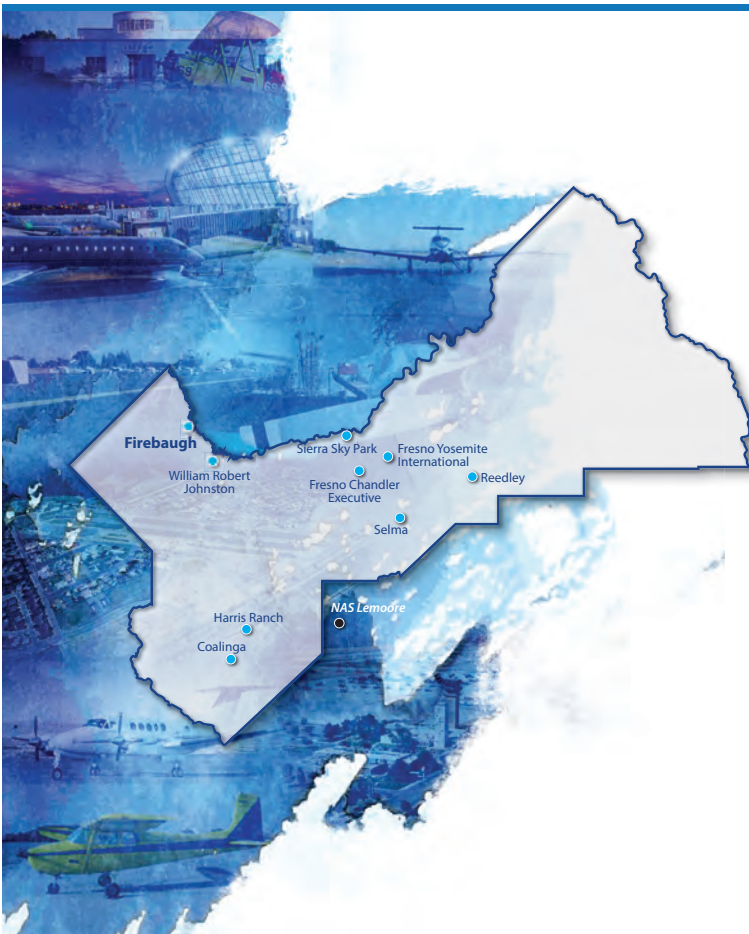




Fresno Council
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Appendix B

FIREBAUGH AIRPORT



Appendix B: Firebaugh Airport

Appendix B provides an overview of Firebaugh Airport's (Airport) setting, airport influence area, safety zones, noise, and airspace and overflight areas. This Appendix also discusses existing and planned land uses, as well as current and future Airport facilities.

Firebaugh Airport is a public use airport located less than one mile west of the City of Firebaugh, which is in the northwestern corner of Fresno County. The Airport sits at an elevation of 157 feet above mean sea level on 37 acres of land. The 2017 – 2021 *National Plan of Integrated Airports* (NPIAS) classifies Firebaugh Airport as a basic general aviation facility and the 2013 *California Aviation System Plan* (CASP) classifies it as a community-agriculture airport. The Airport is used primarily for agricultural purposes. It is estimated that 95 percent of all traffic at the Airport is conducted with crop dusting planes to perform aerial application operations. In addition to agricultural uses, the Airport also has some private aviation use.¹

SAFETY ZONES

The AIA and Safety Zones for Firebaugh Airport are shown on **Exhibit B1**. Figure 3A of the California Airport Land Use Planning Handbook (Handbook) provides three example zones for general aviation airports, which are differentiated by runway length. The Handbook zone examples are provided as a starting point for developing safety zones specific to an airport. As discussed below, Firebaugh Airport has one runway, Runway 12-30, which is 3,102 feet long. The Federal Aviation Administration (FAA)-approved Airport Layout Plan (ALP) does not include any changes to the runway length. Therefore, the Safety Zones are based on the Short General Aviation Runway example. For this plan, the outermost

¹ Meeting with Airport manager in July 2017.

zone in the Handbook examples was replaced by the 14 CFR Part 77 Conical Surface, which also represents the airspace and overflight review area boundaries. Additional information regarding the safety compatibility zones can be found in **Appendix M**.

NOISE

The standard methodology for analyzing noise conditions at airports involves the use of a computer simulation model. The Airport Environmental Design Tool Version 2c (AEDT) is accepted by the State of California and required by the FAA for developing noise exposure contours. This is the model used to develop the noise exposure contours for this Airport Land Use Compatibility Plan (ALUCP). The following sections describe the noise modeling inputs for the Firebaugh Airport noise exposure contours shown on **Exhibit B2**. Additional information regarding the noise modeling process and land use compatibility thresholds can be found in **Appendix M**.

AIRCRAFT OPERATIONS AND FLEET MIX

As outlined in Public Utilities Code (PUC) Section 21675(a), the noise contours included in an ALUCP must reflect the anticipated growth of the airport during at least the next 20 years. **Table B1** summarizes the 2037 operations for the Airport using the FAA's Terminal Area Forecast, Fiscal Years 2016-2045, and also includes the aircraft types used in the noise model. 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 AEDT provides aircraft noise data for many of the aircraft operating in the national fleet.

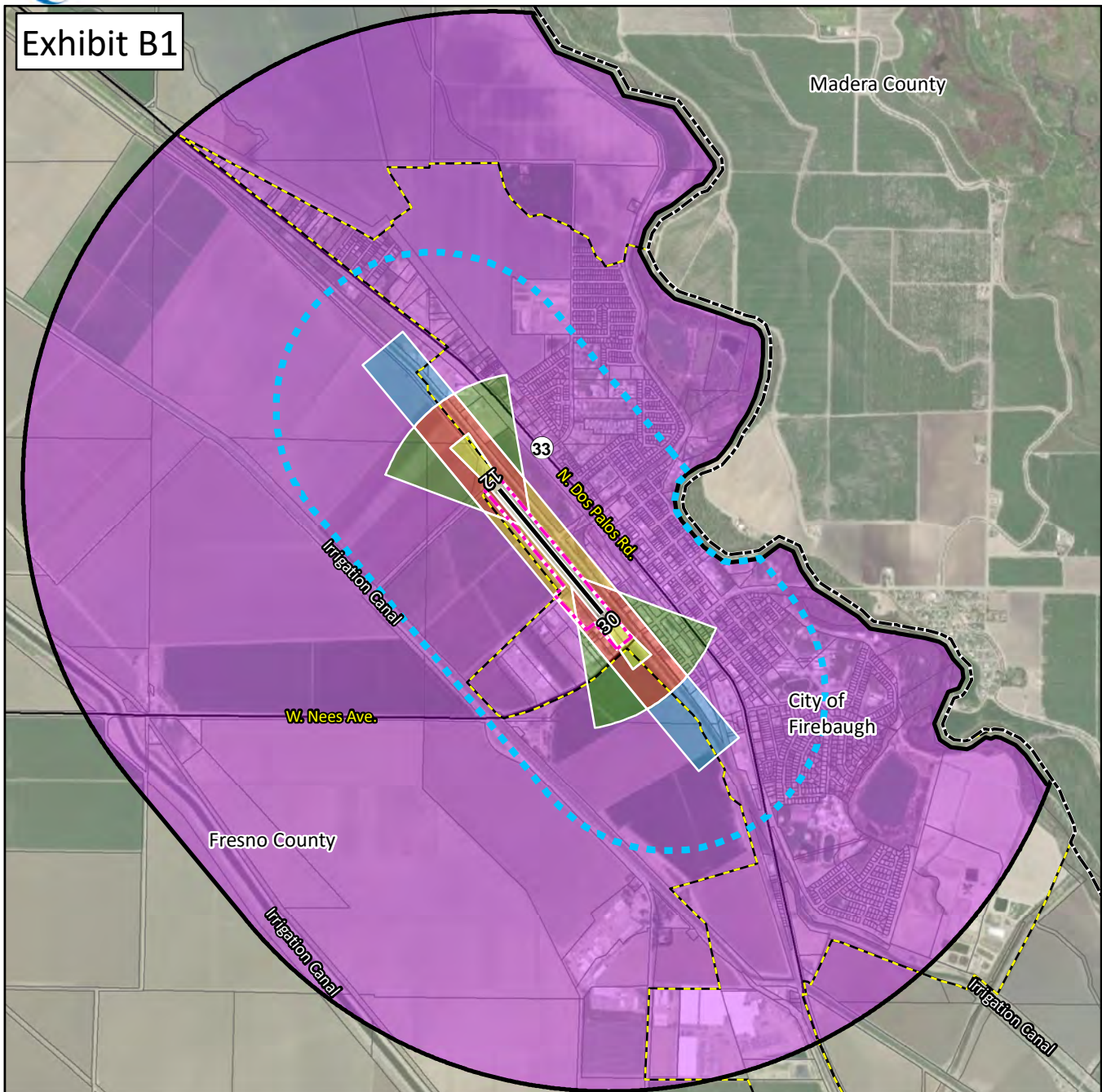
The selection of individual aircraft types is important to the modeling process because different aircraft types generate different noise levels. The aircraft fleet mix for Firebaugh Airport was derived from an interview with the Airport manager, based aircraft list, and a review of flight plan records. **Table B1** summarizes the generalized fleet mix data input into the noise analysis.

