.skyharbor.com/docs/default-source/pdfs/rules-and-regulations/stormwater_pollution_prevention_plan.pdf?sfvrsn=eabe8588_12

**Exhibit 3-4: Area of Potential Effect**



The Arizona State Historic Preservation Office (SHPO) concurred with the FAA's delineation of the direct and indirect APEs on November 9, 2022. A copy of this consultation is included in **Appendix D, Cultural Resources.**

*Direct APE*
The direct APE covers 2,034 acres of Airport land, including the entire existing airfield. It is bounded by the Union Pacific Railroad to the north, the Salt River and Interstate 10 to the south, S. 24th Street to the west, and S. 44th Street to the east.

Within the direct APE, the City's consultant SWCA Environmental Consultants, conducted archival research for archaeological and historical resources and a field survey for built resources (e.g., buildings, districts, objects, and structures) constructed prior to January 1, 1981. SWCA Environmental Consultants, prepared the report entitled "*A Historic Properties Inventory for the Sky Harbor Airport Comprehensive Asset Management Plan, Sky Harbor International Airport, Phoenix, Maricopa County, Arizona"*, and revised it in September 2021. Based on the information in the September 2021 Revised Historic Properties Inventory report, and an August 19, 2022 Revised Technical Memorandum (also prepared by SWCA) providing additional information on data recovery and monitoring projects at PHX, FAA determined there are ten (10) archaeological sites and one (1) structure listed or eligible for inclusion in the National Register of Historic Places (NRHP) within the direct APE (see **Table 3-13**).

**Table 3-13: National Register Eligible Properties within the Direct Area of Potential Effects**

| Resource Name/Number | Resource Type | Eligibility Status | Applicable Register Criteria | Resource Description |
|---|---|---|---|---|
| Pueblo Salado/ AZ T:12:47(ASM) | Site (Hohokam/Salado village) | Determined eligible | D | This Hohokam village was occupied during the Classic and post-Classic periods (1150-1540) and contains data about Hohokam occupation along the Salt River |
| Dutch Canal Ruin/ AZ T:12:62(ASM) NA19324 | Site (Hohokam agricultural village) | Determined eligible | D | This Hohokam village was occupied from the late Pioneer Period and into the Classic Period (650-1450) and contains data about Hohokam occupation along the Salt River. |
| Park of the Four Waters Canals AZ U:9:2 (ASM) | Site (canals) | Determined eligible | D | This Hohokam canal system was used during prehistoric times and contains data about Hohokam agriculture along the Salt River. |
| Canal Salado System/AZ T:12:389(ASM) | Site (canal segments originally mapped by Turney) | Recommended eligible | D | This Hohokam canal system was used during prehistoric times and contains data about Hohokam agriculture along the Salt River. |
| Canal Patricio System/ AZ T:12:131(ASM) | Site (Hohokam canals) | Determined eligible | D | This Hohokam canal system was used from the late Pioneer Period and into the Classic Period (650-1450) and contains data about Hohokam agriculture along the Salt River. |
| AZ U:9:237(ASM) | Site (Two Hohokam main canals and adjacent field) | Determined eligible | D | This Hohokam canal and field system was used during prehistoric times and contains data about past agriculture along the Salt River. |
| AZ U:9:314(ASM) | Site (Hohokam pit house discovered during monitoring) | Recommended eligible | D | This Hohokam field house was used during prehistoric times and contains data about agricultural activities and land use patterns along the Salt River |

| Resource Name/Number | Resource Type | Eligibility Status | Applicable Register Criteria | Resource Description |
|---|---|---|---|---|
| Hohokam Canal/ P:3:6(GP) PHX:3:6(GP) | Site (Hohokam canal) | Unevaluated | N/A | This Hohokam canal system was used during prehistoric times and contains data about Hohokam agriculture along the Salt River. |
| Old Sky Harbor Tower/ 33196 | Site (demolished tower) | Unevaluated | N/A | Former location of the Sky Harbor Air Traffic Control Tower that has been demolished. |
| Swilling Ditch Head/ 33435 | Site (historic-age canal) | Unevaluated | N/A | This is a historic canal that provided water for irrigation and other uses in the growing desert community. |
| Southern Pacific Railroad Supplemental Mainline (Wellton-Phoenix-Eloy Spur)/ (formerly AZ T:10:84[ASM]) | Structure (in use) | Determined eligible | A | This railroad line was built between 1924 and 1926 and is associated with transcontinental railroading in Arizona between 1878 and 1940. |

Note: Applicable Register Criteria are identified where known, however, eligible archaeological resources are assumed to be eligible under Criterion D if not otherwise noted in archival site records. Additionally, land jurisdiction refers to that which falls in the direct APE and may not reflect all jurisdictions/landowners that apply to a specific resource (particularly for linear resources that intersect the direct APE).
Source: Historic Properties Identification Work Plan for the Sky Harbor Airport Comprehensive Asset Management Plan Short Range Development Plan, Sky Harbor International Airport, Phoenix, Maricopa County, Arizona (2020, Revised 2021)

*Indirect APE*

The indirect APE covers 9,260 acres of municipal and private land surrounding the direct APE. It is bounded by Van Buren Street to the north, the Salt River, University Drive, and Fifth Street the south, Central Avenue and 7th Street to the west, and Mill Avenue to the east. The indirect APE includes portion of the City of Phoenix and the City of Tempe.

Within the indirect APE, SWCA Environmental Consultants conducted archival research that focused on identifying previously recorded historic properties where integrity of setting is a defining characteristic. This included a review of the NRHP as well as the Phoenix and Tempe city registers. In the indirect APE, researchers identified 33 resources listed in or eligible for listing in the NRHP or a city register (**Table 3-14**). This total consists of 27 buildings, one district, two archaeological sites, and three structures. Five are listed in the NRHP, 16 were previously determined NRHP-eligible, five were newly determined to be eligible for the NRHP, five are listed in or eligible for listing in city registers, and two are Salt River Project (SRP) heritage resources, but not NRHP-listed or listed in city registers.

**Table 3-14: Previously Recorded Cultural Resources within the Indirect Area of Potential Effects**

| Property | Address/ Location | City | Resource Type | Eligibility Status | Criteria | Land Jurisdiction | Setting |
|---|---|---|---|---|---|---|---|
| Dos Casas (AZ T:12:273 [ASM]) | Not applicable (N/A) | Phoenix | Archaeological Site | NRHP - Eligible | D | Private | Industrial |
| Pueblo Grande (AZ U:9:1[ASM]) | N/A | Phoenix | Archaeological site | NRHP-listed | A, D | City of Phoenix (COP), United State Postal Service, Arizona Department of Transportation, Union Pacific | Industrial |
| Roosevelt Addition Historic District | 3rd Street east of Roosevelt Street | Tempe | Historic district | NRHP-listed | C | Private | Residential |
| Sacred Heart Church | 801 South 16th Street | Phoenix | Building | NRHP-listed | A | Private | Commercial/ Industrial |
| Gonzales Martinez House | 320 West 1st Street | Tempe | Building | NRHP-listed | C | Private | Commercial |
| Tovrea Castle | 5401 East Van Buren Street | Phoenix | Building | NRHP-listed | A, C | Private | Commercial/ Industrial |
| Tovrea Land & Cattle Co. Administration Building/ Stockyards Restaurant | 5009 East Washington Street | Phoenix | Building | COP HPR-listed | NA | Private | Commercial/ Industrial |
| Farmers & Stockmens Bank | 5001 East Washington Street | Phoenix | Building | COP HPR-listed | NA | Private | Commercial/ Industrial |
| Centennial (Sampson-Tupper) House | 601 West 3rd Street | Tempe | Building | THPR-listed | NA | Private | Residential |
| Dines-Hight House | 508 West 5th Street | Tempe | Building | THPR-eligible | NA | Private | Residential |
| Guthrie House | 600 West 5th Street | Tempe | Building | THPR-eligible | NA | Private | Residential |
| Historic Zanjero House | 109 North 40th Street | Phoenix | Building | SRP Heritage Property | NA | Private | Commercial/ Industrial |
| Joint Head Dam | On the Grand Canal east of airport | Phoenix | Structure | SRP Heritage Property | NA | COP, Salt River Project (SRP), and Bureau of Reclamation (Reclamation) | Commercial/ Industrial |
| Grand Canal | NA | Phoenix | Structure | SRP Heritage Property NRHP-Listed | A, C | Reclamation | Commercial/ Industrial |
| Undetermined (Ernesto [carpenter] and Inocensia Guevara, 1950) | 1109 South 13th Place | Phoenix | Building | NRHP-eligible | A, C | Private | Residential/ Commercial |
| Unknown | 1427 South 13th Place | Phoenix | Building | NRHP-eligible | A, C | Private | Residential/ Commercial |
| Pillipa and Rosa de Gutierrez House | 1429 South 13th Place | Phoenix | Building | NRHP-eligible | A, C | Private | Residential/ Commercial |
| Unknown | 1127 South 13th Street | Phoenix | Building | NRHP-eligible | A, C | Private | Residential/ Commercial |

| Property | Address/ Location | City | Resource Type | Eligibility Status | Criteria | Land Jurisdiction | Setting |
|---|---|---|---|---|---|---|---|
| Unknown | 1439 South 13th Street | Phoenix | Building | NRHP-eligible | A, C | Private | Residential/ Commercial |
| Wilson W. Jones Homestead | 1008 East Buckeye Road | Phoenix | Building | NRHP-eligible | A, C | Private | Residential/ Commercial |
| Neighborhood Grocery/Carolina's Mexican Foods | 1615 South 12th Street | Phoenix | Building | NRHP-eligible | A | Private | Residential |
| Southside Assembly of God/Iglesia Christinia | 1717 South 12th Street | Phoenix | Building | NRHP-eligible | A, C | Private | Residential |
| W.H. Wah and Company Grocery | 1443 South 13th Place | Phoenix | Building | NRHP-eligible | A | Private | Residential |
| Austin's Cash Market | 1445 South 13th Place | Phoenix | Building | NRHP-eligible | A | Private | Residential |
| Tang Grocery and K.L. Tang House | 1141 East Buckeye Road | Phoenix | Building | NRHP-eligible | A, C | Private | Residential/ Commercial |
| Greater Friendship Missionary Baptist Church | 1901 East Jefferson Street | Phoenix | Building | NRHP-eligible | A | Private | Commercial/ Industrial |
| Gospel Center Church and Dormitory | 919 East Mohave Street | Phoenix | Building | NRHP-eligible | A, C | Private | Residential |
| Ducommun Metals & Supply Buildings (Reliance Metalcenter) | 301 South 26th Street | Phoenix | Building | NRHP-eligible | A, C | Private | Commercial/ Industrial |
| Colorado Fuel & Iron Corporation Building | 201 South 28th Street | Phoenix | Building | NRHP-eligible | A, C | Private | Commercial/ Industrial |
| Arizona Daily Journal Building | 2801 East Washington Street | Phoenix | Building | NRHP-eligible | A, C | Private | Commercial/ Industrial |
| Ora B. Hopper & Son Display Building | 3007 East Madison Street | Phoenix | Building | NRHP-eligible | A, C | Private | Commercial/ Industrial |
| Manuel Killegas House | 3249 East Madison Street | Phoenix | Building | NRHP-eligible | A, C | Private | Residential |
| Southern Pacific Railroad Supplemental Mainline (Wellton-Phoenix-Eloy Spur) | N/A | Phoenix | Structure (in use) | NRHP – eligible | A | Private | Commercial /Industrial |

COP HPR – City of Phoenix Historic Property Register
NRHP – National Register of Historic Places
THPR – Tempe Historic Property Register
SRP – Salt River Project
Source: A Historic Properties Inventory for the Sky Harbor Airport Comprehensive Asset Management Plan, Sky Harbor International Airport, Phoenix, Maricopa County, Arizona (2021)

Additional information on historic, architectural, archaeological, and cultural resources is provided in Appendix D.

## 3.3.7 Land Use

### *3.3.7.1 Affected Environment*

*Land Use Study Area*

The GSA was used to identify existing land use for the purpose of this EA, in which the following planning authorities are present: the City of Phoenix, the City of Tempe, and Maricopa County.

*Existing Land Use*

The predominant land uses within the GSA include multi-family residential, commercial, industrial, and recreational land uses. Land uses directly adjacent to Airport are primarily commercial. Existing land uses are depicted on **Exhibit 3-5**.

*Planned and Future Land Use*

The City reviewed local and county comprehensive plans, local redevelopment plans, regional transportation plans, and other agreements from the jurisdictions within the GSA to understand planned and future land uses. These included the following:

- City of Phoenix General Plan
- City of Tempe General Plan 2040

The following are summaries of these plans and regulations for each jurisdiction.

**City of Phoenix 2015 General Plan**[57]
The City of Phoenix 2015 General Plan provides a vision and policies for growth throughout the city, and outlines plans for land use. The General Plan presents core values to achieve the plan's vision. The values identified are connecting people and places, strengthening the local economy, diversity in the communities and neighborhoods, sustainability, and downtown development. The plan contains a future land use map which guides the ultimate physical development of the city. The *City of Phoenix General Plan Land Use Ma*p identifies land uses for the GSA that include commercial, commerce/business park, industrial, mixed use, parks, and residential. The *City of Phoenix General Plan Land Use* map identifies a transition of residential land use to industrial and commerce/business park.

The Airports section of the General Plan established the following goals:

- Ensure the growth, vitality and protection of each of the city's three municipal airports.
- Develop the Phoenix Airport system into a safe, well-planned, and fiscally sound system which meets the needs of the traveling public, its tenants and its various aviation users. A multi-modal transportation system should be developed that will allow the movement of goods and all people safely and efficiently throughout the city, especially into, and between, the urban village cores.

The Land Use and Design Principles call for the following:

- Encourage the development of City-owned and non-City-owned parcels near the Airport to Airport-compatible land uses surrounding the City's Airports.
- Limit land use changes or projects that may increase wildlife hazards at the City's three airports or within the airport's airspace, which may adversely impact aircraft operations or pose a possible aircraft hazard.
- Continue to carefully monitor and evaluate all future land uses around the airports, protecting the airport from incompatible development that could pose a safety hazard to aircraft passengers, or to individuals

[57] https://www.phoenix.gov/pdd/planning-zoning/phoenix-general-plan

living or residing in those areas. Additionally, ensure that future land uses within the Sky Harbor Center area will be compatible with the safe operation of PHX.
- Develop airport facilities using concepts that are flexible and adaptable to changing conditions in the airline and transportation industry.

**City of Tempe General Plan 2040**[58]

The Aviation element of the General Plan notes the City's involvement with the Phoenix Airspace Users Working Group to maintain a dialogue about air traffic issues, with the goal to

1. Keep aircraft from departing to the east over the Tempe Town Lake and Salt Riverbed areas,
2. Keep aircraft away from residential areas on both sides of the riverbed until they reach the Price Rd/Hwy 101/202 intersection, and
3. Direct departures east and west of the Airport in an effort to distribute the noise burden evenly on an annual basis between communities on both sides of the Airport.

The Conservation Goal identified a noise reduction goal to control noise levels for living, working and learning environments free from nuisance noise that affect comfort, productivity, and the enjoyment of indoor and outdoor environments. This goal has several objectives:

Objective N1: Reduce noise impacts though enforcement of the noise ordinance, utilizing the following strategies:

- Identify nuisance noise issues and possible mitigation methods
- Seek community input on Airport related issues, such as provided by the Tempe Aviation Commission (TAVCO)
- Follow technology research for improved noise mitigation
- Develop additional policies and programs to mitigate noise

Objective N2: Promote land use and building design buffers that mitigate noise, utilizing the following strategies:

- Develop policies and programs to address noise sources
- Develop design guidelines for street development that help minimize road noise
- Continue to develop transportation policies which mitigate noise in sensitive areas such as railroad quiet zones

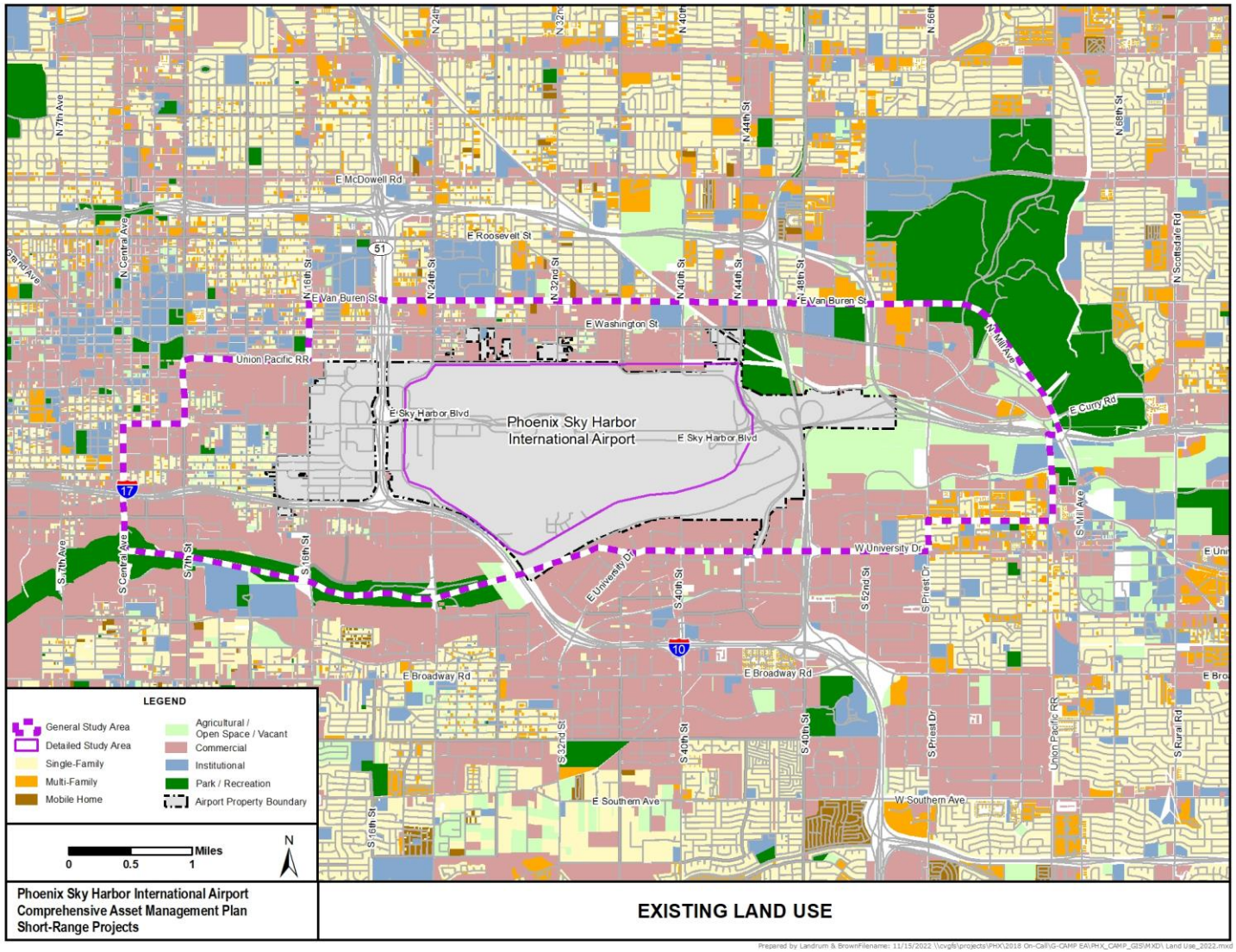
Objective N3: Promote regional noise mitigation and monitoring regionally to protect Valley-wide quality of life, utilizing the following strategies:

- Work with Phoenix Sky Harbor International Airport to mitigate aircraft noise within Tempe
- Track noise impacts and complaints to assist in identifying problems and prioritizing changes
- Work with regional and state agencies to reduce noise
- Provide educational information on noise issues
- Continue to support adjacent communities' regional reliever airport developments

The City also developed a Transit Goal to coordinate and produce efficient, safe, convenient and interconnected transit options to increase ridership. One objective of this goal (Objective TR3) is to expand transit availability to regional and interregional systems. One strategy for achieving this goal is to study the viability of commuter rail along the Union Pacific Railroad corridor.

[58] https://www.tempe.gov/government/community-development/general-plan-2040

**Exhibit 3-5: Existing Land Use**



## 3.3.8 Natural Resources and Energy Supply

Airport development projects have the potential to change the consumption of natural resources and use of energy supplies. CEQ regulations require that, when evaluating the environmental consequences of a Proposed Project and its alternatives, a federal agency's environmental consequences analysis must include, among other things, energy requirements and the conservation potential of various alternatives and mitigation measures, and natural or depletable resource requirements and the conservation potential of various alternatives and mitigation measures.[59]

### *3.3.8.1 Affected Environment*

#### *Natural Resources and Energy Study Area*

Because the availability and access to natural resources and energy are typically considered at a regional level, the Natural Resources and Energy Study Area includes the greater Phoenix area. This area is a well-developed urban area with adequate access to natural resources for facility operations, aircraft operations, and construction projects. Under normal operating circumstances, the Airport has access to utilities and fuel, and these energy sources are currently not in short supply in the area.

#### *Electricity*

Airport facilities require electricity and natural gas for lighting, cooling, and heating. Electricity provides energy for a variety of services including cooling and lighting for buildings, lighting for vehicle parking areas, and security lighting. Arizona Public Service (APS) provides electricity to the Airport and Natural Resources and Energy Study Area. In 2019 the Airport used approximately 143.0 million kilowatt hours (kWh) of electricity. In 2020 the usage was down to 133.3 million kWH.[60]

#### *Natural Gas*

Natural gas is utilized primarily for heat, steam, and hot water. Natural gas is provided by Southwest Gas Corporation. In 2019 the Airport consumed 41,415 therms of natural gas. In 2020 natural gas consumption was up slightly, to 50,320 therms.[61]

#### *Renewable Energy*

The Airport currently has 5.4 megawatts of solar photovoltaics located at the Rental Car Center and East Economy Parking Garages. These installations provide 51 percent of the energy used at those facilities, equating to the power supply for 700 homes for a year. This offsets carbon dioxide emissions from energy production equivalent to removing 1,000 cars off the road. In 2019 the Airport utilized 8.0 million kWh of renewable onsite solar energy. In 2020, this utilization was up to 8.6 million kWh.[62]

#### *Water*

Water on the Airport is supplied by Phoenix Water. In 2020 (the most recent year for which data was available), water usage at the Airport was 282,348,469 gallons, down from 290,430,422 gallons the previous year.[63]

#### *Natural Resources*

Other natural resources used at the Airport include sand, concrete, stone, wood, and gravel. In the 2015 United States Geological Survey Minerals Yearbook, Arizona was ranked the second overall state for value of nonfuel mineral production, primarily including cement, copper, molybdenum concentrates (used for production of steel

[59] 40 CFR §1502.16(e)-(f),
[60] Data provided by City of Phoenix – Aviation Department
[61] Data provided by City of Phoenix – Aviation Department
[62] Data provided by City of Phoenix – Aviation Department
[63] Sustainability Management Plan Update Report, January 2022

alloys), sand and gravel, and crushed stone.[64] These resources are not in short supply, and are readily available in the Natural Resources and Energy Study Area.

## 3.3.9 Noise and Noise-Compatible Land Use

The FAA uses land use compatibility guidelines established under 14 Code of Federal Regulations (CFR) Part 150, *Airport Noise Compatibility Planning* (Part 150). These guidelines are consistent with land use compatibility guidelines developed by other federal agencies such as EPA and the United States Department of Housing and Urban Development.[65,66] Potential impacts from airport noise, relative to the land uses surrounding an airport, are determined by modeling and mapping the DNL. A noise level of DNL 65 decibels is where noise-sensitive land uses, such as residences, churches, schools, libraries, and nursing homes, become significantly impacted. Below DNL 65, all land uses are determined to be compatible with airport noise.

### *3.3.9.1 Affected Environment*

The GSA was used to evaluate noise and noise compatible land use for the purpose of this EA. Within the GSA, noise contours were defined based on the average annual noise exposure pattern at PHX from March 2019 to February 2020 (see **Exhibit 3-6**). Noise contours are presented for the 65, 70, and 75 DNL. DNL contours are a graphic representation of how the noise from PHX's annual average daily aircraft operations is distributed over the surrounding area.

DNL represents an average sound level over the course of an average annual day. Noise contour patterns extend from the Airport along each extended runway centerline, reflective of the flight tracks used by all aircraft. The relative distance of a contour from the Airport along each route is a function of the frequency of use of each runway end for total aircraft arrivals and departures, and the type of aircraft assigned to it.

### *3.3.9.2 Noise-Compatible Land Use*

The FAA has created guidelines regarding the compatibility of land uses with various aircraft noise levels measured using the DNL metric. These guidelines are defined in Appendix A to 14 CFR Part 150. The land use compatibility table is reproduced in **Table 3-15**. These guidelines show the compatibility parameters for residential, public (schools, churches, nursing homes, hospitals, and libraries), commercial, institutional, and recreational land uses. All land uses exposed to noise levels below the DNL 65 dB noise contour are generally considered compatible with airport noise.

[64] USGS 2015 Minerals Yearbook, Statistical Summary, Table 3
[65] Federal Interagency Committee on Urban Noise (FICUN), 1980, Guidelines for Considering Noise in Land Use Planning and Control.
[66] Federal Interagency Committee on Noise (FICON), 1992, Federal Agency Review of Selected Airport Noise Analysis Issues, August.

**Exhibit 3-6: Existing Noise Exposure Contour**

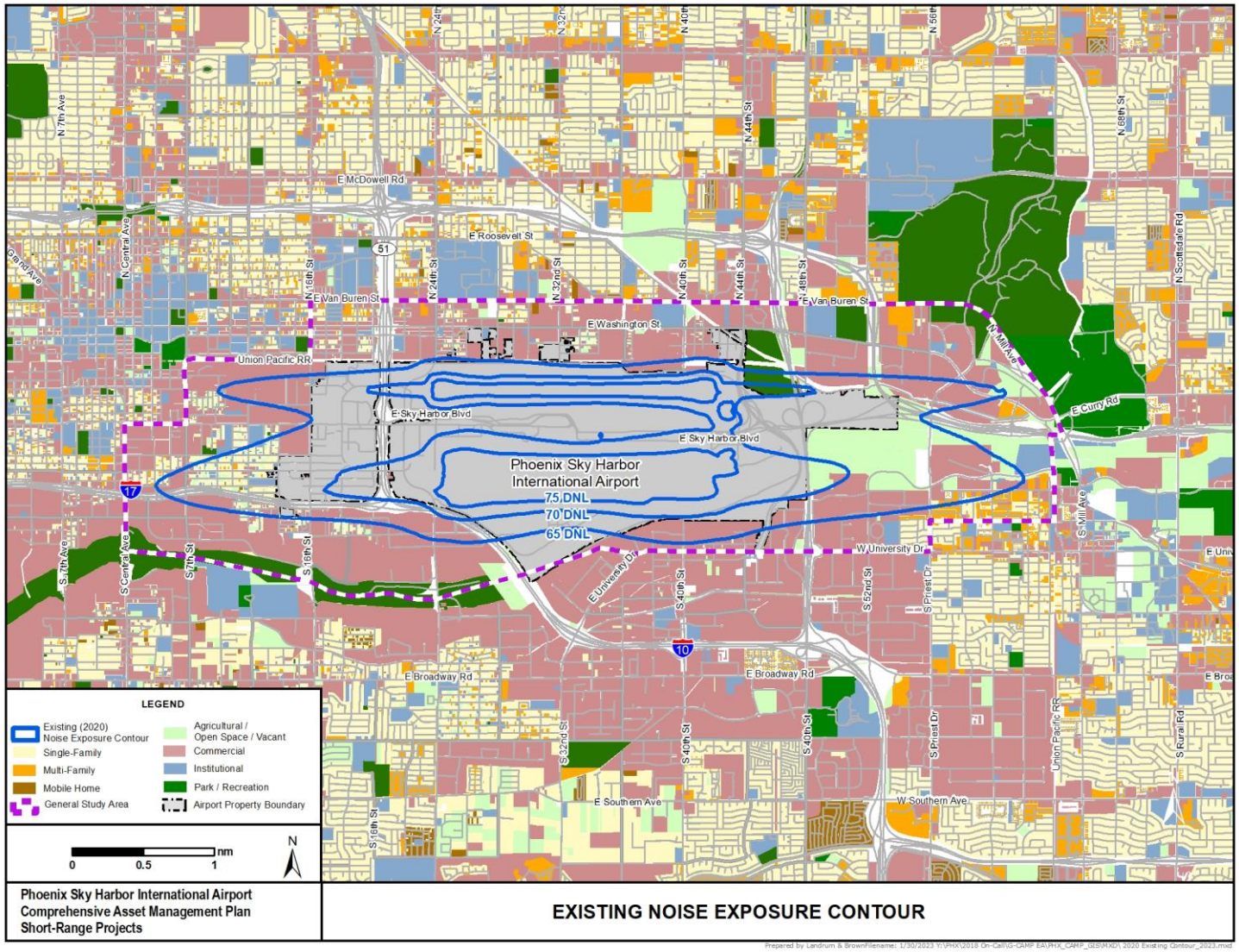


**Table 3-15: Land Use Compatibility Guidelines from 14 CFR Part 150**

| | Yearly Day-Night Average Sound level (DNL) in Decibels (dB) | | | | | |
|---|---|---|---|---|---|---|
| **Land Use** | **Below 65** | **65-70** | **70-75** | **75-80** | **80-85** | **Over 85** |
| Residential | | | | | | |
| Residential, other than mobile homes and transient lodgings | Yes | No (1) | No (1) | No | No | No |
| Mobile home parks | Yes | No | No | No | No | No |
| Transient lodgings | Yes | No (1) | No (1) | No (1) | No | No |
| Public Use | | | | | | |
| Schools | Yes | Yes | No (1) | No | No | No |
| Hospitals and nursing homes | Yes | Yes | 30 | No | No | No |
| Churches, auditoriums, and concert halls | Yes | Yes | 30 | No | No | No |
| Governmental services | Yes | Yes | 25 | 30 | No | No |
| Transportation | Yes | Yes | Yes (2) | Yes (3) | Yes (4) | Yes (4) |
| Parking | Yes | Yes | Yes (2) | Yes (3) | Yes (4) | No |
| Commercial Use | | | | | | |
| Offices, business and professional | Yes | Yes | 25 | 30 | No | No |
| Wholesale and retail—building materials, hardware and farm equipment | Yes | Yes | Yes (2) | Yes (3) | Yes (4) | No |
| Retail trade—general | Yes | Yes | 25 | 30 | No | No |
| Utilities | Yes | Yes | Yes (2) | Yes (3) | Yes (4) | No |
| Communication | Yes | Yes | 25 | 30 | No | No |
| Manufacturing and Production | | | | | | |
| Manufacturing, general | Yes | Yes | Yes (2) | Yes (3) | Yes (4) | No |
| Photographic and optical | Yes | Yes | 25 | 30 | No | No |
| Agriculture (except livestock) and forestry | Yes | Yes (6) | Yes (7) | Yes (8) | Yes (8) | Yes (8) |
| Livestock farming and breeding | Yes | Yes (6) | Yes (7) | No | No | No |
| Mining and fishing, resource production and extraction | Yes | Yes | Yes | Yes | Yes | Yes |
| Recreational | | | | | | |
| Outdoor sports arenas and spectator sports | Yes | Yes | Yes (5) | No | No | No |
| Outdoor music shells, amphitheaters | Yes | Yes | No | No | No | No |
| Nature exhibits and zoos | Yes | Yes | No | No | No | No |
| Amusements, parks, resorts and camps | Yes | Yes | Yes | No | No | No |
| Golf courses, riding stables and water recreation | Yes | Yes | 25 | 30 | No | No |

(1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.

(2) Measures to achieve NLR 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

(3) Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
(4) Measures to achieve NLR 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal level is low.
(5) Land use compatible provided special sound reinforcement systems are installed.
(6) Residential buildings require an NLR of 25.
(7) Residential buildings require an NLR of 30.
(8) Residential buildings not permitted.
Notes: The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable under Federal, State, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.
SLUCM=Standard Land Use Coding Manual.
Y (Yes)=Land Use and related structures compatible without restrictions.
N (No)=Land Use and related structures are not compatible and should be prohibited.
NLR=Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.
25, 30, or 35=Land use and related structures generally compatible; measures to achieve NLR of 25, 30, or 35 dB must be incorporated into design and construction of structure.
Source: 14 CFR § 150 Airport Noise Compatibility Planning, Appendix A, Table 1.

Within the 65 DNL of the Existing (2020) Noise Exposure contour there are 11 schools, 13 places of worship, and four medical facilities. Summaries of the residential population and housing units affected by noise levels exceeding DNL 65 dB for the Existing (2020) Noise Exposure Contours are provided in **Table 3-16**.

**Table 3-16: Non-Compatible Land Use Housing and Population for Existing (2020) Noise Contours**

| | DNL 65-70 dB | DNL 70-75 dB | DNL 75+ dB |
|---|---|---|---|
| **Housing** | | | |
| Single-Family Residential | 202 | 0 | 0 |
| Multi-Family Residential | 127 | 0 | 0 |
| Manufactured Housing | 2 | 0 | 0 |
| Total Housing Units | **331** | **0** | **0** |
| **Population** | | | |
| Single-Family Residential | 733 | 0 | 0 |
| Multi-Family Residential | 844 | 0 | 0 |
| Manufactured Housing | 7 | 0 | 0 |
| Total Population | **1,584** | **0** | **0** |

Notes: Population numbers are estimates based on the 2000 United States Census average household size per number of housing units.
Source: Landrum & Brown and Phoenix Aviation Department, 2023.

### *3.3.9.3 Construction Noise*

**Table 3-17** depicts an estimate of the typical maximum sound level energy from various types of construction equipment that are likely to be used during construction of the Proposed Project. The total sound energy would be a product of a machine's sound level, the number of such machines in service, and the average time they operate.

**Table 3-17: Construction Equipment Noise**

| Equipment Type | Typical Maximum Sound Level (Lmax) in dB(A) at 50 feet |
|---|---|
| Dump Truck | 76 |
| Concrete Mixer Truck | 79 |
| Chain Saw | 84 |
| Crane | 81 |
| Jackhammer | 89 |
| Scraper | 84 |
| Man Lift | 75 |
| Dozer | 82 |
| Tractor | 84 |
| Paver | 77 |
| Roller | 80 |
| Generator | 81 |
| Rock Drill | 81 |
| Pump | 81 |
| Pneumatic Tools | 85 |
| Backhoe | 78 |

Source: Federal Highway Administration, *Construction Noise Handbook, 9.0 Construction Equipment Noise Levels and Ranges*. Available online at https://www.fhwa.dot.gov/Environment/noise/construction_noise/handbook/handbook09.cfm Accessed January 2021

To reduce impacts from construction noise, in 2004 Maricopa County established limits on the hours of construction in zoned areas as follows:

- From April 15th to October 15th, inclusive, all construction work in or within 500 feet of Rural or Residential zones, and within 1,500 feet of an occupied residence, shall not begin prior to 5:00 a.m. and must stop by 7:00 p.m. each day.
- From October 16th to April 14th, inclusive, all other construction work in or within 500 feet of Rural or Residential zones, and within 1,500 feet of an occupied residence, shall not begin prior to 6:00 a.m. and must stop by 7:00 p.m. each day.
- All construction work in Commercial and Industrial zones not within 500 feet of Rural or Residential zones, or within any zone but not within 1,500 feet of an occupied residence, shall not begin prior to 5:00 a.m. and must stop by 10:00 p.m.

In the City of Phoenix, building construction is generally only permitted during daytime weekday hours, unless an extended hours construction permit has been issued. Phoenix City Code Noise Ordinance 23-12 established limits to building construction including erection, excavation, demolition, alteration or repair of any building within 500 feet of any inhabited structure as follows:

- From May 1 to and including September 30 construction is only permitted between the hours of 6:00 a.m. and 7:00 p.m.
- From October 1 and including April 30 on non-holiday weekdays construction is only permitted between the hours of 7:00 a.m. and 7:00 p.m.

## 3.3.10 Socioeconomics, Environmental Justice, and Children's Health and Safety

### *3.3.10.1 Affected Environment for Socioeconomics*

Socioeconomics is an umbrella term used to describe aspects of a project that are either social or economic in nature. A socioeconomic analysis evaluates how elements of the human environment such as population, employment, housing, and public services might be affected by the Proposed Action and alternatives.

#### *Socioeconomic Study Area*

The Study Area for socioeconomic resources is the GSA. Eight U.S. Census tract boundaries are wholly or partially within the GSA. These eight census tracts are composed of 19 census block groups, which were used to tabulate most of the Census-based data in this section. The GSA tracts and block groups are listed in **Table 3-18** below, and depicted on **Exhibit 3-7**.

**Table 3-18: GSA Census Tracts and Block Groups**

| Census Tract | Block Group(s) |
|---|---|
| 113800 | 1,2,3,4,5,6,7 |
| 113900 | 1,2 |
| 114000 | 2 |
| 114900 | 2,3 |
| 117200 | 1,2,3 |
| 318800 | 2,4 |
| 319710 | 1 |
| 320100 | 1 |

Source: U.S. Census data, 2020

#### *Demographics*

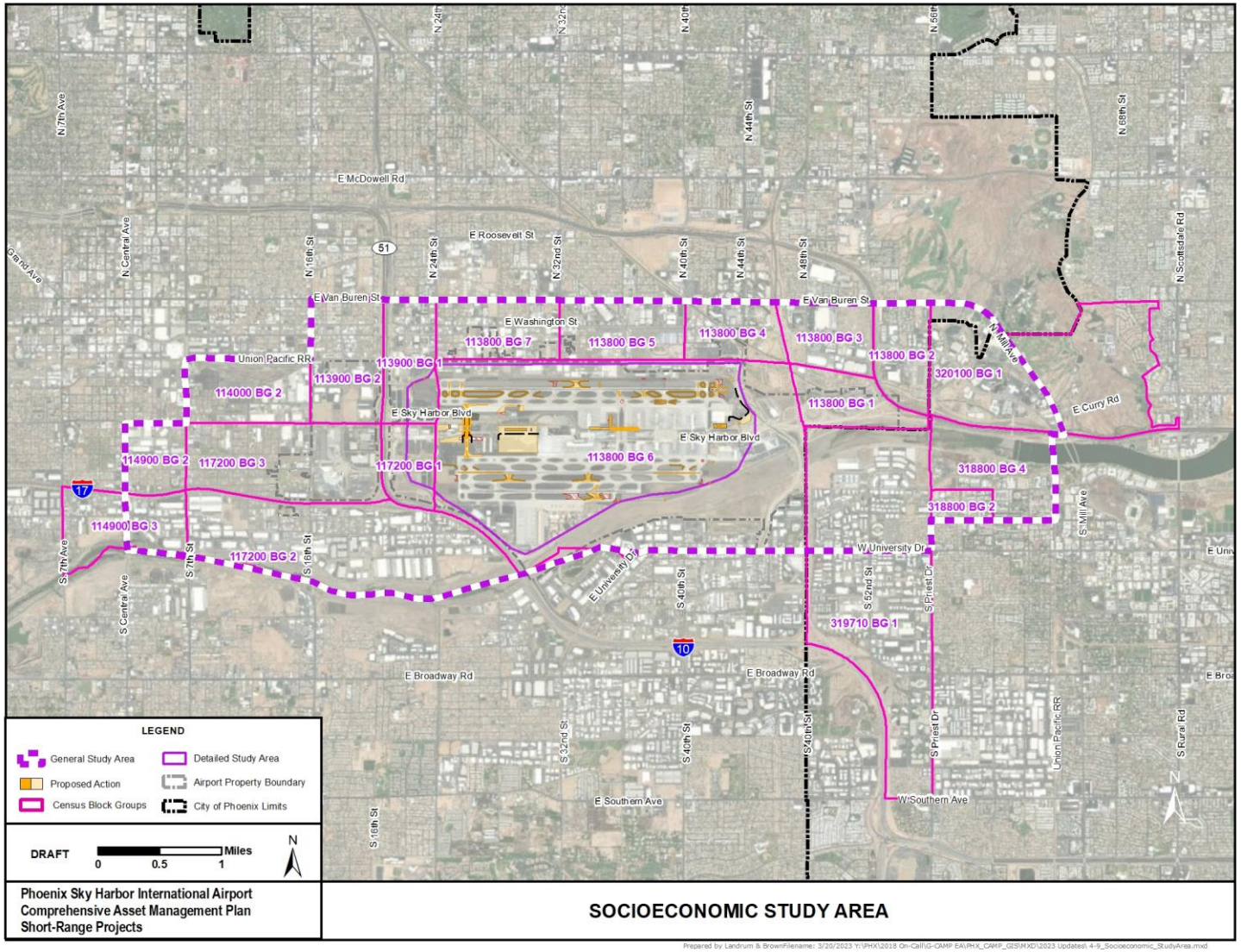
The populations of Maricopa County, the City of Phoenix, the City of Tempe, and the GSA are summarized in **Table 3-19**, along with select demographic and socioeconomic data. The table presents data from the 2020 Census. In general, the GSA contains similar population characteristics as the other geographic areas.

**Table 3-19: Population Characteristics**

| | Maricopa County | City of Phoenix | City of Tempe | GSA |
|---|---|---|---|---|
| Total Population | 4,420,568 | 1,608,139 | 180,587 | 15,479 |
| White | 53.3% | 41.8% | 54.1% | 40.6% |
| Black or African American | 5.5% | 7.4% | 6.3% | 8.7% |
| American Indian and Alaska Native | 1.5% | 1.6% | 2.4% | 2.8% |
| Asian | 4.5% | 4.0% | 9.5% | 5.9% |
| Native Hawaiian and other Pacific Islander | 0.2% | 0.2% | 0.4% | 0.3% |
| Two or more races | 3.8% | 3.4% | 4.8% | 4.3% |
| Other | 0.5% | 0.5% | 0.5% | 0.5% |
| Hispanic or Latino | 30.6% | 41.1% | 22.0% | 36.9% |
| Percent Children (under 18 years of age) | 23.0% | 24.7% | 14.2% | 15.4% |
| Elderly Population (over 65 years) | 15.8% | 11.7% | 9.2% | 5.3% |

Source: U.S. Census Bureau, 2020 Decennial Census (Table P2) and American Community Survey 5-Year Estimates, Table DP05, and Table B01001

**Exhibit 3-7: Socioeconomic Study Area**



## *Economics*

The economic characteristics of Maricopa County, the City of Phoenix, the City of Tempe, and the GSA are summarized in **Table 3-20**. The table presents data from 2020, the most recent year for which such data is available. GSA residents reported lower median household income and per capita income, with higher rates of individuals earning income below the poverty level, and lower rates of unemployment when compared with Maricopa County, Phoenix, and Tempe.

**Table 3-20: Economic Characteristics**

| | Maricopa County | City of Phoenix | City of Tempe | GSA |
|---|---|---|---|---|
| Median Household Income | $67,779 | $60,914 | $61,290 | $45,240[1] |
| Per Capita Income | $35,090 | $31,427 | $33,205 | $26,649[1] |
| Income Below the Poverty Level (individuals) | 12.7% | 16.2% | 18.5% | 29.0%[1] |
| Unemployment Rate (civilian labor force, over 16 years of age) | 5.1% | 5.4% | 6.1% | 2.8% |

[1]Average of the GSA block groups reporting income
Source: U.S. Census Bureau, 2020 American Community Survey 5-Year Estimates, Table DP03

## *Public Services*

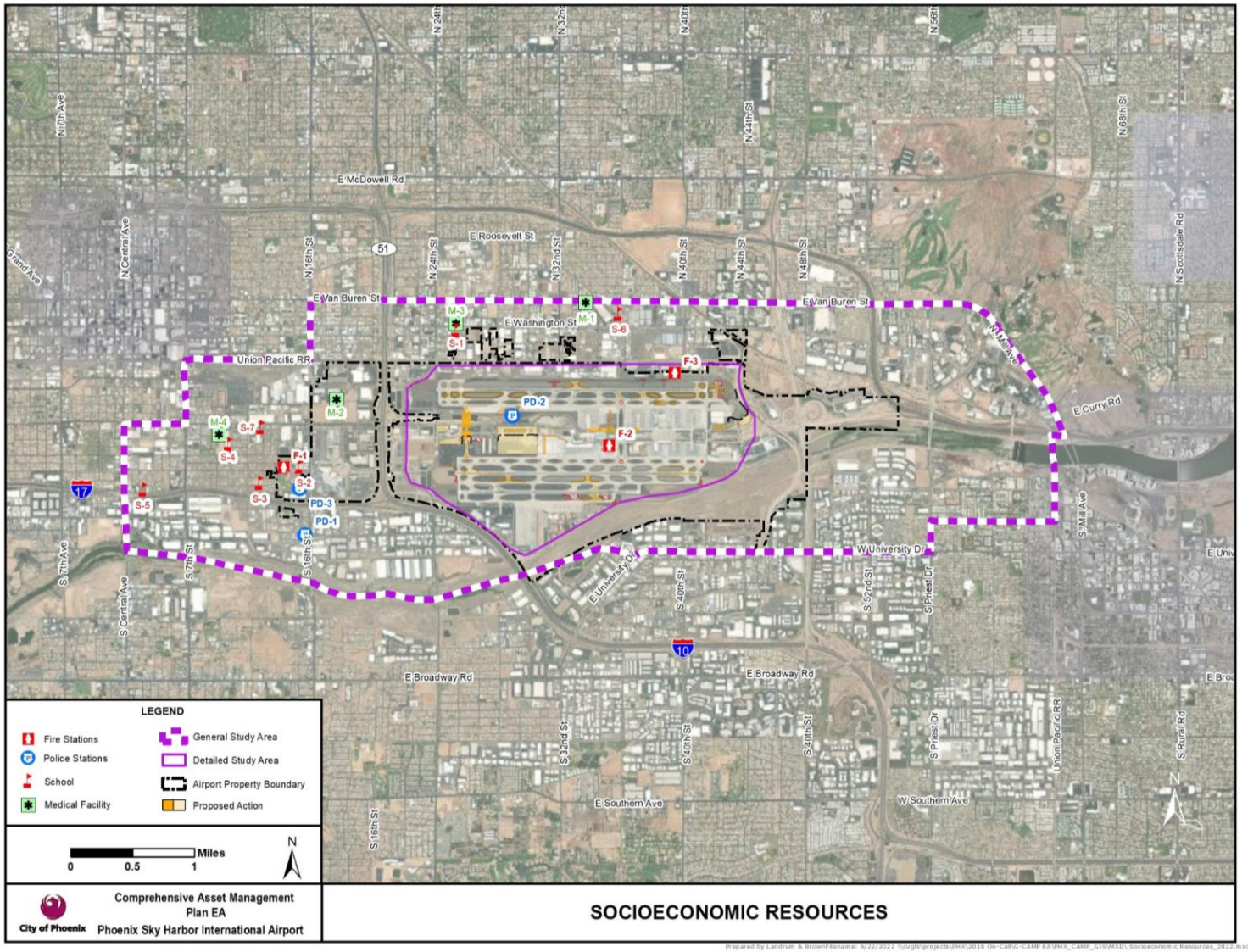
Residents of communities in the GSA have available a wide range of public services. Public services include facilities such as schools, medical services, and emergency response services. Each of these facilities are listed in **Table 3-21** below and depicted on **Exhibit 3-8**.

**Table 3-21: Socioeconomic Resources Within the GSA**

| Map ID | Facility Name |
|---|---|
| Public Schools | |
| S-1 | Robert L Duffy High School |
| S-2 | Children First Leadership Academy |
| S-3 | Kids at Hope Academy |
| S-4 | Sylvestre Herrera Elementary |
| S-5 | Academia Del Pueblo |
| S-6 | Gateway Early College High School |
| S-7 | GateWay Community College |
| S-8 | GateWay Community College Children's Learning Center |
| S-9 | Sojourner Center - Child Development Center |
| S-10 | Sunrise Preschools |
| S-11 | Superior Children's Center |
| Medical Facilities | |
| M-1 | Circle the City Family Health Center (UMOM Campus) |
| M-2 | Concerta Urgent Care |
| M-3 | Stand Together and Recover (S.T.A.R.) Centers |
| M-4 | Wesley Health Center, Inc. |
| Police Stations | |
| PD-1 | Arizona Highway Patrol, Knutson Station |
| PD-2 | Phoenix Police Airport Bureau |
| PD-3 | Phoenix Police Central City Precinct |
| Fire Stations | |
| F-1 | Phoenix Fire Department - Station 16 |
| F-2 | Phoenix Fire Department - Station 19 |
| F-3 | Phoenix Fire Department - Station 29 |

Source: City of Phoenix, Landrum & Brown analysis

**Exhibit 3-8: Socioeconomic Resources**



### 3.3.10.2 Affected Environment for Environmental Justice

Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. *Fair treatment* means that no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental, and commercial operations or policies. *Meaningful Involvement* means that:

- People have an opportunity to participate in decisions about activities that may affect their environment and/or health;
- The public's contribution can influence the regulatory agency's decision;
- Their concerns will be considered in the decision making process; and,
- The decision makers seek out and facilitate the involvement of those potentially affected.

USDOT Order 5610.2(a) defines a minority population as any readily identifiable group of minority persons living in geographic proximity to a proposed DOT program, policy or activity including, if circumstances warrant, geographically dispersed or transient persons (such as migrant workers or Native Americans) who will be similarly affected by the proposed program, policy, or activity.

USDOT Order 5610.2(a) defines Low-Income as a median household income at or below the Department of Health and Human Services (HHS) poverty guidelines. USDOT Order 5610.2(a) defines a Low-Income Population as any readily identifiable group of low-income persons who live in geographic proximity including, if circumstances warrant, geographically dispersed or transient persons who will be similarly affected by the proposed program, policy or activity.

#### *Environmental Justice Study Area*

The Environmental Justice Study Area is the GSA and includes the same 19 U.S. Census block groups described above for the socioeconomic discussion.

#### *Minority Populations*

The EA used the Fifty Percent analysis[67] to identify the extent to which minority populations reside within the GSA. The steps of the Fifty Percent analysis and results are summarized in **Table 3-22** below.

**Table 3-22: Fifty Percent Analysis**

| Steps | | Results |
|---|---|---|
| **1.** | Determine the total number of individuals residing within the affected environment (defined herein as the GSA) | There are 15,479 individuals residing in the GSA |
| **2.** | Determine the total number of minority individuals residing within the affected environment | There are 8,390 minority individuals[1] |
| **3.** | Select the appropriate geographic unit of analysis within the affected environment | The analysis will consider individual census block groups |
| **4.** | Determine the percentage of minority individuals (including Hispanics) residing within the geographic unit of analysis | See Table 3-23 for data by block group |
| **5.** | If the percentage of minorities residing within the geographic unit of analysis meets or exceeds 50%, note the existence of a minority population, and the need for a heightened focus within that area | 13 of the 17 block groups with a population above zero have a minority percentage that exceeds 50% |

[67] *Promising Practices for EJ Methodologies in NEPA Reviews,* Report of the Federal Interagency Working Group on Environmental Justice & NEPA Committee, 2016

| Steps | | Results |
|---|---|---|
| **6.** | Next, compare the total number of minority individuals residing within the affected environment against the total number of individuals residing within the affected environment, in order to determine the percentage of minority individuals residing within the affected environment | 54.2 percent of the GSA residents are minority individuals[1] |
| **7.** | If the percentage of minorities residing in the affected environment exceeds 50%, consider noting the need for a heightened focus throughout the entire environmental justice analysis | The entire GSA will be reviewed with a heightened focus |
| **8.** | After completion of the *Fifty Percent* analysis, conduct the *Meaningfully Greater* analysis (see below) | |

[1]According to USDOT Order 5610.2(a), minority population refers to a person who is any of the following: Black, Hispanic, Asian American, or American Indian/Alaskan Native.
Note: Data based on U.S. Census Bureau, 2020 American Community Survey Estimates

Based on the above analysis, 13 of the 17 block groups within the GSA with a population above zero (two block groups have a population of zero) contained a minority population in excess of 50 percent and are therefore considered environmental justice populations. These block groups are indicated below in **Table 3-23**.

**Table 3-23: Minority Populations for GSA Block Groups**

| Census Tract | Block Group | Minority Percentage (2020) |
|---|---|---|
| 113800 | 1 | N/A |
| 113800 | 2 | 41.9% |
| 113800 | 3 | 74.1% |
| 113800 | 4 | 52.1% |
| 113800 | 5 | 87.2% |
| 113800 | 6 | 75.6% |
| 113800 | 7 | 84.5% |
| 113900 | 1 | 58.3% |
| 113900 | 2 | 93.0% |
| 114000 | 2 | 85.4% |
| 114900 | 2 | 90.6% |
| 114900 | 3 | 73.8% |
| 117200 | 1 | N/A |
| 117200 | 2 | 97.3% |
| 117200 | 3 | 90.0% |
| 318800 | 2 | 51.9% |
| 318800 | 4 | 48.4% |
| 319710 | 1 | 48.8% |
| 320100 | 1 | 37.0% |

N/A = data not available
Note: shaded row indicates a minority population in excess of 50%
Source: U.S. Census Bureau, 2020 American Community Survey 5-Year Estimates, Table B03002

After completion of the *Fifty Percent Analysis*, the *Meaningfully Greater Analysis* was also conducted to identify any minority populations that might have been missed. The results of the analysis are indicated below in **Table 3-24**.

