RIVERSIDE COUNTY
AIRPORT LAND USE COMMISSION

STAFF REPORT

AGENDA ITEM:	3.1
HEARING DATE:	February 8, 2024
CASE NUMBER:	ZAP1093BD23 – B.H. Indio, LLC (Representative: MIG, Inc.)
APPROVING JURISDICTION:	City of Indio
JURISDICTION CASE NO:	GP-23-0001 (General Plan Amendment), SP-0001 (Specific Plan), ZMA-23-0001 (Zoning Map Amendment), TPM-23-0001 (Tentative Parcel Map)
LAND USE PLAN:	2004 Bermuda Dunes Airport Land Use Compatibility Plan
Airport Influence Area:	Bermuda Dunes Airport
Land Use Policy:	C, D, and E
Noise Levels:	below 55 CNEL from aircraft
MAJOR ISSUES:	None

RECOMMENDATIONS: Staff recommends that the proposed General Plan Amendment, Specific Plan, and Zoning Map Amendment be found CONSISTENT with the 2004 Bermuda Dunes Airport Land Use Compatibility Plan.

PROJECT DESCRIPTION: A proposal to establish the Oasis at Indio Specific Plan on approximately 186 acres which includes 66 acres of Mixed-Use in Planning Area 1; 5 acres of Mixed-Use in Planning Area 2, 10 acres of Mixed-Use in Planning Area 3, and 100 acres of Industrial in Planning Area 4. The applicant also proposes amending the site's General Plan land use designation from Mixed Use Neighborhood and Regional Commercial to Specific Plan, and also change the site's zoning from Specific Plan, Mixed Use Neighborhood, and Regional Commercial to Specific Plan. The applicant also proposes to divide the site into 4 parcels (one for each Planning Area)

PROJECT LOCATION: The site is located southerly of Avenue 42, westerly of Monroe Street, and northerly of Interstate 10, approximately 5,400 feet easterly of Runway 10-28 at Bermuda Dunes Airport.

BACKGROUND:

Residential Density: Pursuant to the Bermuda Dunes Airport Land Use Compatibility Plan (ALUCP), the project is located within Zones C (28.06 acres), D (55.68 acres), and E (91.15 acres), where residential density is restricted to a maximum 0.2 dwelling units per acre in Zone C, either below 0.2 dwelling units per acre or above 5.0 dwelling units per acre in Zone D, and not restricted in Zone E.

No development is proposed at this time.

The project proposes three Planning Areas with a Mixed-Use designation:

- Planning Area 1 consists of 66 acres (29.64 acres in Zone D, 32.43 acres in Zone E) and proposes a Mixed-Use designation which allows for a residential density between 20 to 50 dwelling units per acre, which is consistent with Zone D residential density criteria of either below 0.2 dwelling units per acre or above 5.0 dwelling units per acre, and Zone E where residential density is not restricted. There is also approximately 0.57 acres within Planning Area 1 that is located within Zone C, however, this portion has been identified as area not to be developed with occupiable structures, but can be used as ancillary uses such as parking, open area, or other non-structure related development, which is consistent with Zone C criteria.

- Planning Area 2 consists of 5 acres (entirely within Zone E) and proposes a Mixed-Use designation which allows for a residential density between 20 to 50 dwelling units per acre, which is consistent with Zone E where residential density is not restricted.

- Planning Area 3 consists of 10 acres (entirely within Zone E) and proposes a Mixed-Use designation which allows for a residential density between 20 to 50 dwelling units per acre, which is consistent with Zone E where residential density is not restricted.

Additionally, the Specific Plan contains language requiring that future projects shall be consistent with the ALUCP criteria. Future projects will be assessed for density requirements.

<u>Non-Residential Intensity</u>: Pursuant to the ALUCP, the project is located within Zones C (28.06 acres), D (55.68 acres), and E (91.15 acres), where non-residential intensity is restricted to 75 people average acre and 150 people single acre in Zone C, 100 people average acre and 300 people single acre in Zone D, and not restricted in Zone E. No development is proposed at this time.

Planning Area's 1, 2, and 3 are designated Mixed-Use which allows for a mix of residential, commercial and industrial uses (residential density already analyzed above). Commercial and industrial uses are allowed in Zones C, D and E with the provision that the project is consistent with the underlying ALUCP criteria. The Specific Plan contains language requiring that future projects shall be consistent with the ALUCP criteria. Future projects will be assessed for intensity requirements.

Planning Area 4 consists of 100 acres (27.49 acres in Zone C, 20.04 acres in Zone D, 45.76 acres in Zone E) and proposes an Industrial designation allowing for general light industrial, manufacturing, and warehouse distribution uses. Industrial uses are allowed in Zones C, D and E with the provision that the project is consistent with the underlying ALUCP criteria. The Specific Plan contains language requiring that future projects shall be consistent with the ALUCP criteria. Future projects will be assessed for intensity requirements.

<u>Prohibited and Discouraged Uses:</u> The project does not propose any uses prohibited or discouraged in Zones C, D and E. The Specific Plan contains language requiring that future projects shall be consistent with the ALUCP criteria.

Noise: The site is located below the 55 CNEL contour range from aircraft noise. Therefore, no special measures are required to mitigate aircraft-generated noise.

Part 77: The elevation of Runway 10-28 at its easterly terminus is approximately 73 feet above mean sea level (AMSL). At a distance of approximately 5,400 feet from the runway, FAA review would be required for any structures with top of roof exceeding 127 feet AMSL. The project's site elevation is 25 feet AMSL, and although no development is proposed at this time, it is anticipated that the maximum height of future buildings would be 70 feet, resulting in a maximum top point elevation of 95 feet AMSL. Therefore, review of the buildings for height/elevation reasons by the FAA Obstruction Evaluation Service (FAAOES) was not required. Future projects will be assessed for Part 77 requirements.

Open Area: Pursuant to the ALUCP, the project site is located within Compatibility Zones C, D and E, which requires projects greater than 10 acres to designate 20% in Zone C and 10% in Zone D of the project area as ALUC qualifying open area that could potentially serve as emergency landing areas (Zone E does not require open area). No development is proposed at this time. Future projects will be assessed for ALUC open area requirements.

Hazards to Flight: Land use practices that attract or sustain hazardous wildlife populations on or near airports significantly increase the potential of Bird Aircraft Strike Hazards (BASH). The FAA strongly recommends that storm water management systems located within 5,000 or 10,000 feet of the Airport Operations Area, depending on the type of aircraft, be designed and operated so as not to create above-ground standing water. To facilitate the control of hazardous wildlife, the FAA recommends the use of steep-sided, rip-rap lined, narrow, linearly shaped water detention basins. All vegetation in and around detention basins that provide food or cover for hazardous wildlife should be eliminated. (FAA Advisory Circular 5200-33C). Although the project is located 5,400 feet from the runway, and therefore would be subject to the above requirement, no development is proposed at this time. Future projects will be assessed for hazards to flight.

General Plan Amendment/Specific Plan/Zoning Map Amendment: The applicant proposes amending the site's General Plan land use designation from Mixed Use Neighborhood and Regional Commercial to Specific Plan, and also change the site's zoning from Specific Plan, Mixed Use Neighborhood, and Regional Commercial to Specific Plan. The project is consistent with all applicable density and intensity requirements with the ALUCP, as well as containing language within the Specific Plan requiring that future projects shall be consistent with the ALUCP criteria.

X:\AIRPORT CASE FILES\Bermuda Dunes\ZAP1093BD23\ZAP1093BD23sr.doc

NOTICE OF AIRPORT IN VICINITY

This property is presently located in the vicinity of an airport, within what is known as an airport influence area. For that reason, the property may be subject to some of the annoyances or inconveniences associated with proximity to airport operations (for example: noise, vibration, or odors). Individual sensitivities to those annoyances [can vary from person to person. You may wish to consider what airport annoyances], if any, are associated with the property before you complete your purchase and determine whether they are acceptable to you. Business & Professions Code Section 11010 (b)(13)(A)

NOTICE

THERE IS AN AIRPORT NEARBY.

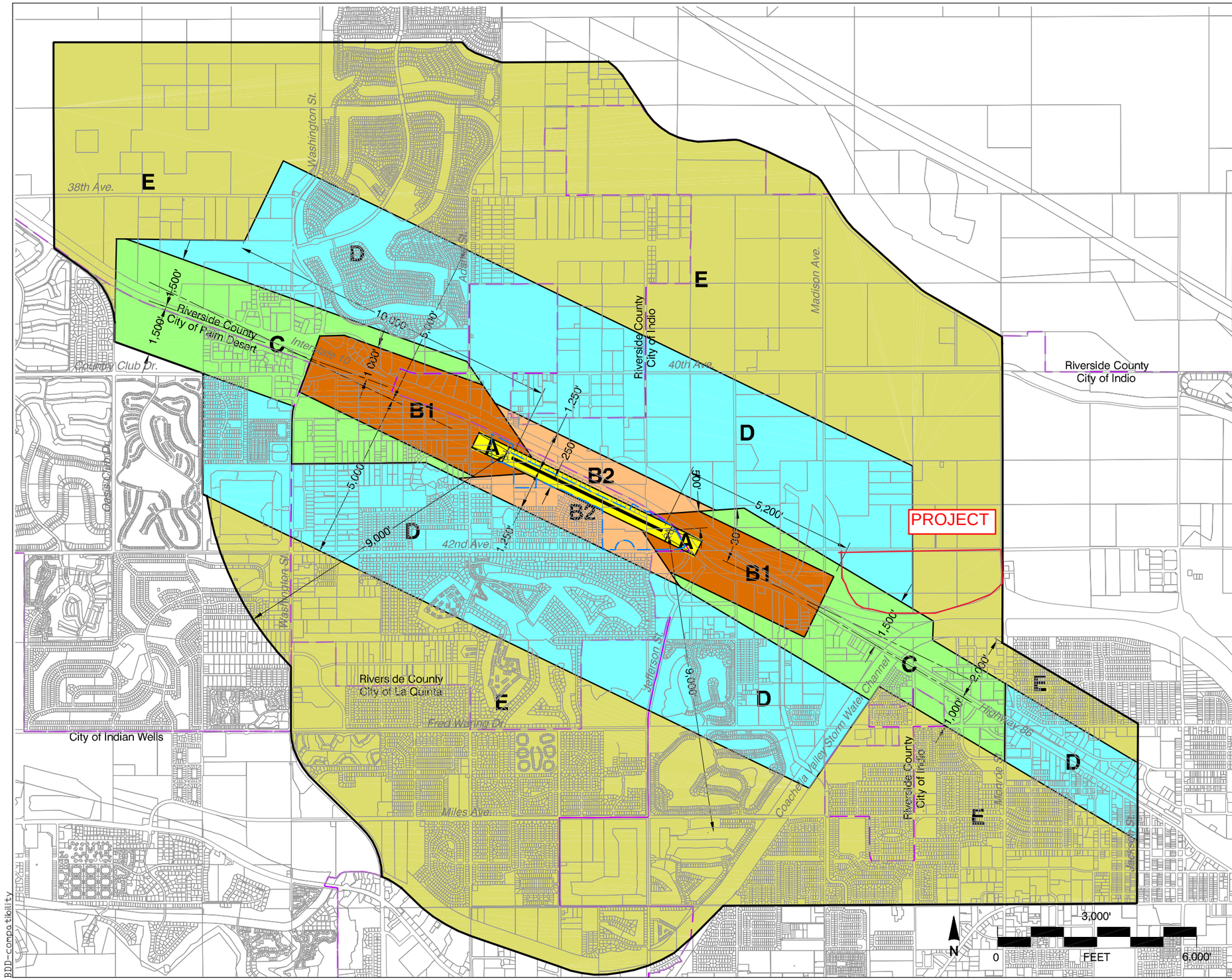
THIS STORM WATER BASIN IS DESIGNED TO HOLD STORM WATER FOR ONLY 48 HOURS AND NOT TO ATTRACT BIRDS

PROPER MAINTENANCE IS NECESSARY TO AVOID BIRD STRIKES

RIVERSIDE COUNTY
ALUC
AIRPORT LAND USE COMMISSION

IF THIS BASIN IS OVERGROWN, PLEASE CONTACT:

Name: _____ **Phone:** _____



Legend

Compatibility Zones

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

Boundary Lines

- Airport Property Line
- City Limits

Note

Southwestern edge of Airport Influence Area boundary measured from a point 200 feet beyond runway ends in accordance with FAA airspace protection criteria (FAR Part 77). All other dimensions measured from runway ends and centerlines.

See Chapter 2, Table 2A for compatibility criteria associated with this map.

Riverside County
Airport Land Use Commission

Riverside County
Airport Land Use Compatibility Plan
Policy Document

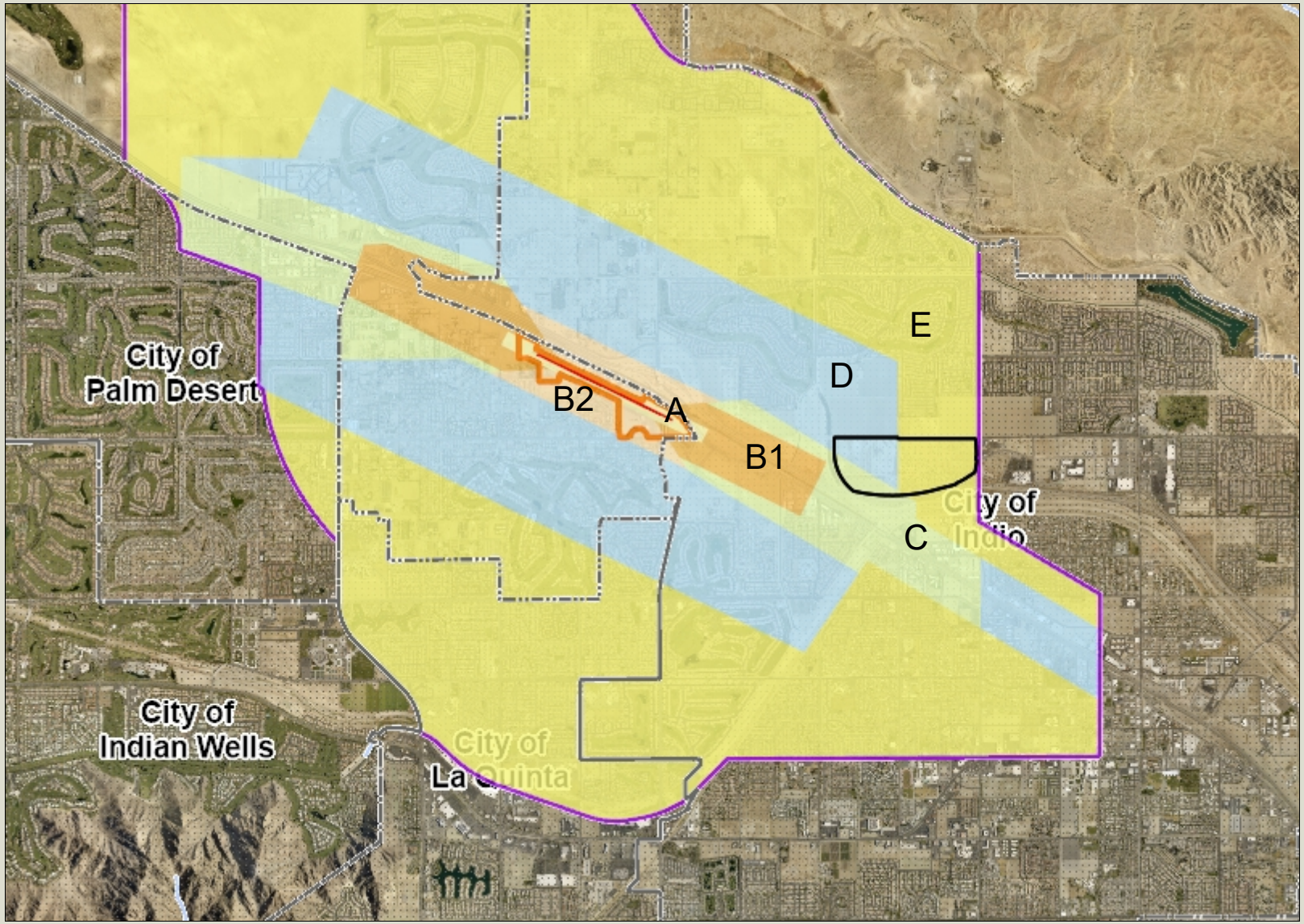
(Adopted December 2004)

Map BD-1

Compatibility Map

Bermuda Dunes Airport

Map My County Map



Legend

- County Boundary
- City Boundaries
- Runways
- Airports
- Airport Influence Areas
- Airport Compatibility Zones
  - A
  - A-EXC1
  - B1
  - B1-APZ I
  - B1-APZ I-EXC1
  - B1-APZ II
  - B1-APZ II-EXC1
  - B1-EXC1
  - B2
  - B2-EXC1
  - C
  - C1
  - C1-EXC1
  - C1-EXC3
  - C1-EXC4
  - C1-HIGHT
  - C2
  - C2-EXC1
  - C2-EXC2
  - C2-EXC3
  - C2-EXC5

0 6,157 12,314 Feet

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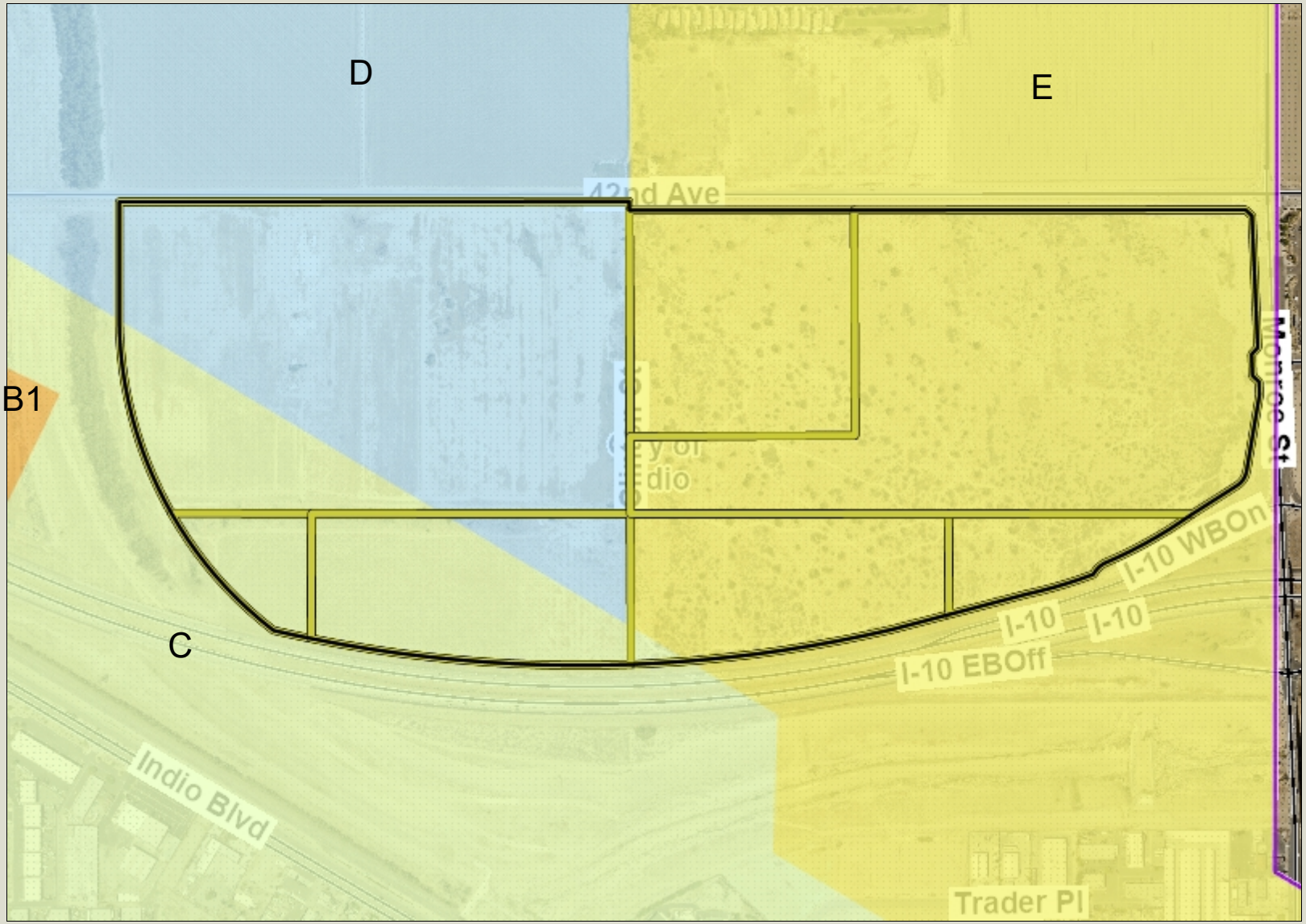
Notes

Map My County Map



Legend

- County Boundary
- City Boundaries
- Runways
- Airports
- Airport Influence Areas
- Airport Compatibility Zones
  - A
  - A-EXC1
  - B1
  - B1-APZ I
  - B1-APZ I-EXC1
  - B1-APZ II
  - B1-APZ II-EXC1
  - B1-EXC1
  - B2
  - B2-EXC1
  - C
  - C1
  - C1-EXC1
  - C1-EXC3
  - C1-EXC4
  - C1-HIGHT
  - C2
  - C2-EXC1
  - C2-EXC2
  - C2-EXC3
  - C2-EXC5

0 770 1,539 Feet

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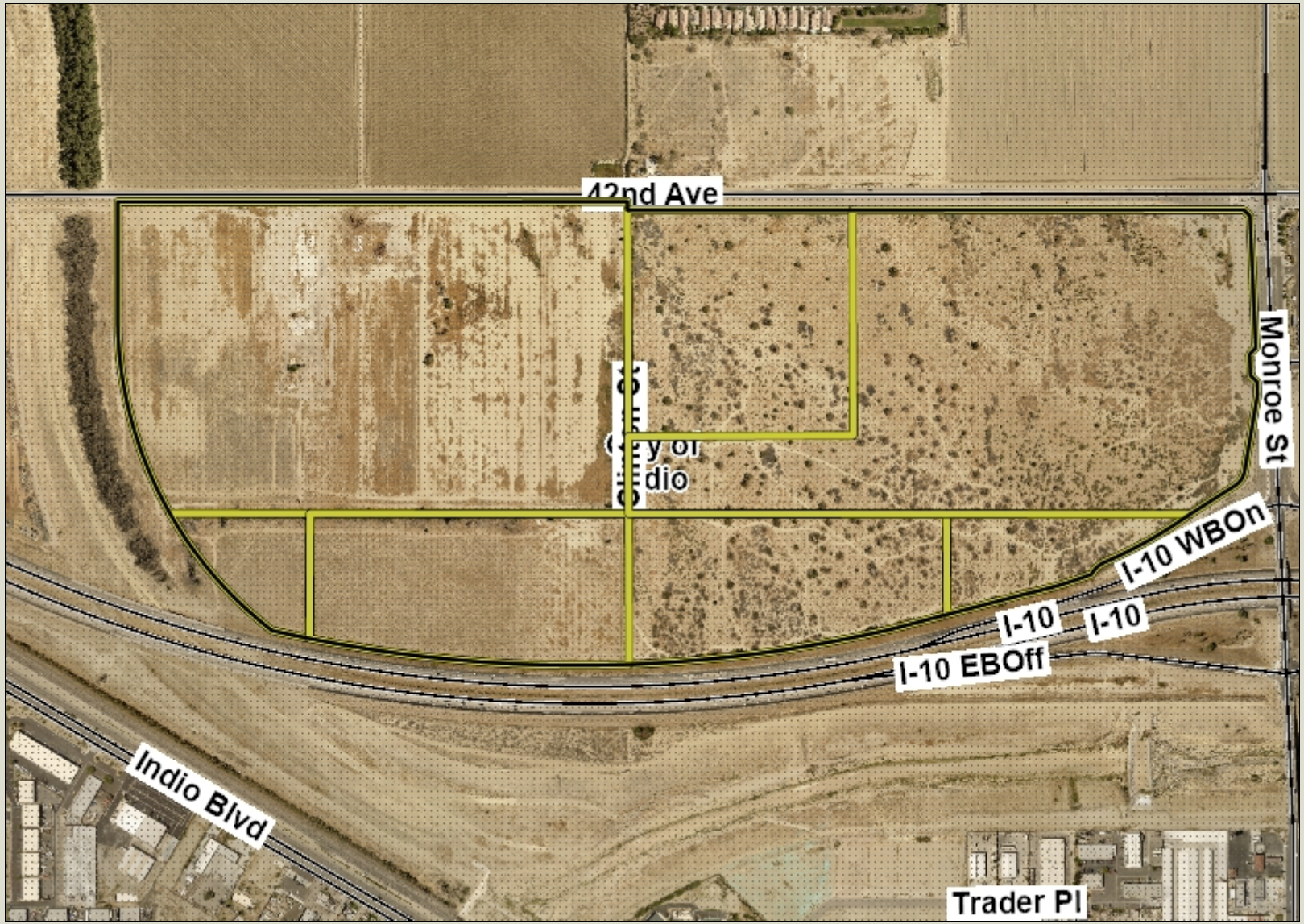
Notes

Map My County Map



Legend

- County Boundary
- City Boundaries
- County Centerline Names
- County Centerlines
- Blueline Streams
- City Areas
- World Street Map

0 770 1,539 Feet

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Notes

Map My County Map

Legend

- County Boundary
- City Boundaries
- Blueline Streams
- City Areas
- World Street Map

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0 6,157 12,314 Feet

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Notes

Map My County Map

Legend

- County Boundary
- City Boundaries
- Blueline Streams
- City Areas
- World Street Map

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0 3,079 6,157 Feet

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Notes

Map My County Map

Legend

- County Boundary
- City Boundaries
- County Centerline Names
- County Centerlines
- Blueline Streams
- City Areas
- World Street Map

0 1,539 3,079 Feet

IMPORTANT Maps and data are to be used for reference purposes only. Map features are approximate, and are not necessarily accurate to surveying or engineering standards. The County of Riverside makes no warranty or guarantee as to the content (the source is often third party), accuracy, timeliness, or completeness of any of the data provided, and assumes no legal responsibility for the information contained on this map. Any use of this product with respect to accuracy and precision shall be the sole responsibility of the user.

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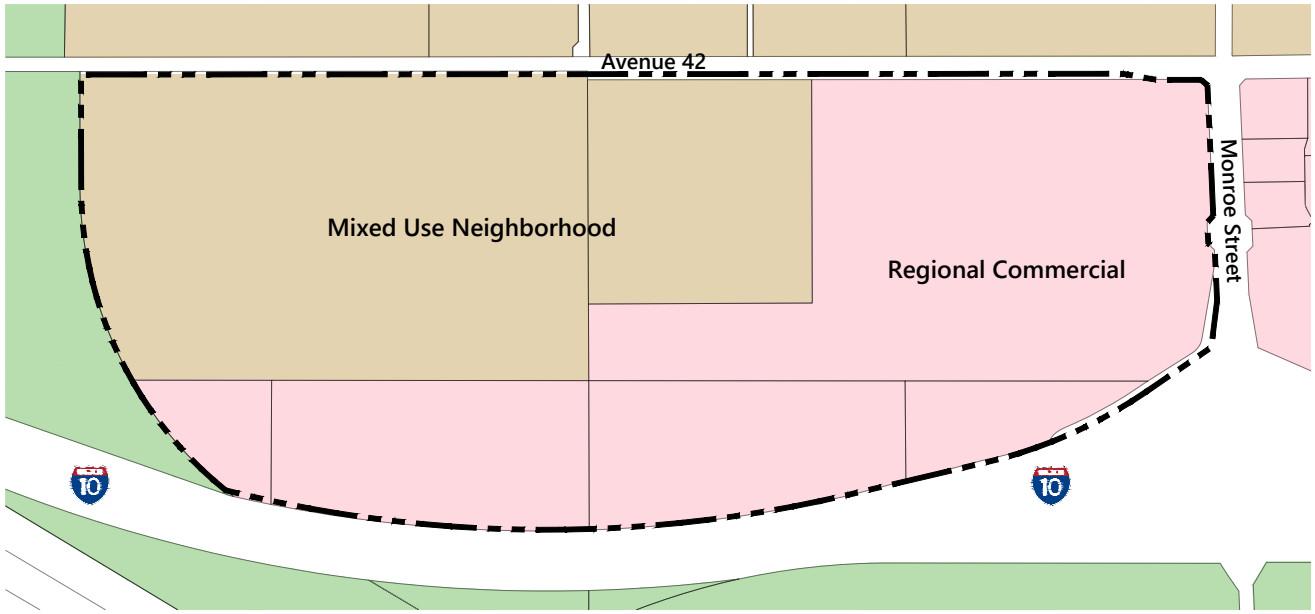
Notes

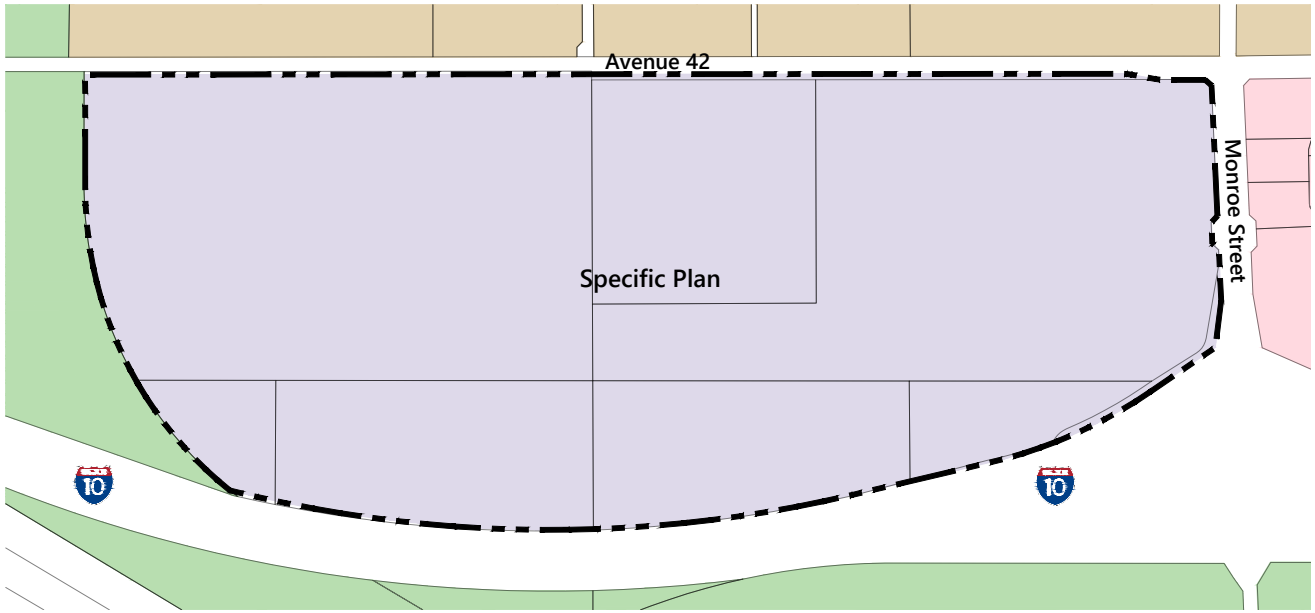
Figure 2-X General Plan Exhibit

The Oasis at Indio Specific Plan
Indio, California

Legend	
	Specific Plan Boundary
Current	
	Mixed Use Neighborhood
	Regional Commercial
	Parks and Open Space
Proposed	
	Specific Plan



CURRENT GENERAL PLAN

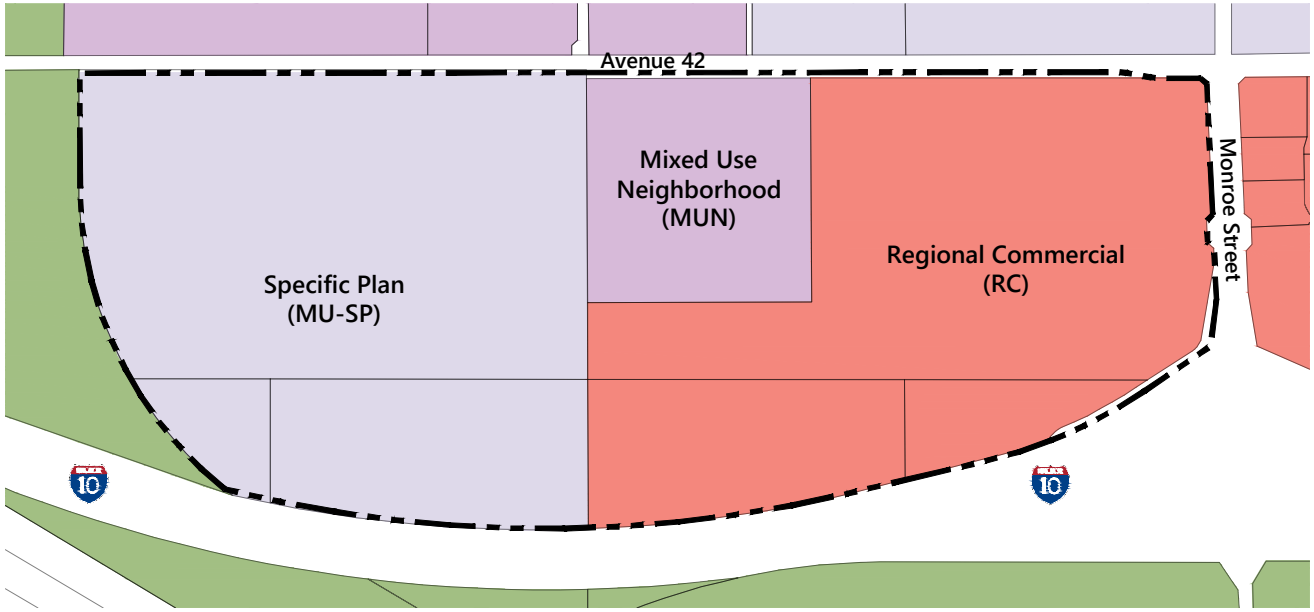


PROPOSED GENERAL PLAN

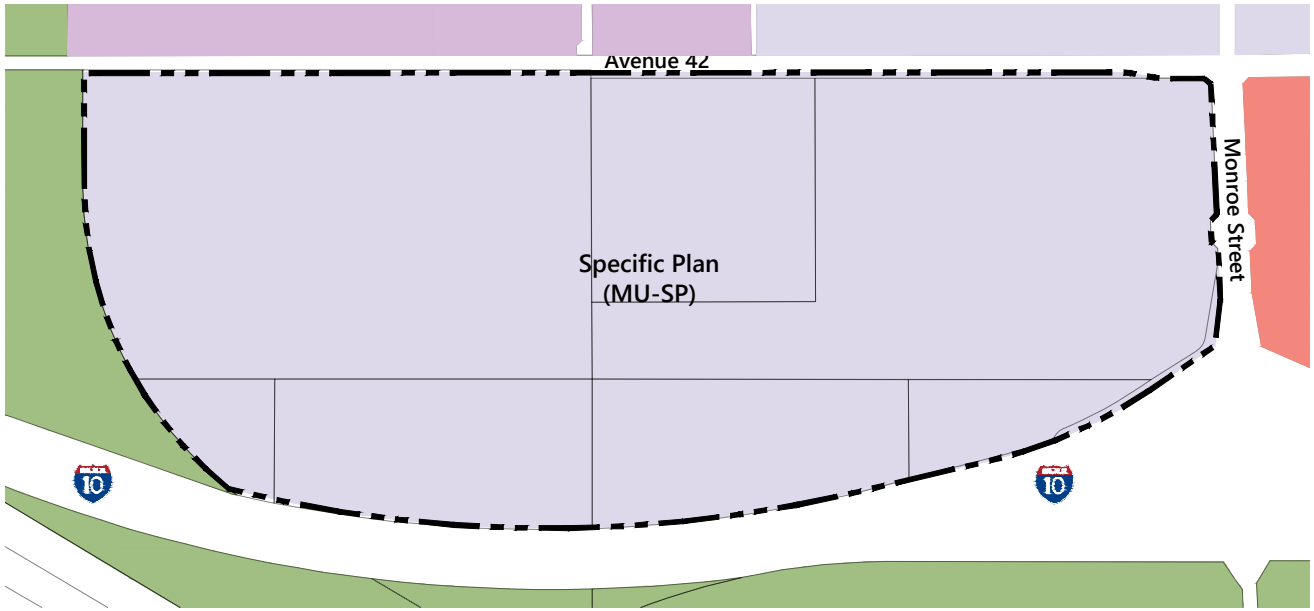
Figure 2-X Zoning Exhibit

The Oasis at Indio Specific Plan
Indio, California

Legend	
	Specific Plan Boundary
Current	
	Mixed Use Neighborhood (MUN)
	Regional Commercial (RC)
	Specific Plan (MU-SP)
	Parks and Open Space (OS)
Proposed	
	Specific Plan (MU-SP)



CURRENT ZONING PLAN



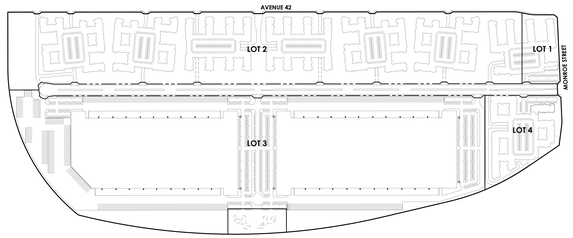
PROPOSED ZONING PLAN

ABBREVIATIONS

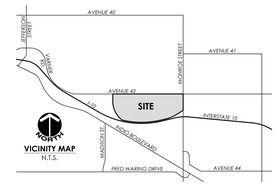
(E)	EXIST	NO.	NUMBER
(N)	NORTH	N.T.S.	NOT TO SCALE
(S)	SOUTH	O/H	OVERHEAD
(V)	VACATE	OS/PP	OPEN SPACE / PARKS
AC.	ASPHALT CONCRETE	P/L	PROPERTY LINE
A.C.	ACREAGE	PVS.	PROPERTY
APN	ASSESSORS PARCEL NUMBER	PROP.	PROPOSED
BNDRY	BOUNDARY	P.U.E.	PUBLIC UTILITY EASEMENT
C/L	CENTERLINE	R	RADIUS
C&G	CURB AND GUTTER	R-L	LOW DENSITY (RESIDENTIAL)
E/P	EDGE OF PAVEMENT	R/W	RIGHT OF WAY
ESMT.	EASEMENT	SF	SQUARE FEET
EX.	EXISTING	STD.	STANDARD
MAX.	MAXIMUM	TYP.	TYPICAL
M.B.	MAP BOOK	UG	UNDERGROUND
MIN.	MINIMUM		

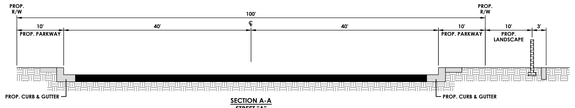
LEGEND

679.2	EXISTING SPOT ELEVATIONS
	EXISTING CONTOURS
3	EXISTING EASEMENT DELTA
	EXISTING CABLE
	EXISTING IRRIGATION DRAIN LINE
	EXISTING EASEMENT
	EXISTING ELECTRIC
	EXISTING GAS
	EXISTING IRRIGATION
	EXISTING LOT LINE
	EXISTING EDGE OF PAVEMENT
	EXISTING TELEPHONE
	EXISTING OVERHEAD TELEPHONE
	EXISTING RIGHT OF WAY
	EXISTING SEWER
	EXISTING SEWER FORCE MAIN
	EXISTING WATER
	TENTATIVE TRACT MAP BOUNDARY
	PROPOSED AND EXISTING CENTER LINE
	PROPOSED CURB
	PROPOSED EASEMENT
	PROPOSED LOT LINE
	PROPOSED RIGHT OF WAY

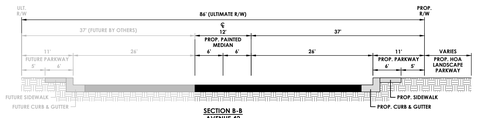


KEY MAP
SCALE: 1" = 400'

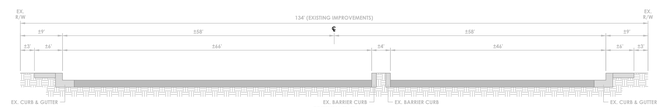




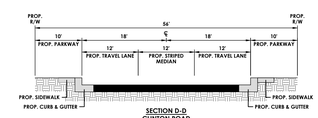
SECTION A-A
STREET "A"
(PUBLIC ROAD)
N.T.S.



SECTION B-B
AVENUE 42
(SECONDARY PER CITY OF INDIO GENERAL PLAN / PUBLIC ROAD)
N.T.S.



SECTION C-C
MONROE STREET
(PER CITY OF INDIO / PUBLIC ROAD)
N.T.S.



SECTION D-D
CLINTON ROAD
(PUBLIC ROAD)
N.T.S.

DATA TABLE CONTINUED

EXISTING EASEMENT NOTES:

1. AN EASEMENT IN FAVOR OF SOUTHERN SIERRAS POWER COMPANY FOR PUBLIC UTILITY AND INCIDENTAL PURPOSES. RECORDED 08/13/1934 AS BOOK 189, PAGE 65, O.R. [PROJECT IN PLACE] [PLOTTED HEREON]
2. AN EASEMENT IN FAVOR OF THE COUNTY OF RIVERSIDE FOR PUBLIC HIGHWAY, UTILITIES AND INCIDENTAL PURPOSES. RECORDED 05/14/1941 AS BOOK 505, PAGE 140, O.R. [PLOTTED HEREON]
3. AN EASEMENT IN FAVOR OF THE UNITED STATES OF AMERICA FOR PIPELINES AND INCIDENTAL PURPOSES. RECORDED 04/23/1948 AS BOOK 910, PAGE 54, O.R. [PLOTTED HEREON]
4. AN EASEMENT IN FAVOR OF THE UNITED STATES OF AMERICA FOR PIPELINES AND INCIDENTAL PURPOSES. RECORDED 07/14/1948 AS BOOK 994, PAGE 157, O.R. [PLOTTED HEREON]
5. AN EASEMENT IN FAVOR OF THE UNITED STATES OF AMERICA FOR PIPELINES AND INCIDENTAL PURPOSES. RECORDED 07/31/1948 AS BOOK 999, PAGE 409, O.R. [PLOTTED HEREON]
6. ABUTTER'S RIGHTS OF INGRESS AND EGRESS TO OR FROM THE STREET OR HIGHWAY ABUTTING SAID LAND ALONG THE SOUTHERLY BOUNDARY HAVE BEEN RELINQUISHED IN THE DOCUMENT RECORDED 02/13/1970 AS INST. NO. 1970-13926, O.R. [PLOTTED HEREON]
7. AN EASEMENT IN FAVOR OF THE CITY OF INDIO FOR PUBLIC STREET, PUBLIC UTILITY AND INCIDENTAL PURPOSES. RECORDED 01/30/1998 AS INST. NO. 1998-34956, O.R. [PLOTTED HEREON]
8. AN EASEMENT IN FAVOR OF THE CITY OF INDIO FOR PUBLIC UTILITY AND INCIDENTAL PURPOSES. RECORDED 08/28/2008 AS INST. NO. 2008-0473794, O.R. [PLOTTED HEREON]
9. AN EASEMENT IN FAVOR OF THE CITY OF INDIO FOR PUBLIC ROADWAY, UTILITY AND INCIDENTAL PURPOSES. RECORDED 10/15/2008 AS INST. NO. 2008-0554153, O.R. [PLOTTED HEREON]

PUBLIC UTILITY PURVEYORS:

ELECTRIC:	IMPERIAL IRRIGATION DISTRICT	(760) 335-3640
GAS:	SOUTHERN CALIFORNIA GAS COMPANY	(800) 427-2200
TELEPHONE:	VERIZON COMPANY	(800) 483-5000
WATER:	INDIO WATER AUTHORITY	(760) 391-4038
CABLE:	TIME WARNER CABLE	(760) 340-1312
SEWER:	VALLEY SANITARY DISTRICT	(760) 238-5400
USA:	UNDERGROUND SERVICE ALERT	(800) 227-2600

FEMA FLOOD ZONE DESIGNATION:

ZONE "X": AREAS OF MINIMAL FLOOD HAZARD

AS SHOWN ON RIVERSIDE COUNTY, CALIFORNIA, FLOOD INSURANCE RATE MAP, COMMUNITY PANEL MAP NUMBER: 06065C2251H
EFFECTIVE DATE: MARCH 16, 2018

LIQUEFACTION: LOW LIQUEFACTION ZONE

NOTES:
1. THIS MAP INCLUDES THE ENTIRE CONTIGUOUS OWNERSHIP OF THE LAND DIVIDER.
2. THERE ARE NO EXISTING DWELLINGS, BUILDINGS, OR OTHER STRUCTURES KNOWN ON THIS PROPERTY.
3. STREET RIGHTS OF WAY AT INTERSECTIONS, MAY BE WIDENED TO ACCOMMODATE ADEQUATE TURNING MOVEMENTS

IN THE CITY OF INDIO, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

TENTATIVE PARCEL MAP NO. 38799

EXHIBIT DATE: AUGUST 29, 2023

REVISIONS

NO.	DATE	DESCRIPTION

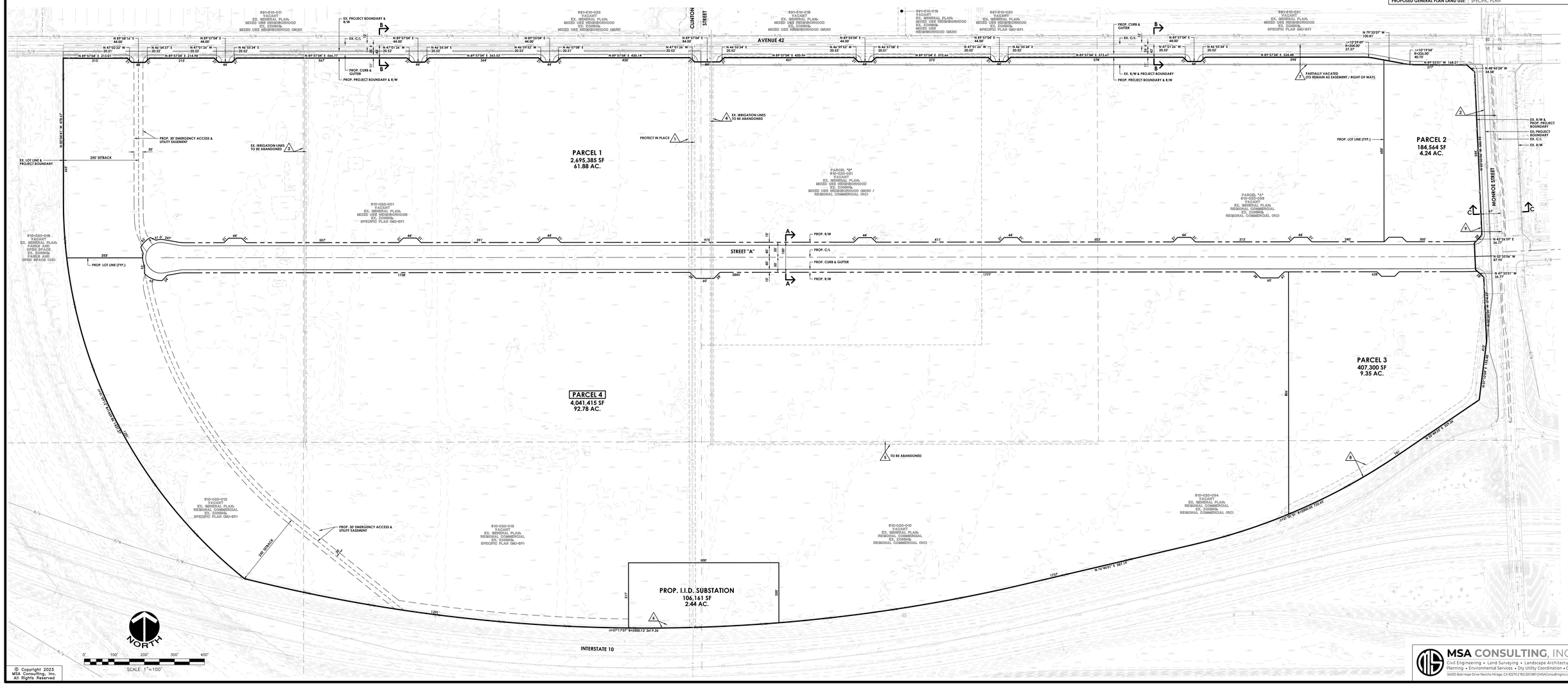
DATA TABLE

APPLICANT / LAND OWNER:	B.H. MANAGEMENT, INC.		
ADDRESS:	11111 SANTA MONICA BOULEVARD, SUITE 600 LOS ANGELES, CALIFORNIA 90049		
CONTACT:	DAVID LIM.		
EXHIBIT PREPARER:	MSA CONSULTING, INC.		
ADDRESS:	34200 BOB HOPE DRIVE RANCHO MIRAGE, CALIFORNIA 92270		
CONTACT:	PAUL DEPALATIS, AICP	**TELEPHONE:**	(760) 320-9811
SOURCE OF TOPOGRAPHY:	INLAND AERIAL SURVEYS, INC.		
ADDRESS:	7117 ARLINGTON AVENUE, SUITE "A" RIVERSIDE, CALIFORNIA 92503		
DATE OF TOPOGRAPHY:	JULY 27, 2022	**TELEPHONE:**	(951) 687-4252
ASSESSOR'S PARCEL NUMBERS:	610-020-001, -010, -012, -013, -021, -034 & -036		

LEGAL DESCRIPTION:
A PORTION OF THE NORTH 1/2 OF SECTION 15 TOWNSHIP 5 SOUTH, RANGE 7 EAST, SAN BERNARDINO MERIDIAN.

LAND USE DESCRIPTION:	**ACREAGE:**
EXISTING GROSS ACREAGE	181.76 AC.
PROPOSED PUBLIC RIGHT OF WAY VACATION (AVENUE 42)	1.18 AC.
TOTAL EXISTING GROSS ACREAGE	**182.94 AC.**
PROPOSED PUBLIC RIGHT OF WAY DEDICATION (AVENUE 42 & MONROE STREET)	1.81 AC.
PROPOSED I.I.D. SUBSTATION DEDICATION	2.44 AC.
PROPOSED STREET (STREET "A")	10.44 AC.
PROPOSED NET ACREAGE	**168.25 AC.**
PROPOSED PARCEL 1 (RESIDENTIAL)	61.88 AC.
PROPOSED PARCEL 2 (COMMERCIAL)	4.24 AC.
PROPOSED PARCEL 3 (COMMERCIAL)	9.35 AC.
PROPOSED PARCEL 4 (INDUSTRIAL)	92.78 AC.

EXISTING ZONING:	MIXED USE NEIGHBORHOOD (MUN) / REGIONAL COMMERCIAL (RC) / SPECIFIC PLAN (MU-SP)
PROPOSED ZONING:	SPECIFIC PLAN
EXISTING GENERAL PLAN LAND USE:	MIXED USE NEIGHBORHOOD / REGIONAL COMMERCIAL
PROPOSED GENERAL PLAN LAND USE:	SPECIFIC PLAN



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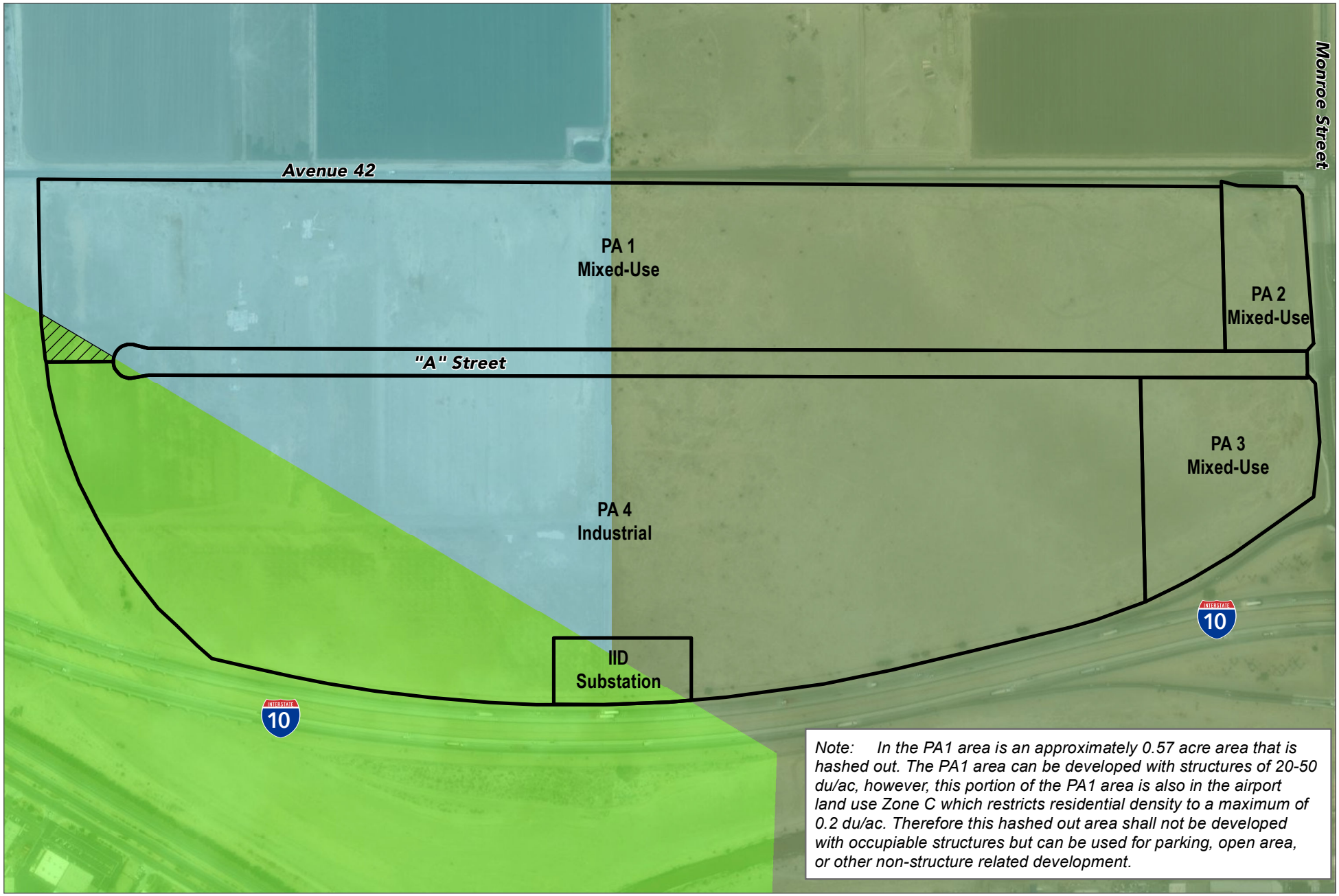

Source: ESRI, Riverside County, MIG, 2023

0 500 1,000 2,000 Feet

Airport Compatibility Zones

C D E No Occupiable Structures (see Note)

M I G

Figure 3-1. Conceptual Site Plan with Airport Compatibility Zones

The Oasis at Indio Specific Plan

Indio, CA

Chapter 3 – Development Regulations

3.1 General Provisions

This section formally establishes the use restrictions and development standards (zoning) for The Oasis at Indio Specific Plan. The regulations provided herein work in concert with the guidelines set forth in Chapter 4, Design Guidelines, of this Specific Plan to achieve the vision of The Oasis at Indio Specific Plan.

