FINAL
ENVIRONMENTAL ASSESSMENT

PROPOSED REIMBURSEMENT FOR RUNWAY PROTECTION ZONE LAND PURCHASE, RUNWAY 27 SAFETY AREA IMPROVEMENTS and, NORTH SIDE IMPROVEMENTS

Riverside Airport
Riverside, Riverside County, California

Prepared for:

City of Riverside, California

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

Prepared by:

Coffman Associates, Inc.

March 2013

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 Final Environmental Assessment (EA) for the City of Riverside for proposed improvements to reimburse the City of Riverside, California for purchase of 13.1 acres of land for the Runway Protection Zone, improve the Runway 27 Safety Area at the east end of Runway 9/27, grading of about 30 acres of developable land on the north side of the airport for an aircraft apron, parallel taxiway and future aircraft hangars, and relocation of a 30-inch natural gas line at Riverside Airport (RIV). This document discloses the analysis and findings of the potential impacts of the City of Riverside's proposal, the No Action alternative, and other reasonable alternatives.

BACKGROUND. The purpose of the proposed improvements is to ensure the airport meets Federal Aviation Administration (FAA) Airport Design Standards, as described in FAA Advisory Circular 150/5300-13A, *Airport Design*. The City has purchased land within the Runway Protection Zone for Runway 9 and seeks reimbursement from the Airport Improvement Program in addition to implementing proposed actions to further enhance the safety of aircraft operations at the airport and develop the remaining portions of the airport to meet demand for aircraft hangar space. The City of Riverside, , as owner and operator of Riverside Airport, has developed its proposed action to meet FAA Airport Design Standards.

The Draft EA was released on January 18, 2013. The notice of availability of the Draft EA was advertised in one local newspaper to inform the general public and other interested parties. The public comment period ended on February 22, 2013. No comments were received during the comment period.

The document presented herein represents the Final EA for the federal decision-making process, in fulfillment of FAA's policies and procedures relative to National Environmental Policy Act (NEPA) and other related federal requirements. Copies of the document are available for inspection at various libraries in the City of Riverside, the Administrative Offices of Riverside Airport, and the FAA's Western-Pacific Region Office in Hawthorne, California. The addresses for these locations are provided in Appendix A of this Final EA.

WHAT SHOULD YOU DO? Read this Final EA to understand the actions that the City of Riverside and FAA intend to take relative to the proposed land reimbursement, RSA Improvement, and north side grading project at Riverside Airport.

WHAT HAPPENS AFTER THIS? The FAA will decide to prepare and issue a Finding of No Significant Impact/Record of Decision (FONSI/ROD) or decide to prepare an Environmental Impact Statement.

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Riverside, California

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Chapter One

PURPOSE & NEED

1.1 INTRODUCTION

This Environmental Assessment (EA) has been prepared pursuant to the requirements of Section 102(2)(c) of the National Environmental Policy Act of 1969 (NEPA), and Section 509(b)(5) of the *Airport and Airway Improvement Act of 1982*, as amended. The Federal Aviation Administration (FAA) is the lead federal agency to ensure compliance with NEPA for airport development actions. The EA has also been prepared in accordance with FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*, and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*). This Environmental Assessment (EA) is intended to identify and consider potential environmental impacts related to the proposed implementation of the first phase (0-5 years) of the Riverside Airport Master Plan.

Riverside Airport is a general aviation airport located on a 525-acre site on the west side of the City of Riverside, California. **Exhibit 1A** depicts the location of the airport in its regional setting. Refer to Chapter Three for more information on the airport's existing facilities and general location.

An update to the Airport's Master Plan was completed in early August 2009. The purpose of the master plan is to identify facility needs and develop an orderly schedule for future development while meeting FAA airport design standards. A number of the proposed improvements recommended in the master plan will be evaluated within this EA as described within Section 1.2. This EA will examine the proposed short term (0-5 years) development items identified in the Riverside Airport Master Plan by first outlining the need for the airport improvements (Chapter One), followed by an evaluation of project

alternatives (Chapter Two), a discussion of the existing environmental resources surrounding the proposed development (Chapter Three), and will conclude with a discussion of the potential environmental impacts of the proposed improvements on identified environmental resources and means to mitigate any potential negative environmental consequences (Chapter Four). Chapters Five and Six provide a list of preparers and references, respectively.

1.2 SPONSOR'S PURPOSE AND NEED

The purpose of the improvements identified on **Exhibit 1B** is to ensure that FAA airport design standards are upheld to the maximum extent practicable and provide developable area to accommodate near-term airside facility demand. The following sections briefly define the need for the various airport improvements.

- **Runway Protection Zone**. According to FAA Advisory Circular (AC) 150/5300-13A, *Airport Design*, the runway protection zone (RPZ) function is to enhance the protection of people and property on the ground. This is achieved through airport owner control over RPZs. Such control includes clearing RPZ areas (and maintaining them clear) of incompatible objects and activities. Control is preferably exercised through the acquisition of sufficient property interest in the RPZ. The ALP currently does not indicate airport ownership.

- **Runway Safety Area Needs.** Runway safety area (RSA) criteria were established by the FAA to provide a level graded area adequate for emergency operations, including landing short or aborted take-offs. As defined in FAA AC 150/5300-13A, the RSA is "a defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway." RSAs are also to be free of non-frangible structures. *The Transportation, Treasury, Housing and Urban Development, the Judiciary, the District of Columbia, and Independent Agencies Appropriations Act, 2006,*[1] which states the following:

  > "*not later than December 31, 2015, the owner or operator of an airport certificated under 49 U.S.C. 44706 shall improve the airport's Runway Safety Areas (RSA) to comply with the Federal Aviation Administration (FAA) design standards required by 14 Code of Federal Regulations (CFR) Part 139.*"

  Riverside Airport is no longer certificated under 49 U.S.C. 44706. However, the City of Riverside intends to enhance the safety of the Runway Safety Areas at the airport to the extent practicable.

  Analysis undertaken for the *2009 Riverside Airport Master Plan Update* determined that Runway 27 does not meet the current RSA requirements for aircraft within the

[1] Public Law 109-115 (2005)

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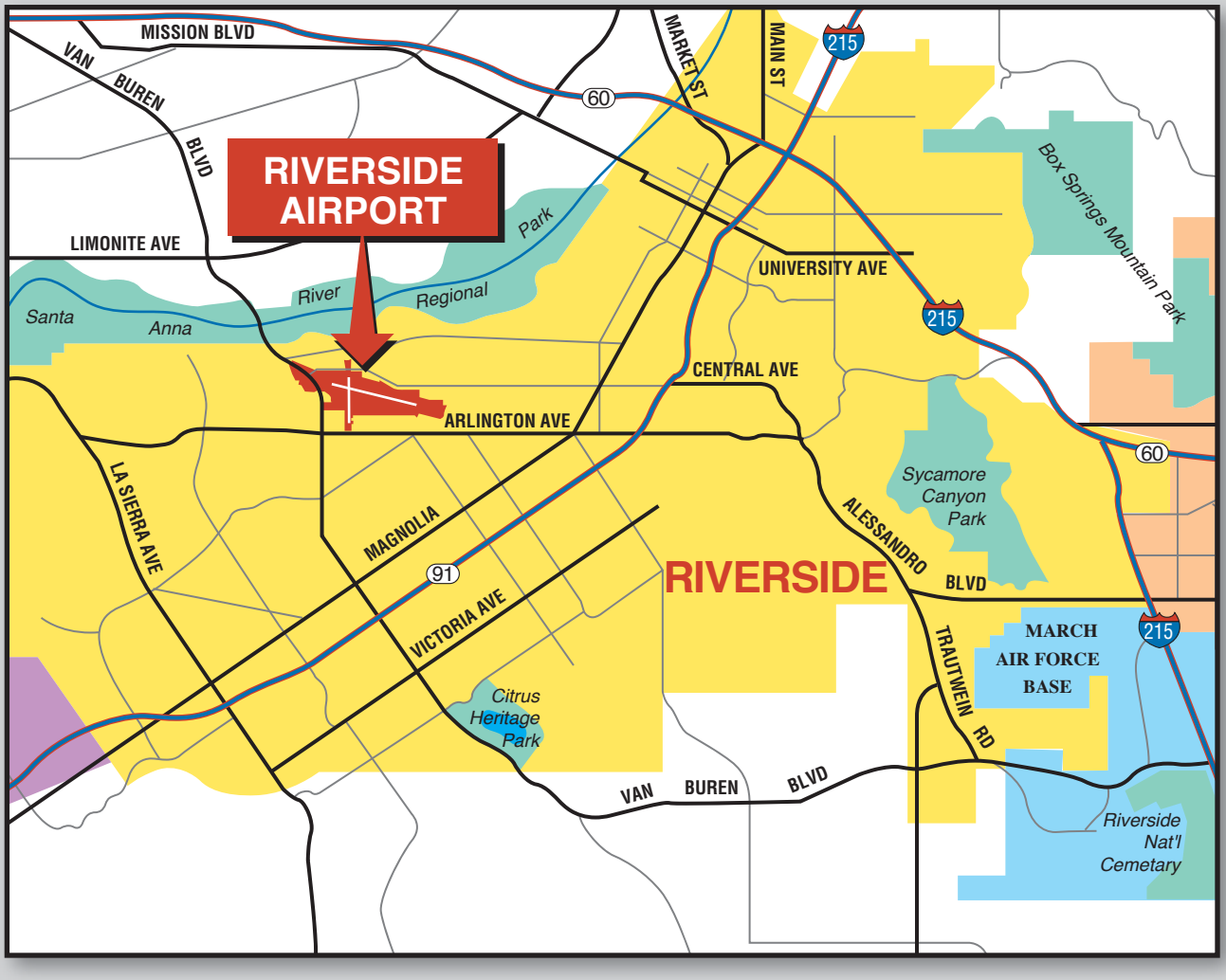

Exhibit 1A
LOCATION MAP

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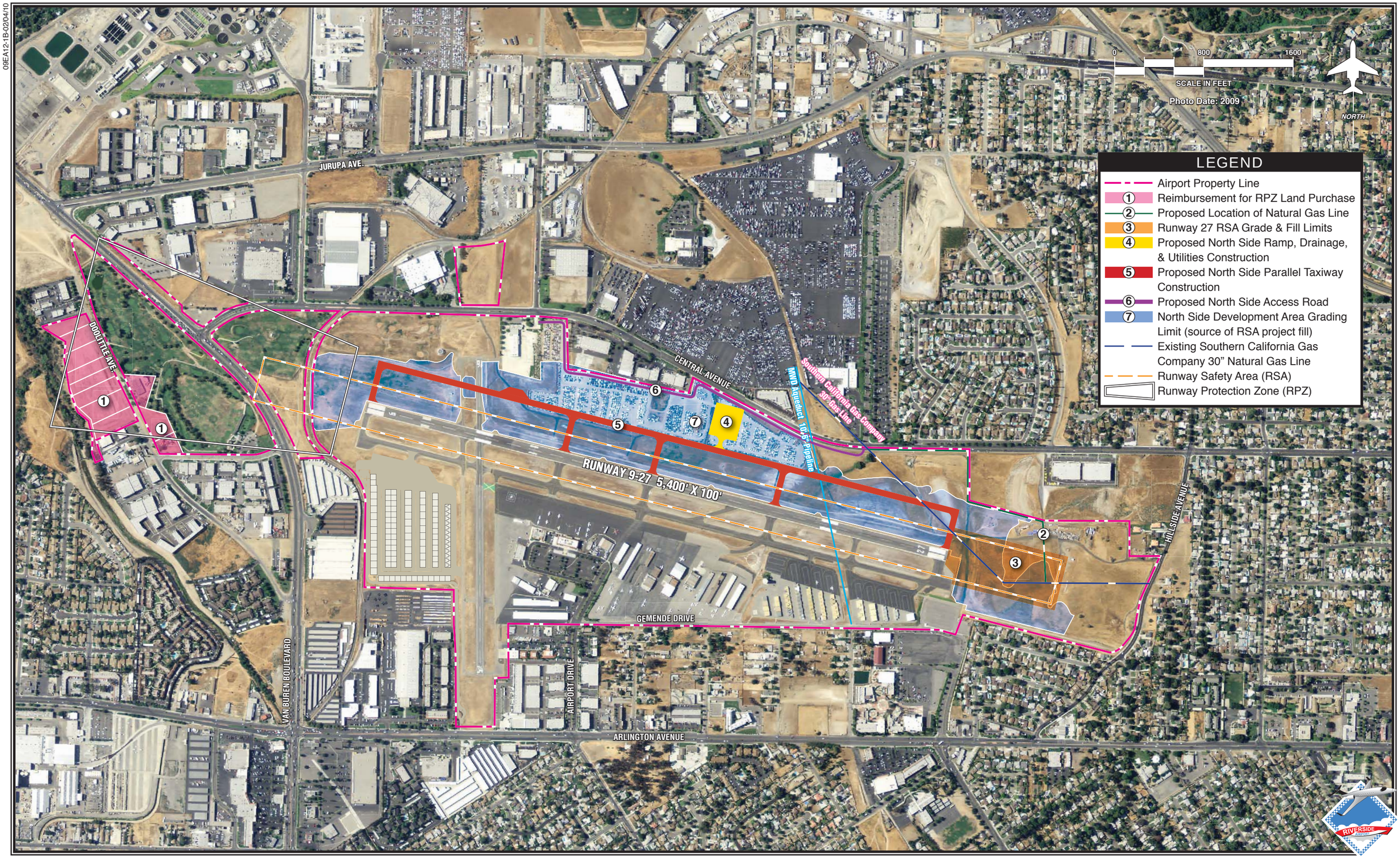

Exhibit 1B
PROPOSED DEVELOPMENT
AND PROPERTY ACQUISITION

ARC C-II category (See **Appendix B** for a detailed discussion on FAA's RSA Standards). Aircraft within this ARC require a RSA that is 500 feet wide and extends 1,000 feet beyond the runway ends for departures and 600 feet beyond the end for arrivals. Currently, the RSA beyond the east end of the runway provides only 100 feet of the required 1,000 feet to meet FAA's RSA design standards.

- **North Side Development.** Construction of 26 T-hangars and 91 box hangars on the west side of Runway 16-34 will use up the remaining portion of undeveloped property on the south side of Riverside Airport. The construction of the new T-hangars and box hangars addresses the short term need for hangar positions for smaller single and twin engine aircraft. However, hangar positions for larger turboprop and business jet aircraft remains deficient, having only five of the 18 hangar positions needed in the short term planning horizon.

1.3 AVIATION FORECASTS

The need for the improvements is supported due to the airport's role within the *National Plan of Integrated Airport Systems 2011-2015* (NPIAS) as a reliever airport. The airport's designation signifies its level of importance within the national aviation system. The role of a reliever airport is to provide pilots with attractive alternatives to using congested commercial service hub airports in major metropolitan areas. By serving general aviation, reliever airports allow commercial service airports to more effectively serve air carrier operations.

Forecasts and facility requirements contained within the NPIAS assume that the airport will continue to fulfill its role within the national aviation system as a reliever airport in the Los Angeles basin. In order to allow the airport to continue to fulfill its assigned role, the airport needs to be able to accommodate the needs of the general aviation community by providing a safe operating environment for all aircraft, including some of the most demanding aircraft in the business jet community. **Table 1A** presents current and forecast operation levels from the Riverside Airport Traffic Control Tower and FAA *Terminal Area Forecasts* (TAF) are used throughout this EA process to represent the no action condition. In the Proposed Action scenarios, business jet and turboprop operations were assumed to increase due the availability of facilities to accommodate these aircraft. In 2015, annual operations for business jets were assumed to from 655 to 740 and turboprops from 805 to 850. An overall increase of 0.22 percent above the 2015 TAF forecast. In 2020, annual operations for business jets were assumed to from 675 to 780 and turboprops from 840 to 900. An overall increase of 0.25 percent increase above the 2020 TAF forecast. According to FAA Order 5050.4B, Paragraph 504b, forecasts used in airport environmental analyses should be consistent with the TAF. This is described as being within 10 percent of the TAF for the 5-year analytical period and within 15 percent for the 10-year analytical period. The Proposed Action operation forecasts are within the 5050.4B tolerances.

TABLE 1A
Aviation Demand

	2010[1] Existing	2015[2] No Action	2015[2,3] Action	2020[2] No Action	2020[2,3] Action
Itinerant Operations					
General Aviation	32,153	33,136	33,266	35,393	35,558
Military	65	116	116	116	116
Total Itinerant	32,218	33,252	33,382	35,509	35,674
Local Operations					
General Aviation	25,811	26,298	26,298	29,177	29,177
Military	53	88	88	88	88
Total Local	28,864	26,386	26,386	29,265	29,265
Total	58,082	59,638	59,768	64,774	64,939

1 Riverside Airport Traffic Control Tower from December 2009 through November 2010 (3% Nighttime Adjustment to itinerant GA)
2 FAA *Terminal Area Forecasts* December 2010
3 Coffman Associates Analysis

Note: As stated in FAA Order 5050.4B, Paragraph 504b, forecasts used in airport environmental analyses should be consistent with the *Terminal Area Forecasts (TAF)*. This is described as being within 10 percent of the TAF for the 5-year analytical period and within 15 percent for the 10-year analytical period. The forecast operations are within the 5050.4B tolerances.

Source: Coffman Associates analysis.

1.4 FAA'S PURPOSE AND NEED

The FAA's statutory mission is to ensure the safe and efficient use of navigable airspace in the United States. Under FAA Order 5200.8, *RSA Program*, the FAA is directed to implement the RSA Program, which is intended to provide enhanced safety through the establishment of RSAs at all federally obligated airports. Implementation of the Proposed Project Action at Riverside Airport would result in the City of Riverside's further compliance with the FAA airport design standards set forth in FAA AC 150/ 5300-13A, *Airport Design*. FAA must ensure the proposed action does not derogate the safety of aircraft and airport operations at Riverside Airport.

1.5 PROPOSED ACTION

The Proposed Action was developed based on recommendations of the airport master plan to meet the needs of existing and anticipated future airport users. The proposed projects are depicted on **Exhibit 1B** and are summarized below.

The first project is the reimbursement for approximately 13.1 acres of land purchased by the City of Riverside within the Runway 9 RPZ to prevent future non-compatible development. Reimbursement will allow ownership to be transferred to the airport and the ALP will be revised to indicate additional airport control over the westernmost RPZ.

The second project is to grade the Runway 27 RSA to meet FAA airport design standards. The final project is to make improvements to the north side of the airport including grading, developing gate controlled road access, aircraft apron, and parallel taxiway access. Relocation of a 30-inch diameter natural gas line will also be required for the Runway 27 RSA and north side grading projects.

1.6 REQUESTED FEDERAL ACTIONS

The requested approval action includes conditional approval of the sponsor's airport layout plan (ALP) reflecting the acquired land within the RPZ, Runway 27 RSA improvements, north side development, and the approval of further processing of an application for federal assistance under the Airport Improvement Program (AIP) to reimburse the City of Riverside for the property acquisition and fund the proposed improvements. The specific federal action under consideration through this EA includes:

- Unconditional approval of the portion of the ALP that depicts the near-term proposed improvements pursuant to 49 U.S.C. Sections 40103(b), 44718 and 47107(a)(16), and Title 14 Code of Federal Regulations (CFR) Part 77 and Part 157.
- Determination of eligibility for federal assistance for the near-term development projects under the federal grant-in-aid program authorized by the *Airport and Airway Improvement Act of 1982*, as amended (49 USC 47101 et. seq.).
- Approval of further processing of an application for federal assistance for near-term eligible projects using federal funds from the Airport Improvement Program, as shown on the ALP.
- Determination under 49 USC § 44502(b) that the Proposed Action Project is reasonably necessary for use in air commerce or in the interests of national defense.
- Continued close coordination with the City of Riverside and appropriate FAA program offices, as required, to maintain aviation and airfield safety during construction pursuant to 49 U.S.C. § 44706.

1.7 DOCUMENTATION REQUIREMENTS AND STANDARDS

This EA has been prepared in accordance with the requirements of Section 102(2)(c) of the *National Environmental Policy Act* (NEPA) *of 1969* (PL 91-190, 42 USC 4321 *et. seq.*) and Title 49, Chapter 471 of the U.S. Code Federal Regulations. Through NEPA, Congress requires federal agencies to consider the environmental effects of proposed actions and their reasonable alternatives. The environmental consequences of maintaining the existing airport facility will be evaluated as the No Action alternative. The environmental consequences of the proposed airport improvements will be evaluated as the Proposed Action alternative.

The FAA is the lead federal agency for NEPA compliance. The format and subject matter included within this report conform to the requirements and standards set forth by the FAA as contained within FAA Order 1050.1E, *Environmental Impacts: Policies and*

Procedures, and FAA Order 5050.4B, *National Environmental Policy Act* (NEPA) *Implementing Instructions for Airport Actions.*

This EA incorporates by reference all, or portions of, other technical documents that are a matter of public record. These documents either relate to the Proposed Action alternative or provide additional information concerning the environmental setting in which elements of the Proposed Action are planned. Chapter Six contains a listing of some of the documents utilized in the preparation of this EA.

1.8 IMPLEMENTATION TIMEFRAME

All items discussed in Section 1.3 and illustrated on **Exhibit 1B** are expected to be developed within the next five years (2012-2015). **Table 1B** provides the Proposed Action implementation schedule. The FAA has federal oversight for the implementation of near-term project improvements.

TABLE 1B
Proposed Action Implementation

Project	Year
Runway Protection Zone Reimbursement	2012
Gas Line Relocation	2013-2014
Runway Safety Area Grading	2013-2014
North Side Development Area Grading	2013-2014
Parallel Taxiway Construction	2014-2015
Access Road Construction	2014-2015
North Side Ramp, Drainage, and Utilities	2014-2015

Source: City of Riverside

Chapter Two

ALTERNATIVES

The objective of this alternatives analysis is to identify reasonable alternatives which accommodate the purpose and need identified in Chapter One. Once identified, each alternative is evaluated in terms of its ability to satisfy the objectives of the purpose and need for the project, meeting Federal Aviation Administration's (FAA) standards, and its potential for an effect on the surrounding environment. **Exhibit 2A** depicts the decision process. The results of this evaluation determine which alternatives will be considered reasonable, thereby warranting further consideration. Reasonable alternatives for *National Environmental Policy Act* (NEPA) purposes includes ways to achieve the stated purpose and need that are within the sponsor's or FAA purview and those alternatives outside FAA's jurisdiction.

Under the *National Environmental Policy Act* (NEPA) o*f 1969*, as stated in FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*, and FAA Order 5050.4B, *National Environmental Policy Act* (NEPA) *Implementing Instructions for Airport Projects*, the FAA allows alternatives to be eliminated from further consideration when they do not fulfill the purpose and need for the action or cannot be reasonably implemented. In general, if an alternative's cost would likely exceed the benefits or when the environmental consequences are excessive, particularly when compared to other alternatives which do meet the purpose and need, that alternative can be eliminated from further consideration. Alternatives that do not meet the purpose and need stated in Chapter One, or are deemed to be not reasonable, will be eliminated and will not be discussed further in this Environmental Assessment (EA), with the exception of the No Action Alternative. The provisions of the *Council on Environmental Quality* (CEQ), Section 1502.14(c), require the evaluation of the No Action Al

ternative, regardless of whether it meets the stated purpose and need or is reasonable to implement.

A number of improvements are needed at the Riverside Airport to accommodate existing and future airport users, improve safety, and meet regulatory requirements. These improvements were described fully within Section 1.4 of Chapter One and include:

- Reimbursement for runway protection zone (RPZ) land purchase
- Runway 27 runway safety area (RSA) grade improvements
- Improvements to the north side of the airport to accommodate anticipated near-term airside facility demand.

The following sections contain a description of the alternatives evaluated for each of the previously mentioned projects.

2.1 RUNWAY PROTECTION ZONE ALTERNATIVES

As described in Chapter One, the function of the RPZ is to enhance the protection of people and property on the ground. The critical aircraft and the type of approach are determining factors in the size of the RPZ. At Riverside Airport, the ARC C-II and Category I approach (landing with a decision height not lower than 200 feet) to Runway 9 necessitates the largest RPZ. Runway 9 currently has a Category I approach that is planned to remain in place. Within FAA Advisory Circular (AC) 150/5300-13A, *Airport Design*, Section 212, the FAA recommends the airport have positive control of the RPZ through fee-simple ownership whenever possible. The City of Riverside has taken steps toward obtaining fee-simple ownership of the Runway 9 RPZ with a 13.1-acre land purchase and is pursuing reimbursement from the FAA for property already acquired in the Runway 9 RPZ. The RPZ land reimbursement alternative meets the project purpose and need and is feasible to implement; therefore, it is considered to be part of the Proposed Action Alternative. Not seeking reimbursement or No Action Alternative is the only option to this action. As previously mentioned, the No Action Alternative will be carried forward per CEQ Section 1502.14(c).

2.2 RUNWAY SAFETY AREA ALTERNATIVES

As discussed in Chapter One, during the master planning process, the City of Riverside determined that the eastern portions of the RSA for Runway 9-27 does not meet FAA Airport Design Standards. Through the master plan, a number of alternatives were evaluated to examine the feasibility of meeting established RSA design standards for the airport. The alternatives evaluation followed the guidance set forth in Appendix 2 of FAA Order 5200.8, *Runway Safety Area Program*. Appendix 2 of this Order provides the direction for an RSA determination and the alternatives that must be evaluated in instances where RSA requirements are not met, as is the case at Riverside Airport. Paragraph 3 of Appendix 2 states that the first alternative to be considered in every case is constructing the traditional graded area surrounding the runway. In instances where this is not possible, the following alternatives are to be evaluated:

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ALTERNATIVE ANALYSIS DECISION TREE

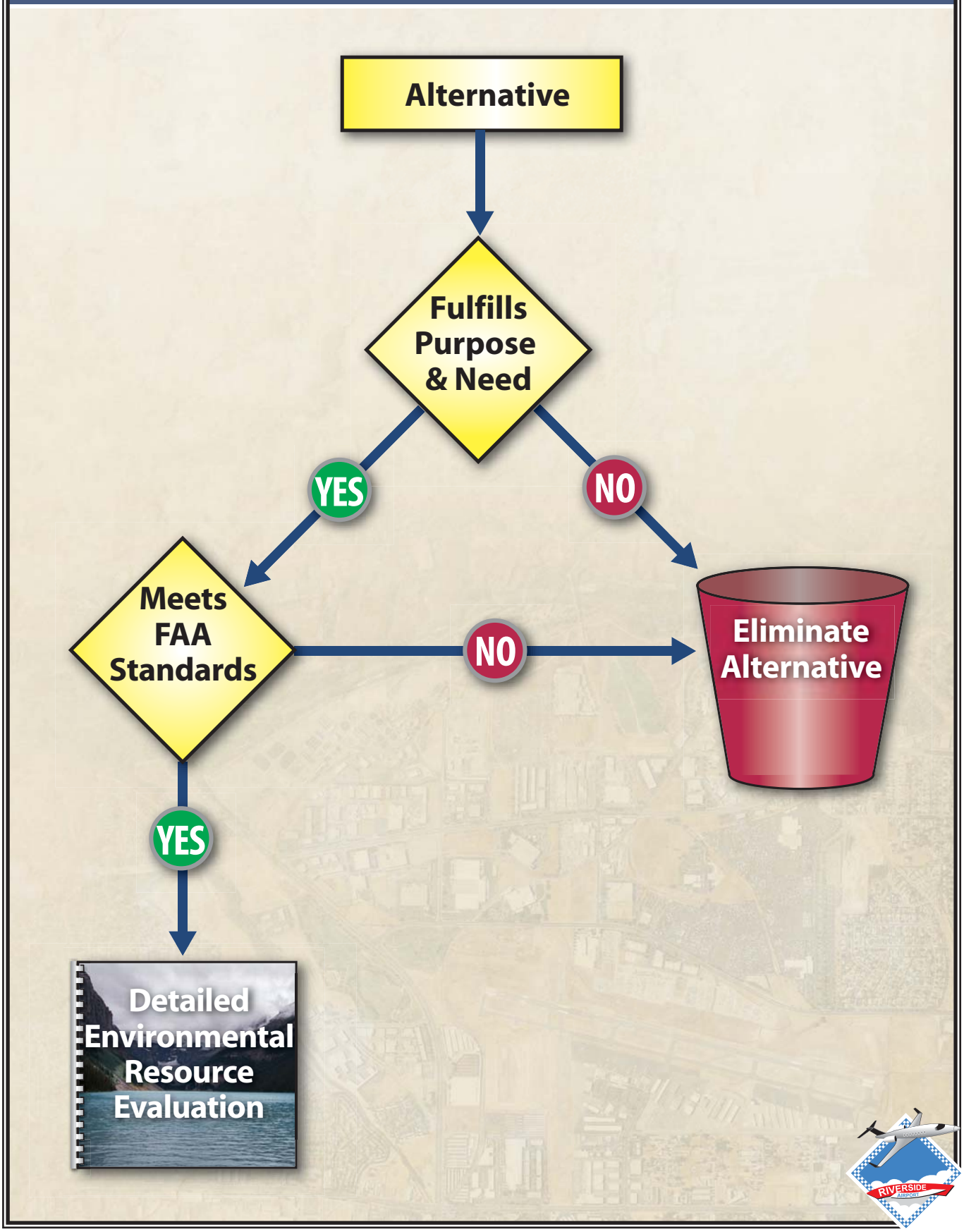

Exhibit 2A
ALTERNATIVE
DECISION PROCESS

- Relocate, shift, or realign the runway
- Reduce runway length
- Use declared distances
- Install an engineered materials arresting system (EMAS)

Through the planning process, the City of Riverside determined that a traditional, graded RSA could be provided at Riverside Airport through the placement of fill within the RSA. The profile of the terrain for the first 1,000 feet to the east of the Runway 27 threshold does not meet the RSA maximum grade standard of two percent. Approximately 155,000 cubic yards of fill are needed to meet the grade requirements. An evaluation of airport terrain identified that the needed fill material could be provided from on-airport sources. Specifically, areas on the north side of the runway could be lowered, thereby providing adequate, suitable, and local fill material for the RSA improvements. The RSA area requiring fill and the areas identified as suitable for providing fill are depicted on **Exhibit 2B**.

The placement of fill within the RSA will result in the easternmost RSA meeting FAA design standards; therefore, this alternative meets the project purpose and need and is feasible to implement and is considered part of the Proposed Action Alternative.

2.3 NORTH SIDE DEVELOPMENT ALTERNATIVES

As described in Chapter One, currently available development space at Riverside Airport is limited and the airport needs to expand to meet future demand, especially in regards to the demand experienced by larger turboprop and business jet aircraft. Through the master planning process, it was determined that development of the north side of the existing runway would allow the airport to meet future aviation demand without requiring the acquisition of additional property. A number of airport improvements are needed to open the north side of the runway for aviation related development. These improvements include the following:

- Relocation of a 30-inch gas line that currently traverses the eastern quarter of the airport.
- Construction of a north side parallel taxiway capable of accommodating ARC C-II aircraft.
- Construction of a vehicular access road to provide vehicle access to the north side of the airport.
- Extension of utilities to the northern portions of the airport
- Construction of an aircraft parking apron

The following sections describe alternatives for each of these development projects.

2.3.1 Gas Line Relocation Alternatives

Currently a Southern California Gas Company 30-inch natural gas line crosses eastern portions of airport property, as depicted on **Exhibit 2C**. The presence of the gas line is prob-

lematic to the development of the north side of the airport as it will be located beneath proposed airport facilities. A number of alignment alternatives were evaluated from both a planning and engineering perspective. The location of the alternatives is depicted on **Exhibit 2C**.

- **Relocated Gas Line Alternative 1.** Alternative 1 initiates the gas line relocation at its intersection with the Runway 9-27 building restriction line, then travelling east to the eastern airport property line along Hillsdale Avenue where it would reconnect with the existing gas line. This alternative was dismissed from further consideration as it could become problematic for future aviation development in the northeastern potions of the airport and it crosses through an area that may contain prehistoric resources. For these reasons, the alternative is not considered reasonable and will not be considered further within this EA.
- **Relocated Gas Line Alternative 2**. Alternative 2 initiates the relocation at the gas line's intersection with the north property line. The gas line is relocated along airport property to the east and south. The gas line is directed south to connect to the existing line at a point that allows for the avoidance of an identified potential prehistoric archaeological site. This gas line alternative is positioned to avoid both sensitive biological and cultural resources (depicted on **Exhibit 2C**) as well as potential future airport projects.

Gas Line Alternative 2 is considered reasonable to implement and meets the project purpose and need of enhancing the north side of the airport to allow for future aviation development. This alternative is considered part of the Proposed Action alternative.

2.3.2 Parallel Taxiway Alternatives

A north side parallel taxiway and connecting taxiways are necessary to provide airfield access to future development planned for the northern portion of the airport. During the *2009 Riverside Airport Master Plan,* staff of the FAA Western-Pacific Region concluded that this taxiway should be located at a separation of 400 feet in order to meet the future standards for critical aircraft in ARC C-II. This determination limits available alternatives as the ARC C-II standards are very specific in how a parallel runway should be aligned. **Exhibit 2D** provides examples of aircraft that meet ARC C-II standards. The proposed connecting taxiways align with existing connecting taxiways on the south side of the runway. This limits potential pilot confusion as it lessens the number of locations of airfield directional signs. The location of the parallel taxiway and connector taxiways is depicted on **Exhibit 2E**.

There are no other reasonable parallel taxiway alternatives. Parallel taxiway alternatives with separation distances less than 400 feet will not meet FAA design standards for ARC C-II aircraft, and parallel taxiways with separation distances greater than 400 feet are not cost-effective and limit potential development area on the north side of the airport.

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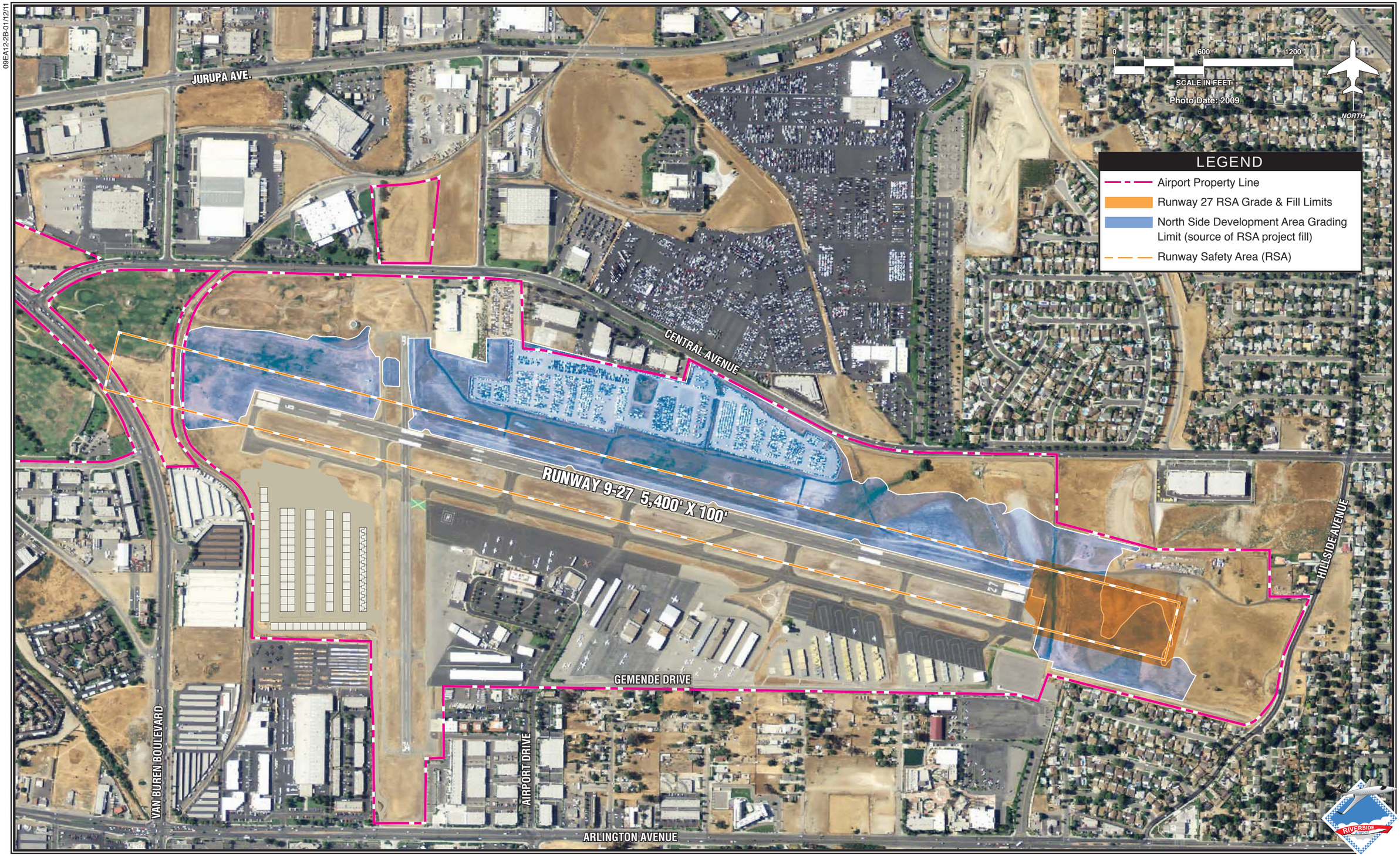

Exhibit 2B
FULL RSA ALTERNATIVE

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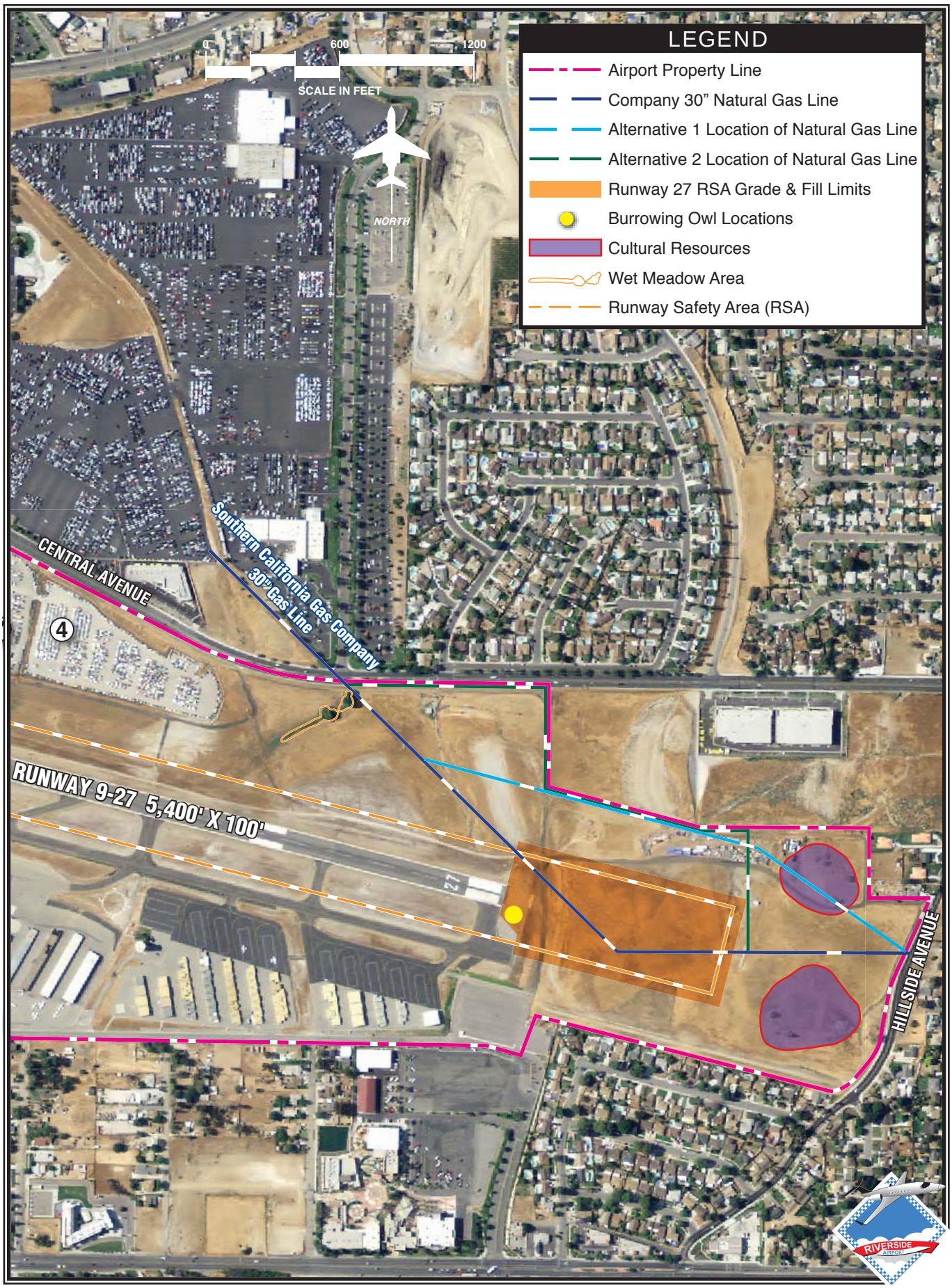

Exhibit 2C
GAS LINE ALTERNATIVES AND
ENVIRONMENTAL CONSTRAINTS

09EA12-2D-04/27/11

AIRPORT REFERENCE CODE C-II AIRCRAFT

Gulfstream

Cessna Citation III

CRJ-200

ERJ-145

Embraer 170

Canadair CL-600

Exhibit 2D
ARC-II AIRCRAFT EXAMPLES

09EA12-2E-02/04/10

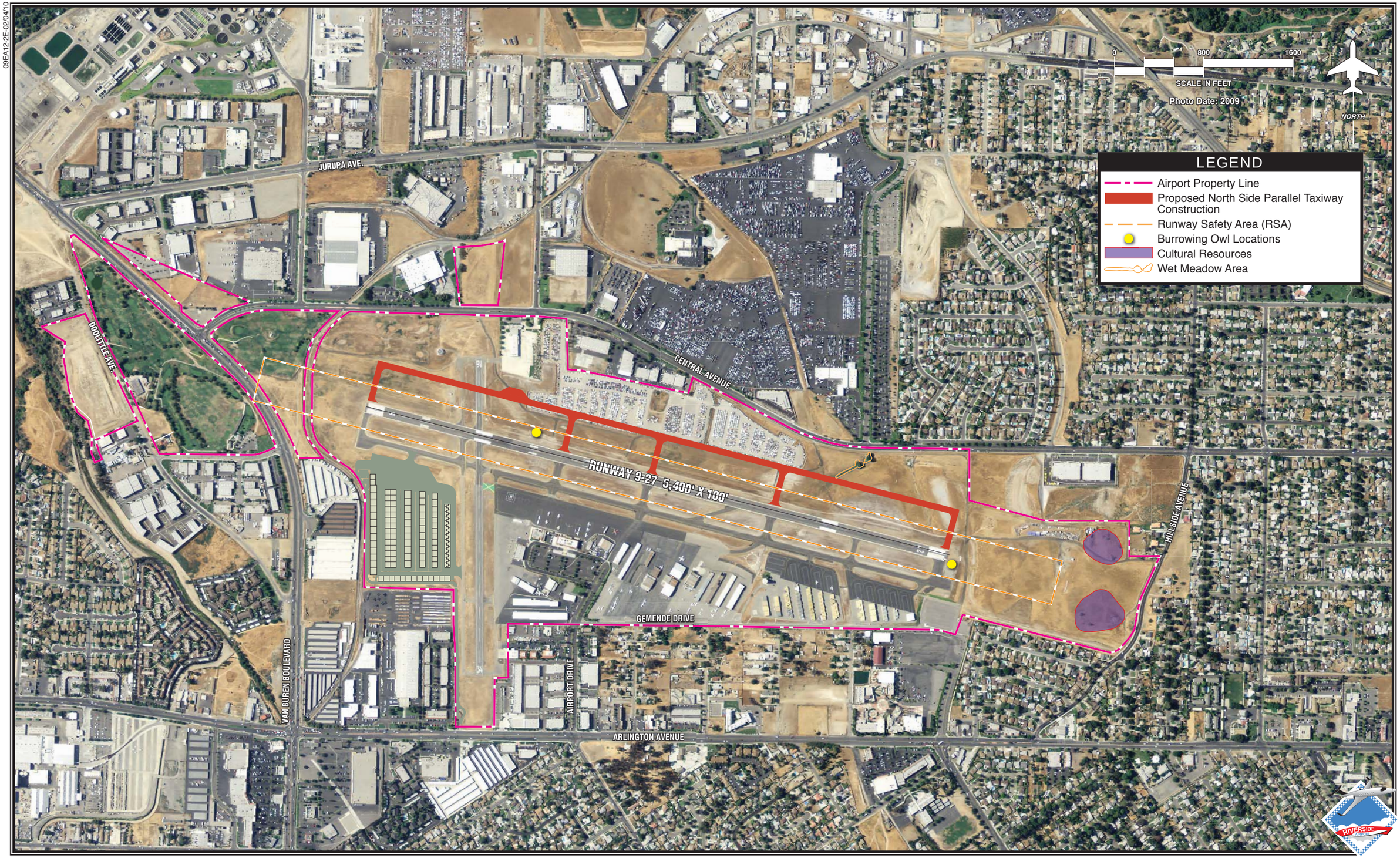

Exhibit 2E
TAXIWAY ALTERNATIVES AND
ENVIRONMENTAL CONSTRAINTS

The provision for parallel and connector taxiways meets the project purpose and need and is reasonable to implement; therefore, it is considered to be part of the Proposed Action Alternative.

2.3.3 Access Road Alternative

One concern regarding the development of the north side of the airport is vehicle access to the north side development area. Vehicles, such as delivery vehicles and airport patron vehicles, may not fully understand the operational characteristics of aircraft and the markings in place to control vehicle access; therefore, utilizing the existing vehicular access points on the south side of the airport is not reasonable and should not be considered. The best solution is to provide dedicated vehicle access roads that have a direct connection to Central Avenue on the north side of the airport.

The access road alternative depicted on **Exhibit 2F** for the north side of the airport runs along the northern airport property boundary. The connection to Central Avenue utilizes an existing connection to the west and creates a new entrance point at its eastern end. The two access points to Central Avenue will be gate-controlled and access would be limited to those individuals requiring access to the north side of the airport. The access road alternative avoids known environmental constraints (depicted on **Exhibit 2F**) while maximizing the amount of airport property available for development. There are no other alternatives that avoid sensitive biological and cultural resources without reducing the amount of developable property on the north side of the airport.

This access road alternative meets the project purpose and need, avoids known environmental constraints, and is feasible to implement. Therefore, this access road alternative is considered to be part of the Proposed Action Alternative.

2.3.4 Aircraft Apron Alternatives

To provide additional parking apron for larger turbojet and business jet aircraft, a 62,500 square foot apron is needed on the north side of the airport. The airport's current Airport Layout Plan (ALP) depicts numerous apron areas on the airport's north side. The apron area shown on **Exhibit 2G** is the first planned as it avoids known environmental constraints and limits the disruption of the existing automobile storage facilities located on the north side of the airport. The apron will be connected to the planned north side parallel taxiway. The airport has received interest from private developers regarding the north side development. (Please note, it is anticipated that the construction of this apron area, combined with the availability of the north side taxiway, will result in the construction of facilities that may include corporate hangars, a fixed base operator, or other aviation related business geared towards larger business jet or turboprop aircraft. The type and specific location of facilities such as these is currently unknown and will be evaluated as part of future development approval processes.)

The proposed aircraft apron construction meets the project purpose and need, avoids known environmental constraints, and is reasonable to implement; therefore, it is considered part of the Proposed Action Alternative.

2.4 PROPOSED ACTION ALTERNATIVE

Exhibit 2H depicts the Proposed Action Alternative in its entirety. This alterative meets the project purpose and need as it meets RSA requirements for the east end of the runway and provides for the development of the north side of the airport to meet the near-term aviation demand of larger business jet and turboprop aircraft.

Environmental impacts resulting from implementation of this alternative include the following:

- Potential impact to state listed species, the Burrowing Owl.
- Short term noise and air quality impacts during construction of the airport improvements.
- Potential impacts to historic and prehistoric archaeological resources.

Statutory or regulatory requirements applicable to this alternative include the following:

- Acquisition of a construction-related National Pollutant Discharge Elimination System (NPDES) permit.
- Compliance with the requirements of the *Migratory Bird Treaty Act* during construction.
- Modification of the airport's existing operation-related NPDES permit.
- Consultation with California State Historic Preservation Officer in accordance with Section 106 of the *National Historic Preservation Act* of 1966.
- Consultation with the United States Fish and Wildlife Service in accordance with Section 7 of the Endangered Species Act.

2.5 NO ACTION ALTERNATIVE

The No Action Alternative considers maintaining the airfield in its existing condition. The primary result of this alternative is that Runway 27 would not meet FAA RSA design standards. In addition, Riverside Airport will be unable to meet the projected future aviation demand as defined in the recent *2009 Riverside Airport Master Plan*.

No statutory or regulatory requirements apply to this alternative.

The No Action Alternative does not meet the identified purpose and need for the facility, as identified in Chapter One. While the No Action Alternative does not meet the purpose and need, in accordance with CEQ NEPA regulations in 40 CFR 1502.14(d), it is further analyzed with regard to its potential environmental impact in Chapter Four of this environmental document.

09EA12-2F-02/04/10

Exhibit 2F
ACCESS ROAD ALTERNATIVES AND
ENVIRONMENTAL CONSTRAINTS

09EA12-2G-02/04/10

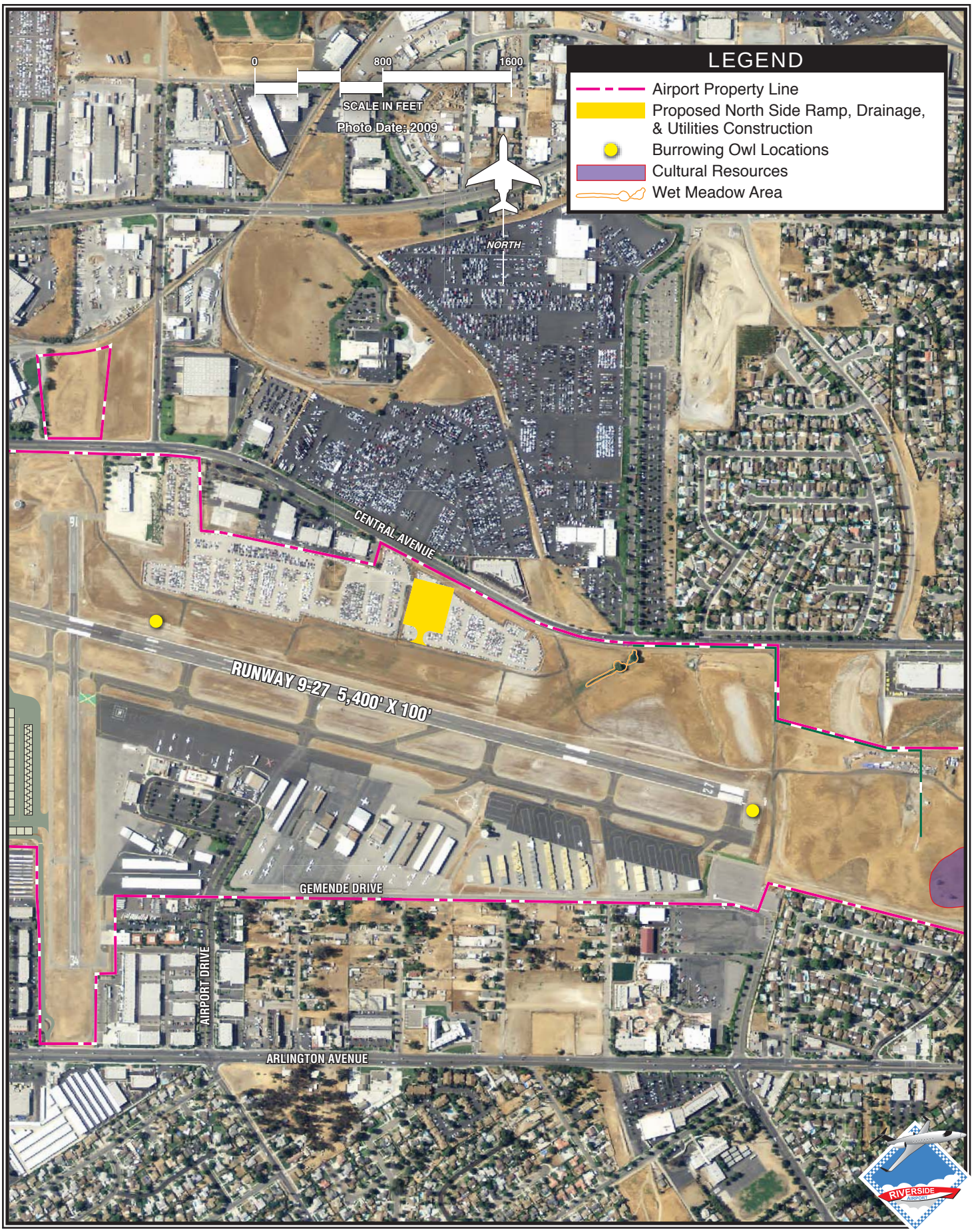

Exhibit 2G
AIRCRAFT APRON AND
ENVIRONMENTAL CONSTRAINTS

09EA12-2H-02/04/10

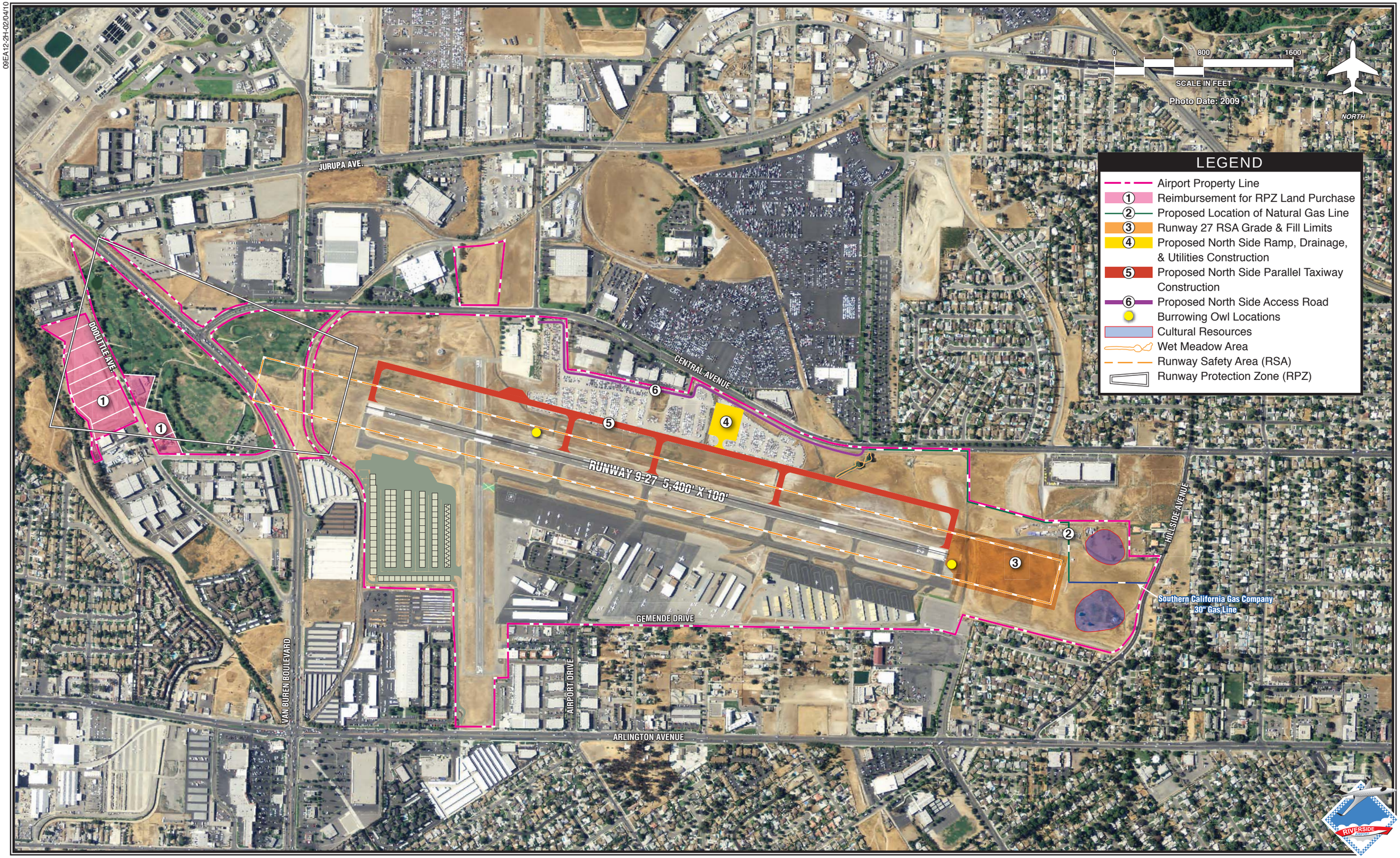

Exhibit 2H
PROPOSED ACTION ALTERNATIVE AND
ENVIRONMENTAL CONSTRAINTS

Chapter Three

AFFECTED ENVIRONMENT

Chapter Three
AFFECTED ENVIRONMENT

The purpose of this chapter is to identify or highlight any important background information that describes the existing environment at Riverside Airport.

3.1 AIRPORT BACKGROUND AND FACILITIES

Riverside Airport is owned and operated by the City of Riverside and is located on approximately 525 acres of property in Riverside County on the northwest portion of the City of Riverside, California (refer to Exhibit 1A.) The airport is approximately six miles to the west/southwest of the City of Riverside's government district. The City of Riverside is located in Riverside County in the greater Los Angeles basin and is approximately 50 miles northeast of downtown Los Angeles.

Facilities at an airport can be divided into two distinct categories: airside facilities and landside facilities. Airside facilities include those directly associated with aircraft operation. Landside facilities include those necessary to provide an interface between surface and air transportation, as well as support aircraft servicing, storage, maintenance, and operational safety.

3.1.1 Airside Facilities

Airside facilities generally include, but are not limited to, runways, taxiways, connecting taxiways, airfield lighting, and navigational aids. As depicted on **Exhibit 3A**, Riverside Airport is served by two runways. As indicated in **Table 3A**, the airport's primary runway,

Runway 9-27 is 5,400 feet long by 100 feet wide. The pavement has been strength-rated at 48,000 pounds single wheel type landing gear (SWL), 70,000 pounds dual wheel type landing gear (DWL), and 110,000 pounds dual wheels in tandem type landing gear (DTWL). These strength ratings refer to the configuration of the aircraft landing gear. For example, SWL indicates an aircraft with a single wheel on each landing gear.

TABLE 3A
Airside Facility Data
Riverside Airport

	RUNWAY 9-27	RUNWAY 16-34
Runway Length (feet)	5,401	2,851
Runway Width (feet)	100	48
Runway Surface Material (Condition)	Asphalt (Excellent)	Asphalt (Excellent)
Runway Markings (Condition)	Nonprecision (27) (Good) Precision (9) (Good)	Basic (Good)
Runway Lighting	Medium Intensity (MIRL)	Medium Intensity (MIRL)
Runway Load Bearing Strength (pounds) Single wheel type landing gear (SWL) Dual wheel type landing gear (DWL)	 48,000 70,000	 40,000 50,000
Dual wheel in tandem type landing gear (DTWL)	110,000	80,000
Taxiway Lighting	Medium Intensity (MIRL)	
Taxiway, Taxilanes & Apron Lighting	Centerline marking, Tie-down area marking	
Traffic Pattern	Left (9-27)	Right (16); Left (34)
Approach Aids	1,400' MALSR (9) PAPI-4L (9-27) (Inoperable) REIL (27) (Inoperable)	PAPI-2L (34)
Instrument Approach Aids	ILS (CAT I) (9) RNAV (GPS) (27) VOR or GPS (9) VOR or GPS-A (Circling) VOR or GPS-B (Circling)	VOR or GPS-A (Circling) VOR or GPS-B (Circling)
Weather and Navigational Aids	Automated Surface Observation System (ASOS) Lighted Wind Cone Airport Beacon Airport Traffic Control Tower (ATCT) Automated Terminal Information System (ATIS) VOR (Inoperable) Remote Communications Outlet (RCO)	

PAPI - Precision Approach Path Indicator
GPS - Global Positioning System
VOR - Very high frequency Omni-directional Range
REIL - Runway End Identification Lights
MALSR - Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights

Source: Airport/Facility Directory - Southwest U.S. December 17, 2009); Airport records.

Crosswind Runway 16-34 is 2,851 feet long and 48 feet wide. Runway 16-34 provides an alternate landing direction for small aircraft (12,500 pounds and less) when wind direction is not closely aligned with Runway 9-27.

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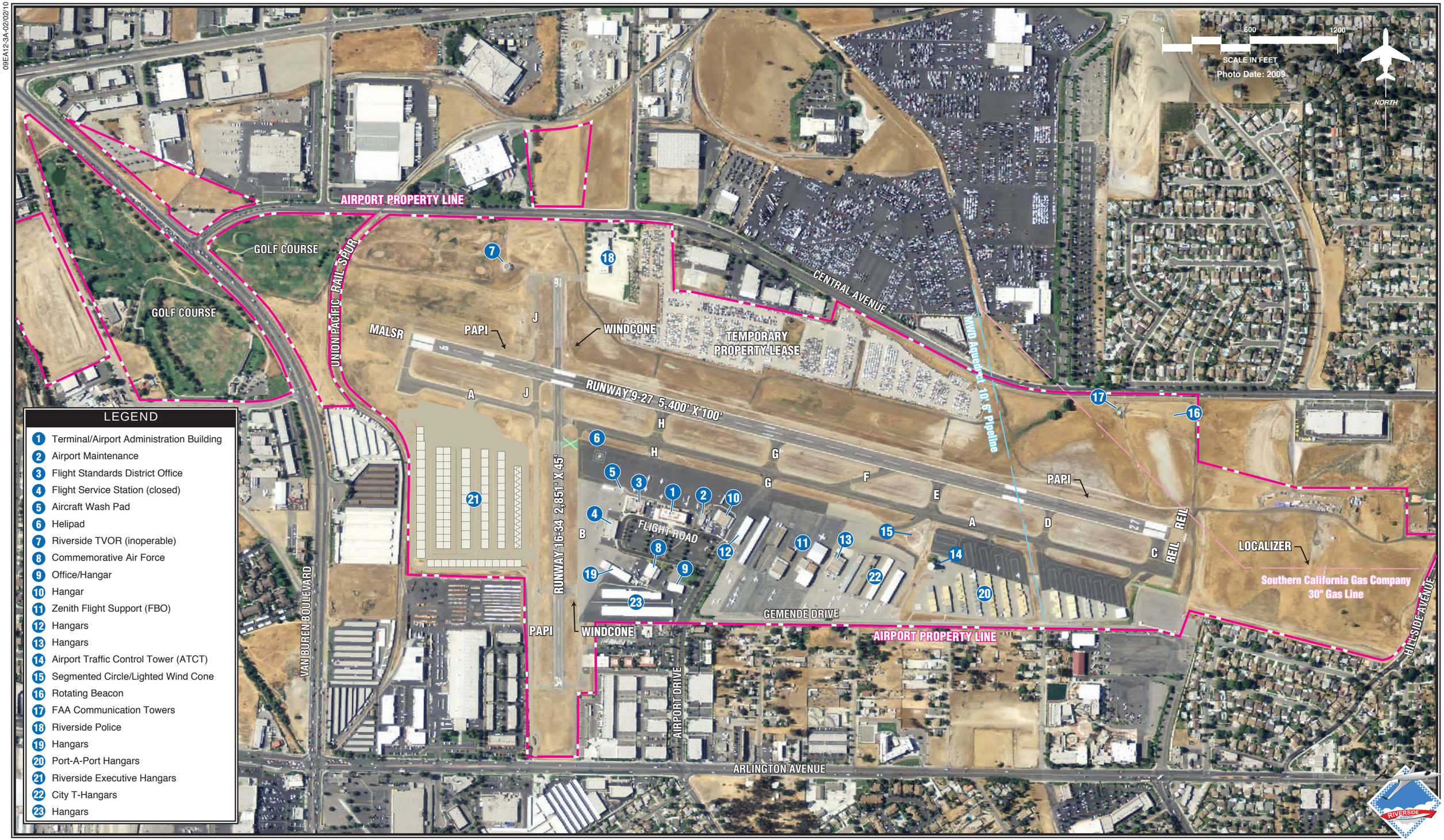

Exhibit 3A
EXISTING FACILITIES

3.1.2 Landside Facilities

Landside facilities are essential to the daily operation of the airport and consist primarily of those facilities required to accommodate aircraft, pilots, and passengers while they are at the airport. Landside facilities at Riverside Airport are depicted on **Exhibit 3A**.

A full range of aviation services are available at Riverside Airport. This includes aircraft rental, flight training, aircraft maintenance, aircraft charter, aircraft fueling, and many other services. The following provides a brief discussion of general aviation businesses at the airport:

Zenith Aviation (FBO) - Aircraft Rental, Flight Instruction, Fueling, Maintenance
Flying Kolors Aeropaint - Aircraft Painting
Airline Transport Professionals (ATP) – Advanced flight training
California Aviation Services, Inc. – Helicopter and fixed-wing flight school
Heli-Flite – Helicopter crane service
Prestige Upholstery – Aircraft interior remodeling
Maintenance One – Airframe and powerplant maintenance
Riverside Executive Aviation – Hangar sales and leasing

Fuel, avionics repair, aircraft maintenance, flight instruction, aircraft rental, and aircraft parking services are available from these tenants. Additionally, the airport has an airport rescue and firefighting (ARFF) station located on-site to provide fire suppression services in case of an emergency.

3.2 LAND USE

3.2.1 Existing Land Use

Land use in the vicinity of the airport is a mixture of residential, commercial, industrial, and open space. To the north of the airport is a mixture of industrial and open space land uses extending to the Santa Ana River Valley. Land uses to the south, west, and east are primarily residential. A number of schools, churches, healthcare, and commercial facilities are distributed through these residential areas. **Exhibit 3B** presents existing land uses in the vicinity of the airport.

3.2.2 Future Land Use and Land Use Planning Policies

The City of Riverside adopted its most recent General Plan in 2006. Per the City's General Plan, the Airport Master Plan will be used to guide development of the airport to ensure the airport's long-term viability and to reduce the risk of potential aircraft-related hazards. The General plan also includes several policies to protect the flight paths from encroachment, limit building heights and land use intensities, and to ensure that Riverside Airport continues to serve general aviation. As indicated on **Exhibit 3C**, the General Plan intends for development to remain similar to the current condition to the south and east of the air-

port. The open areas directly north and northwest of the airport are planned for industrial development. Open areas to the west are planned for open space/natural resources and private recreation.

The March 2005 Airport Land Use Compatibility Plan also provides policies that support the future viability of Riverside Airport. These policies include the establishment of overlay zones that restrict non-compatible development along approach/departure corridors and buyer awareness programs. **Exhibit 3D** depicts the Riverside Airport Land Use Compatibility Plan zones.

3.3 EXISTING ENVIRONMENT

This section provides background information on the existing natural and cultural environment within and surrounding Riverside Airport. Sources of this information include coordination received from various resource agencies (copies contained within Chapter Six), as well as field surveys and studies. General field surveys were conducted to evaluate the presence of botanical, cultural, and paleontological resources. The survey area is limited to those areas that may be disturbed by the project improvements discussed in Chapter Two. The extent of the survey area is depicted on **Exhibit 3E**.

Environmental resources (as described within Appendix A of FAA Order 1050.1E), which are not located within the project area include: Coastal Resources, Farmlands, Floodplains, and Wild and Scenic Rivers. The absence of these resources was determined through internet research.

3.3.1 Air Quality

The Environmental Protection Agency (EPA) has adopted air quality standards that specify the maximum permissible short-term and long-term concentrations of various air contaminants. The National Ambient Air Quality Standards (NAAQS) consist of primary and secondary standards for six criteria pollutants which include: Ozone (O_3), Carbon Monoxide (CO), Sulfur Dioxide (SO_x), Nitrogen Oxide (NO_x), Particulate Matter ($PM_{2.5}$ and PM_{10}), and Lead (Pb).

Primary air quality standards are established at levels to protect the public health and welfare from any known or anticipated adverse effects of a pollutant. All areas of the country are required to demonstrate attainment with NAAQS.

Air contaminants increase the aggravation and the production of respiratory and cardiopulmonary diseases. The standards also establish the level of air quality which is necessary to protect the public health and welfare, including among other things, effects on crops, vegetation, wildlife, visibility, and climate, as well as effects on materials, economic values, and on personal comfort and well-being.

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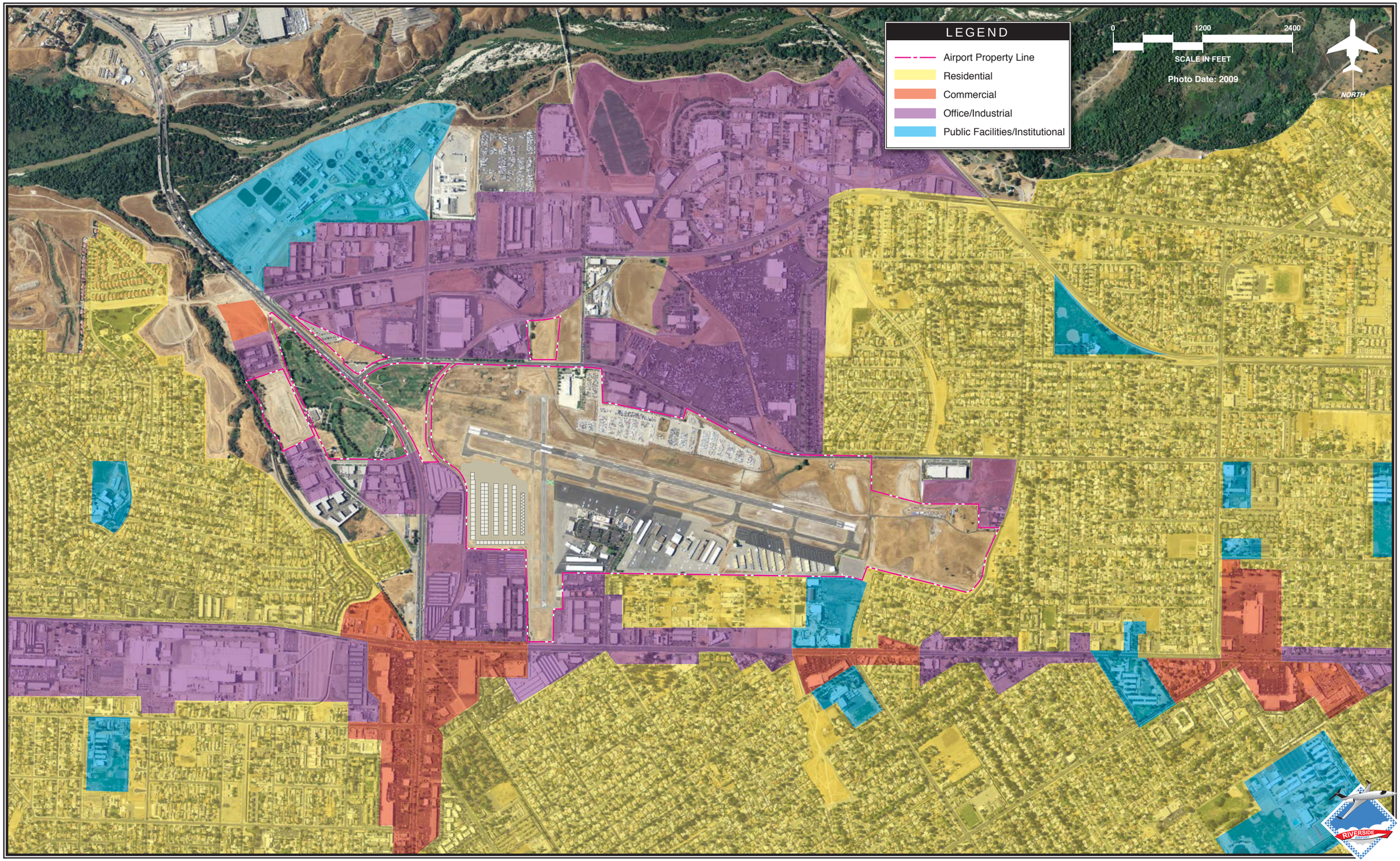
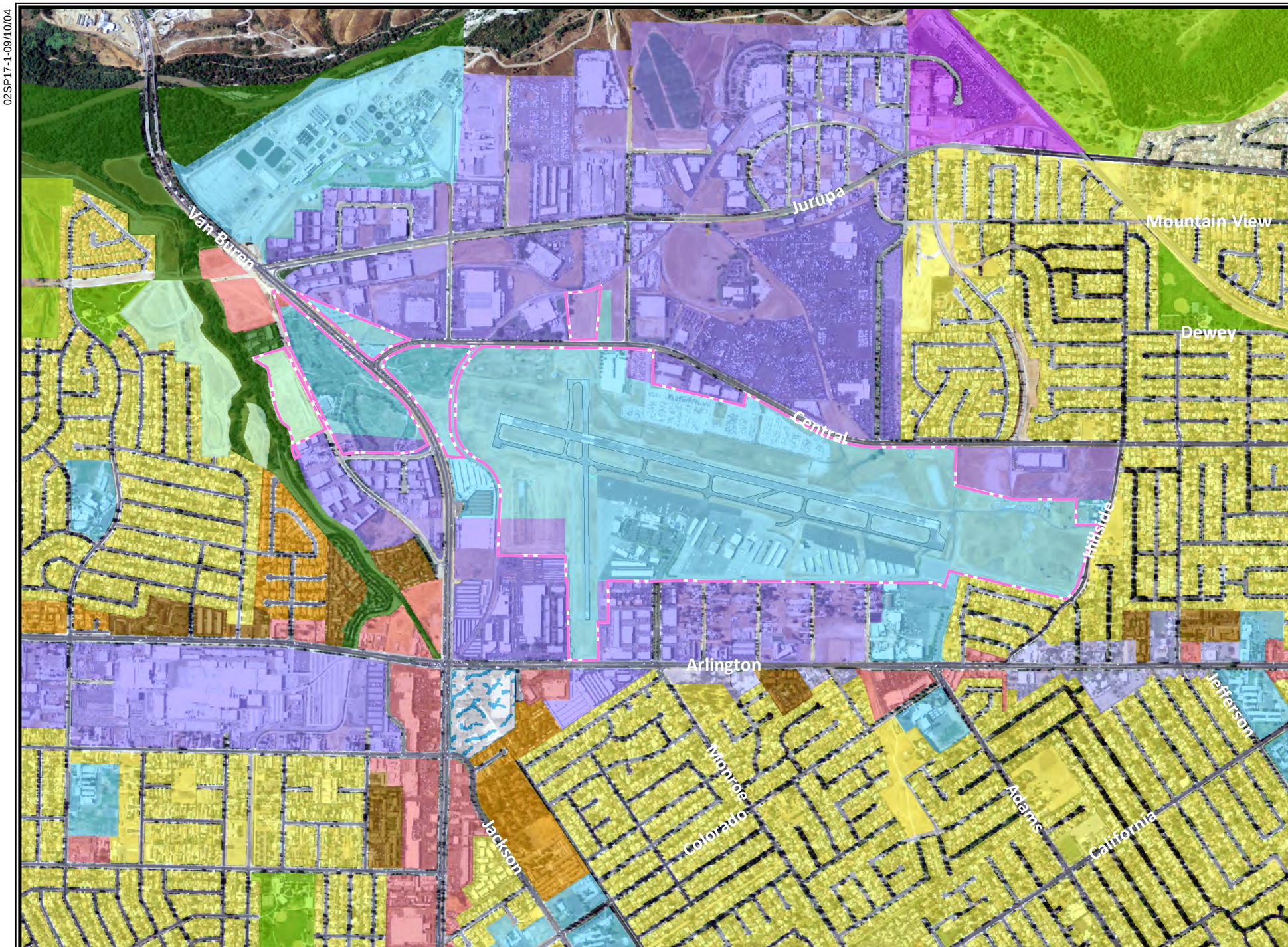


Exhibit 3B
EXISTING LAND USE

02SP17-1-09/10/04



Legend

- A/RR - AGRICULTURAL/RURAL RESIDENTIAL
- SRR - SEMI RURAL RESIDENTIAL
- LDR - LOW DENSITY RESIDENTIAL
- MDR - MEDIUM DENSITY RESIDENTIAL
- MHDR - MEDIUM HIGH DENSITY RESIDENTIAL
- HDR - HIGH DENSITY RESIDENTIAL
- VHDR - VERY HIGH DENSITY RESIDENTIAL
- C - COMMERCIAL
- O - OFFICE
- B/OP - BUSINESS/OFFICE PARK
- I - INDUSTRIAL
- MU-V - MIXED USE-VILLAGE
- PF - PUBLIC FACILITIES/INSTITUTIONAL
- PR - PRIVATE RECREATION
- P - PUBLIC PARK
- OS - OPEN SPACE/NATURAL RESOURCES

Source:

Aerial photography is 2009 National Agriculture Imagery Program (NAIP).

Land use data is Riverside General Plan 2025.

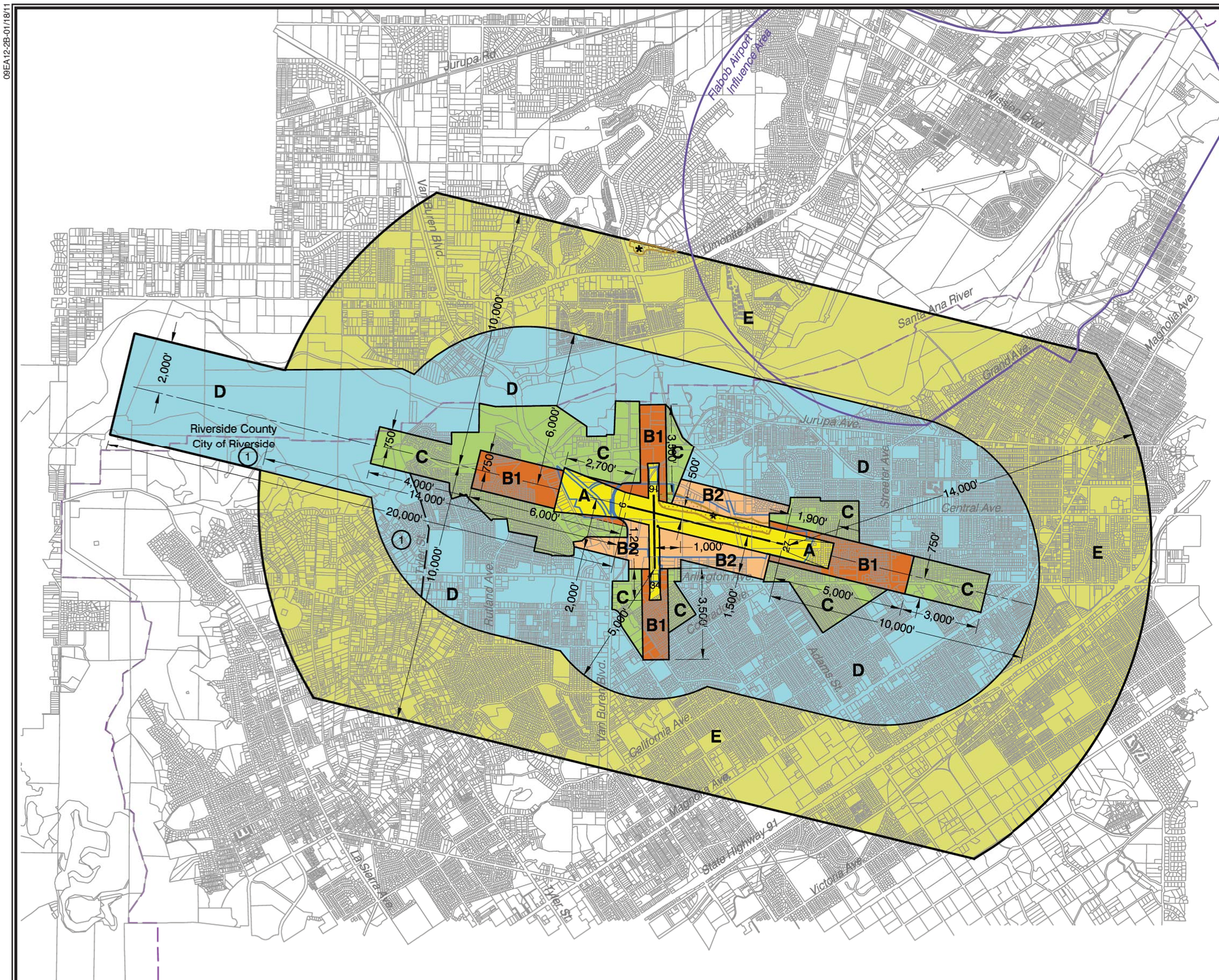
NORTH

0 1,200

1" = 1,200'

Exhibit 3C
2025 GENERAL PLAN LAND USE MAP

09EA12-2B-01/18/11



Legend

Compatibility Zones

- Airport Influence Area Boundary
- Zone A
- Zone B1
- Zone B2
- Zone C
- Zone D
- Zone E
- Height Review Overlay Zone

Boundary Lines

- Airport Property Line
- City Limits

Note

Airport influence boundary measured from a point 200 feet beyond runway ends in accordance with FAA airspace protection criteria **(14 CFR Part 77)**. All other dimensions measured from runway ends and centerlines.

See Chapter 2, Table 2A for compatibility criteria associated with this map. See Section RI.2 for special exceptions to the Table 2A criteria.

NORTH

NOT TO SCALE

SOURCE: Riverside County Land Use Commission Land Use Compatibility Plan - Adopted March 2005

Exhibit 3D
RIVERSIDE AIRPORT LAND USE
COMPATIBILITY ZONES

09EA12-3E-10/27/10

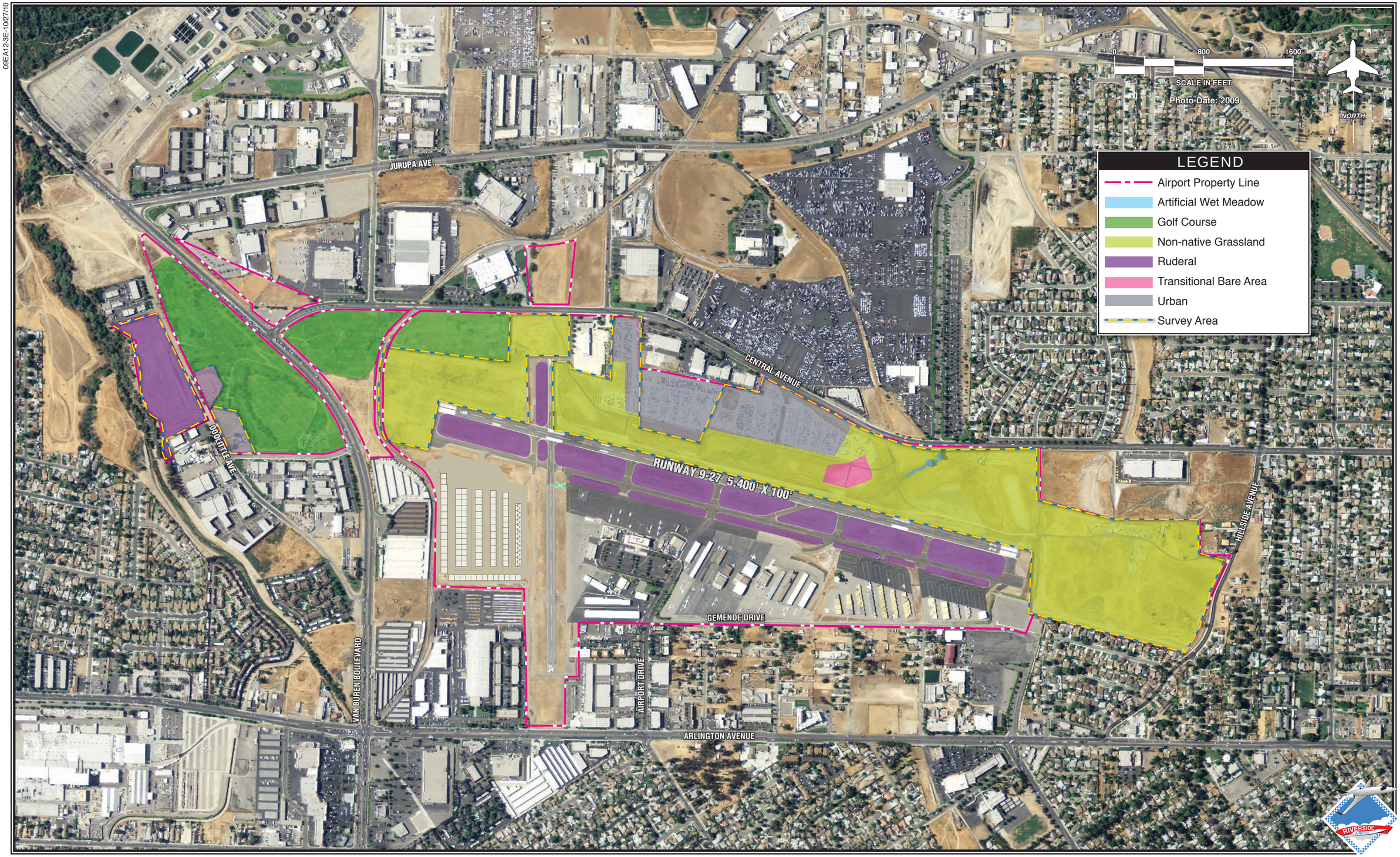


Exhibit 3E
VEGETATION

According to the EPA's "Green Book," Riverside County is a nonattainment area for O_3, $PM_{2.5}$ and PM_{10}.

3.3.2 Fish, Wildlife, and Plants

Riverside Airport is within the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) area. The MSHCP is implemented under Section 10(a)(1)(B) of the Endangered Species Act (ESA).

MSHCP is a comprehensive, multi-jurisdictional habitat conservation plan focusing on conservation of species and their associated habitats in western Riverside County. Under the MSHCP, the United States Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) will allow for habitat loss from development within its boundaries when developers pay a mitigation fee to projects in designated habitat conservation areas. The MSHCP includes prescribed compensation guidelines, conservation strategies, and minimization measures to mitigate for potential project impacts to sensitive species and their habitats.

There are seven bioregions within the MSHCP. Riverside Airport is located within the Riverside Lowlands bioregion, which is characterized by a relatively arid climate and Riversidian sage scrub and annual grasslands. A high level of disturbance and urbanization are noted within this Riverside Lowland bioregion.

In a review of federally and state listed species information obtained from the USFWS and California Natural Diversity Database for areas surrounding the airport, a total of 91 special-status species have been recorded within the nine-U.S. Geographic Service quad map project vicinity, including: 15 plants, four invertebrates, three fish, three amphibians, 13 reptiles, 39 birds, and 14 mammals. In addition, four sensitive habitats were identified. Ten species were assessed as being present or "may occur" within the project site based upon the habitats represented within the project site and species occurrences within the project vicinity. This included San Diego Ambrosia, Plummer's mariposa lily, northern harrier (foraging and nesting), white-tailed kite (foraging and nesting), Cooper's hawk (foraging and nesting), burrowing owl (foraging and nesting), loggerhead shrike (foraging and nesting), California horned lark (foraging and nesting), coyote, and northwestern San Diego pocket mouse.

Three botanical field surveys were done by SWCA Environmental Consultants (SWCA) in February 2008, June 2009, and October 2009. These surveys provided an inventory of biological resources within the project area. The surveyed area included a total of 132 acres on the north, east, and west sides of the airport. A total of 44 plant and 22 wildlife species were observed during the initial survey of the project site and immediate vicinity. This included the observation of two special-status wildlife species: a flock of California horned larks observed on the project site in non-native grassland and ruderal habitats, and a breeding pair of burrowing owls observed in non-native grassland habitat immediately adjacent to the project site on Airport grounds. **Table 3B** lists the federally threatened and endangered species. **Exhibit 3E** depicts the vegetation types in the proposed project survey area. A copy of the survey report is included in **Appendix C**.

TABLE 3B
Special-Status Species Present within the Project Area

Common Name	Scientific Name	Habitat and Distribution	Listing	Location within Study Area
San Diego ambrosia	*Ambrosia pumila*	Chaparral, coastal scrub, valley and foothill grassland, vernal pools.	Federally endangered	Species is not present in the study area.
Slender-horned spineflower	*Dodecahema leptoceras*	Chaparral, coastal scrub (alluvial fan sage scrub). Historically from Los Angeles, Riverside and San Bernardino Counties. Extirpated from much of range.	Federally endangered	Species is not present in the study area.
Santa Ana River woollystar	*Eriastrum densifolium* ssp. *sanctorum*	Coastal scrub, chaparral. Formerly known from Orange and San Bernardino Counties, now known from one extended population.	Federally threatened	Species is not present in the study area.
Delhi Sands flower-loving fly	*Rhaphiomidas terminatus abdominalis*	Found only in areas of the Delhi Sands formation in southwestern San Bernardino and northwestern Riverside Counties.	Federally endangered	Species is not present in the study area.
Santa Ana sucker	*Catostomus santaanae*	Habitat generalists, but prefer sand-rubble-boulder bottoms, cool, clear water and algae.	Federally threatened	Species is not present in the study area.
Arroyo toad	*Bufo californicus*	Semi-arid regions near washes or intermittent streams, including valley-foothill and desert riparian and desert wash.	Federally endangered	Species is not present in the study area.
California red-legged frog	*Rana aurora draytonii*	Deep-water pools with dense stands of overhanging willows and an intermixed fringe of cattails	Federally threatened	Species is not present in the study area.
Southwestern willow flycatcher	*Empidonax traillii extimus*	Restricted to riparian woodlands along streams and rivers with mature, dense stands of willows (*Salix* spp.), cottonwoods (*Populus* spp.) or smaller spring fed or boggy areas with willows or alders (*Alnus* spp.).	Federally endangered	Species is not present in the study area.
Least Bell's vireo	*Vireo bellii pusillus*	Summer resident of southern California. Inhabits low riparian growth in vicinity of water or in dry river bottoms, below 2,000 ft.	Federally endangered	Species is not present in the study area.
Coastal California gnatcatcher	*Polioptila californica californica*	Obligate permanent resident of coastal sage scrub below 2,500 ft in southern California.	Federally threatened	Species is not present in the study area.
Stephens' kangaroo rat	*Dipodomys stephensi*	Primarily annual and perennial grasslands, but also occurs in coastal scrub and sagebrush with sparse canopy cover.	Federally endangered	Species is not present in the study area.
Brush rabbit	*Sylvilagus bachmani cinerascens*	Most often in chaparral, but also coastal scrub and oak woodland.	Federally endangered	Species is not present in the study area.