**Table 3-24: Meaningfully Greater Analysis**

| Steps | | Results |
|---|---|---|
| **1.** | Select the appropriate geographic unit of analysis for the affected environment (e.g., census block, block group). | The analysis considered individual census block groups. |
| **2.** | Select the appropriate reference community (e.g., county, state). | The reference community for this analysis is the combined cities of Phoenix and Tempe. |
| **3.** | Select the appropriate meaningfully greater threshold for comparison. The Meaningfully Greater analysis requires use of a reasonable, subjective threshold (e.g. percentage greater than the reference community). | The meaningfully greater threshold or this analysis is 10 percent (meaning that any block group with a minority percentage more than 10 percent higher than the combined cities of Phoenix and Tempe would be considered a minority population). |
| **4.** | Compare the percentage of minority individuals residing within the selected geographic units of analysis to the percentage of minority individuals residing within the reference community. | The percentage of minority individuals within the reference community (the combined cities of Phoenix and Tempe) is 52.7 percent.[68] |
| **5.** | If the percentage of minorities residing within the geographic unit of analysis is meaningfully greater (based on application of the threshold) either individually or in the aggregate, than the percentage of minorities residing within the reference community, disclose the existence of a minority population. | No additional census block groups within the GSA are meaningfully greater than the reference community. |
| **6.** | Display identified minority populations in a map and table format, as appropriate. Care should be taken to present accurate and current data and information and explain the limitations of the data and information. | Potential minority populations are identified on Exhibit 3-9 below. |
| **7.** | Provide a written rationale which explains the selection of the geographic unit of analysis, the reference community, the meaningfully greater threshold, and other methods used to identify minority populations. | Provided above. |

No additional minority block groups were identified as part of the *Meaningfully Greater Analysis*.

### *Low-Income Populations*

Low income populations are determined by considering the percentage of individuals in the study are whose median household income is at or below the Department of Health and Human Services (HHS) poverty guidelines.[69] The HHS poverty guideline level for a family of four is $26,200 in 2020. **Table 3-25** below lists the median household income for all block groups located within the GSA (in 2020).

[68] U.S. Census Bureau, 2020 American Community Survey 5-Year Estimates, Table DP05
[69] USDOT Order 5610.2(a

**Table 3-25: Median Household Income for GSA Block Groups**

| Census Tract | Block Group | Median Household Income (2020) |
|---|---|---|
| 113800 | 1 | N/A |
| 113800 | 2 | $68,750 |
| 113800 | 3 | N/A |
| 113800 | 4 | $63,036 |
| 113800 | 5 | N/A |
| 113800 | 6 | N/A |
| 113800 | 7 | $30,300 |
| 113900 | 1 | $16,696 |
| 113900 | 2 | $17,656 |
| 114000 | 2 | N/A |
| 114900 | 2 | $31,218 |
| 114900 | 3 | $45,917 |
| 117200 | 1 | N/A |
| 117200 | 2 | $33,571 |
| 117200 | 3 | $43,958 |
| 318800 | 2 | $45,500 |
| 318800 | 4 | $52,847 |
| 319710 | 1 | $70,652 |
| 320100 | 1 | $68,015 |
| ***Average[1]*** | | ***$45,240*** |

[1]Average of the 13 block groups with a reported income. This is not weighted by population.
N/A = data not available
Note: shaded row indicates median household income below the HHS federal poverty guideline for a family of 4
Source: U.S. Census Bureau, 2020 American Community Survey 5-Year Estimates, Table B19013

Based on a review of the 2020 data, there are two block groups within the GSA with a median household income below the federal poverty guidelines: block groups 113900.1 and 113900.2. These block groups are therefore identified as potential low-income populations.

Another measure of identifying low-income populations is by considering poverty thresholds, which are updated each year by the U.S. Census Bureau. In 2020, the poverty threshold was $13,171 per individual.[70] **Table 3-26** below lists the percentage of individuals reporting income below the poverty level for all block groups located within the GSA (in 2020).

[70] https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-poverty-thresholds.html

**Table 3-26: Individuals below the Poverty Threshold for GSA Block Groups**

| Census Tract | Block Group | Percentage of Individuals Reporting Income Below the Poverty Threshold (2020) |
|---|---|---|
| 113800 | 1 | N/A |
| 113800 | 2 | 9.9% |
| 113800 | 3 | N/A |
| 113800 | 4 | 4.7% |
| 113800 | 5 | 55.6% |
| 113800 | 6 | N/A |
| 113800 | 7 | 39.3% |
| 113900 | 1 | 61.7% |
| 113900 | 2 | 57.9% |
| 114000 | 2 | 0.0% |
| 114900 | 2 | 42.6% |
| 114900 | 3 | 22.6% |
| 117200 | 1 | N/A |
| 117200 | 2 | 16.7% |
| 117200 | 3 | 34.1% |
| 318800 | 2 | 25.5% |
| 318800 | 4 | 31.1% |
| 319710 | 1 | 20.9% |
| 320100 | 1 | 11.4% |
| ***Average[1]*** | | ***28.9%*** |

[1]Average of the 15 block groups with a reported income. This is not weighted by population.
N/A = data not available
Note: shaded rows indicate a meaningfully greater percentage of individuals below the poverty threshold
Source: U.S. Census Bureau, 2020 American Community Survey Estimates, Table B17010

Based on a review of the 2020 data, there are four block groups within the GSA with a meaningfully higher percentage of individuals below the poverty threshold than the GSA as a whole (with meaningfully greater being defined as 10 percent or more than the GSA as a whole): block groups 113800.5, 113900.1, 113900.2, and 114900.2. These block groups are therefore identified as potential low-income populations.

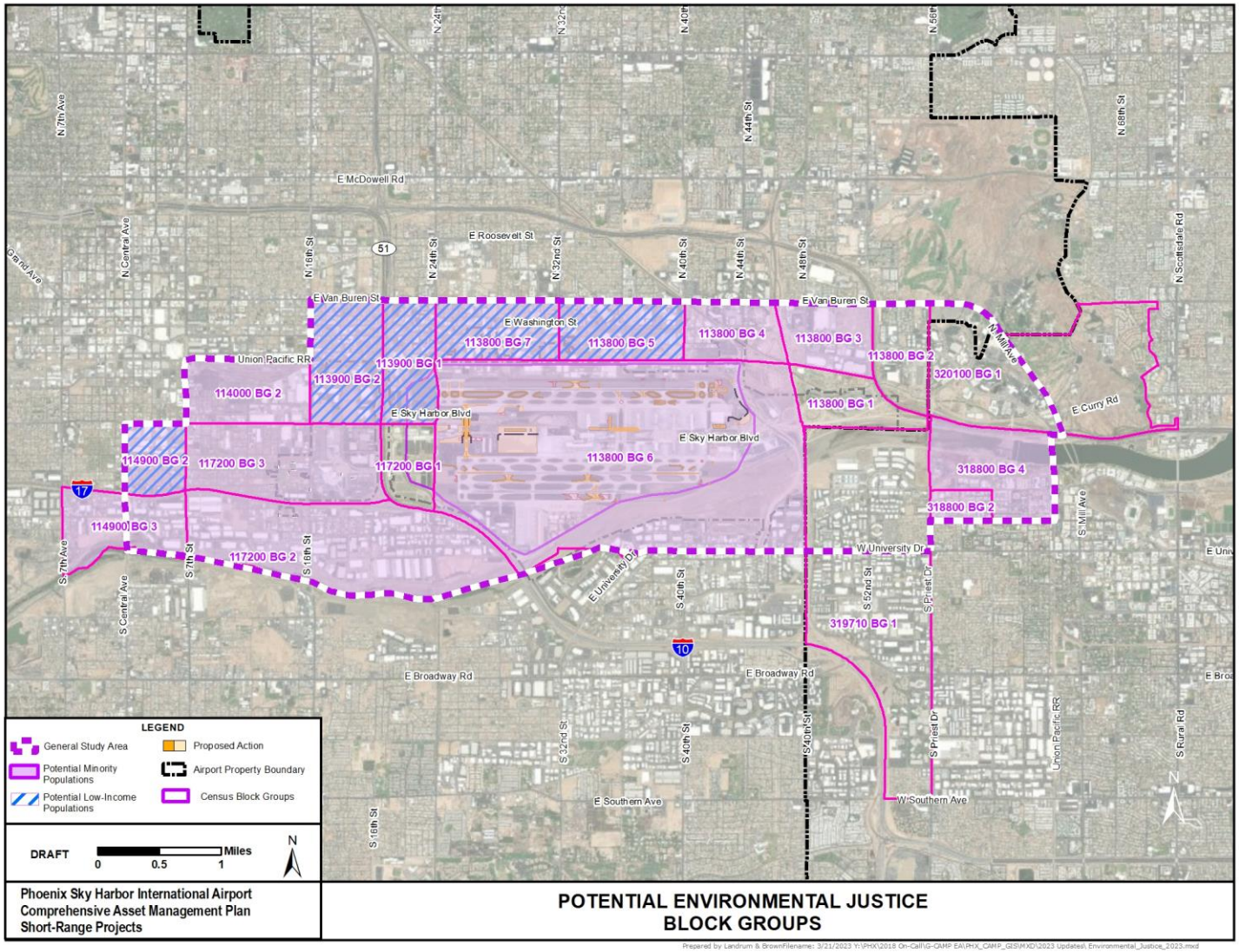
*Findings*

Of the 19 block groups located within the GSA, 13 were identified as potential minority populations, and four were identified as potential low-income populations. These potential minority and low-income populations are depicted on **Exhibit 3-9**.

*Outreach*

The City initiated environmental justice outreach at the onset of the CAMP process, and included 14 project committee and focus group meetings as well as several community and industry group presentations. The City also provided opportunities for the public to learn about CAMP and engage in the planning process through two public workshops held on June 13, 2018, and March 20, 2019. The public workshops were conducted using an open-house format with information stations. The workshops provided opportunities for members of the public to ask questions and provide input through comment cards and conceptual plan markups. Outreach to environmental justice communities and other stakeholders will continue throughout the planning, design, and construction of the Proposed Action.

**Exhibit 3-9: Potential Environmental Justice Block Groups**



### 3.3.10.3 Affected Environment for Children's Health and Safety

EO 13045, Protection of Children from Environmental Health Risks and Safety Risks, directs federal agencies to make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children. These include risks attributable to products or substances that a child is likely to come in contact with or ingest, such as air, food, drinking water, recreational waters, soil, or other products they might be exposed to.

#### *Children's Health and Safety Study Area*

The Study Area for Children's Health and Safety Risks is the GSA. The percentage of the population within the GSA under the age of 18 is 15.4 percent, as shown in **Table 3-27** below.

**Table 3-27: Percentage of Population Under the Age of 18 within GSA**

| Age of Child | Percent within the GSA |
|---|---|
| Under 5 years old | 4.6% |
| 5 to 9 years old | 3.6% |
| 10 to 14 years old | 4.2% |
| 15 to 17 years old | 2.9% |
| Total | 15.4% |

Source: U.S. Census Bureau, 2020 American Community Survey 1-Year Estimate (Table B01001)

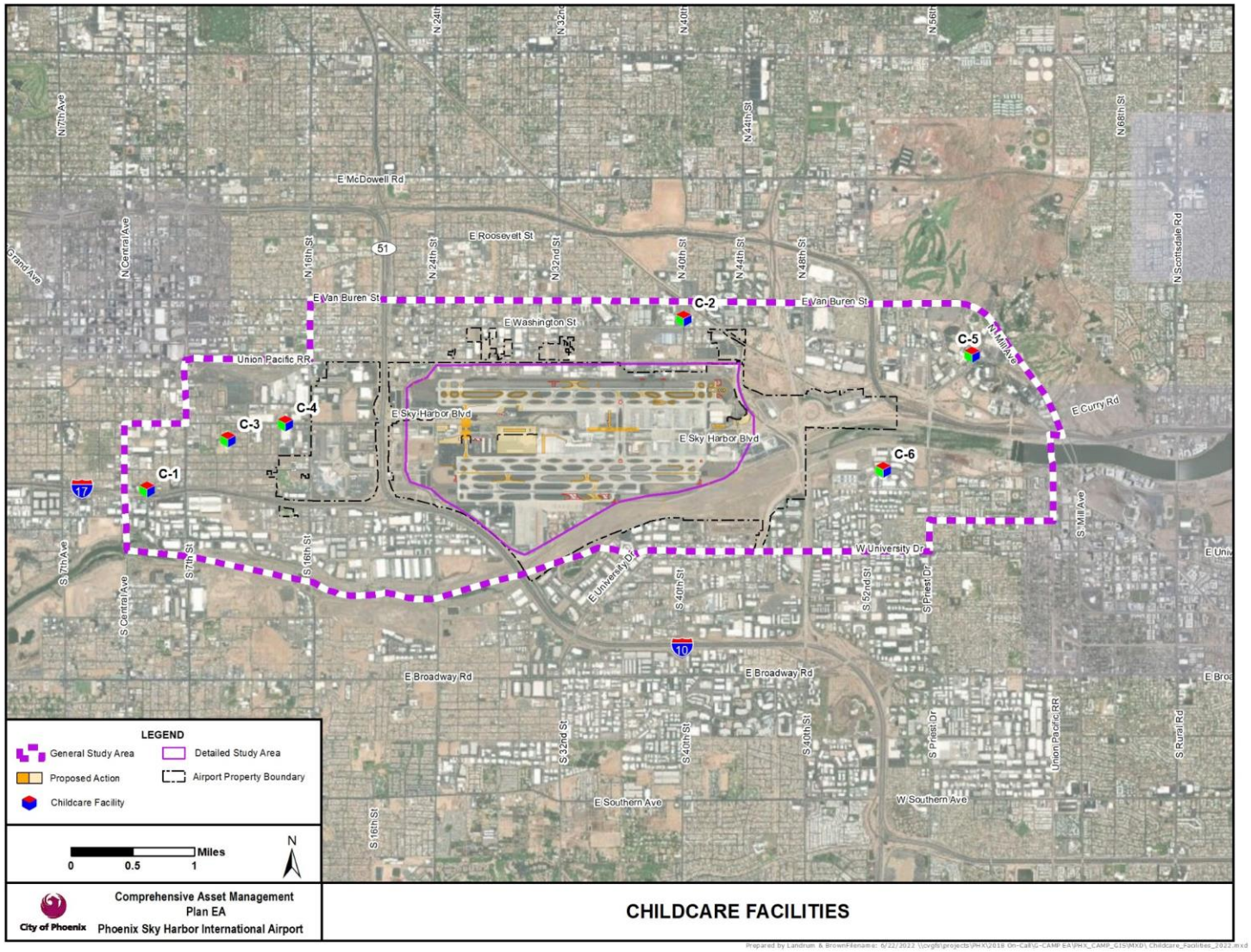
Schools and child-care centers are locations where the potential for a child to be exposed to environmental health risks is increased because higher concentrations of children are in one place during the day. Within the GSA there are 3 schools (shown on Exhibit 3-8) and 6 licensed child-care facilities as listed in **Table 3-28** below and shown on **Exhibit 3-10**. Other areas of potential exposure include public parks, recreation facilities, and medical facilities. The locations of public parks and recreation facilities are shown on Exhibit 3-2 in Section 3.3.4. Medical facilities are depicted on Exhibit 3-8.

**Table 3-28: Childcare Facilities Located Within the GSA**

| Map ID | Childcare Facility Name |
|---|---|
| C-1 | Friendly House Early Childhood Development Center |
| C-2 | Gateway Community College Children's Learning Center |
| C-3 | Herrera Elementary School |
| C-4 | Sojourner Center Child Development Center |
| C-5 | Sunrise Preschools #300 |
| C-6 | Superior Children's Center |

Source: Arizona Department of Health Services, Licensed Childcare Facilities (November 2020)

**Exhibit 3-10: Childcare Facilities Located Within GSA**



## 3.3.11 Visual Effects

### *3.3.11.1 Affected Environment*

*Visual Effects Study Area*

The Study Area for visual effects is the GSA.

*Light Emissions*

The Airport is currently illuminated by various types of lighting on the airfield and landside facilities. Lighting that emanates from the airfield includes runway, apron, and navigational lighting such as, hold position lights, stop-bar lights, and runway and taxiway signage. Airfield lighting is located along taxiways and ramps for guidance during periods of low visibility, and to assist aircraft movement on the airfield. Aircraft lighting, such as landing lights, position and navigation lights, beacon lights, and vehicle lighting are other types of light sources on the airfield. Lights for landside facilities include fixtures associated with buildings, roadways, and parking facilities. The Airport is located in a developed area comprised of other uses that are also lighted and contribute to the overall light emissions in the area, including office buildings, hotels, off-airport parking facilities, and other commercial and industrial uses.

Residential neighborhoods, which are considered most sensitive to light emissions, are present in all directions of the Airport. However, the closest residential areas to the Proposed Action are to the north in the Crestwood Neighborhood that abuts the northwestern portion of the Airport, the El Molino Place Neighborhood (approximately 1,500 feet north of the Airport) and residences located in the Central City zone west of the Airport (approximately 5,000 feet west of the Airport). Of these neighborhoods, only the Crestwood neighborhood has a direct line of site to the Airport.

*Visual Resources/Visual Character*

The Airport has a highly developed visual character, typical of an urban industrial area. The Airport's three parallel east-west runways occupy an area that is over one mile wide and 2.5 miles long. Airport buildings include a tall control tower, multiple terminals and multi-story parking garages, hangars, aircraft maintenance structures, and other buildings.

The GSA is of generally flat topography, with a grid of north-south and east-west streets with industrial, commercial, residential, and aviation-related development. Most building structures are one to two stories in height, with some larger and taller structures intermingled. North of the Airport is primarily commercial and industrial, with large properties such as Honeywell, Phoenix Greyhound Park (no longer in business), Phoenix Park 'N Swap, and the Sky Train Transit Center. Other prominent visual features include powerlines, billboards, streetlights, and railroad tracks.

The southern portion of the GSA is dominated by the Salt River, I-10, and mixed commercial and industrial uses. The portion of the GSA east of the Airport is less intensely developed, and contains the Pueblo Grand Museum, and mixed commercial and industrial properties. The areas west of the Airport are mostly commercial and industrial and contain large properties such as the J.P. Morgan Chase Building, the Bank of America, and the Rental Car Center.

Representative photos from different vantage points surrounding the Airport are provided in **Exhibit 3-11** and **Exhibit 3-12**.

**Exhibit 3-11: Adjacent Viewsheds (Views 1-3)**

View #1: South 40th Street, looking northwest towards the Airport (across the Salt River)

View #2: S. 32nd Street at E. Washington Street looking southeast towards the Airport

View #3: Corner of E. Washington Street and 28th Street, looking southeast towards the Airport

Locations of views:

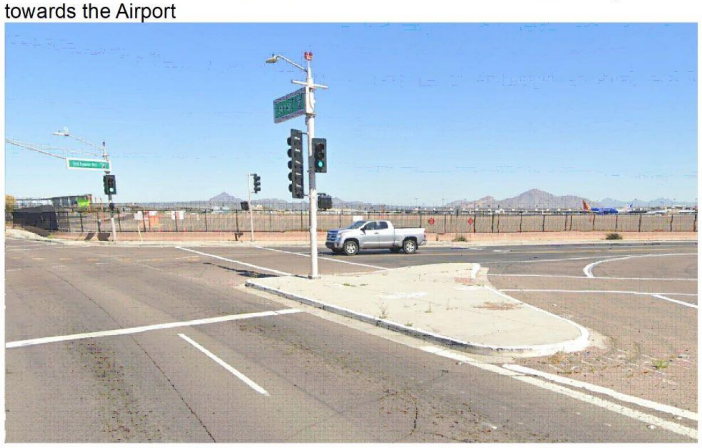

City of Phoenix
Comprehensive Asset Management Plan EA
Phoenix Sky Harbor International Airport

**ADJACENT VIEWSHEDS (VIEWS 1-3)**

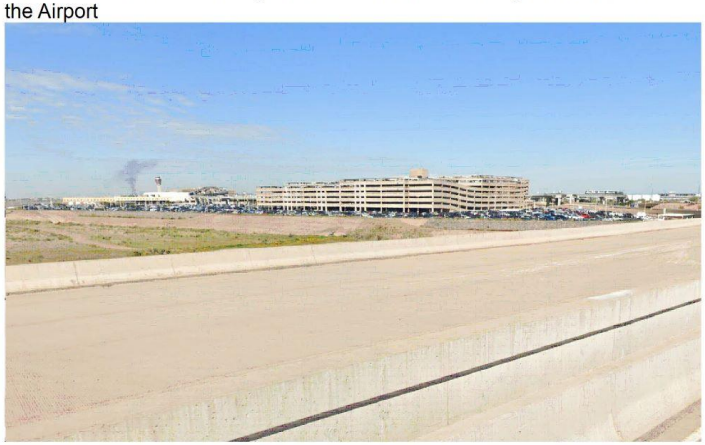
Prepared by Landrum & BrownFilename: 2/16/2021 C:\LBUsers\erik.schwenke\OneDrive - LB\Desktop\ Adjacent_Viewsheds_new.mxd

**Exhibit 3-12: Adjacent Viewsheds (Views 4-6)**

View #4: S. 24th Street at Intersection with Old Tower Road, looking northeast towards the Airport



View #5: S. 44th Street bridge over the Salt River looking west towards the Airport



View #6: S. 24th Street looking southeast towards the Airport

Locations of views:


City of Phoenix
Comprehensive Asset Management Plan EA
Phoenix Sky Harbor International Airport

**ADJACENT VIEWSHEDS (VIEWS 4-6)**

Prepared by Landrum & BrownFilename: 2/12/2021 Y:\PHX\2018 On-Call\G-CAMP EA\PHX_CAMP_GIS\MXD\ Adjacent_Viewsheds2.mxd

### 3.3.12 Past, Present and Reasonably Foreseeable Future Actions

The identification of past, present, and reasonably foreseeable future actions considers projects or actions undertaken by the Airport and other parties such as the City of Phoenix, City of Tempe, Maricopa County, and State of Arizona that are located within the GSA.

Past projects are defined for this EA as those which occurred between 2016 and 2022. Present projects are those that will be under construction or complete by 2022. Reasonably foreseeable future projects are defined for this EA as actions on or off-airport that are likely to be completed within the next five years (2023 to 2028), and that have been developed with enough specificity to provide meaningful data for analysis. The spatial boundary is defined as the GSA. Reasonably foreseeable future projects include those projects that have been included within the Airport's 2020-2025 Capital Improvement Program (ACIP) or have been approved or pending approval by the City, County, or State. Projects included in the CAMP that are longer range proposals are not included in the reasonably foreseeable future projects and are not yet ripe for review under NEPA. The past, present, and reasonably foreseeable future actions within the GSA are listed in **Table 3-29**.

**Table 3-29: Past, Present, and Reasonably Foreseeable Future Actions**

| Project Name | Approving Agency | Description | Status |
|---|---|---|---|
| **Past Projects** | | | |
| Terminal 3: Terminal Processor | City of Phoenix - Aviation Department | A new, consolidated security checkpoint, additional airline ticket counters, baggage handling capacity and other improvements. | Completed in 2016 |
| Relocated Aviation Department Offices | City of Phoenix - Aviation Department | Construction of new Aviation Department office campus | Completed in 2016 |
| Southwest Hangar Expansion | City of Phoenix - Aviation Department | Expanding existing hangar and apron | Completed in 2018 |
| Terminal 3: South Concourse | City of Phoenix - Aviation Department | a new 15-gate South Concourse with new retail and restaurant space. | Completed in 2019 |
| Terminal 4: International Facility Improvements | City of Phoenix - Aviation Department | Facility improvements to accommodate and maintain an acceptable level of service for PHX international passengers | Completed in 2019 |
| Terminal 3 Processor and North Concourse Enhancements | City of Phoenix - Aviation Department | Reconfigure and modernize Terminal 3 processor building and enhance Terminal 3 North Concourse | Completed in 2020 |
| Terminal 2 Demolition | City of Phoenix - Aviation Department | Demolish the Terminal 2 processor building, including relocation of the Paul Coze mural. | Completed in 2020 |
| Grand Canalscape | City of Phoenix - Street Transportation Department | City of Phoenix's 12-mile continuous multi-use recreational trail system along the Grand Canal in Phoenix | Completed in 2020 |
| Terminal 4 South Concourse 1 Apron Construction | City of Phoenix - Aviation Department | Construction of a new apron for the Terminal 4 South Concourse 1. | Completed in 2022 |
| Terminal 4: South Concourse 1 | City of Phoenix - Aviation Department | Construct the eighth pier concourse at Terminal 4, that will provide 8 new aircraft gates | Completed in 2022 |
| Sky Train Stage 2 | City of Phoenix - Aviation Department | Extension of the existing PHX Sky Train which currently operates between the 44th Street PHX Sky Train Station and Terminal 3. The line will extend 2.5 miles to the Rental Car Center. | Completed in 2022 |
| **Present Projects** | | | |

| | | | |
|---|---|---|---|
| Property acquisition for future airport use | City of Phoenix - Aviation Department | Continual purchasing of land between Washington Street and the Union Pacific Railroad for future Airport expansion. | Ongoing |
| 8th Street Salt River Bridge Reconstruction | City of Phoenix - Street Transportation Department | Removal and rebuilding of a portion of the bridge to repair structural damage caused by fires. | Ongoing |
| **Future Projects** | | | |
| Property acquisition for future airport use | City of Phoenix - Aviation Department | Continual purchasing of land between Washington Street and the Union Pacific Railroad for future Airport expansion. | Ongoing |
| West Access Improvements | City of Phoenix - Aviation Department | Roadway connection improvements to Interstate 10 and Interstate 17, including a west security plaza | Planned |
| East Access Improvements | City of Phoenix - Aviation Department | Roadway connection improvements for Terminal 4 traffic weaving and an east security plaza | Planned |
| 24th Street Grade Separation | City of Phoenix – Streets Department | Constructing a bridge to carry 24th Street over the Union Pacific Railroad tracks to eliminate an existing at-grade crossing. | Project Development/ Design |
| I-10 Broadway Curve Improvement Project | Arizona Department of Transportation | Widening and other improvements to Interstate 10 between Interstate 17 and Loop 202 (Santan/South Mountain Freeway), including the Broadway Curve. | Ongoing |
| Van Buren Street Improvement Project | City of Phoenix – Street Transportation Department | This proposed project is aimed at improving safety and developing a stronger pedestrian and bicycle environment along Van Buren Street (between 7th and 24th Streets) that is accessible to future and existing development and all modes of transportation | Project Development/ Design |
| Downtown Traffic Management System | City of Phoenix – Street Transportation Department | This proposed project consists of upgrading the existing Downtown Traffic Management System to provide flexibility for event traffic management in the downtown area. | Project Development/ Design |
| American Airlines Apron Expansion | American Airlines | Expansion of apron into the underutilized surface lot just south of the existing American Airlines maintenance hangar. | Planned |

Sources: The Phoenix Capital Improvement Program 2020-25, Arizona Department of Transportation, City of Phoenix

# Chapter 4:
# Environmental Consequences

# 4 Environmental Consequences

The potential environmental consequences associated with the Proposed Project and the No Action Alternative are discussed in this chapter. This chapter is focused on those environmental impact categories that may potentially be affected by the Proposed Project. These impact categories are evaluated in detail in this chapter of the Environmental Assessment (EA). The following environmental resources were determined to be potentially affected by the Proposed Project and are evaluated as part of this EA in the following sections:

- Air Quality – Section 4.2
- Biological Resources – Section 4.3
- Climate – Section 4.4
- Department of Transportation Act, Section 4(f) – Section 4.5
- Hazardous Materials, Solid Waste, and Pollution Prevention – Section 4.6
- Historic, Architectural, Archaeological, and Cultural Resources – Section 4.7
- Land Use – Section 4.8
- Natural Resources and Energy Supply – Section 4.9
- Noise and Noise-Compatible Land Use – Section 4.10
- Socioeconomics, environmental justice, and children's environmental health and safety risks – Section 4.11
- Visual Effects – Section 4.12
- Cumulative Impacts – Section 4.13

As discussed in Section 3.2, the environmental impact categories specified in Federal Aviation Administration (FAA) Orders 1050.1F and 5050.4B that would not be affected by the Proposed Project are coastal resources, farmlands, visual effects, and water resources.

## 4.1 Analysis Years

The following analysis discloses the potential impacts for the projected future conditions in 2028 and 2033. The FAA uses 2028 as a basis for analysis because 2028 is the projected implementation year of the Proposed Project. Because air quality and climate impacts are linked to specific numbers of aircraft operations, the future year was based on PAL 2 numbers (which correspond to 2027 in the CAMP forecast) and five years beyond PAL 2 (which corresponds to 2032 in the CAMP forecast). For the purposes of the air quality and climate analyses, the PAL 2 operations are used to represent 2028, and PAL 2 plus 5 years operations are used to represent 2033.[71]

## 4.2 Air Quality

This section presents the analysis of the potential for significant adverse air quality impacts resulting from the No Action Alternative and the Proposed Project.

### 4.2.1 Significance Threshold

Significant impacts to air quality include actions that would cause pollutant concentrations to exceed one or more of the National Ambient Air Quality Standards (NAAQS), as established by the United States (U.S.) Environmental

[71] This is appropriate given the fact that the COVID-19 public health emergency resulted in unprecedented (but temporary) reductions in passengers and aircraft operations at PHX, and delayed the realization of growth projections that were based on pre-COVID methodologies.

Protection Agency (EPA) under the Clean Air Act (CAA), for any of the time periods analyzed, or to increase the frequency or severity of any such existing violations.[72]

The General Conformity Rule under the CAA establishes minimum values, referred to as the *de minimis* thresholds, for the criteria and precursor pollutants. The EPA defines *de minimis* as emissions that are so low as to be considered insignificant and negligible. The federal *de minimis* thresholds applicable to this Proposed Project are provided in **Table 4-1**. Conformity to the *de minimis* thresholds is relevant only with regard to those pollutants and the precursor pollutants for which the area is in nonattainment or maintenance. Notably, there are no *de minimis* thresholds to which a federal agency would compare ozone emissions. This is because ozone is not directly emitted from a source. Rather, ozone is formed through photochemical reactions involving emissions of the precursor pollutants, nitrogen oxides ($NO_x$) and volatile organic compounds (VOC), in the presence of abundant sunlight and heat. Therefore, emissions of ozone on a project level are evaluated based on the rate of emissions of the ozone precursor pollutants, NOx and VOC. Since Maricopa County has been designated as serious non-attainment for coarse particulate matter ($PM_{10}$), moderate nonattainment for ozone, and operates under a maintenance plan for carbon monoxide (CO), conformity to the federal *de minimis* threshold is only relevant for $PM_{10}$, CO, and the ozone precursor pollutants $NO_x$ and VOC.

If this air quality analysis were to show that any of the applicable thresholds were equaled or exceeded due to construction or operation of any alternative, more detailed analysis to demonstrate conformity would be required. This is referred to as a General Conformity Determination.[73] There are no components of the Proposed Project that would require approval by either the Federal Highway Administration or the Federal Transit Administration under Transportation Conformity. Thus, FAA evaluation of the Proposed Project is under General Conformity pursuant to the Clean Air Act of 1970, as amended.

If the analysis were to show that none of the relevant thresholds were equaled or exceeded, construction and operation of the Proposed Project would be presumed to conform to the applicable State Implementation Plan (SIPs) and would be assumed not to cause pollutant concentrations to exceed one or more of the NAAQS or increase the frequency or severity of any such existing violations.

**Table 4-1: Federal *de minimis* Thresholds**

| Criteria and Precursor Pollutants | Attainment Status | Threshold (tons per year) |
|---|---|---|
| Carbon monoxide (CO) | Maintenance | 100 |
| Ozone ($NO_x$) | Marginal nonattainment | 100 |
| Ozone (VOC) | Marginal nonattainment | 100 |
| Lead (Pb) | Attainment | N/A |
| Nitrogen dioxide ($NO_2$) | Attainment | N/A |
| Coarse particulate matter ($PM_{10}$) | Serious nonattainment | 70 |
| Fine particulate matter ($PM_{2.5}$) | Attainment | N/A |
| Sulfur dioxide ($SO_2$) | Attainment | N/A |

Note: N/A is not applicable for this analysis. Although lead is a criteria pollutant, it was not evaluated because the only source of lead emissions at the Airport is from aviation gas, and the Proposed Project would not increase the usage of aviation gas. Therefore, an analysis of lead is not included.
Sources: 40 CFR § 93.153(b)(1) & (2).

## 4.2.2 Methods

The air quality analysis discloses potential emissions from two conditions: 1) construction activities during the years 2023 to 2028 for the Proposed Project and 2) operational activities for the Proposed Project for the

[72] FAA Order 1050.1F Exhibit 4-1, Page 4-4
[73] 40 Code of Federal Regulations (CFR), Part 93: Determining Conformity of Federal Actions to State or Federal Implementation Plans

projected future conditions in 2028 when the project is complete and 2033 as it represents a condition five years beyond the opening year.

Construction sources of emissions include on-road material delivery, construction employee worker commute, off-road construction equipment, and fugitive dust generated during demolition and construction. Construction emissions estimates are based on likely construction equipment usage for the Proposed Project elements. Construction phasing and project dimensions (such as the potential new square footage of proposed buildings) were based on the information developed as part of the Comprehensive Asset Management Plan (CAMP), with additional information provided by the City of Phoenix Aviation Department. The construction phasing schedule, the assumptions of on-road and non-road construction vehicles, and the emission factors used in the air quality analysis are provided in **Appendix B, Air Quality and Climate**.

Operational sources of emissions that would be affected by the Proposed Project include aircraft operations and the usage of stationary sources (such as natural gas boilers). The Proposed Project would not result in a change in aircraft operations or fleet mix. However, the Proposed Project is anticipated to result in an increase in taxi times over the No Action Alternative, which would result in an increase in emissions over the No Action Alternative in 2028 and 2033. As such, the Proposed Project is not anticipated to affect the use of ground support equipment (GSE) or auxiliary power units (APUs).[74] In addition, the Proposed Project would not affect localized traffic patterns or change vehicle miles traveled on the Airport. Furthermore, the proposed terminal buildings would result in an increase in usage of stationary sources to natural gas boiler.

The operational emissions are identified by subtracting the No Action Alternative emissions from that of the Proposed Project in the same analysis year. The difference between the 2028 and 2033 No Action Alternative emissions and the 2028 and 2033 Proposed Project emissions can therefore be directly attributed to the project.

Construction emissions were developed using the EPA's Motor Vehicle Emissions Simulator (MOVES Version 3) emission factors for on-road and off-road construction equipment. Operational emissions were developed using the FAA's Aviation Environmental Design Tool (AEDT) Version 3e.

### 4.2.3 Alternative 1: No Action Alternative

#### *4.2.3.1 Construction*

The No Action Alternative would not involve construction of any of the new facilities or improvements planned under the Proposed Project. Therefore, there would be no construction-related emissions.

#### *4.2.3.2 Future (2028) No Action Alternative*

The number and type of aircraft operations directly affects emissions. There are a total of 464,326 aircraft operations forecast for 2028 at PHX. The taxi-in time of six minutes and 25 seconds was applied to all arriving operations and the taxi-out time of 19 minutes and one second was applied to all departing operations.[75] **Table 4-2** shows the annual operational air pollutant emissions for the Future (2028) No Action Alternative.

**Table 4-2: Future (2028) No Action Alternative – Annual Operational Emissions Inventory**

| Emission Source | Annual Emissions (Short Tons) | | | | | |
|---|---|---|---|---|---|---|
| | CO | VOC | $NO_X$ | $SO_X$ | $PM_{10}$ | $PM_{2.5}$ |
| Aircraft | 2,106.9 | 280.7 | 2,113.5 | 201.0 | 20.0 | 20.0 |

Source: Landrum & Brown, 2023.

[74] APU usage typically occurs 10 minutes before landing and 10 minutes after, and sometimes are run at the gate. But because the Proposed Project would not result in any additional operations, the emissions from the Proposed Project and No Action would be identical.
[75] City of Phoenix/Phoenix Sky Harbor International Airport, Runway Incursion Mitigation Study (HNTB). 2019

#### 4.2.3.3 Future (2033) No Action Alternative

The number and type of aircraft operations directly affects emissions. There are a total of 494,490 aircraft operations forecast for 2033 at PHX. Taxi times for the Future (2033) No Action Alternative are expected to remain the same as the Future (2028) No Action Alternative. **Table 4-3** shows the annual operational air pollutant emissions for the Future (2033) No Action Alternative.

**Table 4-3: Future (2033) No Action Alternative – Annual Operational Emissions Inventory**

| Emission Source | Annual Emissions (Short Tons) | | | | | |
|---|---|---|---|---|---|---|
| | CO | VOC | $NO_X$ | $SO_X$ | $PM_{10}$ | $PM_{2.5}$ |
| Aircraft | 2,242.1 | 298.6 | 2,249.3 | 213.9 | 21.3 | 21.3 |

Source: Landrum & Brown, 2023.

### 4.2.4 Alternative 2: Proposed Project

#### 4.2.4.1 Construction

The Proposed Project would result in construction related air emissions. Estimated construction emissions, by year, are presented in **Table 4-4**. Peak construction emissions are expected to occur in 2025 and 2026.

**Table 4-4: Construction Emissions Inventory**

| Year | Annual Emissions (Short Tons) | | | | | |
|---|---|---|---|---|---|---|
| | CO | VOC | $NO_X$ | $SO_X$ | $PM_{10}$ | $PM_{2.5}$ |
| 2023 | 34.9 | 3.0 | 27.1 | 0.0 | 22.5 | 4.4 |
| 2024 | 34.9 | 3.0 | 27.1 | 0.0 | 22.5 | 4.4 |
| 2025 | 40.1 | 3.0 | 28.1 | 0.0 | 22.4 | 4.3 |
| 2026 | 43.6 | 3.2 | 30.5 | 0.0 | 22.6 | 4.5 |
| 2027 | 23.6 | 2.0 | 17.8 | 0.0 | 21.6 | 3.5 |
| 2028 | 19.4 | 1.5 | 13.4 | 0.0 | 21.2 | 3.1 |

Source: Landrum & Brown, 2023.

#### 4.2.4.2 Future (2028) Proposed Project

No change to the number of aircraft operations or fleet mix would occur as a result of implementing the Proposed Project. Therefore, the number of operations for the Future (2028) No Action Alternative would remain the same for the Future (2028) Proposed Action. Given the design of the proposed airfield safety improvements, the taxi-in and taxi-out time of aircraft operations is anticipated to increase due to the implementation of the Proposed Project. The taxi-in time of six minutes and 53 seconds was applied to all arriving operations and the taxi-out time of 19 minutes and 22 seconds was applied to all departing operations.[76] Additionally, the Proposed Project would result in an increased use of natural gas boilers to support the additional proposed facilities. Operational emissions from the proposed terminal and building improvements would be greater with the Proposed Project due to increased use of natural gas boilers for the additional proposed facilities. **Table 4-5** shows the annual operational air pollutant emissions for the Future (2028) Proposed Project.

[76] City of Phoenix/Phoenix Sky Harbor International Airport, Runway Incursion Mitigation Study (HNTB). 2019

**Table 4-5: Future (2028) Proposed Project – Annual Operational Emissions Inventory**

| Emission Source | Annual Emissions (Short Tons) | | | | | |
|---|---|---|---|---|---|---|
| | CO | VOC | $NO_X$ | $SO_X$ | $PM_{10}$ | $PM_{2.5}$ |
| Aircraft | 2,166.3 | 286.8 | 2,124.7 | 203.9 | 20.3 | 20.3 |
| Stationary Source | <0.01 | 0.00 | <0.01 | 0.00 | 0.00 | 0.00 |

Source: Landrum & Brown, 2023.

### *4.2.4.3 Future (2033) Proposed Project*

**No change to the number of aircraft operations, fleet mix, or aircraft arrival and departure paths into and out of PHX would occur as a result of implementing the Proposed Project.** Therefore, the number of operations for the Future (2033) No Action Alternative would remain the same for the Future (2033) Proposed Action. Taxi times for the Future (2033) Proposed Project are expected to remain the same as the Future (2028) Proposed Project. No additional construction is anticipated to occur after 2028. As such, there would be no further increase in the use of natural gas boilers than the Future (2028) Proposed Project. **Table 4-6** shows the annual operational air pollutant emissions for the Future (2033) Proposed Project.

**Table 4-6: Future (2033) Proposed Project – Annual Operational Emissions Inventory**

| Emission Source | Annual Emissions (Short Tons) | | | | | |
|---|---|---|---|---|---|---|
| | CO | VOC | $NO_X$ | $SO_X$ | $PM_{10}$ | $PM_{2.5}$ |
| Aircraft | 2,305.3 | 305.1 | 2,261.2 | 217.0 | 21.6 | 21.6 |
| Stationary Source | <0.01 | 0.00 | <0.01 | 0.00 | 0.00 | 0.00 |

Source: Landrum & Brown, 2023.

Based on the analysis presented, implementing the Proposed Project would result in an increase in emissions when compared to the No Action Alternative. The results of the emission inventory prepared for the Proposed Project were compared to the results of the No Action Alternative of the same future year to disclose the potential increase in emissions caused by the Proposed Project. The comparison of the emissions inventory, which included an inventory of construction emissions, were used for the evaluation of General Conformity as required under the CAA (including the 1990 Amendments). **Table 4-7** shows that none of the Federal or County thresholds were equaled or exceeded for the Proposed Project.

**Table 4-7: Total Emissions Inventory**

| Year | Scenario | Annual Emissions (Short Tons) | | | | | |
|---|---|---|---|---|---|---|---|
| | | CO | VOC | $NO_X$ | $SO_X$ | $PM_{10}$ | $PM_{2.5}$ |
| **2023** | Proposed Project (Construction) | 34.7 | 3.0 | 26.8 | 0.0 | 22.5 | 4.4 |
| | ***2023 Net Increase*** | ***34.7*** | ***3.0*** | ***26.8*** | ***0.0*** | ***22.5*** | ***4.4*** |
| **2024** | Proposed Project (Construction) | 34.7 | 3.0 | 26.8 | 0.0 | 22.5 | 4.4 |
| | ***2024 Net Increase*** | ***34.7*** | ***3.0*** | ***26.8*** | ***0.0*** | ***22.5*** | ***4.4*** |
| **2025** | Proposed Project (Construction) | 40.0 | 3.0 | 27.9 | 0.0 | 22.4 | 4.3 |
| | ***2025 Net Increase*** | ***40.0*** | ***3.0*** | ***27.9*** | ***0.0*** | ***22.4*** | ***4.3*** |
| **2026** | Proposed Project (Construction) | 43.5 | 3.2 | 30.3 | 0.0 | 22.6 | 4.5 |
| | ***2026 Net Increase*** | ***43.5*** | ***3.2*** | ***30.3*** | ***0.0*** | ***22.6*** | ***4.5*** |
| **2027** | Proposed Project (Construction) | 23.5 | 2.0 | 17.8 | 0.0 | 21.6 | 3.5 |
| | ***2027 Net Increase*** | ***23.5*** | ***2.0*** | ***17.8*** | ***0.0*** | ***21.6*** | ***3.5*** |
| **2028** | No Action Alternative (Operational) | 2,106.9 | 280.7 | 2,113.5 | 201.0 | 20.0 | 20.0 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Proposed Project (Construction & Operational) | 2,185.7 | 288.2 | 2,138.1 | 203.9 | 41.4 | 23.3 |
| | ***2028 Net Increase*** | ***78.8*** | ***7.5*** | ***24.6*** | ***2.9*** | ***21.4*** | ***3.3*** |
| **2033** | No Action Alternative (Operational) | 2,242.1 | 298.6 | 2,249.3 | 213.9 | 21.3 | 21.3 |
| | Proposed Project (Operational) | 2,305.3 | 305.1 | 2,261.2 | 217.0 | 21.6 | 21.6 |
| | ***2033 Net Increase*** | ***63.2*** | ***6.5*** | ***11.9*** | ***3.1*** | ***0.3*** | ***0.3*** |
| | Federal *de minimis* Threshold | *100* | *100* | *100* | *N/A* | *70* | *N/A* |
| | ***Exceed Threshold?*** | ***NO*** | ***NO*** | ***NO*** | ***N/A*** | ***NO*** | ***N/A*** |

Note: N/A is not applicable.
Source: Landrum & Brown, 2023.

### 4.2.5 Conclusions

The air quality assessment demonstrates that the Proposed Project when compared to the No Action Alternative would not cause an increase in air emissions above the applicable *de minimis* thresholds. Therefore, the Proposed Project conforms to the SIP and the CAA and would not create any exceedances of the NAAQS, delay the attainment of any NAAQS, nor increase the frequency or severity of any existing violations of the NAAQS. As a result, no significant adverse impact on local or regional air quality is anticipated due to construction or operation of the Proposed Project. No further analysis is required under the CAA or the National Environmental Policy Act (NEPA).

### 4.2.6 Avoidance, Minimization, and Mitigation Measures

Since the Proposed Project would not create significant impacts related to air quality, no specific air quality mitigation would be necessary. However, the following avoidance and minimization measures, incorporated into the Proposed Project include the following:

*Avoidance and Minimization Measures:*
The City of Phoenix Aviation Department requires all contractors and construction staff to comply with federal, state, and local air pollution control laws, codes, and requirements, including:

- Dust Control Permits
  A Maricopa County Air Quality Department Dust Control Permit is required, in advance, for any project that disturbs one-tenth (1/10) acre or more.
- Non-Title V Synthetic Minor Air Quality Permit
  Maricopa County Air Quality Department requires air quality permits to construct or operate any regulation stationary emission source. This includes boilers, emergency generators and fuel tanks.
- Asbestos Surveys and National Emission Standards for Hazardous Air Pollutants (NESHAP) Notification
  NESHAP Notifications are required prior to any demolition activities and may be required prior to any renovation activities.

The City of Phoenix Aviation Department would also ensure that all possible measures would be taken to reduce fugitive dust emissions during construction activities by adhering to guidelines included in FAA Advisory Circular (AC) 150/5370-10H, *Standard Specifications for Construction of Airports*.[77]

## 4.3 Biological Resources

This section presents the analysis of potential impacts to federally listed species, state-listed species, and migratory birds resulting from the No Action Alternative and Proposed Project.

[77] https://www.faa.gov/airports/engineering/construction_standards/

### 4.3.1 Significance Threshold

Significant impacts to biological resources include actions where the U.S. Fish and Wildlife Service (USFWS) determine that the action would be likely to:

- Jeopardize the continued existence of a federally listed threatened or endangered species, or would result in the destruction or adverse modification of federally designated critical habitat. The FAA has not established a significance threshold for non-listed species.[78]

Other factors to consider when evaluating impacts to biological resources are:

- Long-term or permanent loss of unlisted plant or wildlife species, i.e., extirpation of the species from a large project area (e.g., a new commercial service airport);
- Adverse impacts to special status species (e.g., state species of concern, species proposed for listing, migratory birds, bald and golden eagles) or their habitats;
- Substantial loss, reduction, degradation, disturbance, or fragmentation of native species' habitats or their populations; or
- Adverse impacts on a species' reproductive success rates, natural mortality rates, non-natural mortality (e.g., road kills and hunting), or ability to sustain the minimum population levels required for population maintenance.[79]

### 4.3.2 Methods

The potential environmental effects resulting from the Proposed Project and the No Action Alternative were determined based on the proposed footprint of the individual project elements, and the likelihood that protected species would be present and/or impacted by one or more actions. The analysis also considered potential changes to migration patterns of species present within the General Study Area (GSA).

Each of the Endangered Species Act (ESA)-listed threatened and endangered species identified as potentially occurring within the GSA were evaluated based on the likelihood that suitable habitat is present within the GSA.

### 4.3.3 Alternative 1: No Action Alternative

The No Action Alternative would not involve construction of any of the new facilities or improvements planned under the Proposed Project. Therefore, no impacts to federally listed species, migratory birds, other special-status species, or their habitats would occur.

### 4.3.4 Alternative 2: Proposed Project

#### *4.3.4.1 Future (2028) Proposed Project*

The Proposed Project would affect plants and animals through the redevelopment of previously disturbed land within the Phoenix Sky Harbor International Airport (PHX or Airport). No additional fragmentation of vegetation communities or wildlife habitat would result because the Airport has already been developed. Areas of wildlife habitat associated with the Salt River, Tempe Town Lake, and the Phoenix canal system would not be impacted by the Proposed Project.

No new wildlife habitat would be created as a result of the Proposed Project, and all elements of the Proposed Project would be reviewed by the Airport's Wildlife Coordinator to ensure they would not increase wildlife hazards to aircraft operations.

[78] FAA Order 1050.1F Exhibit 4-1, Page 4-4
[79] FAA Order 1050.1F Exhibit 4-1, Page 4-4

## *Federally-Listed Species*

No suitable habitat is available for any of the federally-listed species noted as potentially occurring within the Direct Study Area (DSA). Therefore, the Proposed Project would not result in significant impacts when compared to the No Action Alternative. A summary of findings is provided below in **Table 4-8**.

**Table 4-8: ESA-Listed Species and Designated Critical Habitat**

| Species | Listing Status | Critical Habitat | Known or Likely to Occur in DSA | | Rationale |
|---|---|---|---|---|---|
| | | | Species | Critical Habitat | |
| Sonoran Pronghorn | Experimental Population, Non-Essential | Not Designated | No | No | In Arizona the species is listed in an area north of Interstate 8 and south of Interstate 10, bounded by the Colorado River on the west and Interstate 10 on the east.[1] The GSA is outside of this area. |
| California Least Tern | Endangered | Not Designated | No | No | California Least Terns live along the coast. They nest on open beaches kept free of vegetation by the tide.[2] The GSA does not provide suitable habitat for this species. |
| Southwestern Willow Flycatcher | Endangered | Designated 1/03/2013 78 FR 344 534 | No | No | Habitat includes vegetation alongside rivers, streams, or wetlands, or areas of dense trees and shrubs.[3] The GSA does not provide suitable habitat for this species. |
| Yellow-billed Cuckoo | Threatened | Designated 2/27/2020 85 FR 11458 11594 | No | No | The western yellow-billed cuckoo nests in riparian habitat where conditions are typically cooler and more humid than in the surrounding environment.[4] The GSA does not provide suitable habitat for this species. |
| Yuma Clapper Rail | Threatened | Not Designated | No | No | This species is associated with dense emergent riparian vegetation. Requires wet substrate (mudflat, sandbar) with dense herbaceous or woody vegetation for nesting and foraging.[5] The GSA does not provide suitable habitat for this species. |

[1] USFWS Environmental Conservation Online System (https://ecos.fws.gov/ecp/species/4750
[2] USFWS Species Information (https://www.fws.gov/sacramento/es_species/Accounts/Birds/ca_least_tern/)
[3] 78 FR 344 534
[4] 85 FR 11458 11594
USFWS Species Information (https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=B00P)

*State Listed Species*

No suitable habitat is available for any of the state listed species noted as potentially occurring within the GSA. Therefore, the Proposed Project would not result in significant impacts when compared to the No Action Alternative. A summary of findings is provided below in **Table 4-9**.

**Table 4-9: State Listed Species and Designated Critical Habitat**

| Species | Listing Status | Known or Likely to Occur in GSA | Rationale |
|---|---|---|---|
| Yellow-billed Cuckoo (Western DPS) | Vulnerable | No | The western yellow-billed cuckoo nests in riparian habitat where conditions are typically cooler and more humid than in the surrounding environment.[1] The GSA does not provide suitable habitat for this species. |
| American Peregrine Falcon | Sensitive | Yes | In urban areas these falcons can be seen perching or nesting on skyscrapers, water towers, power pylons, and other tall structures.[2] |
| Bald Eagle – Winter Population | Sensitive | Yes | Many bald eagles spend winter at higher elevations near Flagstaff, but can also be found in good numbers at Roosevelt Lake and along the Salt River.[3] |
| Bald Eagle | Sensitive | Yes | In Arizona, most nesting bald eagles occur in desert habitats along the Salt River, Verde River and large reservoirs in the central part of the state, but can also be found in urban environments. [3] |
| Common Chuckwalla | Sensitive | Yes | The distribution of the common chuckwalla extends eastward from Phoenix along the Salt River to the northwest portions of Roosevelt Lake and southward along the Gila River to almost Winkelman.[4] |

[1] USFWS Environmental Conservation Online System (https://ecos.fws.gov/ecp/species/4750
[2] AZGFD (https://www.azgfd.com/wildlife/viewing/peregrines)
[3] AZGFD (https://www.azgfd.com/wildlife/viewing/webcamlist/baldeagle/)
[4] Tucson Herpetological Society (https://tucsonherpsociety.org/amphibians-reptiles/lizards/common-chuckwalla/)

The Arizona Game and Fish Department indicated that *"as the proposed project is located in a previously disturbed area, with the present habitat providing relatively low value to wildlife, the Department does not anticipate any significant adverse impacts to wildlife resources would occur as a result of this project."*[80]

*Migratory Birds*

No significant impacts to migratory birds would occur as a result of the Proposed Project when compared to the No Action Alternative. The City of Phoenix Aviation Department actively manages wildlife to discourage the congregation of birds and eliminate the Airport's attractiveness to wildlife. Because the number of aircraft operations, fleet mix, and flight procedures would not change between the No Action Alternative and Proposed Project there would be no additional operational (bird strike) related impacts when compared to the No Action Alternative.