3.2 Definition of Terms

- The meaning of words, phrases, titles, and terms shall be the same as provided in the City of Indio Unified Development Code, unless otherwise specifically defined in this Specific Plan.
- ***Industrial:*** Is intended to accommodate a wide variety of employment-generating uses and protect these areas from incompatible uses. The Industrial Use District (PA 4) provides for offices, business and industrial parks, research and development, warehouses, distribution centers, light manufacturing, public and quasi-public uses, and supportive commercial uses.
- ***Mixed-Use:*** shall mean a complementary mixture of land uses including commercial, retail, services, office, and residential uses that are part of an integrated single development, either by parcel or within a district. Land uses may be arranged vertically in one or multiple-story buildings or horizontally within separate buildings on a lot, site, or parcel. A mixed-use building is a structure containing residential and commercial uses or two types of commercial uses (retail, services, and office).
- ***Multi*-Family Residential**: Multi-family attached residential development projects consists of medium to high-density development ranging from 20 du/ac to 50 du/ac. There are a variety of multi-family housing types including triplexes, fourplexes, townhomes, and multi-story apartments. The purpose of the provisions in this section is to contribute toward an urban environment of stable and desirable characteristics that is harmonious with existing and future development.
- ***Outdoor Dining:*** shall mean the extension of services of an existing restaurant or eating/drinking establishment to be provided on the public sidewalk or private common area adjacent to and within the confines of any frontage of that portion of the building where the restaurant use is situated.
- ***Pedestrian Zone:*** shall mean an area comprised of a pedestrian walkway and planting area with continuous or intermittent trees, shrubs, or planters adjacent to a development parcel.
- ***Regular Outdoor Events:*** events that have equal amounts of time between them, so that they happen, for example, at the same time each day, week, or month.

- ***Sporadic Events:*** shall mean an event that occurs infrequently, irregularly, or occurring in scattered instances.

3.3 Performance Standards

3.3.1 Security

Residential units within a mixed-use development shall be designed to ensure residents' security by providing secured entrances and exits that are separate from the non-residential uses and are directly accessible to parking areas. Non-residential and residential uses shall not have common entrance hallways or common balconies. Shared or common residential entrances shall automatically lock upon closing.

3.3.2 Noise and Ventilation

Residential units shall comply with the City's Noise Ordinance, which may include design to limit the interior noise caused by non-residential uses, overhead flights, and/or freeway adjacency, to a maximum of forty-five (45) db in any habitable room with windows closed. Proper design may include, but shall not be limited to, building orientation, sound-rated windows, wall and ceiling insulation, and orientation and insulation of vents. Where it is necessary that windows be closed in order to achieve the required level, means shall be provided for ventilation/cooling to provide a habitable environment.

3.3.3 Air Contaminants

Uses, activities, and processes shall not operate in a manner that emits excessive dust, odor, fumes, smoke, or particulate matter, unless authorized under Federal, State, or local law. Sources of air emissions shall comply with all rules established by the Environmental Protection Agency (Code of Federal Regulations, Title 40), the California Air Resources Board, and the South Coast Air Quality Management District (SCAQMD). The City shall consult, when appropriate, with SCAQMD to determine which uses shall be equipped with emission-control devices or measures to preclude fugitive dust and particulate emissions from the site. Such devices or measures shall be approved by SCAQMD prior to issuance of a building permit or other approval authorizing construction activities. All devices shall be maintained by the owner.

3.3.4 Air Quality and Odors

Residential units shall be designed to minimize adverse impacts from mechanical equipment and operations of nonresidential uses on air pollutant emissions and odors. Odors released from any operation or activity shall not exceed detectable concentration beyond lot lines, measured at any location on the lot lines. Non-residential uses with attached residential units shall provide state-of-the-art ventilation systems to prevent odors from penetrating residential units.

3.3.5 Limitations on Use within a Mixed-Use Development

Any activity or use as determined by the Director not to be compatible with residential uses in a mixed-use development and/or to have the possibility of affecting the health or safety of residents due to the potential for the use to create dust, glare, heat, noise, noxious gases, odor, smoke, traffic, vibration, or other impacts, or create a hazard because of materials, processes, products, or wastes, shall not be permitted within any mixed-use development. This includes but is not limited to, storage or shipping of flammable liquids or hazardous materials beyond that normally associated with residential use and welding, machining, or open flame work.

3.3.6 Maintenance

All properties within the Specific Plan Area shall be kept and maintained in a clean, neat, orderly, operable, and usable condition. This requirement applies to buildings, paving, fences, walls, landscaping, and any other structure or feature on the site.

3.3.7 Hours of Operation

The hours of operation for commercial/retail uses in a mixed-use development shall be no earlier than 7:00 a.m. and no later than 10:00 p.m. daily unless modified by an administrative or conditional use permit. The hours of operation for industrial warehouse use may operate 24 hours daily.

Construction hours of operation: It shall be unlawful for any person to operate, permit, use, or cause to operate construction equipment outside the hours listed below. However, the Community Development Director and/or City Engineer shall have the authority to allow alternative hours for construction as needed.

	Pacific Standard Time	**Pacific Daylight Time**
Monday through Friday	7:00 a.m. through 6:00 p.m.	6:00 a.m. through 6:00 p.m.
Saturday	8:00 a.m. through 6:00 p.m.	7:00 a.m. through 6:00 p.m.
Sunday and Government Holidays	9:00 a.m. through 5:00 p.m.	9:00 a.m. through 5:00 p.m.

3.3.8 Loading

Loading, unloading, and all service and maintenance activities shall be conducted within the hours of operation noted in Subsection 3.3.7 *Hours of Operation*.

3.3.9 Lighting

Lighting for nonresidential uses shall be appropriately designed, located, and shielded to ensure that it does not negatively impact the residential units in the development or any adjacent residential uses and shall comply with Indio Unified Development Code (IUDC) Section 3.02.11 *Outdoor Lighting*.

3.4 Permitted Uses

This section identifies the permitted, conditional, and accessory uses within the Specific Plan Area. Uses in the table are permitted subject to the permit criteria referenced. The Land Use Districts identified in Figure 2-1 provides a visual representation of the desired location of various potential uses for evaluation by the City during review of development proposals. Three land use districts are included: Residential, Commercial/Retail, and Industrial. The residential and commercial/retail land uses allow for both horizontal and vertical mixed-use on individual parcels and stand-alone uses allowed by Table 3-1, *Land Use Matrix*, below. Uses identified by:

- "P" is permitted by right in the designated land use district, subject to compliance with all applicable provision of The Oasis at Indio Specific Plan development standards.
- "AUP" is permitted in the designated land use district following consideration by the Director to ensure that the use can be designed, located, and operated in a manner that will not interfere with the use and enjoyment of surrounding properties. An AUP is subject to the filing of an Administrative Use Permit in accordance with the requirements of the City of Indio Unified Development Code, Section 6.04.04 *Use Permits*.
- "CUP" is permitted in the designated land use district following consideration by the Planning Commission to ensure that the use can be designed, located, and operated in a manner that will not interfere with the use and enjoyment of surrounding properties. A CUP is subject to the filing of a Conditional Use Permit in accordance with the requirements of the City of Indio Unified Development Code, Section 6.04.04 *Use Permits*.
- "TUP" is used for an event, activity, or use on a short-term basis. Such use is permitted in conjunction with filing a Temporary Use Permit per the requirements of the City of Indio Unified Development Code, Section 6.04.05 *Temporary Use Permits*.
- "A" is permitted by right as an ancillary use, in conjunction with the primary permitted or conditionally permitted use of the property.
- "—" is not allowed within the designated land use district.

Any use not included shall be considered prohibited unless deemed to be similar to an allowable use as interpreted by the Community Development Director or his/her designee.

Where there are special development standards or regulations, the Indio Unified Development Code (IUDC) section is identified. Planning Review Applications shall be processed in accordance with Chapter 5 herein.

Table 3-1 Land Use Matrix			
P = Permitted; AUP = Administrative Use Permit; CUP = Conditional Use Permit; TUP = Temporary Use Permit; A = Ancillary Use; -- = Not Permitted			
Use[1]	Land Use District		Additional Notes
	Mixed-Use	Industrial	
Agriculture and Animal Keeping Uses			
Agricultural Support, Sales, Service, and Storage	--	P	
Aquaculture	--	AUP	
Animal Raising and Keeping, Domestic Pets	A	--	See IUDC Ch. 4.04 (Animal Keeping)
Community Garden	A	A	
Greenhouse, Private	P	P	
Private Garden	A	A	
Automobile and Vehicle Uses			
Auto and Vehicle Rental	P	--	See IUDC Ch. 4.05 (Automotive Service and Repair/Fueling Stations)
Auto and Vehicle Sales, New	P	--	
Auto and Vehicle Sales, Used	P	--	
Auto and Vehicle Sales and Rental, Large Vehicles and Equipment	--	AUP	
Auto and Vehicle Services and Repair – Major	--	P	See IUDC Ch. 4.05 (Automotive Service and Repair/Fueling Stations)
Auto and Vehicle Services and Repair – Minor	p	P	See IUDC Ch. 4.05 (Automotive Service and Repair/Fueling Stations)
Auto and Vehicle Washing and Detailing	P	A	
Fueling Stations	AUP	AUP	See IUDC Ch. 4.05 (Automotive Service and Repair/Fueling Stations)
Truck Stop/Fueling Station	AUP	AUP	See IUDC Ch. 4.05 (Automotive Service and Repair/Fueling Stations)

Table 3-1 Land Use Matrix			
P = Permitted; AUP = Administrative Use Permit; CUP = Conditional Use Permit; TUP = Temporary Use Permit; A = Ancillary Use; -- = Not Permitted			
	Land Use District		
Use[1]	Mixed-Use	Industrial	Additional Notes
Cannabis-Related Uses			
Cannabis Cultivation, Personal	P	--	Personal indoor cultivation of 6 or fewer live cannabis plants within a single private residence or inside an accessory structure located upon the grounds of a private residence that is a fully enclosed and a secure structure is permitted per Chapter 4.07 (Cannabis Activity). Outdoor personal cultivation of live cannabis plants is prohibited.
Cannabis Retailer, Microbusiness, or Dispensary	P	--	See Chapter 4.06 (Cannabis Activity)
Eating and Drinking Establishments and Entertainment Uses			
Bar/Nightclub/Lounge	P	P	
Brewpub/Taproom/Wine Bar/Micro distillery	P	P	
Cinema/Theater/Performing Arts Center	P	P	
Drive-Through, Non-Restaurants (Accessory)	A	--	
Live Entertainment as Accessory Use, Indoors (Accessory)	A	A	See IUDC Section 4.27.02 (Temporary Uses)
Live Entertainment as Accessory Use, Outdoors (Accessory)	A, AUP, TUP	A, AUP, TUP	Regular outdoor events as an accessory use require an AUP. Sporadic events require a TUP (See IUDC Chapter 4.27 (Temporary Uses).
Outdoor Dining (Accessory)	A	A	
Restaurant, Dine-In and Take-Out	P	--	
Restaurant, Drive-Through	P	--	

Table 3-1 Land Use Matrix			
P = Permitted; AUP = Administrative Use Permit; CUP = Conditional Use Permit; TUP = Temporary Use Permit; A = Ancillary Use; -- = Not Permitted			
Use[1]	Land Use District		Additional Notes
	Mixed-Use	Industrial	
Industrial and Manufacturing Uses			
Artisan Manufacturing/Makers Space	AUP	P	
Brewery/Distillery/Winery - without tasting room or > 10,000 sf	--	P	
Brewery/Distillery/Winery - with tasting room and <10,000 sf	AUP	P	
Construction and Materials Yards	--	AUP	
Food or Beverage Manufacturing	--	AUP	
Indoor Warehousing, Storage, Wholesaling, and Distribution	--	P	
Manufacturing/Processing, Light	--	P	
Outdoor Storage (Primary Use)	--	AUP	See IUDC Ch. 4.20 (Outdoor Storage)
Outdoor Storage (Accessory)	A	A	See IUDC Ch. 4.20 (Outdoor Storage)
Lodging			
Bed and Breakfast	CUP	--	
Lodging – Hotels/Motels/Extended Stay	P	--	
Recreation, Education, and Public Assembly Uses			
Instructional Services, <= 5000 sf	P	P	
Instructional Services, > 5000 sf	P	P	
Residential Uses			
Accessory Dwelling Unit (ADU) & Junior Accessory Dwelling Unit (JADU)	A	--	Per IUDC Ch 4.02 (Accessory Dwelling Units)
Child Day Care in a Home, Small	P	--	See IUDC Ch. 4.09 (Child Day Care in a Home (Small and Large) and Day Care Centers)
Home Occupation	A	--	See IUDC Ch. 4.15 (Home Occupations)

Table 3-1 Land Use Matrix			
P = Permitted; AUP = Administrative Use Permit; CUP = Conditional Use Permit; TUP = Temporary Use Permit; A = Ancillary Use; -- = Not Permitted			
	Land Use District		
Use[1]	Mixed-Use	Industrial	Additional Notes
Cottage Food Operation	A/AUP	--	See IUDC Ch. 4.11 (Cottage Food Operations)
Live/Work	P	--	See IUDC Ch. 4.16 (Live/Work)
Residential Care Facilities, Large	CUP	--	
Residential Care Facilities, Small	P	--	
Multi-Family Dwelling, Triplex/ Quadplex	P	--	
Multi-Family Dwelling, ≥ 5 Units	P	--	
Single-Room Occupancy	CUP	--	
Supportive Housing	CUP	--	
Transitional Housing	CUP	--	
Yard Sales (Temporary)	P	--	See IUDC Section 4.27.02 (Temporary Uses)
Retail, Service, and Office Uses			
Alcohol Sales, Off-Sale	P	P	
Animal Sales and Services	P	--	
ATM (Accessory Use)	A	--	
Banks, Financial, and Savings and Loan Institutions	P	--	
Building Materials Sales and Services	AUP	P	
Business Support Services	AUP	P	
Convenience Market	P	--	
Food Preparation, Commercial	P	P	
Fortunetelling, Palm and Card Reading	P	--	
Funeral Homes and Mortuaries	P	P	
General Retail ≤ 5,000 sf	P	P	
General Retail/Superstore > 25,000	P	P	
Grocery Store	P	p	

Table 3-1 Land Use Matrix			
P = Permitted; AUP = Administrative Use Permit; CUP = Conditional Use Permit; TUP = Temporary Use Permit; A = Ancillary Use; -- = Not Permitted			
	Land Use District		
Use[1]	Mixed-Use	Industrial	Additional Notes
Kennels/Boarding, Commercial	P	P	
Kiosk/Outdoor Vending	P	--	
Laundromat	P	--	
Massage Establishment, Accessory Use	A	--	
Massage Establishment, Stand-Alone	CUP	--	See IUDC Ch. 4.18 (Massage Establishment (Stand-alone))
Medical Services, Extended Care	AUP	AUP	
Medical Services, Medical/Dental/Holistic/Clinic	P	P	
Medical Services, Urgent Care	P	P	
Mini-Storage Warehousing or Facility	--	AUP	See IUDC Ch. 4.19 (Mini-Storage Warehousing or Facility)
Neighborhood Market	P	P	
Nursery/Garden Center	P	P	
Offices, Processing	P	P	
Offices, Professional /Administrative	P	P	
Offices, Service	P	P	
Outdoor Display (Accessory)	A	A	
Pawnshop	CUP	--	See IUDC Ch. 4.21 (Pawnshops)
Personal Services	P	P	
Research and Development	AUP	P	
Christmas tree sales, sidewalk and parking lot sales, seasonal sales, etc.	P	P	See IUDC Section 4.27.02 (Temporary Uses)
Smoke Shops	P	--	See IUDC Ch. 4.24 (Smoke Shops)
Smoking Lounge	P	--	
Tattoo/Body Art/Piercing	P	--	See IUDC Ch. 4.25 (Tattoo/Body Art/ Piercing Establishment)

Table 3-1 Land Use Matrix			
P = Permitted; AUP = Administrative Use Permit; CUP = Conditional Use Permit; TUP = Temporary Use Permit; A = Ancillary Use; -- = Not Permitted			
	Land Use District		
Use[1]	Mixed-Use	Industrial	Additional Notes
Resale/Consignment/Thrift Shop	P	--	See IUDC Ch. 4.23 (Resale/ Consignment/ Thrift Shops)
Veterinary Hospitals	P	P	
Utility, Transportation, and Communication Uses			
Communications, Facilities within Buildings	AUP	P	
Communications, Telecommunications /Large Commercial Antennas	AUP/CUP	AUP/CUP	An AUP or CUP is required, depending on the design and height of the large commercial antenna, as regulated by Section 4.26.03 (Large Commercial Antennas). See IUDC Ch. 4.26 (Telecommunications/ Wireless Facilities)
Communications, Telecommunications / Small Wireless Facilities	P	P	See IUDC Ch. 4.26 (Telecommunications/ Wireless Facilities)
Freight / Trucking Facility	--	AUP	
Light Fleet-Based Services	AUP	P	
Mobile Recycling Unit	A	A	
Parking Lots and Structures	A/AUP	P	
Renewable Energy System (Primary Use)	CUP	P	
Renewable Energy System, Building-Mounted (Accessory)	A	A	
Renewable Energy System, Stand-Alone or Ground Mounted (Accessory)	A, AUP	A	
Reverse Vending Machine (Accessory)	A	A	

Notes:

1. Uses shall be consistent with the criteria of the Bermuda Dunes Airport Compatibility Plan, including Table 3-2, Maximum Density/Intensity Calculations, and applicable County-wide criteria as may exist at the time of project review. Where the project is located in the Bermuda Dunes Airport Influence Areas, compatibility zones and regulations apply. See Appendix A.

Table 3-2
Maximum Density / Intensity Calculations

Residential Densities	ALUC Zone
• DU/AC[1]	**Zone C:** 0.2 (average parcel size ≥5.0 ac.) **Zone D:** Two options are provided for residential densities in Compatibility Zone D. Option (1) has a density limit of 0.2 dwelling units per acre (i.e., an average parcel size of at least 5.0 gross acres). Option (2) requires that the density be greater than 5.0 dwelling units per acre (i.e., an average parcel size less than 0.2 gross acres). The choice between these two options is at the discretion of the local land use jurisdiction. See Table 2B for an explanation of the rationale. All other criteria for Zone D apply to both options. **Zone E:** No Limit

Non-Residential Intensities	ALUC Zone			Notes
	C	D	E[2]	
• Average	75	100	No Limit	The total number of people permitted on a project site at any time, except rare special events, must not exceed the indicated usage intensity times the gross acreage of the site. Rare special events are ones (such as an air show at the airport) for which a facility is not designed and normally not used and for which extra safety precautions can be taken as appropriate.
• Single Acre	150	300		Clustering of non-residential development is permitted. However, no single acre of a project site shall exceed the indicated number of people per acre. See Policy 4.2.5 for details.
• With Bonus	198	390		An intensity bonus may be allowed if the building design includes features intended to reduce risks to occupants in the event of an aircraft collision with the building. See Policy 4.2.6 for details.
Required Open Land	20%	10%	No Req't	Open land requirements are intended to be applied with respect to an entire zone. This is typically accomplished as part of a community general plan or a specific plan but may also apply to large (10 acres or more) development projects. See Policy 4.2.4 for the definition of open land.

Notes:

1. Usage intensity calculations shall include all people (e.g., employees, customers/visitors, etc.) who may be on the property at a single point in time, whether indoors or outside.
2. Although no explicit upper limit on usage intensity is defined for Zone E, land uses of the types listed—uses that attract very high concentrations of people in confined areas—are discouraged in locations below or near the principal arrival and departure flight tracks. This limitation notwithstanding, no use shall be prohibited in Zone E if its usage intensity is such that it would be permitted in Zone D.

3.5 Development Standards

The following standards establish the development criteria that shall apply within The Oasis at Indio Specific Plan Area

Table 3-3
Development Standards[1, 2 & 3]

Standard	Mixed-Use District			Industrial	Additional Comments/Regulations
	MF Residential	MU	COM		
Lot and Density Standards					
Density (Units/Gross Acres)	20-50		--		See Indio Municipal Code Chapter 154 (Density Bonuses and Other Incentives for Low-Income and Senior Housing)
Min. Lot Size	4,500 sf	20,000 sf	40,000 sf	10,000 sf	
Min. Lot Width	100 ft	100 ft		80 ft	
Min. Lot Depth	100 ft	200 ft		100 ft	
Max. Non-Residential Floor Area Ratio[4]		0.50		0.60	
Max. Height (ft)/Stories	60 ft/4 stories	60 ft/4 stories	60 ft/3 stories	Zone C: 70 ft Zone D/E: 100 ft	Subject to the Bermuda Dunes Airport Land Use Compatibility Plan
Max. Height (ft) – w Architectural Features	70 ft			---	
Max. Height (ft) - Accessory Building	30 ft	---	---	---	
Min. Ground Floor Height – Non-residential (Floor to Floor)	N/A	18 ft	---	---	
Minimum/Maximum Building Site Setback[5]					
Avenue 42	29 ft	10 ft/20 ft	10 ft	---	See IUDC Section 2.03.06 Mixed-Use & M-F Residential Design Standards, Figure 2.03.06-

Table 3-3 Development Standards[1, 2 & 3]					
Standard	Mixed-Use District			Industrial	Additional Comments/Regulations
	MF Residential	MU	COM		
					1 *(Building Frontage Location)*
Monroe Street	10 ft	10 ft	10 ft	---	
East-West Internal Roadway[6]	75 ft	15 ft	15 ft	10 ft	Muni Code: Per Section 95C.08 (A) Standing motor vehicles. No person shall operate or permit the operation of any motor vehicle with a gross vehicle weight rating in excess of 10,000 pounds, or any auxiliary equipment attached to such a vehicle, including but not limited to refrigerated truck compressors, for a period longer than 15 minutes in any hour while the vehicle is stationary and on a public right-of-way or public space, within 150 feet of a residential area between the hours of 7:00 p.m. and 7:00 a.m., except when movement of said vehicle is restricted by other traffic.
Private Street	5 ft	5 ft	5 ft		
Alley or Common Drive	5 ft	5 ft	5 ft	--	
Canal [7]	250 ft	---	---	250 ft	
Interior Property Line	5 ft	10 ft	10 ft	0 ft; 20 ft adjacent to residential	
Freeway Right-of-Way	20 ft	20 ft	10 ft	10 ft	

Table 3-3 Development Standards[1, 2 & 3]					
	Mixed-Use District				
Standard	MF Residential	MU	COM	Industrial	Additional Comments/Regulations
Distance between Structures	Minimum required by adopted Building and Fire Code.				
Parking Frontage[8]					
Max. Surface Parking Along Avenue 42 and Monroe St. Frontage	30%	30%	---	---	No more than 30% of the primary street frontage shall be devoted to parking. (See IUDC Figure 2.03.03-1. Maximum Parking Frontage Along a Primary Street)
Minimum Open Space Standards					
	M-F	MU	COM	IND	Minimum of 100 sf of private open space is required for ground-level units and 60 sf of private open space for upper-level units. Minimum private open space is 6 feet in either direction. Mixed-Use Developments; a minimum of 50% of the units must have 60 sf of private open space. Common open space includes roof decks and other shared common open areas. Minimum common open space dimension is 20 feet in either direction. Setback areas are not considered usable open space unless they are at least 20 feet wide. Up to 40 sf per unit can be provided in an indoor communal space so long as
Minimum Per Unit	36-50 du/ac	36-50 du/ac	---	---	
Private Open Space Common Open Space Total Open Space	60 sf 250 sf 310 sf	60 sf 90 sf 150 sf			
Minimum Per Unit	20-35 du/ac	20-35 du/ac			
Private Open Space Common Open Space Total Open Space	150 sf 250 sf 400 sf	60 sf 90 sf 150 sf			

Table 3-3 Development Standards[1, 2 & 3]					
Standard	Mixed-Use District			Industrial	Additional Comments/Regulations
	MF Residential	MU	COM		
					it opens directly on to a common outdoor space.
Min. Usable Open Space applies to mixed-use Commercial over 25K sf	---	3% of gross floor area	---	---	Could be common open space for employees or publicly accessible open space. If the open space is over 1,000 square feet and provided as publicly accessible, up to 50 percent may be counted towards the required residential common open space.
Min. Landscaping (% of lot)	10% of the lot, of which 50% must be planted with live plant material	10% of the lot, of which 25% must be live plant material.			Minimum width of landscape area is 5 ft.
Minimum Parking Lot Landscaping	15% of the total off-street open parking area shall be Landscaped. A min. 1/3 of the required landscaping shall be distributed within the interior of the parking facility and the remaining two-thirds shall be provided as peripheral planting on the exterior edges of the parking area.				

Other Standards	
Rules of Measurement	See IUDC Chapter 3.01
Accessory Structures	See IUDC Section 3.02.04
Setbacks and Encroachments	See IUDC Section 3.02.03
Utilities, Services Areas, and Building Equipment	See IUDC Section 3.02.07
Refuse and Recycling	See IUDC Section 3.02.08
Landscaping	See IUDC Section 3.02.09
Fences, Walls, and Screening	See IUDC Section 3.02.10

Table 3-3 Development Standards[1, 2 & 3]					
	Mixed-Use District				
Standard	MF Residential	MU	COM	Industrial	Additional Comments/Regulations
Outdoor Lighting				See IUDC Section 3.02.11	
Off-Street Loading				See IUDC Section 3.03.10	
Bicycle Parking				See IUDC Section 3.03.09	
Signs				See IUDC Chapter 3.05	

Notes:

1. Properties located within the Airport Influence Area (AIA) shall be subject to the requirements and standards of the Bermuda Dunes Airport Compatibility Plan (ALUCP).
2. Densities and intensities shall be consistent with the criteria of the Bermuda Dunes Airport Compatibility Plan, including applicable County-wide criteria as may exist at the time of project review.
3. Number of employees shall be based on the largest shift that occurs in a typical week.
4. Individual parcels within PA 4 may exceed the maximum FAR provided that the sum of the industrial development FAR within PA 4 does not.
5. Setbacks from public streets shall be measured from public right-0f-way. Private streets shall be measured from the back of sidewalk or back of the curb if no sidewalk is provided.
6. A 75-foot-wide setback along the east-west internal roadway in PA 1 shall include an enhanced landscaped transition zone. The landscape shall encompass a living desert landscape environment comprised of large canopied evergreen shade trees, shrubs, and semi-tropical flowering plants to create a natural lush low-water landscape with a variety of shapes, intriguing color palettes, and textures. Landscaping may include walkways, benches, trellises, thematic fencing and walls, and related amenities.
7. Passive and active open space uses, trails, walkways, related amenities, driveways, access easements, and parking shall be allowed within the 250-foot setback area.
8. Surface parking limitations are not applicable along the east-west internal roadway.

3.5.1 Supplemental Development Standards

1. As part of certain real estate transactions involving residential property within any compatibility zone, information regarding airport proximity and the existence of aircraft overflights must be disclosed. This requirement is set by California state statutes (Business and Professional Code Section 11010 and Civil Code Sections 1102.6, 1103.4, and 1353). With certain exceptions, these state requirements apply both to the sale or lease of newly subdivided lands and to the sale of existing residential property.

2. Deed Notices. A deed notice shall be recorded for each parcel associated with any discretionary land use action affecting property within an airport influence area. The notice shall include the language indicated below with respect to real estate transfer disclosures.

3. **NOTICE OF AIRPORT IN VICINITY:** This property is presently located in the vicinity of an airport, within what is known as an airport influence area. For that reason, the property may be subject to some of the annoyances or inconveniences associated with proximity to airport operations (for example: noise, vibration, or odors). Individual sensitivities to those annoyances can vary

Figure 3-1: Conceptual Site Plan with Airport Compatibility Zones

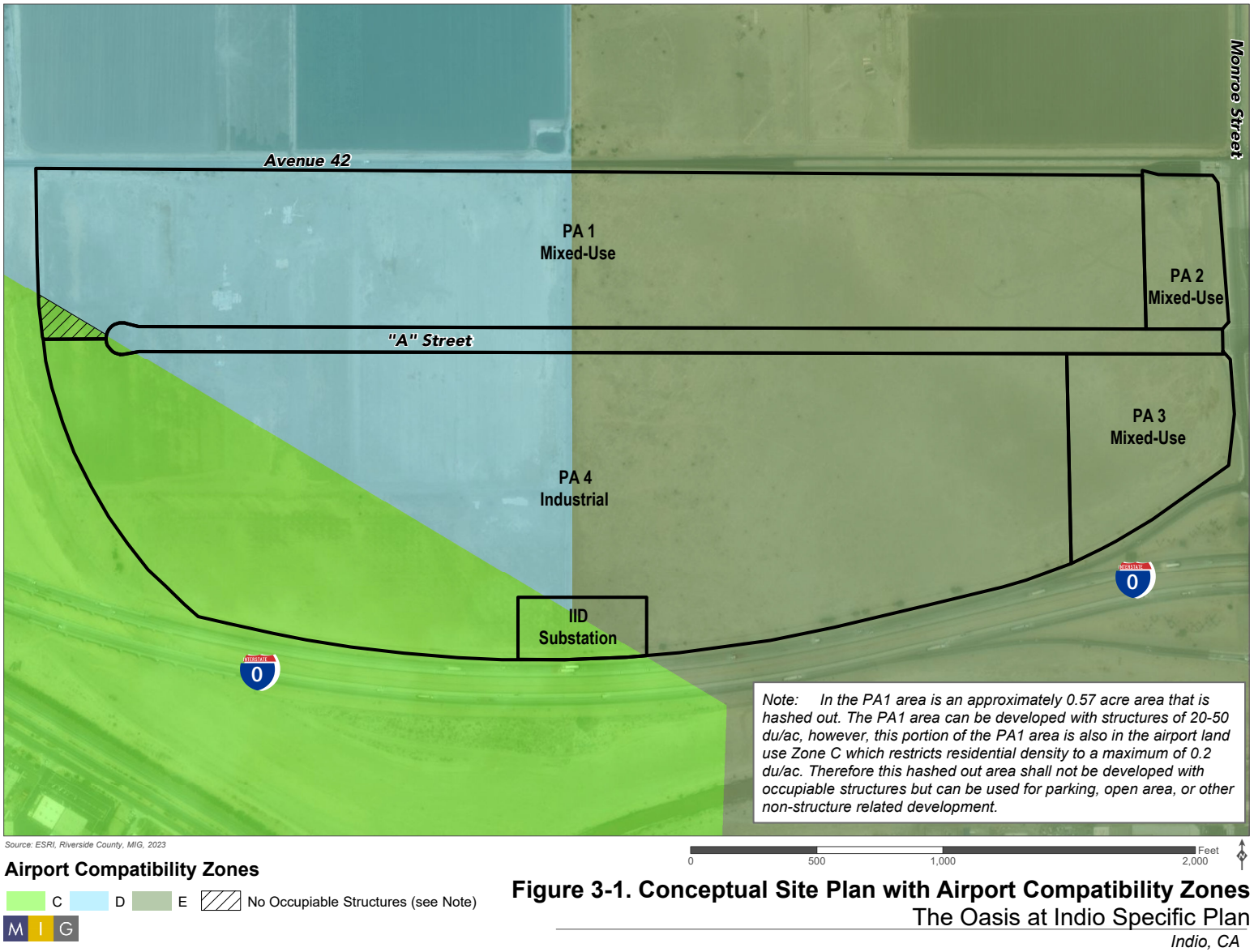

Figure 3-1. Conceptual Site Plan with Airport Compatibility Zones
The Oasis at Indio Specific Plan
Indio, CA

4. from person to person. You may wish to consider what airport annoyances, if any, are associated with the property before you complete your purchase and determine whether they are acceptable to you.

5. Access - Appropriate access routes necessary for fire and safety access, subject to City approval, shall be provided for all areas of a project. See also the City standards in the City Design and Engineering Manual.

6. All developments shall use desert-appropriate sustainable materials that can withstand the desert environment.

3.5.1.1 Supplemental Multiple-Family and Mixed-Use Development Standards (PA 1, PA 2, and PA 3)

1. Table 3-3 Development Standards (Minimum Open Space Requirements for Multiple-Family and Mixed-Use Development Projects), above, establishes the minimum open space requirements for multiple-family development projects and the multiple-family residential portion of mixed-use development projects. The required open space area shall be calculated on a per unit basis and includes [i] private open space for the exclusive use of a dwelling's occupants and guests, and [ii] common open space areas for the enjoyment of all residents within a development project. Common open space consists of active areas, with recreation facilities, and passive areas incorporating features that enhance the appearance and desirability of a development project including plantings, pathways, waterscape, hardscape, rockscapes, shade structures, seating, raised planters, and other unique features.

2. The ratios of “private” open space area to “common” open space area specified in Table 3-3 Development Standards (Minimum Open Space Requirements for Multiple-Family and Mixed-Use Development Projects), above, are recommended and may be adjusted by the developer, based upon the housing market the proposed development is intended to serve, and subject to approval by the approving authority for the project. At a minimum, the “required total” open space for multiple-family development projects shall be provided.

3. Private open space and private common open space in multi-family residential projects and residential mixed-use projects shall comply with Article 2, Section 2.03.06.I of the IUDC.

4. Residential units shall be designed to ensure residents’ security by providing separate and secured entrances and exits that are directly accessible to parking areas. Where residential units are in the same structure as non-residential/commercial uses, access to residential units shall be from a secured area or entrance located on the ground floor. Nonresidential and residential uses located on the same floor shall not have common entrance hallways or common balconies. Shared or common residential entrances shall automatically lock upon closing.

5. A mixed-use building containing two types of commercial uses (retail, services, and office), can collectively be on all floor levels.

6. Block Size - The maximum block size shall be no greater than four acres in size. No block shall be greater than 800 feet in length without a publicly accessible path or street connecting from one public right-of-way to another public right-of-way or turnaround point. Alleys can count as a connecting street or publicly accessible path.

7. External Connectivity - Streets within any proposed building/development site shall, to the extent feasible and unless alternatively approved by the Director, be aligned with existing and planned streets and pathways in the surrounding area to create a continuous street pattern. All streets, alleys, pedestrian and bike pathways in any building/development site shall connect to other streets and to existing and planned public sidewalks, streets, open spaces, and bike paths outside the proposed development to the extent feasible. Any dead-end street longer than 300 feet shall be connected to other streets by a pedestrian path.

8. Multi-Modal Site Access - Pedestrian and bike connections shall connect to existing and proposed public sidewalks, streets, transit stops, open spaces, bike paths, bicycle parking areas, and automobile parking areas adjacent to the Specific Plan Area.

9. A pedestrian pathway or multi-use path (pedestrian and/or bicycle) between buildings or through parking lots from the sidewalk to the interior of the site shall be provided for every 800 feet of a project's frontage.

    a) Pedestrian pathways/sidewalks shall have a minimum six-foot wide unimpeded throughway for the extent of the path or sidewalk.

    b) Multi-use paths through sites that connect two parallel public or publicly accessible rights-of-way shall permit at a minimum one location with 24-hour access for pedestrians, cyclists, and as appropriate emergency vehicles, and shall provide at minimum a 12-foot-wide path within a minimum 20-foot-wide public access easement.

10. Pedestrian pathways/sidewalks connecting to the public sidewalk and other planned or existing pedestrian routes or trails shall be provided. A pedestrian pathway/sidewalk shall connect the primary building entry or entries to the public sidewalk on each street frontage. Pedestrian pathways/sidewalks a minimum of five feet wide shall be provided from the public right-of-way to all primary entryways, common areas, guest/customer vehicle parking, and bicycle parking areas.

11. Internal Private Streets and Pathways –

    a) Private streets shall be a minimum of 24 feet wide, including a clear 20-foot-wide path of travel, and be designed consistent with City standards in the City Design and Engineering Manual. All publicly accessible private streets and multi-use pathways shall provide a minimum of one tree per 35 linear feet of street/pathway.

    b) Private streets, including emergency vehicle access areas, shall be set back a minimum of five feet from interior property lines.

c) Differentiated paving materials, textures (i.e., stamped patterns), and/or colors shall be required where pedestrian paths cross parking areas (where applicable).

d) Private streets shall include on both sides of a street a minimum six-foot-wide sidewalk with a minimum four-foot-wide planting strip.

e) Trees shall be planted at a minimum average spacing between trees of 35 feet. Shrubs and groundcover shall cover at least 30 percent of the planting strip. See also the City standards in the City Design and Engineering Manual.

f) Private streets and pathways shall be publicly accessible 24 hours a day.

g) Buildings fronting internal streets and pathways, both public and private, shall follow all standards as if the building has a front parcel line at the back of walk for the internal street or pathway.

12. Where a non-residential zoned property abuts a residential or mixed-use zoned property, a solid masonry wall shall be installed along the adjacent interior property lines with a minimum height of six feet and a maximum height of eight feet.

3.5.1.2 Drive-through Aisle Standards

1. The entrance/exit of any drive aisle shall be a minimum of 50 feet from an intersection of public rights of way (measured at the closest intersecting curbs).

2. The drive aisle shall be designed with a minimum 10-foot interior radius at curves and a minimum ten-foot width.

3. A clearly identified area shall be provided for vehicles waiting for drive-up or drive-through service that is physically separated from other onsite traffic circulation. The Director may approve alternatives to the requirements of this Subsection where it is determined that the alternate design will, given the characteristics of the site, be equally effective in ensuring on- and off-site pedestrian and vehicular traffic safety and minimizing traffic congestion.

4. The stacking area shall accommodate a minimum of five cars for each drive-up or drive-through window in addition to the vehicle receiving service.

5. The stacking area shall be located at and before the service window (e.g., pharmacy, teller, etc.).

6. Separation of the stacking area from other traffic shall be done by concrete curbing or paint striping on at least one side of the lane.

7. The drive-through aisle shall be screened from the sidewalk or street with landscaping or decorative walls and berms.

3.5.1.3 Supplemental Industrial Development Standards (PA 4)

1. A 20-foot-wide landscaped area shall be provided along the internal east-west roadway.

2. A pedestrian pathway between buildings or through parking lots from the sidewalk to the interior of the site shall be provided at the primary ingress/egress access point of a project's frontage.

    a) Pedestrian pathways shall have a minimum six-foot wide unimpeded throughway for the extent of the path.

    b) A five-foot wide pedestrian pathway shall connect the primary building(s) entry to the public sidewalk on the south of the internal east-west roadway.

3. Differentiated paving materials, textures (i.e., stamped patterns), and/or colors shall be required where pedestrian paths cross parking areas (where applicable).

4. Loading docks shall be permitted on building facades that directly face the internal east-west roadway.

5. Loading docks and truck parking areas shall be visually screened from view along the internal east-west roadway with a 14-foot-high wall, landscaping, and/or other screening features or barriers (such as berms).

6. Gated entry points are permitted in Planning Area 4. If entry gates are used, they shall be positioned to allow enough distance for the stacking of at least two (2) trucks on the lot to preclude queuing of trucks on public streets.

7. Outdoor storage may not be located within any required front or street-side yard. Outdoor storage areas shall be screened from view.

8. Outdoor loading and storage areas and loading doors shall be screened from public view by decorative concrete or masonry walls with lockable view obstructing gates. Such walls shall be a minimum of eight feet in height and shall be of sufficient height to screen all outdoor materials and equipment, tractors and trailers, and loading doors from public view.

9. For security purposes, fencing along the I-10 may include fencing or wall material at least six feet in height.

10. Semi-truck idling shall be restricted to five minutes.

3.6 Parking

Parking standards for uses within the Specific Plan Area are shown in Table 3-4: Off-Street Vehicle Parking Standards.

Table 3-4 Off-Street Vehicle Parking Standards	
Use	**Standards**
Residential	
Multi-Family Dwellings	• 1 per studio or one-bedroom unit • 1.5 per two-bedroom unit • 2 per unit with three or more bedrooms • Plus 0.2 guest spaces per unit
Commercial	
Commercial, Inclusive of Retail, office Use, Services, Restaurants (Dine-In, Take-Out and Drive-Thru)	3.5 spaces/1,000 sf
Lodging – Hotels, Motels, Extended Stay, Inclusive of ancillary retail, food service, and conference	1.25 spaces/key
Community Assembly	1 space/4 fixed seats, or 1 space/40 sf of assembly area if no fixed seats
Industrial	
Freight/Trucking Facility	2 spaces/1,000 sf of office space, plus 1 space/service or fleet vehicle, plus 1 space/service or fleet vehicle.
Warehouse	Up to 200,000 SF: 1 space per 1,250 sf of gross floor area
	All Additional SF: 1 space per 5,000 sf of gross floor
Office	1 space/1,000 sf
Manufacturing/Processing, Light	0.5 spaces/1,000 sf

In addition to the ratios shown, the following criteria are required:

1. Required parking spaces must be available for residents, customers, or employees of the use. Parking and loading areas shall be accessible for their intended purpose during all hours of operation. Fees may be charged for the use of required parking spaces.

2. Stacked or valet parking is allowed if an attendant is present, or an automated system is in place to move vehicles. Uses with valet parking shall provide an approved valet parking plan which includes insurance provisions for patrons. Such provisions must be approved by the City Attorney. If stacked parking managed by an attendant is used for required parking spaces, an acceptable form of guarantee must be filed with the Director ensuring that an attendant will be present while the parking lot is in operation.

3. Residential parking spaces in a mixed-use development shall be assigned to residential occupants.

4. Parking ratios and fraction calculations shall be governed by IUDC 3.03.05.E (Calculation of Required Spaces).

5. An Ancillary use in conjunction with the primary use on the property shall not be subject to additional parking.

6. In a mixed-use building where ancillary service or small-scale food service commercial uses are a small component of the project (less than or equal to 2,000 square feet or 20% of the first-floor area, whichever is more stringent), no additional parking is required. Commercial uses more than 2,000 square feet or over 20% of the floor area shall be parked per the ratios in Table 3-4.

7. Exceptions and reductions to off-street parking shall be governed by IUDC 3.03.06 (Exceptions and Reductions to Off-Street Parking).

8. Required parking for residential uses shall be on the same lot as the dwelling or use they serve on a parcel or tract owned in common by all the owners of the properties that will use the parking area. Required parking spaces serving nonresidential uses shall be located on the same lot as the use they serve.

9. Parking Development and Design Standards shall be governed by IUDC 3.03.08 (Parking Development and Design Standards).

10. In the event that parking characteristics evolve due to new technologies or changes in parking demand, modified parking standards may be proposed based upon a parking demand analysis reviewed and approved by the City as part of the development plan review.

11. New technologies such as parking lifts are permitted, subject to review as part of the development plan review.

12. Handicapped parking spaces shall be provided in accordance with State and Federal regulations and shall be considered in the calculation of required spaces.

13. Electric Vehicle (EV) charging stations shall be governed by Title 24 requirements at the time of permit issuance.

14. Bicycle parking shall be governed by IUDC 3.03.09 (Bicycle Parking) based on use type.

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The Oasis at Indio Specific Plan

ADMINISTRATIVE DRAFT

September 2023

City of Indio
100 Civic Center Drive
Indio, CA 92201

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Chapter 1 - Introduction

1.1 Planning Context

The Oasis at Indio Specific Plan establishes the land use and development regulations, and implementation strategies to provide a balanced and sustainable residential and non-residential development with a range of employment-generating activities and medium to high-density residential that will complement surrounding neighborhoods, centers, and districts. The intent of this Specific Plan is to provide a comprehensive framework in which development can occur in a planned, logical fashion rather than a piecemeal approach. This comprehensive approach will help to create a unified development for the City of Indio residents and visitors to enjoy.

The Oasis at Indio Specific Plan is a stand-alone planning document that focuses on the unique characteristics of the Specific Plan Area and customizes the planning standards and review procedures to reflect the City's vision for this area within the Avenue 42 Corridor Subarea. Additionally, the Specific Plan addresses infrastructure, public services, and utilities to ensure comprehensive and coordinated planning of the essential facilities needed to support the land uses described in this plan. The Specific Plan is the tool that will systematically implement the goals and policies of the City of Indio General Plan. Proposed development plans or agreements, tentative tract or parcel maps, and any other development approval must be in substantial conformance with the Specific Plan. Projects which are found consistent with the Specific Plan will be deemed consistent with the City's General Plan. Upon adoption by ordinance, The Oasis at Indio Specific Plan shall serve as the official zoning and development plan for the Specific Plan Area.

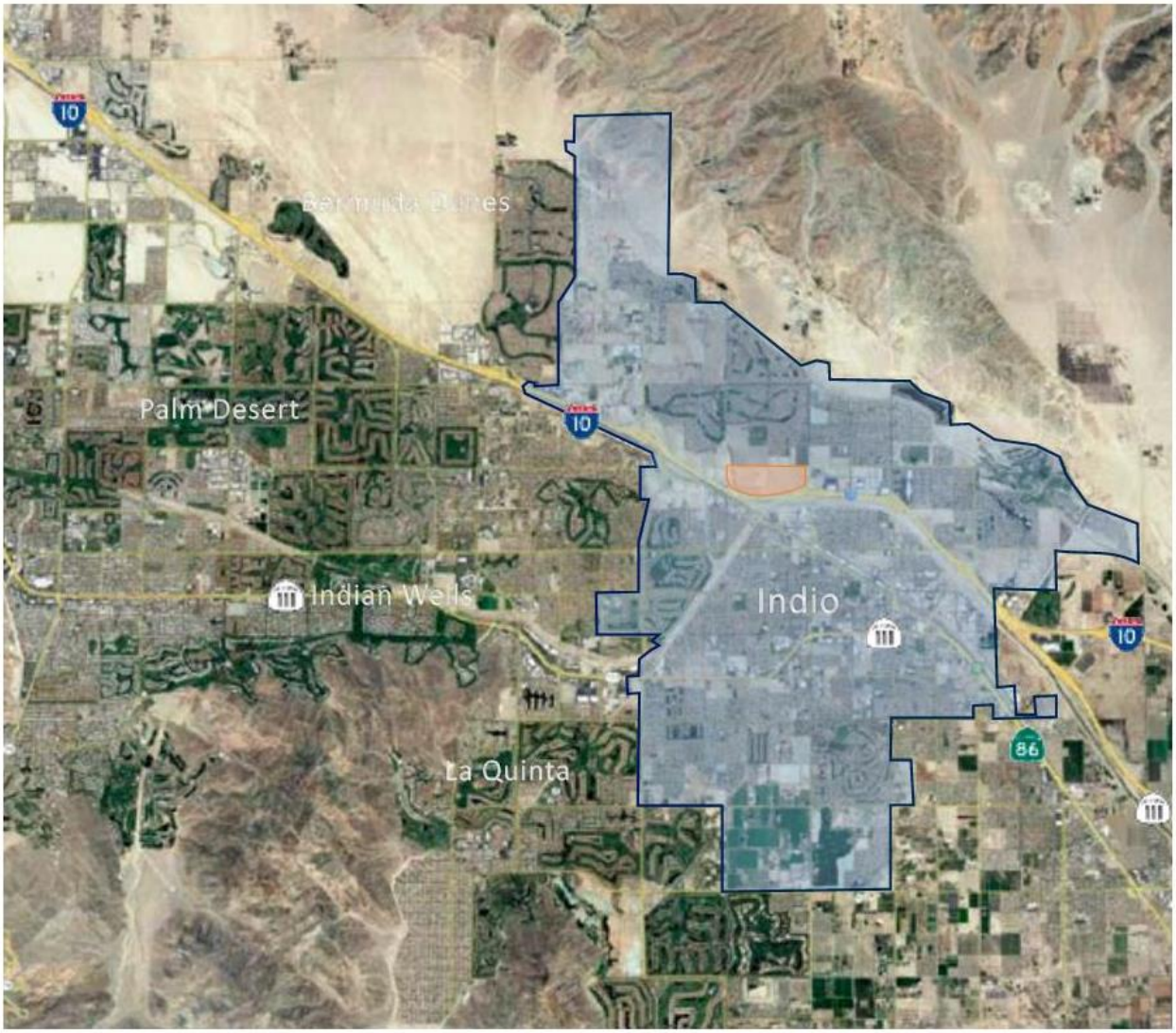
1.1.1 Existing Setting and Surrounding Uses

The Oasis at Indio is located within the Coachella Valley area of Riverside County, in the north-central portion of the City of Indio, adjacent to and north of Interstate 10 (I-10) as shown in Figure 1-1, *Regional Map* and Figure 1-2, *Vicinity Map*. The Specific Plan Area is bounded by Avenue 42 to the north, Monroe Street to the east, the All-American Canal to the west, and the I-10 Freeway to the south.

Regional access to the Specific Plan Area is available from the I-10 Freeway via Monroe Street. Primary arterial access to the Specific Plan Area is available from Monroe Street, Jackson Street, and Jefferson Street, which are accessible from/to I-10.

The Specific Plan Area consists of seven parcels totaling 186 acres. Assessor's Parcel Numbers (APNs): 610-020-001, 610-020-010, 610-020-012, 610-020-013, 610-020-021, 610-020-034, 610-020-036.

Figure 1-1: Regional Map



LEGEND

Specific Plan Area Boundary

City of Indio

N

Not to scale

Figure 1-2: Vicinity Map

The overall site is relatively flat with a slight gradient from northwest to southeast. There is approximately 15 feet of fall across the site with an average slope of about 0.3%. See Figure 1-3, *Topographic Survey Map*. The Specific Plan Area is currently undeveloped vacant land with a few remnants of former development/structures for agricultural purposes including several concrete pads on the north-central portion of the subject property, and two agricultural standpipes on the northwest corner and central portion of the property.

The Site is not located within a 100-year or 500-year flood zone, there are no sole-source aquifers, groundwater monitoring wells, and no evidence of public water sources within the Specific Plan Area.

The site is surrounded by active agriculture land uses to the north, the All-American Canal, vacant land, and a landscaping supply facility (Southwest Boulder & Stone) to the west, commercial land uses (The Palms at Indio) to the east, and the I-10 Freeway to the south. The southeast corner of Monroe Street and Avenue 42 includes a Circle K convenience store/gas station, drive-thru restaurants, financial business, urgent care facility, and other miscellaneous commercial/retail uses. North of the Specific Plan beyond the agricultural land uses, are several residential neighborhoods including Palazzo and Sun City Shadow Hills. South of the Specific Plan beyond the I-10 Freeway includes the Coachella Stormwater Channel as shown in Figure 1-4, *Existing Site Conditions and Surrounding Uses*.