Habitat evaluations undertaken prior to field surveys for MSHCP-covered species determined that appropriate habitat for San Diego Ambrosia and burrowing owl are noted as occurring within the project site. The project site does not contain suitable habitat for two other narrow endemic plant species (Brand's phacelia and San Miguel savory), nor does it contain suitable habitat for least Bell's vireo, southwestern willow flycatcher, yellow-billed cuckoo, or vernal pool shrimp species.

After identifying protected species that may occur in the project area, focused surveys were conducted by SWCA on October 2, 2009 for San Diego Ambrosia and on June 18-19, 2009 and June 24, July 1, 8, and 15, 2009 for the burrowing owl. No San Diego Ambrosia individuals were found. Burrowing owls were found immediately adjacent to the project site, based upon observations during the general biological field survey and focused surveys conducted on June 18-19, 2009 and June 24, July 1, 8, and 15, 2009. Both observations were made during the breeding season for burrowing owls, and included observations of a nesting pair in 2008 and a single individual in 2009. Additionally, appropriate nesting and/or foraging habitat for burrowing owls were observed over the majority of the project site, as well as several areas adjacent to (and within 150 meters) of the project site.

Northern harrier, white-tailed kite, Cooper's hawk, loggerhead shrike, least Bell's vireo, and California horned lark may forage and nest within or adjacent to the project site. Because these species may nest within the project site, the project could potentially impact the nests or young of these species.

The City of Riverside, as a signatory to the MSHCP, must complete its review and deemed projects in compliance with the MSHCP. The existence of the MSHCP can stream line the Section 7 consultation process with the USFWS, however, FAA must still consult with USFWS under Section 7.

3.3.3 Cultural Resources

An evaluation of the potential for cultural resources within the project area was prepared by SWCA in January 2010. The report, included in **Appendix D**, summarizes the findings of the cultural resources records searches and pedestrian surveys conducted for the proposed project area.

The cultural resources records searches indicate that 47 previously recorded cultural resources are located within a one-mile radius of the survey coverage area, including 16 prehistoric archaeological sites or isolates, five historic archaeological sites, and 26 buildings and/or historic structures. Of these 47 previously recorded resources, one is within the APE and three are adjacent. This indicates that there is a moderate sensitivity for historic-period buildings, archaeological resources, and prehistoric archaeological resources in the survey coverage area. The records and literature search also identified 14 previously conducted cultural resources studies within a one-mile radius of the survey coverage area. Three of these studies cover portions of the project survey coverage area.

SWCA's cultural resources specialists conducted intensive surveys of the project survey coverage area on February 27, 2008, November 4, 2009, and January 17, 2010. The field survey resulted in the identification of six cultural resources, all in the eastern portion of the project survey area. These include one prehistoric bedrock milling archaeological site (CA-RIV-8899/33-17095), two multi-component sites containing bedrock milling features and historic refuse scatters (CA-RIV-8897/33-17092 and CA-RIV-8898/33-17094), one built environmental resource, a water tank (33-17096), one historic site containing a refuse scatter and feature (33-17093), one multi-component site containing built environmental resources (concrete features) and a historic refuse scatter (33-17097).

As a result of this evaluation, three of the historic-period resources (33-17093, 33-17096, and 33-17097) have been evaluated and found to be not eligible for listing in the National Register of Historic Places (NRHP) or local registers. The historic components of the two multi-component sites, (CA-RIV-8897/33-17092 and CARIV-8898/33-17094) have been evaluated and found to be not eligible for listing in the NRHP or local registers as well. Any impacts to these resources would be less than significant.

The prehistoric archaeological site (CA-RIV-8899/33-17095) and the prehistoric portions of the two multi-component sites (CA-RIV-8897/33-17092 and CA-RIV-8898/33-17094) within the project survey area have not been formally evaluated for listing in the NRHP or local register.

3.3.4 Noise

Exhibit 3F depicts the existing (2010) noise condition at the airport based on Riverside Airport Traffic Control Tower counts for calendar year 2009. See **Appendix E** for additional information regarding noise analysis input assumptions. Three percent was added to account for itinerant nighttime activity when the tower is closed. As indicated on the exhibit, the 65 community noise equivalent level (CNEL) noise contour remains on airport property to the north, south, and west. The 65 CNEL noise exposure contour does extend off airport property in two areas on the east side of the airport. The 65 CNEL contour extension off airport property to the southeast is near three homes. A grid point analysis was prepared for the three homes located immediately southeast of the airport near the 65 CNEL noise exposure contour. As seen on **Exhibit 3F**, the grid point analysis confirms the homes are outside the 65 CNEL. Therefore, there are no non-compatible land uses within the existing condition noise exposure contors.

3.3.5 Socioeconomic Resources

As depicted on the top of **Exhibit 3G**, the Riverside Airport is located in an area with a moderately low percentage of poverty population. The U.S. Census Bureau block groups that include the airport and the areas north of the airport have populations below the established poverty levels that range between zero and 20 percent. Additionally, the block groups immediately north and south of the airport range between zero and 10 percent below poverty level.

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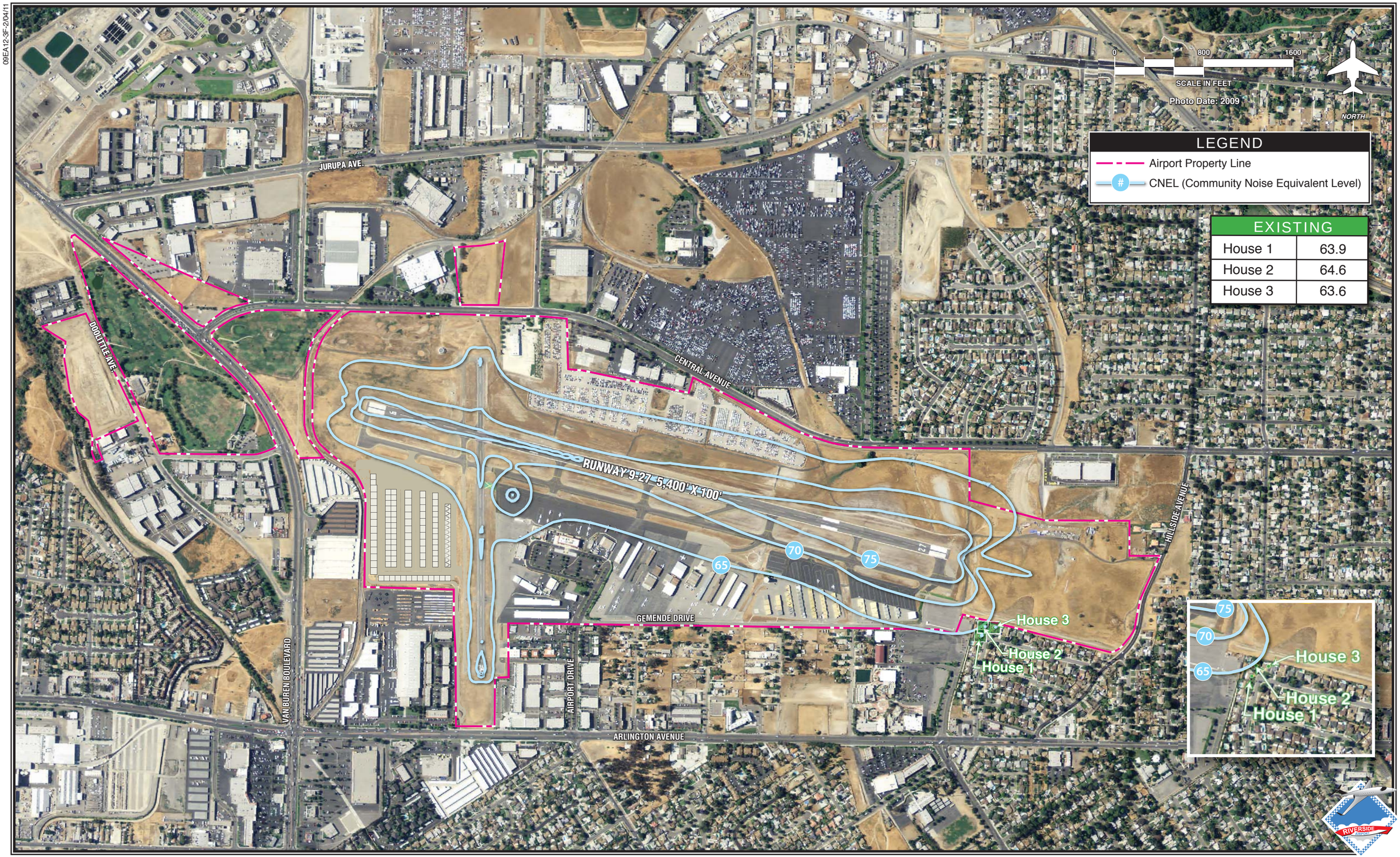
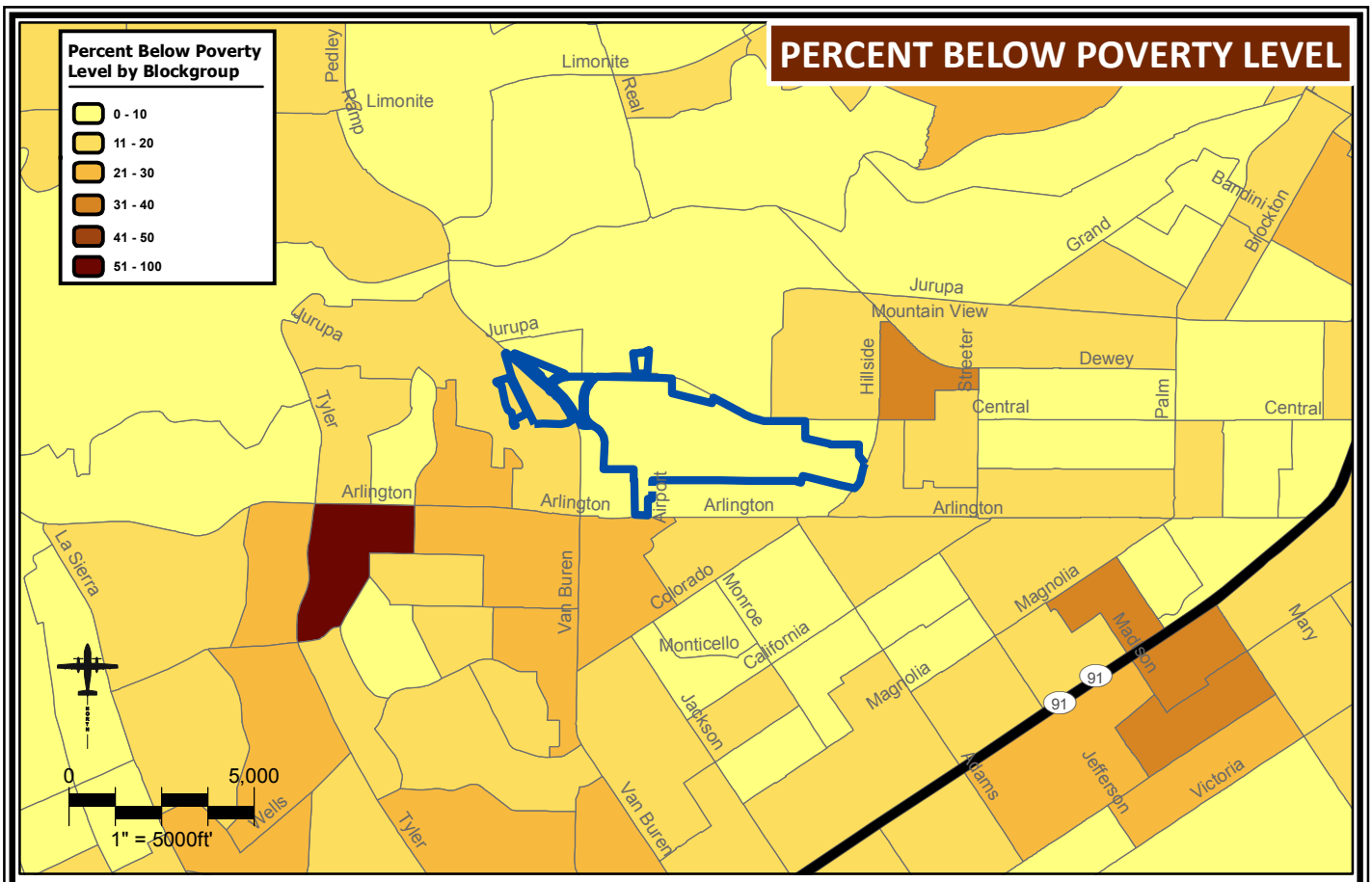
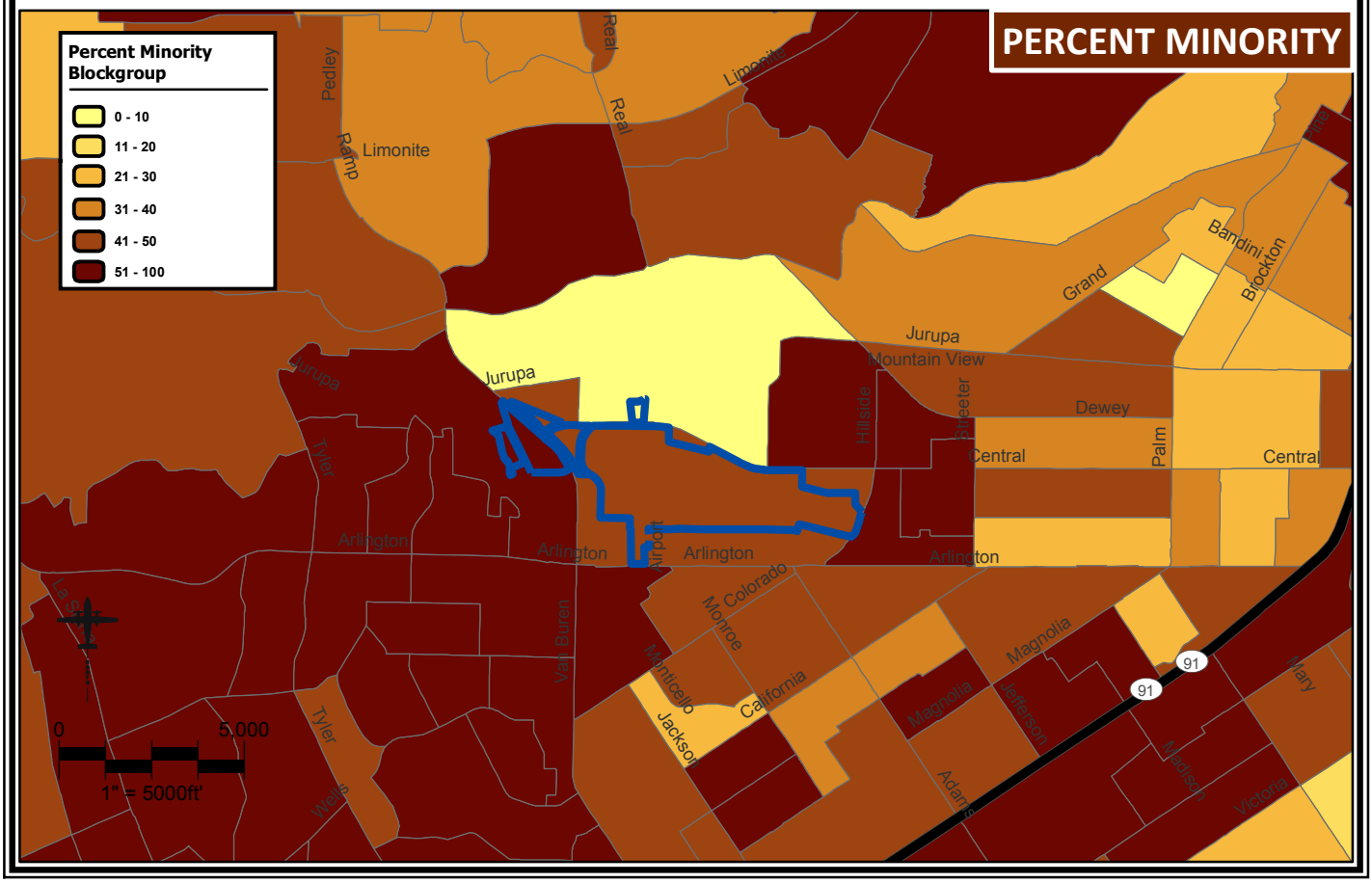


Exhibit 3F
EXISTING NOISE EXPOSURE





Source: Blockgroup data is from the US Census Bureau, SF3 tables. Blockgroup shapefiles are from ESRI.

Exhibit 3G
MINORITY AND LOW INCOME POPULATIONS

The exhibit also illustrates the percent minority by Census block group. As indicated on the exhibit, the blocks including and immediately adjacent to the airport have minority populations ranging from 41 up to 100 percent to the east, west, and south. To the north, the airport has a minority population of less than 10 percent. The bottom graphic on **Exhibit 3G** depicts the percentage of minority population in the area.

Information regarding the socioeconomic characteristics of the study was obtained from the U.S. Census Bureau. The purpose of this section is to provide background material which will be utilized in the socioeconomic discussions within Chapter Four of this EA.

3.3.6 Section 4(f) Resources

Section 4(f) properties include publicly owned land from a public park, recreational area, or wildlife and waterfowl refuge of national, state, or local significance; or any land from a historic site of national, state, or local significance. Riverside Airport has a golf course located on the northwest portion of airport property. The next closest public parks are located approximately 2,000 feet west (Rutland Park) 2,400 feet northeast (Nichols Park), and 3,900 feet southwest (John Bryant Park) of the airport. The location of golf course and public parks are shown on **Exhibit 3C**.

3.3.7 Water Quality and Waters of the U.S.

The City of Riverside is located within the Santa Ana Region (Region 8) of the California Regional Water Quality Control Board (CRWQCB). The CRWQCB issues Federal National Pollutant Discharge Elimination System (NPDES) permits for discharge to surface waters. The City of Riverside requires compliance with NPDES and enforces compliance under the CRWQCB NPDES permit number CAG998001 which includes Best Management Practices (BMPs) which are specific to the Santa Ana River Watershed. This permitting process provides a mechanism to require the implementation of controls designed to prevent harmful pollutants from being washed by stormwater runoff into local water bodies.

The City of Riverside Public Utilities Resource Division – Water Resource Group currently provides potable water and wastewater service to the airport. The airport operates in conformance with Section 402(p) of the *Clean Water Act*. Riverside Airport holds an NPDES Multi-Sector General Permit for stormwater discharges associated with industrial activity and maintains a *Stormwater Pollution Prevention Plan* (SWPPP) in accordance with EPA regulations.

No designated Waters of the U.S. are present on airport property or within the area proposed for acquisition.

3.3.8 Wetlands

In general, wetlands exhibit three characteristics: hydrology, hydrophytes (plants able to tolerate various degrees of flooding or frequent saturation), and poorly drained soils. A review of the Natural Resource Conservation Service's Web Soil Survey indicates that there are no hydric soils present at the airport.[1] However, a wetland delineation undertaken by SWCA on October 30, 2009 indicates the presence of two wetland areas on or adjacent to Riverside Airport property. As shown on **Exhibit 3H**, the wetland to the north is classified as a wet meadow. The wetland along the west edge of airport property proposed for reimbursement within the RPZ is classified as a riparian zone.

The wet meadow on the northern edge of airport property is adjacent to the area proposed for grading. The wet meadow encompasses 0.22 acres of airport property and is fed by a culvert draining surface street runoff from Fremont Street and Central Avenue. Water from outdoor residential uses (i.e. leaky lawn sprinklers) supplies the moisture for the meadow. Therefore, this wet meadow is manmade and not naturally occurring.

3.4 PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE ACTIONS

The purpose of this section is to outline those projects which will need to be considered during the cumulative impact analysis in Chapter Four of this EA. For the purpose of evaluating potential cumulative impacts associated with this project, past projects are defined as those which have been undertaken over the past five years. Foreseeable future actions are defined as those which are likely to become a reality and have begun the approval design or construction processes. Projects which are conceptual in nature are not considered as they may or may not be undertaken. The geographic extent of the analysis is dependent on the type of impacts associated with implementation of the project. Preliminary analysis indicates that the following resources will be affected by implementation of the Proposed Action: noise, compatible land use, socioeconomic and secondary (induce) impacts, environmental justice, air quality, water quality, and fish wildlife and plants. The geographic scope of the noise and compatible land use analysis is limited to those areas within the area of potential effect as identified on Exhibit 4C. The geographic scope of the socioeconomic and environmental justice impacts are limited to the block groups depicted on Exhibit 3G. The geographic scope of the air quality analysis is limited to the Los Angeles South Coast Air Basin. The geographic scope of the water quality cumulative impact analysis is limited to the Santa Ana River watershed. The geographic scope of the fish, wildlife, and plant impact analysis is limited to those areas within the 500-foot buffer area as identified on Exhibit 4A.

Council on Environmental Quality guidance under Title 40, Code of Federal Regulations (CFR) Part 1508.7, defines cumulative impact as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

[1] NRCS web soil survey, http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx, accessed September 2009

09EA12-3H-11/04/10

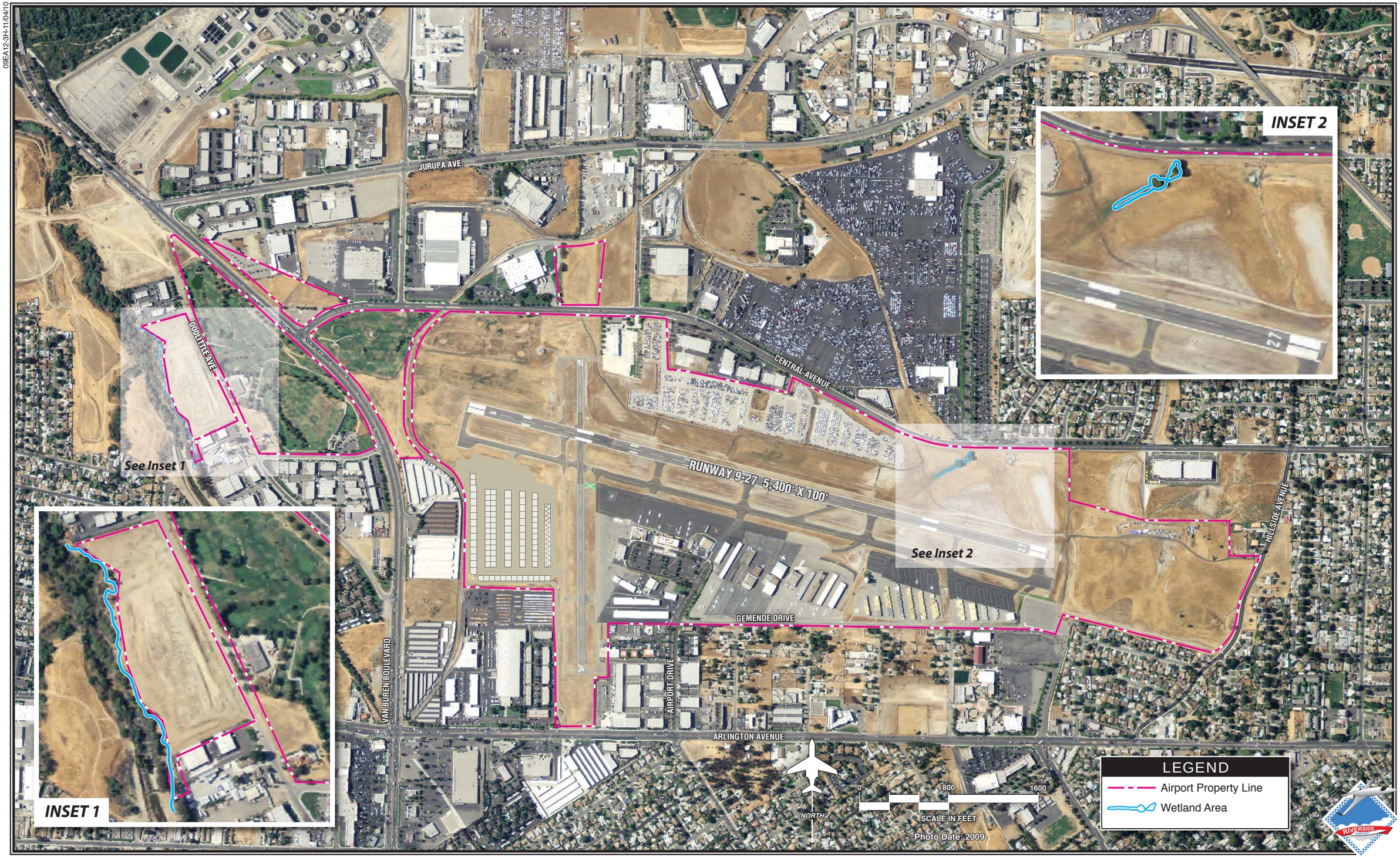


Exhibit 3H
WETLANDS

ON-AIRPORT DEVELOPMENT

Over the past few years, the following projects have taken place at the airport:

- Extend Taxiway "J" south and relocate VOR (Phase I); extend Taxiway "B" to the south (Phase I); acquire 0.03 acres for Taxiway "B" extension (2005)
- Construction of noise berm (2007)
- Reconstruct Runway 9-27 PAPIs for Runway 27 (2007)
- Extend Taxiway "J" south and relocate VOR (Phase II); extend Taxiway B to the south (Phase II) (2006)
- Extend Taxiway "J" south and relocate VOR (Phase III); extend Taxiway B to the south (Phase III); design north parallel taxiway and relocate gas line (Phase I) (2008)
- Reconstruct Runway 9-27, Taxiway A, connecting taxiways, drainage improvements, lighting, signs, and REIL for Runway 27 (2008)
- Design north parallel taxiway and relocate gas line (Phase II) (2009)

Programmed airport development projects in the next five years that are no part of the Proposed Project include:

- Airport pavement preservation

OFF-AIRPORT DEVELOPMENT

Road, sewer, and water service line improvement projects have all occurred in the two miles of the airport in the past three years. According to the City of Riverside capital improvement program, the following projects have been approved or are in the planning stages:

- Central/Magnolia intersection beautification
- Van Buren Widening- Santa Ana River to Jackson Street
- Magnolia railroad grade separation
- Streeter Avenue railroad grade separation
- Santa Ana River Sewer Trunk Replacement

Chapter Four

ENVIRONMENTAL CONSEQUENCES

Chapter Four
ENVIRONMENTAL CONSEQUENCES

Federal Aviation Administration (FAA) Orders 1050.1E, *Environmental Impacts: Policies and Procedures*, and 5050.4B, *National Environmental Policy Act* (NEPA) *Implementing Instructions for Airport Actions*, defines the form and content of Environmental Assessments (EAs), and requires that an impact analysis be conducted for a number of specific categories to determine whether a potential for significant environmental impacts from the proposed improvements exists. Impacts are determined by comparing the anticipated local environmental condition after development (implementation of the Proposed Action Alternative) to the conditions on and around the airport should no project be developed (implementation of the No Action Alternative). Data regarding the affected environment is provided within Chapter Three of this EA.

For the purposes of this EA, the environmental consequences were determined for the following:

- Proposed Action Alternative, resulting in reimbursement for property purchased within the Runway 9 Runway Protection Zone (RPZ), improvements to the eastern portions of the Runway 9-27 runway safety area (RSA) to meet FAA design standards, and north side development which includes the relocation of a natural gas line, construction of a gate-controlled vehicle road access, construction of a parallel taxiway, connector taxiways, and an aircraft apron with utilities.

- No Action Alternative, resulting in no reimbursement for the RPZ property, no improvement to the eastern Runway 9-27 RSA, and no development on the north side of the airport.

In accordance with the Council on Environmental Quality (CEQ) guidance, as contained within 40 CFR (Code of Federal Regulations) 1508, the environmental consequences of each impact category include consideration of the following:

- *Direct effects and their significance*. Direct effects are defined as those caused by the action and occur at the same time and place.

- *Indirect effects and their significance*. Indirect effects are defined as those caused by the action and are later in time or farther removed in distance.

- *Cumulative effects and their significance*. Cumulative effects are defined as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes the other actions. Past, present, and reasonably foreseeable future actions which will be evaluated were described within Chapter Three, Section 3.4 of this EA. Only those past, present, and reasonably foreseeable future actions that incrementally contribute to the cumulative effects on resources affected by the Proposed Action will be considered. Therefore, resources which are not affected by the Proposed Action will not be evaluated for cumulative impacts, unless such an evaluation was requested by a resource agency. A cumulative impacts discussion is contained within Section 4.3.

Where necessary, mitigation measures are discussed which would reduce or eliminate anticipated environmental impacts for each of the alternatives. Special purpose laws which protect various environmental resources will also be discussed. The No Action Alternative provides an evaluation of future environmental conditions if the proposed RPZ property reimbursement, RSA improvements, and north side development are not undertaken.

The following sections contain a detailed impact analysis for those categories as defined within Appendix A of FAA Order 1050.1E and Table 7-1 of FAA Order 5050.4B.

4.1 RESOURCES NOT IMPACTED BY PROJECT ALTERNATIVES

As outlined within paragraph 706.f of FAA Order 5050.4B, concise analysis was undertaken *only* for the potential impacts the alternatives under consideration may cause. A number of resources, discussed below, will not be impacted by implementation of the Proposed Action or No Action alternatives and are, therefore, not discussed in detail within this chapter of the EA.

- Coastal Resources – Riverside Airport is not located within the coastal zone. The coastal zone boundary is located over 30 miles southwest of the airport.

- Department of Transportation Act: Section 4(f) – There is a golf course and three publicly owned parks in the vicinity of the proposed project. The golf course is located approximately 600 feet northwest of the end of Runway 9, Rutland Park is located approximately 2,000 feet west of the airport, Nichols Park is 2,400 feet northeast of the airport, and John Bryant Park is 3,900 feet southwest of the airport. The Proposed Action and No Action 65 CNEL noise exposure contours (depicted on **Exhibit 4E**) do not impact these facilities. Grading and other proposed improvements will also not impact these facilities. Therefore, the proposed action will not directly use or have a constructive use of any properties protected under DOT Act Section 4(f).
- Farmland – Riverside Airport is located within a U.S. Census Urban area; therefore, it is exempt from the *Farmland Protection Policy Act*.[1]
- Floodplains – There are no floodplains (100- or 500-year) located on or adjacent to airport property (Flood Insurance Rate Map panel 06065C0705G).
- Wild and Scenic Rivers – There are 23 river segments designated as Wild and Scenic in California. The closest Wild and Scenic River to Riverside Airport is Fuller Mill Creek, located approximately 14 miles to the southeast.

4.2 RESOURCES POTENTIALLY IMPACTED BY ALTERNATIVES UNDER CONSIDERATION

The following sections describe potential impacts to resources located within the airport environs and any mitigation required to reduce the impacts below the thresholds of significance outlined within FAA Order 1050.1E. For each impact category, a description of the resource is provided along with a general description of the FAA-defined significant impact threshold. This is followed by an analysis of the Proposed Action and No Action alternatives on the identified resource.

4.2.1 Air Quality

Air contaminants increase the aggravation and production of respiratory and cardiopulmonary diseases. The standards also establish the level of air quality which is necessary to protect the public health and welfare including, among other things, effects on crops, vegetation, wildlife, visibility, and climate, as well as effects on materials, economic values, and on personal comfort and well-being. Air quality in a given location is described by the concentrations of various pollutants in the atmosphere. The significance of a pollutant concentration is determined by comparing it to the state and federal ambient air quality standards. The U.S. Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for six pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), sulphur dioxide (SO_2), lead (Pb), ozone (O_3), and particulate matter (PM_{10} and $PM_{2.5}$).

[1] United States Code 658- *Farmland Protection Policy Act*, Section 2- Definitions

Based upon both federal and state air quality standards, a specific geographic area can be classified under the federal and state *Clean Air Act* (CAA) as either being an attainment, non-attainment, or maintenance area for each criteria pollutant. The criterion for non-attainment designation varies by pollutant.

Riverside Airport is located within the Los Angeles South Coast Air Basin which is classified as a non attainment area for ozone (O_3), and particulate matter (PM_{10} and $PM_{2.5}$).

4.2.1.1 Air Quality Standards and Regulatory Setting

The EPA has adopted air quality standards that specify the maximum permissible near-term and long-term concentrations of various air contaminants. The NAAQS consist of primary and secondary standards for each pollutant as presented in **Table 4A**. Primary air quality standards are established at levels to protect the public health from harm with an adequate margin of safety. Secondary standards are set at levels necessary to protect the public health and welfare from any known or anticipated adverse effects of a pollutant. All areas of the country are required to demonstrate attainment with the NAAQS.

TABLE 4A
Federal Ambient Air Quality Standards

Pollutant	Averaging Time	Primary Standard	Secondary Standard
Carbon Monoxide (CO) in parts per million (ppm)	8-hour 1-hour	9 35	– –
Nitrogen Dioxide (NO_x) in ppm	Annual	0.053	0.053
Ozone (O_3) in ppm	1-hour 8-hour	0.12 0.08	0.12 0.08
Lead (Pb) in micrograms per cubic meter	Quarterly Average	1.5	1.5
Particulate Matter (PM_{10}) in micrograms per cubic meter	Annual 24-hour	50 150	50 150
Particulate Matter ($PM_{2.5}$) in micrograms per cubic meter	Annual 24-Hour	65 15	65 15
Sulfur Dioxide (SO_x) in ppm	Annual 24-hour 3-hour	0.03 0.14 –	– – 0.50

Source: U.S. Environmental Protection Agency

The CAA requires analysis of air quality emissions and NEPA requires public disclosure of potential impacts to the human environment. The same analysis, described below, can fulfill the requirements of both Acts.

CLEAN AIR ACT

The following sections address CAA (40 CFR 50-97) provisions for general conformity, transportation conformity, and indirect source review.

General Conformity

To ensure that a federal action complies with the NAAQS, the *Clean Air Act* establishes the General Conformity Rule for all general federal actions, which includes all airport improvement projects. The General Conformity Rule (40 CFR Part 93) applies to federal actions that are:

- Federally funded or federally approved;
- Not a highway or transit project;
- Not identified as an exempt project under the CAA and is not listed on the federal agency Presumed to Conform list; and
- Located within a non-attainment or maintenance area.

If a federal action meets all of the above criteria, the General Conformity Rule is applicable. The General Conformity Rule applies to this project as it meets all of the above criteria. The emissions inventory, found later in this section, will address General Conformity Rule requirements.

Transportation Conformity

The CAA also establishes Transportation Conformity provisions for federal actions. Transportation Conformity is applicable to highway or transit projects that are not included in the regional Transportation Plan or Transportation Improvement Plan, such as the proposed airport improvements. Neither alternative under consideration meets the CAA definition of a transportation project[2] which includes highway and transit projects.

Indirect Source Review

Under the CAA General Conformity Rule provisions, indirect source review is required in some states when a federal action has the potential to cause an increase in emissions from indirect sources. As indicated in the FAA *Air Quality Procedures for Civilian Airports and Air Force Bases*, the State of California does not require indirect source review for the Proposed Action or No Action alternatives.

[2] 40 CFR 93.101, see definition of "transportation project."

***NATIONAL ENVIRONMENTAL POLICY ACT* (NEPA)**

The existing and forecast aircraft operations for Riverside Airport are summarized in **Table 4B** for the Proposed Action and No Action alternatives. An emissions inventory has been prepared to satisfy CAA General Conformity Rule requirements and is depicted in **Table 4C**.

TABLE 4B
Aviation Demand

	2010[1] Existing	2015[2] No Action	2015[2,3] Action	2020[2] No Action	2020[2,3] Action
Itinerant Operations					
General Aviation	32,153	33,136	33,266	35,393	35,558
Military	65	116	116	116	116
Total Itinerant	32,218	33,252	33,382	35,509	35,674
Local Operations					
General Aviation	25,811	26,298	26,298	29,177	29,177
Military	53	88	88	88	88
Total Local	28,864	26,386	26,386	29,265	29,265
Total	58,082	59,638	59,768	64,774	64,939

1 Riverside Airport Traffic Control Tower from December 2009 through November 2010
(3% Nighttime Adjustment to itinerant GA)
2 FAA *Terminal Area Forecasts* December 2010
3 Coffman Associates Analysis

Note: As stated in FAA Order 5050.4B, forecasts used in airport environmental analyses should be consistent with the *Terminal Area Forecasts (TAF)*. This is described as being within 10 percent of the TAF for the 5-year analytical period and within 15 percent for the 10-year analytical period. The forecast operations are within the 5050.4B tolerances.

Source: Coffman Associates analysis.

4.2.1.2 Thresholds of Significance

Per FAA Order 1050.1E, Appendix A, Paragraph 2.3, significant air quality impacts associated with a federal project or action will occur if the project or action exceeds one or more of the NAAQS for any of the time periods analyzed.

4.2.1.3 Alternatives

Riverside Airport is located within the Los Angeles South Coast Air Basin which is classified as a non-attainment area for ozone (O_3), and particulate matter (PM_{10} and $PM_{2.5}$); accordingly, an emissions inventory was prepared to estimate air pollutant emissions related to the project.

Proposed Action

The emissions inventory for the Proposed Action Alternative was calculated using the FAA's Emissions and Dispersion Modeling System (EDMS), Version 5.1.3. EDMS is listed among the EPA's preferred guideline models and has been identified by the FAA as the only acceptable model for estimating aircraft emissions at airports. It calculates emissions of pollutants associated with an airport, including aircraft, ground support equipment, and automobiles.

EDMS does not calculate lead emissions; therefore, an assessment of these impacts cannot be made. Additionally, ozone emissions are not calculated by EDMS; however, volatile organic compounds (VOC) and nitrogen (NO_X) are precursors to ozone. Ground-level ozone is not emitted directly into the air, but is created by chemical reactions between oxides of nitrogen (NO_x) and volatile organic compounds (VOC) in the presence of sunlight. As a result, VOC and NO_x emissions are used to estimate ozone emissions. The fleet mix and operations levels utilized for the preparation of noise contours (**Appendix E**) were utilized for the emissions analysis.

Automobile trips associated with Riverside Airport were also included in the analysis. For purposes of this study, the annual vehicle trips associated with the airport were calculated according to the Institute of Transportation Engineer's Trip Generation Manual, 8th Edition, based on average daily operations at the airport.

Output data from the EDMS program are in tons per year. **Table 4C** provides the projected air pollutant emissions associated with the operations at Riverside Airport under the existing condition (2010), year of implementation (2015), and five years following implementation (2020) of the Proposed Action Alternative and the No Action Alternative. This includes emissions from aircraft, automobiles, ground support equipment, and fueling operations.

EDMS output tables depicting emissions by source (aircraft, automobiles, ground support equipment) are included in **Appendix E**.

Air emissions occurring due to construction activity vary based on the project's duration and level of activity. Construction emissions occur mostly as exhaust products from the operation of construction equipment and vehicles, but can also occur as fugitive dust emissions from land disturbance during material staging, demolition, and movement.

Table 4C includes the anticipated emissions with construction and operation of the Proposed Action Alternative. To allow for a "worst case" evaluation, the 2012 Proposed Action

emissions include construction emissions estimated to be generated during construction of the airport improvements. This construction is expected to occur over four years and is planned to be completed by 2015. The construction emissions inventory was prepared using the California Air Resources Board EMFAC2007 and OFFROAD2007 emissions models. The EMFAC2007 model evaluates highway vehicle emissions such as those from dump trucks or light-duty work trucks and the OFFROAD2007 model estimates emissions related to non-highway approved vehicles such as heavy construction equipment.

TABLE 4C
Emissions Inventory (Tons per Year)

	2010	2015		2020	
Pollutant[1]	**Existing Condition**	**Proposed Action + Construction**	**No Action**	**Proposed Action**	**No Action**
CO	339.82	347.892	346.47	378.1	377.41
VOC	6.67	7.175	6.88	7.53	7.32
NO_X	2.29	3.19	1.99	2.02	1.95
SO_X	0.57	0.593	0.58	0.64	0.62
PM_{10}	0.05	34.6	0.04	0.04	0.04
$PM_{2.5}$	0.05	7.231	0.04	0.04	0.04

[1] EDMS does not calculate emissions for lead
Source: Coffman Associates analysis.

The EMFAC2007 and OFFROAD2007 models do not calculate lead emissions; therefore, an assessment of these impacts cannot be made. Additionally, similar to the aircraft emission model EDMS, ozone emissions are not calculated by the EMFAC2007 and OFFROAD2007 models; however, reactive organic gases (ROGs), also referred to as volatile organic compounds (VOCs), are a precursor to ozone. VOCs combine with sunlight and oxides of nitrogen (NO_x) to form ozone. Therefore, VOC emissions are used to estimate ozone emissions.

Output data from the EMFAC2007 and OFFROAD2007 emissions models are expressed in tons per year. A summary of the construction emissions assumptions used for this analysis is included in **Appendix E**.

Emissions factors of 26.4 pounds per day per acre of land disturbed during site grading was used to estimate particulate matter (PM) fugitive dust emissions that would result from unpaved land disturbance. These factors were obtained from the *South Coast Air Quality Management District CEQA Air Quality Handbook*. For the purposes of this analysis, it was assumed that 25 percent of the documented project area (96.6 acres) would be disturbed on any given day and there would be an overall 75 percent control efficiency of fugitive emissions due to site watering and other mitigation.

No Action

Under federal air quality modeling and analysis guidelines, the No Action Alternative represents the baseline condition to which the Proposed Action Alternative is compared. As described within **Table 4C**, air emissions under the No Action Alternative will continue to increase as operations at the airport increase. No construction emissions will occur as no development would occur with implementation of the No Action Alternative.

4.2.1.4 Analysis and Mitigation

The Proposed Action requires an evaluation to determine the applicability of the General Conformity Rule. The General Conformity Rule establishes the procedures and criteria for determining whether certain federal actions conform to state or EPA (federal) air quality implementation plans. The EPA has established *de minimis* emission levels in order to determine if the General Conformity Rule applies. **Table 4D** outlines these levels.

The General Conformity Rule applies if the Proposed Action results in emission levels which exceed those levels identified in **Table 4D**. If the direct and indirect emissions from a proposed federal action are below the *de minimis* emission levels, the project demonstrates conformity. **Table 4D** compares the combined direct and indirect emission levels due to project implementation to the General Conformity *de minimis* levels.

TABLE 4D
Proposed Project Emissions in Comparison to De Minimis Levels

Pollutant	Proposed Action Net Increase in Tons Per Year (tpy) Operational +Construction Emissions (2015) – No Action Emission (2015)	De Minimis Level	Exceeds De Minimis Level
CO	1.42	100	No
VOC	0.30	10[1]	No
NO_X	1.20	10[1]	No
SO_X	0.01	100	No
PM_{10}	34.56	70[2]	No
$PM_{2.5}$	7.19	100	No-

Source: Coffman Associates analysis

[1] – Airport located within an "Extreme" nonattainment area for Ozone which requires more stringent *de minimis* thresholds.
[2] – Airport located within "Serious" nonattainment for PM_{10} which requires more stringent *de minimis* thresholds.

As depicted in **Table 4D**, direct and indirect emissions resulting from the proposed project do not exceed General Conformity Rule *de minimis* levels; therefore, the proposed project demonstrates conformity with the State Implementation Plan (SIP) and further assessment is not warranted.

Construction-related emissions will be short term and localized to the construction area. Best management practices (BMPs) will be implemented to reduce particulate emissions

and were not considered as part of this analysis. Indirect impacts experienced during project construction are addressed in Section 4.2.4, Construction.

Implementation of the No Action Alternative does not result in air quality impacts as no construction will occur.

4.2.2 FISH, WILDLIFE, AND PLANTS

Federally Listed Species. Section 7 of the *Endangered Species Act* (ESA), as amended, applies to federal agency actions and sets forth requirements for consultation to determine if the Proposed Action "may affect" a federally endangered or threatened species. If an agency determines that an action "may affect" a federally protected species, then Section 7(a)(2) requires each agency to consult with the U.S. Fish and Wildlife Service (FWS) or the National Marine Fisheries Service (NMFS), as appropriate, to ensure that any action the agency authorizes, funds, or carries out is not likely to jeopardize the continued existence of any federally listed endangered or threatened species, or result in the destruction or adverse modification of critical habitat. If a species has been listed as a candidate species, Sec. 7 (a)(4) states that each agency must confer with the FWS and/or NMFS.

The *Migratory Bird Treaty Act* (MBTA) prohibits private parties and federal agencies from intentionally taking a migratory bird, their eggs, or nests. The MBTA prohibits activities which will harm migratory birds, their eggs, or nests unless the Secretary of the Interior authorizes such activities under a special permit.

Executive Order 13112, *Invasive Species*, directs federal agencies to use relevant programs and authorities, to the extent practicable and subject to available resources, to prevent the introduction of invasive species and provide for restoration of native species and habitat conditions in ecosystems that have been invaded. The FAA is to identify proposed actions that may involve risks of introducing invasive species on native habitat and populations. "Introduction" is the intentional or unintentional escape, release, dissemination, or placement of a species into an ecosystem as a result of human activity. As defined in the Order, invasive species are alien species whose introduction does, or is likely to, cause economic or environmental harm or harm to human health.

Per FAA Order 1050.1E, Appendix A, Paragraph 8.3, a significant impact to federally listed threatened or endangered species occurs when the FWS or NMFS determines that the Proposed Action will likely jeopardize the continued existence of the affected species or will result in the destruction or adverse modification of critical habitat for the species. An action need not involve a threat to extinction to federally listed species to result in a significant impact; lesser impacts including impacts on non-listed species can also constitute a significant impact. Consultation with agencies or organizations having jurisdiction or special expertise concerning the protection and/or management of the species is necessary.

As described in Chapter Three, the project site is located within the *Western Riverside County Multiple Species Habitat Conservation Plan* (MSHCP), a comprehensive, multi-

jurisdictional (both federal and state) conservation plan focusing on conservation of species and their associated habitats in western Riverside County.

4.2.2.1 Proposed Action

As discussed in Chapter Three, three biological field surveys of the project area were undertaken in February 2008, June 2009, and October 2009. The purpose of the surveys was to inventory plant species and habitat types to allow for an assessment of potential impacts to federally-listed plant and animal species. The results of the surveys are documented within the *Biological Assessment for Proposed Improvements at Riverside Airport* contained in **Appendix C**.

Field surveys identified the presence of five plant communities within the Proposed Action Alternative potential disturbance area. These communities consist of urban or built-up land, non-native grassland, wet meadow, transitional bare areas, and ruderal. The relationship of these plant communities to the Proposed Action Alternative is depicted on **Exhibit 4A**.

Federally Listed Species. The biological investigations determined that of the 12 species listed in Riverside County, habitat is entirely absent for nine of the species. The remaining three species, described below, were considered not likely to occur in the project area.

- Southwestern willow flycatcher. The southern willow scrub community located immediately adjacent to the project site is considered marginal habitat for the foraging and nesting conducted by this species. The habitat is highly disturbed, narrowly confined, and does not contain elements typically associated with breeding. No southwestern willow flycatchers were observed during the field surveys and habitat is not present in the project disturbance area.

- Least Bell's vireo. As with the southwestern willow flycatcher, the southern willow scrub community located immediately adjacent to the project site is considered marginal habitat for the foraging and nesting conducted by this species. The habitat is highly disturbed, narrowly confined, and does not contain elements typically associated with breeding. No least Bell's vireo was observed during the field surveys and habitat is not present in the project disturbance area.

- Stephen's kangaroo rat. The dense non-native grassland within the project disturbance area is considered marginal habitat for this species. No Stephen's kangaroo rats were observed during the field surveys.

No federally designated critical habitat areas are located in the vicinity of the project or in the development area.

Migratory Bird Treaty Act. A number of species protected under the Migratory Bird Treaty Act were present in the project area.

4.2.2.2 No Action

No development is proposed under the No Action Alternative; therefore, no impacts to fish, wildlife, or plants will occur.

4.2.2.3 Analysis and Mitigation

Federally Listed Species. Within the U.S. Fish and Wildlife Service Endangered Species Consultation Handbook[3] for levels of "effect" are defined as follows:

- **No effect** - The project will not affect a listed species or designated critical habitat.
- **Is not likely to adversely affect** – The Proposed Action will have discountable, insignificant, or completely beneficial effects on listed species.
- **May affect** - The Proposed Action may pose any effects on listed species or designated critical habitat.
- **Is likely to adversely affect** – An adverse effect to listed species as a direct or indirect result of the Proposed Action or its interrelated or interdependent actions, and the effect is not: discountable, insignificant, or beneficial.

Based on determination of effect findings included in the biological evaluation, two types of consultation are outlined in the *Endangered Species Consultation Handbook* to communicate the results to the U.S. Fish and Wildlife Service: formal and informal. Formal consultation is a mandatory process for proposed projects that may adversely affect federally-listed species and includes the issuance of a biological opinion by the U.S. Fish and Wildlife Service. Informal consultation is an optional process that is intended to determine whether formal consultation is needed. It can also be used to work with the U.S. Fish and Wildlife Service to modify project design and incorporate conservation actions that would remove all adverse effects from the project and avoid the need for formal consultation.

Informal consultation is an optional process that is designed to help the applicant and the action agency determine whether formal consultation is needed. It includes all discussions, correspondence, etc., between the Services, the action agency, and the applicant, and has no specified timeframe for completion. Federal agencies and the designated non-Federal entity may use this period to work with the Services on project design and conservation actions that would remove all adverse effects and avoid the need for formal consultation.

As previously discussed, three species have marginal habitat present in the project area: southwestern willow flycatcher, least Bell's vireo, and Stephen's kangaroo rat. It is highly unlikely that these species would be present in the project area for the following reasons:

[3] Endangered Species Consultation Handbook, U.S. Fish and Wildlife Service and National Marine Fisheries Service, March 1998, http://www.fws.gov/endangered/consultations/s7hndbk/s7hndbk.htm

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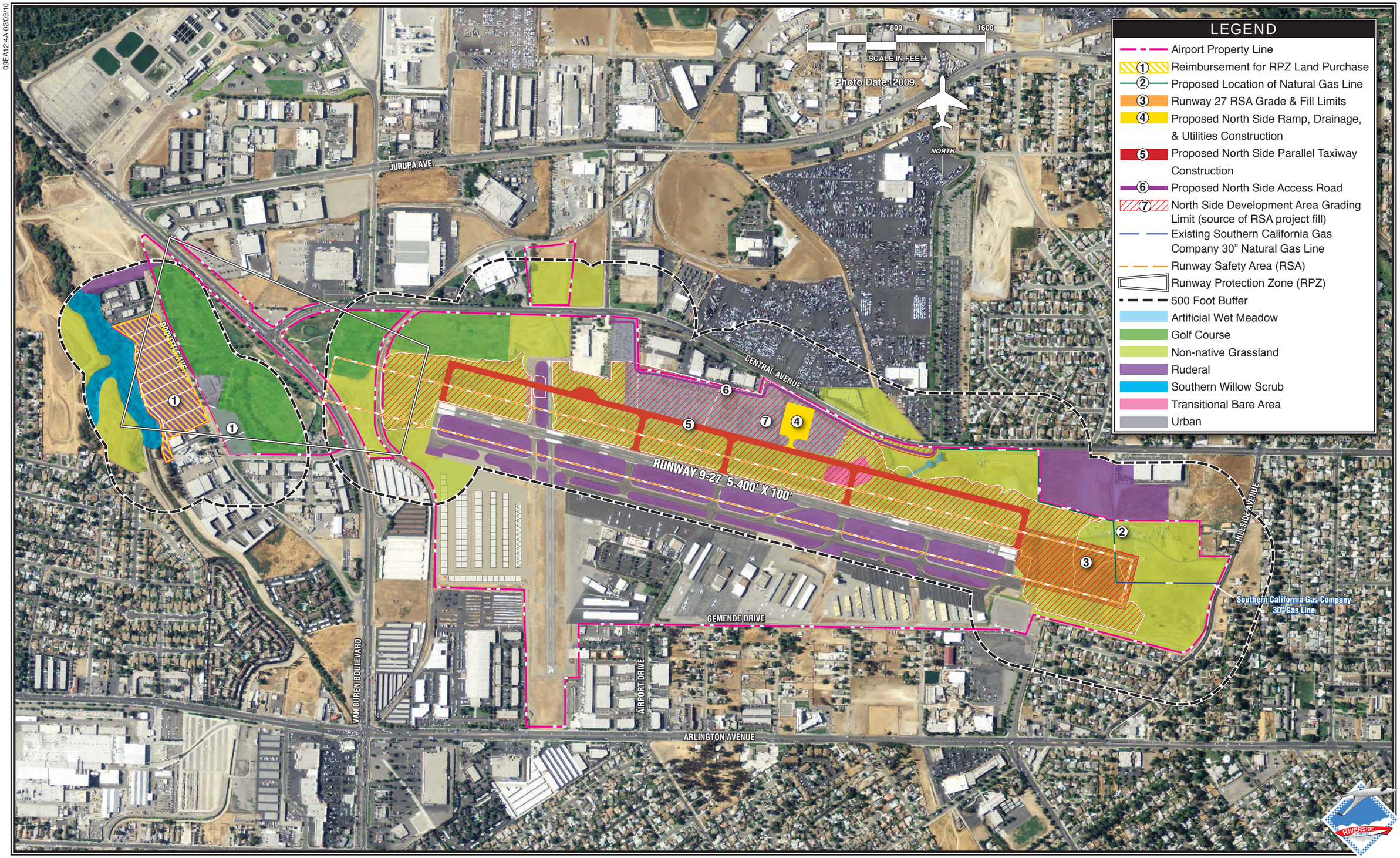

Exhibit 4A
PROPOSED ACTION
AND VEGETATION

- None of the species was observed as part of the three field surveys conducted for the project.
- Populations of the species have not been identified within five kilometers of the project site.

The FAA has determined the proposed project will not affect any federally listed threatened or endangered species or designated critical habitat. FAA bases its determination on the information contained in the field surveys described in the Biological Assessment. See **Appendix C**. Since FAA has made a no effect determination, FAA is not required to initiate Section 7 consultation with the U.S. Fish and Wildlife Service.

The City of Riverside commissioned a biological study for its California Environmental Quality Act (CEQA) analysis and Multiple Species Habitat Conservation Plan (MSHCP) consistency analysis. The consistency analysis and the CEQA initial study both determine that the Proposed Action is fully consistent with the MSHCP (the City of Riverside's consistency determination can be found on page C-84 in **Appendix C**).

Migratory Bird Treaty Act. If Proposed Action Alternative grading and maintenance activities must occur during the nesting season, which typically extends from March 1 through June 30, a qualified biologist will conduct a pre-construction nest survey on the project site and within 150 feet of the proposed project footprint to identify any active nests that occur there. This survey will be carried out within one week of initiation of grading and maintenance activities. If migratory birds are found nesting on or adjacent to the project site, a qualified biologist will monitor the nests daily during all phases of construction to ensure that the project does not impact the nests. Grading and maintenance activities will not be allowed within 150 feet of active nests until it has been determined by a qualified biologist that the chicks have fledged. Following fledging of the nestlings, the buffer area around the nest can be graded.

With implementation of the previously discussed mitigation measures, impacts resulting from implementation of the Proposed Action Alternative will not exceed the levels of significance for this impact category as defined in Section 4.2.2.

4.2.3 Compatible Land Use

As discussed in Chapter Three, existing land uses surrounding Riverside Airport consist of a mix of residential, commercial, industrial, and recreational (golf course) properties. Residential areas consist primarily of single-family dwellings to the south and east with multi-unit dwellings on the southwest side of the airport. Commercial and industrial land uses are located to the north, northwest, and southwest. A golf course is located immediately northwest of the airport.

To promote compatible land uses in the airport environs, Riverside Airport has undertaken a 14 CFR Part 150 noise compatibility study (1995) to assess aircraft noise within the airport environs. The study included the preparation of noise exposure contours which are overlain on existing land use maps to evaluate the effect of airport noise on the surround-

ing community. As a result of the 1995 Noise Compatibility Program, the City of Riverside has constructed a noise berm southeast of Runway 27 and included nine land use and five noise abatement policies to promote airport compatibility in a recent general plan update.

Exhibit 4B depicts federal land use compatibility guidelines established under Title 14 of CFR Part 150, *Airport Noise Compatibility Planning*. According to the table on **Exhibit 4B**, residential land uses and schools are considered incompatible within a 65 CNEL or higher contour. Religious facilities, hospitals, or nursing homes located within a 65 CNEL contour are generally compatible if an interior noise level reduction of 25 dB is incorporated into the design and construction of the structure.

The *Riverside County Airport Comprehensive Land Use Plan* (ACLUP) contains compatible land use guidelines which are more restrictive than the federal guidelines summarized on **Exhibit 4B**. Single family residential land uses, schools, libraries, and hospitals are considered incompatible within a 60 CNEL or higher contour under the Riverside County ALUCP. *The Riverside General Plan 2025* defers to the ALUCP when development occurs within the airport influence area.

As described within Section 4.2.11, there are no non-compatible land uses within the 65 to 70 CNEL noise exposure contours in the 2015 or 2020 No Action and Proposed Action alternatives. A corresponding grid point analysis confirms that the Proposed Action Alternative does not increase noise above 65 CNEL. Therefore, a significant impact is not created with the implementation of the Proposed Action Alternative. FAA Order 1050.1E, Appendix A, paragraph 4.1a, states that if the noise analysis concludes there is no significant impact, a similar conclusion usually may be drawn with respect to compatible land use. Compatible land use evaluations also consider the compatibility of land uses in the vicinity of the airport to ensure those uses do not adversely affect safe aircraft operations.

The City of Riverside has provided a land use assurance letter supporting the proposed development on the north side of the airport. The land use assurance letter can be found in **Appendix F**.

4.2.3.1 Proposed Action

Implementation of the Proposed Action Alternative will not result in business or residential relocations as all proposed development will occur on existing airport property. The implementation of the Proposed Action Alternative will not result in induced socioeconomic impacts as no shifts in patterns of population movement and growth, public service demands, or changes in business and economic activity will result.

As discussed in Section 4.2.11, the 2015 and 2020 Proposed Action Alternative noise contours will not increase in noise over noise-sensitive land uses above 65 CNEL. The proposed projects in the Proposed Action Alternative are also consistent with the planning guidelines outlined within the *Riverside General Plan 2025* (See Land Use Policy LU-23.1).

05SP01-4B-10/7/10

Land Use	Yearly Day-Night Average Sound Level (DNL) in Decibels					
	Below 65	65-70	70-75	75-80	80-85	Over 85
Residential						
Residential, other than mobile homes and transient lodgings	Y	N[1]	N[1]	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N[1]	N[1]	N[1]	N	N
Public Use						
Schools	Y	N[1]	N[1]	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Government services	Y	Y	25	30	N	N
Transportation	Y	Y	Y[2]	Y[3]	Y[4]	Y[4]
Parking	Y	Y	Y[2]	Y[3]	Y[4]	N
Commercial Use						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail-building materials, hardware and farm equipment	Y	Y	Y[2]	Y[3]	Y[4]	N
Retail trade-general	Y	Y	25	30	N	N
Utilities	Y	Y	Y[2]	Y[3]	Y[4]	N
Communication	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing, general	Y	Y	Y[2]	Y[3]	Y[4]	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y[6]	Y[7]	Y[8]	Y[8]	Y[8]
Livestock farming and breeding	Y	Y[6]	Y[7]	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor sports arenas and spectator sports	Y	Y[5]	Y[5]	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts, and camps	Y	Y	Y	N	N	N
Golf courses, riding stables, and water recreation	Y	Y	25	30	N	N

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.

See other side for notes and key to table.

Exhibit 4B
LAND USE COMPATIBILITY GUIDELINES

Key

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, 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.

Notes

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, respectively, should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide an 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 of 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 of 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 noise 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.

Source: ***14 CFR Part 150***, Appendix A, Table 1.

Exhibit 4B (Continued)
LAND USE COMPATIBILITY GUIDELINES

The Proposed Action Alternative will not result in changes to the ALUCP compatibility zones, the mission of the airport, or the type of aircraft that can use the airport. Therefore, the Proposed Action Alternative is consistent with the ALUCP.

4.2.3.2 No Action

No development would occur with implementation of the No Action Alternative. Therefore, there would be no changes to airport operations or noise or critical habitat alterations. The No Acton Alternative will not result in induced socioeconomic impacts, community disruption, or business relocations.

4.2.3.3 Analysis and Mitigation

Significant increases in noise over noise-sensitive land uses do not occur with implementation of either the Proposed Action Alternative or No Action Alternative. The Proposed Action Alternative will not exceed the compatible land use thresholds outlined within **Appendix E** as it will not divide or disrupt an established community or result in floodplain impacts. Further discussions related to the impacts to protected resources are discussed in Section 4.2.2, Fish, Wildlife, and Plants.

The established thresholds for significance for this impact category will not be exceeded with implementation of either the Proposed Action or No Action Alternative.

4.2.4 Construction Impacts

Airport construction-related environmental effects generally include dust and equipment emissions, noise, and storm water runoff. In most cases, these effects are subject to federal, state, and/or local ordinances or regulations which typically prescribe suitable mitigation measures. Significant impacts occur when the severity of construction impacts cannot be mitigated below FAA's threshold for the affected resources (i.e., air quality, noise, water quality, etc.)

4.2.4.1 Proposed Action

Construction of the Proposed Action Alternative will result in impacts to the eastern and northern portions of the airport. Areas where persons would likely notice construction on the east end of the airport include residential areas immediately north, east, and southeast of the airport. All construction-related impacts are expected to be temporary in nature and will be limited to the following resources.

<u>Noise</u>. Noise-related construction impacts at airports result from the use of construction equipment. Noise impacts from construction activities are closely related to the type of construction equipment being used during each phase of construction. The construction

phases are expected to include earthwork/grading, paving, and landscaping. Each phase necessitates different types of construction equipment.

At Riverside Airport, construction of the Proposed Action Alternative is not expected to result in excessive construction equipment causing noise impacts as the construction activities are localized north and of east of Runway 9-27, and whenever possible construction will occur during daytime hours.

It is not expected that airport operations (aircraft) will be significantly impacted by construction of the parallel taxiway and RSA grading. There will be times when the runway thresholds will need to be temporarily relocated to allow for grading near the end of Runway 27; however, it is not anticipated this will result in changes to the noise condition discussed within Section 4.2.11. Construction vehicle traffic will utilize Central Avenue to access the construction site. No residential areas will be impacted by construction traffic.

Air Quality. The generation of fugitive dust as a result of construction activities is anticipated due to the movement of heavy construction equipment and the exposure and disturbance of surface soils. This impact is expected to be both temporary and localized. Construction emissions and mitigation measures are discussed further within Section 4.2.1.4. Mitigation measures, as outlined within Sections 4.2.4.3, will reduce this impact to levels below significance.

Water Quality. Construction activities also have the potential to result in temporary water quality impacts, particularly suspended sediments, during and shortly after precipitation events in the construction phase. Recommendations established in FAA Advisory Circular 150/5370-10, *Standards for Specifying Construction of Airports, Item P-156, Temporary Air and Water Pollution, Soil Erosion and Siltation Control,* will be incorporated into project design specifications to further mitigate potential impacts. These standards include temporary measures to control water pollution, soil erosion, and siltation through the use of berms, fiber mats, gravels, mulches, slope drains, and other erosion control methods.

In addition, the airport sponsor will comply with the NPDES program regarding filing a Notice of Intent prior to construction activities affecting more than one acre. This program is managed by the State of California.

The project design and construction of the Proposed Action Alternative will incorporate BMPs to reduce erosion, minimize sedimentation, and control non-storm water discharges in order to protect the quality of surface water features on and off the airport. BMPs are defined as nonstructural and structural practices that provide the most efficient and practical means of reducing or preventing pollution of storm water. These are described fully within Section 4.2.4.3.

4.2.4.2 No Action

No development is proposed under the No Action Alternative; therefore, no construction impacts will occur.

4.2.4.3 Analysis and Mitigation

Implementation of the Proposed Action Alternative will result in short-term construction impacts. The following preventative and mitigative measures will be implemented during construction:

Site Preparation

- Minimize land disturbance.
- Use watering trucks to minimize dust.
- Cover trucks when hauling dirt.
- Stabilize the surface of dirt piles if not removed immediately.
- Use windbreaks to prevent accidental dust pollution.
- Limit vehicular paths and stabilize these temporary roads.
- Grade to prevent soil from washing onto paved roadways.
- Pave all unpaved construction roads and parking areas to road grade for a length no less than 50 feet where such roads and parking areas exit the construction site to prevent dirt from washing onto paved roadways.

Construction

- Cover trucks when transferring materials.
- Use dust suppressants on traveled paths which are not paved.
- Minimize unnecessary vehicular and machinery activities.
- Minimize dirt track-out by washing or cleaning trucks before leaving the construction site.

Post-Construction

- Revegetate any disturbed land not used. [*None existing today.*]
- Remove unused material.
- Remove dirt piles.
- Revegetate all vehicular paths created during construction to avoid future off-road vehicular activities. [*None existing today.*]

Construction Scheduling

- Sequence construction activities so that areas void of vegetation are not exposed for long periods of time.
- Schedule landscaping and other work that permanently stabilizes the area to be done immediately after the land has been graded to its final contour.
- Alter the project schedule to minimize the amount of denuded areas during wet months.
- Construct permanent storm water control facilities early in the project schedule and then utilize these structures for controlling erosion and sedimentation.

Limiting Exposed Areas

- Divert up-slope water from entering the denuded areas of the construction site by constructing dikes and swales.

- Divert or intercept storm water before it reaches long and/or steep slopes.
- Release captured storm water at a slow and controlled rate to prevent damage to downstream drainageways and structures.
- Increase the soil's ability to absorb moisture through vegetative means, surface roughening, and/or mulching.
- Stage grading so that the native vegetation provides a buffer to slow and disperse runoff.

Runoff Velocity Reduction

- Build check dams or other energy dissipation structures in unlined drainage channels to slow runoff velocity and encourage settlement of sediments.
- Limit slopes to 3:1 wherever practical.
- Intercept runoff before it reaches steep slopes using diversion dikes, swales, or other barriers.
- Protect slopes with mulches, matting, or other types of temporary or permanent soil stabilization.
- Provide velocity-reducing structures or rip-rap linings at storm water outfalls.

Sediment Trapping

- Direct sediment-laden storm water to temporary sediment traps.
- Construct temporary sediment traps or basins at the drainage outlet for the site.
- Use temporary sediment barriers such as silt fences, straw bale barriers, sand bag barriers, and gravel filter barriers for construction sites with relatively flat slopes that produce sheet flow run-off.

Good Housekeeping

- Schedule regular inspections of storm water and sediment control devices.
- Repair and/or replace storm water and sediment control devices as often as necessary to maintain their effectiveness.

4.2.5 Hazardous Materials, Pollution Prevention, and Solid Waste

Four primary laws have been passed governing the handling and disposal of hazardous materials, chemicals, substances, and wastes. The two statutes of most importance to the FAA in proposing actions to construct and operate facilities and navigational aids are the *Resource Conservation Recovery Act* (RCRA) (as amended by the *Federal Facilities Compliance Act of 1992*) and the *Comprehensive Environmental Response, Compensation, Liability Act* (CERCLA), as amended (also known as Superfund). RCRA governs the generation, treatment, storage, and disposal of hazardous wastes. CERCLA provides for cleanup of any release of a hazardous substance (excluding petroleum) into the environment.

Consideration should be given regarding the hazardous nature of any materials or wastes to be used, generated, or disturbed by the Proposed Action Alternative, as well as the control measures to be taken.

FAA Order 1050.1E, Appendix A, paragraph 10.3 states that thresholds of significant impact are typically only reached when the resource agency has indicated that it would be difficult to issue a permit for the proposed development. A significant impact may also be realized if the Proposed Action Alternative would affect a property listed on the National Priorities List (NPL).

4.2.5.1 Proposed Action

Hazardous Materials. Construction of the Proposed Action Alternative will result in earth-work disturb-ances. Areas planned to be disturbed for grading the RSA for Runway 27, north side parallel taxiway, north side access road, and north side apron development were disturbed during construction of the airport or have been utilized for airport purposes. The Environmental Protection Agency's *Enviromapper for Envirofacts*[4] was consulted regarding the presence of regulated hazardous sites. According to the *Enviromapper* site, one hazardous waste site was identified within the vicinity of Riverside Airport. The site in the vicinity of the airport is an Exxon Mobile service station registered with the EPA. This site is south of the airport and will not be affected by the proposed runway protection zone (RPZ) land reimbursement or developments at the airport. Therefore, there are no impacts related to this issue.

Pollution Prevention. As discussed within Section 4.2.13, Water Quality, Riverside Airport maintains an NPDES General Permit. Implementation of the Proposed Action Alternative will require a modification of this permit to reflect the additional impervious surfaces and any mitigation measures which could be implemented during the final design of the project. Additionally, a construction-related NPDES permit will be required prior to construction of the proposed improvements. This permit requires a Notice of Intent for all construction activities disturbing one acre or more of land. Construction-related water quality impacts are discussed under Section 4.2.4, Construction Impacts, and will be minimized through the use of best management practices (BMPs).

Solid Waste. The Proposed Action Alternative is being undertaken to accommodate existing and future forecasted users of the airport. Solid waste, in the form of construction materials, is expected to increase with implementation of the proposed project; however, the quantity and type of solid waste resulting from implementation of the Proposed Action Alternative is not anticipated to exceed handling capabilities.

4.2.5.2 No Action

No construction would occur with implementation of the No Action Alternative; therefore, no impacts to hazardous materials are anticipated to result from alternative implementation. Additionally, the airport will continue to operate in a manner similar to today; therefore, ongoing pollution prevention measures will be employed and solid waste will continue to be generated.

[4] http://www.epa.gov/enviro/emef/, Accessed November 2010.

4.2.5.3 Analysis and Mitigation

Riverside Airport will obtain and modify necessary permits for operation of the airport and construction of the proposed improvements. These actions will help ensure that any potential impacts are properly mitigated. Initial coordination with affected resource agencies has not identified any mitigation measures which may be required.

4.2.6 Historical, Architectural, Archeological, and Cultural Resources

Historical, architectural, archeological, and cultural resources are protected in accordance with the *National Historic Preservation Act* (NHPA). Section 106 of the NHPA requires the FAA to consider the effects of Proposed Actions on sites listed on, eligible for listing on, or potentially eligible for listing on, the NRHP. To assist with the determination of impacts, an area of potential effect (APE) is defined (See **Exhibit 4C**). The APE includes the areas that will be directly impacted by construction of the proposed project as well as areas that could be indirectly impacted (i.e., through a change in noise exposure after project implementation). Once the APE is defined, an inventory is undertaken of NRHP properties or NRHP-eligible properties within the project area and an assessment of impacts is undertaken.

The FAA determined the boundaries of the APE by using the boundaries of the entire area that would have physical disturbance. The APE also includes the land in the Runway Protection Zone west of the Airport that is proposed for reimbursement. These boundaries were determined through consultation with the City of Riverside on the extent of the proposed north side and Runway Safety Area grading projects. Since the proposed undertaking will not affect the number or type of aircraft using the airport, FAA delineated a Direct Effects APE only. There would be no change in the indirect effects from aircraft noise resulting from the proposed undertaking. Also note that the California SHPO concurred with the FAA's delineation of the APE by letter dated February 3, 2012. FAA consulted with the California Native American Heritage Commission (NAHC). The California NAHC provided a listing of 15 tribal contacts for the proposed undertaking. All the contacts provided were from Federally recognized Native American Tribes including the Agua Caliente Band of Cahuilla Indians, Augustine Band of Cahuilla Mission Indians, Cabazon Band of Mission Indians, Cahuilla Band of Mission Indians, Colorado River Indian Tribes, Fort McDowell Yavapai Nation, Ione Band of Miwok Indians, Morongo Band of Cahuilla Mission Indians, Pechanga Band of Mission Indians, Quechan Tribe of the Fort Yuma Indian Reservation, Ramona Band of Cahuilla Indians, Santa Rosa Band of Mission Indians, Soboba Band of Luiseno Indians, Torres Martinez Desert Cahuilla Indians, and the Yavapai-Apache Community Council. One written response was received indicating concern about a historic property near area of the proposed undertaking.

FAA Order 1050.1E, Appendix A, paragraph 11.3 states that the FAA, through the Section 106 consultation process, makes the determination regarding significant impacts on protected resources through consultation with the State Historic Preservation Officer.

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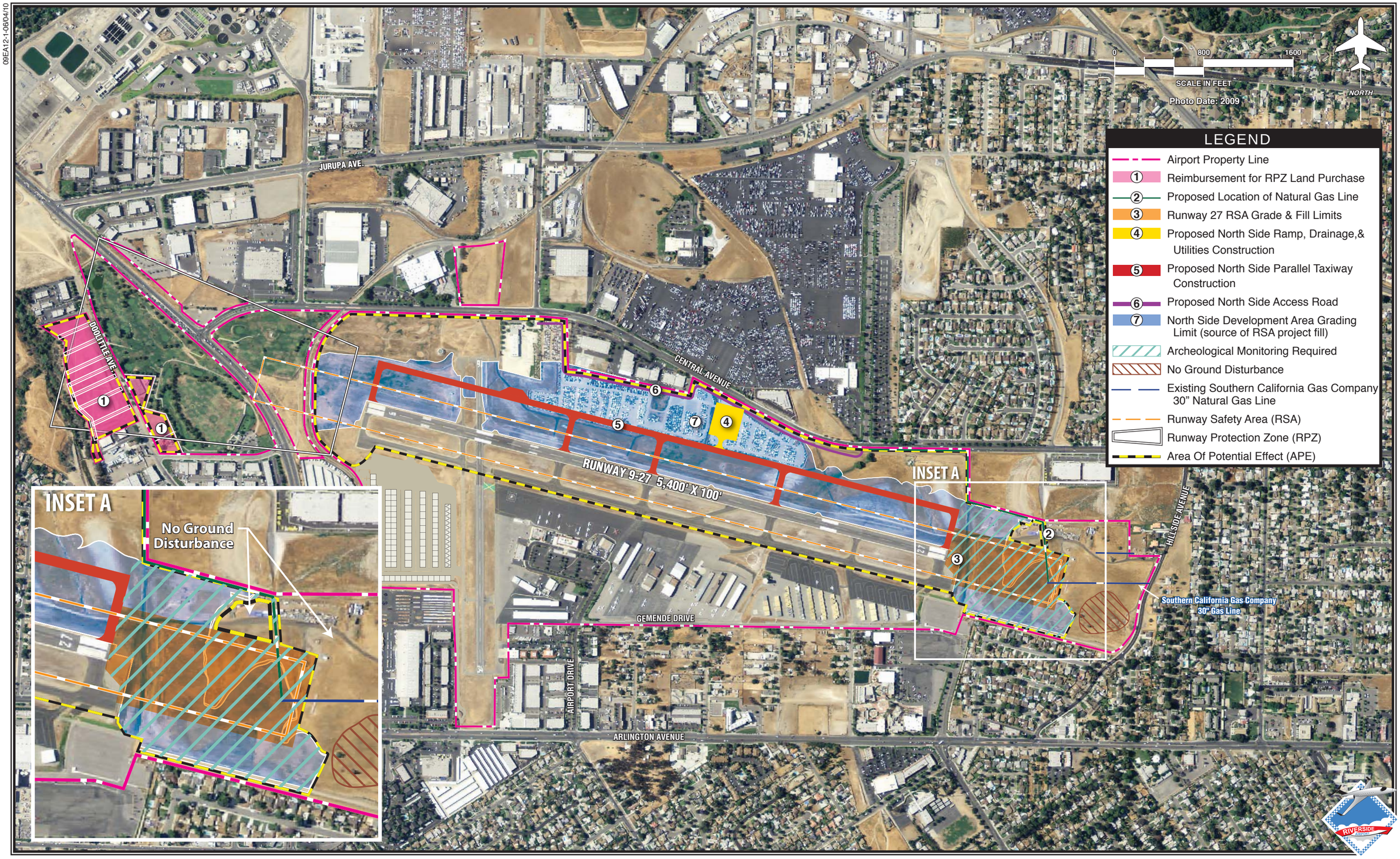


Exhibit 4C
AREA OF POTENTIAL EFFECT

4.2.6.1 Proposed Action

As described in Chapter Three, an evaluation of the potential for historical, architectural, archeological, cultural, and paleontological resources within the project area was undertaken by SWCA. The evaluation included record searches and field surveys which are documented within the reports included in **Appendix D** of this EA.

As a result of this evaluation, a series of sites was identified that need further investigation to determine if they warrant listing in the NRHP or the local register. The boundary of these sites was communicated to the project engineer and design changes were made to ensure the areas would be avoided during construction of the proposed airport improvements.

Upon reviewing the field survey documentation and tribal coordination, the FAA determined that no historic properties are listed or eligible for listing on the National Register of Historic Places within the APE. The California SHPO concurred with FAA's delineation of the revised Area of Potential Effect for the proposed undertaking, and FAA's determination of eligibility of properties for inclusion into the National Register of Historic Places and FAA's Findings of Effect by letter dated October 29, 2012. This communication between the FAA and the SHPO is documented within **Appendix D**.

4.2.6.2 No Action

No development will occur with implementation of the No Action Alternative and aircraft will continue to operate in a manner similar to today; therefore, no impacts to historic or cultural resources will occur.

4.2.6.3 Analysis and Mitigation

Implementation of the Proposed Action Alternative will occur in proximity to sites recommended for further investigation. Although the City and the FAA have removed the cultural site from the Project APE, there is still a potential that subsurface cultural resources could be impacted by the proposed grading and modification required to develop the proposed changes within the APE. FAA has concurred with the following measures to ensure these resources are not impacted:

Mitigation Measure 1. Prior to beginning project construction, the Project Applicant shall retain a Riverside County qualified archaeological monitor to monitor all ground-disturbing activities in an effort to identify any unknown archaeological resources. Any newly discovered cultural resource deposits shall be subject to a cultural resources evaluation.

Mitigation Measure 2. At least 30 days prior to beginning project construction, the Project Applicant shall contact the Pechanga Tribe to notify the Tribe of grading, excavation and the monitoring program, and to coordinate with the City of Riverside, and/or FAA and the Tribe to develop a Cultural Resources Treatment and Monitoring Agreement. The Agree-

ment shall address the treatment of known cultural resources, the designation, responsibilities, and participation of professional Native American Tribal monitors during grading, excavation and ground-disturbing activities; project grading and development scheduling; terms of compensation for the monitors; and treatment and final disposition of any cultural resources, sacred sites, and human remains discovered on the site.

Mitigation Measure 3. Prior to beginning project construction, the Project Archaeologist shall file a pre-grading report with the City of Riverside and/or FAA (if required) to document the proposed methodology for grading activity observation which will be determined in consultation with the Pechanga Tribe. Said methodology shall include the requirement for a qualified archaeological monitor to be present and have the authority to stop and redirect grading activities. In accordance with the agreement required in Mitigation Measure 2, the archaeological monitor's authority to stop and redirect grading will be exercised in consultation with the Pechanga Tribe in order to evaluate the significance of any archaeological resources discovered on the property. Tribal and archaeological monitors shall be allowed to monitor all grading, excavation and groundbreaking activities, and shall also have the authority to stop and redirect grading activities.

Mitigation Measure 4. If human remains are encountered, California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the Riverside County Coroner has made the necessary findings as to origin. Further pursuant to California Public Resources Code Section 5097.98(b), remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. If the Riverside County Coroner determines the remains to be Native American, the Native American Heritage Commission must be contacted within 24 hours. The Native American Heritage Commission must then immediately identify the "most likely descendant(s)" of receiving notification of the discovery. The most likely descendant(s) shall then make recommendations within 48 hours, and engage in consultations concerning the treatment of the remains as provided in Public Resources Code 5097.98 and the Treatment Agreement described in Mitigation Measure 2.

Mitigation Measure 5. The landowner shall relinquish ownership of all cultural resources, including sacred items, burial goods, and all archaeological artifacts that are found on the project area to the appropriate Tribe for proper treatment and disposition.

Mitigation Measure 6. All sacred sites, should they be encountered within the project area, shall be avoided and preserved as the preferred mitigation, if feasible.

Mitigation Measure 7. If inadvertent discoveries of subsurface archaeological/cultural resources are discovered during grading, the Developer, the project archaeologist, and the Tribe shall assess the significance of such resources and shall meet and confer regarding the mitigation for such resources. Pursuant to California Public Resources Code § 21083.2(b), avoidance is the preferred method of preservation for archaeological resources. If the Developer, the project archaeologist, and the Tribe cannot agree on the significance or the mitigation for such resources, these issues will be presented to the Planning Director for decision. The Planning Director shall make the determination based on the provisions of the *California Environmental Quality Act* with respect to archaeological

resources and shall take into account the religious beliefs, customs, and practices of the Tribe. Notwithstanding any other rights available under the law, the decision of the Planning Director shall be appealable to the Planning Commission and/or City Council.

With implementation of the mitigation measures discussed above, impacts to historical, architectural, archeological, and cultural resources will not exceed the established threshold of significance for this impact category.

Implementation of the No Action Alternative will not result in impacts to identified resources.

4.2.7 Light Emissions and Visual Impacts

Airport lighting is characterized as either airfield lighting (i.e., runway, taxiway, approach and landing lights) or landside lighting (i.e., security lights, building interior lighting, parking lights, and signage). Generally, airport lighting does not result in significant impacts unless a high intensity strobe light, such as a Runway End Identification Light (REIL), would produce glare on any adjoining site, particularly residential uses.

Visual impacts relate to the extent that the proposed development contrasts with the existing environment and whether a jurisdictional agency considers this contrast objectionable. The visual sight of aircraft, aircraft contrails, or aircraft lights at night, particularly at a distance that is not normally intrusive, should not be assumed to constitute an adverse impact.

No specific impact thresholds have been established for this resource category by the FAA.

4.2.7.1 Proposed Action

Implementation of the Proposed Action Alternative will result in grading the RSA for Runway 27, north side parallel taxiway, north side access road, and north side apron development. It is expected that new lighting will be introduced for the new taxiway, access road and apron. However, additional lighting and structures would be consistent with land uses in the area. The development is located on the north side of the airport, the majority of which is bordered by Central Avenue and light industrial land uses. Impacts resulting from the additional lighting are not anticipated as the majority of the area bordering the improvements is currently utilized for light industrial uses.

Aesthetic impacts which could result from implementation of the Proposed Action Alternative are not anticipated as the proposed improvements are being undertaken entirely on airport property adjacent to light industrial land uses.

4.2.7.2 No Action

As no development would occur with implementation of the No Action Alternative, no lighting or visual impacts are anticipated.

4.2.7.3 Analysis and Mitigation

The implementation of the Proposed Action will result in new lighting. However, additional lighting and structures would be consistent with land uses in the area. The improvements are located on the north side of the airport, the majority of which is bordered by Central Avenue and light industrial land uses. Impacts resulting from the additional lighting are not anticipated as the majority of the area bordering the improvements is currently utilized for light industrial uses. However, light shielding will be incorporated into the Proposed Action Alternative access road and ramp lighting to reduce potential light emission impacts to a residential subdivision located to the northeast of the airport.

No mitigation measures are required.

4.2.8 Natural Resources and Energy Supply

Energy requirements associated with airport development projects generally fall into two categories: (1) those that relate to changed demands for stationary facilities (i.e., airfield lighting and terminal building heating); and (2) those that involve the movement of air and ground vehicles (i.e., fuel consumption). In addition to fuel, the use of natural resources includes construction materials, water, and manpower.

An impact arises where a project will have a measurable effect on local energy supplies or would require the use of an unusual material or one in short supply. Increased consumption of fuel by aircraft is examined where ground movement or run-up times are increased substantially without offsetting efficiencies in operational procedures, or if the faction includes a change in flight patterns. Ground vehicles' fuel consumption is examined only if the action would add appreciably to access time, or if there would be a substantial change in movement patterns for on-airport service or other vehicles.

4.2.8.1 Proposed Action

The primary impact on natural resources resulting from alternative implementation is related to fuel usage during construction of the proposed airport improvements. Indirect impacts attributed to construction activities could temporarily increase the use of some or all of the following: electricity, fuel, oil, chemicals, water, and other forms of energy and resources needed to construct the proposed improvements.

4.2.8.2 No Action

No construction will occur with implementation of the No Action Alternative; therefore, natural resources and energy supply would be utilized in a manner similar as to what is experienced today.

4.2.8.3 Analysis and Mitigation

Implementation of the Proposed Action Alternative will result in an increased use of energy and natural resources during construction. It is not anticipated that the demand for these resources will exceed supply.

No mitigation measures are required.

4.2.9 Noise

Aircraft sound emissions are often the most noticeable environmental impact an airport will produce on a surrounding community. If the sound is sufficiently loud or frequent in occurrence, it may interfere with various activities or otherwise be considered objectionable. To determine noise-related impacts that the Proposed Action Alternative could have on the environment surrounding the airport, noise exposure patterns based on projected future aviation activity were analyzed.

FAA Order 1050.1E, Appendix A, paragraph 14.3, defines a significant noise impact as one which would occur if the Proposed Action would cause noise-sensitive areas to experience an increase in noise of 1.5 CNEL or more, at or above the 65 CNEL noise exposure level when compared to the No Action Alternative for the same timeframe.

In accordance with the requirements of FAA Orders 1050.1E and 5050.4B, an analysis of aircraft noise exposure was developed for the Proposed Action and No Action future conditions. Future analysis time periods include the anticipated year of project implementation (2015) and five years beyond the implementation date (2020). Detailed descriptions of the modeling inputs, including operational and flight track assumptions, are included in **Appendix E**. The following sections outline the results of the noise modeling efforts for the Proposed Action and No Action conditions.

4.2.9.1 Proposed Action

<u>2015 Noise Condition</u>

Exhibit 4D depicts the forecast 2015 noise condition with implementation of the Proposed Action Alternative. The 2015 Proposed Action Alternative assumes that the FAA's *Terminal Area Forecast* (TAF) for operations in 2015 will increase 13 percent for business jets and six percent for turboprop aircraft. This equates to a .022 percent increase in total opera-

tions above the TAF forecast for the 2015 condition. As shown on the exhibit, portions of the 65 CNEL contour extend beyond airport property to the southeast. A grid point analysis was prepared to confirm if the three homes located southeast of the airport are impacted by the 65 CNEL noise exposure contour. As seen on **Exhibit 4D**, the three homes fall outside the 65 CNEL noise exposure contour. Therefore, no noise-sensitive land uses are located within the 65, 70 or 75 CNEL noise contour under this condition.

2020 Noise Condition

Exhibit 4E depicts the noise condition projected for 2020 for the Proposed Action Alternative condition. The 2020 Proposed Action Alternative assumes that the FAA's *Terminal Area Forecast* (TAF) for operations in 2020 will increase 15 percent for business jets and seven percent for turboprop aircraft. This equates to a .025 percent increase in total operations above the TAF forecast for the 2020 condition. In this forecast condition, the same three homes continue to be located outside of the 65 CNEL noise exposure contour southeast of the airport based upon the grid point analysis depicted on **Exhibit 4E**.. There continues to be no noise-sensitive land uses located within the 65, 70 or 75 CNEL noise contour under this condition.

4.2.9.2 No Action

For comparison, the No Action Alternative CNEL noise contours are also depicted on **Exhibit 4D** and **Exhibit 4E**. As with the Proposed Action Alternative, the portions of the 65 CNEL noise contours extend beyond existing airport property to the southeast for the 2015 and 2020 conditions.

2015 Noise Condition

Under the 2015 No Action Alternative condition, a total of three homes are located within the 65 CNEL contour southeast of airport property. No noise-sensitive land uses are located within the 70 or 75 CNEL noise contour under this condition.

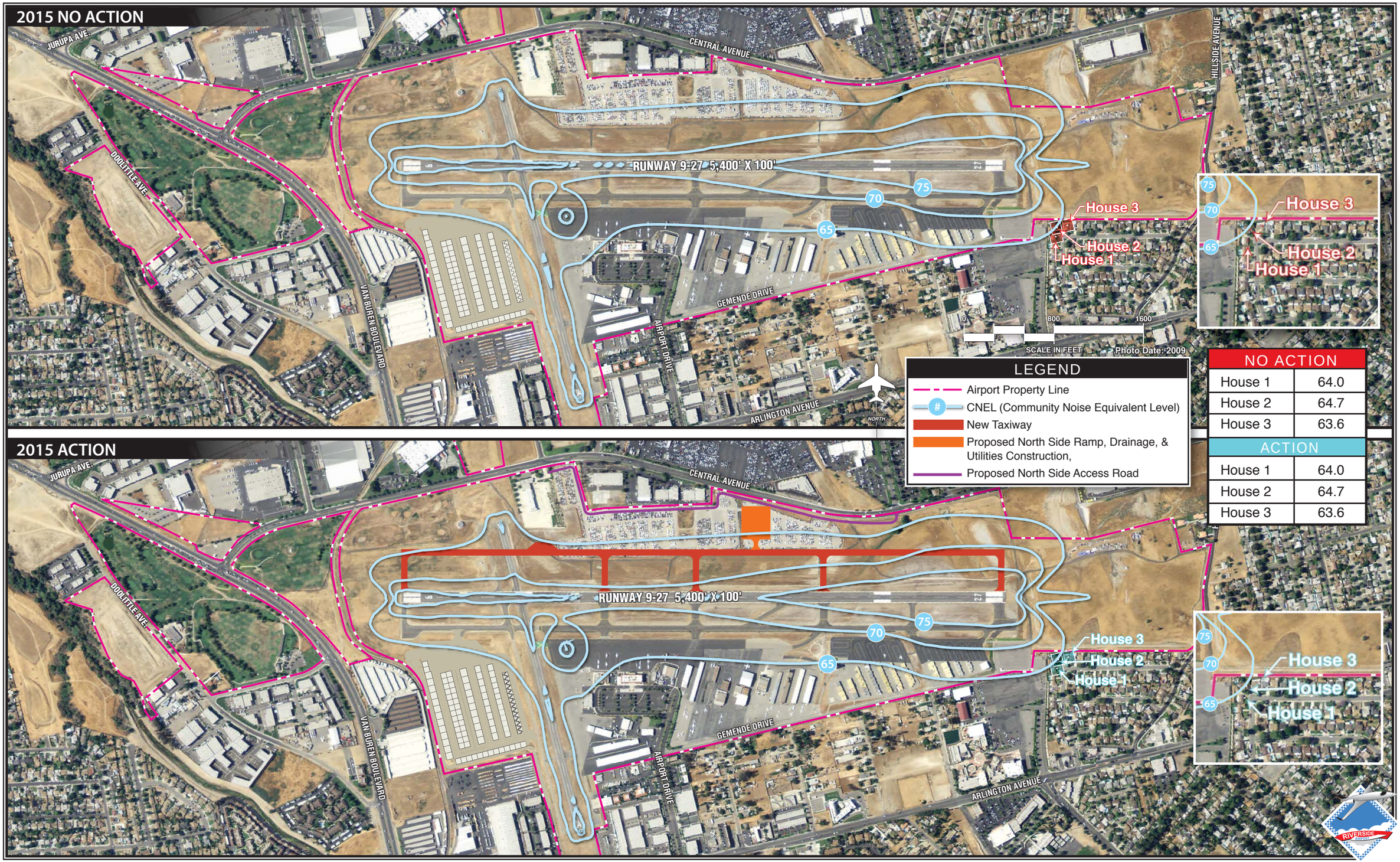
2020 Noise Condition

Under the 2020 No Action Alternative condition, three homes continue to be located within the 65 CNEL contour southeast of airport property. There continues to be no noise-sensitive land uses within the 70 or 75 CNEL noise contour under this condition.