#### *4.3.4.2 Future (2033) Proposed Project*

The Future (2033) Proposed Project would have the same effects upon biological resources as described for the Future (2028) Proposed Project**.**

### 4.3.5 Avoidance, Minimization, and Minimization Measures

Since the Proposed Project would not create significant impacts to state or federally listed threatened or endangered species or their habitat or non-listed species, no mitigation is necessary. Additionally, no change to

[80] Arizona Game and Fish Department letter to City of Phoenix Aviation Department, July 31, 2020 (included in Appendix C)

impacts to Migratory Bird Treaty Act (MBTA) species would occur and as a result, no mitigation specific to MBTA-listed species is necessary.

*Avoidance, and Minimization Measures:*
In an effort to minimize impacts, the City of Phoenix Aviation Department would implement Best Management Practices (BMPs), such as silt fencing, during construction activities to protect against sediment and soils entering nearby drainages that wildlife may use.

## 4.4 Climate

This section provides an analysis of potential climate impacts as a result of the Future No Action Alternative and the Proposed Project and a discussion of climate adaptation.

### 4.4.1 Significance Threshold

FAA Order 1050.1F states that the FAA has not identified a significant threshold for aviation GHG emissions. According to recent CEQ guidance issued in January 2023[81], agencies, including the FAA, should quantify the reasonably foreseeable GHG emissions for the proposed action, no action alternative, and any reasonable alternatives, using available information and data. A comparison of GHG emission quantities can then be used to describe how they would relate to climate action commitments and goals. The recent CEQ guidance did not establish any particular quantity of GHG emissions as "significantly" affecting the quality of the human environment.

### 4.4.2 Methods

For this analysis, GHG emissions were quantified to enable the FAA to make an informed decision whether the Proposed Project would have the potential to cause significant climate change effects. GHG emissions inventories were conducted to provide the estimate of the annual rate of GHG emissions attributable to airport sources (direct and indirect) for the No Action Alternative and the Proposed Project. The GHG emissions inventories were prepared using the same data and assumptions as developed for the air quality criteria pollutant emissions inventories. A comparison was made of the GHG inventories between the No Action Alternative and the Proposed Project to determine if there was an increase or reduction in GHG emissions attributed to the Proposed Project. Appendix B presents the methodology and inputs used to prepare the GHG emissions inventories.

GHGs differ from each other in their ability to absorb energy and how long they stay in the atmosphere. The Global Warming Potential (GWP) was developed to allow comparisons of the global warming impacts of different gases by converting each gas amount to a carbon dioxide equivalent ($CO_2e$). GWPs provide a common unit of measure, which allows for one emission estimate of these different gases.

GWPs based on a 100-year period (GWP 100) provided in the FAA's *Aviation Emissions and Air Quality Handbook Version 3 Update 1* and based on the Intergovernmental Panel on Climate Change (IPCC), Fifth Assessment Report (AR5) are used in this evaluation. $CO_2$ has a GWP of one (1) because it is the gas used as the reference point. Methane does not last as long in the atmosphere as $CO_2$ however it absorbs much more energy. Therefore, one ton of methane has 34 times more heat capturing potential than one ton of carbon dioxide. The amount of methane emissions would be multiplied by 34 to determine its $CO_2e$ value. Nitrous oxides last in the atmosphere far longer than $CO_2$. The amount of nitrous oxides emissions would be multiplied by 298 to determine its $CO_2e$ value. The GHG emissions inventories are presented in terms of metric tons per year of $CO_2e$.

[81] Council on Environmental Quality, National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions and Climate Change, 88 Federal Register 1196, January 9, 2023.

#### *4.4.2.1 Reasonably Foreseeable Timeframe*

GHG emissions were quantified to consider the reasonably foreseeable effects of the Proposed Project. The reasonably foreseeable timeframe is defined as between 2023 and 2028 because there is enough specificity to provide meaningful data for analysis of these years. In addition, 2033 is used as a basis for analysis because it represents a condition five years beyond the opening year. This timeframe includes potential GHG emissions from operational and construction activities. Potential projects beyond 2033 would be considered speculative and too far into the future to realistically predict potential impacts.

### 4.4.3 Alternative 1: No Action Alternative

#### *4.4.3.1 Future (2028) No Action Alternative*

The Future (2028) No Action Alternative would not involve construction of any of the new facilities or improvements planned under the Proposed Project. Operational GHG emissions were developed from aircraft operating at the Airport. Due to the nature of the Proposed Project, neither the No Action Alternative nor the Proposed Project would affect GSE or APUs. No changes would occur to vehicle miles traveled on the Airport. **Table 4-10** shows the annual operational GHG emissions for the Future (2028) No Action Alternative.

**Table 4-10: Future (2028) No Action Alternative – Annual Operational GHG Emissions Inventory**

| Emission Source | Annual GHG Emissions (metric tons per year) |
|---|---|
| | $CO_2e$ |
| Aircraft | 491,126 |

$CO_2e$: Carbon Dioxide equivalent
Source: Landrum & Brown, 2023.

#### *4.4.3.2 Future (2033) No Action Alternative*

The Future (2033) No Action Alternative would not involve construction of any of the new facilities or improvements planned under the Proposed Project. Operational GHG emissions were developed from aircraft operating at the Airport. **Table 4-11** shows the annual operational GHG emissions for the Future (2033) No Action Alternative.

**Table 4-11: Future (2033) No Action Alternative – Annual Operational GHG Emissions Inventory**

| Emission Source | Annual GHG Emissions (metric tons per year) |
|---|---|
| | $CO_2e$ |
| Aircraft | 522,662 |

$CO_2e$: Carbon Dioxide equivalent
Source: Landrum & Brown, 2023.

### 4.4.4 Alternative 2: Proposed Project

#### *4.4.4.1 Construction*

The Proposed Project's construction activities would create GHG emissions for the years 2023 through 2028. Construction phasing and project dimensions were based on the information provided by the City of Phoenix Aviation Department. The construction phasing schedule, the estimates of on-road and non-road construction vehicles based on previous airport construction projects, and the emission factors are provided in Appendix B. **Table 4-12** shows the annual GHG emissions from construction activities for the Proposed Project.

**Table 4-12: Proposed Project – Annual Construction GHG Emissions**

| Year | Annual GHG Emissions (metric tons per year) |
|---|---|
| | $CO_2e$ |
| 2023 | 14,644 |
| 2024 | 14,644 |
| 2025 | 14,588 |
| 2026 | 15,409 |
| 2027 | 8,627 |
| 2028 | 5,793 |

$CO_2e$: Carbon Dioxide equivalent
Source: City of Phoenix and Landrum & Brown, 2023.

#### *4.4.4.2 Future (2028) Proposed Project*

No change to the number of aircraft operations or fleet mix would occur as a result of implementing the Proposed Project. Given the design of the proposed airfield safety improvements, the taxi-in and taxi-out time of aircraft operations is anticipated to increase due to the implementation of the Proposed Project. The GHG emissions for operational activities for the Proposed Project were prepared using the same sources and methodology as described in Section 4.2, *Air Quality*. **Table 4-13** shows the annual operational GHG emissions for the Future (2028) Proposed Project.

**Table 4-13: Future (2028) Proposed Project – Annual Operational GHG Emissions Inventory**

| Emission Source | Annual GHG Emissions (metric tons per year) |
|---|---|
| | $CO_2e$ |
| Aircraft | 498,236 |
| Stationary Sources | 5 |
| **Total** | **498,241** |

$CO_2e$: Carbon Dioxide equivalent
Source: Landrum & Brown, 2023.

#### *4.4.4.3 Future (2033) Proposed Project*

No change to the number of aircraft operations or fleet mix would occur as a result of implementing the Proposed Project. Given the design of the proposed airfield safety improvements, the taxi-in and taxi-out time of aircraft operations is anticipated to increase due to the implementation of the Proposed Project. The GHG emissions for operational activities for the Proposed Project were prepared using the same sources and methodology as described in Section 4.2, *Air Quality*. **Table 4-14** shows the annual operational GHG emissions for the Future (2033) Proposed Project.

**Table 4-14: Future (2033) Proposed Project – Annual Operational GHG Emissions Inventory**

| Emission Source | Annual GHG Emissions (metric tons per year) |
|---|---|
| | $CO_2e$ |
| Aircraft | 530,232 |
| Stationary Sources | 5 |
| **Total** | **530,237** |

$CO_2e$: Carbon Dioxide equivalent

Source: Landrum & Brown, 2023.

The results of the GHG emission inventory prepared for the Proposed Project were compared to the results of the No Action Alternative of the same future year to disclose the change in GHG emissions caused by the Proposed Project. Based on the analysis presented, implementing the Proposed Project would result in a gross or net increase in GHG emissions when compared to the No Action Alternative. See **Table 4-15** for the GHG emissions inventory.

**Table 4-15: Total GHG Emissions Inventory**

| Year | Scenario | Annual Emissions (Metric Tons) $CO_2e$ |
|---|---|---|
| 2023 | Proposed Project (Construction) | 14,644 |
| | ***2023 Net Increase*** | ***14,644*** |
| 2024 | Proposed Project (Construction) | 14,644 |
| | ***2024 Net Increase*** | ***14,644*** |
| 2025 | Proposed Project (Construction) | 14,588 |
| | ***2025 Net Increase*** | ***14,588*** |
| 2026 | Proposed Project (Construction) | 15,409 |
| | ***2026 Net Increase*** | ***15,409*** |
| 2027 | Proposed Project (Construction) | 8,627 |
| | ***2027 Net Increase*** | ***8,627*** |
| 2028 | No Action Alternative (Operational) | 491,126 |
| | Proposed Project (Construction & Operational) | 504,034 |
| | ***2028 Net Increase*** | ***12,908*** |
| 2033 | No Action Alternative (Operational) | 522,662 |
| | Proposed Project (Operational) | 530,237 |
| | ***2033 Net Increase*** | ***7,575*** |

$CO_2e$: Carbon Dioxide equivalent
Source: Landrum & Brown, 2023.

Peak construction GHG emissions are expected to occur in 2026. Operational GHG emissions would be greater with the Proposed Project due to the increased aircraft taxi times and use of natural gas boilers for the additional proposed facilities.

### 4.4.5 Social Costs of Greenhouse Gas

The CEQ's *NEPA Guidance on Consideration of Greenhouse Gas Emissions and Climate Change* recommends that "agencies provide additional context for GHG emissions, including through the use of the best available social cost of GHG (SC–GHG) estimates, to translate climate impacts into the more accessible metric of dollars." The estimation of SC-GHG allows the monetization of climate change effects expected from a proposed project. The ''Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990'' released by the Interagency Working Group on Social Cost of Greenhouse Gases (IWG SC–GHG) in February 2021 presents a methodology to estimate the SC-GHG using three discount rates (2.5 percent, 3 percent, and 5 percent) per year. The term "discount rate" refers to the reduction or discount in value per year as a future cost or benefit is adjusted to be comparable with a current cost or benefit from a proposed project.

For this analysis, all three discount rates were used to estimate a range of global social costs from the increase in GHG emissions from the Proposed Project. See **Table 4-16** for the range of social costs estimated per year.

**Table 4-16: Social Cost GHG Monetization**

| YEAR | SOCIAL COST GHGs (U.S. Dollars) | | |
|---|---|---|---|
| | 5% DISCOUNT | 3% DISCOUNT | 2.5% DISCOUNT |
| 2023 | $233,517 | $794,997 | $1,176,453 |
| 2024 | $229,220 | $787,029 | $1,166,422 |
| 2025 | $223,934 | $775,869 | $1,151,747 |
| 2026 | $231,789 | $810,734 | $1,205,593 |
| 2027 | $127,068 | $448,894 | $668,741 |
| 2028 | $185,989 | $663,966 | $991,093 |
| 2033 | $98,187 | $367,471 | $553,698 |

Source: Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990' and Landrum & Brown analysis.

The social cost is estimated to be the highest in 2026 from GHGs due to temporary construction activities. In 2026, there would be a potential social cost from increased GHG emissions of between $231,789 and $1,205,593. This range represents the potential net harm to the global society associated with adding GHGs to the atmosphere in a given year. It includes the value of all climate change impacts, including (but not limited to) changes in net agricultural productivity, human health effects, property damage from increased flood risk natural disasters, disruption of energy systems, risk of conflict, environmental migration, and the value of ecosystem services.

This range does not include the beneficial costs of the Proposed Project including (but not limited to) enhanced airfield safety and efficiency or the improved passenger facilities to accommodate the forecasted demand. There are currently no tools to estimate the benefit of enhanced safety. However, this benefit may far exceed the social cost attributed to the increase in GHGs. FAA's statutory mission is to ensure the safe and efficient use of navigable airspace in the United States as set forth under 49 U.S.C. § 47101 (a)(1).

### 4.4.6 Climate Preparedness and Adaptation

The environmental consequences section for climate also includes a discussion of the extent to which the Proposed Action and No Action Alternative could be affected by future climate conditions. The two primary risks identified in the City's Climate Action Plan are extreme heat and drought. These risks are not new to the Airport, given its location in the Sonoran Desert. The Aviation Department has taken measures to reduce the effects of heat and drought through sustainable design and site development guidelines in the PHX-DVT-GYR Design Manual[82]. These guidelines include:

- Applying design concepts suited to the desert environment (Chapter 1-7.1.2)
- Incorporating design applications which enhance the overall building performance in the desert environment including concepts of shading, use of natural light, and orientation whenever possible (Chapter 4-2.1.5)
- Utilizing low water desert landscaping (xeriscaping) design theme (Chapter 4-4.2.5)

These risks are being managed through review and update of the Design Manual, and by the various actions taken by the City in its preparation and updating of the Action Climate Plan. These risks would be present

[82] City of Phoenix Aviation Department PHX-DVT-GYR Design Manual, October 2018.

regardless of the alternative selected, and would not be exacerbated by the Proposed Project. Therefore, the Proposed Project would not result in any significant impacts related to climate.

### 4.4.7 Climate Impacts on Environmental Justice Communities

As disclosed, there would be a temporary increase in GHG emissions during construction of the Proposed Project. In addition, the Proposed Project would result in an increase in operational GHG emissions compared to the No Action in 2028 and 2033 due to increased aircraft taxi times and use of natural gas boilers for the additional proposed facilities. It is not possible to link GHG emissions from the Proposed Project with any specific climate change impacts in any particular location. Climate change is a global phenomenon, thus environmental justice populations near to the Airport would not disproportionately bear climate change impacts from the Proposed Project. The Proposed Project would not result in disproportionately high and adverse impacts to minority and/or low-income populations when compared with the No Action Alternative. There are no known unique climate-related risks or concerns with the Proposed Project to environmental justice communities. See also Section 4.11 for additional discussion of the potential Environmental Justice impacts.

### 4.4.8 Avoidance, Minimization and Mitigation Measures

As discussed in Chapter 2, there are no alternatives other than the Proposed Project that meets the purpose and need. The City of Phoenix and the FAA have shown in their alternatives analysis that there were no practicable alternatives that would reduce potential GHG emissions. The Proposed Project includes the use of construction equipment, increased aircraft taxi times, and the use of natural gas boilers for the additional proposed facilities. Due to the nature of the Proposed Project, there are no avoidance, minimization, or mitigation measures that would reduce GHG emissions.

*Avoidance and Minimization Measures:*
While not a part of the Proposed Project, the City of Phoenix has undertaken a wide range of activities designed to reduce GHG emissions and prepare for the effects of climate change. In January 2014, the Phoenix City Council adopted a new goal to reduce GHGs by 30-percent community wide reduction by 2025 and a 90-percent community wide reduction by 2050. The City of Phoenix updated its Climate Action Plan in 2021[83] with a goal to reduce GHG emissions by a minimum of 50 percent by 2030 and to achieve net-zero emissions by 2050 through measures such as:

- Installing solar energy generation systems at Aviation Department properties;
- Purchasing electric vehicles and busses and installing electric vehicle charging stations;
- Turning waste into resources (using recycled materials instead of raw materials); and
- Supporting transit-oriented development.

Therefore, when considering the potential increase in GHG emissions due to the Proposed Project, in context with the City of Phoenix's climate action commitment and goals, the Proposed Project would not have an adverse significant impact on climate when compared to the No Action Alternative.

## 4.5 Department of Transportation Act, Section 4(f)

This section summarizes the analysis of potential impacts to the U.S. Department of Transportation (DOT) Act, Section 4(f) resources as a result of the alternatives. Resources that are protected by Section 4(f) are publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, and publicly or privately owned land from an historic site of national, state, or local significance.

[83] City of Phoenix Climate Action Plan, 2021 Edition. Available for review at: https://www.phoenix.gov/oepsite/Documents/2021ClimateActionPlanEnglish.pdf

## 4.5.1 Significance Threshold

The FAA's threshold for this impact category is when an "action involves more than a minimal physical use of a Section 4(f) resource or constitutes a "constructive use" based on an FAA determination that the aviation project would substantially impair the Section 4(f) resource."[84]

The FAA may make a *de minimis* impact determination with respect to a physical use of Section 4(f) property if, after taking into account any measures to minimize harm, the result is either:

- a determination that the project would not adversely affect the activities, features, or attributes qualifying a park, recreation area, or wildlife or waterfowl refuge for protection under Section 4(f); or
- a Section 106 finding of no adverse effect or no historic properties affected.[85]

The FAA's NEPA document must include documentation sufficient to support the above results, including the measures to minimize harm that the FAA is relying on to make the *de minimis* impact determination. The FAA must also ensure that mitigation measures are implemented.

## 4.5.2 Methods

The FAA oversaw the preparation of a DOT Section 4(f) Evaluation under the U.S. DOT Act.[86] The boundaries of Section 4(f) resources were compared with the limits of disturbance of the Proposed Project to determine if there would be an actual physical taking of Section 4(f) property through purchase of land or a permanent easement, physical occupation of a portion or all of the property, or alteration of structures or facilities on the property. Section 4(f) resources were also evaluated to identify any constructive uses, or uses that do not physically use an eligible resource, but may still, by means of noise, air pollution, water pollution, or other impacts, dissipate its aesthetic value, harm its wildlife, restrict its access, and take it in every practical sense.

## 4.5.3 Alternative 1: No Action Alternative

No physical development, land transfers, or other federal actions would occur under the No Action Alternative. Therefore, no physical or constructive use impacts to Section 4(f) properties would occur.

## 4.5.4 Alternative 2: Proposed Project

### *4.5.4.1 Future (2028) Proposed Project*

No publicly owned parks, recreation areas, wildlife and waterfowl refuges of national, state, or local significance are located within the GSA. Three National Register of Historic Places (NRHP)-eligible sites were identified within the direct Area of Potential Effect (APE) that could be affected by a component of the Proposed Project. The FAA made a determination of eligibility for the National Register of Historic Places, and a finding of no adverse effect for the three NRHP-eligible sites located within the GSA. The State Historic Preservation Officer (SHPO) concurred with that determination on March 14, 2023. Based on the finding of no adverse effect, the FAA has made a *de minimis* finding for the three historic sites that would be affected by the Proposed Project (see **Table 4-17: Section 4(f) Findings and Justification**). A *de minimis* finding is not a full and complete Section 4(f) evaluation. It does not require an analysis and finding that there are no feasible and prudent alternatives or a finding that all possible planning has been done to minimize harm. A *de minimis* finding does not describe these resources' value or significance, but is instead a statuary term used in the review process. This finding is conditioned on the Sponsor conducting archaeological monitoring as described below in Section 4.7.5. In this case, the FAA elected to include historic properties eligible only under Criterion D (Information Potential) in the Section 4(f) review, despite the potential exemption for sites perceived to have minimal value for preservation in place.

[84] FAA Order 1050.1F Exhibit 4.1 Page 4-6
[85] 1050.1F Desk Reference (v2), Section 5.3.3. Federal Aviation Administration, February 2020
[86] 49 U.S.C §303

The FAA also consulted with other consulting parties, including the City of Phoenix Historic Preservation Office, the City of Phoenix Archaeology Office, and relevant Tribal Historic Preservation Offices regarding the effect findings and the FAA's intent to make a *de minimis* Section 4(f) finding.[87]

**Table 4-17: Section 4(f) Findings and Justification**

| Name | Qualifying Status | Undertaking-related Activities | Findings | Justification |
|---|---|---|---|---|
| **Pueblo Salado** | NRHP -Eligible | • demolishing pavement<br>• altering taxiway pavement edges<br>• changing pavement markings | *De minimis* impact | The portion of the site in the GSA was previously disturbed or buried by airport construction or maintenance activities. FAA issued a finding on no adverse effect. |
| **Dutch Canal Ruin** | NRHP -Eligible | • installing fences and lighted signs<br>• changing pavement markings | *De minimis* impact | The portion of the site in the GSA was previously disturbed or buried by airport construction or maintenance activities. FAA issued a finding on no adverse effect. |
| **Park of the Four Waters Canals** | NRHP -Eligible | • installing fences and signs<br>• changing pavement markings | *De minimis* impact | The portion of the site in the GSA was previously disturbed or buried by airport construction or maintenance activities. FAA issued a finding on no adverse effect. |

Source: Landrum & Brown, 2022

Because there would be no adverse effects to National Register eligible resources, and no other Section 4(f) resources impacted, no significant impacts to any DOT Section 4(f) eligible resources are anticipated when compared to the No Action Alternative. No constructive use of a DOT Section 4(f) resource would occur as a result of the Proposed Project. There would be no impacts to any Section 6(f) funded properties.

### *4.5.4.2 Future (2033) Proposed Project*

The Future (2033) Proposed Project would have the same effects upon DOT Section 4(f) resources as described for the Future (2028) Proposed Project.

## 4.5.5 Avoidance, Minimization, and Mitigation Measures

Since there would be no significant physical or constructive use impacts identified, no mitigation would be necessary.

*Avoidance and Minimization Measures:*
As indicated in the March 14, 2023, between the FAA to the Arizona SHPO, to ensure that adverse effects are avoided, and as a condition of the no adverse effect finding, the City of Phoenix Aviation Department will provide archaeological monitoring of any undertaking-related, ground-disturbing activities located within an archaeological site and its buffer, and by following the monitoring and discovery procedures in the previously prepared, citywide plan titled General Monitoring and Discovery Plan for the City of Phoenix, Maricopa County, Arizona (Henderson, 2020).

[87] This was discussed at several meetings, including a January 6, 2022, Consulting Parties Meeting and an August 19, 2022 Four Southern Tribes Cultural Resources Working Group Meeting. This was also stated in a June 3, 2022 letter from FAA to all agency and tribal consulting parties.

The City of Phoenix will also conduct archaeological testing of the various canals in the northern half of the airport where data recovery has not occurred before starting construction those areas. The City of Phoenix would establish a buffer of 250 feet around the current site boundaries and 50-feet around canals prior to construction to delineate areas where archaeological monitoring should occur.[88]

## 4.6 Hazardous Materials, Solid Waste, and Pollution Prevention

This section assesses the potential exposure to hazardous materials and generation of solid waste that would occur as a result of the No Action Alternative and Proposed Project, and pollution prevention measures that would be considered to reduce or eliminate impacts.

### 4.6.1 Significant Impact Threshold

The FAA has not established a significance threshold for hazardous materials, solid waste, and pollution prevention. However, based on guidance in FAA Order 1050.1F, the FAA has identified factors to consider in evaluating the context and intensity of potential environmental impacts for hazardous materials, solid waste, and pollution prevention. These factors are whether an action would:

- Violate applicable federal, state, tribal, or local laws or regulations regarding hazardous materials and/or solid waste management;
- Involve a contaminated site [including but not limited to a site listed on the National Priorities List (NPL)];[89,90]
- Produce an appreciably different quantity or type of hazardous waste;
- Generate an appreciably different quantity or type of solid waste or use a different method of collection or disposal and/or would exceed local capacity; or
- Adversely affect human health and the environment.[91]

### 4.6.2 Methods

The potential environmental effects resulting from the Proposed Project and No Action Alternative were evaluated based on their potential to violate laws or regulations, affect areas of known or likely contamination, affect the amount or type of solid waste being generated, exceed local disposal capacity, or adversely affect human health or the environment. The analysis considered the types of potential activities and materials that are likely to have been present at the site, and the amount of solid waste that would be generated by each alternative.

### 4.6.3 Alternative 1: No Action Alternative

The No Action Alternative would not involve construction of any of the new facilities or improvements planned under the Proposed Project. Existing uses at the Airport would continue, and all hazardous waste generators would remain in place. Existing passenger-related waste generation would also continue to increase as the number of projected passengers increases. No significant impacts to hazardous materials or solid waste and recycling would occur.

[88] FAA letter to Arizona SHPO dated March 13, 2023
[89] Contaminated sites may encompass relatively large areas. However, not all the grounds within the boundaries of a contaminated site are contaminated, which leaves space for siting a facility on non-contaminated land within the boundaries of a contaminated site.
[90] Paragraph 6-2.3.a of FAA Order 1050.1F allows for mitigating impacts below significant levels (e.g., modifying an action to site it on non-contaminated grounds within a contaminated site). Therefore, if appropriately mitigated, actions within the boundaries of a contaminated site would not have significant impacts.
[91] FAA Order 1050.1F Exhibit 4-1, Page 4-7

## 4.6.4 Alternative 2: Proposed Project

### *4.6.4.1 Future (2028) Proposed Project*

The Proposed Project would involve construction activities within areas of documented contamination, and areas with potential for contamination.

*Hazardous Materials*

- *NPL Sites*
  One NPL site would be impacted by the Proposed Project: the Motorola, Inc. (52nd Street Plant) site. This site is located within the footprint of the proposed airfield safety improvements (as shown on **Exhibit 4-1**). Contaminants of concern (COC) at this site include VOCs, including trichloroethylene (TCE) and tetrachloroethene (PCE)[92]. There are currently no known exposures to COCs in excess of applicable health based screening levels at the site. This includes studies conducted to date for groundwater, soil (surface and subsurface), and soil vapor intrusion. The main exposure pathway to the COCs is through ingestion of contaminated groundwater.[93] Because groundwater depths in the area range between 50 to over 500 feet below ground surface, and construction would not extend to that depth, no groundwater would be encountered or used during construction. All construction would occur in uncontaminated deposits vertically separated from the underground contamination. Therefore, no significant impacts from the Proposed Project are anticipated when compared to the No Action Alternative.

- *Resource Conservation and Recovery Act (RCRA) Sites*
  One RCRA documented hazardous waste generator is located within the footprint of one or more elements of the Proposed Project: a City of Phoenix Aviation Department Facilities and Services building at 2515 E Buckeye Road. The location of this site is depicted on Exhibit 4-1. Although hazardous materials have been generated or stored at this site, the building would not be demolished as part of the Proposed Project. Furthermore, all hazardous materials would be handled in accordance with all applicable laws and regulations. Therefore, no significant impacts from the Proposed Project are anticipated when compared to the No Action Alternative.

- *Honeywell Site Plume*
  The Honeywell 34th Street Leaking Underground Storage Tank (LUST) Site is a fuel plume located in the north central portion of the Airport, within the footprint of the proposed airfield safety improvements (as shown on Exhibit 4-1). Because the depth of contamination at this site is between 80 to 100 feet below the surface, and construction would not extend to that depth, no groundwater would be encountered or used during construction. All construction would occur in uncontaminated deposits vertically separated from the underground contamination. Therefore, no significant impacts from the Proposed Project are anticipated when compared to the No Action Alternative.

- *Buildings to be Demolished*
  The Proposed Project would require the demolition of all, or portions of two existing Airport buildings (the West Cargo Building C, and the American Airlines cargo/sorting building). There are no known hazardous materials in these buildings. However, each has the potential to contain regulated building materials including but not limited to asbestos containing materials (commonly found in floor and ceiling tiles, and insulation), lead paint, and mercury (commonly found in fluorescent light tubes and thermostats). Demolition requirements contained in the Airport Design Manual (and described below under Minimization Measures) would alleviate any exposure risks to these materials. During demolition activities the Proposed Project could temporarily increase the amount hazardous materials needing

[92] Tetrachloroethene is also referred to as Perchloroethylene
[93] Arizona Department of Environmental Quality, Superfund Site/Motorola 52nd Street (https://www.azdeq.gov/node/1916)

disposal. However, City of Phoenix Aviation Department routinely handles and disposes of a wide variety of hazardous materials each year, and has protocols for all products encountered at the Airport. During operations of the Proposed Project, hazardous materials would be similar in quantity and type as currently used at the Airport. Furthermore, all hazardous materials would be handled in accordance with all applicable laws and regulations to avoid adverse effects to human health or the environment. Therefore, no significant impacts are anticipated as part of the Proposed Project when compared to the No Action Alternative.

*Solid Waste and Recycling*

As with the No Action Alternative, existing passenger-related waste generation would continue to increase as the number of projected passengers increases. This would occur at the same rate as the No Action Alternative because the number of future passengers would be the same, and the same waste reduction initiatives would be in place.

Construction activities associated with the Proposed Project would also generate additional solid waste such as construction debris (such as asphalt, concrete, and wood), building materials (such as steel, wood, glass, and plastic products), and other materials commonly associated with facility demolition and construction. Since the Butterfield Station landfill has sufficient regional solid waste disposal capacity through 2110,[94] no significant impacts related to solid waste are expected as a result of the Proposed Project when compared to the No Action Alternative.

*Pollution Prevention*

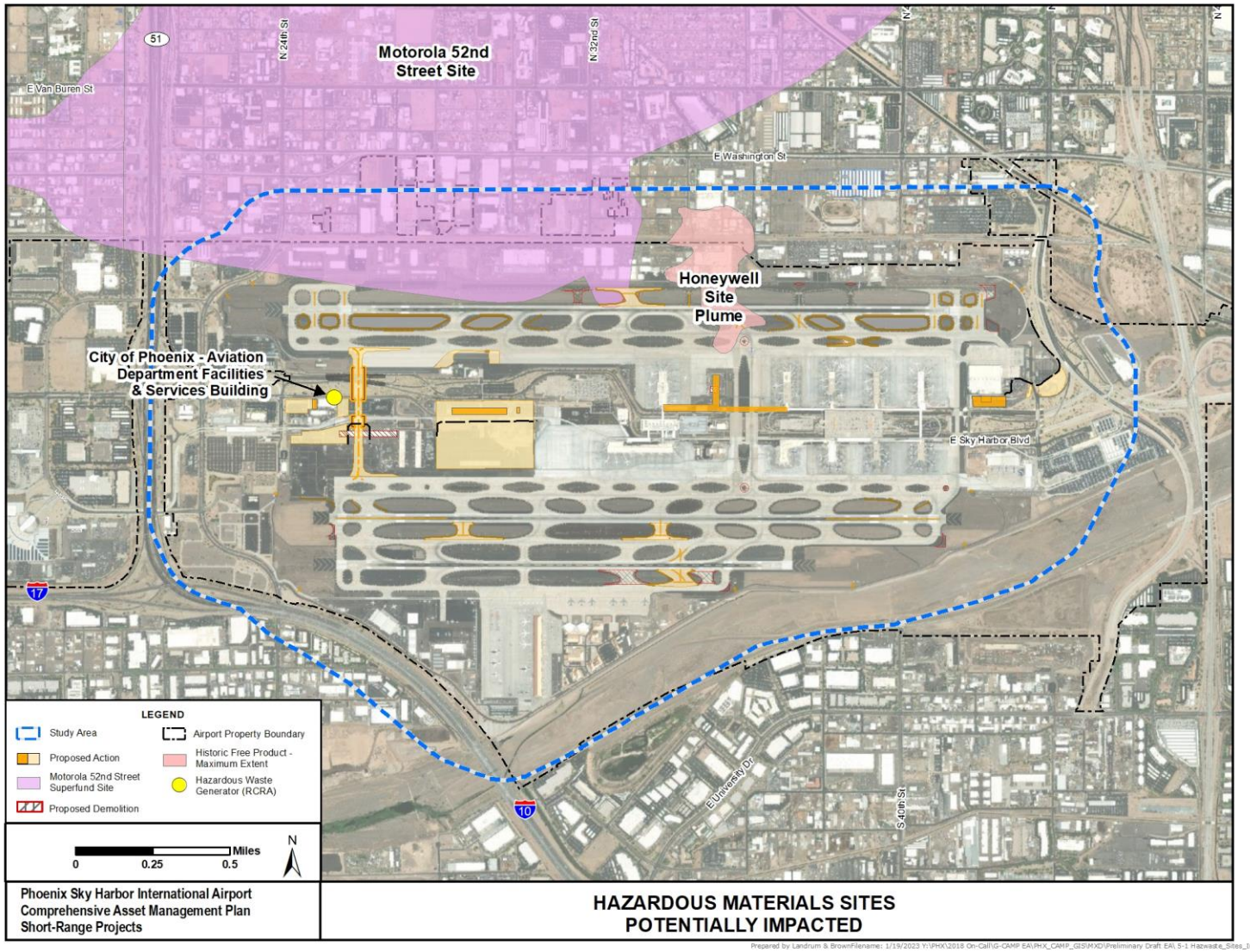
The Proposed Project would result in construction activity at the Airport, with the potential to result in the release of hazardous materials and/or pollution. The City of Phoenix Aviation Department has established several processes to address pollution prevention (described below) that would mitigate any risks of pollutant transport should spills occur during construction or operation of the new facilities, or if unknown areas of contamination are encountered during construction. Through compliance with these plans and construction standards specified above, no significant pollution related impacts are anticipated with the Proposed Project when compared to the No Action Alternative.

### *4.6.4.2 Future (2033) Proposed Project*

The Future (2033) Proposed Project would have the same effects upon hazardous materials, solid waste, and pollution prevention as described for the Future (2028) Proposed Project**.**

[94] Maricopa Association of Governments Solid Waste Management Summary, 2017 (https://www.azmag.gov/Portals/0/Documents/MagContent/SWAC_2017_Solid-Waste-Management-Facilities-Summary.pdf?ver=2019-03-14-164324-820)

**Exhibit 4-1: Hazardous Materials Sites Potentially Impacted**



### 4.6.5 Avoidance, Minimization and Mitigation Measures

No significant impacts have been identified under the Proposed Project; therefore, mitigation is not required.

*Avoidance and Minimization Measures:*
The City of Phoenix Aviation Department would require contractors to adhere to all applicable requirements of the Airport's Design Manual, and conduct a hazardous materials survey of a project site prior to commencement of construction or demolition activities. This survey would identify any asbestos containing materials (ACM), lead-based paint, polychlorinated biphenyls (PCBs), petroleum contaminated soil, or other hazardous materials present in affected buildings, structures, pavement and/or in the underground utilities on site.

The City of Phoenix Aviation Department would require the selected contractor to ensure proper disposal or encapsulation (in a manner consistent with federal, state and local regulations) if any previously unknown or unexpected hazardous materials are encountered during construction activities.

The Airport's Design Manual requires that all ground-disturbing activities are first evaluated to determine if any environmental or health and safety problems are present at that location. If so, the project design may be altered to minimize environmental impacts. In these areas an Environmental Site Assessment would be required, which would include the following: [95]

- Hazardous Materials Survey
  Conduct a hazardous materials survey of the site to identify ACM, lead-based paint, PCBs, and other hazardous materials present in the building and structures, pavement and/or in the underground utilities on site.
- Hazardous Materials Inventory
  Prepare a hazardous materials inventory statement for materials to be stored at the construction site.
- Survey for Petroleum Contaminated Soil
  Conduct a site investigation to identify potential petroleum contaminated soil (PCS) and/or groundwater on site.
- Air Quality Permits
  Prepare an application for an air quality permit to construct and operate any regulated stationary emission source (such as, boiler, fuel tank, emergency generator, etc.) where applicable.
- Polychlorinated Biphenyl Products
  Conduct a survey of all electrical equipment for PCB before any necessary demolition/construction process starts.
- Stormwater Pollution Prevention Plan
  Prepare a Construction Storm Water Pollution Prevention Plan (CSWPPP) including associated erosion and sediment control requirements for construction activities.
- Water Quality Discharge Permit
  Prepare an application for a water quality discharge permit for any regulated process water to be generated during construction and/or as a part of the facility's future operations.
- Underground or Above Ground Storage Tanks
  Conform to all local, state, and federal standards for installation and removal of Underground Storage Tanks (USTs)/Above Ground Storage Tanks (AST).

The City of Phoenix Aviation Department would manage and dispose of this waste in a manner that is consistent with federal, state and local regulations.

[95] City of Phoenix Aviation Department PHX-DVT-GYR Design Manual, 2018. Chapter 2-3.2.2

The City of Phoenix Aviation Department would address potential water quality impacts through compliance with the Arizona Pollutant Discharge Elimination System (AZPDES) General Construction Permit, and applicable Stormwater Pollution Prevention Plans (SWPPP).

## 4.7 Historical, Architectural, Archeological, and Cultural Resources

This section analyzes potential direct and indirect impacts to historic, archeological, and cultural resources (including Tribal resources), that could result from construction or operation of the Proposed Project. This section also documents the FAA's consultation with the Arizona SHPO pursuant to Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations at 36 CFR Part 800, as well as the FAA's consultation with Native American Tribes regarding cultural resources that could be affected by the Proposed Project. The Historic Resources Report for the Proposed Project and documentation of the FAA's consultation with the Arizona SHPO and the FAA's consultation with Native American Tribes are included in **Appendix D, Cultural Resources**. The direct and indirect APEs are described in Section 3.3.6 and shown on Exhibit 3-4 (in Chapter 3).

### 4.7.1 Significance Threshold

Consistent with Section 106 regulations, the FAA's 1050.1F Desk Reference states that the FAA would determine that the effect of a proposed undertaking is adverse if it would alter any of the characteristics that qualify the historic property for inclusion in the NRHP in a manner that diminishes the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.[96] A finding of adverse effect on a historic property is appropriate when the undertaking would:

- physically destroy or damage the property;
- alter the property in a way that is inconsistent with the Secretary of the Interior's Standards for Treatment of Historic Properties (see 36 CFR Part 68);
- remove the property from its historic location;
- change the character of the property's use, or of physical features within the property's setting that contribute to its historic significance;
- introduce an atmospheric, audible, or visual feature to the area that would diminish the integrity of the property's significant historic features (including its setting, provided the setting has been identified as a contributing factor to the property's historical significance); or
- result in neglect of a property which would cause its deterioration or the transfer, sale, or lease of a property out of federal ownership or control without adequate protection to ensure the long-term preservation of the property's historic significance.

### 4.7.2 Methods

The FAA consulted with the SHPO under NHPA. FAA consulted with the SHPO via letter on June 3, 2022 (see Appendix D) to establish a revised direct APE based on changes to the proposed undertaking that occurred since previous consultation was initiated in 2021. In September of 2022 the City of Phoenix further reduced the list of proposed CAMP project components. On October 7, 2022, the FAA submitted a letter to SHPO to confirm the acceptability of the direct and indirect APEs in light of these changes. The SHPO concurred with FAA's delineation of the APE on November 9, 2022. The FAA prepared a determination of eligibility and effect dated March 13, 2023, to assess the potential direct and indirect effects the undertaking would have on properties determined eligible for the NRHP. An effect is defined as an alteration to the characteristics of a historic property qualifying it for inclusion in, or eligible for inclusion in, the NRHP.[97]

[96] U.S. Department of Transportation, Federal Aviation Administration, *FAA Order 1050.1F Desk Reference, Version 2.0*, February 2020.
[97] 36 CFR § 800.16(i)

### 4.7.3 Alternative 1: No Action Alternative

The No Action Alternative would not involve construction of any of the new facilities or improvements planned under the Proposed Project. Since the No Action Alternative would not adversely affect any properties listed on or eligible for the NRHP, no impacts to historical, architectural, archaeological, or cultural resources would occur.

### 4.7.4 Alternative 2: Proposed Project

#### *4.7.4.1 Future (2028) Proposed Project*

The FAA determined there are ten (10) archaeological sites listed or eligible for inclusion into the National Register of Historic Places (NRHP) within the Direct APE. Of these 10 sites, three would be affected by project related activities. Those three sites are listed in **Table 4-18: National Register-Eligible or Listed Properties within the Direct APE.**

**Table 4-18: Affected National Register-Eligible Properties within the Direct APE**

| Historic Properties Name & Number | Eligibility Criterion | Undertaking-related Activities | Proposed Treatment | Comments |
|---|---|---|---|---|
| **Pueblo Salado (AZ T:12:47 ASM)** | D | • demolishing pavement<br>• altering taxiway pavement edges<br>• changing pavement markings | Archaeological monitoring for ground-disturbing activities that extend below the depth of existing disturbance | The portion of the site in the direct APE was previously disturbed or buried by airport construction or maintenance activities. |
| **Dutch Canal Ruin (AZ T:12:62 ASM)** | D | • installing fences and lighted signs<br>• changing pavement markings | Archaeological monitoring for ground-disturbing activities that extend below the depth of existing disturbance | The portion of the site in the direct APE was previously disturbed or buried by airport construction or maintenance activities. |
| **Canal Patricio System (AZ T:12:131 ASM)** | D | None | None | The portion of the site in the direct APE was previously disturbed or buried by airport construction or maintenance activities. |

Source: Historic Properties Identification Work Plan for the Sky Harbor Airport Comprehensive Asset Management Plan Short Range Development Plan, Sky Harbor International Airport, Phoenix, Maricopa County, Arizona (2020)

The FAA provided information about the proposed undertaking and the APE for the Proposed Project components to Tribal contacts traditionally and culturally affiliated with this area. In a letter dated, August 25, 2021, the FAA contacted the following Native American Tribes concerning this proposed undertaking:

- Ak-Chin Indian Community
- Fort McDowell Yavapai Nation
- Fort Mojave Indian Tribe
- Gila River Indian Community
- Hopi Tribe of Arizona
- Pascua Yaqui Tribe
- Salt River Pima-Maricopa Indian Community
- Tohono O'odham Nation
- Tonto Apache Tribe
- White Mountain Apache Tribe
- Yavapai- Apache Nation of Camp Verde Indian Reservation,

- Yavapai-Prescott Indian Tribe
- Pueblo of Zuni

FAA received one reply from the Hopi Tribe requesting continued consultation if the Proposed Project has the potential to adversely affect prehistoric sites. On June 3, 2022, following up on the initial letter to the tribes, FAA sent emails to the tribes describing that the City had reduced the overall size of the proposed undertaking. In the June 3, 2022 email, FAA made a finding of no adverse effect with archeological monitoring for ten sites located within the existing airport. FAA received emails concurring with FAA's finding from the Salt River Pima-Maricopa Indian Community, the Tohono O'odham Nation, Pascua Yaqui Tribe, and the City of Tempe.

*Findings*
Construction of the Proposed Project would not result in adverse effects compared to the No Action Alternative. There will be minor impacts to Pueblo Salado (AZ T:12:47[ASM]), Dutch Canal Ruin (AZ T:12:62[ASM]), and the Park of the Four Waters (AZ U:9:2[ASM]). As indicated in Table 4-18, the proposed ground disturbance within the Dutch Canal Ruin and Park of the Four Waters involves only new signage and relocating a fence. The proposed work within Pueblo Salado consists of limited taxiway improvements within an area that was previously investigated (testing and data recovery).

In a letter dated March 13, 2023, the FAA made an updated finding of no adverse effect to historic properties by the Proposed Project, with the commitment that archaeologic monitoring of ground disturbing activities for the Proposed Project would be conducted for these historic sites under the City of Phoenix's General Monitoring and Discovery Plan for the City of Phoenix, Maricopa County, Arizona, (Henderson 2020) (see Appendix D**).** On March 14, 2023 the SHPO concurred with the finding of no adverse effect, provided monitoring within sites and testing for canals is conducted, and no significant cultural resources would be affected. In the event that human remains are encountered or adverse effects to significant cultural resources occur at any time during project activities, all work must stop to continue consultation on the development of a Memorandum of Agreement.

### *4.7.4.2 Future (2033) Proposed Project*

The Future (2033) Proposed Project would have the same effects upon historical, architectural, archaeological, and cultural resources as described for the Future (2028) Proposed Project**.**

## 4.7.5 Avoidance, Minimization, and Mitigation Measures

No significant adverse impacts were identified for historic properties, therefore, no mitigation is required.

*Avoidance and Minimization Measures:*
The City of Phoenix Aviation Department will, where possible, minimize potential adverse effects to all types of historic properties, with input from the SHPO, the City Office of Historic Preservation, the City Office of Archaeology, and other consulting parties.

- The City of Phoenix Aviation Department will provide archaeological monitoring of any undertaking-related, ground-disturbing activities extending below modern disturbances and located within an archaeological site and a 250-foot-wide buffer or near an archaeological canal alignment and a 50-foot-wide buffer.
- The City of Phoenix Aviation Department will follow the monitoring and discovery procedures in the previously prepared, citywide plan titled *General Monitoring and Discovery Plan for the City of Phoenix, Maricopa County, Arizona* (Henderson, 2020)[98]
    - In the event that an archaeological feature is encountered during construction activities, the archaeological monitor may temporarily halt construction activities so the feature can be

98 General Monitoring and Discovery Plan for the City of Phoenix, Maricopa County, Arizona, prepared by archaeologist T. Kathleen Henderson, and dated July 31, 2020 (see https://www.phoenix.gov/parkssite/Documents/PKS_Pueblo_Grande_Museum/DA%20pr19- 120_draft2.pdf).

documented in profile or plan and sampled for pollen, botanical material, or diagnostic artifacts if appropriate. If human remains are encountered, all work will be discontinued within 50 feet of the remains, and the area secured until notifications can be made, and appropriate documentation and recovery can be completed.
    - Inadvertent discoveries occurring outside the site boundaries where archaeological monitoring is required will be reported, immediately, to the City Archaeologist. After notification, recording by a qualified archaeologist would follow the same procedures identified above.
- The City of Phoenix will conduct archaeological testing of the various canals in the northern half of the airport where data recovery has not occurred before starting construction those areas. The City of Phoenix would establish a buffer of 250 feet around the current site boundaries and 50-feet around canals prior to construction to delineate areas where archaeological monitoring should occur.[99]

# 4.8 Land Use

This section presents the analysis of potential land use incompatibility resulting from the No Action Alternative and Proposed Project.

## 4.8.1 Significance Threshold

The FAA has not established a significance threshold for land use. The determination that significant impacts exist in the land use impact category is normally dependent on the significance of other impacts. There are no specific independent factors to consider for land use.[100]

## 4.8.2 Methods

The potential environmental effects resulting from implementation of the Proposed Project and No Action Alternative were evaluated based on the degree to which each alternative would create conflicts with land uses, zoning, and comprehensive plans of the surrounding jurisdictions. Potential impacts on noise compatible land use are discussed in Section 4.10, *Noise and Noise Compatible Land Use.*

## 4.8.3 Alternative 1: No Action Alternative

The No Action Alternative would not involve construction of any of the new facilities or improvements planned under the Proposed Project. Therefore, no impacts to land use would occur.

## 4.8.4 Alternative 2: Proposed Project

### *4.8.4.1 Future (2028) Proposed Project*

The consistency of the Proposed Project with other local land use plans is described below. Additional information related to local land use plans can be found in Section 3.3.7, *Land Use*.

- *City of Phoenix 2015 General Plan*
  All elements of the Proposed Project would occur in the City of Phoenix, within the areas governed by this plan. None of the elements of the Proposed Project would be inconsistent with this plan.
- *City of Tempe General Plan 2040*
  None of the elements of the Proposed Project would occur within the City of Tempe or be inconsistent with the plan. Therefore, the Proposed Project would be consistent with the City of Tempe General Plan.

Each of the local land use plans for jurisdictions adjacent to or in the vicinity of the Airport have recognized the Airport operations; in some cases, specifically addressing the potential for additional development of Airport property or property in the vicinity of the Airport for Airport-related operations.

[99] FAA letter to Arizona SHPO dated March 13, 2023
[100] FAA Order 1050.1F Exhibit 4-1, Page 4-8

The Proposed Project would be consistent with all airport and local jurisdiction planning documents and would not significantly alter the future land use patterns in the area. Therefore, the Proposed Project would not result in significant land use impacts when compared to the No Action Alternative.

#### *4.8.4.2 Future (2033) Proposed Project*

The Future (2033) Proposed Project would have the same effects upon land use as described for the Future (2028) Proposed Project**.**

### 4.8.5 Avoidance, Minimization and Mitigation Measures

Because no significant impacts related to land use were identified, no avoidance, minimization or mitigation measures are necessary.

## 4.9 Natural Resources and Energy Supply

This section presents the analysis of potential impacts to natural resources and energy supplies resulting from the No Action Alternative and Proposed Project. The Proposed Project would not increase the number of existing or forecasted aircraft operations, so aircraft and aircraft support equipment fuel usage would be the same under the No Action and Proposed Project alternatives. Therefore, the analysis of natural resources and energy supply is focused on electricity, natural gas, water, and construction materials.

### 4.9.1 Significance Threshold

The FAA has not established a significance threshold for natural resources and energy supply. However, FAA Order 1050.1F identifies the following factor to consider:

- The degree to which the action would have the potential to cause demand to exceed available or future supplies of these resources.[101]

### 4.9.2 Methods

The potential environmental effects resulting from the Proposed Project and No Action Alternative were calculated based on the square footage of the newly proposed facilities, and the number of passengers expected. Future demand projections are based on the ratios of existing natural resource and energy use to building area and/or passenger volumes.

### 4.9.3 Alternative 1: No Action Alternative

*Natural Resources*

The No Action Alternative would not involve construction of any of the new facilities or improvements planned under the Proposed Project. There would be an increase in demand for water because passenger volumes would continue to increase, resulting in more water usage regardless of whether or not the Proposed Project is constructed. The increase in demand is expected to be proportionate to the annual number of passengers and is depicted in **Table 4-19**. No significant impacts related to the use of natural resources would occur.

**Table 4-19: Projected Water Usage**

| Year | Water Consumption (Gallons) | Passengers (in millions) | Gallons used per Passenger |
|---|---|---|---|
| 2019 | 301,713,290 | 46.3 | 6.52 |
| 2020 | 142,711,038 | 21.9 | 6.52 |
| No Action (2028) | 358,600,000 | 55.0 | 6.52 |
| Proposed Project (2028) | 358,600,000 | 55.0 | 6.52 |

[101] FAA Order 1050.1F Exhibit 4-1, Page 4-8

Source: City of Phoenix data and Landrum & Brown analysis, 2022.

### *Energy Supply*

Energy demand at the Airport would continue to increase under the No Action Alternative. This additional demand would include electricity, natural gas, and renewable energy. This increase in energy demand would occur under the No Action and Proposed Project alternatives and would not result in a significant impact to energy supply. Therefore, no significant impact related to energy supply would occur under the No Action Alternative.

## 4.9.4 Alternative 2: Proposed Project

### *4.9.4.1 Future (2028) Proposed Project*

### *Natural Resources*

Construction of the Proposed Project would require the use of typical paving materials such as sand, gravel, concrete, asphalt, and water, and construction materials such as steel, wood, and glass. These materials are not in short supply[102] in the Phoenix area and construction of the Proposed Project is not expected to exceed the available supply. Therefore, the Proposed Project would not result in significant impacts when compared to the No Action Alternative. Future water usage is shown in Table 4-19 and was estimated based on the projected number of future passengers, and the calculated average gallons used per passenger.

### *Energy Supply*

The new facilities proposed as part of the Proposed Project would result in increased energy demand for heating, cooling, lighting, and other uses. **Table 4-20** shows the total area of all new facilities under the Proposed Project. Approximately 73,120 square feet of additional building space would be constructed, representing an increase of 2.2 percent over the existing building area. Future estimates for electricity and natural gas demand are based on this additional area of buildings, using the same ratio of building area to energy use. The proposed airfield elements such as taxiway extensions and aprons would not result in appreciable electricity usage and were therefore not included.

**Table 4-20: Total Area of Airport Buildings**

| Building | Total Area (square feet) | | |
|---|---|---|---|
| | Existing | Future No Action | Future Proposed Project |
| Terminal 2 | 256,637 | 0 | 0 |
| Terminal 3 | 283,691 | 283,691 | 358,691 |
| Terminal 4 | 1,722,637 | 1,852,637 | 1,852,637 |
| Air Cargo Facilities | 351,695 | 351,695 | 351,695 |
| In-Flight Catering | 154,000 | 154,000 | 154,000 |
| Airline Maintenance | 24,609 | 24,609 | 24,609 |
| Operations/Fire/Police | 92,157 | 92,157 | 92,157 |
| Administrative Space | 290,383 | 290,383 | 290,383 |
| Airfield Support Space | 9,119 | 9,119 | 7,239 |
| General Aviation Space | 185,777 | 185,777 | 185,777 |
| Miscellaneous Facilities | 8,347 | 8,347 | 8,347 |
| Total | 3,379,052 | 3,252,415 | 3,325,535 |

[102] This assumes that COVID-19 pandemic related supply chain issues will be resolved by 2028.