Figure 1-3: Topographic Survey Map

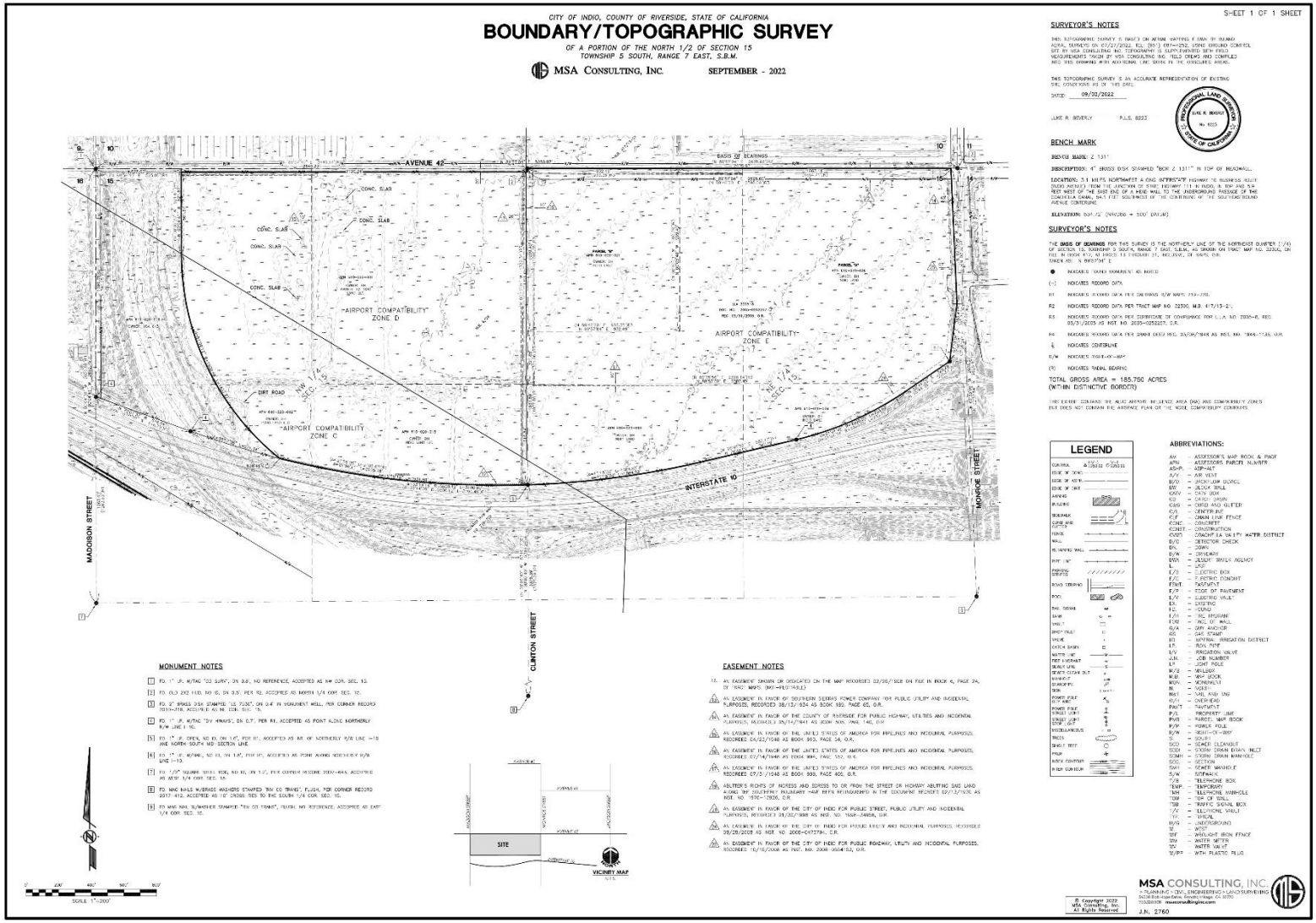


Figure 1-4: Existing Site Conditions and Surrounding Uses

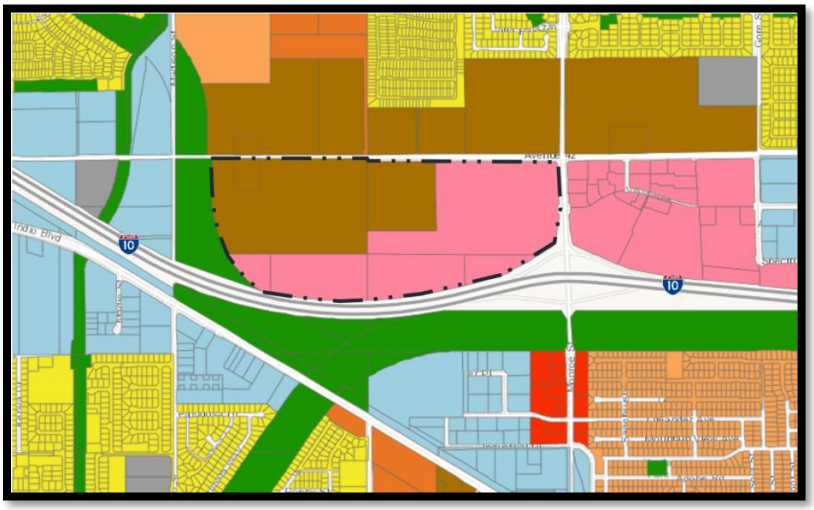
1.1.2 Existing and Proposed General Plan Land Use and Zoning

1.1.2.1 General Plan

The City of Indio 2040 General Plan is a long-range policy document that provides implementation measures to achieve the City's long-term vision to enhance the local economy, maintain the "City of Festivals" reputation, and simultaneously improve access to quality education, housing, and jobs.

The 2040 General Plan sets forth land use designations called place types that indicate the purpose and intended use for each parcel within the City. The place types specify additional guidance related to development form and character including allowable uses, building density, building placement, parking location and access, building frontage, and streetscape design. The existing General Plan designation within the Specific Plan Area is Mixed-Use Neighborhood (MUN) within the northwesterly area and Regional Commercial (RC) within the northeasterly and southerly area as shown in Figure 1-5, *Existing and Proposed General Plan Place Type.*

Figure 1-5: Existing General Plan Place Type Designations



Proposed General Plan Place Type Designations

- Suburban Neighborhood High
- Connected Neighborhood Low
- Connected Neighborhood High
- Mixed Use Neighborhood
- Neighborhood Center
- Regional Commercial
- Workplace Employment District
- Parks and Open Space
- Public and Institutional
- Specific Plan

The Oasis at Indio Specific Plan Boundary

Mixed-Use Neighborhood supports moderate- to higher-intensity neighborhood development that features a variety of multifamily housing choices and commercial uses along major streets. Allowed land uses include a range of single-family and multi-family residential uses, parks and recreation, mixed-use (retail/office, retail/residential, office/residential), and neighborhood-serving retail, general commercial, services, entertainment, live/work, and office.

Regional Commercial supports large-format retail development along with associated restaurant and commercial service activity. Allowed land uses include large-format retail, commercial services, lodging, entertainment, restaurants, parks and recreation.

Table 1-1
General Plan Place Type Designation

Place Type and Intent	Max. Gross Density/FAR	Zoning Correlation
Mixed Use Neighborhood (MUN)	DU/AC: Up to 40 FAR: up to 0.5	RH, NC, CC, P
Regional Commercial (RC)	FAR: 0.35 to 1.0	RC, CC

In addition to Place Type Designations, the General Plan includes key strategies for specific subareas to encourage infill development ensuring the result is a connected, complete place with housing and commercial uses organized into a walkable, transit-supportive pattern of neighborhoods and centers. The Oasis at Indio Specific Plan is located within Indio's subarea, Avenue 42 Corridor. Avenue 42 Corridor is comprised of large areas of undeveloped land on both sides with good freeway access and is close to many of Indio's newest neighborhoods.

While Avenue 42 Corridor encourages a pattern of connected neighborhoods, centers, and employment districts to leverage the economic and fiscal value of that area for future generations, the ultimate composition of the area may vary in response to market conditions.

With the adoption of The Oasis at Indio Specific Plan, the General Plan Land Use (Place Types) will be reclassified from MUN and RC to Specific Plan (SP) to establish an appropriate land use and zoning district designation that optimizes the Specific Plan Area's potential and facilitates achievement of the Specific Plan's goals and objectives.

This refinement is consistent with the community's desire to provide more specific guidance on the intended future character of the City and allows the City to establish zoning designations that similarly communicate form and character.

1.1.2.2 Zoning

The existing zoning designation for the site is Specific Plan (MU-SP), Mixed-Use Neighborhood (MUN), and Regional Commercial (RC). With the adoption of The Oasis at Indio Specific Plan, the Specific Plan Area will be reclassified and zoned Specific Plan (SP) to permit the implementation of the proposed project subject to management and implementation tools to ensure that the goals and policies are fully satisfied in compliance with the City's General Plan.

Figure 1-6: Existing Zoning

Proposed Zoning

- Suburban Neighborhood-8 (SN-8)
- Connected Neighborhood-14 (CN-14)
- Connected Neighborhood-20 (CN-20)
- Mixed Use Neighborhood (MUN)
- Neighborhood Center (NC)
- Regional Commercial (RC)
- Light Industrial (IL)
- Heavy Industrial (IH)
- Parks and Open Space (OS)
- Public and Institutional (PI)
- Specific Plan (MU-SP)

The Oasis at Indio Specific Plan Boundary

1.1.3 Relationship with the Bermuda Dunes Airport Plan

The Bermuda Dunes Airport is a privately-owned, public-use general aviation airport located along the central, western edge of Indio. As a result of the airport, certain restrictions apply to new projects within its Airport Influence Area as identified in the adopted Riverside County Airport Land Use Compatibility Plan (ALUCP) for Bermuda Dunes Airport. These zones and the land use restrictions associated with them are outlined in the 2004 ALUCP and included in Appendix B of this Specific Plan

The Oasis at Indio Specific Plan is located within the influence area for the Bermuda Dunes Airport and Airport Compatibility Zones C, D, and E overlay the property.

As required by State law, the adoption of a specific plan affecting the property within an airport influence area (Public Utilities Code Section 21676(b)) and the adoption or approval of a zoning ordinance or building regulation which (1) affects property within an airport influence area, and (2) involves the types of airport impact concerns listed in Section 1.4 (Public Utilities Code Section 21676(b)) shall be referred to the Airport Land Use Commission (ALUC) for determination of consistency with the Commission's Plan prior to the approval by the City of Indio.

The Riverside County Airport Land Use Commission held a public hearing on ___ and issued a Finding of Consistency for the project on _____, 2023. The ALUC approval letter, conditions of approval, and Airport Notice are included in Appendix B of this Specific Plan. ALUC Conditions of approval have been fully incorporated into this Specific Plan as identified in Appendix B.

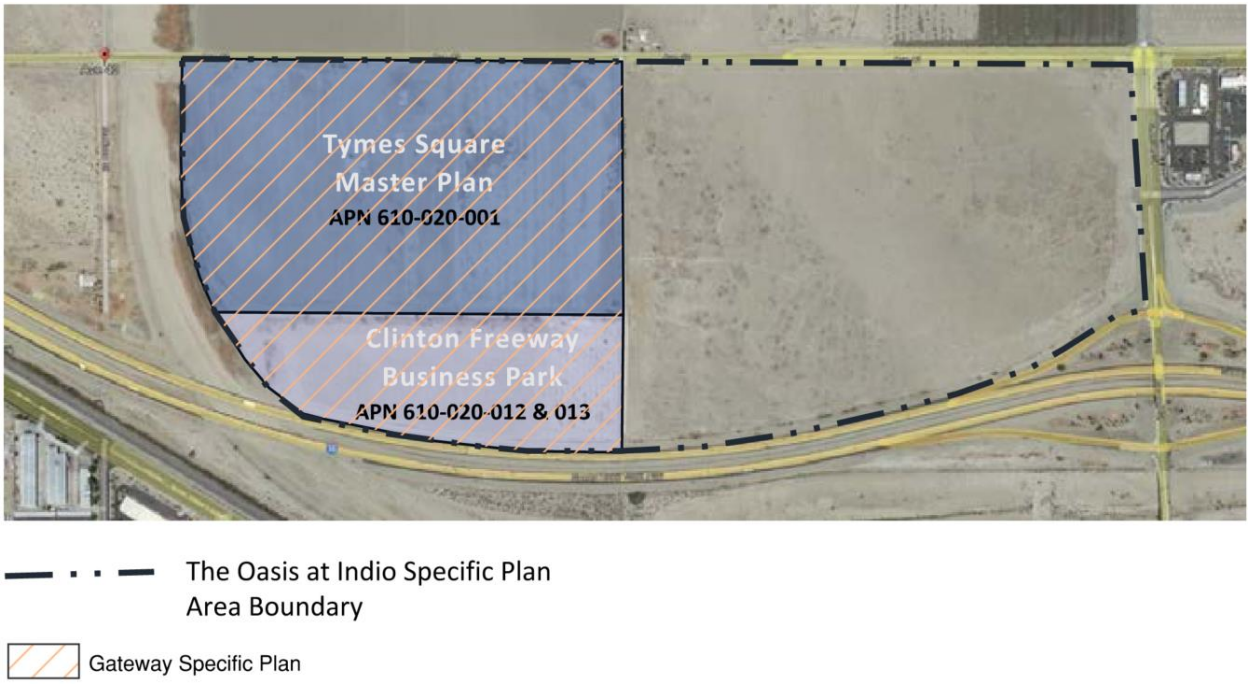
1.1.4 Previous Entitlements

Several Master Plan entitlements were approved within the Specific Plan Area. In 1995, the Gateway Conceptual Specific Plan was approved, covering over 2,700 acres and proposing a planned mixture of commercial, business, office, and residential uses in Indio. The western portion of the project site (approximately 80 acres west of the Clinton Street alignment) is located within the Gateway Conceptual Specific Plan, designated for Mixed Use (MU7). In 2007, the City of Indio approved the "Thymes Square" Project Master Plan on 63.2 acres (APN: 610-020-010) located on the southeast corner of Avenue 42 and the All-American Canal flood control channel right-of-way. The approval authorizes the development of Mixed Use on the Gateway Conceptual Specific Plan that includes 217 Residential units (32.6 acres) on the western half of the master plan, Open Space/Recreation (5-acre public park), Commercial/Business Park development (10 acres) on the northeastern potion, and Light Industrial/Business Park development (11.1 acres) on the southeastern portion of the master plan site.

In 2008, the City of Indio approved the Clinton Freeway Business Park Project Master Plan - A 22.6-acre project (APN: 610-020-012 and 610-020-013) immediately south of the "Thymes Square" mixed-use project. The approval authorizes the development of a Mixed-Use business park with three basic components: showroom retail businesses (6.3 acres) taking advantage of the site's direct freeway visibility, light industrial businesses (11 acres) requiring large indoor spaces for light manufacturing, assembly, and storage as well as "industrial incubator" units (4.3 acres) adjacent to Clinton Street with more modest square footages to serve small businesses.

Neither master plan has been implemented and both sites currently remain vacant. The 80-acre portion located within the Gateway Specific Plan shall be withdrawn prior to the adoption of The Oasis at Indio Specific Plan.

Figure 1-7: Previous Entitlements



1.2 Authority and Requirements

A "Specific Plan" is a planning and regulatory tool made available to local governments by the State of California. Specific plans implement an agency's General Plan through the development of policies, programs, and regulations that provide an intermediate level of detail between General Plans and individual development projects. State law stipulates that specific plans can only be adopted or amended if they are consistent with an adopted General Plan.

The authority to prepare, adopt and implement specific plans is provided by California Government Code Sections 65450 through 65457. Procedures for preparing, processing, reviewing, adopting, and amending specific plans are provided in Article 6, Subsection 6.05.03, Chapter 22.46 of the City of Indio Unified Development Code. The State allows Specific Plans, including any associated regulations and programs, to be adopted by resolution or ordinance; approval of this specific plan shall be by ordinance in compliance with the City of Indio Unified Development Code. As required by the City of Indio and the California Government Code, the Specific Plan includes text and diagrams which specify the following in detail:

- The distribution, location, and extent of land uses proposed within the area covered by the Specific Plan, including open space areas.

- The proposed distribution, extent, intensity, and location of major components of public and private circulation/transportation, drainage, energy, sewers, solid waste disposal, water, and other essential facilities proposed to be located within the Specific Plan Area and needed to support the proposed land uses.
- Standards, criteria, and guidelines by which development would proceed, and standards for the conservation, development, and utilization of natural resources, where applicable.
- A program of implementation measures, including financing, regulations, programs, and public works projects, necessary to carry out the proposed land uses, infrastructure, and development and conservation standards and criteria.
- A discussion of the relationship of the Specific Plan to the actions, goals, objectives, and policies of the adopted General Plan inclusive of detailed analysis as to how the Specific Plan complies with the actions, goals, objectives, and policies.
- Additional information deemed to be necessary by the Director based on the characteristics of the area to be covered by the plan, applicable actions, goals, objectives, and policies of the General Plan, or any other issue(s) determined by the Director to be significant.

For legislative changes, including Specific Plans, Specific Plan Amendments, General Plan Amendments, Development Code, and Zoning Map Amendments, the Planning Commission shall review the requested action and make a recommendation to the City Council, with the Council serving as the final decision-making body. Both the Planning Commission, in its advisory role, and the City Council, in its approval role, may approve, deny, or modify a specific plan.

The Oasis at Indio Specific Plan is the regulatory document guiding land uses and development within the boundaries identified in this Specific Plan. Upon adoption by ordinance by Council, this Specific Plan will provide the zoning design and development standards and regulations, as well as infrastructure requirements, on which subsequent project-related development activities are to be based. Concurrently with adopting the Specific Plan, the General Plan 2040 shall be amended by resolution of the Council to specifically refer to The Oasis at Indio Specific Plan and change the land use designation of the area encompassed in the Specific Plan Area from Mixed-use Neighborhood (MUN) and Regional Commercial (RC) to Specific Plan (SP) on the General Plan Land Use Map. Additionally, the Zoning Map shall be amended and approved by the City Council to change the zoning of Specific Plan (MU-SP), Mixed-Use Neighborhood (MUN), and Regional Commercial (RC) to Specific Plan (SP) on the Zoning Map.

1.3 CEQA Compliance

An Environmental Impact Report (EIR) has been prepared for The Oasis at Indio Specific Plan in accordance with the California Environmental Quality Act (CEQA) and the implementing State CEQA Guidelines (California Code of Regulations, Title 14, Section 15000 et seq.). The EIR evaluates potential environmental impacts based on the highest development intensity associated with the two alternative land use plans with LU Option 1 reflecting the most intensive development.

- LU Option 1: A mixed-use development of up to 3,240 multi-family residential units and 20,000 sf of commercial use on approximately 81 acres within Planning Areas (PA) 1, 2, and 3; and 1,806,290 sf of light Industrial use on approximately 100 acres within PA 4.

- LU Option 2: A mixed-use development of up to 1,320 multi-family residential units and 71,600 square feet of commercial use including a 128 key hotel on approximately 81 acres within PAs 1, 2, and 3; and 1,806,290 sf of Industrial use on approximately 100 acres within PA 4.

The EIR also identifies feasible mitigation measures and potentially feasible alternatives to address any significant and adverse impacts of the Specific Plan on the environment. The City of Indio is required, by CEQA, to certify the EIR prior to the approval of The Oasis at Indio Specific Plan.

Later activities that have been adequately analyzed under the EIR and are consistent with the specific plan are exempt from the requirements of CEQA, as long as subsequent projects are (1) within the scope of the approved EIR, and (2) the EIR adequately describes the activity for the purposes of CEQA (CEQA Guidelines § 15168). Accordingly, pursuant to Government Code Section 65457, it is anticipated that no additional EIR or negative declaration will be required for "any residential project, including any subdivision, or any zoning change that is undertaken to implement and is consistent with a specific plan."

Additional CEQA compliance is required if, after the adoption of the specific plan, one or more of the following events occurs: (1) Substantial changes are proposed in the project which require major revisions to the EIR; (2) Substantial changes to the circumstances under which the development project is being undertaken which require major revisions to the EIR; or (3) New information, which was not known and could not have been known at the time the EIR was certified, becomes available. If any of these events occurs, certification of a subsequent EIR, supplemental EIR, an addendum to the EIR, or adoption of a negative declaration, would be required depending on the environmental impacts identified.

1.4 Specific Plan Goals and Objectives

The following Specific Plan Goals and Objectives form the physical, economic, and environmental framework upon which the Specific Plan is built.

Goal: Accommodate a range of land uses and maintain a level of variety and flexibility that will allow the plan to adjust to market conditions and meet the economic, housing, and service needs of the community.

- Provide uses that ensure long-term economic benefits and stability for the City of Indio.
- Develop a diverse set of land uses that permit a mix of commercial, industrial, and residential uses.
- Implement employment-generating land uses that would create new jobs for the City of Indio.
- Establish development standards and guidelines that facilitate business and employment opportunities, are adaptive to changing market conditions, and achieve local planning objectives.

Goal: Where industrial uses are near existing and planned residential development, ensure that industrial projects be designed to limit the impact of truck traffic, air, and noise pollution.

- Create a high-quality development that provides industrial land use activity adjacent to I-10.
- Encourage site plan designs to provide appropriate setbacks and/or design features that reduce negative impacts at the source.
- Encourage industrial land uses that accommodate buildings with loading bays that have a short direct access route to I-10 on- and off-ramps.
- Design safe and efficient vehicle access to commercial land uses from arterial streets to ensure efficient vehicular ingress and egress.
- Utilize existing designated truck routes and develop a safe and efficient system for delivering goods and services.

Goal: Ensure that development has a positive effect on the City of Indio and a high quality of life for all residents.

- Ensure development along Avenue 42 results in a connected, complete place with housing and commercial uses organized into a walkable, transit-supportive pattern of neighborhoods and centers.
- Establish development standards along Avenue 42 to include wide sidewalks, trees, pedestrian furniture, safe pedestrian crossings, and direct connections to the front entrances of retail and services.
- Provide landscaping that improves the streetscape experience and is supportive of the site's character and the character of the surrounding community.
- Encourage a mix of local- and regional-serving uses along Avenue 42 and Monroe Street that serves the needs of the community.
- Promote compatibility with surrounding uses through site design that provides appropriate transitions and buffer space.

Goal: Ensure the circulation network provides a safe and efficient level of connectivity for commercial and passenger vehicles, bicyclists, and pedestrians.

- Establish pedestrian connections between residential and retail commercial developments.
- Develop sidewalks for pedestrian use where existing gaps exist.
- Establish the opportunity for a Multi-Modal Transportation Network that serves all users and modes in a healthy, equitable manner.
- Encourage commercial/retail developments to have common driveways to minimize the number of curb cuts along any given block to improve pedestrian safety.
- Encourage residential and non-residential developments within a ½ mile radius of existing or planned transit stops, particularly along Avenue 42, to facilitate and take advantage of

transit service, reduce vehicle trips, and allow residents without private vehicles to access services.

- Design a circulation network that provides pedestrians and bicyclists safe transit on existing designated arterial and boulevard truck routes.

Goal: Provide adequate infrastructure, services, and utilities to meet the needs of the community.

- Ensure adequate infrastructure and utility service levels before approving new development.
- Require new development to pay their fair share for required improvements to public services and infrastructure.

Goal: Provide a stand-alone regulatory instrument that will plan for the orderly and efficient buildout of the Specific Plan Area

- Establish appropriate land uses and development standards that optimizes the Specific Plan Area potential and facilitates the achievement of project objectives.
- Establish appropriate land uses and development standards within the Airport Influence Area consistent with the densities, intensities, prohibited uses, and other development conditions defined in the Bermuda Dunes Airport Land Use Compatibility Plan.

1.5 Specific Plan Organization

The Oasis at Indio Specific Plan is organized into five Chapters and three appendices. The following describes each chapter and accompanying appendices:

- *Chapter 1 Introduction* - Provides local and regional context and setting; background; authority to prepare; relationship to other plans and documents; CEQA compliance; project goals and objectives and organization of the Specific Plan.
- *Chapter 2 Development Plan* – Explains the conceptual land use plan for the Specific Plan Area; circulation and mobility; grading; circulation, infrastructure, and public services.
- *Chapter 3 Development Regulations* – Identifies allowable uses, development intensities, and the general development standards, parking, and other regulations for development with The Oasis at Indio Specific Plan.
- *Chapter 4 Design Guidelines* - Provides design concepts and establishes design guidelines for development in the Specific Plan Area to ensure consistency with the vision and objectives of The Oasis at Indio Specific Plan.
- *Chapter 5 Administration and Implementation* – Discusses the development review procedures applicable to the Specific Plan Area; Implementation of the proposed land uses, including Specific Plan adoption, subsequent approvals and plans, substantial conformance findings, and phasing are outlined in this chapter. Additionally, financing sources and maintenance responsibilities are identified and administrative procedures regulating modifications and amendments.

- *Appendix A: Airport Land Use Commission (ALUC)* – Includes the ALUC approval letter, conditions of approval, and Airport Notice. Also included are the land use zones and associated land use restrictions as outlined in the 2004 Riverside County Airport Land Use Compatibility Plan (ALUCP) for Bermuda Dunes Airport.
- *Appendix B: Track Implementation Form* – Provides a mechanism for tracking Development Project Reviews/Entitlements.

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Chapter 2 – Development Plan

The greatest value offered by The Oasis at Indio is its location. The property is located immediately north of Interstate I-10, a regional corridor; south of Avenue 42, which serves as a backbone corridor for all modes of transportation within North Indio; and west of Monroe Street, which provides direct access to/from I-10. The Specific Plan Area is located just over one mile east of the Bermuda Dunes Airport. When creating a guiding vision for The Oasis at Indio the property's setting and proximity to major transportation corridors and facilities were given the highest consideration.

The Oasis at Indio establishes a mixture of employment and residential land uses arranged in a sensible and efficient manner that allows ease of access and complements the surrounding community. To that end, The Oasis at Indio's land use plan is a contemporary mixed-use center containing industrial, commercial, and multi-family residential land uses that take advantage of the property's location near regional transportation corridors.

The Oasis at Indio is a place where businesses can locate and thrive and where multi-family housing opportunities are within walking distance of shopping, goods and services, employment opportunities, and public transit. The mixture of uses and their orientation on the property are designed for the benefit of the residents, visitors, the surrounding community, and the region.

2.1 Land Use Concept Plan

As shown in Figure 2-1*, Land Use Districts*, The Oasis at Indio Specific Plan specifies two primary land use districts: Mixed-Use, which allows residential and commercial uses, and Industrial. For planning purposes, the 186-acre Oasis at Indio Specific Plan property is divided into four Planning Areas (PA).

Figure 2-1: Land Use Districts

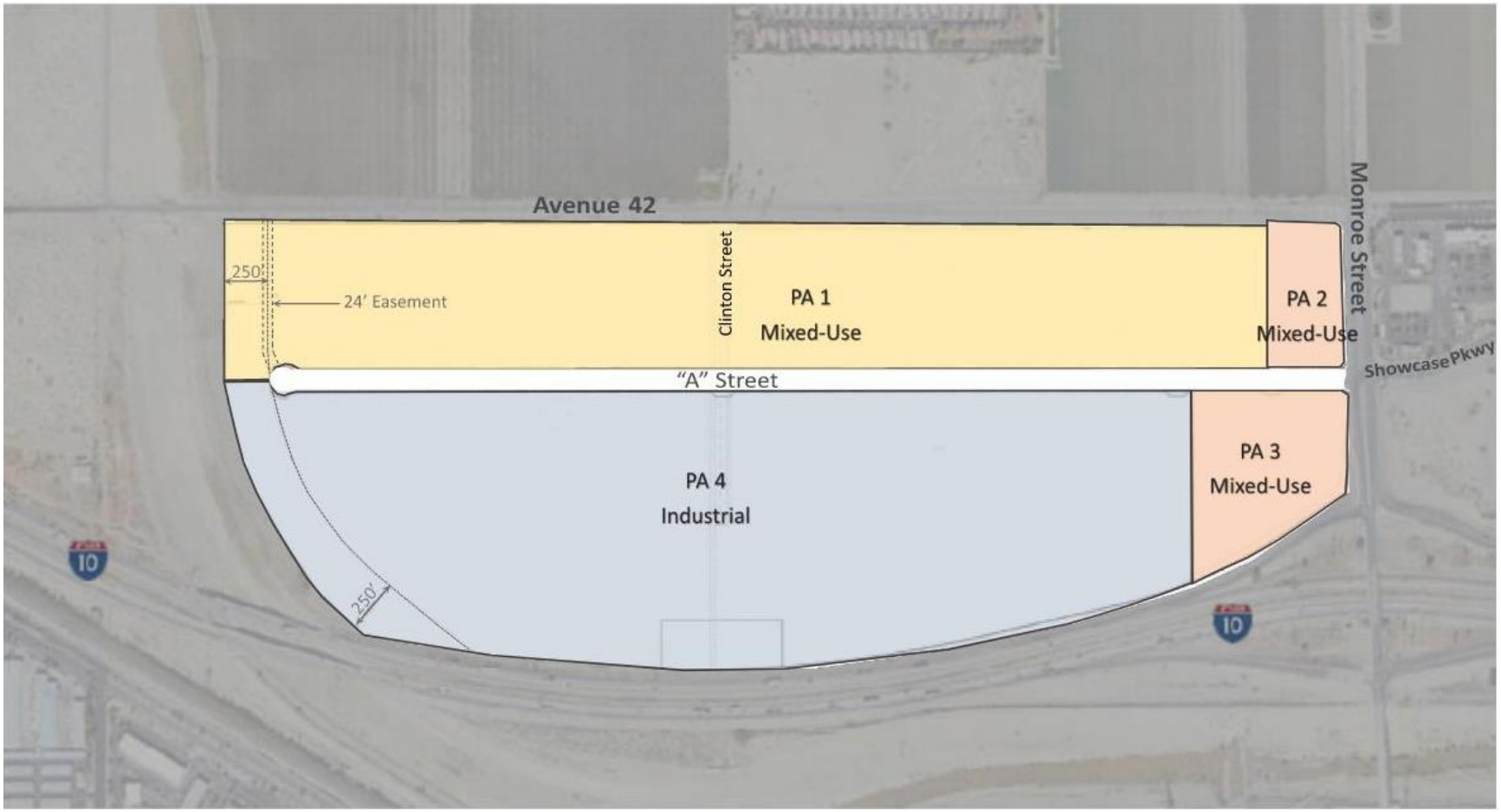


Table 2-1, *Land Use Plan Statistical Summary* provides a high-level summary of the planned land uses and permitted intensity of uses within the planning areas of the Specific Plan. Table 2-1 reflects generally applicable standards and does not describe potential buildout, which is further controlled by the development maximum reflected in Table 2-2 and the land use equivalency conversion ratios identified in Specific Plan Section 5.2.7, *Land Use Conversion*. The applicable development standards in Specific Plan Section 3.5, *Development Standards*, also apply to any future development within the Specific Plan's Planning Areas. Each Planning Area may develop as a singular anticipated use or as a combination of uses identified below in a horizontal or vertical mixed-use development.

Further definition of each planning area will occur as individual developments are implemented through the Planning Review process and based on market demand.

Table 2-1
Land Use Plan Statistical Summary

Land Use District	PA	Acreage (Approximately)		Allowed Uses[1]			
		Gross	Net	Multi-Family Residential		Non-Residential Square Footage	
Mixed-Use	1	66	61.20	20-50 DU/AC		0.50 FAR	
Mixed-Use	2	5	4.24				
Mixed-Use	3	10	9.35				
Industrial	4	100	95.31	N/A		0.60 FAR	
Public ROW Dedication		5		N/A			
"A" Street			10.19	N/A			
TOTALS		**186**	**180.29**	**-**	**-**	**-**	**-**

1. The "Allowed Uses" and associated intensities are reflective of the Development Standards applicable to each Planning Area district. It does not reflect maximum buildout, however, as development within the Specific Plan is also limited to the intensity identified in Table 2-2, subject to the land use equivalency ratios identified in Specific Plan Section 5.2.7. There is no equivalency ratio for industrial uses and residential or commercial square footage capacity cannot be converted to additional industrial square footage.

2.1.1 Specific Plan Development Limit

Notwithstanding the Specific Plan's permitted densities/intensities and development standards, maximum development (buildout) within the Specific Plan is also controlled by the development capacity limitations below. It is important to note that while the equivalency tables allow variation in intensity between uses, the maximums identified below are reflective of the most intensive development that could occur within the Specific Plan. Any of the development variants that could occur using equivalency would be consistent with and within the scope of the maximums.

Table 2-2 Development Potential Maximums					
		Acreage (Approximately)		Maximum Potential	
Land Use District	PA	Gross	Net	Multi-Family Residential	Commercial Non-Residential Square Footage
Mixed-Use	1	66	61.20	50 DU/AC	20,000 square feet
Mixed-Use	2	5	4.24		
Mixed-Use	3	10	9.35		
Industrial	4	100	95.31	N/A	1,806,290 square feet
Public ROW Dedication		5		N/A	
"A" Street			10.19	N/A	
TOTALS		**186**	**180.29**	**3,240 DU**	**1,877,890**

The "maximums" identified in Table 2-2 reflect the most intensive development that could occur within the Specific Plan. However, the exact development may not reflect the uses actually developed. The square footage of commercial non-residential square footage may increase while residential unit development would decrease, for instance, consistent with the land use equivalency conversion ratios in Section 5.2.7.

LU Alternate 1 reflects an *illustrative* alternative development scenario that is consistent with both (1) the maximums under Table 2-2 and (2) the land use equivalency conversion ratios in Section 5.2.7.

Table 2-3 LU Alternate 1						
		Acreage (Approximately)		Land Uses		
Land Use District	PA	Gross	Net	Multi-Family Residential	Commercial Non-Residential Square Footage	
Mixed-Use	1	66	61.20	20 DU/AC	71,600 square feet	128 Key Hotel/Motel
Mixed-Use	2	5	4.24			
Mixed-Use	3	10	9.35			
Industrial	4	100	95.31	N/A	1,806,290 square feet	
Public ROW Dedication		5		N/A		

Table 2-3 LU Alternate 1					
		Acreage (Approximately)		Land Uses	
Land Use District	PA	Gross	Net	Multi-Family Residential	Commercial Non-Residential Square Footage
Interior ROW			10.19	N/A	
TOTALS		**186**	**180.29**	**1,320 DU**	**1,877,890 and 128 Key Hotel/Motel**

2.1.2 Planning Area 1-3

Planning Areas 1, 2, and 3 comprise approximately 81 acres (75 net acres) in the northern and northeastern quadrant of the Specific Plan Area. As shown on Figure 2-1.

- *Planning Area 1* is bordered on the north by Avenue 42; on the west by the All-American Canal; on the east by PA 2; and on the south by an internal east-west roadway ("A" Street);
- *Planning Area 2* is bordered on the north by Avenue 42; on the east by Monroe Street; on the south by an internal east-west roadway ("A" Street); and on the west by PA 1; and
- *Planning Area 3* is bordered on the north by an internal east-west roadway ("A" Street); on the east by Monroe Street; on the south by the I-10 on-ramp; and on the west by PA 4.

The mixed-use designation allows for medium to high-density multi-family residential and commercial land uses in a vertical or horizontal mixed-use development within walkable distance to surrounding neighborhoods, a variety of nearby retail commercial centers, workplaces, public transit, and the Coachella Valley alternative transportation corridor (CV Link). The presence of multi-family residential housing would contribute to a diverse set of land uses ensuring a mixed-use development and a variety of housing types and densities within a walkable urban format of The Oasis at Indio Specific Plan and the surrounding area.

Residential development is envisioned to include private on-site amenities such as fitness rooms, community pools, and clubhouses for the residents and their guests as well as common open space areas, walkways, landscape parkways and buffer areas, and parking. The final site plan and housing type will largely depend on future developers but will most likely consist of low-rise (3 stories or less) multi-family rental units, and not-for-sale products.

Planning Areas 2 and 3 located on a prominent corner near the I-10 Freeway and the Bermuda Dunes Airport, affords the opportunity to attract and provide a high-quality and viable balance of commercial uses and moderate- to high-intensity multi-family residential housing. The development of PA 2 would provide working opportunities and various services like restaurants, shops, or other amenities within walkable distance to existing and proposed nearby residents.

Designed to complement the uses of PA 2, Planning Area 3 would allow for a range of commercial uses that benefit from visibility and access from the I-10. A 128-key hotel is envisioned in PA 3 with the intention of serving the surrounding community and region, such as visitors to the nearby Polo Club or festivals and Bermuda Dunes Airport. Refer to Chapter 3, Section 3.4, Permitted Uses and Section 3.5, Development Standards, for a list of permitted uses and additional information.

Frontage along Avenue 42 would provide 11-foot-wide parkways comprised of 6-foot-wide sidewalks, shade trees, and landscaping that improves the pedestrian experience and is supportive of the site's character and the character of the surrounding community. See Chapter 4, *Design Guidelines* for the placement, orientation, and design along Avenue 42.

An approximately 68-foot-wide landscaped transition zone is planned along the southern boundary of PA 1 to soften the overall site design, support compatibility with surrounding land uses, and serve as a water quality/detention basin as part of the development's storm drain system. Additionally, a 250-foot-wide setback is provided along the western boundary that provides a usable transition between the future development in PA 1 and the canal bank. This setback allows for passive or active open space uses, trails, walkways, driveways, parking, and secondary vehicular and/or emergency use access.

2.1.3 Planning Area 4

Encompassing approximately 100 acres (95 net acres) in the southern portion of the Specific Plan, Planning Area 4 is designated for industrial land use and is the largest of the Planning Areas. As shown on Figure 2-1, PA 4 is bordered on the north by an internal east-west roadway ("A" Street); on the east by PA 3; on the south by the I-10 freeway; and on the west by the All-American Canal.

Planning Area 4 is designed to accommodate buildings of various sizes that house users such as general light industrial, manufacturing, and warehouse/distribution operations. These types of uses typically attract both passenger car and truck traffic that benefit from a short, direct route to the regional transportation (freeway) system.

The buildings in PA 4 are configured to provide a sustainable design with proper balance in size, aesthetics, energy efficiency, accessibility, safety, and security. Enhanced landscaping and decorative screen walls along the northern boundary of PA 4 provide an additional buffer treatment to further soften the transition and reduce potential impacts to the uses north of PA 4. A 250-foot-wide setback is provided along the western boundary that provides a usable transition between the industrial use and the canal bank. This setback allows for passive or active open space uses, walkways, driveways, and parking. A potential I.I.D. substation and water quality/detention basins are proposed along the southern portion of PA 4. The water quality/detention basins provide additional green space as part of the development's storm drain system. Driveway access points are provided via "A" Street intended primarily to accommodate commercial traffic for PA 4 with left-turn in/right-turn out only to facilitate direct vehicular access to the Interstate 10/Monroe Street on- and off-ramps. The conceptual site plan for The Oasis at Indio Specific Plan is conceptual and will largely depend on future developers.

Note: The site design represented in Figure 2-2 is conceptual in nature and exemplifies one possible design scenario that has been developed in accordance with the design criteria of The Oasis at Indio Specific Plan and may not represent the ultimate use or building layout within the Specific Plan.

Figure 2-2: Conceptual Land Use Plan

2.2 Circulation and Mobility

The main objective of the Circulation Plan is to provide direct, safe, and convenient vehicular and non-vehicular access for residents, visitors, and employees to, from, and through, the Specific Plan's four Planning Areas.

Development of The Oasis at Indio requires improvements to existing public streets as well as the development of Clinton Street a north-south roadway, and "A" Street an east-west internal roadway. The internal roadway is designed to coordinate the movement of vehicles and pedestrians, minimize potential conflicts, and encourage a safe and enjoyable pedestrian experience in compliance with the General Plan.

2.2.1 Vehicle Circulation

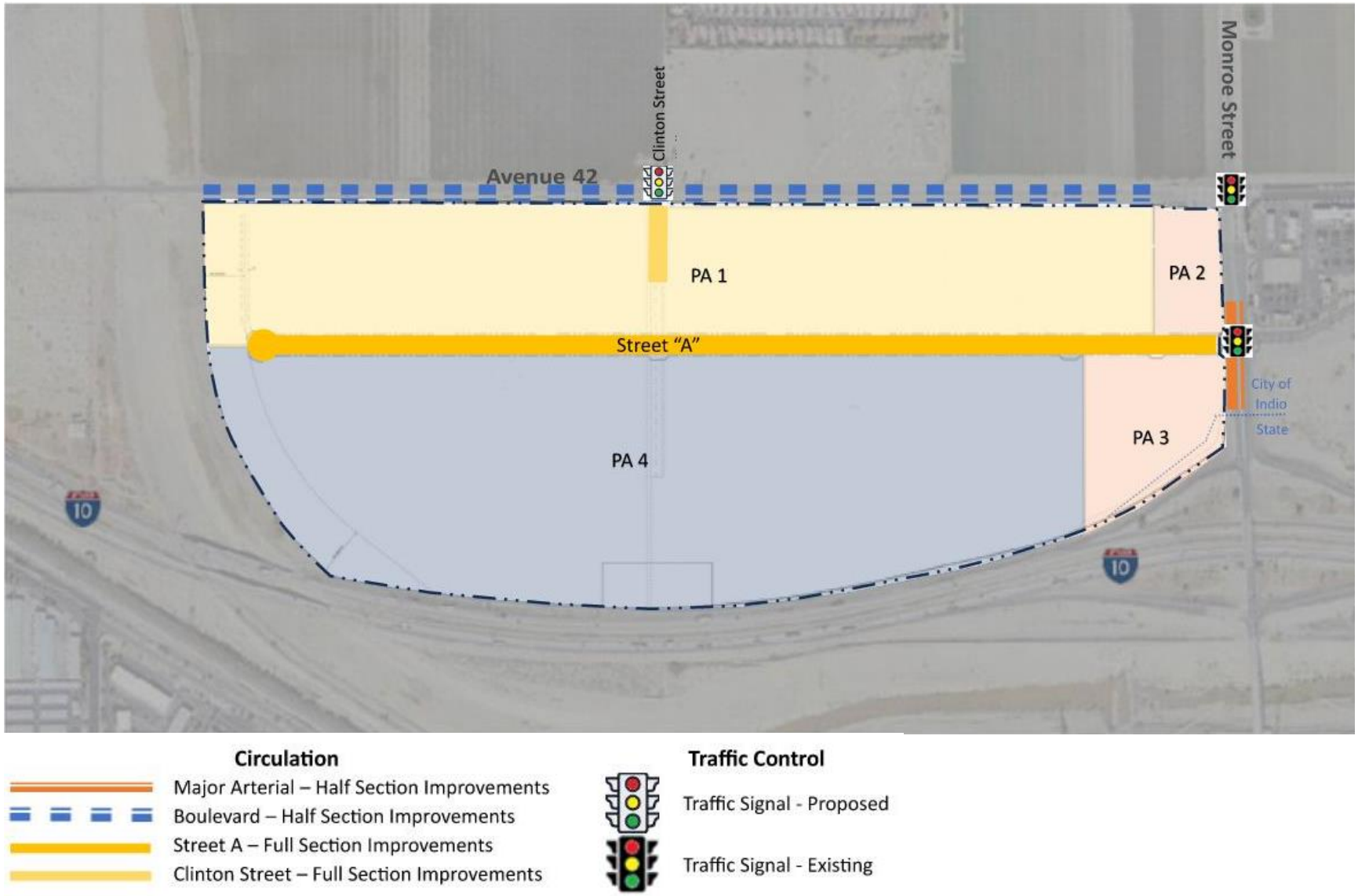
The circulation system depicted in Figure 2- 3, *Conceptual Vehicular Circulation and Mobility Plan*, provides the necessary roadway improvements and design to accommodate the Land Use Plan, provides mobility choice to all residents, and limits truck traffic on Avenue 42.

As a component of this project, a comprehensive traffic analysis was prepared, which identified existing conditions, forecasted future conditions, and provided recommended roadway segment and intersection improvements to address project-related significant impacts associated with the build-out of the anticipated land use plan. This analysis is provided in the technical appendices of The Oasis at Indio Specific Plan EIR.

The Specific Plan is served by Monroe Street to the east and Avenue 42 to the north. Concurrent with the development of The Oasis at Indio, improvements to Monroe Street and Avenue 42 will result in completed street sections consistent with the City's General Plan Mobility Element. All street improvements will be constructed in accordance with applicable City of Indio design standards and specifications.

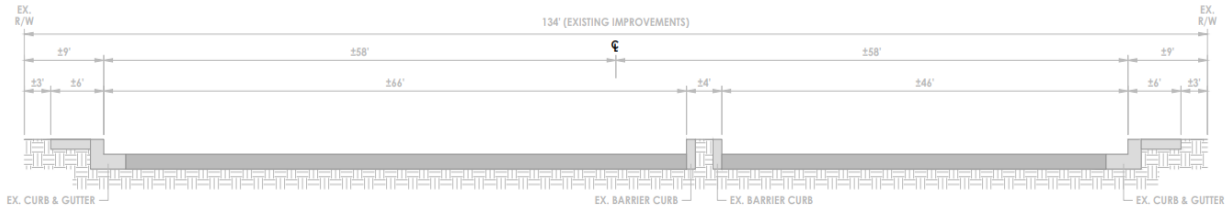
Interstate 10, which is under the authority of CalTrans, is located immediately south of the Specific Plan Area forming the southern boundary of Planning Areas 3 and 4. A portion of land along the southeast corner of the Specific Plan Area is required by CalTrans for improvements along the northwest quadrant of the I-10/Monroe Street on-ramp. Development of The Oasis at Indio does not affect CalTrans' plans for the Monroe Street on/off ramp improvements, operation, and maintenance of Interstate 10. Drivers traveling between the Specific Plan Area and the freeway system will have convenient access via the on- and off-ramps at Monroe Street, Jackson Street (one mile east), and Jefferson Street (two miles west).

Figure 2- 3: Conceptual Vehicular Circulation and Mobility Plan



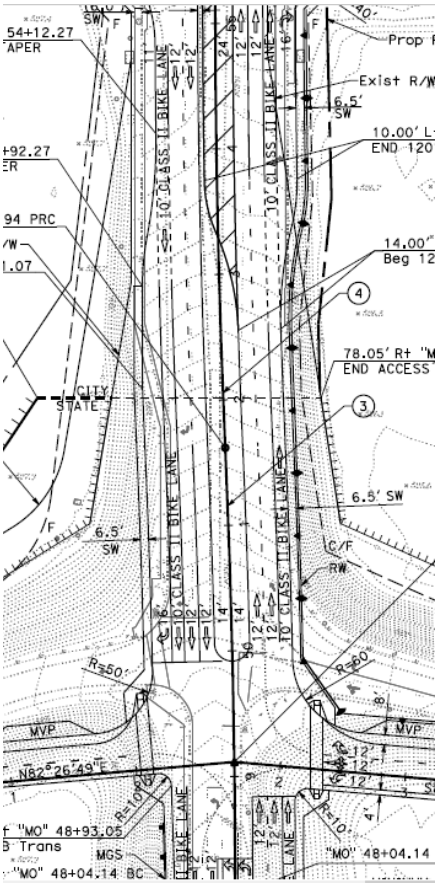
2.2.1.1 Monroe Street

Monroe Street forms the eastern boundary of the Specific Plan and consists of two lanes in each direction with signalized turn lanes eastbound onto Showcase Parkway (existing) and westbound onto Avenue 42. Additional features include a non-landscaped median, abutting sidewalks, and streetlights within the public right-of-way. Monroe Street is classified in the City's General Plan Mobility Element as a 6-lane Major Arterial with vehicular efficiency prioritized. Bicycle lanes can be provided and can be further enhanced or complemented by other facilities or off-street pathways. As shown below, the existing segment of Monroe Street between Showcase Parkway and Avenue 42 is currently improved with an ultimate right-of-way (ROW) width of 134 feet with 116 feet of pavement including a four-foot-wide barrier curb and curb and gutter improvements, and a nine-foot-wide parkway on both sides of the street. On-street parking is not allowed. Monroe Street is a designated truck route within the General Plan. Improvements along Monroe Street would be required in conjunction with the development of the Specific Plan.



SECTION C-C
MONROE STREET
(PER CITY OF INDIO / PUBLIC ROAD)
N.T.S.

As part of the I-10 Freeway improvements, Caltrans proposes to widen Monroe Street, South of Showcase Parkway, to include a right turn west-bound I-10 access lane, a 10-foot-wide Class IV Bike Lane, two through traffic lanes, and 14 feet of a 28-foot-wide median.

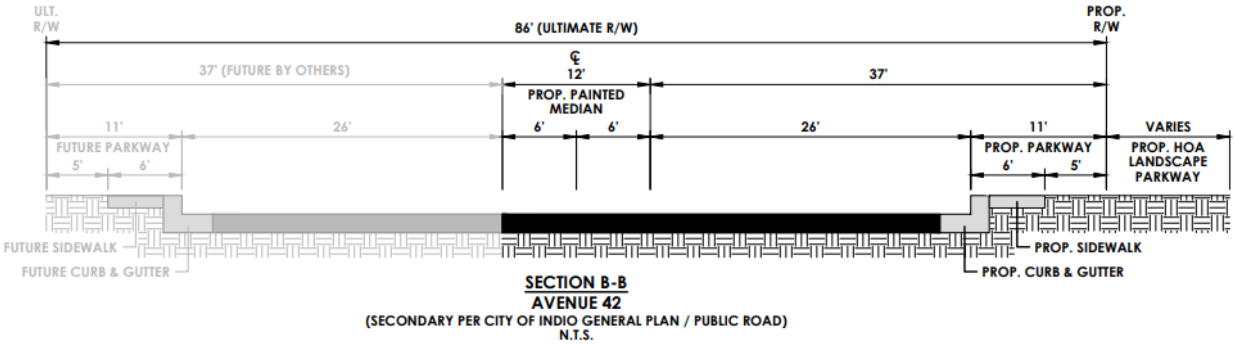


Monroe Street ROW proposed south of Showcase Parkway

2.2.1.2 Avenue 42

Avenue 42 currently consists of one lane in each direction with above-ground utility poles along the Specific Plan Areas frontage and a non-landscaped median, east of Clinton Street. Avenue 42 is a designated truck route within the General Plan.

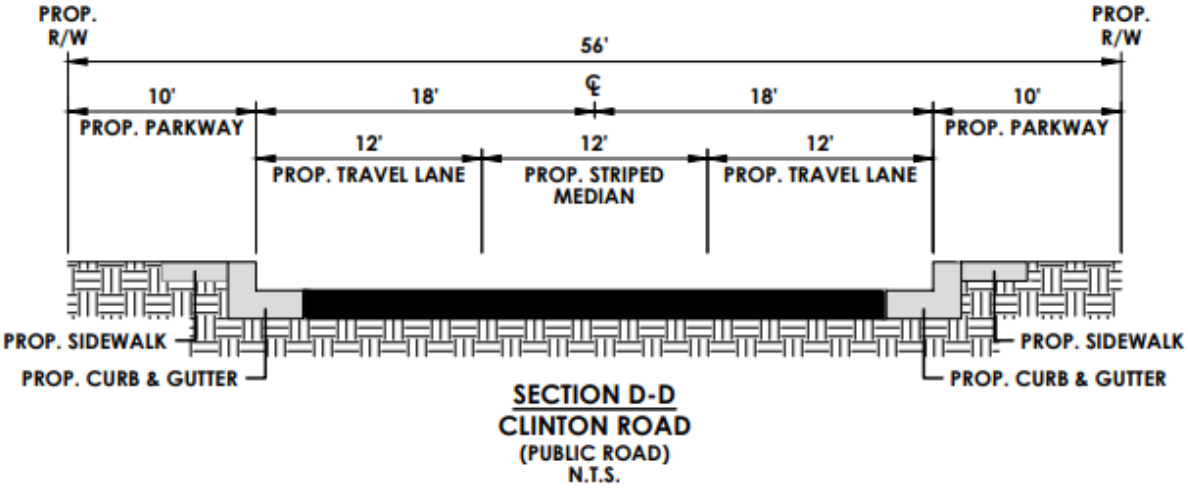
As shown below, Avenue 42 would feature an ultimate 86-foot-wide right-of-way with 52 feet of pavement, a 12-foot-wide painted median, curb and gutter improvements, and an 11-foot-wide parkway on both sides of the street. Bicycle lanes and on-street vehicle parking are to be provided. Intersection improvements for pedestrians and bicyclists should be emphasized to improve comfort, safety, connectivity, and accessibility. Improvements along the southern portion of Avenue 42 abutting the specific plan frontage would be required in conjunction with the development of the Specific Plan.



2.2.1.3 Clinton Street

Based on the Mobility Element of the General Plan, Clinton Street is projected to extend southerly across Avenue 42 in a north-south direction through PA 1 of the Specific Plan Area. Clinton Street is classified in the City's Mobility Element as a Secondary 4-lane roadway featuring an 86-foot-wide right-of-way including 52 feet of pavement, a 12-foot-wide painted median, curb and gutter improvements, and 11-foot-wide parkways on both sides of the street. On-street parking is typically allowed.

Implementation of development within PA 1, would incorporate construction of Clinton Street from Avenue 42 southerly to accommodate vehicular access to the mixed-use component. As shown in the cross-section below, Clinton Street would feature a 56-foot-wide right-of-way including 36 feet of pavement for two 12-foot-wide travel lanes and a 12-foot-wide painted median, curb and gutter improvements, and a 10-foot-wide parkway on both sides of the street. Street rights of way at intersections may be widened to accommodate adequate turning movements. A traffic signal would be required at the Clinton Road and Avenue 42 intersection.

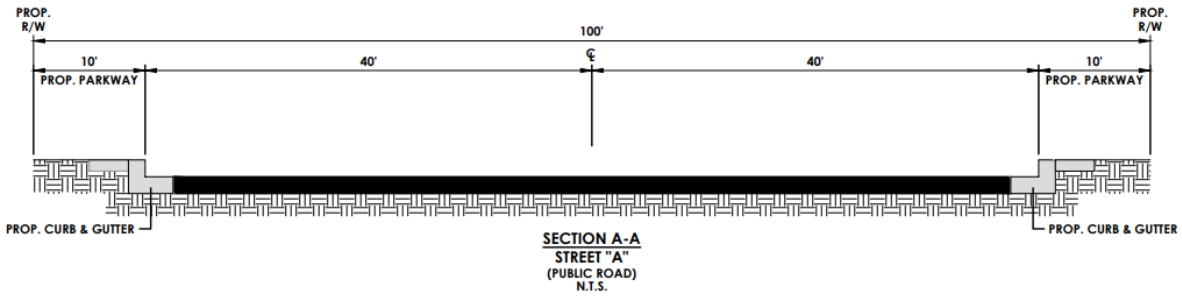


2.2.1.4 Internal Circulation

Internal circulation through the Specific Plan Area is provided by an east-west public collector street ("A" Street). "A" Street will connect to the existing signalized intersection on Monroe Street and would provide primary access for PA 2, PA 3, and PA 4, and secondary access for PA 1. To facilitate safe and efficient on-site and off-site circulation, secondary access driveways on the north side of the collector

street in PA 1 would be right in/right out only. The right-out only safely directs residential and passenger vehicular traffic northwest onto Avenue 42. Driveways on the south side of the collector street are left-in/right-out only providing commercial trucks a direct route to/from the I-10 freeway via Monroe Street, limiting truck traffic on Avenue 42.

As shown in the cross-section below, "A" Street features a 100-foot-wide right-of-way with 80 feet of pavement, a 12-foot-wide raised median, curb and gutter improvements, and a 10-foot-wide parkway on both sides of the street. Visually what is seen between the north and south edge conditions along "A" Street is primarily 185 feet or more of green space due to the extensive landscape setbacks and edge options as illustrated in Chapter 4, Design Guidelines.



2.2.2 Non-Vehicular Circulation

A comprehensive network of pedestrian and bikeway facilities are provided within The Oasis at Indio as shown in Figure 2-4, *Conceptual Non-Vehicular Circulation and Mobility Plan*. The purpose for the non-vehicular circulation plan is to provide a Complete Street that incorporates a pedestrian- and bicycle-friendly environment and enhance connectivity across all travel modes to encourage the use of non-vehicular modes of travel.

2.2.2.1 Bikeways

Roadway improvements along Avenue 42 and Monroe Street will include a Class IV Separated Bikeway or Cycle Track – currently, no bike path or lane exists. The Class IV Separated Bikeway or Cycle Track provides a delineated right-of-way with a physical separation or barrier between bicyclists and motor vehicle traffic. This separation can include parked vehicles, bollards, curbs, or any other physical device that provides this separation.