A variety of general aviation, single engine fixed-propeller aircraft are modeled with the GASEPV and GASEPF aircraft in the AEDT. The GASEPV represents many single engine general aviation aircraft including the Mooney M-20, Cessna 172 and 180, Piper Cherokee Arrow, and the Air Tractor AT-502 and AT-802. The general aviation, single engine fixed-pitch propeller model, the GASEPF, also represents several single engine general aviation aircraft. These include the Cessna 150, Piper Archer, and the Piper Tomahawk.

The CNA208 designator represents single engine turboprop aircraft including the Cessna Caravan and Beech Bonanza 36. The Beech Baron (BEC58P) represents light twin-engine aircraft, such as Beech 50, Beech 55, Piper PA-23, PA-30, PA-34, Cessna 304, Cessna 310, and Cessna 401.



Exhibit B1

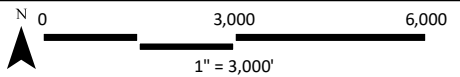


LEGEND

- Runway¹
- Airport Boundary¹
- Parcel Boundary
- Municipal Boundary
- County Boundary
- Streets
- Airport Influence Area (AIA)²
- Vulnerable Occupants Review Area (See Section 3.2.2 & Table 3A)

Safety Zones³

- 1. Runway Protection Zone
- 2. Inner Approach/Departure Zone
- 3. Inner Turning Zone
- 4. Outer Approach/Departure Zone
- 5. Sideline Zone
- 6. Traffic Pattern Zone



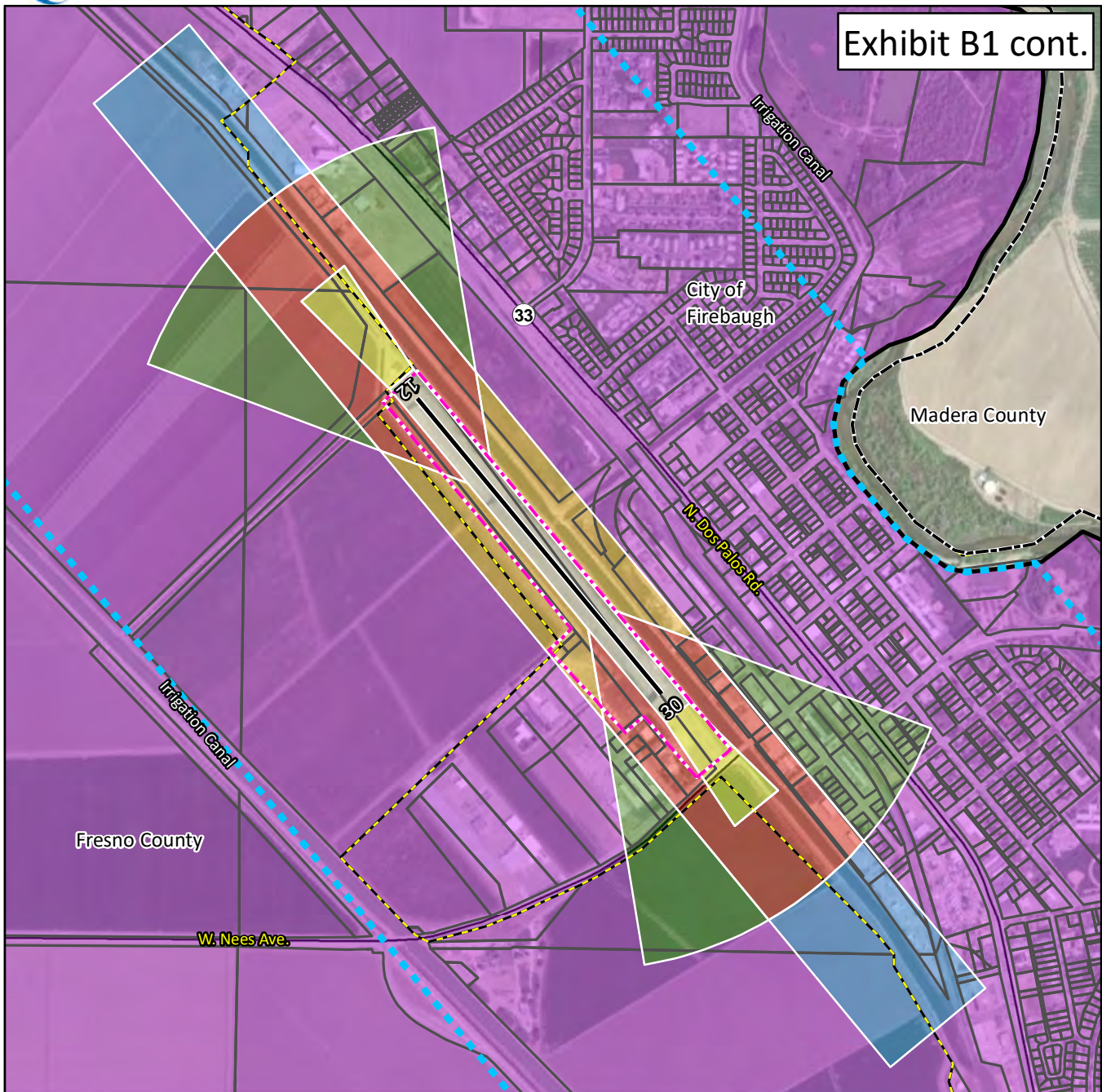
¹Firebaugh Airport Layout Plan (2013).

²AIA drawn from Part 77 Conical Surface. See 14 CFR, Subchapter E, Part 77, §77.25.