Note: Existing square footage of Arizona Air National Guard (AZANG) facilities was not available. No Action total includes construction of Terminal 4-8th Concourse and demolition of Terminal 2. Proposed Project total include construction of the Proposed Project/Terminal 4-8th Concourse.
Source: CAMP, Tables 2-5 to 2-24; GIS Analysis, 2022.

As shown in **Table 4-21**, the estimated electricity use at the Airport would be approximately 140.7 million kilowatt hours (kWH) per year under the Proposed Project. This represents an increase of 3.1 million kWH over the Future (2028) No Action Alternative. Natural gas use would be approximately 40,759 therms, an increase of 896 therms over the Future (2028) No Action Alternative.

**Table 4-21: Projected Annual Energy Use**

| Year | Building Area (square feet) | Electricity (Kilowatt hours kWH) in millions | Natural Gas (therms) |
|---|---|---|---|
| 2019 | 3,379,052 | 143.0 | 41,415 |
| 2020 | 3,379,052 | 133.0 | 50,320 |
| No Action (2028) | 3,252,415 | 137.6 | 39,863 |
| Proposed Project (2028) | 3,325,535 | 140.7 | 40,759 |

Source: City of Phoenix data and Landrum & Brown analysis, 2022.

These projections do not take into consideration newer, more energy efficient building materials or technologies, in order to present a conservative potential energy demand. Because the new facilities would be designed to enhance energy efficiency, consistent with the Aviation Department's Sustainability Management Plan[103], the projections are likely higher than what would actually occur under the Proposed Project.
While implementing the Proposed Project would increase the demand for electricity and natural gas, the per capita energy consumption in Arizona is among the lowest in the nation, and in 2020 the state generated more electricity than the state consumed, sending more than 20 percent of the electricity generated in-state to consumers outside of Arizona.[104] Given the available energy resources, the additional demand would not exceed the available energy supplies in the Phoenix area. Therefore, the Proposed Project would not result in significant impacts when compared to the No Action Alternative.

### *4.9.4.2 Future (2033) Proposed Project*

The Future (2033) Proposed Project would have the same effects upon natural resources and energy supply as described for the Future (2028) Proposed Project**.**

## 4.9.5 Avoidance, Minimization and Mitigation Measures

Because no significant impacts related to Natural Resources and Energy Supply were identified, no mitigation is necessary.

*Avoidance and Minimization Measures:*
Minimization measures and BMPs related to water usage and use of other natural resources would be used to minimize impacts during construction of the Proposed Project. It is noted that increased water efficiency standards and conservation efforts will likely result in a reduction in average water use per passenger, but actual 2019 usage was used to provide a conservative estimate of future demands. The City of Phoenix Aviation Department will also use recycled materials and construction products to the extent possible during construction of the Proposed Project, and will specify in construction documents a minimum weight of materials for each

[103] City of Phoenix Aviation Department, Sustainability Management Plan, 2015. Available for review at https://www.skyharbor.com/about/Sustainability
[104] U.S. Energy Information Administration, Arizona State Profile and Energy Estimates (https://www.eia.gov/state/analysis.php?sid=AZ)

project that must be recycled or reused. The proposed new facilities would also be designed to enhance energy efficiency, consistent with the City's Sustainability Management Plan.[105]

## 4.10 Noise and Noise-Compatible Land Use

This section presents the results of construction noise exposure to surrounding communities as a result of the No Action and the Proposed Project. The Proposed Project would not increase the number of existing or forecasted aircraft operations, therefore, there would be no change to the approach and departure flight paths to and from the Airport under the Proposed Project. The aircraft noise conditions would be the same under the No Action and Proposed Project alternatives. Therefore, the analysis of noise and noise compatible land use impacts in this EA is focused on construction related noise.

### 4.10.1 Significance Threshold

The FAA's significance threshold for noise considers if the action would increase noise by Day-Night Average Sound Level (DNL) 1.5 decibels (dB) or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the no action alternative for the same timeframe.[106]

### 4.10.2 Methods

Because the Proposed Project would not increase the number of existing or forecasted aircraft operations, there would be no aircraft related changes to noise under the Proposed Project, and the analysis is focused on the potential for construction-related noise impacts. Construction-related noise is a function of the types of equipment being used, the distance to potential receptors, and the duration of construction activities. When noise levels from a point source (such as a construction site) are referenced, they typically include a specified distance from the source, because the intensity of noise decreases over distance from the source. The standard reduction for point source noise (a source that emanates noise spherically, not in a straight line) is 6 dBA per doubling of distance from the source.[107]

When multiple sources of noise are combined together (i.e., situations where multiple pieces of construction equipment are operating at the same time) the sound intensities would be combined. However, since dBA are calculated on logarithmic scale, the sound levels would not add together. In a case where two 85 dBA pneumatic tools are operating simultaneously, the combined sound intensity would not produce a 170 dBA sound level. Rather, two pneumatic tools operating simultaneously (a doubling of sound intensity from just one) would result in an increase of 3 dBA of sound level, or 88 dBA at the source.[108] Likewise, eight pneumatic tools operating simultaneously would result in a sound level of 94 dBA at the source. This concept is illustrated below in **Table 4-22** for use of one, two, and eight pneumatic tools (such as jackhammers, grinders, and air compressors), the loudest type of construction equipment anticipated for the Proposed Project.

[105] City of Phoenix Aviation Department, Sustainability Management Plan, 2015. Available for review at https://www.skyharbor.com/about/Sustainability
[106] FAA Order 1050.1F Exhibit 4-1, Page 4-8
[107] Federal Highway Administration, Construction Noise Handbook
[108] Based on Transit Noise and Vibration Impact Assessment, Federal Transit Administration, May 2006 (FTA-VA-90-1003-06)

**Table 4-22: Example of Noise Reduction over Distance from Pneumatic Tools (85 dBA)**

| Distance from Source (feet) | Point Source Noise (from a 85 dBA source) | Point Source Noise (from two 85 dBA sources) | Point Source Noise (from eight 85 dBA sources) |
|---|---|---|---|
| 0 | 85 dBA | 88 dBA | 94 dBA |
| 50 | 79 dBA | 82 dBA | 88 dBA |
| 100 | 73 dBA | 76 dBA | 82 dBA |
| 200 | 67 dBA | 70 dBA | 76 dBA |
| 400 | 61 dBA | 64 dBA | 70 dBA |
| 800 | 55 dBA | 58 dBA | 64 dBA |
| 1,600 | 49 dBA | 52 dBA | 58 dBA |
| 3,200 | 43 dBA | 46 dBA | 52 dBA |

Source: Based off of Federal Highway Administration, Construction Noise Handbook and Federal Transit Administration, Transit Noise and Vibration Impact Assessment

## 4.10.3 Alternative 1: No Action Alternative

The No Action Alternative would not involve construction of any of the new facilities or improvements planned under the Proposed Project. Therefore, there would be no construction related noise impacts.

## 4.10.4 Alternative 2: Proposed Project

### *4.10.4.1 Future (2028) Proposed Project*

The Proposed Project would consist of multiple project components occurring over the span of approximately five years. Detailed information on construction timing and estimated equipment usage can be found in Appendix B – Air Quality and Climate (as it was used to estimate construction equipment emissions).

Construction of the Proposed Project would generate increased noise during construction activities such as demolition, excavation, grading, and structural work. Since the project is still in the planning phase, specific construction activities and timing are unknown at this time, but the bulk of the proposed work would likely occur during weekday, daytime hours. Construction activities that involve active taxiways may occur during nighttime hours to limit operational and safety impacts. Construction-related noise would vary based on the type of equipment used (examples provided in Table 3-17) and proximity to the construction site (example sound levels estimated in Table 4-22), and it is likely that multiple activities would be occurring at once, involving multiple types of construction equipment. To simulate multiple pieces of construction equipment being used at once, the City analyzed the sound levels produced by the simultaneous use of eight of the loudest construction equipment anticipated for the Proposed Project (eight pneumatic tools at 85 dBA each). The sound levels generated by this equipment usage was estimated at three different noise-sensitive land uses north of the Airport:

- Crestwood Neighborhood
- El Molino Place Neighborhood
- Hilaria Rodriguez Park

Each is depicted on **Exhibit 4-2**.

- *Crestwood Neighborhood*
  This neighborhood is located between S. 24th Street and S. 26th Street and includes a mix of residential and commercial/industrial land use. Based on U.S. Census data, this neighborhood is located in an area containing percentages of minority and low-income populations in excess of the GSA as a whole (potential Environmental Justice impacts are discussed in Section 4.11.4.2). The nearest residential receptor is over 1,500 feet from the proposed airfield safety improvements (construction of taxiway fillet

pavement). At this distance, construction-related noise would be reduced by more than 30 dBA because of the sound dissipation over distance. With the assumed simultaneous use of eight pneumatic tools, the resulting noise levels from this equipment would be below 64 dBA at this location, not counting the shielding effect of the buildings located between the proposed project and the residential receptors. There are no residential properties associated with the Crestwood Neighborhood that are located within the existing 65 DNL noise exposure contour (as depicted on Exhibit 3-6). Furthermore, the sound levels experienced by the Crestwood Neighborhood during construction would be below the 65 dBA threshold used by the FAA to determine land use compatibility for residential properties.

- *El Molino Place Neighborhood*
  This residential neighborhood is located along E. Adams Street (between N. 28th Street and N. 30th Street). Based on U.S. Census data, this neighborhood is located in an area containing percentages of minority and low-income populations in excess of the GSA as a whole (potential Environmental Justice impacts are discussed in Section 4.11.4.2. The nearest home is approximately 2,800 feet away from the proposed airfield safety improvements (closure of Taxiway A5 and construction of Taxiway A6). At this distance construction related noise would be reduced by more than 36 dBA due to sound dissipation over distance. With the assumed simultaneous use of eight pneumatic tools, the resulting noise levels from this equipment would be less than 58 dBA at this location, not counting the shielding effect of the buildings located between the proposed project and the residential receptors. There are no residential properties associated with the El Molino Place Neighborhood that are located within the existing 65 DNL noise exposure contour (as depicted on Exhibit 3-6). Furthermore, the sound levels experienced by the El Molino Place Neighborhood during construction would be below the 65 dBA threshold used by the FAA to determine land use compatibility for residential properties.

- *Hilaria Rodriguez Park*
  This public park is located in the El Molino Place Neighborhood at 2801 E. Adams Place, and includes a playground, picnic tables, and two turf play areas. The Park is 2,800 feet from the proposed airfield safety improvements (taxiway fillet improvements, and over 3,300 feet away from the more substantial Taxiway A5/Taxiway A6 work. At this distance construction related noise would be reduced by more than 36 dBA from the fillet work, and more than 42 dBA from the taxiway work, due to sound dissipation over distance. With the assumed simultaneous use of eight pneumatic tools, the resulting noise levels from this equipment would be approximately 58 dBA at this distance, not counting the shielding effect of the commercial/industrial buildings along E. Washington Street, between the proposed project and the residential receptors. The Hilaria Rodriquez Park in not located within the existing 65 DNL noise exposure contour (as depicted on Exhibit 3-6). Furthermore, the sound levels experienced by the Hilaria Rodriquez Park would be below the 65 dB threshold used by the FAA to determine land use compatibility for parks.

Each of these areas would experience increased noise during construction activities, which could include temporary conversation interference, activity interference (e.g., reading or watching television), or annoyance. However, based on the short duration of activities (no individual pavement project should take more than 6 months to construct), and the distance between the proposed projects and the nearest receptors, construction noise impacts would not be significant. Therefore, the Proposed Project would not result in significant impacts when compared to the No Action Alternative.

The Proposed Project is not an airfield capacity enhancement project and would not cause a change in aircraft related noise as compared to the No Action Alternative.

### *4.10.4.2 Future (2033) Proposed Project*

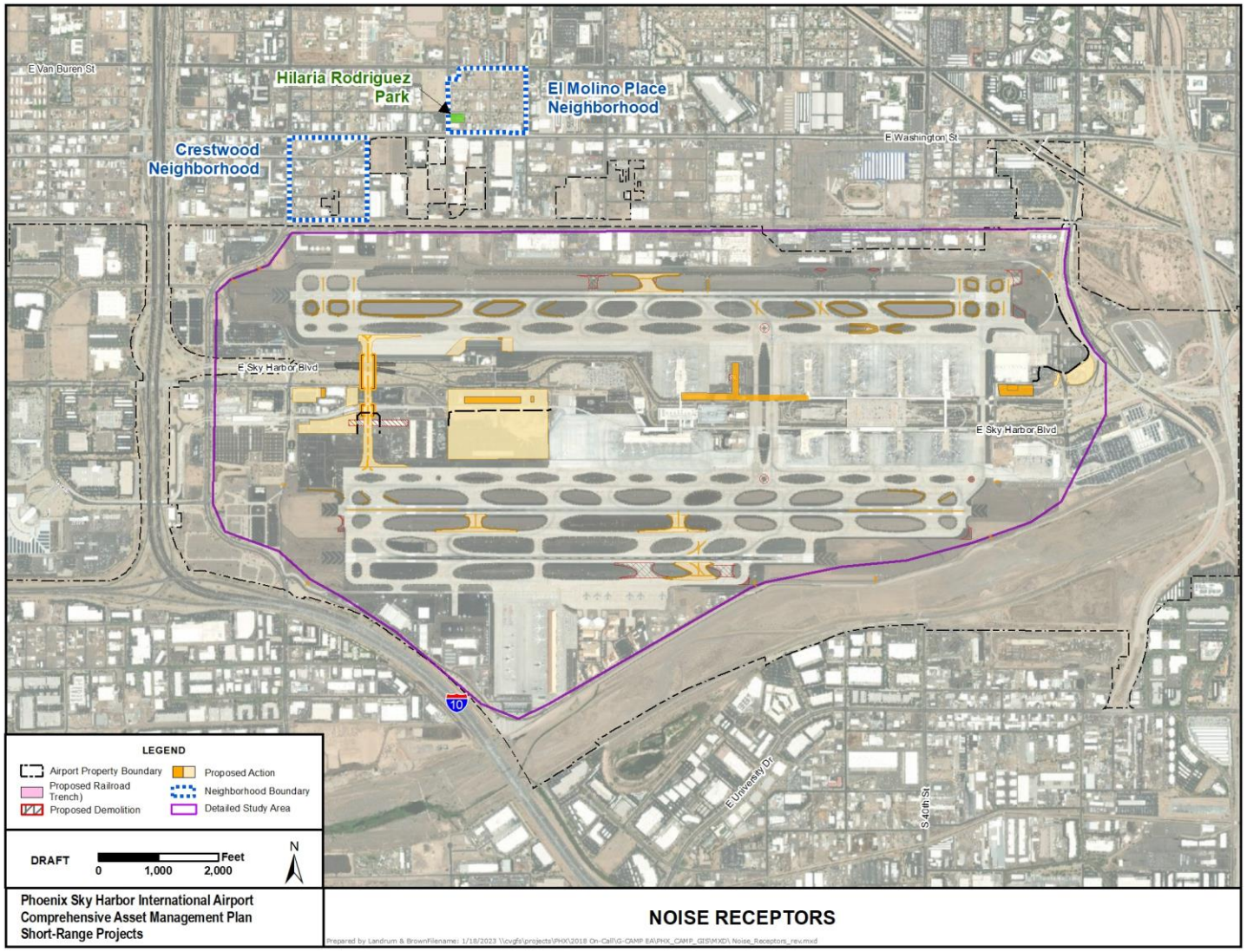
The Future (2033) Proposed Project would have the same effects upon noise and noise compatible land use as described for the Future (2028) Proposed Project**.**

### 4.10.5 Avoidance, Minimization and Mitigation Measures

Because no significant impacts related to construction noise would occur, no mitigation is necessary.

*Avoidance and Minimization Measures:*
The City of Phoenix Aviation Department would implement measures such as requiring equipment exhaust muffler requirements, establishing equipment idling time limits, and requiring the use of noise sensitive equipment backup alarms during construction activities. Construction would also follow the conditions required by the Phoenix City Noise Ordinance, however nighttime construction would likely be required to minimize operational impacts and improve safety.

**Exhibit 4-2: Noise Receptors**



# 4.11 Socioeconomics, Environmental Justice, and Children's Health and Safety Risks

This section presents the analysis of potential socioeconomic impacts, environmental justice impacts, and children's environmental health and safety risks that would occur as a result of the No Action Alternative and Proposed Project.

## 4.11.1 Significance Threshold

The FAA has not established a significance threshold for socioeconomic, environmental justice, or children's health and safety risks. However several factors to consider have been identified.[109] These factors include:

*Socioeconomic:*

The degree to which the action would have the potential to:

- Induce substantial economic growth in an area, either directly or indirectly (e.g., through establishing projects in an undeveloped area);
- Disrupt or divide the physical arrangement of an established community;
- Cause extensive relocation when sufficient replacement housing is unavailable;
- Cause extensive relocation of community businesses that would cause severe economic hardship for affected communities;
- Disrupt local traffic patterns and substantially reduce the levels of service of roads serving an airport and its surrounding communities; or
- Produce a substantial change in the community tax base.

*Environmental Justice:*

- The action would have the potential to lead to a disproportionately high and adverse impact to an environmental justice population, i.e., a low-income or minority population, due to:
    - Significant impacts in other environmental impact categories; or
    - Impacts on the physical or natural environment that affect an environmental justice population in a way that the FAA determines are unique to the environmental justice population and significant to that population.

*Children's Health and Safety Risks:*

- The action would have the potential to lead to a disproportionate health or safety risk to children.

## 4.11.2 Methods

The potential socioeconomic effects resulting from implementation of the Proposed Project and the No Action were evaluated based on whether or not the various project elements would result in one or more of the factors identified above. The analysis considered both direct and induced (or secondary) impacts attributable to a project element. Potential impacts are based on the tabulated census data and resources identified in Chapter 3.3.10. For environmental justice, the analysis focused on the distribution of impacts, and if they are unique to the environmental justice population and significant to that population.

## 4.11.3 Alternative 1: No Action Alternative

The No Action Alternative would not involve construction of any of the new facilities or improvements planned under the Proposed Project. Therefore, no impacts to socioeconomic resources, environmental justice populations, or children's health and safety would occur.

## 4.11.4 Alternative 2: Proposed Project

### *4.11.4.1 Socioeconomic*

#### *Induced Economic Growth*

The Proposed Project would support long-term economic growth for the Airport and surrounding areas by providing facilities necessary to accommodate future passenger and support Airport tenant needs. The proposed concourse expansions would likely create new concessions and retail jobs (for the new food and shopping establishments), and new jobs associated with operation and maintenance of the new facilities. Temporary growth in economic activity for local businesses would likely result from the creation of construction jobs and supporting businesses during the periods of active construction. The overall effect to the economic environment of the GSA would be beneficial, and no significant impacts resulting from induced economic growth are anticipated when compared to the No Action Alternative.

#### *Division of Communities*

The Proposed Project would occur entirely on City of Phoenix Aviation Department owned property, with no additional land acquisition necessary. Therefore, no significant impacts would occur related to division of communities when compared to the No Action Alternative.

#### *Relocation of Residences/Businesses*

The Proposed Project would not require the acquisition of any residences of businesses. Two existing on-airport buildings would be demolished (the C-Point cargo facility, and Air Cargo Complex C) but comparable replacement facilities would be provided for each. The entire project would be located on existing Airport land. Therefore, the Proposed Project would not result in significant impacts when compared to the No Action Alternative.

#### *Disruptions of Local Traffic Patterns*

The Proposed Project would not disrupt any local traffic patterns because the entire project would occur on existing Airport land, and would not involve any publicly accessible roads. Therefore, the Proposed Project would not result in significant impacts when compared to the No Action Alternative.

#### *Substantial Loss in Community Tax Base*

The Proposed Project would likely benefit the local tax base by providing additional employment opportunities and supporting the overall growth of the area. Additional retail tax revenues would be expected from new food and retail establishments contained within the proposed terminal concourse improvements. Therefore, the Proposed Project would not result in significant impacts when compared to the No Action Alternative.

### *4.11.4.2 Environmental Justice*

The Proposed Project would be located entirely on Airport owned property and would not result in any direct impacts to off-Airport property. Although off-site impacts are possible for certain resource categories, the analyses of air quality emissions, climate impacts, noise (construction and operational), and visual effects all conclude that no significant impacts are anticipated under the Proposed Project. Increased air quality emissions are anticipated due to construction related activities and increases to aircraft taxiing times; however, these

impacts would not result in pollutant levels that exceed the NAAQS. Furthermore, there are no unique circumstances known to exist that would result in greater impacts to environmental justice populations than other populations in the vicinity of the Airport. A summary of potential environmental justice impacts, by resource category, is provided in Table **4-23**.

**Table 4-23: Environmental Justice Impacts**

| Environmental Resource Category | Impacts | Are the Impacts Disproportionately Borne by Environmental Justice Population? | Does the Impact Cause a Disproportionately High and Adverse Effect? |
|---|---|---|---|
| Air Quality | Temporary increase in emissions during construction of the Proposed Project. In 2028 and 2033, the Proposed Project would result in an increase in emissions compared to the No Action. The additional emissions would be *de minimis*, and not cause any exceedances of the NAAQS, which are set to protect public health and welfare, including protection of "sensitive" populations. | Yes, because the majority of the block groups surrounding the Airport have been identified as potential environmental justice communities. | No; the Proposed Project would not cause an exceedance of the NAAQS. Therefore, the Proposed Project would not result in disproportionately high and adverse effects on environmental justice populations. |
| Biological Resources | There would be minor impacts to biological resources as a result of the Proposed Project. | No; all impacts would occur on existing Airport property. | N/A |
| Climate | Temporary increase in GHG emissions during construction of the Proposed Project. In 2028 and 2033, the Proposed Project would result in an increase in GHG emissions compared to the No Action. It is not possible to link GHG emissions from the Proposed Action with any specific climate change impacts in any particular location. | No; climate change is a global phenomenon, thus environmental justice populations within the study area would not disproportionately bear climate change impacts from the Proposed Project. | N/A |
| Section 4(f) | The Proposed Project would result in *de minimis* impacts to Section 4(f) eligible resources. | No; the impacts would be *de minimis*, and would occur on Airport property. | N/A |
| Hazardous Materials, Solid Waste, and Pollution Prevention | The Proposed Project would impact contaminated areas and includes demolition of buildings with hazardous materials. These impacts would occur on City-owned | No | N/A |

| | | | |
|---|---|---|---|
| | property. No significant impacts related to solid waste are anticipated. | | |
| Historic, Architectural, Archaeological, and Cultural Resources | The Proposed Project would have no adverse effect on historic properties that are listed in, or eligible for listing on the NRHP. Archaeological monitors or an Inadvertent Discoveries Plan will be included for areas that have the potential to contain archaeological resources. | No | N/A |
| Land Use | The Proposed Project is consistent with applicable zoning, land uses, and land use plans, and would therefore no affect land use. | No | N/A |
| Natural Resources and Energy Supply | Consumption of natural resources and energy would occur during construction of the Proposed Project. However, the Proposed Action would not cause a significant shortage of area supplies or resources. | No; impacts to natural resources and energy supply would not be disproportionately borne by environmental justice populations. | N/A |
| Noise and Noise Compatible Land Use | The areas surrounding the Airport would experience increased noise during construction. | Yes, because the majority of the block groups surrounding the Airport have been identified as potential environmental justice communities. | No; the Proposed Project would only result in only temporary impacts, and these impacts would be below the levels compatible for residential and park land uses. None of the affected properties are located within the 65 DNL noise exposure contour. |
| Socioeconomics | The overall economic effect of the Proposed Project would be beneficial. The Proposed Project will occur entirely on City property and would not require land acquisition. | No | N/A |
| Visual Effects | The Proposed Project would result in new sources of light emissions and new visual elements; however, the impacts would be isolated, and limited to views from certain angles or vantage points. | Yes, because the majority of the block groups surrounding the Airport have been identified as potential environmental justice communities. | No; the potential visual effects would be minor in nature, and consistent with the existing visual environment. |

Source: L&B Analysis, 2023

Based on the above analysis, the Proposed Project would not result in disproportionately high and adverse impacts to minority and/or low-income populations when compared with the No Action Alternative.

#### *4.11.4.3 Children's Environmental Health and Safety Risks*

Although the Proposed Project would result in increases in construction related air emissions as compared to the No Action Alternative, these increases would not be considered significant. No releases of hazardous materials or other hazardous materials related impacts are anticipated given the avoidance and minimization measures that would be required during construction activities. Aircraft noise exposure levels would be the same for the Proposed Project as the No Action Alternative, because the Proposed Project would not increase the number of aircraft operations or type of aircraft being used. Construction related noise would not exceed the threshold used by the FAA to determine land use compatibility for residential properties or schools. No other environmental impacts have been identified that could cause disproportionate health and safety risks to children. Therefore, no significant impacts to children's environmental health and safety would occur under the Proposed Project when compared with the No Action Alternative.

### 4.11.5 Avoidance, Minimization, and Mitigation and Minimization Measures

No significant impacts to socioeconomic resources, environmental justice populations, or children's environmental health and safety would occur as a result of the Proposed Project. Therefore, no avoidance, minimization, or mitigation measures would be necessary.

## 4.12 Visual Effects

This section describes the potential visual effect impacts associated with light emissions and visual resources and character that would result from the No Action Alternative and Proposed Project.

### 4.12.1 Significance Threshold

The FAA has not established a significance threshold for visual effects. However several factors to consider have been identified for light emissions and visual resources/visual character.[110] These factors include:

*Light Emissions*

The degree to which the action would have the potential to:

- Create annoyance or interfere with normal activities from light emissions; and
- Affect the visual character of the area due to the light emissions, including the importance, uniqueness, and aesthetic value of the affected visual resources.

*Visual Resources / Visual Character*

The extent the action would have the potential to:

- Affect the nature of the visual character of the area, including the importance, uniqueness, and aesthetic value of the affected visual resources;
- Contrast with the visual resources and/or visual character in the study area; and
- Block or obstruct the views of visual resources, including whether these resources would still be viewable from other locations.

[110] FAA Order 1050.1F Exhibit 4-1, Page 4-10

## 4.12.2 Methods

The potential environmental effects resulting from the Proposed Project and No Action Alternative were evaluated based on the type of development proposed and the location and extent of potential receptors.

Light emission impacts are typically related to the extent to which any lighting or glare associated with the Proposed Project or alternative(s) would create an annoyance for people in the vicinity and/or would interfere with their normal activities, including work and recreation.

Visual impacts are changes to the scenic attributes of the landscape that would affect, obstruct, substantially alter, or remove visual resources including buildings, historic sites, or other landscape features, such as topography, water bodies, or vegetation, that are visually important or have unique characteristics.

## 4.12.3 Alternative 1: No Action Alternative

The No Action Alternative would not involve construction of any of the new facilities or improvements planned under the Proposed Project, or affect the visual resources or character of the surrounding areas. Therefore, no impacts to visual resources would occur.

## 4.12.4 Alternative 2: Proposed Project

### *4.12.4.1 Light Emissions*

The GSA is currently illuminated by a number of different light sources including commercial and industrial building lights, residential lighting, parking lot lights, and streetlamps. The Proposed Project would add exterior lights for the new buildings, airfield improvements, and parking areas. These new light sources would occur within the boundary of the Airport and would be designed to provide illumination to serve the Airport's needs while avoiding off-site glare and light pollution. None of the elements of the Proposed Project would occur in residential or other light sensitive areas, and no new light sources would be directed towards these areas.

As a result, the new light sources associated with the Proposed Project would not create additional annoyances, interfere with normal activities, or adversely affect the visual character in the developed areas surrounding the Airport. New light sources would be indistinguishable from ambient lighting levels at and around the Airport and would not result in significant light emissions impacts when compared with the No Action Alternative.

### *4.12.4.2 Visual Resources and Visual Character*

The Proposed Project would affect the existing viewshed by constructing new buildings, structures, and pavement. None of the six vantage points illustrated in Section 3.3.11 of this EA would be substantially altered as a result of the Proposed Project. Views 1, 4, 5, and 6 would be essentially the same after construction of the Proposed Project, with only minor changes to background building profiles and locations. Views 2 and 3 would be unchanged, with no development occurring north of the existing Airport property.

Although the Proposed Project would introduce new visual elements within the GSA, the impacts from these new elements would be limited to views from certain angles or vantage points. Since the topography of the GSA is generally flat, many of the views would be obstructed by intervening buildings and transportation infrastructure (such as the Sky Train and grade separated roadways). New buildings, and airfield pavement would be similar in context to the existing visual environment of large one- or two-story structures. Therefore, impacts to visual resources and visual character resulting from the Proposed Project would not be significant when compared with the No Action Alternative.

### 4.12.5 Avoidance, Minimization, and Mitigation and Minimization Measures

Since no significant light emission impacts or impacts related to visual resources or visual character were identified for the Proposed Project, therefore, no mitigation is necessary.

*Avoidance and Minimization Measures:*
Compliance with the Maricopa County Outdoor Light Provisions (Dark Sky Ordinance) would reduce the likelihood of light emissions impacting off-airport receptors by requiring full or partial shielding of building and parking related light fixtures.

New development would be designed in accordance with the City of Phoenix Aviation Department's Design Manual to achieve cohesive and consistent development. This manual requires new development to be compatible with the existing architectural design characteristics of the Airport, with an emphasis on aesthetic issues such as views and sight lines and scale and proportion of buildings. Structures and facilities would be designed within the context of their entire surrounding area and the planned future development of the area.

## 4.13 Cumulative Impacts

This section describes reasonably foreseeable future actions relevant to cumulative impacts. For a project to have potential cumulative effects with the Proposed Project, the project must result in impacts to the same resources affected by the Proposed Project.

### 4.13.1 Methods

Cumulative impacts were evaluated by considering the combined impacts of the Proposed Project and the impacts of the past, present, and reasonably foreseeable future projects identified Table 3-29. Significant cumulative impacts are determined according to the same thresholds of significance used in the evaluation of the environmental impact category in the environmental consequences discussion.

For environmental impact categories where construction and implementation of the Proposed Project would have no environmental impact, there is no potential for an adverse cumulative environmental impact to occur. Therefore, the following discussion of cumulative impacts discusses only those environmental impact categories where environmental impacts could result from implementation of the Proposed Project.

### 4.13.2 Potential Impacts

*Air Quality*

Construction activities associated with the Proposed Project would result in air quality emissions from construction equipment, vehicles, and fugitive dust emissions from demolition and earthwork. The impacts would occur within the immediate vicinity of the construction site and would be minimized through BMPs to reduce emissions, control dust particles, and regulate stationary emissions sources. While the Proposed Project would contribute to the overall emissions of air pollutants in the City of Phoenix and Maricopa County, the effect of these air emissions would not cause or contribute to any new violation of the NAAQS, would not increase the frequency or severity of existing violations, and would not delay timely attainment of any standard.

Ongoing projects such as DOT's I-10 Broadway Curve would not cause a violation of any of the NAAQS and would not fit the criteria to be considered a project of air quality concern.[111] No other future projects are known to exist that, in combination with the construction emissions from the Proposed Project, would generate emissions above the *de minimis* threshold for individual pollutants. In fact, the recently completed Sky Train Stage 2 project

[111] I-10 Broadway Curve Draft Environmental Assessment, Chapter IV.H.4, page 93.

is expected to reduce overall emissions due to the elimination of vehicle miles traveled between Terminal 3 and the Rental Car Center.

Additionally, the City of Phoenix Aviation Department is voluntarily implementing programs such as encouraging alternative fuel/clean vehicles, providing electric vehicle charging stations, and providing ground power and cooled air service for parked aircraft to reduce emissions on and around the Airport. Therefore, the Proposed Project, when combined with other reasonably foreseeable future projects in Table 3-29 is not likely to result in significant impacts to air quality.

### *Biological*

The Proposed Project would not directly impact any federally-listed threatened or endangered species or their habitat. Potential impacts to other non-listed species and migratory birds would result from the disruption of existing habitat areas; however, these impacts would not be significant in nature. The reasonably foreseeable future projects in Table 3-29 are likely to contribute to the overall loss of natural habitat in the area; however, the combined effect of these projects is not anticipated to be significant given the fact that the primary areas of habitat within the GSA (the Salt River bed, Tempe Town Lake, and stormwater retention basins) are not likely to be impacted because of development restrictions and permitting requirements. Therefore, implementation of the Proposed Project, when combined with other past, present, or reasonably foreseeable future projects would not result in significant adverse impacts to biological resources.

### *Climate*

The Proposed Project would result in GHG emissions. The reasonably foreseeable future actions identified in Table 3-29 would also generate GHG emissions.

### *Department of Transportation Act, Section 4(f)*

The Proposed Project would result in *de minimis* impacts to three Section 4(f) resources, all three of which are National Register eligible (or assumed eligible) archaeological sites. Other reasonably foreseeable future actions would not impact these same historic properties or their settings. Therefore, the Proposed Project, when combined with reasonably foreseeable future projects in Table 3-29 would not result in significant adverse impacts to these resources.

### *Hazardous Materials, Solid Waste, and Pollution Prevention*

#### *Hazardous Materials*

The Proposed Project would be unlikely to result in impacts to known hazardous materials sites or areas of contamination. Past activities in the vicinity of the Airport have led to documented areas of contamination, however the nature of these areas and the ongoing remediation activities associated with each known site limit the potential risks associated with the Proposed Project.

The Sky Train Stage 2 project was determined to have little effect on hazardous materials. Future on-Airport projects such as the East and West Access Improvements would occur within areas of known or suspected areas of contamination; however, these risks would be minimized through the same measures identified above as part of the Proposed Project. Future off-Airport projects would be required to comply with state and federal regulations governing hazardous materials, meaning that significant impacts to or from hazardous materials would be unlikely. The largest ongoing project is DOT's I-10 Broadway Curve project, which has the potential to impact one leaking underground storage tank site and six other sites with potential concerns. However general mitigation, removal, and disposal requirements are expected to minimize or prevent potential risks.[112]

[112] I-10 Broadway Curve Draft Environmental Assessment, Chapter IV.O.4, page 141.

The Proposed Project and reasonably foreseeable future actions in Table 3-29 are unlikely to violate hazardous materials laws and regulations and would not increase hazardous waste amounts above the capacity of waste disposal facilities in the Phoenix area.

### *Solid Waste*

The Proposed Project would generate additional solid waste during construction related activities; however, there is sufficient capacity to handle the additional waste. The additional waste would be managed and disposed of by City of Phoenix-selected contractors, in a manner that is consistent with state and local regulations. Therefore, there would not be significant impacts to the solid waste disposal capacity of the region.

The Future actions in Table 3-29 would have the potential to create solid waste; however, none of the future projects are sufficiently large enough to produce solid waste in amounts that would individually or cumulatively exceed solid waste disposal capacity of the region. Therefore, implementation of the Proposed Project when combined with other reasonably foreseeable projects would not result in significant adverse impacts to solid waste.

## *Historical, Architectural, Archeological, and Cultural Resources*

The Proposed Project would result in no adverse effect to the three National Register-eligible archaeological sites that overlap a portion of a project footprint. Other reasonably foreseeable future actions would not impact these same historic properties or their settings. Therefore, implementation of the Proposed Project, when combined with reasonably foreseeable future projects in Table 3-29 would not result in significant adverse impacts to historical, architectural, archeological, and cultural resources.

## *Land Use*

The Proposed Project would be consistent with the City of Phoenix 2015 General Plan and the City of Tempe General Plan 2040, and would not significantly alter the future land use patterns in the area. Therefore, the Proposed Project would not result in significant land use impacts.

Other past, present, and future actions may contribute to land use changes in the GSA. However, these projects would be unlikely to result in significant impacts because they would each be evaluated by the appropriate jurisdiction for consistency with the future land use and zoning designations and would abide by all applicable development standards and guidelines. Therefore, construction of the Proposed Project, when combined with other past, present, or reasonably foreseeable future projects, would not result in significant adverse impacts to existing or future land uses.

## *Natural Resources and Energy Supply*

Increases in demand for construction materials are likely to occur during construction of the Proposed Project due to the size and scale of the proposed project elements. This demand would be compounded by other present and future projects in Table 3-29 that are anticipated to occur during the same time frame, such as the Terminal 4 improvements and the I-10 Broadway Curve project; however, aside from temporary COVID-19 related supply chain issues, no long-term shortage of construction materials is expected in the Phoenix area. Therefore, the Proposed Project when combined with reasonably foreseeable future projects would not be expected to result in a significant effect on consumable natural resources.

The Proposed Project would also increase the demand of energy supply to power new facilities and infrastructure being constructed. However, this increase is not likely to be significant, and would be partially offset with the development and use of energy efficient technologies and renewable energy sources that would reduce the

burden on energy resources.[113] The existing and future energy supply in the Phoenix area is anticipated to meet the combined demand of the Proposed Project and all reasonably foreseeable future projects.

Water usage is not expected to increase under the Proposed Project. However, in 2020, the City of Phoenix Aviation Department implemented a goal to reduce water consumption by 2 percent annually. As part of this goal, the City of Phoenix Aviation Department has increased the recirculation of water in the Terminal 4 cooling tower, saving more than 22 million gallons of water annually.[114]

*Noise and Noise-Compatible Land Use*

The Proposed Project would result in noise during construction activities. However, none of these impacts would be significant in nature, and would not exceed the 65 dBA threshold used by the FAA to determine land use compatibility for residential properties established. Furthermore, none of the adjacent noise-sensitive receptors (that would be adversely affected by construction noise from the Proposed Project) are located within the existing 65 DNL noise exposure contour (as depicted on Exhibit 3-6). Compliance with the City of Phoenix Noise Ordinance would further reduce overall impacts by limiting the hours of construction activities, and requiring other measures such as equipment exhaust muffler requirements, equipment idling time limits, and quieter equipment backup alarms to be implemented during construction activities to minimize impacts. With consideration to these measures, impacts to potential receptors in the vicinity of the Airport are not anticipated to be significant. The same construction noise reduction measures would be applied to the other projects identified in Table 3-29 to ensure that resulting construction noise impacts are minimized to the extent possible. Given the limited extent of noise-related impacts, the Proposed Project, when combined with other past, present, and reasonably foreseeable future projects, would not result in significant impacts to noise and noise-compatible land uses.

### *4.13.2.2 Conclusion*

The level of impacts anticipated to occur within these environmental impact categories would not be significant based on the Proposed Project and reasonably foreseeable future projects listed in Table 3-29.

[113] Consistent with the Aviation Department's Sustainability Management Plan, 2015. Available for review at https://www.skyharbor.com/about/Sustainability
[114] City of Phoenix Aviation Department, Sustainability Management Plan Update Report. 2022.

# Chapter 5:
# List of Preparers

# 5 List of Preparers

The following identifies the individuals that contributed to the preparation of this Environmental Assessment (EA). The list is organized by the organization for which the individuals work, and provides brief synopses of the qualifications and responsibilities of those individuals from the Federal Aviation Administration (FAA), City of Phoenix Aviation Department, and the consultant team responsible for preparation of this document, respectively.

## 5.1 Federal Aviation Administration

*David B. Kessler, AICP, Regional Environmental Protection Specialist, Airports Division, Western-Pacific Region. B.A. Physical Geography (Geology Minor); M.A. Physical Geography*. Mr. Kessler has 40 years of professional experience. He is the Principal FAA Planner/Environmental Protection Specialist responsible for detailed FAA evaluation of EAs and Environmental Impact Statements (EISs) as well as coordination of comments from various federal and state agencies in the FAA's Western-Pacific Region. He performed and reviewed the required consultation with the Arizona State Historic Preservation Office. Mr. Kessler directed the preparation of this EA.

## 5.2 City of Phoenix – Aviation Department

*Jordan Feld, Deputy Aviation Director, Department of Aviation Planning & Environment Division*. Mr. Feld has over 23 years of experience with airport planning and environmental processing and review. He is responsible for City of Phoenix management and oversight of this EA.

## 5.3 Landrum & Brown

*Sarah Potter, Executive Vice President. B.A. in Mathematics*. Ms. Potter has over 24 years of experience managing environmental projects and has extensive National Environmental Policy Act (NEPA) analysis experience on EISs and EAs. She is the L&B Environmental Practice Leader responsible for technical input, technical analysis, and project management.

*Rob Adams, President. Bachelor of Urban Planning*. Mr. Adams has over 28 years of experience completing airport environmental and master planning assignments, including numerous EISs and EAs. He is the L&B Team Project Manager, responsible for project management, technical input, and management of the EA.

*Chris Babb, Senior Managing Consultant. B.S. Aerospace; M.S. Aeronautical Science, Management, and Operations*. Mr. Babb has over 20 years of experience working directly with airports, the FAA, and environmental regulatory agencies on the preparation of NEPA documents. He is responsible for preparing the air quality and climate analysis.

*Erik Schwenke, Managing Consultant. B.S. in Natural Science; M.S. in Environmental Science and Policy.* Mr. Schwenke has 26 years of experience completing NEPA documentation for large scale airport and capital improvement projects throughout the country. He is the Deputy Project Manager and principal author of the EA.

*Christian Valdes, Senior Managing Consultant. B.S. in Aviation Science; M.A. in Geographic Information Science; M.B.A*. Mr. Valdes has over 23 years of experience in civil airport noise management and airport noise assessments. He is responsible for preparing the noise analysis for this EA.

## 5.4 SWCA Environmental Consultants

*Annie Lutes, Cultural Resources Team Lead*, lead the cultural resources field effort and assisted with the preparation of the cultural resources inventory report.

*Adrienne Tremblay, Ph.D., Lead Archaeologist and Principal Investigator*, was responsible for oversight of the cultural resources investigation for the project and Section 106 consultation.

# Chapter 6:
# References

# 6 References

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# *DRAFT*

# *ENVIRONMENTAL ASSESSMENT*

## *Volume 2: Appendices*

PHOENIX SKY HARBOR INTERNATIONAL AIRPORT (PHX)
COMPREHENSIVE ASSEST MANAGEMENT PROJECT

Phoenix International Airport
Phoenix, Maricopa County, Arizona

*Prepared for:*
**CITY OF PHOENIX AVIATION DEPARTMENT**

**U.S. DEPARTMENT OF TRANSPORTATION**
**FEDERAL AVIATION ADMINISTRATION**
As lead Federal Agency pursuant to the National Environmental Policy Act of 1969

*Prepared by:*
Landrum and Brown, Incorporated

**July 2023**

# APPENDIX A

## FAA Approvals

### Forecast

- Phoenix Sky Harbor International Airport Aviation Activity Forecast Approval, July 5, 2018
- Phoenix Sky Harbor International Airport – Comprehensive Asset Management Plan Baseline Forecast Review, May 29, 2018

### Section 163

- FAA Approval Authority Review - Phoenix Sky Harbor Comprehensive Asset Management Plan Section 163 Determination, April 15, 2022

U.S. Department
of Transportation
**Federal Aviation
Administration**

Federal Aviation Administration
Phoenix Airports District Office

3800 N Central Ave
Suite 1025
Phoenix, AZ 85012

July 5, 2018

Jordan Feld
Deputy Aviation Director – Planning & Environmental
City of Phoenix Aviation Department
2485 E Buckeye Rd
Phoenix, AZ 85034

Dear Mr. Feld:

**Phoenix Sky Harbor International Airport**
**Aviation Activity Forecast Approval**

The Federal Aviation Administration (FAA) has reviewed the aviation forecast for the Phoenix Sky Harbor International Airport (PHX) dated May 29, 2018. The FAA approves both this forecast and the use of D-V for the existing and future critical design aircraft for airport planning purposes and Airport Layout Plan development.

The forecast was developed using current data, appropriate methodologies, and is within the acceptable range for TAF tolerance and therefore approved for planning purposes at PHX. It is important to note that the approval of this forecast doesn't guarantee funding for large scale capital improvements as future projects will need to be justified by current activity levels at the time the projects are proposed for implementation.

If you have any questions about this forecast approval, please call me at 602-792-1073.

Sincerely,

Kyler Erhard
Lead Program Manager

RICONDO®

May 29, 2018

Kyler Erhard
Federal Aviation Administration – Phoenix Airports District Office
3800 N. Central Avenue
Phoenix, AZ 85012

RE: Phoenix Sky Harbor International Airport – Comprehensive Asset Management Plan Baseline Forecast Review

Dear Mr. Erhard:

Enclosed is a forecast of aviation activity submitted on behalf of the City of Phoenix Aviation Department for review by the Federal Aviation Administration (FAA). Prepared in support of the Comprehensive Asset Management Plan (CAMP) for Phoenix Sky Harbor International Airport (PHX), the forecast presents future activity over the 20-year planning horizon, extending to 2037. The Activity Forecasts section details the methodology, analyses, and conclusions reached as part of the forecast development. Additionally, the tables included with this transmittal letter include a comparison of the PHX forecasts of enplaned passengers and aircraft operations to the FAA's 2017 Terminal Area Forecast.

The baseline forecast of enplaned passengers projects a compound annual growth rate (CAGR) of 2.2 percent while aircraft operations are forecasted to grow at a CAGR of 0.9 percent over the planning horizon. The Critical Aircraft (i.e., 500 or more annual operations) in terms of Airplane Design Group (ADG) for PHX is forecasted to remain Airplane Design Group V throughout the planning horizon with potential seasonal use by ADG VI aircraft.

Domestic enplaned passengers are forecasted to grow at a CAGR of 2.1 percent while international enplaned passengers are forecasted to grow at a higher rate of 3.5 percent. Although the annual forecast does not identify specific new international markets, it is anticipated that service will continue to London, United Kingdom and that seasonal service will continue to Frankfurt, Germany. It is further anticipated that service will be expanded to one or two additional European destinations such as Paris, France; Amsterdam, Netherlands; or Rome, Italy. It is also anticipated that there will be additional flights to Mexico and Canada and potentially a Central American destination such as Liberia, Costa Rica; Guatemala City, Guatemala; Panama City; Panama; or Belize City, Belize.

We appreciate the FAA's review of the PHX CAMP forecast of aviation activity. Please reach out to Mr. Jordan Feld at 602-273-4072 or jordan.feld@phoenix.gov or me at 720-259-5591 or mrichter@ricondo.com with any questions or for further coordination.

Sincerely,

RICONDO & ASSOCIATES, INC.

Mark R. Richter
Director

ENCLOSURE

cc: J. Feld, City of Phoenix Aviation Department
J. Williams, Ricondo & Associates, Inc.
C. Kerr, Ricondo & Associates, Inc.
17-06-1007 3.5

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**Tables 1** and **2** summarize the baseline forecast of aviation activity prepared in support of the Comprehensive Asset Management Plan (CAMP) for Phoenix Sky Harbor International Airport (PHX). Data are presented similarly to the templates provided in the document *Forecasting Aviation Activity by Airport*. [1]

[1] GRA, Incorporated, *Forecasting Aviation Activity by Airport,* July 2001.

## TABLE 1 (1 OF 2) FORECAST SUMMARY

| BASE YEAR: 2016[1] | FORECAST LEVELS AND GROWTH RATES | | | | | AVERAGE COMPOUND ANNUAL GROWTH RATE | | | |
|---|---|---|---|---|---|---|---|---|---|
| | BASE YEAR LEVEL | BASE YEAR + 1 YEAR | BASE YEAR + 5 YEARS | BASE YEAR + 10 YEARS | BASE YEAR + 15 YEARS | BASE YEAR TO +1 | BASE YEAR TO +5 | BASE YEAR TO +10 | BASE YEAR TO +15 |
| **Passenger Enplanements** | | | | | | | | | |
| Air Carrier | 21,108,437 | 21,406,143 | 23,595,587 | 26,113,657 | 29,083,100 | 1.4% | 2.3% | 2.2% | 2.2% |
| Commuter [2] | 564,981 | 572,950 | 631,552 | 698,949 | 778,429 | 1.4% | 2.3% | 2.2% | 2.2% |
| Total Enplanements | 21,673,418 | 21,979,092 | 24,227,139 | 26,812,606 | 29,861,529 | 1.4% | 2.3% | 2.2% | 2.2% |
| **Operations** | | | | | | | | | |
| ***Itinerant*** | | | | | | | | | |
| Air Carrier (incl. Air Cargo) | 356,818 | 360,049 | 366,470 | 380,224 | 406,256 | 0.9% | 0.5% | 0.6% | 0.9% |
| Commuter/Air Taxi | 60,415 | 59,881 | 53,620 | 54,329 | 57,685 | -0.9% | -2.4% | -1.1% | -0.3% |
| Total Commercial Operations | 417,233 | 419,930 | 420,090 | 434,553 | 463,941 | 0.6% | 0.1% | 0.4% | 0.7% |
| General Aviation | 20,857 | 20,909 | 21,166 | 21,497 | 21,839 | 0.2% | 0.3% | 0.3% | 0.3% |
| Military | 2,553 | 2,553 | 2,553 | 2,553 | 2,553 | 0.0% | 0.0% | 0.0% | 0.0% |
| ***Local*** | | | | | | | | | |
| General Aviation | 106 | 0 | 0 | 0 | 0 | | | | |
| Military | 22 | 0 | 0 | 0 | 0 | | | | |
| Total Operations | 440,771 | 443,392 | 443,809 | 458,603 | 488,333 | 0.6% | 0.1% | 0.4% | 0.7% |
| **Instrument Operations** | 440,771 | 443,392 | 443,809 | 458,603 | 488,333 | 0.6% | 0.1% | 0.4% | 0.7% |
| **Peak Hour Operations** | 123 | 124 | 125 | 130 | 133 | 0.8% | 0.3% | 0.6% | 0.5% |

## TABLE 1 (2 OF 2) FORECAST SUMMARY

| BASE YEAR: 2016[1] | FORECAST LEVELS AND GROWTH RATES | | | | | AVERAGE COMPOUND ANNUAL GROWTH RATES | | | |
|---|---|---|---|---|---|---|---|---|---|
| | BASE YEAR LEVEL | BASE YEAR + 1 YEAR | BASE YEAR + 5 YEARS | BASE YEAR + 10 YEARS | BASE YEAR + 15 YEARS | BASE YEAR TO +1 | BASE YEAR TO +5 | BASE YEAR TO +10 | BASE YEAR TO +15 |
| **Cargo** | | | | | | | | | |
| Cargo/mail (tons) [3] | 354,085 | 367,002 | 419,442 | 486,710 | 562,030 | 3.6% | 3.4% | 3.2% | 3.1% |
| **Based Aircraft** | | | | | | | | | |
| Single Engine (Nonjet) | 16 | 16 | 16 | 16 | 16 | 0.0% | 0.0% | 0.0% | 0.0% |
| Multi Engine (Nonjet) | 20 | 20 | 20 | 20 | 20 | 0.0% | 0.0% | 0.0% | 0.0% |
| Jet Engine | 12 | 12 | 12 | 12 | 12 | 0.0% | 0.0% | 0.0% | 0.0% |
| Helicopter | 12 | 12 | 12 | 12 | 12 | 0.0% | 0.0% | 0.0% | 0.0% |
| Other | 8 | 8 | 8 | 8 | 8 | 0.0% | 0.0% | 0.0% | 0.0% |
| Total | 68 | 68 | 68 | 68 | 68 | 0.0% | 0.0% | 0.0% | 0.0% |
| Operational Factors | | | | | | | | | |
| **Average aircraft size (seats)** | | | | | | | | | |
| Air Carrier | 146.2 | 147.0 | 157.1 | 167.2 | 172.9 | | | | |
| Commuter | 44.7 | 44.9 | 48.0 | 51.1 | 52.9 | | | | |
| **Average Enplaning Load Factor** | | | | | | | | | |
| Air Carrier | 81% | 81% | 82% | 82% | 83% | | | | |
| Commuter | 81% | 81% | 82% | 82% | 83% | | | | |
| **General Aviation Operations per Based Aircraft** | 308 | 307 | 311 | 316 | 321 | | | | |

NOTES:

1 Forecast prepared on a calendar year basis.

2 Commuter as defined by FAA. Commuter operations include takeoff and landings by aircraft with 60 or fewer seats that transport regional passengers on scheduled commercial flights.

3 Cargo/mail in total U.S. tons (enplaned and deplaned).

SOURCES: Federal Aviation Administration (template); City of Phoenix Aviation Department (historical passenger, aircraft operations, and cargo activity); Federal Aviation Administration, Air Traffic Activity Data System (ATADS), January 2018 (historical aircraft operations activity); U.S. Department of Transportation, Form T-100, January 2018 (historical passenger activity); Ricondo & Associates, Inc., January 2018 (forecast).