The All-American Canal abutting the Specific Plan's westerly boundary provides a Class 1 – Bike Path and serves as a community connector to the Coachella Valley alternative transportation corridor (CV Link) – a 50-mile pathway for bicycles, pedestrians, and low-speed (up to 25 mph) electric vehicles along the Whitewater River Channel and Tahquitz Creek that will initially stretch from Palm Springs to Coachella. The Class I Bike Path provides a separate corridor that is not served by streets and highways and is away from the influence of parallel streets. Class I bikeways are for non-vehicle use only with opportunities for direct access and recreational benefits, right-of-way for the exclusive use of bicycles and pedestrians, and crossflow conflicts are minimized.

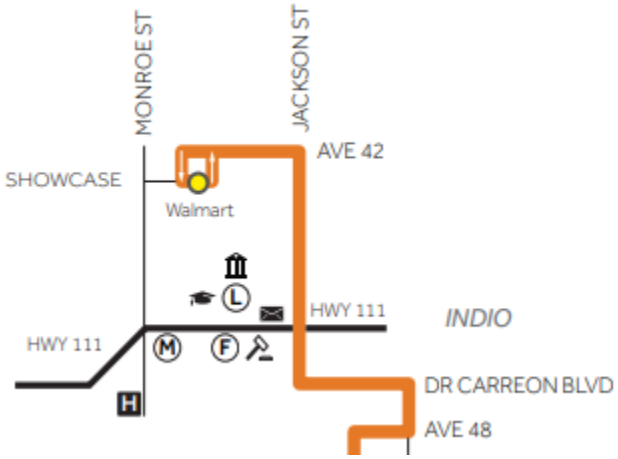
2.2.2.2 Pedestrian ways

Existing sidewalks are located on the east and west sides of Monroe Street. Currently, there are no sidewalks along Avenue 42 west of Monroe Street.

The widening of Avenue 42 will include a pedestrian sidewalk buffered from vehicle traffic using landscaping or parked vehicles on the south side of Avenue 42 along the Specific Plan's frontage. Streetscape elements including trees and landscaping will be an important component of the Complete Streets design.

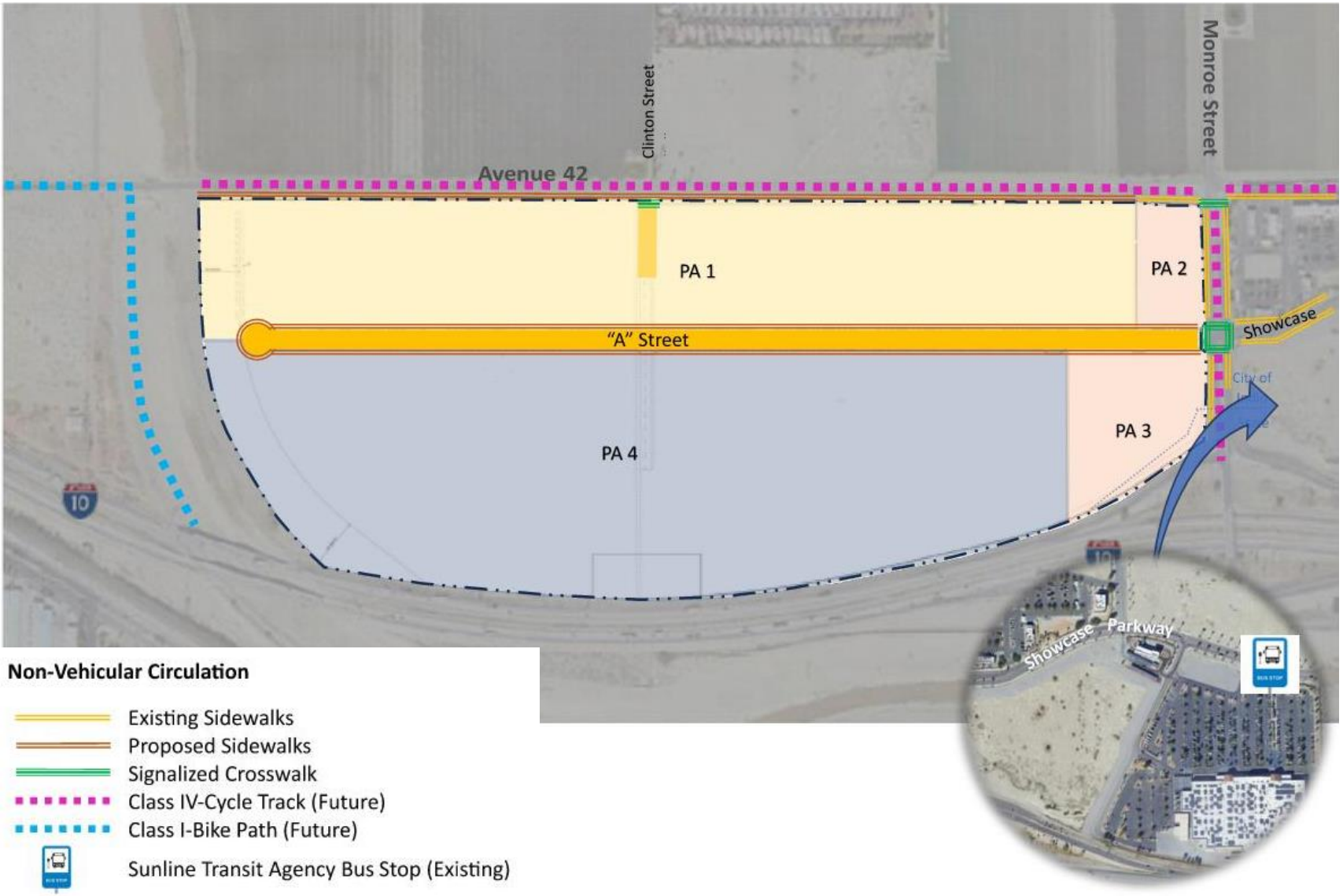
2.2.3 Public Transit

Sunline Transit routes provide regional connections to neighboring cities and local circulation routes within the City of Indio. The local transit northbound loop within the City of Indio is Transit Route No. 8 (formerly Routes, 80, 81, 90 & 91). An accessible bus stop with service on Transit Route No. 8 is located on Showcase Parkway, approximately a quarter mile east of Monroe Street. The route operates in a counterclockwise direction along Jackson Street up to Avenue 42. Service frequency is 60 minutes. Travel time around the loop is approximately 50 minutes.



Sunline Transit Route No. 8

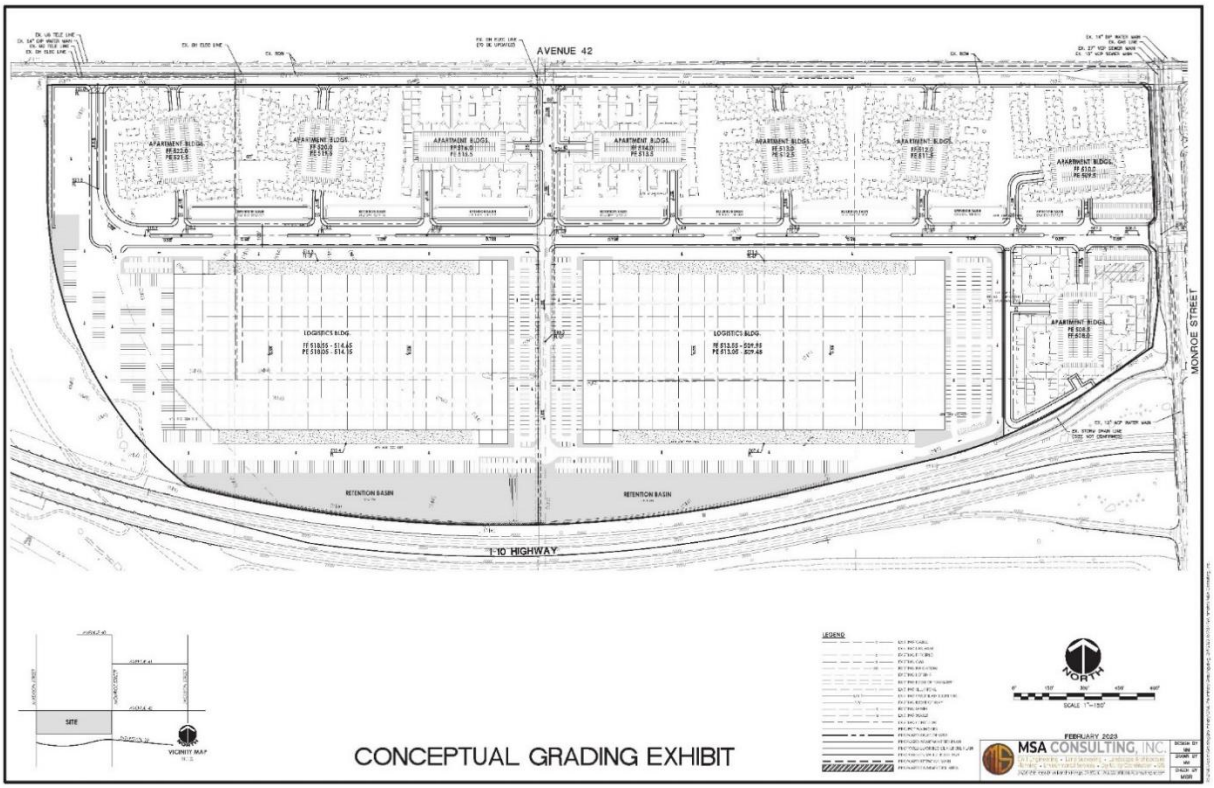
Figure 2-4: Conceptual Non-Vehicular Circulation and Mobility Plan



2.3 Grading

The natural topography of the site is relatively flat. No unusual grading conditions are present and substantial import or export of earth materials is not expected. The primary objectives of the grading plan are to provide stable development pads for construction; balance the cut and fill grading quantities on-site; and meet City of Indio building standards and acceptable infrastructure gradient requirements. The grading plan is shown in Figure 2-5, *Conceptual Grading Plan*.

Figure 2-5: Conceptual Grading Plan



2.4 Landscape and Green Space

The Oasis at Indio landscaping and green space plan serves to achieve visual appeal, soften site design, promote compatibility, provide screening, and control stormwater runoff. Being mindful of the environment and of California's resources, the Specific Plan Area incorporates a desert-friendly landscape palette with low- water usage in compliance with the City's Water Efficient Landscape Ordinance. Refer to Chapter 4, Design Guidelines, for detailed information on landscape design.

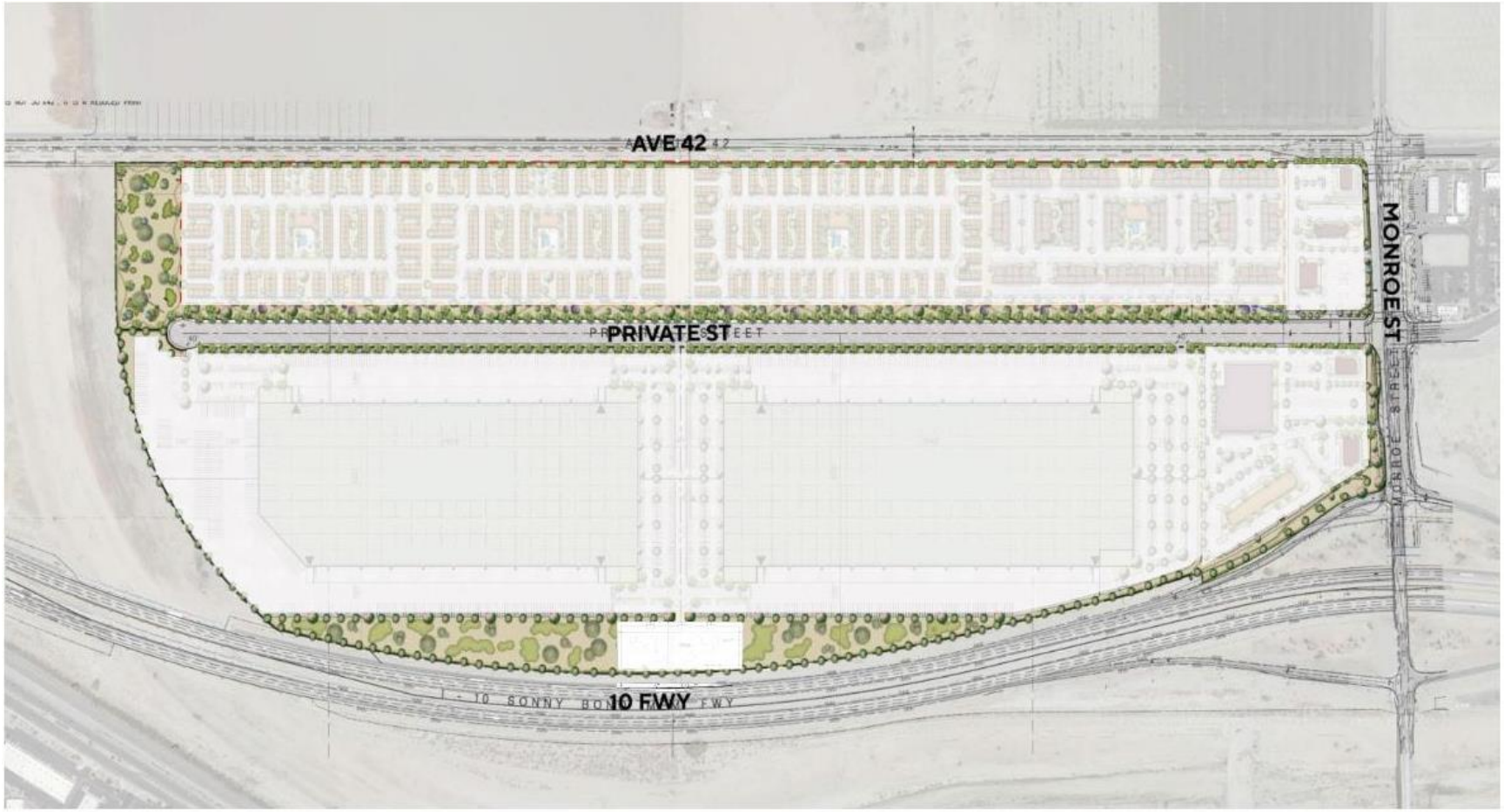
Landscaping occurs throughout the Specific Plan Area, but most prominently along the various roadways and site frontage entryways. Street corners include multiple layers of landscaping and identification monuments. Streetscape landscaping presents a combination of evergreen and deciduous trees, shrubs, and masses of groundcovers to create a sustainable and visually pleasing experience for pedestrians and passing motorists. Creative solutions along the southern boundary of "A" Street include berms, multiple

layers of landscaping, and the use of decorative walls. An enhanced landscape transition zone along the northern boundary of “A” Street would provide passive pedestrian uses and serve as a retention facility. The basins would be planted with a living desert landscape palette utilizing Layers of large, canopied evergreen shade trees, shrubs, and semi-tropical flowering plants to create a natural lush low-water landscape with a variety of shapes, intriguing color palettes, and textures.

Two large retention facilities designed to capture, immobilize, and treat pollutants from stormwater runoff are provided along the southern boundary of PA 4. The essential component utilizes diverse native plant materials to maximize system performance and sustainability while simultaneously creating a green buffer area between the industrial use and Interstate 10.

The retentions are designed to comply with the City’s engineering standards in providing retention capacity for the stormwater volume resulting from the worst-case 100-year storm event, allowing the project to be hydrologically self-contained, rather than involving routine runoff discharge conditions into public infrastructure.

Figure 2-6: Conceptual Landscape and Green Space Plan



2.5 Infrastructure and Utilities

Buildout of The Oasis at Indio Specific Plan requires the installation of water, sewer, drainage, and other utility infrastructure, as described in this section. All utility infrastructure improvements shall be constructed in accordance with applicable City of Indio design standards and specifications.

2.5.1 Water

The potable water provider for the Specific Plan Area is served by IWA. As shown on Figure 2-7, *Water Infrastructure Plan*, an existing 24-inch water main underlying Avenue 42 and an existing 14-inch water main underlying Monroe Street will be used to serve the Specific Plan. A new 18-inch water line will underly the east-west internal roadway and underly the access easements north of the internal roadway connecting to the off-site water main that underlies Monroe Street and Avenue 42. A separate fire system will be provided in compliance with the fire code.

This project would be required to pay the IWA Water Impact Fees in addition to the Supplemental Water Supply Fees.

2.5.2 Wastewater

Valley Sanitary District (VSD) is the sanitary sewer provider for the Specific Plan Area. As shown on Figure 2-8, *Sanitary Sewer Infrastructure Plan*, an existing 27-inch sewer main at the intersection of Monroe Street and Avenue 42 and an existing 15-inch sewer main underlying Monroe Street will serve the Specific Plan Area. A new 15-inch sewer main will underlie the east-west internal roadway and connect to the off-site sewer main that underlies Monroe Street. Sewer stub outs will be provided for future connections.

Figure 2-7: Conceptual Water Infrastructure Plan

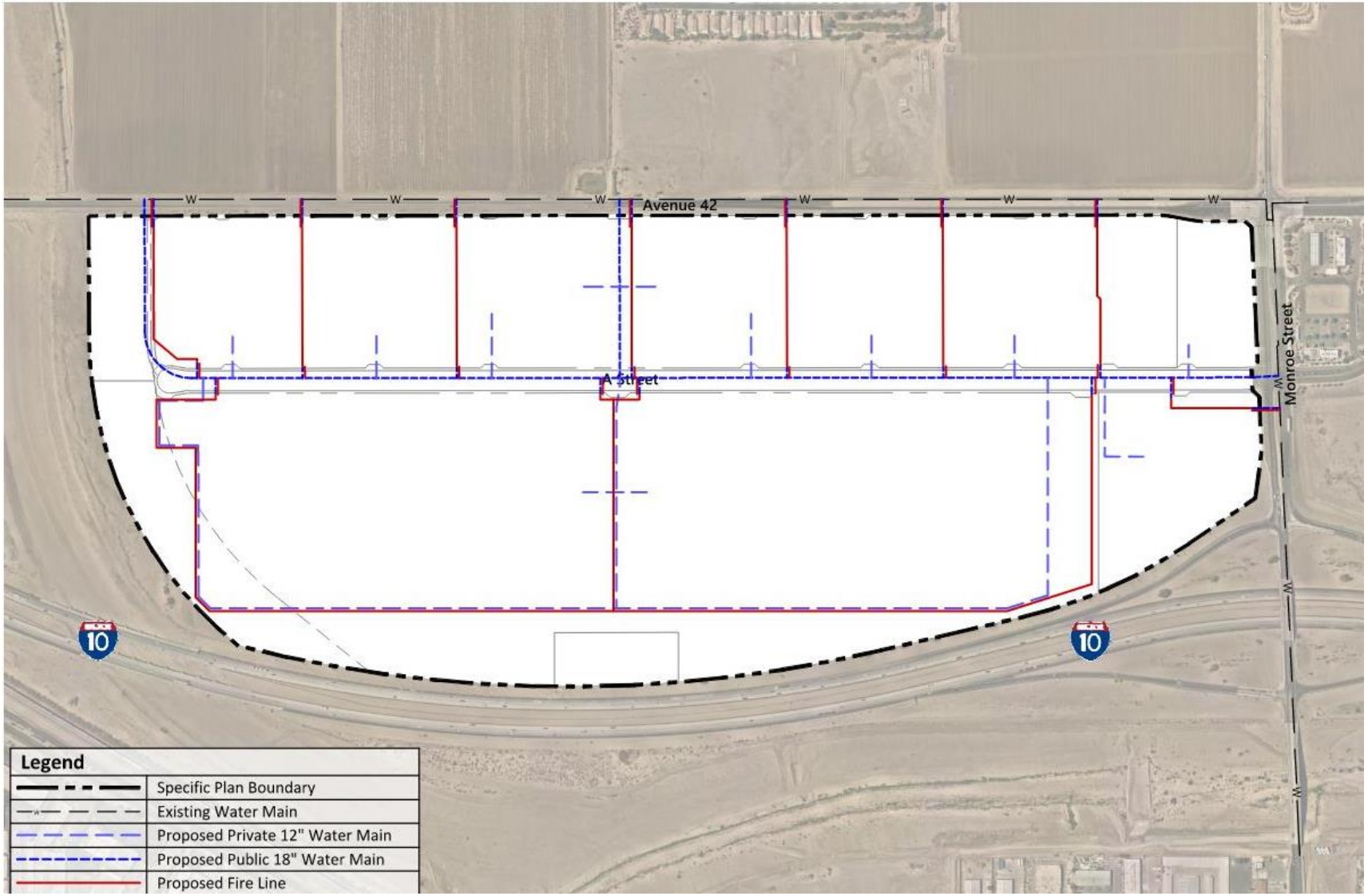
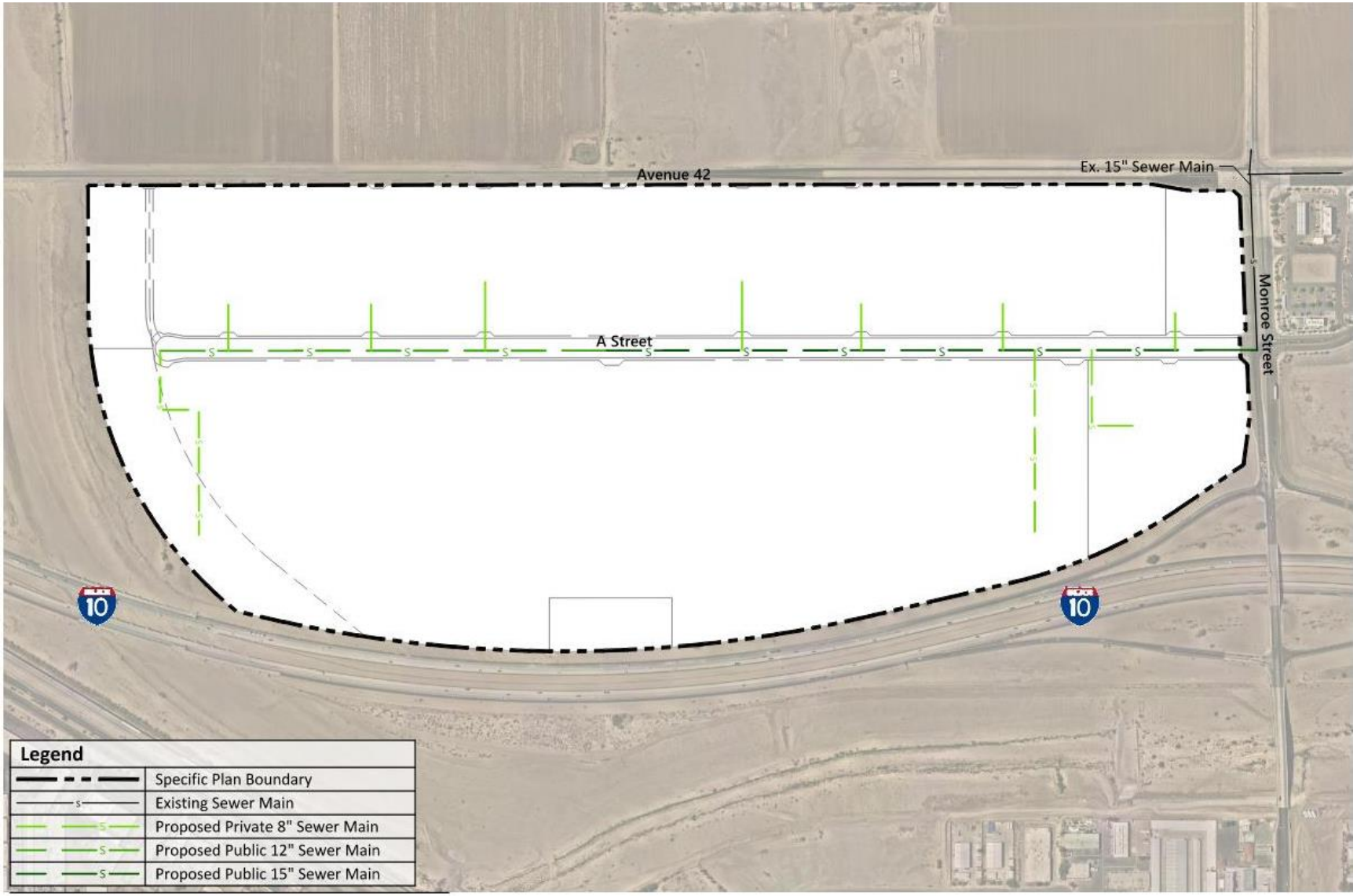


Figure 2-8: Conceptual Sanitary Sewer Infrastructure Plan



2.5.3 Stormwater Drainage and Flood Control

Local drainage facilities are maintained by the City and generally convey runoff from local streets to the regional facilities, which are constructed, operated, and maintained by the Coachella Valley Water District (CVWD). The main regional flood control facility in the City of Indio is the Coachella Valley Stormwater Channel, which meanders through the City in a west-to-east direction, partially along the Interstate 10 Freeway. The local storm drain system consists of gutters, engineered storm drains, and channels.

Natural drainage of the site occurs from the northwest to the southeast. Each planning area will manage stormwater independently in conjunction with development. The drainage concept is to provide numerous site-specific pick-up points to channel storm water from non-permeable areas via a combination of private streets, overland flows, and storm drain systems and convey it to the nearest retention basin. See Figure 2-9, *Storm Drain Infrastructure Plan.*

2.5.4 Dry Utilities

Electric service for the Specific Plan Area is served by Imperial Irrigation District (IID). Existing overhead utility lines are located on above-ground utility poles and currently extend in an east-west direction along the south side of Avenue 42, and in a north-south direction transecting through the Specific Plan Area. These overhead utility lines consist of local distribution and regional transmission lines. In conjunction with the development of the Specific Plan Area, new conduits and switch vaults would be installed, and overhead utility lines would be undergrounded where appropriate based on size/capacity in accordance with applicable public utility standards and specifications and to the satisfaction of the City of Indio Public Works Engineer. Transmission lines will remain above ground due to their high voltage. In addition, in conjunction with the development, an onsite power sub-station may be proposed that will provide power to the project and excess power to the community grid to enhance electric system resilience in the area.

Natural gas for the Specific Plan Area is served by Southern California Gas (SCG) Company. As shown in Figure 2-10, *Dry Utility Infrastructure Plan*, an existing gas line underlies Monroe Street. New gas lines are planned to be installed to fully service the Specific Plan Area.

Figure 2-9: Conceptual Storm Drain Infrastructure Plan

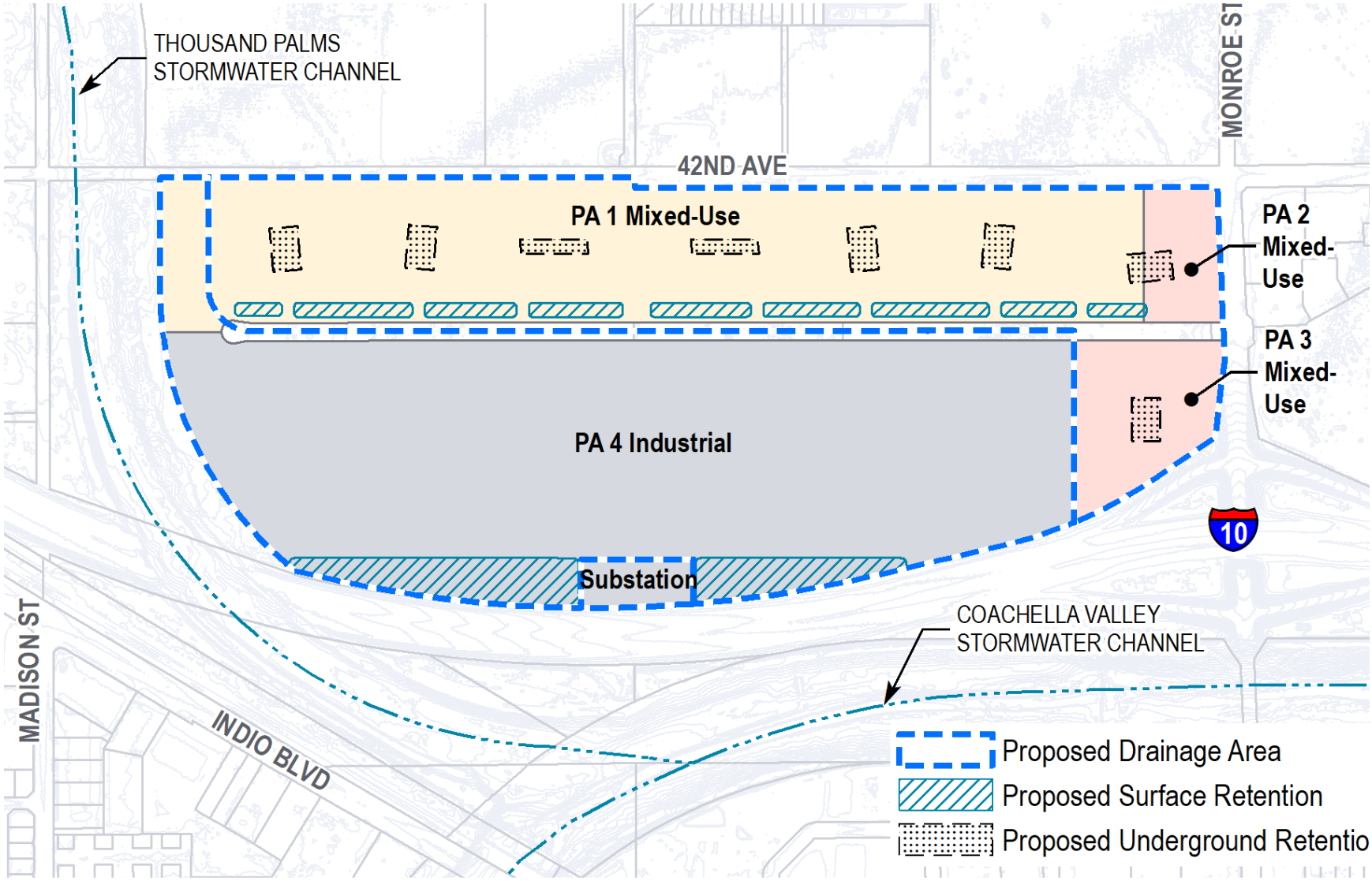
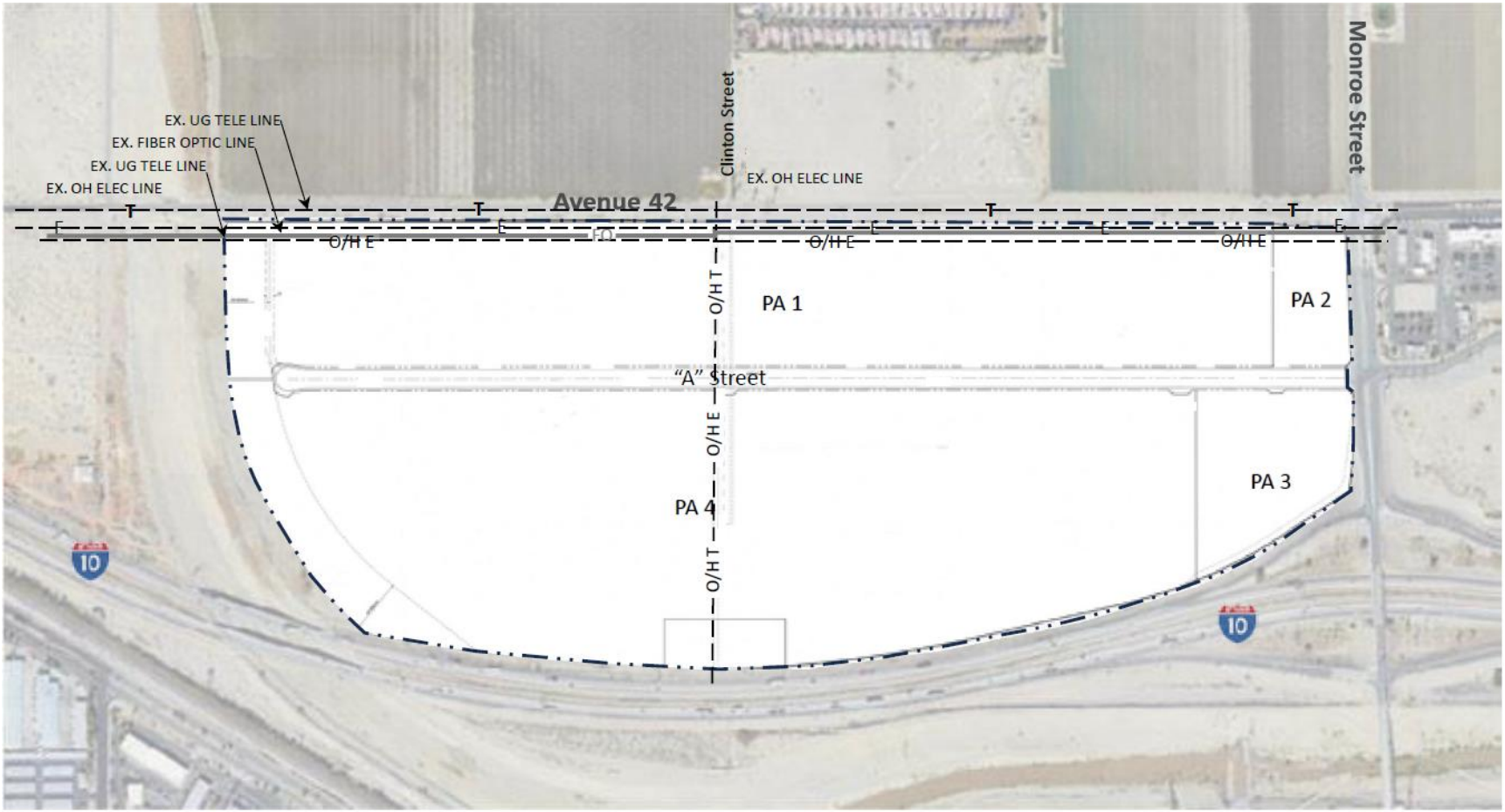


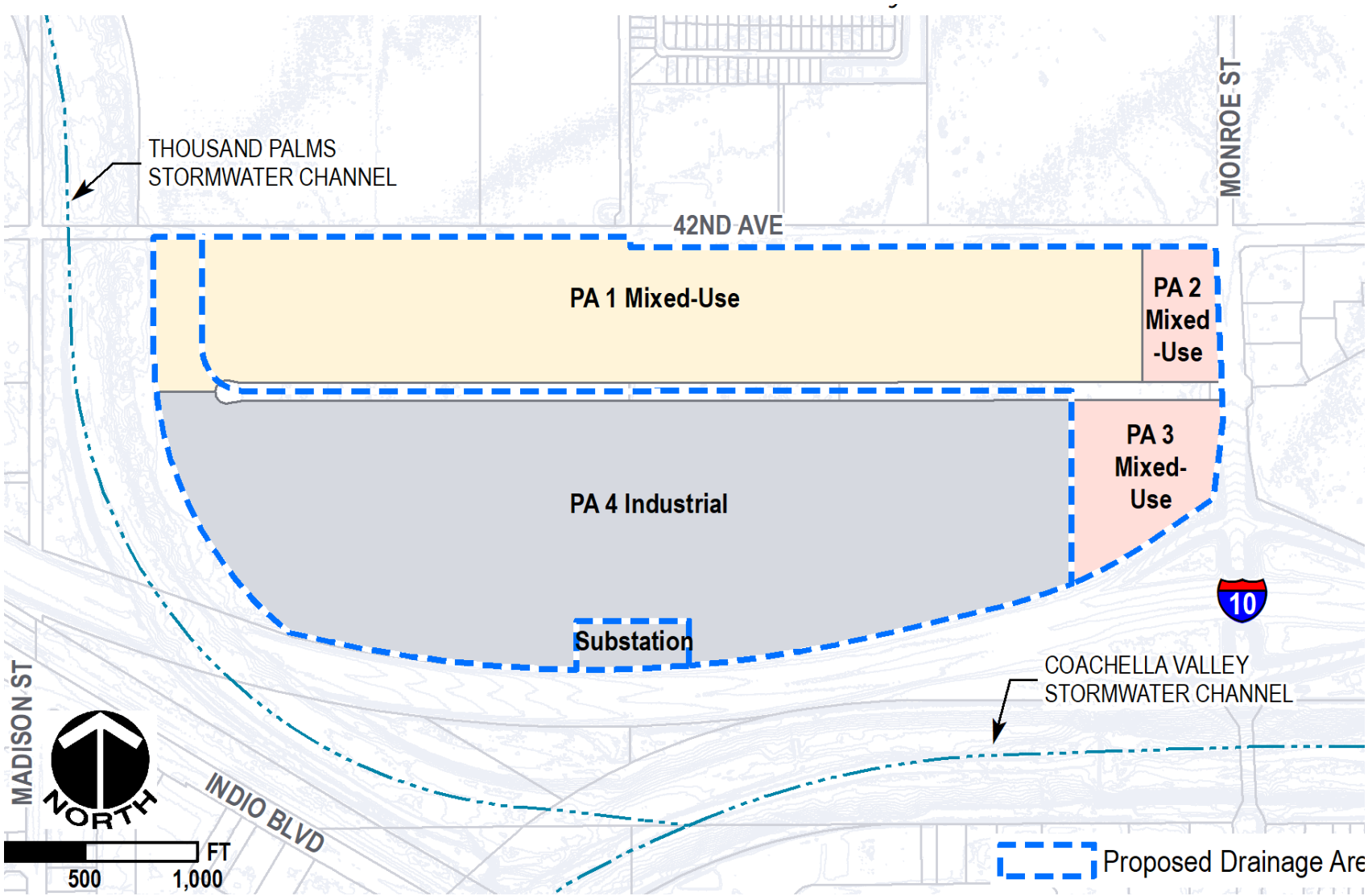
Figure 2-10: Conceptual Dry Utility Infrastructure Plan



LEGEND

E	Existing Under Ground Electric
T	Existing Under Ground Telephone
O/H E	Existing Overhead Electric
O/H T	Existing Overhead Telephone
FO	Existing Fiber Optic Line
	Specific Plan Boundary

Figure 2-11: Conceptual Preliminary Hydrology Plan



2.5.5 Fiber Optics

The City of Indio has partnered with Magellan Advisors to develop a Fiber Master Plan to guide the development of reliable and cost-effective next-generation broadband. The Plan will develop strategies for enhancing broadband in the City of Indio to expand innovation and quality of life.

Connections to fiber optic networks do not currently exist within the Specific Plan Area. As the infrastructure needed to deliver these services is made accessible in the future, individual projects will have the opportunity to connect and make these services available.

2.5.6 Solid Waste

The City of Indio has agreements with Burrtec Waste and Recycling Services (Burrtec) for residential and commercial trash and recycling collection. Burrtec's contract calls for solid waste to be transported to the Indio/Coachella Valley Waste Transfer Station in Coachella located approximately 5.5 miles southeast of the Specific Plan Area.

2.6 Public Services

2.6.1 Police

Police protection is provided by the City of Indio Police Department (IPD), located at 46800 Jackson Street. The IPD includes three divisions – Support Services Division, Field Services Division, and Investigative Services Division.

2.6.2 Fire

The Riverside County Fire Department provides fire protection and emergency services to the City of Indio. Four fire stations are located throughout the City to provide timely response and services. Fire Station 86 serves as the main headquarters where Fire Administration and Prevention Offices are located. Fire Station 80 is the nearest station, approximately 2 miles north of the Specific Plan Area.

Table 2-4
Riverside County Fire Station Locations

Riverside County Fire Department Stations	Approximate Distance to Specific Plan Area
Indio Station #1: Station 86 @ 46990 Jackson St.	3.5 Miles
Indio Station #3: Station 88 @ 46621 Madison St.	3 Miles
Indio Station #4: Station 80 @ 81025 Avenue 40	2 Miles
Indio Station 5:	2.5 Miles

Table 2-4 Riverside County Fire Station Locations	
Riverside County Fire Department Stations	**Approximate Distance to Specific Plan Area**
Station 87 @ 42900 Golf Center Pkwy	

2.6.3 Schools

The Specific Plan is served by the DSUSD. Assigned schools include Ronald Reagan Elementary School, Desert Ridge Academy, and Shadow Hills High School.

2.6.4 Library Services

Library services are managed by the County of Riverside. The Indio Library, located at 200 Civic Center Mall, is a branch of the County of Riverside library system.

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Chapter 3 – Development Regulations

3.1 General Provisions

This section formally establishes the use restrictions and development standards (zoning) for The Oasis at Indio Specific Plan. The regulations provided herein work in concert with the guidelines set forth in Chapter 4, Design Guidelines, of this Specific Plan to achieve the vision of The Oasis at Indio Specific Plan.

3.2 Definition of Terms

- The meaning of words, phrases, titles, and terms shall be the same as provided in the City of Indio Unified Development Code, unless otherwise specifically defined in this Specific Plan.

- ***Industrial:*** Is intended to accommodate a wide variety of employment-generating uses and protect these areas from incompatible uses. The Industrial Use District (PA 4) provides for offices, business and industrial parks, research and development, warehouses, distribution centers, light manufacturing, public and quasi-public uses, and supportive commercial uses.

- ***Mixed-Use:*** shall mean a complementary mixture of land uses including commercial, retail, services, office, and residential uses that are part of an integrated single development, either by parcel or within a district. Land uses may be arranged vertically in one or multiple-story buildings or horizontally within separate buildings on a lot, site, or parcel. A mixed-use building is a structure containing residential and commercial uses or two types of commercial uses (retail, services, and office).

- ***Multi*-Family Residential**: Multi-family attached residential development projects consists of medium to high-density development ranging from 20 du/ac to 50 du/ac. There are a variety of multi-family housing types including triplexes, fourplexes, townhomes, and multi-story apartments. The purpose of the provisions in this section is to contribute toward an urban environment of stable and desirable characteristics that is harmonious with existing and future development.

- ***Outdoor Dining:*** shall mean the extension of services of an existing restaurant or eating/drinking establishment to be provided on the public sidewalk or private common area adjacent to and within the confines of any frontage of that portion of the building where the restaurant use is situated.

- ***Pedestrian Zone:*** shall mean an area comprised of a pedestrian walkway and planting area with continuous or intermittent trees, shrubs, or planters adjacent to a development parcel.

- ***Regular Outdoor Events:*** events that have equal amounts of time between them, so that they happen, for example, at the same time each day, week, or month.

- ***Sporadic Events:*** shall mean an event that occurs infrequently, irregularly, or occurring in scattered instances.

3.3 Performance Standards

3.3.1 Security

Residential units within a mixed-use development shall be designed to ensure residents' security by providing secured entrances and exits that are separate from the non-residential uses and are directly accessible to parking areas. Non-residential and residential uses shall not have common entrance hallways or common balconies. Shared or common residential entrances shall automatically lock upon closing.

3.3.2 Noise and Ventilation

Residential units shall comply with the City's Noise Ordinance, which may include design to limit the interior noise caused by non-residential uses, overhead flights, and/or freeway adjacency, to a maximum of forty-five (45) db in any habitable room with windows closed. Proper design may include, but shall not be limited to, building orientation, sound-rated windows, wall and ceiling insulation, and orientation and insulation of vents. Where it is necessary that windows be closed in order to achieve the required level, means shall be provided for ventilation/cooling to provide a habitable environment.

3.3.3 Air Contaminants

Uses, activities, and processes shall not operate in a manner that emits excessive dust, odor, fumes, smoke, or particulate matter, unless authorized under Federal, State, or local law. Sources of air emissions shall comply with all rules established by the Environmental Protection Agency (Code of Federal Regulations, Title 40), the California Air Resources Board, and the South Coast Air Quality Management District (SCAQMD). The City shall consult, when appropriate, with SCAQMD to determine which uses shall be equipped with emission-control devices or measures to preclude fugitive dust and particulate emissions from the site. Such devices or measures shall be approved by SCAQMD prior to issuance of a building permit or other approval authorizing construction activities. All devices shall be maintained by the owner.

3.3.4 Air Quality and Odors

Residential units shall be designed to minimize adverse impacts from mechanical equipment and operations of nonresidential uses on air pollutant emissions and odors. Odors released from any operation or activity shall not exceed detectable concentration beyond lot lines, measured at any location on the lot lines. Non-residential uses with attached residential units shall provide state-of-the-art ventilation systems to prevent odors from penetrating residential units.

3.3.5 Limitations on Use within a Mixed-Use Development

Any activity or use as determined by the Director not to be compatible with residential uses in a mixed-use development and/or to have the possibility of affecting the health or safety of residents due to the potential for the use to create dust, glare, heat, noise, noxious gases, odor, smoke, traffic, vibration, or other impacts, or create a hazard because of materials, processes, products, or wastes, shall not be permitted within any mixed-use development. This includes but is not limited to, storage or shipping of flammable liquids or hazardous materials beyond that normally associated with residential use and welding, machining, or open flame work.

3.3.6 Maintenance

All properties within the Specific Plan Area shall be kept and maintained in a clean, neat, orderly, operable, and usable condition. This requirement applies to buildings, paving, fences, walls, landscaping, and any other structure or feature on the site.

3.3.7 Hours of Operation

The hours of operation for commercial/retail uses in a mixed-use development shall be no earlier than 7:00 a.m. and no later than 10:00 p.m. daily unless modified by an administrative or conditional use permit. The hours of operation for industrial warehouse use may operate 24 hours daily.

Construction hours of operation: It shall be unlawful for any person to operate, permit, use, or cause to operate construction equipment outside the hours listed below. However, the Community Development Director and/or City Engineer shall have the authority to allow alternative hours for construction as needed.

	Pacific Standard Time	**Pacific Daylight Time**
Monday through Friday	7:00 a.m. through 6:00 p.m.	6:00 a.m. through 6:00 p.m.
Saturday	8:00 a.m. through 6:00 p.m.	7:00 a.m. through 6:00 p.m.
Sunday and Government Holidays	9:00 a.m. through 5:00 p.m.	9:00 a.m. through 5:00 p.m.

3.3.8 Loading

Loading, unloading, and all service and maintenance activities shall be conducted within the hours of operation noted in Subsection 3.3.7 *Hours of Operation*.

3.3.9 Lighting

Lighting for nonresidential uses shall be appropriately designed, located, and shielded to ensure that it does not negatively impact the residential units in the development or any adjacent residential uses and shall comply with Indio Unified Development Code (IUDC) Section 3.02.11 *Outdoor Lighting*.

3.4 Permitted Uses

This section identifies the permitted, conditional, and accessory uses within the Specific Plan Area. Uses in the table are permitted subject to the permit criteria referenced. The Land Use Districts identified in Figure 2-1 provides a visual representation of the desired location of various potential uses for evaluation by the City during review of development proposals. Three land use districts are included: Residential, Commercial/Retail, and Industrial. The residential and commercial/retail land uses allow for both horizontal and vertical mixed-use on individual parcels and stand-alone uses allowed by Table 3-1, *Land Use Matrix*, below. Uses identified by:

- "P" is permitted by right in the designated land use district, subject to compliance with all applicable provision of The Oasis at Indio Specific Plan development standards.
- "AUP" is permitted in the designated land use district following consideration by the Director to ensure that the use can be designed, located, and operated in a manner that will not interfere with the use and enjoyment of surrounding properties. An AUP is subject to the filing of an Administrative Use Permit in accordance with the requirements of the City of Indio Unified Development Code, Section 6.04.04 *Use Permits*.
- "CUP" is permitted in the designated land use district following consideration by the Planning Commission to ensure that the use can be designed, located, and operated in a manner that will not interfere with the use and enjoyment of surrounding properties. A CUP is subject to the filing of a Conditional Use Permit in accordance with the requirements of the City of Indio Unified Development Code, Section 6.04.04 *Use Permits*.
- "TUP" is used for an event, activity, or use on a short-term basis. Such use is permitted in conjunction with filing a Temporary Use Permit per the requirements of the City of Indio Unified Development Code, Section 6.04.05 *Temporary Use Permits*.
- "A" is permitted by right as an ancillary use, in conjunction with the primary permitted or conditionally permitted use of the property.
- "—" is not allowed within the designated land use district.

Any use not included shall be considered prohibited unless deemed to be similar to an allowable use as interpreted by the Community Development Director or his/her designee.

Where there are special development standards or regulations, the Indio Unified Development Code (IUDC) section is identified. Planning Review Applications shall be processed in accordance with Chapter 5 herein.

Table 3-1 Land Use Matrix			
P = Permitted; AUP = Administrative Use Permit; CUP = Conditional Use Permit; TUP = Temporary Use Permit; A = Ancillary Use; -- = Not Permitted			
Use[1]	Land Use District		Additional Notes
	Mixed-Use	Industrial	
Agriculture and Animal Keeping Uses			
Agricultural Support, Sales, Service, and Storage	--	P	
Aquaculture	--	AUP	
Animal Raising and Keeping, Domestic Pets	A	--	See IUDC Ch. 4.04 (Animal Keeping)
Community Garden	A	A	
Greenhouse, Private	P	P	
Private Garden	A	A	
Automobile and Vehicle Uses			
Auto and Vehicle Rental	P	--	See IUDC Ch. 4.05 (Automotive Service and Repair/Fueling Stations)
Auto and Vehicle Sales, New	P	--	
Auto and Vehicle Sales, Used	P	--	
Auto and Vehicle Sales and Rental, Large Vehicles and Equipment	--	AUP	
Auto and Vehicle Services and Repair – Major	--	P	See IUDC Ch. 4.05 (Automotive Service and Repair/Fueling Stations)
Auto and Vehicle Services and Repair – Minor	p	P	See IUDC Ch. 4.05 (Automotive Service and Repair/Fueling Stations)
Auto and Vehicle Washing and Detailing	P	A	
Fueling Stations	AUP	AUP	See IUDC Ch. 4.05 (Automotive Service and Repair/Fueling Stations)
Truck Stop/Fueling Station	AUP	AUP	See IUDC Ch. 4.05 (Automotive Service and Repair/Fueling Stations)

Table 3-1 Land Use Matrix			
P = Permitted; AUP = Administrative Use Permit; CUP = Conditional Use Permit; TUP = Temporary Use Permit; A = Ancillary Use; -- = Not Permitted			
	Land Use District		
Use[1]	Mixed-Use	Industrial	Additional Notes
Cannabis-Related Uses			
Cannabis Cultivation, Personal	P	--	Personal indoor cultivation of 6 or fewer live cannabis plants within a single private residence or inside an accessory structure located upon the grounds of a private residence that is a fully enclosed and a secure structure is permitted per Chapter 4.07 (Cannabis Activity). Outdoor personal cultivation of live cannabis plants is prohibited.
Cannabis Retailer, Microbusiness, or Dispensary	P	--	See Chapter 4.06 (Cannabis Activity)
Eating and Drinking Establishments and Entertainment Uses			
Bar/Nightclub/Lounge	P	P	
Brewpub/Taproom/Wine Bar/Micro distillery	P	P	
Cinema/Theater/Performing Arts Center	P	P	
Drive-Through, Non-Restaurants (Accessory)	A	--	
Live Entertainment as Accessory Use, Indoors (Accessory)	A	A	See IUDC Section 4.27.02 (Temporary Uses)
Live Entertainment as Accessory Use, Outdoors (Accessory)	A, AUP, TUP	A, AUP, TUP	Regular outdoor events as an accessory use require an AUP. Sporadic events require a TUP (See IUDC Chapter 4.27 (Temporary Uses).
Outdoor Dining (Accessory)	A	A	
Restaurant, Dine-In and Take-Out	P	--	
Restaurant, Drive-Through	P	--	

Table 3-1 Land Use Matrix			
P = Permitted; AUP = Administrative Use Permit; CUP = Conditional Use Permit; TUP = Temporary Use Permit; A = Ancillary Use; -- = Not Permitted			
Use[1]	Land Use District		Additional Notes
	Mixed-Use	Industrial	
Industrial and Manufacturing Uses			
Artisan Manufacturing/Makers Space	AUP	P	
Brewery/Distillery/Winery - without tasting room or > 10,000 sf	--	P	
Brewery/Distillery/Winery - with tasting room and <10,000 sf	AUP	P	
Construction and Materials Yards	--	AUP	
Food or Beverage Manufacturing	--	AUP	
Indoor Warehousing, Storage, Wholesaling, and Distribution	--	P	
Manufacturing/Processing, Light	--	P	
Outdoor Storage (Primary Use)	--	AUP	See IUDC Ch. 4.20 (Outdoor Storage)
Outdoor Storage (Accessory)	A	A	See IUDC Ch. 4.20 (Outdoor Storage)
Lodging			
Bed and Breakfast	CUP	--	
Lodging – Hotels/Motels/Extended Stay	P	--	
Recreation, Education, and Public Assembly Uses			
Instructional Services, <= 5000 sf	P	P	
Instructional Services, > 5000 sf	P	P	
Residential Uses			
Accessory Dwelling Unit (ADU) & Junior Accessory Dwelling Unit (JADU)	A	--	Per IUDC Ch 4.02 (Accessory Dwelling Units)
Child Day Care in a Home, Small	P	--	See IUDC Ch. 4.09 (Child Day Care in a Home (Small and Large) and Day Care Centers)
Home Occupation	A	--	See IUDC Ch. 4.15 (Home Occupations)

Table 3-1 Land Use Matrix			
P = Permitted; AUP = Administrative Use Permit; CUP = Conditional Use Permit; TUP = Temporary Use Permit; A = Ancillary Use; -- = Not Permitted			
	Land Use District		
Use[1]	Mixed-Use	Industrial	Additional Notes
Cottage Food Operation	A/AUP	--	See IUDC Ch. 4.11 (Cottage Food Operations)
Live/Work	P	--	See IUDC Ch. 4.16 (Live/Work)
Residential Care Facilities, Large	CUP	--	
Residential Care Facilities, Small	P	--	
Multi-Family Dwelling, Triplex/ Quadplex	P	--	
Multi-Family Dwelling, ≥ 5 Units	P	--	
Single-Room Occupancy	CUP	--	
Supportive Housing	CUP	--	
Transitional Housing	CUP	--	
Yard Sales (Temporary)	P	--	See IUDC Section 4.27.02 (Temporary Uses)
Retail, Service, and Office Uses			
Alcohol Sales, Off-Sale	P	P	
Animal Sales and Services	P	--	
ATM (Accessory Use)	A	--	
Banks, Financial, and Savings and Loan Institutions	P	--	
Building Materials Sales and Services	AUP	P	
Business Support Services	AUP	P	
Convenience Market	P	--	
Food Preparation, Commercial	P	P	
Fortunetelling, Palm and Card Reading	P	--	
Funeral Homes and Mortuaries	P	P	
General Retail ≤ 5,000 sf	P	P	
General Retail/Superstore > 25,000	P	P	
Grocery Store	P	p	

Table 3-1 Land Use Matrix			
P = Permitted; AUP = Administrative Use Permit; CUP = Conditional Use Permit; TUP = Temporary Use Permit; A = Ancillary Use; -- = Not Permitted			
Use[1]	Land Use District		Additional Notes
	Mixed-Use	Industrial	
Kennels/Boarding, Commercial	P	P	
Kiosk/Outdoor Vending	P	--	
Laundromat	P	--	
Massage Establishment, Accessory Use	A	--	
Massage Establishment, Stand-Alone	CUP	--	See IUDC Ch. 4.18 (Massage Establishment (Stand-alone))
Medical Services, Extended Care	AUP	AUP	
Medical Services, Medical/Dental/Holistic/Clinic	P	P	
Medical Services, Urgent Care	P	P	
Mini-Storage Warehousing or Facility	--	AUP	See IUDC Ch. 4.19 (Mini-Storage Warehousing or Facility)
Neighborhood Market	P	P	
Nursery/Garden Center	P	P	
Offices, Processing	P	P	
Offices, Professional /Administrative	P	P	
Offices, Service	P	P	
Outdoor Display (Accessory)	A	A	
Pawnshop	CUP	--	See IUDC Ch. 4.21 (Pawnshops)
Personal Services	P	P	
Research and Development	AUP	P	
Christmas tree sales, sidewalk and parking lot sales, seasonal sales, etc.	P	P	See IUDC Section 4.27.02 (Temporary Uses)
Smoke Shops	P	--	See IUDC Ch. 4.24 (Smoke Shops)
Smoking Lounge	P	--	
Tattoo/Body Art/Piercing	P	--	See IUDC Ch. 4.25 (Tattoo/Body Art/ Piercing Establishment)

Table 3-1 Land Use Matrix			
P = Permitted; AUP = Administrative Use Permit; CUP = Conditional Use Permit; TUP = Temporary Use Permit; A = Ancillary Use; -- = Not Permitted			
Use[1]	Land Use District		Additional Notes
	Mixed-Use	Industrial	
Resale/Consignment/Thrift Shop	P	--	See IUDC Ch. 4.23 (Resale/ Consignment/ Thrift Shops)
Veterinary Hospitals	P	P	
Utility, Transportation, and Communication Uses			
Communications, Facilities within Buildings	AUP	P	
Communications, Telecommunications /Large Commercial Antennas	AUP/CUP	AUP/CUP	An AUP or CUP is required, depending on the design and height of the large commercial antenna, as regulated by Section 4.26.03 (Large Commercial Antennas). See IUDC Ch. 4.26 (Telecommunications/ Wireless Facilities)
Communications, Telecommunications / Small Wireless Facilities	P	P	See IUDC Ch. 4.26 (Telecommunications/ Wireless Facilities)
Freight / Trucking Facility	--	AUP	
Light Fleet-Based Services	AUP	P	
Mobile Recycling Unit	A	A	
Parking Lots and Structures	A/AUP	P	
Renewable Energy System (Primary Use)	CUP	P	
Renewable Energy System, Building-Mounted (Accessory)	A	A	
Renewable Energy System, Stand-Alone or Ground Mounted (Accessory)	A, AUP	A	
Reverse Vending Machine (Accessory)	A	A	

Notes:

1. Uses shall be consistent with the criteria of the Bermuda Dunes Airport Compatibility Plan, including Table 3-2, Maximum Density/Intensity Calculations, and applicable County-wide criteria as may exist at the time of project review. Where the project is located in the Bermuda Dunes Airport Influence Areas, compatibility zones and regulations apply. See Appendix A.