³Figure 3A, California Airport Land Use Planning Handbook (2011), and Coffman Associates Analysis. Sources: Fresno County Parcels, Fresno County Streets, ESRI Basemap Imagery (2020).



Exhibit B1 cont.

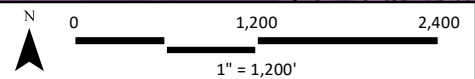


LEGEND

- Runway¹
- Airport Boundary¹
- Parcel Boundary
- Municipal Boundary
- County Boundary
- Streets
- Airport Influence Area (AIA)²
- Vulnerable Occupants Review Area (See Section 3.2.2 & Table 3A)

Safety Zones³

- 1. Runway Protection Zone
- 2. Inner Approach/Departure Zone
- 3. Inner Turning Zone
- 4. Outer Approach/Departure Zone
- 5. Sideline Zone
- 6. Traffic Pattern Zone



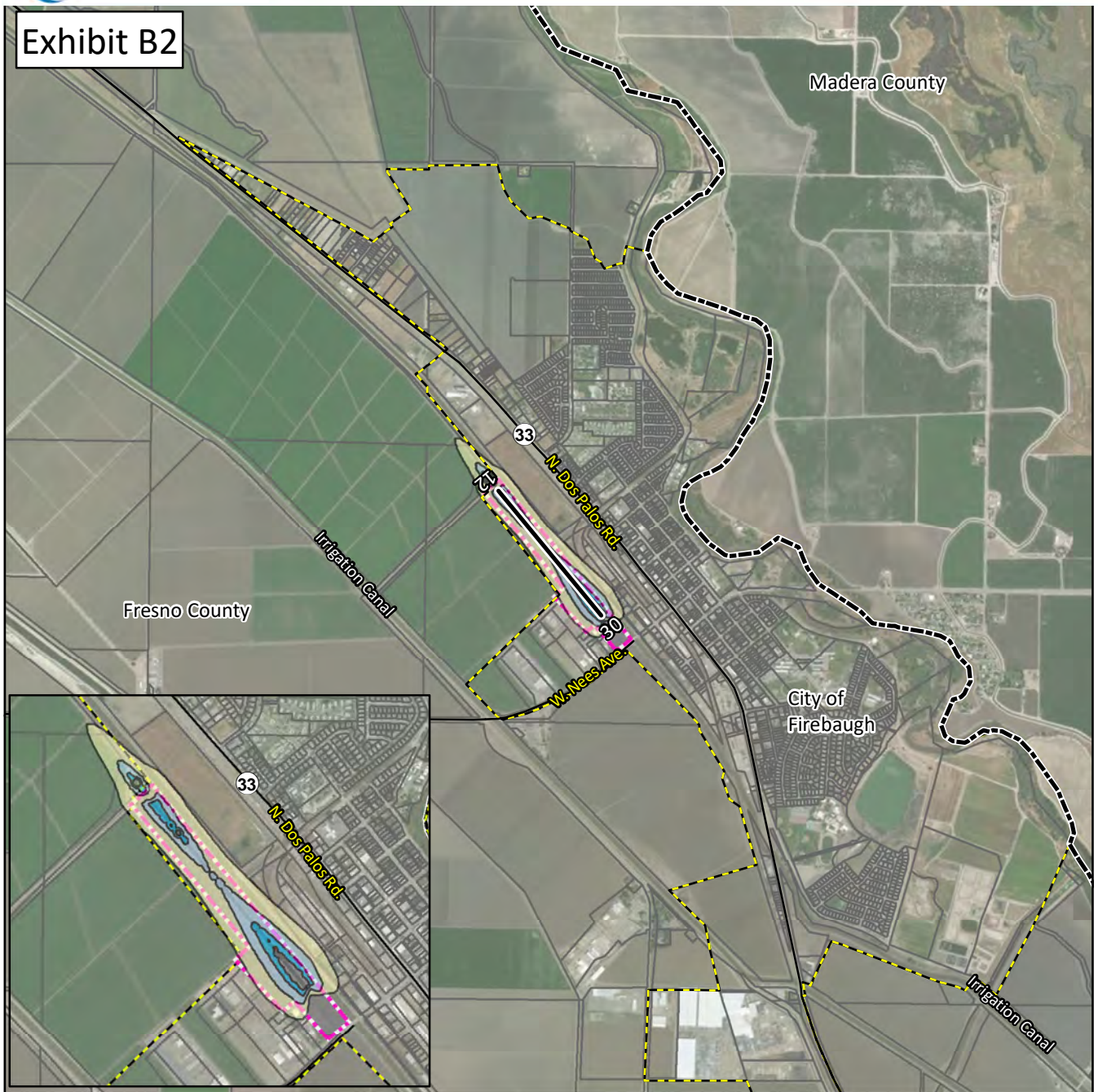
¹Firebaugh Airport Layout Plan (2013).

²AIA drawn from Part 77 Conical Surface. See 14 CFR, Subchapter E, Part 77, §77.25.

³Figure 3A, California Airport Land Use Planning Handbook (2011), and Coffman Associates Analysis. Sources: Fresno County Parcels, Fresno County Streets, ESRI Basemap Imagery (2016).



Exhibit B2

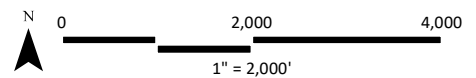


LEGEND

- Runway Centerline¹
- Airport Property¹
- Parcel Boundaries
- Municipal Boundary
- County Boundary