4.2.9.3 Analysis and Mitigation

FAA Order 1050.1E, Appendix A, paragraph 14.3, defines a significant noise impact as one which would occur if the Proposed Action Alternative would cause noise-sensitive areas to experience an increase in noise of 1.5 CNEL or more, at or above the 65 CNEL noise exposure level when compared to the No Action Alternative for the same timeframe. A grid point analysis was prepared to determine if a 1.5 CNEL increase occurred over the three homes contained within the 2015 and 2020 Proposed and No Action alternatives' 65 CNEL

09EA12-4D-02/04/10



LEGEND

- Airport Property Line
- CNEL (Community Noise Equivalent Level)
- New Taxiway
- Proposed North Side Ramp, Drainage, & Utilities Construction,
- Proposed North Side Access Road

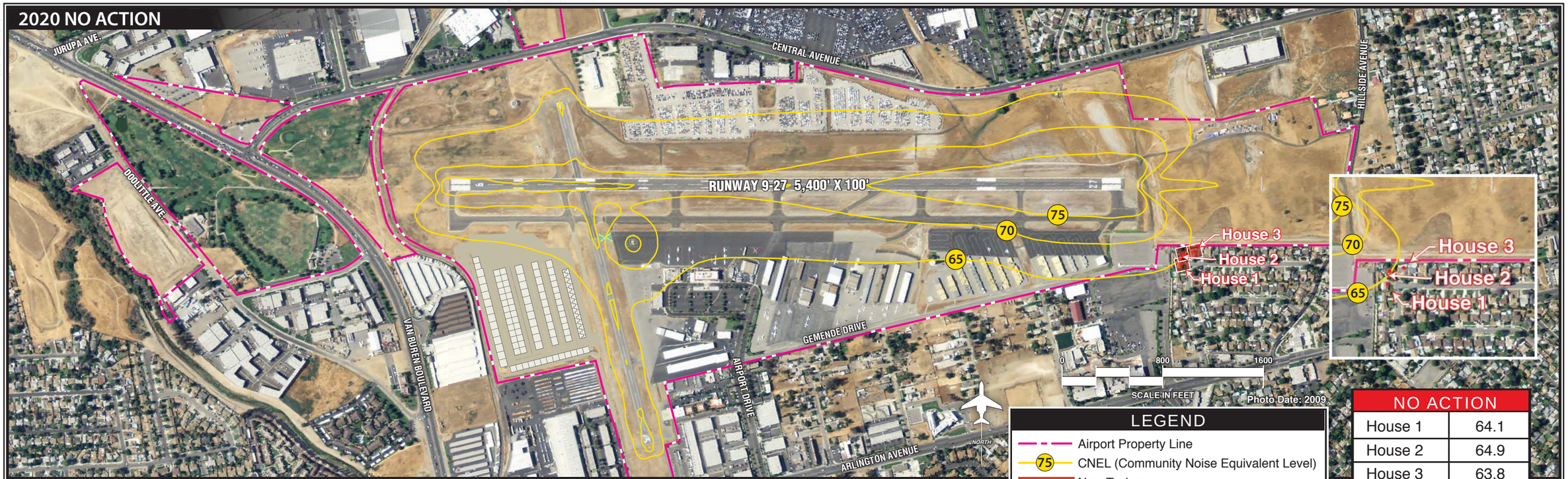
NO ACTION	
House 1	64.0
House 2	64.7
House 3	63.6

ACTION	
House 1	64.0
House 2	64.7
House 3	63.6

Exhibit 4D
2015 ACTION/NO ACTION
NOISE CONTOURS

09EA12-4E-04/04/10

2020 NO ACTION



NO ACTION	
House 1	64.1
House 2	64.9
House 3	63.8

ACTION	
House 1	64.2
House 2	64.9
House 3	63.8

LEGEND

- Airport Property Line
- 75 CNEL (Community Noise Equivalent Level)
- New Taxiway
- Proposed North Side Ramp, Drainage, & Utilities Construction,
- Proposed North Side Access Road

2020 ACTION

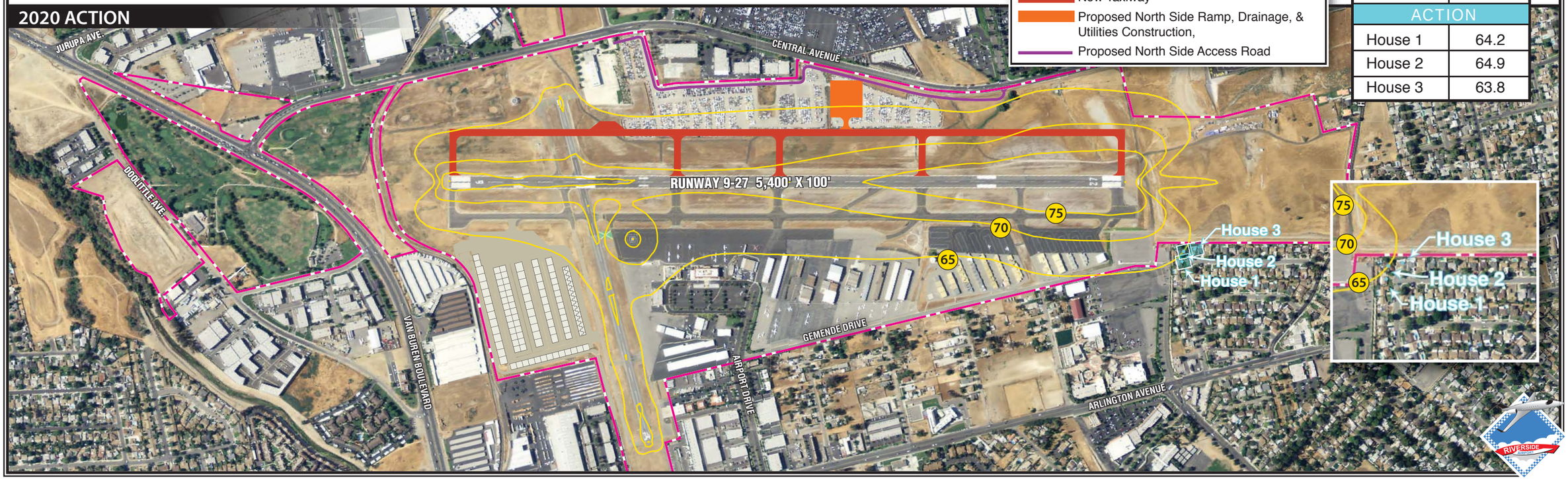


Exhibit 4E
2020 ACTION/NO ACTION
NOISE CONTOURS

noise contour. As seen on the grid point data tables on **Exhibits 4D** and **4E**, noise levels are not increased over the three homes within the 65 CNEL contour between the Proposed and No Action alternatives in 2015 or 2020. Therefore, implementation of the Proposed Action Alternative does not result in impacts which exceed the stated threshold of significance.

4.2.10 Secondary (Induced) Impacts

Major development proposals often involve the potential for induced or secondary impacts on surrounding communities. Examples of induced or secondary impacts include shifts in patterns of population movement and growth, public service demands, and changes in business and economic activity to the extent influenced by the airport development. Induced impacts will normally not be significant except where there are also significant impacts in other categories, especially noise, land use, or direct social impacts.

4.2.10.1 Proposed Action

Direct and indirect secondary impacts anticipated to result from implementation of the Proposed Action Alternative primarily relate to the potential financial impacts to the existing business and economic conditions of the area. The Proposed Action Alternative is being advanced by the City of Riverside and is consistent with the airport master planning objectives and the city's planning and economic development objectives.

The proposed airport development would result in less-than-significant induced socioeconomic impacts, including impacts to population and growth trends, land use and development plans, and service and infrastructure improvement plans of the city. The proposed projects are consistent with the planning and development objectives for the airport and its positive influence on the local economy.

4.2.10.2 No Action

No secondary (induced) impacts would occur as a result of implementation of the No Action Alternative.

4.2.10.3 Analysis and Mitigation

Implementation of the Proposed Action alternative will result in a safer airport that provides needed facilities for business jet and turboprop aircraft. This may result in additional tax revenue and employment possibilities for the region.

No mitigation measures are required.

4.2.11 Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks

Socioeconomic impacts known to result from airport improvements are often associated with relocation activities or other community disruptions, including alterations to surface transportation patterns, division or disruption of existing communities, interferences with orderly planned development, or an appreciable change in employment related to the project. Social impacts are generally evaluated based on areas of acquisition and/or areas of significant project impact, such as areas encompassed by noise levels in excess of 65 CNEL.

Executive Order 12898, *Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations,* and the accompanying Presidential Memorandum, and Order DOT 5610.2, *Environmental Justice*, require FAA to provide for meaningful public involvement by minority and low-income populations, as well as analysis that identifies and addresses potential impacts on these populations that may be disproportionately high and adverse.

Pursuant to Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks,* federal agencies are directed to identify and assess environmental health and safety risks that may disproportionately affect children. These risks include those that are 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 products they may be exposed to.

FAA Order 1050.1E, Appendix A, paragraph 16.3, states the thresholds of significance for this impact category are reached if the project negatively affects a disproportionately high number of minority or low-income populations or if children would be exposed to a disproportionate number of health and safety risks. Significant socioeconomic impacts would result if an extensive number of residents need to be relocated and sufficient replacement housing is unavailable; if extensive relocation of business is required and this relocation would create a severe economic hardship for the affected communities; if disruptions of local traffic patterns would substantially reduce the level of service of the roads serving the airport and the surrounding community; or, if there would be a substantial loss in the community tax base.

4.2.11.1 Proposed Action

Socioeconomic Impacts. The proposed improvements will not result in the division or disruption of existing communities nor will they interfere with orderly planned development.

The proposed project includes grading the RSA for Runway 27, north side parallel taxiway, north side access road, north side apron development, and reimbursement for property within the Runway 9 protection zone. The north side access road, located on airport property, will not be utilized by the general public but will provide access to airport-related vehicles to the north side of the airfield. All other improvements occur on airport property and do not involve relocation or changes to existing roads.

Environmental Justice. As depicted on Exhibit 3G, areas south and east of the airport are considered areas of substantial low income or minority populations. However, impacts resulting from implementation of the Proposed Action Alternative relate primarily to potential impacts to protected plant species. The noise condition does not change significantly with alternative implementation and air quality impacts will be localized and occur during construction of the proposed improvements. Therefore, the Proposed Action will not have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.

Children's Environmental Health and Safety Risks. Pursuant to Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks,* federal agencies are directed to identify and assess environmental health and safety risks that may disproportionately affect children.

After implementation of the proposed airport improvements, the airport will continue to operate in a manner similar as it does today. Access to substances which could affect a child's health or safety will still be limited. The perimeter fence would be maintained to restrict unauthorized persons, including children, from gaining access to the runway and other areas of potential health and safety risks.

Indirect impacts are not anticipated as proper permits and precautions will be taken prior to project implementation.

4.2.11.2 No Action

Environmental justice impacts and impacts to children's environmental health and safety are not anticipated with implementation of the No Action Alternative as the airport will continue to operate in a manner similar to today. The perimeter fence would be maintained to restrict unauthorized persons, including children, from gaining access to the runway and other areas of potential health and safety risks.

4.2.11.3 Analysis and Mitigation

The proposed projects will occur entirely on airport property. There are no significant socioeconomic impacts associated with implementation of the No Action Alternative or Proposed Action Alternative.

With implementation of the Proposed Action Alternative, direct and indirect potential health and safety risks to children will be minimized through adherence to standard construction and safety practices implemented by the construction contractor. Fugitive dust will be controlled by the application and maintenance of standard erosion and sedimentation control measures, and a fugitive dust permit will be obtained prior to construction. The airport portions of the security fence may be relocated during construction; however, a secure perimeter would be maintained at all times.

The construction contractor will employ BMPs to restrict children from the construction site. These practices may include the posting of signs around the construction site, prohibiting access, fencing, warnings posted around areas of open excavation, and site policing.

Impacts resulting from implementation of the Proposed Action Alternative do not exceed the levels of significance for this impact category.

4.2.12 Water Quality

The *Clean Water Act* provides the authority to establish water quality standards, control discharges, develop waste treatment management plans and practices, prevent or minimize the loss of wetlands, and regulate other issues concerning water quality. Water quality concerns related to airport development most often relate to the potential for surface runoff and soil erosion as well as the storage and handling of fuel, petroleum products, solvents, etc.

Water quality regulations and issuance of permits will normally identify any deficiencies in the proposed development with regard to water quality or any additional information necessary to make judgments on the significance of impacts. Difficulties in obtaining needed permits for the project, such as National Pollutant Discharge Elimination System (NPDES) or Section 404 permits, typically indicate a potential for significant water quality impacts.

4.2.12.1 Proposed Action

Implementation of the Proposed Action Alternative will result in changes to the drainage patterns at the airport as well as an increase of impermeable surfaces. Additionally, construction of the proposed improvements may have limited, short-term effects on surface water quality, particularly an increase in suspended sediments during and shortly after precipitation events in the construction phase. As discussed in Chapter Three, the airport is currently operating under Regional Water Quality Control Board (CRWQCB) National Pollutant Discharge Elimination System (NPDES) Permit Number CAG998001 for Discharges of Storm Water.

During final project design, drainage improvements will be outlined to account for the additional impervious surfaces. The airport's permit will be modified to include these surfaces and, as needed, additional drainage storage capacity and BMPs will be employed to address drainage concerns.

Prior to construction, the airport will obtain a CRWQCB NPDES construction permit as the proposed improvements will impact an area larger than one acre.

Indirect impacts may occur to water quality as an increase in impermeable surfaces occurs in the area. Additionally, short-term water quality impacts will occur during project construction. As a condition of the NPDES construction permit and other local regulations,

these impacts will be mitigated. Implementation of BMPs will ensure appropriate measures are taken to reduce impacts to water quality.

Cumulative water quality impacts resulting from development projects in the area may result in short-term impacts to water quality. These impacts will be mitigated using BMPs. In addition, the increase of impermeable surfaces in the area will result in the increase of storm water runoff.

4.2.12.2 No Action

Implementation of the No Action Alternative will result in no development activities at the airport; therefore, no impacts to water quality are anticipated.

4.2.12.3 Analysis and Mitigation

Implementation of the Proposed Action Alternative will require the acquisition of an NPDES construction permit. The airport's existing NPDES operating permit will need to be modified to include the additional impervious surfaces at the airport and changes in drainage patterns. No difficulties in obtaining these permits have been identified by any resource agencies.

It is anticipated that the Proposed Action Alternative will result in less than 15 percent of the graded area being paved. Storm water will continue to remain in over-land flow in ditches that will continue mostly on the same flow path as the existing storm water. A few pipe crossings under pavements also will be required. These pipe crossings will allow water to pond to effectively keep the 1, 2, and 5 year storms from exceeding the current 1, 2, and 5 year max flow rates. At the far west end, where the terrain is flat and all taxiway runoff is directed, a retention pond situation is planned to meter out absolute minimum water flows by using inlet and pipe controls that are also designed to safely pass a large (100-year) event.

The No Action Alternative will not result in impacts to water quality or a Water of the U.S., as no construction would occur.

Mitigation measures for the Proposed Action Alternative relate primarily to construction-related impacts. Mitigation measures are discussed within Section 4.2.4.3. A more detailed cumulative impacts discussion is located in Section 4.3.

4.3 CUMULATIVE IMPACTS

Analysis of the cumulative overall impact of a Proposed Action Alternative and the consequences of subsequent related actions is required to determine the significance of the impact on the environment resulting from the incremental impact of the action when added to

other past, present, and reasonably foreseeable future actions, regardless of the actions' originator.

Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time. Cumulative impact analysis considers connected actions, projects related and dependent upon the completion of the proposed airport project, and similar actions or projects having a common geography or timing that provide a basis for considering their impact together with impacts related to the proposed airport project. Cumulative impacts are evaluated on three time horizons: past actions, present action, and reasonably foreseeable actions. Due to limited availability of information regarding past actions, this portion of the analysis is limited to the past five years. Present actions are those projects which are ongoing and will continue during the implementation of the Proposed Action. Reasonably foreseeable actions, for the purposes of this project, are those that have received local approval for implementation, such as a City Council approval of the City's capital improvement program. Planned projects, such as those outlined within a community's General Plan or Specific Plan, are not considered reasonably foreseeable as part of this analysis.

Specific thresholds for cumulative impacts are not established in FAA Order 1050.1E as the significance threshold varies according to the affected resources. In evaluating cumulative impacts, the impact of the proposed action should be added to the impacts of other projects to determine if the significant impact threshold will be exceeded.

Past Actions

As discussed within Chapter Three, Section 3.4, a number of projects, both on and off airport property, have been undertaken in the past. These projects include the following:

- Extend Taxiway "J" south and relocate VOR (Phase I); Extend Taxiway "B" to the south (Phase I); Acquire 0.03 acres for Taxiway "B" extension (2005)
- Construction of noise berm (2007)
- Reconstruct Runway 9-27 PAPIs for Runway 27 (2007)
- Extend Taxiway "J" south and relocate VOR (Phase II); Extend Taxiway B to the south (Phase II) (2006)
- Extend Taxiway "J" south and relocate VOR (Phase III); Extend Taxiway B to the south (Phase III). Design north parallel taxiway and relocate gas line (Phase I) (2008)
- Reconstruct Runway 9-27, Taxiway A, connecting taxiways, drainage improvements, lighting, signs, and REIL for Runway 27 (2008)
- Design north parallel taxiway and relocate gas line (Phase II) (2009)

Foreseeable Future Actions

Future projects planned within the next five years for the airport beyond the Proposed Project include additional pavement maintenance. Within the vicinity of the airport, the following projects are included in the City of Riverside's capital improvement program:

- Central/Magnolia intersection beautification
- Van Buren Widening - Santa Ana River to Jackson Street
- Magnolia railroad grade separation
- Streeter Avenue railroad grade separation
- Santa Ana River sewer trunk replacement

No agencies indicated concerns regarding potential cumulative impacts during the agency scoping process undertaken at the onset of this EA. Resource issues that are appropriate for analysis under a cumulative impact assessment are addressed below. These categories were identified for cumulative impact analysis because of the impacts caused by the Proposed Action. Much of the discussion contained within the following sections is also reflected within the various impact analyses in Section 4.2. The discussions have been consolidated within this section to summarize the qualitative cumulative impact analysis which was completed for the project.

Proposed Action

No agencies indicated concerns regarding potential cumulative impacts during the agency scoping process undertaken at the onset of this EA. Resource issues that are appropriate for analysis under a cumulative impact assessment are addressed below. These categories were identified for cumulative impact analysis because of the impacts caused by the Proposed Action. Much of the discussion contained within the following sections is also reflected within the various impact analyses in Section 4.2. The discussions have been consolidated within this section to summarize the qualitative cumulative impact analysis which was completed for the project.

NOISE

The geographic scope of the noise analysis is limited to those areas within the area of potential effect as identified on **Exhibit 4C.** The proposed airport improvements will not result in noise impacts which exceed the FAA's threshold of significance (See Section 4.2.10). Furthermore, the proposed airport improvements will not result in a significant increase in based aircraft or itinerant operations (See **Appendix E**). Other ongoing projects at the airport are being undertaken primarily for maintenance purposes.

COMPATIBLE LAND USE

The geographic scope of the compatible land uses analysis is limited to those areas within the area of potential effect as identified on **Exhibit 4C.** With the Riverside County ALUC efforts, no cumulative land use or zoning impacts are anticipated and all reasonably foreseeable development in the area around the airport would be compatible with airport operations.

The property purchase reimbursement within the runway protection zone, runway safety area grading project, and north side development will not require any business relocations. No impacts to wetlands, floodplains, or critical habitat are expected as these are not anticipated to be located within the project area.

SOCIOECONOMIC AND SECONDARY (INDUCED) IMPACTS

The geographic scope of the socioeconomic and secondary impact analysis is limited to those areas within the block groups identified on Exhibit 3G.The Proposed Action Alternative does not result in the displacement of residences, businesses, or agricultural operations, or result in the division or disruption of established communities. Other development projects ongoing within the airport environs could result in induced development impacts, including shifts in patterns of population and growth, demand for public services, or changes in business and economic activity. The proposed property purchase reimbursement within the runway protection zone, runway safety area grading project, and north side development do not result in the displacement of residences, businesses, or agricultural operations.

ENVIRONMENTAL JUSTICE

The geographic scope of the environmental justice impact analysis is limited to those areas within the block group identified on Exhibit 3G. The noise condition does not change significantly with alternative implementation and air quality impacts will be localized and occur during construction of the proposed improvements. Therefore, the Proposed Action will not have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.

AIR QUALITY

Riverside Airport is located within the Los Angeles South Coast Air Basin which is classified as a non-attainment area for ozone (O_3) and particulate matter (PM_{10} and $PM_{2.5}$).

The geographic scope of the air quality analysis is limited to the Los Angeles South Coast Air Basin which includes all of Orange County and the urban portions of Los Angeles, Riverside, and San Bernardino counties. The EPA has listed the area as a non-attainment area for ozone (O_3) and particulate matter (PM_{10} and $PM_{2.5}$). However, implementation of the

Proposed Action will result in de minimis air quality impacts. In addition, construction emissions will not exceed the identified significance thresholds.

The Proposed Action Alternative may be undertaken simultaneously with other projects in the area. Construction impacts will be short-term and can be attributed to vehicular emissions related to construction as well as dust resulting from ground disturbance and construction. It is not expected that these projects, cumulatively, will result in air quality impacts which exceed the stated threshold of significance.

WATER QUALITY

The geographic scope of the water quality cumulative impact analysis is limited to the Santa Ana River watershed, which includes Riverside Airport. Cumulative water quality impacts resulting from development projects in the area may result in short-term impacts to water quality. These impacts will be mitigated with additional drainage storage capacity and using BMPs. In addition, the increase of impermeable surfaces in the area will result in the increase of storm water runoff.

During the process of obtaining and modifying permits, review by agencies having jurisdiction over water supply and quality issues would be conducted. The permit programs implemented by these agencies take into account the cumulative impact of actions and projects on the regulated resources. Periodic program reviews are conducted to ensure that the loss of regulated resources authorized through the permit programs do not constitute an individual or cumulatively unacceptable impact. The Proposed Action Alternative, as well as all reasonably foreseeable actions, will be subject to this regulatory review process, as applicable.

FISH, WILDLIFE, AND PLANTS

The geographic scope of the fish, wildlife, and plant impact analysis is limited to those areas within the 500-foot buffer area as identified on **Exhibit 4A.** The FAA has determined the proposed project will not affect any federally listed threatened or endangered species or designated critical habitat. FAA bases its determination on the information contained in the field surveys described in the Biological Assessment. See **Appendix C**. Since FAA has made a no effect determination, FAA is not required to initiate Section 7 consultation with the U.S. Fish and Wildlife Service. Therefore, cumulative impacts on federally listed threatened or endangered species or designated critical habitat is not anticipated with the implementation of Proposed Action.

Chapter Five

PREPARERS

Persons responsible for preparation of this Environmental Assessment document and significant supporting background analysis and materials are listed below.

NAME	EXPERTISE	PROFESSIONAL EXPERIENCE
PREPARERS		
FAA Reviewer		
David B. Kessler, AICP	Environmental Protection Specialist, Airports Division, Western-Pacific Region	B.A., Physical Geography (Geology Minor), M.A. Physical Geography, 33 years' experience. Principal FAA Planner/Environmental Protection Specialist for the Airports Division responsible for detailed FAA evaluation of Environmental Assessments and Environmental Impact Statements, as well as coordination of comments from various federal and state agencies in the FAA's Western Pacific Region.
Coffman Associates		
Dave Fitz	Land Use Planning, Environmental Analysis, Noise Modeling, Assessment, and Documentation	Masters, Community and Regional Planning. 15 years' experience in airport master planning, noise modeling, and land use management.

NAME	EXPERTISE	PROFESSIONAL EXPERIENCE
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Coffman Associates *(Continued)*		
Molly Waller	Land Use Planning, Environmental Analysis and Documentation, Noise Assessment and Documentation	Masters, Community and Regional Planning. Ten years' experience in environmental evaluations of various projects, six years' experience in land use management and noise assessment.
Kory Lewis	Land Use Planning, Environmental Analysis and Documentation, Noise Monitoring and Assessment, Air Quality Analysis	B.A., Geography; Masters, Urban Planning. Four years' experience in land use management and noise assessment, two years' experience in environmental documentation of various development projects.
SWCA Environmental Consultants		
Eleanor Gladding	Senior Biologist/Project Manager/Tucson Natural Resources Lead	M.S. Biology. 15 years of biological experience and 10 years of environmental consulting experience, including 6 years of experience doing environmental resource work for airport projects.
Michael Tuma	Biologist	M.S. Zoology. Twenty years experience in conducting population research, special-status species surveys, habitat assessments, and impact assessments, including reporting in support of NEPA, CEQA, ESA, and CESA compliance.
William Sawyer	Archaeologist	M.A. Anthropology. Over 25 years of experience in the evaluation and analysis of historical material and archaeological research. Mr. Sawyer has participated in more than 200 archaeological projects throughout California and Nevada. .
John Dietler	Archaeologist/Principal Investigator	Ph.D. Anthropology. 16 years of experience in conducting cultural resources research in support of development, infrastructure, and multidisciplinary environmental projects in compliance with CEQA, NEPA, and Section 106 of NHPA.
Jessica L Debusk	Project Manager and Paleontology Lead	B.S. Geology (Paleobiology). 8 years of paleontological experience and 6 years of project management in the environmental consulting field. Technical expertise includes paleontological resources survey and assessment, excavation, laboratory preparation, specimen curation and technical reporting.
Shannon Carmack	Architectural History	B.A. History. 10 years of professional experience in cultural resource management and environmental consulting. Her expertise encompasses architectural history, historical research, and historic preservation planning and management.

NAME	EXPERTISE	PROFESSIONAL EXPERIENCE
PREPARERS (Continued)		
SWCA Environmental Consultants *(Continued)*		
Susan Underbrink	Archaeologist	M.A. Anthropology. She is a Registered Professional Archaeologist and has 14 years of professional experience, primarily as a field archaeologist. She has performed many phases of both historic and prehistoric archaeology as crew chief, laboratory technician, and field technician.
Cara Corsetti	Senior Paleontologist	M.S. Geological Sciences, emphasis Paleobiology. 15 years paleontological experience, and 10 years of consulting experience.
Taya Cummins	Botanist/Environmental Specialist	M.S., Biology; 10 years experience as a biologist/botanist. Expertise includes botanical and wildlife surveys for threatened and endangered species, invasive species management, habitat mapping, wetland delineation, habitat restoration, and local plans including the Western Riverside County MSHCP.
Michael Cady	Biologist	B.S. Conservation Biology. 6 years experience as a biological consultant; general and special-status flora and fauna surveys; tree surveys; vegetation mapping; jurisdictional waters delineation and permitting (401/404/1600); biological monitoring; production of CEQA/NEPA documents; permit applications and documentation to support ESA Section 7 and 10 consultations, and CESA 2081 permitting; and production of habitat mitigation and monitoring plans.
David Daitch	Biologist	Dr. Daitch is Natural Resources Program Lead in SWCA's Pasadena, California, office. He has worked for over 15 years in the paleontological and biologic sciences as a field investigator, laboratory and museum technician, and teacher, and has been working in environmental consulting for over 10 years.
Shanee Stopnitzky	Biologist	Ms. Stopnitzky brings more than seven years of experience as a project manager, environmental planner, and biologist to the SWCA Natural Resources team. Her experience includes primarily strategic planning and research in support of project management.

Chapter Six

REFERENCES

The following documents and websites were utilized during the preparation of this Environmental Assessment:

Biological Study for Proposed Improvements at Riverside Airport in Riverside, Riverside County, California, December 2009, SWCA Environmental Consultants

Cultural Resources Survey for the Proposed Riverside Airport Improvement Project, City and County of Riverside, California, January 2010, SWCA Environmental Consultants

Paleontological Resources Assessment Report for the Proposed Riverside Airport Improvements Project, Riverside, Riverside County, California, February 2010, SWCA Environmental Consultants

Federal Aviation Administration (FAA), FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*, March 2006

FAA, FAA Order 5050.4B, *National Environmental Policy Act* (NEPA) *Implementing Instructions for Airport Actions,* April 2006

FAA, *National Plan of Integrated Airport Systems 2011-2015*

FAA, Advisory Circular 150/5300-13A, *Airport Design*

Riverside Airport Master Plan, 2009, Coffman Associates, Inc.

Riverside General Plan 2025, 2007, City of Riverside.

United Stated Department of Agriculture – Natural Resources Conservation Service, NCSS Web Soil Survey, http://websoilsurvey.nrcs.usda.gov/app/

United States Census Bureau, *U.S. Census 2000*, http://www.census.gov/main/www/cen2000.html

U.S. Environmental Protection Agency, *EnviroMapper*, http://www.epa.gov/emefdata/em4ef.home

U.S. Environmental Protection Agency, Green Book Nonattainment Areas for Criteria Pollutants, http://www.epa.gov/oar/oaqps/greenbk/

U.S. Fish and Wildlife Service, *Endangered Species List*, http://www.fws.gov/southwest/es/EndangeredSpecies/lists/

Appendix A

AGENCY COORDINATION

Appendix A
PROJECT SCOPING MATERIALS AND AGENCY COORDINATION

The purpose of this appendix is to provide additional background information regarding the land acquisition and proposed improvements within this Environmental Assessment (EA) and Initial Study (IS). At the onset of the EA and IS, letters were sent to the following entities seeking input regarding potential environmental resources which could be impacted by the proposed land acquisition. A copy of the letter sent to them and the response received (if any) follows the table of contents within this appendix.

RIVERSIDE MUNICIPAL AIRPORT
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FEDERAL

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Ms. Lucinda Woodward
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P.O. Box 942896
Sacramento, CA 94296-0001
T: (916) 653-5099

Item **Page**

Sample of initial scoping letter A-5

Letter from California Department of Transportation A-9

Letter from Pechanga Tribe A-11

CITY OF
RIVERSIDE

Airport

November 20, 2009

Col. Thomas H. Magness, IV
District Commander
U.S. Army Corps of Engineers
Los Angeles District
915 Wilshire Blvd., Suite 1101
Los Angeles, CA 90017

RE: *Environmental Documentation for Land Acquisition Reimbursement and Improvements for Riverside Airport*

Dear Col. Magness:

The City of Riverside, California is preparing *National Environmental Policy Act* (NEPA) and *California Environmental Quality Act* (CEQA) documentation for proposed improvements at Riverside Airport. Due to the size and scope of the improvements, an Environmental Assessment (EA) will be prepared pursuant to NEPA requirements and an Initial Study will be prepared to comply with CEQA.

The EA will be prepared pursuant to the requirements of Section 102(2) of the *National Environmental Policy Act of 1969* and will conform to the requirements and standards set forth by the Federal Aviation Administration (FAA) as contained in FAA Order 1050.1E *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. The FAA will act as the lead agency for NEPA documentation.

The Initial Study will be prepared pursuant to the requirements of the CEQA, as contained within *California Public Resources Code, Division 13, Sections 21000-21177*. The format and subject matter included within the Initial Study will conform to the guidelines set forth by the State of California within the *California Code of Regulations, Title 14, Division 6, Chapter 3, Article 5*. The City of Riverside will perform lead agency responsibilities for the CEQA documentation.

The purpose of this letter is to solicit your comments regarding environmental or social resources and sensitivities potentially associated with or affected by the projects listed below for Riverside Airport. We are also seeking your input regarding any potential cumulative impacts that may occur upon project implementation.

To assist you with your review of the proposed airport development, a general location exhibit (**Exhibit 1**) is included for your reference. The property acquisition reimbursement and proposed improvements under consideration are discussed below and depicted on **Exhibit 2**.

PROPOSED RPZ IMPROVEMENTS

Safety standards and guidelines for Riverside Airport are defined in FAA *Advisory Circular (AC) 5300-13, Airport Design*. A review of these safety standards and guidelines during the 2009 Riverside Airport Master Plan recommended improvements to control of the Runway 9

6951 Flight Road • Riverside, CA 92504 • 951.351.6113 • fax 951.359.3570 • www.riversideca.gov/airport

runway protection zone (RPZ) and the grade of Runway 27 runway safety area (RSA). According to AC 5300-13, the RPZ's function is to enhance the protection of people and property on the ground. This is achieved through airport owner control over RPZs. Such control includes clearing RPZ areas (and maintaining them clear) of incompatible objects and activities. Control is preferably exercised through the acquisition of sufficient property interest in the RPZ. The City of Riverside has taken steps toward obtaining control of the Runway 9 RPZ with a recent land purchase. This Environmental Assessment will review the property purchased by the City in order get reimbursement funds from the Airport Improvement Program (AIP).

PROPOSED RSA IMPROVEMENTS

The RSA is defined by the FAA *AC 5300-13, Airport Design* as the surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway. The east side of Runway 9-27 at Riverside Airport currently has only 100 feet of the required 1,000 feet to meet FAA's design standards. Two projects will need to be completed to bring the Runway 27 RSA grade into compliance with safety standards. First, approximately 2,700 feet of a 30-inch natural gas line will have to be relocated out of the RSA. Second, approximately 155,000 cubic yards of fill will need to be brought in to bring the Runway 27 RSA up to standard. In order to reduce the environmental impacts of bringing fill from an off-airport site and to save costs, fill for the Runway 27 RSA will be taken from the north side of the airport. Removal of the needed fill from the north side will also prepare this area for a proposed parallel taxiway, connecting taxiways, north side access road (gated access), and north side ramp with drainage and utility improvements.

Please send any written comments to our consultant David Fitz at the address below by December 21, 2009. As another option, you may fax or e-mail your comments to the number or e-mail address below.

David Fitz, AICP
Principal
Coffman Associates Inc.
237 NW Blue Parkway, Suite 100
Lee's Summit, MO 64063

FAX: 816.524.2575
E-mail: dfitz@coffmanassociates.com

If you have any questions or need additional information, please feel free to contact me at (951) 351-6113 or David Fitz at (816) 524-3500. Thank you for your consideration and timely response.

Sincerely,

Mark S. Ripley
Airport Director

Enclosures (2)

C. Mr. David Fitz, Coffman Associates

05MP11-1-8/14/07

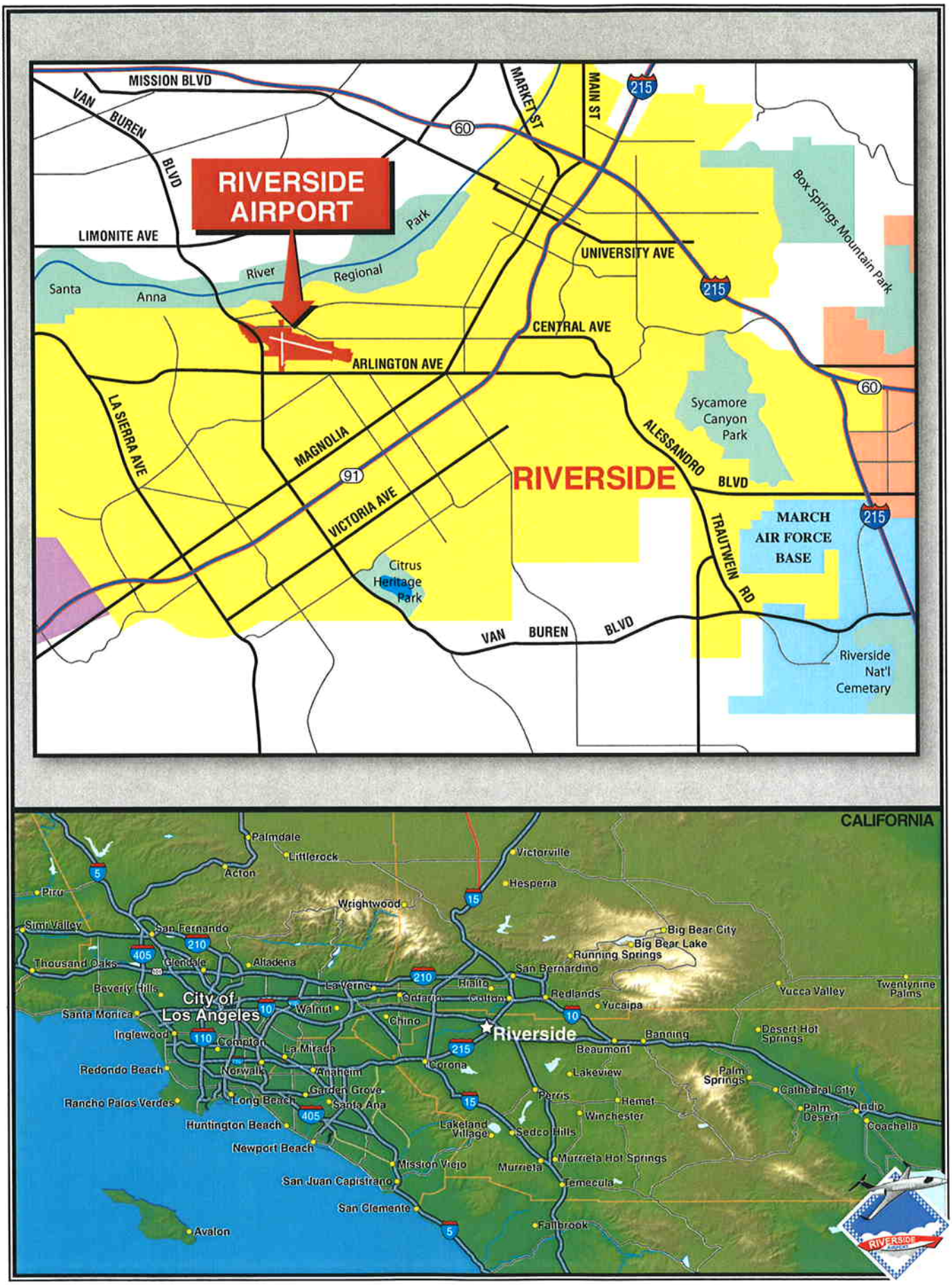

Exhibit 1
LOCATION MAP

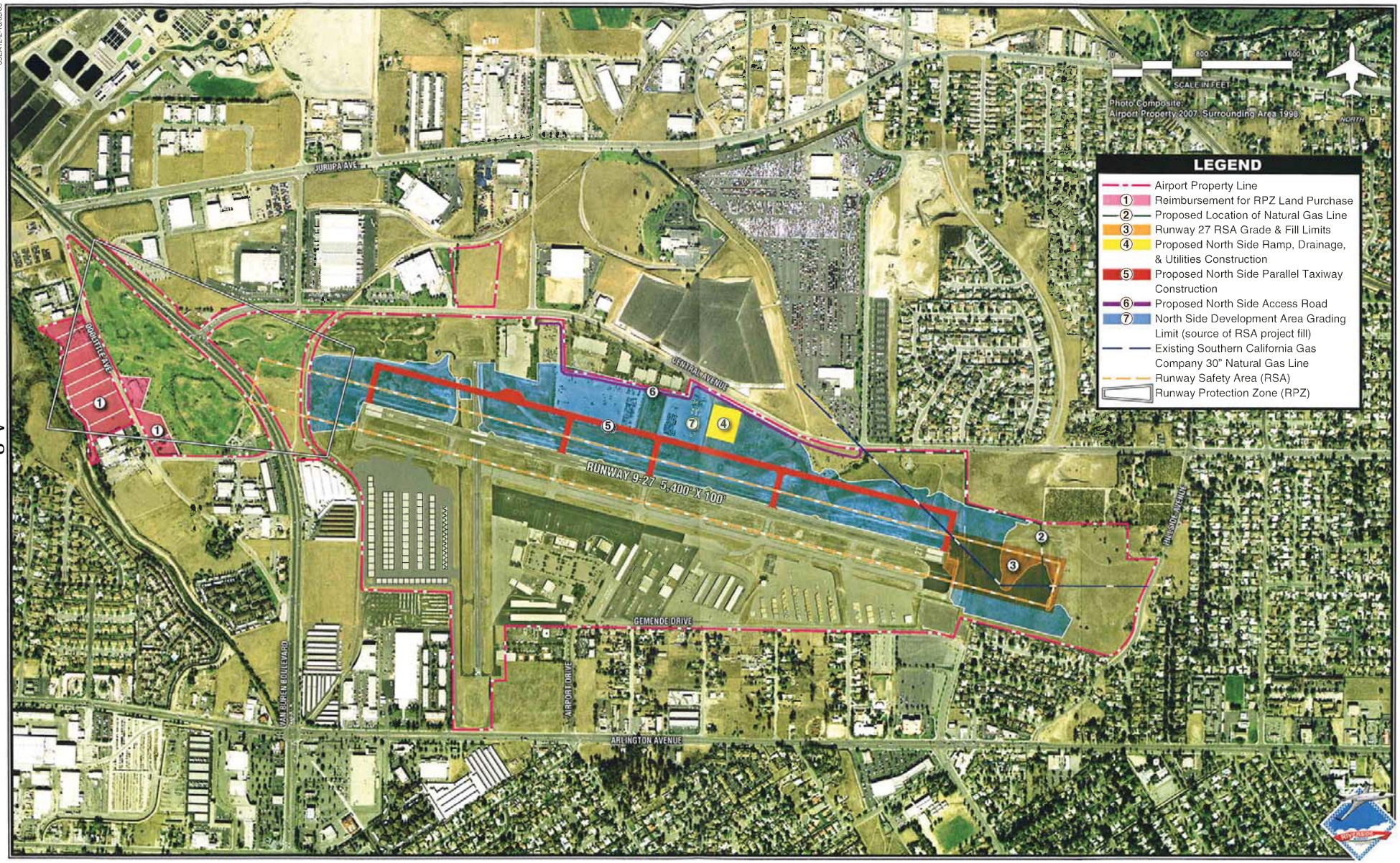

Exhibit 2
PROPOSED DEVELOPMENT
AND PROPERTY ACQUISITION

09EA12-2-10/25/09

DEPARTMENT OF TRANSPORTATION
DIVISION OF AERONAUTICS – M.S.#40
1120 N STREET
P. O. BOX 942874
SACRAMENTO, CA 94274-0001
PHONE (916) 654-4959
FAX (916) 653-9531
TTY 711

Flex your power!
Be energy efficient!

December 14, 2009

Mr. David Fitz, AICP
Principal
Coffman Associates Inc.
237 NW Blue Parkway, Suite 100
Lee's Summit, MO 64063

Dear Mr. Fitz:

Re: City of Riverside's Environmental Documentation for Land Acquisition Reimbursement and Improvements for Riverside Municipal Airport

The California Department of Transportation (Caltrans), Division of Aeronautics (Division), reviewed the above-referenced document with respect to airport-related noise and safety impacts and regional aviation land use planning issues pursuant to the California Environmental Quality Act (CEQA). The Division has technical expertise in the areas of airport operations safety and airport land use compatibility. We are a funding agency for airport projects and we have permit authority for public-use and special-use airports and heliports.

The proposed improvements at Riverside Municipal Airport (RAL) will include acquisition of land in the runway protection zone (RPZ) for Runway 9 and the grading of the runway safety area for Runway 27. We support these improvements that should further enhance safety at RAL.

RAL operates with an airport permit issued by the Division. In accordance with California Public Utilities Section (PUC) Section 21664.5, the proposed acquisition of RPZ will result in the need for an amended State airport permit. The required items include approval of the airport plan of construction by the Riverside City Council in accordance with PUC Section 21661.5. The applicant should also be advised to contact the Division's Aviation Safety Officer for Riverside County, Phillip Miller, at (916) 654-5507, to request a State airport permit-application package. Detailed information regarding State airport permit amendments can also be viewed on-line at http://www.dot.ca.gov/hq/planning/aeronaut/airportpermit.html.

Prior to amending the State airport permit, the Division must be assured that the proposal is in full compliance with CEQA. The Division must be provided copies of all environmental documentation for this proposal including a notice of determination when the project has been approved.

The proposal should also be referred to the Riverside County Airport Land Use Commission (ALUC) for consideration.

PUC Section 21659 prohibits structural hazards on or near airports. New construction projects must meet or exceed the minimum design standards for a permitted airport, as specified in the California Code of Regulations, Title 21, Article 3, "Design Standards, Airports Only." The guidance in the Federal Aviation Administration's (FAA) Advisory Circular 150/5370-2E, *Operational Safety on*

Airports during Construction, should be incorporated into the project design in order to identify any permanent or temporary construction-related impacts including cranes. The FAA may require a Notice of Proposed Construction or Alteration (Form 7460-1) pursuant to Federal Aviation Regulation Part 77. Form 7460-1 is available at http://forms.faa.gov/forms/faa7460-1.pdf.

These comments reflect the areas of concern to the Division of Aeronautics with respect to airport-related noise, safety, and regional land use planning issues. We advise you to contact our District 8 office concerning surface transportation issues.

Thank you for the opportunity to review and comment on this proposal. If you have any questions, please call me at (916) 654-5314 or by email at sandy.hesnard@dot.ca.gov.

Sincerely,

Original Signed by

SANDY HESNARD
Aviation Environmental Specialist

c: Riverside County ALUC

PECHANGA CULTURAL RESOURCES
Temecula Band of Luiseño Mission Indians

Post Office. Box 2183 • Temecula, CA 92593
Telephone (951) 308-9295 • Fax (951) 506-9491

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Germaine Arenas

Vice Chairperson:
Mary Bear Magee

Committee Members:
Evie Gerber
Darlene Miranda
Bridgett Barcello Maxwell
Aurelia Marruffo
Richard B. Scearce, III

Director:
Gary DuBois

Coordinator:
Paul Macarro

Cultural Analyst:
Anna Hoover

July 20, 2012

VIA E-MAIL and USPS

Mr. David B. Kessler, AICP
Regional Environmental Protection Specialist
U.S. Dept of Transportation
Federal Aviation Administration
P. O. Box 92007
Los Angeles, CA 90009-2007

Re: Pechanga Tribe Comments on the Request for Concurrence of a Finding of No Effect for the Proposed Riverside Airport Improvements, Riverside County, California

Dear Mr. Kessler:

This comment letter is written on behalf of the Pechanga Band of Luiseño Indians (hereinafter, "the Tribe"), a federally recognized Indian tribe and sovereign government. The Tribe formally requests to be notified and involved in the entire NEPA environmental review process for the duration of the above referenced project (the "Project"). If you have not done so already, please add the Tribe to your distribution list(s) for public notices and circulation of all documents, including environmental review documents, archeological reports, and all documents pertaining to this Project. The Tribe further requests to be directly notified of all public hearings and scheduled approvals concerning this Project. Please also incorporate these comments into the record of approval for this Project.

The Tribe submits these comments in response to a request for concurrence for a Finding of No Effect on the above named project. The Tribe has been working with the Federal Aviation Administration on this Project since 2011; however, we previously submitted comments to the Project archaeologist in March 2008. As we stated in both 2008 and 2011, the Tribe is concerned that the cultural site[1] located on the eastern portion of the Riverside Airport will be impacted by the proposed Project and by any future expansion of the Airport facilities.

[1] The Tribe understands that for management purposes, SWCA separated the three milling features into three distinct archaeological sites designated as CA-RIV-8897, -8898, and -8899. It is the Pechanga Tribe's position that separating these features encourages their destruction as they become minimized into "isolated" sites rather than seeing that they are in fact connected and comprise a larger habitation area. Combining the features into one recorded site not only allows for better protection of the resources, but also further shifts the viewpoint from being isolated locales into that of a traditional community use area. The Tribe disagrees with the individual recordation

In response to the Tribe's concerns regarding the previously proposed impacts to these resources, the FAA submitted a revised APE that excludes the cultural site from the proposed Project development. Further, the FAA and the City of Riverside have agreed to: 1) designate this area as an Environmentally Sensitive Area on the Airport Layout Plan; 2) install signage indicating to Airport staff that this is an off-limits area; 3) plant protective plants around the site, ensuring that none of the plants will attract wildlife which could cause damage or harm to the Airport activities or themselves; 4) place no fill over the site; and 5) ensure that a 20 foot buffer be set between the site and the APE. At this time, based upon the information as stated above and with an agreement that the following additional recommendations be in place prior to Project approval, the Pechanga Tribe concurs with the Finding of No Effect as proposed by the FAA.

PROJECT RECOMMENDATIONS

The Tribe appreciates the efforts of the FAA and the City of Riverside to protect and preserve the important cultural resources located on the Riverside Airport property. To clarify the above points, the Tribe requests the following measures be added to the appropriate environmental and/or Project approval documents:

1) The Pechanga Tribe requests that due to the ongoing activities at the Airport, a long-term Preservation Plan be developed between the Pechanga Tribe, the City of Riverside and the FAA (if applicable) for the cultural site (CA-RIV-1711) located within Riverside Airport boundaries.
2) The Pechanga Tribe requests to review the proposed signage that will be placed in the area, prior to printing and placement.
3) The Pechanga Tribe has in-house consultants that are very knowledgeable regarding native plants. We offer our assistance to the City of Riverside in selecting the plant palette to be used around the cultural site.
4) Although the City and the FAA have removed the cultural site from the Project APE, there is still a potential that subsurface cultural resources could be impacted by the proposed grading and modification required to develop the proposed changes within the APE. Therefore, we request the following mitigation measures be applied to the Project:

MM 1 Prior to beginning project construction, the Project Applicant shall retain a Riverside County qualified archaeological monitor to monitor all ground-disturbing activities in an effort to identify any unknown archaeological resources. Any newly discovered cultural resource deposits shall be subject to a cultural resources evaluation.

MM 2 At least 30 days prior to beginning project construction, the Project Applicant

---

method and recommends that the FAA require SWCA to update the site record and combine these numbers under the original designation, CA-RIV-1711.

shall contact the Pechanga Tribe to notify the Tribe of grading, excavation and the monitoring program, and to coordinate with the City of Riverside and/or FAA and the Tribe to develop a Cultural Resources Treatment and Monitoring Agreement. The Agreement shall address the treatment of known cultural resources, the designation, responsibilities, and participation of professional Native American Tribal monitors during grading, excavation and ground disturbing activities; project grading and development scheduling; terms of compensation for the monitors; and treatment and final disposition of any cultural resources, sacred sites, and human remains discovered on the site.

MM 3 Prior to beginning project construction, the Project Archaeologist shall file a pre-grading report with the City of Riverside and/or FAA (if required) to document the proposed methodology for grading activity observation which will be determined in consultation with the Pechanga Tribe. Said methodology shall include the requirement for a qualified archaeological monitor to be present and to have the authority to stop and redirect grading activities. In accordance with the agreement required in MM 2, the archaeological monitor's authority to stop and redirect grading will be exercised in consultation with the Pechanga Tribe in order to evaluate the significance of any archaeological resources discovered on the property. Tribal and archaeological monitors shall be allowed to monitor all grading, excavation and groundbreaking activities, and shall also have the authority to stop and redirect grading activities.

MM 4 If human remains are encountered, California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the Riverside County Coroner has made the necessary findings as to origin. Further, pursuant to California Public Resources Code Section 5097.98(b) remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. If the Riverside County Coroner determines the remains to be Native American, the Native American Heritage Commission must be contacted within 24 hours. The Native American Heritage Commission must then immediately identify the "most likely descendant(s)" of receiving notification of the discovery. The most likely descendant(s) shall then make recommendations within 48 hours, and engage in consultations concerning the treatment of the remains as provided in Public Resources Code 5097.98 and the Treatment Agreement described in MM 2.

MM 5 The landowner shall relinquish ownership of all cultural resources, including sacred items, burial goods and all archaeological artifacts that are found on the project area to the appropriate Tribe for proper treatment and disposition.

MM 6 All sacred sites, should they be encountered within the project area, shall be avoided and preserved as the preferred mitigation, if feasible.

MM 7 If inadvertent discoveries of subsurface archaeological/cultural resources are discovered during grading, the Developer, the project archaeologist, and the Tribe shall assess the significance of such resources and shall meet and confer regarding the mitigation for such resources. Pursuant to Calif. Pub. Res. Code § 21083.2(b) avoidance is the preferred method of preservation for archaeological resources. If the Developer, the project archaeologist and the Tribe cannot agree on the significance or the mitigation for such resources, these issues will be presented to the Planning Director for decision. The Planning Director shall make the determination based on the provisions of the California Environmental Quality Act with respect to archaeological resources and shall take into account the religious beliefs, customs, and practices of the Tribe. Notwithstanding any other rights available under the law, the decision of the Planning Director shall be appealable to the Planning Commission and/or City Council.

The Tribe reserves the right to fully participate in the environmental review process, as well as to provide further comment on the Project's impacts to cultural resources and potential mitigation for such impacts.

The Pechanga Tribe thanks the FAA and the City of Riverside for actively protecting the invaluable Pechanga cultural resources found in and nearby the Project APE. Please contact me at 951-770-8104 or at ahoover@pechanga-nsn.gov once you have had a chance to review these comments so that we might address the issues concerning the mitigation language. Thank you.

Sincerely,

Anna Hoover
Cultural Analyst

Cc Pechanga Office of the General Counsel

Appendix B

RUNWAY SAFETY AREA ANALYSIS

Appendix B
RUNWAY SAFETY AREA ANALYSIS

The FAA has established design criteria to define the physical dimensions of runways and taxiways, as well as the imaginary surfaces surrounding them which protect the safe operation of aircraft at the airport. FAA design criteria primarily center on the airport's critical design aircraft. The critical aircraft is the most demanding aircraft or family of aircraft which currently, or are projected to, conduct 500 or more operations (take-offs and landings) per year at the airport. Factors included in airport design are an aircraft's wingspan, approach speed, tail height and, in some cases, the instrument approach visibility minimums for each runway. The FAA has established the Airport Reference Code (ARC) to relate these critical aircraft factors to airfield design standards.

Analysis conducted in the *2009 Riverside Airport Master Plan Update* concluded that the current critical aircraft is defined by turboprops and small business jets in ARC B-II. There is a King Air turboprop and a Cessna Citation V - Model 560XL business jet based at the airport. Both of these aircraft operate on a frequent basis. These aircraft, in conjunction with itinerant activity, represent the current critical aircraft.

A wide range of transient jet aircraft in the ARC C-II category also operate at Riverside Airport. In order to discern the number and type of business jet operations, an analysis of instrument flight plan data was conducted in the *2009 Riverside Airport Master Plan Update*. Flight plan data was acquired for this study from the subscription database service, *AirportIQ*[1]. The data available includes documentation of flight plans that are opened and

[1] www.AirportIQ.com

closed on the ground at the airport. Flight plans that are opened or closed from the air are not credited to the airport. Therefore, it is likely that there are more business jet operations at the airport than are captured by this methodology, but they are not included in these calculations. No activity conducted under visual flight conditions is captured.

Table B1 shows general aviation business jets completing instrument flight plans conducted 583 operations at Riverside Airport in the 12-month period (September 26, 2006 – September 25, 2007) used for this study[2]. The largest number of operations is conducted within approach category B with 399 operations. Business jets within approach categories C and D conducted an additional 184 operations.

TABLE B1
Business Jet Operations By Design Category
September 26, 2006 - September 25, 2007
Riverside Airport

Design Category	Operational Count[1]
Approach Category B	399
Approach Category C	130
Approach Category D	54
Total	583

[1] Does not account for flight plans closed in route or aircraft fly that under visual flight rules.
Source: Airport IQ; Coffman Associates analysis.

Based upon the *AirportIQ* analysis and national trends, the *2009 Riverside Airport Master Plan Update* anticipates that operations by business jet aircraft in the ARC C-II category will continue and increase in the future. Therefore, future facilities at Riverside Airport will need to meet FAA design standards for aircraft in ARC C-II category.

Table B2 presents the design standards to be applied to the Runway 27 RSA at Riverside Airport. It also highlights the dimensions where the RSA does not meet FAA design standards.

TABLE B2
Runway Safety Area Runway 27
Riverside Airport

Runway 27 Runway Safety Area	FAA ARC C-II Design Standard	Current Condition	Ultimate Condition
Width	400	400	400
Length	1,000	**100**	1,000

Note: All measurements in feet. **BOLD =** Does not meet standard
Source: FAA AC 150/5300 – 13A, Airport Design

[2] *2009 Riverside Airport Master Plan Update*

Appendix C

BIOLOGICAL INFORMATION

Appendix C
BIOLOGICAL INFORMATION

This appendix includes a copy of the Biological Assessment prepared for the proposed project site. The City of Riverside's Multiple Species Habitat Conservation Plan consistency determination is included in the back of this appendix.

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Biological Assessment for the Proposed Improvements at Riverside Airport in Riverside, Riverside County, California

Prepared for

Coffman Associates

Prepared by

SWCA Environmental Consultants

May 2011

BIOLOGICAL ASSESSMENT FOR THE PROPOSED IMPROVEMENTS AT RIVERSIDE AIRPORT IN RIVERSIDE, RIVERSIDE COUNTY, CALIFORNIA

Prepared for:

Coffman Associates
237 NW Blue Parkway
Lee's Summit, Missouri 64063
Contact: David Fitz

Prepared by:

Michael Tuma, Taya Cummins, Michael Cady, David Daitch, and Shanee Stopnitzky

SWCA Environmental Consultants
625 Fair Oaks Avenue, Suite 190
South Pasadena, California 91030
(626) 240-0587
www.swca.com

Contact: Eleanor Gladding

SWCA Project No. 14079.01

May 2011

MANAGEMENT SUMMARY/ABSTRACT

Purpose and Scope: This document details the results of a biological study in support of proposed improvements (project) at the existing Riverside Municipal Airport (Airport) in the City of Riverside (City), Riverside County, California. The purpose of this document is to demonstrate project compliance with a number of federal laws pertaining to the protection of sensitive natural resources, including the Federal Endangered Species Act (FESA), the Migratory Bird Treaty Act (MTBA), and the Bald and Golden Eagle Protection Act (Eagle Act), and the Clean Water Act (CWA). This document was also prepared to satisfy the project's permitting requirements for the Western Riverside Multiple Species Habitat Conservation Plan (MSHCP) review process. The MSHCP is a Habitat Conservation Plan (HCP) implemented under Section 10(a)(1)(B) of FESA.

The Airport occurs over 78 parcels encompassing 351 acres; the expansion is proposed over a 132-acre area that includes all or portions of 28 parcels (Assessor Parcel Numbers 155060010, 155060011, 155060012, 155060013, 155280003, 155280004, 155280005, 155280006, 155280007, 155280008, 155280059, 155280060, 189170025, 189170026, 189210003, 189210004, 189210005, 189210006, 189210007, 189210010, 189210015, 189210024, 189210027, 189210028, 189220001, 189220002, 190210006, and 190270004). The proposed project consists of the upgrades to the existing runway (Runway 27) safety area (RSA) reimbursement of land acquired within the runway protection zone (RPZ) and north side parallel taxiway. Approximately 2,700 feet of a 30-inch natural gas line will be relocated out of the RSA. Second, approximately 155,000 cubic yards of fill will be brought in to bring the Runway 27 RSA up to Federal Aviation Administration (FAA) design standards. In order to reduce the environmental impacts of bringing fill from an off-airport site and to save costs, fill for the Runway 27 RSA will be taken from the north side of the airport. Removal of the needed fill from the north side will also prepare this area for a proposed parallel taxiway, connecting taxiways, north side access road (gated access), and north side ramp with drainage and utility improvements. As a discretionary action, the proposed project is subject to the requirements of the MSHCP.

The services provided by SWCA included: conducting a literature and database search to determine the potential for occurrence of special-status species and sensitive habitats within and immediately adjacent to the project site; conducting a field visit to characterize the biological conditions of the project site and its immediate vicinity; conducting habitat assessments for MSHCP-covered species; conducting an analysis of potential impacts that the project could have on sensitive biological resources covered under both the MSHCP; and recommending measures that would mitigate any potential impacts.

Dates of Investigation: The literature and database searches were performed on March 5, 10, and 11, 2008, and updated on October 13, 2009. The initial habitat assessment survey of the project site and adjacent lands within 150 meters was conducted on February 26, 2008. Step IIa focused burrow surveys for burrowing owl were conducted on June 18 and 19, 2009. Step IIb focused breeding season surveys for burrowing owl were conducted on June 24 and July 1, 8, and 15, 2009. A focused survey for San Diego ambrosia was conducted on October 2, 2009. A wetland delineation was conducted on October 30, 2009.

Findings of the Investigation: Five habitat types were identified in the project during the general biological field survey: urban or built up land, non-native grassland, artificial wet meadow, transitional bare areas, and ruderal habitats. Habitats identified on adjacent lands (within 150 meters) include: urban or built-up lands, non-native grasslands, and ruderal habitats. A total of 44 plant and 22 wildlife species were observed during the initial survey of the project site and immediate vicinity. This included the observation of two special-status wildlife species: a flock of California horned larks observed on the project site in non-native grassland and ruderal habitats, and a breeding pair of burrowing owls observed in non-native grassland habitat immediately adjacent to the project site on Airport grounds.

A total of 73 special-status species that are covered under the MSHCP have been recorded within the nine-quad project vicinity, including: eight plants, one invertebrate, two fish, three amphibians, nine reptiles, 35 birds, and eight mammals. Ten species were assessed as being present or "may occur" within the project site based upon the habitats represented within the project site and species occurrences within the project vicinity. These included San Diego ambrosia, Plummer's mariposa lily, northern harrier (foraging and nesting), white-tailed kite (foraging and nesting), Cooper's hawk (foraging and nesting), burrowing owl (foraging and nesting), loggerhead shrike (foraging and nesting), California horned lark (foraging and nesting), coyote, and northwestern San Diego pocket mouse.

Habitat assessments for MSHCP-covered species determined that appropriate habitat for San Diego ambrosia and burrowing owl occurs within the project site. The project site does not contain suitable habitat for two other narrow endemic plant species (Brand's phacelia and San Miguel savory), nor suitable habitat for least Bell's vireo, southwestern willow flycatcher, yellow-billed cuckoo, or vernal pool shrimp species.]

Focused surveys for San Diego ambrosia within appropriate habitat resulted in no individuals of the species being found. Burrowing owls are present immediately adjacent to the project site, based upon observations during the general biological field survey and focused surveys. Both observations were made during the breeding season for burrowing owls, and included observations of a nesting pair in 2008 and a single individual in 2009. Additionally, appropriate nesting and/or foraging habitat for burrowing owl was observed over the majority of the project site, as well as several areas adjacent to (and within 150 meters) of the project site. Because the burrowing owl could inhabit the project site throughout the year (nesting season, post-nesting dispersal period, and winter season), construction associated with implementation of the project could potentially impact burrowing owls that inhabit the project site. As well, burrowing owls that inhabit appropriate burrowing owl habitat within 150 meters of the project site could be impacted by the construction phase of the project. Construction-generated noise and construction-related traffic have the potential to indirectly impact burrowing owls inhabiting these areas. Any impacts that disrupt the foraging and/or nesting of burrowing owls within or adjacent to the project site would be considered a violation of MSHCP requirements and the Migratory Bird Treaty Act of 1918 (MBTA).

Northern harrier, white-tailed kite, Cooper's hawk, loggerhead shrike, and California horned lark may forage and nest within or adjacent to the project site. Because these species may nest within the project site, the project could potentially impact nests or young of these species. Any impacts that disrupt the nesting of these avian species within or adjacent to the project site would be considered a violation of MSHCP requirements, the MBTA, federal Endangered Species Act (FESA), and California Endangered Species Act (CESA).

The construction activities associated with the proposed project that result in ground disturbance and/or the removal of vegetation could have both direct and indirect impacts to actively nesting birds, including the nests of special-status species. Direct project impacts would include the destruction of active nests, eggs, or young located within vegetation removed within the project site. Indirect impacts would include noise and disturbance associated with the construction activities that cause birds in adjacent habitats to abandon their nests. Any impacts (direct or indirect) that result in the abandonment or destruction of an active nest or the destruction of eggs or young of any protected avian species, including special-status species, would be considered a violation of the MSHCP and the MBTA.

Signs of a coyote were observed within the project site, and Plummer's mariposa lily and northwestern San Diego pocket mouse may occur there. These species are covered under the MSHCP. Therefore, payment of the MSHCP fees fully mitigates any project-related impacts to these species.

No riparian/riverine or vernal pool habitat occurs within the project site. Implementation of the project, therefore, will not result in the loss of sensitive habitats. As well, the project site does not contain, nor is it directly adjacent to, any linkages connecting core areas, as defined by the MSHCP.

A formal delineation of the artificial wet meadow was conducted in accordance with standards established by the U.S. Army Corps of Engineers (USACE). The area delineated lacks a federal nexus, and is not a jurisdictional Water of the United States. The drainage along the western boundary of the project site was mapped outside of the project area.

Recommendations: Since burrowing owls were detected during the breeding season during both the general biological field survey and focused surveys, mitigation may be required in order to prevent take of burrowing owls. Appropriate mitigation measures may only be developed through consultation with the CDFG and U.S. Fish and Wildlife Service (USFWS) personnel assigned to oversight of the MSHCP plan area. Mitigation may include preservation and enhancement (i.e., installation of artificial burrows, habitat restoration) of burrowing owl habitat at both onsite and offsite mitigation areas.

A pre-construction survey will be necessary in all appropriately identified burrowing owl habitat within and adjacent to the project site in order to determine whether burrowing owls are actively occupying the site. The pre-construction survey should be conducted prior to and within 30 days of ground-disturbing activities to ensure clearance of these areas, and to prevent take of burrowing owls. Should burrowing owls be determined to occur within or adjacent to (within 150 meters) the project site, mitigation and monitoring measures should be determined through consultation with the CDFG and USFWS personnel assigned to oversight of the MSHCP plan area.

During the construction phase of the project, a qualified biologist should monitor the project site weekly to determine whether burrowing owls have moved into appropriate burrowing owl habitats within and adjacent to the project site in order to prevent disturbance to or take of burrowing owls. Should burrowing owls be detected during monitoring of the construction phase of the project, the biologist should retain the authority to stop work within 150 feet of the area occupied by the owl(s), and monitor the project site daily until the owl(s) leaves the project site under its own accord, or until the owl(s) has been removed from the project site using mitigation measures approved through consultation with the CDFG and USFWS personnel assigned to oversight of the MSHCP plan area. If burrowing owls are determined to be nesting within the project site, mitigation should include those that protect nesting avian species.

Grading or vegetation clearing within the project site would likely impact any non-raptor nests located on or within 150 feet, and raptor nests located on or within 500 feet of the project site, including those of northern harrier, white-tailed kite, Cooper's hawk, burrowing owl, loggerhead shrike, and California horned lark. SWCA recommends that construction and maintenance activities of the project take place outside of the nesting season, which (under the MSHCP Construction Guidelines, Volume I, Section 7.5.3) occurs from March 1 through June 30. If project grading and maintenance activities occur outside of the nesting season, no further work is recommended. If project grading and maintenance activities must occur during the nesting season, it is recommended that a qualified biologist conduct a pre-construction nest survey on the project site and within 150 feet (for non-raptor nests) and 500 feet (for raptor nests) of the project footprint to identify any active nests that occur there. This survey should be carried out within one week of initiation of grading activities and maintenance activities. If bird species protected under the MBTA, FESA (16 U.S. Code [USC] 153 et seq.), or the MSHCP are found nesting on or adjacent to the project site, SWCA recommends that a qualified biologist monitor the nests daily during all phases of construction and maintenance to ensure that the project does not impact the nests. Grading and maintenance activities should not be allowed within 150 feet of active non-raptor nests or 500 feet of active raptor nests until it has been determined by a qualified biologist that the chicks have fledged. Following fledging of the nestlings, the buffer area around the nest can be graded.

Numerous MSHCP-covered species occur, or may occur, within the project site, including Plummer's mariposa lily, northern harrier, white-tailed kite, Cooper's hawk, loggerhead shrike, California horned lark, coyote, and northwestern San Diego pocket mouse. Focused surveys are not required for these species, and take of individuals and their habitat is allowed under the MSHCP. No further action is necessary for plant, reptilian, and mammalian species; however, the Construction Guidelines detailed in Volume I, Section 7.5.3 of the MSHCP should be implemented with regard to protection of nesting avian species.

A Waste Discharge Requirement (WDR) or a waiver of WDR will be required by the CRWQCB.

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APPENDICES

Appendix A: Western Riverside County MSHCP List of Covered Species
Appendix B: Inventory of Plant and Wildlife Species Observed within the Project Site
Appendix C: Assessment of Potential for Occurrence of Special-status Plant and Wildlife Species Known to Occur within the Project Vicinity

INTRODUCTION

This document details the results of a biological study in support of proposed improvements (project) at the existing Riverside Municipal Airport (Airport) in the City of Riverside (City), Riverside County, California. The Airport occurs over 78 parcels encompassing 351 acres; the expansion is proposed over a 132-acre area that includes all or portions of 28 parcels (Assessor Parcel Numbers 155060010, 155060011, 155060012, 155060013, 155280003, 155280004, 155280005, 155280006, 155280007, 155280008, 155280059, 155280060, 189170025, 189170026, 189210003, 189210004, 189210005, 189210006, 189210007, 189210010, 189210015, 189210024, 189210027, 189210028, 189220001, 189220002, 190210006, and 190270004).

The purpose of this document is to demonstrate project compliance with a number of federal laws pertaining to the protection of sensitive natural resources. Paramount among these policies are the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP), which was created under Section 10 of the FESA. Together, these laws combine to cover all of the sensitive natural resources protected by federal policies that may be affected the proposed project. The MSHCP is a Habitat Conservation Plan (HCP) implemented under Section 10(a)(1)(B) of the federal Endangered Species Act (FESA). It fulfills requirements of the Migratory Bird Treaty Act (MTBA), the Bald and Golden Eagle Protection Act (Eagle Act), the California Endangered Species Act (CESA), and California Fish and Game Code Sections pertaining to the protection of state-listed species, nesting raptors, nesting native and migratory bird species, and Fully Protected species. It provides protection for 146 Covered Species and numerous sensitive habitats, and seeks to provide a framework for permitting incidental take of listed species and their habitat for all discretionary projects within the region while simultaneously conserving important ecosystem elements within a series of core conservation areas and their linkages throughout western Riverside County. In pursuing this ecosystem approach, the MSHCP covers far more than federally listed species. For example, one common species – the coyote – is protected under the MSHCP because of its recognized importance as a top predator in most (if not all) of the habitats within western Riverside County. Though the MSHCP is comprehensive in protecting Covered Species and their habitat, and aggressive in assembling conservation lands, not all sensitive natural resources are protected under the permit.

This document was prepared to satisfy the project's permitting requirements for the MSHCP review processes. MSHCP review will be completed by City staff, Federal Aviation Administration (FAA) staff, U.S. Fish and Wildlife Service (USFWS) and CDFG agency personnel, and staff at the Western Riverside County Regional Conservation Authority (RCA), a multi-jurisdictional authority that oversees implementation and enforcement of the MSHCP. Demonstrating project compliance with the MSHCP may partially fulfill requirements specified under additional environmental legislation, including the National Environmental Policy Act (NEPA). Descriptions of these laws and how they pertain to the project are provided in Section 2.3 of this document.

Project Location

The Airport is located in a light industrial/manufacturing area at 6951 Flight Road, north of Arlington Road, south of Central Avenue, and east of Van Buren Boulevard in the City of Riverside, Riverside County, California. Specifically, it is located at an elevation of approximately 243 meters (797 feet) above mean sea level in the San Bernardino Meridian T2S, R5W, section 31 (Latitude/Longitude: 33.9529°N, 117.4414°W) on the U.S. Geologic Survey (USGS) Riverside West 7.5-minute Quadrangle, (1967 photorevised 1980) (Figure 1).

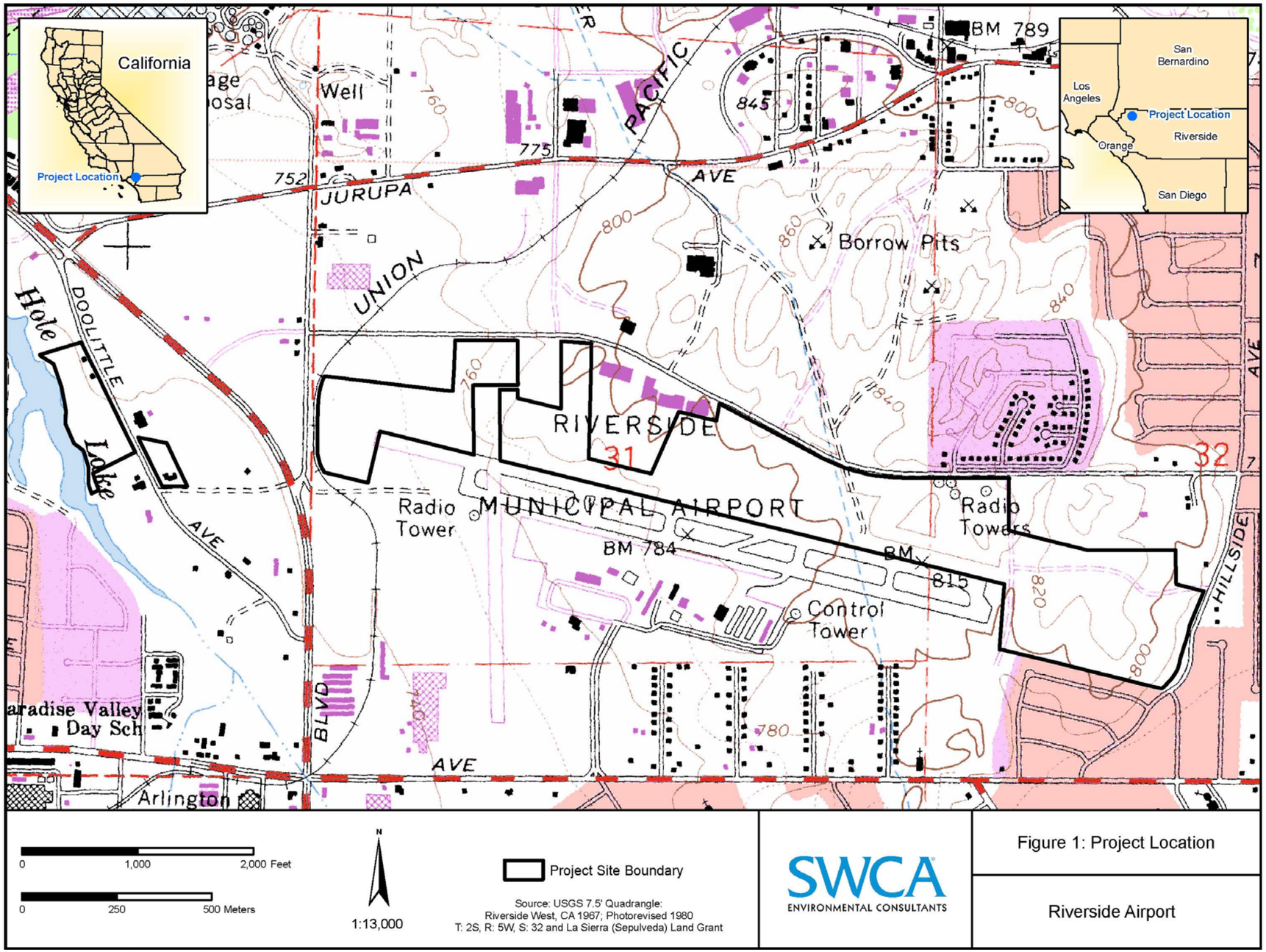

Figure 1. Project Location Map

Project Description

The proposed project consists of the upgrades to the existing runway (Runway 27) safety area (RSA), reimbursement of acquired land within the runway protection zone (RPZ), and a north side parallel taxiway. Approximately 2,700 feet of a 30-inch natural gas line will be relocated out of the RSA. Second, approximately 155,000 cubic yards of fill will be brought in to bring the Runway 27 RSA up to FAA design standards. In order to reduce the environmental impacts of bringing fill from an off-airport site and to save costs, fill for the Runway 27 RSA will be taken from the north side of the airport. Removal of the needed fill from the north side will also prepare this area for a proposed parallel taxiway, connecting taxiways, north side access road (gated access), and north side ramp with drainage and utility improvements. As a discretionary action, the proposed project is subject to the requirements of the MSHCP.

SETTING

Environmental Setting

The Airport is located in the southwestern California region within the south coast subregion. This subregion was previously dominated by coastal scrub and chaparral communities but has recently been urbanized, resulting in a great loss of undisturbed habitat (Hickman 1993). Specifically, the project site is located just south of the Santa Ana River and the Pedley Hills. The local climate is typical of a Mediterranean region with hot, dry summers and cooler, wetter winters. Temperatures range from daytime highs in the low 40s to low 100s degrees Fahrenheit (°F) to overnight lows in the mid 30s to low 90s °F. Average annual precipitation ranges from 12 inches per year in the coastal plain to 18 inches per year in the inland alluvial valleys, reaching 40 inches or more in the San Bernardino Mountains.

The Airport contains a mosaic of developed and undeveloped lands. Undeveloped lands have been modified, and contain transitional bare areas, ruderal habitats, and non-native grassland. Habitats immediately adjacent to the Airport are primarily developed, though several parcels of undeveloped lands border the Airport, and contain primarily non-native grassland and ruderal habitats. Detailed descriptions of the vegetation communities and habitats within and immediately adjacent to the Airport are provided in the Results section of this report.

Soils

Soils within the project site include Porterville clay, Fallbrook sandy loam, Buren fine sandy loam, Arlington loam, and Terrace escarpments. These soil types are not classified as hydric.

Porterville clay (Map Unit Symbol: PtB; 0 to 5 percent slopes) is found on alluvial fans and foothills with slopes of 0 to 9 percent. It is formed in fine textured alluvium from basic and metabasic rocks. This soil may be gravelly or cobbly, with most of the gravel or cobbles concentrated on the surface. Rock fragments may cover as much as 45 percent of the surface. The soil is well-drained, with very slow to rapid runoff and slow permeability. The natural vegetation associated with the soil is composed of annual grasses, herbaceous forbs, and widely spaced shrubs (Natural Resources Conservation Service [NRCS] 1971). Within the project site these soils are located in the western portion of the airport property and on the isolated western parcels.

Fallbrook sandy loam soils (Map Unit Symbol: FaD2, 8 to 15 percent slopes, eroded; FaE2, 15 to 25 percent slopes, eroded) are found on rolling hills that have slopes of 5 to 75 percent. They consist of deep,

well-drained soils that are formed from material weathered from granitic rocks. Usually the rock is deeply weathered and rock outcrops are common in some areas. The soils are well-drained, with medium to very rapid runoff and moderately slow permeability. The natural vegetation associated with the soils is composed of mainly annual grasses and forbs with considerable chaparral, chamise, flattop buckwheat, and other shrubs (NRCS 1971). Within the project site these soils are located in the eastern and northern portions of the airport property.

Buren fine sandy loam (Map Unit Symbol: BuC2, 2 to 8 percent slopes, eroded) is found on gently to strongly sloping alluvial fans and terraces. It is formed from alluvium derived mostly from basic igneous rocks and partly from other crystalline rocks. The soil is well-drained, with slow to medium runoff and moderately slow permeability in the Bt horizon and very slow in the Csi horizon. The natural vegetation associated with the soils is principally annual grasses and forbs with chaparral shrubs on eroded terrace slopes (NRCS 1971). Within the project site this soil is located in the center, north-central, and eastern boundary of the airport property.

Arlington loam (Map Unit Symbol: ArD, deep, 5 to 15 percent slopes) is found on nearly level to strongly sloping area and on alluvial fans and terraces. The soil is well-drained, with slow to medium runoff and slow permeability. The natural vegetation associated with the soil is mainly annual grasses and forbs (NRCS 1971). Within the project site this soil is located at the eastern end of the airport runway.

Terrace escarpments (Map Unit Symbol: TeG, 5 to 75 percent slopes, eroded) consist of steep, relatively smooth descending slopes at the ends of terraces. The natural drainage, subsoil permeability, and available water holding capacity are variable. Surface runoff is rapid and the erosion hazard is severe. Typically the soil material varies considerably in characteristics within short distances. This soil type is considered to be a hydric soil when it occurs in drainages and floodplains (NRCS 1971). Within the project site, this soil is located along the western edge of the isolated western parcels.

Regulatory Setting

Federal Regulations

FEDERAL ENDANGERED SPECIES ACT OF 1973 (16 U.S. CODE [USC] 1531-1544, 87 STAT. 884), AS AMENDED

The Federal Endangered Species Act (FESA) the 1973 Endangered Species Act provides for the conservation of ecosystems upon which threatened and endangered species of fish, wildlife, and plants depend. FESA authorizes the Secretary of the Interior to make determinations, including listing of species as threatened and endangered and designating Critical Habitat for listed species. FESA prohibits the take, possession, sale, and transport of listed species. “Take” may include adverse impacts to listed species or their Critical Habitat, and includes actions that could result in “significant habitat modification or degradation.” Applicants for projects that could result in adverse impacts to any federally listed species are required to obtain either a Biological Opinion from the U.S. Fish and Wildlife Service (USFWS) that authorizes the project or “action,” or an Incidental Take Authorization. A Biological Opinion may be issued only during agency-to-agency consultations, as defined and authorized under Section 7 of FESA. During the Section 7 process, determinations are made regarding the proposed project and its potential to adversely affect the federally listed species, and reasonable and prudent mitigation measures required to avoid such effects. An Incidental Take Permit may be issued under Section 10(a)(1)(B) of FESA where a non-federal action may result in adverse affects to listed species or their Critical Habitat. An HCP is required as part of the Incidental Take permitting process. The purpose of the HCP and permit is to allow the project or action to proceed through identifying potential adverse affects that could cause take, and avoiding, minimizing, and/or mitigating for that take to the maximum extent practicable.

The proposed project is within the MSHCP, which serves as an HCP pursuant to Section 10(a)(1)(B) of FESA, as well as a Natural Communities Conservation Plan (NCCP) under the NCCP Act of 2001 (California Fish and Game Code 2800 et seq.). At the time of its implementation in 2004, the plan was the nation's largest HCP. It covers 146 species (Appendix A) and multiple habitats within a diverse landscape, and under multiple jurisdictions. The MSHCP allows participating jurisdictions to authorize take of Covered Species within the plan area. The MSHCP includes compensation requirements for take authorization, and prescribes protection and mitigation measures that are approved and monitored by multiple resource agencies, including USFWS and CDFG. The compensation provided by MSHCP-permitted actions and projects is used to assemble and manage a series of core conservation areas and numerous linkages between them.

Implementation of the MSHCP is overseen, administered, and enforced by the RCA, a joint authority formed by the County of Riverside and the 14 cities that are signatories to the MSHCP. The current project is an action proposed by the City, one of the signatories of the MSHCP. As part of the permitting process required under the MSHCP, City Planning Division staff will review technical documents pertaining to environmental compliance, and coordinate with RCA, USFWS, and CDFG staff to ensure that the proposed project meets the requirements of the MSHCP.

MIGRATORY BIRD TREATY ACT (16 USC 703 TO 711)

The Migratory Bird Treaty Act of 1918 (MBTA) prevents the take of all migratory birds, including their nests and eggs.

BALD AND GOLDEN EAGLE PROTECTION ACT (16 USC 668)

The Eagle Act specifically protects bald and golden eagles from being killed or their eggs taken.

CLEAN WATER ACT (33 USC §1251 ET SEQ.; 1972)

Under provisions of the Clean Water Act, the U.S. Army Corps of Engineers (USACE) administers the day-to-day activities required by Section 404. These include the individual permit decisions, jurisdictional determinations, developing policy and guidance, and enforcing provisions of Section 404. The USACE will assert jurisdiction over the following categories of water bodies: traditional navigable waters (TNW); all wetlands adjacent to TNW; non-navigable tributaries of TNW that are relatively permanent (i.e., tributaries that typically flow year-round or have continuous flow at least seasonally); and wetlands that directly abut such tributaries. In addition, the agencies will assert jurisdiction over every water body that is not a Relatively Permanent Water Body (RPW) if that water body is determined (on the basis of a fact-specific analysis) to have a significant nexus with a TNW. The classes of water body that are subject to Clean Water Act jurisdiction, only if such a significant nexus is demonstrated, are: non-navigable tributaries that do not typically flow year-round or have continuous flow at least seasonally; wetlands adjacent to such tributaries; and wetlands adjacent to but that do not directly abut a relatively permanent, non-navigable tributary.

NATIONAL ENVIRONMENTAL POLICY ACT OF 1969, AS AMENDED

NEPA requires federal agencies to take into consideration the environmental consequences of proposed actions as well as input from state and local governments, Indian tribes, the public, and other federal agencies during their decision-making process. The Council on Environmental Quality (CEQ) was established under NEPA to ensure that all environmental, economic, and technical considerations are given appropriate consideration in this process.

State Regulations

CALIFORNIA ENDANGERED SPECIES ACT (FISH AND GAME CODE SECTION 2050 ET SEQ.)

Species listed under the California Endangered Species Act (CESA) cannot be taken or harmed, except under specific permit. As currently stated in the Act, "take" means to hunt, pursue, catch, capture, or kill, or to attempt to do so. As stated above, the proposed project is within the area covered by the MSHCP. The MSHCP also includes compensation requirements for take of state listed species and their habitat in accordance with CESA. The MSHCP also includes prescribed protection and mitigation measures approved by the CDFG for sensitive species.

FISH AND GAME CODE SECTIONS 3511, 4700, 5050, AND 5515

These Sections provide a provision for the protection of bird, mammal, reptile, amphibian, and fish species that are "fully protected." Fully protected animals may not be harmed, taken, or possessed.

FISH AND GAME CODE SECTION 3503

This Section states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this Code or any regulation made pursuant thereto.

FISH AND GAME CODE SECTION 3503.5

This Section provides protection for all birds-of-prey, including their eggs and nests.

FISH AND GAME CODE SECTION 3513

This Section makes it unlawful to take or possess any migratory non-game bird as designated in the MBTA.

FISH AND GAME CODE SECTIONS 1900 ET SEQ., OR NATIVE PLANT PROTECTION ACT

This Section lists threatened, endangered, and rare plants so designated by the California Fish and Game Commission.

TITLE 14, CALIFORNIA CODE OF REGULATIONS, SECTIONS 670.2 AND 670.5

These Sections list animals designated as threatened or endangered in California. The CDFG designates species considered to be indicators of regional habitat changes, or candidate species for future state listing, as California Species of Concern (CSC). CSC do not have special legal status, but are used by the CDFG as a management tool when considering the future use of any land parcel.

PORTER-COLOGNE WATER QUALITY ACT (CALIFORNIA WATER CODE ß13000 *ET SEQ.*)

The California Regional Water Quality Control Board (CRWQCB) regulates discharge of waste in any region that could affect the Waters of the State under the California Porter-Cologne Water Quality Act or Waters of the U.S. under Section 401 of the Federal Clean Water Act. Under the Porter-Cologne Act, a Report of Waste Discharge must be submitted prior to discharging waste, or proposing to discharge waste, within any region that could affect the quality of the Waters of the State (California Water Code Section 13260). Waste Discharge Requirements (WDRs) or a waiver of WDRs will then be issued by the CRWQCB. Waters of the State are defined as any surface water or groundwater, including saline waters, which are within the boundaries of the state (California Codes: Public Resource Code Section 71200).

METHODS

Literature and Database Search

SWCA biologists reviewed existing sources of information regarding the occurrence of special-status species, and assessed the potential for occurrence of these species within the project site. The review was conducted on March 5, 10, and 11, 2008, and updated on October 13, 2009. Special-status species are plants and animals in one or more of the following categories.

- Species listed or proposed for listing as threatened or endangered under FESA (50 CFR 17.12 [listed plants], 50 CFR 17.11 [listed animals], and various notices in the Federal Register [FR] [proposed species]).
- Species that are candidates for possible future listing as threatened or endangered under FESA (67 FR 40657, June 13, 2002).
- Species listed or proposed for listing by the State of California as threatened or endangered under CESA (14 California Code of Regulations [CCR] 670.5).
- Species that meet the definitions of rare or endangered under CEQA (State CEQA Guidelines Section 15380).
- Plants listed as rare under the California Native Plant Protection Act (California Fish and Game Code Section 1900 et seq.).
- Plants considered by the California Native Plant Society (CNPS) to be "rare, threatened, or endangered in California" (Lists 1B and 2 in CNPS 2001).
- Plants listed by CNPS as plants about which more information is needed to determine their status and plants of limited distribution (Lists 3 and 4 in CNPS 2001), which may be included as special-status species on the basis of local significance or recent biological information.
- Animal species of special concern as listed by CDFG (2009).
- Animals fully protected in California (California Fish and Game Code Sections 3511 [birds], 4700 [mammals], 5050 [amphibians and reptiles], and 5515 [fish]).
- Animals included on the California Special Animals List (CDFG 2009) because of inclusion on one or more of several "watch lists," including the International Union for Conservation of Nature (IUCN) Red List, the American Bird Conservancy (ABC) Green List, the Audubon WatchList, the Bureau of Land Management (BLM) Sensitive Species list, the California Department of Forestry and Fire Protection Sensitive Species list, the U.S. Forest Service (USFS) Sensitive Species list, the USFWS Birds of Conservation Concern list, the United States Bird Conservation (USBC) Watch List, bat species included on the Western Bat Working Group's (WBWG) Regional Priority Matrix as High or Medium, and the Xerces Society Red list of pollinators.

The following sources of information were consulted prior to conducting the general biological field survey:

- The California Natural Diversity Database (CNDDB) for the Riverside East USGS 7.5-minute quadrangle (USGS Quad) and the eight surrounding quadrangles in the project vicinity including: Fontana, San Bernardino South, Riverside East, Steele Peak, Lake Matthews, Corona South, Corona North, and Guasti.

- CNPS's 2007 online *Inventory of Rare and Endangered Plants of California* for the Riverside East USGS 7.5-minute Quad and the eight surrounding quadrangles in the project vicinity including: Fontana, San Bernardino South, Riverside East, Steele Peak, Lake Matthews, Corona South, Corona North, and Guasti.
- USFWS, Carlsbad Fish & Wildlife Office Endangered and Threatened Species List (Riverside County).
- Interactive Species Map for Western Riverside County (http://ecoregion.ucr.edu/maps.asp) for a list of sensitive species within the vicinity (within five kilometers) of the project. This species list includes observations of MSHCP-covered species.

MSHCP Conservation Summary Report Generator

Prior to initiating field surveys, we determined the MSHCP survey requirements for the proposed project area. A review of the Riverside County Integrated Plan (RCIP) MSHCP Conservation Summary Report Generator (http://www.tlma.co.riverside.ca.us/gis/rciprepgen.html) determined that the affected parcels within the project site are located within the overlay for four MSHCP Covered Species: burrowing owl (*Athene cunicularia*) and three narrow endemic plant species – San Diego ambrosia (*Ambrosia pumila*), Brand's phacelia (*Phacelia stellaris*), and San Miguel savory (*Satureja chandleri*). In addition to requiring habitat assessments for these species, the MSHCP also requires that habitat assessments be performed on all project sites for the following Covered Species: least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), western yellow-billed cuckoo (*Coccyzus americanus occidental*), California linderiella (*Linderiella occidentalis santarosae*), Riverside fairy shrimp (*Streptocephalus woottoni*), and vernal pool fairy shrimp (*Branchinecta lynchi*).