Table 3-2
Maximum Density / Intensity Calculations

Residential Densities	ALUC Zone
• DU/AC[1]	**Zone C:** 0.2 (average parcel size ≥5.0 ac.) **Zone D:** Two options are provided for residential densities in Compatibility Zone D. Option (1) has a density limit of 0.2 dwelling units per acre (i.e., an average parcel size of at least 5.0 gross acres). Option (2) requires that the density be greater than 5.0 dwelling units per acre (i.e., an average parcel size less than 0.2 gross acres). The choice between these two options is at the discretion of the local land use jurisdiction. See Table 2B for an explanation of the rationale. All other criteria for Zone D apply to both options. **Zone E:** No Limit

Non-Residential Intensities	ALUC Zone			Notes
	C	D	E[2]	
• Average	75	100	No Limit	The total number of people permitted on a project site at any time, except rare special events, must not exceed the indicated usage intensity times the gross acreage of the site. Rare special events are ones (such as an air show at the airport) for which a facility is not designed and normally not used and for which extra safety precautions can be taken as appropriate.
• Single Acre	150	300		Clustering of non-residential development is permitted. However, no single acre of a project site shall exceed the indicated number of people per acre. See Policy 4.2.5 for details.
• With Bonus	198	390		An intensity bonus may be allowed if the building design includes features intended to reduce risks to occupants in the event of an aircraft collision with the building. See Policy 4.2.6 for details.
Required Open Land	20%	10%	No Req't	Open land requirements are intended to be applied with respect to an entire zone. This is typically accomplished as part of a community general plan or a specific plan but may also apply to large (10 acres or more) development projects. See Policy 4.2.4 for the definition of open land.

Notes:

1. Usage intensity calculations shall include all people (e.g., employees, customers/visitors, etc.) who may be on the property at a single point in time, whether indoors or outside.
2. Although no explicit upper limit on usage intensity is defined for Zone E, land uses of the types listed—uses that attract very high concentrations of people in confined areas—are discouraged in locations below or near the principal arrival and departure flight tracks. This limitation notwithstanding, no use shall be prohibited in Zone E if its usage intensity is such that it would be permitted in Zone D.

3.5 Development Standards

The following standards establish the development criteria that shall apply within The Oasis at Indio Specific Plan Area

Table 3-3
Development Standards[1, 2 & 3]

Standard	Mixed-Use District			Industrial	Additional Comments/Regulations
	MF Residential	MU	COM		
Lot and Density Standards					
Density (Units/Gross Acres)	20-50		--		See Indio Municipal Code Chapter 154 (Density Bonuses and Other Incentives for Low-Income and Senior Housing)
Min. Lot Size	4,500 sf	20,000 sf	40,000 sf	10,000 sf	
Min. Lot Width	100 ft	100 ft		80 ft	
Min. Lot Depth	100 ft	200 ft		100 ft	
Max. Non-Residential Floor Area Ratio[4]		0.50		0.60	
Max. Height (ft)/Stories	60 ft/4 stories	60 ft/4 stories	60 ft/3 stories	Zone C: 70 ft Zone D/E: 100 ft	Subject to the Bermuda Dunes Airport Land Use Compatibility Plan
Max. Height (ft) – w Architectural Features	70 ft			---	
Max. Height (ft) - Accessory Building	30 ft	---	---	---	
Min. Ground Floor Height – Non-residential (Floor to Floor)	N/A	18 ft	---	---	
Minimum/Maximum Building Site Setback[5]					
Avenue 42	29 ft	10 ft/20 ft	10 ft	---	See IUDC Section 2.03.06 Mixed-Use & M-F Residential Design Standards, Figure 2.03.06-

Table 3-3 Development Standards[1, 2 & 3]					
Standard	Mixed-Use District			Industrial	Additional Comments/Regulations
	MF Residential	MU	COM		
					1 *(Building Frontage Location)*
Monroe Street	10 ft	10 ft	10 ft	---	
East-West Internal Roadway[6]	75 ft	15 ft	15 ft	10 ft	Muni Code: Per Section 95C.08 (A) Standing motor vehicles. No person shall operate or permit the operation of any motor vehicle with a gross vehicle weight rating in excess of 10,000 pounds, or any auxiliary equipment attached to such a vehicle, including but not limited to refrigerated truck compressors, for a period longer than 15 minutes in any hour while the vehicle is stationary and on a public right-of-way or public space, within 150 feet of a residential area between the hours of 7:00 p.m. and 7:00 a.m., except when movement of said vehicle is restricted by other traffic.
Private Street	5 ft	5 ft	5 ft		
Alley or Common Drive	5 ft	5 ft	5 ft	--	
Canal [7]	250 ft	---	---	250 ft	
Interior Property Line	5 ft	10 ft	10 ft	0 ft; 20 ft adjacent to residential	
Freeway Right-of-Way	20 ft	20 ft	10 ft	10 ft	

Table 3-3 Development Standards[1, 2 & 3]					
	Mixed-Use District				
Standard	MF Residential	MU	COM	Industrial	Additional Comments/Regulations
Distance between Structures	Minimum required by adopted Building and Fire Code.				
Parking Frontage[8]					
Max. Surface Parking Along Avenue 42 and Monroe St. Frontage	30%	30%	---	---	No more than 30% of the primary street frontage shall be devoted to parking. (See IUDC Figure 2.03.03-1. Maximum Parking Frontage Along a Primary Street)
Minimum Open Space Standards					
	M-F	MU	COM	IND	Minimum of 100 sf of private open space is required for ground-level units and 60 sf of private open space for upper-level units. Minimum private open space is 6 feet in either direction. Mixed-Use Developments; a minimum of 50% of the units must have 60 sf of private open space. Common open space includes roof decks and other shared common open areas. Minimum common open space dimension is 20 feet in either direction. Setback areas are not considered usable open space unless they are at least 20 feet wide. Up to 40 sf per unit can be provided in an indoor communal space so long as
Minimum Per Unit	36-50 du/ac	36-50 du/ac	---	---	
Private Open Space	60 sf	60 sf			
Common Open Space	250 sf	90 sf			
Total Open Space	310 sf	150 sf			
Minimum Per Unit	20-35 du/ac	20-35 du/ac			
Private Open Space	150 sf	60 sf			
Common Open Space	250 sf	90 sf			
Total Open Space	400 sf	150 sf			

Table 3-3 Development Standards[1, 2 & 3]					
Standard	Mixed-Use District			Industrial	Additional Comments/Regulations
	MF Residential	MU	COM		
					it opens directly on to a common outdoor space.
Min. Usable Open Space applies to mixed-use Commercial over 25K sf	---	3% of gross floor area	---	---	Could be common open space for employees or publicly accessible open space. If the open space is over 1,000 square feet and provided as publicly accessible, up to 50 percent may be counted towards the required residential common open space.
Min. Landscaping (% of lot)	10% of the lot, of which 50% must be planted with live plant material	10% of the lot, of which 25% must be live plant material.			Minimum width of landscape area is 5 ft.
Minimum Parking Lot Landscaping	15% of the total off-street open parking area shall be Landscaped. A min. 1/3 of the required landscaping shall be distributed within the interior of the parking facility and the remaining two-thirds shall be provided as peripheral planting on the exterior edges of the parking area.				

Other Standards	
Rules of Measurement	See IUDC Chapter 3.01
Accessory Structures	See IUDC Section 3.02.04
Setbacks and Encroachments	See IUDC Section 3.02.03
Utilities, Services Areas, and Building Equipment	See IUDC Section 3.02.07
Refuse and Recycling	See IUDC Section 3.02.08
Landscaping	See IUDC Section 3.02.09
Fences, Walls, and Screening	See IUDC Section 3.02.10

Table 3-3 Development Standards[1, 2 & 3]					
	Mixed-Use District				
Standard	MF Residential	MU	COM	Industrial	Additional Comments/Regulations
Outdoor Lighting				See IUDC Section 3.02.11	
Off-Street Loading				See IUDC Section 3.03.10	
Bicycle Parking				See IUDC Section 3.03.09	
Signs				See IUDC Chapter 3.05	

Notes:

1. Properties located within the Airport Influence Area (AIA) shall be subject to the requirements and standards of the Bermuda Dunes Airport Compatibility Plan (ALUCP).
2. Densities and intensities shall be consistent with the criteria of the Bermuda Dunes Airport Compatibility Plan, including applicable County-wide criteria as may exist at the time of project review.
3. Number of employees shall be based on the largest shift that occurs in a typical week.
4. Individual parcels within PA 4 may exceed the maximum FAR provided that the sum of the industrial development FAR within PA 4 does not.
5. Setbacks from public streets shall be measured from public right-0f-way. Private streets shall be measured from the back of sidewalk or back of the curb if no sidewalk is provided.
6. A 75-foot-wide setback along the east-west internal roadway in PA 1 shall include an enhanced landscaped transition zone. The landscape shall encompass a living desert landscape environment comprised of large canopied evergreen shade trees, shrubs, and semi-tropical flowering plants to create a natural lush low-water landscape with a variety of shapes, intriguing color palettes, and textures. Landscaping may include walkways, benches, trellises, thematic fencing and walls, and related amenities.
7. Passive and active open space uses, trails, walkways, related amenities, driveways, access easements, and parking shall be allowed within the 250-foot setback area.
8. Surface parking limitations are not applicable along the east-west internal roadway.

3.5.1 Supplemental Development Standards

1. As part of certain real estate transactions involving residential property within any compatibility zone, information regarding airport proximity and the existence of aircraft overflights must be disclosed. This requirement is set by California state statutes (Business and Professional Code Section 11010 and Civil Code Sections 1102.6, 1103.4, and 1353). With certain exceptions, these state requirements apply both to the sale or lease of newly subdivided lands and to the sale of existing residential property.

2. Deed Notices. A deed notice shall be recorded for each parcel associated with any discretionary land use action affecting property within an airport influence area. The notice shall include the language indicated below with respect to real estate transfer disclosures.

3. **NOTICE OF AIRPORT IN VICINITY:** This property is presently located in the vicinity of an airport, within what is known as an airport influence area. For that reason, the property may be subject to some of the annoyances or inconveniences associated with proximity to airport operations (for example: noise, vibration, or odors). Individual sensitivities to those annoyances can vary

from person to person. You may wish to consider what airport annoyances, if any, are associated with the property before you complete your purchase and determine whether they are acceptable to you.

4. Access - Appropriate access routes necessary for fire and safety access, subject to City approval, shall be provided for all areas of a project. See also the City standards in the City Design and Engineering Manual.

5. All developments shall use desert-appropriate sustainable materials that can withstand the desert environment.

3.5.1.1 Supplemental Multiple-Family and Mixed-Use Development Standards (PA 1, PA 2, and PA 3)

1. Table 3-3 Development Standards (Minimum Open Space Requirements for Multiple-Family and Mixed-Use Development Projects), above, establishes the minimum open space requirements for multiple-family development projects and the multiple-family residential portion of mixed-use development projects. The required open space area shall be calculated on a per unit basis and includes [i] private open space for the exclusive use of a dwelling's occupants and guests, and [ii] common open space areas for the enjoyment of all residents within a development project. Common open space consists of active areas, with recreation facilities, and passive areas incorporating features that enhance the appearance and desirability of a development project including plantings, pathways, waterscape, hardscape, rockscapes, shade structures, seating, raised planters, and other unique features.

2. The ratios of “private” open space area to “common” open space area specified in Table 3-3 Development Standards (Minimum Open Space Requirements for Multiple-Family and Mixed-Use Development Projects), above, are recommended and may be adjusted by the developer, based upon the housing market the proposed development is intended to serve, and subject to approval by the approving authority for the project. At a minimum, the “required total” open space for multiple-family development projects shall be provided.

3. Private open space and private common open space in multi-family residential projects and residential mixed-use projects shall comply with Article 2, Section 2.03.06.I of the IUDC.

4. Residential units shall be designed to ensure residents’ security by providing separate and secured entrances and exits that are directly accessible to parking areas. Where residential units are in the same structure as non-residential/commercial uses, access to residential units shall be from a secured area or entrance located on the ground floor. Nonresidential and residential uses located on the same floor shall not have common entrance hallways or common balconies. Shared or common residential entrances shall automatically lock upon closing.

5. A mixed-use building containing two types of commercial uses (retail, services, and office), can collectively be on all floor levels.

6. Block Size - The maximum block size shall be no greater than four acres in size. No block shall be greater than 800 feet in length without a publicly accessible path or street connecting from one public right-of-way to another public right-of-way or turnaround point. Alleys can count as a connecting street or publicly accessible path.

7. External Connectivity - Streets within any proposed building/development site shall, to the extent feasible and unless alternatively approved by the Director, be aligned with existing and planned streets and pathways in the surrounding area to create a continuous street pattern. All streets, alleys, pedestrian and bike pathways in any building/development site shall connect to other streets and to existing and planned public sidewalks, streets, open spaces, and bike paths outside the proposed development to the extent feasible. Any dead-end street longer than 300 feet shall be connected to other streets by a pedestrian path.

8. Multi-Modal Site Access - Pedestrian and bike connections shall connect to existing and proposed public sidewalks, streets, transit stops, open spaces, bike paths, bicycle parking areas, and automobile parking areas adjacent to the Specific Plan Area.

9. A pedestrian pathway or multi-use path (pedestrian and/or bicycle) between buildings or through parking lots from the sidewalk to the interior of the site shall be provided for every 800 feet of a project's frontage.

    a) Pedestrian pathways/sidewalks shall have a minimum six-foot wide unimpeded throughway for the extent of the path or sidewalk.

    b) Multi-use paths through sites that connect two parallel public or publicly accessible rights-of-way shall permit at a minimum one location with 24-hour access for pedestrians, cyclists, and as appropriate emergency vehicles, and shall provide at minimum a 12-foot-wide path within a minimum 20-foot-wide public access easement.

10. Pedestrian pathways/sidewalks connecting to the public sidewalk and other planned or existing pedestrian routes or trails shall be provided. A pedestrian pathway/sidewalk shall connect the primary building entry or entries to the public sidewalk on each street frontage. Pedestrian pathways/sidewalks a minimum of five feet wide shall be provided from the public right-of-way to all primary entryways, common areas, guest/customer vehicle parking, and bicycle parking areas.

11. Internal Private Streets and Pathways –

    a) Private streets shall be a minimum of 24 feet wide, including a clear 20-foot-wide path of travel, and be designed consistent with City standards in the City Design and Engineering Manual. All publicly accessible private streets and multi-use pathways shall provide a minimum of one tree per 35 linear feet of street/pathway.

    b) Private streets, including emergency vehicle access areas, shall be set back a minimum of five feet from interior property lines.

c) Differentiated paving materials, textures (i.e., stamped patterns), and/or colors shall be required where pedestrian paths cross parking areas (where applicable).

d) Private streets shall include on both sides of a street a minimum six-foot-wide sidewalk with a minimum four-foot-wide planting strip.

e) Trees shall be planted at a minimum average spacing between trees of 35 feet. Shrubs and groundcover shall cover at least 30 percent of the planting strip. See also the City standards in the City Design and Engineering Manual.

f) Private streets and pathways shall be publicly accessible 24 hours a day.

g) Buildings fronting internal streets and pathways, both public and private, shall follow all standards as if the building has a front parcel line at the back of walk for the internal street or pathway.

12. Where a non-residential zoned property abuts a residential or mixed-use zoned property, a solid masonry wall shall be installed along the adjacent interior property lines with a minimum height of six feet and a maximum height of eight feet.

3.5.1.2 Drive-through Aisle Standards

1. The entrance/exit of any drive aisle shall be a minimum of 50 feet from an intersection of public rights of way (measured at the closest intersecting curbs).

2. The drive aisle shall be designed with a minimum 10-foot interior radius at curves and a minimum ten-foot width.

3. A clearly identified area shall be provided for vehicles waiting for drive-up or drive-through service that is physically separated from other onsite traffic circulation. The Director may approve alternatives to the requirements of this Subsection where it is determined that the alternate design will, given the characteristics of the site, be equally effective in ensuring on- and off-site pedestrian and vehicular traffic safety and minimizing traffic congestion.

4. The stacking area shall accommodate a minimum of five cars for each drive-up or drive-through window in addition to the vehicle receiving service.

5. The stacking area shall be located at and before the service window (e.g., pharmacy, teller, etc.).

6. Separation of the stacking area from other traffic shall be done by concrete curbing or paint striping on at least one side of the lane.

7. The drive-through aisle shall be screened from the sidewalk or street with landscaping or decorative walls and berms.

3.5.1.3 Supplemental Industrial Development Standards (PA 4)

1. A 20-foot-wide landscaped area shall be provided along the internal east-west roadway.

2. A pedestrian pathway between buildings or through parking lots from the sidewalk to the interior of the site shall be provided at the primary ingress/egress access point of a project's frontage.

    a) Pedestrian pathways shall have a minimum six-foot wide unimpeded throughway for the extent of the path.

    b) A five-foot wide pedestrian pathway shall connect the primary building(s) entry to the public sidewalk on the south of the internal east-west roadway.

3. Differentiated paving materials, textures (i.e., stamped patterns), and/or colors shall be required where pedestrian paths cross parking areas (where applicable).

4. Loading docks shall be permitted on building facades that directly face the internal east-west roadway.

5. Loading docks and truck parking areas shall be visually screened from view along the internal east-west roadway with a 14-foot-high wall, landscaping, and/or other screening features or barriers (such as berms).

6. Gated entry points are permitted in Planning Area 4. If entry gates are used, they shall be positioned to allow enough distance for the stacking of at least two (2) trucks on the lot to preclude queuing of trucks on public streets.

7. Outdoor storage may not be located within any required front or street-side yard. Outdoor storage areas shall be screened from view.

8. Outdoor loading and storage areas and loading doors shall be screened from public view by decorative concrete or masonry walls with lockable view obstructing gates. Such walls shall be a minimum of eight feet in height and shall be of sufficient height to screen all outdoor materials and equipment, tractors and trailers, and loading doors from public view.

9. For security purposes, fencing along the I-10 may include fencing or wall material at least six feet in height.

10. Semi-truck idling shall be restricted to five minutes.

3.6 Parking

Parking standards for uses within the Specific Plan Area are shown in Table 3-4: Off-Street Vehicle Parking Standards.

Table 3-4 Off-Street Vehicle Parking Standards	
Use	**Standards**
Residential	
Multi-Family Dwellings	• 1 per studio or one-bedroom unit • 1.5 per two-bedroom unit • 2 per unit with three or more bedrooms • Plus 0.2 guest spaces per unit
Commercial	
Commercial, Inclusive of Retail, office Use, Services, Restaurants (Dine-In, Take-Out and Drive-Thru)	3.5 spaces/1,000 sf
Lodging – Hotels, Motels, Extended Stay, Inclusive of ancillary retail, food service, and conference	1.25 spaces/key
Community Assembly	1 space/4 fixed seats, or 1 space/40 sf of assembly area if no fixed seats
Industrial	
Freight/Trucking Facility	2 spaces/1,000 sf of office space, plus 1 space/service or fleet vehicle, plus 1 space/service or fleet vehicle.
Warehouse	Up to 200,000 SF: 1 space per 1,250 sf of gross floor area
	All Additional SF: 1 space per 5,000 sf of gross floor
Office	1 space/1,000 sf
Manufacturing/Processing, Light	0.5 spaces/1,000 sf

In addition to the ratios shown, the following criteria are required:

1. Required parking spaces must be available for residents, customers, or employees of the use. Parking and loading areas shall be accessible for their intended purpose during all hours of operation. Fees may be charged for the use of required parking spaces.

2. Stacked or valet parking is allowed if an attendant is present, or an automated system is in place to move vehicles. Uses with valet parking shall provide an approved valet parking plan which includes insurance provisions for patrons. Such provisions must be approved by the City Attorney. If stacked parking managed by an attendant is used for required parking spaces, an acceptable form of guarantee must be filed with the Director ensuring that an attendant will be present while the parking lot is in operation.

3. Residential parking spaces in a mixed-use development shall be assigned to residential occupants.

4. Parking ratios and fraction calculations shall be governed by IUDC 3.03.05.E (Calculation of Required Spaces).

5. An Ancillary use in conjunction with the primary use on the property shall not be subject to additional parking.

6. In a mixed-use building where ancillary service or small-scale food service commercial uses are a small component of the project (less than or equal to 2,000 square feet or 20% of the first-floor area, whichever is more stringent), no additional parking is required. Commercial uses more than 2,000 square feet or over 20% of the floor area shall be parked per the ratios in Table 3-4.

7. Exceptions and reductions to off-street parking shall be governed by IUDC 3.03.06 (Exceptions and Reductions to Off-Street Parking).

8. Required parking for residential uses shall be on the same lot as the dwelling or use they serve on a parcel or tract owned in common by all the owners of the properties that will use the parking area. Required parking spaces serving nonresidential uses shall be located on the same lot as the use they serve.

9. Parking Development and Design Standards shall be governed by IUDC 3.03.08 (Parking Development and Design Standards).

10. In the event that parking characteristics evolve due to new technologies or changes in parking demand, modified parking standards may be proposed based upon a parking demand analysis reviewed and approved by the City as part of the development plan review.

11. New technologies such as parking lifts are permitted, subject to review as part of the development plan review.

12. Handicapped parking spaces shall be provided in accordance with State and Federal regulations and shall be considered in the calculation of required spaces.

13. Electric Vehicle (EV) charging stations shall be governed by Title 24 requirements at the time of permit issuance.

14. Bicycle parking shall be governed by IUDC 3.03.09 (Bicycle Parking) based on use type.

Chapter 4–Design Guidelines

The general framework for the physical design of The Oasis at Indio Specific Plan is to ensure the development of a high-quality and cohesive mixed-use project while allowing for variation and flexibility. These guidelines are intended to complement the Development Standards set forth in Chapter 3 and to provide general directions on implementing the vision and fundamental concepts established by the Specific Plan for the future design of buildings, streetscapes, and other spaces. These guidelines are not a set of rigid requirements; rather, they are general and illustrative in nature and are intended to provide a range of flexibility to encourage creativity and variety on the part of designers. The overall goal is to ensure that the intent and spirit of the design guidelines are followed to attain the best possible design solutions.

The objectives of these Design Guidelines are to:

- Promote compatibility with surrounding uses.
- Ensure a site design that provides appropriate transitions and buffer space and/or design features that reduce negative impacts at the source.
- Provide guidelines that allow flexibility for practical application and creative expression.
- Ensure functional pedestrian and motor vehicle circulation within a project and convenient pedestrian connections between residential and retail commercial developments.
- Provide landscaping that improves the streetscape experience and is supportive of the site's character and the character of the surrounding community.

The Oasis at Indio Specific Plan features a contemporary mixed-use development containing multi-family residential, commercial, and industrial uses that takes advantage of the property's location near regional transportation corridors. The Oasis at Indio is a place where businesses can locate, thrive, have access to goods and services, and where multi-family homes in an urban residential area are within walking distance to shopping, employment opportunities, and a variety of transportation modes. Many of the design guidelines apply to all Planning Areas within the Specific Plan Area. However, due to the different land use districts and settings, some guidelines are specifically applicable to residential, commercial, mixed-use, or industrial land uses. To establish which guideline applies, the applicable planning area is referenced. These Guidelines will be implemented through careful coordination between the master developer and the City of Indio during the entitlement review process.

4.1 Multi-Family Guidelines

Site Design

- Ensure that new residential developments provide adequate on-site recreational and open space amenities, generous streetscapes, and landscaped front yards consistent with the values and standards of the community and the needs of new development.
- Buildings should be oriented to promote privacy for individual residential units to the greatest extent possible.

- Buildings should be grouped to create a functional and visual relationship between them and clustered when feasible to maximize the use of surface/ground level areas for other uses such as parks, useable open space, and paseos.
- Establish connections among buildings through structural and landscape elements.
- Provide an array of pedestrian amenities that are integrated into the overall design and character of the development, such as seating areas, drinking fountains, landscape planters, water fountains, shade canopies, and trash receptacles.

Ex: Simple geometric forms, repeated patterns, mass breaks, and building articulation.

- Buildings should be oriented towards public spaces to provide "eyes on the street" to create welcoming and safe places for Indio residents.
- For multi-family buildings, front-street façades should be lined with dwelling units oriented to the street at ground level. Individual direct street access to ground-level units should also be provided when possible.

Parking

- Structured, surface and semi-subterranean parking areas should be designed and placed to be unobtrusive and have minimal impact on the character and scale of residential and mixed-use land uses.
- Subterranean parking may extend to all property lines.
- Semi-subterranean parking in residential buildings may extend to all property lines, provided that the aboveground section of the semi-subterranean parking garage does not rise up more than 4 feet from ground level, does not encroach within or interfere with applicable utility easements, and is completely screened from street view by landscape treatments.

4.1.1 Exterior Design

Primary versus Secondary Exposures

- The primary exposure(s) of buildings are those side(s) of buildings that contain the main entry and face the street. Primary exposures should receive greater attention to design detail than those that are screened from pedestrian-level, street view by walls, landscaping, or buildings.
- Secondary exposures are those side(s) of buildings that face interior roadways and do not contain the main building entry. Secondary exposures shall be architecturally compatible with but need not be as detailed as primary exposures.

Building Form, Mass, and Scale

- Encourage sustainable building practices.
- Encourage the use of building techniques and materials that relate to Indio's warm and dry desert climate. Promote solar control and use of shade in building design and associated pedestrian amenities.
- Simple geometric forms shall constitute the overall building form. Rectangular forms are encouraged to promote balance and visual interest. Arbitrary, complicated building forms shall be avoided.
- Towers and other vertical/prominent building features should be used to accentuate key elements such as building entries, and pedestrian plazas or courtyards.
- Multi-family residential buildings should express a rhythm and pattern through repeated patterns of lines, shapes, forms, and/or colors that reflect the size and scale of a housing unit and/or individual rooms and spaces.
- Buildings greater than three stories in height with building facades greater than 150 feet in length shall have a minimum of one major mass break. Building facades greater than 300 feet in length shall have a minimum of two major mass breaks. Mass breaks shall be a minimum of:
    - Vertical shift modulation of five feet deep and ten feet wide and extend at minimum the full height of the building above the ground floor, including a break in the roofline.
- Building facades greater than 75 feet in length shall have at least one minor mass break. Minor breaks shall be a minimum of:
    - Vertical shift modulation of two feet deep and four feet wide and extend at minimum the full height of the building above the ground floor, including a break in the roofline.
- Reduce the visual impact of long building facades through the use of various paint colors, building materials, recesses, offsets, reveals, decorative fixtures, landscaping, screen walls, and other methods.
- Use building organization and construction to derive scale and articulation rather than surface ornamentation.
- Small-scale articulation of building facades, roofs, materials, colors, and textures are appropriate at locations where pedestrians will experience them.
- Modulation and variation of building masses between adjacent buildings visible from public streets is encouraged.

Ex: Small-scale articulation, and visually appealing and identifiable entry.

Building Articulation

- All facades shall include a minimum of two of the following facade articulation strategies to create visual interest:
    - Change in texture
    - Change in color
    - Change in material

  - Vertical and horizontal recesses such as a pattern of recessed grouping of windows, recessed panels, or similar strategies.
  - Vertical and horizontal projections such as shading and weather protection devices, decorative architectural details, or similar strategies.
  - Datum lines that continue the full length of the building, such as cornices
  - Screening devices such as lattices, louvers, trellis elements, or other similar strategies.
  - Balconies
  - Pilasters
  - Material inlays
  - Variation of architectural styles
- Building offsets or recesses may be used to accentuate building entries and form courtyards.

Building Components (Base/Middle/Top)

Buildings of three stories or less shall include at minimum a defined base and top. Buildings four stories and higher shall be designed to differentiate a defined base, a middle or body, and a top, cornice, or parapet cap. Each of these elements shall be distinguished from one another for a minimum of 80% of the facade length through use of two or more of the following:

- Horizontal facade modulation.
- Horizontal facade articulation and/or variation in facade articulation strategy.
- Variation in facade rhythm and pattern.
- Variation in fenestration strategy (size, proportions, pattern, and depth or projection).
- Variation in material (facade material, material size, texture and/or pattern) and color.

Building Base

- Buildings should rest on a noticeable foundation base or pedestal to visually anchor the structure to the ground unless an acceptable alternative is approved by the Director.
- When used, the types of materials appropriate for the building base should project an image of durability, quality, and permanence and may include:
  - Plaster
  - Ceramic tile
  - Granite
  - Stone
  - Marble
  - Split-face concrete block

Ex: Building Component (Base/Middle/Top)

Building Middle

- Create visual rhythms in the building's middle through repetitive façade elements such as rows of windows and columns.
- Segment the building faces into a series of defined areas through the use of columns, piers, windows, awnings, and other combinations that define the vertical space.

Ex: Primary residential building entry shared by multiple units.

Building Top

- Buildings should be crowned with a discernible roof cap or edge feature that defines the top of the building unless an acceptable alternative is approved by the Director.
- Appropriate elements for the cap include:
    - Protruding crown molding
    - Roof corbels supporting roof overhangs
    - Roof brackets supporting eave overhangs.
    - Shaped, foam-based, plaster-covered cornice
    - Stepped parapets
    - Textured materials, such as brink masonry
- The types of materials appropriate for the building cap may include:
    - Plaster
    - Ceramic tile
    - Granite
    - Stone
    - Marble
    - Split-face concrete block

Corners and Towers

- When used, tower elements should be located at a focal point such as the terminus of the main entrance or at a major intersection.
- Tower elements or other prominent building features may be used to accentuate key elements such as building entries, converging walls, and pedestrian plazas or courtyards.
- Where appropriate, design building corners at highly visible locations with unique architectural features to emphasize the building entrance.

Colonnades

- If appropriate, project out or set back upper floors to create colonnades or other pedestrian passages with access to fresh air and natural lighting.
- If used, design colonnades for pedestrian connectivity, protection from the elements, and for aesthetic appeal.

- Consistent column placement should define the arcade and frame the building façade.
- Align the openings in the colonnade with doors and windows.

Building Entry Treatment

- Entries shall be visually appealing and identifiable through the use of elements such as changes in building massing, colors, materials, roof heights, enriched materials, architectural detailing, and the use of tower elements or recesses.
- Primary residential building entries shared by multiple units (e.g., leading to upper stories) should be accentuated from the overall building façade through a façade modulation that includes at least one of the following:
    - A recess or projection from the primary facade plane with a minimum depth of two feet.
    - A change in roof form.
    - Weather protection that is a minimum of six feet wide and four feet deep by recessing the entry, providing an awning/canopy, or using a combination of these methods.

Roofs

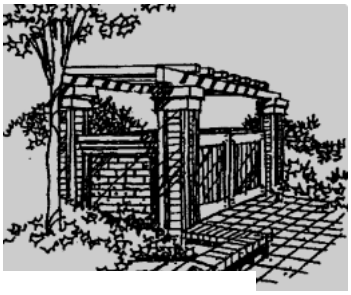
- Roof styles and materials shall be architecturally and aesthetically compatible.
- Although the majority of roof areas may be flat, the massing of visible elevations should be broken-up with elements such as sloping roofs, including hips or gable forms (as appropriate to the primary architectural style), variation in roof heights, or parapet treatments with architectural details.
- Roof pitch shall be in proportion to the design of the building and in conformance with code regulations for the roof material.

Ex: Variation in roof heights and style to reduce massing.

Screening of Refuse/Recycling Containers, Utility Equipment, and Mechanical Equipment

- All above-ground utilities and equipment (e.g., electric and gas meters, fire sprinkler valves, irrigation backflow prevention devices, etc.), service areas, and outdoor storage areas should be integrated into building and landscape design and located to minimize impact on the pedestrian experience and neighboring properties.
- Utilities and equipment, service, storage, and non-passenger loading areas shall not be located within 25 feet of a street corner.
- Electrical and gas meters should be located on the rear or side elevation and should be clustered, screened by landscaping or walls, and/or located behind doors. Screening utility meters behind doors is not required where meters are located in screened service areas and service courts or in “back of house” areas not intended for public access.

- Screening walls and utility enclosures should be designed as integral architectural features of the building.
- Utilities and equipment, service, refuse and recycling collection or storage areas, and non-passenger loading areas should be located on non-primary street frontages, alleys, parking areas, and/or at the rear or side of buildings.
- All service and storage areas, utilities, and equipment not housed inside buildings shall be screened so that it is not visible from unobstructed pedestrian-level views from public streets or walkways in accordance with utility requirements. Screening may be achieved by the building itself, a screen wall component that is consistent with the structure's architecture, landscaping, or other design element that best blends with the overall development.



- Screening shall be made of a primary exterior finish material used on other portions of the building, architectural grade wood or masonry, metal, or landscape screening that forms an opaque barrier when planted. Roof-mounted mechanical equipment is permitted atop residential structures with flat roofs if screened from view by a parapet designed to be compatible with the architecture, materials, and color of the building.
- Unless part of a design acceptable to the City, flashing and sheet metal materials shall be articulated and painted to be consistent with the overall architectural expression.

4.1.2 General Architectural Features and Accents

Materials and Colors

- Color and material should be used in a way that is consistent with the overall architectural expression.
- Materials and colors shall match and enhance the architectural style of the building.
- Materials should wrap architectural elements in their entirety on primary elevations and where exposed to primary public spaces.
- Material changes shall occur at inside corners, edges of building planes, changes in architectural features, building-score lines, or other similar changes in a facade.

Windows and Doors

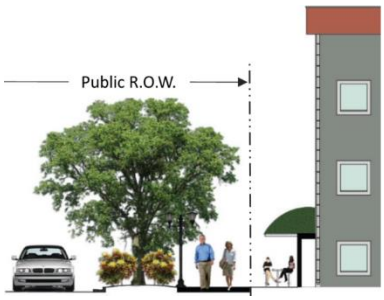
- Windows, material changes, colors, and façade decorations should be used to create visual interest and break up flat surfaces, especially at the pedestrian level.
- Window treatments, where feasible, are encouraged. Exterior window treatments include, but are not limited to:
    - Recessing and surrounds of not less than four inches
    - Trim elements
    - Headers and sills

  - Awnings (cloth awnings should be carefully designed due to high winds)
  - Shutters (proportional to window and consistent with architectural style)
  - Mullion patterns as appropriate to the architectural style
- Awnings, when provided, shall be designed to be consistent with the architectural style and color palette of the main structure.

4.2 Commercial and Mixed-Use Guidelines

4.2.1 Site Design

- Buildings should be oriented to the street and sidewalk, encourage activity at ground level, provide entrances from the sidewalk, and provide views into other portions of the site.
- Entry courtyards, plazas, entries, or outdoor eating areas should be located adjacent to the exterior property line to promote pedestrian activity along public streets. Establish connections among buildings and plazas through structural and landscape elements.
- Provide an array of pedestrian amenities that are integrated into the overall design and character of the development, such as seating areas, benches, drinking fountains, landscape planters, water fountains, shade canopies, and trash receptacles.



Ex: Entry and pedestrian activity along public street

- On-site gathering spaces (plazas, courtyards, etc.) should include pedestrian-scale amenities, such as seating areas, benches, drinking fountains, landscaping planters, water fountains, shade canopies, and trash receptacles.
- Pedestrian amenities such as colonnades, arcades, loggias, arches, and overhangs are encouraged to shade the pedestrian space on either floor of the retail building and at entrances.
- Site design should provide a clear delineation between private and public space and natural access control between public and private space.
- Buildings should be located to define, connect, and activate public and private open spaces as usable plazas, and gathering spaces.
- Buildings should be grouped to create a functional and visual relationship between them and clustered when feasible to maximize use of surface/ground level areas for other uses such as parks, plazas, and paseos.
- Mixed-use projects should be woven together into one cohesive planning area and not isolated as individual uses.
- Mixed-use projects with residential and commercial uses in the same structure should provide separate entrances for each use.
- For mixed-use, non-residential uses should be located at ground level and oriented to the street. Individual street-front access to retail/commercial uses should be provided for each space. A portion

Ex: On-site gathering space and pedestrian amenities.

of the ground-level street-oriented space in mixed-use buildings may also be used for residential units if applicable to the building type.

- Outdoor dining areas within front setbacks are encouraged to include planters or other landscape elements.
- Drop-off zones should be located along the curb or within parking facilities to promote sidewalk/street wall continuity and reduce conflicts with pedestrians.

Parking Areas

- Vehicle parking should be distributed such that all commercial uses are within reasonable walking distance of parking.
- To ensure parking areas do not dominate street frontages, parking lots should be broken up with screen walls, buildings, plazas, or landscaping.
- On-site circulation should be designed so as to minimize areas of conflict between pedestrians and vehicles.
- On-site pedestrian circulation should include safe pedestrian crossings and direct connections to the front entrances of retail and services.
- Pervious or open grid paving should be used whenever possible to reduce the negative effects of stormwater runoff and to facilitate groundwater recharge.
- Parking structures may utilize shared entrances for mixed-use developments.

Ex: Distribution of vehicular parking with safe on-site pedestrian crossings.

Service and Storage Areas

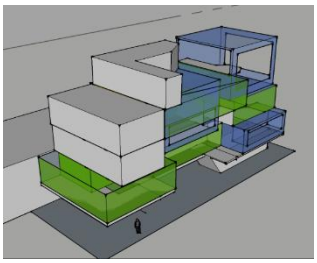
- Where reasonably possible, commercial loading docks and storage areas should be located to the rear or side of the building served.
- Service-only entrances should be sited so that they do not interfere with customer access.
- Appropriate onsite service-vehicle parking and turnouts should be provided within efficient, non-obtrusive locations.

4.2.2 Exterior Design

Primary versus Secondary Exposures

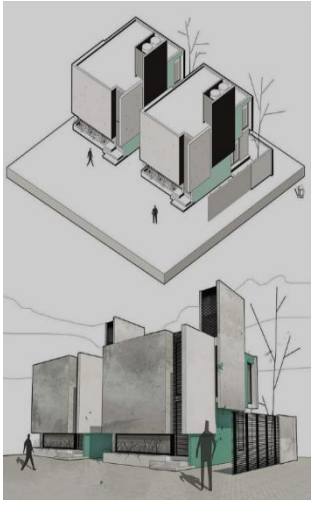
- The primary exposure(s) of buildings are those side(s) of buildings that contain the main entry and face the street. Primary exposures should receive greater attention to design detail than those that are screened from pedestrian-level, street view by walls, landscaping, or buildings.
- Secondary exposures are those side(s) of buildings that face interior roadways and do not contain the main building entry. Secondary exposures shall be architecturally compatible with but need not be as detailed as primary exposures.

Building Form, Mass, and Scale



Ex: Simple geometric forms.

- Simple geometric forms shall constitute the overall building form. Rectangular forms are encouraged to promote balance and visual interest. Arbitrary, complicated building forms shall be avoided.
- Towers and other vertical/prominent building features should be used to accentuate key elements such as building entries, and pedestrian plazas or courtyards.
- Residential mixed-use buildings should express a rhythm and pattern through repeated patterns of lines, shapes, forms, and/or colors that reflect the size and scale of a housing unit and/or individual rooms and spaces.
- Buildings greater than three stories in height with building facades greater than 150 feet in length shall have a minimum of one major mass break. Building facades greater than 300 feet in length shall have a minimum of two major mass breaks. Mass breaks shall be a minimum of:
    - Vertical shift modulation of five feet deep and ten feet wide and extend at minimum the full height of the building above the ground floor, including a break in the roofline.
- Building facades greater than 75 feet in length shall have at least one minor mass break. Minor breaks shall be a minimum of:
    - Vertical shift modulation of two feet deep and four feet wide and extend at minimum the full height of the building above the ground floor, including a break in the roofline.
- Reduce the visual impact of long building facades through the use of various paint colors, building materials, recesses, offsets, reveals, decorative fixtures, landscaping, screen walls, and other methods.



Ex: Building form, mass, and scale.

- Use building organization and construction to derive scale and articulation rather than surface ornamentation.
- Small-scale articulation of building facades, roofs, materials, colors, and textures are appropriate at locations where pedestrians will experience them.
- Modulation and variation of building masses between adjacent buildings visible from public streets is encouraged.

Building Articulation

- All facades shall include a minimum of two of the following facade articulation strategies to create visual interest:
    - Change in texture

- Change in color
- Change in material
- Vertical and horizontal recesses such as a pattern of recessed grouping of windows, recessed panels, or similar strategies.
- Vertical and horizontal projections such as shading and weather protection devices, decorative architectural details, or similar strategies.
- Datum lines that continue the full length of the building, such as cornices.
- Screening devices such as lattices, louvers, trellis elements, or other similar strategies.
- Balconies
- Pilasters
- Material inlays
- Variation of architectural styles

Ex: Building articulation through use of vertical and horizontal projections, trellis elements, and changes in color, texture, and material.

- Building offsets or recesses may be used to accentuate building entries and form courtyards.
- Facade articulation is expected to be used for commercial facing I-10, but at a scale appropriate to fast-moving vehicles and not for pedestrians.

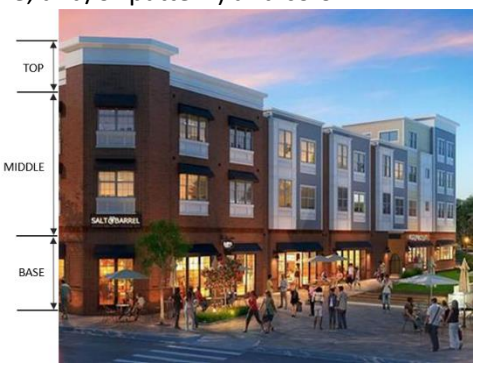
Building Components (Base/Middle/Top)

Buildings of three stories or less shall include at minimum a defined base and top. Buildings four stories and higher shall be designed to differentiate a defined base, a middle or body, and a top, cornice, or parapet cap. Each of these elements shall be distinguished from one another for a minimum of 80% of the facade length through use of two or more of the following:

- Horizontal facade modulation.
- Horizontal facade articulation and/or variation in facade articulation strategy.
- Variation in facade rhythm and pattern.
- Variation in fenestration strategy (size, proportions, pattern, and depth or projection).
- Variation in material (facade material, material size, texture, and/or pattern) and color.

Building Base

- Buildings should rest on a noticeable foundation base or pedestal to visually anchor the structure to the ground unless an acceptable alternative is approved by the Director.
- When used, the types of materials appropriate for the building base should project an image of durability, quality, and permanence.



Ex: Building Component (Base/Middle/Top

Building Middle

- Create visual rhythms in the building's middle through repetitive façade elements such as rows of windows and columns.
- Segment the building faces into a series of defined areas through the use of columns, piers, windows, awnings, and other combinations that define the vertical space.

Building Top

- Buildings should be crowned with a discernible roof cap or edge feature that defines the top of the building unless an acceptable alternative is approved by the Director.
- Appropriate elements for the cap include:
    - Protruding crown molding
    - Roof corbels or brackets supporting roof overhangs
    - Shaped, foam-based, plaster-covered cornice
    - Stepped parapets
    - Textured materials, such as brick masonry

Corners and Towers

- When used, tower elements should be located at a focal point such as the terminus of the main entrance or at a major intersection.
- Tower elements or other prominent building features may be used to accentuate key elements such as building entries, converging walls, and pedestrian plazas or courtyards.
- Where appropriate, design building corners at highly visible locations with unique architectural features to emphasize the building entrance.

Colonnades

- If appropriate, project out or set back upper floors to create colonnades or other pedestrian passages with access to fresh air and natural lighting.
- If used, design colonnades for pedestrian connectivity, protection from the elements, and for aesthetic appeal.
- Consistent column placement should define the arcade and frame the building façade.
- Align the openings in the colonnade with doors and windows.

Building Entry Treatment

- Entries shall be visually appealing and identifiable through the use of elements such as changes in building massing, colors, materials, roof heights, enriched materials, architectural detailing, and the use of tower elements or recesses.

- Primary entries should be designed so they are easily recognized, are the most prominent entry for that tenant, and are readily accessible to pedestrians and in proximity to parking.
- Secondary entries should also be easily recognizable but designed at a lesser scale than the primary entry.

Roofs

- Roof styles and materials shall be architecturally and aesthetically compatible.
- Although the majority of roof areas may be flat, the massing of visible elevations should be broken-up with elements such as sloping roofs, including hips or gable forms (as appropriate to the primary architectural style), variation in roof heights, or parapet treatments with architectural details.
- Roof pitch shall be in proportion to the design of the building and in conformance with code regulations for the roof material.

Screening of Refuse/Recycling Containers, Utility Equipment, and Mechanical Equipment

- All above-ground utilities and equipment (e.g., electric and gas meters, fire sprinkler valves, irrigation backflow prevention devices, etc.), service areas, and outdoor storage areas should be integrated into building and landscape design and located to minimize impact on the pedestrian experience and neighboring properties.

- Utilities and equipment, service, storage, and non-passenger loading areas shall not be located within 25 feet of a street corner.
- Electrical and gas meters should be located on the rear or side elevation and should be clustered, screened by landscaping or walls, and/or located behind doors. Screening utility meters behind doors is not required where meters are located in screened service areas and service courts or in "back of house" areas not intended for public access.
- Screening walls and utility enclosures should be designed as integral architectural features of the building.
- Utilities and equipment, service, refuse and recycling collection or storage areas, and non-passenger loading areas should be located on non-primary street frontages, alleys, parking areas, and/or at the rear or side of buildings.
- Refuse collection areas to the extent possible shall be located as far as possible from the residential portion of mixed-use buildings and open space areas.

Ex: Decorative screen wall and landscaping around trash enclosure.

- All service and storage areas, utilities, and equipment not housed inside buildings shall be screened so that it is not visible from unobstructed pedestrian-level views from public streets or walkways in accordance with utility requirements. Screening may be achieved by the building itself, a screen wall designed as an integral architectural feature of the building, landscaping, or other design element that best blends with the overall development.

- Screening shall be made of a primary exterior finish material used on other portions of the building, architectural grade wood or masonry, metal, or landscape screening that forms an opaque barrier when planted.
- Roof-mounted equipment shall be screened so that it is not visible from unobstructed pedestrian-level views from public streets, walks, or parking lots. Screening of rooftop equipment may be achieved by the building parapet or other similar screen wall component that is consistent with the structure's architecture. This applies to all types of equipment, including mechanical equipment, communication dishes, skylights, exhaust fans, ducts, or any other non-architectural elements.
- Unless part of a design acceptable to the City, flashing and sheet metal materials shall be articulated and painted to be consistent with the overall architectural expression.

4.2.3 General Architectural Features and Accents

- One architectural style shall apply to all buildings within the commercial/retail land use planning area, although variation from the chosen theme is allowed for major national retail chains that have to maintain certain characteristics for identification.
- Variation on the architectural theme is encouraged through simple changes such as color palette and entry treatments.

Materials and Colors

- Color and material should be used in a way that is consistent with the overall architectural expression.
- A dominant building material and color should be clearly established in each building. Accents and variations may then occur within the background established by that dominant base. The dominant colors for buildings should be more neutral in nature, with the more intense colors used in the accents.
- Materials and colors should match and enhance the architectural style of the building.
- All materials shall wrap architectural elements in their entirety on primary elevations and where exposed to primary public spaces.
- Material changes shall occur at inside corners, edges of building planes, changes in architectural features, building-score lines, or other similar changes in a façade.

Windows and Doors

- Windows, material changes, colors, and façade decorations should be used to create visual interest and break up flat surfaces, especially at the pedestrian level.
- Window treatments, where feasible, are encouraged. Exterior window treatments include, but are not limited to:
    - Recessing and surrounds of not less than four inches
    - Trim elements
    - Headers and sills
    - Awnings (cloth awnings should be carefully designed due to high winds)
    - Shutters (proportional to window and consistent with architectural style)

  - Mullion patterns as appropriate to the architectural style
- Awnings, when provided, shall be designed to be consistent with the architectural style and color palette of the main structure.
- Avoid continuous awnings. Awnings should frame a segmented portion of the storefront, such as a window bay or entrance.
- Emergency exit or egress-only doors should be treated to blend in with the adjacent walls or surfaces to discourage their perception as entries.

4.3 Industrial Guidelines

4.3.1 Site Design

- Buildings should be oriented to facilitate the ease of truck parking and loading.
- Buildings should be designed with the vehicle in mind, requiring less pedestrian-scale articulation than buildings in the other land use planning areas.
- Interior driveways and drive aisles shall be designed to provide adequate stacking and prevent queuing of vehicles on public streets.
- Service entrances shall be sited such that they do not interfere with owner/tenant/customer access.
- Loading areas shall be designed to provide for backing and maneuvering on-site and not from a public street.
- Appropriate on-site service vehicle parking/turnouts shall be provided in an efficient, non-obtrusive location appropriate to the scale and needs of the development.
- Loading vehicles, when parked, shall not impede normal traffic flow.

4.3.2 Exterior Design

Primary versus Secondary Exposures

- The primary exposure(s) of buildings are those side(s) of buildings that contain the main entry and face the street. Primary exposures should receive greater attention to design detail than those that are screened from pedestrian-level, street view by walls, landscaping, or buildings. This can be achieved through variation in form, mass, scale, modulation, and architectural detail.
- Secondary exposures are those side(s) of buildings that face interior roadways and do not contain the main building entry. Secondary exposures shall be architecturally compatible with but need not be as detailed as primary exposures.

Ex: Secondary exposure side of a building architecturally compatible to the primary exposure of the building through use of windows and color blocking.

Building Form, Mass, and Scale

- Simple geometric forms shall constitute the overall building form. Rectangular forms are encouraged to promote balance and visual interest. Arbitrary, complicated building forms shall be avoided.
- Reduce the visual impact of long building facades through the use of various paint colors, building materials, recesses, reveals, offsets, decorative fixtures, landscaping, screen walls, and other methods.

Ex: High level of building articulation, architectural elements, and textured materials reduce the visual impact of a long building façade.

- Small-scale articulation of building facades, roofs, materials, colors, and textures are appropriate at locations where pedestrians will experience them.
- Long horizontal wall planes visible from a public street shall include periodic changes in exterior building materials, color, decorative accents, and/or articulated features.
- Modulation and variation of building masses between adjacent buildings visible from public streets is encouraged.
- Pedestrian entrances to buildings should be made obvious through changes in massing, color, and/or building materials.
- Pedestrian and ground-level building entries should be recessed or covered by architectural projections, roofs, or arcades in order to provide shade and visual relief.
- Architectural and trim detailing on building façades shall be clean, simplistic, and not overly complicated.
- Materials applied to any elevations shall turn the corner of the building to a logical termination point in relation to architectural features or massing.