## TABLE 2 COMPARISON TO TERMINAL AREA FORECAST

| BASE YEAR: 2016 | YEAR[1] | CAMP FORECAST | FAA TAF | BASELINE VS. FAA TAF (% DIFFERENCE) |
|---|---|---|---|---|
| **Passenger Enplanements[2]** | | | | |
| Base year | 2016 | 21,673,418 | 20,977,638 | 3.3% |
| Base year + 5 years | 2021 | 24,227,139 | 22,746,471 | 6.5% |
| Base year + 10 years | 2026 | 26,812,606 | 25,164,415 | 6.5% |
| Base year + 15 years | 2031 | 29,861,529 | 27,844,803 | 7.2% |
| **Commercial Operations** | | | | |
| Base year | 2016 | 417,233 | 417,870 | -0.2% |
| Base year + 5 years | 2021 | 420,090 | 440,493 | -4.6% |
| Base year + 10 years | 2026 | 434,553 | 489,910 | -11.3% |
| Base year + 15 years | 2031 | 463,941 | 539,817 | -14.1% |
| **Total Operations** | | | | |
| Base year | 2016 | 440,643 | 442,322 | -0.4% |
| Base year + 5 years | 2021 | 443,809 | 462,045 | -3.9% |
| Base year + 10 years | 2026 | 458,603 | 511,462 | -10.3% |
| Base year + 15 years | 2031 | 488,333 | 561,369 | -13.0% |

NOTES:

1 The CAMP forecast was prepared on a calendar year basis while the FAA Terminal Area Forecast is prepared on a federal fiscal year basis (October through September).

2 The CAMP Forecast includes nonrevenue passengers while the FAA TAF does not.

SOURCES: Federal Aviation Administration (template); City of Phoenix Aviation Department (historical passenger and aircraft operations activity); Federal Aviation Administration, Air Traffic Activity Data System (ATADS), January 2018 (historical aircraft operations activity); U.S. Department of Transportation, Form T-100, January 2018 (historical passenger activity); Federal Aviation Administration, 2017 Terminal Area Forecast, January 2018; Ricondo & Associates, Inc., January 2018 (forecast).

U.S. Department
of Transportation
**Federal Aviation Administration**

Western-Pacific Region
Office of Airports
Phoenix Airports District Office

3800 N Central Avenue
Suite 1025, 10th Floor
Phoenix, AZ 85012

April 15, 2022

Sent via email – Jordan.Feld@phoenix.gov

Jordan Feld
Deputy Aviation Director
City of Phoenix
Aviation Department
Planning & Environmental Division
2485 E. Buckeye Road
Phoenix, AZ 85034

Dear Mr. Feld:

Re: FAA Approval Authority Review – Phoenix Sky Harbor (PHX), Phoenix, AZ CAMP 2022 Section 163 Determination

On March 24, 2022, the City of Phoenix requested the Federal Aviation Administration (FAA) conduct a Section 163 analysis to determine the Agency's approval authority regarding the proposed Comprehensive Asset Management Plan (CAMP) for Short-Range Development undertaking. Proposed actions include airfield facilities, terminal and concourse facilities, and airport tenant and support facilities. All proposed development is within the current airport boundaries.

Recent changes in federal law have required the FAA to revisit whether FAA approval is needed for certain types of airport projects throughout the nation. On October 5, 2018, HR 302, the "FAA Reauthorization Act of 2018" (the Act) was signed into law (P.L. 115-254). In general, Section 163(a) limits the FAA's authority to directly or indirectly regulate an airport operator's transfer or disposal of certain types of airport land. However, Section 163(b) identifies exceptions to this general rule. The FAA retains authority:

1. To ensure the safe and efficient operation of aircraft or safety of people and property on the ground related to aircraft operations;
2. To regulate land or a facility acquired or modified using federal funding;
3. To ensure an airport owner or operator receives not less than fair market value (FMV) in the context of a commercial transaction for the use, lease, encumbrance, transfer, or disposal of land, any facilities on such land, or any portion of such land or facilities;
4. To ensure that that airport owner or operator pays not more than fair market value in the context of a commercial transaction for the acquisition of land or facilities on such land;
5. To enforce any terms contained in a Surplus Property Act instrument of transfer; and
6. To exercise any authority contained in 49 U.S.C. § 40117, dealing with Passenger Facility Charges.

In addition, Section 163(c) preserves the statutory revenue use restrictions regarding the use of revenues generated by the use, lease, encumbrance, transfer, or disposal of the land, as set forth in 49 U.S.C. §§ 47107(b) and 47133.

Section 163(d) of the Act limits the FAA's review and approval authority for Airport Layout Plans (ALPs) to those portions of ALPs or ALP revisions that:

1. Materially impact the safe and efficient operation of aircraft at, to, or from the airport;
2. Adversely affect the safety of people or property on the ground adjacent to the airport as a result of aircraft operations; or
3. Adversely affect the value of prior Federal investments to a significant extent.

**Proposed Project**

The City of Phoenix, acting as the airport sponsor for the Phoenix Sky Harbor International Airport (PHX) is proposing various actions in the Short-Range Development Plan included under CAMP. These projects are categorized into three elements:

1. Airfield Facilities
   I. Various improvements to airfield pavement to increase safety and efficiency.
   II. Construction of Crossfield Taxiway U

2. Terminal and Concourse Facilties
   I. Construction of Terminal 3, North Concourse 2
   II. Construction of Terminal 3, Terminal 4 Connector
   III. Extension of Terminal 3, South Terminal
   IV. Apron hold pad

3. Airport Tenant and Support Facilities
   I. American Airlines Storage Facility Relocation
   II. Relocated Facilities and Service Lots

Additional information is included as Attachment 1.

**Determination Regarding the Airport Layout Plan**

For the purpose of determining whether the proposed aviation hangar project requires FAA Airport Layout Plan (ALP) approval, we have made the following determinations:

1. Airfield Facilities, Terminal and Concourse Facilities: Because this portion of the development may have material impact on aircraft operations at, to, or from the airport, the FAA retains the legal authority to approve or disapprove the following changes to the PHX ALP related to the construction of the airfield, terminal and concourse facilities.

2. Airport Tenant and Support Facilities: Because this portion of the proposed development would have no material impact on aircraft operations at, to, or from the airport, would not affect the safety of people and property on the ground and would not have an adverse effect

on the value of prior Federal investments to a significant extent, the FAA lacks the legal authority to approve or disapprove changes to the PHX ALP for these elements of the project.

**FAA's Authority to Regulate Land Use**

Under section 163(b) of the Act, the FAA has the legal authority to regulate land acquired with federal funding. However, the proposed project is considered an aeronautical use, consistent with the intended land use when acquired, therefore the FAA will not require a release of obligations of the subject parcel as depicted on the currently approved ALP.

**Applicability of the National Environmental Policy Act (NEPA)**

The FAA's ALP approval authority for the proposed project, and any other Federal approvals associated with the project, such as funding under the AIP or PFC programs, is a federal action subject to the National Environmental Policy Act (NEPA). Therefore, the sponsor will be required to perform an appropriate environmental review consistent with NEPA. Contact the Phoenix Airports District Office (PHX ADO) for guidance on preparing the environmental document for these actions.

**Sponsor Obligations Still In Effect**

This determination only addresses FAA's approval authority for this project. It is not a determination that the project complies with the sponsor's federal grant assurances. The sponsor must continue to comply with all of its Federal grant obligations, including but not limited to Grant Assurance #5, Preserving Rights and Powers; Grant Assurance #19, Operation and Maintenance; Grant Assurance #20, Hazard Removal and Mitigation; Grant Assurance #21, Compatible Land Use; and Grant Assurance #25 Airport Revenue.

Section 163 and Grant Assurance 25 require the airport sponsor to receive not less than fair market value for the use, lease, encumbrance, transfer, or disposal of land, any facilities on such land, or any portion of such land or facilities. The sponsor must ensure that all revenues generated as a result of this project may only be expended for the capital or operating costs of the airport; the local airport system; or other local facilities which are owned or operated by the owner or operator of the airport and which are directly and substantially related to the actual air transportation of passengers or property; or for noise mitigation purposes on or off the airport.

The sponsor also has the responsibility to comply with all federal, state, and local environmental laws and regulations.

Additionally, any development on these parcels is still subject to airspace review under the requirements of 14 CFR part 77, and Grant Assurance 29 still requires the airport to update and maintain a current ALP. An updated ALP and Exhibit A property map should be submitted to the Phoenix Airports District Office (PHX ADO) if the project is completed.

This is a preliminary determination, and does not constitute a final agency action or an "order issued by the Secretary of Transportation" under 49 U.S.C. § 46110.

If you have any questions, please contact Kyler Erhard, Lead Program Manager at 602-792-1073 or via email to kyler.erhard@faa.gov.

Sincerely,

HOLLY L DIXON

Digitally signed by HOLLY L DIXON
Date: 2022.04.14 17:52:00 -07'00'

Mike N. Williams, A.A.E.
Manager

Cc: FAA Grant File
AWP-620

# APPENDIX B

## Air Quality & Climate

Air Quality & Climate Analysis

City of Phoenix

# Appendix B

## Air Quality and Climate Analysis

**May 4, 2023**

PREPARED FOR
Phoenix Sky Harbor International Airport

PRESENTED BY
Landrum & Brown, Incorporated

# Contents

Page

## List of Tables

Page

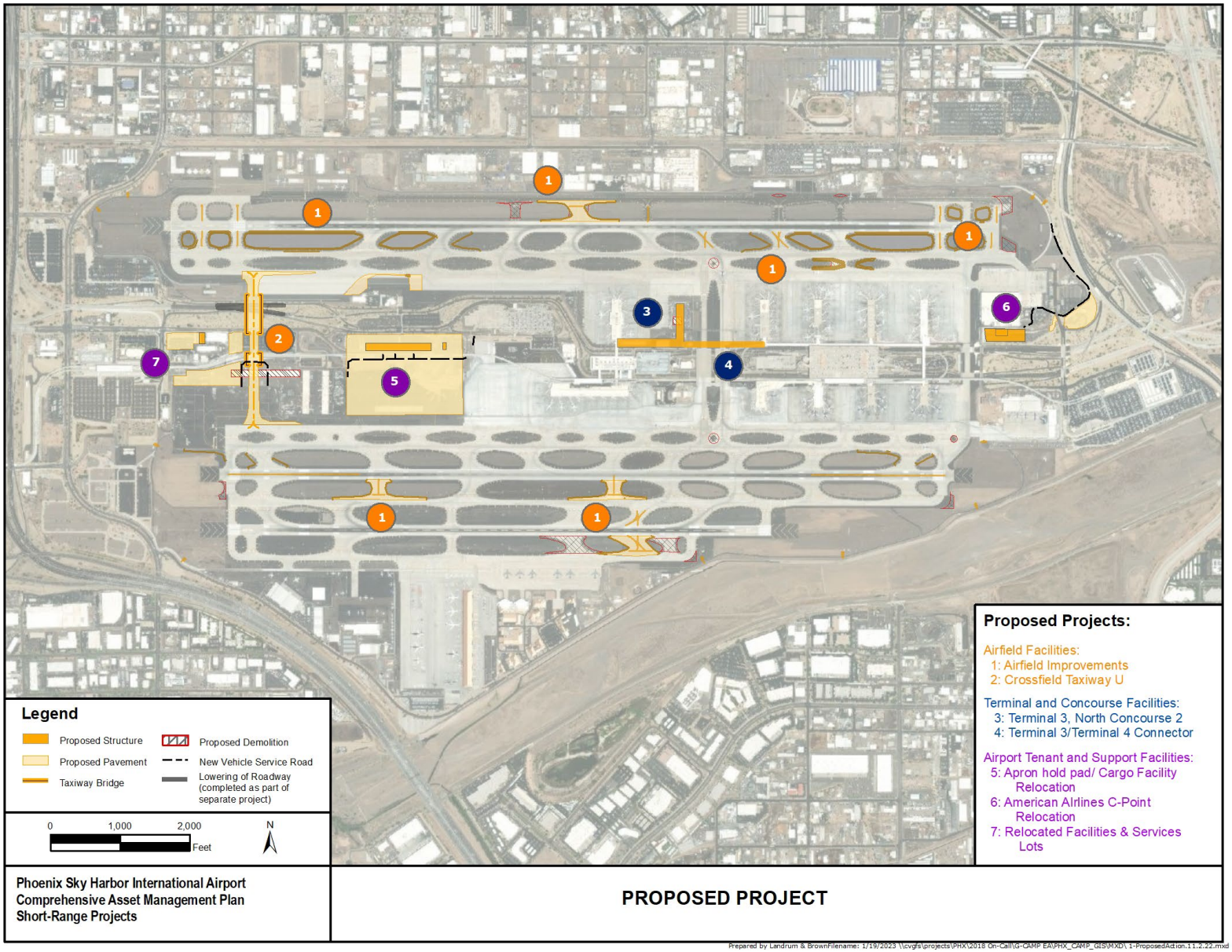
# 1 Introduction

This appendix provides supporting/detailed air quality and climate documentation for the Comprehensive Asset Management Plan (CAMP) Environmental Assessment (EA) at the Phoenix Sky Harbor International Airport (PHX or Airport). The air quality and climate assessment was prepared to disclose potential emissions from two scenarios: the Proposed Project and the No Action Alternative. This document describes the overall approach, methods, and results of the air quality and climate assessment to demonstrate compliance with the National Environmental Policy Act (NEPA).

## 1.1 Description of the Proposed Project

The Proposed Project is composed of three elements: 1) airfield facilities; 2) terminal and concourse facilities; and 3) airport tenant and support facilities. The Proposed Project is shown in **Exhibit 1.**

## EXHIBIT 1, PROPOSED PROJECT



# 2 Air Quality

## 2.1 Regulatory Setting for Air Quality

### 2.1.1 Federal Regulatory Setting

The Clean Air Act (CAA) established the standards and programs used to evaluate, achieve, and maintain acceptable air quality in the United States. Under the CAA, the United States Environmental Protection Agency (EPA) established a set of standards, the National Ambient Air Quality Standards (NAAQS), for six pollutants determined to be potentially harmful to human health and welfare:

- Carbon monoxide (CO);
- Ozone ($O_3$);
- Nitrogen dioxide ($NO_2$);
- Sulfur dioxide ($SO_2$);
- Particulate matter ($PM_{10}$ and $PM_{2.5}$); and
- Lead (Pb). [1]

For each of the six criteria pollutants, the EPA established “primary” NAAQS intended to protect public health, and “secondary” standards for the protection of public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. The NAAQS are summarized in **Table 1**.

[1] EPA, Code of Federal Regulations, Title 40, Part 50 (40 C.F.R. Part 50) National Primary and Secondary Ambient Air Quality Standards (NAAQS), July 2011.

**TABLE 1, NATIONAL AMBIENT AIR QUALITY STANDARDS**

| Pollutant | | Primary/ Secondary | Averaging Time | Level | Form of Measurement |
|---|---|---|---|---|---|
| Carbon Monoxide | | Primary | 8 hour | 9 ppm | Not to be exceeded more than once per year |
| | | | 1 hour | 35 ppm | |
| Lead | | Primary and Secondary | Rolling 3-month average | 0.15 µg/m$^3$ (1) | Not to be exceeded |
| Nitrogen Dioxide | | Primary | 1 hour | 100 ppb | 98$^{th}$ percentile of 1-hour daily maximum concentrations, averaged over 3 years |
| | | Primary and Secondary | 1 year | 53 ppb (2) | Annual Mean |
| Ozone | | Primary and Secondary | 8 hour | 0.070 ppm (3) | Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years |
| Particulate Matter | $PM_{2.5}$ | Primary | 1 year | 12.0 µg/m$^3$ | Annual mean, averaged over 3 years |
| | | Secondary | 1 year | 15.0 µg/m$^3$ | Annual mean, averaged over 3 years |
| | | Primary and Secondary | 24 hour | 35 µg/m$^3$ | 98$^{th}$ percentile, averaged over 3 years |
| | $PM_{10}$ | Primary and Secondary | 24 hour | 150 µg/m$^3$ | Not to be exceeded more than once per year on average over 3 years |
| Sulfur Dioxide | | Primary | 1 hour | 75 ppb (4) | 99$^{th}$ percentile of 1-hour daily maximum concentrations, averaged over 3 years |
| | | Secondary | 3 hour | 0.5 ppm | Not to be exceeded more than once per year |

(1) In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 µg/m$^3$ as a calendar quarter average) also remain in effect.

(2) The level of the annual $NO_2$ standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.

(3) Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O3 standards are not revoked and remain in effect for designated areas. Additionally, some areas may have certain continuing implementation obligations under the prior revoked 1-hour (1979) and 8-hour (1997) O3 standards.

(4) The previous $SO_2$ standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous $SO_2$ standards or is not meeting the requirements of a SIP call under the previous $SO_2$ standards (40 CFR 50.4(3)). A SIP call is an EPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the required NAAQS.

Notes: ppm is parts per million; ppb is parts per billion, and µg/m$^3$ is micrograms per cubic meter.

Source: EPA, https://www.epa.gov/criteria-air-pollutants/naaqs-table, accessed January 2023.

Areas of the country where air pollution levels consistently exceed the NAAQS may be designated nonattainment by the EPA. A nonattainment area is a homogeneous geographical area (usually referred to as an air quality control region or airshed) that is in violation of one or more NAAQS and has been designated as nonattainment by the EPA as provided for under the CAA. Each nonattainment area is required to have a State Implementation Plan (SIP), developed by the state that quantifies current conditions, projects future conditions through the date of prescribed attainment, and then identifies mitigation measures that are to be used to bring the area back into attainment.

A maintenance area describes the air quality designation of an area previously designated nonattainment by the EPA and subsequently re-designated attainment after emissions are reduced. Such an area remains designated as maintenance for a period up to 20 years at which time the state can apply for redesignation to attainment, provided that the NAAQS were sufficiently maintained throughout the maintenance period.

After EPA sets a new NAAQS or revises an existing standard for a criteria air pollutant, the CAA requires EPA to determine if areas of the country meet the new standards. If the air quality in a geographic area meets or is cleaner than the national standard, it is called an attainment area (designated “attainment/unclassifiable”); areas that don't meet the national standard are called nonattainment areas. In some cases, EPA is not able to determine an area's status after evaluating the available information and those areas are designated "unclassifiable." A maintenance area is an area previously designated nonattainment that subsequently meets the requirements in the CAA Section 107(d)(3). Such an area remains designated as maintenance for a period of up to 20 years provided that the NAAQS were sufficiently maintained throughout the maintenance period. Once designations take effect, state and local governments with nonattainment areas must develop State Implementation Plans (SIPs) outlining how areas will attain and maintain the standards by reducing air pollutant emissions.

Section 176(c) of the CAA requires federal actions to conform to the appropriate SIPs in order to attain the CAA’s air quality goals. To address this, EPA promulgated a Transportation Conformity Rule (40 Code of Federal Regulations [C.F.R.] Part 93, subpart A) and a General Conformity Rule (40 C.F.R. Part 93, subpart B). The Transportation Conformity Rule does not apply for this analysis because the Proposed Action will not be funded through U.S.C. Title 23 or the Federal Transit Act.

Most actions by the FAA fall under the General Conformity provisions of the CAA.[2] The first step is to determine if the Proposed Action is located in an EPA-designated nonattainment or maintenance area for one or more of the regulated criteria pollutants. Given the age of some NAAQS and the age of plans in place, if an area has been successfully under a maintenance plan for two consecutive ten-year maintenance periods, it is no longer subject of a plan approved under Section 175A. The maintenance plan may still be listed on the EPA Green Book[3], but General Conformity does not apply.

[2] General Conformity ensures that the actions taken by federal agencies, such as airport construction, do not interfere with a state’s plans to attain and maintain national standards for air quality. Additional information for General Conformity can be found on-line: https://www.epa.gov/general-conformity

[3] The EPA Green Book provides detailed information about area National Ambient Air Quality Standards (NAAQS) designations, classifications and nonattainment status. The Green Book is found by the following website https://www.epa.gov/green-book

### 2.1.2 Maricopa County Air Quality Status

The Airport is located within Maricopa County, Arizona, which EPA designated as serious non-attainment for Particulate Matter with an aerodynamic diameter of 10 microns or less ($PM_{10}$). Maricopa County is designated as moderate non-attainment for the 2008 8-Hour $O_3$ standard and moderate non-attainment for 2015 8-Hour $O_3$ standard. Additionally, the County operates under a maintenance plan for CO.

The Maricopa Association of Governments (MAG) serves as the regional air quality planning agency for the nonattainment area. MAG develops regional air quality plans to address air pollution problems and conducts the air quality conformity analyses for transportation programs. The following plans apply to the Airport:

- 2012 Five Percent Plan for $PM_{10}$[4]
- 2020 Eight-Hour Ozone Plan[5]
- 2013 Carbon Monoxide Maintenance Plan[6]

### 2.1.3 Air Quality Monitoring in Region

Air quality monitoring data for 2019 and 2020 was reviewed to determine if the existing conditions are still consistent with EPA's nonattainment designations. **Table 2** summarizes air quality data collected for 2019 and 2020 at the monitoring stations closest to the Airport. Most pollutants are monitored at the Central Phoenix Station (Station ID 040133002) at 1645 E. Roosevelt Street in Phoenix. The closest monitoring station with $PM_{2.5}$ data is located at 33 West Tamarisk Avenue in Phoenix (Station ID 040134003). The data shows that there is a continued exceedance of the ozone standard (0.070 ppm) and the $PM_{10}$ standard (35 (µg/m3). The data for CO shows the monitor is below the standards and is maintaining its attainment status.

**TABLE 2, SUMMARY OF POLLUTANT MONITORING DATA FOR 2019 AND 2020 NEAREST THE AIRPORT**

| Pollutant | 2019 Annual Monitoring Data | 2020 Annual Monitoring Data |
|---|---|---|
| **Carbon Monoxide (CO)[1]** | | |
| 2nd High 1-Hour Concentration (ppm) | 2.5 | N/A |
| 2nd High 8-Hour Concentration (ppm) | 1.8 | 1.9 |
| **Nitrogen Dioxide ($NO_2$)[1]** | | |
| 1-Hour Federal Design Value (ppb) | 52 | 54 |
| Annual Federal Design Value (ppb) | 15.7 | 15.9 |
| **Ozone ($O_3$)[1]** | | |
| 4th High 8-Hour Concentration (ppm) | 0.073 | 0.072 |
| **Particulate Matter ($PM_{2.5}$)[2]** | | |
| 1st High 24-Hour Concentration (µg/m$^3$) | 48.4 | 64.7 |
| Annual Federal Design Value (µg/m$^3$) | 7.5 | 10.5 |

[4] https://www.azmag.gov/portals/0/Documents/EP_2012-06-06_FINAL-MAG-2012-Five-Percent-Plan-for-PM10-for-the-Maricopa-County-Nonattainment-Area.pdf
[5] https://www.azmag.gov/Portals/0/Documents-Ext/Air-Quality/2020-Eight-Hour-Ozone-Plan_Submittal-of-Marginal-Area-Requirements-for-the-Maricopa-Nonattainment-Area.pdf
[6] https://www.azmag.gov/portals/0/Documents/EP_2013-03-29_MAG-2013-Carbon-Monoxide-Maintenance-Plan-for-the-Maricopa-County-Area.pdf

| Pollutant | 2019 Annual Monitoring Data | 2020 Annual Monitoring Data |
|---|---|---|
| **Particulate Matter ($PM_{10}$)[1]** | | |
| 2nd High 24-Hour Concentration (µg/m³) | 69 | 100 |
| **Sulfur Dioxide ($SO_2$)[1,3]** | | |
| 1st High 1-Hour Concentration (ppb) | 5 | 6 |
| 2nd High 24-Hour Concentration (ppb) | 2.3 | N/A |
| Annual Federal Design Value (ppb) | 0.45 | 0.25 |

Source: EPA, Annual Summary of Monitor Data, 2019 and 2020.
Key: µg/m³ = micrograms per cubic meter, CO = carbon monoxide, $NO_2$ = nitrogen dioxide, $O_3$ = ozone, $PM_{10}$ = coarse particulate matter, $PM_{2.5}$ = fine particulate matter, ppb = parts per billion, ppm = parts per million, $SO_2$ = sulfur dioxide
Notes:
[1] Data from 1645 East Roosevelt Street monitoring station.
[2] Data from 33 West Tamarisk Avenue monitoring station.
[3] 3-hour statistics are not available.

## 2.2 Air Quality Methodology

The overall approach to conducting this air quality analysis follows FAA guidelines for preparing NEPA documents, which includes FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures (including the Desk Reference);* FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*; and FAA's *Aviation Emissions and Air Quality Handbook Version 3 Update 1.* In accordance with these orders, the overall approach and goal of the air quality impact analysis is to meet the requirements of NEPA and the CAA.

NEPA: Compliance with NEPA is accomplished by disclosing the potential emissions associated with the Proposed Project. This includes preparation of emission inventories of both construction activities and operational conditions for the Proposed Project, any development alternatives, and the No Action Alternative. NEPA also requires that the project is shown qualitatively or quantitatively as to not cause, or contribute to, violations of the NAAQS.

CAA: The CAA requires that project emissions do not cause or contribute to violations of the NAAQS. In nonattainment and maintenance areas, a project's compliance with this requirement can be demonstrated by showing that the project emissions are *de minimis* or that they conform to the SIP for achieving and maintaining the NAAQS.

The air quality assessment included an evaluation of operational activities for the Existing (2020) Condition; and the Proposed Project, and the No Action Alternative, for the projected future conditions in 2028 and 2033. The year 2028 was selected because it represents the year when most, if not all, of the elements of the Proposed Project would be substantially complete and operational if construction begins in 2023. FAA Order 1050.1F also suggests conducting analysis of impacts for an out year, five to ten years beyond the opening year to understand the potential impacts associated with growth in activity after implementation. For this analysis, the FAA has selected 2033 as the out year, which will be used for the evaluation of the out-year impacts. Interim years of 2023 through 2028 were assessed for potential impacts associated with construction activity.

An emissions inventory was developed to summarize the total pollutants generated by all active emissions sources that may be affected by the Proposed Project. The emissions inventory provides the total annual pollutant emissions as tons per year for each scenario and each analysis year. The Existing (2020) Condition is provided for background and context only. For the assessment of impacts, the Proposed Project was compared to the No Action Alternative for 2028 and 2033 conditions.

### 2.2.1 Models Used in the Analysis

Operational emissions were evaluated using the FAA's Aviation Environmental Design Tool (AEDT) Version 3e. AEDT models aircraft performance in space and time to estimate fuel consumption, air quality emissions, and noise consequences at airports. To develop construction emissions, emission factors for on-road and off-road motor vehicles were derived from the EPA's Motor Vehicle Emissions Simulator (MOVES) version 3. MOVES is an emission modeling system that estimates emissions for mobile sources at the national, county, and project level for criteria air pollutants, greenhouse gases, and air toxics. Construction equipment type and usage was developed using the California Emissions Estimator Model (CalEEMod) version 2020.4.0. These models are approved by the FAA for the purpose of this analysis.

### 2.2.2 Sources of Emissions

The following sources of emissions are included in this analysis:

1. Aircraft Landing and Takeoff Cycles (LTOs), including engine start-up, approach, climb, and taxiing
    - The forecast number of aircraft operations would not be impacted by the Proposed Project. However, the Proposed Project is anticipated to result in an increase in taxi-in and taxi-out times over the No Action Alternative. As such, aircraft LTOs were modeled for the purpose of this analysis.
2. Stationary Sources
    - The Proposed Project would result in an increase in terminal facilities. As such, an increase in stationary source (natural gas boiler) is anticipated with the implementation of the Proposed Project.
3. Construction Activity
    - The Proposed Project would result in a temporary increase in emissions from on-road and non-road activity related to construction equipment
        - On-road activity including construction employee vehicle trips and material delivery/hauling trips
        - Off-road activity including use of construction equipment such as excavators, graders, and pavers

The following sources of emissions were not included in this analysis:

1. Auxiliary Power Unit (APU) and ground support equipment (GSE) usage
    - Aircraft type and number of operations would not change between the No Action Alternative and the Proposed Project. Because APUs and GSEs are dependent on the

aircraft type and number of operations, there would be no change between the No Action and Proposed Project.
    - APU usage typically is initiated ten minutes before landing and ten minutes after, and sometimes are run at the gate. Furthermore, the Proposed Project includes the installation of central power and pre-conditioned air will be installed at the new gates as is used in all existing gates. However, because the Proposed Project would not result in any additional operations, the emissions from the Proposed Project and No Action would be identical.
2. Passenger and cargo vehicle emissions will not be modeled.
    - No existing passenger parking facilities would be impacted by the Proposed Project, and no new parking would be constructed.
    - Any changes to the vehicle service roads would result in negligible changes to air quality emissions from passenger and cargo vehicles.

## 2.3 Air Quality Analysis

### 2.3.1 Existing (2020) Condition

**Aircraft Activity Level**

In order to calculate emissions from aircraft, information concerning operations was collected from FAA's Air Traffic Activity Data System (ATADS). According to FAA data, there were 444,029 total annual operations at the Airport in 2020. See **Attachment 1** of this Appendix for the aircraft and number of operations for the Existing (2020) Condition. The taxi-in time of six minutes and 20 seconds was applied to all arriving operations and the taxi-out time of 16 minutes and 16 seconds was applied to all departing operations. The aircraft, number of operations, and taxi times were modeled in AEDT to quantify emissions. **Table 3** shows the annual emissions inventory for the Existing (2020) Condition.

**TABLE 3, OPERATIONAL EMISSIONS INVENTORY – EXISTING (2020) CONDITIONS**

| Emissions Source | Annual Emissions | | | | | |
|---|---|---|---|---|---|---|
| | CO | VOC | $NO_x$ | $SO_x$ | $PM_{10}$ | $PM_{2.5}$ |
| Aircraft Operations | 1,817.6 | 248.2 | 1,984.1 | 182.5 | 18.4 | 18.4 |

Source: Landrum & Brown, 2023.

### 2.3.2 No Action Alternative

**Future (2028) No Action Alternative**

Approximately 464,325 total annual operations are forecast to occur at the Airport in 2028. See **Attachment 1** of this Appendix for the aircraft and number of operations for the Future (2028) No Action Alternative. The taxi-in time of six minutes and 25 seconds was applied to all arriving operations and the taxi-out time of 19 minutes and one second was applied to all departing operations.[7] **Table 4** shows the annual emissions inventory for the Future (2028) No Action Alternative.

[7] City of Phoenix/Phoenix Sky Harbor International Airport, Runway Incursion Mitigation Study (HNTB). 2019

**TABLE 4, OPERATIONAL EMISSIONS INVENTORY – FUTURE (2028) NO ACTION ALTERNATIVE**

| Emissions Source | Annual Emissions | | | | | |
|---|---|---|---|---|---|---|
| | CO | VOC | $NO_x$ | $SO_x$ | $PM_{10}$ | $PM_{2.5}$ |
| Aircraft Operations | 2,106.9 | 280.7 | 2,113.5 | 201.0 | 20.0 | 20.0 |

Source: Landrum & Brown, 2023.

### Future (2033) No Action Alternative

Approximately 494,490 total annual operations are forecast to occur at the Airport in 2033. See **Attachment 1** of this Appendix for the aircraft and number of operations for the Future (2033) No Action Alternative. Taxi times for the Future (2033) No Action Alternative are expected to remain the same as the Future (2028) No Action Alternative. **Table 5** shows the annual emissions inventory for the Future (2033) No Action Alternative.

**TABLE 5, OPERATIONAL EMISSIONS INVENTORY – FUTURE (2033) NO ACTION ALTERNATIVE**

| Emissions Source | Annual Emissions | | | | | |
|---|---|---|---|---|---|---|
| | CO | VOC | $NO_x$ | $SO_x$ | $PM_{10}$ | $PM_{2.5}$ |
| Aircraft Operations | 2,242.1 | 298.6 | 2,249.3 | 213.9 | 21.3 | 21.3 |

Source: Landrum & Brown analysis, 2023.

## 2.3.3 Proposed Project

### Construction

Air pollutants would be emitted by construction equipment and fugitive dust generated during demolition and construction of the proposed projects. Construction sources of emissions include on-road and non-road activities, as well as ground disturbance. The construction schedule was obtained from the City of Phoenix. Construction activities associated with the Proposed Project are set to begin in 2023 and be completed in 2028. The City of Phoenix provided the detailed phasing schedule for each project as detailed in **Table 6**.

**TABLE 6, CONSTRUCTION PHASING**

| PROJECT ID | ACTIVITY | START | END |
|---|---|---|---|
| A-1 | Airfield Improvements | 2023 | 2028 |
| A-2 | Crossfield Taxiway U | 2023 | 2027 |
| T-1 | Terminal 3, North Concourse 2 | 2023 | 2028 |
| T-2 | Terminal 3/Terminal 4 Connector | 2025 | 2028 |
| S-1 | Apron Hold Pad/Cargo Facility Relocation | 2023 | 2026 |
| S-2 | American Airlines C-Point Relocation | 2023 | 2024 |
| S-3 | Relocated Facilities & Services Lots | 2023 | 2024 |

Source: City of Phoenix, 2022.

Each project element was input into the CalEEMod to estimate on-road and non-road equipment use for each year of construction. Emission factors for on-road construction equipment were developed using MOVES version 3, the latest version of MOVES developed by the U.S. EPA. See **Attachment 1**

of this Appendix for detailed on-road and non-road construction equipment use and emission factors. The annual construction emissions are provided in **Table 7**.

**TABLE 7, PROPOSED PROJECT CONSTRUCTION EMISSIONS**

| Year | Annual Emissions (Short Tons) | | | | | |
|---|---|---|---|---|---|---|
| | CO | VOC | $NO_X$ | $SO_X$ | $PM_{10}$ | $PM_{2.5}$ |
| 2023 | 34.9 | 3.0 | 27.1 | 0.0 | 22.5 | 4.4 |
| 2024 | 34.9 | 3.0 | 27.1 | 0.0 | 22.5 | 4.4 |
| 2025 | 40.1 | 3.0 | 28.1 | 0.0 | 22.4 | 4.3 |
| 2026 | 43.6 | 3.2 | 30.5 | 0.0 | 22.6 | 4.5 |
| 2027 | 23.6 | 2.0 | 17.8 | 0.0 | 21.6 | 3.5 |
| 2028 | 19.4 | 1.5 | 13.4 | 0.0 | 21.2 | 3.1 |

Source: Landrum & Brown analysis, 2023.

### Future (2028) Proposed Project

No change to the number of aircraft operations or fleet mix would occur as a result of implementing the Proposed Project. Therefore, the number of operations for the Future (2028) No Action Alternative would remain the same for the Future (2028) Proposed Project. Given the design of the proposed airfield safety improvements, the taxi-in and taxi-out time of aircraft operations is anticipated to increase due to the implementation of the Proposed Project. The taxi-in time of six minutes and 53 seconds was applied to all arriving operations and the taxi-out time of 19 minutes and 22 seconds was applied to all departing operations.[8] Additionally, the Proposed Project would result in an increased use of natural gas boilers, also referred to as a stationary source, to support the additional proposed facilities. The Proposed Project would result in an increase of 896 therms of natural gas usage.[9] Operational emissions from the proposed terminal and building improvements would be greater with the Proposed Project due to increased use of natural gas boilers for the additional proposed facilities. **Table 8** shows the annual operational air pollutant emissions for the Future (2028) Proposed Project.

**TABLE 8, FUTURE (2028) PROPOSED PROJECT – ANNUAL OPERATIONAL EMISSIONS INVENTORY**

| Emission Source | Annual Emissions (Short Tons) | | | | | |
|---|---|---|---|---|---|---|
| | CO | VOC | $NO_X$ | $SO_X$ | $PM_{10}$ | $PM_{2.5}$ |
| Aircraft | 2,166.3 | 286.8 | 2,124.7 | 203.9 | 20.3 | 20.3 |
| Stationary Source | <0.01 | 0.00 | <0.01 | 0.00 | 0.00 | 0.00 |

Source: Landrum & Brown analysis, 2023.

### Future (2033) Proposed Project

No change to the number of aircraft operations or fleet mix would occur as a result of implementing the Proposed Project. Therefore, the number of operations for the Future (2033) No Action Alternative would remain the same for the Future (2033) Proposed Project. No additional construction is anticipated to occur after 2028. Taxi times for the Future (2033) Proposed Project are expected to remain the same in the Future (2033) Proposed Project as the Future (2028) Proposed Project.

[8] City of Phoenix/Phoenix Sky Harbor International Airport, Runway Incursion Mitigation Study (HNTB). 2019
[9] The additional use of natural gas from the Proposed Project was modeled in AEDT with the Natural Gas: Wall Fired Boiler, <100 Million BTU/hr, Uncontrolled option.

Additionally, there would be no further increase in the use of natural gas boilers in the Future (2033) Proposed Project than the Future (2028) Proposed Project. **Table 9** shows the annual operational air pollutant emissions for the Future (2033) Proposed Project.

**TABLE 9, FUTURE (2033) PROPOSED PROJECT – ANNUAL OPERATIONAL EMISSIONS INVENTORY**

| Emission Source | Annual Emissions (Short Tons) | | | | | |
|---|---|---|---|---|---|---|
| | CO | VOC | $NO_X$ | $SO_X$ | $PM_{10}$ | $PM_{2.5}$ |
| Aircraft | 2,305.3 | 305.1 | 2,261.2 | 217.0 | 21.6 | 21.6 |
| Stationary Source | <0.01 | 0.00 | <0.01 | 0.00 | 0.00 | 0.00 |

Source: Landrum & Brown, 2023.

### 2.3.4 Total Criteria Pollutant Emissions

Based on the analysis presented, implementing the Proposed Project would result in an increase in emissions when compared to the No Action Alternative. The results of the emission inventory prepared for the Proposed Project were compared to the results of the No Action Alternative of the same future year to disclose the potential increase in emissions caused by the Proposed Project. The comparison of the emissions inventory, which included an inventory of construction emissions, were used for the evaluation of General Conformity as required under the CAA (including the 1990 Amendments). **Table 10** shows that none of the Federal or County *de minimis* thresholds were equaled or exceeded for the Proposed Project.

**TABLE 10, TOTAL EMISSIONS INVENTORY**

| Year | Scenario | Annual Emissions (Short Tons) | | | | | |
|---|---|---|---|---|---|---|---|
| | | CO | VOC | $NO_X$ | $SO_X$ | $PM_{10}$ | $PM_{2.5}$ |
| 2023 | Proposed Project (Construction) | 34.7 | 3.0 | 26.8 | 0.0 | 22.5 | 4.4 |
| | ***2023 Net Increase*** | ***34.7*** | ***3.0*** | ***26.8*** | ***0.0*** | ***22.5*** | ***4.4*** |
| 2024 | Proposed Project (Construction) | 34.7 | 3.0 | 26.8 | 0.0 | 22.5 | 4.4 |
| | ***2024 Net Increase*** | ***34.7*** | ***3.0*** | ***26.8*** | ***0.0*** | ***22.5*** | ***4.4*** |
| 2025 | Proposed Project (Construction) | 40.0 | 3.0 | 27.9 | 0.0 | 22.4 | 4.3 |
| | ***2025 Net Increase*** | ***40.0*** | ***3.0*** | ***27.9*** | ***0.0*** | ***22.4*** | ***4.3*** |
| 2026 | Proposed Project (Construction) | 43.5 | 3.2 | 30.3 | 0.0 | 22.6 | 4.5 |
| | ***2026 Net Increase*** | ***43.5*** | ***3.2*** | ***30.3*** | ***0.0*** | ***22.6*** | ***4.5*** |
| 2027 | Proposed Project (Construction) | 23.5 | 2.0 | 17.8 | 0.0 | 21.6 | 3.5 |
| | ***2027 Net Increase*** | ***23.5*** | ***2.0*** | ***17.8*** | ***0.0*** | ***21.6*** | ***3.5*** |
| 2028 | No Action Alternative (Operational) | 2,106.9 | 280.7 | 2,113.5 | 201.0 | 20.0 | 20.0 |
| | Proposed Project (Construction & Operational) | 2,185.7 | 288.2 | 2,138.1 | 203.9 | 41.4 | 23.3 |
| | ***2028 Net Increase*** | **78.8** | **7.5** | **24.6** | **2.9** | **21.4** | **3.3** |
| 2033 | No Action Alternative (Operational) | 2,242.1 | 298.6 | 2,249.3 | 213.9 | 21.3 | 21.3 |
| | Proposed Project (Operational) | 2,305.3 | 305.1 | 2,261.2 | 217.0 | 21.6 | 21.6 |
| | ***2033 Net Increase*** | **63.2** | **6.5** | **11.9** | **3.1** | **0.3** | **0.3** |
| | Federal *de minimis* Threshold | *100* | *100* | *100* | *N/A* | *70* | *N/A* |
| | ***Exceed Threshold?*** | ***NO*** | ***NO*** | ***NO*** | ***N/A*** | ***NO*** | ***N/A*** |

Note: N/A is not applicable.

Source: Landrum & Brown analysis, 2023.

## 2.4 Conclusions

The air quality assessment demonstrates that the Proposed Project would not cause an increase in air emissions above the applicable *de minimis* thresholds. Therefore, the Proposed Project conforms to the SIP and the CAA and would not create any exceedances of the NAAQS, delay the attainment of any NAAQS, nor increase the frequency or severity of any existing violations of the NAAQS. As a result, no significant adverse impact on local or regional air quality is anticipated due to construction or operation of the Proposed Project. No further analysis is required under the CAA or the NEPA.

## 2.5 Avoidance, Minimization, and Mitigation Measures

Since the Proposed Project would not create significant impacts related to air quality, no specific air quality mitigation would be necessary. However, the City of Phoenix Aviation Department requires all contractors and construction staff to comply with federal, state and local air pollution control laws, codes, and requirements, including:

- Dust Control Permits
  A Maricopa County Air Quality Department Dust Control Permit is required, in advance, for any project that disturbs one-tenth (1/10) acre or more
- Non-Title V Synthetic Minor Air Quality Permit
  Maricopa County Air Quality Department requires air quality permits to construct or operate any regulation stationary emission source. This includes boilers, emergency generators and fuel tanks.
- Asbestos Surveys and National Emission Standards for Hazardous Air Pollutants (NESHAP) Notification
  NESHAP Notifications are required prior to any demolition activities and may be required prior to any renovation activities.

The City of Phoenix Aviation Department would also ensure that all possible measures would be taken to reduce fugitive dust emissions during construction activities by adhering to guidelines included in FAA Advisory Circular (AC) 150/5370-10H, *Standard Specifications for Construction of Airports*.[10]

[10] https://www.faa.gov/airports/engineering/construction_standards/

# 3 Climate

## 3.1 Regulatory Setting for Climate

FAA Order 1050.1F states that the FAA has not identified a significant threshold for aviation GHG emissions. According to recent CEQ guidance issued in January 2023[11], agencies, including the FAA, should quantify the reasonably foreseeable GHG emissions for the proposed action, no action alternative, and any reasonable alternatives, using available information and data. A comparison of GHG emission quantities can then be used to describe how they would relate to climate action commitments and goals. The recent CEQ guidance did not establish any particular quantity of GHG emissions as "significantly" affecting the quality of the human environment.

## 3.2 Climate Methodology

GHG emissions inventories were conducted to provide the estimate of the annual rate of GHG emissions attributable to airport sources (direct and indirect) for the No Action Alternative and the Proposed Project. The GHG emissions inventories were prepared using the same data and assumptions as developed for the air quality criteria pollutant emissions inventories. A comparison was made of the GHG inventories between the No Action Alternative and the Proposed Project to determine if there was an increase or reduction in GHG emissions attributed to the Proposed Project.

GHGs differ from each other in their ability to absorb energy and how long they stay in the atmosphere. The Global Warming Potential (GWP) was developed to allow comparisons of the global warming impacts of different gases by converting each gas amount to a carbon dioxide equivalent ($CO_2e$). GWPs provide a common unit of measure, which allows for one emission estimate of these different gases.

GWPs based on a 100-year period (GWP 100) provided in the FAA's *Aviation Emissions and Air Quality Handbook Version 3 Update 1* and based on the Intergovernmental Panel on Climate Change (IPCC), Fifth Assessment Report (AR5) are used in this evaluation. $CO_2$ has a GWP of one (1) because it is the gas used as the reference point. Methane does not last as long in the atmosphere as $CO_2$ however it absorbs much more energy. Therefore, one ton of methane has 34 times more heat capturing potential than one ton of carbon dioxide. The amount of methane emissions would be multiplied by 34 to determine its $CO_2e$ value. Nitrous oxides last in the atmosphere far longer than $CO_2$. The amount of nitrous oxides emissions would be multiplied by 298 to determine its $CO_2e$ value. The GHG emissions inventories are presented in terms of metric tons per year of $CO_2e$.

[11] Council on Environmental Quality, National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions and Climate Change, 88 Federal Register 1196, January 9, 2023.

## 3.3 Climate Analysis

### 3.3.1 Existing (2020) Condition

Operational GHG emissions were developed for the Existing (2020) Condition from aircraft operating at the Airport. The GHG emissions inventory was prepared using the same data and assumptions as developed for the air quality criteria pollutant emissions inventories. **Table 11** shows the annual emissions inventory for the Existing (2020) Condition.

**TABLE 11, EXISTING (2020) CONDITION – ANNUAL OPERATIONAL GHG EMISSIONS INVENTORY**

| Emission Source | Annual GHG Emissions (metric tons per year) |
|---|---|
| | $CO_2e$ |
| Aircraft | 446,059 |

$CO_2e$: Carbon Dioxide equivalent
Source: Landrum & Brown, 2023.

### 3.3.2 No Action Alternative

**Future (2028) No Action Alternative**

The Future (2028) No Action Alternative would not involve construction of any of the new facilities or improvements planned under the Proposed Project. Operational GHG emissions were developed from aircraft operating at the Airport. Due to the nature of the Proposed Project, neither the No Action Alternative nor the Proposed Project would affect GSE or APUs. No changes would occur to vehicle miles traveled on the Airport. The GHG emissions inventory was prepared using the same data and assumptions as developed for the air quality criteria pollutant emissions inventories. **Table 12** shows the annual operational GHG emissions for the Future (2028) No Action Alternative.

**TABLE 12, FUTURE (2028) NO ACTION ALTERNATIVE – ANNUAL OPERATIONAL GHG EMISSIONS INVENTORY**

| Emission Source | Annual GHG Emissions (metric tons per year) |
|---|---|
| | $CO_2e$ |
| Aircraft | 491,126 |

$CO_2e$: Carbon Dioxide equivalent
Source: Landrum & Brown, 2023.

**Future (2033) No Action Alternative**

The Future (2033) No Action Alternative would not involve construction of any of the new facilities or improvements planned under the Proposed Project. Operational GHG emissions were developed from aircraft operating at the Airport. The GHG emissions inventory was prepared using the same data and assumptions as developed for the air quality criteria pollutant emissions inventories. **Table 13** shows the annual operational GHG emissions for the Future (2033) No Action Alternative.

**TABLE 13, FUTURE (2033) NO ACTION ALTERNATIVE – ANNUAL OPERATIONAL GHG EMISSIONS INVENTORY**

| Emission Source | Annual GHG Emissions (metric tons per year) |
|---|---|
| | $CO_2e$ |
| Aircraft | 522,662 |

$CO_2e$: Carbon Dioxide equivalent
Source: Landrum & Brown, 2023.

### 3.3.3 Proposed Project

#### Construction

The Proposed Project's construction activities would create GHG emissions for the years 2023 through 2028. Construction phasing and project dimensions were based on the information provided by the City of Phoenix Aviation Department. The construction phasing schedule, the estimates of on-road and non-road construction vehicles based on previous airport construction projects, and the emission factors are provided in Attachment 1 to this appendix**. Table 14** shows the annual GHG emissions from construction activities for the Proposed Project.

**TABLE 14, PROPOSED PROJECT – ANNUAL CONSTRUCTION GHG EMISSIONS**

| Year | Annual GHG Emissions (metric tons per year) |
|---|---|
| | $CO_2e$ |
| 2023 | 14,644 |
| 2024 | 14,644 |
| 2025 | 14,588 |
| 2026 | 15,409 |
| 2027 | 8,627 |
| 2028 | 5,793 |

$CO_2e$: Carbon Dioxide equivalent
Source: City of Phoenix and Landrum & Brown, 2023.

#### Future (2028) Proposed Project

No change to the number of aircraft operations or fleet mix would occur as a result of implementing the Proposed Project. The GHG emissions inventory was prepared using the same data and assumptions as developed for the air quality criteria pollutant emissions inventories. **Table 15** shows the annual operational GHG emissions for the Future (2028) Proposed Project.

**TABLE 15, FUTURE (2028) PROPOSED PROJECT – ANNUAL OPERATIONAL GHG EMISSIONS INVENTORY**

| Emission Source | Annual GHG Emissions (metric tons per year) |
|---|---|
| | $CO_2e$ |
| Aircraft | 498,236 |
| Stationary Sources | 5 |
| **Total** | **498,241** |

$CO_2e$: Carbon Dioxide equivalent

Source: Landrum & Brown, 2023.

**Future (2033) Proposed Project**

No change to the number of aircraft operations or fleet mix would occur as a result of implementing the Proposed Project. The GHG emissions inventory was prepared using the same data and assumptions as developed for the air quality criteria pollutant emissions inventories. **Table 16** shows the annual operational GHG emissions for the Future (2033) Proposed Project.

**TABLE 16, FUTURE (2033) PROPOSED PROJECT – ANNUAL OPERATIONAL GHG EMISSIONS INVENTORY**

| Emission Source | Annual GHG Emissions (metric tons per year) |
|---|---|
| | $CO_2e$ |
| Aircraft | 530,232 |
| Stationary Sources | 5 |
| **Total** | **530,237** |

$CO_2e$: Carbon Dioxide equivalent
Source: Landrum & Brown, 2023.

### 3.3.4 Total GHG Emissions

The results of the GHG emission inventory prepared for the Proposed Project were compared to the results of the No Action Alternative of the same future year to disclose the change in GHG emissions caused by the Proposed Project. Based on the analysis presented, implementing the Proposed Project would result in a gross or net increase in GHG emissions when compared to the No Action Alternative. See **Table 17** for the total GHG emissions inventory.

**TABLE 17, TOTAL GHG EMISSIONS INVENTORY**

| Year | Scenario | Annual Emissions (Metric Tons) $CO_2e$ |
|---|---|---|
| 2023 | Proposed Project (Construction) | 14,644 |
| | ***2023 Net Increase*** | ***14,644*** |
| 2024 | Proposed Project (Construction) | 14,644 |
| | ***2024 Net Increase*** | ***14,644*** |
| 2025 | Proposed Project (Construction) | 14,588 |
| | ***2025 Net Increase*** | ***14,588*** |
| 2026 | Proposed Project (Construction) | 15,409 |
| | ***2026 Net Increase*** | ***15,409*** |
| 2027 | Proposed Project (Construction) | 8,627 |
| | ***2027 Net Increase*** | ***8,627*** |
| 2028 | No Action Alternative (Operational) | 491,126 |
| | Proposed Project (Construction & Operational) | 504,034 |
| | ***2028 Net Increase*** | ***12,908*** |

| Year | Scenario | Annual Emissions (Metric Tons) $CO_2e$ |
|---|---|---|
| 2033 | No Action Alternative (Operational) | 522,662 |
| | Proposed Project (Operational) | 530,237 |
| | ***2033 Net Increase*** | ***7,575*** |

$CO_2e$: Carbon Dioxide equivalent
Source: Landrum & Brown analysis, 2023.

Peak construction GHG emissions are expected to occur in 2026. Operational GHG emissions would be greater with the Proposed Project due to the increased aircraft taxi times and use of natural gas boilers for the additional proposed facilities.

## 3.4 Social Cost of Greenhouse Gases

The CEQ's *NEPA Guidance on Consideration of Greenhouse Gas Emissions and Climate Change* recommends that "agencies provide additional context for GHG emissions, including through the use of the best available social cost of GHG (SC–GHG) estimates, to translate climate impacts into the more accessible metric of dollars." The estimation of SC-GHG allows the monetization of climate change effects expected from a proposed project.[12] The "Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990" released by the Interagency Working Group on Social Cost of Greenhouse Gases (IWG SC–GHG) in February 2021 presents a methodology to estimate the SC-GHG using three discount rates (2.5 percent, 3 percent, and 5 percent) per year. The term "discount rate" refers to the reduction or discount in value per year as a future cost or benefit is adjusted to be comparable with a current cost or benefit from a proposed project.

For this analysis, all three discount rates were used to estimate a range of global social costs from the increase in GHG emissions from the Proposed Project. See **Table 18** for the range of social costs estimated per year.

**TABLE 18, SOCIAL COST GHG MONETIZATION**

| YEAR | SOCIAL COST GHGs (U.S. Dollars) | | |
|---|---|---|---|
| | 5% DISCOUNT | 3% DISCOUNT | 2.5% DISCOUNT |
| 2023 | $233,517 | $794,997 | $1,176,453 |
| 2024 | $229,220 | $787,029 | $1,166,422 |
| 2025 | $223,934 | $775,869 | $1,151,747 |
| 2026 | $231,789 | $810,734 | $1,205,593 |
| 2027 | $127,068 | $448,894 | $668,741 |
| 2028 | $185,989 | $663,966 | $991,093 |
| 2033 | $98,187 | $367,471 | $553,698 |

[12] Multiplying the SC-GHG in year t by the change in emissions in year t yields the monetized value of future emission changes from a year t perspective. This value must then be discounted to the present before being included in an analysis. For this purpose, the monetized value of future emission changes should be discounted at the same rate used to calculate the initial SC-GHG to ensure internal consistency.

Source: Landrum & Brown analysis, 2023.