Field Surveys

General Biological Field Survey

SWCA conducted a general biological field survey of the project site and adjacent lands within 150 meters to identify and characterize the vegetation types and assess wildlife habitats. During the visit, the project site was walked and plant communities were characterized. The purpose of this survey was to identify vegetation, land cover types, and any habitats, including riparian areas and vernal pools, with the potential to support sensitive wildlife species. The project site was also evaluated to determine whether habitat existed for other sensitive biological resources, including nesting birds. During this evaluation, SWCA biologists searched the project site for bird nests and nesting habitat.

Vegetation types and land cover types were recorded on aerial photographs and described in field notes. Natural vegetation communities were described using the California List of Terrestrial Natural Communities (CDFG 2003). When possible, Holland (1986) and Sawyer and Keeler-Wolf (1995) equivalents were assigned. Plant nomenclature followed *The Jepson Manual of Higher Plants of California* (Hickman 1993).

Special-status Species Habitat Assessments

BURROWING OWL

SWCA biologists conducted a walkover of the project site to ascertain the presence/absence of burrowing owl habitat. This survey was performed using guidelines for Step I Habitat Assessment as recommended in the revised burrowing owl survey instructions for the MSHCP (County of Riverside 2006), which rely

heavily on survey methodology developed by the California Burrowing Owl Consortium (1993) and were approved by the CDFG (1995). Standard field methods included walking transects spaced at no more than 30 meters across the entire property and visually inspecting the vegetation, topography, and presence or absence of potential burrows (rodent burrows, boulders, berms, and concrete or asphalt debris piles). If burrowing owl habitat was identified within the project site, then adjacent lands within 150 meters (500 feet) of the project site were also surveyed for the presence of burrowing owl habitat. Although the purpose of the survey was not to look for burrowing owls, the locations of any burrowing owls or their sign observed on the project were documented with photographs, field notes, and global positioning system (GPS) technology.

NARROW ENDEMIC PLANT AND OTHER MSHCP-COVERED SPECIES

SWCA assessed the presence or absence of appropriate habitat for other MSHCP-covered species, including three narrow endemic plant species with overlays on the project site (San Diego ambrosia, Brand's Phacelia, San Miguel savory), as well as least Bell's vireo, southwestern willow flycatcher, western yellow-billed cuckoo, and vernal pool shrimp species. This included a characterization of the biological conditions within the project site, and an assessment of whether the habitats within the project site provided appropriate habitat for these species.

Focused Surveys

SAN DIEGO AMBROSIA

Due to the determination of the occurrence of suitable habitat for the species, focused surveys for San Diego ambrosia were conducted within the identified wet meadow habitat by an SWCA botanist. Samples of *Ambrosia* spp. were collected in the field and identification of the species was made in the office using a dissection microscope and *The Jepson Manual of Higher Plants of California* (Hickman 1993) and *A Flora of Southern California Flora* (Munz 1974).

BURROWING OWL

Per MSHCP requirements, focused surveys were conducted by SWCA biologists within habitats determined to be appropriate for burrowing owl during Step I. These habitats include nonnative grassland, transitional bare areas, and ruderal habitats within the project site and on adjacent properties within 150 meters of the project site. The focused surveys (MSHCP protocol Step II surveys, County of Riverside 2006) included transects (spaced 10 to 30 meters apart) to identify burrows or other burrowing structures that could be used by burrowing owl (Step II, Part A). Any burrowing owl sightings, occupied burrows, and burrows with owl sign were documented with photographs, field notes, and GPS technology.

Dusk/dawn focused surveys were conducted over four separate visits (Step II, Part B). The surveys were conducted in the early evening, two hours before sunset to one hour after sunset. The focused surveys were conducted during the breeding season (March 1 through August 30), and were conducted during weather that was conducive to observing owls outside their burrows and their sign. The surveys were not conducted within five days of rain, which could eliminate sign of burrowing owl. Any burrowing owl sightings, occupied burrows, and burrows with owl sign were documented with photographs, field notes, and GPS technology.

Wetland Delineation

Due to the occurrence of the wet meadow in the north-central portion of the project area and a drainage with riparian vegetation along the western boundary of the project area, SWCA conducted a wetland delineation in accordance with regulations described in Part IV of *The Corps of Engineers Wetlands*

Delineation Manual (Environmental Laboratory 1987). Preliminary studies to identify potential drainages and wetland areas within the project site was accomplished using 1:2400 (one inch = 100 feet) scaled topographical maps with contours at five-foot intervals. Aerial photographs were also used to identify areas of potential riparian or hydrophytic vegetation. Field surveys were then conducted to determine the structure and composition of onsite riparian and hydrophytic vegetation in order to verify all potential CDFG jurisdictional areas.

Measurements were taken using 100-foot fabric tape measures and mapping was conducted using 1:2400 (one inch = 100 feet) scaled topographical maps with a five-foot contour interval. Observation points were established at 30-50 feet intervals or where the width of the drainages noticeably varied. Measurements of USACE non-wetlands jurisdictional waters of the U.S. were taken at each observation point by finding the ordinary high water marks (OHWM) on each side of the drainage. OHWM are produced by the fluctuation of waters within a channel or body of water and can be identified by shelving, changes in soil characteristics, change in vegetation, lack of vegetation, the presence of vegetative or other debris, or anything else that distinguishes the area below from above.

At observation points where CDFG jurisdiction extended outside of USACE jurisdiction (in areas where riparian vegetation was present) measurements were taken from the limits of contiguous riparian vegetation. This included drainages where hydrophytic vegetation overhung the USACE jurisdiction and continued beyond the designated waters of the U.S.

Assessment of Special-status Species Occurrence Potential

Following the database searches and general biological field survey, SWCA assessed of the potential for occurrence for other special-status species not covered under the MSHCP. This consisted of assessing the biological conditions within the project site and the known occurrences of special status species within the project vicinity. During the assessment, each species was assigned to one of the following categories:

Present: Species is known to occur within the project site, based on recent (within 20 years) CNDDB or other records, and/or was observed within the project site during the field survey(s).

May occur: Species is known to occur in the project vicinity (based on recent [within 20 years] CNDDB or other records within five miles [10 miles for butterfly, bird, and bat species] and/or based on professional expertise specific to the project vicinity or species), and there is suitable habitat within the project site. Alternatively, there is suitable habitat within the project site and the project limits are within the known range of the species. For avian species, a distinction was made between occurrence potential on the project site as a forager, nester, and/or transient.

Not likely to occur: Species is known to occur in the vicinity of the project site (within five miles for plants and terrestrial animals or 10 miles for butterfly, bird, and bat species); however, there is poor quality or marginal habitat in the project site. If the species occurs at the project site, it would likely be as a migrant, and the species is not likely to reproduce (breed or nest) within the project site due to a lack of suitable habitat or because the project site is outside of their known breeding range.

Absent: There is no suitable habitat for the species within the project site, or the project site is located outside of the known range of the species. Alternatively, a species was surveyed for during the appropriate season with negative results for species occurrence.

RESULTS

Field Surveys

General Biological Field Survey

SWCA biologists Michael Tuma and Taya Cummins conducted a general biological field survey of the project site on February 26, 2008, between 9:00a.m. and 11:45a.m. Conditions at the project site during the survey were clear with north/northwesterly winds of approximately seven miles per hour and an average temperature of 65°F.

Focused Surveys

SAN DIEGO AMBROSIA

Focused surveys for San Diego ambrosia were conducted within the identified wet meadow habitat by SWCA Senior Biologist Ty Garrison, M.S. on October 2, 2009. Conditions at the project site during the survey were clear with east/northerly winds and an average temperature of 80°F.

BURROWING OWL

The burrowing owl burrow survey (Step IIa) was conducted by SWCA biologists Dr. David Daitch and Michael Cady on June 18 and 19, 2009. Temperature ranged from 80 to 95°F with sunny skies and wind speeds below five miles per hour.

The burrowing owl dusk/dawn focused surveys (Step IIb) were conducted on June 24 and July 1, 8, and 15, 2009, by SWCA biologists Dr. David Daitch, Michael Cady, and Shanee Stopnitzky. All four surveys were conducted from two hours before sunset to one hour after. Temperature ranged from 65 to 90°F with mostly sunny skies and wind speeds from five to 14 miles per hour.

Wetland Delineation

A wetland delineation was conducted in the area of the wet meadow in the north-central portion of the project area, and a demarcation of the eastern boundary of the riparian habitat located at the western edge of project area. The wetland delineation was conducted by SWCA Senior Biologist Ty Garrison and biologist Dr. David Daitch on October 30, 2009. Conditions at the project area during the survey were clear with east/northeasterly winds of approximately six miles per hour and an average temperature of 75°F.

Biological Conditions Within and Adjacent to the Project Site

The project site contains five habitat types: urban or built up land, non-native grassland, wet meadow, transitional bare areas, and ruderal habitats. Habitats identified on adjacent lands (within 150 meters) include: urban or built-up lands, non-native grasslands, and ruderal habitats. These habitat types are discussed in detail below and are depicted in.

Habitat Types in the Project site

NON-NATIVE GRASSLAND

Non-native grasslands have a dense to sparse cover of low-growing annual grasses and forbs that germinate with the onset of the late fall rains and complete their life cycle by early summer (Holland 1986). Non-native grassland within the project site included the majority of the open fields surrounding runway and airport facilities (Figure 2; Photograph 1). Several bedrock outcrops were identified within the non-native grassland in the eastern half of the project site. The non-native grassland habitat is regularly mowed and herbicide is applied as necessary in select locations where mowing is not practicable. Dominant plant species identified within this habitat included non-native annual grasses and forbs such as slender wild oat (*Avena barbata*), rip-gut brome (*Bromus diandrus*), red brome (*Bromus madritensis* ssp. *rubens*), wild barley (*Hordeum murinum*), redstem filaree (*Erodium cicutarium*), wild radish (*Raphanus raphanistrum*), black mustard (*Brassica nigra*), western ragweed (*Ambrosia psilostachya*), and pygmy-weed (*Crassula connata*). Additionally, several Brazilian peppertrees (*Schinus molle*) were scattered throughout the eastern portion of the project site. A full inventory of plant species observed in this habitat is presented in Appendix B.

Wildlife species observed within this habitat included side-blotched lizard (*Uta stansburiana*), red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparvarius*), burrowing owl, white-crowned sparrow (*Zonotrichia leucophrys*), western meadowlark (*Sturnella neglecta*), and California ground squirrel (*Spermophilus beecheyi*). A full inventory of wildlife species observed in this habitat is presented in Appendix A. The location for the burrowing owl sighting, which included a breeding pair at a burrow, is presented in Figure 3. Other species expected to occur in this habitat include San Diego gopher snake (*Pituophis catenifer annectens*), southern Pacific rattlesnake (*Crotalus oreganus helleri*), lesser goldfinch (*Carduelis psaltria*), valley pocket gopher (*Thomomys bottae*), California vole (*Microtus californicus*), and desert cottontail (*Sylvilagus audubonii*).

Photograph 1. View of Non-native Grassland Habitat

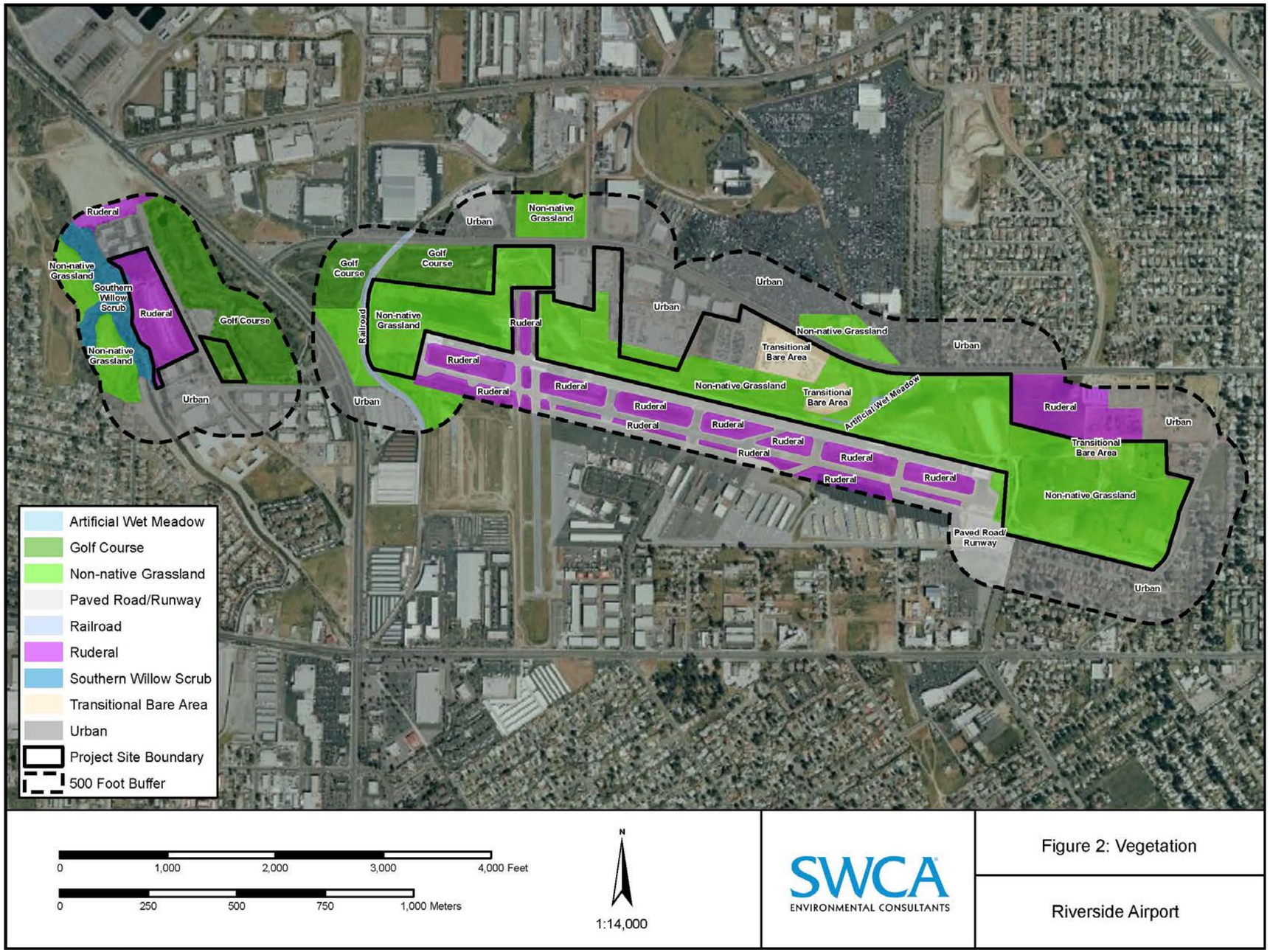

Figure 2. Vegetation Map

URBAN OR BUILT-UP LAND

Urban or Built-up Land is comprised of areas of intensive use with much of the land covered by structures or are entirely paved. Included in this category are cities, transportation, power, and communications facilities, and areas such as those occupied by mills, shopping centers, industrial and commercial complexes, and institutions that may, in some instances, be isolated from urban areas. These areas are characterized by buildings, asphalt, concrete, suburban gardens, and a systematic street pattern (Anderson et al. 1976). Urban or built-up land was identified throughout much of the project site, encompassing nine acres (Figure 2; Photograph 2). Within the project site, this habitat includes paved areas associated with the helipad, auto-auction car lot, and structures associated with airport operations. These areas are almost entirely paved and void of vegetation, aside from a few invasive opportunistic individuals such as red stem filaree and brome grasses.

Wildlife observed in this habitat included American crow (*Corvus brachyrhynchos*) and house sparrow (*Passer domesticus*) (Appendix B). Other wildlife species expected to occur within this habitat include rock dove (*Columba livia*) and European starling (*Sturnus vulgaris*).

Photograph 2. View of Navigational Aid on Urban or Built-up Land Associated with Airport Operations

TRANSITIONAL BARE AREAS

Transitional bare areas are defined as areas which are in transition from one land use activity to another (Anderson et al. 1976). Transitional bare areas encompass five acres within the project site and include a recently cleared area east of existing paved car lots, a small area just southeast of the recently cleared site, and a patch located along the northeastern boundary of the project site (Figure 2; Photograph 3). These areas have been recently disturbed and are void of vegetation aside from a few opportunistic species such as redstem filaree and brome grasses. Wildlife species commonly found in this type of habitat include western fence lizard (*Sceloporus occidentalis*) and killdeer (*Charadrius vociferus*).

Photograph 3. View of a Transitional Bare Area in the North-central Portion of the Project Site

RUDERAL

Ruderal habitats are highly disturbed or modified habitats dominated by opportunistic and often invasive species. Although ruderal habitat is not pristine, it does provide some limited wildlife value by serving as food and cover for insects, reptiles, small mammals, songbirds, and raptors. Ruderal habitat identified within the project site adjacent to runway areas where vegetation it heavily disturbed on a regular basis (Figure 2; Photograph 4). Common plants that were identified within this habitat include black mustard, brome grasses, redstem filaree, and wild radish (Appendix B). Wildlife observed in this habitat included California horned lark (*Eremophila alpestris actia*) and house finch (*Carpodacus mexicanus*) (Appendix B). Other wildlife species expected to occur in this habitat includes California ground squirrel, burrowing owl, mourning dove (*Zenaida macroura*), and killdeer.

Photograph 4. View of Ruderal Habitat

ARTIFICIAL WET MEADOW

Wet meadows consist of a layer of herbaceous species including sedges, rushes, forbs, and grasses. Woody plants, if present, account for a minority of the total area cover (Mayer and Laudenslayer 1988). Wet meadows are characterized by moist to saturated soils throughout the much of the year with standing water present for only brief to moderate periods during the growing season that occur in road ditches, retention basins that catch run-off water, pond areas, and wetland edges. Wet meadows, therefore, do not usually support aquatic life such as fish but do attract large numbers of birds, small mammals, and insects. It was determined that the wet meadow in the north-central portion of the project site, which encompasses 0.22 acres, is artificially fed by a culvert which feeds surface street runoff onto the site along the northern boundary of the project site at Fremont Street and Central Avenue (Figures 4a and 4c; Photographs 5 and 6). A discussion of the jurisdictional character of this habitat is provided in Section 4.6.

Vegetation identified within this habitat included a wide variety of herbaceous species including curly dock (*Rumex crispus*), umbrella sedge (*Cyperus eragrostis*), broadleaf cattail (*Typha latifolia*), clover (*Trifolium* sp.), dallisgrass (*Paspalum dilatatum*), bullthistle (*Cirsium vulgare*), and narrowleaf plantain (*Plantago lanceolata*). Larger species observed included Mexican fan palm (*Washingtonia robusta*) and red willow (*Salix laevigata*) (Appendix B). Wildlife observed in the artificial wet meadow habitat included mourning dove, Anna's hummingbird (*Calypte anna*), and song sparrow (*Melospiza melodia*) (Appendix B). Other wildlife species expected to occur in this habitat include Pacific chorus frog (*Pseudacris regilla*), great egret (*Ardea alba*), red-winged blackbird (*Agelaius phoeniceus*), and deer mouse, (*Peromyscus maniculatus*).

Photograph 5. View of Artificial Wet Meadow facing North

Photograph 6. View of Drainage System Leading to Culvert at Upper Reach of Artificial Wet Meadow facing South along Fremont Street

Habitats on Adjacent Lands (within 150 meters)

NON-NATIVE GRASSLAND

Nonnative grassland habitats within 150 meters of the project site were identified on properties to the west and southwest of the project site (Figure 2). These habitats were continuous and of similar species composition to non-native grassland within the project site.

URBAN OR BUILT-UP LAND

Urban or built-up land dominated most of the area within 150 meters of the project site, and includes runways, parking lots, surface streets, residential and industrial development, and associated landscaped areas (Figure 2). These areas are almost entirely developed and void of vegetation, aside from ornamental plants and a few invasive opportunistic individuals such as red stem filaree and brome grasses.

SOUTHERN WILLOW SCRUB

Southern willow scrub is typically composed of dense, broad-leafed, winter-deciduous riparian thickets dominated by willow (*Salix* spp.), with scattered emergent Fremont cottonwood (*Populus fremontii*) and western sycamore (*Platanus racemosa*). Most stands are too dense to allow much understory development. This habitat is found adjacent to the western margin of the isolated western portion of the project site. It is dominated by black willow (*Salix gooddingii*), but has a substantial nonnative component dominated by giant reed (*Arundo donax*), with scattered European olive (*Olea europaea*) and Canary Island date palm (*Phoenix canariensis*). Other plants observed within this habitat include castor bean (*Ricinus communis*) Fremont's cottonwood (*Populus fremontii*) tree tobacco (*Nicotiana glauca*), Chinese elm (*Ulmus parvifolia*), and water cress (*Nasturtium officinale*). This habitat includes a well developed streambed, with water flowing to the north and into the Santa Ana River, approximately ¾ mile to the north of the project site. Substantial disturbances were observed within this habitat, primarily the result of this area supporting a long-term homeless encampment.

GOLF COURSE

A golf course was identified adjacent to and within 150 meters of the northwestern portion of the project site (Figure 2). This habitat consists of maintained turfgrass with patches of bare areas and undulating topography.

RUDERAL

Ruderal habitats within the 150 meter buffer were identified adjacent to the northeastern portion of the project site (Figure 2). Vegetation consisted of similar species composition ruderal habitats within the project site.

Assessment of Special-status Species Occurrence Potential

A list of special-status species known to occur within the nine-quad vicinity of the project site was generated from several sources, including the CNDDB (2009), the CNPS 2007 online *Inventory of Rare and Endangered Plants of California*, the Carlsbad Fish and Wildlife Office's Endangered and Threatened Species List, and the Interactive Species Map for Western Riverside County. This species list was cross-referenced with the list of MSHCP-covered species, and those that are not MSHCP-covered were excluded from consideration. A total of 73 special-status species were identified within this search area, including: eight plants, one invertebrate, two fish, three amphibians, nine reptiles, 35 birds, and eight mammals. Appendix C provides a list of all MSHCP-covered plant and wildlife species identified by the

database search as occurring in the nine-quad project vicinity. It also provides a description of typical habitat requirements, legal status, and an evaluation of the potential for occurrence within the project site. Below, we provide expanded descriptions for those species that were either present within the project site, or their occurrence potential was evaluated as "may occur" within the project site.

Special-status Plants

During the general biological field survey, habitats capable of supporting special-status plant species were evaluated within the study area. Based on the analysis provided in Appendix C, the following species were eliminated from further consideration because: (1) there is no suitable habitat within the project site AND there are no local records (within five miles) in the vicinity of the project site; and/or (2) the project site is outside of their known range. Alternatively, although there are records of these species within the project's vicinity (within ten miles), there is no suitable habitat within the project site to support the occurrence of these species. These species were assessed as "absent:"

- Parry's spineflower
- Slender-horned spineflower
- Santa Ana River woollystar
- Southern California black walnut
- Coulter's goldfields

Based on the analysis provided in Appendix C, the following species were eliminated from further consideration either because: although there are local records of their occurrence within the vicinity of the project site, habitat within the project site was determined to be to be marginal, limited, or otherwise unfavorable. This specie was assessed as "not likely to occur:"

- Many-stemmed dudleya

The following species have either been observed within the project site (present) or – based on the analysis provided in Appendix C – their occurrence potential was assessed as "may occur" within the project site due to the presence of suitable habitat and recent local records in the project vicinity. Brief species accounts for the following species are provided below:

- San Diego ambrosia
- Plummer's mariposa lily

SAN DIEGO AMBROSIA

The San Diego ambrosia (*Ambrosia pumila*) is a rhizomatous herb in the Asteraceae family that is listed as federally endangered, and listed by the CNPS as List 1B.1 (rare, threatened, or endangered in California and elsewhere; seriously endangered in California [more than 80 percent of occurrences threatened/high degree and immediacy of threat]), and is covered under the MSHCP.

This species is restricted to 15 extant populations in California (CNDDB 2008), with 12 in western San Diego County and three in western Riverside County, California, and south to the vicinity of Cabo Colonet, along the west coast of Baja California, Mexico (Munz 1974; Reiser 1996; Wiggins 1980). San Diego ambrosia primarily occurs at low elevations generally less than 1600 feet in the Riverside populations and less than 600 feet in San Diego County (CNDDB 2008; University of California Riverside [UCR] 2001; Munz 1974; Hickman 1993). It prefers coarse substrates on upper terraces of rivers and drainages as well as in open grasslands, openings in coastal sage scrub, and occasionally in

clay soils in upland areas or in areas adjacent to vernal pools as well as in disturbed sites including roadsides and firebreaks. Common native plants found in association with this species include purple needlegrass (*Nassella pulchra*), saltgrass (*Distichlis spicata*), mule fat (*Baccharis salicifolia*), broom baccharis (*Baccharis sarothroides*), California buckwheat (*Eriogonum fasciculatum*), and turkey mullein (*Eremocarpus setigerus*). Nonnative associates include brome grasses (*Bromus* spp.), oat grasses (*Avena* spp.), and tocalote (*Centaurea melitensis*) (Burrascano 1997; DUDEK 1999).

The San Diego ambrosia is a clonal herbaceous perennial plant in the family Asteraceae (Hickman 1993) which reproduces vegetatively via underground rhizome-like roots from which aboveground growth arises, indicating that isolated populations may consist of only one or a few genetic individuals. Aboveground growth tends to fluctuate from year to year based on seasonal conditions and typically flowers from June through September (Munz 1974). Because populations may remain dormant in dry years and its vegetative similarity with other *Ambrosia* spp., survey results for this species may not be representative of the true population size. Competition from nonnative species may also negatively impact San Diego ambrosia populations. Oftentimes, multi-year surveys are necessary to determine presence or absence of the species in suitable habitats.

This species is threatened by habitat destruction, fragmentation, and degradation of habitat primarily by construction and maintenance of roadways and utility easements, development of recreational facilities, residential and commercial development, potential competition, encroachment, and other negative impacts from non-native plants; mowing and disking for fuel modification.

There is one historic record of this species within five miles of the project site (CNDDB 2009). Suitable habitat for the San Diego ambrosia occurs within the project site, within and immediately adjacent to the artificial wet meadow. The San Diego ambrosia may occur within the project site.

PLUMMER'S MARIPOSA LILY

Plummer's mariposa lily (*Calochortus plummerae*) is a bulbiferous herb listed as a 1B.2 CA-Endemic plant by the CNPS, and is covered by the MSHCP. This species, which typically blooms in May and June and dies back to the ground after flowering, occurs in mountains and foothills of Los Angeles, Orange, Riverside, and San Bernardino Counties at elevations up to 5,600 feet. Its habitats include chaparral, coastal sage scrub, grassland, woodlands, and pine forests. There is one recent record of this species within five miles of the project site (CNDDB 2009). Suitable habitat for this species was observed in the non-native grassland within the project site. This species may occur within the project site.

Special Status Wildlife

During the general biological field survey, habitats were evaluated for their potential to support special-status wildlife species. Based on the analysis provided in Appendix C, the following species were eliminated from further consideration because: (1) there is no suitable habitat within the project site or its immediate vicinity AND there are no local records (within five miles, or 10 miles for bird, bat, and butterfly species) in the vicinity of the project site; and/or (2) the project site is outside of their known range. Alternatively, although there are records of these species within the project site vicinity, there is no suitable habitat within the project site or its immediate vicinity to support the occurrence of these species. These species were assessed as "absent:"

- Delhi Sands flower-loving fly
- Arroyo chub
- Santa Ana sucker
- Arroyo toad
- California red-legged frog
- Western pond turtle
- San Diego banded gecko
- Granite spiny lizard
- Southern sagebrush lizard
- Coast horned lizard
- Orange-throated whiptail
- Coastal whiptail
- Double-crested cormorant
- Black-crowned night heron
- White-faced ibis
- Turkey vulture
- Sharp-shinned hawk
- Ferruginous hawk
- Golden eagle
- Bald eagle
- Mountain plover
- Western yellow-billed cuckoo
- Black swift
- Williamson's sapsucker
- Tree swallow
- Cactus wren
- Coastal California gnatcatcher
- Nashville warbler
- Yellow warbler
- Wilson's warbler
- Yellow-breasted chat
- Southern California rufous-crowned sparrow
- Bell's sage sparrow
- Lincoln's sparrow
- Brush rabbit

Based on the analysis provided in Appendix C, the following species were eliminated from further consideration either because: (1) there are no recent local records of their occurrence in the vicinity of the project site; OR (2) although there are local records (recent or historic) of their occurrence within the vicinity of the project site, habitat within the project site was determined to be to be marginal, limited, or otherwise unfavorable; OR (3) the project site does not likely provide suitable habitat for a sustaining population of this species. Additionally, avian species may have been eliminated from further consideration because: (1) they would use the project site only as a migrant; OR (2) they are not likely to be resident or reproduce there due to a lack of appropriate habitat or because the project site is outside of their known breeding range. These species were assessed as "not likely to occur:"

- Western spadefoot
- Two-striped garter snake
- Northern red-diamond rattlesnake
- American bittern
- Swainson's hawk
- Downy woodpecker
- Southwestern willow flycatcher

- Least Bell's vireo
- Purple martin
- Tricolored blackbird
- Long-tailed weasel
- Bobcat
- Stephens' kangaroo rat
- San Diego desert woodrat
- San Diego black-tailed jackrabbit

The following species have either been observed within the project site (present) or – based on the analysis provided in Appendix C – their occurrence potential was assessed as "may occur" within the project site due to the presence of suitable habitat and recent local records in the project vicinity. Brief species accounts for the following species are provided below:

- Northern harrier
- White-tailed kite
- Cooper's hawk
- Burrowing owl
- Loggerhead shrike
- California horned lark
- Coyote
- Northwestern San Diego pocket mouse

NORTHERN HARRIER

The northern harrier (*Circus cyaneus*) is a California Species of Special Concern, is covered under the MSHCP, and its nests protected under the MBTA. The northern harrier prefers coastal prairies, marshes, grasslands, swamps, and other open areas. Nests are built on the ground or on a mound of dirt or vegetation and are constructed of sticks and are lined inside with grass and leaves. Their breeding season is from March through June. Northern harriers hunt by flying low to the ground in open areas, where they prey primarily on small rodents (mice and voles), amphibians, small reptiles, small rabbits, and other birds. According to the Interactive Species Map for Western Riverside County, there are five recent records from three sites within five kilometers of the project site. Suitable foraging and nesting habitat is located within the non-native grassland habitat in the project site. Foraging habitat is located across most of the project site, including non-native grassland and ruderal habitats where rodents are abundant. Suitable nesting areas are located within and adjacent to the artificial wet meadow. This species may nest and forage within the project site.

WHITE-TAILED KITE

The white-tailed kite (*Elanus leucurus*) is a California Species of Special Concern and a California Fully Protected species, is covered under the MSHCP, and its nests protected under the MBTA. This species ranges throughout California, primarily along the coast and Central Valley. They require relatively open habitat for foraging, as well as trees (isolated or within stands) for nesting and roosting. Habitats with

abundant prey populations (un-grazed or little grazed grasslands, agriculture, and grass dominated wetlands) support more kites. This small raptor species preys primarily on small rodents. According to the Interactive Species Map for Western Riverside County, there are ten recent records from five sites within five kilometers of the project site. There is suitable foraging habitat throughout the non-native grassland and ruderal habitats within the project site, and suitable nesting habitat in scattered trees located throughout the non-native grassland in the western portion of the project site, as well as within trees along the artificial wet meadow. This species may forage and nest within the project site.

COOPER'S HAWK

Cooper's hawk (*Accipiter cooperii*) is a California Species of Special Concern, is covered under the MSHCP, and its nests protected under the MBTA. This species occurs throughout North America, where it inhabits woodlands and woodland edges. In southern California, preferred nesting habitats of this species include oak and riparian woodlands dominated by sycamores and willows. Cooper's hawks in the region prey on small birds and rodents in riparian woodlands and sometimes in scrub and chaparral communities. This species has become increasingly common in urban parks and residential areas throughout southern California in recent years. According to the Interactive Species Map for Western Riverside County, there are 16 recent records from eight sites within five kilometers of the project site. There is suitable foraging and nesting habitat throughout the scattered trees in the non-native grassland in the western portion of the project site, and in trees along the artificial wet meadow. This species may forage and nest within the project site.

BURROWING OWL

The western burrowing owl is a California Species of Special Concern, is covered under the MSHCP, and its nests protected under the MBTA. In North America, the species ranges from southwestern Canada into Central America. Within California, it occurs primarily in agricultural and grassland areas of interior and coastal valleys. The burrowing owl currently occupies most of its historic range; however, it is declining throughout much of this range and, due to loss of habitat through development, has been nearly extirpated from coastal southern California. Burrowing owls require large, open expanses of sparsely vegetated areas on gently rolling or level terrain, with an abundance of active small mammal burrows, particularly those of the California ground squirrel. The burrows of these rodents are an important habitat feature for burrowing owls, as they modify and use squirrel (and other rodent) burrows for refugia, roosting, and nesting. They sometimes use artificial features, such as pipes, culverts, and nest boxes in areas where squirrel burrows are scarce (Robertson 1929).

Burrowing owls are crepuscular, foraging at or near dawn and dusk. They hunt by using short flights, running along the ground, hovering, or by using an elevated perch from which prey is spotted. They are opportunistic foragers (Haug et al. 1993), and their prey includes invertebrates and small vertebrates (Thomsen 1971). Their diet is composed of a variety of foods, primarily mice (*Peromyscus* spp. and *Microtus* spp.) and beetles. Beetles are taken with more frequency; however, per biomass, *Peromyscus* mice are dominant, followed by *Microtus* mice (Marti 1974). Although they eat mostly insects and small mammals, burrowing owls also may take reptiles, birds, and carrion. During the breeding season, there are significant declines in the percentage of vertebrate prey in the diet and increases in the percentage of invertebrate prey consumed (Haug et al. 1993). Males typically hunt for vertebrate resources during crepuscular periods, whereas females hunt for invertebrate prey during diurnal periods (Poulin and Todd 2006).

Breeding occurs from March through August, with a peak in April and May. The male attracts a female to the burrow and defends the nest site by calling in front of the burrow. One burrow is typically used for nesting; however, satellite burrows are usually found within the immediate vicinity of the nest burrow within the owl's territory. The nest chamber is lined with excrement, pellets, debris, grass, and/or

feathers; sometimes it is unlined. The shredded excrement of predators is a preferred nest lining, as this technique probably provides insulation within the nest cavity, as well as scent camouflage from mammalian predators (Johnsgard 2002). Within California, clutch size ranges from one to eleven eggs, with an average of seven (Landry 1979). The young emerge from the burrow at about two weeks and can fly by about four weeks (Zarn 1974). Martin (1973) reported that 95 percent of the young fledged in one population, with a mean reproductive success of 4.9 young per pair. Burrowing owls in southern California may winter in the nesting burrow or a nearby burrow following successful fledging of juveniles, but are more likely to disperse from the nesting area if the nest fails (Catlin et al. 2005; Rosier et al. 2006).

Little is understood about the migratory movements of this species. Breeding populations from the northern range of the species are apparently migratory, though southern California populations are probably year-round residents (Thomsen 1971). Increases in winter population sizes within southern California are probably the result of immigration of owls from more northerly areas (Coulombe 1971). Nesting burrowing owls banded in Idaho have been observed wintering in southern California (Brian W. Smith, personal communication, November 2006). Male burrowing owls that are year-round residents in southern California may overwinter in burrows within nesting areas, as this allows them to retain possession of their burrows and territories, as well as maintain the burrows (Johnsgard 2002:165).

There are 11 recent records and one historic record of this species within ten miles of the project site (CNDDB 2009). According to the Interactive Species Map for Western Riverside County, there are five historic records at two sites within five kilometers of the project site. Suitable foraging and nesting habitat for burrowing owl occurs over much of the project site, within grassland and ruderal habitats. Additionally, burrowing owls were observed foraging and nesting within the project site during surveys that were completed in 2008.

LOGGERHEAD SHRIKE

The loggerhead shrike (*Lanius ludovicianus*) is a California Species of Special Concern, is covered under the MSHCP, and its nests protected under the MBTA. This species is an uncommon but widespread resident of southern California. Loggerhead shrikes prefer open habitats interspersed with shrubs, trees, poles, fences, or other perches from which they can hunt. They are primarily monogamous and are territorial throughout the year. Nests are built in densely-vegetated shrubs or trees, often containing thorns or near fences with barbs, which offer protection from predators and upon which prey items are impaled. There is one recent record within ten miles of the project site (CNDDB 2009). Additionally, according to the Interactive Species Map for Western Riverside County, there are 20 recent records from eight sites within five kilometers of the project site. There is suitable foraging habitat throughout the project site in non-native grassland and ruderal habitats. Suitable nesting habitat is located within trees along the artificial wet meadow, and in trees scattered throughout the non-native grassland in the western portion of the project site. This species may forage and nest within the project site.

CALIFORNIA HORNED LARK

The California horned lark (*Eremophila alpestris actia*) is a California Species of Special Concern, and is covered under the MSHCP, and its nests protected under the MBTA. This species is a short-distance migrant that occupies short-grass prairie, “bald” hills, mountain meadows, open coastal plains, fallow grain fields, alkali flats in coastal regions. It nests on the ground in open, sparsely vegetated grasslands and avoids areas dominated by dense vegetation. There are two recent records of this species within ten miles of the project site (CNDDB 2009). Additionally, according to the Interactive Species Map for Western Riverside County, there are 13 historic records from one site within five kilometers of the project site. A flock of approximately eight California horned larks was observed within ruderal habitats adjacent to the airport runway and taxiways during the survey of the project site. Suitable foraging and nesting

habitat occurs along the runway and taxiways and adjacent ruderal habitats, as well as transitional bare areas within the project site. This species may forage and nest within the project site.

COYOTE

The coyote (*Canis latrans*) is the largest Canid carnivore within southern California. It is covered under the MSHCP. Coyotes utilize many habitats types and often are found in urban areas adjacent to open space. Primary habitats include grassland, coast scrub, and broken forests. According to the Interactive Species Map for Western Riverside County, there are two historic records from two sites within five kilometers of the project site. Sign of this species (scat) was observed within the non-native grassland habitat within the project site. Suitable habitat for this species is present throughout the project site in non-native grassland and ruderal habitats. This species may occur within the project site.

NORTHWESTERN SAN DIEGO POCKET MOUSE

The northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*) is a California Species of Special Concern, and is covered under the MSHCP. It inhabits coastal sage scrub, sage scrub/grassland ecotones, and chaparral communities. In western Riverside County, the northwestern San Diego pocket mouse is commonly found in disturbed grassland and open sage scrub vegetation with sandy loam to loam soils. There are two recent records of this species within five miles of the project site (CNDDB 2009). Additionally, according to the Interactive Species Map for Western Riverside County, there are two recent records from two sites within five kilometers of the project site. Appropriate habitat for this species is present within the non-native grassland habitat throughout the project site. This species may occur within the project site.

Special-status Species Habitat Assessments

Burrowing Owl

The majority of the project site supports suitable habitat for burrowing owl. This includes the non-native grassland habitat, transitional bare areas, and ruderal habitat (Figure 2). Numerous California ground squirrels and their burrows were observed throughout the project site during the survey. Suitable habitat for burrowing owl also exists within 150 meters of the project site within non-native grassland and ruderal habitats (Figure 2).

Narrow Endemic Plants

SAN DIEGO AMBROSIA, BRAND'S PHACELIA, AND SAN MIGUEL SAVORY

Suitable habitat for San Diego ambrosia occurs within and adjacent (within 50 meters) to the wet meadow (Figure 2). Suitable habitat for Brand's phacelia, and San Miguel savory was not identified within the project site. San Miguel Savory occurs within chaparral, cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland in rocky, gabbroic, or metavolcanic soils. Brand's phacelia occurs in coastal dunes and coastal scrub.

Other MSHCP-Covered Species

SOUTHWESTERN WILLOW FLYCATCHER, LEAST BELL'S VIREO, AND YELLOW-BILLED CUCKOO

Suitable habitat for southwestern willow flycatcher, least Bell's vireo, and yellow-billed cuckoo, which includes dense riparian vegetation associated with open water, was not identified within the project site.

The artificial wet meadow supports two large willows and other nonnative trees that produce a closed canopy, but this area is not subject to conservation requirements under the MSHCP. Additionally, this small stand does not contain additional habitat elements (open water) that are associated with breeding by these bird species. The southern willow scrub habitat located along the western border of the project site is highly disturbed, narrowly confined, and does not contain elements typically associated with breeding least Bell's vireo, southwestern willow flycatcher, or yellow-billed cuckoo.

VERNAL POOL SHRIMP

No vernal pools that would support vernal pool shrimp species were identified within the project site. Ponding water was noted in the north central portion of the project site, but this ponding occurred in an area that was recently disturbed by construction activities, and did not contain indicators that characterize vernal pools, such as vernal pool obligate plants.

Focused Surveys

San Diego Ambrosia

Representative samples of several types of *Ambrosia* spp. were collected from the wetland area and returned to SWCA's Pasadena office for identification. Using a dissection microscope and *The Jepson Manual of Higher Plants of California* (Hickman 1993) and *A Flora of Southern California Flora* (Munz 1974), the samples were identified as *A. psilostachya* and *A. acanthicarpa*. San Diego Ambrosia *A. pumila* was not identified and is assumed to be absent from the project site.

Burrowing Owl

Three burrows were identified during the Step IIa focused burrowing owl surveys as having been formerly occupied by burrowing owl. During two of the Step IIb surveys, a single burrowing owl was observed within one of the burrows. The location of this burrowing owl observation is presented in Figure 3.

A breeding pair of burrowing owls was detected immediately adjacent to the project site on Airport grounds during the general biological field survey on February 26, 2008. This observation included the sighting of two adult owls at one burrow, and an ancillary burrow with fresh sign located approximately 20 meters to the north (Figure 3). The burrow that had been occupied by this pair had been filled in and was no longer viable for occupation, as observed in 2009.

Wetland Delineation

The artificial wet meadow located in the north-central portion of the project site (Figure 4a and 4c) consists of a single narrow channel approximately three to four feet in width in the northern portion, which dissipates into sheet flow as the water flows south. Water enters into the wet meadow as street runoff through a culvert (draining the residential and industrial areas to the north of the airport) and terminates via percolation and evaporation approximately 350 feet south of the culvert. The northern portion of the wet meadow is dominated by black willow (*Salix gooddingii*), shamel ash (*Fraxinus uhdei*), and broad-leaved cattail (*Typha latifolia*), with Mexican fan palm (*Washingtonia robusta*) occurring sporadically. The black willow and broad-leaved cattail are obligate wetland species. The southern portion of the wet meadow is dominated by dallisgrass (*Paspalum dilatatum*) and bitter dock (*Rumex obtusifolius*), with an unidentified sedge (*Scirpus* sp.) and nightshade (*Solanum xanti*) rarely occurring. The dallisgrass and bitterdock are facultative species that are equally likely to occur in wetlands or non-

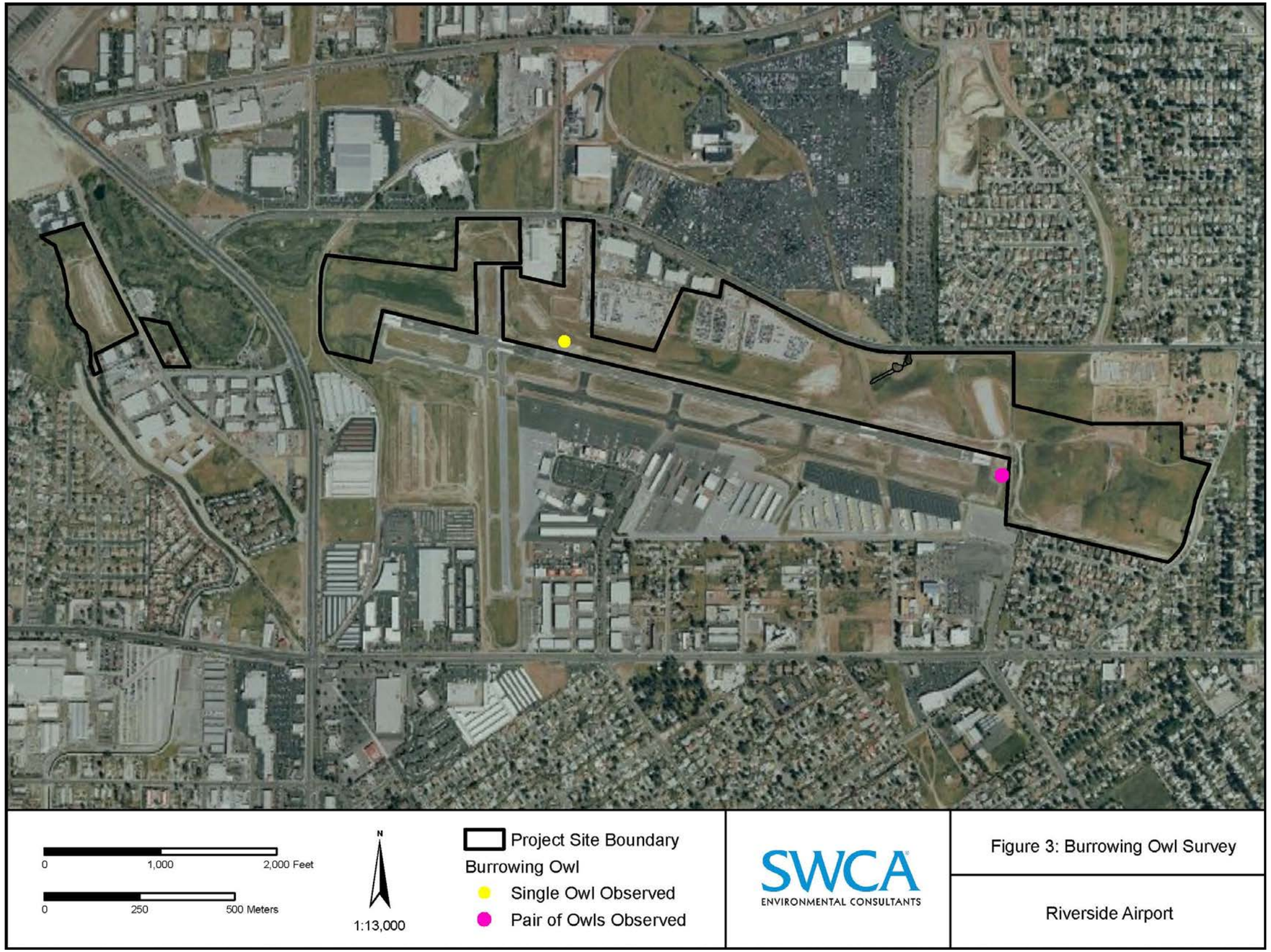

Figure 3. Burrowing Owl Observation Locations

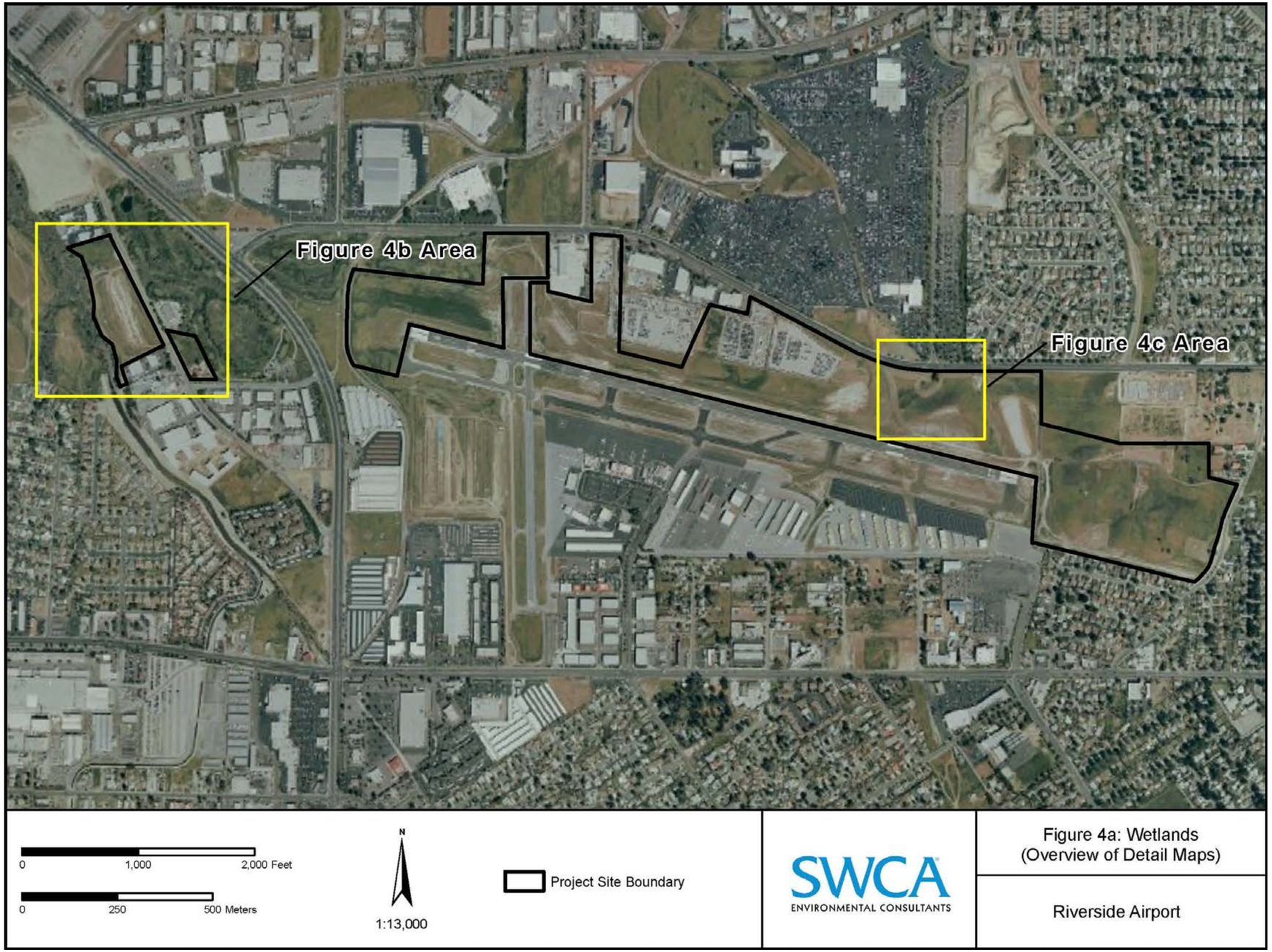

Figure 4a. Overview Map of Wetland Areas

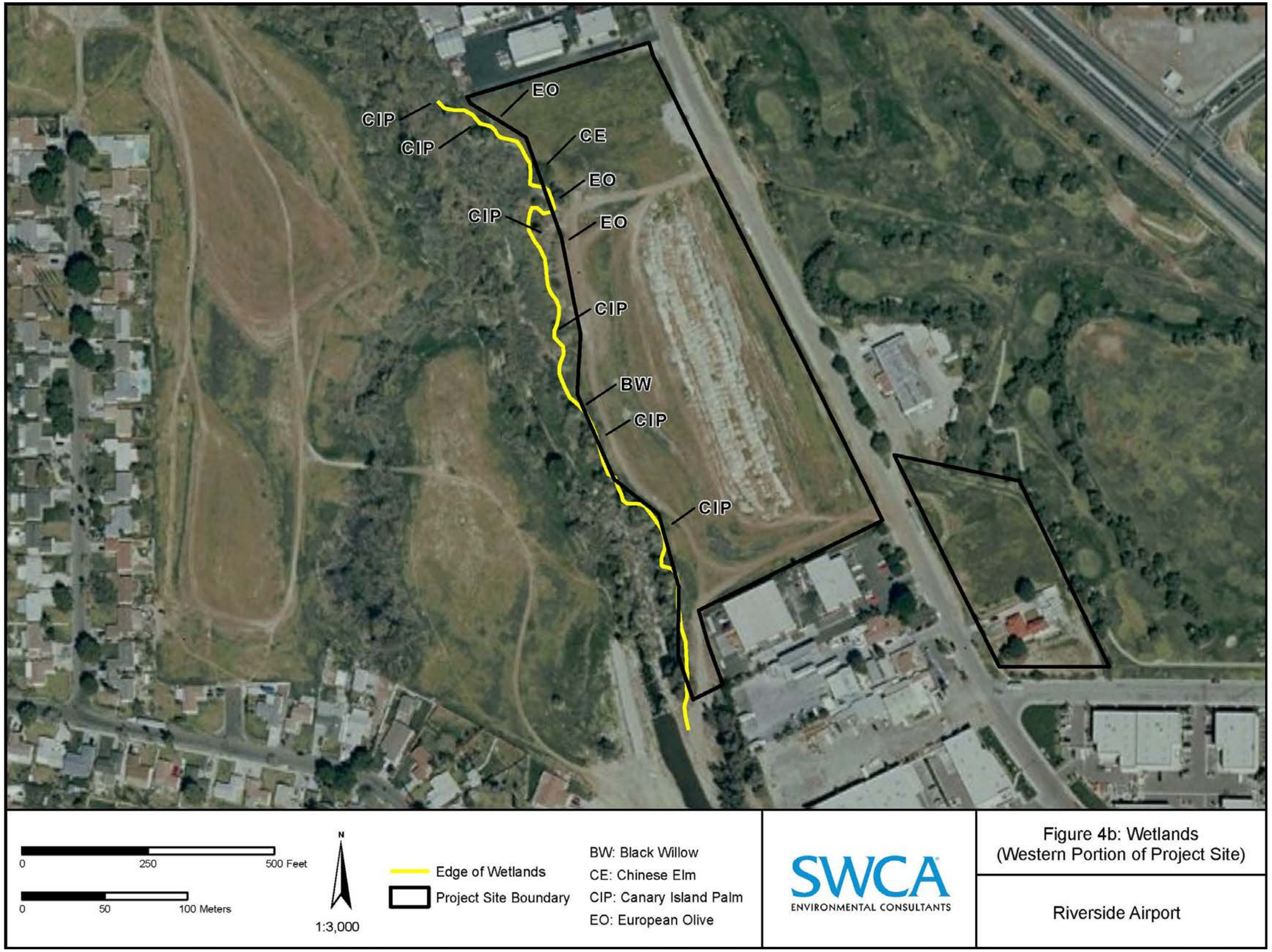

Figure 4b. Riparian Zone on West Side of Project Site

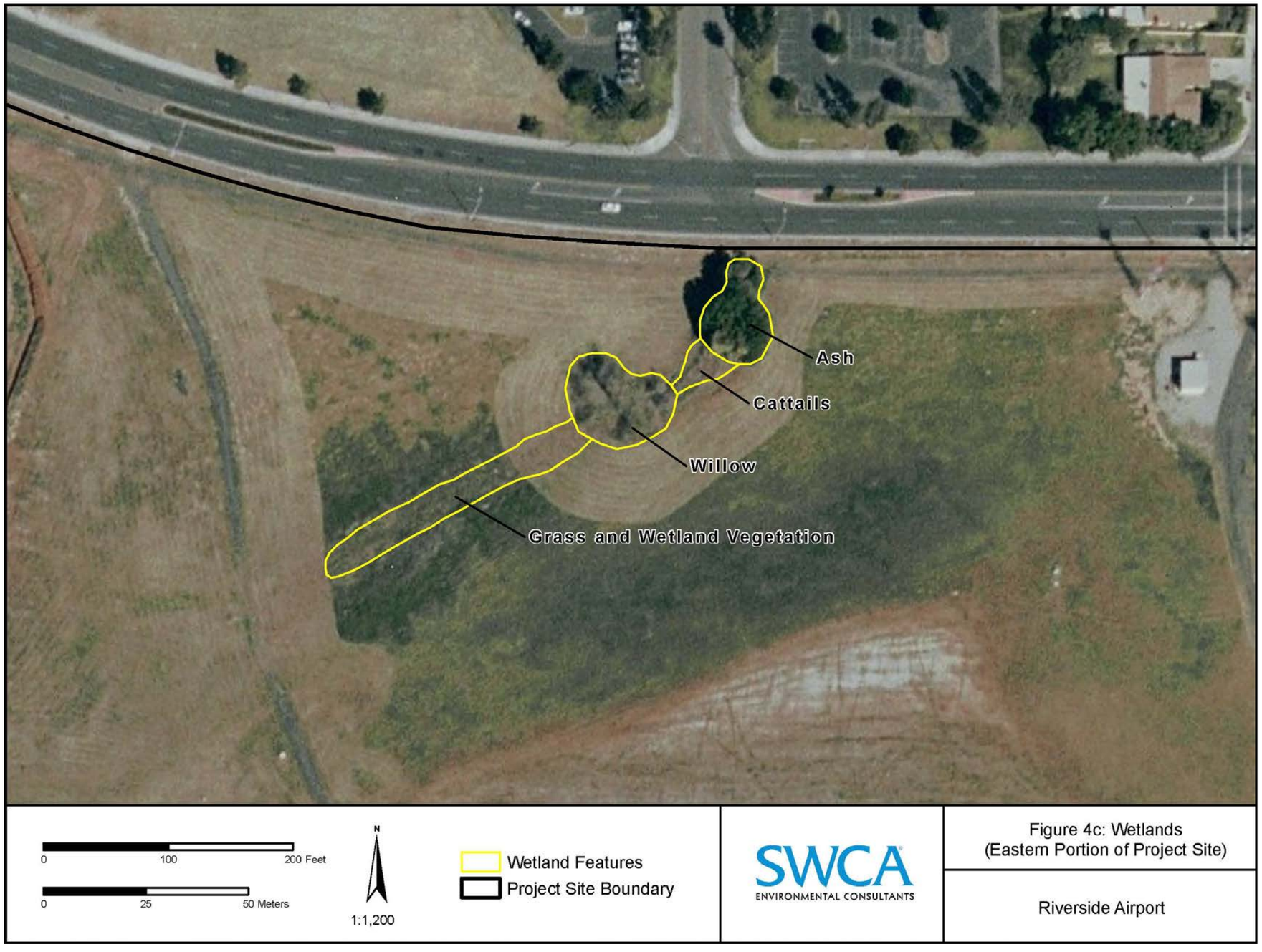

Figure 4c. Artificial Wet Meadow Area on North Side of Existing Airport Runway

wetlands. Because the wetland is artificial, it is not subject to MSHCP requirements for species protection in riparian/riverine habitats.

The northern portion of the artificial wet meadow has a defined streambed and bank and supports riparian vegetation that can be utilized by wildlife for foraging and nesting activities. Accordingly, the CDFG asserts jurisdiction over such habitat. The artificial wet meadow is not a jurisdictional water of the U.S. because it is not considered a TNW; it is not a wetlands adjacent to TNW; it is not a non-navigable tributary of TNW that is relatively permanent (i.e., tributaries that typically flow year-round or have continuous flow at least seasonally); and it is not a wetlands that directly abut such tributaries. In addition, the wet meadow is not a RPW if that has a significant nexus with a TNW. The classes of water body that are subject to Clean Water Act jurisdiction only if such a significant nexus is demonstrated are: non-navigable tributaries that do not typically flow year-round or have continuous flow at least seasonally; wetlands adjacent to such tributaries; and wetlands adjacent to but that do not directly abut a relatively permanent, non-navigable tributary. A significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or an insubstantial effect on the chemical, physical, and/or biological, integrity of a TNW. Principal considerations when evaluating significant nexus include the volume, duration, and frequency of the flow of water in the tributary and the proximity of the tributary to a TNW, plus the hydrologic, ecologic, and other functions performed by the tributary and all of its adjacent wetlands. While all waters of the U.S. also fall under the category of waters of the State, some Waters of the State may be identified beyond the delineation of Waters of the U.S., and the CRWQCB may exert authority to regulate waste discharge into these waters under the Port-Cologne Water Quality Act even if the waters do not fall under USACE Federal jurisdiction.

The riparian habitat and its associated drainage along the western boundary of the project site were mapped outside of the project area, while not occurring within the project site, USACE, CDFG, and CRWQCB asserts jurisdiction over the southern willow scrub located along the western margin of the isolated western portion of the project area. This riparian habitat includes a well developed streambed, with water flowing to the north and into the Santa Ana River, approximately ¾ mile to the north of the project area. Additionally, the habitat around this natural drainage is subject to species conservation under the MSHCP.

Assessment of Other Sensitive Biological Resources

Riparian/Riverine and Vernal Pool Habitat

No riparian/riverine or vernal pool habitat that would be protected under the MSHCP occurs within the project site. The artificial wet meadow observed within the central portion of the project site does not qualify as riparian/riverine habitat under MSHCP rules, as this habitat is man-made. Likewise, ponding water noted in the north central portion of the project site was also of anthropogenic origin, rather than being a natural vernal pool. The western border of the project site is immediately adjacent to a riparian/riverine habitat (Figure 2).

Nesting Raptors, Migratory, and Native Avian Species

Appropriate nesting habitat for birds protected under the MBTA and Fish and Game Codes 3503, 3503.5, and 3513 occurred over the majority of the project site, including non-native grassland, landscaped areas within urban or built-up lands, ruderal habitat, transitional bare areas, and scattered shrubs and trees within and adjacent to the project site.

PROJECT IMPACT ANALYSIS

This section assesses the potential for the project to impact sensitive biological resources present within the project site, as well as special-status species that may occur there. The sensitive resources are described in the context of the policies (MSHCP) that protect them.

Sensitive Habitats

There are no riparian/riverine or vernal pool habitats, as defined under the MSHCP, within the project site.

Jurisdictional Habitats

The northern portion of the artificial wet meadow is under CDFG jurisdictional. If discharge into waters of the State is proposed, then a Waste Discharge Requirement (WDR) or a waiver of WDR may be required by the CRWQCB (Sections 3830 through 3869, Title 23 of the CCR).

The riparian areas located along the western margin of the isolated western portion of the project site are considered jurisdictional waters under the USACE, CDFG, and CRWQCB. The boundary of the project site is adjacent to the boundary of the jurisdictional lands (Figure 4a and 4b), but no development is currently proposed for this portion of the project site. If these jurisdictional wetlands are avoided during development, no permitting will be required. However, if development will occur anywhere within the bounds of this wetland, permitting through the USACE, CDFG, and CRWQCB would be required and involve a complete wetlands delineation and appropriate mitigation.

Special-status Species

Special-status Plants

No special-status plant species covered under the MSHCP were identified within the project site. Appropriate habitat for San Diego ambrosia occurs within the project site, but a focused survey for this species was negative for occurrence. Habitat for two other narrow endemic plant species identified by the MSHCP online report generator, Brand's Phacelia and San Miguel savory, is not found onsite and both species are determined to be absent from the project site. No impacts to these species will occur as a result of the proposed project.

Plummer's mariposa lily may occur within the project site, but this species is covered under the MSHCP. Therefore, take of individuals and habitat for this species would not be considered a significant impact, since payment of the MSHCP fees fully mitigates any project-related impacts to this species.

Special-status Wildlife

Provided below is a discussion of impacts to MSHCP-covered wildlife species that were either present within the project site or that may occur there.

NORTHERN HARRIER, WHITE-TAILED KITE, COOPER'S HAWK, LOGGERHEAD SHRIKE, AND CALIFORNIA HORNED LARK

Northern harrier, white-tailed kite, Cooper's hawk, loggerhead shrike, and California horned lark may forage and nest within the project site. Because these species may nest within the project site, the project could potentially impact nests or young of these species. Any impacts that disrupt the nesting of these

avian species within or adjacent to the project site would be considered a violation of MSHCP requirements and the MBTA.

LEAST BELL'S VIREO AND SOUTHWESTERN WILLOW FLYCATCHER

Southwestern willow flycatcher and least Bell's vireo may forage and nest immediately adjacent to the project site within the southern willow scrub habitat located along the western margin of the isolated western portion of the project site. Because these species may nest adjacent to the project site, construction activities associated with the project could potentially impact nests or young of these species. Any impacts that disrupt the nesting of these avian species within or adjacent to the project site would be considered a violation of MSHCP requirements, the MBTA, CESA, and FESA.

BURROWING OWL

Burrowing owls were observed within the project site. Additionally, appropriate nesting and/or foraging habitat for burrowing owl was observed over the majority of the project site, as well as several areas adjacent to (and within 150 meters) of the project site. Because the burrowing owl could inhabit the project site throughout the year (nesting season, post-nesting dispersal period, and winter season), construction associated with implementation of the project could potentially impact burrowing owls that inhabit the project site. As well, burrowing owls that inhabit appropriate burrowing owl habitat within 150 meters of the project site could be impacted by the construction phase of the project. Construction-generated noise and construction-related traffic have the potential to indirectly impact burrowing owls inhabiting these areas. Any impacts that disrupt the foraging and/or nesting of burrowing owls within or adjacent to the project site would be considered a violation of MSHCP requirements and the MBTA.

NESTING RAPTORS, MIGRATORY, AND NATIVE AVIAN SPECIES

The construction activities associated with the proposed project that result in ground disturbance and/or the removal of vegetation could have both direct and indirect impacts to actively nesting birds, including the nests of special-status species. Direct project impacts would include the destruction of active nests, eggs, or young located within vegetation removed within the project site. Indirect impacts would include noise and disturbance associated with the construction activities that cause birds in adjacent habitats to abandon their nests. Any impacts (direct or indirect) that result in the abandonment or destruction of an active nest or the destruction of eggs or young of any protected avian species, including special-status species, would be considered a violation of the MSHCP and the MBTA.

COYOTE AND NORTHWESTERN SAN DIEGO POCKET MOUSE

Sign for coyote was observed within the project site and northwestern San Diego pocket mouse may occur there. These species are covered under the MSHCP. Therefore, take of individuals and habitat for these species is permitted, since payment of the MSHCP fees fully mitigates any project-related impacts to these species.

SPECIAL-STATUS AVIAN SPECIES; NESTING RAPTORS, MIGRATORY, AND NATIVE AVIAN SPECIES

The construction and maintenance activities associated with the proposed project that result in the removal of vegetation could have both direct and indirect impacts to actively nesting birds, including the nests of special-status species. Under the MSHCP, the breeding season for birds is considered to occur from March 1 to June 30; implementation of the project during this period could result in both direct and indirect impacts. Direct project impacts would include the destruction of active nests, eggs, or young located within vegetation removed within the proposed project alignment. Indirect impacts would include noise and disturbance associated with the construction activities that cause birds in adjacent habitats to

abandon their nests. Any impacts (direct or indirect) that result in the abandonment or destruction of an active nest or the destruction of eggs or young of any protected avian species, including special-status species, would be considered a violation of the MSHCP and the MBTA.

RECOMMENDATIONS

MSHCP Requirements

The impact analysis determined that the proposed project could impact one special-status species: burrowing owl. Additionally, the proposed project could potentially impact the nesting activities of migratory and native avian species (including raptors) that nest within or immediately adjacent to the project site, including those of several special-status avian species covered under the MSHCP. Since the project is located within the MSHCP plan area, adherence to MSHCP guidelines pertaining to these species will reduce potential project-related impacts. The following guidelines are recommended.

Burrowing Owl

MITIGATION

Since burrowing owls were detected during the breeding season, during both the general biological field survey and focused surveys, mitigation may be required in order to prevent take of burrowing owls. Appropriate mitigation measures may only be developed through consultation with the CDFG and USFWS personnel assigned to oversight of the MSHCP plan area. Mitigation may include preservation and enhancement (i.e., installation of artificial burrows, habitat restoration) of burrowing owl habitat at both onsite and offsite mitigation areas.

PRE-CONSTRUCTION SURVEY

A pre-construction survey will be necessary in all appropriately identified burrowing owl habitat within and adjacent to the project site in order to determine whether burrowing owls are actively occupying the site. The pre-construction survey should be conducted prior to and within 30 days of ground-disturbing activities to ensure clearance of these areas, and to prevent take of burrowing owls. Should burrowing owls be determined to occur within or adjacent (within 150 meters) to the project site, mitigation and monitoring measures should be determined through consultation with the CDFG and USFWS personnel assigned to oversight of the MSHCP plan area.

MONITORING

During the construction phase of the project, a qualified biologist should monitor the project site weekly to determine whether burrowing owls have moved into appropriate burrowing owl habitats within and adjacent to the project site in order to prevent disturbance to or take of burrowing owls. Should burrowing owls be detected during monitoring of the construction phase of the project, the biologist should retain the authority to stop work within 150 feet of the area occupied by the owl(s), and monitor the project site daily until the owl(s) leaves the project site under its own accord, or until the owl(s) has been removed from the project site using mitigation measures approved through consultation with the CDFG and USFWS personnel assigned to oversight of the MSHCP plan area. If burrowing owls are determined to be nesting within the project site, mitigation should include those that protect nesting avian species, as presented in Section 6.1.2.

Special-status Avian Species; Nesting Raptor, Migratory, and Native Avian Species

Grading or vegetation clearing within the project site would likely impact any non-raptor nests located on or within 150 feet, and raptor nests located on or within 500 feet of the project site, including those of northern harrier, white-tailed kite, Cooper's hawk, burrowing owl, loggerhead shrike, and California horned lark. In order to reduce these impacts to a less than significant level, SWCA recommends that construction of the project take place outside of the nesting season, which (under the MSHCP Construction Guidelines, Volume I, Section 7.5.3) occurs from March 1 through June 30. If project grading and maintenance activities occur outside of the nesting season, no further work is recommended. If project grading and maintenance activities must occur during the nesting season, it is recommended that a qualified biologist conduct a pre-construction nest survey on the project site and within 150 feet (for non-raptor nests) and 500 feet (for raptor nests) of the project footprint to identify any active nests that occur there. This survey should be carried out within one week of initiation of grading and maintenance activities. If bird species protected under the MBTA or California Fish and Game Code Sections 3503, 3503.5, and 3513 are found nesting on or adjacent to the project site, SWCA recommends that a qualified biologist monitor the nests daily during all phases of construction to ensure that the project does not impact the nests. Grading and maintenance activities should not be allowed within 150 feet of active non-raptor nests or 500 feet of active raptor nests until it has been determined by a qualified biologist that the chicks have fledged. Following fledging of the nestlings, the buffer area around the nest can be graded.

OTHER MSHCP-COVERED SPECIES

Numerous MSHCP-covered species occur, or may occur, within the project site, including Plummer's mariposa lily, northern harrier, white-tailed kite, Cooper's hawk, loggerhead shrike, California horned lark, coyote, and northwestern San Diego pocket mouse. Focused surveys are not required for these species, and take of individuals and their habitat is allowed under the MSHCP. No further action is necessary for plant, reptilian, and mammalian species; however, the Construction Guidelines detailed in Volume I, Section 7.5.3 of the MSHCP should be implemented with regard to protection of nesting avian species (see Section 6.1.2).

Other Sensitive Biological Resources

Jurisdictional Habitats

A WDR or a waiver of WDR may be required by the CRWQCB.

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APPENDIX A

Western Riverside County MSHCP List of Covered Species (N=146)

INVERTEBRATES/CRUSTACEANS
Riverside fairy shrimp *Streptocephalus woottoni*
Santa Rosa Plateau fairy shrimp *Linderiella santarosae*
vernal pool fairy shrimp *Branchinecta lynchi*
INVERTEBRATES/INSECTS
Delhi Sands flower-loving fly *Rhaphiomidas terminatus abdominalis*
Quino checkerspot butterfly *Euphydryas editha quino*
FISH
arroyo chub *Gila orcutti*
Santa Ana sucker *Catastomus santaanae*
AMPHIBIANS
arroyo toad *Bufo californicus*
California red-legged frog *Rana aurora draytonii*
coast range newt *Taricha tarosa tarosa*
mountain yellow-legged frog *Rana mucosa*
western spadefoot *Scaphiopus hammondii*
REPTILES
Belding's orange-throated whiptail *Aspidoscelis hyperythrus beldingi*
coastal western whiptail *Aspidoscelis tigris multiscutatus*
granite night lizard *Xantusia henshawi henshawi*
granite spiny lizard *Sceloporus orcutti*
northern red-diamond rattlesnake *Crotalus ruber ruber*
San Bernardino mountain kingsnake *Lampropeltis zonata parvirubra*

San Diego banded gecko *Coleonyx variegatus abbottii*
Blainville's horned lizard *Phrynosoma blainvillei*
San Diego mountain kingsnake *Lampropeltis zonata pulchra*
southern rubber boa *Charina bottae umbratica*
southern sagebrush lizard *Sceloporus graciosus vandenburgianus*
Pacific pond turtle *Actinemys marmorata*
BIRDS
American bittern *Botaurus lentiginosus*
bald eagle *Haliaeetus leucocephalus*
Bell's sage sparrow *Amphispiza belli belli*
black swift (breeding) *Cypseloides niger*
black-crowned night heron *Nycticorax nycticorax*
burrowing owl *Athene cunicularia hypugaea*
cactus wren *Campylorhynchus brunneicapillus*
California horned lark *Eremophila alpestris actia*
California spotted owl *Strix occidentalis occidentalis*
coastal California gnatcatcher *Polioptila californica californica*
Cooper's hawk *Accipiter cooperii*
double-crested cormorant *Phalacrocorax auritus*
downy woodpecker *Picoides pubescens*
ferruginous hawk *Buteo regalis*

grasshopper sparrow *Ammodramus savannarum*
golden eagle *Aquila chrysaetos*
great blue heron *Ardea herodias*
least Bell's vireo *Vireo bellii pusillus*
Lincoln's sparrow *Melospiza lincolnii*
loggerhead shrike *Lanius ludovicianus*
Macgillivray’s warbler *Oporornis tolmiei*
merlin *Falco columbarius*
mountain plover (wintering) *Charadrius montanus*
mountain quail *Oreortyx pictus*
Nashville warbler *Vermivora ruficapilla*
northern goshawk *Accipiter gentilis*
northern harrier (breeding) *Circus cyaneus*
osprey *Pandion haliaetus*
peregrine falcon *Falco peregrinus*
prairie falcon (breeding) *Falco mexicanus*
purple martin *Progne subis*
sharp-shinned hawk *Accipiter striatus*
So. California rufous-crowned sparrow *Aimophila ruficeps canescens*
southwestern willow flycatcher *Empidonax traillii extimus*
Swainson's hawk *Buteo swainsoni*

tree swallow *Tachycineta bicolor*
tricolored blackbird (colony) *Agelaius tricolor*
turkey vulture (breeding) *Cathartes aura*
western yellow-billed cuckoo *Coccyzus americanus occidentalis*
white-faced ibis *Plegadis chihi*
white-tailed kite *Elanus leucurus*
Williamson's sapsucker *Sphyrapicus thyroideus*
Wilson's warbler *Wilsonia pusilla*
yellow warbler *Dendroica petechia brewsteri*
yellow-breasted chat *Icteria virens*
MAMMALS
Aguanga kangaroo rat *Dipodomys merriami collinus*
bobcat *Lynx rufus*
brush rabbit *Sylvilagus bachmani*
coyote *Canis latrans*
Dulzura kangaroo rat *Dipodomys simulans*
long-tailed weasel *Mustela frenata*
Los Angeles pocket mouse *Perognathus longimembris brevinasus*
mountain lion *Puma concolor*
northwestern San Diego pocket mouse *Chaetodipus fallax fallax*
San Bernardino flying squirrel *Glaucomys sabrinus californicus*

San Bernardino kangaroo rat *Dipodomys merriami parvus*
San Diego black-tailed jackrabbit *Lepus californicus bennettii*
San Diego desert woodrat *Neotoma lepida intermedia*
Stephens' kangaroo rat *Dipodomys stephensi*
PLANTS
beautiful hulsea *Hulsea vestita ssp. callicarpha*
Brand’s phacelia *Phacelia stellaris*
California beardtongue *Penstemon californicus*
California bedstraw *Galium californicum ssp. primum*
California black walnut *Juglans californica var. californica*
California muhly *Muhlenbergia californica*
California Orcutt grass *Orcuttia californica*
chickweed oxytheca *Oxytheca caryophylloides*
Cleveland's bush monkeyflower *Mimulus clevelandii*
cliff cinquefoil *Potentilla rimicola*
Coulter's goldfields *Lasthenia glabrata ssp. coulteri*
Coulter's matilija poppy *Romneya coulteri*
Davidson's saltscale *Atriplex serenana var. davidsonii*
Engelmann oak *Quercus engelmannii*
Fish's milkwort *Polygala cornuta var. fishiae*
graceful tarplant *Holocarpha virgata ssp. elongata*

Hall's monardella *Monardella macrantha ssp. hallii*
Hammitt's clay-cress *Sibaropsis hammittii*
heart-leaved pitcher sage *Lepechinia cardiophylla*
intermediate mariposa lily *Calochortus weedii var. intermedius*
Jaeger's milk-vetch *Astragalus pachypus var. jaegeri*
Johnston's rock cress *Arabis johnstonii*
lemon lily *Lilium parryi*
little mousetail *Myosurus minimus*
long-spined spine flower *Chorizanthe polygonoides var. longispina*
many-stemmed dudleya *Dudleya multicaulis*
Mojave tarplant *Deinandra mohavensis*
mud nama *Nama stenocarpum*
Munz's mariposa lily *Calochortus palmeri var. munzii*
Munz's onion *Allium munzii*
Nevin's barberry *Berberis nevinii*
ocellated Humboldt lily *Lilium humboldtii ssp. ocellatum*
Orcutt's brodiaea *Brodiaea orcuttii*
Palmer's grapplinghook *Harpagonella palmeri*
Palomar monkeyflower *Mimulus diffusus*
Parish's brittlescale *Atriplex parishii*
Parish's meadowfoam *Limnanthes gracilis var. parishii*

Parry's spine flower *Chorizanthe parryi var. parryi*
Payson's jewelflower *Caulanthus simulans*
peninsular spine flower *Chorizanthe leptotheca*
Plummer's mariposa lily *Calochortus plummerae*
prostrate navarretia *Navarretia prostrate*
prostrate spine flower *Chorizanthe procumbens*
Rainbow manzanita *Arctostaphylos rainbowensis*
round-leaved filaree *Erodium macrophyllum*
San Diego ambrosia *Ambrosia pumila*
San Diego button-celery *Eryngium aristulatum var. parishii*
San Jacinto Mountains bedstraw *Galium angustifolium ssp. jacinticum*
San Jacinto Valley crownscale *Atriplex coronata var. notatior*
San Miguel savory *Satureja chandleri*
Santa Ana River woollystar *Eriastrum densifolium ssp. sanctorum*
shaggy-haired alumroot *Heuchera hirsutissima*
slender-horned spine flower *Dodecahema leptoceras*
small-flowered microseris *Microseris douglasii var. platycarpha*
small-flowered morning-glory *Convolvulus simulans*
spreading navarretia *Navarretia fossalis*
sticky-leaved dudleya *Dudleya viscida*
thread-leaved brodiaea *Brodiaea filifolia*

Vail Lake ceanothus *Ceanothus ophiochilus*
vernal barley *Hordeum intercedens*
Wright's trichocoronis *Trichocoronis wrightii var. wrightii*
Yucaipa onion *Allium marvinii*

APPENDIX B

Inventory of Plant and Wildlife Species Observed within the Project Site

Inventory of Plant Species Observed within the Project site

Common Name	Scientific Name	Habitat
	ANGIOSPERM (DICOTS)	
Sumac Family	**Anacardiaceae**	
Brazilian peppertree	*Schinus molle*	Non-native grassland, Southern willow scrub
Sunflower Family	**Asteraceae**	
Western ragweed	*Ambrosia psilostachya* var. *Californica*	Non-native grassland, artificial wet meadow
Tarragon	*Artemesia dracunculis*	Non-native grassland
Mulefat	*Baccharis salicifolia*	Artificial wet meadow
Tocalote	*Centaurea meletensis*	Non-native grassland
Bullthistle	*Cirsium vulgare*	Artificial wet meadow
African Daisy	*Dimorphotheca aurantiaca*	Non-native grassland, ruderal
Common sunflower	*Helianthus annuus*	Artificial wet meadow
Prickly lettuce	*Lactuca seriola*	Artificial wet meadow, ruderal
Goldfields	*Lasthenia glabrata*	Non-native grassland
California aster	*Lessingia filaginifolia*	Non-native grassland
Bristly ox-tongue	*Picris echioides*	Non-native grassland, ruderal
Borage Family	**Boraginaceae**	
Rancher's fireweed	*Amsinckia menziesii*	Non-native grassland
Winged pectocarya	*Pectocary penicilata*	Non-native grassland
Mustard Family	**Brassicaceae**	
Black mustard	*Brassica nigra*	Non-native grassland, ruderal
Mediterranean mustard	*Hirshfeldia incana*	Non-native grassland, ruderal
Water Cress	*Nasturtium officinale*	Southern willow scrub
Wild radish	*Raphanus raphanistrum*	Non-native grassland, ruderal
London rocket	*Sisymbrium irio*	Non-native grassland, ruderal
Cactus family	**Cactaceae**	
Mission cactus	*Opuntia occidentalis*	Southern willow scrub
Chenopod Family	**Chenopodiaceae**	
Lamb's quarters	*Chenopodium album*	Non-native grassland, ruderal
Chenopod (unidentified)	*Chenopodium* sp.	Artificial wet meadow
California thistle	*Cirsium occidentale*	southern willow scrub
Russian thistle	*Salsola tragus*	Non-native grassland, Ruderal, Southern willow scrub
Stonecrop Family	**Crassulaceae**	
Pygmy-weed	*Crassula connata*	Non-native grassland, ruderal

Inventory of Plant Species Observed within the Project site

Common Name	Scientific Name	Habitat
Spurge Family	**Euphorbiaceae**	
Doveweed	*Eremocarpus setigerus*	Non-native grassland
Castor bean	*Ricinus communis*	Southern willow scrub
Pea Family	**Fabaceae**	
Miniature lupine	*Lupinus bicolor*	Non-native grassland
Succulent lupine	*Lupinus succulentus*	Non-native grassland
Clover	*Trifolium sp.*	Artificial wet meadow, ruderal
Geranium Family	**Geraniaceae**	
Redstem filarree	*Eodium cicutarium*	Non-native grassland, ruderal
Mint Family	**Lamiaceae**	
Horehound	*Marrubium vulgare*	Southern willow scrub
Mallow Family	**Malvaceae**	
Cheeseweed	*Malva parviflora*	Non-native grassland, ruderal
Olive Family	**Oleaceae**	
Shamel Ash	*Fraxinus uhdei*	Artificial wet meadow
European Olive	*Olea europaea*	Southern willow scrub
Plantain Family	**Plantaginaceae**	
Narrowleaf plantain	*Plantago lanceolata*	Artificial wet meadow, non-native grassland, ruderal
Phlox Family	**Polemoniaceae**	
Chaparral gilia	*Gilia angelensis*	Non-native grassland
Buckwheat Family	**Polygonaceae**	
Curly dock	*Rumex crispus*	Artificial wet meadow
Bitter dock	*Rumex obtusifolius*	Artificial wet meadow
Purslane family	**Portulacaceae**	
Fringed redmaids	*Calandrinia ciliata*	Non-native grassland
Rose family	**Rosaceae**	
California blackberry	*Rubus discolor*	Southern willow scrub
Willow Family	**Salicaceae**	
Red willow	*Salix laevigata*	Artificial wet meadow
Black willow	*Salix gooddingii*	Artificial wet meadow, Southern willow scrub
Arroyo willow	*Salix lasiolepis*	Southern willow scrub
Simarouba family	**Simaroubaceae**	
Tree-of-heaven	*Ailanthus altissima*	Southern willow scrub
Nightshade family	***Solinaceae***	

Inventory of Plant Species Observed within the Project site

Common Name	Scientific Name	Habitat
Tree tobacco	*Nicotiana glauca*	Southern willow scrub
Nightshade	Solanum xanti	Artificial wet meadow
Elm Family	**Ulmaceae**	
Chinese elm	*Ulmus parvifolia*	Southern willow scrub
Grape family	**Vitaceae**	
California wild grape	*Vitis california*	Southern willow scrub
ANGIOSPERM (MONOCOTS)		
Palm Family	**Arecaceae**	
Mexican fan palm	*Washingtonia robusta*	Artificial wet meadow
Canary Island date palm	*Phoenix canariensis*	Southern willow scrub
Sedge Family	**Cyperaceae**	
Umbrella sedge	*Cyperus eragrostis*	Artificial wet meadow
Grass Family	**Poaceae**	
Giant reed	*Arundo donax*	Southern willow scrub
Slender wild oat	*Avena barbata*	Non-native grassland
Rip-gut brome	*Bromus diandrus*	Non-native grassland
Red brome	*Bromus madritensis* ssp. *rubens*	Non-native grassland
Foxtail barley	*Hordeum murinum*	Non-native grassland
Common barley	*Hordeum vulgare*	Non-native grassland
Dallis grass	*Paspalum dilatatum*	Artificial wet meadow
Mediterranean grass	*Schismus arabicus*	Non-native grassland, ruderal
Cattail Family	**Typhaceae**	
Broadleaved cattail	*Typha latifolia*	Artificial wet meadow

Inventory of Wildlife Species Observed within the Project site

Common Name	Scientific Name	Habitat
Side-blotched lizard	*Uta stansburiana*	Non-native grassland
Mallard	*Anas platyrhynchos*	Non-native grassland
Turkey vulture	*Cathartes aura*	Non-native grassland
Red-tailed hawk	*Buteo jamaicensis*	Non-native grassland
American kestrel	*Falco sparverius*	Non-native grassland
Western gull	*Larus occidentalis*	Non-native grassland
Rock dove	*Columba livia*	Urban or built-up land
Mourning dove	*Zenaida macroura*	Non-native grassland, artificial wet meadow
Burrowing owl	*Athene cunicularia*	Non-native grassland
Anna's hummingbird	*Calypte anna*	Artificial wet meadow
Ash-throated flycatcher	*Myiarchus cinerascens*	Non-native grassland
Western kingbird	*Tyrannus verticalis*	Non-native grassland
American crow	*Corvus brachyrhynchos*	Non-native grassland, urban or built-up land, golf course
Horned lark	*Eremophila alpestris*	Non-native grassland, ruderal
Northern mockingbird	*Mimus polyglottos*	Non-native grassland, urban or built-up land
Song sparrow	*Melospiza melodia*	Non-native grassland, artificial wet meadow
White-crowned sparrow	*Zonotrichia leucophrys*	Non-native grassland, ruderal
Western meadowlark	*Sturnella neglecta*	Non-native grassland, artificial wet meadow
House finch	*Carpodacus mexicanus*	Non-native grassland, ruderal, urban or built-up land
House sparrow	*Passer domesticus*	Urban or built-up land
Coyote	*Canis latrans*	Non-native grassland
California ground squirrel	*Spermophilus beecheyi*	Non-native grassland

APPENDIX C

Assessment of Potential for Occurrence of MSHCP-covered Plant and Wildlife Species Known to Occur within the Project Vicinity

MSHCP-covered Plant and Wildlife Species Known to Occur within the Project Vicinity

Scientific Name	Common Name	Federal Status	State Status	Other	CNPS Status	General Habitat	Micro Habitat	Potential For Occurrence	Effect Determination[1]
Plants									
Ambrosia pumila	San Diego ambrosia	FE	None	MSHCP	1B.1	Chaparral, coastal scrub, valley and foothill grassland, vernal pools.	Disturbed areas in sandy loam or clay soils, 20-415m.	**Absent:** Focused surveys for the species were conducted by an SWCA biologist with experience surveying for the plant. No individuals of the species were found in the wet meadow onsite.	**No effect.**
Calochortus plummerae	Plummer's mariposa lily	None	None	MSHCP	1B.2 CA-Endemic	Coastal scrub, chaparral, valley and foothill grassland, cismontane woodland, lower montane coniferous forest.	Occurs on rocky and sandy sites, usually of granitic or alluvial material, 100-1700m.	**Absent:** Focused surveys for the species were conducted by an SWCA biologist with experience surveying for the plant. No individuals of the species were found in the non-native grasslands onsite.	**NA**
Chorizanthe parryi var. *parryi*	Parry's spineflower	None	None	MSHCP	List 3.2 CA-Endemic	Chaparral, coastal scrub	Sandy or rocky soils, openings within vegetation, 40-1705m.	**Absent:** Though there are two historic records (1903, 1917) within five miles, there is no suitable habitat within the project site.	**NA**
Dodecahema leptoceras	Slender-horned spineflower	FE	SE	MSHCP	1B.1 CA-Endemic	Chaparral, coastal scrub (alluvial fan sage scrub). Historically from Los Angeles, Riverside and San Bernardino Counties. Extirpated from much of range.	Flood deposited terraces and washes. Associates include *Encelia, Dalea,* and *Lepidospartum*, 200-760m.	**Absent:** Though there is one historic record (1923) within five miles, there is no suitable habitat within the project site.	**No effect.**

[1] Effects determinations are only provided for those species listed and protected under the FESA.