Building Articulation

Building Body

- Create visual rhythms in the building's middle through repetitive façade elements such as rows of windows and columns.

Ex: Visual rhythm using rows of windows.

- Segment the building faces into a series of defined areas through the use of columns, scoring, piers, and other combinations that define the vertical space.

Corners and Towers

- When used, towers and other vertical/prominent building features should be used to accentuate key elements such as building entries, pedestrian plazas or courtyards, terminus of the main entrance, converging walls, or at a major intersection.
- Design building corners at highly visible locations with a unique architectural feature to emphasize the building entrance.

Ex: Detailed façade design highlights the covered building entrance and creates a recognizable entrance.

Building Entry Treatment

- Entries shall be visually appealing and identifiable through the use of elements such as changes in building massing, colors, materials, roof heights, enriched materials, architectural detailing, and the use of tower elements or recesses.
- Primary entries should be designed so they are easily recognized, are the most prominent entry for that tenant, and are readily accessible to pedestrians and in proximity to parking.
- Secondary entries should also be easily recognizable but designed at a lesser scale than the primary entry.
- When building entries are designed with a discernible roof cap or edge, appropriate elements include:
    - Protruding crown molding
    - Roof corbels supporting roof overhangs
    - Roof brackets supporting ease overhangs.
    - Shaped, foam-based, plaster-covered cornice
    - Stepped parapets
    - Textured materials, such as brink masonry

Roofs

- Roof styles and materials shall be architecturally and aesthetically compatible.
- Although the majority of roof areas may be flat, the massing of visible elevations should be broken-up with elements such as variation in roof heights or parapet treatments with architectural details.
- Arched, gable, hip, and shed roof forms shall not be used as a primary roof form but may be used as a secondary/accent roof form.
- All rooftop-mounted equipment shall be screened from public view using materials complementary to those used on the main structure.

Screening of Refuse/Recycling Containers, Utility Equipment, and Mechanical Equipment

- All above-ground utilities and equipment (e.g., electric and gas meters, fire sprinkler valves, irrigation backflow prevention devices, etc.), service areas, and outdoor storage areas should be integrated into building and landscape design and located to minimize impact on the pedestrian experience and neighboring properties.

- Electrical and gas meters should be located on the rear or side elevation and should be clustered, screened by landscaping or walls, and/or located behind doors. Screening utility meters behind doors is not required where meters are located in screened service areas and service courts or in “back of house” areas not intended for public access.
- Screening walls and utility enclosures should be designed as integral architectural features of the building.
- Whenever possible, refuse and recycling collection or storage areas should be located behind or to the side of the building served.
- Solid walls, landscaping, or trellis work shall screen any refuse containers, utility equipment, and mechanical equipment from unobstructed pedestrian-level, street-view streets. This screening shall be conceived as part of the building architecture and landscape design to best blend with the overall development.
- Roof-mounted equipment shall be screened so that it is not visible from unobstructed pedestrian-level views from public streets, walks, or parking lots. Screening of rooftop equipment may be achieved by the building parapet or other similar screen wall component that is consistent with the structure’s architecture. This applies to all types of equipment, including mechanical equipment, communication dishes, skylights, exhaust fans, ducts, or any other non-architectural elements.
- All wall- or ground-mounted equipment shall be screened so that it is not visible from unobstructed pedestrian-level views from public streets or walkways in accordance with utility requirements. Screening equipment may be achieved by the building itself, a screen wall component that is consistent with the structure’s architecture, landscaping and other devises acceptable to the City.

Screening of Loading Areas

- Loading docks and doors facing I-10 are not required to be fully blocked from view but will include landscape treatments.
- Truck loading docks shall be screened from pedestrian-level, public view from the streets as detailed in Chapter 3, *Development Standards*. Screening may be aesthetically compatible landscaping

Ex: Quality material screening of loading docks.

or comparable materials that blend with the architectural and landscape treatments of the site and perimeter landscaping.

4.3.3 General Architectural Features and Accents

- Architectural design should be clean, simple, and streamlined for a modern appearance.
- Variation on the architectural theme is encouraged through simple changes such as color palette and entry treatments.

Materials and Colors

Ex: Light and warm hues on the building facade with more vibrant accent colors to emphasize building entry.

- All facilities shall be constructed of permanent finished materials such as concrete, masonry, and glass. Acceptable exterior finish materials include concrete with textured, sandblasted, or painted finishes; stone or brick; stucco; or masonry with textured or sandblasted finishes. Glass, glazing systems, glass block, ceramic or natural stone tile, decorative metal, and metal panel systems are appropriate when used as accents. Metal siding may be used as an architectural detail or only when it serves a practical purpose (e.g., refrigeration units) and is limited to 15 percent of an elevation.
- Exterior building colors are light and warm tones with darker or more vibrant accent colors on wall planes at focal points, such as around building entrances and near outdoor gathering spaces. Additionally, architectural designs may mix colors, materials, and textures to articulate façades and create visual appeal. Materials and colors shall match and enhance the architectural style of the building.
- Material changes shall occur at corners, edges of building planes, changes in architectural features, building-score lines, or other similar changes in a facade.
- Materials applied to any elevations shall turn the corner of the building to a logical point in relation to architectural features or massing.

Windows and Doors

Ex: Window design creates a horizontal emphasis and frames the primary building entry. Awnings are consistent with the architectural style.

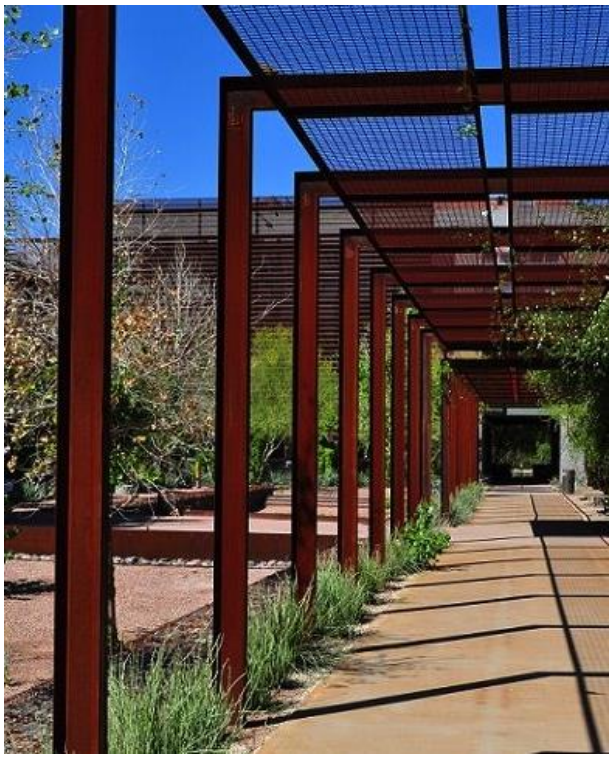
- Windows, doors, and other openings should unify the building façade by creating a clear pattern.
- Window treatments, where feasible, are encouraged. Exterior window treatments include, but are not limited to:
    - Recessing and surrounds of not less than four inches

    - Trim elements
    - Headers and sills
    - Mullion patterns as appropriate to the architectural style
- Awnings, when provided, shall be designed to be consistent with the architectural style and color palette of the main structure.
- Windows, material changes, colors, and façade decorations should be used to create visual interest and break up flat surfaces, especially at the pedestrian level.
- Emergency exit or egress-only doors should be treated to blend in with the adjacent walls or surfaces to discourage their perception as entries.

4.4 Landscape

The landscape at The Oasis of Indio will support the goals of the Specific Plan through visually cohesive landscaped spaces within the contemporary village. Landscape areas will provide a sense of arrival, offer clear and safe pathways for interconnectivity, and invite visitors to stay while providing a level of visual continuity,

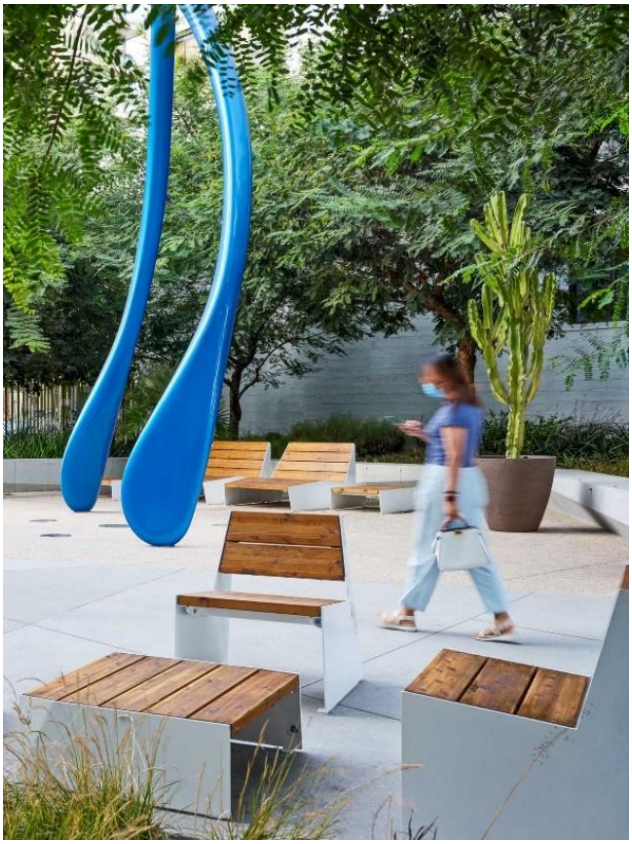
An emphasis will be placed on pedestrian-oriented experiences that incorporate a mix of materials, complementing the adjacent architecture. Water elements are encouraged near seating areas to enhance the visitor experience.



- Shade canopies and trellises shall be used to provide architectural interest in the landscape while providing visual interest and individuality to each land use district. Seasonal shading concepts shall be considered for plazas and seating areas that address the variation in seasonal temperatures.
- Large specimen shade trees should be considered within plaza spaces to create inviting destinations and a sense of permanence. A thoughtful selection of trees, plant species, and comfortable site furnishings will contribute to the enjoyment of these spaces.
- Conveniently placed bike racks near commercial corridors and visible from a variety of destinations will increase alternative modes of transportation.
- Select gathering areas shall be visible from Monroe Street and Showcase Parkway to energize the street presence and invite visitors.

4.5 Landscape Architectural Concepts

The landscape concept within The Oasis at Indio will reinforce the contemporary mixed-use village while providing visual cues for visitors and inviting destinations. Contemporary landscape features shall be incorporated into the design of the residential, commercial/retail, and industrial land use areas. Each area shall have a distinct "personality" that supports the adjacent uses while lending individuality to each land use district.



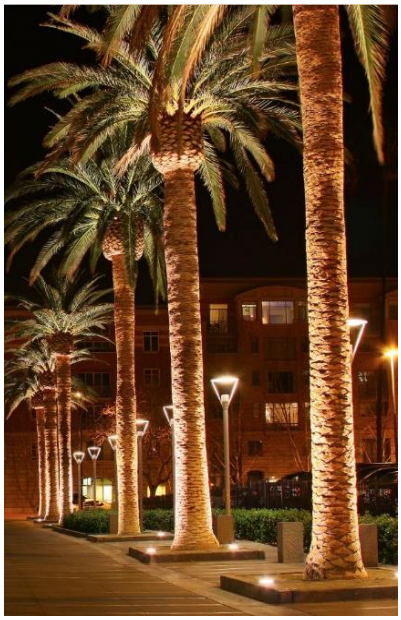
The landscape design shall utilize a hierarchy that provides visually prominent planting for the purpose of inviting and guiding, and a more visually receding landscape for more functional spaces.

Some guiding ideas:

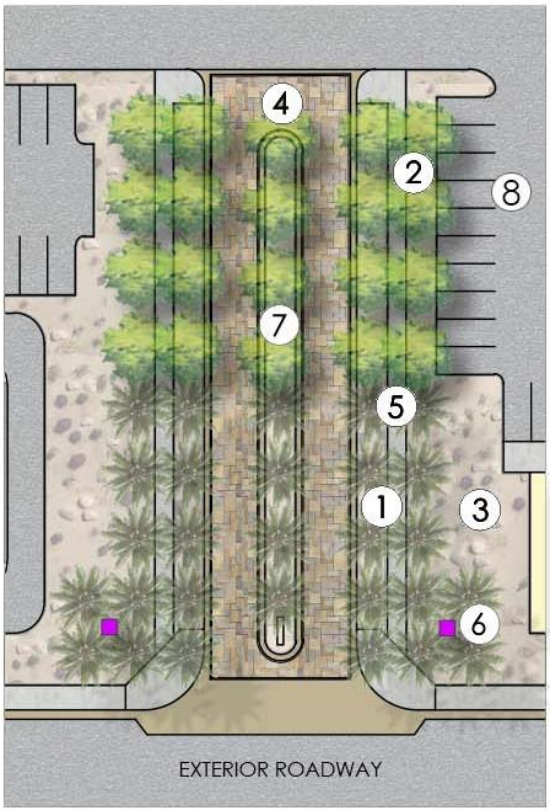
- Resort-style palm trees at commercial/retail and multi-family entries
- Desert shade trees at industrial entries and parking areas
- Formal use of planting at entries, gateways, and transition areas
- Large evergreen shade trees and palms at plazas and seating areas

4.6 Entries, Edge Conditions and Social Spaces

The following design studies are intended to guide the hierarchy described above.

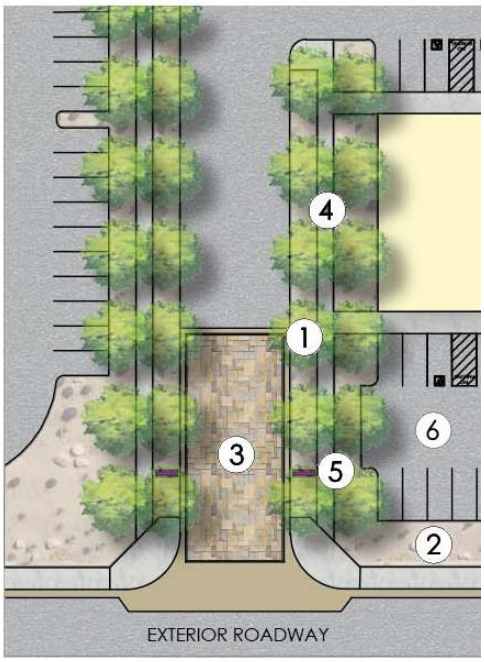


Commercial/Retail and Multi-Family Entry



Legend

1. Date Palm tree
2. Desert canopy tree
3. Desert landscape areas
4. Enhanced pavement
5. 6’ wide colored concrete walkway
6. Horizontal or vertical marker
7. 10’ wide median island
8. Parking lot/Driveway



Legend

1. Desert canopy tree
2. Desert landscape areas
3. Enhanced pavement
4. 6’ wide colored concrete walkway
5. Horizontal or vertical marker
6. Parking lot/Driveway

Corner Monumentation

The landscape corner monuments located at primary intersections shall follow the current sign hierarchy program located on Monroe Street north of the 1-10 freeway. The sign size, orientation and associated landscape areas will reflect the scale of the adjacent retail property. Plant material shall include mature Date Palm trees and create an attractive landscape composition with the sign and wall design.

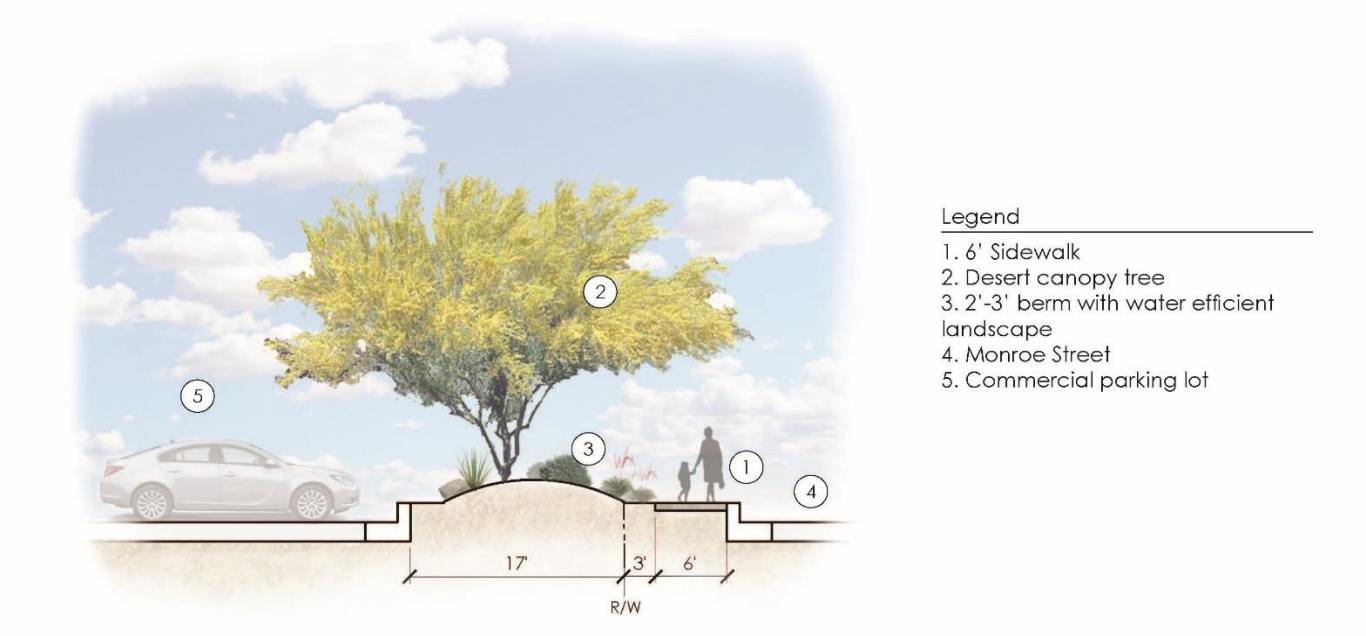
Signature District Style

Creating a signature style is encouraged for each Planning Area through a mix of both planting and hardscape materials. Hardscape materials may include stone, stucco, masonry, pre-cast concrete and wood. Planting areas can be architectural planting with symmetrical rows or eclectic designs with varied textures and forms.

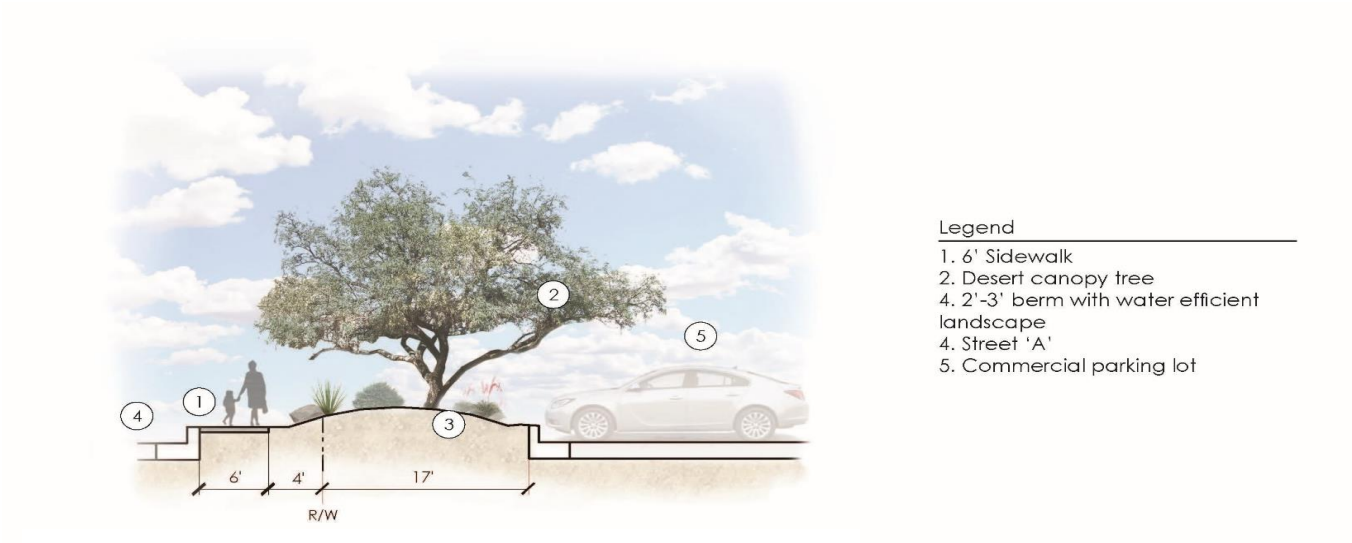
Screening and buffering adjacent conditions will be required for successfully integrating into the surrounding neighborhood. Some edge requirements include:

- Monroe Street Parkway: 20’ landscape area with 3’ high berm to help screen vehicles in adjacent parking lots from roadway
- A Street @ Commercial Edge Condition: 21’ landscape area with 3’ high berm to help screen vehicles in adjacent parking lots from roadway
- A Street @ Industrial Edge: 14’ landscape area with 3’ high berm and large multi-trunk tree adjacent to 14’ screen wall
- Avenue 42 @ Residential Edge: 19’ landscape area with 6’ high wall or fence and palms within the walled area
- A Street @ Residential Edge: 19’ landscape area with decomposed granite trail connecting to adjacent detention basin
- A Street Open Space: 50’ landscape area with walking trail and passive seating areas within the landscaped basin area

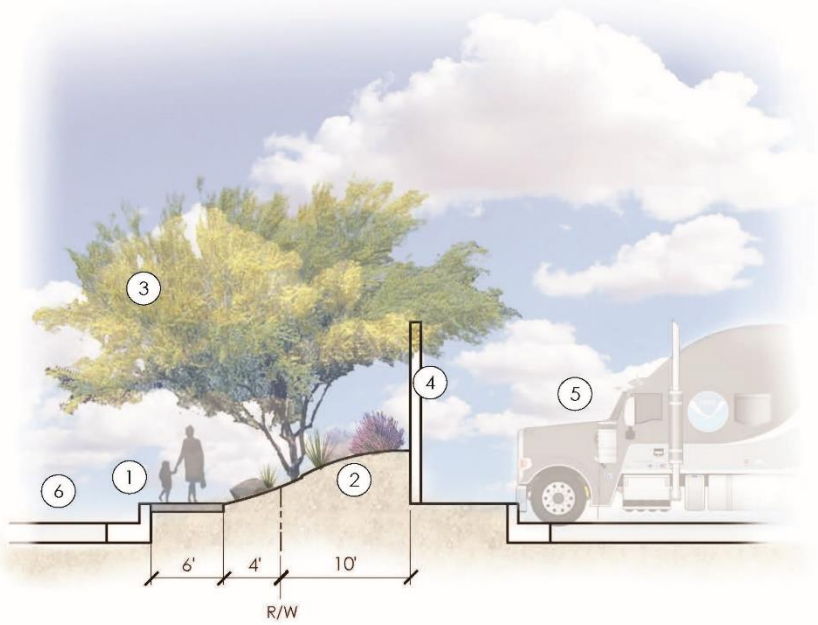
Providing shade for both pedestrians and vehicles is required in the local desert climate. Parking areas shall focus on effective shade through a consistent use of canopy trees that thrive in the desert environment. Shaded walkways will promote comfortable connections to each district. Utilizing a variety of evergreen and deciduous trees at seating areas will provide seasonally adapted shade.



Monroe Street Parkway – Commercial Edge Condition (West)



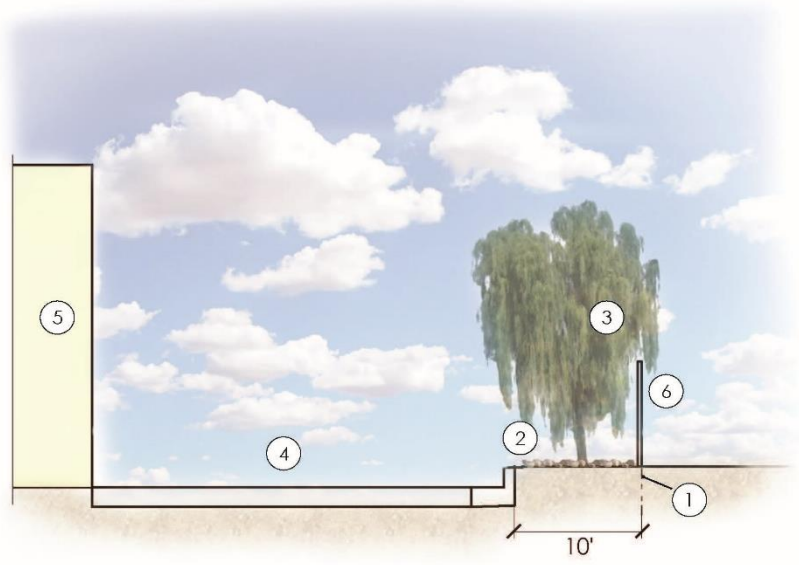
Street 'A' – Commercial Edge Condition



Legend

1. 6' Sidewalk
2. 2'-3' berm with water efficient landscape
3. Desert canopy tree
4. 14' Screen wall
5. Truck parking
6. Street 'A'

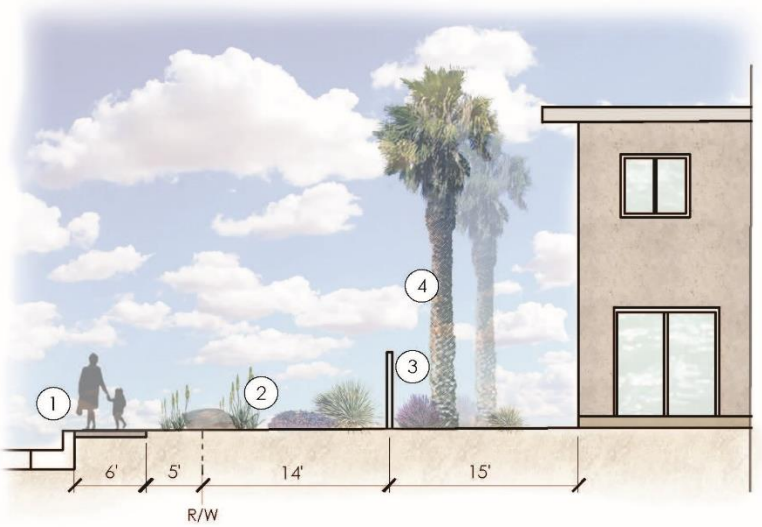
Street 'A' – Industrial Edge Condition



Legend

1. Property line
2. Crushed rock groundcover
3. Acacia salicina
4. Truck loading dock
5. Industrial building
6. 8' Ht. fence

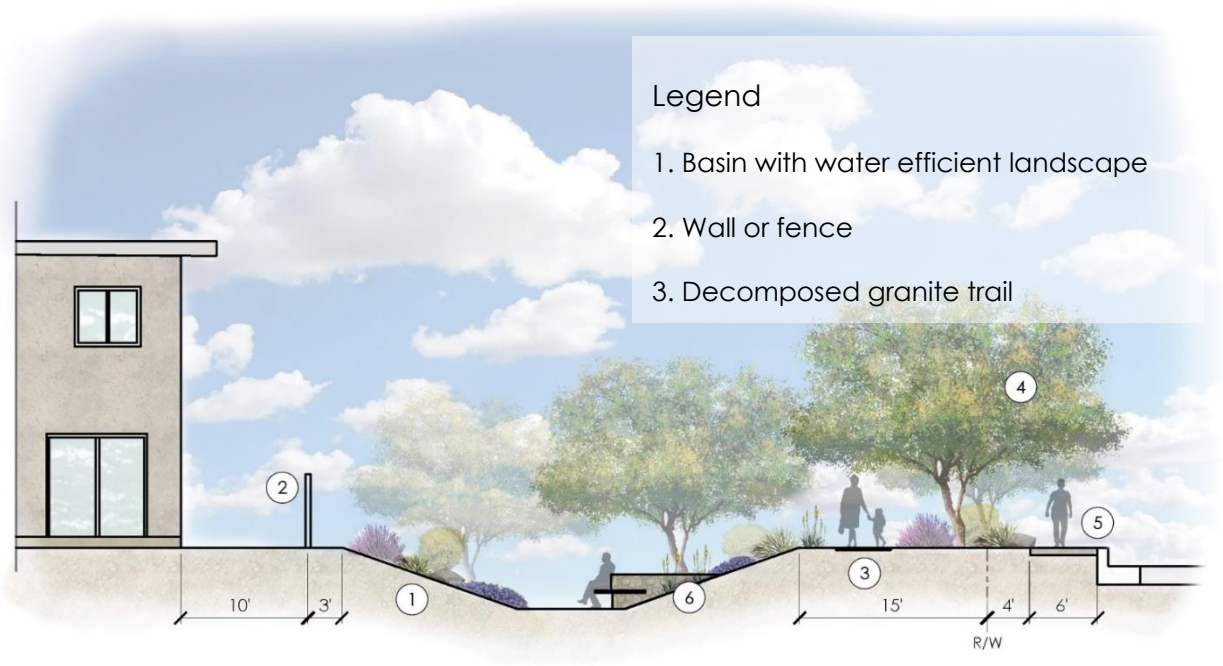
Freeway Edge Condition



Legend

1. 6' Sidewalk
2. Water efficient landscape
3. Wall or fence
4. Washingtonia robusta palm trees

Avenue 42 – Residential Edge Condition



Drive-Through Screening

Creative solutions for screening undesirable views shall include berms, multiple layers of landscaping and architectural screens that complement the building architecture. Architectural planting solutions and modern interpretive wall art may be used for creating interest along perimeter walls.

Detention Basins

Detention basins shall include desert riparian trees, desert cactus and succulents, and select groundcovers combined with rock outcroppings. Gathering areas with gabion structures are encouraged around the basins to activate these open spaces. Natural, undulating landforms are preferred over geometrically graded basins.

4.7 Landscape Sustainability and Energy Efficiency

The plant palette throughout the Specific Pan area shall utilize a low maintenance and low water palette. Turf grasses will only be permitted in “use” areas that include open lawn for play/ recreation and for the infiltration portions of detention basins. Annual plant materials are allowed in accent landscaping areas but shall not be allowed in permanent planting areas of the Specific Plan.

The landscaping and irrigation plans and system shall comply with all City ordinances relating to water efficiency and shall be an automatic system with an irrigation timer and two drip or bubbler heads per tree to produce deep root irrigation. The water use calculations for this system will be prepared and submitted per Indio Water Authority’s irrigation design requirements.

Landscape lighting will include tree and shrub up lights, path lights, and step lights. All lighting will be low voltage and have low maintenance LED fixtures. The selective use of up lights will be limited to high-profile specimen tree and shrubs and will be shielded to reduce glare and hot spots. There shall be zero lumen foot candle for all exterior lighting at any property line of abutting properties and/or public right-of-way. Lighting for landscaping, pathways and stairways, monuments and signs shall be installed as needed for security and safety purposes.

4.8 Temporary Landscape Conditions

All vacant pads and portions of the subject parcel in any Planning Area shall be planted with drought tolerant landscaping and/or decomposed granite if they remain inactive for a period of 6 months following completion of final grading. This shall include all pads or portion of the subject parcel and shall include fencing as appropriate. All landscaping and fencing shall remain in place and shall be regularly irrigated and maintained until the property has received authorization from the City to begin initial construction. The final landscape plan for each parcel or Planning Area shall contain detailed information for the planting, irrigation, and maintenance of the vacant pad areas and/or undeveloped portions of the parcel.

4.9 'THE OASIS OF INDIO' PLANT PALETTE

Trees	Botanical / Common Name
	Acacia aneura / Mulga Tree
	Acacia salicina / Willow Acacia
	Caesalpinia cacalaco 'Smoothie' / Cascalote
	Cercidium X 'Desert Museum' / Desert Museum Palo Verde
	Chilopsis linearis / Desert Willow
	Olea europaea 'Swan Hill' / Fruitless Olive Tree
	Olneya tesota / Desert Ironwood
	Parkinsonia praecox / Sonoran Palo Verde
	Prosopis glandulosa 'Maverick' / Thornless Honey Mesquite
	Tipuana tipu/ Tipu Tree
Palm Trees	**Botanical / Common Name**
	Phoenix roebelenii / Pygmy Date Palm
	Phoenix dactylifera / Date Palm
	Washingtonia robusta / Mexican Fan Palm
	Washingtonia filifera / California Fan Palm
Shrubs	**Botanical / Common Name**
	Abronia vilosa / Desert Sand Verbena
	Bougainvillea x 'Oo La-La'
	Caesalpinia gilliesii / Yellow Bird of Paradise
	Cascabela thevetia / Yellow Oleander
	Callistemon viminalis 'Little John'/ Dwarf Bottlebrush
	Chrysactinia mexicana / Damianita
	Dasylirion wheeleri / Desert Spoon
	Dianella tasmanica / Tasman Flax Lily
	Eremophila glabara / Mingenew Gold
	Eremophila hygrophana / Blue Bells
	Euphorbia milii / Crown of Thorns
	Glandularia pulchella / Moss Verbena
	Hesperaloe spp.
	Ixora coccinea / Maui Yellow
	Lantana c. 'Dallas Red'/ Red Lantana
	Lantana x 'New Gold'
	Leucophyllum frutescens 'Compacta' / Compact Texas Ranger
	Leucophyllum langmaniae 'Rio Bravo' / Texas Ranger
	Leucophyllum laevigatum / Chihuahuan Sage
	Muhlenbergia capillaris 'Regal Mist' / Pink Muhly Grass
	Muhlenbergia lindheimeri / Lindheimer's Muhly
	Olea e. 'Montra'/ Little Ollie Dwarf Olive
	Russelia equisetiformis / Coral Fountain
Accents	**Botanical / Common Name**
	Agave americana / Century Plant
	Agave desmettiana / Smooth Agave
	Agave geminiflora / Twin Flowering Agave
	Agave ocahui / Century Plant Agave victoriae-reginae / Queen Victoria Agave
	Agave weberi/ Weber Agave
	Agave x 'Blue Glow' / Blue Glow Agave
	Echinocactus grusonii / Golden Barrel Cactus
	Euphorbia resinifera / Resin Spurge
	Yucca aloifolia / Spanish Bayonet
	Yucca pendula / Soft Leaf Yucca
	Yucca rostrata / Beaked Yucca
Vine / Espalier	**Botanical / Common Name**
	Bougainvillea X 'Barbara Karst'
	Calliandra haematocephala / Red Powder Puff
Crushed Stone	**Common Name**
	* Baja Cresta Rubble
	* Copper Canyon
	* Mojave Gold
	* Palomino Coral
DG (Decomposed Granite)	**Common Name**
	* Desert Gold
	* Mojave Gold
	* Palomino Coral
* Note: Available through Southwest Boulder Palm Springs, or approved equal	

Chapter 5– Administration and Implementation

The purpose of this section is to provide an outline of the steps necessary to implement The Oasis at Indio Specific Plan for the benefit of the development team, the City and other approving agencies, and interested citizens.

5.1 Administration

The California Government Code (Title 7, Division 1, Chapter 3, Article 8, Sections 65450 et seq.) grants authority to cities to use Specific Plans for purposes of implementing the goals and policies of the City's General Plan.

The Oasis at Indio Specific Plan establishes a set of regulations, standards, guidelines, and processes for the proposed development, and shall constitute the zoning for development within the Specific Plan Area.

5.1.1 Responsibility and Enforcement

The City of Indio Planning and Building and Safety Division, Community Development Director, or his or her designee shall be responsible for administering The Oasis at Indio Specific Plan in accordance with the provisions of this Specific Plan document, all governing and applicable State and federal laws, the City of Indio's General Plan, and the City of Indio's Municipal Code.

The Oasis at Indio Specific Plan serves as the implementation tool for the General Plan land use and zoning for the Specific Plan Area. The Specific Plan addresses permitted uses, development standards, and design guidelines. The City shall enforce the provisions of the Specific Plan in the same manner that the City enforces the provisions of the Municipal Code and Unified Development Code.

5.1.2 Applicability

All development within The Oasis at Indio Specific Plan Area shall comply with the requirements and standards set forth in this Specific Plan. If conflicts exist between the standards contained in this Specific Plan, Unified Development Code, or Municipal Code, the regulations and standards in the Specific Plan shall take precedence.

Any area of site development, administration, review procedures, and regulations not expressly addressed by this Specific Plan document shall be subject to the provisions of the City of Indio Unified Development Code (IUDC) or Municipal Code, using the context and objectives of the Specific Plan as a guide.

5.1.3 Severability

If any portion of this Specific Plan and its regulations are declared to be invalid or in effect in whole or in part by a court of competent jurisdiction, such decision shall not affect the validity of the remaining portions thereof.

5.1.4 Interpretation

Whenever the provisions contained in the Specific Plan conflict with the Municipal or Unified Development Code, the provisions of the Specific Plan shall take precedence. In case of uncertainty or ambiguity to the meaning or intent of any provision concerning the content or application of The Oasis at Indio Specific Plan, the Community Development Director or designee has the authority to interpret the intent of the provision. Such interpretations shall take into account the stated goals and objectives of the Specific Plan. The Community Development Director's decision shall be final.

5.1.5 Initial Entitlements

Initial entitlements required for development in the Specific Plan Area include the following actions to be taken by the City:

- Environmental Impact Report (EIR)
- General Plan Text and Map Amendment – The 2040 General Plan is a long-term comprehensive policy document that contains the primary vision, principles, and policies that define the future land use mixes, intensities, patterns, and forms to be implemented. The General Plan Map Amendment will be considered by the Planning Commission and City Council and adopted by Resolution. A General Plan Map Amendment from Mixed-Use Neighborhood (MUN) and Regional Commercial (RC) to Specific Plan SP is required as part of the General Plan Map Amendment.
- Withdraw 80-acre site from the Gateway Specific Plan.
- Specific Plan – The Oasis at Indio Specific Plan is a regulatory document that establishes the zoning, land use designations, development standards, and design guidelines for the entire Specific Plan Area. The Specific Plan will implement the City's General Plan. The Specific Plan will be considered by the Planning Commission and City Council and adopted by Ordinance. Subsequent tract/parcel maps or site development plans must be in substantial compliance with the adopted Specific Plan. A zone map change from Specific Plan (MU-SP), Mixed-Use Neighborhood (MUN), and Regional Commercial (RC) to Specific Plan SP is required as part of the Specific Plan adoption.
- Subdivision Map – A tentative map or parcel map is a basic tool for the implementation of a specific plan. The tentative map or parcel map will create the individual lots and associated planning areas. A Tentative Parcel Map has been prepared and will be considered by the City concurrently with the review of this Specific Plan.
- Development Agreement

5.1.6 Administrative Adjustments and Specific Plan Amendments

It is anticipated that certain modifications or adjustments to the Specific Plan text, exhibits, and/or project may be necessary during the development of the project. Amendments may be requested at any time pursuant to Section 65453(a) of the Government Code. Depending upon the nature of the request, environmental analysis may be required, pursuant to the CEQA Guidelines.

5.1.6.1 Administrative Adjustments

Administrative Adjustments are minor adjustments or modifications, as requested by an applicant, from the plans and standards of the Specific Plan that are consistent with the vision of The Oasis at Indio Specific Plan, are in substantial conformance with the intent of the Specific Plan provisions, and do not result in additional potentially significant environmental impacts as defined by CEQA. Minor modifications may be warranted to accommodate changes resulting from final design and engineering that cause adjustments in internal driveway alignments, location of utilities or other infrastructure, development of innovative product design, distribution of permitted uses within the Specific Plan, development of builder-level design guidelines, density transfers or other similar modifications deemed to be minor. The following may be considered for Administrative Adjustments:

- Inclusion of land uses not specified in Chapter 3, Development Regulations, but similar in intent and character subject to interpretation by the Community Development Director as specified in Section 5.1.4 Interpretation above.
- Determination of equivalent Development Standards.
- Revisions to exhibits, graphics, and text for purposes of clarification that do not substantially change the intent of The Oasis at Indio Specific Plan.
- Modifications necessary to comply with final Conditions of Approval or mitigation measures when adopted under subsequent actions.
- Modifications to performance standards included in the Specific Plan provided any such modifications provide substantially equivalent protection as the original standard.
- Modification of the net acreage covered by a given Planning Area.
- Minor adjustments of any planning area boundary to implement a development plan (including lot line adjustments).
- A decrease in development intensity/density (non-residential square footage, lodging rooms, and/or residential units).
- Modifications to the conceptual phasing program, provided that public infrastructure improvements and services necessary to serve the development are available or will be provided concurrently with the development.
- Modifications to the conceptual design guidelines contained within this Specific Plan, which are intended to be flexible in their implementation.
- Adjustments to the alignment, location and sizing of utilities and facilities or a change in utility and/or public service provider may be approved by the City's Public Works Department, so long as the adjustments or changes are found to be in compliance with applicable plans and standards of the agency responsible for such utilities and facilities and do not result in significant environmental impacts.

- Modifications to the design of the roadway cross-sections, alignment, width, and location of vehicle ingress and egress, and roadway alignment provided that the streets and drives have adequate capacity to handle the anticipated volumes of traffic and the design changes are supported by the City's Traffic Engineer.
- Any modification deemed by the Community Development Director to be minor modifications that are in keeping with the intent of Oasis at Indio Specific Plan and are in conformance with the City's General Plan.
- Minor adjustments to any of the development standards or regulations such as modification of wall heights for noise attenuation purposes, modification of allowable encroachments into setbacks, etc. that are specifically allowed under the Development Regulations of this Specific Plan.
- Approval of changes in construction materials and methods that are functionally equivalent or superior.
- Modification of any design element in this Specific Plan that improves circulation, reduces grading, improves drainage, improves infrastructure, or provides similar utility and reduces operations and maintenance costs or improves the level of sustainability.
- Determinations regarding issues, conditions, or situations that arise and are not addressed by this Specific Plan.

The Administrative Adjustments listed above are not comprehensive. Any adjustment that is deemed by the Community Development Director to be in substantial conformance with the purpose and intent of the Specific Plan shall be permitted, provided that the adjustment does not result in additional potentially significant environmental impacts as defined by CEQA.

The documentation of substantial conformance may include text and/or maps which describe the nature of all proposed modifications or adjustments to the Specific Plan. This application of substantial conformance with the adopted Specific Plan shall undergo any necessary technical review by City agencies as the Community Development Director or designee deems necessary.

The Community Development Director shall record the determination in writing with findings on which the determination is based. The Administrative Adjustment may be approved, with or without conditions, after making all the following findings:

1. The modifications are consistent with the goals and intent of the Specific Plan;
2. The physical characteristics of the site have been adequately assessed, and proposed building sites are of adequate size and shape to accommodate proposed uses and all other features of development;
3. There is supporting infrastructure, existing or available, consistent with the requirements of the Specific Plan, to accommodate the development without significantly lowering service levels; and
4. The development resulting from the approval of the Administrative Adjustment would not be detrimental to the public health, interest, safety, or general welfare and would not be detrimental or injurious to property or improvements in the vicinity and in the same Land Use District.

Public Notice

No public review or public notice shall be required. The decision by the Community Development Director shall be final unless a call for review is made pursuant to Section 6.03.12 of the Unified Development Code.

5.1.6.2 Specific Plan Amendments

Substantial amendments to the Specific Plan are modifications or amendments that change the intent, provisions, or development standards of The Oasis at Indio Specific Plan. Amendments shall constitute the following:

- Amendments to the Specific Plan that would result in an amendment to the City's adopted General Plan.
- Modifications to the Specific Plan boundaries to include properties not included in the Specific Plan at the time of approval (changes to planning area boundaries within the Specific Plan boundaries are deemed minor as noted above and would not require an amendment).
- Any changes in land use or development intensity that would result in substantial changes or potentially significant impacts not considered by the EIR.
- Any changes in land use development intensity that would increase the maximum development capacity as described in Chapter 2 of the Specific Plan and implemented by the Land Use Equivalency Table (Table 5-2).

Specific Plan Amendments shall be reviewed and processed pursuant to Section 6.05.03 of the Unified Development Code. The Specific Plan may be amended as often as deemed necessary by the Council in compliance with State law (Government Code Section 65453).

5.2 Implementation

Approval of The Oasis at Indio Specific Plan indicates acceptance by the City Council of a general framework for development within The Oasis at Indio boundaries. Part of that framework establishes specific development standards that constitute the zoning regulations for The Oasis at Indio Specific Plan. The implementation process described herein provides the mechanisms for the review and approval of subsequent development projects within The Oasis at Indio.

The intent of Section 5.2 is to streamline subsequent project approvals. Figure 5-1, *Permit Process*, and Table 5-1, *Review Authority* outline the procedures for the processing of implementing projects within the Specific Plan.

5.2.1 Planning Review - Administrative

Administrative planning review applies to the following proposed new or modified uses, activity, and/or structures allowed as a matter of right ("P" Permitted) or through an Administrative Use Permit ("AUP")

per Table 3-1: Land Use Matrix, so long as the use, activity, and/or structure conform to all applicable development regulations and standards in Chapter 3 and meets the intent of the design guidelines in Chapter 4 of the Specific Plan.

Applicability

Administrative Planning review is required for all projects that require a permit for new construction, reconstruction, rehabilitation, alteration, or other improvements to the exterior of a structure or site including:

- Residential development projects and residential mixed-use projects not subject to the Housing Crisis Act/SB 330
- Commercial development projects
- Industrial development projects

Exemptions:

- Additions, construction, reconstruction, alterations, improvements, and landscaping for a project developed in compliance with a previous planning review approval, and
- Replacement of exterior materials, including openings, with the same materials.

Review Authority

The Director shall be the review authority for administrative planning reviews. The Director may, at his/her discretion, refer any administrative application to the Planning Commission for a decision rather than acting on it himself/herself.

Application Review and Approval Process

The Director will review the project against all applicable use, development standards, and design guidelines. If the Director determines that the proposed use or building is allowed as a matter of right by The Oasis at Indio Specific Plan, conforms to all the applicable development and use standards, and meets the intent of the design standards and/or guidelines, the Director shall issue an approval. Staff will draft a Findings and Notice of Decision document containing all relevant findings and conditions of approval.

In order to track implementation of the project, as planning applications for Development Project Review are submitted, a tracking mechanism will be employed, using a form provided in Appendix C of this Specific Plan.

Public Notice

For projects requiring an Administrative Permit, a mailed notice shall be delivered by First Class mail 10 days before the date of action to:

1. The applicant, the owner or owner's duly authorized agent, and any occupant of the subject property;
2. All property owners within a not-to-exceed 500-foot radius of the subject property as shown on the latest available assessment roll.

5.2.1.1 Minor Modifications of Approved Plans

No change in the use or structure for which a permit or other approval has been issued is permitted unless the permit is modified as provided for in this Specific Plan. For the purposes of this Section, the modification of a permit may include modification of a planning review approval.

Applicability

The Director may approve minor changes or modifications to approved plans provided that they meet the following:

1. They have no potential for significant offsite impacts and would not intensify any potentially detrimental effects of the project.
2. They are consistent with the original findings and conditions approved by the hearing body.
3. They do not change the use designated in the original use permit.
4. They are consistent with the development and design standards they were approved under.
5. They do not increase, reduce, or alter the size or shape of the premises beyond the following:
    a. A five percent increase in building height;
    b. A 10 percent increase in floor area or building coverage when calculated on a total, aggregate project basis; or
    c. A 10 percent decrease in common open space.

Public Notice

No public review or public notice shall be required. The decision by the Community Development Director shall be final unless a call for review is made pursuant to Section 6.03.12 of the Unified Development Code.

5.2.1.2 Administrative Variance

Administrative Variances are minor deviations that are small in size from otherwise applicable standards and are unlikely to have any adverse effects on nearby properties or neighborhoods.

Applicability

Variances may be granted to vary or modify dimensional and performance standards, but Variances may not be granted to allow uses or activities that this Specific Plan does not authorize.

Review Authority and Approval Process

The Director may grant an Administrative Variance for adjustments from the development standards in Chapter 3 of the Specific Plan where, in his/her opinion, the intent of the ordinance can be achieved and equal performance obtained by granting an Administrative Variance. The authority to grant such variances shall be limited to requests that do not exceed a 20 percent deviation in the development standards for the following:

a. Lot area
b. Lot width
c. Required yards
d. Parking regulations

e. Encroachments into required yards

Required Findings for Administrative Variances

Administrative Variance shall include data or other evidence showing that the requested Administrative Variance conforms to the required findings set forth below. The Director may approve or approve with conditions an Administrative Variance application if all of the following findings are made.

1. There are exceptional or extraordinary circumstances or conditions applicable to the property involved that do not apply generally to property in the vicinity and identical zone, and that the granting of an Administrative Variance will not constitute a granting of a special privilege inconsistent with the limitations on the property in the vicinity and identical zone;
2. The granting of the application is necessary to prevent a physical hardship which is not of the applicant's own actions or the actions of a predecessor in interest;
3. The granting of the application will not be detrimental or injurious to property or improvements in the vicinity, and will not be detrimental to the public health, safety, general welfare or convenience; and
4. The granting of the Administrative Variance will be consistent with the general purposes and objectives of this Specific Plan and of the General Plan.

Public Notice

No public review or public notice shall be required. The decision by the Community Development Director shall be final unless a call for review is made pursuant to Section 6.03.12 of the Unified Development Code.

5.2.1.3 Administrative Use Permit

Uses specified as administratively permitted uses (AUP) within Chapter 3 "Development Regulations" of this Specific Plan shall be reviewed and approved by the City pursuant to the requirements of the Unified Development Code, Section 6.04.04 (Use Permits).

5.2.1.4 Temporary Use Permit

Uses specified as temporary (TUP) within Chapter 3, "Development Regulations", of this Specific Plan intended to be of a limited duration of time and not permanently alter the character or physical facilities of the site where they occur shall be reviewed and approved by the City pursuant to the requirements of the Unified Development Code, Section 6.04.05 (Temporary Use Permits).

5.2.2 Planning Review – Ministerial

Applicability

Ministerial planning review applies to the following types of proposed uses or buildings that qualify for streamlined ministerial planning review under California Government Code Sections 65650 et seq. ("State Supportive Housing Law"), 65660 et seq. ("State Low Barrier Navigation Centers Law"), and 65913.4 ("State Streamlined Ministerial Approval Process").

- Affordable housing developments (per SB 35).

- Residential developments of two or more units and mixed-use developments in which two-thirds of the project's square footage is used for residential purposes (per Housing Crisis Act/SB 330).
- Transitional or supportive housing (per SB 744/AB 2162).
- Low Barrier Navigation Centers (per SB 48).

Review Authority and Approval Process

The Planning Commission shall have the authority to conduct ministerial planning reviews to make sure that a project complies with all applicable objective plans, regulations, policies, development and design standards. Application review and procedure shall be processed in compliance with Section 6.04.03.E (Permits and Approvals) of the IUDC.

5.2.3 Planning Review – Discretionary

Applicability

Discretionary planning review applies to all projects requiring Planning Commission approval (such as Conditional Use Permits and Variances) and all projects that do not qualify for an administrative or ministerial planning review.

Review Authority and Approval Process

Discretionary Planning Review and procedures shall be processed in compliance with Section 6.04.03.F (Permits and Approvals) of the IUDC.

5.2.3.1 Major Modifications of Approved Plans

No change in the use or structure for which a permit or other approval has been issued is permitted unless the permit is modified as provided for in this Specific Plan. For the purposes of this Section, the modification of a permit may include modification of a planning review approval.

Applicability

The Planning Commission may approve major changes or modifications to approved plans provided that they meet the following. This is an action item only, not subject to public hearing.

1. They have no potential for significant offsite impacts and would not intensify any potentially detrimental effects of the project.
2. They are consistent with the original findings and conditions approved by the hearing body.
3. They do not change the use designated in the original use permit.
4. They are consistent with the development and design standards they were approved under.
5. They do not increase, reduce, or alter the size or shape of the premises beyond the following:
    a. A 10 percent increase in building height;
    b. A 15 percent increase in floor area or building coverage when calculated on a total, aggregate project basis; or
    c. A 15 percent decrease in common open space.

New Application. A request for changes in conditions of approval of a discretionary permit or a change in an approved site plan or building plan beyond those allowed under the thresholds for major modifications above shall be treated as a new application.