Future Noise Contours²

- 60 CNEL
- 65 CNEL
- 70 CNEL



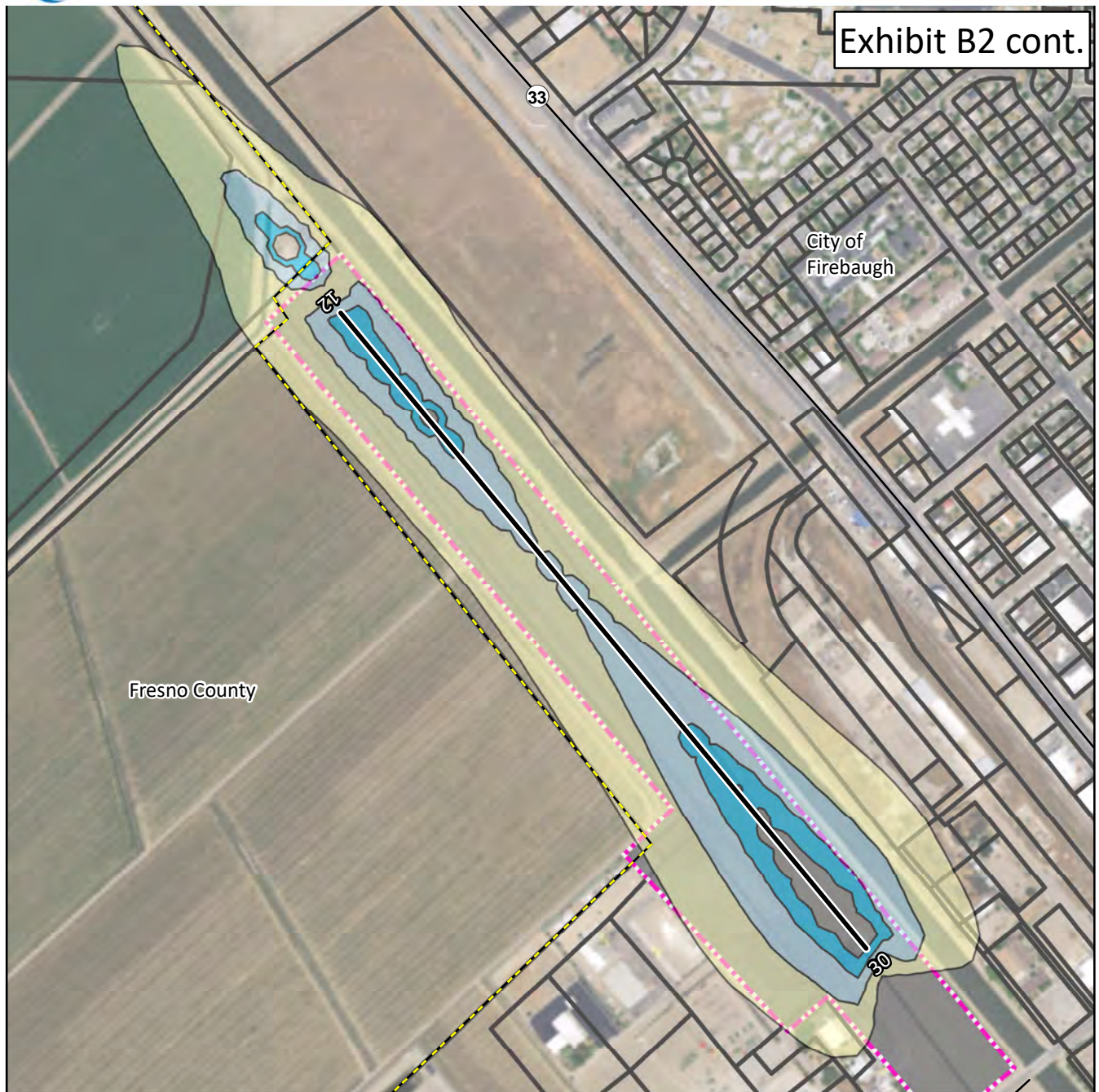
¹Firebaugh Airport Layout Plan (2013).

²Community Noise Equivalent Level -
Coffman Associates Analysis

Sources: Fresno County Parcels, Fresno County
Streets, ESRI Basemap Imagery (2016).

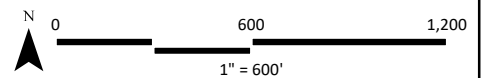


Exhibit B2 cont.



LEGEND

	Future Noise Contours ²
Runway Centerline ¹	60 CNEL
Airport Property ¹	65 CNEL
Parcel Boundaries	70 CNEL
Municipal Boundary	



¹Firebaugh Airport Layout Plan (2013).

²Community Noise Equivalent Level -
Coffman Associates Analysis

Sources: Fresno County Parcels, Fresno County
Streets, ESRI Basemap Imagery (2016).

TABLE B1
Firebaugh Airport
Aircraft Fleet Mix and Operations

Operations	AEDT Designator	2017 ¹	2037 ²
Itinerant			
Single Engine, Fixed	GASEPF	1,910	1,910
Single Engine, Variable	GASEPV	1,910	1,910
Single Engine, Turboprop	CNA208	80	80
Twin Engine	BEC58P	100	100
Subtotal		4,000	4,000
Local			
Single Engine, Fixed	GASEPF	3,000	3,000
Single Engine, Variable	GASEPV	3,000	3,000
Subtotal		6,000	6,000
Grand Total		10,000	10,000

Source:

¹ FAA 5010 Airport Master Record, operations for 12 months ending June 13, 2017

² FAA Terminal Area Forecast, Fiscal Years 2016-2045, January 2017

Time-of-Day

The time-of-day which aircraft operations occur is important as input to the AEDT 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.

Since the Airport is not equipped with an airport traffic control tower (ATCT), time-of-day information was estimated based upon Airport staff interviews and time-of-day activity levels at similar airports. Currently, most operations occur during the daytime hours, with an estimated one percent occurring during evening hours, and approximately one percent occurring during nighttime hours.

Runway Use

Runway usage data is also an essential component for developing noise exposure contours. Based on a review of regional airport activity and wind conditions, the following assumptions were made for runway use:

- Runway 12 – 25 percent
- Runway 30 – 75 percent

Flight Tracks

A review of local flight procedures was used to develop consolidated flight tracks for use in the AEDT. As discussed below, the traffic pattern for Runway 12 is right hand and the traffic pattern for Runway 30

is left hand. Accordingly, it is assumed that touch-and-go traffic occurs to the west of the Airport for Runway 12-30.

Flight Profiles

The standard arrival profile used in the AEDT program is a three-degree approach. No indication was given by Airport staff that there was any variation on this standard procedure for civilian aircraft. Therefore, the standard approach was included in the model as representative of local operating conditions.

AIRSPACE AND OVERFLIGHT

Exhibit B3 depicts the Airspace Plan from the 2013 Firebaugh Airport Layout Plan. This exhibit includes the 14 CFR Part 77 Conical Surface which is also the Airport Influence Area for Firebaugh Airport.