MSHCP-covered Plant and Wildlife Species Known to Occur within the Project Vicinity

Scientific Name	Common Name	Federal Status	State Status	Other	CNPS Status	General Habitat	Micro Habitat	Potential For Occurrence	Effect Determination[1]
Dudleya multicaulis	Many-stemmed dudleya	None	None	MSHCP	1B.2 CA-Endemic	Chaparral, coastal scrub, valley and foothill grassland.	In heavy, often clay-type soils or grassy slopes, 15-790m.	**Not likely to occur:** Though there is one recent record (1996) within five miles and one historic record (1986) within five kilometers, the habitat within the project site is considered marginal.	**NA**
Eriastrum densifolium ssp. *sanctorum*	Santa Ana River woollystar	FE	SE	MSHCP	1B.1 CA-Endemic	Coastal scrub, chaparral. Formerly known from Orange and San Bernardino Counties, now known from one extended population.	In sandy or gravelly soils on river floodplains or terraced fluvial deposits, 91-610m.	**Absent:** Though there is one recent record (1994) within five miles and one historic record (1986) within five kilometers, there is no suitable habitat within the project site.	**No effect.**
Juglans californica californica	Southern California black walnut	None	None	MSHCP	4.2 CA-Endemic	Chaparral, cismontane woodland, and coastal scrub.	Alluvial soils, 50-900m.	**Absent:** Though there is one recent record (1991) within five kilometers, this conspicuous species was not observed within the project site.	**N/A**
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields	None	None	MSHCP	1B.1	Coastal salt marshes, playas, valley and foothill grasslands, vernal pools.	Usually found on alkaline soils in playas, sinks, and grasslands, 1-1220m.	**Absent:** Though there is one recent record (1989) within five miles, there is no suitable habitat within the project site.	**N/A**
Invertebrates									
Rhaphiomidas terminatus abdominalis	Delhi Sands flower-loving fly	FE	None	MSHCP		Found only in areas of the Delhi Sands formation in southwestern San Bernardino and northwestern Riverside Counties.	Requires fine, sandy soils, often with wholly or partly consolidated dunes and sparse vegetation.	**Absent:** There is only an historic record (1941) within five miles, and there is no suitable habitat within the project site.	**No effect.**

MSHCP-covered Plant and Wildlife Species Known to Occur within the Project Vicinity

Scientific Name	Common Name	Federal Status	State Status	Other	CNPS Status	General Habitat	Micro Habitat	Potential For Occurrence	Effect Determination[1]
Fish									
Gila orcutti	Arroyo chub	None	SC	MSHCP, FSS		Los Angeles basin in southern coastal streams.	Slow water stream sections with mud or sand bottoms. Feed heavily on aquatic vegetation and associated invertebrates.	**Absent:** Though there are three recent records (1995, 1996, and 2001) within five miles, and three records (last record from 1997) within 5 kilometers, there is no suitable habitat within the project site.	**N/A**
Catostomus santaanae	Santa Ana sucker	FT	SC	MSHCP, IUCN:VU, FSS		Endemic to Los Angeles basin south coastal streams.	Habitat generalists, but prefer sand-rubble-boulder bottoms, cool, clear water and algae.	**Absent:** Though there are five recent records (2001, 2004, and three in 1991) within five miles, and three records (last record from 1997) within five kilometers, there is no suitable habitat within the project site.	**No effect.**
Amphibians									
Spea hammondii	Western spadefoot	None	SC	MSHCP, BLMS, IUCN:NT		Occurs primarily in grassland habitat, but can be found in valley-foothill hardwood woodlands.	Vernal pools or rain pools that persist with more than three weeks of standing water. Riparian habitats with suitable water resources may also be utilized.	**Not likely to occur:** Though there two records (no dates given) within five kilometers, the artificial wet meadow habitat within the project site is of recent origin, and this species has likely not dispersed into the project site.	**N/A**

MSHCP-covered Plant and Wildlife Species Known to Occur within the Project Vicinity

Scientific Name	Common Name	Federal Status	State Status	Other	CNPS Status	General Habitat	Micro Habitat	Potential For Occurrence	Effect Determination[1]
Bufo californicus	Arroyo toad	FE	SC	MSHCP, IUCN:EN		Semi-arid regions near washes or intermittent streams, including valley-foothill and desert riparian, and desert wash.	Rivers with sandy banks, willows, cottonwoods, and sycamores; loose, gravelly areas of streams in drier parts of range.	**Absent:** There are only three historic records (last record from 1907) within five kilometers, and there is no suitable habitat within the project site.	**No effect.**
Rana aurora draytonii	California red-legged frog	FT	SC	MSHCP, IUCN:NT		Deep-water pools with dense stands of overhanging willows and an intermixed fringe of cattails	Dense, shrubby or emergent riparian vegetation closely associated with deep (greater than 2 1/3-foot deep) still or slow moving water	**Absent:** There are only two historic records (last record from 1974) within five kilometers, and there is no suitable habitat within the project site.	**No effect.**
Reptiles									
Actinemys marmorata	Pacific pond turtle	None	SC	MSHCP, IUCN:VU		Ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation.	Require basking sites and sandy, open upland sites for egg-laying.	**Absent:** There are only three historic records (last record from 1974) within five kilometers, and there is no suitable habitat within the project site.	**N/A**
Coleonyx variegatus abbotti	San Diego banded gecko	None	None	MSHCP		Primarily a desert species, but also occurs cismontane chaparral, desert scrub, and open sand dunes.	Rocks, boards, fallen yucca stems, cow dung, and other litter serve as diurnal refugia.	**Absent:** Though there is one recent record (2003) within five miles, and two historic records (last record 1974) within five kilometers, there is no suitable habitat within the project site.	**N/A**
Sceloporus orcuttii	Granite spiny lizard	None	None	MSHCP		Chaparral, coastal scrub, riparian woodland, yellow pine forest, pinyon-juniper woodlands.	Closely tied to fractured granodiorite rock outcrops, often present under granite flakes on boulders.	**Absent:** Though there are three historic records (last record from 1917) within five kilometers, there is no suitable habitat within the project site.	**N/A**

MSHCP-covered Plant and Wildlife Species Known to Occur within the Project Vicinity

Scientific Name	Common Name	Federal Status	State Status	Other	CNPS Status	General Habitat	Micro Habitat	Potential For Occurrence	Effect Determination[1]
Sceloporus graciosus vandenburganus	Southern sagebrush lizard	None	SC	MSHCP		Montane chaparral, hardwood and conifer habitats, juniper habitats, and sage scrub habitats at higher elevations.	Prefers open ground, good light and scattered low bushes, and is usually found near bushes, brush heaps, logs, or rocks.	**Absent:** There is only one historic record (no date given) within five kilometers, and there is no suitable habitat within the project site.	**N/A**
Phrynosoma coronatum	Coast horned lizard	None	SC	MSHCP		Inhabits coastal sage scrub and chaparral in arid and semi-arid climate conditions.	Prefers friable, rocky or shallow sandy soil.	**Absent:** Though there is one historic record (1951) within five miles, and three records (last record from 1990) within five kilometers, there is no suitable habitat within the project site.	**N/A**
Aspidoscelis hyperythra beldingi	Orange-throated whiptail	None	SC	MSHCP, IUCN:DD		Inhabits low elevation coastal scrub, chaparral and valley-foothill hardwood habitats.	Prefers washes and other sandy areas with patches of brush and rocks. Perennial plants necessary for its major food - termites.	**Absent:** Though there are two recent records (1989 and 2003) and three historic records (1951, 1963, and one with no date given) within five miles, and two records (last record from 1974) within five kilometers, there is no suitable habitat within the project site.	**N/A**
Aspidoscelis tigris stejnegeri	Coastal whiptail	None	None	MSHCP		Found in deserts and semi-arid areas with sparse vegetation and open areas. Also found in woodland and riparian areas.	Sandy or rocky soils, soils may be compacted or firm.	**Absent:** Though there is one recent record (2001) within five miles, and one record (no date given) within five kilometers, there is no suitable habitat within the project site.	**N/A**

MSHCP-covered Plant and Wildlife Species Known to Occur within the Project Vicinity

Scientific Name	Common Name	Federal Status	State Status	Other	CNPS Status	General Habitat	Micro Habitat	Potential For Occurrence	Effect Determination[1]
Thamnophis hammondii	Two-striped garter snake	None	SC	MSHCP, BLMS, FSS, IUCN:DD		Wetland habitats such as streams, creeks and pools	Streams with rocky beds and bordered by willows, also ponds, lakes, wetlands and vernal pools; mixed oak, oak woodlands and chaparral on coastal slopes	**Not likely to occur:** Though there is one historic record (1974) within five kilometers, the artificial wet meadow habitat within the project site is of recent origin, and this species has likely not dispersed into the project site.	**N/A**
Crotalus ruber ruber	Northern red-diamond rattlesnake	None	SC	MSHCP		Chaparral, woodland, grassland, and desert areas.	Occurs in rocky areas and dense vegetation. Needs rodent burrows, cracks in rocks or surface cover objects.	**Not likely to occur:** Though there is one recent (2003) and two historic records (1959 and1939) within five miles, and two records (no date given) within five kilometers, habitat is marginal within the project site.	**N/A**
Birds									
Phalacrocorax auritus albociliatuse	Double-crested cormorant	None	SC	MSHCP, IUCN:LC		Require lakes, rivers, reservoirs, estuaries, or use the ocean for foraging. Nest on mainland in tall trees, wide rock ledges on cliffs, or rugged slopes near (or in) the aquatic environments.	Perching sites must be barren of vegetation.	**Absent:** Though there are six recent records (last record from 1998) within five kilometers, there is no suitable foraging or nesting habitat within the project site.	**N/A**

MSHCP-covered Plant and Wildlife Species Known to Occur within the Project Vicinity

Scientific Name	Common Name	Federal Status	State Status	Other	CNPS Status	General Habitat	Micro Habitat	Potential For Occurrence	Effect Determination[1]
Botaurus lentiginosus	American bittern	None	None	MSHCP, IUCN:LC		Emergent habitat of freshwater marshes and vegetated borders of ponds and lakes.	Marshes, meadows, and along the edges of shallow ponds.	**Not likely to occur:** Though there are four recent records (last record from 1999) within five kilometers, the artificial wet meadow habitat within the project site is considered marginal foraging and nesting habitat.	**N/A**
Nycticorax nycticorax	Black-crowned night heron	None	None	MSHCP, BLMS, IUCN:LC		Various wetland habitats, including salt, brackish, and freshwater marshes, swamps, streams, lakes, and agricultural fields.	Nests in a platform of sticks placed in tree or cattails. Nests colonially; more than a dozen nests may be in a single tree.	**Absent:** Though there are eight recent records (last record from 1999) within five kilometers, there is no suitable habitat within the project site.	**N/A**
Plegadis chihi	White-faced ibis	None	SC	MSHCP, IUCN:LC		Forages in shallow lacustrine waters, muddy ground of wet meadows, marshes, ponds, lakes, rivers, flooded fields, and estuaries.	Extensive marshes are required for nesting. The species prefers shallow, grassy marshes and nests in dense, fresh emergent wetland.	**Absent:** Though there are two recent records (last record from 1999) within five kilometers, there is no suitable habitat within the project site.	**N/A**
Cathartes aura	Turkey vulture	None	None	MSHCP		Forested or partly forested areas with nest sites such as rock outcrops, fallen trees, and abandoned buildings that are isolated from human and perhaps other mammalian disturbance.	Uses large trees, rock outcrops, and riparian thickets for roosting, perching, and sunning.	**Absent:** There are six recent records (last record from 1999) within five kilometers of project site. Though this species was observed foraging over the project site, there is no suitable nesting habitat there.	**N/A**

MSHCP-covered Plant and Wildlife Species Known to Occur within the Project Vicinity

Scientific Name	Common Name	Federal Status	State Status	Other	CNPS Status	General Habitat	Micro Habitat	Potential For Occurrence	Effect Determination[1]
Circus cyaneus	Northern harrier	None	SC	MSHCP, IUCN:LC		Coastal salt marsh and fresh-water marsh. Nest and forage in grasslands, from salt grass in desert sink to mountain springs.	Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.	**May occur:** There are five recent records (last record from 1999) within five kilometers, and suitable foraging and nesting habitat within the project site, particularly within and adjacent to the artificial wet meadow.	**N/A**
Elanus leucurus	White-tailed kite	None	FP	MSHCP		Nests in rolling foothills/valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland.	Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	**May occur:** There are ten recent records (last record from 1999) within five kilometers, and there is suitable foraging and nesting habitat within the project site.	**N/A**
Accipiter cooperii	Cooper's hawk	None	SC	MSHCP, IUCN:LC		Woodland, chiefly of open, interrupted or marginal type.	Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms, on river floodplains; also live in oaks.	**May occur:** There are 16 recent records (last record from 1999) within five kilometers, and there is suitable foraging and nesting habitat within the project site.	**N/A**
Accipiter striatus	Sharp-shinned hawk	None	SC	MSHCP, IUCN:LC		Found in ponderosa pine, black oak, riparian deciduous, mixed conifer, and Jeffrey pine habitats but prefers riparian areas.	Requires north facing slopes with plucking perches. Nests usually within 275 ft of water.	**Absent:** Though there are five recent records (last record from 1999) within five kilometers, the project site is outside of the known breeding range of this species. May occasionally forage over the project site.	**N/A**

MSHCP-covered Plant and Wildlife Species Known to Occur within the Project Vicinity

Scientific Name	Common Name	Federal Status	State Status	Other	CNPS Status	General Habitat	Micro Habitat	Potential For Occurrence	Effect Determination[1]
Buteo swainsoni	Swainson's hawk	None	ST	MSHCP, ABC, Audubon, USBC, FSS, BCC		Open desert, sparse shrub lands, grassland, or cropland containing scattered, large trees or small groves.	Nests in scattered trees within grassland, shrubland, or agricultural landscapes, especially along stream courses or in open woodlands.	**Not likely to occur:** Though there is one recent record (1999) within five kilometers, the nesting habitat within the project site is considered marginal. May forage within the project site during winter.	**N/A**
Buteo regalis	Ferruginous hawk	None	SC	MSHCP, Audubon, BLMS, IUCN:NT, BCC		Open grasslands, sagebrush flats, desert scrub, low foothills surrounding valleys and fringes or pinyon-juniper habitats.	Mostly eats lagomorphs, ground squirrels, and mice.	**Absent:** Though there are two recent records (last record from 1992) within five kilometers, the project site is outside of the known breeding range of this species. May forage within the project site during winter.	**N/A**
Aquila chrysaetos	Golden eagle	None	SC, FP	MSHCP, BLMS, CDFS, IUCN:LC, BCC		Rolling foothill or coast-range terrain, where open grassland turns to scattered oaks, sycamores, or large digger pines.	Cliff-walled canyons provide nesting habitat in most parts of range; also large trees in open areas.	**Absent:** There is only an historic record (1910) within five kilometers, and there is no suitable nesting habitat within the project site. May forage within the project site.	**N/A**
Haliaeetus leucocephalus	Bald eagle	FD	SE, FP	MSHCP, CDFS, IUCN:LC		Ocean shorelines, lake margins, and river courses for both nesting and wintering. Most nests within one mile of water.	Nests in large, old-growth, or dominant live tree with open branches, especially Ponderosa Pine. Roosts communally in winter.	**Absent:** Though there are five historic records (1981 and four from 1975) within ten miles, there is no suitable foraging or nesting habitat within the project site.	**No effect.**

MSHCP-covered Plant and Wildlife Species Known to Occur within the Project Vicinity

Scientific Name	Common Name	Federal Status	State Status	Other	CNPS Status	General Habitat	Micro Habitat	Potential For Occurrence	Effect Determination[1]
Charadrius montanus	Mountain plover	None	SC	MSHCP, ABC, Audubon, BLMS, IUCN:VU, USBC, BCC		Nest in dry, open, shortgrass prairies or grasslands and winter in shortgrass plains, plowed fields, open sagebrush areas, and sandy deserts Relatively open areas with little vegetative cover where it forages for insects.	Relatively open areas with little vegetative cover where it forages for insects.	**Absent:** Though there are three historic records (1909) within five kilometers, there is no suitable foraging or nesting habitat within the project site.	**N/A**
Coccyzus americanus occidentalis	Western yellow-billed cuckoo	FC	SE	MSHCP, IUCN:LC, FSS, BCC		Riparian forest nester, along the broad, lower flood-bottoms of larger river systems.	Nests in riparian thickets of willow, often mixed with cottonwoods, with lower story of blackberry, nettles, or wild grape.	**Absent:** Though there is one recent record (1989) and three historic records (1919, 1930, 1977) within ten miles, and four records (last record from 1993) within five kilometers, there is no suitable foraging or nesting habitat within the project site.	**No effect.**

MSHCP-covered Plant and Wildlife Species Known to Occur within the Project Vicinity

Scientific Name	Common Name	Federal Status	State Status	Other	CNPS Status	General Habitat	Micro Habitat	Potential For Occurrence	Effect Determination[1]
Athene cunicularia	Burrowing owl	None	SC	MSHCP, BLMS, IUCN:LC, BCC		Open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation.	Subterranean nester, dependent upon burrowing mammals, especially California ground squirrel.	**Present:** Breeding pair observed within the project site during initial habitat assessment (Step I) and one individual observed during dusk/dawn surveys (Step IIb). In addition, there are 11 recent records (1989, 1998, 2003, 2005, 2007, two in 2002, and four in 2006) and one historic record (1986) within ten miles, and five historic records (last record 1974) within five kilometers of the project site. Suitable foraging and nesting habitat occurs throughout the majority of the project site.	**N/A**
Cypseloides niger borealis	Black swift	None	SC	MSHCP, IUCN:LC, FSS		Forages near nest sites over a variety of habitats.	Nests in moist crevices or caves on sea cliffs above the surf, or on cliffs behind, or adjacent to, waterfalls in deep canyons,	**Absent:** Though there is one recent record (1999) within five kilometers, there is no suitable nesting habitat within the project site.	**N/A**

MSHCP-covered Plant and Wildlife Species Known to Occur within the Project Vicinity

Scientific Name	Common Name	Federal Status	State Status	Other	CNPS Status	General Habitat	Micro Habitat	Potential For Occurrence	Effect Determination[1]
Picoides pubescens turatie	Downy woodpecker	None	None	MSHCP		Generally nests in deciduous (often willow) woodlands, deciduous growth/oak woodlands, orchards, suburban plantings, and occasionally in conifers.	Requires abundant snags, and tree/shrub, tree/herbaceous, and shrub/herbaceous ecotones.	**Not likely to occur:** Though there are 22 recent records (last record from 1999) within five kilometers, the habitat within the project site is considered marginal for foraging and nesting.	**N/A**
Sphyrapicus thyroideus thyroideus	Williamson's sapsucker	None	None	MSHCP		Montane spruce-fir, Douglas fir, lodgepole pine, ponderosa pine forests and mixed deciduous-coniferous forest, oak-juniper and pine-oak forests	Cavity-nester, most often in Aspen trees.	**Absent:** Though there is one recent record (1998) within five kilometers, there is no suitable foraging or nesting habitat within the project site.	**N/A**
Empidonax traillii extimus	Southwestern willow flycatcher	FE	SE	MSHCP, Audubon, USBC		Restricted to riparian woodlands along streams and rivers with mature, dense stands of willows (*Salix* spp.), cottonwoods (*Populus* spp.) or smaller spring fed or boggy areas with willows or alders (*Alnus* spp.).	Nests from zero to 13 feet above ground in thickets of trees and shrubs approximately 13 to 23 feet tall with a high percentage of canopy cover and dense foliage.	**Not likely to occur:** Though there is one recent record (1991) within ten miles, and six records (last record from 1999) within five kilometers, the southern willow scrub community immediately adjacent to the project site is marginal foraging and nesting habitat for the species.	**No effect.**
Lanius ludovicianus	Loggerhead shrike	None	SC	MSHCP, IUCN:LC, BCC		Savannah, scrub, orchards, grassland.	Nests in dense, thorny shrubs and small trees. Uses thorns and barb wire fences to hook prey items.	**May occur:** There is one recent record (1994) within ten miles, and 20 records (last record in 1999) within five kilometers, and suitable foraging and nesting habitat within the project site.	**N/A**

MSHCP-covered Plant and Wildlife Species Known to Occur within the Project Vicinity

Scientific Name	Common Name	Federal Status	State Status	Other	CNPS Status	General Habitat	Micro Habitat	Potential For Occurrence	Effect Determination[1]
Vireo bellii pusillus	Least Bell's vireo	FE	SE	MSHCP, ABC, Audubon, IUCN:NT, USBC, BCC		Summer resident of southern California. Inhabits low riparian growth in vicinity of water or in dry river bottoms, below 2,000 ft.	Nests placed along margins of bushes or twigs projecting into pathways, usually willow, *Baccharis*, mesquite.	**Not likely to occur:** Though there are ten recent records (1987, 1994, 1999, 2004, 2007, two from 2001, and three from 2003) and two historic records (1983, 1978) within ten miles and 10 recent records (last record from 1999) within five kilometers, the southern willow scrub community immediately adjacent to the project site is marginal foraging and nesting habitat for the species.	**No effect.**
Eremophila alpestris actia	California horned lark	None	SC	MSHCP, IUCN:LC		Open habitats, usually where trees and large shrubs are absent.	Breed in level or gently sloping shortgrass prairie, montane meadows, "bald" hills, opens coastal plains, fallow grain fields, and alkali flats	**Present:** This species was observed within the project site. In addition, there are two recent records (both from 1992) within ten miles, and 13 historic records (last record from 1896) within five kilometers. There is suitable foraging and nesting habitat within the project site.	**N/A**

MSHCP-covered Plant and Wildlife Species Known to Occur within the Project Vicinity

Scientific Name	Common Name	Federal Status	State Status	Other	CNPS Status	General Habitat	Micro Habitat	Potential For Occurrence	Effect Determination[1]
Tachycineta bicolor	Tree swallow	None	None	MSHCP		Frequents valley foothill and montane riparian habitats below 2,700 meters (9000 ft) for breeding within its range.	Nests almost exclusively in cavity-containing trees or snags with cavities that are near, or preferably in, water. Forage primarily over and around ponds, marshes, rivers, lakes, and estuaries.	**Absent:** Though there are seven recent records (last record from 1999) within five kilometers, there is no suitable nesting habitat within the project site. May forage over the project site.	**N/A**
Progne subis subis	Purple martin	None	SC	MSHCP, FSS, IUCN: LC		Forage over a variety of habitats usually near water.	Breed in tall sycamores, pines, and other large trees in or near oak woodlands or open coniferous forest.	**Not likely to occur:** Though there is one recent record (1999) within five kilometers, the habitat within the project site is considered marginal for nesting. May occasionally forage and suitable foraging within the project site.	**N/A**
Campylorhynchus brunneicapillus cousei	Cactus wren	None	SC	MSHCP		Southern California coastal sage scrub.	Requires tall *Opuntia* cactus for nesting and roosting.	**Absent:** Though there are nine historic records (last record from 1908) within five kilometers, there is no suitable foraging or nesting habitat within the project site.	**N/A**

MSHCP-covered Plant and Wildlife Species Known to Occur within the Project Vicinity

Scientific Name	Common Name	Federal Status	State Status	Other	CNPS Status	General Habitat	Micro Habitat	Potential For Occurrence	Effect Determination[1]
Polioptila californica californica	Coastal California gnatcatcher	FT	SC	MSHCP, ABC, Audubon, IUCN:LC, USBC		Obligate permanent resident of coastal sage scrub below 2,500 ft in southern California.	Low, coastal sage scrub, in arid washes, on mesas and slopes. Prefers stands dominated by *Artemisia californica*.	**Absent:** Though there are 41 recent records (dates from 1988-2008) and two historic record (1928 and 1924) within ten miles, and 11 records (last record in 1998) within five kilometers, there is no suitable foraging or nesting habitat within the project site.	**No effect.**
Vermivora ruficapilla ridgwayi	Nashville warbler	None	None	MSHCP		Breeds in pine, hardwood and conifer forests in the Sierras and in montane chaparral habitats	In summer habitat in the San Gabriel and San Bernardino Mountains, where breeding is presumed but not observed to occur, individuals are found on shaded slopes within mixed coniferous forests with California black oaks and yellow pines and brush communities with Manzanita.	**Absent:** Though there are two recent records (last record from 1997) within five kilometers, there is no suitable foraging or nesting habitat within the project site.	**N/A**
Dendroica petechia brewsteri	Yellow warbler	None	SC	MSHCP, IUCN:LC		Riparian woodlands. Prefers willows, cottonwoods, aspens, sycamores, and alders for nesting and foraging.	Low, bushy, open-canopy riparian woodland.	**Absent:** Though there is one recent record (2000) within ten miles, and 15 recent records (last record from 1999) within five kilometers, there is no suitable foraging or nesting habitat within the project site.	**N/A**

MSHCP-covered Plant and Wildlife Species Known to Occur within the Project Vicinity

Scientific Name	Common Name	Federal Status	State Status	Other	CNPS Status	General Habitat	Micro Habitat	Potential For Occurrence	Effect Determination[1]
Wilsonia pusilla pileolata	Wilson's warbler	None	None	MSHCP		Breeding habitats include montane meadows and low, dense willow thickets often on steep slopes.	Prefer native willow habitat during spring migration.	**Absent:** Though there are 13 recent records (last record from 1999) within five kilometers, there is no suitable foraging or nesting habitat within the project site.	**N/A**
Icteria virens	Yellow-breasted chat	None	SC	MSHCP, IUCN:LC		Found in dense, relatively wide riparian woodlands and thickets of willows, vine tangles, and dense brush with well-developed understories. Nesting areas are associated with streams, swampy ground, and the borders of small ponds.	Nests in low, dense riparian, consisting of willow, blackberry, wild grape; forage and nest within 10 ft of the ground.	**Absent:** Though there is one recent record (2000) within ten miles, and 23 recent records (last record from 1999) within five kilometers, there is no suitable foraging or nesting habitat within the project site.	**N/A**
Aimophila ruficeps canescens	Southern California rufous-crowned sparrow	None	SC	MSHCP, IUCN:LC		Resident in southern California coastal sage scrub and sparse mixed chaparral.	Frequents relatively steep, often rocky hillsides with grass and forb patches.	**Absent:** Though there are four recent records (1997, 1999, 2001, and 2003) within ten miles and one recent record (1999) within five kilometers, there is no suitable foraging or nesting habitat within the project site.	**N/A**

MSHCP-covered Plant and Wildlife Species Known to Occur within the Project Vicinity

Scientific Name	Common Name	Federal Status	State Status	Other	CNPS Status	General Habitat	Micro Habitat	Potential For Occurrence	Effect Determination[1]
Amphispiza belli belli	Bell's sage sparrow	None	SC	MSHCP, IUCN:LC, BCC		Nests in hard chaparral dominated by fairly dense stands of chamise. Found in coastal sage scrub in south of range.	Nests located on the ground beneath shrub or in a shrub 6-18 inches above ground.	**Absent:** Though there are two recent records (1999, 2001) within ten miles, and nine historic records (last record from 1891) within five kilometers there is no suitable foraging or nesting habitat within the project site.	**N/A**
Zonotrichia lincolnii alticola	Lincoln's sparrow	None	None	MSHCP		Breeds in wet montane meadows of corn lily, sedges and low willows.	Prefer dense, low underbrush often in disturbed edges with grasses and weeds mixed with shrubs.	**Absent:** Though there are five recent records (last record from 1993) within five kilometers, there is no suitable foraging or nesting habitat within the project site.	**N/A**
Agelaius tricolor	Tricolored blackbird	None	SC	MSHCP, ABC, Audubon, BLMS, IUCN:LC, USBC, BCC		Highly colonial species, most numerous in the Central Valley and vicinity. Largely endemic to California.	Requires open water, protective nesting substrate and foraging area with insect prey within a few km of the colony.	**Not likely to occur:** Though there are two recent (1992, 1999) and one historic (1950) records within ten miles, and six historic records (last record from 1974) within five kilometers, the habitat within the project site (drainage in the artificial wet meadow) is considered marginal for nesting. May forage within the project site during winter.	**N/A**

MSHCP-covered Plant and Wildlife Species Known to Occur within the Project Vicinity

Scientific Name	Common Name	Federal Status	State Status	Other	CNPS Status	General Habitat	Micro Habitat	Potential For Occurrence	Effect Determination[1]
Mammals									
Mustela frenata latriostra	Long-tailed weasel	None	None	MSHCP		Chaparral, coastal scrub, grassland, riparian forest.	Areas supporting large populations of small mammals (burrows) and birds. Appears to be partially restricted to habitats in close proximity to standing water.	**Not likely to occur:** Though there is suitable habitat within the project site, there are only two historic records (last record from 1974) within five kilometers.	**N/A**
Canis latrans clepticus	Coyote	None	None	MSHCP		Chaparral, coastal scrub, grassland, short-grass prairie, semiarid sagebrush, and broken forests.	Natal dens are associated with brush-covered slopes, thickets, hollow logs, rocky ledges, and burrows.	**Present:** Sign of this species was observed within the project site. In addition, there are two historic records (last record from 1974) within five kilometers, and there is suitable habitat within the project site.	**N/A**
Lynx rufus californicus	Bobcat	None	None	MSHCP		Primarily in foothills comprised of chaparral, but also in coastal scrub, grassland, woodland, and riparian forest.	Rocky and brushy areas near springs or other perennial water sources.	**Not likely to occur:** Though there is suitable habitat within the project site, there is only an historic record (1974) within five kilometers.	**N/A**
Chaetodipus fallax fallax	Northwestern San Diego pocket mouse	None	SC	MSHCP, IUCN:DD		Coastal scrub, chaparral, grasslands.	Sandy, herbaceous areas, usually in association with rocks or coarse gravel.	**May occur:** There are two recent (1994 and 1995) records within five miles, and two recent records (last record in 1995) within five kilometers, and there is suitable habitat within the project site.	**N/A**

MSHCP-covered Plant and Wildlife Species Known to Occur within the Project Vicinity

Scientific Name	Common Name	Federal Status	State Status	Other	CNPS Status	General Habitat	Micro Habitat	Potential For Occurrence	Effect Determination[1]
Dipodomys stephensi	Stephens' kangaroo rat	FE	ST	MSHCP		Primarily annual and perennial grasslands, but also occurs in coastal scrub and sagebrush with sparse canopy cover.	Prefers buckwheat, chamise, brome grass and filaree. Will burrow into firm soil.	**Not likely to occur:** Though there are four recent records (1989, 1991, and two from 1990) within five miles, the dense non-native grassland within the project site is considered marginal habitat.	**No effect.**
Neotoma lepida intermedia	San Diego desert woodrat	None	SC	MSHCP, IUCN:DD		Coastal scrub, chaparral, grassland, oak woodland.	Particularly abundant around rock outcrops, boulders, cholla cacti patches, rocky cliffs and slopes, and areas of dense undergrowth.	**Not likely to occur:** Though there is one historic record (1974) within five kilometers, the dense non-native grassland within the project site is considered marginal habitat.	**N/A**
Lepus californicus bennettii	San Diego black-tailed jackrabbit	None	SC	MSHCP, IUCN:LC		Coastal sage scrub habitats in southern California.	Intermediate canopy stages of shrub habitats and open shrub/herbaceous and tree/herbaceous edges.	**Not likely to occur:** Though there are two recent records (1997 and 2001) within five miles, and two historic records (last record 1974), the dense non-native grassland within the project site is considered marginal habitat.	**N/A**

MSHCP-covered Plant and Wildlife Species Known to Occur within the Project Vicinity

Scientific Name	Common Name	Federal Status	State Status	Other	CNPS Status	General Habitat	Micro Habitat	Potential For Occurrence	Effect Determination[2]
Sylvilagus bachmani cinerascens	Brush rabbit	FE	SE	MSHCP, IUCN:LC		Most often in chaparral, but also coastal scrub and oak woodland.	Brushy areas; concentrate their activities at the edge of brushy habitats.	**Absent:** Though there is one historic record (1974) within five kilometers, there is no suitable habitat within the project site.	**No effect.**

Status Codes:

Federal

FT = Federal Threatened

FE = Federal Endangered

FPT = Federal Proposed Threatened

FPE = Federal Proposed Endangered

FPD = Federal Proposed Delisting

FC = Federal Candidate

FD = Federal Delisted

State

CE = California listed as Endangered

CT = California listed as Threatened

CR = California Rare Species

SC = California Species of Special Concern

FP = California Fully Protected

Other

FSS = Forest Service Sensitive

BLMS = Bureau of Land Management Sensitive

CDFS = California Dept. of Forestry Sensitive

MSHCP = Western Riverside County MSHCP-covered Species

IUCN = International Union for Conservation of Nature and Natural Resources

CR: Critically Endangered

DD: Data Deficient

EN: Endangered

LC: Least Concern

NT: Near Threatened

VU: Vulnerable

WBWG = Western Bat Working Group

H: High Priority

MH: Medium-High Priority

M: Medium Priority

LM: Low-Medium Priority

USBC = The United States Bird Conservation Watch List

ABC = The American Bird Conservancy Green List

Audubon = WatchList

Xerces = Xerces Society

CI: Critically Imperiled

DD: Data Deficient

IM: Imperiled

VU: Vulnerable

CNPS

List 1B = Plants rare or endangered in California and elsewhere

List 2 = Rare, threatened, or endangered in California, but more common elsewhere.

List 3 = We need more information about this plant (Review List).

0.1 = Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)

0.2 = Fairly endangered in California (20-80% occurrences threatened)

0.3 = Not very endangered in California (<20% of occurrences threatened)

CA-Endemic = Plant's native range is confined to California

[2] Effects determinations are only provided for those species listed and protected under the FESA.

11-1872/ALB

CITY OF RIVERSIDE
Office of the
City Attorney

November 28, 2011

Federal Aviation Administration
Airports Division
Attention: David Kessler
P.O. Box 92007
Los Angeles, CA 90009

Dear Mr. Kessler:

The City of Riverside ("Riverside") is undertaking a Land Acquisition Reimbursement and Improvements project ("Project") at the Riverside Municipal Airport. More specifically, the Project will increase the runway safety area ("RSA") to the correct standards. To do so, approximately 2,700 feet of a 30-inch natural gas line will be relocated outside of the RSA. Approximately 155,000 cubic yards of fill will be used for the required grading. Prior to Project approval, the City must complete the requisite environmental review. As a federal agency, the Federal Aviation Administration ("FAA") must consider the federal Endangered Species Act prior to granting any approval for the Project. The FAA and United States Fish and Wildlife Service Carlsbad Field Office determined that Riverside complete the MSHCP process before the FAA will begin Section 7 consultation for the Project.

Riverside commissioned a biological study for its California Environmental Quality Act ("CEQA") analysis. The biological study included an MSHCP consistency analysis. The consistency analysis, and the CEQA initial study, both determine that the Project is fully consistent with the MSHCP, and that the City will complete the MSHCP process, in complete satisfaction of all MSHCP requirements, prior to Project approval. There are no anticipated significant impacts to biological resources after mitigation, including to any endangered species.

I am available at your convenience should you have any questions regarding this matter.

Very truly yours,

Anthony L. Beaumon
Deputy City Attorney

ALB/sm

c : Mark Ripley, Airport Director
Diana Jenkins, Planning Department
Kristi J. Smith, Supervising Deputy City Attorney

3900 Main Street • Riverside, CA 92522 • 951.826.5567 • fax 951.826.5540 • www.riversideca.gov

Appendix D

CULTURAL RESOURCE SURVEYS

Appendix D
CULTURAL RESOURCES SURVEY

This appendix includes the results of the cultural resources survey for the proposed improvements and property reimbursement at Riverside Airport to determine the presence of properties eligible for inclusion on the National Register of Historic Places (NHRP). Correspondence between the Federal Aviation Administration and the California Office of Historic Preservation is also included in this appendix.

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Cultural Resources Survey for the Proposed Riverside Airport Improvement Project City and County of Riverside, California

Prepared for

Coffman Associates

Prepared by

SWCA Environmental Consultants

February 2012

CONFIDENTIAL – NOT FOR PUBLIC DISTRIBUTION

CULTURAL RESOURCES SURVEY FOR THE PROPOSED RIVERSIDE AIRPORT IMPROVEMENT PROJECT, CITY AND COUNTY OF RIVERSIDE, CALIFORNIA

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USGS 7.5-Minute Quadrangles
Riverside West, California

SWCA Project No. 14079

SWCA Cultural Resources Report Database No. 2009-405

Final
February 21, 2012

Key Words: cultural resources survey; intensive; 145.7 acres; positive results; City of Riverside; Riverside County, CA-RIV-1711; CA-RIV-8897; CA-RIV-8898; CA-RIV-8899; P-33-11633; P-33-17093; P-33-17096; P-33-17097; prehistoric; American period; bedrock milling; historic artifacts; foundation; trough; water tank; Township 2S, Range 5W

MANAGEMENT SUMMARY

Purpose and Scope: SWCA Environmental Consultants (SWCA) was retained by Coffman Associates on behalf of the Riverside Airport to conduct a cultural resources survey, for proposed improvements to the Riverside Airport. The purpose of the various airport improvements is two-fold. First, the improvements are needed to ensure that Federal Aviation Administration (FAA) airport design standards are upheld to the maximum extent practicable, particularly in relation to the runway protection zones (RPZ) and runway safety area (RSA), without significantly impairing use of the airfield. Secondly, the improvements are being undertaken to improve the efficiency and circulation on the airfield. The project consists of 145.7 acres, situated on four discontiguous areas, located in the city and county of Riverside, California.

This technical report was prepared to comply with current federal environmental review policies. National Environmental Policy Act (NEPA) guidelines require the identification of historic properties, and that project-related effects on those properties be considered as part of the environmental assessment process. That adherence includes Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, as required by the Advisory Council on Historic Preservation (ACHP), and with regulations contained in 36 Code of Federal Regulations (CFR), Part 800. Section 106 of the NHPA defines "historic properties" as any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places. Effects under Section 106 of the NHPA are delineated in the "Criteria of Effect and Adverse Effect" (36 CFR Section 800.5(1)).

Dates of Investigation: SWCA archaeologist Susan Underbrink completed a cultural resources literature search at the Eastern Information Center (EIC) on February 26, 2008. SWCA contacted the Native American Heritage Commission (NAHC) on February 26, 2008, requesting a search of the Sacred Lands File for traditional cultural resources and a list of Native American contacts. We attempted to contact each of these contacts by mail on February 28 and by telephone on March 19 and 20, 2008. SWCA cultural resources specialists conducted intensive surveys of the area of potential effects (APE) on February 27, 2008, November 4, 2009, and January 17, 2010. This report was finalized in February 2012.

Investigation Constraints: Ground-surface visibility ranged from low to high throughout the project area. Visibility was between zero and 100 percent throughout the project. Within the western segment of the project area, one acre was obstructed by tall vegetation and transient camps and consequently subjected only to reconnaissance level survey.

Summary of Findings: The records and literature search indicated that 47 previously recorded cultural resources are located within a one-mile radius of the APE, including 16 prehistoric archaeological sites or isolates, 5 historic archaeological sites, and 26 buildings and/or historic structures. Of these 47 previously recorded resources, two are within the APE and three are adjacent. This indicates that there is a moderate to high sensitivity for historic-period buildings and archaeological resources in the APE. The records and literature search also identified 14 previously conducted cultural resources studies within a one-mile radius of the APE. Three of these studies cover portions of the project APE.

The NAHC Sacred Lands File search for traditional cultural resources failed to indicate the presence of Native American cultural resources in the immediate vicinity of the proposed project area. The NAHC response included a list of 12 Native American groups and/or individuals for Riverside County who may have knowledge of cultural resources in the project area. SWCA sent letters describing the proposed project along with location maps via U.S. mail to these 12 groups. Responses were received from two of the 12 Native American groups. These responses are documented in Table 5. The Pechanga Tribe has

requested formal government-to-government consultation regarding the project with the FAA. The FAA also contacted 15 Native American contacts directly in January 2011.

The field surveys identified six cultural resources, all in the eastern portion of the survey area. These include one bedrock milling archaeological site (CA-RIV-8899/33-17095), two sites containing bedrock milling features and historic refuse scatters (CA-RIV-8897/33-17092 and CA-RIV-8898/33-17094), one built environment resource, a water tank (33-17096), one historic site containing a refuse scatter and feature (33-17093) and one historic site containing built environment resources (concrete features) and a refuse scatter (33-17097). The three bedrock milling sites (CA-RIV-8897/33-17092, CA-RIV-8898/33-17094, and CA-RIV-8899/33-17095) may be affiliated or synonymous with previously recorded, but poorly mapped CA-RIV-1711 (33-01711). Although recorded here as three separate prehistoric or multi-component archaeological sites, these may actually represent a single component Ethnographic period occupation. The APE was revised to exclude all of these resources.

Evaluations and Recommendations: One previously recorded residence (33-11633) was documented within the project area, however the building was found not eligible for listing in the CRHR and NRHP. No further action is recommended regarding this property. A reportedly Ethnographic period archaeological site, CA-RIV-1711 (33-01711), may be located within the survey area, but the APE has been revised to exclude this location from project impacts.

Three of the newly recorded historic-period resources (33-17093, 33-17096, and 33-17097) have been evaluated in the course of this study and found not eligible for listing in the NRHP or local registers. Resource 33-17093 lacks integrity; it does not embody the distinctive characteristics of a type, period, or method of construction, represent the work of a master, or possess high artistic values; and it has no significant associations to events or persons important to history (Criteria A, B, and C). Furthermore, it is not likely to yield information important in history (Criterion D). Resources 33-17096 and 33-17097 do not warrant further evaluation under Criteria A, B, or C because they no longer retain integrity sufficient to convey their association with significant events or persons. It is also not likely to yield information important in history (Criterion D). None of these resources are eligible as a contributor to a historic district, nor do they qualify for local listing. Thus any impacts to these three resources would be less than significant.

The three bedrock milling archaeological sites (CA-RIV-8897/33-17092, CA-RIV-8898/33-17094, and CA-RIV-8899/33-17095) within the survey area have not been formally evaluated for listing in the NRHP or local register. If previously recorded CA-RIV-1711 (33-01711) is located within the survey area, it almost certainly corresponds to one or more of these three sites. Thus mitigation (or avoidance) applied to the three newly recorded bedrock milling sites would also address any project impacts to CA-RIV-1711 (33-01711). None of these sites has been formally evaluated for listing in the NRHP or local register. The APE has been revised to exclude all of these resources.

Impacts to those unevaluated resources should be avoided during project improvements. If project engineering plans change such that that impact avoidance is not possible, additional mitigation measures are required to address these impacts. SWCA recommends that a qualified archaeologist be present to monitor ground-disturbing activities during grading at these three locations. SWCA also recommends that, prior to initiation of ground-disturbing activities, a qualified archaeologist conduct a worker cultural awareness training session. In the event that cultural resources are discovered during ground-disturbing activities, such as grading, grubbing, and vegetation clearing, work in the immediate area must be halted and the project archaeologist should be notified immediately to evaluate the resource(s) encountered. Lastly, a Native American tribe has recommended that a Native American monitor observe all archaeological studies and all ground-disturbing activities conducted in connection with the project.

Disposition of Data: This report will be filed with Coffman Associates; the Eastern Information Center located at located at the University of California, Riverside; and SWCA Environmental Consultants. All field notes and records related to the project will remain on file at the Pasadena office of SWCA.

Archaeological and other heritage resources can be damaged or destroyed through uncontrolled public disclosure of information regarding their location. This document contains sensitive information regarding the nature and location of archaeological sites which should not be disclosed to the general public or unauthorized persons.

Information regarding the location, character, or ownership of a cultural resource is exempt from the Freedom of Information Act pursuant to 16 USC 470w-3 (National Historic Preservation Act) and 16 USC Section 470(h)(h) (Archaeological Resources Protection Act).

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INTRODUCTION

Contracting Data: Coffman Associates retained SWCA Environmental Consultants (SWCA) to conduct an intensive cultural resources survey for the proposed improvements to Riverside Airport. SWCA's investigation included a literature search and records review, a Sacred Lands File search, Section 106 consultation and an intensive pedestrian survey of the proposed direct area of potential effect (APE) for any prehistoric or historic cultural resources (Appendix A). The project will be completed under regulatory oversight of the Federal Aviation Administration (FAA) with proposed runway safety area improvements; therefore, this report was prepared to identify historic properties, as defined by Section 106 of the National Historic Preservation Act (NHPA).

Regulatory Setting: Current environmental review policies, in compliance with National Environmental Policy Act (NEPA) guidelines, require the identification of historic properties, and that consideration of project-related effects on those properties be considered as part of the environmental assessment process. This report was prepared to comply with Section 106 of the NHPA of 1966, as amended, as required by the Advisory Council on Historic Preservation (ACHP), and with regulations contained in 36 Code of Federal Regulations (CFR), Part 800. These regulations require that federal agencies to consider the effects of proposed projects on historic properties as part of the environmental assessment process.

Section 106 of the NHPA of 1966 (as amended) defines "historic properties" as:

> Any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR Part 800 Protection of Historic Properties, §800.16 Definitions [l]).

Effects under Section 106 of the NHPA are delineated in the "Criteria of Effect and Adverse Effect" (36 CFR Section 800.5(1). Adverse or negative effects that may be caused by undertakings on historic properties include, but are not limited to:

1. Physical destruction of or damage to all or part of the property;
2. Isolation of the property from or alteration of the character of the property's setting when that character contributes to the property's qualification for the National Register;
3. Introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting;
4. Neglect of a property resulting in its deterioration or destruction; and
5. Transfer, lease, or sale of the property (36 CFR Part 800.9 [b])

Under 36 CFR Part 800.9 (c) there can be "effects of an undertaking that would otherwise be found to be adverse [but] may be considered… not adverse for the purpose of these regulations," when the following applies:

1. When the historic property is of value only for its potential contribution to archeological, historical, or architectural research, and when such value can be substantially preserved through the conduct of appropriate research, and such research is conducted in accordance with applicable professional standards and guidelines

2. When the undertaking is limited to the rehabilitation of buildings and structures and is conducted in a manner that preserves the historical and architectural value of affected historic property

through conformance with the *Secretary…* [*of the Interior's*] *Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings* or

3. When the undertaking is limited to the transfer, lease, or sale of a historic property, and adequate restrictions or conditions are included to ensure preservation of the property's significant historic features.

As described above, Section 106 of NHPA requires federal agencies to take into account effects of undertakings on historic properties and to allow the Advisory Council the opportunity to comment on those undertakings, following these regulations (36 CFR Part 800),

Properties that may be historic resources within the identified project APE were evaluated for National Register of Historic Places (National Register) eligibility, according to criteria set forth in 36 CFR Part 60.4. The age criterion for inclusion in the National Register is 50 years and older, except in cases of overriding significance (criteria consideration G).

If a proposed project and its related impacts would adversely affect the values of an archaeological or built environment site that is either listed in or determined eligible for inclusion in the National Register, such effects/impacts would be considered significant.

Report Format: The report meets the Secretary of the Interior's Standards and Guidelines and follows contemporary professional standards for the preparation of historic resources reports, as well as *Archaeological Resource Management Reports: Recommended Contents and Format* recommended by the California Office of Historic Preservation (1990).

PROJECT DESCRIPTION

The proposed project (Figure 1) will include improvements to the existing runway and airport property, in order to enhance the protection of people and property on the ground. Improvements included in the proposed project include reimbursement for land purchased within the runway protection zone (RPZ), relocation of existing gas line out of the Runway Safety Area (RSA), introduction of 155,000 cubic yards of fill into the RSA, addition of new parallel taxiway and connecting taxiways, aircraft apron construction and construction of new access road with drainage and utility improvements to be completed on the north side of the runway.

Area of Potential Effects: A proposed project-specific APE was established in accordance with 36 CFR Part 800.16(d), which defines an APE as:

> the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.

The proposed project APE was delineated to ensure identification of significant historical resources that may be directly or indirectly affected by the proposed project and are listed in or eligible for inclusion in the National Register. The proposed direct or archaeological APE is the proposed project right-of-way and/or areas of direct ground disturbance, which includes areas for staging and temporary building activities. The direct APE is limited to areas where project related construction activities would or may result in ground disturbance and potential mitigation sites for state listed species. The FAA determined the new boundaries of the APE by using the boundaries of the entire area that would have physical

disturbance. The APE also includes the land in the Runway Protection Zone west of the Airport that is proposed for reimbursement. These boundaries were determined through consultation with the City of Riverside on the extent of the proposed north side and Runway Safety Area grading projects.

Since the proposed undertaking will not affect the number or type of aircraft using the airport, FAA delineated a Direct Effects APE only. There would be no change in the indirect effects from aircraft noise resulting from the proposed undertaking. The project site boundary depicted on Figure 1 identifies the survey coverage area for this cultural resources survey. Two general areas within the APE boundary depicted on Figure 1 were not surveyed for this cultural resources report. These areas include the existing active runway/taxiway areas and automobile parking lot on the north side of the project area. Both of these areas were either heavily disturbed for construction of the airport or are paved.

Project Personnel: The report was prepared by SWCA Cultural Resources Specialists William Sawyer, Susan Underbrink, and Shannon Carmack. Underbrink, Sawyer, Jessica DeBusk, Charles Cisneros and John Covert conducted field surveys for the project. Architectural Historian Sonnier Francisco conducted preliminary building research for the project. John Dietler, SWCA Cultural Resources Principal Investigator and Certified Archaeological Consultant for the County of Riverside (Certification #227), reviewed the report. Ms. Underbrink, Mr. Sawyer, and Dr. Dietler are Registered Professional Archaeologists (RPA) who exceed the Secretary of the Interior's Professional Qualifications Standards (PQS) (36 CFR Part 61, Archaeology: Secretary of the Interior's Standards and Guidelines [as amended and annotated]) in archaeology. SWCA GIS Specialists Chad Flynn and Chris Query created the maps and figures used in the report; Jaimie Jones served as technical editor.

REGULATORY SETTING

The study was completed under the provisions of NHPA Section 106 (36 CFR Part 800). Cultural resources are considered during federal undertakings chiefly under Section 106 of NHPA of 1966 (as amended) through one of its implementing regulations, 36 CFR 800 (Protection of Historic Properties), as well as NEPA. Properties of traditional religious and cultural importance to Native Americans are considered under Section 101(d)(6)(A) of NHPA. Other federal laws include the Archaeological Data Preservation Act of 1974, the American Indian Religious Freedom Act of 1978, the Archaeological Resources Protection Act of 1979, and the Native American Graves Protection and Repatriation Act of 1989, among others.

Section 106 of NHPA (16 United States Code [USC] 470f) requires federal agencies to take into account the effects of their undertakings on any district, site, building, structure, or object that is included in or eligible for listing in the National Register and to afford the ACHP a reasonable opportunity to comment on such undertakings (36 CFR 800.1). Under Section 106, the significance of affected historic properties is evaluated and mitigation measures are proposed to reduce those effects.

Significant cultural resources are those properties that are listed in, or eligible for listing in, the National Register in accord with criteria listed at 36 CFR 60.4 (ACHP 2000).

National Register of Historic Places (National Register)

The National Register is the nation's official list of districts, sites, buildings, structures, and objects worthy of preservation. Currently, the National Register includes approximately 80,000 listings, including icons of American architecture, engineering, culture, and history. According to Section 106, an "historic property" is defined as:

> Any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR Part 800 Protection of Historic Properties, Section 800.16 Definitions[l][1]).

Overseen by the National Park Service (NPS), under the Department of the Interior, the National Register was authorized under the NHPA, as amended. Its listings encompass all National Historic Landmarks as well as historic areas administered by NPS.

National Register guidelines for evaluation of significance were developed to be flexible and to recognize accomplishments of all who have made significant contributions to the nation's history and heritage. Its criteria were designed to guide state and local governments, federal agencies, and others in evaluating potential entries in the National Register. For a property to be listed in or determined eligible for listing, it must be demonstrated to possess integrity and to meet at least one of the following criteria. It must demonstrate:

> The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:
>
> A. That are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> B. That are associated with the lives of persons significant in our past; or
>
> C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> D. That have yielded or may be likely to yield, information important in prehistory or history.

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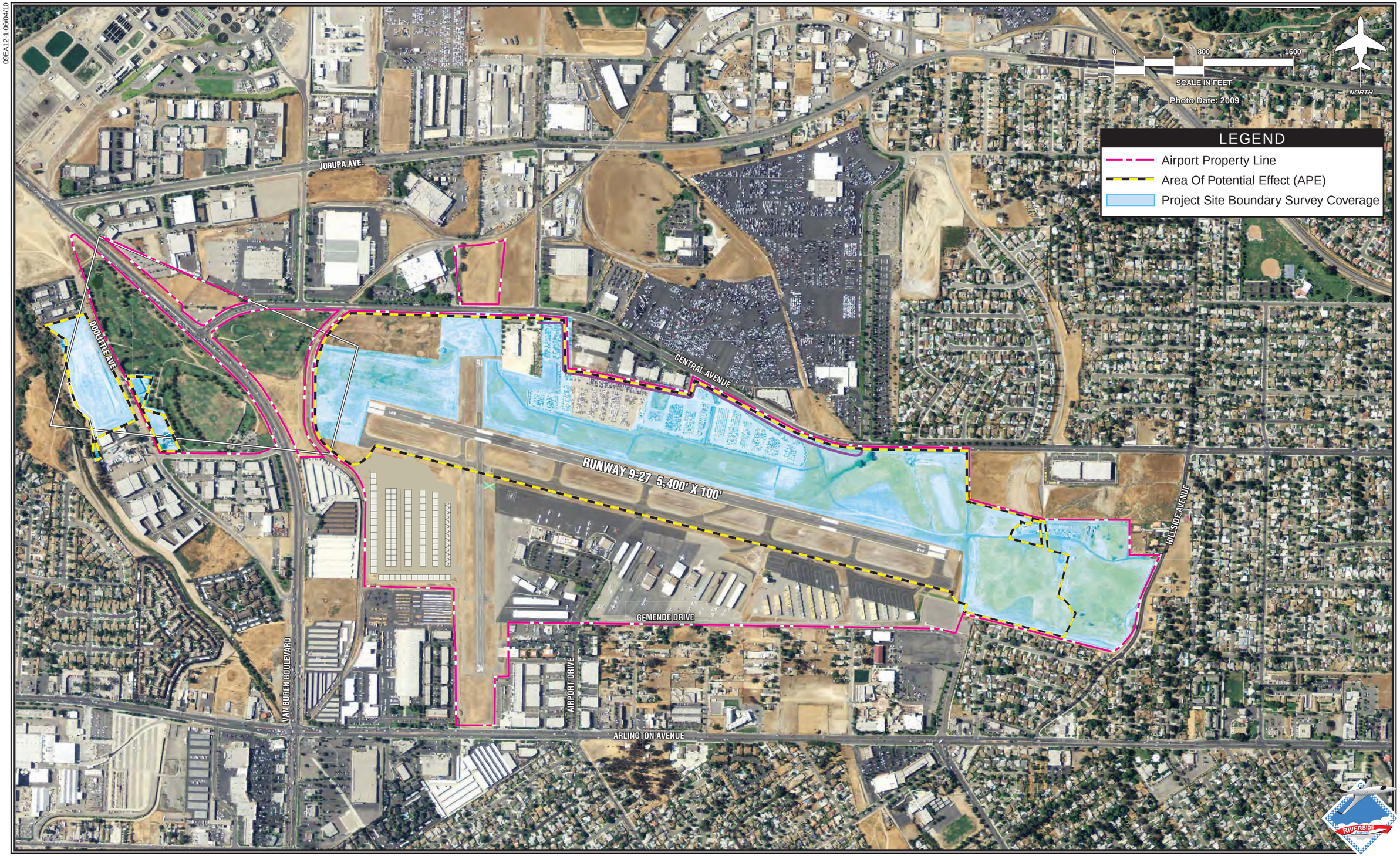

Figure 1
PROJECT LOCATION MAP

ENVIRONMENTAL SETTING

The project area is located in the southwestern California region, and more specifically, within the south coast subregion. This subregion was previously dominated by coastal scrub and chaparral communities but has recently been urbanized, resulting in a great loss of undisturbed habitat (Hickman 1993).

CLIMATE

Today, the project area has generally hot, dry summers, with maximum temperatures ranging from 28.8 degrees to 33.3 degrees Centigrade (84 to 92 degrees Fahrenheit [°F]), and winter lows ranging from zero degrees to 6.6 degrees Centigrade (32°F to 44°F) (Munz and Keck 1968:17). The average annual precipitation is 28 centimeters (11 inches), with most occurring between November and March. The uplands generally have a warm Mediterranean-type climate with occasional summer thundershowers. Due to the low quantity of precipitation, there is little natural perennial surface water in the watershed; the rivers do not typically convey large volumes of water. River flow today includes highly treated discharges from wastewater treatment plants, as well as urban and irrigation runoff.

HYDROLOGY

The project area is located within the Santa Ana River watershed, with the Santa Ana River channel itself located approximately 150 meters (492 feet) south of the project area. The Santa Ana River watershed includes much of the Pomona, San Bernardino, and San Jacinto Valleys, and receives water from the southern flanks of the San Gabriel and San Bernardino Mountains and the flanks of the several smaller hill ranges surrounding the Santa Ana River. Lake Elsinore is the only natural freshwater lake of any size within the watershed, and is located approximately 32 km (20 miles) south of the project area.

The project area is flanked on the eastern side by a small, unnamed ephemeral drainage that drains directly into the Santa Ana River. The drainage has been extensively modified in recent times, and no longer retains its original shape and drainage pattern.

GEOLOGY

The project is positioned near the northern end of the Perris Block, which lies within the geomorphic province known as the Peninsular Ranges Province. Rivers in this province, including the Santa Ana River, drain westward into the Pacific Ocean. The Perris Block is a structurally stable, internally unfaulted mass of crustal rocks bounded on the west by the Elsinore-Chino fault zones, on the east by the San Jacinto fault zone, and on the north by the Cucamonga fault zone (Morton and Cox 1994, 2001; Morton and Matti 1989). On the south, the Perris Block is bounded by a series of sedimentary basins that lie between Temecula and Anza (Morton and Matti 1989).

Approximately 90 to 120 million years ago, during the Cretaceous period, a major episode of mountain building known as the Nevadan Orogeny caused the formation of massive granitic intrusions in what is today the Sierra Nevada mountain range. The granitic rocks of the Peninsular Ranges also formed around this time. Although similar in age and composition, the Peninsular granitics are generally less silicic and more calcic than typical Sierran granitics. The magma that fed the Peninsular and Sierran batholiths originated from melting crustal material during subduction of the Pacific Plate beneath the western edge of North America (Norris and Webb 1990). During the Miocene, about 25 to 29 million years ago, the Pacific plate was completely overridden by the North American plate. About 5 million years ago, the

Sierra Nevada Range, Coast Ranges, Transverse Ranges, and the Peninsular Ranges began to uplift. Studies on the nature and distribution of clasts shed from the Transverse and Peninsular Ranges and deposited on the Perris block suggest that the Peninsular Ranges formed further south of their present location and moved north along the San Andreas Fault (Morton and Matti 1989).

Across the Perris Block as a whole are a wide variety of plutonic rocks (including tonalite, quartz diorite, granodiorite, granite, and sparse small bodies of gabbro and diorite) that are part of the Peninsular Range Batholith (Morton and Cox 2001; Morton and Kennedy 1991)—sometimes called the Southern California Batholith. A batholith is a large mass of igneous rock that upwelled from deep in the earth's crust, resulting in thousands of granitic boulders on the rounded hills in the project area and many more in the greater area. These boulders have the potential to form rock shelters and suitable outcrops as the basis for bedrock grinding features. The alluvial units that became deposited over and around these granitoid bodies consist variously of fluvial sand, gravel and cobbles, and strongly eroded gravel and pebbly sand. In the project vicinity, these sediments contain clasts of mylonite, quartzite, and plutonic rocks derived form the western San Bernardino Mountains, and have been interpreted as erosional remnants of a paleo-Santa Ana River that flowed further south than its present-day course (Morton and Cox 2001).

ECOLOGICAL SETTING

The ecological setting within and adjacent to the project area contains a mosaic of disturbed/developed areas and native vegetation communities. Though most of the uplands adjacent to the Santa Ana River have been developed and/or disturbed, there are remnant patches of upland habitat that indicate the range of habitats, and resources therein, that were likely available to the prehistoric inhabitants of the project area vicinity.

Vegetation Communities

Vegetation in the general vicinity of the project area consists of the following communities and, more specifically, includes those communities that likely existed near the project area in the past. Several communities, particularly those located along the Santa Ana River channel, still exist today. The description is based on data presented in Holland (1986), Holland and Keil (1995), and Sawyer and Keeler-Wolf (1995). A list of plants typical of vegetation communities within the project area vicinity is presented in Table 1, and the vegetation communities described below.

Table 1. Major Flora Indigenous to the Project Vicinity

Common Name	Scientific Name
Coastal Sage Scrub Community	
California sagebrush	*Artemisia californica*
California buckwheat	*Eriogonum fasciculatum*
Sages and chia	*Salvia* spp.
Encelias	*Encelia* spp.
Coast prickly pear	*Opuntia littoralis*
Monkeyflowers	*Mimulus* spp.
Deerweed	*Lotus scoparius*
Nightshades	*Solanum* spp.
Chaparral yucca	*Yucca whipplei*
Rock-rose	*Helianthemum scoparium*

Table 1. Major Flora Indigenous to the Project Vicinity

Common Name	Scientific Name
Golden yarrow	*Eriophyllum confertiflorum*
Lilies	*Bloomeria* and *Brodiaea* spp.
Onions	*Allium* spp.
Sanicles	*Sanicula* spp.
Lomatiums	*Lomatium* spp.
Soap plants	*Chlorogalum* spp.
Grasses	*Melica*, *Muhlenbergia*, *Nassella*, and *Vulpia* spp.
Live-forevers	*Dudleya* spp.
Grassland Community	
Grasses	*Melica*, *Muhlenbergia*, *Nassella*, and *Vulpia* spp.
Geophytes	
Onions	*Allium* spp.
Wildcelery	*Apiastrum angustifolium*
Common golden star	*Bloomeria crocea*
Brodiaeas	*Brodiaea* spp
Mariposa lily and allies	*Calochortus* spp.
Blue dicks	*Dichelostemma capitata*
Muillas	*Muilla* spp.
Blue-eyed grass	*Sisyrinchium bellum*
Live-forevers	*Dudleya* spp.
Herbaceous Plants	
Yellow fiddleneck	*Amsinckia menziesii*
Calandrinias	*Calandrinia* spp.
Common calyptridium	*Calyptridium monardum*
Suncups	*Camissonia* spp.
Owl's-clovers	*Castilleja* spp.
Chinese houses	*Collinsia heterophylla*
Cryptanthas	*Cryptantha* spp.
Delphiniums	*Delphinium* spp.
California poppy	*Eschcholzia californica*
Gilias	*Gilia* spp.
Tarweeds	*Hemizonia* spp.
Coast goldfields	*Lasthenia californica*
Common tidy-tips	*Layia platyglossa*
Linanthus	*Linanthus* spp.
Lomatiums	*Lomatium* spp.
Lotus	*Lotus* spp.
Lupines	*Lupinus* spp.
Microseris	*Microseris* spp.
Popcorn flowers	*Plagiobothrys* spp.
Sanicles	*Sanicula* spp.
Checker mallow	*Sidalcea malvaeflora*
Clovers	*Trifolium* spp.
Sub-shrubs	

Table 1. Major Flora Indigenous to the Project Vicinity

Common Name	Scientific Name
Astragalus	*Astragalus* spp.
Goldenbushes	*Ericameria* spp.
Buckwheats	*Eriogonum* spp.
Gum plant	*Grindelia camporum*
Goldenbushes	*Hazardia* spp.
Coast goldenbush	*Isocoma menziesii*
California aster	*Lessingia filaginifolia*
Deerweed	*Lotus scoparius*
Coast Live Oak Woodland Community	
Overstory	
Coast live oak	*Quercus agrifolia*
Western sycamore	*Platanus racemosa*
California walnut	*Juglans californica*
Willows	*Salix* spp.
Mid-story	
California blackberry	*Rubus ursinus*
Creeping snowberry	*Symphoricarpos mollis*
Toyon	*Heteromeles arbutifolia*
Currants	*Ribes* spp.
California bay	*Umbellularia californica*
Western poison oak	*Toxicodendron diversilobum*
Understory Species	
Bracken fern	*Pteridium aquilinum*
California polypody	*Polypodium californicum*
Fiesta flower	*Pholistorma auritum*
Indian lettuce	*Claytonia perfoliata*
Riparian Scrub/Woodland Community	
Overstory Species	
Box elder	*Acer negundo*
Big-leaf maple	*A. macrophyllum*
Valley oak	*Quercus lobata*
Coast live oak	*Q. agrifolia*
White alder	*Alnus rhombifolia*
Oregon ash	*Fraxinus latifolia*
California dogwood	*Cornus californica*
California bay	*Umbellularia californica*
Western sycamore	*Platanus racemosa*
Fremont's cottonwood	*Populus fremontii*
California walnut	*Juglans californica*
Mid-story Species	
Willows	*Salix* spp.
Mexican elderberry	*Sambucus mexicana*
Wild grape	*Vitis girdiana*

Table 1. Major Flora Indigenous to the Project Vicinity

Common Name	Scientific Name
Western poison-oak	*Toxicodendron diversilobum*
Understory Species	
Mugwort	*Artemisia douglasiana*
Monkeyflowers	*Mimulus* spp.
California rose	*Rosa californica*
Creeping snowberry	*Symphoricarpos mollis*
Freshwater Marshland	
Cattails	*Typha* spp.
Bulrushes	*Scirpus* spp.
Sedges	*Carex* spp.
Spike rushes	*Eleocharis* spp.
Flatsedges	*Cyperus* spp
Smartweed	*Polygonum* spp.
Watercress	*Rorippa* spp.
Yerba mansa	*Anemopsis californica*
Pennywort	*Hydrocotyle* spp.
Pondweeds	*Potamogeton* spp.
Water-parsley	*Oenanthe sarmentosa*
Chaparral Community	
Shrubs	
Manzanitas	*Arctostaphylos* spp.
Wild-lilacs	*Ceanothus* spp.
Silk-tassel bushes	*Garrya* spp.
Oaks	*Quercus* spp.
Coffeeberry, redberry	*Rhamnus* spp.
Sugarbush and lemonade berry	*Rhus* spp.
Laurel sumac	*Malosma laurina*
Mountain-mahogany	*Cercocarpus betuloides*
Toyon	*Heteromeles arbutifolia*
Holly-leaf cherry	*Prunus ilicifolia*
Mission manzanita	*Xylococcus bicolor*
Vines	
Wild cucumbers	*Marah* spp.
Dodders	Cuscuta spp.
Chaparral-peas	*Lathyrus* spp.
Bedstraws	*Galium* spp.
Western poison-oak	*Toxicodendron diversilobum*
Honeysuckles	*Lonicera* spp.
Herbaceous Plants	
Lupines	*Lupinus* spp.
California threadstem	*Pterostegia drymarioides*
Indian lettuce	*Claytonia perfoliata*
Everlastings	*Gnaphalium* spp.

Table 1. Major Flora Indigenous to the Project Vicinity

Common Name	Scientific Name
Phacelias	*Phacelia* spp.
Gilias	*Gilia* spp.
Whispering bells	*Emmenanthe penduliflora*
Fiesta-flowers	*Pholistoma* spp.

Note: Sources include Holland and Keil (1995), Sawyer and Keeler-Wolf (1995), Holland (1986), Keeley (1990), Keeley and Keeley (1988), and Barbour and Major (1977)

Coastal Sage Scrub Community

In prehistoric times coastal sage scrub was common to Riverside and nearby areas, and provided a very rich resource for the prehistoric inhabitants. Seeds are the primary resource within the coastal sage scrub community, but edible stems, stalks, shoots, greens, roots, bulbs, and some berries also occur in these areas. Resources from coastal sage scrub communities are primarily available in the spring. Coastal sage scrub is characterized by a suite of low, aromatic, drought-tolerant shrubs and sub-shrub species. This vegetation community likely occurred over most of the project area in the prehistoric past. Remnant patches of this community were observed along the slopes north and east of the project area, including the hillside where a prehistoric archaeological site was identified during the survey.

Valley and Foothill Grassland

The grassland community near Riverside is quite varied. A primary resource for prehistoric inhabitants would have been seeds from the many annual grasses that grew in the area, as well as the many blossoms, greens, and bulbs that became available during the spring. Valley and foothill grasslands occur in a variety of forms ranging from scattered perennial bunch grasses (typically *Nassella pulchra* or *N. lepida*) to stands dominated by native perennial grasses in an assemblage of geophytes (plants with underground bulbs or corms), and herbaceous annual species. Valley and foothill grasslands also support an abundance of native geophytes, herbaceous plants, and sub-shrubs. The project area and its immediate vicinity likely contained grassland community prehistorically, particularly in open areas between stands of coastal sage scrub.

Coast Live Oak Woodland Community

Oak woodlands occur in sheltered valleys where the soil is deep. Acorns were a primary food resource for the native inhabitants, at least during the latter part of the archaeological sequence. Acorns become available in the fall, thus providing a rich resource during the time of year when other plants are far past their peak availability. As the name implies, coast live oak woodland is dominated by coast live oak (*Quercus agrifolia*), but is well represented by a number of other species. In drier areas, coast live oak woodland will mix with common chaparral and coastal sage scrub species. Coast live oak woodlands vary from savanna-like, with few to no woody associates, to dense woodlands. Oak woodlands likely occurred prehistorically along ephemeral drainages in the uplands surrounding the Santa Ana River, possibly within the drainage located along the eastern side of the project area.

Riparian Scrub/Forest

Riparian scrub is a mid-successional-stage community that typically matures into riparian forest; therefore, species composition between these habitat types is very similar. Riparian forest can revert to

riparian scrub through disturbances or frequent flooding events. This community exists along streams and around seeps and springs and continues to occur along the Santa Ana River channel. Many plants within this community, as well as animals attracted to the water and vegetation, would have provided abundant subsistence resources for prehistoric and historic period inhabitants.

Freshwater Marshland

Freshwater marshlands were likely an important part of the prehistoric environment, particularly along the Santa Ana River channel. Freshwater marshland is characterized by an abundance of perennial monocots up to 2 meters in height. Species commonly occurring in freshwater marshlands include cattails (*Typha* spp.), bulrushes (*Scirpus* spp.), sedges (*Carex* spp.), and spikerush (*Eleocharis* spp.), among others.

Chaparral

The chaparral community exists on higher elevated slopes surrounding the Santa Ana River Valley, and may have required a day's walk by prehistoric inhabitants from the valley floor. Numerous shrub species occur in chaparral habitat, providing an abundance of seeds, berries, bulbs, shoots, and roots.

Faunal Resources

Wildlife species common to the vegetation communities in the vicinity of the project and available for exploitation by the local prehistoric peoples would have included mule deer (*Odocoileus hemionus*), cottontail (*Sylvilagus auduboni*), jackrabbit (*Lepus californicus*), and wood rats (*Neotoma* spp.); California quail (*Callipepla californica*), dove (*Zenaidura macroura*), and other birds, including waterfowl, associated with the marshes; and various types of reptiles, amphibians, fish, and insects. Although pronghorn antelope (*Antilocapra americana*) were barely noted by Euro-American settlers (Sleeper 1982), they were quite common in 1769 throughout the plains and valleys when the Portolá expedition traveled through the region, whereas deer were less common (Brown 2001:308, 325). Predators included mountain lion (*Felis concolor*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), and gray fox (*Urocyon cineroargenteus*). A list of common vertebrate species that likely occurred in the project area vicinity, and that may have been harvested by the prehistoric occupants, are presented in Table 2.

Table 2. Major Fauna Indigenous to the Project Vicinity

Common Name	Scientific Name
Reptiles	
Coachwhip	*Masticophis flagellum*
California whipsnake	*Masticophis lateralis*
Gopher snake	*Pituophis catenifer*
California kingsnake	*Lampropeltis getula californiae*
Southern Pacific rattlesnake	*Crotalus oreganus helleri*
Western pond turtle	*Emys marmorata*
Birds	
Upland Communities	
California quail	*Callipepla californica*
Mourning dove	*Zenaida macroura*
California thrasher	*Toxostoma redivivum*

Table 2. Major Fauna Indigenous to the Project Vicinity

Common Name	Scientific Name
Red-tailed hawk	*Buteo jamaicensis*
Burrowing owl	*Athene cunicularia*
Greater roadrunner	*Geococcyx californianus*
Riparian and Marshland Communities	
Egrets	*Egretta* spp.
Herons	*Ardea*, *Butorides*, *Nycticorax*, and *Nyctanassa* spp.
American bittern	*Botaurus lentiginosus*
Geese	*Branta* spp.
Wood duck	*Aix sponsa*
Ducks	*Anas*, *Aythya*, and *Bucephala* spp.
Mergansers	*Mergus* and *Lophodytes* spp.
Ruddy duck	*Oxyura jamaicensis*
Mammals	
Pocket gopher	*Thomomys bottae*
California ground squirrel	*Spermophilus beecheyi*
Dusky-footed woodrat	*Neotoma fuscipes*
Brush rabbit	*Sylvilagus bachmani*
Desert cottontail	*Sylvilagus audubonii*
Black-tailed jackrabbit	*Lepus californicus*
Mule deer	*Odocoileus hemionus*
Coyote	*Canis latrans*
Gray fox	*Urocyon cinereoargenteus*
Striped skunk	*Mephitis mephitis*
Long-tailed weasel	*Mustela frenata*
Raccoon	*Procyon lotor*
Bobcat	*Felis rufus*
Mountain lion	*Felis concolor*

CULTURAL SETTING

PREHISTORIC OVERVIEW

Numerous chronological sequences have been devised to understand cultural changes for various areas within southern California over the past century. Building on early studies and focusing on data synthesis, Wallace (1955, 1978) developed a prehistoric chronology for the southern California coastal region, which is still widely used today and is applicable to near-coastal and many inland areas, including western Riverside County. Four periods are presented in Wallace's prehistoric sequence: Early Man, Milling Stone, Intermediate, and Late Prehistoric. As noted by Moratto (1984:159), Wallace's (1955) synthesis lacked chronological precision due to the lack of absolute dates at the time of its creation, but remains generally valid today.

In addition to Wallace's classic summary, a regional synthesis developed by Warren (1968) will be referred to in the following discussion. This synthesis is supported by a larger archaeological database for

southern California, which includes the advent and increased use of radiocarbon dating after the 1950s. Using the concepts of cultural ecology and cultural tradition, Warren (1968) proposed a series of six prehistoric traditions. Three of these traditions, the San Dieguito Tradition, Encinitas Tradition, and Campbell Tradition, correlate with Wallace's Early Man, Milling Stone, and Intermediate periods. The Chumash Tradition, Takic Tradition (formerly "Shoshonean"), and Yuman Tradition are represented within Wallace's Late Prehistoric period. As noted further, these ecologically based traditions are applicable to specific regions within southern California.

Some revisions have been made to Wallace's 1955 synthesis using radiocarbon dates and projectile point assemblages (e.g., Koerper and Drover 1983; Koerper et al. 2002; Mason and Peterson 1994). The summary of prehistoric chronological sequences for southern California coastal and near-coastal areas presented below is a composite of information in Wallace (1955) and Warren (1968), as well as more recent studies, including Koerper and Drover (1983). The chronology formulated by Koerper and Drover (1983) is based on the results of their excavations at a multi-component village site (CA-ORA-119-A) near the University of California, Irvine, in Orange County.

Early Man Period/San Dieguito/Paleo-Coastal (ca. 10,000–6000 B.C.)

When Wallace (1955) defined the Early Man period in the mid-1950s, there was little evidence of human presence on the southern California coast prior to 6000 B.C. Archaeological work in the intervening years has identified numerous older sites dating prior to 10,000 years ago, including sites on the coast and Channel Islands (e.g., Erlandson 1991; Johnson et al. 2002; Moratto 1984; Rick et al. 2001:609). The earliest accepted dates for occupation are from two of the northern Channel Islands, located off the coast of Santa Barbara. On San Miguel Island, Daisy Cave clearly establishes the presence of people in this area about 10,000 years ago (Erlandson 1991:105). On Santa Rosa Island, human remains have been dated from the Arlington Springs site to approximately 13,000 years ago (Johnson et al. 2002).

In what is now Orange County, there are sites dating from 9,000 to 10,000 years ago (Macko 1998a:41; Mason and Peterson 1994:55–57). Known sites dating to the Early Man period are rare in western Riverside County. One exception is the Elsinore site (CA-RIV-2798-B), which has deposits dating as early as 6630 cal. B.C. (Grenda 1997:260).

Recent data from coastal and inland sites during this period indicate that the economy was a diverse mixture of hunting and gathering, with a major emphasis on aquatic resources in many coastal areas (e.g., Jones et al. 2002) and on Pleistocene lakeshores in eastern San Diego County (see Moratto 1984:90–92).

A Paleo-Coastal Tradition was proposed and recently referenced to highlight the distinctive marine and littoral focus identified within the southern California coastal archaeological record prior to the emergence of the Encinitas Tradition during the succeeding Milling Stone period (Mason and Peterson 1994:57–58; Moratto 1984:104). At coastal sites, there is abundant evidence that marine resources such as fish, sea mammals, and shellfish were exploited by Paleo-Coastal Tradition peoples.

At near-coastal and inland sites, it is generally considered that an emphasis on hunting may have been greater during the Early Man period than in later periods, although few Clovis-like or Folsom-like fluted points have been found in southern California (e.g., Dillon 2002; Erlandson et al. 1987). In Riverside County, only one isolated fluted point has been identified on the surface of a site in the Pinto Basin in the central part of the county (Campbell and Campbell 1935; Dillon 2002:113). Common elements in many San Dieguito Tradition sites include leaf-shaped bifacial projectile points and knives, stemmed or shouldered projectile points (e.g., Silver Lake and Lake Mojave series), scrapers, engraving tools, and crescents (Warren 1967:174–177; Warren and True 1961:251–254). Use of the atlatl (spear-throwing stick) during this period facilitated launching spears with greater power and distance. Subsistence patterns

shifted around 6000 B.C. coincident with the gradual desiccation associated with the onset of the Altithermal, a warm and dry period that lasted for about 3,000 years. After 6000 B.C., a greater emphasis was placed on plant foods and small animals.

Milling Stone Period (ca. 6000–3000/1000 B.C.)

The Milling Stone period of Wallace (1955, 1978) and the Encinitas Tradition of Warren (1968) are characterized by an ecological adaptation to collecting, and by the dominance of the principal ground stone implements generally associated with the horizontal motion of grinding small seeds—namely, milling stones (metates, slabs) and handstones (manos), which are typically shaped. Milling stones occur in large numbers for the first time, and are even more numerous near the end of this period. As testified by their toolkits and shell middens in coastal sites, people during this period practiced a mixed food procurement strategy. Subsistence patterns varied somewhat as groups became better adapted to their regional or local environments.

Milling Stone period sites are common in the southern California coastal region between Santa Barbara and San Diego, and at many inland locations, including the Prado Basin in western Riverside County and the Pauma Valley in northeastern San Diego County (e.g., Herring 1968; Langenwalter and Brock 1985; Sawyer and Brock 1999; Sutton 1993). Wallace (1955, 1978) and Warren (1968) relied on several key coastal sites to characterize the Milling Stone period and Encinitas Tradition, respectively. These include the Oak Grove Complex in the Santa Barbara region, Little Sycamore in southwestern Ventura County, Topanga Canyon in the Santa Monica Mountains, and La Jolla in San Diego County. The Encinitas Tradition was proposed to extend into San Diego County, where it apparently continued alongside the following Campbell Tradition, which occurred primarily in the Santa Barbara–Ventura County region beginning around 3000 B.C.

Of the numerous Milling Stone period sites identified in the region, the most well known is the Irvine site (CA-ORA-64), which has occupation levels dating between ca. 6000 and 4000 B.C. (Drover et al. 1983; Macko 1998b). Along coastal Orange County, Koerper and Drover (1983:11) mark the transition at the end of the Milling Stone around 1000 B.C., whereas Wallace's mid-1950s scheme has the period ending at 3000 B.C. Based on radiocarbon dates from the Newport Coast Archaeological Project (NCAP), Mason and Peterson (1994) propose a timeline for the Milling Stone similar to that advanced by Koerper and Drover (1983). The chronological schemes advanced for coastal Orange County also apply to many southern California near-coastal and inland areas, including much of western Riverside County.

During the Milling Stone period and Encinitas Tradition, stone chopping, scraping, and cutting tools are abundant, and generally made from locally available raw material. Projectile points, rather large and generally leaf-shaped, and bone tools, including awls, are generally rare. The large points are associated with the spear, and probably with an atlatl. Items made from shell, including beads, pendants, and abalone dishes, are generally rare. Evidence of weaving or basketry is present at a few sites. Cogged stones and discoidals are often purposefully buried or "cached," and are found mainly in sites along the coastal drainages from southern Ventura County southward, with a few specimens inland at Cajon Pass, and in abundance at some Orange County sites (Dixon 1968:63; Moratto 1984:149). Kowta (1969) attributes the presence of numerous scraper-planes in Milling Stone sites to the preparation of agave or yucca for food or fiber. The mortar and pestle, associated with the vertical motion of pounding foods, such as acorns, were introduced during the Milling Stone, but are not common.

Two types of artifacts that are considered diagnostic of the Milling Stone period are the cogged stone and discoidal, most of which have been found within sites dating between 4000 and 1000 B.C. (Moratto 1984:149). The cogged stone is best described as a ground stone object that has variant forms of gear-like

teeth on the perimeter, which is produced from a variety of materials. The function of cogged stones is unknown, but has been interpreted as ritualistic or ceremonial in nature (Dixon 1968:64-65; Eberhart 1961:367). Similar to cogged stones, discoidals are found in the archaeological record subsequent to the introduction of the cogged stone. Both discoidals and cogged stones have been found together at some Orange County sites, such as CA-ORA-83/86/144 (Van Bueren et al. 1989:772), CA-ORA-950 (Ron Bissell, personal communication 1999), and Los Cerritos Ranch (Dixon 1975 in Moratto 1984:150).

Koerper and Drover (1983) suggest that Milling Stone period sites represent migratory settlement patterns of hunters and gatherers who used marine resources during the winter and inland resources the remainder of the year. More recent research indicates that residential bases or camps were moved to resources in a seasonal round (de Barros 1996; Koerper et al. 2002; Mason et al. 1997; Tuma 2004), or that some sites were occupied year-round with portions of the village population leaving at certain times of the year to exploit available resources (Cottrell and Del Chario 1981). Regardless of settlement system, it is clear that subsistence strategies during the Milling Stone period included the following: hunting of small and large terrestrial mammals, sea mammals, and birds; collecting shellfish and other shore species; extensive use of seed and plant products; the processing of yucca and agave; and nearshore fishing with barbs or gorges (Kowta 1969; Reinman 1964; Tuma 2004). As evidenced by the abundant milling equipment found at these sites throughout the region, the processing of small seeds was an important component of their subsistence practices.

Characteristic mortuary practices during the Milling Stone period or Encinitas Tradition include extended and loosely flexed burials, some with red ochre, and few grave goods such as shell beads and milling stones interred beneath cobble or milling stone cairns. “Killed” milling stones, exhibiting holes, may occur in the cairns. Reburials are common in the Los Angeles County area, with flexed burials oriented to the north common in Orange and San Diego Counties. Evidence of wattle-and-daub structures and walls have been identified at some sites in the San Joaquin Hills and Newport Coast area spanning all cultural periods (Koerper 1995; Mason et al. 1991, 1992, 1993; Strudwick 2004).

Intermediate Period (ca. 3000/1000 B.C.–A.D. 500/650)

Following the Milling Stone, Wallace’s Intermediate period and Warren’s Campbell Tradition in Santa Barbara, Ventura, and parts of Los Angles Counties, date from approximately 3000 B.C. to A.D. 500 and are characterized by a shift toward a hunting and maritime subsistence strategy, along with a wider use of plant foods. The Campbell Tradition (Warren 1968) incorporates David B. Rogers’ (1929) Hunting Culture and related expressions along the Santa Barbara coast. In the San Diego region, the Encinitas Tradition (Warren 1968) and the La Jolla Culture (Moriarty 1966; M. Rogers 1939, 1945) persist with little change during this time.

Temporal placement of the Intermediate is generally recognized as ranging between 3000 B.C. and A.D. 500 (Wallace 1955; Warren 1968). In Orange County, researchers have estimated the Intermediate period began around 1000 B.C. and lasted until ca. A.D. 650 (3000–1300 B.P.) (Koerper and Drover 1983:11; Mason and Peterson 1994). A more recent evaluation, based on some 1,300 calibrated radiocarbon dates from sites in Orange County, suggests a date of 1400 B.C. for the start of the Intermediate, marked by single-piece circular fishhooks and coinciding with the transition from the Middle to Late Holocene (Koerper et al. 2002:67–68). Another researcher sees the Intermediate not as a cultural period, but as a transition between the Milling Stone and the later Late Prehistoric period based on his investigations at sites in the Bonita Mesa area near upper Newport Bay (Peterson 2000). This idea may simply reflect sub-regional or area-specific trends at sites in and around Newport Bay rather than an accurate depiction of the cultural period dynamics in Orange County and the greater southern California region.

Although sites in the Prado Basin and Perris Reservoir area have cultural components that date to this period (Bettinger 1974:160; Grenda 1995:25), the Intermediate period in western Riverside County is still not as well understood as it is in coastal areas (e.g., Van Bueren et al. 1986:11). The following discussion is thus based mainly on information gathered from coastal and near-coastal sites in southern California.

During the Intermediate period, there is a pronounced trend toward greater adaptation to regional or local resources. For example, the remains of fish, land mammals, and sea mammals are increasingly abundant and diverse in sites along the California coast in the referenced region. Related chipped stone tools suitable for hunting are more abundant and diversified, and shell fishhooks become part of the toolkit during this period. Larger knives, a variety of flake scrapers, and drill-like implements are common during this period. Projectile points include large side-notched, stemmed, and lanceolate or leaf-shaped forms. Koerper and Drover (1983) consider Gypsum Cave and Elko series points, which have a wide distribution in the Great Basin and Mojave deserts between ca. 2000 B.C. and A.D. 500, to be diagnostic of this period. Bone tools, including awls, are more numerous than in the preceding period, and the use of asphaltum adhesive is now common.

Mortars and pestles become more common during this period, gradually replacing manos and metates as milling stone implements. In addition, hopper mortars and stone bowls, including steatite vessels, appear to enter the toolkit at this time. This shift appears to correlate with a diversification in subsistence resources. Many archaeologists believe this change in milling stones signals a shift away from the processing and consumption of hard seed resources to the increasing importance of the acorn (e.g., Glassow et al. 1988; True 1993). It has been argued that mortars and pestles may have been used initially to process roots (e.g., tubers, bulbs, and corms associated with marshland plants), with acorn processing beginning at a later point in prehistory (Glassow 1997:86) and continuing to European contact.

Characteristic mortuary practices during the Intermediate period include fully flexed burials, placed face down or face up, and oriented toward the north or west (Warren 1968:2–3). Red ochre is common, and abalone shell dishes are infrequent. Interments sometimes occurred beneath cairns or broken artifacts. Shell, bone, and stone ornaments, including charmstones, are more common than in the preceding Encinitas Tradition. Some later sites include Olivella shell and steatite beads, mortars with flat bases and flaring sides, and a few small points. The broad distribution of steatite from the Channel Islands and obsidian from distant inland regions, among other items, attest to the growth of trade, particularly during the later part of this period.

Late Prehistoric Period (ca. A.D. 500/650–A.D. 1769)

Wallace (1955, 1978) places the beginning of the Late Prehistoric around A.D. 500. In Orange County, the start of this period is recognized at a slightly later date, ca. A.D. 650 (Koerper and Drover 1983; Mason and Peterson 1994). In all chronological schemes for southern California, the Late Prehistoric period lasts until European contact occurred in A.D. 1769.

During the Late Prehistoric period, there was an increase in the use of plant food resources in addition to an increase in land and sea mammal hunting. There was a concomitant increase in the diversity and complexity of material culture during this period, demonstrated by more classes of artifacts. The recovery of a greater number of small, finely chipped projectile points, usually stemless with convex or concave bases, suggests an increased utilization of the bow and arrow rather than the atlatl and dart for hunting. In Orange County, Cottonwood series triangular projectile points in particular are diagnostic of this period (Koerper and Drover 1983). Other items include steatite cooking vessels and containers, the increased presence of smaller bone and shell circular fishhooks, perforated stones, arrow shaft straighteners made of

steatite, a variety of bone tools, and personal ornaments made from shell, bone, and stone. There is also an increased use of asphalt for waterproofing and as an adhesive.

During the Late Prehistoric, sites contain beautiful and complex objects of utility, art, and decoration. Ornaments include drilled whole Chione (venus clam) and drilled abalone. Steatite effigies become more common, with pecten shell rattles common in middens. In Orange County, for example, pecten shell rattles are concentrated in the Late Prehistoric midden at CA-ORA-119A, and other time-sensitive artifacts, including abalone ornaments and drilled Chione shells, are also present (Koerper and Drover 1983:19–20). Most of the rock art found today in the Chumash sphere is thought to date to this period. Mortuary customs are elaborate, including cremation and interment, with abundant grave goods.

By A.D. 1000, fired clay smoking pipes and ceramic vessels begin to appear at some sites (Meighan 1954; Warren and True 1984). The scarcity of pottery in coastal and near-coastal sites implies ceramic technology was not well developed in that area, or that ceramics were obtained by trade with neighboring groups to the south and east. The lack of widespread pottery manufacture is usually attributed to the high quality of tightly woven and watertight basketry that functioned in the same capacity as ceramic vessels.

Another feature typical of Late Prehistoric period occupation is an increase in the frequency of obsidian imported from the Obsidian Butte source in Imperial County, California. Obsidian Butte was exploited after ca. A.D. 1000 after its exposure by the receding waters of Holocene Lake Cahuilla (Wilke 1978). A Late Prehistoric period component of the Elsinore site (CA-RIV-2798-A) produced two flakes that originated from Obsidian Butte (Grenda 1997:255; Towner et al. 1997:224-225). Although about 16 percent of the debitage at the Peppertree site (CA-RIV-463) at Perris Reservoir is obsidian, no sourcing study was done (Wilke 1974:61). The site contains a late Intermediate to Late Prehistoric period component and it is assumed that most of the obsidian originated from Obsidian Butte. In the earlier Milling Stone and Intermediate periods, most of the obsidian found at sites within Orange County and many inland areas came from northern sources, mostly the Coso volcanic field. This also appears to be the case within Prado Basin and other interior sites that have yielded obsidian (e.g., Grenda 1995:59; Taşkiran 1997:46). The presence of Grimes Canyon (Ventura County) fused shale at southern California archaeological sites is also thought to be typical of the Late Prehistoric period (Demcak 1981; Hall 1988).

During this period, there is an increase in population size accompanied by the advent of larger, more permanent villages (Wallace 1955:223). Large populations and, in places, high population densities are characteristic, with some coastal and near-coastal settlements containing as many as 1,500 people. Many of the larger settlements were permanent villages, where people resided year-round. The populations of these villages may have also increased seasonally.

In Warren's (1968) cultural ecological scheme, the period between A.D. 500 and European contact is divided into three regional patterns. The Chumash Tradition is present mainly in the region of Santa Barbara and Ventura Counties; the Takic or Numic Tradition in the Los Angeles, Orange, and western Riverside Counties region; and the Yuman Tradition in the San Diego region. The seemingly abrupt changes in material culture, burial practices, and subsistence focus at the beginning of the Late Prehistoric period are considered the result of a migration to the coast of peoples from inland desert regions to the east. In addition to the small triangular and triangular side-notched points similar to those found in the desert regions in the Great Basin and Lower Colorado River, Colorado River pottery and the introduction of cremation in the archaeological record are diagnostic of the Yuman Tradition in the San Diego region. This combination certainly suggests a strong influence from the Colorado Desert region.

In Los Angeles, Orange, and western Riverside Counties, similar changes (introduction of cremation, pottery, and small triangular arrow points) are considered the result of a Takic migration to the coast from inland desert regions. This Takic or Numic Tradition was formerly referred to as the "Shoshonean wedge"

or "Shoshonean intrusion" (Warren 1968). This terminology, used originally to describe a Uto-Aztecan language group, is generally no longer used in order to avoid confusion with ethnohistoric and modern Shoshonean groups who spoke Numic languages (Heizer 1978:5; Shipley 1978:88, 90). Modern Gabrielino/Tongva, Juaneño, and Luiseño in this region are considered the descendants of the prehistoric Uto-Aztecan, Takic-speaking populations that settled along the California coast during this period, or perhaps somewhat earlier.

ETHNOGRAPHIC OVERVIEW

The following ethnographic overview provides pertinent information regarding the Luiseño and Cahuilla, both of whom occupied lands near Riverside. Kroeber (1925:Plate 57) indicates that the Luiseño occupied the area around Riverside, whereas Bean (1978) places the area around Riverside within the Cahuilla territory. Because of the apparent overlap, both ethnographic groups are discussed.