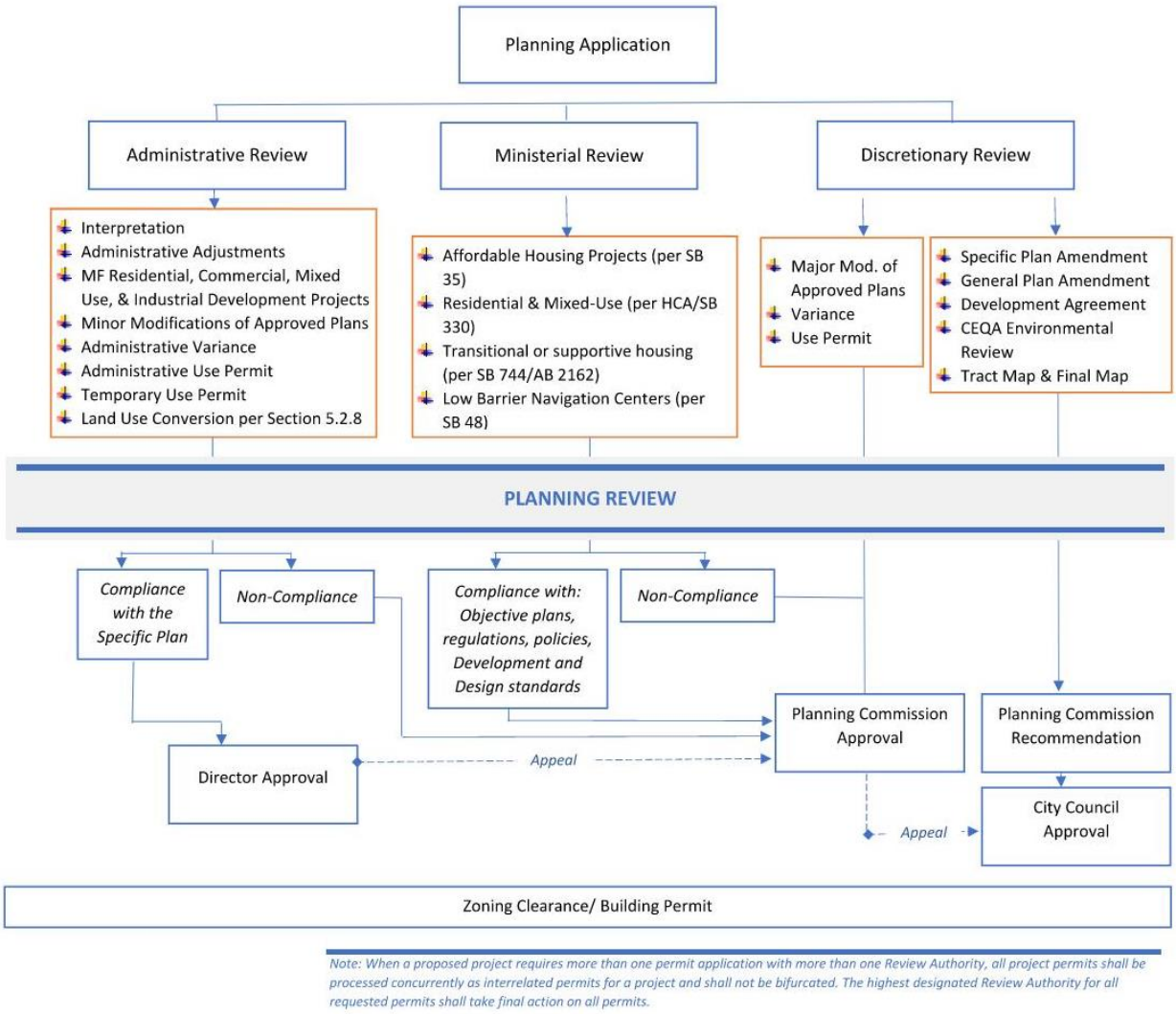
5.2.3.2 Variance

All Variances that do not qualify as an Administrative Variance are subject to discretionary review and requirements pursuant to Section 6.04.06.E (Variances) of the IUDC.

5.2.3.3 Use Permits

Uses specified as conditionally permitted uses (CUP) within Chapter 3 "Development Regulations" of this Specific Plan shall be reviewed and approved by the City pursuant to the requirements of the Unified Development Code, Section 6.04.04 (Use Permits).

Figure 5-1: Permit Process



5.2.4 Pre-Application Review and Conferences

A Pre-Application Review is a review process and opportunity to:

1. Acquaint a potential application with information on relevant policies, code regulations, and other relevant criteria and procedures. This review is intended for large or complex projects and projects that are potentially controversial.
2. Provide a potential applicant with an early opportunity to meet with the City's Pre-Application Committee to identify possible major issues and discuss the City's review processes to help expedite permit processing and approvals.
3. To acquaint City staff with a potential applicant and application.

Pre-application reviews for subsequent development projects requiring an administrative review or discretionary planning review is not required.

5.2.5 Concurrent Processing

Concurrent Processing. When a proposed project requires more than one permit application with more than one Review Authority, all project permits shall be processed concurrently as interrelated permits for a project and shall not be bifurcated. The highest designated Review Authority for all requested permits shall take final action on all permits.

5.2.6 Notice of Decision; Appeals; Expiration, Extensions, and Modifications.

When making a decision to approve, approve with conditions, modify, or deny any discretionary permit, the responsible authority shall issue a Notice of Decision and make findings of fact as required.

5.2.6.1 Notice of Decision

Where Planning Review is conducted ***by the Director***, a Notice of Decision shall be provided pursuant to Section 6.03.10 (Timing and Notice of Decision and Findings Required). The Director shall provide a report at every regularly scheduled Planning Commission meeting of administrative decisions made by the Director or his/her designee.

Where Planning Review is conducted ***by the Planning Commission***, a Notice of Decision of Planning Review shall be provided concurrently with the associated project approval (such as the Conditional Use Permit or Variance). See Section 6.03.10 (Timing and Notice of Decision and Findings Required).

5.2.6.2 Appeals

Planning Review decisions are subject to the appeal provisions of Section 6.03.13 (Appeals).

5.2.6.3 Expiration, Extensions, and Modifications

Planning Review approval is effective and may only be extended or modified as provided for in Chapter 6.03 (Common Procedures).

Table 5-1 Review Authority		
Review Authority	**Request**	**Review Type**
Community Development Director or Designee	Interpretations per Specific Plan Section 5.1.4	Administrative
	Administrative Adjustments per Specific Plan Section 5.1.6.1	
	Land Use Conversions per Specific Plan Section 5.2.7	
	Sign Permits and updated Master Sign Program	
	Zoning Clearance Letter	
	Administrative Planning Review per Specific Plan Section 5.2.1	
	Administrative Use Permit per Specific Plan Section 5.2.1.3	
	Administrative Variance per Specific Plan Section 5.2.1.2	
	Home Occupation Permit	
	Temporary Use Permit	
Planning Commission	Discretionary Planning Review per Specific Plan Section 5.2.3	Discretionary
	Conditional Use Permit per Specific Plan Section 5.2.3.3	
	Variance per Specific Plan Section 5.2.3.2	
	Certification of Public Convenience (ABC license)	
	Tentative Parcel Map	
	Major Modifications to an Approved Permit per Specific Plan Section 5.2.3.1	
	Appeal of Community Development Director's Decision	
	Call for review a decision of the Director pursuant to IUDC Section 6.03.11	
City Council	Specific Plans and Amendments	Discretionary
	Tentative Tract Maps, Final Maps, and Improvements per Indio Municipal Code	

Table 5-1 Review Authority		
Review Authority	**Request**	**Review Type**
preceding Planning Commission recommendation	Development Agreements and Amendments per IUDC Section 6.05.02	
	General Plan Amendment per IUDC Chapter 6.06	
	Appeal of Planning Commission Decision pursuant to IUDC Section 6.03.12	
	Call for review a decision of the Director or Planning Commission pursuant to IUDC Section 6.03.11	

5.2.7 Land Use Conversion

The amount and type of land uses within the Specific Plan Area is programmatic and is intended to be flexible, responding to market demand and opportunities for unique or in-demand land uses. The mix of uses outlined in the Land Use section of this document is based upon anticipated demand for these uses at the time of writing.

Maximum intensities of land uses may be converted at any time by the project developer, based on the conversion factors outlined in Table 5-2, *Land Use Equivalency Conversion*. These conversion factors are based on trip generation, which allows a conversion program while keeping traffic generation stable. Implementation of a land use conversion will be reviewed by the Community Development Director as part of the related application and allowed as part of an administrative Planning review subject to substantial conformance with relevant development standards.

Table 5-2
Land Use Equivalency Conversion

	Land Use (Unit)	Equivalency Ratios to Convert to these Land Use Types				
		MF Residential (DU) [a]	Commercial/ Retail Option A (KSF) [b]	Commercial/ Retail Option B (KSF) [c]	Hotel (Rooms)	Industrial (KSF) [d]
From these Land Use Types:	MF Residential (DU) [a]	--	0.124	0.071	0.844	1.047
	Commercial/Retail Option A (KSF) [b]	8.079	--	--	6.815	8.455
	Commercial/Retail Option B (KSF) [c]	14.019	--	--	11.826	14.672
	Hotel (Rooms)	1.185	0.147	0.085	--	1.241
Land Use (Unit)	**Quantity to Convert From**	**Land Use Equivalence**				
		MF Residential (DU) [a]	**Commercial/ Retail Option A (KSF) [b]**	**Commercial/ Retail Option B (KSF) [c]**	**Hotel (Rooms)**	**Industrial (KSF) [d]**
MF Residential (DU) [a]	100	--	12.378	7.133	84.355	104.658
Commercial/Retail Option A (KSF) [b]	100	807.864	--	--	681.477	845.497
Commercial/Retail Option B (KSF) [c]	100	1401.929	--	--	1182.603	1467.236
Hotel (Rooms)	100	118.546	14.674	8.456	--	124.068

Notes
[a] ITE LU 220: Multifamily Housing Low Rise Not Close to Rail Transit
[b] ITE LU 822: Strip Retail Plaza less than 40K
[c] ITE LU 821: Shopping Plaza 40k to 150k with Supermarket
[d] ITE LU 155: High Cube Fulfillment Center Warehouse Sort

5.2.8 Conceptual Phasing

A diverse typology of residential and non-residential land uses is anticipated to achieve the Specific Plan vision. The extension of "A" Street (east-west internal roadway) connects the different land uses and the Specific Plan Area as a whole with the existing surrounding neighborhood and the regional circulation network. Buildout of the Specific Plan will take place in multiple phases based on market demand. The only factor limiting the phases is that infrastructure is available for the construction of that phase.

The Oasis at Indio will be phased to:

- Provide for the orderly build-out of the community based upon market demand.
- Provide adequate infrastructure to service the development.
- Phases may occur concurrently so long as the associated infrastructure is provided.

5.2.9 Maintenance and Ownership

The public and private improvements constructed within The Oasis at Indio shall be maintained through a combination of public and private entities as described in Table 5-3, Financing, Ownership, and Maintenance Responsibilities.

Maintenance will be funded by a combination of private and public funds. For common areas located within a planning area, the CC&Rs shall govern the maintenance responsibilities. The maintenance association(s) shall be responsible for private driveways, parking, open space areas, signage, landscaping, irrigation, common areas, on-site sewers, storm drains, BMPs, and other responsibilities as necessary. For areas outside the planning area boundaries, municipal maintenance districts may fund the maintenance of these areas.

Table 5-3
Financing, Ownership, and Maintenance

Facility	Financing	Ownership	Maintenance
Public Street right-of-way (ROW)			
• Curb to Curb Improvements	Developer	City	City
• Storm Water Drainage/Water Quality Facilities	Developer	City	City
• Water Infrastructure	Developer	IWA	IWA
• Sanitary Sewer Infrastructure	Developer	VSD	VSD
• Dry Utilities ○ Electric ○ Natural Gas	Developer	IID SCG	IID SCG
• Landscaping including medians & parkways	Developer	City	City
• Sidewalks	Developer	City	City
• Streetlights	Developer	City	City
• Traffic control signal	Developer	City	City
• Traffic control signs	Developer	City	City
Private Internal Streets and Driveways			
• Curb to Curb Improvements	Developer	Private	Private/POA
• Storm Water Drainage/Water Quality Facilities	Developer	Private	Private/POA
• Water Infrastructure	Developer	Private	Private/POA
• Sanitary Sewer Infrastructure	Developer	Private	Private/POA
• Dry Utilities	Developer	Private	Private/POA
• Landscaping including parkways	Developer	Private	Private/POA
• Sidewalks	Developer	Private	Private/POA
• Traffic control signs	Developer	Private	Private/POA
• Streetlights	Developer	Private	Private/POA
Internal Planning Areas			
• Common Open Space	Developer	Private	Private/POA

Table 5-3 Financing, Ownership, and Maintenance			
Facility	**Financing**	**Ownership**	**Maintenance**
• Common landscape areas	Developer	Private	Private/POA
• Fences & walls	Developer	Private	Private/POA
• Drive aisles and parking	Developer	Private	Private/POA
• Storm Water Drainage/Water Quality Facilities	Developer	Private	Private/POA
• Utility Infrastructure	Developer	Private	Private/POA

5.2.10 Development Agreement

The property owner and the City of Indio may enter into a development agreement on a single planning area or collection of planning areas therein. The development agreement may include, but not be limited to, methods for financing, acquisition, and construction of infrastructure, and the provision of economic opportunities for the City of Indio and employment and/or housing opportunities for community residents.

5.2.11 Financing for Operations and Maintenance

A facilities financing program is critical to this Specific Plan's implementation. The financing program ensures timely financing of public streets, utilities, and other necessary capital improvements.

Various options are available for the financing of capital improvements associated with Specific Plan development and for funding the future operations and maintenance costs of public improvements and facilities. The exact financing method will be determined in conjunction with the phasing of the improvements and facilities. Some of the possible funding mechanisms are listed in Table 5-4.

Table 5-4 Financing Mechanisms		
Type	**Description**	**Use**
Assessment Districts "Assessment" includes, but is not limited to, "Special Assessment," "Benefit Assessment," and "Maintenance Assessment."	An Assessment District is a financing mechanism under the California Streets and Highway Code, Divisions 10 and 12, enabling the City, or special districts organized for the purpose of aiding in the development or improvement to, or within the district, to designate specific areas as an assessment district with the approval of a majority of the landowners based on financial obligations, and allows these	Construct, and sometimes operate and maintain, public capital improvements, such as streets, sidewalks, curbs and gutters, water, sewer, gas, electric, lighting, drainage, and flood control, as well as landscaping and parking facilities.

Table 5-4 Financing Mechanisms		
Type	**Description**	**Use**
	Districts to issue bonds and collect special assessments to finance the improvements constructed or acquired by the District. Assessment District help each property owner pay a fair share of the costs of such improvements over a period of years at reasonable interest rates and ensures that the cost will be spread to all properties that receive direct and special benefit by the improvements constructed. A lien is placed against each property within the district, which is amortized over the life of the assessment, and is collected with regular property taxes.	
Landscape and Lighting Districts	The Landscape and Lighting District provides and ensures the continued maintenance, servicing, administration and operation of various landscaped and lighting improvements and associated appurtenances located within the public right-of-way and dedicated landscape easements in various tracts throughout each district. Funding is determined annually, based upon the landscape, maintenance and appurtenant facilities associated with the district, and costs associated with their maintenance. Costs are apportioned to the parcels within each district based on an equity-based formula. Annual assessments are established pursuant to the Landscape and Lighting Act of 1972, Part 2 of Division 15 of	Maintain certain improvements such as perimeter landscape, medians and center islands, planting materials, irrigation systems, drainage systems, detention basins, open space areas, public pedestrian paths, and entry monuments.

Table 5-4 Financing Mechanisms		
Type	**Description**	**Use**
	the California Streets and Highways Code.	
Property and Business Improvement District	A Property and Business improvement District is a form of a Benefit Assessment District. It is a geographically defined business area in which private property owners' group to gain legal standing and generate revenue to improve the services and facilities of the area.	Physical improvements and programs, including street furnishings, signs, lighting, street and sidewalk cleaning, retail retention and recruitment, and marketing for businesses.
Cost Reimbursement District	A Cost Reimbursement District is a form of a Benefit Assessment District that allows a developer to recoup costs of initial infrastructure with capacity to serve areas beyond the boundaries of the development. It requires the initial installation of the improvement by a developer who then receives cost reimbursement from future developers as they utilize the improvements.	Construct major infrastructure improvements.
Mello-Roos District/Community Facility Districts	The Mello-Roos Community Facilities Act of 1982 (Government Code §53321) is strictly a funding mechanism that enables the County, special districts, and school districts to establish Community Facility Districts to levy special taxes to fund facilities and services within the district.	Develop schools, transportation facilities, libraries, recreation, and infrastructure. Maintenance of public facilities and services, such as parks, open space, storm drain, fire and police.
Special District/Community Services District	A special district is a separate entity that provides facilities and services in a defined area (Government Code §16271). Special Districts may serve a single function (e.g., vector control) or multiple functions (e.g., County Service Area), in	Construct facilities and provide public services. Commonly used for parks and recreation, water, sewer, fire protection.

Table 5-4 Financing Mechanisms		
Type	**Description**	**Use**
	which case they are often referred to as Community Services Districts (Government Code §61000, et seq). An Enterprise Special District charges fees for customer services, while a Non-Enterprise Special District does not charge user fees. A Non-Enterprise Special District provides services that benefit the entire community, not just specific individuals. An Independent Special District elects a Board of Directors, either by registered voters, or by landowners. A Dependent Special District is governed by an existing legislative body, such as the County Board of Supervisors.	
Developer-Paid Impact Fees	Impact fees are direct charges to developers that are collected primarily upon approval of a building permit, certificate of occupancy, or final inspection by the County as a condition of development project approval. The purpose of the fee must directly relate to the need created by the development. The amount must be proportional to the cost of the improvement to mitigate the impact.	Construct transportation, infrastructure, parks and recreation facilities.
Conventional Subdivision Financing	This method is to finance with a lender the construction of necessary public facilities and infrastructure to serve the subdivision along with the development of residential and/or commercial uses in the subdivision.	Any infrastructure or public facilities necessary to support the development of the subdivision land uses, including roads, parks, water and storm water facilities.

Table 5-4 Financing Mechanisms		
Type	**Description**	**Use**
Land Reservation, Offers of Dedication, and/or Easements	Land reservation, dedications and easements can be granted to the primary or subsequent developer of the Specific Plan by a public agency or entity to construct improvements for that agency or entity to manage, or the developer may give such grants to a public agency/entity to construct and manage facilities.	Construct and maintain utilities, rights-of-way, open space, parks and recreation, and other infrastructure.
Public Utility District	A Public Utility District is a form of a Special District that may be created pursuant to the State Public Utility District Act (Public Utilities Code §15501-18055). A Public Utility District can provide one or more services to a given geographical area. It is managed by an elected Board of Directors residing within the District.	Construct and maintain utilities, including energy.
Reimbursement Agreement	A Developer Reimbursement Agreement can take the form of a written contract between the primary developer in the Specific Plan Area and subsequent developers or property owners. The primary developer constructs infrastructure improvements for an overall area, and then is reimbursed or partially reimbursed the costs by subsequent developers or property owners benefitting from the improvement.	Construct streets and other transportation or parking facilities; water, sewer, storm water infrastructure.
Property Owners Association	A Property Owners' Association (POA) can include all types of residential units and sometimes businesses and commercial properties. POAs often have a Board of Directors elected by	Maintain landscaping, open space and other areas, as well as recreation facilities, owned in common by the POA property owners.

Table 5-4 Financing Mechanisms		
Type	**Description**	**Use**
	the property owners in the given area managed by the POA. Each property owner pays dues to the POA, which can then be used by the POA to manage landscaping, recreation, and other commonly owned facilities.	
Transportation Management Association	A Transportation Management Association (TDA) is a non-profit, member-controlled organization that provides transportation services in a geographic area. It is often a public-private partnership that provides Transportation Demand Management (TDM) measures that reduce vehicle miles travelled, encourage carpooling, encourage alternative transportation, and can also provide parking management. The Association is often more cost effective than a single business in offering TDM measures. A TDA can be established for the Specific Plan Area, with residents, employers, employees and customers in the area pooling resources to reduce transportation infrastructure needs and parking demand, thereby reducing transportation and parking infrastructure costs.	A TDA can be established for the Specific Plan Area, with residents, employers, employees, and customers in the area pooling resources to reduce transportation infrastructure needs and parking demand, thereby reducing infrastructure costs and the amount of land reserved for parking spaces.

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NOTICE OF PUBLIC HEARING

RIVERSIDE COUNTY AIRPORT LAND USE COMMISSION

www.rcaluc.org

A PUBLIC HEARING has been scheduled before the Riverside County Airport Land Use Commission (ALUC) to consider the applications described below.

Any person may submit written comments to the ALUC before the hearing or may appear and be heard in support of or opposition to the project at the time of hearing. **Information on how to participate in the hearing will be available on the ALUC website at www.rcaluc.org.** The ALUC holds hearings for local discretionary permits within the Airport Influence Area, reviewing for aeronautical safety, noise and obstructions. ALUC reviews a proposed plan or project solely to determine whether it is consistent with the applicable Airport Land Use Compatibility Plan. For more information please contact **ALUC Planner Paul Rull at (951) 955-6893.**

The City of Indio Planning Department should be contacted on non-ALUC issues. For more information please contact City of Indio Planner Kevin Snyder at (760) 541-4255.

The proposed project application may be viewed by a prescheduled appointment and on the ALUC website www.rcaluc.org. Written comments may be submitted at the Riverside County Administrative Center, 4080 Lemon Street, 14th Floor, Riverside, California 92501, Monday through Friday from 8:00 a.m. to 3:30 p.m., or by e-mail to prull@rivco.org. Individuals with disabilities requiring reasonable modifications or accommodations, please contact Barbara Santos at (951) 955-5132.

PLACE OF HEARING: **Riverside County Administration Center**
4080 Lemon Street, 1st Floor Board Chambers
Riverside California

DATE OF HEARING: **February 8, 2024**

TIME OF HEARING: **9:30 A.M.**

CASE DESCRIPTION:

ZAP1093BD23 – B.H. Indio, LLC (Representative: MIG, Inc.) – City of Indio Case Nos. GP-23-0001 (General Plan Amendment), SP-0001 (Specific Plan), ZMA-23-0001 (Zoning Map Amendment), TPM-23-0001 (Tentative Parcel Map). A proposal to establish the Oasis at Indio Specific Plan on approximately 186 acres which includes 66 acres of Mixed-Use in Planning Area 1; 5 acres of Mixed-Use in Planning Area 2, 10 acres of Mixed-Use in Planning Area 3, and 100 acres of Industrial in Planning Area 4, located southerly of Avenue 42, westerly of Monroe Street, and northerly of Interstate 10. The applicant also proposes amending the site's General Plan land use designation from Mixed Use Neighborhood and Regional Commercial to Specific Plan, and also change the site's zoning from Specific Plan, Mixed Use Neighborhood, and Regional Commercial to Specific Plan. The applicant also proposes to divide the site into 4 parcels (one for each Planning Area) (Airport Compatibility Zones C, D, E of the Bermuda Dunes Airport Influence Area)

RIVERSIDE COUNTY
AIRPORT LAND USE COMMISSION

APPLICATION FOR MAJOR LAND USE ACTION REVIEW

ALUC STAFF ONLY

ALUC Case Number: ZAP1093BD23 Date Submitted: 12/27/23

AIA: Bermuda Dunes Zone: C1,D,E Public Hearing ☑ Staff Review ☐

Applicant

Applicant Full Name: B.H. Indio Land LLC, David Um

Applicant Address: 11111 Santa Monica Blvd., Suite 600, Los Angeles, California 90025

Phone: 310-820-8888 **Email:** David.Um@bhproperties.com

Representative/ Property Owner Contact Information

Representative: MIG, Inc., Pam Steele **Email:** pams@migcom.com

Phone: 951-733-5240

Address: 1650 Spruce Street, Ste 106, Riverside, CA 92507

Property Owner: B.H. Indio Land LLC, David Um **Email:** David.Um@bhproperties.com

11111 Santa Monica Blvd., Suite 600 Phone: 310-820-8888

Address: Los Angeles, California 90025

Local Jurisdiction Agency

Agency Name: City of Indio Phone: 760-541-4255

Staff Contact: Kevin Snyder, Community Development Director **Email:** ksnyder@indio.org

Address: 100 Civic Center Dr., Indio, CA 92201 : :

Local Agency Case No.: PLAN-DA-23-0001 DEV AGMT; PLAN-ZMA-23-0001 ZONING MAP AMENDMENT; PLAN-TPM-23-0001 TENTATIVE PARCEL MAP; PLAN-GP-23-000, GENERAL PLAN AMENDMENT; PLAN-SP-23-0001 SPECIFIC PLAN

Project Location

Street Address: S/W corner of Ave 42 and Monroe Street Gross Parcel Size.: 180.29

Assessor's Parcel No.: 610-020-001, -010, -012, -013, -021, -034, -036.

Solar

Is the project proposing solar Panels? Yes ☐ No ☑ If yes, please provide solar glare study. (only if in Zone C or higher)

Data

Site Elevation:(above mean sea level)	5 - 25 feet above mean sea level (AMSL)
Height of Building or structures:	Please see submitted project description
What type of drainage basins are being proposed and the square footage:	Conceptual at this time - this is a Specific Plan

Notice

A. NOTICE: Failure of an applicant to submit complete or adequate information pursuant to Sections 65940 to 65948 inclusive of the California Government Code, MAY constitute grounds for disapproval of actions, regulations, or permits.

B. REVIEW TIME: Estimated time for "staff level review" is approximately 30 days from date of submittal. Estimated time for "commission level review" is approximately 45 days from date of a complete application submittal to the next available commission hearing meeting.

C. SUBMISSION PACKAGE:

Please submit all application items DIGITALLY via USB or CD:

- Completed ALUC Application Form
- Plans Package: site plans, floor plans, building elevations, grading plans, subdivision maps
- Exhibits of change of zone, general plan amendment, specific plan amendment
- Project description of existing and proposed use

Additionally, please provide:

- ALUC fee payment (Checks made out to Riverside County ALUC)
- Gummed address labels of all surrounding property owners within a 300-foot radius of project site. (Only required if the project is scheduled for a public hearing).

Riverside County Airport Land Use Commission, County Administrative Center, 4080 Lemon Street, 14th Floor, Riverside, CA 92501, Phone: 951-955-5132 Fax: 951-955-5177 Website: www.rcaluc.org

RIVERSIDE COUNTY
AIRPORT LAND USE COMMISSION

STAFF REPORT

AGENDA ITEM:	3.2
HEARING DATE:	February 8, 2024
CASE NUMBER:	ZAP1592MA23 – Riverside CSG 3, LLC (Representative: Dimension Renewable Energy)
APPROVING JURISDICTION:	March Joint Powers Authority
JURISDICTION CASE NO:	CUP23-03
LAND USE PLAN:	2014 March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan
Airport Influence Area:	March Air Reserve Base
Land Use Policy:	Zone B2
Noise Levels:	Between 70-75 CNEL contour
MAJOR ISSUES:	**None**

RECOMMENDATION: Staff recommends that the Commission find the proposed Conditional Use Permit CONSISTENT with the 2014 March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan, subject to the conditions included herein.

PROJECT DESCRIPTION: A proposal to construct a solar panel system totaling 498,155 square feet on an existing industrial building on 26.91 acres.

PROJECT LOCATION: The site is located at located at 22000 Opportunity Way, approximately 1,804 feet westerly of the northerly end of Runway 14-32 at March Air Reserve Base.

BACKGROUND:

Non-Residential Land Use Intensity: Pursuant to the Airport Land Use Compatibility Plan for the March Air Reserve Base/Inland Port Airport, the site is located within Compatibility Zone B2, which limits average intensity to 100 people per acre and 250 people per single acre. The proposed rooftop solar panels will not generate any occupancy.

March Air Reserve Base/United States Air Force Input: Given that the project site is located in Zone B2 westerly of the northerly runway at March Air Reserve Base, the March Air Reserve Base staff was notified of the proposal to add rooftop solar panels and sent a solar glare hazard analysis study for their review. On January 17, 2024, the Air Force provided comments concurring with the analysis and conclusions of the glare study, with the added note that their general concerns

regarding cumulative impacts of solar projects are being addressed in the ongoing March Compatibility Use Study update.

Prohibited and Discouraged Uses: The applicant does not propose any uses prohibited or discouraged in Compatibility Zone B2.

Flight Hazard Issues: Structure height, electrical interference, and reflectivity/glare are among the issues that solar panels in the airport influence area must address. The project's 498,155 square foot photovoltaic (PV) panel structures would be located on the rooftop of the apartment buildings within Compatibility Zone B2.

Glint and Glare/Reflectivity

Based on the Federal Aviation Administration's Interim Policy for Review of Solar Energy System Projects on Federally Obligated Airports, no glare potential or low potential for temporary after-image ("green" level) are acceptable levels of glare on final approach (within 2 miles from end of runway) for solar facilities located on airport property. However, potential for temporary after-image" ("yellow" level) and potential for permanent eye damage ("red" level) are not acceptable levels of glare on final approach. No glare is permitted at air traffic control towers.

The project proposes 498,155 square feet of solar panels on the existing building rooftop with a fixed tilt of 10 degrees with no rotation, and an orientation of 238 degrees. The applicant has submitted a glare analysis utilizing the web-based Forge Solar, a copy of which is attached hereto. The analysis was based on a 2 mile straight in approach (as per FAA Interim Policy standards) to runways 14 and 32, and also based on the traffic patterns as identified by March Air Reserve Base staff (Runway 12/30 General Aviation, Runway 14/32 General Aviation, Runway 14/32 C-17/KC-135, Runway 14/32 Overhead). The analysis utilized a glide slope approach of 3.0 degrees. No glare would affect the Air Traffic Control Tower.

The analysis concluded that some glare would occur within the Air Force traffic pattern. Evaluation of the Air Force traffic patterns indicates that the panels would result in a low potential for temporary after-image ("green" level glare) or no glare. All times are in standard time.

Runway 12/30 General Aviation traffic pattern (totaling 3,369 minutes of 'green' level glare):

- Runway 12 General, totaling 1,452 minutes of "green" level glare, lasting up to 10 minutes a day, from November to January, from 3:00 p.m. to 4:00 p.m.
- Runway 30 General, totaling 1, 917 minutes of "green" level glare, lasting up to 40 minutes a day, from March to April and September to October, from 5:00 p.m. to 6:00 p.m.

Runway 14/32 General Aviation traffic pattern (totaling 1,651 minutes of 'green' level glare):

- Runway 32 Initial, totaling 1,651 minutes of "green" level glare, lasting up to 25 minutes a day, between March to April and September to October, from 7:30 a.m. to 8:30 a.m.

Runway 14/32 C-17, KC-135 Aviation traffic pattern (totaling 1,684 minutes of 'green' level glare):

- Runway 32 C-17, totaling 1,684 minutes of "green" level glare, lasting up to 25 minutes a day, from February to April and September to October, from 7:00 a.m. to 8:30 a.m.

Runway 14/32 Overhead Aviation traffic pattern (totaling 2,066 minutes of 'green' level glare):

- Runway 14 overhead, totaling 2,066 minutes of “green” level glare, lasting up to 30 minutes a day, throughout the year, from 7:00 a.m. to 2:00 pm.

The total of 8,770 minutes of “green” level glare represents less than 3 percent of total day light time.

Electrical and Communication Interference

The applicant has indicated that they do not plan to utilize equipment that would interfere with aircraft communications. The PV panels themselves present little risk of interfering with radar transmission due to their low profiles. In addition, solar panels do not emit electromagnetic waves over distances that could interfere with radar signal transmissions, and any electrical facilities that do carry concentrated current will be buried beneath the ground and away from any signal transmission. There are no radar transmission or receiving facilities within the site.

Noise: The March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan depicts the site below 70-75 CNEL range from aircraft noise. The proposed solar panels are not noise sensitive.

Part 77: The elevation of Runway 14-32 at its northerly terminus is 1,535 feet above mean sea level (AMSL). At a distance of approximately 1,084 feet from the project to the nearest point on the runway, Federal Aviation Administration (FAA) review would be required for any structures with top of roof exceeding 1,553 feet AMSL. The site’s finished floor elevation is 1,556 feet AMSL and building height is 35 feet, resulting in a top point elevation of 1,591 feet AMSL. Therefore, review by the FAA Obstruction Evaluation Service was required. However, the proposed solar panels will not significantly increase the height of the existing buildings, no mitigation measures are necessary.

Open Area: None of the Compatibility Zones for the March Air Reserve Base/Inland Port ALUCP require open area specifically.

CONDITIONS:

1. Any new outdoor lighting that is installed shall be hooded or shielded so as to prevent either the spillage of lumens or reflection into the sky. Outdoor lighting shall be downward facing.

2. The following uses/activities are not included in the proposed project and shall be prohibited at this site:

   (a) Any use which would direct a steady light or flashing light of red, white, green, or amber colors associated with airport operations toward an aircraft engaged in an initial straight or circling climb following takeoff or toward an aircraft engaged in a straight or circling final approach toward a landing at an airport, other than a DoD or FAA-approved navigational signal light or visual approach slope indicator.

   (b) Any use which would cause sunlight to be reflected towards an aircraft engaged in an initial straight or circling climb following takeoff or towards an aircraft engaged in a straight or circling final approach towards a landing at an airport.

   (c) Any use which would generate smoke or water vapor or which would attract large

concentrations of birds, or which may otherwise affect safe air navigation within the area. (Such uses include landscaping utilizing water features, aquaculture, production of cereal grains, sunflower, and row crops, composting operations, wastewater management facilities, artificial marshes, trash transfer stations that are open on one or more sides, recycling centers containing putrescible wastes, construction and demolition debris facilities, fly ash disposal, and incinerators.)

(d) Any use which would generate electrical interference that may be detrimental to the operation of aircraft and/or aircraft instrumentation.

(e) Children's schools, day care centers, libraries, hospitals, skilled nursing and care facilities, congregate care facilities, places of assembly (including but not limited to places of worship and theaters)

(f) Highly noise-sensitive outdoor nonresidential uses. Examples of noise-sensitive outdoor nonresidential uses that are prohibited include, but are not limited to, major spectator-oriented sports stadiums, amphitheaters, concert halls and drive-in theaters.

(g) Other Hazards to Flight

3. Prior to issuance of building permits, the landowner shall convey an avigation easement to the March Inland Port Airport Authority or its successor in interest, or provide evidence that such easement has been previously conveyed. The Airport Authority may waive this requirement in the event that the Authority determines that pre-existing avigation easements dedicated to the United States of America are sufficient to address its needs. Contact the March Joint Powers Authority at (951) 656-7000 for additional information.

4. Any proposed stormwater basins or facilities shall be designed and maintained to provide for a maximum 48-hour detention period following the design storm, and remain totally dry between rainfalls. Vegetation in and around the stormwater basins that would provide food or cover for birds would be incompatible with airport operations and shall not be utilized in project landscaping. Trees shall be spaced so as to prevent large expanses of contiguous canopy, when mature. Landscaping in and around the stormwater basin(s) shall not include trees or shrubs that produce seeds, fruits, or berries.

   Landscaping in the stormwater basin, if not rip-rap, should be in accordance with the guidance provided in ALUC "LANDSCAPING NEAR AIRPORTS" brochure, and the "AIRPORTS, WILDLIFE AND STORMWATER MANAGEMENT" brochure available at RCALUC.ORG which list acceptable plants from Riverside County Landscaping Guide or other alternative landscaping as may be recommended by a qualified wildlife hazard biologist.

   A notice sign, in a form similar to that attached hereto, shall be permanently affixed to the stormwater basin with the following language: "There is an airport nearby. This stormwater basin is designed to hold stormwater for only 48 hours and not attract birds. Proper maintenance is necessary to avoid bird strikes". The sign will also include the name, telephone number or other contact information of the person or entity responsible to monitor the stormwater basin

5. March Air Reserve Base must be notified of any land use having an electromagnetic radiation component to assess whether a potential conflict with Air Base radio communications could result. Sources of electromagnetic radiation include, but are not limited to, radio wave transmission in conjunction with remote equipment inclusive of irrigation controllers, access gates, etc.

6. All solar arrays installed on the project site shall consist of a 498,155 square foot rooftop solar panel system on an existing industrial building, a fixed tilt of 10 degrees and orientation of 238 degrees. Solar panels shall be limited to a total of 498,155 square feet, and the locations and coordinates shall be as specified in the glare study. Any deviation from these specifications (other than reduction in square footage of panels), including change in tilt or orientation, shall require a new solar glare analysis to ensure that the amended project does not result in any glare impacting the air traffic control tower or creation of any "yellow" or "red" level glare in the flight paths, and shall require review by the Airport Land Use Commission.

7. In the event that any glint, glare, or flash affecting the safety of air navigation occurs as a result of project operation, upon notification to the airport operator of an event, the airport operator shall notify the project operator in writing. Within 30 days of written notice, the project operator shall be required to promptly take all measures necessary to eliminate such glint, glare, or flash. An "event" includes any situation that results in an accident, incident, "near-miss," or specific safety complaint regarding an in-flight experience to the airport operator or to federal, state, or county authorities responsible for the safety of air navigation. The project operator shall work with the airport operator to prevent recurrence of the incidence. Suggested measures may include, but are not limited to, changing the orientation and/or tilt of the source, covering the source at the time of day when events of glare occur, or wholly removing the source to diminish or eliminate the source of the glint, glare, or flash. For each such event made known to the project operator, the necessary remediation shall only be considered to have been fulfilled when the airport operator states in writing that the situation has been remediated to the airport operator's satisfaction.

8. In the event that any electrical interference affecting the safety of air navigation occurs as a result of project operation, upon notification to the airport operator of an event, the airport operator shall notify the project operator in writing. Within 30 days of written notice, the project operator shall be required to promptly take all measures necessary to eliminate such interference. An "event" includes any situation that results in an accident, incident, "near-miss," report by airport personnel, or specific safety complaint to the airport operator or to federal, state, or county authorities responsible for the safety of air navigation. The project operator shall work with the airport operator to prevent recurrence of the event. For each such event made known to the project operator, the necessary remediation shall only be considered to have been fulfilled when the airport operator states in writing that the situation has been remediated to the airport operator's satisfaction.

9. This project has been evaluated as consisting of a 498,155 square foot rooftop solar panel system on an existing industrial building. Any increase in building area, change in use to any higher intensity use, change in building location, or modification of the tentative parcel map lot lines and areas will require an amended review to evaluate consistency with the ALUCP compatibility criteria**,** at the discretion of the ALUC Director.

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NOTICE

THERE IS AN AIRPORT NEARBY.

THIS STORM WATER BASIN IS DESIGNED TO HOLD STORM WATER FOR ONLY 48 HOURS AND NOT TO ATTRACT BIRDS

PROPER MAINTENANCE IS NECESSARY TO AVOID BIRD STRIKES

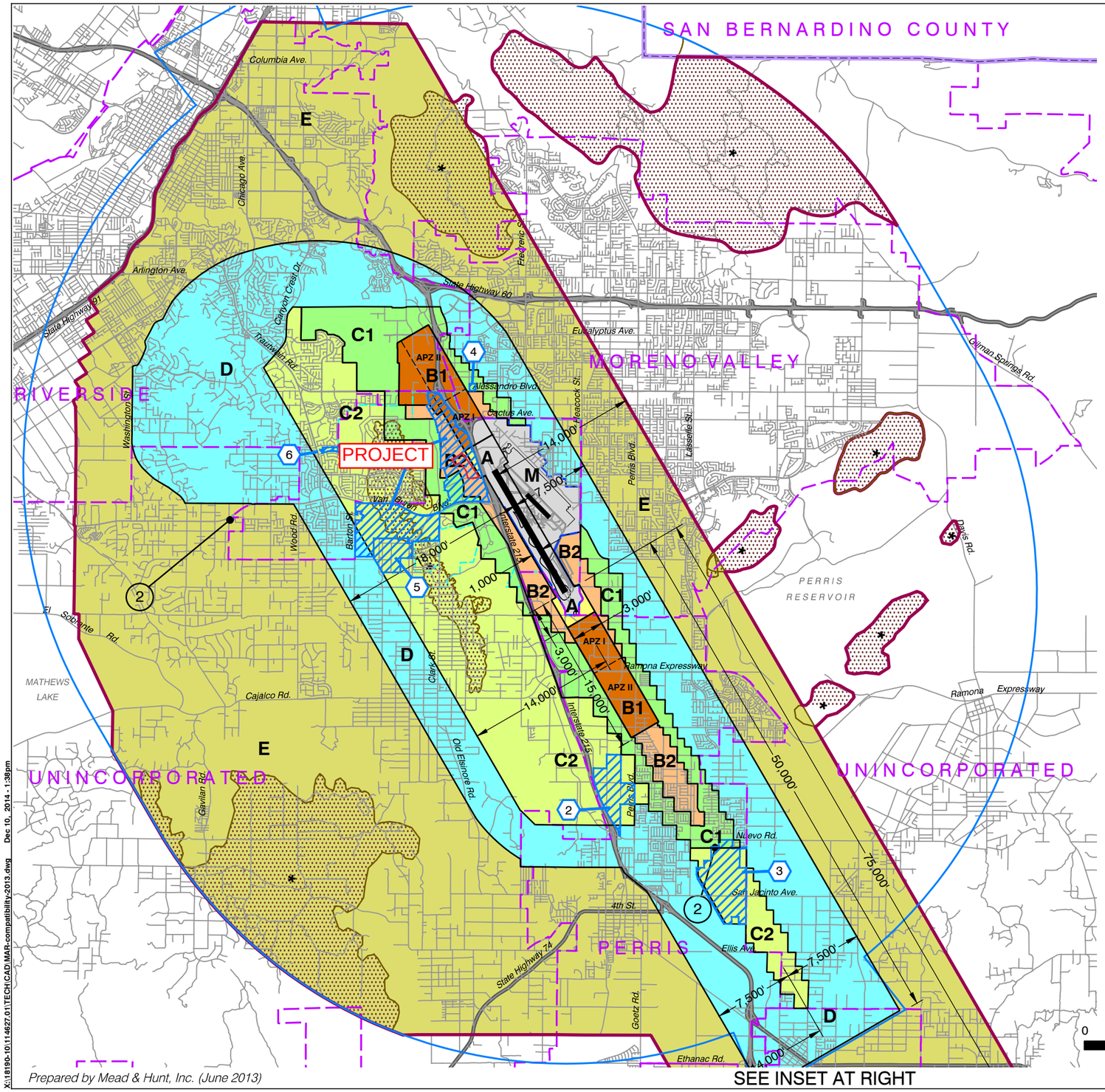
RIVERSIDE COUNTY
ALUC
AIRPORT LAND USE COMMISSION

IF THIS BASIN IS OVERGROWN, PLEASE CONTACT:

Name: _____ **Phone:** _____

NOTICE OF AIRPORT IN VICINITY

This property is presently located in the vicinity of an airport, within what is known as an airport influence area. For that reason, the property may be subject to some of the annoyances or inconveniences associated with proximity to airport operations (for example: noise, vibration, or odors). Individual sensitivities to those annoyances [can vary from person to person. You may wish to consider what airport annoyances], if any, are associated with the property before you complete your purchase and determine whether they are acceptable to you. Business & Professions Code Section 11010 (b)(13)(A)



LEGEND

Compatibility Zones

- Airport Influence Area Boundary
- Zone A
- Zone B1
- Zone B2
- Zone C1
- Zone C2
- Zone D
- Zone E
- Zone M
- High Terrain Zone
- FAR Part 77 Military Outer Horizontal Surface Limits
- FAR Part 77 Notification Area

Boundary Lines

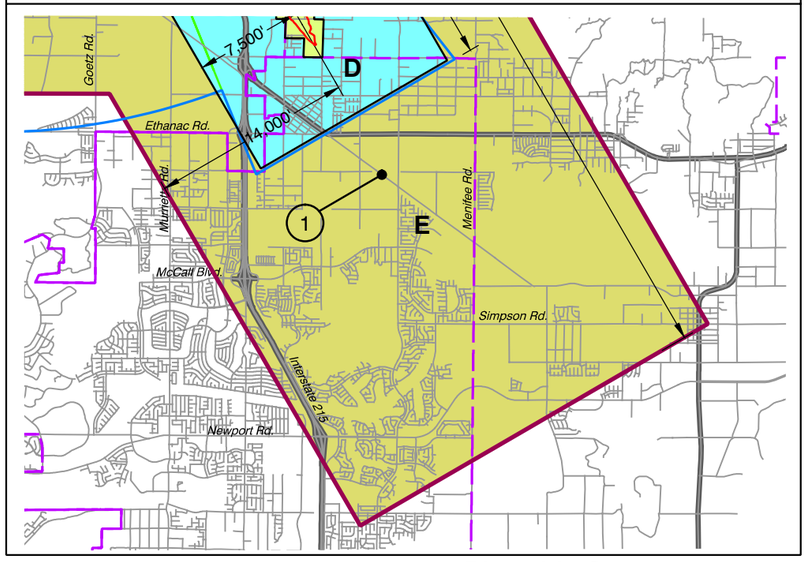
- March Air Reserve Base / Air Force Property
- March Joint Powers Authority Property Line
- County Boundary
- City Limits
- Site-Specific Exceptions (existing local agency commitments to development projects)

1. March JPA: March Business Center/Meridian
2. Perris: Harvest Landing
3. Perris: Park West
4. Moreno Valley: Affordable Housing
5. March JPA: Ben Clark Training Center
6. Riverside: Ridge Crest Subdivision

(1) Point at which aircraft on Runway 32 ILS approach descend below 3,000 feet above runway end. Airport Elevation is 1,535 feet MSL.

(2) Point at which departing aircraft typically reach 3,000 feet above runway end.

INSET



Note:
All dimensions are measured from runway ends and centerlines.

Riverside County Airport Land Use Commission

March Air Reserve Base / Inland Port Airport Land Use Compatibility Plan

(Adopted November 13, 2014)

Map MA-1

Compatibility Map

March Air Reserve Base / Inland Port Airport

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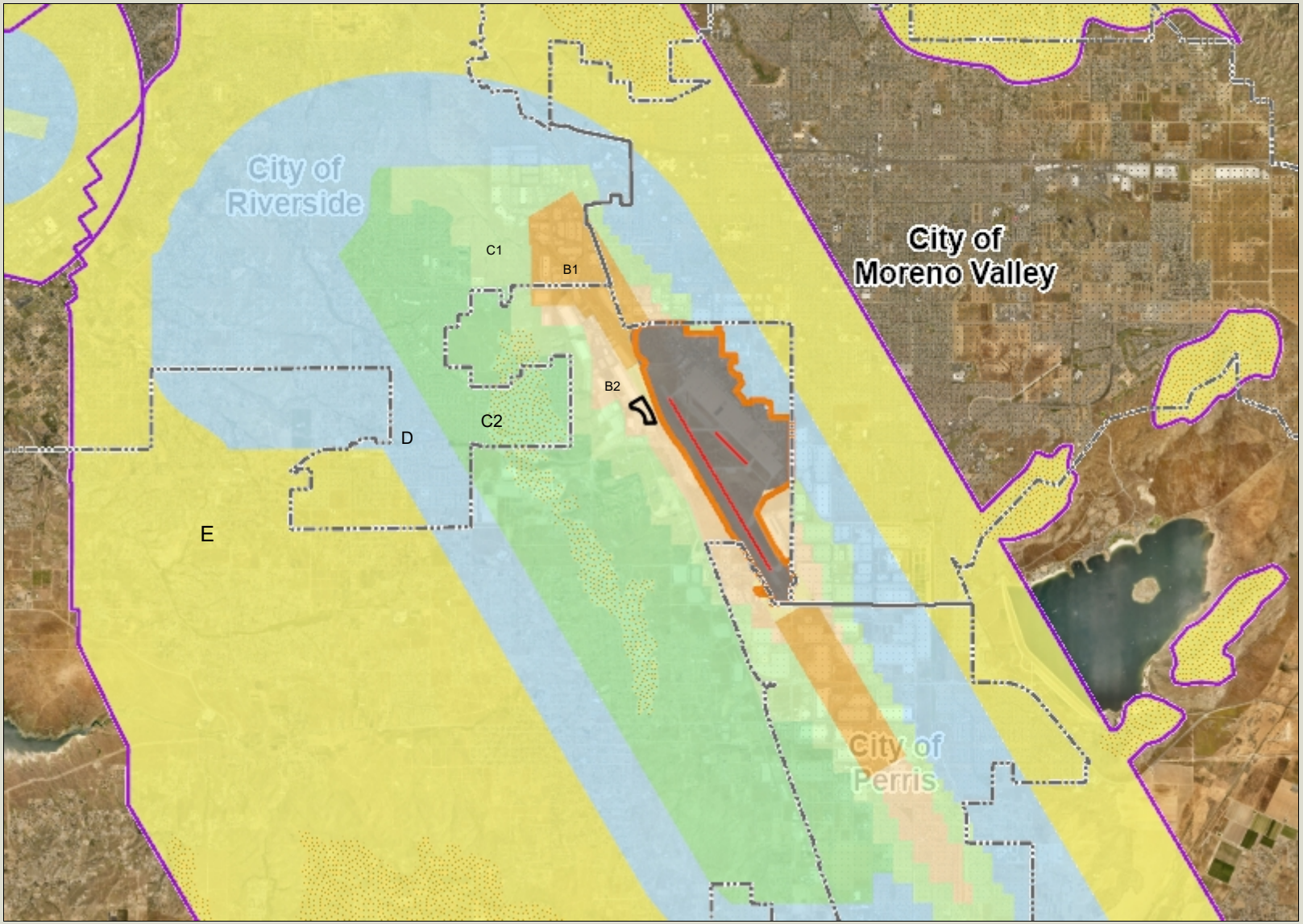
Map My County Map



Legend

- County Boundary
- City Boundaries
- Runways
- Airports
- Airport Influence Areas
- Airport Compatibility Zones
  - A
  - A-EXC1
  - B1
  - B1-APZ I
  - B1-APZ I-EXC1
  - B1-APZ II
  - B1-APZ II-EXC1
  - B1-EXC1
  - B2
  - B2-EXC1
  - C
  - C1
  - C1-EXC1
  - C1-EXC3
  - C1-EXC4
  - C1-HIGHT
  - C2
  - C2-EXC1
  - C2-EXC2
  - C2-EXC3
  - C2-EXC5

0 12,314 24,629 Feet

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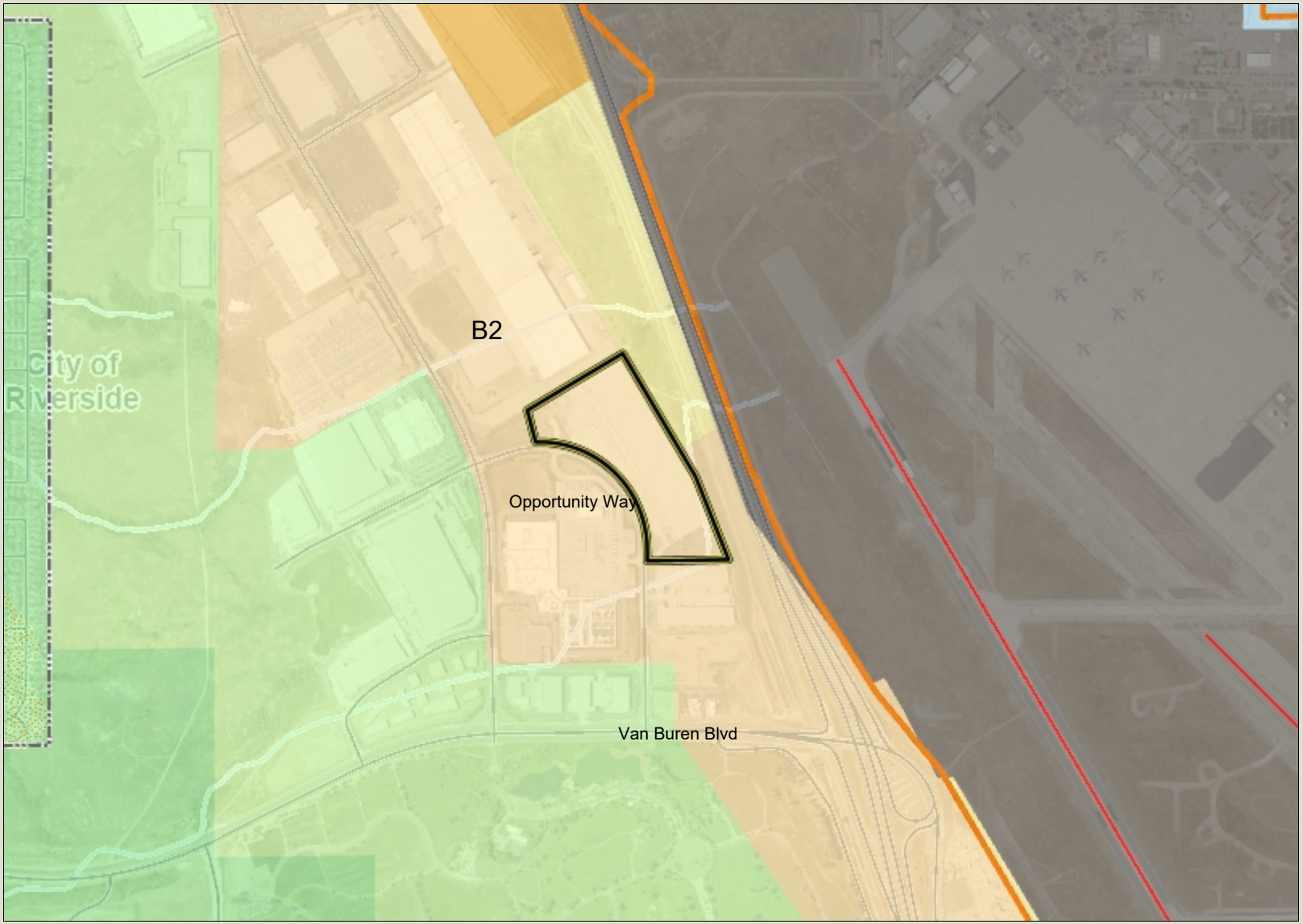
Notes

Map My County Map



Legend

- County Boundary
- City Boundaries
- Runways
- Airports
- Airport Influence Areas
- Airport Compatibility Zones
  - A
  - A-EXC1
  - B1
  - B1-APZ I
  - B1-APZ I-EXC1
  - B1-APZ II
  - B1-APZ II-EXC1
  - B1-EXC1
  - B2
  - B2-EXC1
  - C
  - C1
  - C1-EXC1
  - C1-EXC3
  - C1-EXC4
  - C1-HIGHT
  - C2
  - C2-EXC1
  - C2-EXC2
  - C2-EXC3
  - C2-EXC5

0 1,539 3,079 Feet

IMPORTANT Maps and data are to be used for reference purposes only. Map features are approximate, and are not necessarily accurate to surveying or engineering standards. The County of Riverside makes no warranty or guarantee as to the content (the source is often third party), accuracy, timeliness, or completeness of any of the data provided, and assumes no legal responsibility for the information contained on this map. Any use of this product with respect to accuracy and precision shall be the sole responsibility of the user.