The social cost is estimated to be the highest in 2026 from GHGs due to temporary construction activities. In 2026, there would be a potential social cost from increased GHG emissions of between $231,789 and $1,205,593. This range represents the potential net harm to the global society associated with adding GHGs to the atmosphere in a given year. It includes the value of all climate change impacts, including (but not limited to) changes in net agricultural productivity, human health effects, property damage from increased flood risk natural disasters, disruption of energy systems, risk of conflict, environmental migration, and the value of ecosystem services.

This range does not include the beneficial costs of the Proposed Project including (but not limited to) enhanced airfield safety and efficiency or the improved passenger facilities to accommodate the forecasted demand. There are currently no tools to estimate the benefit of enhanced safety. However, this benefit may far exceed the social cost attributed to the increase in GHGs. FAA's statutory mission is to ensure the safe and efficient use of navigable airspace in the United States as set forth under 49 U.S.C. § 47101 (a)(1).

## 3.5 Climate Adaptation

The environmental consequences section for climate also includes a discussion of the extent to which the Proposed Action and No Action Alternative could be affected by future climate conditions. The two primary risks identified in the City's Climate Action Plan are extreme heat and drought. These risks are not new to the Airport, given its location in the Sonoran Desert. The Aviation Department has taken measures to reduce the effects of heat and drought through sustainable design and site development guidelines in the PHX-DVT-GYR Design Manual[13]. These guidelines include:

- Applying design concepts suited to the desert environment (Chapter 1-7.1.2)
- Incorporating design applications which enhance the overall building performance in the desert environment including concepts of shading, use of natural light, and orientation whenever possible (Chapter 4-2.1.5)
- Utilizing low water desert landscaping (xeriscaping) design theme (Chapter 4-4.2.5)

These risks are being managed through review and update of the Design Manual, and by the various actions taken by the City in its preparation and updating of the Action Climate Plan. These risks would be present regardless of the alternative selected, and would not be exacerbated by the Proposed Project. Therefore, the Proposed Project would not result in any significant impacts related to climate.

## 3.6 Avoidance, Minimization and Mitigation Measures

As discussed in Chapter 2, there are no alternatives other than the Proposed Project that meets the purpose and need. The City of Phoenix and the FAA have shown in their alternatives analysis that there were no practicable alternatives that would reduce potential GHG emissions. The Proposed Project includes the use of construction equipment, increased aircraft taxi times, and the use of natural gas

[13] City of Phoenix Aviation Department PHX-DVT-GYR Design Manual, October 2018.

boilers for the additional proposed facilities. Due to the nature of the Proposed Project, there are no avoidance, minimization, or mitigation measures that would reduce GHG emissions.

While not a part of the Proposed Project, the City of Phoenix has undertaken a wide range of activities designed to reduce GHG emissions and prepare for the effects of climate change. In January 2014, the Phoenix City Council adopted a new goal to reduce GHGs by 30-percent community wide reduction by 2025 and a 90-percent community wide reduction by 2050. The City of Phoenix updated its Climate Action Plan in 2021[14] with a goal to reduce GHG emissions by a minimum of 50 percent by 2030 and to achieve net-zero emissions by 2050 through measures such as:

- Installing solar energy generation systems at Aviation Department properties;
- Purchasing electric vehicles and busses and installing electric vehicle charging stations;
- Turning waste into resources (using recycled materials instead of raw materials); and
- Supporting transit-oriented development.

Therefore, when considering the potential increase in GHG emissions due to the Proposed Project, in context with the City of Phoenix's climate action commitment and goals, the Proposed Project would not have an adverse significant impact on climate.

[14] City of Phoenix Climate Action Plan, 2021 Edition. Available for review at: https://www.phoenix.gov/oepsite/Documents/2021ClimateActionPlanEnglish.pdf

# Attachment 1

## Aircraft

The aircraft and number of operations modelled for this analysis are provided in Table 1-1.

**TABLE 1-1, TOTAL ANNUAL OPERATIONS BY AIRFRAME**

| Airframe | 2020 | 2028 | 2033 |
|---|---|---|---|
| Airbus A300F4-600 Series | 2,296.00 | 2,400.90 | 2,557.74 |
| Airbus A319-100 Series | 29,707.00 | 31,064.30 | 33,093.56 |
| Airbus A320-100 Series | 22,494.00 | 23,521.70 | 25,058.24 |
| Airbus A320-200 Series | 4,166.00 | 4,356.30 | 4,640.87 |
| Airbus A320-NEO | 3,989.00 | 4,171.20 | 4,443.68 |
| Airbus A321-100 Series | 26,510.00 | 27,721.10 | 29,531.96 |
| Airbus A321-200 Series | 23,276.00 | 24,339.40 | 25,929.36 |
| Airbus A321-NEO | 3,911.00 | 4,089.70 | 4,356.86 |
| Airbus A330-200 Series | 766.00 | 801.00 | 853.32 |
| Airbus A330-300 Series | 499.00 | 521.80 | 555.89 |
| Airbus A380-800 Series | 2.00 | 2.10 | 2.24 |
| Antonov 124 Ruslan | 8.00 | 8.40 | 8.95 |
| Bell 206 JetRanger | 1,570.00 | 1,641.70 | 1,748.94 |
| Boeing 717-200 Series | 259.00 | 270.80 | 288.49 |
| Boeing 727-200 Series | 9.00 | 9.40 | 10.01 |
| Boeing 737-300 Series Freighter | 13.00 | 13.60 | 14.49 |
| Boeing 737-400 Series | 997.00 | 1,042.50 | 1,110.60 |
| Boeing 737-600 Series | 317.00 | 331.50 | 353.16 |
| Boeing 737-700 Series | 70,773.00 | 74,006.40 | 78,840.83 |
| Boeing 737-8 | 243.00 | 254.10 | 270.70 |
| Boeing 737-800 Series | 34,919.00 | 36,514.20 | 38,899.47 |
| Boeing 737-9 | 2.00 | 2.10 | 2.24 |
| Boeing 737-900 Series | 5,546.00 | 5,799.40 | 6,178.24 |
| Boeing 737-900-ER | 6,239.00 | 6,524.00 | 6,950.18 |
| Boeing 747-400 ER | 494.00 | 516.60 | 550.35 |
| Boeing 747-400 Series | 138.00 | 144.30 | 153.73 |
| Boeing 757-200 Series | 10,624.00 | 11,109.40 | 11,835.12 |
| Boeing 757-300 Series | 303.00 | 316.80 | 337.49 |
| Boeing 767-200 ER | 1,851.00 | 1,935.60 | 2,062.04 |
| Boeing 767-300 ER | 4,186.00 | 4,377.20 | 4,663.14 |
| Boeing 767-300 Series | 1,631.00 | 1,705.40 | 1,816.80 |
| Boeing 767-400 | 45.00 | 47.10 | 50.18 |
| Boeing 777-200 Series | 694.00 | 725.70 | 773.11 |
| Boeing 777-200-LR | 299.00 | 312.70 | 333.13 |
| Boeing 787-8 Dreamliner | 378.00 | 395.30 | 421.12 |
| Boeing 787-9 Dreamliner | 255.00 | 266.70 | 284.12 |
| Boeing Business Jet (BBJ) | 411.00 | 429.70 | 457.77 |

| Airframe | 2020 | 2028 | 2033 |
|---|---|---|---|
| Boeing Business Jet II | 38,115.00 | 39,856.30 | 42,459.89 |
| Boeing DC-10-30 Series | 341.00 | 356.60 | 379.89 |
| Boeing F/A-18 Hornet | 381.00 | 400.00 | 400.00 |
| Boeing KC-135 Stratotanker | 1,953.00 | 2,050.00 | 2,050.00 |
| Boeing MD-11 | 1,120.00 | 1,171.20 | 1,247.71 |
| Boeing MD-83 | 16.00 | 16.70 | 17.79 |
| Boeing MD-87 | 4.00 | 4.20 | 4.47 |
| Bombardier Challenger 300 | 1,144.00 | 1,196.30 | 1,274.45 |
| Bombardier Challenger 600 | 565.00 | 590.80 | 629.39 |
| Bombardier CRJ-200 | 2,696.00 | 2,819.20 | 3,003.36 |
| Bombardier CRJ-700 | 15,694.00 | 16,411.00 | 17,483.04 |
| Bombardier CRJ-700-LR | 6,894.00 | 7,208.90 | 7,679.82 |
| Bombardier CRJ-900 | 39,395.00 | 41,194.80 | 43,885.83 |
| Bombardier Global 5000 | 222.00 | 232.10 | 247.26 |
| Bombardier Global Express | 116.00 | 121.30 | 129.22 |
| Bombardier Learjet 35 | 570.00 | 596.00 | 634.93 |
| Bombardier Learjet 45 | 421.00 | 440.20 | 468.96 |
| Bombardier Learjet 60 | 593.00 | 620.10 | 660.61 |
| Cessna 172 Skyhawk | 811.00 | 848.10 | 903.50 |
| Cessna 182 | 352.00 | 368.10 | 392.15 |
| Cessna 206 | 133.00 | 139.10 | 148.19 |
| Cessna 208 Caravan | 3,055.00 | 3,194.60 | 3,403.29 |
| Cessna 310 | 62.00 | 64.80 | 69.03 |
| Cessna 402 | 20.00 | 20.90 | 22.27 |
| Cessna 404 Titan II | 952.00 | 995.50 | 1,060.53 |
| Cessna 550 Citation II | 241.00 | 252.00 | 268.46 |
| Cessna 560 Citation Excel | 872.00 | 911.80 | 971.36 |
| Cessna 560 Citation V | 1,059.00 | 1,107.40 | 1,179.74 |
| Cessna 650 Citation III | 132.00 | 138.00 | 147.01 |
| Cessna 680 Citation Sovereign | 490.00 | 512.40 | 545.87 |
| Cessna 680-A Citation Latitude | 593.00 | 620.10 | 660.61 |
| Cessna 750 Citation X | 401.00 | 419.30 | 446.69 |
| Cessna CitationJet CJ/CJ1 (Cessna 525) | 4,090.00 | 4,276.90 | 4,556.29 |
| Cirrus SR22 Turbo (FAS) | 304.00 | 317.90 | 338.67 |
| Convair CV-640 | 512.00 | 535.40 | 570.37 |
| Dassault Falcon 2000-EX | 276.00 | 288.60 | 307.45 |
| Dassault Falcon 8X | 192.00 | 200.80 | 213.92 |
| Dassault Falcon 900 | 287.00 | 300.10 | 319.70 |
| Diamond DA40 | 59.00 | 61.70 | 65.73 |
| Embraer EMB120 Brasilia | 1,335.00 | 1,396.00 | 1,487.19 |
| Embraer ERJ140 | 3,590.00 | 3,754.00 | 3,999.23 |
| Embraer ERJ145 | 391.00 | 408.90 | 435.61 |
| Embraer ERJ170 | 9.00 | 9.40 | 10.01 |

| Airframe | 2020 | 2028 | 2033 |
|---|---|---|---|
| Embraer ERJ175 | 4,737.00 | 4,953.40 | 5,276.98 |
| Embraer ERJ175-LR | 4,489.00 | 4,694.10 | 5,000.74 |
| Embraer Legacy 650 | 324.00 | 338.80 | 360.93 |
| Embraer Phenom 100 (EMB-500) | 379.00 | 396.30 | 422.19 |
| Embraer Phenom 300 (EMB-505) | 657.00 | 687.00 | 731.88 |
| Fairchild SA-226-TC Metro II | 191.00 | 199.70 | 212.75 |
| Fairchild SA-227-AT Expeditor | 642.00 | 671.30 | 715.15 |
| Falcon 7X | 109.00 | 114.00 | 121.45 |
| Gulfstream G300 | 483.00 | 505.10 | 538.10 |
| Gulfstream G450 | 440.00 | 460.10 | 490.16 |
| Gulfstream G550 | 269.00 | 281.30 | 299.68 |
| Gulfstream G650 | 86.00 | 89.90 | 95.77 |
| Gulfstream II | 190.00 | 198.70 | 211.68 |
| Hawker HS-125 Series 700 | 385.00 | 402.60 | 428.90 |
| Honda HA-420 Hondajet | 520.00 | 543.80 | 579.32 |
| Israel IAI-1125 Astra | 288.00 | 301.20 | 320.88 |
| Lockheed C-130 Hercules | 98.00 | 103.00 | 103.00 |
| Piaggio P.180 Avanti | 18.00 | 18.80 | 20.03 |
| Pilatus PC-12 | 6,151.00 | 6,432.00 | 6,852.17 |
| Piper PA-28 Cherokee Series | 847.00 | 885.70 | 943.56 |
| Raytheon Beech 1900-C | 1,170.00 | 1,223.50 | 1,303.42 |
| Raytheon Beech 99 | 2,071.00 | 2,165.60 | 2,307.07 |
| Raytheon Beech Baron 58 | 203.00 | 212.30 | 226.17 |
| Raytheon Beech Bonanza 36 | 6,516.00 | 6,813.70 | 7,258.80 |
| Raytheon Beechjet 400 | 338.00 | 353.40 | 376.49 |
| Raytheon C-12 Huron | 1,284.00 | 1,342.70 | 1,430.41 |
| Raytheon King Air 90 | 2,037.00 | 2,130.10 | 2,269.25 |
| Raytheon Premier I | 934.00 | 976.70 | 1,040.50 |
| Raytheon Super King Air 300 | 1,227.00 | 1,283.10 | 1,366.92 |
| Shorts 360-100 Series | 508.00 | 531.20 | 565.90 |
| SMR80 | 16,160.00 | 16,898.30 | 18,002.17 |
| **TOTAL** | **444,029.00** | **464,325.00** | **494,490.01** |

Note: Because air quality and climate impacts are linked to specific numbers of aircraft operations, the future year was based on PAL 2 numbers (which correspond to 2027 in the CAMP forecast) and five years beyond PAL 2 (which corresponds to 2032 in the CAMP forecast). For the purposes of the air quality and climate analyses, the PAL 2 operations are used to represent 2028, and PAL 2 plus 5 years operations are used to represent 2033.

### Construction Equipment

On-Road Construction Equipment Usage

On-road construction vehicle use, including construction employee vehicle trips to and from the job site and material delivery trips, were estimated using the California Emissions Estimator Model (CalEEMod) version 2020.4.0. Total vehicle miles traveled (VMT) for each type of on-road construction activity during each construction year are provided in **Table 1-2**.

**TABLE 1-2, ON-ROAD VEHICLE ACTIVITY**

| Year | On-Road Vehicle Activity | VMT |
|---|---|---|
| 2023 | Employee Commute | 4,794,779 |
| 2023 | Vendor Delivery | 804,037 |
| 2023 | Material Hauling | 96,600 |
| 2024 | Employee Commute | 4,794,779 |
| 2024 | Vendor Delivery | 804,037 |
| 2024 | Material Hauling | 96,600 |
| 2025 | Employee Commute | 6,331,430 |
| 2025 | Vendor Delivery | 1,197,945 |
| 2025 | Material Hauling | 51,840 |
| 2026 | Employee Commute | 6,886,024 |
| 2026 | Vendor Delivery | 1,352,077 |
| 2026 | Material Hauling | 51,840 |
| 2027 | Employee Commute | 3,447,088 |
| 2027 | Vendor Delivery | 664,264 |
| 2027 | Material Hauling | 13,640 |
| 2028 | Employee Commute | 3,072,188 |
| 2028 | Vendor Delivery | 664,264 |

Source: Landrum & Brown analysis, 2023.

Non-Road Construction Equipment Usage

Total hours of activity for each non-road equipment type during each construction year are provided in **Table 1-3**.

**TABLE 1-3, NON-ROAD CONSTRUCTION EQUIPMENT USE PER YEAR**

| Year | Non-Road Type Equipment | Average HP | Load Factor | Hours of Activity |
|---|---|---|---|---|
| 2023 | Air Compressors | 78 | 0.48 | 6,264 |
| 2023 | Concrete/Industrial Saws | 81 | 0.73 | 14,616 |
| 2023 | Cranes | 231 | 0.29 | 3,654 |
| 2023 | Excavators | 158 | 0.38 | 60,552 |
| 2023 | Forklifts | 89 | 0.20 | 12,528 |
| 2023 | Generator Sets | 84 | 0.74 | 4,176 |
| 2023 | Graders | 187 | 0.41 | 10,440 |
| 2023 | Pavers | 130 | 0.42 | 16,704 |
| 2023 | Paving Equipment | 132 | 0.36 | 16,704 |
| 2023 | Rollers | 80 | 0.38 | 16,704 |
| 2023 | Rubber Tired Dozers | 247 | 0.40 | 70,992 |
| 2023 | Scrapers | 367 | 0.48 | 12,528 |
| 2023 | Tractors/Loaders/Backhoes | 97 | 0.37 | 77,778 |
| 2023 | Welders | 46 | 0.45 | 4,176 |
| 2024 | Air Compressors | 78 | 0.48 | 6,264 |
| 2024 | Concrete/Industrial Saws | 81 | 0.73 | 14,616 |

| Year | Non-Road Type Equipment | Average HP | Load Factor | Hours of Activity |
|---|---|---|---|---|
| 2024 | Cranes | 231 | 0.29 | 3,654 |
| 2024 | Excavators | 158 | 0.38 | 60,552 |
| 2024 | Forklifts | 89 | 0.20 | 12,528 |
| 2024 | Generator Sets | 84 | 0.74 | 4,176 |
| 2024 | Graders | 187 | 0.41 | 10,440 |
| 2024 | Pavers | 130 | 0.42 | 16,704 |
| 2024 | Paving Equipment | 132 | 0.36 | 16,704 |
| 2024 | Rollers | 80 | 0.38 | 16,704 |
| 2024 | Rubber Tired Dozers | 247 | 0.40 | 70,992 |
| 2024 | Scrapers | 367 | 0.48 | 12,528 |
| 2024 | Tractors/Loaders/Backhoes | 97 | 0.37 | 77,778 |
| 2024 | Welders | 46 | 0.45 | 4,176 |
| 2025 | Air Compressors | 78 | 0.48 | 4,697 |
| 2025 | Cement and Mortar Mixers | 9 | 0.56 | 2,086 |
| 2025 | Concrete/Industrial Saws | 81 | 0.73 | 8,352 |
| 2025 | Cranes | 231 | 0.29 | 5,738 |
| 2025 | Excavators | 158 | 0.38 | 41,756 |
| 2025 | Forklifts | 89 | 0.20 | 16,173 |
| 2025 | Generator Sets | 84 | 0.74 | 6,260 |
| 2025 | Graders | 187 | 0.41 | 12,522 |
| 2025 | Pavers | 130 | 0.42 | 14,610 |
| 2025 | Paving Equipment | 132 | 0.36 | 14,610 |
| 2025 | Rollers | 80 | 0.38 | 16,696 |
| 2025 | Rubber Tired Dozers | 247 | 0.40 | 52,190 |
| 2025 | Scrapers | 367 | 0.48 | 18,786 |
| 2025 | Tractors/Loaders/Backhoes | 97 | 0.37 | 70,183 |
| 2025 | Welders | 46 | 0.45 | 10,432 |
| 2026 | Air Compressors | 78 | 0.48 | 4,697 |
| 2026 | Cement and Mortar Mixers | 9 | 0.56 | 2,086 |
| 2026 | Concrete/Industrial Saws | 81 | 0.73 | 8,352 |
| 2026 | Cranes | 231 | 0.29 | 7,563 |
| 2026 | Excavators | 158 | 0.38 | 41,756 |
| 2026 | Forklifts | 89 | 0.20 | 22,429 |
| 2026 | Generator Sets | 84 | 0.74 | 8,345 |
| 2026 | Graders | 187 | 0.41 | 12,522 |
| 2026 | Pavers | 130 | 0.42 | 14,610 |
| 2026 | Paving Equipment | 132 | 0.36 | 14,610 |
| 2026 | Rollers | 80 | 0.38 | 16,696 |
| 2026 | Rubber Tired Dozers | 247 | 0.40 | 52,190 |
| 2026 | Scrapers | 367 | 0.48 | 18,786 |
| 2026 | Tractors/Loaders/Backhoes | 97 | 0.37 | 75,657 |
| 2026 | Welders | 46 | 0.45 | 12,517 |

| Year | Non-Road Type Equipment | Average HP | Load Factor | Hours of Activity |
|---|---|---|---|---|
| 2027 | Air Compressors | 78 | 0.48 | 3,131 |
| 2027 | Cement and Mortar Mixers | 9 | 0.56 | 2,086 |
| 2027 | Concrete/Industrial Saws | 81 | 0.73 | 4,176 |
| 2027 | Cranes | 231 | 0.29 | 5,736 |
| 2027 | Excavators | 158 | 0.38 | 20,876 |
| 2027 | Forklifts | 89 | 0.20 | 16,165 |
| 2027 | Generator Sets | 84 | 0.74 | 6,257 |
| 2027 | Graders | 187 | 0.41 | 8,346 |
| 2027 | Pavers | 130 | 0.42 | 10,434 |
| 2027 | Paving Equipment | 132 | 0.36 | 10,434 |
| 2027 | Rollers | 80 | 0.38 | 12,520 |
| 2027 | Rubber Tired Dozers | 247 | 0.40 | 27,134 |
| 2027 | Scrapers | 367 | 0.48 | 10,434 |
| 2027 | Tractors/Loaders/Backhoes | 97 | 0.37 | 45,120 |
| 2027 | Welders | 46 | 0.45 | 10,429 |
| 2028 | Air Compressors | 78 | 0.48 | 1,565 |
| 2028 | Cement and Mortar Mixers | 9 | 0.56 | 2,086 |
| 2028 | Cranes | 231 | 0.29 | 5,736 |
| 2028 | Excavators | 158 | 0.38 | 4,172 |
| 2028 | Forklifts | 89 | 0.20 | 16,165 |
| 2028 | Generator Sets | 84 | 0.74 | 6,257 |
| 2028 | Graders | 187 | 0.41 | 6,258 |
| 2028 | Pavers | 130 | 0.42 | 6,258 |
| 2028 | Paving Equipment | 132 | 0.36 | 6,258 |
| 2028 | Rollers | 80 | 0.38 | 8,344 |
| 2028 | Rubber Tired Dozers | 247 | 0.40 | 10,430 |
| 2028 | Scrapers | 367 | 0.48 | 6,258 |
| 2028 | Tractors/Loaders/Backhoes | 97 | 0.37 | 32,592 |
| 2028 | Welders | 46 | 0.45 | 10,429 |

Source: Landrum & Brown analysis, 2023.

### Construction Equipment Emission Factors

Emission factors for on-road and non-road construction equipment were estimated separately.

On-Road

Emission factors for on-road construction vehicles were developed using the Motor Vehicle Emission Simulator (MOVES Version 3), which was developed by the U.S. Environmental Protection Agency (EPA). For the employee vehicle trips, the model was run using gasoline passenger cars. For the material delivery trips, diesel combination short-haul trucks were used. **Table 1-4** presents the MOVES3 emission factors used to calculate emissions for on-road construction vehicles for 2023. These emission factors were used for all other construction years.

**TABLE 1-4, ON-ROAD CONSTRUCTION VEHICLES EMISSION FACTORS**

| On-Road Vehicle Activity | Grams Per VMT | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | CO | VOC | $NO_X$ | $SO_X$ | $PM_{10}$ | $PM_{2.5}$ | $CO_2$ | $CH_4$ | $N_2O$ |
| Employee Commute | 3.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 333.2 | 0.01 | 0.002 |
| Vendor Delivery | 2.2 | 0.1 | 4.4 | 0.0 | 0.1 | 0.1 | 1,695.0 | 0.02 | 0.003 |
| Material Hauling | 2.2 | 0.1 | 4.4 | 0.0 | 0.1 | 0.1 | 1,695.0 | 0.02 | 0.003 |

Source: MOVES3, Landrum & Brown analysis, 2022.

Non-Road

Emission factors for non-road construction equipment were developed using MOVES3. Emission factors for non-road vary by equipment and horsepower. Therefore, emission factors were assigned by equipment type and average horsepower. **Table 1-5** provides the non-road construction emissions factors.

**TABLE 1-5, NON-ROAD CONSTRUCTION EMISSION FACTORS**

Source: MOVES3, Landrum & Brown analysis, 2023

| Non-Road Equipment Type | Average HP | Load Factor | Grams Per Hour of Activity | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | CO | VOC | NOx | SOx | $PM_{10}$ | $PM_{2.5}$ | $CO_2$ | $CH_4$ |
| Aerial Lifts | 75.0 | 0.2 | 5.5 | 1.2 | 8.2 | 0.0 | 0.8 | 0.7 | 1,388.6 | 0.0 |
| Aerial Lifts | 100.0 | 0.6 | 5.7 | 1.1 | 6.4 | 0.0 | 0.8 | 0.8 | 1,388.8 | 0.0 |
| Air Compressors | 100.0 | 0.4 | 1.1 | 0.2 | 3.4 | 0.0 | 0.2 | 0.2 | 1,180.3 | 0.0 |
| Cement & Mortar Mixers | 600.0 | 0.6 | 2.2 | 0.5 | 9.3 | 0.0 | 0.3 | 0.3 | 1,060.8 | 0.0 |
| Chippers/Stump Grinders (com) | 100.0 | 0.4 | 3.5 | 0.7 | 7.5 | 0.0 | 0.7 | 0.6 | 1,178.6 | 0.0 |
| Concrete/Industrial Saws | 40.0 | 0.6 | 0.8 | 0.2 | 5.3 | 0.0 | 0.1 | 0.1 | 1,191.6 | 0.0 |
| Cranes | 300.0 | 0.4 | 0.3 | 0.1 | 1.2 | 0.0 | 0.1 | 0.1 | 1,061.8 | 0.0 |
| Crawler Tractor/Dozers | 175.0 | 0.6 | 0.3 | 0.1 | 1.1 | 0.0 | 0.1 | 0.1 | 1,073.5 | 0.0 |
| Excavators | 175.0 | 0.6 | 0.3 | 0.0 | 0.8 | 0.0 | 0.1 | 0.1 | 1,073.6 | 0.0 |
| Forklifts | 100.0 | 0.6 | 0.2 | 0.0 | 1.8 | 0.0 | 0.0 | 0.0 | 1,192.3 | 0.0 |
| Generator Sets | 40.0 | 0.4 | 1.9 | 0.5 | 6.8 | 0.0 | 0.4 | 0.4 | 1,179.3 | 0.0 |
| Graders | 40.0 | 0.6 | 0.6 | 0.2 | 5.1 | 0.0 | 0.0 | 0.0 | 1,191.8 | 0.0 |
| Graders | 300.0 | 0.6 | 0.2 | 0.0 | 0.7 | 0.0 | 0.0 | 0.0 | 1,073.5 | 0.0 |
| Irrigation Sets | 600.0 | 0.6 | 1.6 | 0.4 | 5.0 | 0.0 | 0.3 | 0.3 | 1,061.0 | 0.0 |
| Off-highway Trucks | 600.0 | 0.6 | 0.2 | 0.0 | 0.6 | 0.0 | 0.0 | 0.0 | 1,073.6 | 0.0 |
| Other Construction Equipment | 11.0 | 0.7 | 5.0 | 1.7 | 8.4 | 0.0 | 0.5 | 0.5 | 1,187.5 | 0.1 |
| Other Construction Equipment | 175.0 | 0.4 | 0.6 | 0.1 | 1.7 | 0.0 | 0.1 | 0.1 | 1,073.2 | 0.0 |
| Other Construction Equipment | 600.0 | 0.6 | 2.4 | 0.3 | 6.4 | 0.0 | 0.3 | 0.3 | 1,072.7 | 0.0 |
| Pavers | 175.0 | 0.4 | 0.5 | 0.1 | 1.5 | 0.0 | 0.1 | 0.1 | 1,073.4 | 0.0 |
| Pavers | 175.0 | 0.6 | 0.5 | 0.1 | 1.5 | 0.0 | 0.1 | 0.1 | 1,073.4 | 0.0 |
| Plate Compactors | 6.0 | 0.4 | 5.3 | 1.7 | 8.7 | 0.0 | 0.6 | 0.5 | 1,175.9 | 0.1 |
| Pumps | 11.0 | 0.4 | 5.4 | 1.7 | 8.7 | 0.0 | 0.6 | 0.6 | 1,176.0 | 0.1 |
| Rollers | 100.0 | 0.6 | 1.5 | 0.1 | 2.9 | 0.0 | 0.2 | 0.2 | 1,192.0 | 0.0 |
| Scrapers | 600.0 | 0.6 | 0.6 | 0.1 | 1.6 | 0.0 | 0.1 | 0.1 | 1,073.4 | 0.0 |
| Skid Steer Loaders | 75.0 | 0.2 | 13.0 | 2.5 | 11.7 | 0.0 | 1.9 | 1.8 | 1,384.7 | 0.1 |
| Surfacing Equipment | 25.0 | 0.6 | 3.0 | 0.7 | 7.5 | 0.0 | 0.3 | 0.3 | 1,190.3 | 0.1 |
| Surfacing Equipment | 100.0 | 0.4 | 1.6 | 0.2 | 3.3 | 0.0 | 0.2 | 0.2 | 1,191.7 | 0.0 |
| Surfacing Equipment | 600.0 | 0.6 | 2.8 | 0.4 | 7.4 | 0.0 | 0.4 | 0.3 | 1,072.6 | 0.0 |
| Tractors/Loaders/Backhoes | 75.0 | 0.2 | 9.7 | 1.7 | 9.8 | 0.0 | 1.4 | 1.3 | 1,386.9 | 0.1 |
| Tractors/Loaders/Backhoes | 100.0 | 0.2 | 9.6 | 1.7 | 8.7 | 0.0 | 1.4 | 1.3 | 1,387.0 | 0.1 |
| Tractors/Loaders/Backhoes | 175.0 | 0.6 | 3.8 | 1.3 | 7.4 | 0.0 | 0.8 | 0.8 | 1,249.3 | 0.1 |
| Pressure Washers | 25.0 | 0.4 | 4.7 | 1.3 | 9.5 | 0.0 | 0.7 | 0.6 | 1,177.0 | 0.1 |
| Sweepers/Scrubbers | 175.0 | 0.4 | 0.3 | 0.1 | 1.2 | 0.0 | 0.1 | 0.1 | 1,061.9 | 0.0 |

# APPENDIX C

## Biological Resources

U.S. Fish & Wildlife Service List of Threatened and Endangered Species

Arizona Game and Fish Department – Arizona Environmental Online Review Tool Report

# United States Department of the Interior

FISH AND WILDLIFE SERVICE
Arizona Ecological Services Field Office
9828 North 31st Ave
#c3
Phoenix, AZ 85051-2517
Phone: (602) 242-0210 Fax: (602) 242-2513
http://www.fws.gov/southwest/es/arizona/
http://www.fws.gov/southwest/es/EndangeredSpecies_Main.html

In Reply Refer To: January 18, 2021
Consultation Code: 02EAAZ00-2021-SLI-0390
Event Code: 02EAAZ00-2021-E-01010
Project Name: CAMP Short-Range

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The Fish and Wildlife Service (Service) is providing this list under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). The list you have generated identifies threatened, endangered, proposed, and candidate species, and designated and proposed critical habitat, that may occur within one or more delineated United States Geological Survey 7.5 minute quadrangles with which your project polygon intersects. Each quadrangle covers, at minimum, 49 square miles. In some cases, a species does not currently occur within a quadrangle but occurs nearby and could be affected by a project. Please refer to the species information links found at:
http://www.fws.gov/southwest/es/arizona/Docs_Species.htm
http://www.fws.gov/southwest/es/arizona/Documents/MiscDocs/AZSpeciesReference.pdf .

The purpose of the Act is to provide a means whereby threatened and endangered species and the habitats upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of Federal trust resources and to consult with us if their projects may affect federally listed species and/or designated critical habitat. A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, we recommend preparing a biological evaluation similar to a Biological Assessment to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If the Federal action agency determines that listed species or critical habitat may be affected by a federally funded, permitted or authorized activity, the agency must consult with us pursuant to 50 CFR 402. Note that a "may affect" determination includes effects that may not be adverse and that may be beneficial, insignificant, or discountable. You should request consultation with us even if only one individual or habitat segment may be affected. The effects analysis should include the entire action area, which often extends well outside the project boundary or "footprint." For example, projects that involve streams and river systems should consider downstream effects. If the Federal action agency determines that the action may jeopardize a proposed species or adversely modify proposed critical habitat, the agency must enter into a section 7 conference. The agency may choose to confer with us on an action that may affect proposed species or critical habitat.
Candidate species are those for which there is sufficient information to support a proposal for listing. Although candidate species have no legal protection under the Act, we recommend considering them in the planning process in the event they become proposed or listed prior to project completion. More information on the regulations (50 CFR 402) and procedures for section 7 consultation, including the role of permit or license applicants, can be found in our Endangered Species Consultation Handbook at:
http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF.

We also advise you to consider species protected under the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703-712) and the Bald and Golden Eagle Protection Act (Eagle Act) (16 U.S.C. 668 et seq.). The MBTA prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when authorized by the Service. The Eagle Act prohibits anyone, without a permit, from taking (including disturbing) eagles, and their parts, nests, or eggs. Currently 1026 species of birds are protected by the MBTA, including species such as the western burrowing owl (Athene cunicularia hypugea). Protected western burrowing owls are often found in urban areas and may use their nest/burrows year-round; destruction of the burrow may result in the unpermitted take of the owl or their eggs.

If a bald eagle (or golden eagle) nest occurs in or near the proposed project area, you should evaluate your project to determine whether it is likely to disturb or harm eagles. The National Bald Eagle Management Guidelines provide recommendations to minimize potential project impacts to bald eagles:
https://www.fws.gov/migratorybirds/pdf/management/
nationalbaldeaglenanagementguidelines.pdf
https://www.fws.gov/birds/management/managed-species/eagle-management.php.

The Division of Migratory Birds (505/248-7882) administers and issues permits under the MBTA and Eagle Act, while our office can provide guidance and Technical Assistance. For more information regarding the MBTA, BGEPA, and permitting processes, please visit the following: https://www.fws.gov/birds/policies-and-regulations/incidental-take.php. Guidance for minimizing impacts to migratory birds for communication tower projects (e.g. cellular, digital television, radio, and emergency broadcast) can be found at:
https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds/collisions/communication-towers.php.

Activities that involve streams (including intermittent streams) and/or wetlands are regulated by the U.S. Army Corps of Engineers (Corps). We recommend that you contact the Corps to determine their interest in proposed projects in these areas. For activities within a National Wildlife Refuge, we recommend that you contact refuge staff for specific information about refuge resources.
If your action is on tribal land or has implications for off-reservation tribal interests, we encourage you to contact the tribe(s) and the Bureau of Indian Affairs (BIA) to discuss potential tribal concerns, and to invite any affected tribe and the BIA to participate in the section 7 consultation. In keeping with our tribal trust responsibility, we will notify tribes that may be affected by proposed actions when section 7 consultation is initiated.

We also recommend you seek additional information and coordinate your project with the Arizona Game and Fish Department. Information on known species detections, special status species, and Arizona species of greatest conservation need, such as the western burrowing owl and the Sonoran desert tortoise (Gopherus morafkai) can be found by using their Online Environmental Review Tool, administered through the Heritage Data Management System and Project Evaluation Program https://www.azgfd.com/Wildlife/HeritageFund/.

For additional communications regarding this project, please refer to the consultation Tracking Number in the header of this letter. We appreciate your concern for threatened and endangered species. If we may be of further assistance, please contact our following offices for projects in these areas:

Northern Arizona: Flagstaff Office 928/556-2001
Central Arizona: Phoenix office 602/242-0210
Southern Arizona: Tucson Office 520/670-6144

Sincerely,
/s/ Jeff Humphrey Field Supervisor

Attachment

Attachment(s):

- Official Species List

# Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**Arizona Ecological Services Field Office**
9828 North 31st Ave
#c3
Phoenix, AZ 85051-2517
(602) 242-0210

# Project Summary

Consultation Code: 02EAAZ00-2021-SLI-0390
Event Code: 02EAAZ00-2021-E-01010
Project Name: CAMP Short-Range
Project Type: DEVELOPMENT
Project Description: Airfield, Facility (buildings), Cargo, Terminal Concourse, and other Airport improvements

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@33.435630200000006,-112.01098943765547,14z


Counties: Maricopa County, Arizona

# Endangered Species Act Species

There is a total of 6 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

## Mammals

| NAME | STATUS |
|---|---|
| Sonoran Pronghorn *Antilocapra americana sonoriensis*<br>Population: U.S.A. (AZ), Mexico<br>No critical habitat has been designated for this species.<br>Species profile: https://ecos.fws.gov/ecp/species/4750 | Experimental Population, Non-Essential |

## Birds

| NAME | STATUS |
|---|---|
| California Least Tern *Sterna antillarum browni*<br>No critical habitat has been designated for this species.<br>Species profile: https://ecos.fws.gov/ecp/species/8104 | Endangered |
| Southwestern Willow Flycatcher *Empidonax traillii extimus*<br>There is **final** critical habitat for this species. The location of the critical habitat is not available.<br>Species profile: https://ecos.fws.gov/ecp/species/6749 | Endangered |
| Yellow-billed Cuckoo *Coccyzus americanus*<br>Population: Western U.S. DPS<br>There is **proposed** critical habitat for this species. The location of the critical habitat is not available.<br>Species profile: https://ecos.fws.gov/ecp/species/3911 | Threatened |
| Yuma Ridgways (clapper) Rail *Rallus obsoletus [=longirostris] yumanensis*<br>No critical habitat has been designated for this species.<br>Species profile: https://ecos.fws.gov/ecp/species/3505 | Endangered |

## Reptiles

| NAME | STATUS |
| --- | --- |
| Sonoran Desert Tortoise *Gopherus morafkai* | Candidate |

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9289

## Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

July 31. 2020

Jordan Feld
City of Phoenix Aviation Department
2485 E Buckeye Road
Phoenix, Arizona 85034

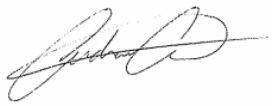
Re: Review of the Phoenix Sky Harbor CAMP project

Dear Ms. Name Here:

The Arizona Game and Fish Department (Department) reviewed your Project Evaluation Request dated June 19, 2020, regarding the various improvements associated with the Short Range Development Plan at the Sky Harbor Airport in Phoenix, Arizona. As the proposed project is located in a previously disturbed area, with the present habitat providing relatively low value to wildlife, the Department does not anticipate any significant adverse impacts to wildlife resources would occur as a result of this project.

Thank you for the opportunity to review this project. The report created for you (attached) on Arizona's Online Environmental Review Tool should provide general recommendations and additional contact information. If you have any questions regarding this letter, please contact me at (623) 236-7222.

Sincerely,



Andrew Cavalcant
Project Evaluation Program Specialist, Habitat Branch
Arizona Game and Fish Department

cc: Ginger Ritter, Project Evaluation Program Supervisor
Kelly Wolff, Habitat Program Manager, Region VI

AGFD# M20-07092753

# Arizona Environmental Online Review Tool Report

***Arizona Game and Fish Department Mission***
***To conserve Arizona's diverse wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations.***

**Project Name:**
PHX Sky Harbor CAMP

**Project Description:**
General Improvements and land acquisition

**Project Type:**
Transportation & Infrastructure, Airports, Construction of new runways, terminals/concourses, other facilities

**Contact Person:**
Andrew Cavalcant

**Organization:**
AZGFD

**On Behalf Of:**
CITY

**Project ID:**
HGIS-11754

***Please review the entire report for project type and/or species recommendations for the location information entered. Please retain a copy for future reference.***

**Disclaimer:**

1. This Environmental Review is based on the project study area that was entered. The report must be updated if the project study area, location, or the type of project changes.
2. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area. This review is also not intended to replace environmental consultation (including federal consultation under the Endangered Species Act), land use permitting, or the Departments review of site-specific projects.
3. The Departments Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. HDMS data contains information about species occurrences that have actually been reported to the Department. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HabiMap Arizona data, specifically Species of Greatest Conservation Need (SGCN) under our State Wildlife Action Plan (SWAP) and Species of Economic and Recreational Importance (SERI), represent potential species distribution models for the State of Arizona which are subject to ongoing change, modification and refinement. The status of a wildlife resource can change quickly, and the availability of new data will necessitate a refined assessment.

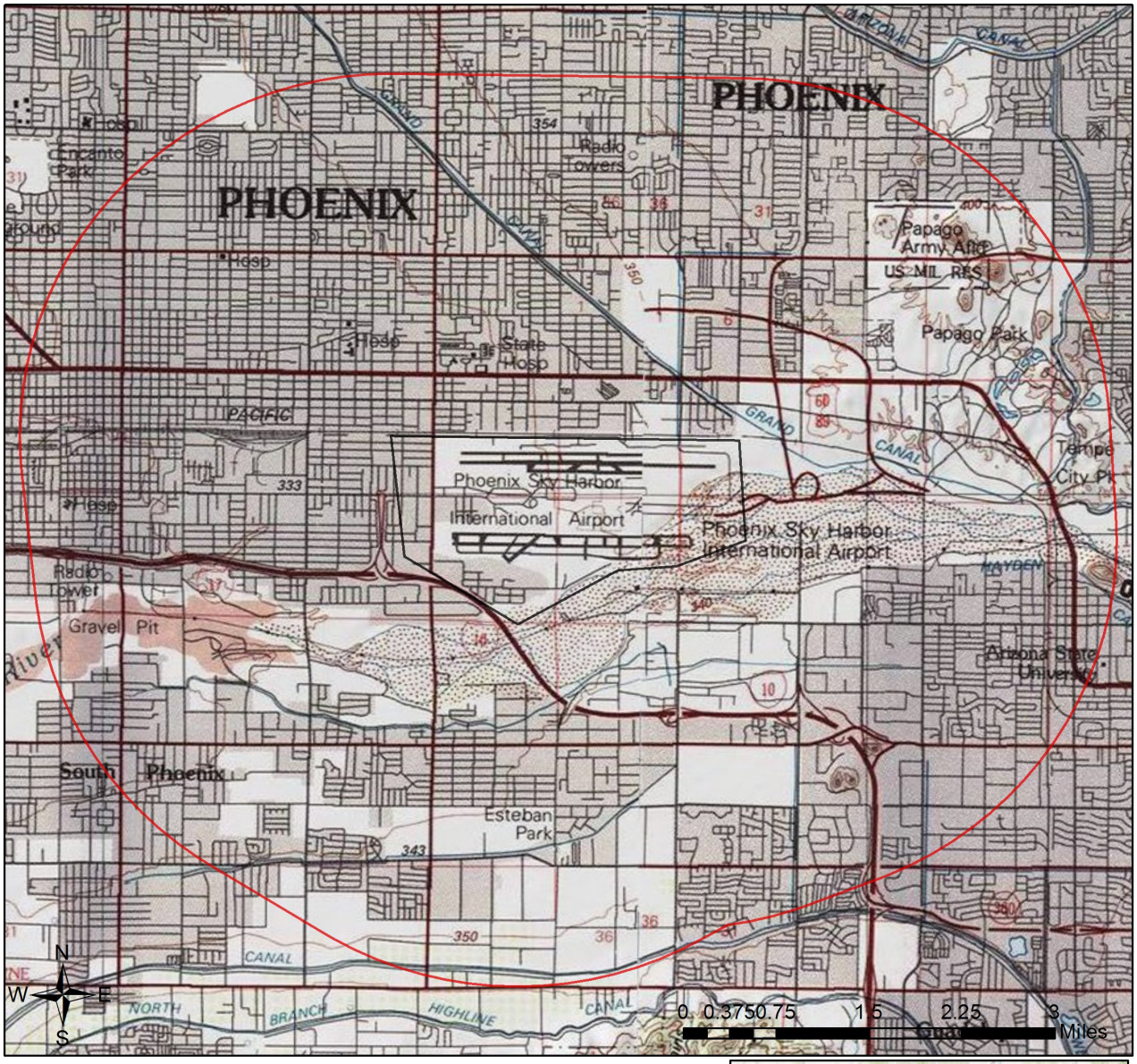
**Locations Accuracy Disclaimer:**
Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Report is solely responsible for the project location and thus the correctness of the Project Review Report content.

**Recommendations Disclaimer:**

1. The Department is interested in the conservation of all fish and wildlife resources, including those species listed in this report and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
2. Recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation).
3. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project. These recommendations are preliminary in scope, designed to provide early considerations on all species of wildlife.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. Further coordination with the Department requires the submittal of this Environmental Review Report with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map). Once AGFD had received the information, please allow 30 days for completion of project reviews. Send requests to:
   **Project Evaluation Program, Habitat Branch**
   **Arizona Game and Fish Department**
   **5000 West Carefree Highway**
   **Phoenix, Arizona 85086-5000**
   **Phone Number: (623) 236-7600**
   **Fax Number: (623) 236-7366**
   **Or**
   PEP@azgfd.gov
6. Coordination may also be necessary under the National Environmental Policy Act (NEPA) and/or Endangered Species Act (ESA). Site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies

# PHX Sky Harbor CAMP

## USA Topo Basemap With Locator Map




Project Boundary

Buffered Project Boundary

Project Size (acres): 2,108.86

Lat/Long (DD): 33.4349 / -112.0119

County(s): Maricopa

AGFD Region(s): Mesa

Township/Range(s): T1N, R3E; T1N, R4E

USGS Quad(s): PHOENIX; TEMPE


Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap

# PHX Sky Harbor CAMP

## Web Map As Submitted By User


Project Boundary

Buffered Project Boundary

Project Size (acres): 2,108.86

Lat/Long (DD): 33.4349 / -112.0119

County(s): Maricopa

AGFD Region(s): Mesa

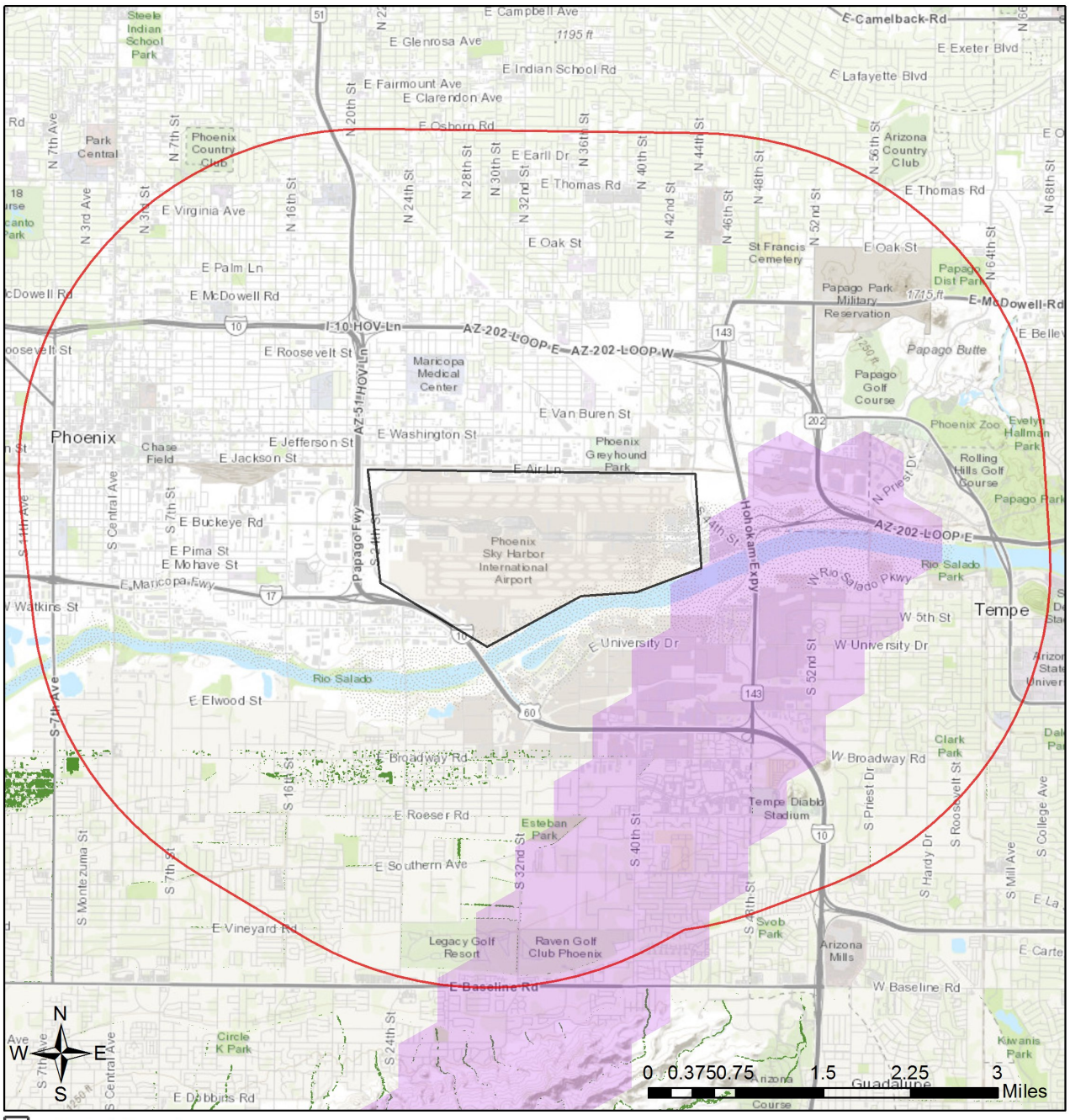
Township/Range(s): T1N, R3E; T1N, R4E

USGS Quad(s): PHOENIX; TEMPE

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

# PHX Sky Harbor CAMP

## Important Areas




- Project Boundary
- Buffered Project Boundary
- Wildlife Connectivity
- Important Connectivity Zones
- Pinal County Riparian
- Critical Habitat
- Important Bird Areas

Project Size (acres): 2,108.86

Lat/Long (DD): 33.4349 / -112.0119

County(s): Maricopa

AGFD Region(s): Mesa

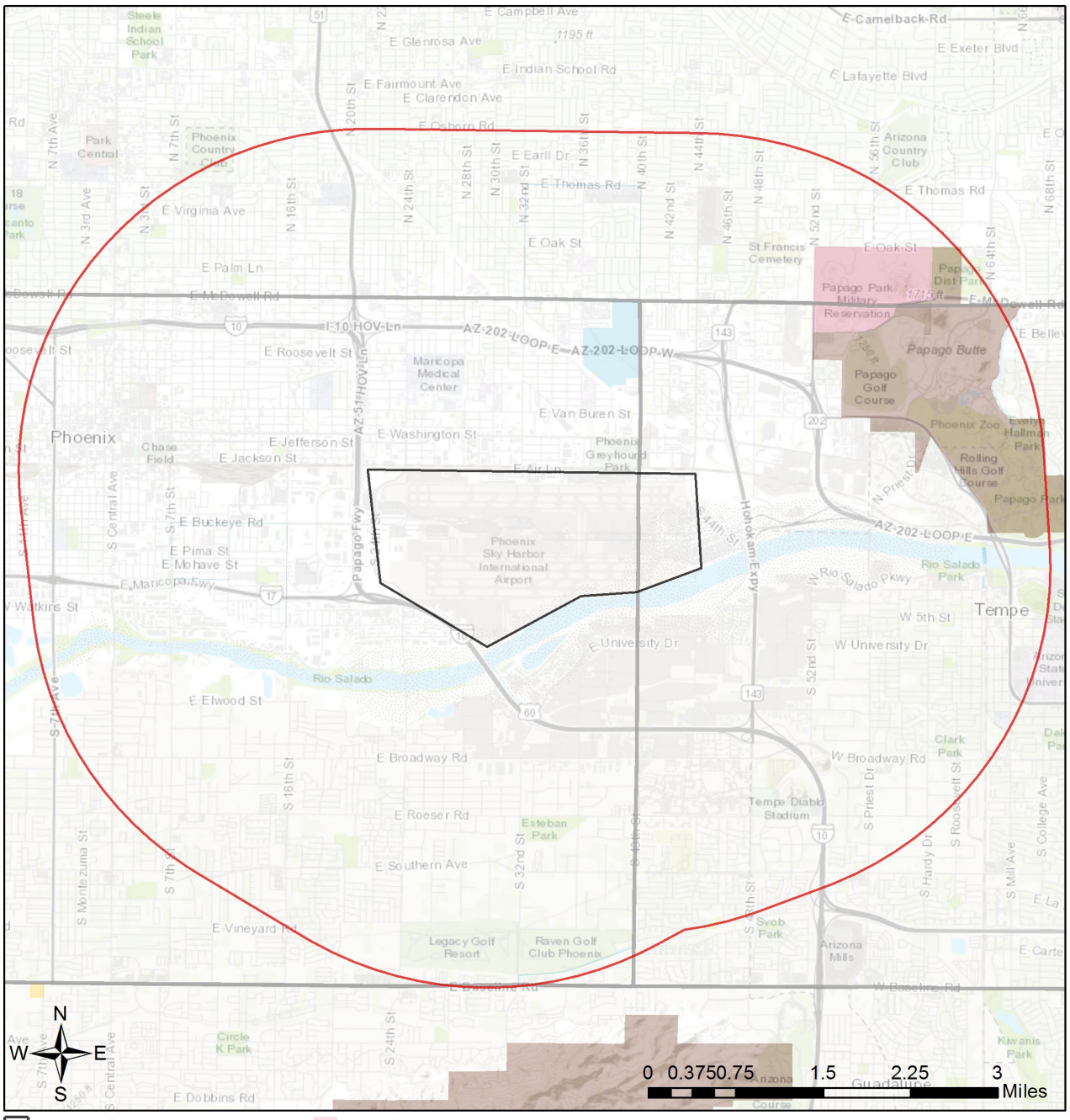
Township/Range(s): T1N, R3E; T1N, R4E

USGS Quad(s): PHOENIX; TEMPE

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

# PHX Sky Harbor CAMP

## Township/Ranges and Land Ownership




- Project Boundary
- Buffered Project Boundary
- Township/Ranges

**Land Ownership**

- AZ Game & Fish Dept.
- BLM
- BOR
- Indian Res.
- Military
- Mixed/Other
- National Park/Mon.
- Private
- State & Regional Parks
- State Trust
- US Forest Service
- Wildlife Area/Refuge

Project Size (acres): 2,108.86

Lat/Long (DD): 33.4349 / -112.0119

County(s): Maricopa

AGFD Region(s): Mesa

Township/Range(s): T1N, R3E; T1N, R4E

USGS Quad(s): PHOENIX; TEMPE

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

**Special Status Species Documented within 3 Miles of Project Vicinity**

| Scientific Name | Common Name | FWS | USFS | BLM | NPL | SGCN |
|---|---|---|---|---|---|---|
| Coccyzus americanus | Yellow-billed Cuckoo (Western DPS) | LT | S | | | 1A |
| Falco peregrinus anatum | American Peregrine Falcon | SC | S | S | | 1A |
| Haliaeetus leucocephalus (wintering pop.) | Bald Eagle - Winter Population | SC, BGA | S | S | | 1A |
| Haliaeetus leucocephalus | Bald Eagle | SC, BGA | S | S | | 1A |
| Sauromalus ater | Common Chuckwalla | SC | | | | |

*Note: Status code definitions can be found at* https://www.azgfd.com/wildlife/planning/wildlifeguidelines/statusdefinitions/
.