AIRPORT INFORMATION

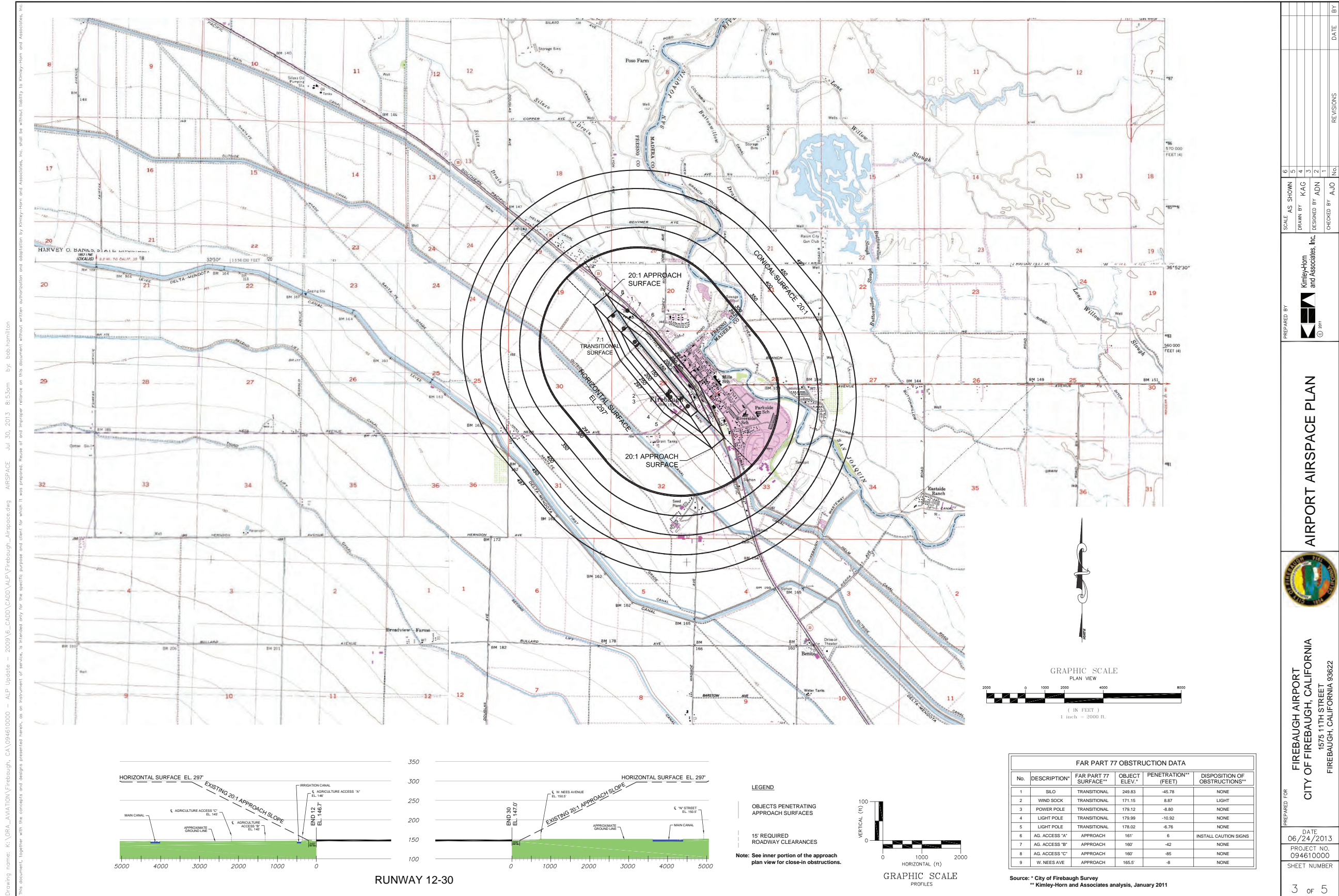
AIRPORT FACILITIES

Firebaugh Airport has one runway, Runway 12-30. **Table B2** provides additional details about the Airport's facilities and **Exhibit B4** shows the ALP.

Runway 12-30 is 3,102 feet long and 60 feet wide. It is constructed of asphalt and is in good condition. The traffic pattern is right-handed on Runway 12 and left-handed on Runway 30. The runway lighting consists of medium intensity runway lighting (MIRL) only, as the touchdown point is unlighted and there are no approach lights or runway end identifier lights (REILs). Runway 30 is equipped with a visual approach slope indicator (VASI) at a three-degree glide path; however, there are no instrument approach aids located at the airport. Approximately four to five years ago, Runway 12-30, the taxiway, and tiedowns were all repaired. There are two published approaches for the airport, an area navigation (RNAV-GPS) approach and a very high frequency omnidirectional range distance measuring equipment (VOR/DME) approach.

FUTURE AIRPORT PLANS

The Airport has plans to acquire the triangle-shaped parcel of land just north of Runway 12. Other than this property acquisition, there are no changes proposed for the Airport during the planning horizon of this study.



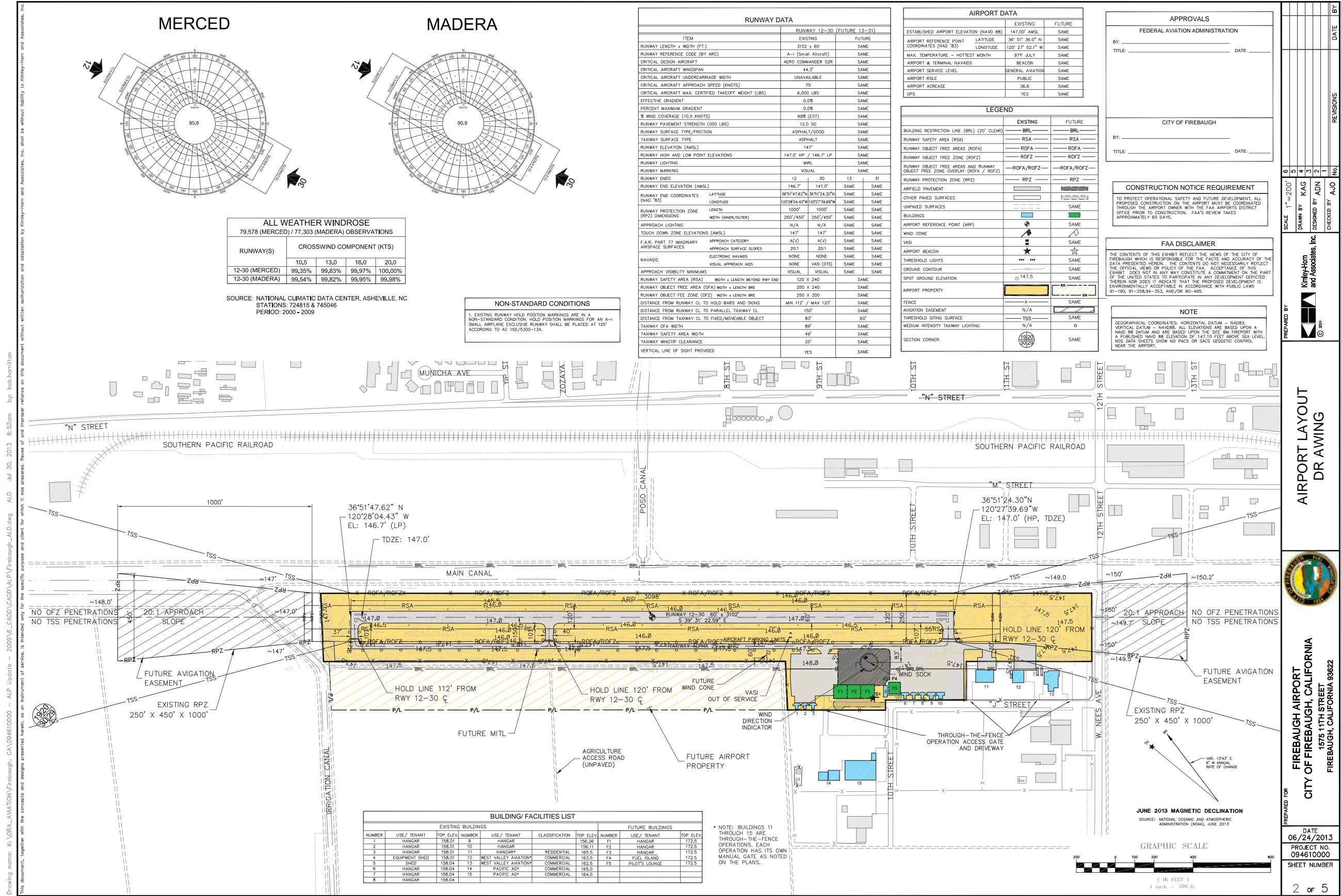


TABLE B2
Airport Facilities
Firebaugh Airport

Runway 12-30	
RUNWAY	
Length (feet)	3,102
Width (feet)	60
Threshold Displacement (feet)	0
Runway Pavement Surface Material	Asphalt
Runway Pavement Surface Treatment	Not listed
Runway Pavement Condition	Good
Traffic Pattern	Right Left
Runway Pavement Load Bearing Strength (lbs.)	
Single Wheel	12,000
Dual Wheel	N/A
Double Tandem	N/A
Double Dual Tandem	N/A
Runway Pavement Markings	
Type	Basic
Condition	Fair
Runway Lighting	
Runway Edge Lighting	MIRL
Approach Lighting System (ALS)	None
Touchdown Point	Yes (no lights)
Runway End Identifier Lights (REILs)	No
VISUAL APPROACH AIDS	
Type	N/A 2-box VASI on left
Glide Path	N/A 3.00 degrees
INSTRUMENT APPROACH AIDS	
Instrument Landing System (ILS)	No
Global Positioning System (GPS)	No
VOR/DME	No

N/A: Not Applicable

MIRL: Medium Intensity Runway Lights

VASI: Visual Approach Slope Indicator

VOR/DME: Very High Frequency Omnidirectional Range Distance Measuring Equipment

Source: AirNav (July 2017)

AIRPORT ENVIRONS

EXISTING LAND USES

Exhibit B5 shows existing land uses within Firebaugh Airport's airport influence area (AIA).