Luiseño

Luiseño is a term derived for the Native Americans administered by the Mission San Luis Rey, and later applied specifically to the Payomkawichum ethnic nation who resided in the region near the mission. Payomkawichum means the "western people," and applies to the closely related coastal Luiseño who lived north of the mission. The Luiseño language derives from the Cupan segment of the Takic language branch, a part of the Uto-Aztecan linguistic family (Mithun 2001:539–540).

Luiseño territory included the northern half of San Diego County and the western edge of Riverside County. Along the coast, their territory extended from Agua Hedionda Creek northward to Aliso Creek, and inland to the Palomar Mountains at the south and east of Santiago Peak towards the north (Bean and Shipek 1978). Their northern neighbors were the Juaneño (Acjachemen), who spoke a Luiseño dialect. Many contemporary Juaneño and coastal Luiseño identify themselves as descendents of the indigenous people who lived in the local area, termed the Acjachemen Nation.

The Luiseño resided in permanent villages with 50 to 400 people, but during certain seasons inhabited camps that included many fewer people. Village social structure revolved around lineages and clans. Smaller villages generally included a single lineage, whereas larger villages were clan-centered with people from multiple lineages. Each clan/village owned a resource territory that was politically independent, but maintained ties to other nearby clans through economic, religious, and social networks.

Luiseño nuclear families resided in dome-shaped dwellings (*kish*) made of willow poles covered with interlaced tule reeds. The chief's residence was generally larger than the others to accommodate his large family, ceremonial regalia, and ceremonial food processing activities. Other village structures included a ceremonial enclosure (*vamkech*), a semi-subterranean sweat lodge, and menstrual huts. During acorn harvest season, simple lean-tos were constructed in the upper foothills. The ceremonial enclosure and chief's home were generally located in the center of the village.

Luiseño socio-political structure included three hierarchical social classes: (1) an elite class that included chiefly families, lineage heads, and other ceremonial specialists; (2) a "middle class" of established and successful families; and (3) people of disconnected or wandering families and war captives (Bean 1976:109–111). Native leadership focused on the *Nota,* or clan chief, who conducted community rites and regulated ceremonial life in conjunction with a council of elders (*puuplem*) composed of lineage heads and ceremonial specialists. The council discussed and decided matters of community significance, which were then implemented by the *Nota* and his staff.

Luiseño mortuary practices included cremation and burial of the dead. Specific individuals were tasked with managing the cremations and compensated for their services. A specialist practiced ritual cannibalism on high-ranking shamans. The death of those of high rank, and perhaps others, was commemorated on the first anniversary.

Like other indigenous California groups, the primary food staple was the acorn (Bean and Shipek 1978:552), with other plant resources, fish, shellfish, waterfowl, and marine and terrestrial mammals supplementing the diet. Villages were situated near reliable sources of water to facilitate daily leaching of milled acorn flour, and to provide potable water. Acorn mush (*weewish*) was prepared in various ways and served as gruel, cakes, or fried (these were sometimes sweetened with honey or sugar-laden berries), or made into a stew with greens and meat. Other plant foods such as pine nuts were in the diet, as were seeds from grass, manzanita, sunflower, sage, chia, lemonade berry, wild rose, holly-leaf cherry, prickly pear, and lamb's-quarter. Seeds were parched, ground, and prepared in ways similar to the weewish variations. Greens in the diet included thistle, miner's lettuce, white sage, and clover, among others. Thimbleberries, elderberries, and wild grape were eaten raw or dried. Cooked yucca buds, blossoms, pods, and stalks provided an important addition to the community's food resources. The diet also included bulbs, roots, and tubers, as well as mushrooms and tree fungus. Various teas or medicinal cures were made from flowers, fruits, stems, or roots. Large and small mammalian prey included deer, antelope, rabbit, jackrabbit, wood rat, mice, and ground squirrel. Birds such as quail and duck were included in the diet, as were fish, including trout and salmon from rivers and creeks.

The first direct European contact with the Luiseño was in July 1769 by the Spanish expedition led by Gaspar de Portolá. During the next six years, eight missions and forts were founded north and south of Luiseño territory. In 1776, Mission San Juan Capistrano was founded in proximity to the Luiseño, causing the population of the five northern Luiseño villages to be halved within 15 years. In 1798, Mission San Luis Rey was established within Luiseño territory, and the proselytizing among the Payomkawichum began in earnest (Engelhardt 1921:8). The Luiseño were not forced to live at the mission; consequently, the disruption of traditional lifeways and deaths from introduced diseases were less devastating than was experienced by many other indigenous California groups.

Several Luiseño leaders signed the statewide 1852 treaty—locally known as the Treaty of Temecula (an interior Luiseño village)—but the U.S. Congress never ratified it. However, by 1875, the government established reservations for the Luiseño in the Palomar Mountains and nearby valleys, including Pala, Pauma, Rincon, Pechanga, La Jolla, and San Pasqual (CIAP 2003). No reservations were established for the remaining coastal people, whose lands had already been usurped by the Mexican ranchos. Today, the San Luis Rey group is actively petitioning the Bureau of Indian Affairs' Office of Federal Acknowledgement to review their request for federal recognition. By 2003 there were 1,340 enrolled members on four Luiseño reservations; today there are more than 2,000 Luiseño, including non-enrolled but active members of the community.

Cahuilla

The Cahuilla, like Luiseño, spoke dialects that are a branch of the Takic family of the Uto-Aztecan linguistic stock (Bean and Shipek 1978; Kroeber 1925). The name "Cahuilla" possibly derives from a native word meaning "master, boss" (Bean 1978:575). *'Ivi'lyu'atam* is the traditional term for the linguistically and culturally defined Cahuilla cultural nationality, and "refers to persons speaking the Cahuilla language and recognizing a commonly shared cultural heritage" (Bean 1972:85).

Evidence suggests the Cahuilla migrated to southern California about 2,000 to 3,000 years ago, most likely from the southern Sierra Nevada ranges of east-central California with other related socio-linguistic

(Takic speaking) groups (Moratto 1984:559). The Cahuilla settled in a territory that extended west to east from the present-day city of Riverside to the central portion of the Salton Sea in the Colorado Desert, and south to north from the San Jacinto Valley to the San Bernardino Mountains. Though 60 percent of Cahuilla territory was in the Lower Sonoran Desert environment, 75 percent of their diet came from plant resources acquired in Upper Sonoran and Transition environmental zones (Bean 1978:576).

Cahuilla socio-political organization included three primary levels (Bean 1978:580). The highest level was the cultural nationality, encompassing everyone speaking a common language. Next were two patrimoieties called the Wildcats (*tuktum*) and the Coyotes (*'istam*): every clan of the Cahuilla belonged to one or the other. The third basic level of socio-political organization was the many political-ritual-corporate units called sibs, or patrilineal clans (Bean 1978:580). Anthropologists have designated groups of Cahuilla clans by their geographical location into Pass, Desert, and Mountain, which though implying dialectical and ceremonial differences between these groupings, actually results from proximity rather than actual differences in social connections (Strong 1970). In reality, a continuum of minor differences existed between the clans. Lineages within a clan cooperated in many ways, including defense, communal subsistence activities, and religious ceremonies. While most lineages owned their own village site and particular resource area, much of the territory was open to all Cahuilla people.

Each lineage within a sib had a defined territory that, among the Cahuilla of the Coachella Valley desert, was formed around springs in mountain canyons and the alluvial fans that spread from these canyons out onto the desert floor. Villages in these canyons were occupied year-round. They were situated to take maximum advantage of natural resources such as climate, water, food, and materials. Individuals or groups would periodically leave the villages for gathering, hunting, visiting, or trading activities. The sibs and lineages would maintain formal associations among themselves for protection, for religious ceremonies, and help with large projects. The relationship between these groups was maintained through intermarriage and ceremonial reciprocity (Bean 1972).

Cahuilla villages were usually located in canyons or on alluvial fans near a source of accessible water such as springs or where large wells could be dug. Each family and lineage had houses (*kish*) and granaries for the storage of food, and ramadas for work and cooking. Sweat houses and song houses (for non-religious music) commonly occurred at these villages. Each community built a separate house for the lineage or clan leader. The clan leader also had a ceremonial house, or *kíš ?ámnawet*, where major religious ceremonies were held. Houses and ancillary structures were often spaced apart, causing villages to sometimes spread over a mile or two.

Each lineage maintained ownership rights to various resource-collecting locations, "including food collecting, hunting, and other areas. Individuals also owned specific areas or resources, e.g., plant foods, hunting areas, mineral collecting places, or sacred spots used only by shamans, healers and the like" (Bean 1990:2). A variety of game was hunted, including mountain sheep, cottontail, jackrabbit, mice, and wood rats, as well as carnivores such as mountain lion, coyote, wolf, bobcat, and fox. Various birds were also consumed, including quail, chukker, and dove, plus various reptiles, amphibians and insects.

The Cahuilla used more than 200 desert and mountain plants (Bean and Saubel 1972). Key plant foods included acorns, screwbean and honey mesquite, piñon nuts, prickly-pear cactus fruit and leaves, and yucca blossoms and stalks. They also gathered hard seeds from manzanita, sunflowers, sages, lemonade berry, wild rose, buckwheat, and coyote gourd (calabazilla). Fruits, berries (toyon, grape, blackberry, and elderberry, which was also used for medicine), tubers, and greens (chenopodium, clover, Miner's lettuce, and white sage [Dale 1985]) were also gathered (Bean and Smith 1978:538-539; O'Neil 2001). The amole tuber served for making tools and soap. Numerous additional plants were used for making medicine, twine, basketry, ornamentation, and tools, and as well as in religious ceremonies (O'Neil 2001).

The territory used by the Cahuilla was a productive environment well suited to a sophisticated hunting and gathering economy. Studies (Bean and Lawton 1993) suggest that aboriginal people in southern California improved the structure and productivity of the environment through controlled burning, selective harvesting and pruning, replanting, seed re-broadcast, and possibly limited irrigation. Human-induced burning, whether accidental or intentional, potentially influenced fire-adapted plant associations in the past few thousand years. It has been suggested (e.g., Bean and Lawton 1993:37–42, 46–51; King 1993:296–298), for example, that burning the native vegetation helped create and maintain the park-like aspect of many California landscapes described by early Spanish diarists. The emphasis on fire suppression that began during colonial times and which largely continues today is partially responsible for the current distribution of brush and paucity of grasslands in areas that looked quite different to European explorers and missionaries (Timbrook et al. 1993:129–134).

The Cahuilla adopted limited agriculture by the time of Euro-American contact. Bean (1978:578) suggests that their "proto-agricultural techniques and…marginal agriculture" included beans, squash, and corn, which they potentially adopted from the Colorado River groups to the east. Certainly by the time of the first Romero Expedition in 1823–1824 they observed corn, pumpkins, and beans growing in small gardens localized around springs in the Thermal area of the Coachella Valley (Bean and Mason 1962:104). By the 1850s, the inhabitants of Toro village supplied food to travelers from crops produced at their village: "We camped at this place and were surrounded by crowds of Indians anxious to trade melons, squashes, corn, and barley, for pork, bacon, or other articles" (Hoyt 1948:19). The introduction of barley and other grain crops provides evidence for the introduction of European plants via the mission or local Mexican rancheros. Despite the increasing use and diversity of crops, no evidence exists to indicate that small-scale agriculture provided anything more than a supplement to Cahuilla subsistence or that it altered their social organization (i.e., no effect on the basic division of labor or created new social roles).

The Cahuilla used a wide variety of tools and implements when they gathered and collected food resources. Hunting was achieved using bow and arrow, traps, nets, slings, and blinds for land mammals and birds, and nets for fish when Lake Cahuilla was filled. Throwing sticks were used to procure individual rabbits and hares, whereas clubs and large nets were used during communal rabbit drives. Food processing was achieved using a variety of tools: portable and bedrock mortars, basket hopper mortars, pestles, manos and metates, bedrock grinding slicks, hammerstones and anvils, woven strainers and winnowers, leaching baskets and bowls, woven parching trays, knives, bone saws, and wooden drying racks. Food was consumed from woven, carved wood, and pottery vessels. Ground meal and unprocessed hard seeds were stored in large, finely woven baskets, whereas unprocessed mesquite beans were stored in large granaries woven from willow branches and placed on raised platforms to protect them from vermin.

The Cahuilla produced pottery vessels, and also obtained them via trade with Yuman-speaking groups across the Colorado River and to the south. Pottery was introduced to the Cahuilla during the Late Prehistoric period. The art of constructing pottery was later adopted by the Cahuilla, who used the paddle and anvil technique. Typical culinary wares included jars, cooking vessels, and ladles. Ceramic pipes were also commonly manufactured and used. Ceramic ollas (large, round pots with small necks) were used for storing seeds, and were frequently cached in caves and rockshelters with foodstuffs sealed in to be used during anticipated hunting and gathering forays (Bean 1978:578–579).

Spanish mission outposts, known as *assistencias*, were established near Cahuilla territory at San Bernardino and San Jacinto by 1819, though interaction with Europeans was less intense in the Cahuilla region than it was for coastal groups. The topography and lack of water made the inland area inhabited by the Cahuilla less attractive to colonists than the coastal valley regions. By the 1820s, however, the Pass Cahuilla experienced consistent contact with the ranchos of Mission San Gabriel, whereas the Mountain

Cahuilla frequently received employment from private rancheros and were recruited to Mission San Luis Rey.

The Romero-Pacheco Expedition during the winter of 1823 passed through the Coachella Valley in an unsuccessful attempt to establish a route from San Gabriel to Tucson via the upper Colorado River. They passed by the village of Toro with its great mesquite thickets on the north side and walk-in wells at the village site (Bean and Mason 1962:37). This scene has been identified as the village of *Pūichekiva*. Underground water supported the large stands of mesquite, the major plant resource for the local Cahuilla. Water was sufficiently close to the surface that the Cahuilla excavated walk-in wells, which reached a depth of 12 to 15 feet. Blake described this same village complex in 1853, indicating that the well water was used for household purposes as well as mesquite and crop irrigation (Bean et al. 1991:78). Crops included melons, squashes, corn, and barley.

Mexican ranchos were located near Cahuilla territory along the upper Santa Ana and San Jacinto rivers by the 1830s, providing the opportunity for the Cahuilla to earn money ranching and to learn new agricultural techniques. The Bradshaw Trail, established in 1862, was the first major east-west stage and freight route through the Coachella Valley. Traversing the San Gorgonio Pass, the trail connected gold mines on the Colorado River to the coast. Bradshaw developed his trail using the model employed for the Cocomaricopa trail, which had maps and guides provided by local Native Americans. Journals by early travelers along the Bradshaw Trail described encounters with Cahuilla villages and walk-in wells as they journeyed through the Coachella Valley.

The continued expansion of immigrants into the region introduced the Cahuilla to European diseases. The single worst recorded event was a smallpox epidemic in 1862–1863. By 1891, only 1,160 Cahuilla remained within what was left of their territory, down from an aboriginal population of 6,000 to 10,000 (Bean 1978:583-584). By 1974, approximately 900 people claimed Cahuilla descent, most of who resided on reservations.

Between 1875 and 1891, the United States established ten reservations for the Cahuilla within their territory: Agua Caliente, Augustine, Cabazon, Cahuilla, Los Coyotes, Morongo, Ramona, Santa Rosa, Soboba, and Torres-Martinez (Bean 1978:585). Four of these reservations are shared with other Native American groups, including the Chemehuevi, Cupeño, and Serrano. The Cahuilla on the Morongo Reservation established the Malki Museum in 1965, which today is a respected repository for artifacts and ethnographic knowledge. The museum publishes books on Native American lifeways, and the *Journal of California and Great Basin Anthropology*.

HISTORIC OVERVIEW

Post-Contact history for the state of California is divided into three periods: the Spanish period, the Mexican period, and the American period. Each of these periods is briefly described below.

Spanish Period (1769–1822)

The first Europeans to observe what became southern California were members of the A.D. 1542 expedition of Juan Rodriguez Cabrillo. Cabrillo and other early explorers sailed along the coast, and made limited expeditions into Alta (upper) California between 1529 and 1769. Spanish, Russian, and British explorers briefly visited Alta California during this nearly 250-year span. Eventual Spanish settlement of California in the spring of 1769 marked the devastating disruption of the indigenous cultures.

Gaspar de Portolá established the first Spanish settlement in Alta California at San Diego in 1769, and with Father Junipero Serra founded the first of 21 missions (Mission San Diego de Alcala) built by the Spanish and Franciscan Order between 1769 and 1823. Portolá continued north, reaching San Francisco Bay on October 31, 1769. Pedro Fages, who sought a site for a mission, and Lt. Colonel Juan Bautista De Anza, a Spanish military officer from Tubac, Arizona, who surveyed an overland trail from the Mexican interior to San Francisco Bay, made later expeditions to Alta California in 1772 and 1774, respectively (Grunsky 1989:2–3). De Anza's diary provides the first recorded Euro-American entry into the region. De Anza later led a group of colonists and their livestock through the San Jacinto Valley and across the Santa Ana Narrows on their way to settle San Francisco Bay between 1775 and 1776. The Juan Bautista de Anza National Historic Trail—approved by Congress in 1990 and mapped by the National Park Service in 1996—and the National Millennial Trail (designated in 1999) both commemorate the trail as a heritage tourism automobile route (California Highways 2004).

The process of converting the local Native American population to Christianity through baptism and relocation to the mission grounds began in this region by the Franciscan padres at Mission San Juan Capistrano, which was established in 1776. People from the interior region were converted within 10 years of establishing Mission San Juan Capistrano. Mission San Luis Rey was founded 20 years later, and as it grew and expanded its influence, it established ranchos east of San Juan Capistrano. This expansion created territorial conflicts with Mission San Juan Capistrano.

Mexican Period (1822–1848)

After the Mexican Revolution (1810–1821) against the Spanish crown, all Spanish holdings in North America (including both Alta and Baja California) became part of the new Mexican republic. With the onset of the Mexican period, an era of extensive land grants was begun, in contrast to the Spanish colonization through missions and presidios. Most of the land grants to Mexican citizens in California (*Californios*) were in the interior, granted to increase the population away from the more settled coastal areas where the Spanish had concentrated their settlements. The Mexican period is also marked by exploration by American fur trappers west of the Sierra Nevada Mountains.

American Period (1848–Present)

The Mexican-American War ended with the signing of the Treaty of Guadalupe Hidalgo in 1848, making California a territory of the United States. The discovery of gold in 1848 at Sutter's Mill near Sacramento and the resulting Gold Rush era greatly influenced the history of the state and the nation. The tens of thousands of people who rushed to the gold fields had a devastating impact on the lives of indigenous Californians, with the introduction and concentration of diseases, the loss of land and territory (including traditional hunting and gathering locales), violence, malnutrition, and starvation. Thousands of settlers and immigrants continued to pour into the state, particularly after the completion of the transcontinental railroad in 1869.

One year after discovering gold, nearly 90,000 people journeyed to the California gold fields. A portion of Captain John Sutter's Mexican land grant, known as *New Helvetia,* became the bustling Gold Rush boomtown of Sacramento. California became the 31st state in 1850 largely as a result of the Gold Rush. By 1853, the population of the state exceeded 300,000; Sacramento became the state capital in 1854.

Riverside County formed 40 years later in 1893, created from portions of nearby San Bernardino and San Diego Counties. The City of Riverside, located on the Santa Ana River channel, is the county seat and was founded in 1870. Part of California's "Inland Empire," many Riverside County residents work in and commute to the greater Los Angeles metropolitan area.

Local History: City of Riverside

The first recorded Euro-American entry into the region surrounding the project area comes from Lt. Colonel Juan Bautista de Anza's 1774 expedition along an overland trail from the Mexican interior to San Francisco Bay. Following his initial mapping survey, de Anza led a group of more than 200 settlers and their livestock in 1775–1776 through the San Jacinto Valley and across the Santa Ana Narrows on their way to found a mission and presidio in San Francisco.

In 1838, San Diego merchant Juan Bandini gained a land grant from the Mexican government that entitled him to a great extent of the Santa Ana River drainage, which he named Rancho Jurupa. A group of Euro-American investors in 1870 bought a substantial portion of the rancho, and then surveyed a 1-square-mile town site for their new colony that they named Riverside. They built irrigation canals to divert water from the Santa Ana River, supplying the water needed to found the modern California citrus industry (City of Riverside 2004).

As Riverside began to grow and develop into a larger city, the Atchison, Topeka and Santa Fe Railway extended the Chicago railroad's main line through Riverside in 1882, connecting Barstow with Los Angeles. The Southern Pacific Railroad extended a branch line to Riverside in 1892. Resulting from the influx of people and industry, Riverside County was formed in 1893 with Riverside as the county seat (Hansen and Mermilliod 2002).

Further expansion of California and western commerce in 1904 brought the San Pedro, Los Angeles and Salt Lake Railroad across the Santa Ana River and through Riverside to connect the thriving capitals of California and Utah. That year, a massive 984-foot-long concrete viaduct across the Santa Ana's Anza Narrows was built by the "Salt Lake Route" (part of the Union Pacific Railroad [UPRR] after 1921, which it remains today) to gain access from the north bank into Riverside on the south side of the river. After completion, the bridge briefly held the title "largest concrete structure in the world" (National Park Service 1991). The railroad established a depot for "Jurupa" just south of the river (between present Jurupa Avenue and Mountain View Avenue), and in 1908 the Riverside Land and Irrigation Company platted housing tracts around the railroad station. A handful of suburban-styled homes appeared by the 1920s in the area. The surviving 1910s and 1920s houses along Jurupa Avenue and Florence Street represent this early 20th century attempt at Riverside suburban settlement.

PRE-FIELD RESEARCH

LITERATURE SEARCH

On February 26, 2008, SWCA archaeologist Susan Underbrink conducted a cultural resources records search at the Eastern Information Center (EIC), located at the University of California, Riverside (Appendix B). The EIC maintains data on resources for the California Historical Resources Information System (CHRIS) for Riverside, Inyo, and Mono Counties. The purpose of this records search was to determine whether the project area had been the subject of earlier cultural resources studies and whether cultural resources had been previously recorded in or near the project area. Information regarding archaeological sites, historical resources, and studies within a one-mile radius of the study area was complied. In addition to official maps and records, the following sources of information at the EIC were consulted as part of the records search:

- National Register of Historic Places – Listed Properties (2008)
- California Register of Historical Resources

- California Inventory of Historical Resources (2008)
- California State Historical Landmarks (1996 and updates)
- California Points of Historical Interest (1992 and updates)
- Office of Historic Preservation Historic Property Directory and Determinations of Eligibility (2008)

Prior Studies in One-Mile Radius of APE

The EIC records search identified fourteen previously conducted cultural resource studies within a one-mile radius of the proposed project area (Table 3). Three of these studies covered portions of the proposed project area; one of these identified the presence of cultural resources within the direct APE.

Table 3. Prior Cultural Resources Studies within One Mile of the Project Area

Report #	Title	Author(s) / Date
RI-00117	La Loma-Mira Loma Transmission Line: Expected Impact on Archaeological Values	Wilke, P. and S. Hammond / 1973
RI-00141	Archaeology of Proposed Additions to the Indian Hills Housing Development, City of Pedley, Riverside County, California	Schlanger, S. / 1974
RI-00939	Letter Report: City of Riverside Senior Citizens Center	Swenson, J. / 1980
RI-02125	An Archaeological Assessment of 970+ acres of land located on March Air Force Base, Riverside County, California	Swope, K. / 1987
RI-02307	Cultural Resources Survey, Upper Santa Ana River, California	Hampson, R. et al. / 1988
RI-03395	Cultural and Biological Resources Assessment of Jurupa Avenue Extension, Approximately 1 Mile, City of Riverside, Riverside County, California	Jertberg, P., and Kirtland, K. / 1991
RI-03839	Cultural Resources Survey for the Army Camp Anza UST Removal and Disposal Project, Riverside County, California	Mason, R. / 1994
RI-03959 **	A Phase I Cultural Resources Investigation of the Proposed Van Buren Golf Center, Located at Van Buren Boulevard and Central Avenue, City of Riverside, Riverside County, California	McKenna, J. / 1996
RI-04404**	Final Cultural Resources Inventory Report for the Williams Communications, Inc., Fiber Optic Cable System Installation Project, Riverside to San Diego, California Vol I-III	Jones and Stokes Associates, Inc. / 2000
RI-5154	A Phase I Cultural Resource Survey for Global Premiere, Riverside County, California	Hudlow, S. / 2004
RI-5354	Historical/Archaeological Resources Survey Report	CRM Tech / 2005
RI-05753	Historical / Archaeological Resources Survey Report, Assessor's Parcel No. 193-122-21, Arlington Area, City of Riverside, Riverside County, California	Dahdul, M. / 2002
RI-0500**	Historical/Archaeological Resources Survey Report, Riverside Gateway Project, City of Riverside, Riverside County, California	Love, B. and B. Tang / 2002
RI-6155	Letter Report: Records Search and Site Visit Results for Cingular Tele Facility SB-355-01 (Arlington Inn)	Aislin-Kay, M. and Taniguchi, C. / 2004

** Portion of study runs through current proposed project area

Previously Recorded Cultural Resources within One-Mile Radius of APE

The EIC record search indicated that there are 47 previously recorded cultural resources within one mile of the direct APE (Table 4). These include 16 prehistoric archaeological sites or isolates, five historic archaeological sites, and 26 historic buildings and/or structures within one mile of the proposed project. There are no properties listed in the NRHP, ADOE, or HPD within the boundaries of the project area. California Historic Landmark No. 787, which commemorates the de Anza crossing of the Santa Ana River in 1775 and 1776, is located northeast of the proposed project near the existing Union Pacific Railroad bridge (P-33-3361). Two previously recorded resources appear to be located within the direct APE: a single-family residence (P-33-11633) and an archaeological site (CA-RIV-1711). Discussion of the previously recorded cultural resource follows the table.

Table 4. Previously Recorded Cultural Resources within One Mile of the Project Area

Primary Number/ Trinomial	Resource Description	Recorded by / Date	National/California Register Eligibility	Proximity to APE
33-000127/ CA-RIV-127	Prehistoric: Granitic outcrop of milling features bisected by a Union Pacific Railroad bridge (CA-RIV-3361-H)	Coorhart / 1951 Haenszel, A. / 1971 Kirkish, A. / 1972 Hall, M. / 1975 McCarthy, D. / 1987 Sorensen, J. et al. / 1987	Not evaluated	Outside
33-000325	Prehistoric: Jurupa Bluffs-unspecified artifacts in River bottom	Heller, R. / 1967 Reynolds/ 1971	Not evaluated	Outside
33-000494/ CA-RIV-494	Prehistoric: Groundstone, and lithic artifact scatter, was field checked in 1975, and surface collected 1979, 2006 field check-completely destroyed due to development	Galt, A./1971 Hall, M. / 1975 Anonymous 1979 Chambers Group / 2006	Not eligible	Outside
33-000560/ CA-RIV-560	Prehistoric: Sparse scatter of flakes with a possible rock feature	Kirkish, A. / 1972 Hall, C. / 1975	Not evaluated	Outside
33-000561/ CA-RIV-561	Prehistoric: Sparse scatter of flakes and ground stone	Sorensen, J. et al. / 1972 Hammond, S. / 1973 Hall, C. / 1975	Not evaluated	Outside
33-000619/ CA-RIV-619	Prehistoric: Sparse scatter of flakes and ground stone	Hammond, S. / 1973 Hall, C. / 1975	Not evaluated	Outside
33-000620/ CA-RIV-620	Prehistoric: Bedrock milling feature site	Hammond, S. / 1973 Hall, C. / 1975 McCarthy, D. / 1987 Parr, R. / 1988 McLean, K., and Bouscaren, C. / 2007	Not evaluated	Outside
33-000679/ CA-RIV-679	Prehistoric: Several red pictographs on a large granite boulder	Haenszel, A. / 1967	Not evaluated	Outside

Table 4. Previously Recorded Cultural Resources within One Mile of the Project Area

Primary Number/ Trinomial	Resource Description	Recorded by / Date	National/California Register Eligibility	Proximity to APE
33-001711/ CA-RIV-1711	Prehistoric: Bedrock milling with mortars, manos and metates	Smith, G. / 1939 Haenszel, A. / 1971	Not evaluated	Outside
CA-RIV-3355	Prehistoric: bedrock milling features	Schmidt, J. et al. / 1987	Not evaluated	Outside
CA-RIV-3359H	Scatter of historical debris that includes glass shards, ceramic sherds, and metal cans	Sorensen, J. et al. / 1987	Not evaluated	Outside
CA-RIV-3361	Union Pacific Railroad Bridge over Santa Ana River; construction completed in 1904	Sorensen, J. et al. / 1987 SWCA / 2004	Not evaluated	Outside
CA-RIV-3363	Prehistoric: Bedrock milling feature	Sorensen, J. et al. / 1987	Not evaluated	Outside
CA-RIV-3375	Prehistoric: Bedrock milling feature	Parr, R. / 1988	Not evaluated	Outside
33-9651	Historic-era complex of earthen dams built circa 1915 and associated with the Willitts J. Hole Ranch	Collet, R. / 2000	Status Code, 5S3, locally eligible	Outside
33-9766	De Anza Crossing of the Santa Ana River 1775 and 1776; located near the Union Pacific Railroad Bridge (CA-RIV-3361H)	Arbuckle, J. / 1979	Status Code 1CL, California Historic Landmark No. 787	Outside
33-11397 / CA-RIV-6785	Prehistoric: Lithic scatter consisting of seven flakes and one mano fragment	Love, B. et al. / 2002	Status Code 6Z, not eligible for NRHP	Adjacent
33-11398/ CA-RIV-6786H	Historic archaeological site consisting of several wood pillars, concrete pylons, and concrete footings	Love, B. et al. / 2002	Not evaluated	Adjacent
33-11592	Prehistoric: Isolated bifacial mano and flake	Smallwood, J. /2002	Status Code 6Z, not eligible for NRHP	Adjacent
33-11633	Historic: 6870 Doolittle Avenue	Tang, B. / 2002	Status Code 6Z, not eligible for NRHP	Within
33-11634	Historic: 4922 Arlington Avenue	Tang, B. / 2002	Status Code 5S1, City of Riverside Structure of Merit	Outside
33-11635	Historic: 4948 Arlington Avenue	Tang, B. / 2002	Status Code 5S1, City of Riverside Structure of Merit	Outside
33-12177	Historic: 6735 Capistrano Way	Tibbet, C. / 2000	Status Code 5D3, local district contributor	Outside
33-12178	Historic: 6755 Capistrano Way	Tibbet, C. / 2000	Status Code 5D3, local district contributor	Outside
33-12179	Historic: 6765 Capistrano Way	Tibbet, C. / 2000	Status Code 5D3, local district contributor	Outside
33-12180	Historic: 6710 Streeter Avenue	Tibbet, C. / 2000	Status Code 5S3, locally eligible	Outside

Table 4. Previously Recorded Cultural Resources within One Mile of the Project Area

Primary Number/ Trinomial	Resource Description	Recorded by / Date	National/California Register Eligibility	Proximity to APE
33-12181	Historic: 5218 Central Avenue	Tibbet, C. / 2000	Status Code 5S3	Outside
33-12182	Historic: 5181 Sierra Street	Tibbet, C. / 2000	Status Code 5S3	Outside
33-12735	Historic: Isolated amethyst bottle fragment	Romani, G. and Wakefield, S. / 1987	Not evaluated	Outside
33-12736	Historic: Isolated amethyst jar base and additional fragments	Romani, G. and Wakefield, S. / 1987	Not evaluated	Outside
33-13252	Historic: Wastewater treatment plant on Acorn Street	SWCA / 2004	Not evaluated	Outside
33-13253	Historic: 7297 Jurupa Avenue	SWCA / 2004	Not evaluated	Outside
33-13254	Historic: 6091 Jurupa Avenue	SWCA / 2004	Not evaluated	Outside
33-13255	Historic: 5868 Jurupa Avenue	SWCA / 2004	Not evaluated	Outside
33-13256	Historic; 6019 Florence Street	SWCA / 2004	Not evaluated	Outside
33-13257	Historic: 5000 Jurupa Avenue	SWCA / 2004	Not evaluated	Outside
33-13258	Historic: 5748 Jurupa Avenue	SWCA / 2004	Not evaluated	Outside
33-13260	Historic: Martha McLean-Anza Narrows Park	SWCA / 2003	Not evaluated	Outside
33-13261	Historic: 5876 Jurupa Avenue	SWCA / 2004	Not evaluated	Outside
33-13531	Prehistoric: Bedrock milling site	Maxon, P., and Paige P. / 2003	Not evaluated	Outside
33-14890	Historic: 5530 Mountain View Avenue	Smallwood, J. / 2005	Status Code 6Z, not eligible for NRHP	Outside
33-16019	Historic: Steel truss bridge	Mock, K., and Hollins, J. / 2006	Status Code 6Z, not eligible for NRHP	Outside
33-16020	Historic: Gauging station	Mock, K., and Hollins, J. / 2006	Status Code 6Z, not eligible for NRHP	Outside
33-16021	Historic: Retaining wall	Mock, K., and Hollins, J. / 2006	Status Code 6Z, not eligible for NRHP	Outside
33-16737/ CA-RIV-8761	Bedrock milling site containing two milling slicks	Knell, E., and Tuma, M. / 2007	Not evaluated	Outside
33-16848	Historic: Santa Ana River Trunk Sewer line	McLean, K., and Bouscaren, C. / 2007	Not evaluated	Outside
33-16851	Historic: De Anza Trail Monument marker	McLean, K., and Bouscaren, C. / 2007	Status Code 6Z, not eligible for NRHP	Outside

*This site does not appear on EIC maps, and its site record contains conflicting locational data. See accompanying text.

CA-RIV-1711 (33-01711): Squires Village Site

This reportedly Ethnohistoric period bedrock milling site, labeled the Squires Village site and also designated SBCM 42, was initially recorded in 1938 or 1939 based on the notes of an informant, Arthur

Squires, who lived in the vicinity in early 1900s. Mr. Squires described the site as "the main village of the Sabobos [the Soboba Band of Luiseño Indians]" that was located 0.25-mile from his house on Hillside Avenue, between Arlington Avenue and Central Avenue. The site contained stone pestles, granite boulders with grinding surfaces, and broken pottery. Squires went on to note that "this village was the last to move to the Soboba Res. at San Jacinto" (Smith 1939). The site's location is indicated by a hand-drawn map that accompanies the 1939 site record that is not to scale, as well as UTM coordinates in the 1971 site record update. The UTM data (Zone 11, NAD 1927, 460420 m E, 3756820 m N) place the site about 150 m north of the project APE, but the hand-drawn map may place the site within the easternmost portion of the original APE. Maps in the possession of Pechanga Cultural Resources, Temecula Band of Luiseño Mission Indians (A. Hoover 2011, personal communication to J. Dietler) place the site within the original eastern direct APE. The APE was subsequently revised to exclude this location.

33-11633

Located at 6780 Doolittle Avenue is the Pasquale Solazzo Residence, a Spanish Eclectic style home and associated out buildings. The property was found not eligible for listing in the CRHR or NRHP, as it is unremarkable in architectural style and is not associated with events or persons important to history (Love and Tang 2002).

HISTORIC MAPS

A review of the USGS 1901 Elsinore, California 30-minute and 1901 and 1942 Riverside, California 15-minute quadrangles indicated that Hillside, Arlington and Van Buren avenues were established prior to 1901. Sometime between 1905 and 1942, several dirt roads were constructed along the south side of the Santa Ana River. No buildings are depicted in the vicinity of the project area on any of these maps.

NATIVE AMERICAN CONSULTATION

SWCA Archaeologist Susan Underbrink contacted the California Native American Heritage Commission (NAHC) by letter on February 26, 2008, to request a review of the Sacred Lands File for Native American cultural resources (Table 5; Appendix C). The reply from the NAHC, dated February 28, 2008, stated that the results of the Sacred Lands File search failed to indicate the presence of Native American cultural resources in the immediate vicinity of the proposed project area. The NAHC reply included a list of 12 Native American groups and/or individuals for Riverside County who may have knowledge of cultural resources in the project area. SWCA sent letters describing the proposed project and its related APE, along with location maps, via U.S. mail to these 12 groups on February 28, 2008. Ms. Underbrink followed up with each group via telephone or email on March 19 and 20, 2008, and made subsequent follow-ups, as necessary.

In December 2010, FAA consulted with the NAHC. The NAHC provided a listing of 15 tribal contacts for the proposed undertaking. In January 2011, FAA contacted all the tribal contacts by letter. One written response was received indicating concern about a historic property near the area of the proposed undertaking.

Table 5. Consultation with Native American Groups

Native American Contact	Date Letter Sent	Date of Follow-up Correspondence/ Reply	Summary of Consultation
Anthony Madrigal, Jr., Chairperson Cahuilla Band of Indians P.O. Box 391760 Anza, CA 92536	2/28/08	Left telephone message on 03/19/08	Message left on voice mail on 3/19/08. No response received. No further action necessary.
Harold Arres, Cultural Resources Manager Soboba Band of Luiseño Indians P.O. Box 487 San Jacinto, CA 92581	2/28/08	Left telephone message on 3/19/08	Message left on voice mail on 3/19/08. No response received. No further action necessary.
Anna Hoover, Pechanga Cultural Resources Temecula Band of Luiseño Mission Indians PO Box 2183 Temecula, CA 92593	2/28/08	Responded 3/3/08 via telephone and sent letter 3/19/08	On 3/3/08, Anna Hoover, Cultural Analyst for the tribe, contacted SWCA Archaeologist Susan Underbrink, requesting the inclusion of a Native American observer during the recordation of the sites found during the field survey. A representative from the tribe cultural resources center was scheduled to accompany archaeologists to record the sites on March 11, 2008, but was unable to attend. On March 19, 2008 Ms. Hoover sent a letter to Ms. Underbrink, restating the previous conversation and adding requests for site records and notification on project updates. On February 18, 2011 Ms. Hoover sent a letter to Mark McClardy at the FAA, which was provided to SWCA reiterating her requests outlined above. She also noted the presence of site CA-RIV-1711within the APE [note that the APE has been revised subsequently to exclude CA-RIV-1711], requested the execution of an agreement between the FAA or its designee and the Pechanga Tribe specifying appropriate treatment of inadvertent discoveries of cultural resources, and requested mitigation that required Pechanga tribal monitors during all archaeological studies and ground-disturbing activities associated with the project. On April 15, 2011, SWCA Principal Investigator John Dietler telephoned Ms. Hoover to discuss the location of CA-RIV-1711. In addition to the site location data, Ms. Hoover reiterated her requests for government-to-government consultation with an FAA representative, mitigation requiring Native American monitoring of ground-disturbing activities, and project updates.

Table 5. Consultation with Native American Groups

Native American Contact	Date Letter Sent	Date of Follow-up Correspondence/ Reply	Summary of Consultation
Cindi Alvitre Ti'At Society 6515 E. Seaside Walk #C Long Beach, CA 90803	2/28/08	Left telephone message on 3/19/08	Message left on voice mail on 3/19/08. No response received. No further action necessary.
Joseph Hamilton, Chairman Ramona Band of Cahuilla Mission Indians PO Box 391670 Anza, CA 92539	2/28/08	Left telephone message on 3/20/08	Message left on voice mail on 3/20/08. No response received. No further action necessary.
Anthony Morales, Chairperson Gabrieleno/Tongva San Gabriel Band of Mission Indians P.O. Box 693 San Gabriel, CA 91778	2/28/08	Telephoned on 3/19/08 and 3/20/08	Telephoned on 3/19/08 and 3/20/08. No answering machine. No response received. No further action necessary.
John Marcus, Chairman Santa Rosa Band of Mission Indians P.O. Box 609 Hemet, CA 92546	2/28/08	Telephoned 3/19/08	Telephoned 3/19/08. Terry Hughes, Tribal Administrator responded on behalf of the Tribe and Mr. Marcus, stating that the project was not in their jurisdiction and that they had no concerns. However he stated the No further action necessary.
Sam Dunlap, Tribal Secretary Gabrielino Tongva Nation 761 Terminal Street, Bldg 1 2nd Floor Los Angeles, CA 90021	2/28/08	Telephoned 3/19/08	Telephoned 3/19/08, line disconnected. No response received. No further action necessary.
Ms. Susan Frank Gabrielino Band of Mission Indians P.O. Box 3021 Beaumont, CA 92223	2/28/08	Left telephone message on 3/19/08	Message left on voice mail on 3/19/08. No response received. No further action necessary.
Goldie Walker Serrano Nation of Indians 6588 Valaria Drive Highland, CA 92346	2/28/08	Left telephone message on 3/20/08	Message left on voicemail on 3/20/08. No response received. No further action necessary.
Robert Martin, Chairperson Morongo Band of Mission Indians 11581 Potrero Road Banning, CA 92220	2/28/08	Sent email on 3/19/08	Sent email on 3/19/08. No response received. No further action necessary.

Table 5. Consultation with Native American Groups

Native American Contact	Date Letter Sent	Date of Follow-up Correspondence/ Reply	Summary of Consultation
Ann Brierty Environmental Department San Manuel Band of Mission Indians 101 Pure Water Lane Highland, CA 92346	2/28/08	Left telephone message on 3/20/08	Message left on voicemail on 3/20/08. No response received. No further action necessary.
Agua Caliente Band of Cahuilla Indians, Augustine Band of Cahuilla Mission Indians, Cabazon Band of Mission Indians, Cahuilla Band of Mission Indians, Colorado River Indian Tribes, Fort McDowell Yavapai Nation, Ione Band of Miwok Indians, Morongo Band of Cahuilla Mission Indians, Pechanga Band of Mission Indians, Quechan Tribe of the Fort Yuma Indian Reservation, Ramona Band of Cahuilla Indians, Santa Rosa Band of Mission Indians, Soboba Band of Luiseno Indians, Torres Martinez Desert Cahuilla Indians, and the Yavapai-Apache Community Council	1/2011		In December 2010, FAA consulted with the NAHC. The NAHC provided a listing of 15 tribal contacts for the proposed undertaking. In January 2011, FAA contacted all the tribal contacts by letter. One written response was received indicating concern about a historic property near the area of the proposed undertaking.

METHODS

FIELD SURVEY

On February 27, 2008, SWCA archaeologists Susan Underbrink, William A. Sawyer, and Jessica DeBusk conducted an intensive pedestrian survey of the main 132.9-acre survey area (Figure 1). In October 2009, the survey area was revised to include two additional parcels, located west of the original survey area. These two new parcels comprise an area of approximately 11.8 acres. On November 4, 2009, SWCA archaeologists Jessica DeBusk and Charles Cisneros conducted an intensive survey of this area. An additional 1-acre parcel, containing two buildings was added to the survey area, near the northwestern edge of the project area in January 2010. On January 17, 2010 this parcel was surveyed by SWCA archaeologist John Covert. SWCA architectural historian Sonnier Francisco conducted preliminary research to determine the age of the buildings.

During the surveys, archaeologists conducted parallel transects spaced 10 to 20 meters apart in unpaved areas. The archaeologists inspected parcels for the presence of surface archaeological sites and artifacts, as well as evidence of features associated with historic activity in the area, where ground visibility and access permitted. They navigated with global positioning system (GPS) receivers, topographic maps, and aerial photographs. Project documentation included field notes and numerous digital photographs, including general overviews of each parcel, photographs of any buildings located on the parcels, and overviews of the surrounding properties during the surveys. Preliminary research for the project included a review of historic aerials, assessor parcel information, building permits and data located on the City of

Riverside website. All field notes, digital photographs, and records related to the current study are on file at the SWCA Pasadena, California, office.

CULTURAL RESOURCE RECORDATION

SWCA archaeologists Underbrink, Sawyer, and DeBusk recorded the location of cultural resources within the project area between February 28 and March 11, 2008, using a Garmin GPS with submeter accuracy. California Department of Parks and Recreation (DPR) series 523 forms, a field notebook, and a digital camera were used to record site characteristics and survey conditions. Copies of the field notes and digital photographs are available at the SWCA Pasadena office. No cultural resources were recorded during the subsequent field surveys.

RESULTS AND EVALUATIONS

Within the eastern portion of the project, the areas directly adjacent to the runway were highly disturbed. There were gravel access roads throughout the project area. Vegetation throughout most of the area was extremely dense; the grasses were knee-high and obscured between 70 and 90 percent of the ground surface. The soils in the project area were generally sandy and silty, with coarse sands derived from the decomposing quartz diorite bedrock underlying the area (Figure 2).

The western portion of the APE consists of three parcels. This area is heavily disturbed with modern refuse and concrete debris. Vegetation consists of sage scrub and weeds, and visibility ranged from zero percent to 100 percent. The areas with fair visibility showed signs of disturbance, including tire tracks and cleared vegetation. The local soil consists of light yellow sandy silt that is extremely compact. For safety reasons, approximately 1 acre along the southern boundary of the western project area could not be surveyed. A densely vegetated drainage in this area contains transient living quarters.

Two previously unrecorded buildings were identified during the field survey, within the western portion of the APE. Located at 6775 Doolittle Avenue, the buildings consist of a large, rectangular concrete block warehouse that faces east towards Doolittle Avenue, with a smaller, similar building situated to the rear. SWCA archaeologist John Covert photographed the buildings and architectural historian Sonnier Francisco conducted preliminary research on the buildings. A review of assessors parcel data, building permits and historic aerial photographs revealed that the larger building was constructed in 1962, for use as a machine shop. The smaller building was constructed in 1974, also for use as a machine shop (City of Riverside, var). The buildings are now part of the adjacent golf course property (Historic Aerials.com, var,). These simple, utilitarian type concrete buildings were constructed in 1962 and 1974 and are less than 50 years of age; the buildings were not documented on DPR forms or evaluated for historic significance and are not considered historic properties or historical resources.

Six new cultural resources were located during the field survey, all in the eastern project area. These include one prehistoric bedrock milling archaeological site (CA-RIV-8899/33-17095), two multi-component sites containing bedrock milling features and historic refuse scatters (CA-RIV-8897/33-17092 and CA-RIV-8898/33-17094), one built environment resource, a water tank (33-17096), one site containing a historic refuse scatter and historic feature (33-17093) and one multi-component site containing built environment resources (concrete features) and a historic refuse scatter (33-17097). SWCA archaeologists Underbrink and Sawyer recorded the six sites on March 11, 2008 (Figure 3). DPR forms for these resources are included in Appendix D.

CA-RIV-8897 (33-17092): BEDROCK MILLING FEATURE AND HISTORIC ARTIFACT SCATTER

This is a multi-component archaeological site with prehistoric and historic resources detected on the site surface, which measures approximately 18 x 18 m (254 m^2). It sits at the base of a small knoll in a relatively flat area. Heavy vegetation of various grasses surrounds the site. The area was mowed the day before the site was recorded so the ground visibility was about 50 percent (Photograph 1).

The prehistoric component consists of a single quartz diorite boulder among a bedrock outcrop, with seven milling slicks at different elevations. The boulder is 8.5 m north-south × 4.3 m east-west. Five of the milling slicks are in poor condition, with cracks and exfoliation. Two of the slicks have heavy polish and very slight depth. One slick has a well-defined inner portion with high polish and an outer area evidencing much less use. No prehistoric artifacts were observed.

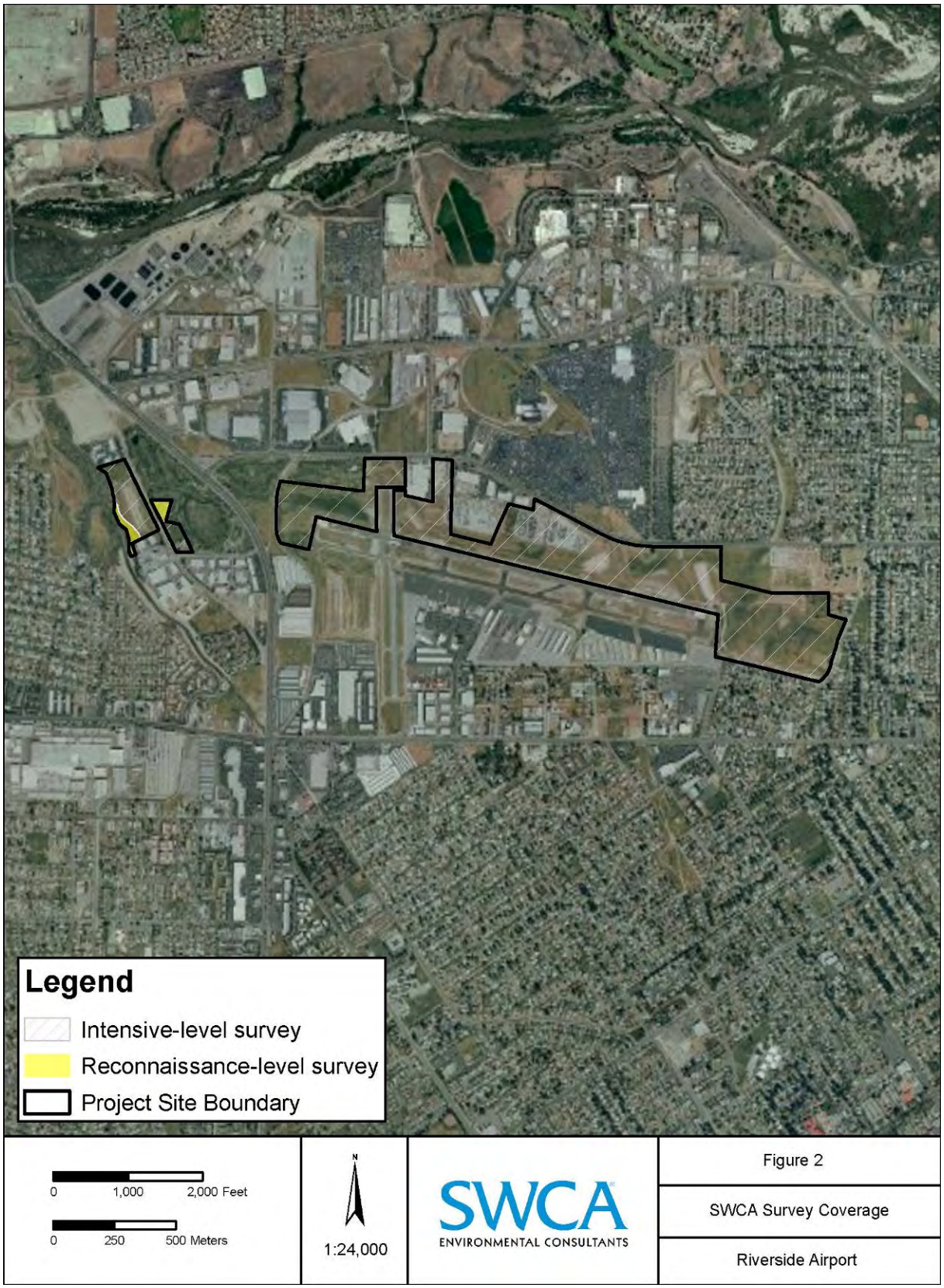

Figure 2. SWCA Survey Coverage

Exact location of identified resources is not disclosed to protect resource integrity.

Photograph 1. View to the north of CA-RIV-8897 (33-17092)

The historic component is a surface scatter of highly fragmented historic artifacts located around and within the bedrock outcrop, particularly the east side. Approximately 300 glass, 30 ceramic, 10 metal, and a few fragments of other material (such as brick) were counted within the 18 × 18 m area. Artifact density diminishes with distance. The glass artifacts have maker's marks and manufacturing attributes spanning the period between the early to mid twentieth century, with a few pieces that may be attributable to late nineteenth century historic activity in the area.

Bottle glass fragments were observed in a variety of colors (colorless, sun-colored amethyst, amber/brown, aqua, and blue). Some exhibited manufacturing techniques found mainly before the 1920s; these include prescription bottle necks with hand-tooled finishes and a number of sun-colored amethyst glass fragments. One soda bottle neck displays the Codd marble stopper system that was manufactured mainly between the late 1870s to about 1900 (Munsey 1970:104, 250).

Other bottle and jar pieces were machine-made with maker's marks ranging from the 1920s to the early 1960s. Glass maker's marks included Hazel Atlas Glass Company, 1920-1964 and Glass Containers, Inc., circa 1940s (Toulouse 1971:220, 239). One bottle fragment is embossed with the phrase "Federal Law Forbids Sale or Reuse of this Bottle," placing it in the post-Prohibition era, after 1933 (Munsey 1970:126). Other glass artifacts noted are a canning jar lid liner, a milk bottle, a pressed glass bowl lid, and flat (window) glass.

Some glass fragments are associated with modern recreational activity in the area, including beer, liquor, and various beverage bottles. Ceramic artifacts consist of plates, bowls, and cups; primarily whitewares, with a few porcelain fragments. There are blue transfer prints, floral decals, and hand painted floral motifs on the whitewares and the decorations cannot be assigned to any particular decorative style or chronological period. No ceramic maker's marks were found. Several salt-glazed stoneware sherds may derive from beverage or ink bottles. Brown-glazed earthenware sewer pipe fragments, unglazed earthenware, and blue-glazed earthenware flower pots are also present. All of the ceramic artifacts fit within the time frame assigned to the glass artifacts.

The few metal artifacts found at this site comprise highly corroded food or beverage can fragments, wire nails, a paint can, and sheet metal fragments. One brass shotgun shell is stamped "WINCHESTER/NO.

10/NEW RIVAL" on the base, which was manufactured before 1920 (Farrar 2008). Miscellaneous artifacts include concrete and brick fragments, and a graphite D-cell battery core.

There is no observable connection between this site and two nearby bedrock milling sites. Site CA-RIV-8898 (33-17094), which also contains historical artifacts, is located approximately 50 m to the west, while CA-RIV-8899 (33-17095) is located approximately 50 m to the northwest. It is possible that all three of these sites are associated or synonymous with CA-RIV-1711, the Squires Village site. In 1939, an informant familiar with the site described it as the main village of the Soboba Band of Luiseño Indians, occupied in the early 1900s prior to their resettling at the Soboba Reservation. If accurate, the site may be a single component Ethnographic period site.

Site CA-RIV-8897 (33-17092), consisting of a single bedrock boulder with seven milling slicks and late 19th/early 20th century refuse, cannot be evaluated for NRHP significance without formal archaeological testing.

33-17093: HISTORIC FEATURE AND ARTIFACT SCATTER

This historic archaeological site consists of one feature and a refuse scatter. The entire site measures 87 × 57 feet (3,893 square feet) The feature is a square hole with inside dimensions of 47 inches north-south × 46 inches east-west. The hole is approximately 28 inches deep, but the bottom is very soft and could have been filled for safety reasons. A capped metal pipe was found in the bottom, but there is no way to determine if this pipe is part of the feature or subsequent fill. A sidewall profile shows that bedrock is capped with 9 inches of concrete to the surface. There is a peppertree 10 feet to the west (Photograph 2).

Photograph 2. Close-up of 33-17093.

A light scatter of historic refuse is located mainly north of the hole and includes approximately 10 ceramic sherds, 20 bottle glass fragments, a two-inch thick concrete slab, a two-inch diameter metal water pipe section, miscellaneous metal hardware and can fragments, and a scallop (*Argopecten* sp. or similar) shell fragment. The typologically diagnostic ceramics include a cup-bottom mold fragment circa 1910 and a Chinese globular jar fragment. Whether the artifacts and the hole are associated is unknown.

33-17093 consists of one historic feature and a historic refuse scatter. Both lack integrity and have no significant associations to events or persons important to history (Criteria A, B and C). Furthermore, it is not likely to yield information important in history (Criterion D). Further, the site does not qualify for local listing. It is recommended that 33-17093 be assigned California Historical Resources Status Code (Status Code) "6Z, Found ineligible for N[ational] R[egister], C[alifornia] R[egister], or Local designation through survey evaluation" (California Office of Historic Preservation 2003).

CA-RIV-8898 (33-17094): BEDROCK MILLING FEATURE AND HISTORIC ARTIFACT SCATTER.

This multi-component archaeological site comprises a single bedrock milling feature and a surface scatter of historic artifacts in and around bedrock outcrops. The site boundary encompasses an area of ca. 55.5 × 35 m (1,526 m) and includes four loci (named A-D) with light artifact scatters. Each locus is associated with either a non-native peppertree or a bedrock outcrop; a light scatter of glass, ceramics, and metal is found between the loci. Although the area was recently mowed, the surface visibility was under 50 percent, so all materials may not have been observed. The peppertrees on the site are probably associated with the historic activity responsible for the deposition of the artifacts. The trees appear to be old themselves, having been cut back or trimmed on occasion since they were first planted (Photograph 3).

Photograph 3. View northeast of Locus B, CA-RIV-8898 (33-17094)

Locus A

This locus consists of historic material scattered in and around a bedrock outcrop. The locus measures 6 × 6 m (19.7 x 19.7 feet) or 28 square meters. Cultural material includes five bottle glass fragments (various types), a brown, glazed stoneware jar sherd, one leather fragment, and two pieces of whiteware ceramic. The stoneware sherd appears to be from a utilitarian vessel of a type that is often found associated with Chinese occupation, post 1885 in this region of southern California (e.g., Brott 1987).

Locus B

This locus includes historic artifacts and a prehistoric milling feature located around a large bedrock outcrop adjacent to a large peppertree. The locus measures 14 × 15 m (45.9 x 49.2 feet) or 165 square meters. Historic refuse is found in and around the outcrop and tree, and includes approximately 20 pieces of glass, ceramic, metal, concrete, and milled wood. A "LIQUOZONE" bottle body sherd was identified; these were manufactured from the mid 1890s to the early twentieth century (Fike 1987:68).

One small milling slick was found on a small bedrock exposure that is flush to the ground and located in the southwest portion of the locus.

Locus C

This locus is a light scatter of approximately 20 historic artifacts including bottle glass and ceramic fragments, scattered around a peppertree. The locus measures 8 × 8 m (26.2 x 26.2 feet) or 50 square meters. No diagnostic materials were observed.

Locus D

This locus is a light scatter of historic materials including bottle glass, ceramic fragments, metal (probably food cans), brown, glazed stoneware (Chinese), and a brown earthenware ceramic sherd that may be Native American in origin. The locus measures 10 × 9 m (32.8 x 29.5 feet) or 71 square meters. Again, the scatter is concentrated around a peppertree.

The historic material at this site is scattered across a gentle slope, amongst bedrock exposures and peppertrees. The milled wood, concrete, and household refuse found at Locus B may indicate that a habitation locus was close by; however the small amount of refuse suggests short term or limited use of the area. No historic material was found upslope from these loci.

The datable historic materials from all loci indicate an American period time range of ca. 1885 to 1920. Additionally, two fragments of Chinese earthenware and one brown earthenware sherd, possibly Native American in origin, were found at loci A and D, and suggest access to multi-ethnic resources.

There is no observable connection between this site and two nearby bedrock milling sites. Site CA-RIV-8897 (33-17092), which also contains historical artifacts, is located approximately 50 m to the east, while CA-RIV-8899 (33-17095) is located approximately 50 m to the northeast. It is possible that all three of these sites are associated or synonymous with CA-RIV-1711, the Squires Village site. In 1939, an informant familiar with the site described it as the main village of the Soboba Band of Luiseño Indians, occupied in the early 1900s prior to their resettling at the Soboba Reservation. If accurate, these sites may represent a single component Ethnographic period occupation.

Site CA-RIV-8898 (33-17094), consisting of a single bedrock boulder with one milling slick, an earthenware sherd of possible Native American origin, and late 19th/early 20th century refuse, cannot be evaluated for NRHP significance without formal archaeological testing.

CA-RIV-8899 (33-17095): BEDROCK MILLING FEATURES

This prehistoric archaeological site consists of four milling slicks on three boulders, within an 8 × 6.7 m (42 m) area. All of the slicks are in fair to poor condition. One is covered with soil, and is in fair condition; the other three have high polish and are well-defined. Two slicks on one boulder have eroded

edges. No artifacts were found in association, but the ground visibility was extremely limited due to heavy grass vegetation (Photograph 4).

Photograph 4. View south of CA-RIV-8899 (3317095)

There is no observable connection between this site and two nearby bedrock milling sites. Site CA-RIV-8897 (33-17092), is located approximately 50 m to the southeast, while CA-RIV-8898 (33-17094) is located approximately 50 m to the southwest. It is possible that all three of these sites are associated or synonymous with CA-RIV-1711, the Squires Village site. In 1939, an informant familiar with the site described it as the main village of the Soboba Band of Luiseño Indians, occupied in the early 1900s prior to their resettling at the Soboba Reservation. If accurate, these sites may represent a single component Ethnographic period occupation.

Site CA-RIV-8899 (33-17095), consisting of a four milling slicks on three boulders, cannot be evaluated for NRHP significance without formal archaeological testing.

33-17096: HISTORIC WATER TANK

This resource is a historic, above-ground water tank. It is a composite tank consisting of a concrete base with a vertical extension made from galvanized steel with riveted joints. The rim of the tank is reinforced with 1½-inch diameter steel pipe. Although no longer symmetrical, the tank measures 114 inches (290 cm) in diameter and about 43 inches (109 cm) in height. The concrete base is clad with a galvanized steel skirt and is attached to the upper extension with a six-inch strip of galvanized steel with riveted joints. The concrete is four inches thick and its depth was not determined. The tank is directly adjacent to a peppertree and a dirt track access road. There are no intake or outlet pipes or holes evident on the tank. No other historic material was observed near the tank primarily due to poor surface visibility (Photograph 5).

Photograph 5. View east of 33-17096

33-17096 consists of one deteriorating steel water tank, a structure considered to be a ubiquitous resource throughout Riverside County and southern California. 33-17096 does not warrant further evaluation under Criteria A, B, or C because it no longer retains integrity sufficient to convey its association with significant events or persons. Furthermore, it is not likely to yield information important in history (Criterion D). The site is also not eligible as a contributor to a historic district. Further, the site does not qualify for local listing. It is recommended that 33-17096 be assigned California Historical Resources Status Code (Status Code) "6Z, Found ineligible for N[ational] R[egister], C[alifornia] R[egister], or Local designation through survey evaluation" (California Office of Historic Preservation 2003).

33-17097: HISTORIC FEATURES AND ARTIFACT SCATTER

This historic archaeological site has several components including a linear concrete feature, concrete standpipe, small concrete trough, palm tree stumps, and a small concrete slab; all of which lack integrity. The site measures 131.2 x 111.5 feet. The linear concrete feature appears to be a trough adjacent to a low-profile concrete standpipe presently located under a peppertree. The trough disappears about 10 m directly west of the standpipe, probably having been destroyed by ground disturbance in the area. The trough is 15 inches wide and the walls are 2.25 inches thick. This feature was probably part of a water conveyance system (Photograph 6).

The concrete standpipe is 20 inches in diameter and stands about 10 inches above the duff-covered ground surface. Some wire is wrapped around the perimeter, probably to hold together the broken upper portion. This pipe probably fed water to the trough located just to the south.

The un-reinforced concrete slab is located about 15.5 m (50.9 feet) northwest of the trough and standpipe. The slab is 52 inches long, 24 inches wide, and 4 inches thick, and is cardinally positioned. The purpose of this slab is unclear. Another peppertree is located about 2.7 m (8.9 feet) south of the slab. Between the slab and peppertree there is a scatter of concrete and brick fragments with some pieces of sheet metal.

Along the eastern edge of the site and north of the peppertrees are two palm tree stumps that are about 13 m (42.7) apart and aligned north to south. Palm trees were often used to mark historic residences at the

beginning of the twentieth century. No house foundations or midden was observed, but ground visibility was generally poor throughout the area.

Photograph 6. View of 33-17097

Resource 33-17097 does not warrant further evaluation under Criteria A, B, or C because it no longer retains integrity sufficient to convey its association with significant events or persons. No evidence was discovered to warrant consideration under Criterion D. The site is also not eligible as a contributor to a historic district. Further, the site does not qualify for local listing. It is recommended that 33-17097 be assigned California Historical Resources Status Code (Status Code) "6Z, Found ineligible for N[ational] R[egister], C[alifornia] R[egister], or Local designation through survey evaluation" (California Office of Historic Preservation 2003).

SUMMARY AND RECOMMENDATIONS

The goal of this project is to identify cultural resources within the Riverside Airport Improvement project area and provide management recommendations for those resources. One previously recorded residence (33-11633) was documented within the project area, however the building was found not eligible for listing in the CRHR and NRHP. No further action is recommended regarding this property. A reportedly Ethnographic period archaeological site, CA-RIV-1711 (33-01711), may be located within the study area. It is discussed below.

The field surveys identified six cultural resources, all in the eastern portion of the survey area. These include one bedrock milling archaeological site (CA-RIV-8899/33-17095), two sites containing bedrock milling features and historic refuse scatters (CA-RIV-8897/33-17092 and CA-RIV-8898/33-17094), one built environment resource, a water tank (33-17096), one historic site containing a refuse scatter and feature (33-17093) and one historic site containing built environment resources (concrete features) and a refuse scatter (33-17097) All six cultural resource sites are outside the APE.

Three of the historic-period resources (33-17093, 33-17096, and 33-17097) have been evaluated and found to be not eligible for listing in the NRHP or local registers. Any impacts to these resources would be less than significant.

The three bedrock milling sites (CA-RIV-8897/33-17092, CA-RIV-8898/33-17094, and CA-RIV-8899/33-17095) may be affiliated or synonymous with previously recorded, but poorly mapped CA-RIV-1711 (33-01711). Although recorded here as three separate prehistoric or multi-component archaeological sites, these may actually represent a single component Ethnographic period occupation. If CA-RIV-1711 (33-01711) is located within the survey area, it almost certainly corresponds to one or more of these three sites. Thus mitigation (or avoidance) applied to the three newly recorded bedrock milling sites would also address any project impacts to CA-RIV-1711 (33-01711). None of these sites has been formally evaluated for listing in the NRHP or local register. To the extent possible, impacts to those resources should be avoided during project improvements. If avoidance is not feasible, formal NRHP evaluation and data recovery may be necessary to mitigate impacts to these resources.

AVOIDANCE OF POTENTIALLY ELIGIBLE ARCHAEOLOGICAL SITES

Resource avoidance would be accomplished by marking the boundaries of sensitive archaeological areas with a highly visible and reasonably sturdy barrier (e.g., orange fencing with wooden stakes). This barrier should be erected under the direct supervision of an archaeologist, and should be checked for integrity periodically for the duration of the ground-disturbing elements of the project by an archaeologist. For the current project, the three unevaluated sites are located in a tight grouping immediately east of the proposed limits of grading. A single exclusion barrier should encompass the three sites and an additional 5-meter (16.4-foot) buffer (Figures 4 and 5). The barrier should be accompanied by signs that read "Environmentally Sensitive Area: No Ground Disturbance." It is critical that these signs do *not* mention archaeological resources so as not to attract looters and vandals.

MONITORING OF GROUND-DISTURBING ACTIVITY

The easternmost portion of the survey area is situated on a hillside. The field survey and research indicate that this area is ideal for human occupation. Three prehistoric archaeological sites were identified within this area; CA-RIV-8899/33-17095, CA-RIV-8897/33-17092 and CA-RIV-8898/33-17094. Due to high archaeological sensitivity within the APE, SWCA recommends that a qualified archaeologist be present to monitor ground-disturbing activities within this area during initial grading for the project (see Figure 4). SWCA recommends that the monitor work under the direction of an archaeologist who meets the Secretary of the Interior's Professional Qualification Standards (NPS 1983). If monitoring is conducted in conjunction with site avoidance, special attention should be paid to the southeastern portion of this area, in the vicinity of the three prehistoric archaeological sites.

SWCA recommends that a Monitoring Plan is established prior to implementation of this project. Implementation of a Monitoring Plan during ground disturbance in highly sensitive archaeological areas will ensure cultural resources are identified and protected and also ensure that, if cultural resources are discovered or if previously identified resources are affected in an unanticipated manner, such resources receive mitigation to lessen the impact to less than significant. A sample monitoring plan is included in Appendix E.

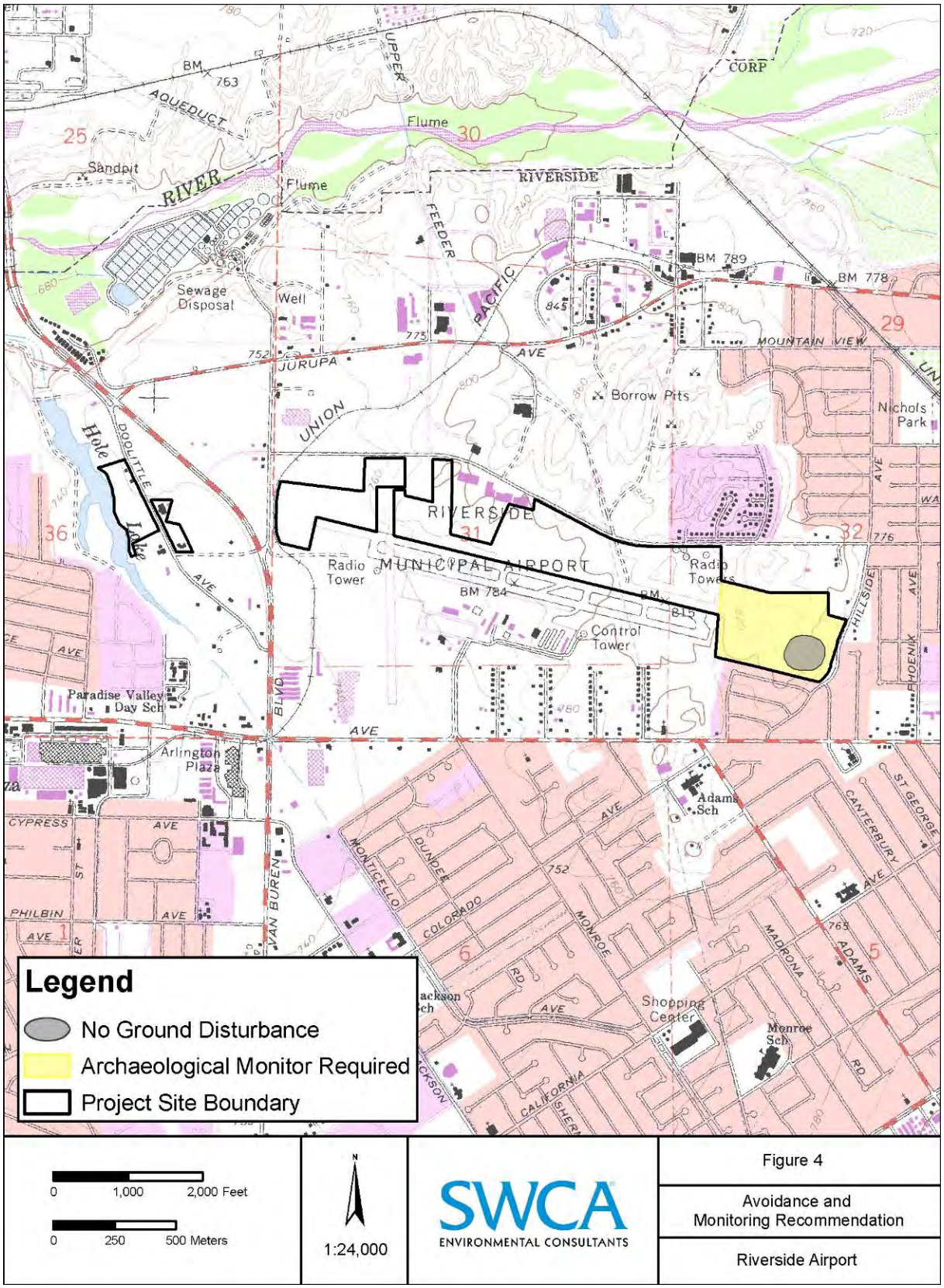

Figure 4. Avoidance and Monitoring Recommendation

Exact location of identified resources is not disclosed to protect resource integrity.

NRHP EVALUATION OF ARCHAEOLOGICAL SITES

If project plans change such that resource avoidance is not feasible, an archaeological testing and significance evaluation program will be needed to establish the NRHP eligibility of sites CA-RIV-8897 (33-17092), CA-RIV-8898 (33-17094), CA-RIV-8899 (33-17095), and CA-RIV-1711 (33-01711). Such a testing program will either determine that a resource is not NRHP eligible, leading to a finding of no significant impacts, or that it is NRHP eligible. Archaeological resources that are found to be NRHP eligible typically qualify for listing under Criterion D (a resource that has yielded, or may be likely to yield, information important in prehistory or history). Where resource avoidance remains unfeasible, an archaeological data recovery program may be used to exhaust the data potential of the resource, thus reducing impacts to less than significant. Site-specific mitigation plans should be prepared for each of the potentially eligible resources that are to be affected by development. The current APE excludes all of these resources; none will be affected by the current project design, and thus evaluation is not required.

NATIVE AMERICA MONITORING OF GROUND-DISTURBING ACTIVITY

The Pechanga Cultural Resources office of the Temecula Band of Luiseño Mission Indians has requested mitigation requiring that Native American monitors be present during all ground-disturbing activities and all archaeological studies conducted in connection with the project.

WORKER CULTURAL AWARENESS TRAINING

SWCA further recommends that, prior to initiation of ground-disturbing activities, qualified archaeologists conduct a short awareness training session for all construction workers and supervisory personnel. The course would explain the importance of and legal basis for the protection of significant archaeological resources. Each worker would also learn the proper procedures to follow in the event cultural resources or human remains/burials are uncovered during ground-disturbing activities. These procedures include work curtailment or redirection and the immediate contact of their supervisor and the archaeological monitor. It is recommended that this worker education session include visuals of artifacts (prehistoric and historic) that might be found in the project vicinity, and that it take place on-site immediately prior to the start of ground disturbance. The approximately 30- to 45-minute training session may be conducted on site by video, PowerPoint presentation, or related media.

INADVERTENT DISCOVERIES

In the event that cultural resources are exposed during ground-disturbing activities, the archaeological monitor must be empowered to temporarily halt construction activities (e.g., grading, grubbing, vegetation clearing) in the immediate vicinity of the discovery while the resources are evaluated for significance. Construction activities could continue in other areas. If the discovery proves to be significant, additional work, such as data recovery excavation, may be warranted and would be discussed in consultation with the lead agency.

Prehistoric materials within the APE might include flaked or ground stone tools, tool-making debris, pottery, culturally modified animal bone, fire-affected rock (FAR), or soil darkened by cultural activities (midden). Historic materials might include building remains, metal, glass, ceramic artifacts, or other debris greater than 50 years old.

In the event that prehistoric or ethnohistoric cultural resources are exposed during ground-disturbances, SWCA recommends contacting the appropriate tribal contacts regarding the find because local tribal representatives have indicated that the project area is an area of concern.

HUMAN REMAINS

The discovery of human remains is always a possibility during ground disturbances; State of California Health and Safety Code Section 7050.5 addresses these findings. This code section states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to PRC Section 5097.98. The Riverside County Coroner must be notified of the find immediately. If the human remains are determined to be prehistoric in age, the Coroner will notify the Native American Heritage Commission (NAHC), which will determine and notify a Most Likely Descendant (MLD). The MLD shall complete the inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

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APPENDIX A:
Area of Potential Effects Map

09EA12-1-06/04/10

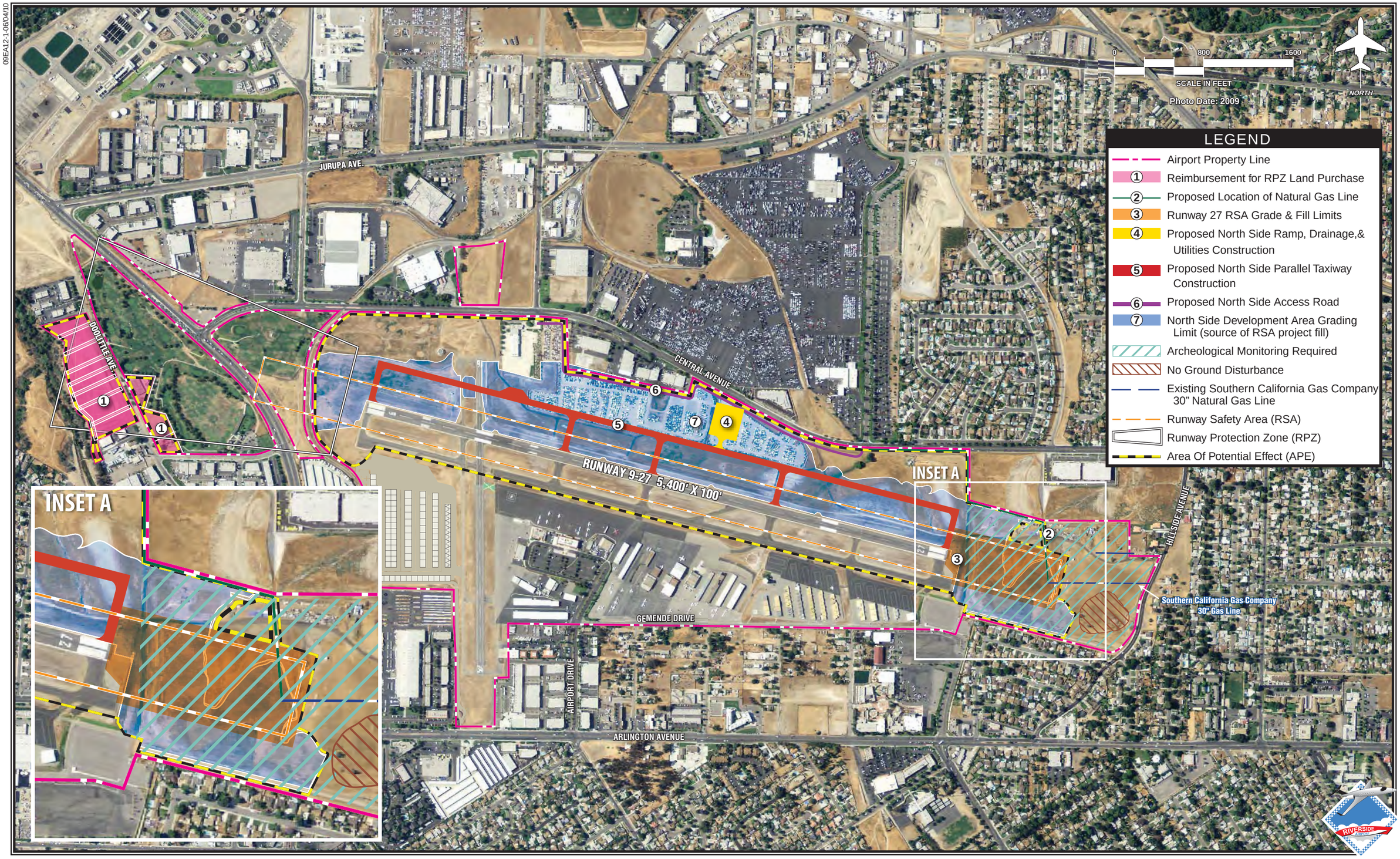

Exhibit 4C
AREA OF POTENTIAL EFFECT

APPENDIX B:
Records Search Bibliography

Eastern Information Center Report Listing

Report No.	Year	Author(s)	Title	Affiliation	Pages	Resources	Acreage Survey	Acreage Monitoring
RI-00117	1973	WILKE, PHILIP J.; S.R. HAMMOND	LA LOMA-MIRA LOMA TRANSMISSION LINE: EXPECTED IMPACT ON ARCHAEOLOGICAL VALUES.	ARCHAEOLOGICAL RESEARCH UNIT, U.C. RIVERSIDE	19	13	1000	0
RI-00141	1974	SCHLANGER, SARAH H.	ARCHAEOLOGY OF PROPOSED ADDITIONS TO THE INDIAN HILLS HOUSING DEVELOPMENT, CITY OF PEDLEY, RIVERSIDE COUNTY, CALIFORNIA.	ARCHAEOLOGICAL RESEARCH UNIT, U.C. RIVERSIDE	4	0	1000	0
RI-00939	1980	SWENSON, JAMES D.	LETTER REPORT - SW 1/4 OF THE NW 1/4 OF THE SW 1/4 OF SECTION 33, CITY OF RIVERSIDE FOR SENIOR CITIZENS CENTER	ARCHAEOLOGICAL RESEARCH UNIT, U.C. RIVERSIDE	2	0	10	0
RI-02125	1987	SWOPE, KAREN K.	AN ARCHAEOLOGICAL ASSESSMENT OF 970+ ACRES OF LAND LOCATED ON MARCH AIR FORCE BASE, RIVERSIDE COUNTY, CALIFORNIA	ARCHAEOLOGICAL RESEARCH UNIT, U.C. RIVERSIDE	15	19	970	0
RI-02307	1988	HAMPSON, R.P.; J. SORENSEN; S.K. GOLDBERG; M.T. SWANSON; J.ARNOLD	CULTURAL RESOURCES SURVEY, UPPER SANTA ANA RIVER, CALIFORNIA	GREENWOOD AND ASSOCIATES	158	15	3860	0
RI-03395	1991	JERTBERG, PATRICIA; KAREN KIRTLAND	CULTURAL AND BIOLOGICAL RESOURCES ASSESSMENT OF JURUPA AVENUE EXTENSION, APPROXIMATELY 1 MILE, CITY OF RIVERSIDE, RIVERSIDE COUNTY, CALIFORNIA	LSA ASSOCIATES	21	0	12	0
RI-03839	1994	MASON, ROGER D.	CULTURAL RESOURCES SURVEY FOR THE ARMY CAMP ANZA UST REMOVAL AND DISPOSAL PROJECT, RIVERSIDE COUNTY, CALIFORNIA	CHAMBERS GROUP, INC.	18	0	1	0
RI-03959	1996	MCKENNA, JEANETTE A.	A PHASE I CULTURAL RESOURCES INVESTIGATION OF THE PROPOSED VAN BUREN GOLF CENTER, LOCATED AT VAN BUREN BOULEVARD AND CENTRAL AVENUE, CITY OF RIVERSIDE, RIVERSIDE COUNTY, CALIFORNIA	MCKENNA ET AL	22	0	40	0
RI-04404	2000	JONES AND STOKES ASSOCIATES, INC.	FINAL CULTURAL RESOURCES INVENTORY REPORT FOR THE WILLIAMS COMMUNICATIONS, INC., FIBER OPTIC CABLE SYSTEM INSTALLATION PROJECT, RIVERSIDE TO SAN DIEGO, CALIFORNIA VOL I-IV.	JONES AND STOKES ASSOCIATES, INC.	252	20	12	0
RI-05154	2004	HUDLOW, SCOTT	A PHASE I CULTURAL RESOURCE SURVEY FOR GLOBAL PREMIERE, MECCA, RIVERSIDE COUNTY, CALIFORNIA	HUDLOW CULTURAL RESOURCE ASSOCIATES	21	0	4	0

Eastern Information Center Report Listing

Report No.	Year	Author(s)	Title	Affiliation	Pages	Resources	----- Acreage ----- Survey	Monitoring
RI-05354	2005	CRM TECH	HISTORICAL/ARCHAEOLOGICAL RESOURCES SURVEY REPORT: ASSESSOR'S PARCEL NUMBER 190-370-021, CITY OF RIVERSIDE, RIVERSIDE COUNTY, CA	CRM TECH	23	1	2	0
RI-05753	2002	DAHDUL, MARIAM; DANIEL BALLESTER; BAI TANG; MICHEAL HOGAN	HISTORICAL.ARCHAEOLOGICAL RESOURCES SURVEY REPORT: ASSESSOR PARCEL NO. 193-122-021, ARLINGTON AREA, CITY OF RIVERSIDE, RIVERSIDE COUNTY, CALIFORNIA	CRM TECH	20	0	9	0
RI-05902	2002	LOVE, BRUCE; BAI TANG	HISTORIC BUILDING EVALUATION, 6630-6642 BROCKTON AVENUE, CITY OF RIVERSIDE, RIVERSIDE COUNTY, CA	CRM TECH	16	1	0	0
RI-06155	2004	AISLIN-KAY, MARNIE; CHRISTEEN TANIGUCHI	LETTER REPORT: RECORDS SEARCH AND SITE VISIT RESULTS FOR CINGUAR TELECOMMUNICATIONS FACILITY CANDIDATE SB-355-01 (ARLINGTON INN), 6843 ARLINGTON AVENUE, RIVERSIDE, RIVERSIDE COUNTY, CA	MICHAEL BRANDMAN ASSOCIATES	15	0	~1	0

APPENDIX C:
Native American Scoping Documents

Native American scoping documentation undertaken by SWCA in this section was prepared for California Environmental Quality Act analysis and was removed for the purposes of preparing National Environmental Protection Act (NEPA) documentation. Native American consultation for NEPA was completed by the Federal Aviation Administration (Government-to-Government) for this Environmental Assessment and is included later in this appendix.

APPENDIX D:
California Department of Parks & Recreation
Series 523 Forms

Exact location of identified resources is not disclosed to protect resource integrity.

ARCHAEOLOGICAL SITE RECORD

***A1. Dimensions: a. Length:** 18m. × **b. Width:** 18 m.
Method of Measurement: ☐ Paced ☐ Taped ☐ Visual estimate ■ Other: measured off of aerial
Method of Determination (Check any that apply.): ■ Artifacts ☐ Features ☐ Soil ☐ Vegetation ☐ Topography
☐ Cut bank ☐ Animal burrow ☐ Excavation ☐ Property boundary ☐ Other (Explain):

Reliability of Determination: ☐ High ■ Medium ☐ Low Explain: Visibility was poor due to high vegetation
Limitations (Check any that apply): ■ Restricted access ☐ Paved/built over ☐ Site limits incompletely defined
☐ Disturbances ☐ Vegetation ☐ Other (Explain):

A2. Depth: ☐ None ■ Unknown Method of Determination:

***A3. Human Remains:** ☐ Present ☐ Absent ☐ Possible ■ Unknown (Explain):

***A4. Features** (Number, briefly describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map.):
This site has one feature with seven (7) milling slicks on the single boulder. The boulder is 8.5 meters N/S by 4.3 meters E/W with various elevations. The slicks are at various elevations on this large quartz diorite boulder. Five (5) of the milling slicks are in poor condition, with cracks and exfoliation occurring. Two of the slicks have heavy polish and a very slight depth. One slick has a well defined inner portion with high polish, and an outer area of much less use.

***A5. Cultural Constituents (**Describe and quantify artifacts, ecofacts, cultural residues, etc., not associated with features.):
No prehistoric artifacts were observed. Bottle glass came in a variety of colors with some exhibiting manufacturing techniques found mainly before the 1920s. Other bottle and jar pieces are machine made and some maker's marks date from the 1920s to the early 1940s. Of course, there is also some glass fragments associated with modern recreational activity in the area. Some prescription bottle necks have hand tooled finishes and there are a number of sun-colored (purple) glass fragments.

One soda bottle neck displays the Codd marble stopper system and was manufactured mainly between the late 1870s to about 1900 (Munsey 1970:104, 250). Glass maker's marks include Hazel Atlas Glass Company, 1920-1964 and Glass Containers, Inc., circa 1940s (Toulouse 1971:220, 239). One bottle fragment is embossed Federal Law Forbids Sale or Reuse of this Bottle, placing it in the post-Prohibition era, after 1933 (Munsey 1970:126). Other glass artifacts noted are a canning jar lid liner, a milk bottle, a pressed glass bowl lid, and flat (window) glass. Other artifacts include concrete, brick, and graphite D-cell battery core.

Ceramic artifacts consist of plates, bowls, and cups mainly whitewares with some porcelains. There are blue transfer prints, floral decals, and hand painted floral types. No maker's marks were found. There are some salt glazed stoneware sherds that could be from beverage or ink bottles. Some brown glazed earthenware sewer pipe is also present. Some sherds to unglazed red earthenware and blue glazed earthenware flower pots. All of the ceramic artifacts fit within the time frame assigned to the glass artifacts.

The few metal artifacts found at this site comprise highly corroded food or beverage can fragments, wire nails, paint can, and some sheet metal. One brass shotshell is stamped "WINCHESTER/NO. 10/NEW RIVAL" on the base.

***A6. Were Specimens Collected?** ■ No ☐ Yes (If yes, attach Artifact Record or catalog and identify where specimens are curated.)

***A7. Site Condition:** ☐ Good ■ Fair ☐ Poor (Describe disturbances.):

***A8. Nearest Water** (Type, distance, and direction.)**:** Santa Ana River

***A9. Elevation:** 809 feet

A10. Environmental Setting (Describe culturally relevant variables such as vegetation, fauna, soils, geology, landform, slope, aspect, exposure, etc.)**:** It sits at the base of a small knoll in a relatively flat area. Heavy vegetation of various grasses surrounds the site. The area was mowed the day before the site was recorded so the ground visibility was about 50 %.

A11. Historical Information:

***A12. Age:** ■ Prehistoric ☐ Protohistoric ☐ 1542-1769 ☐ 1769-1848 ☐ 1848-1880 ☐ 1880-1914 ☐ 1914-1945
☐ Post 1945 ☐ Undetermined **Describe position in regional prehistoric chronology or factual historic dates if known:**

A13. Interpretations (Discuss data potential, function[s], ethnic affiliation, and other interpretations): It is difficult to say whether this historical material is associated with a habitation site in the vicinity. For instance, there is no direct connection between this site and site RMA3 located just upslope. However, this site being down slope from site RMA3 could indicate that it served as an area of refuse disposal for the latter site, although making such a connection is problematical. Historic refuse associated with habitation sites usually contain larger amounts of metal debris, particularly the remnants of food and beverage cans and metal fasteners (e.g., nails). However, being a surface scatter of sheet refuse would not be conducive to the preservation of metal artifacts.

The only other explanation for the presence of this historic refuse is that it represents communal dumping from historic households in the vicinity. However, the location of the refuse on a slope is not typical of communal dumping behavior.

A14. Remarks:

A15. References (Documents, informants, maps, and other references):

A16. Photographs (List subjects, direction of view, and accession numbers or attach a Photograph Record.):
Original Media/Negatives Kept at: SWCA Pasadena Office

***A17. Form Prepared by:** S.Underbrink, W. Sawyer **Date:** 11 March 2008
Affiliation and Address: SWCA Environmental Consultants 625 Fair Oaks Avenue Ste 190, South Pasadena CA 91030

State of California — The Resources Agency **Primary #** 33-17092
DEPARTMENT OF PARKS AND RECREATION **Trinomial** CA-RIV-8897

MILLING STATION RECORD

 Resource Name or # (Assigned by Recorder): RMA-1

Form Prepared by: S. Underbrink **Date:** March 11, 2008

Feature	Outcrop	Dimensions (m) and Orientation			Bedrock Type and Condition
A	8.5m N	**x** 4.3 m E	**x Height**	80 cm highpoint	Quartz diorite-metavolcanic, exfoliating, a lot of cracks
		x	**x Height**		
		x	**x Height**		

Feature #	Milling Surface #	Type	Length (cm)	Width (cm)	Depth (cm)	Contents	Remarks
A	1	MS	30 N/S	15 E/W			Was probably once bigger-mostly gone
	2	MS	24 E/W	15 N/S			Cracking, exfoliation
	3	MS	31 E/W	20 N/S			Cracking, exfoliation
	4	MS	22 N/S	21 E/W			Cracking, exfoliation
	5	MS	33 N/S	20 E/W			Cracking, exfoliation
	6	MS	36 E/W	26 E/W		s	High polish
	7	MS	36 E/W	22 N/S			High polish with small amount of depth
	7	MS	79 E/W	53 N/S			

Type Key:		**Contents Key:**	
CO Conical mortar	PM Possible mortar	S Filled with soil	R Contains rock
OM Oval mortar	MS Milling slick	L Filled with leaves	P Contains pestle
SM Saucer mortar	BM Basin milling feature	U Unexcavated	M Contains mano
Other:		Other:	

DPR 523F (1/95) **NOTE: Attach plan(s) of milling stations.**

Exact location of identified resources is not disclosed to protect resource integrity.