**Special Areas Documented within the Project Vicinity**

| Scientific Name | Common Name | FWS | USFS | BLM | NPL | SGCN |
|---|---|---|---|---|---|---|
| Important Connectivity Zone | Wildlife Connectivity | | | | | |
| Salt River - Saguaro Lake to Gila River | Maricopa County Wildlife Movement Area - Riparian/Wash | | | | | |

*Note: Status code definitions can be found at* https://www.azgfd.com/wildlife/planning/wildlifeguidelines/statusdefinitions/
.

**Species of Greatest Conservation Need Predicted within the Project Vicinity based on Predicted Range Models**

| Scientific Name | Common Name | FWS | USFS | BLM | NPL | SGCN |
|---|---|---|---|---|---|---|
| Agosia chrysogaster | Longfin Dace | SC | | S | | 1B |
| Aix sponsa | Wood Duck | | | | | 1B |
| Ammospermophilus harrisii | Harris' Antelope Squirrel | | | | | 1B |
| Anthus spragueii | Sprague's Pipit | SC | | | | 1A |
| Athene cunicularia hypugaea | Western Burrowing Owl | SC | S | S | | 1B |
| Botaurus lentiginosus | American Bittern | | | | | 1B |
| Buteo regalis | Ferruginous Hawk | SC | | S | | 1B |
| Calypte costae | Costa's Hummingbird | | | | | 1C |
| Castor canadensis | American Beaver | | | | | 1B |
| Catostomus clarkii | Desert Sucker | SC | S | S | | 1B |
| Catostomus insignis | Sonora Sucker | SC | S | S | | 1B |
| Catostomus latipinnis | Flannelmouth Sucker | CCA | | S | | 1A |
| Catostomus sp. 3 | Little Colorado Sucker | CCA | S | S | | 1A |
| Chilomeniscus stramineus | Variable Sandsnake | | | | | 1B |
| Chionactis occipitalis klauberi | Tucson Shovel-nosed Snake | SC | | | | 1A |
| Cistothorus palustris | Marsh Wren | | | | | 1C |
| Coccyzus americanus | Yellow-billed Cuckoo (Western DPS) | LT | S | | | 1A |
| Colaptes chrysoides | Gilded Flicker | | | S | | 1B |
| Corynorhinus townsendii pallescens | Pale Townsend's Big-eared Bat | SC | S | S | | 1B |

**Species of Greatest Conservation Need Predicted within the Project Vicinity based on Predicted Range Models**

| Scientific Name | Common Name | FWS | USFS | BLM | NPL | SGCN |
|---|---|---|---|---|---|---|
| Crotalus tigris | Tiger Rattlesnake | | | | | 1B |
| Cyprinodon macularius | Desert Pupfish | LE | | | | 1A |
| Empidonax wrightii | Gray Flycatcher | | | | | 1C |
| Euderma maculatum | Spotted Bat | SC | S | S | | 1B |
| Eumops perotis californicus | Greater Western Bonneted Bat | SC | | S | | 1B |
| Falco peregrinus anatum | American Peregrine Falcon | SC | S | S | | 1A |
| Gila elegans | Bonytail Chub | LE | | | | 1A |
| Gila robusta | Roundtail Chub | SC | S | S | | 1A |
| Gopherus morafkai | Sonoran Desert Tortoise | CCA | S | S | | 1A |
| Haliaeetus leucocephalus | Bald Eagle | SC, BGA | S | S | | 1A |
| Heloderma suspectum | Gila Monster | | | | | 1A |
| Incilius alvarius | Sonoran Desert Toad | | | | | 1B |
| Kinosternon sonoriense sonoriense | Desert Mud Turtle | | | S | | 1B |
| Lasiurus blossevillii | Western Red Bat | | S | | | 1B |
| Lasiurus xanthinus | Western Yellow Bat | | S | | | 1B |
| Leptonycteris yerbabuenae | Lesser Long-nosed Bat | SC | | | | 1A |
| Lithobates yavapaiensis | Lowland Leopard Frog | SC | S | S | | 1A |
| Macrotus californicus | California Leaf-nosed Bat | SC | | S | | 1B |
| Melanerpes uropygialis | Gila Woodpecker | | | | | 1B |
| Melospiza lincolnii | Lincoln's Sparrow | | | | | 1B |
| Melozone aberti | Abert's Towhee | | S | | | 1B |
| Micrathene whitneyi | Elf Owl | | | | | 1C |
| Micruroides euryxanthus | Sonoran Coralsnake | | | | | 1B |
| Myiarchus tyrannulus | Brown-crested Flycatcher | | | | | 1C |
| Myotis velifer | Cave Myotis | SC | | S | | 1B |
| Myotis yumanensis | Yuma Myotis | SC | | | | 1B |
| Nyctinomops femorosaccus | Pocketed Free-tailed Bat | | | | | 1B |
| Oreoscoptes montanus | Sage Thrasher | | | | | 1C |
| Oreothlypis luciae | Lucy's Warbler | | | | | 1C |
| Panthera onca | Jaguar | LE | | | | 1A |
| Passerculus sandwichensis | Savannah Sparrow | | | | | 1B |
| Phrynosoma solare | Regal Horned Lizard | | | | | 1B |
| Phyllorhynchus browni | Saddled Leaf-nosed Snake | | | | | 1B |
| Poeciliopsis occidentalis occidentalis | Gila Topminnow | LE | | | | 1A |
| Ptychocheilus lucius | Colorado Pikeminnow | LE,XN | | | | 1A |
| Rallus obsoletus yumanensis | Yuma Ridgway's Rail | LE | | | | 1A |
| Setophaga petechia | Yellow Warbler | | | | | 1B |
| Sphyrapicus nuchalis | Red-naped Sapsucker | | | | | 1C |

**Species of Greatest Conservation Need Predicted within the Project Vicinity based on Predicted Range Models**

| Scientific Name | Common Name | FWS | USFS | BLM | NPL | SGCN |
|---|---|---|---|---|---|---|
| Spizella breweri | Brewer's Sparrow | | | | | 1C |
| Tadarida brasiliensis | Brazilian Free-tailed Bat | | | | | 1B |
| Toxostoma lecontei | LeConte's Thrasher | | | S | | 1B |
| Troglodytes pacificus | Pacific Wren | | | | | 1B |
| Vireo bellii arizonae | Arizona Bell's Vireo | | | | | 1B |
| Vulpes macrotis | Kit Fox | No Status | | | | 1B |
| Xyrauchen texanus | Razorback Sucker | LE | | | | 1A |

**Species of Economic and Recreation Importance Predicted within the Project Vicinity**

| Scientific Name | Common Name | FWS | USFS | BLM | NPL | SGCN |
|---|---|---|---|---|---|---|
| Callipepla gambelii | Gambel's Quail | | | | | |
| Zenaida asiatica | White-winged Dove | | | | | |
| Zenaida macroura | Mourning Dove | | | | | |

**Project Type: Transportation & Infrastructure, Airports, Construction of new runways, terminals/concourses, other facilities**

**Project Type Recommendations:**
During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife. Guidelines for many of these can be found at: https://www.azgfd.com/wildlife/planning/wildlifeguidelines/.

Consider impacts of outdoor lighting on wildlife and develop measures or alternatives that can be taken to increase human safety while minimizing potential impacts to wildlife. Conduct wildlife surveys to determine species within project area, and evaluate proposed activities based on species biology and natural history to determine if artificial lighting may disrupt behavior patterns or habitat use. Use only the minimum amount of light needed for safety. Narrow spectrum bulbs should be used as often as possible to lower the range of species affected by lighting. All lighting should be shielded, canted, or cut to ensure that light reaches only areas needing illumination.

Consider tower designs and/or modifications that reduce or eliminate impacts to migratory birds (i.e. free standing, minimally lighted structures).

Minimization and mitigation of impacts to wildlife and fish species due to changes in water quality, quantity, chemistry, temperature, and alteration to flow regimes (timing, magnitude, duration, and frequency of floods) should be evaluated. Minimize impacts to springs, in-stream flow, and consider irrigation improvements to decrease water use. If dredging is a project component, consider timing of the project in order to minimize impacts to spawning fish and other aquatic species (include spawning seasons), and to reduce spread of exotic invasive species. We recommend early direct coordination with Project Evaluation Program for projects that could impact water resources, wetlands, streams, springs, and/or riparian habitats.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

Based on the project type entered, coordination with State Historic Preservation Office may be required (http://azstateparks.com/SHPO/index.html).

Based on the project type entered, coordination with Arizona Department of Environmental Quality may be required (http://www.azdeq.gov/).

Based on the project type entered, coordination with U.S. Army Corps of Engineers may be required (http://www.usace.army.mil/)

Based on the project type entered, coordination with County Flood Control district(s) may be required.

Based on the project type entered, coordination with U.S. Fish and Wildlife Service (Migratory Bird Treaty Act) may be required (http://www.fws.gov/southwest/es/arizona/).

***The Department requests further coordination to provide project/species specific recommendations, please contact Project Evaluation Program directly at*** PEP@azgfd.gov.

**Project Location and/or Species Recommendations:**
HDMS records indicate that one or more **Listed, Proposed, or Candidate** species or **Critical Habitat** (Designated or Proposed) have been documented in the vicinity of your project. The Endangered Species Act (ESA) gives the US Fish and Wildlife Service (USFWS) regulatory authority over all federally listed species. Please contact USFWS Ecological Services Offices at http://www.fws.gov/southwest/es/arizona/ or:

**Phoenix Main Office**
9828 North 31st Avenue #C3
Phoenix, AZ 85051-2517
Phone: 602-242-0210
Fax: 602-242-2513

**Tucson Sub-Office**
201 N. Bonita Suite 141
Tucson, AZ 85745
Phone: 520-670-6144
Fax: 520-670-6155

**Flagstaff Sub-Office**
SW Forest Science Complex
2500 S. Pine Knoll Dr.
Flagstaff, AZ 86001
Phone: 928-556-2157
Fax: 928-556-2121

Analysis indicates that your project is located in the vicinity of an identified ***wildlife habitat connectivity feature***. The **County-level Stakeholder Assessments** contain five categories of data (Barrier/Development, Wildlife Crossing Area, Wildlife Movement Area- Diffuse, Wildlife movement Area- Landscape, Wildlife Movement Area- Riparian/Washes) that provide a context of select anthropogenic barriers, and potential connectivity. The reports provide recommendations for opportunities to preserve or enhance permeability. Project planning and implementation efforts should focus on maintaining and improving opportunities for wildlife permeability. For information pertaining to the linkage assessment and wildlife species that may be affected, please refer to: https://www.azgfd.com/wildlife/planning/habitatconnectivity/identifying-corridors/.
Please contact the Project Evaluation Program (pep@azgfd.gov) for specific project recommendations.

Analysis indicates that your project is located in the vicinity of an identified ***wildlife habitat connectivity feature***.
The **Statewide Wildlife Connectivity Assessment's Important Connectivity Zones** (ICZs) represent general areas throughout the landscape which contribute the most to permeability of the whole landscape. ICZs may be used to help identify, in part, areas where more discrete corridor modeling ought to occur. The reports provide recommendations for opportunities to preserve or enhance permeability. Project planning and implementation efforts should focus on maintaining and improving opportunities for wildlife permeability. For information pertaining to the linkage assessment and wildlife species that may be affected, please refer to: https://s3.amazonaws.com/azgfd-portal-wordpress/azgfd.wp/wp-content/uploads/0001/01/23120719/ALIWCA_Final_Report_Perkl_2013_lowres.pdf.
Please contact the Project Evaluation Program (pep@azgfd.gov) for specific project recommendations.

# APPENDIX D

# Historic Resources

## Coordination between FAA and SHPO

- Revised Undertaking, Area of Potential Effects, and No Adverse Effect Finding, Letter from FAA Phoenix Airports District Office to SHPO on June 3, 2022
- Definition of Area of Potential Effects, Letter from FAA to SHPO on October 7, 2022
    - SHPO concurrence on November 9,2022 (signature on last page of letter)
- Finding of No Adverse Effects, Letter from FAA to SHPO on March 13, 2023
    - SHPO concurrence on March 14, 2023 (signature and notes on last page of letter)

## Other Consultation and Documentation

- *A Historic Properties Inventory for the Sky Harbor Airport Comprehensive Asset Management Plan, Sky Harbor International Airport, Phoenix, Maricopa County, Arizona*, September 2021.
- Additional Archaeological Projects Information for SHPO, revised August, 2022

Revised Undertaking, Area of Potential Effects, and No Adverse Effect Finding, Letter from FAA Phoenix Airports District Office to SHPO on June 3, 2022

U.S. Department
of Transportation
**Federal Aviation Administration**

Western-Pacific Region
Airports Division
Phoenix Airports District Office

3800 N. Central Avenue
Suite 1025, 10th Floor
Phoenix, AZ 85012

June 3, 2022

VIA EMAIL (azshpo@azstateparks.gov)

Ms. Kathryn Leonard
State Historic Preservation Officer
Arizona State Parks & Trails
1110 West Washington Street, Suite 100
Phoenix, AZ 85007

Subject: Proposed Airport Layout Plan Change for Comprehensive Asset Management Plan's (CAMP) Short-Range Development Plan Improvements at Phoenix Sky Harbor International Airport, Phoenix, Arizona – Revised Undertaking, Area of Potential Effect, and No Adverse Effect Finding (SHPO-2021-0159)

Dear Ms. Leonard:

The Federal Aviation Administration, in coordination with the City of Phoenix Aviation Department (Sponsor), reduced the original undertaking's area and number of projects as well as altered several airfield projects since our last correspondence dated November 5, 2021 (SHPO-2021-0159 161457). At this time, we are no longer considering projects situated north of the Union Pacific Railroad, some of which entailed acquiring historic properties. The FAA remains the lead federal agency, but the Federal Railroad Administration no longer has an action associated with the undertaking. The FAA determined that proposed Airport Layout Plan changes and federal financial assistance for the Comprehensive Asset Management Plan's (CAMP) revised Short-Range Development Plan's projects at Phoenix Sky Harbor International Airport are an undertaking. The FAA revised the area of potential effects (APE), but our identification effort and resource evaluations haven't changed since our last correspondence dated November 5, 2021 (SHPO-2021-0159 161457). The FAA found that the revised undertaking with archaeological monitoring would result in **no adverse effect**. Thus, we no longer plan to pursue a programmatic agreement.

The FAA seeks your concurrence on the revised APE and finding of no adverse effect. Likewise, the FAA invites consulting parties, included as courtesy copy recipients, to concur.

## Description of the Undertaking

The revised undertaking includes the following projects shown on Enclosure 1:

1. Airfield Facilities
    I. Improvements of various airfield pavements to increase safety and efficiency *(A-1 on Enclosure 1)*
    II. Construction of Crossfield Taxiway U *(A-2 on Enclosure 1)*

a. Would require construction of a taxiway bridge over the PHX Sky Train, which is already below grade, and Sky Harbor Boulevard, which would be reconstructed below grade in this location
b. Would require relocation of portions of the Facilities and Services Complex parking and equipment storage lots to a new space *(see 3. below)*
c. Would require relocation of a portion of Air Cargo Complex C to a new space *(see 3. below)*

2. Terminal and Concourse Facilities
   I. Construction of Terminal 3, North Concourse 2 (*T-1 on Enclosure 1*)
      a. Would provide 6 aircraft gates
      b. Would require relocation of the American Airlines C-Point cargo facility and vehicle gate located west of the Terminal 3 North Concourse to a new space (*see 3. below*)
   II. Construction of Terminal 3 - Terminal 4 Connector (*T-2 on Enclosure 1*)
   III. Extension of Terminal 3 South Terminal (*T-3 on Enclosure 1*)
      a. Would provide 10 aircraft gates

3. Airport Tenant and Support Facilities
   I. Construction of South Apron Hold Pad and Cargo Complex C Replacement to replace portions of Air Cargo Complex C demolished by the construction of Crossfield Taxiway U (*S-1 on Enclosure 1*)
   II. Relocation of American Airlines' C-Point Cargo Facility and Vehicle Gate demolished by the construction of Terminal 3, North Concourse 2 *(S-2 on Enclosure 1)*
   III. Replacement of Facilities and Services parking and equipment storage yard impacted by Crossfield Taxiway U *(S-3 on Enclosure 1)*

The airport is located five miles east of Phoenix's central business district. It is bounded by State Route 143 to the east, Interstate 10 and the Salt River to the south, 16th Street to the west, and the Union Pacific Railroad tracks to the north. The airport is situated within portions of Sections 10 to 15 in Township 1 North, Range 3 East and Sections 7 and 18 in Township 1 North, Range 4 East on the Gila and Salt River Baseline and Meridian. The corresponding 7.5-minute topographic map is Phoenix, Arizona.

## Description of the Area of Potential Effects

The revised undertaking's direct APE covers 2,034 acres of municipal-owned land, which 159 acres smaller than the original and no longer includes private land. Enclosure 2 shows the areas deleted from the direct APE, which are located north of the airport. It also shows the areas added to the direct APE on existing airport property to the south, west, and east. The direct APE, shown in Enclosure 3, is bounded by the south edge of the Union Pacific Railroad corridor to the north, the Salt River and Interstate 10 to the south, S. 44th Street to the east, and S. 24th Street to the west. The FAA selected this area because it envelops undertaking-related, ground-disturbing activities, building demolition, construction staging, and temporary, ground-operation-related, construction detours.

The indirect APE hasn't changed, because it overlaps the direct APE and its outer boundary is the same. It covers 9,250 acres of municipal and private land surrounding the direct APE (Enclosure 3) and is bounded by Van Buren Street to the north, the Salt River, University Drive, and Fifth Street the south, Central Avenue and 7th Street to the west, and Mill Avenue to the east. The FAA selected this area, because it encompasses the airport's existing 65 decibel noise contours, which is where airport-induced, land-use changes occurred in the past.

## Resource Identification Methods

The FAA finds that the identification efforts conducted to date by SWCA, which were described in our November 5, 2021 letter are adequate for the revised, smaller undertaking. If requested we'll re-send the lengthy report. The Sponsor's record check confirmed that the two buildings to be wholly or partially demolished were constructed between 1987 and 2002. The FAA continues to consult with Indian tribes. The FAA will inform your office about any disagreements with or changes to, our identification efforts, resource evaluations, or effect findings that result from tribal consultation.

## Resource Identification Results

Within the revised direct APE, SWCA's researchers identified 11 resources (Enclosure 4, Table 1). This total includes one building (i.e., Terminal 3) and 10 sites.

Within the indirect APE, SWCA's researchers identified 32 historic properties where integrity of setting is a defining characteristic (Enclosure 4, Table 2a). This total consists of 27 buildings, one district, one site (i.e., Pueblo Grande Ruins), and three structures. It includes six resources identified during the original undertaking's identification efforts located north of the Union Pacific railroad tracks. This total doesn't include eight recorded resources that have since been demolished by other entities and unrelated to the current undertaking (Enclosure 4, Table 2b).

## Resource Evaluations

The FAA, in consultation with your office and consulting parties, previously evaluated the resources identified in the direct and indirect APEs in terms of the National Register of Historic Places eligibility criteria (see our last correspondence dated November 5, 2021 (SHPO-2021-0159 161457)). Since then, the FAA hasn't identified any new information that would change these eligibility determinations (Enclosure 4, Tables 1 and 2a). The 10 historic properties located within the direct APE are shown on Enclosure 5, and the 32 historic properties situated in the indirect APE are shown on Enclosure 6.

## Effect Finding

The FAA finds that the criteria of adverse effect aren't met for the identified historic properties located wholly or partially within the revised direct APE based on the types of undertaking-related activities that would occur and the degree previous ground disturbance (Enclosure 4, Table 3a). The activities include altering, demolishing, and marking (i.e., painting) pavement such as taxiways, constructing building additions, and installing fences and lighted signs.

The FAA finds that the criteria of adverse effect aren't met for the identified historic properties located wholly or partially within the indirect APE, based on distance and degree of line-of-sight to the airport (Enclosure 4, Table 3b).

Therefore, the FAA finds **no adverse effect** for the undertaking with the condition that the Sponsor conducts archaeological monitoring during any undertaking-related, ground-disturbing activities extending below modern disturbances and located within an archaeological site and a 250-foot-wide buffer or near an archaeological canal alignment and a 50-foot-wide buffer. The Sponsor would follow the monitoring and discovery procedures in the previously prepared, city-wide plan titled *General Monitoring and Discovery Plan for the City of Phoenix, Maricopa County, Arizona*, prepared by archaeologist T. Kathleen Henderson, and dated July 31, 2020 (see https://www.phoenix.gov/parkssite/Documents/PKS_Pueblo_Grande_Museum/DA%20pr19-120_draft2.pdf).

## Looking Ahead

The FAA intends to make a *de minimus* finding in the Department of Transportation Act's Section 4f process with regard to the historic properties identified within the undertaking's direct APE (Enclosure 4, Table 3a). A *de minimus* finding doesn't describe these resources' value or significance, but is instead a statuary term used in the review process. This finding would be conditioned on the Sponsor conducting archaeological monitoring as described above. In this case, the FAA elects to include historic properties eligible only under Criterion D (Information Potential) in the Section 4f review despite the exemption for sites perceived to have minimal value for preservation in place.

Please concur with the FAA's revised APE and finding of **no adverse effect**. Likewise, we invite the courtesy copy recipients to also concur. If you have any questions, please contact me at (602) 792-1066 or email matthew.h.bilsbarrow@faa.gov.

Sincerely,

MATTHEW H BILSBARROW

Digitally signed by MATTHEW H BILSBARROW
Date: 2022.06.03 13:18:00 -07'00'

Matthew H. Bilsbarrow, RPA
Environmental Planner

Enclosures

cc. w/Enclosures:
Elaine Peters (EPeters@ak-chin.nsn.us)
Mark Frank (mfrank@fmyn.org)
Erika McCalvin (emccalvin@fmyn.org)
Albert Nelson (anelson@fmyn.org)
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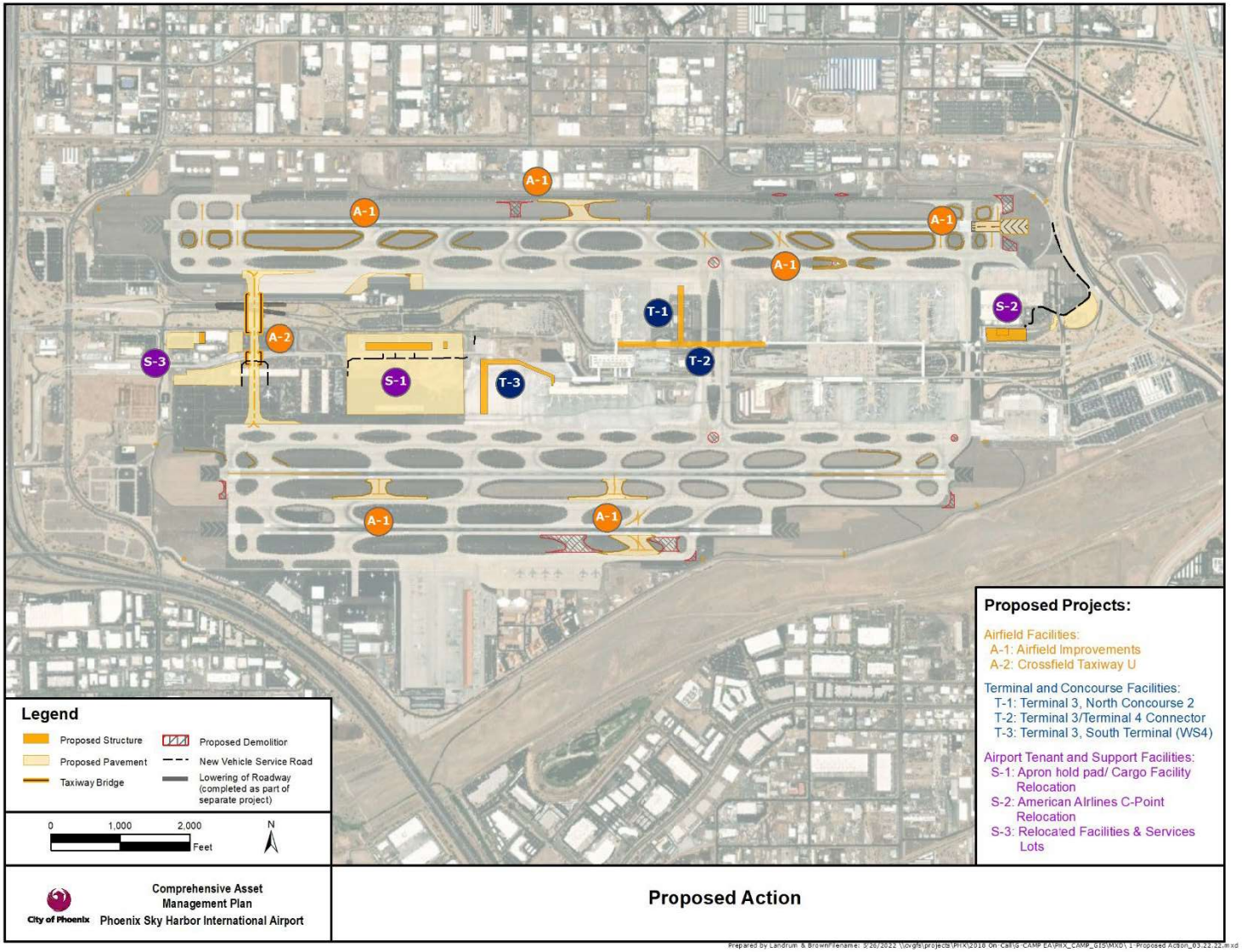
## Enclosure 1. Proposed Undertaking

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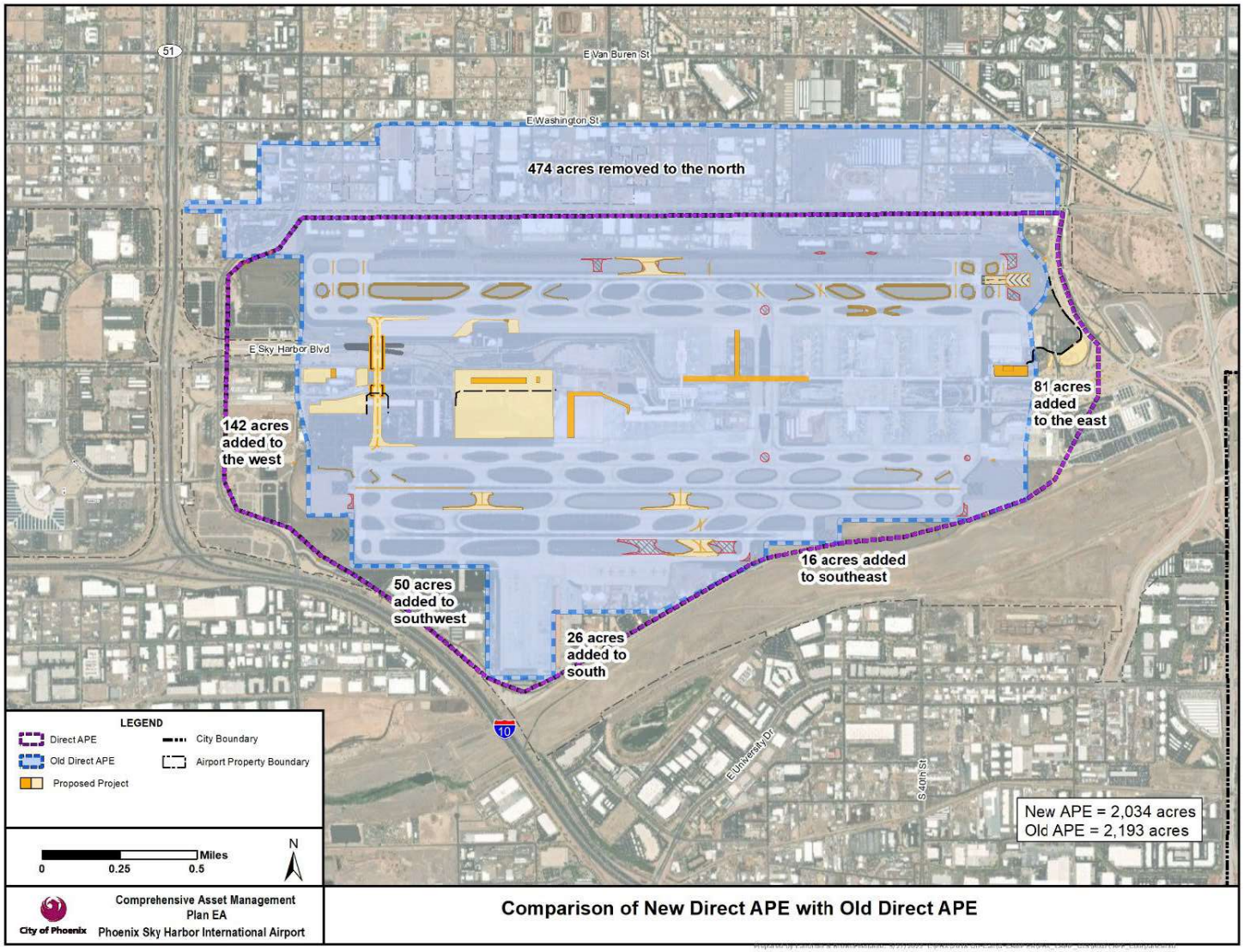
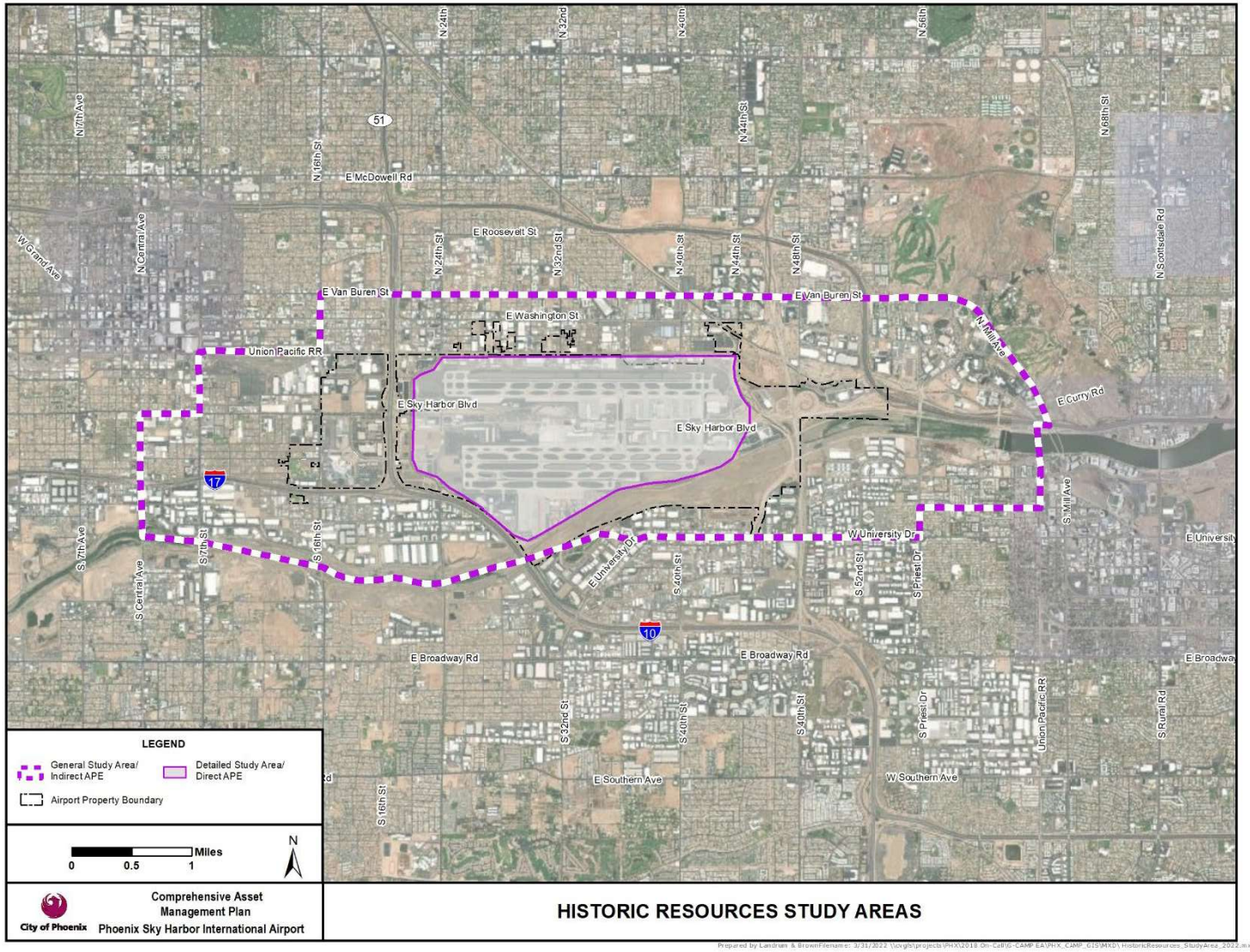
## Enclosure 2. Changes to the Direct Area of Potential Effects



## Enclosure 3. Direct and Indirect Area of Potential Effects




Prepared by Landrum & BrownFilename: 3/31/2022 \\cvgfs\projects\PHX\2018 On-Call\G-CAMP EA\PHX_CAMP_EIS\MXD\ HistoricResources_StudyArea_2022.mxd

## Enclosure 4. Data Tables

### Table 1. Resources Identified in the Direct APE.

| No. | Resource Name/Number | Resource Address | Resource Type | Eligibility Status | Applicable Register Criteria | Land Jurisdiction |
|---|---|---|---|---|---|---|
| 1 | Old Sky Harbor Tower<br>33196 | Not applicable (N/A) | Site (demolished tower) | Unevaluated, but treated as eligible | N/A | City of Phoenix (COP) |
| 2 | Swilling Ditch Head<br>33435 | N/A | Site (historic-age canal) | Unevaluated, but treated as eligible | N/A | COP |
| 3 | Pueblo Salado<br>AZ T:12:47(ASM) | N/A | Site (Hohokam/Salado village) | Determined eligible | D | State of Arizona (State), COP, private |
| 4 | Dutch Canal Ruin<br>AZ T:12:62(ASM)<br>NA19324 | N/A | Site (Hohokam agricultural village) | Determined eligible | D | State, Arizona Department of Transportation (ADOT), COP, Union Pacific Railroad Company (UPRC), private |
| 5 | Canal Patricio System<br>AZ T:12:131(ASM) | N/A | Site (Hohokam canals) | Determined eligible | D | COP, UPRC, private |
| 6 | Canal Salado System<br>AZ T:12:389(ASM) | N/A | Site (canal segments originally mapped by Turney) | Determined eligible | D | COP |
| 7 | AZ U:9:2(ASM) | NA | Site (canals) | Determined eligible | D | COP |
| 8 | AZ U:9:237(ASM) | N/A | Site (Two Hohokam main canals and adjacent field) | Determined eligible | D | COP, private |
| 9 | AZ U:9:314(ASM) | N/A | Site (Hohokam pit house discovered during monitoring) | Determined eligible | D | Federal, COP, UPRC, private |
| 10 | Hohokam Canal<br>P:3:6(GP)/ PHX:3:6(GP) | N/A | Site (Hohokam canal) | Unevaluated, but treated as eligible | N/A | Arizona Public Service (APS), COP, private |
| 11 | Terminal 3 (John S. McCain, III Terminal[†]) | 3400 East Sky Harbor Boulevard | Building and structure (terminal and associated facilities) | Determined ineligible[‡] | N/A | COP |

Notes: Eligibility status is based on FAA letter dated 11/5/21 and SHPO response dated 11/12/21 (SHPO 2021-0159 161457)
Applicable Register Criteria are identified where known, however, eligible archaeological resources are assumed to be eligible under Criterion D if not otherwise noted in archival site records. Additionally, land jurisdiction refers to that which falls in the Direct APE and may not reflect all jurisdictions/landowners that apply to a specific resource (particularly for linear resources that intersect the Direct APE).

[†] Terminal 3 was named in honor of the late U.S. Senator in 2017, however, the property itself is not associated with McCain's productive life and does not qualify for significance under Criterion B.

[‡] Sky Harbor International Airport was not evaluated as a historic district due to the limited scope of the Sky Harbor CAMP study, which did not include a complete inventory of all airport facili ies; the airport itself has been in operation as a municipal airport since 1935 and many of its components were constructed after 1980.

**Table 2a. Historic Properties Located in the Indirect APE.**

| No. | Property | Address/Location | City | Resource Type | Eligibility Status | Criteria | Land Jurisdiction | Setting |
|---|---|---|---|---|---|---|---|---|
| 1 | Pueblo Grande (AZ U:9:1[ASM]) | Not applicable (N/A) | Phoenix | Archaeological site | NRHP-listed | A, D | City of Phoenix (COP), United State Postal Service, Arizona Department of Transportation, Union Pacific | Industrial |
| 2 | Roosevelt Addition Historic District | 3rd Street east of Roosevelt Street | Tempe | Historic district | NRHP-listed | C | Private | Residential |
| 3 | Sacred Heart Church | 801 South 16th Street | Phoenix | Building | NRHP-listed | A | Private | Commercial/ Industrial |
| 4 | Gonzales Martinez House | 320 West 1st Street | Tempe | Building | NRHP-listed | C | Private | Commercial |
| 5 | Tovrea Castle | 5401 East Van Buren Street | Phoenix | Building | NRHP-listed | A, C | Private | Commercial/ Industrial |
| 6 | Tovrea Land & Cattle Co. Administration Building/ Stockyards Restaurant | 5009 East Washington Street | Phoenix | Building | COP HPR-listed, and treated as NRHP eligible | NA | Private | Commercial/ Industrial |
| 7 | Farmers & Stockmens Bank | 5001 East Washington Street | Phoenix | Building | COP HPR-listed and treated as NRHP eligible | NA | Private | Commercial/ Industrial |
| 8 | Centennial (Sampson-Tupper) House | 601 West 3rd Street | Tempe | Building | THPR-listed and treated as NRHP eligible | NA | Private | Residential |
| 9 | Dines-Hight House | 508 West 5th Street | Tempe | Building | THPR-elig ble and treated as NRHP eligible | NA | Private | Residential |
| 10 | Guthrie House | 600 West 5th Street | Tempe | Building | THPR-elig ble and treated as NRHP eligible | NA | Private | Residential |
| 11 | Historic Zanjero House | 109 North 40th Street | Phoenix | Building | SRP Heritage Property and treated as NRHP eligible | NA | Private | Commercial/ Industrial |

**Table 2a. Historic Properties Located in the Indirect APE.**

| No. | Property | Address/Location | City | Resource Type | Eligibility Status | Criteria | Land Jurisdiction | Setting |
|---|---|---|---|---|---|---|---|---|
| 12 | Joint Head Dam | On the Grand Canal east of airport | Phoenix | Structure | SRP Heritage Property and treated as NRHP eligible | NA | COP, Salt River Project (SRP), and Bureau of Reclamation (Reclamation) | Commercial/ Industrial |
| 13 | Grand Canal | NA | Phoenix | Structure | SRP Heritage Property, NRHP-Listed, and treated as NRHP eligible | A, C | Reclamation | Commercial/ Industrial |
| 14 | Undetermined (Ernesto [carpenter] and Inocensia Guevara, 1950) | 1109 South 13th Place | Phoenix | Building | NRHP-eligible | A, C | Private | Residential/ Commercial |
| 15 | Unknown | 1427 South 13th Place | Phoenix | Building | NRHP-eligible | A, C | Private | Residential/ Commercial |
| 16 | Pillipa and Rosa de Gutierrez House | 1429 South 13th Place | Phoenix | Building | NRHP-eligible | A, C | Private | Residential/ Commercial |
| 17 | Unknown | 1127 South 13th Street | Phoenix | Building | NRHP-eligible | A, C | Private | Residential/ Commercial |
| 18 | Unknown | 1439 South 13th Street | Phoenix | Building | NRHP-eligible | A, C | Private | Residential/ Commercial |
| 19 | Wilson W. Jones Homestead | 1008 East Buckeye Road | Phoenix | Building | NRHP-eligible | A, C | Private | Residential/ Commercial |
| 20 | Neighborhood Grocery/Carolina's Mexican Foods | 1615 South 12th Street | Phoenix | Building | NRHP-eligible | A | Private | Residential |
| 21 | Southside Assembly of God/Iglesia Christinia | 1717 South 12th Street | Phoenix | Building | NRHP-eligible | A, C | Private | Residential |
| 22 | W.H. Wah and Company Grocery | 1443 South 13th Place | Phoenix | Building | NRHP-eligible | A | Private | Residential |
| 23 | Austin's Cash Market | 1445 South 13th Place | Phoenix | Building | NRHP-eligible | A | Private | Residential |
| 24 | Tang Grocery and K.L. Tang House | 1141 East Buckeye Road | Phoenix | Building | NRHP-eligible | A, C | Private | Residential/ Commercial |

**Table 2a. Historic Properties Located in the Indirect APE.**

| No. | Property | Address/Location | City | Resource Type | Eligibility Status | Criteria | Land Jurisdiction | Setting |
|---|---|---|---|---|---|---|---|---|
| 25 | Greater Friendship Missionary Baptist Church | 1901 East Jefferson Street | Phoenix | Building | NRHP-eligible | A | Private | Commercial/ Industrial |
| 26 | Gospel Center Church and Dormitory | 919 East Mohave Street | Phoenix | Building | NRHP-eligible | A, C | Private | Residential |
| 27 | Ducommun Metals & Supply Buildings (Reliance Metalcenter) | 301 South 26th Street | Phoenix | Building | NRHP- eligible | A, C | Private | Commercial/ Industrial |
| 28 | Colorado Fuel & Iron Corporation Building | 201 South 28th Street | Phoenix | Building | NRHP- eligible | A, C | Private | Commercial/ Industrial |
| 29 | Arizona Daily Journal Building | 2801 East Washington Street | Phoenix | Building | NRHP- eligible | A, C | Private | Commercial/ Industrial |
| 30 | Ora B. Hopper & Son Display Building | 3007 East Madison Street | Phoenix | Building | NRHP- eligible | A, C | Private | Commercial/ Industrial |
| 31 | Manuel Killegas House | 3249 East Madison Street | Phoenix | Building | NRHP- eligible | A, C | Private | Residential |
| 32 | Southern Pacific Railroad Supplemental Mainline (Wellton-Phoenix-Eloy Spur) | N/A | Phoenix | Structure (in use) | NRHP – elig ble | A | Private | Commercial/ Industrial |

Note: Eligibility status is based on FAA letter dated 11/5/21 and SHPO response dated 11/12/21 (SHPO 2021-0159 161457)

**Table 2b. Demolished Properties within the Indirect APE.**

| No. | Property | Address/Location | City | Resource Type | Eligibility Status | Criteria | Land Jurisdiction | Setting |
|---|---|---|---|---|---|---|---|---|
| - | Blakely House (demolished) | 305 South Roosevelt Street | Tempe | Building | THPR-eligible | NA | Private | Residential |
| - | Curry House (demolished) | 225 South Roosevelt Street | Tempe | Building | THPR-eligible | NA | Private | Residential |
| - | Unknown (demolished) | 1430 East Jefferson Street | Phoenix | Building | NRHP-elig ble | A, C | COP | Residential/ Commercial |
| - | Undetermined (Severiano M. and Antonia Martinez, 1940) (demolished) | 1949 East Madison Street | Phoenix | Building | NRHP-elig ble | A, C | COP | Residential/ Commercial |
| - | Undetermined (Ernest and Inocensia Guevara, 1950) (demolished) | 800 South 10th Place | Phoenix | Building | NRHP-elig ble | A, C | COP | Residential/ Industrial |
| - | Undetermined (J.V. [laborer] and Maria Rodriguez, 1950) (demolished) | 1131 South 13th Street | Phoenix | Building | NRHP-elig ble | A, C | COP | Residential/ Commercial |
| - | Unknown (demolished) | 1401 South 13th Street | Phoenix | Building | NRHP-elig ble | A, C | COP | Residential/ Commercial |
| - | Undetermined (Emilio and Helen Quinones, 1958) (demolished) | 1402 South 14th Street | Phoenix | Building | NRHP-elig ble | A, C | COP | Residential/ Commercial |

COP HPR – City of Phoenix Historic Property Register
NRHP – National Register of Historic Places
THPR – Tempe Historic Property Register
SRP – Salt River Project

**Table 3a. Historic Properties in the Direct APE: Impacts and Treatments**

| Historic Properties Name & Number | Eligibility Criterion | Undertaking-related Activities | Proposed Treatment | Comments |
|---|---|---|---|---|
| Pueblo Salado (AZ T:12:47 ASM) | D | • demolishing pavement<br>• altering taxiway pavement edges<br>• changing pavement markings | Archaeological monitoring for ground-disturbing activities that extend below the depth of existing disturbance | The portion of the site in the direct APE was previously disturbed or buried by airport construction or maintenance activities. |
| Dutch Canal Ruin (AZ T:12:62 ASM) | D | • installing fences and lighted signs<br>• changing pavement markings | Archaeological monitoring for ground-disturbing activities that extend below the depth of existing disturbance | The portion of the site in the direct APE was previously disturbed or buried by airport construction or maintenance activities. |
| Canal Patricio System (AZ T:12:131 ASM) | D | None | None | The portion of the site in the direct APE was previously disturbed or buried by airport construction or maintenance activities. |
| Canal Salado System (AZ T:12:389 ASM) | D | None | None | The portion of the site in the direct APE was previously disturbed or buried by airport construction or maintenance activities. |
| Park of the Four Waters Canals AZ U:9:2(ASM) | D | • installing fences and signs<br>• changing pavement markings | Archaeological monitoring for ground-disturbing activities that extend below the depth of existing disturbance | The portion of the site in the direct APE was previously disturbed or buried by airport construction or maintenance activities. |
| AZ U:9:237(ASM) | D | None | None | The portion of the site in the direct APE was previously disturbed or buried by airport construction or maintenance activities. |
| AZ U:9:314(ASM) | D | None | None | The portion of the site in the direct APE was previously disturbed or buried by airport construction or maintenance activities. |
| Old Sky Harbor Tower | D | • constructing terminal building additions<br>• changing pavement markings | None | This is the original location of the Old Sky Harbor tower. In 1992, the tower was removed from this site during Terminal 1's demolition of Terminal 1. The tower's new location is situated next to the Cutter Aviation Hangar in the southern portion of the airport. Terminal 2 was located at this site until it was demolished in 2020. |
| Swilling Ditch Head | D | None | None | The portion of the site in the direct APE was previously disturbed or buried by airport construction or maintenance activities. |
| P:3:6GP/ PHX:3:6(GP) | D | None | None | The portion of the site in the direct APE was previously disturbed or buried by airport construction or maintenance activities. |

**Table 3b. Setting of Historic Properties Located within the Indirect APE.**

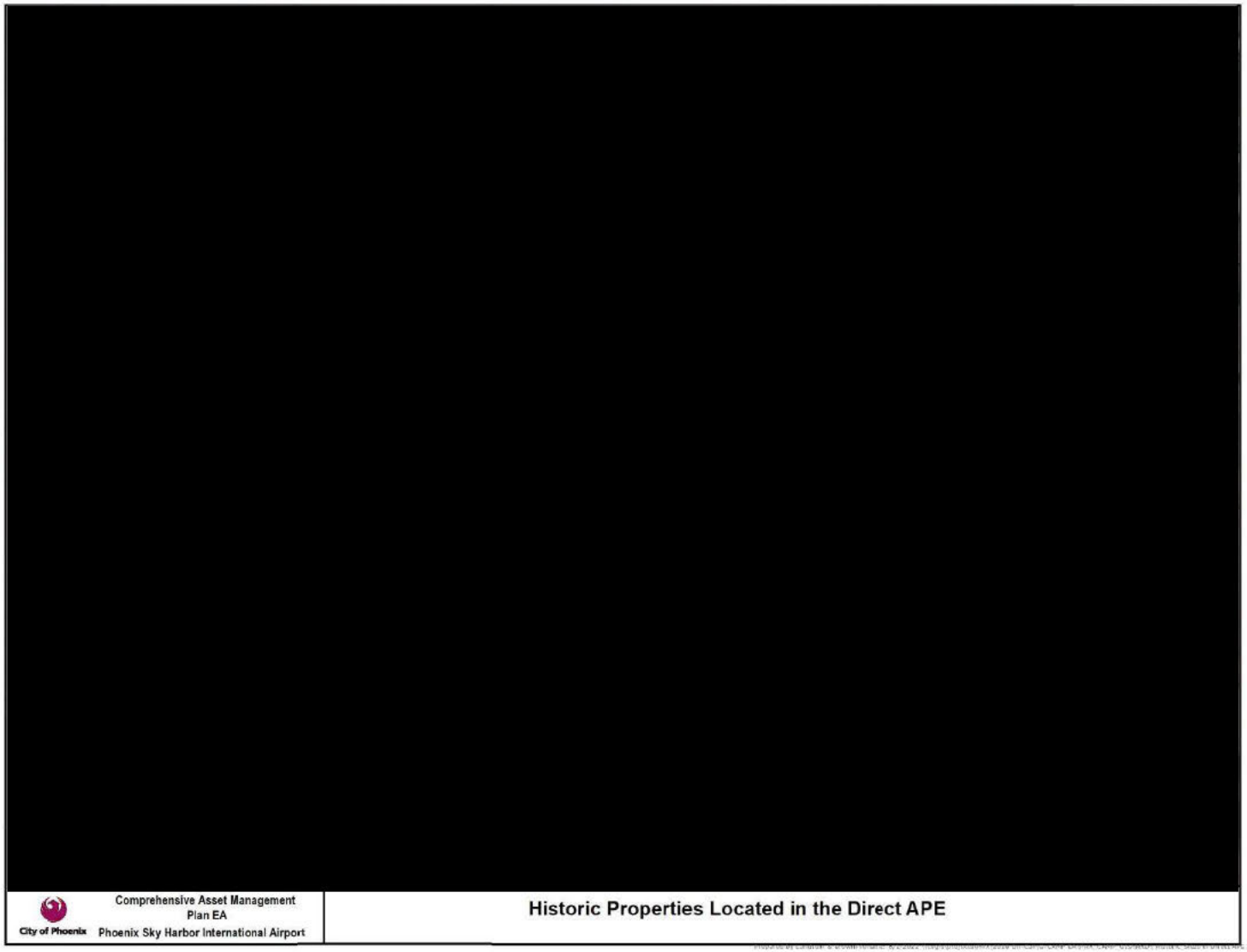
| No. | Property | Address/Location | City | Distance from Direct APE (range) | Noise Contour (decibels)[1] | Direct Line of Sight to Airport? |
|---|---|---|---|---|---|---|
| 1 | Pueblo Grande (AZ U:9:1[ASM]) | Not applicable (N/A) | Phoenix | 0.25 mile to 0.5 mile | 60 | Limited |
| 2 | Roosevelt Addition Historic District | 3rd Street east of Roosevelt Street | Tempe | Greater than 1.5 miles | 60 | No |
| 3 | Sacred Heart Church | 801 South 16th Street | Phoenix | 0.5 mile to 0.75 mile | 65 | No |
| 4 | Gonzales Martinez House | 320 West 1st Street | Tempe | Greater than 1.5 miles | 60 | No |
| 5 | Tovrea Castle | 5401 East Van Buren Street | Phoenix | 1.25 miles to 1.5 miles | Out | No |
| 6 | Tovrea Land & Cattle Co. Administration Building/ Stockyards Restaurant | 5009 East Washington Street | Phoenix | 0.75 mile to 1 mile | Out | No |
| 7 | Farmers & Stockmens Bank | 5001 East Washington Street | Phoenix | 0.5 mile to 0.75 mile | Out | No |
| 8 | Centennial (Sampson-Tupper) House | 601 West 3rd Street | Tempe | Greater than 1.5 miles | 60 | No |
| 9 | Dines-Hight House | 508 West 5th Street | Tempe | Greater than 1.5 miles | 60 | No |
| 10 | Guthrie House | 600 West 5th Street | Tempe | Greater than 1.5 miles | 60 | No |
| 11 | Historic Zanjero House | 109 North 40th Street | Phoenix | 0.25 mile to 0.5 mile | Out | Limited |
| 12 | Joint Head Dam | On the Grand Canal east of airport | Phoenix | 0.25 mile to 0.5 mile | 65 | Limited |
| 13 | Grand Canal | NA | Phoenix | 0.25 mile to 0.5 mile | Out | Limited |
| 14 | Undetermined (Ernesto [carpenter] and Inocensia Guevara, 1950) | 1109 South 13th Place | Phoenix | 1 mile to 1.25 miles | 60 | No |
| 15 | Unknown | 1427 South 13th Place | Phoenix | 1 mile to 1.25 miles | 65 | No |
| 16 | Pillipa and Rosa de Gutierrez House | 1429 South 13th Place | Phoenix | 1 mile to 1.25 miles | 65 | No |
| 17 | Unknown | 1127 South 13th Street | Phoenix | 1 mile to 1.25 miles | 60 | No |
| 18 | Unknown | 1439 South 13th Street | Phoenix | 1 mile to 1.25 miles | 65 | No |
| 19 | Wilson W. Jones Homestead | 1008 East Buckeye Road | Phoenix | 1.25 miles to 1.5 miles | 60 | No |
| 20 | Neighborhood Grocery/Carolina's Mexican Foods | 1615 South 12th Street | Phoenix | 1 mile to 1.25 miles | 65 | No |

**Table 3b. Setting of Historic Properties Located within the Indirect APE. (continued)**

| No. | Property | Address/Location | City | Distance from Direct APE (range) | Noise Contour (decibels)[1] | Direct Line of Sight to Airport? |
|---|---|---|---|---|---|---|
| 21 | Southside Assembly of God/Iglesia Christinia | 1717 South 12th Street | Phoenix | 1.25 miles to 1.5 miles | 65 | No |
| 22 | W.H. Wah and Company Grocery | 1443 South 13th Place | Phoenix | 1 mile to 1.25 miles | 65 | No |
| 23 | Austin's Cash Market | 1445 South 13th Place | Phoenix | 1 mile to 1.25 miles | 65 | No |
| 24 | Tang Grocery and K.L. Tang House | 1141 East Buckeye Road | Phoenix | 1.25 miles to 1.5 miles | Out | No |
| 25 | Greater Friendship Missionary Baptist Church | 1901 East Jefferson Street | Phoenix | 0.5 mile to 0.75 mile | Out | No |
| 26 | Gospel Center Church and Dormitory | 919 East Mohave Street | Phoenix | Greater than 1.5 miles | 65 | No |
| 27 | Ducommun Metals & Supply Buildings (Reliance Metalcenter) | 301 South 26th Street | Phoenix | Less than 0.25 mile | 60 | Limited |
| 28 | Colorado Fuel & Iron Corporation Building | 201 South 28th Street | Phoenix | Less than 0.25 mile | 60 | No |
| 29 | Arizona Daily Journal Building | 2801 East Washington Street | Phoenix | Less than 0.25 mile | 60 | No |
| 30 | Ora B. Hopper & Son Display Building | 3007 East Madison Street | Phoenix | Less than 0.25 mile | 60 | No |
| 31 | Manuel Killegas House | 3249 East Madison Street | Phoenix | Less than 0.25 mile | 60 | No |
| 32 | Southern Pacific Railroad Supplemental Mainline (Wellton-Phoenix-Eloy Spur) | N/A | Phoenix | Less than 0.25 mile | 65 | Yes |

[1]65 decibels is the noise level where noise-sensitive land uses are incompatible with aircraft noise without mitigation, and could be significantly impacted as noise exposure levels increase. Below 65 dec bels, all land uses are determined to be compatible with airport noise. Out – outside the measured area.
Note: None of these sites are located within the Federal Transit Administration (FTA) defined screening distances for railroad related v bration impacts.