Much of the land to the north, west, and south of the Airport is unincorporated Fresno County and is comprised of agricultural uses. Select parcels in Fresno County are presently used as industrial sites, and there are few single-family residential parcels. A portion of the Firebaugh Airport 14 CFR Part 77 Conical Surface falls into Madera County and is not included in the AIA in this ALUCP. Areas southwest of the Airport property that are within Firebaugh's municipal limits are either commercial, industrial, or vacant

land uses. Land on the eastern side of the Airport is vacant, public, industrial, or commercial, serving as a buffer before the more residential areas of the City. There are three irrigation canals in the Airport's AIA, as well.

ZONING

Zoning in Firebaugh Airport's AIA is shown on **Exhibit B6**.

Unincorporated areas of Fresno County in the AIA are zoned entirely for agriculture. The parcels adjacent to the western Airport property line are zoned industrial. To the immediate east of the Airport are industrial zones. Farther east past North Dos Palos Road are commercial and multi- and single-family residential zones. Areas in the southern portion of the AIA are primarily commercial, with some areas to the south and south east zoned more for residential uses. Areas along the southeastern and easternmost boundary of the AIA are zoned for open space, which are along the municipal boundary for the City of Firebaugh and Madera County.

GENERAL PLAN

General plan land uses are shown on **Exhibit B7**.

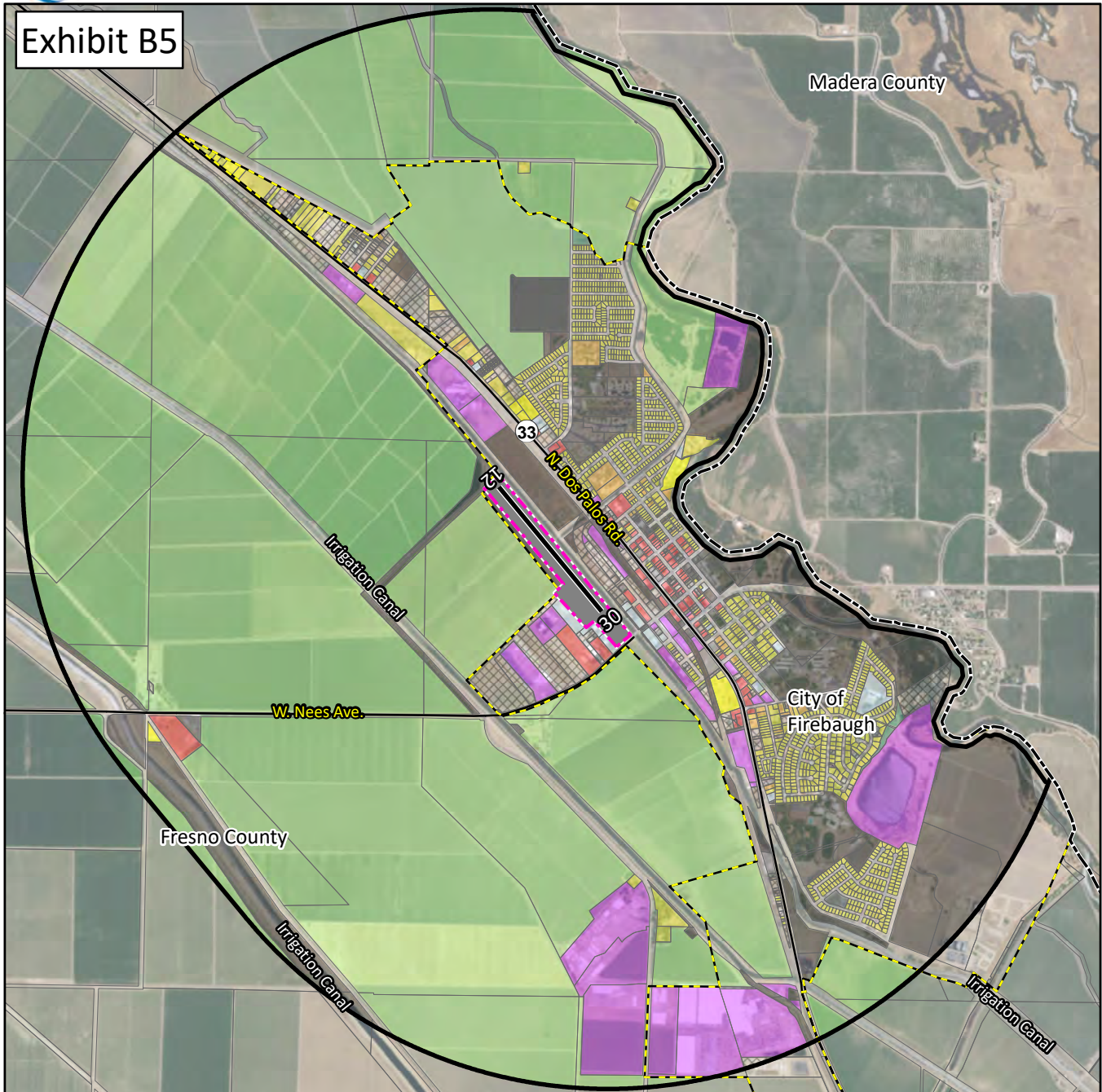
Land uses in the entire western portion of the AIA are planned for agricultural uses, except for some areas closer to the Airport that are planned for either suburban offices or an office park. These areas planned for office uses fall within both unincorporated Fresno County and City of Firebaugh limits. The areas immediately east of the airport are planned for office use. East of North Dos Palos Road, uses are planned for commercial, mixed use, and single- and multi-family residential, as well as open space along the eastern municipal boundary. The northeastern and southeastern areas of the AIA are planned primarily for agricultural and single-family residential; however, the southeastern areas also have some parcels planned for public use, industrial, mixed use, and commercial.

COMPATIBILITY FACTORS

Exhibit B8 is a compatibility factors map, which compiles National Transportation Safety Board flight accident data for all airports in the United States, noise exposure contours, and arrival and departure flight tracks from the noise exposure contours. The purpose of this exhibit is to illustrate the methodology behind the shape and size of the safety, noise, and airspace compatibility zones.



Exhibit B5

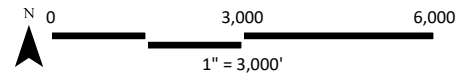


LEGEND

- Runway¹
- Airport Boundary¹
- Parcel Boundary
- Municipal Boundary
- County Boundary
- Streets
- Airport Influence Area (AIA)²

Existing Land Use³

- Single Family Residential
- Multi-Family Residential
- Commercial
- Industrial
- Public
- Agricultural
- Open Space
- Transportation/Right-of-Way
- Vacant/Other
- No Data



¹Firebaugh Airport Layout Plan (2013).