***A1. Dimensions: a. Length:** 55.5m. **(** N/S**) ×** **b. Width:** 35m. **(** E/W**)**
Method of Measurement: ☐ Paced ☐ Taped ☐ Visual estimate ■Other: from aerial
Method of Determination (Check any that apply.): ■ Artifacts ☐ Features ☐ Soil ☐ Vegetation ☐ Topography
☐ Cut bank ☐ Animal burrow ☐ Excavation ☐ Property boundary ☐ Other (Explain):

Reliability of Determination: ☐ High ■ Medium ☐ Low Explain: Visibility was under 50%

Limitations (Check any that apply): ■ Restricted access ☐ Paved/built over ☐ Site limits incompletely defined
☐ Disturbances ☐ Vegetation ☐ Other (Explain):

A2. Depth: ☐ None ■ Unknown Method of Determination:

***A3. Human Remains:** ☐ Present ☐ Absent ☐ Possible ■Unknown (Explain):

***A4. Features** (Number, briefly describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map.):
(A) This locus consists of historic material scattered in and around a bedrock outcrop. The locus measures 6 m (19.7 feet) × 6 m (19.7 feet) or 28 square meters. Material includes five bottle glass fragments (various types), a brown glazed stoneware jar sherd, one leather fragments, and two pieces of whiteware ceramics. The stoneware jar sherd appears to be from a utilitarian jar or vessel that is often found associated with Chinese occupation, post 1885 in this region of southern California (e.g., Brott 1987).

(B) This locus comprises a large bedrock outcrop with a large peppertree growing adjacent to the outcrop. The locus measures 14 m (45.9 feet) × 15 m (49.2 feet) or 165 square meters. Historic refuse is found in and around the outcrop and tree, and includes approximately 20 pieces of glass, ceramic, metal, concrete, and milled wood. A "LIQUOZONE" bottle body sherd was identified; these were manufactured from the mid 1890s to the early 20th century (Fike 1987:68). One small milling slick was found on a small bedrock exposure that is flush to the ground and located in the southwest portion of the locus.

(C) This locus is a light scatter of approximately 20 pieces of historic refuse including bottle glass and ceramic fragments, scattered around a peppertree. The locus measures 8 m (26.2 feet) × 8 m (26.2 feet) or 50 square meters. No diagnostic materials were observed.

(D) This locus is a light scatter of approximately xxx historic materials including bottle glass, ceramic fragments, metal (probably food cans), brown glazed stoneware (Chinese), and a brown earthenware ceramic sherd that may be Native American in origin. The locus measures 10 m (32.8 feeet) × 9 m (29.5 feet) or 71 square meters. Again, the scatter is concentrated around a peppertree.

***A5. Cultural Constituents (**Describe and quantify artifacts, ecofacts, cultural residues, etc., not associated with features.):
The milled wood, concrete, and household refuse found at locus B may indicate that a habitation locus was close by; however the small amount of refuse suggests short term or limited use of the area. No historic material was found upslope from these loci and would certainly imply that the focus of historic activity was at and between each locus.

The datable materials from all loci indicate a time range of ca. 1885 to 1920. Additionally, two fragments of Chinese earthenware and one brown earthenware sherd, possibly Native American in origin, were found at loci A and D, and suggest access to multi-ethnic resources.

***A6. Were Specimens Collected?** ■ No ☐ Yes (If yes, attach Artifact Record or catalog and identify where specimens are curated.)

***A7. Site Condition:** ☐ Good ☐ Fair ☐ Poor (Describe disturbances.):

***A8. Nearest Water** (Type, distance, and direction.)**:** Santa Ana River

***A9. Elevation:** 820 feet

A10. Environmental Setting (Describe culturally relevant variables such as vegetation, fauna, soils, geology, landform, slope, aspect, exposure, etc.)**:** The historic material at this site is scattered across a gentle slope, amongst bedrock exposures and peppertrees.

A11. Historical Information:

***A12. Age:** ■Prehistoric ☐ Protohistoric ☐ 1542-1769 ☐ 1769-1848 ☐ 1848-1880 ☐ 1880-1914 ■ 1914-1945
■Post 1945 ☐ Undetermined **Describe position in regional prehistoric chronology or factual historic dates if known:**

A13. Interpretations (Discuss data potential, function[s], ethnic affiliation, and other interpretations):

A14. Remarks:

A15. References (Documents, informants, maps, and other references):

A16. Photographs (List subjects, direction of view, and accession numbers or attach a Photograph Record.):

Original Media/Negatives Kept at:

***A17. Form Prepared by:** S.Underbrink, W. Sawyer **Date:** 11 March 2008
Affiliation and Address: SWCA Environmental Consultants 625 Fair Oaks Avenue Ste 190, South Pasadena CA 91030

State of California — The Resources Agency **Primary #** 33-17094
DEPARTMENT OF PARKS AND RECREATION **Trinomial** CA-RIV-8898

MILLING STATION RECORD

 Resource Name or # (Assigned by Recorder): RMA-3

Form Prepared by: S. Underbrink **Date:** March 11, 2008

Feature	Outcrop Dimensions (m) and Orientation				Bedrock Type and Condition
A	1.45 m N/W	**x** 60 cm E/W	**x Height**	Flush to ground	Quartz diorite-metavolcanic, exfoliating, a lot of cracks
		x	**x Height**		
		x	**x Height**		

Feature #	Milling Surface #	Type	Length (cm)	Width (cm)	Depth (cm)	Contents	Remarks
A	1	MS	23 N/S	18 E/W			Covered by soil, swept off, minimal use

Type Key:		**Contents Key:**	
CO Conical mortar	PM Possible mortar	S Filled with soil	R Contains rock
OM Oval mortar	MS Milling slick	L Filled with leaves	P Contains pestle
SM Saucer mortar	BM Basin milling feature	U Unexcavated	M Contains mano
Other:		Other:	

DPR 523F (1/95) **NOTE: Attach plan(s) of milling stations.**

Exact location of identified resources is not disclosed to protect resource integrity.

ARCHAEOLOGICAL SITE RECORD

***A1. Dimensions: a. Length:** 8 m. (N/S) × **b. Width:** 6.7 m. (E/W)
Method of Measurement: ☐ Paced ■ Taped ☐ Visual estimate ☐ Other:
Method of Determination (Check any that apply.): ☐ Artifacts ■ Features ☐ Soil ☐ Vegetation ☐ Topography
☐ Cut bank ☐ Animal burrow ☐ Excavation ☐ Property boundary ☐ Other (Explain):

Reliability of Determination: ☐ High ■ Medium ☐ Low Explain: Poor ground visibility hindered looking for artifacts

Limitations (Check any that apply): ■ Restricted access ☐ Paved/built over ☐ Site limits incompletely defined
☐ Disturbances ■ Vegetation ☐ Other (Explain):

A2. Depth: ☐ None ■ Unknown Method of Determination:
***A3. Human Remains:** ☐ Present ☐ Absent ☐ Possible ■ Unknown (Explain):

***A4. Features** (Number, briefly describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map.):
This site has 3 milling features. There is a total of four milling slicks on three boulders. Feature A has one milling slick and was completely covered with soil. Features B has one milling slick with heavy use wear. Feature C has 2 milling slicks very close together with heavy use and they are in poor condition due to exfoliation of the boulder.

***A5. Cultural Constituents (**Describe and quantify artifacts, ecofacts, cultural residues, etc., not associated with features.):
No artifacts were observed.

***A6. Were Specimens Collected?** ■ No ☐ Yes (If yes, attach Artifact Record or catalog and identify where specimens are curated.)
***A7. Site Condition:** ☐ Good ■ Fair ☐ Poor (Describe disturbances.): Erosion of boulders

***A8. Nearest Water** (Type, distance, and direction.)**:** Santa Ana River
***A9. Elevation:** 809 feet
A10. Environmental Setting (Describe culturally relevant variables such as vegetation, fauna, soils, geology, landform, slope, aspect, exposure, etc.)**:** On a slight slope with heavy vegetation, several boulders in the area.

A11. Historical Information:

***A12. Age:** ■ Prehistoric ☐ Protohistoric ☐ 1542-1769 ☐ 1769-1848 ☐ 1848-1880 ☐ 1880-1914 ☐ 1914-1945
☐ Post 1945 ☐ Undetermined **Describe position in regional prehistoric chronology or factual historic dates if known:**

A13. Interpretations (Discuss data potential, function[s], ethnic affiliation, and other interpretations):
This is a food processing site that may be connected to RMA-1 to the south.

A14. Remarks:

A15. References (Documents, informants, maps, and other references):

A16. Photographs (List subjects, direction of view, and accession numbers or attach a Photograph Record.):

Original Media/Negatives Kept at:
***A17. Form Prepared by:** S. Underbrink, W. Sawyer **Date:**
Affiliation and Address: SWCA Environmental Consultants 625 Fair Oaks Avenue Ste 190, South Pasadena CA 91030

State of California — The Resources Agency **Primary #** 33-17095
DEPARTMENT OF PARKS AND RECREATION **Trinomial** CA-RIV-8899

MILLING STATION RECORD

 Resource Name or # (Assigned by Recorder): RMA-4

Form Prepared by: S. Underbrink **Date:** March 11, 2008

Feature	Outcrop Dimensions (m) and Orientation				Bedrock Type and Condition
A	2.6 m E/W	**x** 2 m N/s	**x Height**	Flush to ground, 27 cm on S highest height	Quartz diorite-metavolcanic, exfoliating, a lot of cracks
B	1.4 E/W	**x** 90 cm N/s	**x Height**	38 cm	Quartz diorite-metavolcanic, some cracks
C	1.8 m E/w	x 1 m N/s	**x Height**	62 cm S, 60 cm on N	Quartz diorite-metavolcanic, exfoliating, a lot of cracks

Feature #	Milling Surface #	Type	Length (cm)	Width (cm)	Depth (cm)	Contents	Remarks
A	1	MS	46 E/W	29 N/S	1	Soil	Was completely covered by soil-found by sweeping boulder, took advantage of natural depression is rock, medium use
B	1	MS	29 E/W	21 N/S	1.5		Heavy use, highly polished
C	1	MS	25 E/W	23 N/S			South edge eroded away, heavy use, highly polished
C	2	MS	34.5 E/W	18 N/S			North edge eroded away, heavy use, highly polished
							These 2 slicks are really close together 10 cm apart

Type Key:		**Contents Key:**	
CO Conical mortar	PM Possible mortar	S Filled with soil	R Contains rock
OM Oval mortar	MS Milling slick	L Filled with leaves	P Contains pestle
SM Saucer mortar	BM Basin milling feature	U Unexcavated	M Contains mano
Other:		Other:	

Exact location of identified resources is not disclosed to protect resource integrity.

Primary # 33-17096
HRI#

BUILDING, STRUCTURE, AND OBJECT RECORD

***NRHP Status Code** 6Z

***Resource Name or #** (Assigned by recorder) RMA-5

B1. Historic Name:
B2. Common Name:
B3. Original Use: agricultural B4. Present Use: none
***B5. Architectural Style:** Utilitarian
***B6. Construction History:** (Construction date, alterations, and date of alterations) Unknown
***B7. Moved?** ☐No ☐Yes ☒Unknown **Date:** **Original Location:**
***B8. Related Features:**
B9a. Architect: Unknown b. Builder: Unknown
***B10. Significance: Theme:** **Area:**
Period of Significance: **Property Type** **Applicable Criteria:**
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

RMA-5 consists of one deteriorating steel water tank, a structure considered to be a ubiquitous resource throughout Riverside and southern California. The structure is not eligible for listing in the Naitonal or California Registers as RMA-5 does not warrant further evaluation under Criteria A/1 B/2 or C/3 because it no longer retains integrity sufficient to convey its association with significant events or persons. No evidence was discovered to warrant consideration under Criterion D/4. The structure is also not eligible as a contributor to a historic district. Further, the structure does not qualify for local listing. It is recommended that RMA-5 be assigned California Historical Resources Status Code (Status Code) "6Z, Found ineligible for N[ational] R[egister], C[alifornia] R[egister], or Local designation through survey evaluation" (California Office of Historic Preservation 2003).

B11. Additional Resource Attributes: (List attributes and codes)
***B12. References:**
B13. Remarks:

***B14. Evaluator:** S. Carmack
***Date of Evaluation:** November 4, 2009

(Sketch Map with north arrow required.)
no scale

See Page 2

(This space reserved for official comments.)

Exact location of identified resources is not disclosed to protect resource integrity.

Primary # 33-17097
HRI#

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status Code 6Z

*Resource Name or # (Assigned by recorder) RMA-6

B1. Historic Name:
B2. Common Name:
B3. Original Use: agricultural B4. Present Use: none
*B5. Architectural Style: Utilitarian
*B6. Construction History: (Construction date, alterations, and date of alterations) Unknown
*B7. Moved? ☒☐No ☐Yes ☐Unknown Date: Original Location:
*B8. Related Features:
B9a. Architect: Unknown b. Builder: Unknown
*B10. Significance: Theme: Area:
Period of Significance: Property Type Applicable Criteria:
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

RMA-6 is a historic site with several components including a linear concrete feature, concrete standpipe, small concrete trough, palm tree stumps, and a small concrete slab; all of which significantly lack integrity. The age of site cannot be determined at this time, however it was likely established around the turn of the 20th century. No house foundations or historic midden was observed around the objects, but ground visibility was generally poor throughout the area. Given the low integrity of RMA-6, the site does not warrant further evaluation under Criteria A/1 B/2 or C/3 because it no longer retains integrity sufficient to convey its association with significant events or persons. No evidence was discovered to warrant consideration under Criterion D/4. The site is also not eligible as a contributor to a historic district. Further, the site does not qualify for local listing. It is recommended that RMA-6 be assigned California Historical Resources Status Code (Status Code) "6Z, Found ineligible for N[ational] R[egister], C[alifornia] R[egister], or Local designation through survey evaluation" (California Office of Historic Preservation 2003).

B11. Additional Resource Attributes: (List attributes and codes)
*B12. References:
B13. Remarks:

*B14. Evaluator: S. Carmack
*Date of Evaluation: November 4, 2009

(Sketch Map with north arrow required.)
no scale

See Page 2

(This space reserved for official comments.)

APPENDIX E:
Sample Monitoring Plan

The following document is a sample monitoring program for the City of Los Angeles Department of Water and Power. The intent of this document is to provide the general framework for the identification, evaluation, and treatment of any previously unknown cultural resources that are encountered during construction monitoring. This document is not intended to be the monitoring program for the proposed improvements for Riverside Municipal Airport covered in this cultural resources report.

CULTURAL RESOURCES TREATMENT PLAN FOR THE SOUTH LOS ANGELES WETLANDS POCKET PARK PROJECT, CITY OF LOS ANGELES, LOS ANGELES COUNTY, CALIFORNIA

Prepared for

Los Angeles Department of Public Works

Prepared by

SWCA Environmental Consultants

May 2009

FINAL

CULTURAL RESOURCES TREATMENT PLAN FOR THE SOUTH LOS ANGELES WETLANDS POCKET PARK PROJECT, CITY OF LOS ANGELES, LOS ANGELES COUNTY, CALIFORNIA

Prepared for

LOS ANGELES DEPARTMENT OF PUBLIC WORKS
Environmental Management Division
1149 S. Broadway, Suite 600
Los Angeles, California 90015-2213

Prepared by

John Dietler, Ph.D., RPA

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USGS 7.5-Minute Quadrangle
Inglewood, CA

SWCA Project No. 15417

SWCA Cultural Resources Report No. 2009-113

May 22, 2009

Key Words: Cultural Resources Treatment Plan, Los Angeles County, Los Angeles, Los Angeles Railway, South Park Shops, Township 2 South, Range 13 West

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1. INTRODUCTION

1.1 PURPOSE

The City of Los Angeles Department of Public Works (LADPW) retained SWCA to prepare a Cultural Resources Treatment Plan (CRTP) for the South Los Angeles Wetlands Pocket Park Project. The CRTP describes the procedures that will be undertaken for the treatment of known cultural resources that cannot be avoided during demolition and construction associated with the project. The plan will also provide a procedural framework to identify, evaluate, and treat any previously unknown resources that are encountered during construction monitoring.

The CRTP represents a detailed framework for the implementation of a portion of the cultural resources mitigation measures (numbered CUL-1, CUL-2, etc.; Appendix A) that are outlined in the project's Final Environmental Impact Report (CDM 2007b), which was certified by the City Council in April 2008, as well as the Mitigation Monitoring and Reporting Program (MMRP; CDM 2007c). Along with the other mitigation measures, the CRTP provides procedures to be followed to ensure that impacts to cultural resources do not occur during the construction of the park without mitigation that would reduce any impacts to less than significant.

The purpose of the CRTP is to lay out the proposed personnel, methods, and research framework for cultural resources monitoring and evaluation activities within the project area. If needed for evaluation of the significance of a discovery, the CRTP also provides a general plan for presence/absence testing for subsurface archaeological deposits. Further, the CRTP provides a plan for avoidance or data recovery in the event that significant cultural resources are identified during monitoring, including a discussion of artifact collection, retention/disposal, and curation policies as related to the research questions formulated in the research framework.

Cultural resources are defined as anything made or affected by human beings or the remains thereof, as well as human remains. For the purposes of this CRTP, the terms "finds," "cultural resource," "cultural material," "discovery," and "cultural resource materials" are used interchangeably. Types of cultural resources will be consistent with California Code of Regulations (CCR), Title 14, Chapter 11.5, Section 4852(a), including archaeological and historical objects, sites and districts, historic buildings and structures, cultural landscapes, and sites and resources of concern to local Native American or other ethnic groups.

1.2 PROJECT DESCRIPTION

The City of Los Angeles plans to construct and operate a stormwater pre-treatment system and recreational space in the city of Los Angeles, Los Angeles County, California (Figure 1). The following project description is excerpted from the MMRP (CDM 2007c); a complete description of the approved project is found in the Final Environmental Impact Report (EIR) (CDM 2007b).

The proposed Wetlands Park is located on a 9-acre parcel at 5413 South Avalon Boulevard, which is currently a bus maintenance yard owned and operated by the Los Angeles County Metropolitan Transportation Authority (Metro). The proposed Wetlands Park component includes two elements: (1) a stormwater pre-treatment system and constructed wetlands to improve local stormwater and dry-weather runoff quality; and (2) a recreational space for educational and community-serving uses. The pre-treatment and wetland components of the project would assist the City in meeting Total Maximum Daily

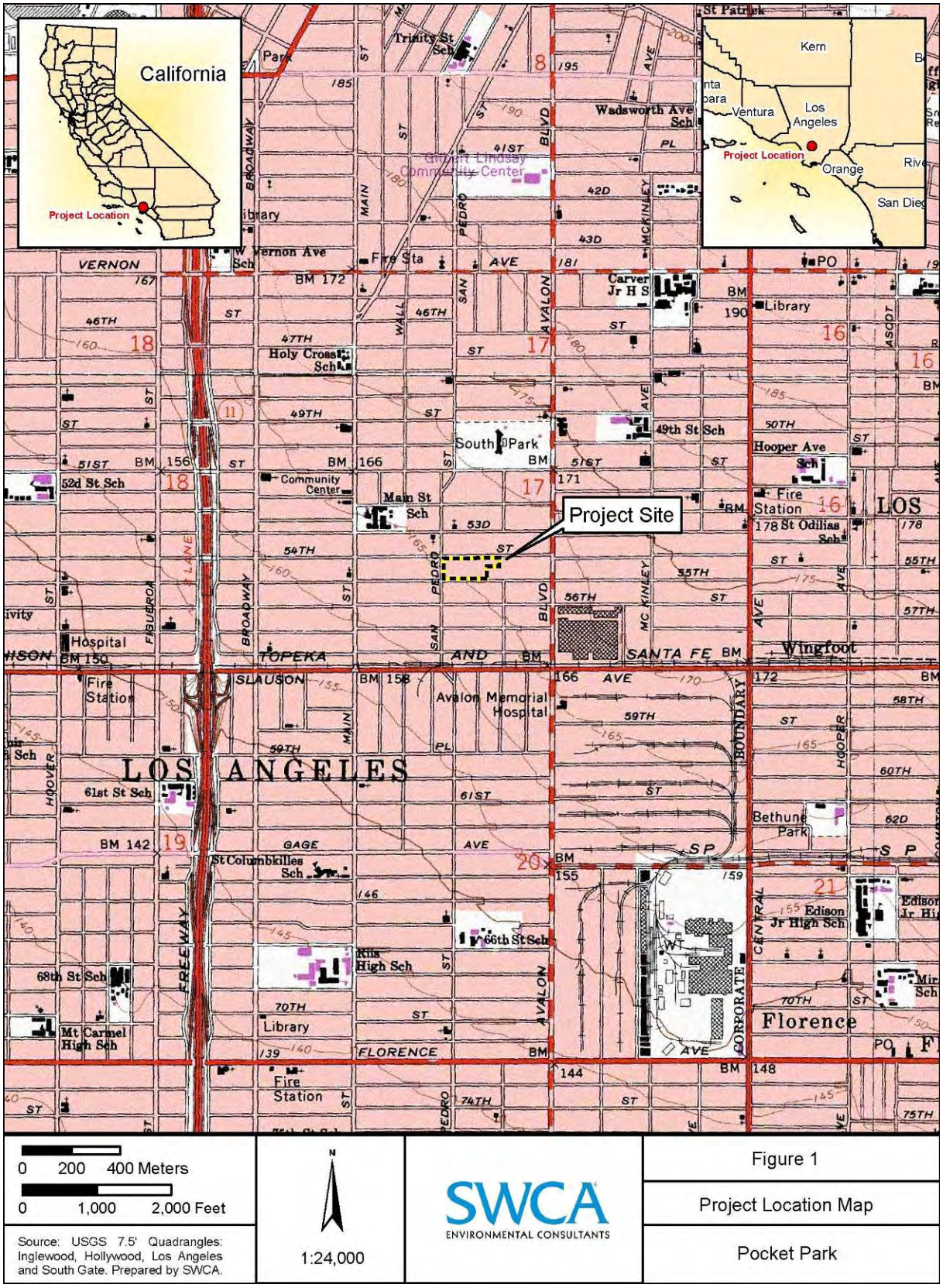

Figure 1. Project Location

Load requirements for the Los Angeles River Watershed adopted by the California Regional Water Quality Control Board–Los Angeles Region by reducing pollutants from stormwater runoff occurring within the 525-acre local watershed so that the subject runoff (which eventually drains into the Los Angeles River) can be discharged with a reduced pollutant load. The proposed stormwater pre-treatment system would consist of a series of stormwater best management practice (BMP) devices to remove oil and grease, trash, and sediment from runoff diverted from the existing 63-inch storm drain in San Pedro Street (just south of 54th Street). Runoff would be diverted through a structural BMP prior to entering a new pump station. The runoff would then be pumped into the constructed wetlands, where additional pollutants would be removed, prior to release back into the stormwater conveyance system. A vegetated swale would border the parking lot and direct runoff flows from the parking lot into the wetlands.

1.3 PROJECT LOCATION

The proposed Wetlands Park is located in the southern portion of Los Angeles (Figure 1). The 9-acre project is situated approximately 5 miles (8 km) south of downtown Los Angeles and approximately 0.5 mile (0.8 km) east of Interstate 110 at 5413 South Avalon Boulevard (Figure 2). The proposed Wetlands Park site is bordered by 54th Street to the north, 55th Street to the south, Avalon Boulevard to the east, and San Pedro Street to the west. The project area is found on the U.S. Geological Survey (USGS) Inglewood, CA 7.5-minute quadrangle map within Township 2 South, Range 13 West, Section 17.

1.4 REGULATORY SETTING

Cultural resources investigations conducted for this project are designed to meet the legal requirements of the California Environmental Quality Act (CEQA), along with a number of other applicable state and local laws (Appendix B).

1.4.1 State Regulations and Requirements

California Environmental Quality Act (CEQA)

The cultural resources investigation for this project is consistent with compliance procedures set forth in CEQA. Sections 21083.2 and 21084.1 of the Statutes of CEQA and Public Resources Code (PRC) Section 5024.1, Section 15064.5 of the Guidelines, were also used as the guidelines for the cultural resources study (Governor's Office of Planning and Research 1998). PRC Section 5024.1 requires that any properties that can be expected to be directly or indirectly affected by a proposed project be evaluated for California Register of Historical Resources (CRHR) eligibility. The purpose of the register is to maintain listings of the state's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from material impairment and substantial adverse change. The term "historical resources" includes a resource listed in, or determined to be eligible for listing in, the CRHR, a resource included in a local register of historical resources, and any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant (Section 15064.5[a] of the Guidelines). The criteria for listing properties in the CRHR were expressly developed in accordance with previously established criteria developed for listing in the National Register of Historic Places (NRHP).

According to PRC Section 5024.1(c)(1–4), a resource may be considered *historically significant* if it retains integrity and meets at least one of the following criteria. A property may be listed in the CRHR if the resource:

Figure 2. Project Area

(1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
(2) Is associated with the lives of persons important in our past;
(3) Embodies the distinctive characteristics of a type, period, region or method of installation, or represents the work of an important creative individual, or possesses high artistic values; or
(4) Has yielded, or may be likely to yield, information important in prehistory or history.

Under CEQA, if an archeological site is not a historical resource but meets the definition of a "unique archeological resource" as defined in PRC Section 21083.2, then it should be treated in accordance with the provisions of that section. A *unique archaeological resource* is defined as follows:

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

Resources that neither meet any of these criteria for listing on the CRHR nor qualify as a "unique archaeological resource" under CEQA PRC Section 21083.2 are viewed as not significant. Under CEQA, "A nonunique archaeological resource need be given no further consideration, other than the simple recording of its existence by the lead agency if it so elects" (PRC Section 21083.2[h]).

Impacts that adversely alter the significance of a resource listed in or eligible for listing in the CRHR are considered a significant effect on the environment. Impacts to historical resources from the proposed project are thus considered significant if the project physically destroys or damages all or part of a resource, changes the character of the use of the resource or physical feature within the setting of the resource which contribute to its significance or introduces visual, atmospheric, or audible elements that diminish the integrity of significant features of the resource.

California Health and Safety Code Section 7050.5

This code section requires that further excavation or disturbance of land, upon discovery of human remains outside of a dedicated cemetery, cease until a county coroner makes a report. It requires a county coroner to contact the Native American Heritage Commission (NAHC) within 24 hours if the coroner determines that the remains are not subject to his or her authority and if the coroner recognizes the remains to be those of a Native American.

California PRC Section 5097.98

The project is subject to California PRC Section 5097.98, which states that if a county coroner notifies the NAHC that human remains are Native American and outside the coroner's jurisdiction per Health and Safety Code Section 7050.5, the NAHC must determine and notify a Most Likely Descendant (MLD). The MLD shall complete the inspection of the site within 48 hours of notification and may recommend

scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

1.4.2 Local Ordinances

Los Angeles Historic-Cultural Monument (LAHCM)

City Ordinance 162102 of the Los Angeles Administrative Code, adopted in 1962, established the City Cultural Heritage Commission and created criteria for Historic-Cultural Monument designation. The City of Los Angeles Office of Historic Resources states the following in regards to determination of significance for a Historic-Cultural Monument:

> Historic-Cultural Monument designation is reserved for those resources that have a special aesthetic, architectural, or engineering interest or value of a historic nature. The Cultural Heritage Ordinance establishes criteria for designation; these criteria are contained in the definition of a Monument in the Ordinance. A historical or cultural monument is any site (including significant trees or other plant life located thereon), building, or structure of particular historical or cultural significance to the City of Los Angeles, such as historic structures or sites:
>
> - in which the broad cultural, political, economic, or social history of the nation, state, or community is reflected or exemplified; or
> - which are identified with historic personages or with important events in the main currents of national, state, or local history; or
> - which embody the distinguishing characteristics of an architectural-type specimen, inherently valuable for a study of a period, style, or method of construction; or
> - which are a notable work of a master builder, designer, or architect whose individual genius influenced his or her age.

A proposed resource may be eligible for designation if it meets at least one of the criteria above.

> When determining historic significance and evaluating a resource against the Cultural Heritage Ordinance criteria above, the Cultural Heritage Commission and the staff of the Office of Historic Resources often ask the following questions:
>
> - Is the site or structure an outstanding example of past architectural styles or craftsmanship?
> - Was the site or structure created by a “master” architect, builder, or designer?
> - Did the architect, engineer, or owner have historical associations that either influenced architecture in the city or had a role in the development or history of Los Angeles?
> - Has the building retained “integrity”? Does it still convey its historic significance through the retention of its original design and materials?
> - Is the site or structure associated with important historic events or historic personages that shaped the growth, development, or evolution of Los Angeles or its communities?
> - Is the site or structure associated with important movements or trends that shaped the social and cultural history of Los Angeles or its communities?

Historic Preservation Overlay Zones (HPOZ)

As described by the City of Los Angeles Office of Historic Resources, the Historic Preservation Overlay Zones (HPOZ) Ordinance was adopted in 1979 for the following purpose:

> Recognizing the need to identify and protect neighborhoods with distinct architectural and cultural resources, the City has developed an expansive program of Historic Preservation Overlay Zones (HPOZs). HPOZs, commonly known as historic districts, provide for review of proposed exterior alterations and additions to historic properties within designated districts.

City of Los Angeles Ordinance Number 175891, in Section 12.20.3 of the Los Angeles Municipal Code, states the following regarding HPOZ eligibility:

> …no building, structure, Landscaping, or Natural Feature shall be considered a Contributing Element unless it is identified as a Contributing Element in the historic resource survey for the applicable Preservation Zone. Features designated as contributing shall meet one or more of the following criteria:
>
> 1. adds to the Historic architectural qualities or Historic associations for which a property is significant because it was present during the period of significance, and possess Historic integrity reflecting its character at that time; or
> 2. owing to its unique location of singular physical characteristics, represents an established feature of the neighborhood, community or city; or
> 3. retaining the building, structure, Landscaping, or Natural Feature, would contribute to the preservation and protection of an Historic place or area of Historic interest in the City.

2. PREVIOUS RESEARCH

2.1 ARCHAEOLOGICAL SURVEY

Greenwood and Associates (2007a) conducted an archaeological investigation for the project in 2007. This investigation included a cultural resources records search, supplemental historical research, a Native American Heritage Commission (NAHC) Sacred Lands File search, and a cultural resources inventory and evaluation for the project area. The California Information System (CHRIS) South Central Coastal Information Center (SCCIC), located at California State University, Fullerton, performed a cultural resources records search for the project on February 13, 2007. The records search was negative. No cultural resources studies had been completed and no previously recorded cultural resources had been recorded within a 0.5-mile radius of the project area. A review of Sanborn Fire Insurance maps indicated that the project area was lightly developed in 1906 and 1922, with structures appearing on fewer than half of the parcels. Additional historical research indicated that one of these buildings housed Chinese laborers, while another was used as a brothel.

Greenwood and Associates archaeologist John M. Foster conducted an intensive-level pedestrian survey of the project area on May 8, 2007. Ground surface visibility within the project was poor, as most of the property is currently covered in asphalt pavement and structures. No archaeological resources were visible at the time of the survey.

Greenwood and Associates (2007a:6–7) concluded that the project area was likely to contain historical archaeological resources:

> At minimum it is expected that refuse deposits, buried mechanical features, and other subsurface historical materials are present within the project area. These archaeological features could predate the use of the area for the streetcar repair station or could be associated with the light rail facility. The Sanborn Fire Insurance maps (e.g., 1906) indicate residences within the project area, prior to the full expansion of the rail facility. The significance of these features would be determined by their associations, context, and integrity. It is unlikely that remnants of the residential structures on the north side of the block would still be present due to the construction of the massive foundations and track beds associated with the trolley operations. However, on the south facing side of the block, there were some track beds but not trolley buildings which would increase the probability of finding earlier residential intact structural remains and artifact deposits.
>
> Based on previous experience, it is probable that features and possible structural remnants of the earlier residential units may be present. It is also likely that trolley car refuse deposits and possible transportation elements may be buried at various locations within the project area. While there is locational information on some structures for specific times, e.g., 1906 and 1922, the full extent and range of buildings and activity areas is unknown.

Greenwood and Associates (2007a:7) recommended archaeological monitoring during the construction of the proposed project. They noted that preliminary archaeological testing, including mechanical trenching, "would probably be ineffective considering the size of the project area, the number of resources that were present, and the potential for encountering hazardous materials."

2.2 NATIVE AMERICAN CONTACT PROGRAM

In response to a request from Greenwood and Associates, the NAHC conducted a search of their Sacred Lands File and provided a list of Native American individuals or organizations that could be contacted for further information about cultural resources in the vicinity of the project area. In a letter dated May 21, 2007, the NAHC stated that the Sacred Lands File search was positive for cultural resources in the immediate project area. They elaborated, indicating that the "project site is in close proximity to previously discovered prehistoric burial sites and is believed to hold numerous cultural resources" (CDM 2007a: Appendix D). The letter went on to note that "in particular, we recommend that you contact Anthony Morales…and the other persons on the attached list of Native American contacts" (CDM 2007a: Appendix D). The appended contact information sheet lists seven Native American individuals or organizations.

The manager of the LADPW Environmental Management Division mailed letters to each of the seven Native American individuals or organizations listed in the contact information sheet that the NAHC sent to Greenwood and Associates. These letters, dated May 29, 2007, summarized the proposed project and requested input concerning the "project's potential effect on traditional tribal cultural places" (CDM 2007a: Appendix D). These letters informed their recipients that Senate Bill 18 (Chapter 905 of the Statutes of 2004) may apply to the proposed undertaking, since it may require a general plan amendment. Responses were requested no later than 90 days from the date of the letter. LADPW did not receive any letters of response (Maria Martin, personal communication, 2009). This consultation satisfies the requirements of Senate Bill 18.

In a letter dated August 29, 2007, the NAHC submitted comments to LADPW concerning a Mitigated Negative Declaration that was prepared for the project. The letter noted the need for a CHRIS records search, an archaeological inventory of the project area, and a NAHC Sacred Lands File search. The NAHC recommended the use of Native American monitors "to ensure proper identification and care given cultural resources that may be discovered" and further advised contacting the seven Native American individuals or groups listed in an attachment to their letter (a list that is identical to the one sent to Greenwood and Associates) (CDM 2007b). Finally, the NAHC recommended including provisions within the project's mitigation plan for the discovery of Native American human remains (CDM 2007b).

The LADPW response to these comments, which was included in the Final EIR, notes their compliance with the majority of these recommendations through the services conducted by Greenwood and Associates and the mitigation measures included in the Final EIR. Response 3 to the NAHC letter notes that "The City will consider the potential use of a Native American Monitor in the implementation of mitigation measures CUL-2 and CUL-3" (CDM 2007b:2–6).

After the public review period, Maria Martin (personal communication, 2009) received a call from Robert Dorame, Tribal Chair/Cultural Resources, Gabrielino Tongva Indians of California Tribal Council, indicating he had not received information on this project. Martin provided Dorame with the information that he requested.

2.3 HISTORICAL RESOURCES EVALUATION

Greenwood and Associates (2007b) conducted a historical resources evaluation of the project area in 2007. This evaluation incorporated the results of the February 2007 SCCIC records search, archival research at numerous libraries, consultation with local historical groups, and a pedestrian survey.

The SCCIC records search revealed no National or California Register–listed properties within a 0.5-mile radius of the project. The 0.5-mile radius does include two City of Los Angeles Historic-Cultural Monuments and 119 properties that have been evaluated for historical significance and are included in the California Historic Resources Inventory.

Greenwood and Associates' (2007b) research revealed that the Wetlands Park project site, which includes the current project area and an area of approximately equivalent size to the immediate east, contains facilities associated with the Los Angeles Railway Company (LARY). The South Park Shops, which were responsible for rail car construction and maintenance, occupied two 9-acre city blocks that were bordered by 53rd and 55th Streets on the north and south, and by San Pedro Street and South Park Avenue (now Avalon Boulevard) to the west and east. The current project area (the west half of the south block) was the last portion of the facility to be built, with the principal buildings constructed between 1922 and 1926, and was commonly referred to as the "New Shops." Suffering from low ridership, LARY was sold to National City Lines in 1946 and operated by its subsidiary Los Angeles Transit Lines (LATL). LATL promptly sold or abandoned major portions of the system, including the north block of the South Park Shops. The New Shops were converted for use with buses, rather than rail cars. In 1963, shortly after taking over the system, the Los Angeles Metropolitan Transit Authority halted streetcar service. The shops' rails were paved over, the overhead wires were removed, and the transfer table pit was filled in. The facility continues to be used for servicing buses today.

The historical resources evaluation included a pedestrian reconnaissance of the project area by Greenwood and Associates architectural historian Dana Slawson on April 24 and May 25, 2007. This reconnaissance included photography and initial documentation of the project area's standing buildings, structures, and landscape features. Greenwood and Associates (2007b:24–28) concluded that the South

Park Shops complex, which comprises the entire nine-acre property at 5413 South Avalon Avenue, is eligible for listing in the CRHR as a historic district. Contributing elements to the potential district that fall within the current project area include the Mill/Body Shop, completed in 1923, track remnants, and a concrete perimeter wall.

Greenwood and Associates (2007b:31–32) recommended comprehensive documentation of the South Parks Shops complex, formal nomination for inclusion on the CRHR as a historic district, the retention and rehabilitation of the Paint Shop (Building 71) for use as a transportation museum, and the protection of the Paint Shop during construction of the Wetlands Park. The recommendations also included the use of salvaged elements of the historic property within the transportation museum.

2.4 HISTORICAL RESOURCES DOCUMENTATION

In compliance with CUL-5, Greenwood and Associates (2008a) prepared comprehensive documentation of the South Parks Shops complex in 2008. This documentation included all buildings and features identified by the historical resources evaluation as contributive to a potential historic district. The documentation was consistent with the Historic American Building Survey/Historic American Engineering Record (HABS/HAER) format.

2.5 HISTORICAL RESOURCES SALVAGE INVENTORY

In compliance with CUL-6, Greenwood and Associates (2008b) conducted a historical resources salvage inventory of the project area in 2008. This inventory included photographic documentation and written descriptions of all items and features identified as relevant to the historic function of the South Park Shops complex and with potential interpretive value.

3. POTENTIAL RESOURCES WITHIN THE PROJECT

The project area has the potential to contain previously undocumented archaeological resources that fall into two broad categories: prehistoric and historic resources. Each of these is described in detail below.

3.1 POTENTIAL PREHISTORIC ARCHAEOLOGICAL RESOURCES

Prehistoric cultural resources, which are defined as isolated occurrences or clusters of artifacts, features, and human burials, are evidence of the past activities of Native American people. Indicators of prehistoric (prior to A.D. 1542) and protohistoric (1542–1771) occupation by Native Americans include, but are not limited to, artifacts of various natural materials, areas of soil discoloration, shell, animal bone, manuports, heat-altered stone, and human remains. Occurrences of prehistoric materials may include, but are not limited to, the following:

- Artifacts (projectile points, ceramics, shell beads, etc.)
- Habitations (house pit depressions, midden deposits, FAR, heat-treated rock, cemeteries, etc.)
- Features (hearths, stone features, artifact caches, etc.)
- Human remains (burials, cremations, or isolated skeletal fragments)

Although the SCCIC records search was negative for previously recorded cultural resources within a 0.5-mile radius of the project, the lack of prior archaeological studies within this radius indicates that this negative data is not a good predictor of the presence of archaeological sites within the project.

The NAHC Sacred Lands File search was positive, indicating that the "project site is in close proximity to previously discovered prehistoric burial sites and is believed to hold numerous cultural resources" (CDM 2007a:Appendix D). Consequently, the project should be considered sensitive for prehistoric archaeological resources. The exact nature of these resources cannot be determined with the available information, however.

Southern California has been home to Native American people for at least 13,000 years (Johnson et al. 2002). The region's prehistoric inhabitants left behind widespread archaeological evidence of their presence, including habitation sites, temporary encampments, resource processing sites, and burial areas. The project area formerly contained numerous plant and animal resources that were exploited by Native Americans and, given its flat topography and proximity to the Los Angeles River (3 miles to the northeast), would have been suitable for habitation. As a consequence, any of the aforementioned prehistoric archaeological deposit types may occur within the project.

3.2 POTENTIAL HISTORIC ARCHAEOLOGICAL RESOURCES

Historic cultural resources, which are defined as isolated occurrences or clusters of artifacts, features, and structures (or their remains), at least 50 years of age (or exceptional, or having Native American religious significance), are evidence of the activities of peoples of all ethnicities of the historic period. Historic materials may include, but are not limited to, the following:

- Buildings and structures or the remains thereof
- Native American sacred sites or other significant ethnic sites (of any age)
- Trash pits, privies, wells, and associated artifacts, surface dumps, and artifact scatters
- Isolated artifacts or isolated clusters of artifacts (metal cans, glass bottles, ceramic vessels, etc.)

The project area is particularly sensitive for historic cultural resources. Archival research conducted by SWCA, including a review of Sanborn Fire Insurance maps, historic aerial photographs, and LARY documentation, permits a detailed assessment of the potential historic archaeological deposits that may exist within the project area.

At least 13 major structures and numerous outbuildings appear within the project area on the 1906 Sanborn Fire Insurance Maps (Volume 5, Sheets 603 and 605). The major structures include seven houses, five multiple-family dwellings (labeled lodgings or flats), and a restaurant. A Los Angeles Railway Company oil house and oil tanks appear immediately east of the project area. The 1922 Sanborn Fire Insurance Map (Volume 5, Sheets 603 and 605) indicates that the neighborhood had grown modestly after 1906, and five additional homes had been constructed facing E. 55th Street. During that period, other portions of the block had fallen into disrepair. The lodgings at 358 E. 54th Street were labeled "vacant and dilapidated," while the lodgings and flats at 334 and 336 E. 54th Street were downgraded to "tenements." These structures may have housed the "flophouse full of fleas" that was reportedly used by Chinese laborers and the brothel that was "not fit for any gentleman of even the lowest status" (Walker 1977:292).

All of the pre-1922 structures within the project area were apparently demolished as the LARY completed the construction of the New Shops of their South Park Shops complex between August 1922 and 1926 (Greenwood and Associates 2007b:11; Walker 1977:292). The construction of the South Park Shops

complex is likely to have obliterated some, but not all of the pre-1922 archaeological deposits within the project area. The most dramatic impact to the property's pre-1922 archaeological deposits was likely the excavation of the basement for the Mill/Body Shop (Building 78, completed in 1923) in the northeast portion of the project. The excavation of a pit along the central east-west axis of the block to house a transfer table may have been deep enough to remove earlier deposits as well. The construction of a lumber storage building (prior to 1927; southwest corner), steam-cleaning shed (pre-1952; north center of project area), paint spray booths (post-1980; northwest corner), and guard shack (post-1980; center of project area) likely had a lesser impact on buried resources.

Older structural remnants and trash deposits may still exist beneath these buildings' footprints. The construction of dozens of storage tracks over most of the south half of the project area in the 1920s likely did little to disturb any underlying archaeological deposits. These may include materials related to the five pre-1922 residences that once occupied that portion of the project area. Finally, materials related to the LARY may be found throughout the project area, including within the filled-in transfer table pit. These may include, but are not limited to, building foundations (such as that of the now-demolished lumber storage building), buried rail segments, concentrated trash deposits, or scattered refuse.

4. TREATMENT MEASURES

4.1 PERSONNEL

All measures recommended by this treatment plan will be undertaken by or under the direction of SWCA Cultural Resources Principal Investigator John Dietler, Ph.D., RPA. Dr. Dietler exceeds the Secretary of the Interior's standards for archaeology and has more than 13 years of experience in southern California archaeology. Additional SWCA cultural resources personnel who will participate in treatment measures include field directors, monitors, field technicians, and laboratory technicians (Table 1). All of these staff members have the minimum qualifications of a bachelor's degree in archaeology, anthropology, or a related field and one year of experience in California archaeology. The specific personnel who will participate in each treatment measure task are listed in Table 2.

Table 1. 2009 Cultural Resources Personnel Rates

Project Role	Labor Category	Hourly Rate
Principal Investigator	Principal Investigator VII	$115.07
Architectural Historian	Sr. Architectural Historian XI	$149.60
Architectural Historian	Asst. Architectural Historian II	$62.83
Senior Archaeologist	Cultural Resources Specialist VIII	$110.76-$118.90
Senior Archaeologist	Cultural Resources Specialist VII	$105.02
Field Director	Cultural Resources Specialist IV	$78.54-83.42
Field Technician/Laboratory Technician	Cultural Resources Specialist II	$59.57-$62.20
Field Technician/Laboratory Technician	Cultural Resources Specialist I	$53.86

4.2 KNOWN CULTURAL RESOURCES

In compliance with CUL-6, on April 9, 2009, SWCA architectural historian Shannon Carmack inspected the buildings, structures, and features within the project area that were flagged for potential salvage and storage for future use by Greenwood and Associates. In a memorandum dated April 10, 2009, Ms.

Carmack presented detailed recommendations and clarifications concerning the treatment of specific structures and features located within and part of Building 78 (Appendix B).

Although not specifically addressed within that memo, the project area is also known to contain numerous streetcar track segments embedded in the pavement outside of the standing structures (Greenwood and Associates 2007b). Although these track segments are listed as contributors to the South Park Shops historic district, there are numerous extant track segments within the Paint Shop/Building 71 that will be preserved and potentially incorporated into interpretive displays under CUL-7. In light of the planned retention and preservation of similar track segments within the Paint Shop, the salvage and retention of the exterior track segments is judged not necessary. If convenient, a small section of the tracks may be salvaged during the demolition phase of construction. Retained track elements should be selected based upon representativeness and good condition, extracted and transported with due care, and stored in conditions conducive to their preservation.

Table 2. Cultural Resources Personnel Needed to Perform Treatment Measure Tasks

Task	Principal Investigator	Field Director	Field/Laboratory Technician
Monitoring	✓		✓
Evaluation and Recordation	✓	✓	✓
Data Recovery	✓	✓	✓
Artifact Analysis	✓		✓
Technical Reporting	✓	✓	✓

4.3 RESOURCE MONITORING

4.3.1 Archaeological Monitoring

Pursuant to CUL-2, monitoring by a qualified archaeological monitor (a field technician) will take place during all grading and/or excavation activities associated with the project. This monitoring will consist of directly watching the excavation and earth-moving activities for the entirety of each workday. Monitoring will continue until construction involving ground disturbance is complete, or the principal investigator concludes that there is no continuing potential for encountering cultural resources.

If cultural resources are observed during monitoring, the archaeological monitor will temporarily halt or divert excavation equipment to examine the find. If the monitoring archaeologist suspects that significant cultural remains have been encountered, the piece of equipment that encounters the suspected deposit shall be stopped or diverted to another work area, and the excavation inspected by the monitoring archaeologist. If potentially significant deposits are found, the principal investigator will inspect the deposits and develop recommendations for identification, testing, evaluation, preservation, or mitigation, as appropriate. If the principal investigator determines that the suspected remains are non-significant or non-cultural in origin, work shall recommence immediately following basic documentation. If further study is warranted, the find(s) shall be mapped, recorded, bagged with the proper provenience and the item(s) collected by the archaeological monitor.

4.3.2 Native American Participation

In light of the NAHC's specific recommendation to contact Gabrieleno/Tongva Tribal Council Chairperson Anthony Morales, SWCA Principal Investigator John Dietler contacted Mr. Morales by telephone on April 3 and 9, 2009. Mr. Morales noted that his tribal elders, now deceased, had specific knowledge concerning the presence of sensitive cultural resources in the vicinity of project area. He recommended the use of Native American monitors for the project, and noted his own availability to perform this work. Dr. Dietler requested an updated list of Native American contacts for the project from the NAHC on April 10, 2009. SWCA will send letters summarizing the proposed project and requesting input to any contacts that did not appear on earlier Native American contact lists for the project.

Given the NAHC's and Mr. Morales' recommendations, SWCA recommends the participation of a Native American monitor in any areas where Native American artifacts are discovered.

Preference in the selection of Native American monitor(s) is typically given to Native Americans with traditional ties to the project area. Given Mr. Morales' close ties to the Los Angeles area and his specific knowledge of sensitive cultural resources in the immediate vicinity of the project, SWCA recommends that the City designate Mr. Morales as the primary Native American monitor for the project.

Within 24 hours of the discovery of Native American artifacts, SWCA staff will notify the Gabrieleno/Tongva Tribal Council of the find and invite them to provide a Native American monitor for the construction and archaeological investigation.

4.3.3 Treatment of Human Remains

Pursuant to CUL-2, and in accordance with Section 7050.5 of the California Health and Safety Code (HSC) and Section 5097.98 of the PRC, if human remains are encountered during construction, whether or not an archaeological monitor is present, all work shall be halted in the immediate vicinity of the find. If the principal investigator determines that a discovery includes human remains:

1. The Project Supervisor or his or her authorized representative (usually the principal investigator) would contact the Los Angeles County Coroner:

   Los Angeles County Department of Coroner
   Main Phone: 323-343-0512
   After Hours Phone: 323-343-0714
   1104 N. Mission Road
   Los Angeles, California 90033
   http://coroner.co.la.ca.us/htm/intro.cfm

2. The principal investigator would notify the Project Supervisor and, as a courtesy, would notify the NAHC:

   Native American Heritage Commission
   Phone: 916-653-4082
   915 Capitol Mall, Room 364
   Sacramento, California 95814
   Email: nahc@pacbell.net

3. The coroner would have two working days to examine the remains after being notified in accordance with HSC 7050.5. If the coroner determines that the remains are Native American and are not subject to the coroner's authority, the coroner has 24 hours to notify the NAHC of the discovery.

4. The NAHC would immediately designate and notify the Native American MLD, who will have 48 hours after being granted access to the location of the remains to inspect them and make recommendations for their treatment. Work will be suspended in the area of the find until the Project Supervisor approves the proposed treatment of the human remains.

If the encountered human interments cannot be avoided by modification of the project, on approval of the County, and in concurrence with the County Coroner and the Native American MLD, a qualified team of archaeologists shall be brought in to recover the remains if that is the course of action deemed appropriate.

4.4 RESOURCE EVALUATION AND RECORDATION

All cultural resources identified during archaeological monitoring would be evaluated for listing on the CRHR using the criteria listed in Section 1.4.1 above. If the data potential and significance of a newly identified archaeological site is unclear and will benefit from the systematic collection and analysis of data, a plan for subsurface testing for the presence/absence of archaeological deposits would be instituted by the principal investigator. The testing plan proposed by the principal investigator would include systematic placement of appropriate excavation units (e.g., controlled shovel test pits, 1 × 1-meter test units, etc.) depending on the nature and extent of the deposit.

Fieldwork, which would be conducted by field technicians under the supervision of the field director, would include establishment of a site datum, recordation of surface artifacts within the site, and excavation following the testing plan. Depending on the nature and content of the site, it may be appropriate to collect and analyze special samples for laboratory analysis (e.g., pollen, protein residue, radiocarbon dating, obsidian sourcing). Artifacts from the excavation would be collected for laboratory analysis and cataloged. Significant and/or diagnostic artifacts will be collected for analysis and eventual curation. The results of the evaluation program would be presented in a detailed technical report following Archaeological Resource Management Report (ARMR) guidelines that addresses research questions and assesses the CRHR eligibility of the site. Photographs would be taken to document the site condition and any features, and a handheld global positioning system (GPS) receiver with submeter accuracy would be used to record the locational data of the site, excavation units, surface artifacts, and features.

All cultural resources (as defined in sections 3.1 and 3.2 above) that are encountered in the course of the archaeological monitoring will be recorded by field technicians under the supervision of the field director. These resources will be appropriately recorded on California Department of Parks and Recreation (DPR) series 523 primary and detail forms, mapped, and photographed. This minimal level of documentation is required for all cultural resources, including those that do not appear to be CRHR-eligible or "unique archaeological resources" under CEQA. The mapping of any sites, features, or artifacts that are encountered during the archaeological monitoring would be accomplished using a handheld GPS receiver with submeter accuracy. Any cultural resources that are encountered would be photographically documented using a digital camera.

4.5 RESOURCE AVOIDANCE OR DATA RECOVERY

Any discovery, whether prehistoric, historic, or multi-component, that is evaluated as significant (i.e., a "historical resource" as defined by CEQA) should be avoided by project design where possible. Avoidance measures might include using flagging and/or fencing under the guidance of archaeological monitors to clearly demarcate resource boundaries and restrict construction equipment access, as well as stronger measures such as relocating project components or capping buried resources with a protective layer of soil.

Significant resources that cannot be avoided by access restriction or project design would be subject to mitigative treatment to reduce project-related impacts to a less-than-significant level. Such mitigative treatment (e.g., data recovery) would require the preparation of a research design by the principal investigator based upon the findings of the site evaluation. Although such a research design must be tailored to the particular resource type that is encountered, a basic data recovery research framework is presented here. The data recovery effort for significant discoveries would be conducted by field technicians under the supervision of the field director. This effort would, at minimum, include the following components:

1. Defining the horizontal and vertical boundaries of the deposit through intensive surface mapping and subsurface testing.
2. Defining the stratigraphic relationships and depth of the deposit through subsurface testing.
3. Investigating the content of the deposit, particularly the date range and information potential, by means of subsurface testing.
4. Exposure and collection of a representative sample of the resource's constituent features and artifacts.
5. Analysis of recovered artifacts, ecofacts, and other samples by qualified specialists. These analyses may include, but are not limited to, the following studies: radiocarbon dating, obsidian sourcing, obsidian hydration dating, flaked stone analysis, ground stone analysis, ceramic sourcing studies, faunal analysis, paleobotanical analysis, and pollen analysis.

4.6 ARTIFACT COLLECTION, RETENTION/DISPOSAL, AND CURATION

Cultural resources would be collected for analysis pursuant to a research design that may be created to mitigate a significant discovery. The research design will govern the retention or disposal of archaeological materials as well as related curation policies. As identified in the research design, significant and/or diagnostic artifacts would be collected for analysis and curated.

All material retained as a result of the archaeological investigations (e.g., survey, testing, data recovery) pursuant to the research design would be cataloged, subjected to appropriate analyses by laboratory technicians under the supervision of the principal investigator, and significant and/or diagnostic artifacts prepared for eventual curation in accordance with the State Historical Resources Commission's "Guidelines for the Curation of Archaeological Collections." All cultural resources would be evaluated for eligibility for listing in the CRHR.

4.7 TECHNICAL REPORTING

Upon completion of the archaeological monitoring, a technical report of the study's findings will be prepared by SWCA archaeologists (field director and field/laboratory technicians) under the direction of the principal investigator. The report will incorporate a discussion of the scope, location, methodology, and results of the cultural resources monitoring. The technical report will follow contemporary archaeological standards as identified in the ARMR Guidelines. This report will contain any required DPR forms in an appendix and will be submitted to the City for approval.

If avoidance, data recovery, or other mitigation is also required, a final technical report will be prepared on all activities carried out under the CRTP. These include archaeological monitoring, evaluation, data recovery, artifact analyses, and any external scientific studies (radiocarbon dating, obsidian hydration dating, etc.). As is the case with the earlier report drafts, this final report will include the personnel, methods, and findings, with all updated DPR 523 site forms in an appendix.

5. REFERENCES

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Greenwood and Associates

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APPENDIX A:
Cultural Resources Mitigation Measures

Cultural Resources Mitigation Measures

(as published in the MMRP, October 2007)

The following measures shall be implemented for all applicable components of the Project as approved.

CUL-1: In the event that paleontological resources are encountered during excavation, all development activities shall cease within the vicinity of these area(s) until the paleontological resources are properly assessed and subsequent recommendations are made by a qualified paleontologist regarding resource preservation/recovery.

CUL-2: Monitoring by a qualified archaeological monitor shall be required at the proposed Wetland Park site during grading and/or excavation activities. Monitoring shall consist of directly watching the excavation and earthmoving activities. Monitoring shall occur during the entire workday, and shall continue on a daily basis until construction involving ground disturbance is complete, or professional judgment concludes that there is no continuing potential for encountering cultural resources.

If cultural resources are observed during monitoring, the following shall occur:

1. The monitoring archaeologist shall halt or divert excavation equipment temporarily to examine isolated artifacts. If further study is warranted, the find(s) shall be mapped, recorded, bagged with the proper provenience and the item(s) collected.

2. Whenever the monitoring archaeologist suspects that significant cultural remains have been encountered, the piece of equipment that encounters the suspected deposit shall be stopped or diverted to another work area, and the excavation inspected by the monitoring archaeologist. If potentially significant deposits are found, then recommendations shall be developed for identification, testing, evaluation, preservation, or mitigation, as appropriate. If the suspected remains prove to be non-significant or non-cultural in origin, work shall recommence immediately.

3. Equipment stoppages shall only involve equipment working within a ten meter buffer of the significant or potentially significant remains, and should not be construed to mean a stoppage of all work on the site unless the cultural deposit covers the entire site.

4. During temporary equipment stoppages brought about to examine suspected remains, the archaeologist shall accomplish the necessary tasks with all due speed.

5. Should human remains be encountered, all work shall be halted in the immediate vicinity of the find. The Project Supervisor and the County Coroner shall be contacted immediately. If the encountered human interments cannot be avoided by modification of the project, on approval of the County, and in concurrence with the County Coroner and the Native American Most Likely Descendant designated by the Native American Heritage Commission, a qualified team of archaeologists shall be brought in to recover the remains if that is the course of action deemed appropriate.

CUL-3: In the event that archaeological resources are encountered during the course of excavation of the proposed billboards, all development shall temporarily cease within the vicinity of these areas until the City of Los Angeles' Planning Department is contacted and agrees upon a qualified archaeologist to be brought onto the project site to properly assess the resources and make recommendations for their disposition. In the event that human remains are discovered, there shall be no disposition of such human remains, other than in accordance with the procedures and requirements set forth in California Health

and Safety Code Section 7050.5 and Public Resources Code Section 50973.98. These code provisions require notification of the County Coroner and the Native American Heritage Commission, who in turn must notify those persons believed to be most likely descended from the deceased Native American for appropriate disposition of the remains. Excavation or disturbance may continue in other areas of the project site that are not reasonably suspected to overlie adjacent remains or archaeological resources.

CUL-4: The former Los Angeles Railway South Park Shops Paint Shop (Building 71) shall be protected during construction of the Wetlands Park (i.e., via barriers or temporary fencing).

CUL-5: Under the supervision of the City of Los Angeles Planning Department's Office of Historic Resources, a comprehensive documentation of the South Parks Shops complex shall be prepared, including all buildings and features identified by this study as contributive to a potential historic district, prior to the commencement of any project related alteration of the property from its present condition. The documentation shall be consistent with the Historic American Building Survey/Historic American Engineering Record/Historic American Landscape Survey (HABS/HAER/HALS) format and conform to the applicable standards described in the Secretary of Interior Standards for Architectural and Engineering Documentation. The level of documentation, either HABS/HAER Level I or Level II, shall be determined in consultation with the State Office of Historic Preservation. For example, if a resource is determined to be of national significance, such as the Paint Shop building, Level I documentation including preparation of a full set of measured drawings, would be recommended. The documentation shall be a written historical report accompanying a set of measured drawings and photographs. The original historical report and documentation package shall be deposited at the MTA Dorothy Peyton Gray Transportation Library. A copy of the historical report shall be provided to the Central branch of the City of Los Angeles Public Library and the main branch of the County of Los Angeles Library.

CUL-6: Prior to the commencement of any demolition activities, potentially historical items or features from the Wetlands Park site that could be used as elements of the Phase II transportation museum and/or interpretive program, which presents the history of the South Parks Shop complex, shall be identified, salvaged, and stored for future use.

CUL-7: Following the completion of the documentation listed under Mitigation Measure CUL-5, a transportation museum plan and/or an interpretive program which presents the history of the South Park Shops complex shall be developed for implementation during Phase II. The interpretive program shall include an internet website that would be of educational benefit to the public and illustrate the history and historic architecture of the site through photographs, video, and oral history interviews collected from former Los Angeles Railway/Los Angeles Transit Lines employees, and others, familiar with historic functioning of the facility. Additionally, a permanent, on-site interpretive facility presenting the history of the property and possibly incorporating historic building documentation and salvaged elements of the historic property shall be created during Phase II of the Wetlands Park. The transportation museum and/or interpretive program shall be coordinated between the City of Los Angeles' Department of Recreation and Parks, in coordination with the Cultural Heritage Commission and/or Planning Department's Office of Historic Resources, and other applicable agencies and organizations, as appropriate.

APPENDIX B:
Memo Regarding Treatment of Built Environment Resources

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MEMORANDUM April 10, 2008

TO: Maria E. Martin, Department of Public Works, Bureau of Engineering, City of Los Angeles

FROM: Shannon Carmack, Architectural Historian

RE: South Los Angeles Wetlands Project
5413 South Avalon Boulevard, Los Angeles, California

SWCA Environmental Consultants were asked to comment on treatment of certain buildings, structures and features at 5413 South Avalon Boulevard in the City of Los Angeles, California, which is proposed to be reused as a park (South Los Angeles Wetlands project). This memorandum transmits our recommendations and clarifications concerning the treatment of specific structures and features located within and part of Building 78 on the subject property, in compliance with Mitigation Measure CUL-6, as outlined in the Final Environmental Impact Report (FEIR) for the South Los Angeles Wetlands project (Project). Historically, the project site was used as a streetcar repair station during operational years of the Los Angeles Yellow Car rail line (1906-1963).

In 2007, a Historical Resources Evaluation Report was prepared in support of the EIR by Greenwood and Associates. The report identified one historic district; the South Park Shops Historic District which is eligible for listing in the California Register of Historical Resources under Criteria 1, 2 and 3. The identified Historic District contains 6 contributing buildings that are considered historical resources, as defined by Section 15064.5 of the California Environmental Quality Act (CEQA) Guidelines. The report results and recommendations were carried forward and summarized in the EIR, which was certified by the City of Los Angeles on April 8, 2008. The requirement that one district contributor, the Paint Shop/Building 71be retained for future use was included in the project mitigation measures, as set forth in the FEIR. The remaining five Historic District contributors and their associated features would be demolished in support of the approved project.

The Cultural Resources Section (Section 3.5) of the FEIR identified four mitigation measures which addressed the demolition of significant resources within the district, including Mitigation Measure CUL-6 which called for the retention of key structures, features and objects, for future incorporation into an on-site interpretive museum or display. That mitigation measure stated:

> CUL-6: Prior to the commencement of any demolition activities, potentially historical items or features from the Wetlands Park site that could be used as elements of the Phase II transportation museum and/or interpretive program, which presents the history of the South Parks Shop Complex, would be identified, salvaged and stored for future use.

Following the certification of the EIR, a Historical Resources Salvage Inventory Report was prepared by Greenwood and Associates (2008) in an effort to comply with CUL-6. The report identified numerous items and features within the 6 historic buildings that helped convey the significance of the historic district and provided recommendations for the treatment of each itemized feature.

SWCA Inc. understands that it is the intention of the Department of Public Works (DPW) to fully implement mitigation measures as outlined in the FEIR, in order to reduce significant adverse project impacts to historical

resources, as required by CEQA. The purpose of this memo is to assist the DPW in implementation of mitigation measure CUL-6 and provide clarification for treatment of specific features within Building 78. The following table provides a summary of key features within Building 78 that were identified as contributing resources to the Historic District and offers further clarifications for their appropriate treatment. Through review of the FEIR and associated documents and consultation with the DPW, we have identified five recommendations in regard to Building 78 that require further clarification (Table 1-*Contributing Structures, Features and Objects Identified Within Building 78*).

Table 1
Structures, Features and Objects Located Within Building 78

Item and Page No. in Historical Resources Salvage Report (2008)	Item Name	Recommendations
Figure 2-3, No. 3 (page 25)	Swing Arm Hoist with Truss Post	Salvage and retention of this piece of equipment is judged not to be necessary. A similar spring arm hoist with truss post is extant in the eastern segment of Building 71. The hoist in Building 71 will be retained for future use in the museum/display therefore retention of both is not necessary.
Figure 2-3, No. 4 (page 25)	Electrical Circuit Breaker Box Panel	Salvage and retention of the electrical circuit breaker box panel is not required, as a similar feature is located within Building 78, which will serve as a representative example of this feature.
Figure 2-3, No. 5 (page 26)	Wood-Framed Office	Salvage and retention of this feature is not necessary. A similar wood-frame office located in Building 71 will be retained and serve as a representative example of this feature.
Figure 2-3, No. 6 (page 26)	Steel Industrial Casement Sash Window Panel	Retention of selected representative steel-frame windows is recommended for future improvement/rehabilitation efforts for Building 71. It is recommended that those features be carefully removed, protected, crated and stored for future use.
Figure 2-3, No. 12 (page 31)	Wood Trestle and Rail Tracks	Salvage and retention of the wood trestle is not necessary. It is recommended that a representative segment of the top portion of the tracks be retained, should it be feasible.

Swing Arm Hoist with Truss Post. Salvage and retention of this piece of equipment is not required. A similar spring arm hoist with truss post is currently situated within the eastern segment of Building 71. The hoist located in Building 71 is in fair condition and retains comparable elements and character with the hoist in Building 78. The hoist in Building 71 will be retained for future use in the museum/display.

Electrical Circuit Breaker Box Panel. Salvage and retention of this piece of equipment is not required, as a similar feature is located within Building 78. The electrical circuit breaker box in building 71 will be retained for future use in the display/museum and will serve as a representative example of this archaic feature.

Wood-Framed Office. The office located in Building 78 has undergone several alterations including the installation of an air-conditioning unit, dropped ceiling and the addition of drywall. These alterations have significantly diminished the integrity of the feature and its ability to convey the historical character and use of the feature. A similar wood-frame office, constructed in a similar fashion is located in Building 71. The office located in Building 71 retains integrity and has not been altered to the same degree that the Building 78 feature has undergone. Therefore, salvage and retention of this feature is not necessary to comply with the intent of CUL-6.

Steel Industrial Casement Sash Window Panel. Retention of selected representative steel-frame windows in Building 78 is recommended. A selection of windows that remain relatively intact, with unbroken glass lights should be selected for conservation and storage. These selected windows should be retained for future rehabilitation efforts to Building 71. This recommendation follows the concepts in the Secretary of the Interior's Standards for Rehabilitation. Although not required as part of the mitigation measures, it is recommended any windows that will not be retained for future use in Building 71 be offered for architectural or building materials salvage, either by sale or donation.

Wood Trestle and Rail Tracks. Salvage and retention of the wood trestle is not required. Given the complexity and size of the feature, it is not structurally or economically feasible to include the feature in a museum/display. Photographic documentation of the wood trestle structure was prepared in support of the mitigation measure CUL-5, which required the preparation of a Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER) recordation package. The large-format photographs and accompanying written documentation of the feature clearly illustrate the design complexity and significance of the feature as it functioned within the building. Photographs and written narrative will adequately serve to document the wood trestle in lieu of physical retention of the feature. It is recommended that a representative segment of the top portion of the tracks be retained, should it be feasible. It is further recommended that the trestle be offered be offered for architectural or building materials salvage, either by sale or donation.

Conclusion

SWCA has reviewed the FEIR and supporting documents and provided further clarification for the treatment of five features itemized in the Historical Resources Salvage Inventory Report. These recommendations were developed to fully comply with the intent of mitigation measure CUL-6 as stated in the FEIR. Therefore, implementation of recommendations and clarifications described in this memorandum are not expected to result in new significant impacts or substantially more adverse significant impacts to historical resources than previously described. Should there be any questions regarding the information contained in this memorandum, please contact Shannon Carmack or Francesca Smith at (626) 240-0587. We appreciate this opportunity to assist you in this project.

Federal Aviation Administration Consultation

with the

California State Historical Preservation Officer

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
1725 23rd Street, Suite 100
SACRAMENTO, CA 95816-7100
(916) 445-7000 Fax: (916) 445-7053
calshpo@parks.ca.gov
www.ohp.parks.ca.gov

February 03, 2011

Reply In Reference To: FAA110114A

David Kessler
Regional Environmental Protection Specialist
Federal Aviation Administration
P.O. Box 92007
Los Angeles, CA 90009-2007

RE: Proposed Airport Improvements, Riverside Airport, City of Riverside, Riverside County, CA

Dear Mr. Kessler:

Thank you for initiating consultation with me on behalf of the Federal Aviation Administration (FAA) in order to comply with Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470f), as amended, and its implementing regulation at 36 CFR Part 800. You are asking that I concur that the Area of Potential Effects (APE) for this undertaking has been adequately determined.

The City of Riverside (City) and the FAA are preparing environmental documentation for a construction project at Riverside Airport. This undertaking will include the following components:

- Construction of a new parallel and connecting taxiway system, north of Runway 9/27
- Construction of new aircraft parking apron
- Construction of access road with drainage and utility improvements north of Runway 9/27
- Grading on the north side of the airport
- Relocation of a 30-inch gas line out of the Runway 27 Approach End Runway Safety Area (RSA)
- Filling and grading of the RSAs at both ends of Runway 9/27 and the new taxiway system
- Federal reimbursement of land acquired for the Runway Protection Zone on the approach end of Runway 9 to the City

The FAA has determined the boundaries of the APE. The APE will include all areas of ground disturbance and all land in the Runway Protection Zone west of the Airport designated as part of the property reimbursement. These boundaries were determined through consultation with the City of Riverside. Since the proposed undertaking will not affect the aircraft type or frequency of use, the FAA has not established an indirect APE beyond the airport's property boundaries. In addition to your letter, you have provided a map of the project area and the physical location of the various runways, RSAs, and land to be required for the new Runway Protection Zone.

Having reviewed your submittal, I concur that the APE, as described in your letter and depicted on the accompanying map, has been properly determined and documented pursuant to 36 CFR Parts 800.4. I would like to be consulted once you have undertaken further identification efforts, including establishing the extent of ground disturbance, the outcome of Native American consultation, and your opinion as to whether this undertaking has the potential to affect historic properties.

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Federal Aviation Administration
Western-Pacific Region
Airports Division, AWP-600

Thank you for considering historic resources during project planning. If you have any questions or comments, please contact Tristan Tozer of my staff at (916) 445-7027, or email at ttozer@parks.ca.gov.

Sincerely,

Susan K Stratton for

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

U.S Department
of Transportation

**Federal Aviation
Administration**

Western-Pacific Region
Airports Division

Federal Aviation Administration
P.O. Box 92007
Los Angeles, CA 90009-2007

December 19, 2011

Mr. Milford Wayne Donaldson
State of California
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100,
Sacramento, California 95816

Attention: Mr. Tristan Tozer

Dear Mr. Donaldson:

Proposed Airport Improvements
Riverside Airport
Riverside, Riverside County, California
Section 106 Coordination

In January 2010, we wrote to you about the City of Riverside and the Federal Aviation Administration (FAA) actions about preparing federal environmental documentation for the proposed undertaking of construction of various airport improvements to Riverside Airport. The proposed undertaking includes the following items:

- Construction of a new parallel and connecting taxiway system, north of Runway 9/27;
- Construction of new aircraft parking apron, access road with drainage and utility improvements north of Runway 9/27;
- Grading of the north side of the airport,
- Relocation of a 30-inch gas line out of the Runway Safety Area for the approach end of Runway 27;
- Filling and Grading of the Runway Safety Area at both ends of the Runway, as necessary;
- Federal reimbursement of the City for land acquired within the Runway Protection Zone for the approach end of Runway 9.

Since we last wrote to you, the City of Riverside modified its proposed undertaking to avoid a possible Native American habitation site located on airport property. This site is identified as a rounded shape east of the end of the Runway Safety Area that is cross hatched with the notation "No Ground Disturbance" in the legend.

The FAA determined the new boundaries of the Area of Potential Effect (APE) by using the boundaries of the entire area that would have physical disturbance. The APE also includes the land in the Runway Protection Zone west of the Airport that is proposed for reimbursement. These boundaries were determined through consultation with the City of Riverside on the extent of the proposed north side and Runway Safety Area grading projects. Since the proposed undertaking will not affect the number or type of aircraft using the airport, FAA delineated a Direct Effects APE only. There would be no change in the indirect effects from aircraft noise resulting from the proposed undertaking. FAA will include this information in the environmental documentation for the proposed project. 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.*

We have included a figure that shows the proposed undertaking and the revised Area of Potential Effect. The revised APE for this undertaking is shown with a black and yellow dashed line.

Pursuant to Title 36, Code of Federal Regulations, Section 800.4, the FAA is seeking concurrence with the APE for the proposed undertaking from the California State Historic Preservation Office.

If you have any further questions concerning this matter, please call me at 310/725-3615.

Sincerely,

David B. Kessler, AICP
Regional Environmental Protection Specialist

Enclosure: Exhibit A – Revised Direct Effects APE (Physical Disturbance Area) for the proposed undertaking.

Cc: LAX-600

U.S Department
of Transportation
**Federal Aviation
Administration**

Western-Pacific Region
Airports Division

Federal Aviation Administration
P.O. Box 92007
Los Angeles, CA 90009-2007

August 23, 2012

Mr. Milford Wayne Donaldson
State of California
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100,
Sacramento, California 95816

Attention: Mr. Tristan Tozer

Dear Mr. Donaldson:

Subject: Proposed Runway 9/27 Safety Area Improvement and Associated Airport Improvement Project, Riverside Airport, Riverside, Riverside County, California, Section 106 Coordination, California SHPO Reference No.:FAA110114A

The City of Riverside and the Federal Aviation Administration (FAA) are preparing federal environmental documentation for the proposed undertaking of improving the Runway Safety Area (RSA) for Runway 9/27, grading the northern portion of the airport to construct a new parallel and connecting taxiway system and several other associated projects at Riverside Airport (RIV). We previously provided information about the Revised Area of Potential Effect (APE) in our December 19, 2011 letter to you, the proposed undertaking includes the following items:

- Construction of a new parallel and connecting taxiway system, north of Runway 9/27,
- Construction of a new aircraft parking apron, access road with drainage and utility improvements north of Runway 9/27.
- Grading of the north side of the airport,
- Relocation of a 30-inch gas line out of the RSA for the approach end of Runway 27,
- Filling and Grading of the RSA at both ends of the Runway, as necessary, and
- Federal reimbursement to the City for land acquired within the Runway Protection Zone for the approach end of Runway 9.

Your office concurred with FAA's Revised APE for the proposed undertaking in a letter dated February 3, 2012. A drawing depicting this APE is shown on Figure 1 on page D-15 in the enclosed copy of *Cultural Resources Survey Report*, dated February 2012.

Since we wrote to you about the APE, FAA conducted additional Government-to-Government consultation with the Pechanga Tribe concerning an archaeological site located east of the area to be disturbed by the proposed undertaking on airport property.

FAA is providing the following background information to assist you in reviewing FAA's determinations of eligibility and findings of effect related to the proposed undertaking.

1. Background Information.

The City of Riverside has determined they can create a graded and compacted 1000-foot long by 500 foot wide RSA for Runway 9/27 that meets the applicable FAA Airport Design Standards. To accomplish this task, fill material must be added to the RSA. This material will come from the northern part of the airport that will be graded to construct the parallel and connecting taxiway. The Cultural Resources Survey Report states about 155,000 cubic yards of earth will be placed as fill in the RSA for Runway 9/27.

RSAs are clear areas around a runway, that are free of objects and structures. The Airport designs and maintains the RSA to enhance safety if an aircraft undershoots, overruns, or veers off the runway, and to provide greater accessibility for aircraft rescue and firefighting equipment during such incidents. Paragraph 2 of FAA Advisory Circular 150/5300-13, *Airport Design*, defines Runway Safety Area as "*a defined surface around the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot or an excursion form the runway.*" FAA Order 5200.8, *Runway Safety Area Program*, provides the applicable FAA requirements for an RSA.

In addition to the work on the RSA and taxiway system north of the runway, the proposed undertaking also includes relocation of an underground 30-inch gas line that crosses the RSA. This gas line will be relocated outside of the RSA. Lastly, the proposed undertaking includes federal reimbursement to the City of Riverside for the acquisition of land within the Runway Protection Zone for the west end of Runway 9.

2. Native American Consultation. In January 2011, based on a listing of Native American contacts provided by the State of California Native American Heritage Commission, FAA contacted the following tribes: Quechan Tribe of the Fort Yuma Indian Reservation, Yavapai-Apache Community Council, Morongo Band of Cahuilla Mission Indians, Pechanga Band of Mission Indians, Ramona Band of Cahuilla Indians, Santa Rosa Band of Mission Indians, Soboba Band of Luiseno Indians, Torres Martinez Desert Cahuilla Indians, Ione Band of Miwok Indians, Fort McDowell Yavapai Nation, Colorado River Indian Tribes, Cahuilla Band of Mission Indians, Cabazon Band of Mission Indians, Augustine Band of Cahuilla Mission Indians, and the Agua Caliente Band of Cahuilla Indians.

FAA provided detailed information about the APE and the proposed undertaking via U.S. Mail to the tribal contacts listed above. FAA provided response forms with stamped self-addressed return envelopes. FAA received only one reply from Ms. Anna Hoover, Cultural Analyst with the Pechanga Tribe. A copy of the initial letter from the tribe was provided to your office via email dated February 3, 2012. The Tribe was concerned about the effect of the proposed undertaking on an archaeological site identified by its trinomial: CA-RIV -1711. This site is located east of the end of Runway 9/27 on airport

property within the Runway Protection Zone, where no development is proposed. This site is outside of the APE and will not be directly affected by the proposed RSA grading project. There was concern also about possible duplicative identification of this site, since documentation of the site is poor. The City of Riverside had the enclosed Cultural Resource Report prepared by SWCA Environmental Consultants based in Pasadena, California. Their report indicates three bedrock milling archaeological sites appear to be in the same area as Site CA-RIV- 1711. These sites are identified as CA-RIV-8897, CA-RIV-8898 and CA-RIV-8899. These three sites may be part of the previously recorded site CA-1711-RIV.

In an effort to avoid affecting this site, the City of Riverside modified its proposed project to ensure the archaeological site remains undisturbed as a result of the proposed undertaking. The APE was revised and coordinated with your office. Your office concurred with the revised APE by letter dated February 3, 2012, (Note: the letter we received had the date February 3, 2011 at the top).

FAA conducted additional Government-to-Government consultation with the Pechanga Tribe about the Revised APE in June 2012. The Tribe replied in a letter dated July 20, 2012 and submitted the following four project recommendations and seven specific mitigation measures for consideration on how to avoid Site CA-RIV-1711.

1. The Pechanga Tribe requests that due to the ongoing activities at the Airport, a long term Preservation Plan be developed between the Pechanga Tribe, the City of Riverside, and the FAA (if applicable) for the cultural site (CA-RIV-1711) located within Riverside Airport Boundaries.

2. The Pechanga Tribe requests to review the proposed signage that will be placed in the area, prior to printing and placement.

3. The Pechanga Tribe has in-house consultants that are knowledgeable regarding native pants. We offer our assistance to the City of Riverside in selecting the plant palette to be used around the cultural site.

4. Although the City and the FAA have removed the cultural site from the Project APE, there is still a potential that subsurface cultural resources could be impacted by the proposed grading and modification required to develop the proposed changes within the APE. Therefore we request the following mitigation measures be applied to the project:

> *MM1. Prior to beginning project construction, the Project Applicant shall retain a Riverside County qualified archaeological monitor to monitor all ground-disturbing activities in an effort to identify any unknown archaeological resources. Any newly discovered cultural resource deposits shall be subject to a cultural resources evaluation.*
>
> *MM2. At least 30-days prior to beginning project construction, the Project Applicant shall contact the Pechanga Tribe to notify the Tribe of grading, excavation and the monitoring program, and to coordinate with the City of*

Riverside, and/or FAA and the Tribe to develop a Cultural Resources Treatment and Monitoring Agreement. The Agreement shall address the treatment of known cultural resources, the designation, responsibilities, and participation of professional Native American Tribal monitors during grading, excavation and ground disturbing activities; project grading and development scheduling; terms of compensation for the monitors; and treatment and final disposition of any cultural resources, sacred sites, and human remains discovered on the site.

MM3. Prior to beginning project construction, the Project Archaeologist shall file a pre-grading report with the City of Riverside and/or FAA (if required) to document the proposed methodology for grading activity observation which will be determined in consultation with the Pechanga Tribe. Said methodology shall include the requirement for a qualified archaeological monitor to be present and have the authority to stop and redirect grading activities. In accordance with the agreement required in MM 2, the archaeological monitor's authority to stop and redirect grading will be exercised in consultation with the Pechanga Tribe in order to evaluate the significance of any archaeological resources discovered on the property. Tribal and archaeological monitors shall be allowed to monitor all grading, excavation and groundbreaking activities, and shall also have the authority to stop and redirect grading activities.

MM4. If human remains are encountered, California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the Riverside County Coroner has made the necessary findings as to origin. Further pursuant to California Public Resources Code Section 5097.98(b) remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. If the Riverside County Coroner determines the remains to be Native American, the Native American Heritage Commission must be contacted within 24 hours. The Native American Heritage Commission must then immediately identify the "most likely descendant(s)" of receiving notification of the discovery. The most likely descendant(s) shall then make recommendations within 48 hours, and engage in consultations concerning the treatment of the remains as provided in Public Resources Code 5097.98 and the Treatment Agreement described in MM 2.

MM5. The landowner shall relinquish ownership of all cultural resources, including sacred items, burial goods and all archaeological artifacts that are found on the project area to the appropriate Tribe for proper treatment and disposition.

MM6. All sacred sites, should they be encountered within the project area, shall be avoided and preserved as the preferred mitigation, if feasible.

MM7. If inadvertent discoveries of subsurface archaeological/cultural resources are discovered during grading, the Developer, the project archaeologist, and the Tribe shall assess the significance of such resources and shall meet and confer

regarding the mitigation for such resources. Pursuant to California Public Resources Code § 21083.2(b) avoidance is the preferred method of preservation for archaeological resources. If the Developer, the project archaeologist and the Tribe cannot agree on the significance or the mitigation for such resources, these issues will be presented to the Planning Director for decision. The Planning Director shall make the determination based on the provisions of the California Environmental Quality Act with respect to archaeological resources and shall take into account the religious beliefs, customs, and practices of the Tribe. Notwithstanding any other rights available under the law, the decision of the Planning Director shall be appealable to the Planning Commission and/or City Council.

The City of Riverside proposes to define an area on their Airport Layout Plan for RIV that encompasses site CA-RIV-1711 that will be identified as an "Environmentally Sensitive Area." While the site is within the airport property, the City proposes to install appropriate signage for airport employees to see and install native plants around the site to help protect the site and discourage off-airport passersby from attempting to recover any items from the site. As noted above, the Pechanga Tribe has offered to assist the City of Riverside in selecting plants that will help obscure the view of the site from off airport locations while not creating wildlife hazard attraction on the airport to ensure airport safety.

No other comments from Native American Tribes have been received by the FAA for the proposed undertaking. The proposed undertaking will occur entirely on RIV property.

3. National Register Eligibility Determinations. SWCA Environmental Consultants, the City of Riverside's cultural resources consultant, prepared the enclosed *Cultural Resources Survey Report*, dated February 2012. SWCA contacted the Eastern Information Center, and the California Native American Heritage Commission for site information. The consultant's archival investigations revealed that there were 14 other investigations within one mile of the APE.

A total of 47 previously recorded resources were identified within one mile of the APE. Of that 47, only one site was located within the APE. Site 33-11633, located at 6870 Doolittle Avenue is within the APE west of the main part of the airport. The Cultural Resources Survey Report indicates, on page D-40 that the structure was evaluated in 2002 and is unremarkable in architectural style and not eligible for inclusion into the National Register of Historic Places. Table 4 in the Cultural Resources Evaluation Report lists the Previously Recorded Cultural Resources in the APE and the one mile search radius.

There are no other properties within the APE that are listed in or eligible for inclusion into the National Register of Historic Places. Based on the information contained within the Cultural Resources Survey Report, the FAA has determined there are no historic properties listed or eligible for listing on the National Register of Historic Places within the APE for the proposed undertaking.

FAA seeks the California SHPO's concurrence with this determination.

4. Assessment of Adverse Effects on Historic Properties. Since the FAA has determined there are no historic properties listed or eligible for listing on the National Register of Historic Places within the APE, the FAA finds the proposed undertaking will not affect any properties listed or eligible for listing on the National Register of Historic Places under 36 CFR Part 800.4(d)(1). **FAA seeks the SHPO's concurrence with this finding.**

If you have any further questions about this matter, please call me at 310/725-3615.

Sincerely,

David B. Kessler, AICP
Regional Environmental Protection Specialist

Enclosures: Cultural Resources Survey Report

OFFICE OF HISTORIC PRESERVATION
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OCT 31 2012
Federal Aviation Administration
Western-Pacific Region
Airports Division - AWP-600

October 29, 2012

Reply In Reference To: FAA110114A

David Kessler
Regional Environmental Protection Specialist
Federal Aviation Administration
P.O. Box 92007
Los Angeles, CA 90009-2007

RE: Proposed Airport Improvements, Riverside Airport, City of Riverside, Riverside County, CA

Dear Mr. Kessler:

Thank you for consulting with me. You do so on behalf of the Federal Aviation Administration (FAA) in order to comply with Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470f), as amended, and its implementing regulation at 36 CFR Part 800. You are asking that I concur with a finding of No Adverse Effect to Historic Properties.

The City of Riverside (City) and the FAA are preparing environmental documentation for a construction project at Riverside Airport. This undertaking will include the following components:

- Construction of a new parallel and connecting taxiway system, north of Runway 9/27
- Construction of new aircraft parking apron
- Construction of access road with drainage and utility improvements north of Runway 9/27
- Grading on the north side of the airport
- Relocation of a 30-inch gas line out of the Runway 27 Approach End Runway Safety Area (RSA)
- Filling and grading of the RSAs at both ends of Runway 9/27 and the new taxiway system
- Federal reimbursement of land acquired for the Runway Protection Zone on the approach end of Runway 9 to the City

In a letter dated January 27, 2012 I concurred that the Area of Potential Effects (APE) had been adequately delineated. Since this time, the FAA has undertaken identification efforts within the APE. The results of these efforts are summarized in the following study:

- *Cultural Resources Survey for the Proposed Riverside Airport Improvement Project, City and County of Riverside, California* (SWCA Environmental Consultants: February 2012)

Qualified archaeologists reviewed existing records and performed a pedestrian survey of the APE. The records search indicates that one archaeological site (CA-RIV-1711) is located within the indirect APE. A pedestrian survey of the APE identified six cultural resources, all in the eastern portion of the survey area. These include one bedrock milling archaeological site (CA-RIV-8899/33-17095), two sites containing bedrock milling features and historic refuse scatters (CA-RIV-8897/33-17092 and CA-RIV-8898/33-17094), a water tank (33-17096), a historic site containing a refuse scatter and feature (33-17093), and one historic site containing concrete remnants and a refuse scatter (33-17097). All six resources are sited outside of the APE.

In 2009, sites 33-17093, 33-17096, and 33-17097 were evaluated and found ineligible for listing on the National Register of Historic Places (NRHP). The three bedrock milling sites may be affiliated or related to the previously recorded, but poorly mapped CA-RIV-1711. Although SWCA Environmental Consultants recorded the sites as three separate prehistoric or multi-component archeological sites, the sites may actually represent a single component ethnographic period occupation site associated with CA-RIV-1711. None of these sites has been formerly evaluated. The consulting archaeologists are of the opinion that while the sites lie outside of the area of direct effects, a Monitoring Plan should be established prior to implementation of the project. The archaeologists provided a sample monitoring plan.

In January 2012, based on a listing of Native American contacts provided by the California Native American Heritage Commission, the FAA contacted the following tribes by mail: the Quechan Tribe of the Fort Yuma Indian Reservation, the Yavapai-Apache Community Council, the Morongo Band of Cahuilla Mission Indians, the Pechanga Band of Mission Indians, the Ramona Band of Cahuilla Indians, the Santa Rosa Band of Mission Indians, the Soboba Band of Luiseno Indians, the Torres Martinez Desert Cahuilla Indians, the Ione Band of Miwok Indians, the Fort McDowell Yavapai Nation, the Colorado River Indian Tribes, The Cahuilla Band of Mission Indians, the Cabazon Band of Mission Indians, the Augustine Band of Mission Indians, and the Agua Caliente Band of Cahuilla Indians.

The FAA received one reply. Ms. Anna Hoover, Cultural Analyst with the Pechanga Tribe, expressed concerns about the effect of the proposed undertaking on an archaeological site identified as CA-RIV-1711. FAA conducted additional Government-to-Government consultation with the Pechanga Tribe in June 2012. The Tribe replied in a letter dated July 20, 2012 and submitted the following four project recommendations and seven specific mitigation measures for consideration on how to avoid Site CA-RIV-1711.

1. The Pechanga Tribe requests that due to the ongoing activities at the Airport, a long term Preservation Plan be developed between the Pechanga Tribe, the City of Riverside, and the FAA (if applicable) for the cultural site (CA-RIV-1711) located within Riverside Airport Boundaries.

2. The Pechanga Tribe requests to review the proposed signage that will be placed in the area, prior to printing and placement.

3. The Pechanga Tribe has in-house consultants that are knowledgeable regarding native plants. We offer our assistance to the City of Riverside in selecting the plant palette to be used around the cultural site.

4. Although the City and the FAA have removed the cultural site from the Project APE, there is still a potential that subsurface cultural resources could be impacted by the proposed grading and modification required to develop the proposed changes within the APE. Therefore we request the following mitigation measures be applied to the project:

> *MM1. Prior to beginning project construction, the Project Applicant shall retain a Riverside County qualified archaeological monitor to monitor all ground-disturbing activities in an effort to identify any unknown archaeological resources. Any newly discovered cultural resource deposits shall be subject to a cultural resources evaluation.*

MM2. At least 30-days prior to beginning project construction, the Project Applicant shall contact the Pechanga Tribe to notify the Tribe of grading, excavation and the monitoring program, and to coordinate with the City of Riverside, and/or FAA and the Tribe to develop a Cultural Resources Treatment and Monitoring Agreement. The Agreement shall address the treatment of known cultural resources, the designation, responsibilities, and participation of professional Native American Tribal monitors during grading, excavation and ground disturbing activities; project grading and development scheduling; terms of compensation for the monitors; and treatment and final disposition of any cultural resources, sacred sites, and human remains discovered on the site.

MM3. Prior to beginning project construction, the Project Archaeologist shall file a pre-grading report with the City of Riverside and/or FAA (if required) to document the proposed methodology for grading activity observation which will be determined in consultation with the Pechanga Tribe. Said methodology shall include the requirement for a qualified archaeological monitor to be present and have the authority to stop and redirect grading activities. In accordance with the agreement required in MM 2, the archaeological monitor's authority to stop and redirect grading will be exercised in consultation with the Pechanga Tribe in order to evaluate the significance of any archaeological resources discovered on the property. Tribal and archaeological monitors shall be allowed to monitor all grading, excavation and groundbreaking activities, and shall also have the authority to stop and redirect grading activities.