## Enclosure 5. Historic Properties Located in the Direct APE



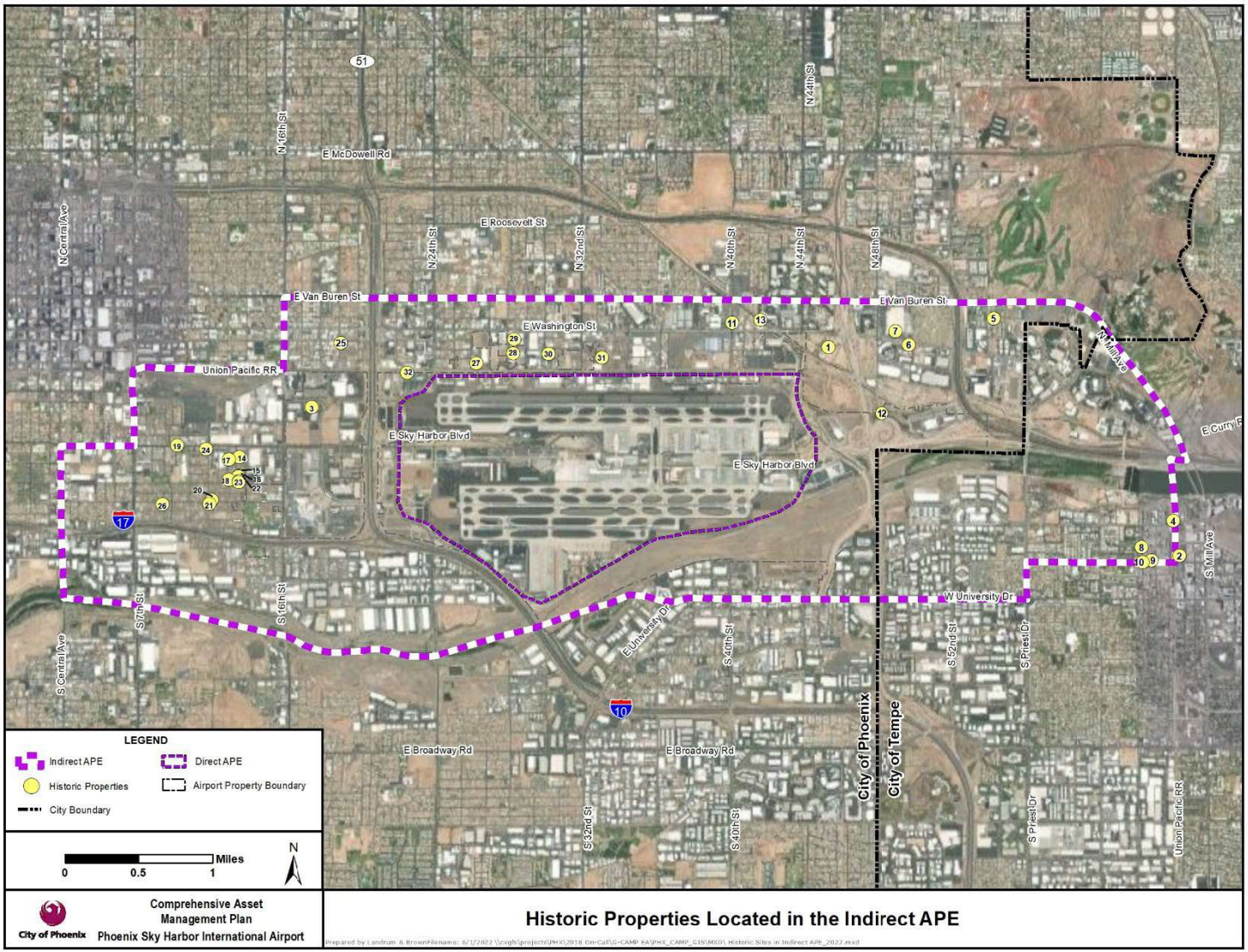
City of Phoenix

Comprehensive Asset Management Plan EA

Phoenix Sky Harbor International Airport

Historic Properties Located in the Direct APE

## Enclosure 6. Historic Properties Located in the Indirect APE



Definition of Area of Potential Effects, Letter from FAA to SHPO on October 7, 2022

- SHPO concurrence on November 9,2022 (signature on last page of letter)

U.S Department
of Transportation

**Federal Aviation
Administration**

Western-Pacific Region
Airports Division

Federal Aviation Administration
777 S. Aviation Blvd., Suite 150
El Segundo, CA 90045

***Via email to: azshpo@azstateparks.gov***

October 7, 2022

Ms. Kathryn Leonard
Arizona State Historic Preservation Officer
Arizona State Parks
1100 West Washington Street, Suite 100
Phoenix, Arizona 85007-2957

Attention: Ms. Caroline Klebacha

Dear Ms. Leonard:

**Proposed Comprehensive Asset Management Plan**
**Phoenix Sky Harbor International Airport,**
**Phoenix, Maricopa County, Arizona**
**Section 106 Coordination**
**SHPO Coordination Number: 2021-0159 (161457)**

This letter is a follow up to a conversation with Ms. Klebacha on Friday, September 30, 2022. As you recall, the Federal Aviation Administration (FAA) and the City of Phoenix (City) are preparing an Environmental Assessment (EA) for the City's proposed Compreshensive Assett Management Plan (CAMP) at Phoenix Sky Harbor International Airport (PHX) (the Project). PHX is owned and operated by the City. The City has further reduced the list of proposed CAMP project components. The CAMP project component list has been reduced to projects to be built within the zero to five year time frame. Thus, the following list of project components is a subset of the list FAA previsouly sent to you. The CAMP Project that FAA is consulting with your office on now includes the following components:

1. Multiple airfield Improvements to increase safety and efficiency, including:
   - Realign perimeter fence outside of the Runway Object Free Area (ROFA)
   - Mark and sign vehicle service road (VSR) hold points to increase pilot awareness within ROFAs
   - Construct Taxiway Design Group (TDG) VI fillet improvements to accommodate TDG VI aircraft
   - Expand Aircraft Center Hold Bay
   - Close Taxiway A5
   - Reconstruct Taxiway A6

- Install Runway Status Lights (RWSL)
- Repaint markings on various taxiways, taxilanes, and aprons to meet FAA design standards for Airplane Design Group IV.
- Paint taxiway islands to enhance pilots' visual awareness that it is a non-movement area
- Construct blast pad and add paint markings to identify the end of Runway 26
- Relocate non-movement line to prevent aircraft from penetrating instrument departure surface
- Demolish excess pavements to enhance pilots' visual awareness of runways and taxiways
- Reconstruct Taxiway F8 to accommodate TDG VI aircraft
- Paint portion of blast pad up to threshold or displaced thresholds of Runways 7L, 25R, and 8
- Paint "TAXI" marking on the east and west ends of Taxiway F
- Shift Taxiway C10 to eliminate direct access between the Terminal 4 North apron and Runway 8-26
- Construct Taxiway F5
- Close Taxiway H5
- Close Taxiway H6
- Construct Taxiway H9 (to replace Taxiways H5 and H6)
- Install Centerline Lights on the full length of all three runways

2. Construct Crossfield Taxiway U
3. Construct Terminal 3, North Concourse 2
4. Construct Terminal 3 - Terminal 4 Connector
5. Construct South Apron Hold Pad and Cargo Complex C Replacement
6. Relocate American Airlines' C-Point Cargo Facility and Vehicle Gate
7. Relocate Facilities and Services parking and equipment storage yard

I have attached a figure that shows the location on the airport of the various project components.

**Description of the Areas of Potential Effects for the Project:**

In March 2022, FAA revised the Area of Potential Effects (APE) for Direct Effects. At the time, the City advised the FAA they were no longer purusing an agreement with the Union Pacific Rail Road, in the short-term, that would have included placing the railroad in a trench providing access to other airport development items north of Runway 8-26. Other changes that reduced the scope of the proposed CAMP components included the removal of Crossfield Taxiway V, Fixed Base Operator and Arizona Air National Guard elements because the necessary enabling projects to relocate and consolidate existing facilities in these areas are not feasible without the airport expansion.

This APE revision was discussed during a meeting held in June 2022. The direct effects portion of the APE includes any areas that would be physically disturbed during construction and the staging equipment and supplies FAA determined these boundaries by consulting with the City on their revised plans for the Proposed Project.

In designating the Indirect Effects APE (airport noise), FAA included the areas around PHX that experience aircraft over flights, including existing developed and undeveloped land uses. FAA has not changed the Indirect Effects portion of the APE. FAA will include this information in the EA.

FAA is seeking comments from your office on the acceptability of the APE's under Title 36, Code of Federal Regulations Section 800.4, *Identification of Historic Properties.*

If you have any further questions about this matter, please call me at 424-405-7315.

Sincerely,

David B. Kessler, AICP
Regional Environmental Protection Specialist

Cc: AWP-610; APP-400, City of Phoenix Aviation Department

Enclosure: Figure depicting Proposed CAMP project components

**I concur with FAA's delineation of the Area of Potential Effects for the proposed undertaking as described above.**

**Caroline Klebacha, M.A.** **11/9/2022**

**Arizona SHPO** **Date**

Finding of No Adverse Effects, Letter from FAA to SHPO on March 13, 2023

- SHPO concurrence on March 14, 2023 (signature and notes on last page of letter)

SHPO-2021-0159 (168241) Rec: 03-13-23

U.S Department
of Transportation
**Federal Aviation
Administration**

Western-Pacific Region
Airports Division

Federal Aviation Administration
777 So. Aviation Blvd. Suite 150
El Segundo, CA 90045

***Via email to: azshpo@azstateparks.gov***

March 13, 2023

Ms. Kathryn Leonard
Arizona State Historic Preservation Officer
Arizona State Parks
1100 W. Washington Street
Phoenix, Arizona 85007

Attention: Ms. Mary-Ellen Walsh

Dear Ms. Leonard:

**Proposed Comprehensive Asset Management Plan**
**Phoenix Sky Harbor International Airport**
**Phoenix, Maricopa County, Arizona**
**Section 106 Coordination**
**SHPO Coordination Number: 2021-0150 (161457)**

The Federal Aviation Administration (FAA), as lead federal agency, along with the City of Phoenix (City) are preparing an Environmental Assessment (EA) for the City's proposed Comprehensive Asset Management Plan (CAMP) at Phoenix Sky Harbor International Airport (PHX) (the proposed undertaking). PHX is owned and operated by the City. The EA is being prepared under the National Environmental Policy Act (NEPA) of 1969, as amended.

The purpose of the proposed undertaking is to enhance the overall safety of aircraft operations at the airport. The proposed undertaking includes the following components: Multiple airfield improvements to increase safety and efficiency, including: Realign perimeter fence outside of the Runway Object Free Area (ROFA); Mark and sign vehicle service road (VSR) hold points to increase pilot awareness within ROFAs; Construct Taxiway Design Group (TDG) VI fillet improvements to accommodate TDG VI aircraft; Expand Aircraft Center Hold Bay; Close Taxiway A5; Reconstruct Taxiway A6; Install Runway Status Lights (RWSL); Repaint markings on various taxiways, taxilanes, and aprons to meet FAA design standards for Airplane Design Group IV; Paint taxiway islands to enhance pilots' visual awareness that it is a non-movement area; Construct blast pad and add paint markings to identify the end of Runway 26; Relocate non-movement line to prevent aircraft from penetrating instrument departure surface; Demolish excess pavements to enhance pilots' visual awareness of runways and

taxiways; Reconstruct Taxiway F8 to accommodate TDG VI aircraft; Paint portion of blast pad up to threshold or displaced thresholds of Runways 7L, 25R, and 8; Paint "TAXI" marking on the east and west ends of Taxiway F; Shift Taxiway C10 to eliminate direct access between the Terminal 4 North apron and Runway 8-26; Construct Taxiway F5; Close Taxiway H5; Close Taxiway H6; Construct Taxiway H9 (to replace Taxiways H5 and H6); Install Centerline Lights on the full length of all three runways; Construct Crossfield Taxiway U; Construct Terminal 3, North Concourse 2; Construct Terminal 3 - Terminal 4 Connector; Construct South Apron Hold Pad and Cargo Complex C Replacement; Relocate American Airlines' C-Point Cargo Facility and Vehicle Gate; and Relocate Facilities and Services parking and equipment storage yard.

The Federal actions requiring compliance with NEPA are approval of the City of Phoenix's Airport Layout Plan depicting the proposed undertaking, and approval of further processing of an application for federal financial assistance to pay for the proposed undertaking.

**1. Background and Area of Potential Effects**

PHX is a commercial service airport owned and operated by the City. The airport accommodates scheduled air carrier services as well as general aviation aircraft activity. PHX also accommodates flight operations of aircraft from the Arizona Air National Guard from the Phoenix Air National Guard Base.

The ground disturbing activity of the proposed undertaking would occur on existing Airport property.

On October 7, 2022, FAA provided your office with it's the Area of Potential Effects (APE) for the proposed undertaking. FAA delineated a Direct APE that includes areas that would disturbed by the construction and used for staging equipment and supplies. FAA also designated an Indirect APE for airport noise for the proposed undertaking. Your office concurred with FAA's delineation of the APE on November 9, 2022.

**2. Native American Consultation.**

In a letter dated, August 25, 2021, the FAA contacted the following Native American Tribes concerning this proposed undertaking: Ak-Chin Indian Community, Fort McDowell Yavapai Nation, Fort Mojave Indian Tribe, Gila River Indian Community, Hopi Tribe of Arizona, Pascua Yaqui Tribe, Salt River Pima-Maricopa Indian Community, Tohono O'odham Nation, Tonto Apache Tribe, White Mountain Apache Tribe, Yavapai-Apache Nation of Camp Verde Indian Reservation, Yavapai-Prescott Indian Tribe, and the Pueblo of Zuni. FAA received one reply from the Hopi Tribe requesting continued consultation if the Proposed Undertaking has the potential to adversely affect prehistoric sites.

On June 3, 2022, following up on our initial letter to the tribes, FAA sent emails to the tribes describing that the City had reduced the overall size of the proposed undertaking. Further, the FAA had discontinued pursuit of a programmatic agreement for the

proposed undertaking since the revised undertaking was no longer as complex. In the June 3, 2022 email, FAA made a finding of no adverse effect with archeological monitoring for ten sites located within the existing airport.

FAA received emails concurring with FAA's finding from the Salt River Pima-Maricopa Indian Community, the Tohono O'odham Nation, Pascua Yaqui Tribe, and the City of Tempe. The Pascua Yaqui Tribe stated *"they understand if significant cultural materials are identified by monitors, and data recovery is necessitated, then the determination for the project will need to be revised to Adverse Effect."* No other comments or responses were received.

In the event a find is made within the Direct APE, work within 50 feet of the find will be temporarily suspended until a qualified archaeologist can assess the find consistent with Title 36, Code of Federal Regulations (CFR) § 800.13.

**3. National Register Eligibility Determinations.**

SWCA Environmental Consultants, prepared the report entitled *"A Historic Properties Inventory for the Sky Harbor Airport Comprehensive Asset Management Plan, Sky Harbor International Airport, Phoenix, Maricopa County, Arizona,"* and revised it in September 2021[1]. Based on the information in the September 2021, Revised Historic Properties Inventory report, and the August 19, 2022 *Revised Technical Memorandum*[2], also prepared by SWCA, providing additional information on data recovery and monitoring projects at PHX, FAA has determined there are ten (10) archaeological sites listed or eligible for inclusion into the National Register of Historic Places (NRHP) within the **Direct** APE. These include:

Pueblo Salado (AZ T:12:47[ASM]); Dutch Canal Ruin (AZ T:12:62[ASM]); Park of the Four Waters Canals (AZ U:9:2[ASM]; Canal Salado (AZ T:12:131[ASM]); Canal Patricio System (AZ T:12:389[ASM]); Two canals and an agricultural field assigned AZ U:9:237(ASM); AZ U:9:314(ASM); PHX:3:6(GP); The Old Sky Harbor Tower (which has been demolished) and Swilling Ditch Head, and various prehistoric and historic canals crossing the airport property.

The following resources were previously determined eligible for inclusion into the National Register of Historic Places under Criterion D (Information Potential): Pueblo Salado, The Dutch Canal Ruin, Canal Patricio System, Dos Casas, Canal Salado System, AZ U:9:237 (ASM), AZ U:9:314(ASM). The Grand Canal (AZ T:7:167(ASM)) and the Southern Pacific Railroad Supplemental Mainline (the Wellton-Phoenix-Eloy Spur) were determined eligible under Criterion A. ***FAA reaffirms this determination of eligibility.***

One private residence located at 3249 East Madison Street (the Manuel Killegas House) is eligible for inclusion into the NRHP under Criterion A and C. As a result of the revision to the APE in March 2022, this property is located in the Indirect APE, ***outside*** of the Direct APE, north of Air Lane Road which is north of the airfield at PHX.

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[1] This document was sent electronically to the Arizona SHPO's office via email dated May 4, 2021.

[2] This document was sent electronically to the Arizona SHPO's office via email dated February 22, 2023.

Tables 10 and 11 in the Historic Resources Report includes a listing of residential and non-residential properties in the CAMP project area and their NRHP status. FAA concurs with the eligibility status of these various properties as ineligible for inclusion into the NRHP for this proposed undertaking.

The Historic Resources Report also identifies four Commercial/Industrial properties as eligible for inclusion into the NRHP:

- 3007 East Madison Street – the Ora B. Hopper & Son Display Building, eligible under Criterion A and C,
- 2801 East Washington Street – the Arizona Daily Journal Building, eligible under Criterion A and C,
- 201 South 28th Street – Colorado Fuel & Iron Corporation – Phoenix Headquarters, eligible under Criterion A and C,
- 301 South 26th Street – Ducommun Metals & Supply Phoenix Division Headquarters, eligible under Criterion A and C,

**FAA seeks the Arizona SHPO's concurrence with this determination of eligibility.**

**SHPO concurs.**

**4. Assessment of Adverse Effects on Historic Properties.**

The Historic Resources Report states there is an NRHP-listed historic district in the APE for auditory effects (the Indirect APE). This district is located three blocks west of downtown Tempe and three blocks south of Tempe Town Lake. The Indirect APE includes three individually listed historic properties identified in Tables 5 and 6 of the report on pages 70 and 71, respectively. The proposed undertaking will not change the number of aircraft operations (takeoffs or landings) or change the aircraft fleet mix using PHX. Thus, there would be no change in the auditory impacts from the airport on historic properties within the Indirect APE.

FAA notes that the Historic Resources Report states the Manuel Killegas House would be adversely affected by the proposed undertaking. The Historic Resources consultant recommended conducting a Historic American Building Survey (HABS) for this property. However, after this report was prepared, the City of Phoenix further reduced the size of the proposed undertaking. The proposed project components that would have directly adversely affected the Manuel Killegas House are no longer part of this proposed undertaking. Thus, a HABS for this historic property is no longer necessary as the proposed undertaking will not directly affect it.

FAA notes the four Commercial/Industrial properties identified above as being eligible for inclusion into the NRHP are now ***outside*** the Direct APE, following the revision to the proposed undertaking in March 2022.

Therefore, considering the reduced size of the proposed undertaking and its reduced APE, and the information contained the Historic Resources Report and supplemented with the August 19, 2022 Revised Technical Memorandum, FAA makes the following findings:

The following previously recorded sites: AZ T:12.273(ASM); AZ U:9:28(ASM); AZ T:12:258(ASM), AZ U:9:310 (ASM), and T:12:235(ASM), as depicted on Figure 33 of the September 2021 Historic Resources Report, are all located north of Air Lane Road and are now ***outside*** the Direct APE for Proposed Undertaking.

The Dutch Canal Ruin [AZ T:12:62(ASM)]; Pueblo Salado [AZ T:12:47(ASM)]; the Park of the Four Waters [AZ U:9:2(ASM)] and AZ T:7:167(ASM) are located on within or on the margin of the Direct APE.

The City of Phoenix's Archaeologist stated in the March 13, 2023 email that the proposed ground disturbance within the Dutch Canal Ruin [AZ T:12:62(ASM)] and Park of the Four Waters AZ U:9:2(ASM)] involves only new signage and relocation of a fence. The proposed work within Pueblo Salado [AZ T:12:47(ASM)], consists of taxiway improvements within an area that was already subject to previous archeological testing and data recovery efforts. No other ground disturbing actions associated with this proposed undertaking would adversely affect these historic properties. The City of Phoenix Archaeologist's email dated March 13, 2023, states phased data recovery is no longer recommended for these sites. However, to ensure that adverse effects are avoided, archaeologic monitoring of ground disturbing activities for the proposed undertaking would be conducted for these historic under the City of Phoenix's *General Monitoring and Discovery Plan for the City of Phoenix, Maricopa County, Arizona*, (Henderson 2020).

As noted above, in June 2022 FAA made a ***finding of no adverse effect with archeological monitoring*** for ten sites located within the existing airport. FAA received emails concurring with FAA's finding from the Salt River Pima-Maricopa Indian Community, the Tohono O'odham Nation, Pascua Yaqui Tribe, and the City of Tempe. The Pascua Yaqui Tribe stated *"they understand if significant cultural materials are identified by monitors, and data recovery is necessitated, then the determination for the project will need to be revised to Adverse Effect."* No other comments or responses were received.

FAA will require the City of Phoenix conduct archaeological testing of the various canals in the northern half of the airport where data recovery has not occurred before starting construction those areas. FAA will require the City of Phoenix establish a buffer of 250 feet around the current site boundaries and 50-feet around canals be established prior to construction to delineate areas where archaeological monitoring should occur.

Thus, ***FAA finds the proposed undertaking would not adversely affect*** these sites: AZ T:12:47(ASM) ARO; AZ U:9:237(ASM); AZ U: 9:237(ASM); AZ U:9:314 (ASM), and PHX 3.6 (GP). **FAA seeks the SHPO's concurrence with this finding.**

FAA asks the SHPO to review the information provided in this letter, and the enclosure. If you agree with the FAA's eligibility determination and findings of project effect, please indicate your concurrence by signing and dating in the space indicated below and returning the letter to this office at the address above.

If you have any further questions about this matter, please call me at 424/405-7315.

Sincerely,

David B. Kessler, AICP
Regional Environmental Protection Specialist

Cc:AWP-610

**I concur with FAA's NRHP eligibility determinations and findings of effect by the proposed undertaking as described above.**

**Provided monitoring within sites and testing for canals is conducted - and no significant cultural resources will be affected. See comments below.**

Mary-Ellen Walsh — 3/14/23

**Arizona SHPO** **Date**

**To clarify, archaeological testing for canals (recently determined NRHP-eligible, will require the development of a work plan as an amendment to the City's Historic Property Treatment Plan, and should be submitted to consulting parties for review and comment prior to any ground-disturbing activities.**

**In the event that human remains are encountered or adverse effects to significant cultural resources occur at any time during project activities, all work must stop to continue consultation on the development of a Memorandum of Agreement.**

**Also, please continue consultation if changes to the flight path occur.**

*A Historic Properties Inventory for the Sky Harbor Airport Comprehensive Asset Management Plan, Sky Harbor International Airport, Phoenix, Maricopa County, Arizona*

September 2021

*Available upon request only*

# Additional Archaeological Projects Information for SHPO

Revised August 2022

SWCA
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# TECHNICAL MEMORANDUM

**To:** Jordan D. Feld
Deputy Aviation Director
Phoenix Sky Harbor International Airport
3400 E. Sky Harbor Boulevard
Phoenix, Arizona 85034

**From:** Adrienne M. Tremblay, Lead Archaeologist

**Date:** July 20, 2022 (Revised August 19, 2022)

**Re:** **CAMP EA Additional Archaeological Projects Information for SHPO / SWCA Project No. 62142.02**

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## INTRODUCTION AND PROJECT BACKGROUND

The City of Phoenix Aviation Department has prepared a Comprehensive Asset Management Plan (CAMP) Short Range Development Plan for the Sky Harbor International Airport (Sky Harbor) in Phoenix, Arizona, to guide development at the airport over the next 20 years (herein referred to as the Sky Harbor CAMP Project). The plan proposes improvements to the airfield and the construction of one new Crossfield Taxiway, expansion of the passenger terminal, and the relocation or replacement of cargo and other facilities. Implementation of the Sky Harbor CAMP Project requires Federal Aviation Administration (FAA) approval of the changes to the airport layout and the use of federal funds. Because federal decisions are needed, the project is subject to compliance with the National Historic Preservation Act (NHPA).

The FAA is currently consulting with the State Historic Preservation Office (SHPO) regarding the effects of the undertaking on National Register of Historic Places (NRHP)–eligible archaeological sites within the area of potential effects (APE) for physical effects which corresponds to the current airport boundaries. A Class I records search of the APE for physical effects resulted in the identification of 10 archaeological sites that are either eligible for the NRHP or are currently of undetermined status (which will be treated as eligible)—i.e., historic properties (Lutes et al. 2021). In addition, several prehistoric canals (mapped by Omar Turney, the first Phoenix City Engineer, and depicted on AZSITE) cross the airport.

The FAA has found that if ground disturbance is monitored by a qualified archaeologist, the undertaking will have no adverse effects on historic properties regarding the archaeological sites and is seeking SHPO concurrence on that finding. Before SHPO concurs, they have requested additional information on previous monitoring, testing, and/or data recovery projects within the APE.

## Project Location and Area of Potential Effects

The proposed project is located in portions of Sections 11–15, Township 1 North, Range 3 East, and Sections 7 and 18, Township 1 North, Range 4 East, as shown on the U.S. Geological Survey Phoenix, Arizona, 7.5-minute quadrangle. The APE for physical effects, as defined by the FAA, encompasses the current airport footprint south to the Salt River.

## PLANNED GROUND DISTURBANCE

For the runway improvements within site boundaries (airfield improvements and Crossfield Taxiway U), areas to be improved will be dug down to approximately 1 m (36–40 inches) which should be within the depth of existing disturbance. It is not anticipated that ground disturbance will extend into undisturbed soil beneath the previously disturbed soil within sites. For Crossfield Taxiway U, excavations outside site boundaries may exceed 1 m. Current pavement standards for the airport show that previous and future airfield pavement consists of 12 inches of subgrade materials, 6 inches of crushed aggregate base of recycled concrete, and overlain with 18 inches of Portland cement.

In addition, ground disturbance associated with the installation of fences or signs will not exceed 1 m.

## ARCHAEOLOGICAL SITES WITH PLANNED GROUND DISTURBANCE WITHIN SITE BOUNDARY

### Pueblo Salado (AZ T:12:47[ASM])

The boundary and 250-foot buffer for Pueblo Salado, AZ T:12:47(ASM), covers a large portion of the Center and South Runways. Ground disturbance for the runway improvements includes the demolition of some areas of existing pavement and the addition of others to connect runways.

Archaeological Consulting Services, Ltd. (ACS), conducted archaeological monitoring of geotechnical boring, subsurface testing, and data recovery within Pueblo Salado in advance of improvements to Runway 7L-25R and Taxiways D-E (Powell et al. 2006). ACS worked in unpaved areas and other accessible areas that were within the safety zones of the runway, taxiway, and connectors. Two of the CAMP areas slated for improvement (existing Taxiway 8 and proposed Taxiway 5) are at least partially within or directly adjacent to areas worked in by ACS (Figure 1). The southernmost proposed improvement (demolition of two existing taxiways and installation of a new taxiway) is within the location identified as a former Air National Guard Facility location in the 2006 report and outside the current boundaries of the site. No investigations were conducted in the portion of Pueblo Salado adjacent to proposed Taxiway U.

The ACS investigations included subsurface excavations in a portion of proposed Taxiway 5 and on either side of existing Taxiway 8. The excavations found that the prehistoric features in and around the runway are primarily associated with agricultural activities: canals and short-term, limited activity features (Aguila and Droz 2006). The historic-age features also primarily represent agricultural use. Based on the results of the excavations, no further work was recommended for the project area, which is now the location of the Central Runway.

Subsurface deposits in or near areas slated for ground disturbance for the CAMP project were limited. Figure 2 shows features found within the Central Runway during the ACS investigation. Please note that not all features found during those excavations are depicted on Figure 2. Because over 100 features were found, only features within the airfield are depicted on Figure 2. Features depicted on Figure 2 have been digitized from Aguila (2006). Within the locations of the existing Taxiway 8 and proposed Taxiway 5, no

agricultural/water control features were found during the investigations. Two features (Features 84 and 85—Hohokam ash stain and a rock feature, respectively) were found about 100 m east of proposed Taxiway 5. Three prehistoric features (Features 89, 93, and 94) and two canals (Features 87 and 88) were found approximately 250 m east. The prehistoric features consisted of a Hohokam thermal feature, trash-filled pit, and sherd concentration. Several historic features (privy, animal skeleton, trash-filled pit, and an ash stain) were found starting 120 m to the west of Taxiway 8 (Fangmeier et al. 2006). The closest of these historic features is Feature 53, a trash pit.

No agricultural/water-control features were found in either proposed taxiway, but several canal segments were found in areas surrounding the proposed taxiways (Droz et al. 2006). Features 87 and 88, lateral canals, were located just west of Features 89, 93, and 94. Feature 90 was a modern thermal pit.

Across the areas investigated by ACS, features were truncated by previous land clearance and construction which affected the top 20–25 cm (8–10 inches) of soils (Phillips and Droz 2006). Generally, the stratigraphy consisted of an upper disturbed plow zone or construction zone, historic soils, prehistoric soils, and sterile sandy point bar sediment and cobbles (Phillips and Droz 2006). Features found in the airfield were primarily found in Stratum 3D and 3L. Stratum 3D consisted of alluvial floodplain deposits with prehistoric artifacts and Stratum 3L consisted of a sand lens above Stratum 3D (Powell et al. 2006:Figure 1.5).

Features 84 and 85, near proposed Taxiway 5, were found in Stratum 3D at approximately 20–40 cm below the ground surface at the time of the fieldwork and extended vertically 20 and 14 cm (see Figure 8.22 in Fangmeier et al. 2006). Both features are prehistoric.

Prehistoric features encountered east of Taxiway 8 were found in Stratum 3D and 3L. The canals, Features 87 and 88, were excavated into Stratums 3L and 3D beginning at approximately 40 cm below ground surface and extending vertically 46 cm (Droz et al. 2006). Feature 53, the historic trash pit, was found excavated into Stratum 3D. The top of the feature is at the bottom of Stratum 2B (modern gravelly loam surface) at about 20 cm below the ground surface at the time of excavation and extends vertically approximately 36 cm (Fangmeier et al. 2006).

Following the archaeological investigations, the airfield construction would have involved removal of existing sediments to approximately 36 inches (91 cm) to prepare for the pavement. Since features found during the ACS investigations were found above that 91-cm level, the removal of existing sediments would have also removed any features within that zone. Please note that not all of proposed Taxiway 5 was investigated, Taxiway 8 was in existence during the ACS investigations and investigations only occurred on either side of the taxiway, and no investigations have occurred near proposed Taxiway U, meaning subsurface deposits may still exist; however, all of the areas slated for construction are currently paved/etc. and are likely disturbed down to the 36-inch (91-cm) level (Figures 3 through 5). Construction monitoring within Pueblo Salado has consistently returned no or very little cultural material or features (Aguila and Carpenter 2005; Aguila and Schilling 2006; Bockhorst et al. 2006; Mitchell et al. 2006; Schilling and Florie 2011; Wadsworth 2012b; Walsh-Anduze 2004). One project produced four pieces of flaked stone in trenches excavated as deep as 90 cm (Wadsworth 2012b).

## Dutch Canal Ruin (AZ T:12:62[ASM])

The Dutch Canal Ruin, AZ T:12:62(ASM), extends into the northwest corner of the APE for physical effects. Within the APE, data recovery within the Dutch Canal Ruin was conducted at the end of the North Runway prior to its expansion (Henderson 2003) (see Figure 2). The data recovery found pithouses, activity areas, canals, pits, and cremations, primarily in the northern extent of the investigations over 500 m northwest of any planned CAMP disturbance.

Construction monitoring within the Dutch Canal Ruin has consistently produced no artifacts or features (Archal and Fangmeier 2007; Lindly 2004; Mitchell et al. 2006; Wadsworth 2012a; Walsh-Anduze 2004). Most of the monitoring projects were outside the boundaries of the airport.

Activities planned with the site include the realignment of the perimeter fence and the installation of new signs near the fence. Archaeological monitoring along the fence line encountered prehistoric canals (F506 and F507), a pithouse (F508), and a historic trash pit (F505) (Henderson 2003). Please note that feature locations shown on Figure 2 have been digitized from the Henderson (2003) report and are approximate.

The northern end of proposed Taxiway U is located approximately 450 m from the site's 250-foot buffer and approximately 50 m from the area investigated at the end of the runway adjacent to the blast fence. However, during those investigations, a cobble bar was encountered which extended along the southern side of the blast fence. Only one feature (Feature 3), a canal, was encountered within the cobble bar (Henderson 2003). The canal is approximately 342 feet (104 m) from the proposed Taxiway U. The canal extended to a depth of approximately 80 cm below ground surface.

It is not inconceivable that the site may extend farther into the airport; however, other subsurface site testing outside the site boundary but within the 250-foot buffer northwest of the airport failed to produce any features (Darby 2015).

### Park of the Four Waters Canals (AZ U:9:2[ASM])

The Park of the Four Waters Canals, AZ U:9:2(ASM), is located in the northeastern corner of the APE. Portions of this site along the eastern side of the airport have been previously subjected to data recovery (Henderson 2015; Masse 1976) (see Figure 2); however, those investigations did not extend into the current project area, which is located entirely in a paved area. Sign installation is the only ground-disturbing activity planned within the site. Demolition of existing pavement and installation of a blast pad are planned within less than 100 m of the buffer.

## ARCHAEOLOGICAL SITES WITH NO PLANNED GROUND DISTURBANCE WITHIN SITE BOUNDARY

### Canal Salado (AZ T:12:131[ASM])

A canal segment from Canal Salado, AZ T:12:131(ASM), is located just south of Pueblo Salado. No ground disturbance is planned in the vicinity of the site or its 250-foot buffer. The closest project component is a demolition of existing pavement approximately 400 m away from the 250-foot buffer.

### Canal Patricio System (AZ T:12:389[ASM])

The Canal Patricio System, AZ T:12:389(ASM), terminates in the northwest corner of the APE in the same area as the Dutch Canal Ruin. Like the Dutch Canal Ruin, no ground-disturbing activities are planned near or within the canal system. The closest improvements are over 450 m from the canal system's 250-foot buffer.

### AZ U:9:237(ASM)

AZ U:9:237(ASM) is located in the northeastern portion of the APE. The site, which consist of two canals and an agricultural field, was subjected to data recovery (Rogge et al. 2002). No work is planned within the site or its 250-foot buffer; pavement demolition is planned adjacent to the site's buffer.

## AZ U:9:314(ASM)

AZ U:9:314(ASM) is outside the boundaries of the APE; however, the 250-foot buffer for the site does extend into the APE. No ground disturbance is planned in the vicinity of the buffer.

## PHX:3:6(GP)

PHX:3:6(GP) and its 250-foot buffer is located in the northern portion of the APE in a developed area. Archaeological monitoring for a 1,175-m-long utility trench within and near the site and crossing several possible canals was conducted in 2018 (Henderson and Darby 2018). No features were found within the site or buffer. One possible canal and a "stratigraphic anomaly" were encountered outside the buffer, but, generally, the area was heavily disturbed (Henderson and Darby 2018). For the CAMP project, no work is planned within the site or buffer; however, work is planned less than 100 m from the buffer.

## Old Sky Harbor Tower and Swilling Ditch Head

Both the Old Sky Harbor Tower and Swilling Ditch Head are unevaluated for the NRHP but are being treated as eligible. Because they are unevaluated, their information potential in terms of subsurface archaeological deposits is unknown. Project components slated for the Old Sky Harbor Tower include improvements to Terminal 3 and a new apron hold pad. No archaeological work has been conducted at this location for the tower.

The Swilling Ditch Head was investigated through data recovery in the 1980s (Cable and Doyel 1986). No improvements are slated for the location of the Swilling Ditch Head or its 250-foot buffer but there are improvements planned for an area less than 100 m from the buffer.

## Canals

Multiple prehistoric and historic canals crossing the airport property were recorded by Omar Turney, the first Phoenix City Engineer (see Figure 1). Many of these canals are near or intersect portions of the CAMP project area. Previous subsurface investigations have encountered several canal segments (e.g., Aguila 2006 and Henderson 2003).

## SUMMARY

This memorandum provides additional information about data recovery and monitoring projects conducted on the Phoenix Sky Harbor International Airport in response to a request from SHPO. Multiple projects have been conducted across the airport. Several of these have resulted in the documentation of features; however, none of those features are within the CAMP project areas. Of particular concern are the improvements to the Central and South Runways, which are within the recorded boundaries of Pueblo Salado. Data recovery has occurred within portions of the areas slated for ground disturbance within Pueblo Salado, and no features were encountered within the proposed taxiway improvements.

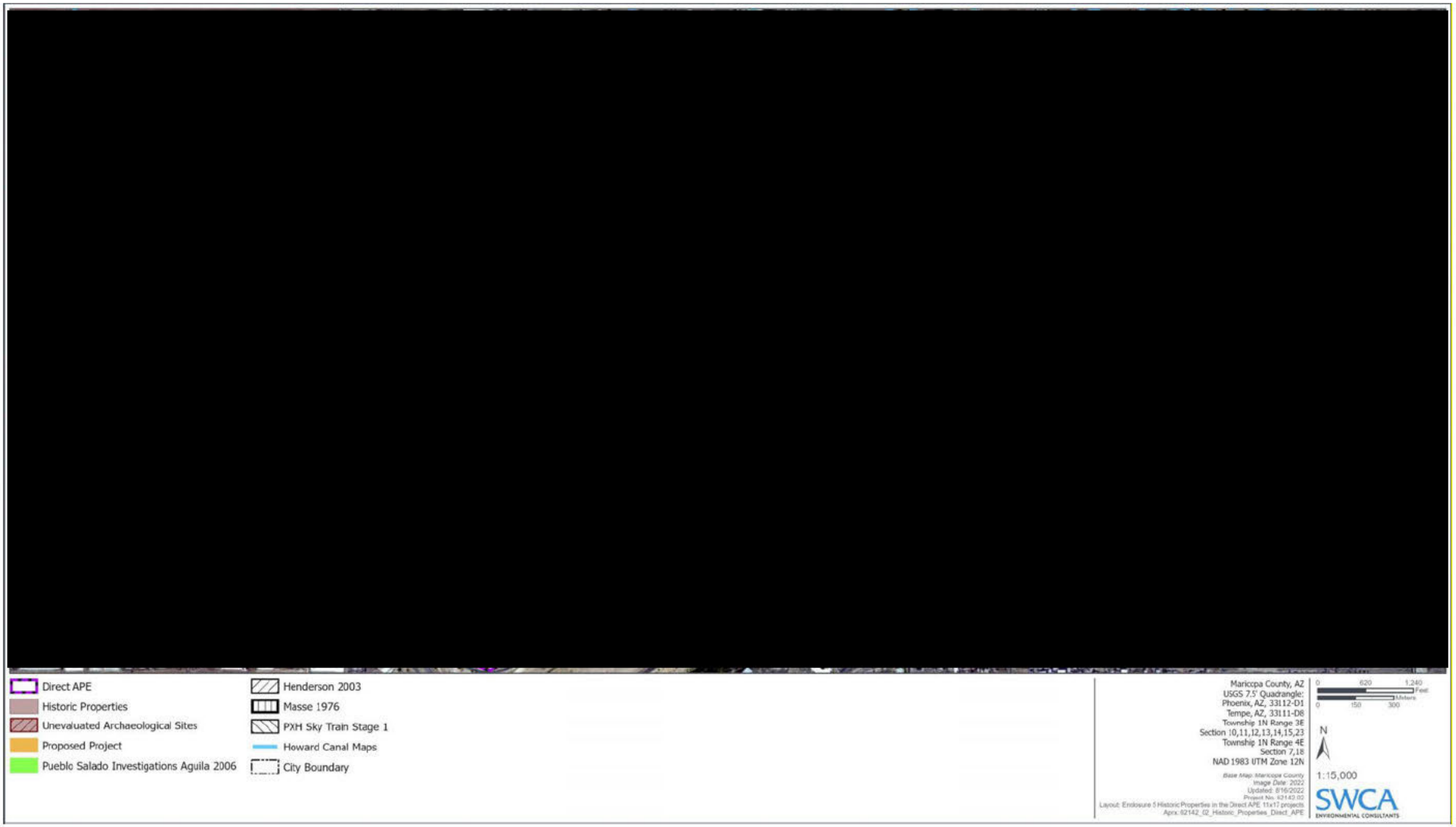


**Figure 1. APE and project areas showing previous data recovery and/or monitoring work within or near CAMP project areas.**

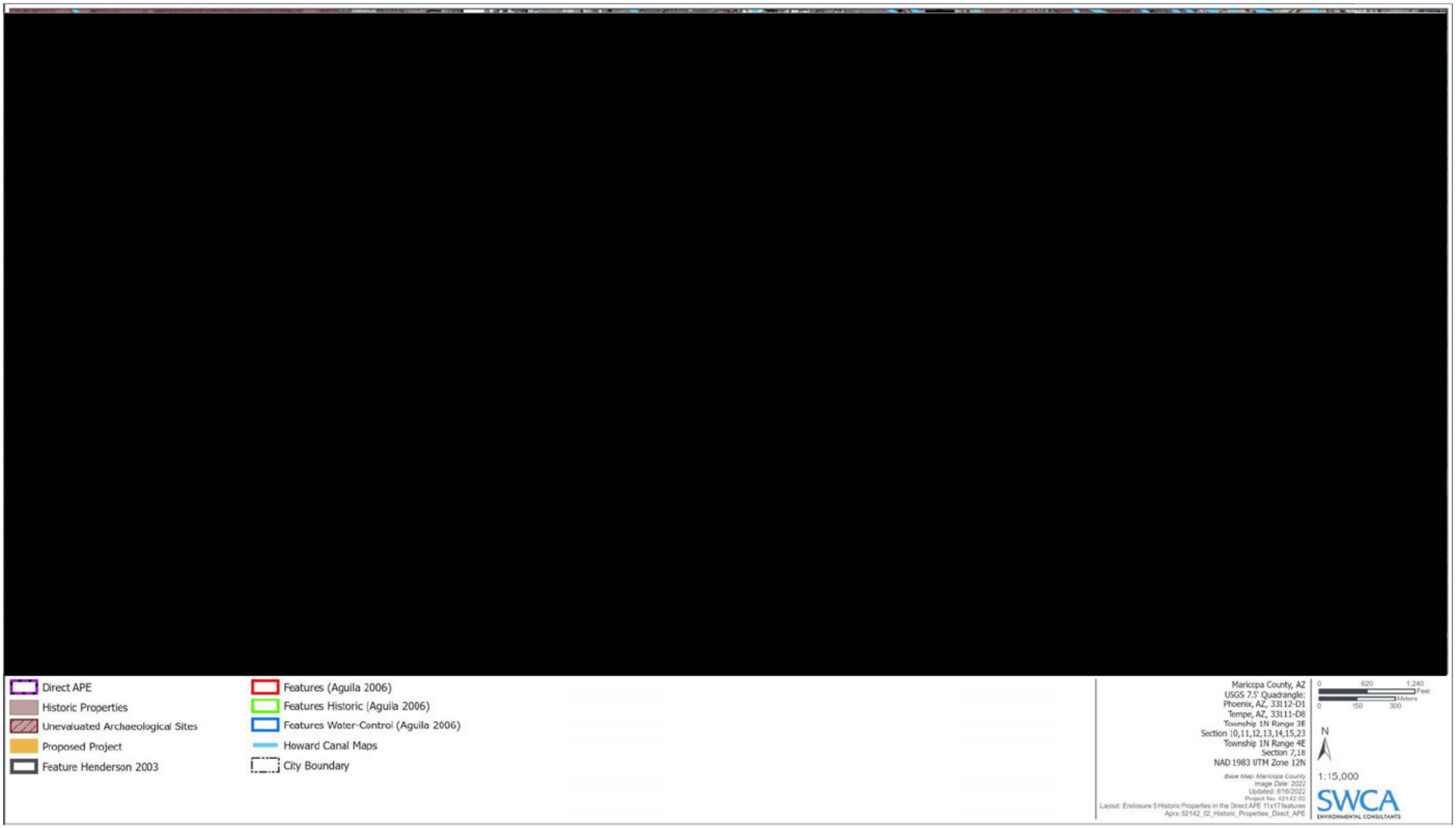


**Figure 2. APE and project areas showing location of features at Pueblo Salado, Dutch Canal Ruins, and canals.**

**Figure 3. Proposed Taxiway 5 location; view facing north.**

**Figure 4. Taxiway 8 location; view facing north.**

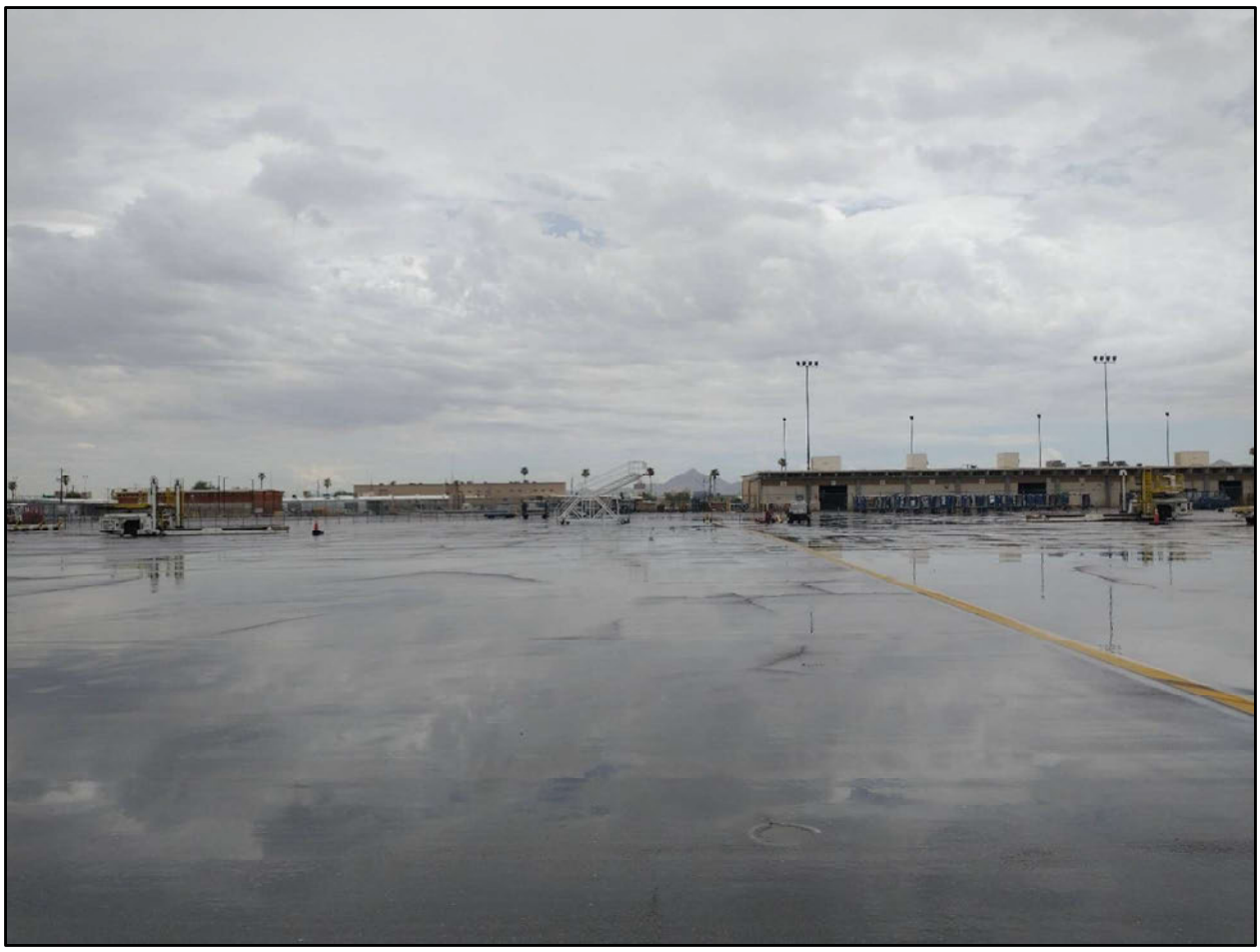

**Figure 5. Proposed Taxiway U location within Pueblo Salado; view facing north.**

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