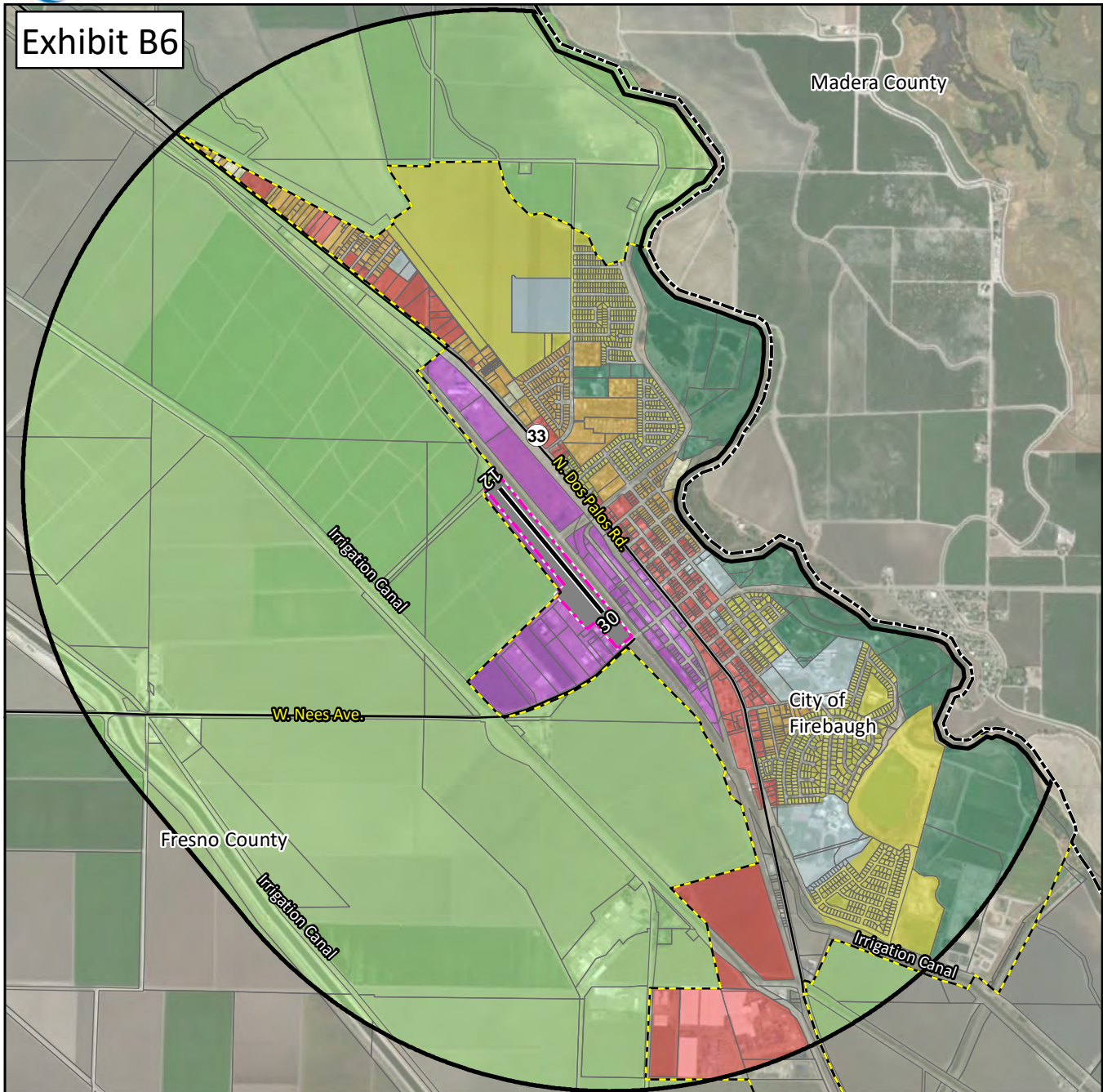
²AIA drawn from Part 77 Conical Surface. See 14 CFR, Subchapter E, Part 77, §77.25.

³Fresno Council of Governments.

Sources: Fresno County Parcels, Fresno County Streets, ESRI Basemap Imagery (2016).



Exhibit B6

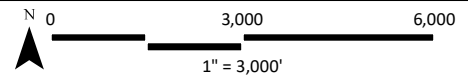


LEGEND

- Runway¹
- Airport Boundary¹
- Parcel Boundary
- Municipal Boundary
- County Boundary
- Streets
- Airport Influence Area (AIA)²

Zoning³

- Mobile Home Park
- Single Family Residential
- Multi-Family Residential
- Commercial
- Industrial
- Public
- Agriculture
- Open Space



¹Firebaugh Airport Layout Plan (2013).

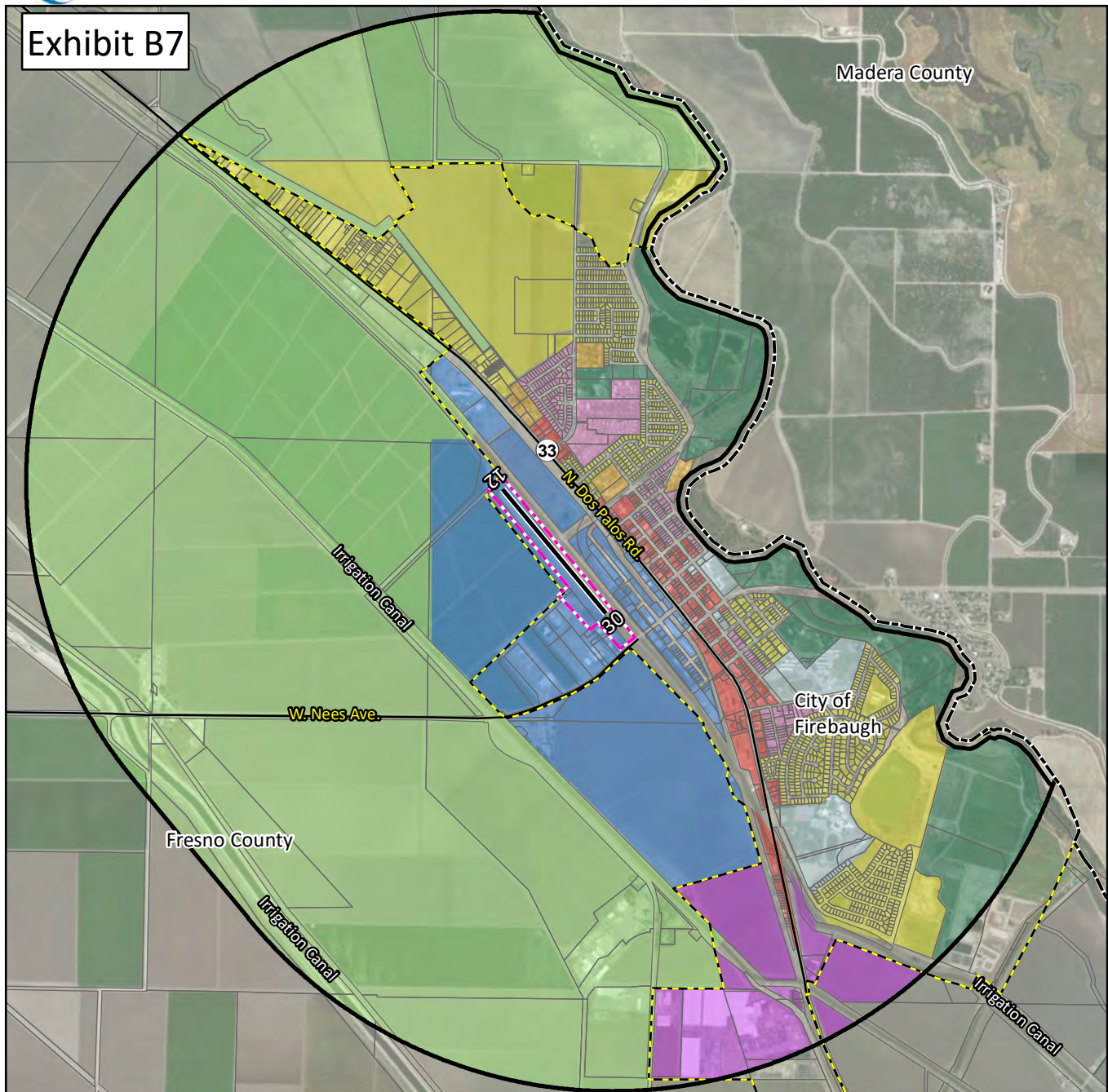
²AIA drawn from Part 77 Conical Surface. See 14 CFR, Subchapter E, Part 77, §77.25.