MM4. If human remains are encountered, California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the Riverside County Coroner has made the necessary findings as to origin. Further pursuant to California Public Resources Code Section 5097.98(b) remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. If the Riverside County Coroner determines the remains to be Native American, the Native American Heritage Commission must be contacted within 24 hours. The Native American Heritage Commission must then immediately identify the "most likely descendant(s)" of receiving notification of the discovery. The most likely descendant(s) shall then make recommendations within 48 hours, and engage in consultations concerning the treatment of the remains as provided in Public Resources Code 5097.98 and the Treatment Agreement described in MM 2.

MM5. The landowner shall relinquish ownership of all cultural resources, including sacred items, burial goods and all archaeological artifacts that are found on the project area to the appropriate Tribe for proper treatment and disposition.

MM6. All sacred sites, should they be encountered within the project area, shall be avoided and preserved as the preferred mitigation, if feasible.

MM7. If inadvertent discoveries of subsurface archaeological/cultural resources are discovered during grading, the Developer, the project archaeologist, and the Tribe shall assess the significance of such resources and shall meet and confer regarding the mitigation for such resources. Pursuant to California Public Resources Code § 21083.2(b) avoidance is the preferred method of preservation for archaeological resources. If the Developer, the project archaeologist and the Tribe cannot agree on the significance or the mitigation for such resources, these issues will be presented to the Planning Director for decision. The Planning Director shall make the determination based on the provisions of the California Environmental Quality Act with respect to

archaeological resources and shall take into account the religious beliefs, customs, and practices of the Tribe. Notwithstanding any other rights available under the law, the decision of the Planning Director shall be appealable to the Planning Commission and/or City Council.

The City of Riverside proposes to define an area on their Airport Layout Plan for RIV that encompasses site CA-RIV-1711 that will be identified as an "Environmentally Sensitive Area." While the site is within the airport property, the City proposes to install appropriate signage for airport employees to see and install native plants around the site to help protect the site and discourage off-airport passersby from attempting to recover any items from the site. As noted above, the Pechanga Tribe has offered to assist the City of Riverside in selecting plants that will help obscure the view of the site from off airport locations while not creating wildlife hazard attraction on the airport to ensure airport safety.

Having reviewed your latest submittal, I have the following comments:

1) I have no objections that the Area of Potential Effects (APE) has been properly determined and documented pursuant to 36 CFR Parts 800.4 (a)(1) and 800.16 (d);

2) I further concur that the finding of No Adverse Effect is appropriate pursuant to 36 CFR Part 800.5(c)(1) and that the documentation supporting this finding has been provided pursuant to 36 CFR Part 800.11(d);

3) I also concur that sites 33-17093, 33-17096, and 33-17097 are ineligible for listing on the NRHP;

4) I recommend the presence of an archaeological monitor during all ground disturbing activity;

5) I also recommend the FAA work with the Pechanga Tribe to address concerns and incorporate the above-referenced Mitigation Measures;

6) Be advised that under certain circumstances, such as an unanticipated discovery or a change in project description, you may have additional future responsibilities for this undertaking under 36 CFR Part 800.

Thank you for considering historic resources during project planning. If you have any questions or comments, please contact Tristan Tozer of my staff at (916) 445-7027, or email at ttozer@parks.ca.gov.

Sincerely,

Susan K Stratton for

Carol Roland-Nawi, PhD
State Historic Preservation Officer

Appendix E

NOISE MODELING & AIR QUALITY INPUT ASSUMPTIONS

Appendix E
NOISE MODELING AND AIR QUALITY INPUT ASSUMPTIONS

This appendix includes information about the noise and air quality modeling assumptions.

AIRCRAFT NOISE ANALYSIS METHODOLOGY

The standard methodology for analyzing noise conditions at airports involves the use of a computer simulation model. The Federal Aviation Administration (FAA) has approved the Integrated Noise Model (INM) for use in Environmental Assessments (EAs).

INM describes aircraft noise in either the *Yearly Day-Night Average Sound Level* (DNL) or the *Community Noise Equivalent Level* (CNEL). DNL accounts for the increased sensitivity to noise at night (10:00 p.m. to 7:00 a.m.) and is the metric preferred by the FAA, Environmental Protection Agency (EPA), and Department of Housing and Urban Development (HUD), among others, as an appropriate measure of cumulative noise exposure. In California, however, these agencies accept the use of CNEL which, in addition to nighttime sensitivities, also accounts for increased sensitivities during the evening hours (7:00 p.m. to 10:00 p.m.). The FAA has accepted the State of California 65 CNEL metric as the threshold of significance for the noise analysis. Further noise analysis is required if the results of the noise analysis indicate a 1.5 CNEL increase in noise over any noise-sensitive area located within the 65 CNEL noise contour.

CNEL is defined as the average A-weighted sound level as measured in decibels during a 24-hour period. A 10-decibel weighting is applied to noise events occurring at night, and a

4.8-decibel weighting is applied to those occurring during the evening hours. CNEL is a summation metric which allows for objective analysis and can describe noise exposure comprehensively over a large area. In addition to being widely accepted, the primary benefit of using the CNEL metric is that it accounts for the average community response to noise as determined by the actual number and types of noise events and the time of day they occur.

The INM works by defining a network of grid points at ground level around the airport. It then selects the shortest distance from each grid point to each flight track and computes the noise exposure for each aircraft operation by aircraft type and engine thrust level, along each flight track. Corrections are applied for air-to-ground acoustical attenuation, acoustical shielding of the aircraft engines by the aircraft itself, and aircraft speed variations. The noise exposure levels for each aircraft are summed at each grid location. The CNEL at all grid points is used to develop noise exposure contours for selected values (e.g., 65, 70, and 75 CNEL). Noise contours are then plotted on a base map of the airport environs using the CNEL metrics.

In addition to the mathematical procedures defined in the model, the INM has another very important element. This is a database containing tables correlating noise, thrust settings, and flight profiles for most of the civilian aircraft and many common military aircraft operating in the United States. This database, often referred to as the noise curve data, has been developed under FAA guidance based on rigorous noise monitoring in controlled settings. In fact, the INM database was developed through more than a decade of research, including extensive field measurements of more than 10,000 aircraft operations. The database also includes performance data for each aircraft to allow for the computation of airport-specific flight profiles (rates of climb and descent). The most recent version of the INM available at the start of this study, Version 7.0b, was used for modeling the noise condition for the purposes of this EA.

INM INPUT

A variety of user-supplied input data is required to use the INM. This includes the airport elevation, average annual temperature, airport area terrain, a mathematical definition of the airport runways, the mathematical description of ground tracks above which aircraft fly, and the assignment of specific take-off weights to individual flight tracks. In addition, aircraft not included in the model's database may be defined for modeling, subject to FAA approval.

- **Activity Data**

Airport activity is defined as the take-offs and landings by aircraft operating at the facility; this is also referred to as aircraft operations. Activity is further described as either *local*, indicating aircraft practicing take-offs and landings (i.e., performing touch-and-go's), or *itinerant*, referring to the initial departure from or final arrival at the airport.

Table E1 provides a summary of operations for the existing condition (2010) and two forecast years (2015 and 2020) for the Proposed Action and No Action alternatives.

Existing airport activity (i.e., take-offs and landings, or operations by aircraft) for 2010 was estimated using data collected from the FAA Enhanced Traffic Management System Counts (ETMSC).[1] Three percent was added to the itinerant operations to account for when the airport traffic control tower is closed (8:00 p.m. to 7:00 a.m.). Forecast operations were collected from the FAA *Terminal Area Forecast*.[2] In the Proposed Action scenarios, business jet and turboprop operations were assumed to increase due to the availability of facilities to accommodate these aircraft. In 2015, annual operations for business jets were assumed to increase 13 percent (from 655 to 740) and turboprops six percent (from 805 to 850). In 2020, annual operations for business jets were assumed to increase 15 percent (from 675 to 780) and turboprops seven percent (from 840 to 900).

- **Fleet Mix**

The selection of individual aircraft types is important to the modeling process because different aircraft types generate different noise levels. The aircraft fleet mix was derived from an inventory of existing operations at the airport. **Table E1** summarizes the generalized fleet mix data input into the noise analysis.

- **Database Selection**

In order to select the proper aircraft from the INM database, a review of the current fleet mix for Riverside Airport was conducted. Different aircraft types generate different noise levels; therefore, selection of individual aircraft plays an important role in the noise modeling process. The following paragraphs outline the database selections used for input into the INM.

Table E1 lists the annual operations by aircraft type. The included aircraft were selected to provide a realistic representation of airport operations. Flight plans, airline flight schedules, airfield observations, and based aircraft lists were used to determine the types of aircraft which frequently use the airport. To accurately represent the noise conditions at the airport, the INM provides aircraft noise data for many of the aircraft operating in the national fleet. For those aircraft not specifically identified in the INM, the FAA provides a list of appropriate substitute aircraft.

The FAA aircraft substitution list indicates that the general aviation single engine variable-pitch propeller model, the GASEPV, represents a number of single engine general aviation aircraft. Among others, these include the Beech Bonanza, Cessna 177 and 180, Piper Cherokee Arrow, and Cessna Caravan. The general aviation single engine fixed-pitch propeller

1 aspm.faa.gov/main/etmsc.asp, FAA Enhanced Traffic Management System Counts (ETMSC)
2 http://aspm.faa.gov/main/taf.asp, FAA Terminal Area Forecast December 2010

model, the GASEPF, also represents several single engine general aviation aircraft. These include the Cessna 150 and 172, Piper Archer, and the Piper Tomahawk.

TABLE E1
Operational Fleet Mix
Riverside Airport Aircraft Fleet Mix and Operations

Aircraft	INM Designator	2010[1] Existing	2015[2] No Action	2015[2,3] Proposed Action	2020[2] No Action	2020[2,3] Proposed Action
ITINERANT OPERATIONS						
Turbojet						
Business Jet	LEAR35	200	210	240	220	250
Business Jet	CNA500	160	165	180	175	210
Business Jet	MU3001	80	85	95	90	100
Business Jet	CNA55B	80	85	95	90	100
Business Jet	CL600	40	45	55	50	60
Business Jet	GIV0	40	45	55	50	60
Business Jet	LEAR25	40	20	20	0	0
Subtotal		640	655	740	675	780
Piston/Turboprop/Helicopter						
SEP (fixed)	GASEPF	13,900	14,300	14,300	15,200	15,200
SEP (variable)	GASEPV	13,900	14,300	14,300	15,200	15,200
MEP	BEC58P	1,490	1,538	1,538	1,739	1,739
Turboprop	DHC6	733	805	850	840	900
Helicopter	H500D	1,490	1,538	1,538	1,739	1,739
Subtotal		31,513	32,481	32,526	34,718	34,778
Military						
Helicopter	S70	44	80	80	80	80
Turboprop	C12	21	36	36	36	36
Subtotal		65	116	150	116	116
Total Itinerant		**32,218**	**33,252**	**33,382**	**35,509**	**35,674**
LOCAL OPERATIONS						
Piston/Turboprop/Helicopter						
SEP (fixed)	GASEPF	10,176	10,300	10,300	11,500	11,500
SEP (variable)	GASEPV	10,176	10,300	10,300	11,500	11,500
MEP	BEC58P	2,426	2,550	2,550	2,800	2,800
Helicopter	H500D	3,032	3,148	3,148	3,377	3,377
Subtotal		25,811	26,298	26,298	29,177	29,177
Military						
Helicopter	S70	53	88	88	88	88
Subtotal		53	88	88	88	88
Total Local		**28,864**	**26,386**	**26,386**	**29,265**	**29,265**
Total Operations		**58,082**	**59,638**	**59,768**	**64,774**	**64,939**

Source: [1] Riverside Airport Traffic Control Tower (ATCT). Three percent added to the itinerant operations to account for when the ATCT is closed.
[2] FAA *Terminal Area Forecasts* (December 2010)
[3] Coffman Associates analysis

The FAA's substitution list included with the INM documentation identifies the BEC58P, the Beech Baron, as a substitute for light twin-engine aircraft such as Beech 50, Beech 55, Piper PA-23, PA-30, PA-34, Cessna 304, Cessna 310, and Cessna 401 among others. Additionally,

the DCH6 is recommended for use in modeling the DeHavilland Dash 6, Beech King Air, and Mitsubishi MU-2. General aviation helicopter operations are represented by the H500D. All the above choices conform to the Pre-Approved Substitution List published by the FAA Office of Environment and Energy (AEE) branch in Washington, D.C.

- **Time-of-Day**

The time of day at which operations occur is important as input to the INM due to the 10-decibel nighttime (10:00 p.m. to 7:00 a.m.) and 4.8-decibel evening (7:00 p.m. to 10:00 p.m.) weighting of flights. In calculating airport noise exposure, one operation at night has the same noise emission value as 10 operations during the day by the same aircraft. While Riverside Airport does have an airport traffic control tower (ATCT), it is closed between 8:00 p.m. and 7:00 a.m. Counts for nighttime activity were derived from interviews with airport users and airport staff. Information obtained from these interviews was used to determine evening and nighttime aircraft operations for modeling the noise exposure contours. **Table E2** depicts the evening and nighttime percentages. These percentages of operations were applied to both the Proposed Action and No Action scenarios.

TABLE E2
Day/Evening/Night Runway Use Percentages by Aircraft Type
Riverside Airport

Aircraft Type	Day	Evening	Night
Single Engine Piston	80%	18%	2%
Multi-Engine Piston	90%	9%	1%
Turboprop	90%	9%	1%
Business Jet	90%	9%	1%
Helicopter	90%	9%	1%

Source: *Riverside Airport Master Plan, 2009*

- **Runway Use**

Runway usage data is another essential input to the INM. For modeling purposes, wind data analysis usually determines runway use percentages. Aircraft will normally land and take-off into the wind. However, wind analysis provides only the directional availability of a runway and does not consider pilot selection, primary runway operations, or local operating conventions.

The runway usage at the airport was established through discussions with the ATCT and airport staff. **Table E3** summarizes the runway use percentages for existing and forecast conditions.

TABLE E3
Existing and Future Runway Use by Aircraft Type
Riverside Airport

Arrivals and Departures				
Runway	**Business Jet**	**Turboprop**	**Piston**	**Military**
9	10%	10%	9%	10%
27	90%	90%	88%	90%
16	0%	0%	1%	0%
34	0%	0%	2%	0%

Source: *Riverside Airport Master Plan, 2009*

- **Flight Tracks**

A review of local and regional air traffic control procedures and radar flight tracks, conducted during the 1995 14 CFR Part 150 Noise Compatibility Study for the airport was used to develop consolidated flight tracks for use in the INM. The resulting analysis is a series of flight tracks describing the typical flight corridors used for aircraft arriving and departing Riverside Airport.

- **Flight Profiles**

The standard arrival profile used in the INM program is a three-degree approach. No indication was given by airport staff that there was any variation on this standard procedure; therefore, the standard approach was included in the model as representative of local operating conditions.

INM Version 7.0b computes the take-off profiles based on the user-supplied airport elevation and average annual temperature entries in the input batch. At Riverside Airport, the elevation is 818 feet mean sea level (MSL) and the average annual temperature is 56.1 degrees Fahrenheit (F), based on information from the National Oceanic and Atmospheric Administration. If other than standard conditions (temperature of 59 degrees F and elevations of zero feet MSL) are specified by the user, the profile generator automatically computes the take-off profiles using the airplane performance coefficients in the database and equations in the Society of Aeronautical Engineers, *Aerospace Information Report 1845* (SAE/AIR 1845).

The INM computes separate departure profiles (altitude at a specified distance from the airport with associated velocity and thrust settings) for each of the various types of aircraft using the airport.

INM OUTPUT

Output data selected for calculation by the INM are annual average noise contours in CNEL. The CNEL is a measure of the 24-hour noise level of a community to allow for comparison between the No Action and proposed development alternatives.

Computer files developed from data described in the previous section provided input to the INM, which generated output files for years and alternatives being evaluated. In accordance with FAA Orders 1050.1E and 5050.4B, the 65, 70, and 75 CNEL noise contours were produced for each alternative. Contours were prepared for the following: existing condition (2010), year of implementation (2015), and five years beyond (2020). Exhibits depicting the noise exposure contours are included in Chapter Three (Section 3.3.8) and Chapter Four (Section 4.2.11).

AIR QUALITY ANALYSIS METHODOLOGY

Air emissions occurring due to construction activity vary based on the project's duration and level of activity. Construction emissions occur mostly as exhaust products from the operation of construction equipment and vehicles, but can also occur as fugitive dust emissions from land disturbance during material staging, demolition, and movement. Evaporative emissions also result from asphalt paving operations. The type of construction equipment commonly used can be categorized as both off- and on-road equipment. Off-road equipment is normally used for earthwork, paving, demolition, and other on-site activities, while on-road equipment is typically used to transport and deliver supplies, material, and employees.

The equipment activity levels and vehicle parameters associated with the proposed improvements (i.e., horsepower, fuel type, expected hours of use) were estimated based on the expected construction schedule for the RAL improvements. Equipment/vehicle emission factors were developed using the CARB-approved emissions models OFFROAD2007 (for off-road equipment) and EMFAC2007 (for on-road equipment). The emission factors were applied to the schedule-specific equipment parameters to calculate the total level of emissions expected from equipment use. The assumptions used for off-road and on-road equipment are included in **Tables E4** and **E5**.

TABLE E4
Off-Road Equipment Construction Assumptions Input for OFFROAD2007
Riverside Airport

	Hours				
Off Road Equipment	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**>4 Years**
Pavers	0	80	0	40	200
Rollers	1440	480	0	200	1600
Scrapers	5600	320	40	200	160
Paving Equipment	0	80	0	60	240
Trenchers	480	160	120	260	1200
Excavators	720	80	80	80	400
Concrete/Industrial Saws	160	40	0	40	80
Cranes	0	0	120	0	40
Graders	1120	960	0	400	1600
Off-highway Trucks	240	480	80	280	0
Crushing/Proc. Equipment	480	0	0	0	0
Rough Terrain Forklifts	960	0	80	0	0
Rubber Tire Loaders	0	480	0	200	800
Tractors/Loaders/Backhoes	0	480	160	360	960
Crawler Tractor/Dozers	140	0	0	0	0
Skid Steer Loaders	960	960	160	480	2000

Source: Parsons-Brinckerhoff

TABLE E5
On-Road Equipment Construction Assumptions Input for EMFAC2007
Riverside Airport

	Year 1		Year 2		Year 3		Year 4		>4 Years	
On Road Vehicles	**Days**	**Miles Per Day**	**Days**	**Miles Per Day**	**Days**	**Miles Per Day**	**Days**	**Miles Per Day**	**Days**	**Miles Per Day**
8 Cubic Yard Dump Truck (HDDV6)	0	0	0	0	20	1	0	0	650	15
16 Cubic Yard Dump Truck (HDDV8a)	100	8	20	15	0	0	20	15	470	15
Water Truck (HDDV7)	300	20	120	20	20	2	40	20	800	20
Pick Up Trucks (HDGV2b)	300	50	200	50	40	50	0	0	900	50

Following are the modeling outputs generated from the EDMS emissions model.

Emissions Inventory Summary

(Short Tons per Year)

Proposed Action - Riverside Muni 2010

Category	CO2	CO	THC	NM...	VOC	TOG	NOx	SOx	PM-...	PM-...	Fuel Cons...
Aircraft	1,520.907	387.158	7.792	7.534	7.323	8.092	1.841	0.623	0.026	0.026	482.062
GSE	N/A	3.776	N/A	0.153	0.160	0.174	0.677	0.016	0.020	0.020	N/A
APUs	N/A	0.039	0.001	0.001	0.001	0.001	0.007	0.001	0.001	0.001	N/A
Parking Facilities	N/A	0.228	N/A	0.034	0.035	0.036	0.027	0.000	0.001	0.000	N/A
Roadways	N/A	0.069	N/A	0.006	0.006	0.006	0.010	0.000	0.000	0.000	N/A
Stationary Sources	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Training Fires	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grand Total	1,520.907	391.270	7.793	7.728	7.523	8.309	2.562	0.640	0.049	0.048	482.062

Emissions Inventory Summary

(Short Tons per Year)

No Action - Riverside Muni 2015

Category	CO2	CO	THC	NM...	VOC	TOG	NOx	SOx	PM-...	PM-...	Fuel Cons...
Aircraft	1,572.568	406.073	8.091	7.797	7.574	8.386	1.908	0.644	0.026	0.026	498.437
GSE	N/A	1.916	N/A	0.084	0.089	0.095	0.304	0.007	0.012	0.011	N/A
APUs	N/A	0.039	0.001	0.001	0.001	0.001	0.007	0.001	0.001	0.001	N/A
Parking Facilities	N/A	0.194	N/A	0.025	0.025	0.026	0.017	0.000	0.001	0.000	N/A
Roadways	N/A	0.059	N/A	0.004	0.004	0.005	0.006	0.000	0.000	0.000	N/A
Stationary Sources	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Training Fires	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grand Total	1,572.568	408.282	8.092	7.911	7.693	8.513	2.242	0.653	0.040	0.039	498.437

Emissions Inventory Summary

(Short Tons per Year)

Proposed Action - Riverside Muni 2015

Category	CO2	CO	THC	NM...	VOC	TOG	NOx	SOx	PM-...	PM-...	Fuel Cons...
Aircraft	1,603.854	406.506	8.229	7.957	7.733	8.546	1.958	0.657	0.030	0.030	508.353
GSE	N/A	2.091	N/A	0.090	0.094	0.102	0.320	0.008	0.012	0.012	N/A
APUs	N/A	0.045	0.001	0.001	0.001	0.001	0.008	0.001	0.001	0.001	N/A
Parking Facilities	N/A	0.194	N/A	0.025	0.025	0.026	0.017	0.000	0.001	0.000	N/A
Roadways	N/A	0.059	N/A	0.004	0.004	0.005	0.006	0.000	0.000	0.000	N/A
Stationary Sources	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Training Fires	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grand Total	1,603.854	408.897	8.230	8.077	7.858	8.680	2.309	0.666	0.044	0.043	508.353

Emissions Inventory Summary

(Short Tons per Year)

No Action - Riverside Muni 2020

Category	CO2	CO	THC	NM...	VOC	TOG	NOx	SOx	PM-...	PM-...	Fuel Cons...
Aircraft	1,682.028	443.123	8.630	8.287	8.046	8.926	2.039	0.689	0.026	0.026	533.131
GSE	N/A	0.927	N/A	0.050	0.053	0.056	0.129	0.007	0.007	0.007	N/A
APUs	N/A	0.039	0.001	0.001	0.001	0.001	0.007	0.001	0.001	0.001	N/A
Parking Facilities	N/A	0.192	N/A	0.022	0.022	0.024	0.012	0.000	0.001	0.000	N/A
Roadways	N/A	0.058	N/A	0.004	0.004	0.004	0.005	0.000	0.000	0.000	N/A
Stationary Sources	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Training Fires	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grand Total	1,682.028	444.341	8.631	8.363	8.125	9.011	2.192	0.697	0.035	0.034	533.131

Emissions Inventory Summary

(Short Tons per Year)

Proposed Action - Riverside Muni 2020

Category	CO2	CO	THC	NM...	VOC	TOG	NOx	SOx	PM-...	PM-...	Fuel Cons...
Aircraft	1,745.290	443.959	8.887	8.583	8.341	9.223	2.138	0.715	0.033	0.033	553.182
GSE	N/A	1.090	N/A	0.055	0.058	0.062	0.143	0.008	0.008	0.007	N/A
APUs	N/A	0.055	0.001	0.001	0.001	0.001	0.009	0.002	0.002	0.002	N/A
Parking Facilities	N/A	0.192	N/A	0.022	0.022	0.024	0.012	0.000	0.001	0.000	N/A
Roadways	N/A	0.058	N/A	0.004	0.004	0.004	0.005	0.000	0.000	0.000	N/A
Stationary Sources	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Training Fires	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grand Total	1,745.290	445.355	8.888	8.666	8.426	9.314	2.308	0.725	0.043	0.042	553.182

Appendix F

LAND USE ASSURANCE LETTER

Appendix F
LAND USE ASSURANCE LETTER

This appendix includes the land use assurance letter signed by the City of Riverside, as grant sponsor of Riverside Airport, pursuant to Section 511 (a)(5) of the Airport and Airway Improvement Act of 1982.

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CITY OF RIVERSIDE

Airport

April 20, 2011

Mr. David Kessler
Environmental Protection Specialist AWP-610.1
Federal Aviation Administration
Western-Pacific Region Airports Division
15000 Aviation Boulevard
Room 3012
Lawndale, CA 90261

Re: Riverside Airport Land Use Assurances

Dear Mr. Kessler:

The City of Riverside, as grant sponsor of the Riverside Airport, makes the following statement of compatible land use assurance pursuant to Section 511 (a)(5) of the Airport and Airway Improvement Act of 1982, as amended:

The City of Riverside provides assurance that appropriate action and enforcement of zoning laws has been or will be taken, to the extent reasonable, to restrict the use of land adjacent to or in the vicinity of the Riverside Airport to activities and purposes compatible with normal airport operation, including landing and takeoff of aircraft.

If you any questions please pass them on. I appreciate all the help and assistance you provide the Riverside Airport.

Sincerely,

Mark S. Ripley
Airport Director

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Appendix G

GLOSSARY OF TERMS

Glossary of Terms

100-YEAR FLOOD - This is a flood having a 1 percent chance of occurring in any given year. Zones A and V of a Flood Insurance Rate Map (FIRM) encompass the area comprising the 100-year floodplain.

A

ABOVE GROUND LEVEL: The elevation of a point or surface above the ground.

ACCELERATE-STOP DISTANCE AVAILABLE (ASDA): See declared distances.

ADVISORY CIRCULAR: External publications issued by the FAA consisting of nonregulatory material providing for the recommendations relative to a policy, guidance and information relative to a specific aviation subject.

AIR CARRIER: An operator which: (1) performs at least five round trips per week between two or more points and publishes flight schedules which specify the times, days of the week, and places between which such flights are performed; or (2) transports mail by air pursuant to a current contract with the U.S. Postal Service. Certified in accordance with Federal Aviation Regulation (FAR) Parts 121 and 127.

AIRCRAFT: A transportation vehicle that is used or intended for use for flight.

AIRCRAFT APPROACH CATEGORY: A grouping of aircraft based on 1.3 times the stall speed in their landing configuration at their maximum certificated landing weight. The categories are as follows:

- Category A: Speed less than 91 knots.
- Category B: Speed 91 knots or more, but less than 121 knots.
- Category C: Speed 121 knots or more, but less than 141 knots.
- Category D: Speed 141 knots or more, but less than 166 knots.
- Category E: Speed greater than 166 knots.

AIRCRAFT OPERATION: The landing, takeoff, or touch-and-go procedure by an aircraft on a runway at an airport.

AIRCRAFT OPERATIONS AREA (AOA): A restricted and secure area on the airport property designed to protect all aspects related to aircraft operations.

AIRCRAFT OWNERS AND PILOTS ASSOCIATION: A private organization serving the interests and needs of general aviation pilots and aircraft owners.

AIRCRAFT RESCUE AND FIRE FIGHTING: A facility located at an airport that provides emergency vehicles, extinguishing agents, and personnel responsible for minimizing the impacts of an aircraft accident or incident.

AIRFIELD: The portion of an airport which contains the facilities necessary for the operation of aircraft.

AIRLINE HUB: An airport at which an airline concentrates a significant portion of its activity and which often has a significant amount of connecting traffic.

AIRPLANE DESIGN GROUP (ADG): A grouping of aircraft based upon wingspan. The groups are as follows:

- Group I: Up to but not including 49 feet.
- Group II: 49 feet up to but not including 79 feet.
- Group III: 79 feet up to but not including 118 feet.
- Group IV: 118 feet up to but not including 171 feet.
- Group V: 171 feet up to but not including 214 feet.
- Group VI: 214 feet or greater.

AIRPORT AUTHORITY: A quasi-governmental public organization responsible for setting the policies governing the management and operation of an airport or system of airports under its jurisdiction.

AIRPORT BEACON: A navigational aid located at an airport which displays a rotating light beam to identify whether an airport is lighted.

AIRPORT CAPITAL IMPROVEMENT PLAN: The planning program used by the Federal Aviation Administration to identify, prioritize, and distribute funds for airport development and the needs of the National Airspace System to meet specified national goals and objectives.

AIRPORT ELEVATION: The highest point on the runway system at an airport expressed in feet above mean sea level (MSL).

AIRPORT IMPROVEMENT PROGRAM: A program authorized by the Airport and Airway Improvement Act of 1982 that provides funding for airport planning and development.

AIRPORT LAYOUT DRAWING (ALD): The drawing of the airport showing the layout of existing and proposed airport facilities.

AIRPORT LAYOUT PLAN (ALP): A scaled drawing of the existing and planned land and facilities necessary for the operation and development of the airport.

AIRPORT LAYOUT PLAN DRAWING SET: A set of technical drawings depicting the current and future airport conditions. The individual sheets comprising the set can vary with the complexities of the airport, but the FAA-required drawings include the Airport Layout Plan (sometimes referred to as the Airport Layout Drawing (ALD), the Airport Airspace Drawing, and the Inner Portion of the Approach Surface Drawing, On-Airport Land Use Drawing, and Property Map.

AIRPORT MASTER PLAN: The planner's concept of the long-term development of an airport.

AIRPORT MOVEMENT AREA SAFETY SYSTEM: A system that provides automated alerts and warnings of potential runway incursions or other hazardous aircraft movement events.

AIRPORT OBSTRUCTION CHART: A scaled drawing depicting the Federal Aviation Regulation (FAR) Part 77 surfaces, a representation of objects that penetrate these surfaces, runway, taxiway, and ramp areas, navigational aids, buildings, roads and other detail in the vicinity of an airport.

AIRPORT REFERENCE CODE (ARC): A coding system used to relate airport design criteria to the operational (Aircraft Approach Category) to the physical characteristics (Airplane Design Group) of the airplanes intended to operate at the airport.

AIRPORT REFERENCE POINT (ARP): The latitude and longitude of the approximate center of the airport.

AIRPORT SPONSOR: The entity that is legally responsible for the management and operation of an airport, including the fulfillment of the requirements of laws and regulations related thereto.

AIRPORT SURFACE DETECTION EQUIPMENT: A radar system that provides air traffic controllers with a visual representation of the movement of aircraft and other vehicles on the ground on the airfield at an airport.

AIRPORT SURVEILLANCE RADAR: The primary radar located at an airport or in an air traffic control terminal area that receives a signal at an antenna and transmits the signal to air traffic control display equipment defining the location of aircraft in the air. The signal provides only the azimuth and range of aircraft from the location of the antenna.

AIRPORT TRAFFIC CONTROL TOWER (ATCT): A central operations facility in the terminal air traffic control system, consisting of a tower, including an associated instrument flight rule (IFR) room if radar equipped, using air/ground communications and/or radar, visual signaling and other devices to provide safe and expeditious movement of terminal air traffic.

AIR ROUTE TRAFFIC CONTROL CENTER: A facility which provides en route air traffic control service to aircraft operating on an IFR flight plan within controlled airspace over a large, multi-state region.

AIRSIDE: The portion of an airport that contains the facilities necessary for the operation of aircraft.

AIRSPACE: The volume of space above the surface of the ground that is provided for the operation of aircraft.

AIR TAXI: An air carrier certificated in accordance with FAR Part 121 and FAR Part 135 and authorized to provide, on demand, public transportation of persons and property by aircraft. Generally operates small aircraft "for hire" for specific trips.

AIR TRAFFIC CONTROL: A service operated by an appropriate organization for the purpose of providing for the safe, orderly, and expeditious flow of air traffic.

AIR ROUTE TRAFFIC CONTROL CENTER (ARTCC): A facility established to provide air traffic control service to aircraft operating on an IFR flight plan within controlled airspace and principally during the en route phase of flight.

AIR TRAFFIC CONTROL SYSTEM COMMAND CENTER: A facility operated by the FAA which is responsible for the central flow control, the central altitude reservation system, the airport reservation position system, and the air traffic service contingency command for the air traffic control system.

AIR TRAFFIC HUB: A categorization of commercial service airports or group of commercial service airports in a metropolitan or urban area based upon the proportion of annual national enplanements existing at the airport or airports. The categories are large hub, medium hub, small hub, or non-hub. It forms the basis for the apportionment of entitlement funds.

AIR TRANSPORT ASSOCIATION OF AMERICA: An organization consisting of the principal U.S. airlines that represents the interests of the airline industry on major aviation issues before federal, state, and local government bodies. It promotes air transportation safety by coordinating industry and governmental safety programs and it serves as a focal point for industry efforts to standardize practices and enhance the efficiency of the air transportation system.

ALERT AREA: See special-use airspace.

ALTITUDE: The vertical distance measured in feet above mean sea level.

ANNUAL INSTRUMENT APPROACH (AIA): An approach to an airport with the intent to land by an aircraft in accordance with an IFR flight plan when visibility is less than three miles and/or when the ceiling is at or below the minimum initial approach altitude.

APPROACH LIGHTING SYSTEM (ALS): An airport lighting facility which provides visual guidance to landing aircraft by radiating light beams by which the pilot aligns the aircraft with the extended centerline of the runway on his final approach and landing.

APPROACH MINIMUMS: The altitude below which an aircraft may not descend while on an IFR approach unless the pilot has the runway in sight.

APPROACH SURFACE: An imaginary obstruction limiting surface defined in FAR Part 77 which is longitudinally centered on an extended runway centerline and extends outward and upward from the primary surface at each end of a runway at a designated slope and distance based upon the type of available or planned approach by aircraft to a runway.

APRON: A specified portion of the airfield used for passenger, cargo or freight loading and unloading, aircraft parking, and the refueling, maintenance and servicing of aircraft.

AREA NAVIGATION: The air navigation procedure that provides the capability to establish and maintain a flight path on an arbitrary course that remains within the coverage area of navigational sources being used.

ATTAINMENT AREA: An attainment area is a geographical area where the levels of all criteria air pollutants meet the NAAQS.

AUTOMATED TERMINAL INFORMATION SERVICE (ATIS): The continuous broadcast of recorded non-control information at towered airports. Information typically includes wind speed, direction, and runway in use.

AUTOMATED SURFACE OBSERVATION SYSTEM (ASOS): A reporting system that provides frequent airport ground surface weather observation data through digitized voice broadcasts and printed reports.

AUTOMATED WEATHER OBSERVATION STATION (AWOS): Equipment used to automatically record weather conditions (i.e. cloud height, visibility, wind speed and direction, temperature, dew point, etc.)

AUTOMATIC DIRECTION FINDER (ADF): An aircraft radio navigation system which senses and indicates the direction to a non-directional radio beacon (NDB) ground transmitter.

AVIGATION EASEMENT: A contractual right or a property interest in land over which a right of unobstructed flight in the airspace is established.

AZIMUTH: Horizontal direction expressed as the angular distance between true north and the direction of a fixed point (as the observer's heading).

B

BASE LEG: A flight path at right angles to the landing runway off its approach end. The base leg normally extends from the downwind leg to the intersection of the extended runway centerline. See "traffic pattern."

BASED AIRCRAFT: The general aviation aircraft that use a specific airport as a home base.

BEARING: The horizontal direction to or from any point, usually measured clockwise from true north or magnetic north.

BLAST FENCE: A barrier used to divert or dissipate jet blast or propeller wash.

BLAST PAD: A prepared surface adjacent to the end of a runway for the purpose of eliminating the erosion of the ground surface by the wind forces produced by airplanes at the initiation of takeoff operations.

BUILDING RESTRICTION LINE (BRL): A line which identifies suitable building area locations on the airport.

C

CANDIDATE SPECIES: Any species that either FWS or NMFS is considering for listing as "endangered" or "threatened", but has not yet been the subject of a proposed rule. These species have no legal status and do not have protection under the ESA. However, their inclusion is intended to alert Federal agencies of potential proposals or listings

CAPITAL IMPROVEMENT PLAN: The planning program used by the Federal Aviation Administration to identify, prioritize, and distribute Airport Improvement Program funds for airport development and the needs of the National Airspace System to meet specified national goals and objectives.

CARGO SERVICE AIRPORT: An airport served by aircraft providing air transportation of property only, including mail, with an annual aggregate landed weight of at least 100,000,000 pounds.

CATEGORY I: An Instrument Landing System (ILS) that provides acceptable guidance information to an aircraft from the coverage limits of the ILS to the point at which the localizer course line intersects the glide path at a decision height of 100 feet above the horizontal plane containing the runway threshold.

CATEGORY II: An ILS that provides acceptable guidance information to an aircraft from the coverage limits of the ILS to the point at which the localizer course line intersects the glide path at a decision height of 50 feet above the horizontal plane containing the runway threshold.

CATEGORY III: An ILS that provides acceptable guidance information to a pilot from the coverage limits of the ILS with no decision height specified above the horizontal plane containing the runway threshold.

CEILING: The height above the ground surface to the location of the lowest layer of clouds which is reported as either broken or overcast.

CIRCLING APPROACH: A maneuver initiated by the pilot to align the aircraft with the runway for landing when flying a predetermined circling instrument approach under IFR.

CLASS A AIRSPACE: See Controlled Airspace.

CLASS B AIRSPACE: See Controlled Airspace.

CLASS C AIRSPACE: See Controlled Airspace.

CLASS D AIRSPACE: See Controlled Airspace.

CLASS E AIRSPACE: See Controlled Airspace.

CLASS G AIRSPACE: See Controlled Airspace.

CLEAR ZONE: See Runway Protection Zone.

COMMERCIAL SERVICE AIRPORT: A public airport providing scheduled passenger service that enplanes at least 2,500 annual passengers.

COMMON TRAFFIC ADVISORY FREQUENCY: A radio frequency identified in the appropriate

aeronautical chart which is designated for the purpose of transmitting airport advisory information and procedures while operating to or from an uncontrolled airport.

COMPASS LOCATOR (LOM): A low power, low/medium frequency radio-beacon installed in conjunction with the instrument landing system at one or two of the marker sites.

CONICAL SURFACE: An imaginary obstruction-limiting surface defined in FAR Part 77 that extends from the edge of the horizontal surface outward and upward at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

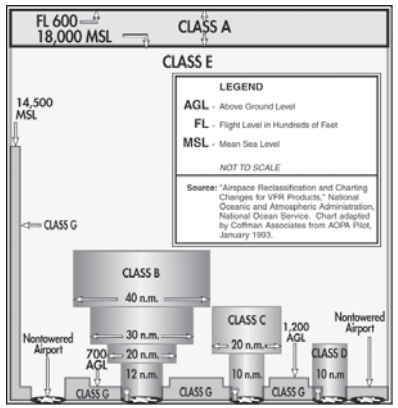
CONTROLLED AIRPORT: An airport that has an operating airport traffic control tower.

CONTROLLED AIRSPACE: Airspace of defined dimensions within which air traffic control services are provided to instrument flight rules (IFR) and visual flight rules (VFR) flights in accordance with the airspace classification. Controlled airspace in the United States is designated as follows:

- **CLASS A**: Generally, the airspace from 18,000 feet mean sea level (MSL) up to but not including flight level FL600. All persons must operate their aircraft under IFR.

- **CLASS B**:
  Generally, the airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports. The configuration of Class B airspace is unique to each airport, but typically consists of two or more layers of air space and is designed to contain all published instrument approach procedures to the airport. An air traffic control clearance is required for all aircraft to operate in the area.

- **CLASS C**: Generally, the airspace from the surface to 4,000 feet above the airport elevation (charted as MSL) surrounding those airports that have an operational control tower and radar approach control and are served by a qualifying number of IFR operations or passenger enplanements. Although individually tailored for each airport, Class C airspace typically consists of a surface area with a five nautical mile (nm) radius and an outer area with a 10 nautical mile radius that



extends from 1,200 feet to 4,000 feet above the airport elevation. Two-way radio communication is required for all aircraft.

- **CLASS D**: Generally, that airspace from the surface to 2,500 feet above the air port elevation (charted as MSL) surrounding those airports that have an operational control tower. Class D airspace is individually tailored and configured to encompass published instrument approach procedure . Unless otherwise authorized, all persons must establish two-way radio communication.

- **CLASS E**: Generally, controlled airspace that is not classified as Class A, B, C, or D. Class E airspace extends upward from either the surface or a designated altitude to the overlying or adjacent controlled airspace. When designated as a surface area, the airspace will be configured to contain all instrument procedures. Class E airspace encompasses all Victor Airways. Only aircraft following instrument flight rules are required to establish two-way radio communication with air traffic control.

- **CLASS G**: Generally, that airspace not classified as Class A, B, C, D, or E. Class G airspace is uncontrolled for all aircraft. Class G airspace extends from the surface to the overlying Class E airspace.

CONTROLLED FIRING AREA: See special-use airspace.

CRITICAL HABITAT: This is a designated area having physical and biological features essential to a listed species' survival. Examples include nesting grounds, migration routes, wintering grounds, or other areas needed to support a life history stage. A species need not occupy an area for it to be critical habitat.

CROSSWIND: A wind that is not parallel to a runway centerline or to the intended flight path of an aircraft.

CROSSWIND COMPONENT: The component of wind that is at a right angle to the runway centerline or the intended flight path of an aircraft.

CROSSWIND LEG: A flight path at right angles to the landing runway off its upwind end. See "traffic pattern."

D

DECIBEL: A unit of noise representing a level relative to a reference of a sound pressure 20 micro newtons per square meter.

DECISION HEIGHT: The height above the end of the runway surface at which a decision must be made by a pilot during the ILS or Precision Approach Radar approach to either continue the approach or to execute a missed approach.

DECLARED DISTANCES: The distances declared available for the airplane's takeoff runway, takeoff distance, accelerate-stop distance, and landing distance requirements. The distances are:

- **TAKEOFF RUNWAY AVAILABLE (TORA)**: The runway length declared available and suitable for the ground run of an airplane taking off.

- **TAKEOFF DISTANCE AVAILABLE (TODA)**: The TORA plus the length of any remaining runway and/or clear way beyond the far end of the TORA.

- **ACCELERATE-STOP DISTANCE AVAILABLE (ASDA)**: The runway plus stopway length declared available for the acceleration and deceleration of an aircraft aborting a takeoff.

- **LANDING DISTANCE AVAILABLE (LDA)**: The runway length declared available and suitable for landing.

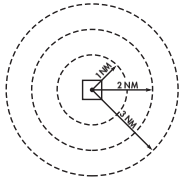
DEPARTMENT OF TRANSPORTATION: The cabinet level federal government organization consisting of modal operating agencies, such as the Federal Aviation Administration, which was established to promote the coordination of federal transportation programs and to act as a focal point for research and development efforts in transportation.

DIRECT EMISSIONS: Direct emissions are emissions caused by the Federal action that occur at the same time and place as the Federal action. They include emissions from temporary construction activities as well as emissions caused by operation of airport facilities and aircraft.

DISCRETIONARY FUNDS: Federal grant funds that may be appropriated to an airport based upon designation by the Secretary of Transportation or Congress to meet a specified national priority such as enhancing capacity, safety, and security, or mitigating noise.

DISPLACED THRESHOLD: A threshold that is located at a point on the runway other than the designated beginning of the runway.

DISTANCE MEASURING EQUIPMENT (DME): Equipment (airborne and ground) used to measure, in nautical miles, the slant range distance of an aircraft from the DME navigational aid.



DNL: The 24-hour average sound level, in A-weighted decibels, obtained after the addition of ten decibels to sound levels for the periods between 10 p.m. and 7 a.m. as averaged over a span of one year. It is the FAA standard metric for determining the cumulative exposure of individuals to noise.

DOWNWIND LEG: A flight path parallel to the landing runway in the direction opposite to landing. The downwind leg normally extends between the crosswind leg and the base leg. Also see "traffic pattern."

E

EASEMENT: The legal right of one party to use a portion of the total rights in real estate owned by another party. This may include the right of passage over, on, or below the property; certain air rights above the property, including view rights; and the rights to any specified form of development or activity, as well as any other legal rights in the property that may be specified in the easement document.

ELEVATION: The vertical distance measured in feet above mean sea level.

ENDANGERED SPECIES: Any species that either the U.S. Fish and Wildlife Service (FWS) or the National Marine Fisheries Service (NMFS) designates in danger of extinction throughout all or a significant portion of the species' range

ENPLANED PASSENGERS: The total number of revenue passengers boarding aircraft, including originating, stop-over, and transfer passengers, in scheduled and nonscheduled services.

ENPLANEMENT: The boarding of a passenger, cargo, freight, or mail on an aircraft at an airport.

ENTITLEMENT: Federal funds for which a commercial service airport may be eligible based upon its annual passenger enplanements.

ENVIRONMENTAL ASSESSMENT (EA): An environmental analysis performed pursuant to the National Environmental Policy Act to determine whether an action would significantly affect the environment and thus require a more detailed environmental impact statement.

ENVIRONMENTAL AUDIT: An assessment of the current status of a party's compliance with applicable environmental requirements of a party's environmental compliance policies, practices, and controls.

ENVIRONMENTAL DUE DILIGENCE AUDIT (EDDA): An EDDA is a systematic investigation of real property to determine if activities involving hazardous materials have occurred at a site or resulted in environmental contamination.

ENVIRONMENTAL IMPACT STATEMENT (EIS): A document required of federal agencies by the National Environmental Policy Act for major projects are legislative proposals affecting the environment. It is a tool for decision-making describing the positive and negative effects of a proposed action and citing alternative actions.

ENVIRONMENTAL JUSTICE: Environmental justice analysis considers the potential of Federal actions to cause disproportionate and adverse effects on low-income or minority populations. Environmental justice ensures no low-income or minority population bears a disproportionate burden of effects resulting from Federal actions.

ESSENTIAL AIR SERVICE: A federal program which guarantees air carrier service to selected small cities by providing subsidies as needed to prevent these cities from such service.

F

FEDERAL AVIATION REGULATIONS: The general and permanent rules established by the executive departments and agencies of the Federal Government for aviation, which are published in the Federal Register. These are the aviation subset of the Code of Federal Regulations.

FEDERAL INSPECTION SERVICES: The provision of customs and immigration services including passport inspection, inspection of baggage, the collection of duties on certain imported items, and the inspections for agricultural products, illegal drugs, or other restricted items.

FINAL APPROACH: A flight path in the direction of landing along the extended runway centerline. The final approach normally extends from the base leg to the runway. See "traffic pattern."

FINAL APPROACH AND TAKEOFF AREA (FATO). A defined area over which the final phase of the helicopter approach to a hover, or a landing is completed and from which the takeoff is initiated.

FINAL APPROACH FIX: The designated point at which the final approach segment for an aircraft landing on a runway begins for a non-precision approach.

FINDING OF NO SIGNIFICANT IMPACT (FONSI): A public document prepared by a Federal agency that presents the rationale why a proposed

action will not have a significant effect on the environment and for which an environmental impact statement will not be prepared.

FIXED BASE OPERATOR (FBO): A provider of services to users of an airport. Such services include, but are not limited to, hangaring, fueling, flight training, repair, and maintenance.

FLIGHT LEVEL: A designation for altitude within controlled airspace.

FLIGHT SERVICE STATION: An operations facility in the national flight advisory system which utilizes data interchange facilities for the collection and dissemination of Notices to Airmen, weather, and administrative data and which provides pre-flight and in-flight advisory services to pilots through air and ground based communication facilities.

FRANGIBLE NAVAID: A navigational aid which retains its structural integrity and stiffness up to a designated maximum load, but on impact from a greater load, breaks, distorts, or yields in such a manner as to present the minimum hazard to aircraft.

G

GENERAL AVIATION: That portion of civil aviation which encompasses all facets of aviation except air carriers holding a certificate of convenience and necessity, and large aircraft commercial operators.

GENERAL AVIATION AIRPORT: An airport that provides air service to only general aviation.

GENERAL CONFORMITY: General Conformity refers to the requirements under Section 176(c) of the Clean Air Act (CAA) for federal agencies to show that their actions conform to the purpose of the applicable SIP. Section 176(c) of the CAA states:

"No department, agency, or instrumentality of the Federal government must engage in, support in any way or provide financial aid for, license or permit, or approve, any activity which does not conform to an approved State Implementation Plan (SIP)."

As a result, Federal agencies cannot fund or approve activities that do not conform to the SIP established for a nonattainment or maintenance area. Therefore, a Federal action in nonattainment or maintenance area must not:

(1) cause or contribute to NAAQS new violations;
(2) increase the frequency or severity of any existing NAAQS; or
(3) delay the timely attainment of a NAAQS, interim emissions decreases, or other milestones.

GENERAL POPULATION: This is the population that an action affects, but that is not a low-income or minority population.

GLIDESLOPE (GS): Provides vertical guidance for aircraft during approach and landing. The glideslope consists of the following:

1. Electronic components emitting signals which provide vertical guidance by reference to airborne instruments during instrument approaches such as ILS; or

2. Visual ground aids, such as VASI, which provide vertical guidance for VFR approach or for the visual portion of an instrument approach and landing.

GLOBAL POSITIONING SYSTEM (GPS): A system of 24 satellites used as reference points to enable navigators equipped with GPS receivers to determine their latitude, longitude, and altitude.

GROUND ACCESS: The transportation system on and around the airport that provides access to and from the airport by ground transportation vehicles for passengers, employees, cargo, freight, and airport services.

H

HAZARDOUS MATERIALS: According to 49 CFR Part 172, Table 172.101, these are any substances or materials commercially transported that pose unreasonable risk to public health, safety, and property. They include hazardous wastes and hazardous substances as well as petroleum and natural gas substances and materials.

HAZARDOUS SUBSTANCES: Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. § 9601(14)) defines this term broadly. It includes hazardous waste, hazardous air pollutants,

hazardous substances designated as such pursuant to the Clean Water Act and the Toxic Substances Control Act and elements, compounds, mixtures, solutions, or substances listed in 40 CFR Part 302 that pose substantial harm to human health or environmental resources. It should be noted that, pursuant to CERCLA, hazardous substances do not include any petroleum or natural gas substances and materials.

HAZARDOUS WASTES: Regulations developed pursuant to the Resource Conservation and Recovery Act (RCRA) at 40 CFR Part 261, Subpart C, define this term. Hazardous wastes are solid wastes that are ignitable, corrosive, reactive, or toxic (sometimes called "characteristic wastes"). In addition, Subpart D contains a list of specific types of solid wastes that the EPA has deemed hazardous (sometimes called "listed wastes").

HELIPAD: A designated area for the takeoff, landing, and parking of helicopters.

HIGH INTENSITY RUNWAY LIGHTS: The highest classification in terms of intensity or brightness for lights designated for use in delineating the sides of a runway.

HIGH-SPEED EXIT TAXIWAY: A long radius taxiway designed to expedite aircraft turning off the runway after landing (at speeds to 60 knots), thus reducing runway occupancy time.

HISTORIC PROPERTY: A historic property is, "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in the National Register of Historic Places (NRHP) maintained by the Secretary of the Interior" (36 CFR Section 800.16(l)). Properties or sites having traditional religious or cultural importance to Native American Tribes and Hawaiian organizations may qualify. To qualify, a property must meet the criteria for eligibility under 36 CFR Section 60.4.

HORIZONTAL SURFACE: An imaginary obstruction- limiting surface defined in FAR Part 77 that is specified as a portion of a horizontal plane surrounding a runway located 150 feet above the established airport elevation. The specific horizontal dimensions of this surface are a function of the types of approaches existing or planned for the runway.

I

INDIRECT EMISSIONS: Indirect emissions are emissions caused by a proposed Federal action that occur later in time and/or at a distance from the proposed action.

INITIAL APPROACH FIX: The designated point at which the initial approach segment begins for an instrument approach to a runway.

INSTRUMENT APPROACH PROCEDURE: A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing, or to a point from which a landing may be made visually.

INSTRUMENT FLIGHT RULES (IFR): Procedures for the conduct of flight in weather conditions below Visual Flight Rules weather minimums. The term IFR is often also used to define weather conditions and the type of flight plan under which an aircraft is operating.

INSTRUMENT LANDING SYSTEM (ILS): A precision instrument approach system which normally consists of the following electronic components and visual aids:

1. Localizer.
2. Glide Slope.
3. Outer Marker.
4. Middle Marker.
5. Approach Lights.

INSTRUMENT METEOROLOGICAL CONDITIONS: Meteorological conditions expressed in terms of specific visibility and ceiling conditions that are less than the minimums specified for visual meteorological conditions.

ITINERANT OPERATIONS: Operations by aircraft that are not based at a specified airport.

J

JURISDICTIONAL WETLANDS - Section 404 of the Clean Water Act (CWA) governs the dredging and filling of navigable waters of the U.S. The term, "navigable waters of the U.S." includes wetlands connected or adjacent to navigable waters of the U.S.

Navigable waters of the U.S. are those waters that are subject to the ebb and flow of the tide and/or are used, have been used in the past, or may be susceptible to use to transport interstate or foreign commerce (see 33 CFR Section 329.4). In carrying out Section 404, the Corps uses 33 CFR Parts 320 through 330 to define wetlands under its jurisdiction. To conduct dredge or fill activities in these wetlands, the Corps must issue a permit authorizing those activities. Wetlands under the Corps' jurisdiction are:

"[A]reas that surface or groundwater inundate or saturate at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands include swamps, marshes, bogs, and similar areas."

K

KNOTS: A unit of speed length used in navigation that is equivalent to the number of nautical miles traveled in one hour.

L

LANDSIDE: The portion of an airport that provides the facilities necessary for the processing of passengers, cargo, freight, and ground transportation vehicles.

LANDING DISTANCE AVAILABLE (LDA): See declared distances.

LARGE AIRPLANE: An airplane that has a maximum certified takeoff weight in excess of 12,500 pounds.

LOCAL AREA AUGMENTATION SYSTEM: A differential GPS system that provides localized measurement correction signals to the basic GPS signals to improve navigational accuracy integrity, continuity, and availability.

LOCAL OPERATIONS: Aircraft operations performed by aircraft that are based at the airport and that operate in the local traffic pattern or within sight of the airport, that are known to be departing for or arriving from flights in local practice areas within a prescribed distance from the airport, or that execute simulated instrument approaches at the airport.

LOCAL TRAFFIC: Aircraft operating in the traffic pattern or within sight of the tower, or aircraft known to be departing or arriving from the local practice areas, or aircraft executing practice instrument approach procedures. Typically, this includes touch and-go training operations.

LOCALIZER: The component of an ILS which provides course guidance to the runway.

LOCALIZER TYPE DIRECTIONAL AID (LDA): A facility of comparable utility and accuracy to a localizer, but is not part of a complete ILS and is not aligned with the runway.

LONG RANGE NAVIGATION SYSTEM (LORAN): Long range navigation is an electronic navigational aid which determines aircraft position and speed by measuring the difference in the time of reception of synchronized pulse signals from two fixed transmitters. Loran is used for en route navigation.

LOW-INCOME: According to DOT Order 5610.2, Environmental Justice in Minority and Low-Income Populations, Appendix 1.a, this is a person having a median household income at or below the Department of Health and Human Services' (HHS) poverty guidelines. Although DOT Order 5610.2 directs DOT agencies to HHS poverty guidelines, guidance from the Council on Environmental Quality (CEQ) and the EPA uses the Census Bureau's annual statistical poverty thresholds on income and poverty (Series P-60) to define low income.

LOW-INCOME POPULATION: A low-income population is any readily identifiable group of low-income persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed/ transient persons (such as migrant workers or Native Americans) who will be similarly affected by a proposed program, policy, or activity.

LOW INTENSITY RUNWAY LIGHTS: The lowest classification in terms of intensity or brightness for lights designated for use in delineating the sides of a runway.

M

MAINTENANCE AREA: This is an area previously designated "nonattainment" but re-designated as a "maintenance area".

MEDIUM INTENSITY RUNWAY LIGHTS: The middle classification in terms of intensity or brightness for lights designated for use in delineating the sides of a runway.

MICROWAVE LANDING SYSTEM (MLS): An instrument approach and landing system that provides precision guidance in azimuth, elevation, and distance measurement.

MIGRATORY BIRD TREATY ACT OF 1918: Actions that may take a migratory bird species are prohibited. If an action may take a migratory bird or affect its breeding habitat, consultation with the FWS is needed. If it is determined there are no feasible alternatives to taking the migratory bird or its nest, FWS must issue a permit for the taking. The permit will likely require mitigation.

MILITARY OPERATIONS: Aircraft operations that are performed in military aircraft.

MINORITY: DOT Order 5610.2 Appendix 1.c defines this term as a person who is:
(1) Black (a person having origins in any of the black racial groups of Africa);
(2) Hispanic (a person of Mexican, Puerto Rican, Cuban, Central or South American, or Spanish culture or origin, regardless of race);
(3) Asian American (a person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands); or
(4) American Indian and Alaskan Native (a person having origins in any of the original peoples of North America and who preserves cultural identification through tribal affiliation or community recognition).

MINORITY POPULATION - This population is one the action would affect. It is comprised of Black, Hispanic, Asian-American, or American Indian and Alaskan Native individuals. Each, several, or all of these ethnic groups may live in geographic proximity to one another or may be geographically scattered or transient (e.g., migrant workers) who will be similarly affected by a proposed program, policy, or activity.

MILITARY OPERATIONS AREA (MOA): See special-use airspace

MILITARY TRAINING ROUTE: An air route depicted on aeronautical charts for the conduct of military flight training at speeds above 250 knots.

MISSED APPROACH COURSE (MAC): The flight route to be followed if, after an instrument approach, a landing is not affected, and occurring normally:

1. When the aircraft has descended to the decision height and has not established visual contact; or
2. When directed by air traffic control to pull up or to go around again.

MOVEMENT AREA: The runways, taxiways, and other areas of an airport which are utilized for taxiing/hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading ramps and parking areas. At those airports with a tower, air traffic control clearance is required for entry onto the movement area.

N

NATIONAL AIRSPACE SYSTEM: The network of air traffic control facilities, air traffic control areas, and navigational facilities through the U.S.

NATIONAL AMBIENT AIR QUALITY STANDARDS: Pursuant to the Clean Air Act, the U.S. Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for six "criteria" air pollutants: carbon monoxide (CO); lead (Pb);1 nitrogen dioxide (NO2), ozone (O_3), particulate matter (PM) for both PM_{10} and $PM_{2.5}$, and sulfur dioxide (SO_2). Compliance with the NAAQS means the ambient outdoor levels of these air pollutants are safe for human health, the public welfare, and the environment. States are responsible for designating areas that are attainment, nonattainment, or maintenance for each of the criteria pollutants. States are required to develop EPA-approved plans, called State Implementation Plans (SIPs), to achieve or maintain the NAAQS within timeframes set under the Clean Air Act.

THE NATIONAL ENVIRONMENTAL POLICY ACT, [42 USC SECTIONS 43214347]. - The Act establishes a national environmental policy and the Council on Environmental Quality (CEQ) to oversee the Act's implementation. The national policy encourages citizens to maintain productive and enjoyable relations between activities and the environment; to promote efforts preventing or removing damage to the environment and biosphere; to stimulate the health and welfare of man; and to

enrich our understanding of the Nation's ecological systems and natural resources.

NATIONAL PLAN OF INTEGRATED AIRPORT SYSTEMS: The national airport system plan developed by the Secretary of Transportation on a biannual basis for the development of public use airports to meet national air transportation needs.

NATIONAL TRANSPORTATION SAFETY BOARD: A federal government organization established to investigate and determine the probable cause of transportation accidents, to recommend equipment and procedures to enhance transportation safety, and to review on appeal the suspension or revocation of any certificates or licenses issued by the Secretary of Transportation.

NAUTICAL MILE: A unit of length used in navigation which is equivalent to the distance spanned by one minute of arc in latitude, that is, 1,852 meters or 6,076 feet. It is equivalent to approximately 1.15 statute mile.

NAVAID: A term used to describe any electrical or visual air navigational aids, lights, signs, and associated supporting equipment (i.e. PAPI, VASI, ILS, etc.)

NAVIGATIONAL AID: A facility used as, available for use as, or designed for use as an aid to air navigation.

NOISE CONTOUR: A continuous line on a map of the airport vicinity connecting all points of the same noise exposure level.

NONATTAINMENT AREA: A nonattainment area is a geographic area where the concentration of one or more of the criteria air pollutants is higher than the NAAQS. It is not uncommon for an area to have acceptable levels of five criteria pollutants but an unacceptable level for another. For example, the Washington, D.C., metropolitan area is simultaneously designated attainment for CO but nonattainment for 8-hour ozone.

NON-DIRECTIONAL BEACON (NDB): A beacon transmitting nondirectional signals whereby the pilot of an aircraft equipped with direction finding equipment can determine his or her bearing to and from the radio beacon and home on, or track to, the station. When the radio beacon is installed in conjunction with the Instrument Landing System marker, it is normally called a Compass Locator.

NONJURISDICTIONAL WETLANDS - Nonjurisdictional wetlands do not involve navigable waters because they are not connected to or adjacent to navigable waters of the United States (U.S.). Dredge and fill activities in these wetlands do not require U.S. Army Corps of Engineers (Corps) approvals, but these wetlands are natural resources FAA must assess under NEPA.

NON-POINT SOURCES: These include stormwater runoff from runways, taxiways, aprons, outdoor storage areas, or construction areas that do not flow through conveyance systems. Federal permits are not necessary for non-point source discharges.

NON-PRECISION APPROACH PROCEDURE: A standard instrument approach procedure in which no electronic glide slope is provided, such as VOR, TACAN, NDB, or LOC.

NOTICE TO AIRMEN: A notice containing information concerning the establishment, condition, or change in any component of or hazard in the National Airspace System, the
timely knowledge of which is considered essential to personnel concerned with flight operations.

O

OBJECT FREE AREA (OFA): An area on the ground centered on a runway, taxiway, or taxilane centerline provided to enhance the safety of aircraft operations by having the area free of objects, except for objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes.

OBSTACLE FREE ZONE (OFZ): The airspace below 150 feet above the established airport elevation and along the runway and extended runway centerline that is required to be kept clear of all objects, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function, in order to provide clearance for aircraft landing or taking off from the runway, and for missed approaches.

ONE-ENGINE INOPERABLE SURFACE: A surface emanating from the runway end at a slope

ratio of 62.5:1. Air carrier airports are required to maintain a technical drawing of this surface depicting any object penetrations by January 1, 2010.

OPERATION: The take-off, landing, or touch-and-go procedure by an aircraft on a runway at an airport.

OUTER MARKER (OM): An ILS navigation facility in the terminal area navigation system located four to seven miles from the runway edge on the extended centerline, indicating to the pilot that he/she is passing over the facility and can begin final approach.

P

PILOT CONTROLLED LIGHTING: Runway lighting systems at an airport that are controlled by activating the microphone of a pilot on a specified radio frequency.

POINT SOURCES: These are stormwater or other types of discharges from wastewater treatment plants, sanitary sewer systems, collection basins, or other water collection devices that flow through a conveyance (pipe) and discharge to a waterway. The states and the U.S. Environmental Protection Agency (EPA) issue National Pollutant Discharge Elimination System (NPDES) permits authorizing point source discharges into navigable waters of the United States under Section 402 of the Clean Water Act (CWA) (33 USC Section 1342).

PRECISION APPROACH: A standard instrument approach procedure which provides runway alignment and glide slope (descent) information. It is categorized as follows:

- **CATEGORY I (CAT I)**: A precision approach which provides for approaches with a decision height of not less than 200 feet and visibility not less than 1/2 mile or Runway Visual Range (RVR) 2400 (RVR 1800) with operative touchdown zone and runway centerline lights.
- **CATEGORY II (CAT II)**: A precision approach which provides for approaches with a decision height of not less than 100 feet and visibility not less than 1200 feet RVR.
- **CATEGORY III (CAT III)**: A precision approach which provides for approaches with minima less than Category II.

PRECISION APPROACH PATH INDICATOR (PAPI): A lighting system providing visual approach slope guidance to aircraft during a landing approach. It is similar to a VASI but provides a sharper transition between the colored indicator lights.

PRECISION APPROACH RADAR: A radar facility in the terminal air traffic control system used to detect and display with a high degree of accuracy the direction, range, and elevation of an aircraft on the final approach to a runway.

PRECISION OBJECT FREE AREA (POFA): An area centered on the extended runway centerline, beginning at the runway threshold and extending behind the runway threshold that is 200 feet long by 800 feet wide. The POFA is a clearing standard which requires the POFA to be kept clear of above ground objects protruding above the runway safety area edge elevation (except for frangible NAVAIDS). The POFA applies to all new authorized instrument approach procedures with less than 3/4 mile visibility.

PRIMARY AIRPORT: A commercial service airport that enplanes at least 10,000 annual passengers.

PRIMARY SURFACE: An imaginary obstruction limiting surface defined in FAR Part 77 that is specified as a rectangular surface longitudinally centered about a runway. The specific dimensions of this surface are a function of the types of approaches existing or planned for the runway.

PRIME FARMLAND: This is land having the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimal use of fuel, fertilizer, pesticides, or products.

PROHIBITED AREA: See special-use airspace.

PVC: Poor visibility and ceiling. Used in determining Annual Service Volume. PVC conditions exist when the cloud ceiling is less than 500 feet and visibility is less than one mile.

R

RADIAL: A navigational signal generated by a Very High Frequency Omni-directional Range or

VORTAC station that is measured as an azimuth from the station.

REGRESSION ANALYSIS: A statistical technique that seeks to identify and quantify the relationships between factors associated with a forecast.

REMOTE COMMUNICATIONS OUTLET (RCO): An unstaffed transmitter receiver/facility remotely controlled by air traffic personnel. RCOs serve flight service stations (FSSs). RCOs were established to provide ground-to-ground communications between air traffic control specialists and pilots at satellite airports for delivering en route clearances, issuing departure authorizations, and acknowledging instrument flight rules cancellations or departure/landing times.

REMOTE TRANSMITTER/RECEIVER (RTR): See remote communications outlet. RTRs serve ARTCCs.

RELIEVER AIRPORT: An airport to serve general aviation aircraft which might otherwise use a congested air-carrier served airport.

RESTRICTED AREA: See special-use airspace.

RNAV: Area navigation - airborne equipment which permits flights over determined tracks within prescribed accuracy tolerances without the need to overfly ground-based navigation facilities. Used en route and for approaches to an airport.

RUNOFF POLLUTANTS: Point source and non-point source runoff may contain pollutants such as metals, oils, greases, hazardous materials, solids, hydrocarbons, pesticides, and herbicides. During dry weather, pollutants can accumulate on impermeable surfaces, but during storms they are washed into creeks, streams, lakes, or other waters causing potential water quality impacts.

RUNWAY: A defined rectangular area on an airport prepared for aircraft landing and takeoff. Runways are normally numbered in relation to their magnetic direction, rounded off to the nearest 10 degrees. For example, a runway with a magnetic heading of 180 would be designated Runway 18. The runway heading on the opposite end of the runway is 180 degrees from that runway end. For example, the opposite runway heading for Runway 18 would be Runway 36 (magnetic heading of 360). Aircraft can takeoff or land from either end of a runway, depending upon wind direction.

RUNWAY ALIGNMENT INDICATOR LIGHT: A series of high intensity sequentially flashing lights installed on the extended centerline of the runway usually in conjunction with an approach lighting system.

RUNWAY END IDENTIFIER LIGHTS (REIL): Two synchronized flashing lights, one on each side of the runway threshold, which provide rapid and positive identification of the approach end of a particular runway.

RUNWAY GRADIENT: The average slope, measured in percent, between the two ends of a runway.

RUNWAY PROTECTION ZONE (RPZ): An area off the runway end to enhance the protection of people and property on the ground. The RPZ is trapezoidal in shape. Its dimensions are determined by the aircraft approach speed and runway approach type and minima.

RUNWAY SAFETY AREA (RSA): A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway.

RUNWAY VISIBILITY ZONE (RVZ): An area on the airport to be kept clear of permanent objects so that there is an unobstructed line of- site from any point five feet above the runway centerline to any point five feet above an intersecting runway centerline.

RUNWAY VISUAL RANGE (RVR): An instrumentally derived value, in feet, representing the horizontal distance a pilot can see down the runway from the runway end.

S

SCOPE: The document that identifies and defines the tasks, emphasis, and level of effort associated with a project or study.

SECTION 4(F) REQUIREMENTS: Section 4(f) states that, subject to exceptions for de minimis impacts, the Secretary of Transportation (Secretary)

may approve a transportation program or project requiring the use of publicly-owned land of a park, recreational area, or wildlife and waterfowl refuge of national, state, or local significance or land of a historic site of national, state, or local significance as determined by the official having jurisdiction over those resources only if:

(1) there is no prudent and feasible alternative that would avoid using those resources, and
(2) the program or project includes all possible planning to minimize harm resulting from the use.

SEGMENTED CIRCLE: A system of visual indicators designed to provide traffic pattern information at airports without operating control towers.

SHOULDER: An area adjacent to the edge of paved runways, taxiways, or aprons providing a transition between the pavement and the adjacent surface; support for aircraft running off the pavement; enhanced drainage; and blast protection. The shoulder does not necessarily need to be paved.

SLANT-RANGE DISTANCE: The straight line distance between an aircraft and a point on the ground.

SMALL AIRPLANE: An airplane that has a maximum certified takeoff weight of up to 12,500 pounds.

SPECIAL-USE AIRSPACE: Airspace of defined dimensions identified by a surface area wherein activities must be confined because of their nature and/or wherein limitations may be imposed upon aircraft operations that are not a part of those activities. Special-use airspace classifications include:

- **ALERT AREA**: Airspace which may contain a high volume of pilot training activities or an unusual type of aerial activity, neither of which is hazardous to aircraft.
- **CONTROLLED FIRING AREA**: Airspace wherein activities are conducted under conditions so controlled as to eliminate hazards to nonparticipating aircraft and to ensure the safety of persons or property on the ground.
- **MILITARY OPERATIONS AREA (MOA)**: Designated airspace with defined vertical and lateral dimensions established outside Class A airspace to separate/segregate certain military activities from instrument flight rule (IFR) traffic and to identify for visual flight rule (VFR) traffic where these activities are conducted.
- **PROHIBITED AREA**: Designated airspace within which the flight of aircraft is prohibited.
- **RESTRICTED AREA**: Airspace designated under Federal Aviation Regulation (FAR) 73, within which the flight of aircraft, while not wholly prohibited, is subject to restriction. Most restricted areas are designated joint use. When not in use by the using agency, IFR/VFR operations can be authorized by the controlling air traffic control facility.
- **WARNING AREA**: Airspace which may contain hazards to nonparticipating aircraft.

STANDARD INSTRUMENT DEPARTURE (SID): A preplanned coded air traffic control IFR departure routing, preprinted for pilot use in graphic and textual form only.

STANDARD INSTRUMENT DEPARTURE PROCEDURES: A published standard flight procedure to be utilized following takeoff to provide a transition between the airport and the terminal area or en route airspace.

STANDARD TERMINAL ARRIVAL ROUTE (STAR): A preplanned coded air traffic control IFR arrival routing, preprinted for pilot use in graphic and textual or textual form only.

STATE IMPLEMENTATION PLAN (SIP): This is a state's detailed description of the regulations, programs, and measures to be used in that state to reduce air pollution and fulfill its responsibilities under the Clean Air Act, as amended (CAA) to attain the NAAQS for all criteria pollutants within the legally required timeframes. The CAA requires each State to prepare and submit a SIP to EPA for approval. EPA's review process for SIPs includes opportunities for public comment.

STATEWIDE AND LOCALLY IMPORTANT FARMLAND: This is land that has been designated as "important" by either a state government (State Secretary of Agriculture or higher office) or by county commissioners or an equivalent elected body.

The State Conservationist representing the Natural Resource Conservation Service (NRCS)1 must agree with the designation.

STOP-AND-GO: A procedure wherein an aircraft will land, make a complete stop on the runway, and then commence a takeoff from that point. A stop-and-go is recorded as two operations: one operation for the landing and one operation for the takeoff.

STOPWAY: An area beyond the end of a takeoff runway that is designed to support an aircraft during an aborted takeoff without causing structural damage to the aircraft. It is not to be used for takeoff, landing, or taxiing by aircraft.

STRAIGHT-IN LANDING/APPROACH: A landing made on a runway aligned within 30 degrees of the final approach course following completion of an instrument approach.

T

TACTICAL AIR NAVIGATION (TACAN): An ultrahigh frequency electronic air navigation system which provides suitably-equipped aircraft a continuous indication of bearing and distance to the TACAN station.

TAKEOFF RUNWAY AVAILABLE (TORA): See declared distances.

TAKEOFF DISTANCE AVAILABLE (TODA): See declared distances.

TAXILANE: The portion of the aircraft parking area used for access between taxiways and aircraft parking positions.

TAXIWAY: A defined path established for the taxiing of aircraft from one part of an airport to another.

TAXIWAY SAFETY AREA (TSA): A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway.

TERMINAL INSTRUMENT PROCEDURES: Published flight procedures for conducting instrument approaches to runways under instrument meteorological conditions.

TERMINAL RADAR APPROACH CONTROL: An element of the air traffic control system responsible for monitoring the en-route and terminal segment of air traffic in the airspace surrounding airports with moderate to high levels of air traffic.

TETRAHEDRON: A device used as a landing direction indicator. The small end of the tetrahedron points in the direction of landing.

THREATENED SPECIES: Any species that either FWS or NMFS states is likely to become an endangered species within the foreseeable future throughout all or a significant portion of the species' range.

THRESHOLD: The beginning of that portion of the runway available for landing. In some instances the landing threshold may be displaced.

TOUCH-AND-GO: An operation by an aircraft that lands and departs on a runway without stopping or exiting the runway. A touch-and go is recorded as two operations: one operation for the landing and one operation for the takeoff.

TOUCHDOWN: The point at which a landing aircraft makes contact with the runway surface.

TOUCHDOWN AND LIFT-OFF AREA (TLOF): A load bearing, generally paved area, normally centered in the FATO, on which the helicopter lands or takes off.

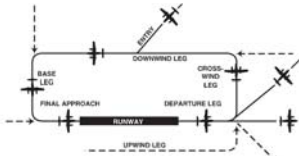
TOUCHDOWN ZONE (TDZ): The first 3,000 feet of the runway beginning at the threshold.

TOUCHDOWN ZONE ELEVATION (TDZE): The highest elevation in the touchdown zone.

TOUCHDOWN ZONE (TDZ) LIGHTING: Two rows of transverse light bars located symmetrically about the runway centerline normally at 100- foot intervals. The basic system extends 3,000 feet along the runway.

TRAFFIC PATTERN: The traffic flow that is prescribed for aircraft landing at or taking off from an airport. The components of a typical traffic pattern are the upwind leg, crosswind leg, downwind leg, base leg, and final approach.

Traffic Pattern Illustration



U

UNCONTROLLED AIRPORT: An airport without an air traffic control tower at which the control of Visual Flight Rules traffic is not exercised.

UNCONTROLLED AIRSPACE: Airspace within which aircraft are not subject to air traffic control.

UNIQUE FARMLAND: This is land used for producing high-value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture necessary to produce high quality crops or high yields of them economically.

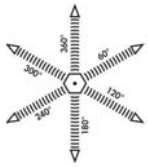
UNIVERSAL COMMUNICATION (UNICOM): A nongovernment communication facility which may provide airport information at certain airports. Locations and frequencies of UNICOM's are shown on aeronautical charts and publications.

UPWIND LEG: A flight path parallel to the landing runway in the direction of landing. See "traffic pattern."

V

VECTOR: A heading issued to an aircraft to provide navigational guidance by radar.

VERY HIGH FREQUENCY/ OMNIDIRECTIONAL RANGE (VOR): A ground-based electronic navigation aid transmitting very high frequency navigation signals, 360 degrees in azimuth, oriented from magnetic north. Used as the basis for navigation in the national airspace system. The VOR periodically identifies itself by Morse Code and may have an additional voice identification feature.



VERY HIGH FREQUENCY OMNI-DIRECTIONAL RANGE/ TACTICAL AIR NAVIGATION (VORTAC): A navigation aid providing VOR azimuth, TACAN azimuth, and TACAN distance-measuring equipment (DME) at one site.

VICTOR AIRWAY: A control area or portion thereof established in the form of a corridor, the centerline of which is defined by radio navigational aids.

VISUAL APPROACH: An approach wherein an aircraft on an IFR flight plan, operating in VFR conditions under the control of an air traffic control facility and having an air traffic control authorization, may proceed to the airport of destination in VFR conditions.

VISUAL APPROACH SLOPE INDICATOR (VASI): An airport lighting facility providing vertical visual approach slope guidance to aircraft during approach to landing by radiating a directional pattern of high intensity red and white focused light beams which indicate to the pilot that he is on path if he sees red/white, above path if white/white, and below path if red/red. Some airports serving large aircraft have three-bar VASI's which provide two visual guide paths to the same runway.

VISUAL FLIGHT RULES (VFR): Rules that govern the procedures for conducting flight under visual conditions. The term VFR is also used in the United States to indicate weather conditions that are equal to or greater than minimum VFR requirements. In addition, it is used by pilots and controllers to indicate type of flight plan.

VISUAL METEOROLOGICAL CONDITIONS: Meteorological conditions expressed in terms of specific visibility and ceiling conditions which are equal to or greater than the threshold values for instrument meteorological conditions.

VOR: See "Very High Frequency Omnidirectional Range Station."

VORTAC: See "Very High Frequency Omnidirectional Range Station/Tactical Air Navigation."

W

WARNING AREA: See special-use airspace.

WIDE AREA AUGMENTATION SYSTEM: An enhancement of the Global Positioning System that includes integrity broadcasts, differential corrections, and additional ranging signals for the purpose of providing the accuracy, integrity, availability, and continuity required to support all phases of flight.

Abbreviations

AC: advisory circular

ADF: automatic direction finder

ADG: airplane design group

AEM: Area Equivalent Method

AFSS: automated flight service station

AGL: above ground level

AIA: annual instrument approach

AIP: Airport Improvement Program

AIR-21: Wendell H. Ford Aviation Investment and Reform Act for the 21st Century

ALS: approach lighting system

ALSF-1: standard 2,400-foot high intensity approach lighting system with sequenced flashers (CAT I configuration)

ALSF-2: standard 2,400-foot high intensity approach lighting system with sequenced flashers (CAT II configuration)

AOA: Aircraft Operation Area

APE: Area of Potential Effect

APV: instrument approach procedure with vertical guidance

ARC: airport reference code

ARFF: aircraft rescue and fire fighting

ARP: airport reference point

ARPA: Archeological Resources Protection Act

ARTCC: air route traffic control center

ASDA: accelerate-stop distance available

ASOS: automated surface observation station

ASR: airport surveillance radar

AST: Above Ground Storage Tank

ATCT: airport traffic control tower

ATIS: automated terminal information service

AVGAS: aviation gasoline - typically 100 low lead (100L)

AWOS: automated weather observation station

BA: Biological Assessment

BE: Biological Evaluation

BMP: Best Management Practice

BRL: building restriction line

CAA: Clean Air Act

CalTrans - California Department of Transportation

CDFG - California Department of Fish and Game

CEQ: Council on Environmental Quality

CFR: Code of Federal Regulation

CIP: capital improvement program

CNEL - Community Equivalent Noise Level

CO: Carbon Monoxide

CWA: Clean Water Act

CZM: Coastal Zone Management

CZMA: Coastal Zone Management Act

DME: distance measuring equipment

DNL: day-night noise level

DOD: Department of Defense

DOI: Department of the Interior

DOT: Department of Transportation

DTWL: runway weight bearing capacity of aircraft with dual-tandem type landing gear

DWL: runway weight bearing capacity of aircraft with dual-wheel type landing gear

EA: Environmental Assessment

EDDA: Environmental Due Diligence Audit

EDMS: Emissions and Dispersion Modeling System

EO: Executive Order

EPA: Environmental Protection Agency

ESA: Endangered Species Act

FAA: Federal Aviation Administration

FAR: Federal Aviation Regulation

FBO: fixed base operator

FEMA: Federal Emergency Management Agency

FICON: Federal Interagency Committee on Noise

FIRM: Flood Insurance Rate Map

FONSI: Finding of No Significant Impact

FPPA: Farmland Protection Policy Act

FR: Federal Register

FY: fiscal year

GPS: global positioning system

GS: glide slope

HIRL: high intensity runway edge lighting

HUD: Department of Housing and Urban Development

IFR: instrument flight rules (FAR Part 91)

ILS: instrument landing system

IM: inner marker

INM: Integrated Noise Model

JD: Jurisdictional Delineation

LDA: localizer type directional aid

LDA: landing distance available

LIRL: low intensity runway edge lighting

LMM: compass locator at ILS outer marker

LORAN: long range navigation

MALS: midium intensity approach lighting system with indicator lights

MIRL: medium intensity runway edge lighting

MITL: medium intensity taxiway edge lighting

MLS: microwave landing system

MSL: mean sea level

MM: middle marker

MOA: military operations area

NAAQS: National Ambient Air Quality Standards

NAS: National Airspace System

NAVAID: navigational aid

NCP: Noise Compatibility Program

NDB: nondirectional radio beacon

NEPA: National Environmental Policy Act

NHPA: National Historic Preservation Act

NM: nautical mile (6,076.1 feet)

NO_2: Nitrogen Dioxide

NPDES: National Pollution Discharge Elimination System Permit

NPIAS: National Plan of Integrated Airport Systems

NPRM: notice of proposed rule making

NRCS: National Resources Conservation Service
NRHP: National Register of Historic Places

NRI: Nationwide Rivers Inventory

O_3: Ozone

ODALS: omnidirectional approach lighting system

OFA: object free area

OFZ: obstacle free zone

OHWM: Ordinary High Water Mark

OM: outer marker

PAC: planning advisory committee

PAPI: precision approach path indicator

PCL: pilot-controlled lighting

PFC: porous friction course

PFC: passenger facility charge

PIW public information workshop

PL: Public Law

PLASI: pulsating visual approach slope indicator

PM_{10}: Particulate Matter 10 microns or larger

$PM_{2.5}$: Particulate Matter 2.5 microns or larger

POFA: precision object free area

PVASI: pulsating/steady visual approach slope indicator

PVC: poor visibility and ceiling

RCO: remote communications outlet

REIL: runway end identifier lighting

RNAV: area navigation

ROD: Record of Decision

RPZ: runway protection zone
RSA: runway safety area

RTR: remote transmitter/receiver

RVR: runway visibility range

RVZ: runway visibility zone

SALS: short approach lighting system

SASP: state aviation system plan

SCS: Soil Conservation Service

SEL: sound exposure level

SHPO: State Historic Preservation Officer

SID: standard instrument departure

SIP: State Implementation Plan

SM: statute mile (5,280 feet)

SO_2: Sulfer Dioxide

SRE: snow removal equipment

SSALF: simplified short approach lighting system with runway alignment indicator lights

STAR: standard terminal arrival route

SWL: runway weight bearing capacity for aircraft with single-wheel tandem type landing gear

TACAN: tactical air navigational aid

TAF: Federal Aviation Administration (FAA) Terminal Area Forecast

TDZ: touchdown zone

TDZE: touchdown zone elevation

THPO: Tribal Historic Preservation Officer

Abbreviations

TODA: takeoff distance available

TORA: takeoff runway available

TRACON: terminal radar approach control

TSA: Transportation Security Administration

USACOE: United States Army Corps of Engineers

USDA: United States Department of Agriculture

USFWS: United States Fish and Wildlife Services

UST: Underground Storage Tank

VASI: visual approach slope indicator

VFR: visual flight rules (FAR Part 91)

VHF: very high frequency

VOC: Volatile organic compound

VOR: very high frequency omni-directional range

VORTAC: VOR and TACAN collocated

WQC: Water Quality Certificate

WUS: Waters of the United States

Coffman Associates Airport Consultants

Appendix H

PUBLIC INVOLVEMENT

APPENDIX H
PUBLIC INVOLVEMENT

This appendix contains materials relating to the public involvement process conducted during the preparation of the Environmental Assessment (EA) and for the Draft EA.

Beginning January 18, 2013, a copy of the Draft EA was made available for public and agency review at the following locations during normal business hours:

- Federal Aviation Administration, Western-Pacific Region, Office of the Airports Division,
  15000 Aviation Boulevard, Hawthorne, CA 90261;
- Administrative Office of the Riverside Airport, Suite 210, 6951 Flight Road, Riverside, CA 92504;
- Riverside City Hall, 3900 Main St., Riverside, CA 92522
- Riverside Main Library, 3581 Mission Inn Ave., Riverside, CA 92501
- Riverside Arlington Branch Library, 9556 Magnolia Ave., Riverside, CA 92503
- Riverside Arlanza Branch Library, 8267 Philbin Ave., Riverside, CA 92503
- Riverside Casa Blanca Branch Library, 2985 Madison St., Riverside, CA 92504
- Riverside Eastside Branch Library, 4033-C Chicago Ave., Riverside, CA 92507
- Riverside Marcy Branch Library, 6927 Magnolia Ave., Riverside, CA 92506
- Riverside Orange-Terrace Branch Library, 20010-B Orange Terrace Pkwy., Riverside, CA 92508

The comment period on the contents of the Draft EA began January 18, 2013 and extended through February 22, 2013. A Notice of Availability was published in *The Press-Enterprise*

on January 18, 2013 and February 6, 2013 announcing availability of the Draft EA. A copy of the Notice is included in this appendix.

INTERNET

The Draft EA was made available at http://www.riversideairportea.airportstudy.com.

COMMENTS RECEIVED

No comments were received during the comment period.

THE PRESS-ENTERPRISE

3450 Fourteenth Street
Riverside, CA 92501-3878
951-684-1200
951-368-9018 FAX

PROOF OF PUBLICATION
(2010, 2015.5 C.C.P)

Publication(s): The Press-Enterprise

PROOF OF PUBLICATION OF

Ad Desc.: /

I am a citizen of the United States. I am over the age of eighteen years and not a party to or interested in the above entitled matter. I am an authorized representative of THE PRESS-ENTERPRISE, a newspaper in general circulation, printed and published daily in the County of Riverside, and which newspaper has been adjudicated a newspaper of general circulation by the Superior Court of the County of Riverside, State of California, under date of April 25, 1952, Case Number 54446, under date of March 29, 1957, Case Number 65673, and under date of August 25, 1995, Case Number 267864; that the notice, of which the annexed is a printed copy, has been published in said newspaper in accordance with the instructions of the person(s) requesting publication, and not in any supplement thereof on the following dates, to wit:

01/18/2013

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Date: January 18, 2013
At: Riverside, California

RIVERSIDE MUNICIPAL AIRPORT, CORINNE
RIVERSIDE MUNICIPAL AIRPORT
6951 FLIGHT ROAD
ADMIN OFFICE SUITE 210
RIVERSIDE, CA 92504

Ad Number: 0000971916-01

P.O. Number:

Ad Copy:

NOTICE OF AVAILABILITY OF DRAFT ENVIRONMENTAL ASSESSMENT

Pursuant to Title 49, United States Code, § 47106(c)(1)(A), notice is hereby given that the City of Riverside, California, proposes to seek reimbursement from the Federal Aviation Administration (FAA) for approximately 13.1 acres of land purchased by the City of Riverside within the Runway Protection Zone (RPZ) for Runway 9, improve the Runway Safety Area (RSA) for Runway 27 to meet FAA airport design standards and to make improvements to the north side of the airport by grading, developing gate controlled road access, aircraft parking apron and parallel taxiway access. The City also proposes to relocate a 30-inch diameter natural gas line within the Runway Protection Zone and north side grading area. This work will occur at Riverside Airport (RIV), City of Riverside, Riverside County, California.

The purpose of the proposed action for the north side grading project is to ensure the FAA airport design standards are upheld to the maximum extent practicable and provide developable area to accommodate near-term airside facility demand. The purpose of the Runway 27 RSA Project is to enhance the level of safety provided by RSAs at the Airport to comply with standards included in Federal Aviation Administration (FAA) Advisory Circular 150/5300-13A, Airport Design.

The Draft EA evaluates the potential environmental effects of the Proposed Action described above and has been prepared pursuant to the requirements of Section 102(2)(c) of the National Environmental Policy Act of 1969 (NEPA), and Section 509(b)(5) of the Airport and Airway Improvement Act of 1982, as amended. The FAA is the lead federal agency to ensure compliance with NEPA for airport development actions. The Draft EA has also been prepared in accordance with FAA Order 1050.1E, Environmental Impacts: Policies and Procedures; and FAA Order 5050.4B, National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions. Pursuant to the federal Endangered Species Act, Clean Water Act, Clean Air Act, National Historic Preservation Act, the Draft EA includes an analysis of prudent or feasible alternatives analysis, potential impacts, and mitigation measures, as appropriate.

Beginning on January 18, 2013 the Draft EA will be available for public review at:
riversidealiportea.airportstudy.com.

- Federal Aviation Administration, Western-Pacific Region, Office of the Airports Division, 15000 Aviation Boulevard, Hawthorne, CA 90261;
- Administrative Office of the Riverside Airport, Suite 210, 6951 Flight Road, Riverside, California 92504;
- Riverside City Hall, 3900 Main St, Riverside CA 92522
- Riverside Main Library, 3581 Mission Inn Ave, Riverside CA 92501
- Riverside Arlington Branch Library 9556 Magnolia Ave, Riverside, CA 92503
- Riverside Arlanza Branch Library 8267 Philbin Ave, Riverside, CA 92503
- Riverside Casa Blanca Branch Library 2985 Madison St, Riverside, CA 92504
- Riverside Eastside Branch Library 4033-C Chicago Ave, Riverside, CA 92507
- Riverside Marcy Branch Library 6927 Magnolia Avenue Riverside, CA 92506 Riverside Orange-Terrace Branch 20010-B Orange Terrace Pkwy Riverside, CA 92508

Written comments on the adequacy of the information disclosed in the Draft EA may be submitted by mail or facsimile to:

Mr. Mark S. Ripley
Airport Director
Riverside Municipal Airport
6951 Flight Road, Suite 210
Riverside, California 92504
FAX: (951) 359-3570

Comments may also be submitted electronically at the website listed above or to Mr. Ripley at MRipley@riversideca.gov.

Comments must be received by 5:00 p.m. Pacific Standard Time on Friday, February 22, 2013. Please ensure adequate time for mailing. Comments received on the Draft EA and the responses to those comments will be disclosed in the Final EA.

Before including your name and telephone number, email 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 your personal identifying information from public review, we cannot guarantee that we will be able to do so. 1/18

THE PRESS-ENTERPRISE

3450 Fourteenth Street
Riverside, CA 92501-3878
951-684-1200
951-368-9018 FAX

PROOF OF PUBLICATION
(2010, 2015.5 C.C.P)

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02/06/2013

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Date: February 06, 2013
At: Riverside, California

RIVERSIDE MUNICIPAL AIRPORT
6951 FLIGHT ROAD
ADMIN OFFICE SUITE 210
RIVERSIDE, CA 92504

Ad Number: 0000984374-01

P.O. Number:

Ad Copy:

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2/6

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Airport Consultants

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