³City of Firebaugh Zoning, Fresno County Zoning. Sources: Fresno County Parcels, Fresno County Streets, ESRI Basemap Imagery (2016).

Note: This plan only applies to property within Fresno County.

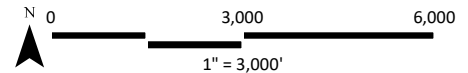


Exhibit B7



LEGEND

- Runway¹
- Airport Boundary¹
- Parcel Boundary
- Municipal Boundary
- County Boundary
- Streets
- Airport Influence Area (AIA)²
- General Plan³
- Single Family Residential
- Multi-Family Residential
- Mixed Use
- Commercial
- Industrial
- Public
- Office
- Open Space
- Agriculture
- No Data



¹Firebaugh Airport Layout Plan (2013).

²AIA drawn from Part 77 Conical Surface. See 14 CFR, Subchapter E, Part 77, §77.25.

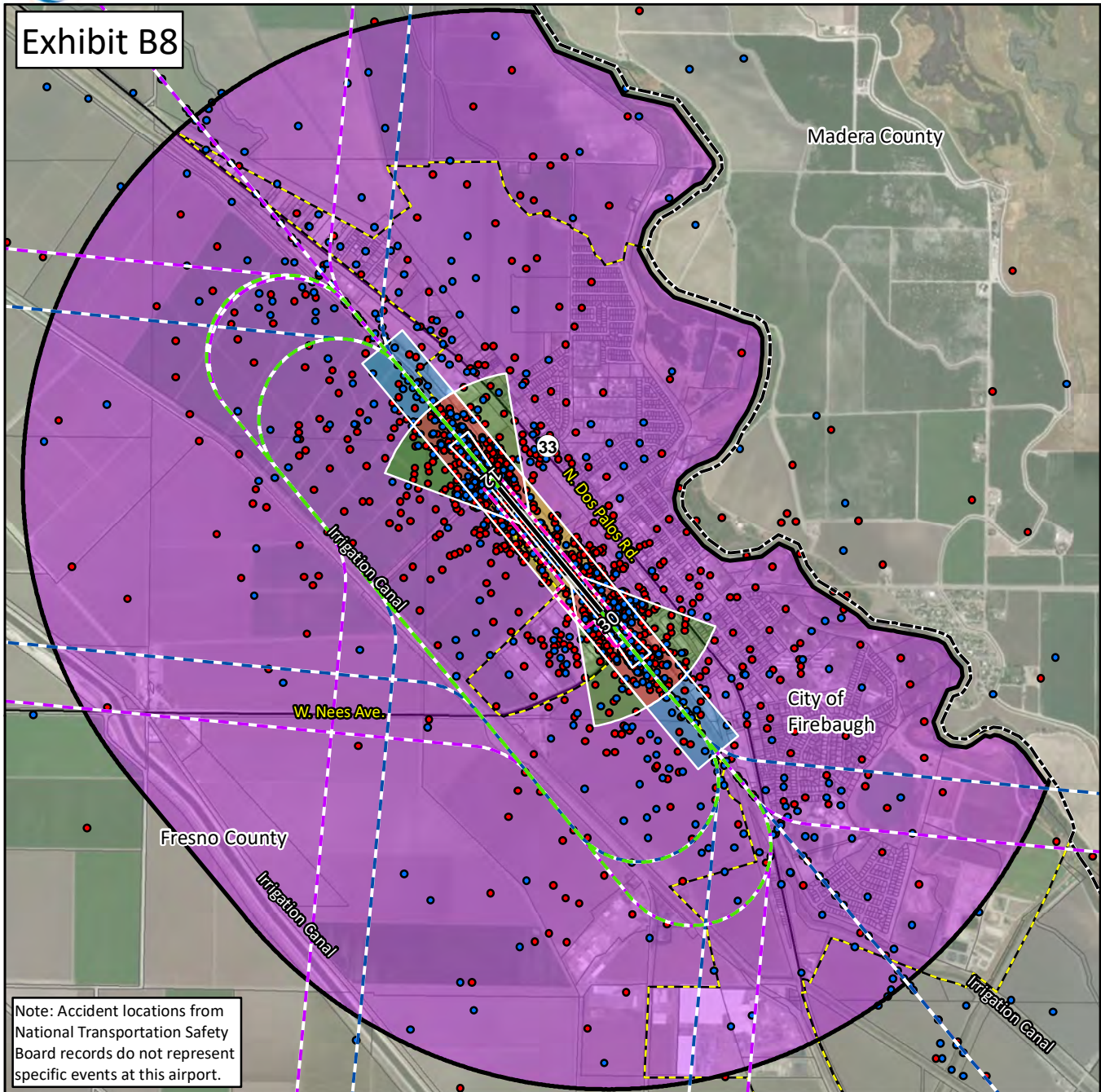
³Fresno County General Plan.

Sources: Fresno County Parcels, Fresno County Streets, ESRI Basemap Imagery (2016).

Note: This plan only applies to property within Fresno County.



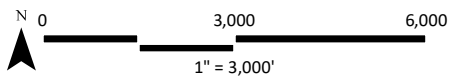
Exhibit B8



Note: Accident locations from National Transportation Safety Board records do not represent specific events at this airport.

LEGEND

- | | |
|---|----------------------------------|
| Runway ¹ | Flight Tracks ⁴ |
| Airport Boundary ¹ | Approach |
| Parcel Boundary | Departure |
| Municipal Boundary | Touch And Go |
| County Boundary | Safety Zones⁵ |
| Streets | 1. Runway Protection Zone |
| Arrival Accidents ² | 2. Inner Approach/Departure Zone |
| Departure Accidents ² | 3. Inner Turning Zone |
| Airport Influence Area (AIA) ³ | 4. Outer Approach/Departure Zone |
| | 5. Sideline Zone |
| | 6. Traffic Pattern Zone |



¹Firebaugh Airport Layout Plan (2013).

²California Airport Land Use Planning Handbook, 2011. Normalized from airports in United States.

³AIA drawn from Part 77 Conical Surface. See 14 CFR, Subchapter E, Part 77, §77.25.

⁴Coffman Associates analysis.

⁵Figure 3A, California Airport Land Use Planning Handbook (2011), and Coffman Associates Analysis. Sources: Fresno County Parcels, Fresno County Streets, ESRI Basemap Imagery (2016).