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Notes

Map My County Map

Legend

- County Boundary
- City Boundaries
- County Centerline Names
- County Centerlines
- Blueline Streams
- City Areas
- World Street Map

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0 1,539 3,079 Feet

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0 3,079 6,157 Feet

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0 1,539 3,079 Feet

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Notes

Map My County Map

Legend

- County Boundary
- City Boundaries
- Blueline Streams
- City Areas
- World Street Map

0 6,157 12,314 Feet

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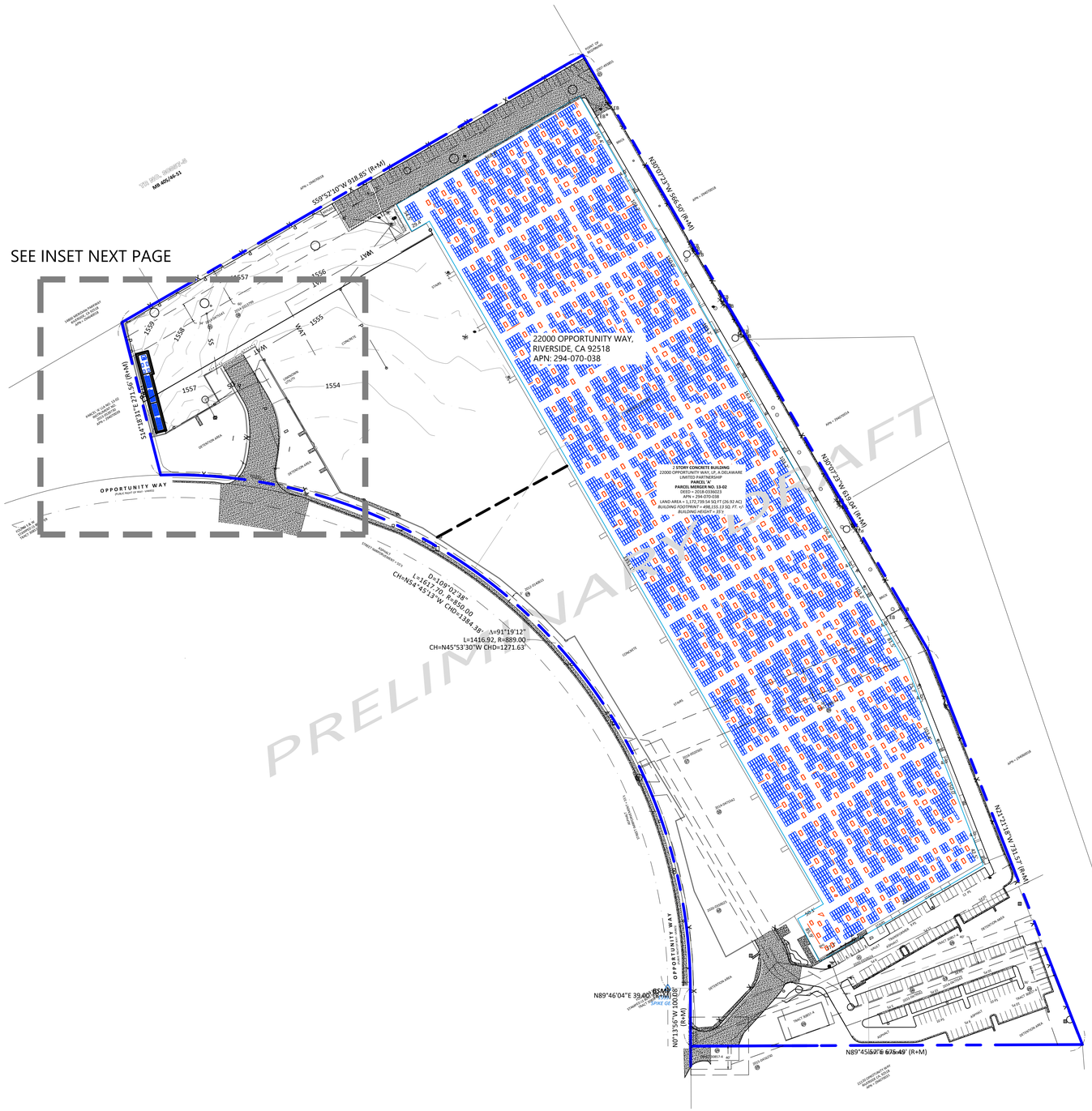
Notes



GENERAL NOTES

1. PROPERTY KNOWN AS PARCEL No. APN: 294-070-038 LOCATED AT 22000 OPPORTUNITY WAY, RIVERSIDE (RIVERSIDE COUNTY), CA 92518 (N 33° 53' 40.14", W 117° 16' 33.19"), CONTAINING APPROXIMATELY 27± ACRES
2. TOPOGRAPHIC INFORMATION SHOWN HEREON BASED UPON CALIFORNIA STATE PLANE COORDINATES ESTABLISHED FROM NC-VRS NETWORK. ELEVATIONS SHOWN HEREON BASED UPON NAVD88 DATUM DEPICTED ON A PLAN ENTITLED "2021 ALTA/NSPS LAND TITLE SURVEY", PREPARED BY BOUNDARY SURVEYING & MAPPING LLC, DATED 5/19/2023, UNSIGNED.
3. FOR INFORMATION ON EASEMENTS IDENTIFIED, REFER TO ALTA SURVEY.
4. ROOFTOP PV AND GROUND LEVEL BATTERY ENERGY STORAGE SYSTEM SHOWN HEREON ARE REPRESENTATIVE. FINAL LAYOUT MAY DIFFER SUBJECT TO BUILDING CODE REVIEW AND APPROVAL.
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TYPICAL BATTERY STORAGE CONTAINER ILLUSTRATION

0 100 200 400 Feet
1"=100'

PARTNER Engineering and Science, Inc.
2154 Torrance Blvd
Suite #200
Torrance, CA 90501
Tel.: 800.419.4923
Fax: 310.870.8521
http://www.partneresi.com
Engineer of Record

Seal

DIMENSION RENEWABLE ENERGY

Location Plan

No.	Date	Description	Drawn	Check	Check
1	DD/MM/YYYY	DESCRIPTION	CL	JCS	PR

Revisions

DC SIZE :	3.45 MW
AC SIZE:	2.76 MW
DC/AC RATIO:	1.25
TILT/AZIMUTH:	10°/238°
PITCH/GCR:	TBD
MODULES:	6,280
INVERTERS:	23
BESS:	11 MWh

Specifications

SOLAR PV ROOF TOP ARRAY AND BATTERY ENERGY STORAGE SYSTEM FOR:

RIVERSIDE CSG 3 LLC
22000 OPPORTUNITY WAY
RIVERSIDE, CA 92518

Project

Project	Design	Date
232418	JCS	8/16/2023
Drawn	Approved	Scale
CL	JCS	1"=100'

SITE PLAN

Drawing Title

01-SITE

Drawing No.

Plotted:10/18/23 – 11:06 PM, By: ckozerowski
File: C:\Users\ckozerowski\opsdata\local\temp\AcPublish_16668\232418_C_Riverside_3_SITE.dwg, ----> 01-Site
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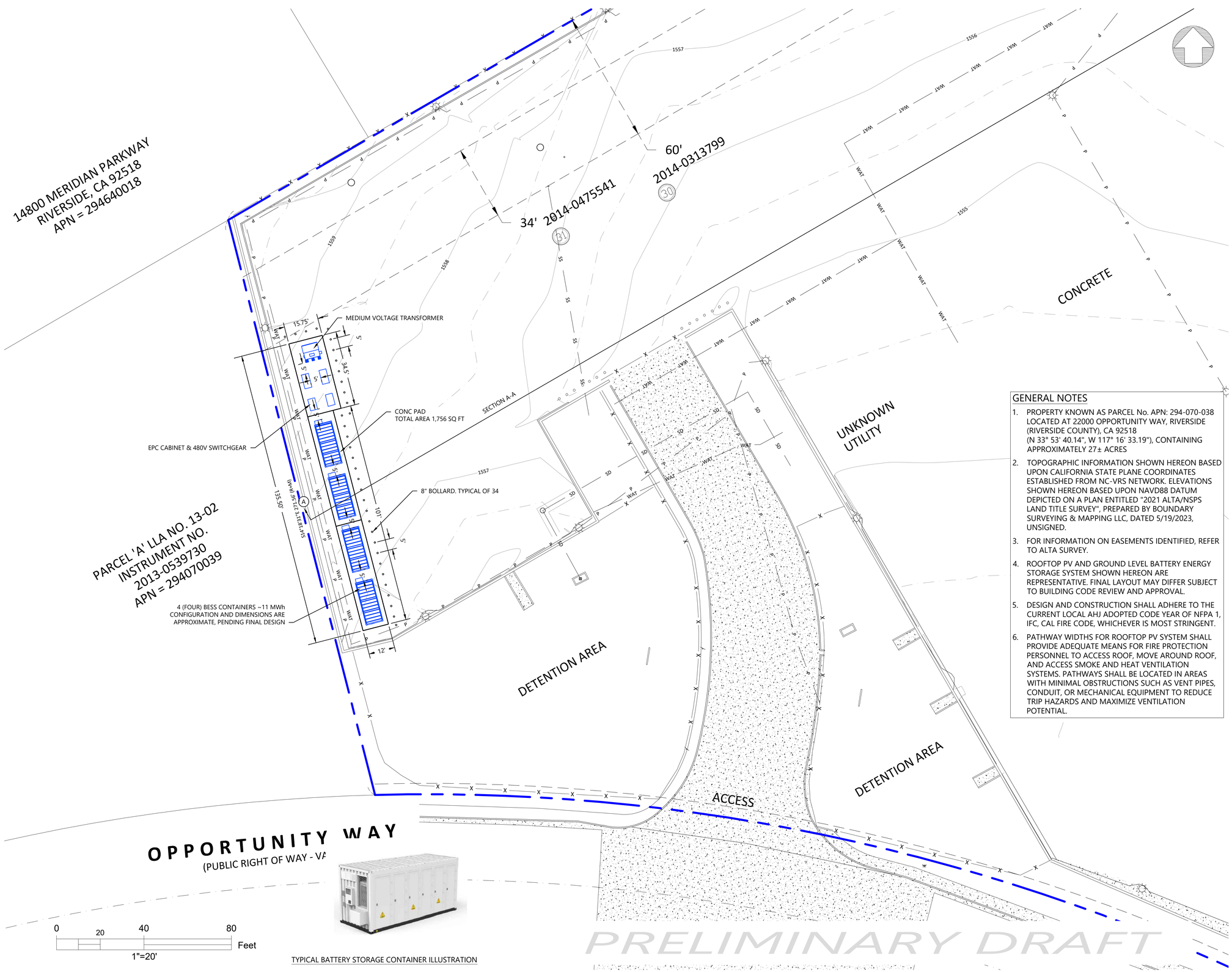

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DIMENSION RENEWABLE ENERGY

Location Plan

No.	Date	Description	Drawn	Check	Check
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RIVERSIDE, CA 92518

Project

Project	Design	Date
232418	JCS	8/16/2023
Drawn	Approved	Scale
CL	JCS	1"=20'

SITE PLAN-INSET
Drawing Title

02-SITE
Drawing No.

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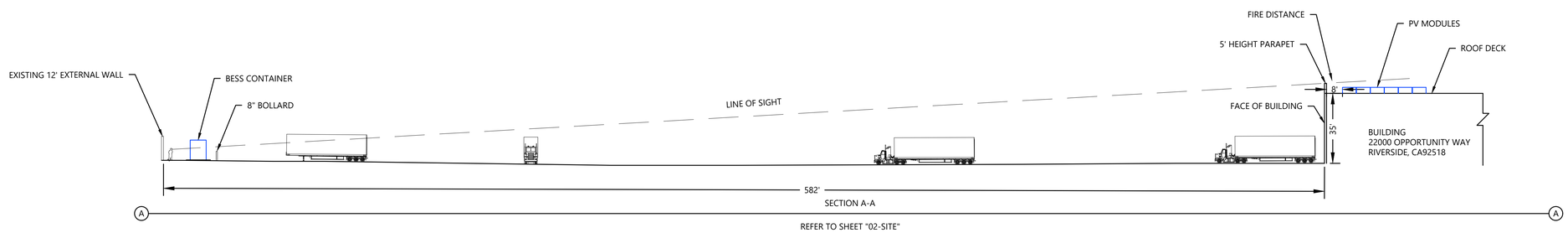

SECTION A-A

REFER TO SHEET "02-SITE"

PRELIMINARY DRAFT

0 30 60 120 Feet

1"=30'

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DIMENSION RENEWABLE ENERGY

DIMENSION RENEWABLE ENERGY

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Project	Design	Date
232418	JCS	8/16/2023
Drawn	Approved	Scale
CL	JCS	1"=30'

SECTION VIEW

Drawing Title

03-SITE

Drawing No.

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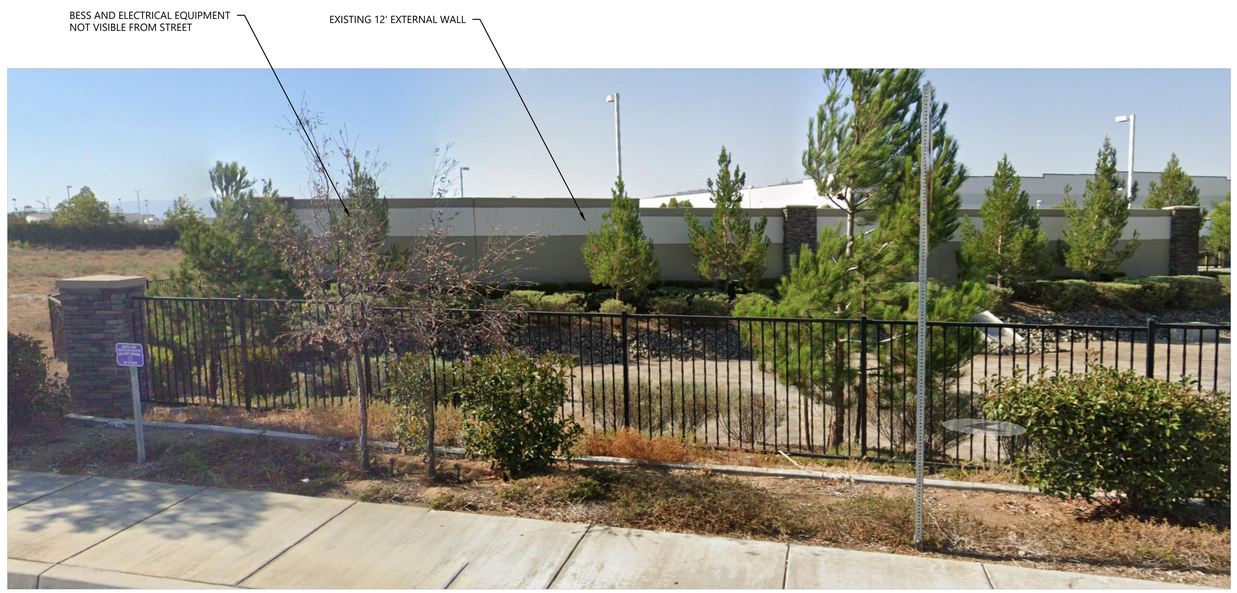

PRELIMINARY DRAFT

0 10 20 40 Feet
1"=10'

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RIVERSIDE, CA 92518

Project

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232418	JCS	8/16/2023
Drawn	Approved	Scale
CL	JCS	1"=10'

ELEVATION

Drawing Title

04-SITE

Drawing No.

Plotted:10/18/23 - 11:06 PM, By: cluzarowski
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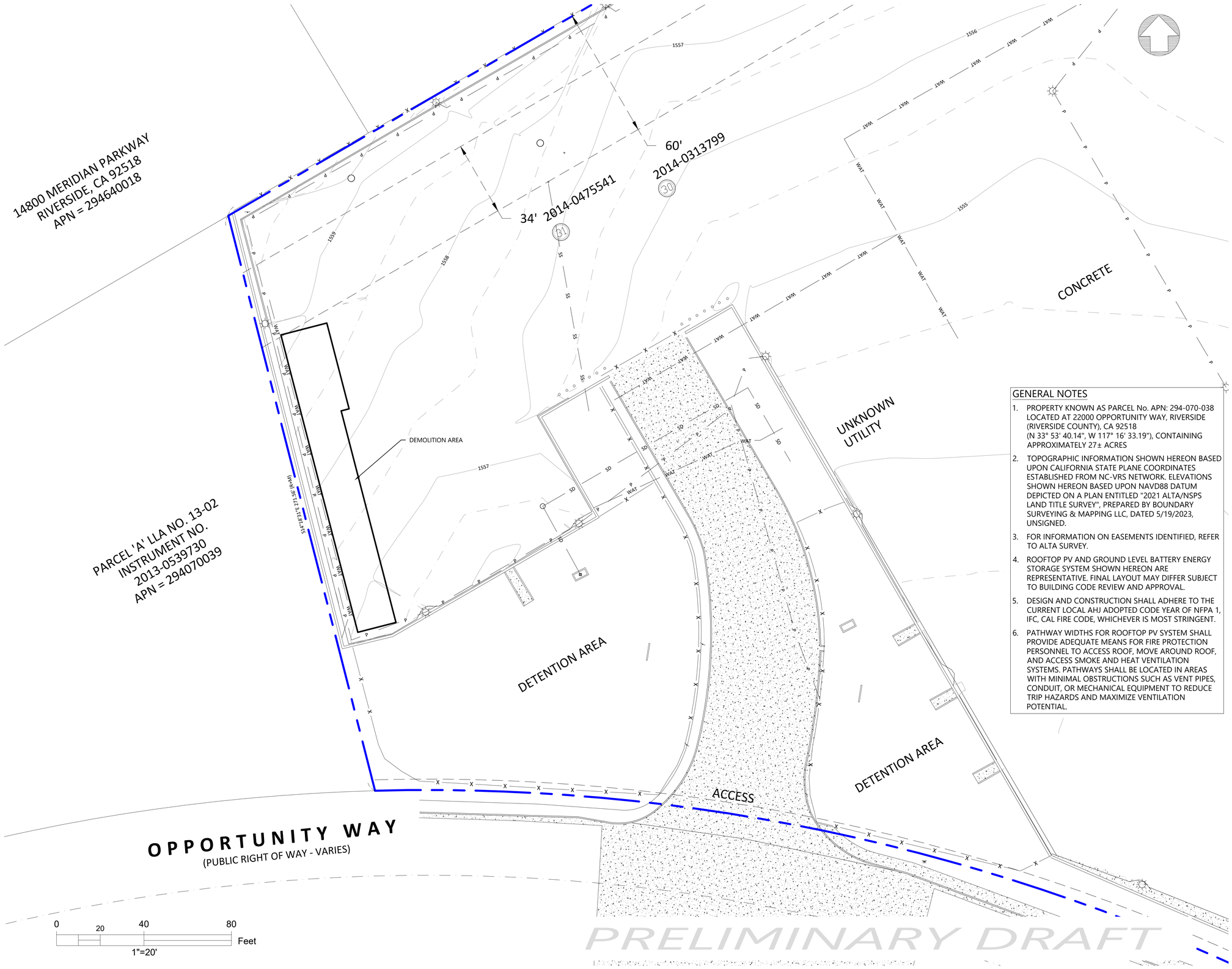

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DIMENSION RENEWABLE ENERGY

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Project

Project	Design	Date
232418	JCS	8/16/2023
Drawn	Approved	Scale
CL	JCS	1"=20'

DEMO PLAN

Drawing Title

05-SITE

Drawing No.

Plotted:10/18/23 - 11:06 PM, By: cluzprowski
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Technical Memorandum

To: Paul Irby, Project Development Manager, Dimension Renewable Energy
From: Nick Johnson, Johnson Aviation, Inc.
Date: October 25, 2023
Subject: Solar Glare Analysis – Solar Photovoltaic (PV) Installation, Riverside CSG 3 Project

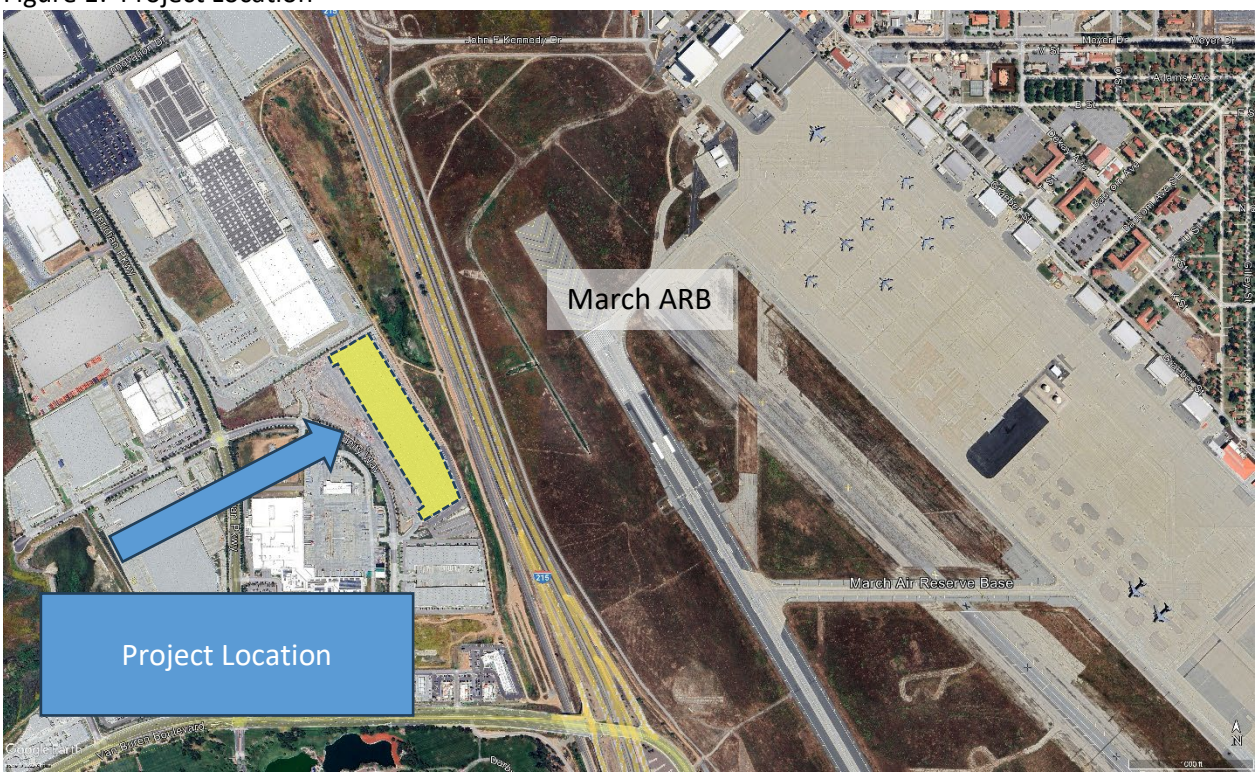
A. Findings

The findings of this Solar Glare Analysis are that the Proposed Project **PASSES** the FAA's recommended solar glare tests and **PASSES** these same tests for four critical flight paths required by the March Air Reserve Base. This Technical Memorandum outlines the study of the potential solar PV Project and substantiates these findings.

B. Introduction

The purpose of this technical memorandum is to assess the airport compatibility of a potential solar PV installation on the roof of the Riverside CSG 3 Project ("Project"). The Project site is located at 22000 Opportunity Way, Riverside, CA. This site is east of Opportunity Way and west of I-215 Freeway, within the March Air Reserve Base (March ARB) airport influence area (AIA) (See Figure 1). The analysis and findings of this memo are intended for review and acceptance by the City of Riverside ("City"), Riverside County Airport Land Use Commission (ALUC) and the March ARB staff.

Figure 1: Project Location



C. Project Description

Riverside CSG 3, LLC, the Project Owner, is planning to develop a roof-top solar PV installation on the existing industrial building on the Project site. The existing building footprint covers approximately

498,155 square feet. The potential solar PV installation is studied to cover the majority of the building roof area (See Figure 2).

Figure 2: Riverside CSG 3 Project–Solar PV Installation

D. Standard of Review

This study and its findings have been prepared consistent with the Federal Aviation Administration's (FAA) policy to eliminate hazards to air navigation that may arise as the result of implementing solar energy facilities on and near airports. The FAA adopted an Interim Policy[1] for Solar PV project review in 2013 and

[1] Background on the Interim Policy, FAA Review of Solar Energy System Projects on Federally Obligated Airports, Federal Register, October 23, 2013.

completed a final solar glare policy in 2021[2]. In both the 2013 Interim Policy and the 2021 Final Policy, off-airport solar arrays are not required to meet the FAA's policies, but they are strongly encouraged to consider the requirements of this policy guidance when siting systems. Neither the FAA nor the US Department of Defense (DOD) control land use off airport or base property. Both entities encourage collaboration with local land use jurisdictions like the ALUC and the City.

As solar PV was being implemented on and near airports in recent years, the FAA was finding that solar PV reflections of sunlight glint and glare were affecting pilots' vision, particularly on final approach to runways, and was also impacting some air traffic controllers' vision when controlling aircraft near airports. In conjunction with Sandia National Laboratories, the FAA developed a computer analysis tool to measure the potential impact of reflected glint and glare from Solar PV installations. The analysis of this impact is achieved through use of the Solar Glare Hazard Assessment Tool (SGHAT). At the time of the Interim Policy, Sandia Labs produced the tool to meet the analysis requirement. Since then, Sandia Labs has licensed the tool to other providers to sell commercially for solar glare analysis. ForgeSolar licensed the SGHAT tool and incorporated its software into their Glare Analysis tool. Johnson Aviation, Inc. uses the ForgeSolar Glare Analysis tool under subscription license from Sims Industries d/b/a ForgeSolar.

The following is the Standard for Measuring Ocular Impact from the FAA's 2013 Interim Policy:

> Standard for Measuring Ocular Impact
> FAA adopts the Solar Glare Hazard Analysis Plot as the standard for measuring the ocular impact of any proposed solar energy system on a federally obligated airport. To obtain FAA approval to revise an airport layout plan to depict a solar installation and/or a "no objection" to a Notice of Proposed Construction Form 7460-1, the airport sponsor will be required to demonstrate that the proposed solar energy system meets the following standards:
>
> 1. No potential for glint or glare in the existing or planned Airport Traffic Control Tower (ATCT) cab; and
> 2. No potential for glare or "low potential for after-image" along the final approach path for any existing landing threshold or future landing thresholds (including any planned interim phases of the landing thresholds) as shown on the current FAA-approved Airport Layout Plan (ALP). The final approach path is defined as two (2) miles from fifty (50) feet above the landing threshold using a standard three (3) degree glidepath.
> 3. Ocular impact must be analyzed over the entire calendar year in one (1) minute intervals from when the sun rises above the horizon until the sun sets below the horizon.

After significant additional study of the issue, the FAA concluded in its final 2021 Policy that less restrictive analysis can achieve the same goals for limiting solar PV glare. The following are the revised FAA 2021 Policy limitations:

> This policy does not apply to:
>
> 1. Solar energy systems on airports that do not have an ATCT,

[2] Federal Aviation Administration Policy: Review of Solar Energy System Projects on Federally-Obligated Airports, 86 Fed. Reg. 25801 (May 11, 2021), https://www.federalregister.gov/documents/2021/05/11/2021-09862/federal-aviation-administration-policy-review-of-solar-energy-system-projects-on-federally-obligated

2. Airports that are not federally-obligated, or

3. Solar energy systems not located on airport property.

Though this policy does not apply to proponents of solar energy systems located off airport property, they are encouraged to consider ocular impact for proposed systems in proximity to airports with ATCTs. In these cases, solar energy system proponents should coordinate with the local airport sponsor.

In addition to the FAA's standards for runway final approach paths and air traffic control tower visibility, the March ARB staff in conjunction with the Riverside County ALUC staff have established a series of air traffic patterns for the two runways located at the Base. Their concern is to ensure that land uses around the base are compatible with its air operations and that solar PV installations will not create a hazard to air navigation as a result of reflected sunlight and the associated potential glare. March ARB staff have provided four sets of geographic coordinates to define the standard traffic patterns listed below:

- FAA 2013 Policy Review (See Attachment A-1)
- FAA 2021 Policy Review (See Attachment A-2)
- Runway 12/30 General Aviation Traffic Pattern (See Attachment B)
- Runway 14/32 General Aviation Traffic Pattern (See Attachment C)
- Runway 14/32 C-17/KC-135 Traffic Pattern (See Attachment D)
- Runway 14/32 Overhead Traffic Pattern (See Attachment E)

E. Solar Glare Analysis Reports

The following pages of this Technical Memorandum provide the solar glare analysis reports for each of the suggested and required studies. The FAA standard study of the final approach paths to the runway ends and the Air Traffic Control Tower analysis is included in each individual report. The six reports are grouped by the flight path studies required by the March ARB and ALUC staff using the SGHAT program.

Attachment A-1
2013 FAA Policy Review

FORGESOLAR GLARE ANALYSIS

Project: **CSG3 Riverside/ Dimension Energy Solar**
Site configuration: **CSG 3-All Final Approaches**
Analysis conducted by Nick Johnson (nick.johnson@johnson-aviation.com) at 00:31 on 18 Oct, 2023.

U.S. FAA 2013 Policy Adherence

The following table summarizes the policy adherence of the glare analysis based on the 2013 U.S. Federal Aviation Administration Interim Policy 78 FR 63276. This policy requires the following criteria be met for solar energy systems on airport property:

- No "yellow" glare (potential for after-image) for any flight path from threshold to 2 miles
- No glare of any kind for Air Traffic Control Tower(s) ("ATCT") at cab height.
- Default analysis and observer characteristics (see list below)

ForgeSolar does not represent or speak officially for the FAA and cannot approve or deny projects. Results are informational only.

COMPONENT	STATUS	DESCRIPTION
Analysis parameters	PASS	Analysis time interval and eye characteristics used are acceptable
2-mile flight path(s)	PASS	Flight path receptor(s) do not receive yellow glare
ATCT(s)	PASS	Receptor(s) marked as ATCT do not receive glare

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

FAA Policy 78 FR 63276 can be read at https://www.federalregister.gov/d/2013-24729

SITE CONFIGURATION

Analysis Parameters

DNI: peaks at 1,000.0 W/m^2
Time interval: 1 min
Ocular transmission coefficient: 0.5
Pupil diameter: 0.002 m
Eye focal length: 0.017 m
Sun subtended angle: 9.3 mrad
Site Config ID: 103291.17983
Methodology: V2

PV Array(s)

Name: Rooftop Solar PV
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 238.0°
Rated power: -
Panel material: Smooth glass without AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.895815	-117.277564	1554.70	35.00	1589.70
2	33.896328	-117.276550	1549.48	35.00	1584.48
3	33.894208	-117.275021	1550.99	35.00	1585.99
4	33.893687	-117.274645	1549.14	35.00	1584.14
5	33.892716	-117.274189	1547.18	35.00	1582.18
6	33.892244	-117.275091	1550.01	35.00	1585.01
7	33.892445	-117.275257	1554.53	35.00	1589.53
8	33.892525	-117.275117	1550.70	35.00	1585.70
9	33.895717	-117.277381	1555.09	35.00	1590.09
10	33.895673	-117.277478	1553.91	35.00	1588.91

Flight Path Receptor(s)

Name: RWY 12 Final
Description: None
Threshold height: 50 ft
Direction: 135.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.890258	-117.260681	1500.00	50.00	1550.00
Two-mile	33.898508	-117.270608	1500.00	1300.00	2800.00

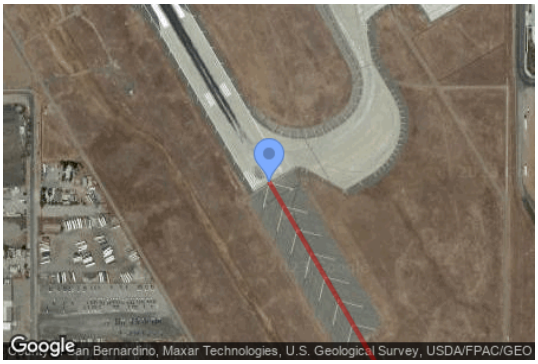
Name: RWY 14 Final
Description: None
Threshold height: 50 ft
Direction: 149.5°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.896431	-117.270636	1500.00	50.00	1550.00
Two-mile	33.906486	-117.277783	1500.00	1500.00	3000.00

Name: RWY 30 Final
Description: None
Threshold height: 50 ft
Direction: 315.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.884319	-117.253536	1500.00	50.00	1550.00
Two-mile	33.876069	-117.243611	1500.00	1300.00	2800.00

Name: RWY 32 Final
Description: None
Threshold height: 50 ft
Direction: 329.5°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°



Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.864994	-117.248281	1500.00	50.00	1550.00
Two-mile	33.854942	-117.241136	1500.00	1500.00	3000.00

Discrete Observation Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
1-ATCT	1	33.891572	-117.251203	1511.00	118.00

Map image of 1-ATCT

GLARE ANALYSIS RESULTS

Summary of Glare

PV Array Name	Tilt (°)	Orient (°)	"Green" Glare min	"Yellow" Glare min	Energy kWh
Rooftop Solar PV	10.0	238.0	0	0	-

Total annual glare received by each receptor

Receptor	Annual Green Glare (min)	Annual Yellow Glare (min)
RWY 12 Final	0	0
RWY 14 Final	0	0
RWY 30 Final	0	0
RWY 32 Final	0	0
1-ATCT	0	0

Results for: Rooftop Solar PV

Receptor	Green Glare (min)	Yellow Glare (min)
RWY 12 Final	0	0
RWY 14 Final	0	0
RWY 30 Final	0	0
RWY 32 Final	0	0
1-ATCT	0	0

Flight Path: RWY 12 Final

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 14 Final

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 30 Final

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 32 Final

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: 1-ATCT

0 minutes of yellow glare
0 minutes of green glare

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions.
Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to V1 algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual results and glare occurrence may differ.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

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Attachment A-2
2021 FAA Policy Review

FORGESOLAR GLARE ANALYSIS

Project: **CSG3 Riverside/ Dimension Energy Solar**
Site configuration: **CSG 3-All Final Approaches**

Created 18 Oct, 2023
Updated 18 Oct, 2023
Time-step 1 minute
Timezone offset UTC-8
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Site ID 103291.17983

Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad
PV analysis methodology V2

Glare Policy Adherence

The following table estimates the policy adherence of this glare analysis according to the **2021** U.S. Federal Aviation Administration Policy:

Review of Solar Energy System Projects on Federally-Obligated Airports

This policy may require the following criteria be met for solar energy systems on airport property:

- No glare of any kind for Air Traffic Control Tower(s) ("ATCT") at cab height.
- Default analysis and observer characteristics, including 1-minute time step.

ForgeSolar is not affiliated with the U.S. FAA and does not represent or speak officially for the U.S. FAA. ForgeSolar cannot approve or deny projects - results are informational only. Contact the relevant airport and FAA district office for information on policy and requirements.

COMPONENT	STATUS	DESCRIPTION
Analysis parameters	PASS	Analysis time interval and eye characteristics used are acceptable
ATCT(s)	PASS	Receptor(s) marked as ATCT do not receive glare

The referenced policy can be read at https://www.federalregister.gov/d/2021-09862

Component Data

This report includes results for PV arrays and Observation Point ("OP") receptors marked as ATCTs. Components that are not pertinent to the policy, such as routes, flight paths, and vertical surfaces, are excluded.

PV Arrays

Name: Rooftop Solar PV
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 238.0°
Rated power: -
Panel material: Smooth glass without AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.895815	-117.277564	1554.70	35.00	1589.70
2	33.896328	-117.276550	1549.48	35.00	1584.48
3	33.894208	-117.275021	1550.99	35.00	1585.99
4	33.893687	-117.274645	1549.14	35.00	1584.14
5	33.892716	-117.274189	1547.18	35.00	1582.18
6	33.892244	-117.275091	1550.01	35.00	1585.01
7	33.892445	-117.275257	1554.53	35.00	1589.53
8	33.892525	-117.275117	1550.70	35.00	1585.70
9	33.895717	-117.277381	1555.09	35.00	1590.09
10	33.895673	-117.277478	1553.91	35.00	1588.91

Observation Point ATCT Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
1-ATCT	1	33.891572	-117.251203	1511.00	118.00

Map image of 1-ATCT

Glare Analysis Results

Summary of Results No glare predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
Rooftop Solar PV	10.0	238.0	0	0.0	0	0.0	-

Total annual glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
1-ATCT	0	0.0	0	0.0

PV: Rooftop Solar PV

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
1-ATCT	0	0.0	0	0.0

Rooftop Solar PV and 1-ATCT

Receptor type: ATCT Observation Point

No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare. This primarily affects V1 analyses of path receptors.
Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

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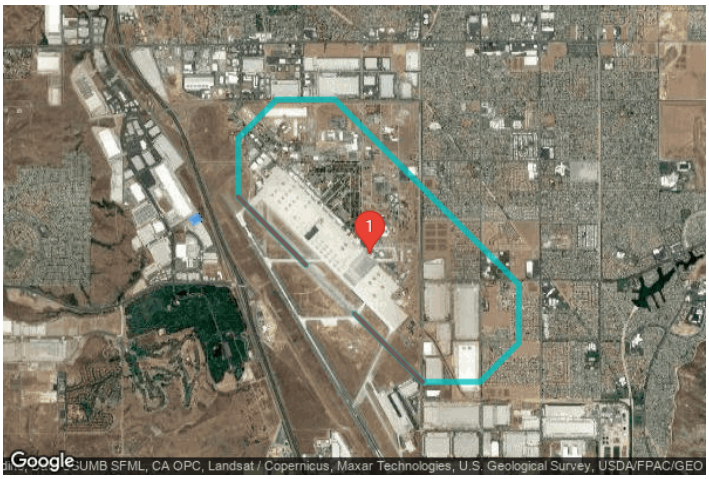
Attachment B
March ARB Runway 12/30 General Aviation Traffic Pattern Analysis

FORGESOLAR GLARE ANALYSIS

Project: **CSG3 Riverside/ Dimension Energy Solar**
Site configuration: **CSG3-MARB Runway 12-30 GA Analysis 1**

Created 18 Oct, 2023
Updated 18 Oct, 2023
Time-step 1 minute
Timezone offset UTC-8
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Category 1 MW to 5 MW
Site ID 103346.17983

Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad
PV analysis methodology V2



Summary of Results

Glare with low potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
Rooftop Solar PV	10.0	238.0	1,733	28.9	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 12 GA Pattern Route	421	7.0	0	0.0
RWY 30 GA Pattern Route	1,312	21.9	0	0.0
RWY 12 Final	0	0.0	0	0.0
RWY 30 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

Component Data

PV Arrays

Name: Rooftop Solar PV
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 238.0°
Rated power: -
Panel material: Smooth glass without AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.895815	-117.277564	1554.70	35.00	1589.70
2	33.896328	-117.276550	1549.48	35.00	1584.48
3	33.895716	-117.276120	1550.00	35.00	1585.00
4	33.895248	-117.277062	1555.00	35.00	1590.00
5	33.895717	-117.277381	1555.09	35.00	1590.09
6	33.895673	-117.277478	1553.91	35.00	1588.91

Route Receptors

Name: RWY 12 GA Pattern Route
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.884319	-117.253536	1500.00	50.00	1550.00
2	33.876069	-117.243611	1500.00	1300.00	2800.00
3	33.876081	-117.235119	1500.00	1300.00	2800.00
4	33.880814	-117.229467	1500.00	1300.00	2800.00
5	33.887897	-117.229483	1500.00	1300.00	2800.00
6	33.910333	-117.256469	1500.00	1300.00	2800.00
7	33.910322	-117.264967	1500.00	1300.00	2800.00
8	33.905592	-117.270622	1500.00	1300.00	2800.00
9	33.898508	-117.270608	1500.00	1300.00	2800.00
10	33.890258	-117.260681	1500.00	50.00	1550.00

Name: RWY 30 GA Pattern Route
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.890258	-117.260681	1500.00	50.00	1550.00
2	33.898508	-117.270608	1500.00	1300.00	2800.00
3	33.905592	-117.270622	1500.00	1300.00	2800.00
4	33.910322	-117.264967	1500.00	1300.00	2800.00
5	33.910333	-117.256469	1500.00	1300.00	2800.00
6	33.887897	-117.229483	1500.00	1300.00	2800.00
7	33.880814	-117.229467	1500.00	1300.00	2800.00
8	33.876081	-117.235119	1500.00	1300.00	2800.00
9	33.876069	-117.243611	1500.00	1300.00	2800.00
10	33.884319	-117.253536	1500.00	50.00	1550.00

Flight Path Receptors

Name: RWY 12 Final
Description: None
Threshold height: 50 ft
Direction: 135.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.890258	-117.260681	1500.00	50.00	1550.00
Two-mile	33.898508	-117.270608	1500.00	1300.00	2800.00

Name: RWY 30 Final
Description: None
Threshold height: 50 ft
Direction: 315.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.884319	-117.253536	1500.00	50.00	1550.00
Two-mile	33.876069	-117.243611	1500.00	1300.00	2800.00

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
1-ATCT	1	33.891572	-117.251203	1511.00	118.00

Map image of 1-ATCT

Glare Analysis Results

Summary of Results Glare with low potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
Rooftop Solar PV	10.0	238.0	1,733	28.9	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 12 GA Pattern Route	421	7.0	0	0.0
RWY 30 GA Pattern Route	1,312	21.9	0	0.0
RWY 12 Final	0	0.0	0	0.0
RWY 30 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

PV: Rooftop Solar PV low potential for temporary after-image

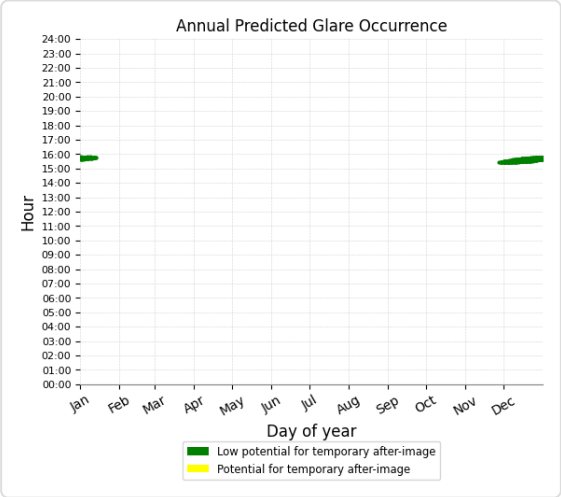
Receptor results ordered by category of glare

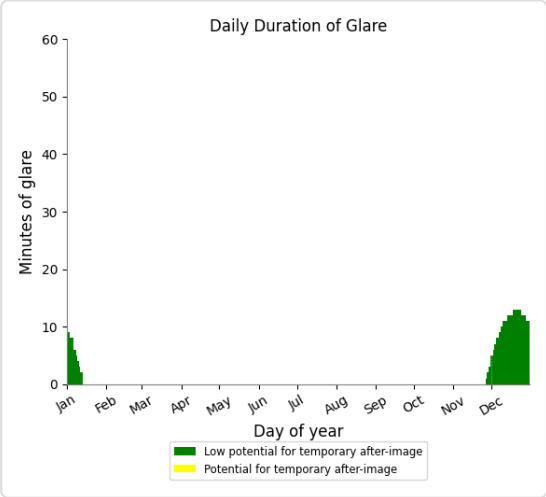
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 12 GA Pattern Route	421	7.0	0	0.0
RWY 30 GA Pattern Route	1,312	21.9	0	0.0
RWY 12 Final	0	0.0	0	0.0
RWY 30 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

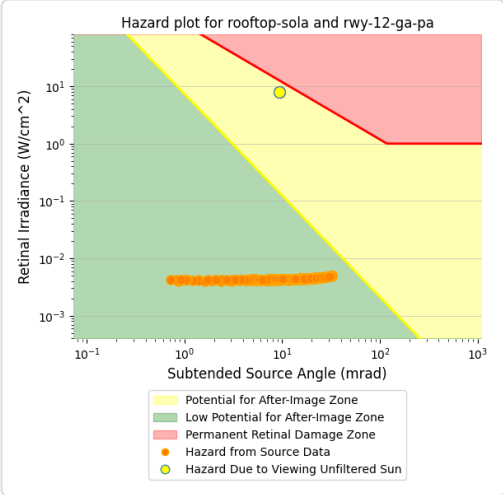
Rooftop Solar PV and Route: RWY 12 GA Pattern Route

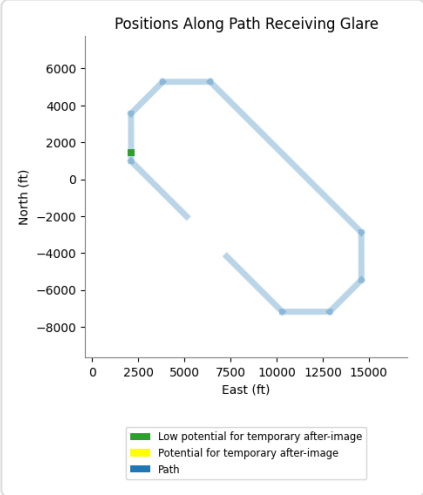
Yellow glare: none

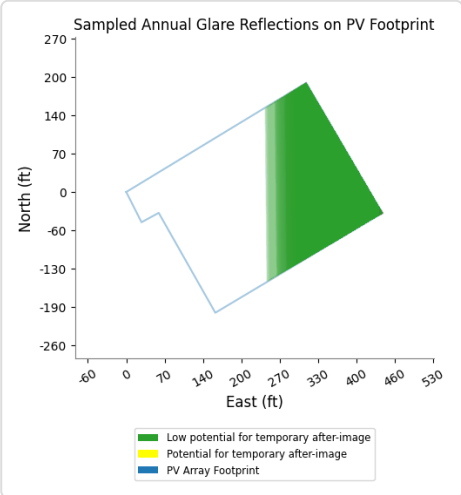
Green glare: 421 min.







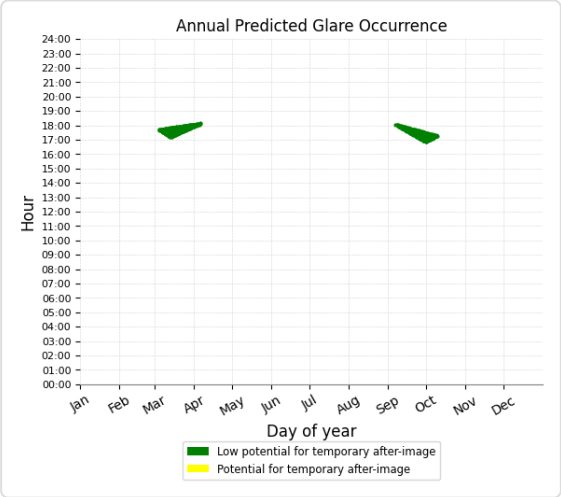


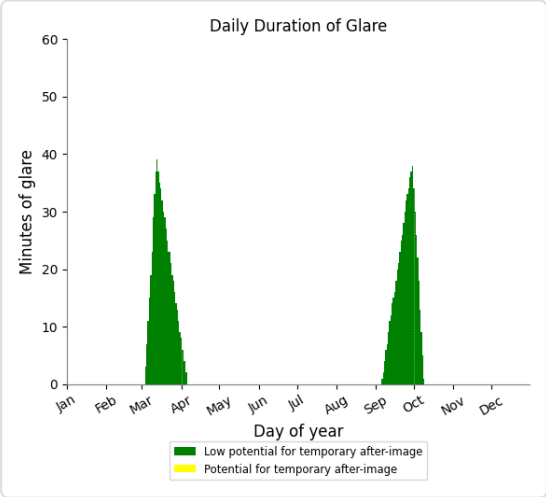


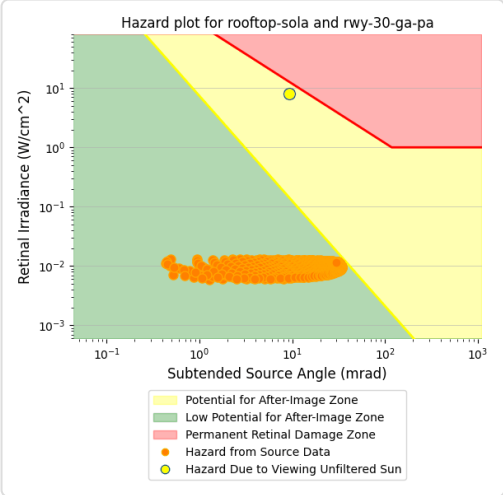
Rooftop Solar PV and Route: RWY 30 GA Pattern Route

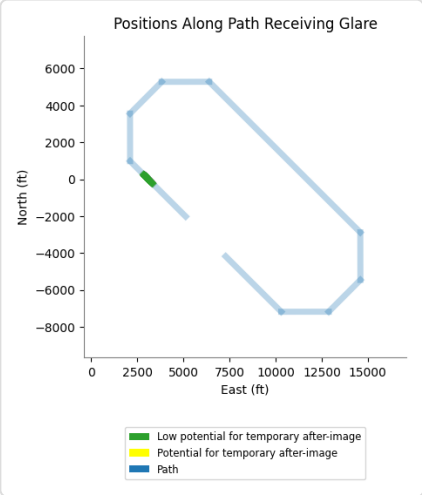
Yellow glare: none

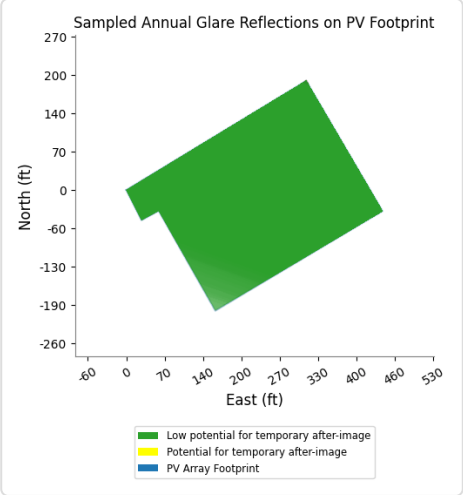
Green glare: 1,312 min.











Rooftop Solar PV and FP: RWY 12 Final

No glare found

Rooftop Solar PV and FP: RWY 30 Final

No glare found

Rooftop Solar PV and 1-ATCT

No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare. This primarily affects V1 analyses of path receptors.
Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
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Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

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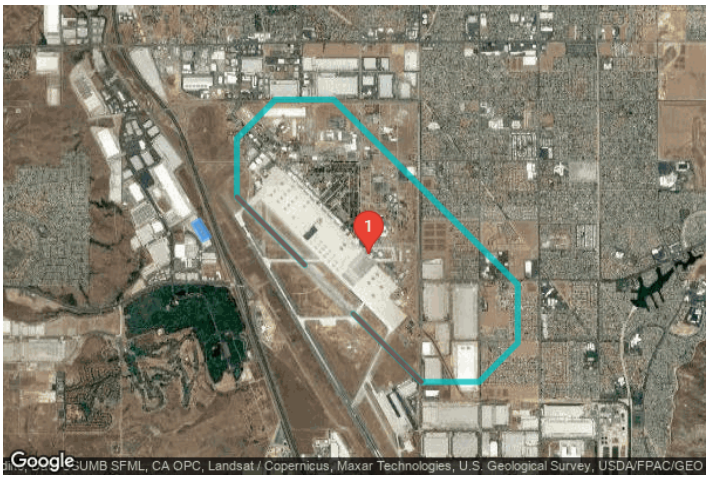
FORGESOLAR GLARE ANALYSIS

Project: **CSG3 Riverside/ Dimension Energy Solar**
Site configuration: **CSG3-MARB Runway 12-30 GA Analysis 2**

Created 18 Oct, 2023
Updated 18 Oct, 2023
Time-step 1 minute
Timezone offset UTC-8
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Category 1 MW to 5 MW
Site ID 103349.17983

Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad
PV analysis methodology V2



Summary of Results

Glare with low potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
Rooftop Solar PV	10.0	238.0	1,636	27.3	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 12 GA Pattern Route	1,031	17.2	0	0.0
RWY 30 GA Pattern Route	605	10.1	0	0.0
RWY 12 Final	0	0.0	0	0.0
RWY 30 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

Component Data

PV Arrays

Name: Rooftop Solar PV
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 238.0°
Rated power: -
Panel material: Smooth glass without AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.895248	-117.277062	1550.00	35.00	1585.00
2	33.895716	-117.276120	1555.00	35.00	1590.00
3	33.894208	-117.275021	1550.99	35.00	1585.99
4	33.893687	-117.274645	1549.14	35.00	1584.14
5	33.893224	-117.275628	1551.00	35.00	1586.00

Route Receptors

Name: RWY 12 GA Pattern Route
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.884319	-117.253536	1500.00	50.00	1550.00
2	33.876069	-117.243611	1500.00	1300.00	2800.00
3	33.876081	-117.235119	1500.00	1300.00	2800.00
4	33.880814	-117.229467	1500.00	1300.00	2800.00
5	33.887897	-117.229483	1500.00	1300.00	2800.00
6	33.910333	-117.256469	1500.00	1300.00	2800.00
7	33.910322	-117.264967	1500.00	1300.00	2800.00
8	33.905592	-117.270622	1500.00	1300.00	2800.00
9	33.898508	-117.270608	1500.00	1300.00	2800.00
10	33.890258	-117.260681	1500.00	50.00	1550.00

Name: RWY 30 GA Pattern Route
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.890258	-117.260681	1500.00	50.00	1550.00
2	33.898508	-117.270608	1500.00	1300.00	2800.00
3	33.905592	-117.270622	1500.00	1300.00	2800.00
4	33.910322	-117.264967	1500.00	1300.00	2800.00
5	33.910333	-117.256469	1500.00	1300.00	2800.00
6	33.887897	-117.229483	1500.00	1300.00	2800.00
7	33.880814	-117.229467	1500.00	1300.00	2800.00
8	33.876081	-117.235119	1500.00	1300.00	2800.00
9	33.876069	-117.243611	1500.00	1300.00	2800.00
10	33.884319	-117.253536	1500.00	50.00	1550.00

Flight Path Receptors

Name: RWY 12 Final
Description: None
Threshold height: 50 ft
Direction: 135.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.890258	-117.260681	1500.00	50.00	1550.00
Two-mile	33.898508	-117.270608	1500.00	1300.00	2800.00

Name: RWY 30 Final
Description: None
Threshold height: 50 ft
Direction: 315.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.884319	-117.253536	1500.00	50.00	1550.00
Two-mile	33.876069	-117.243611	1500.00	1300.00	2800.00

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
1-ATCT	1	33.891572	-117.251203	1511.00	118.00

Map image of 1-ATCT

Glare Analysis Results

Summary of Results Glare with low potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
Rooftop Solar PV	10.0	238.0	1,636	27.3	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 12 GA Pattern Route	1,031	17.2	0	0.0
RWY 30 GA Pattern Route	605	10.1	0	0.0
RWY 12 Final	0	0.0	0	0.0
RWY 30 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

PV: Rooftop Solar PV low potential for temporary after-image

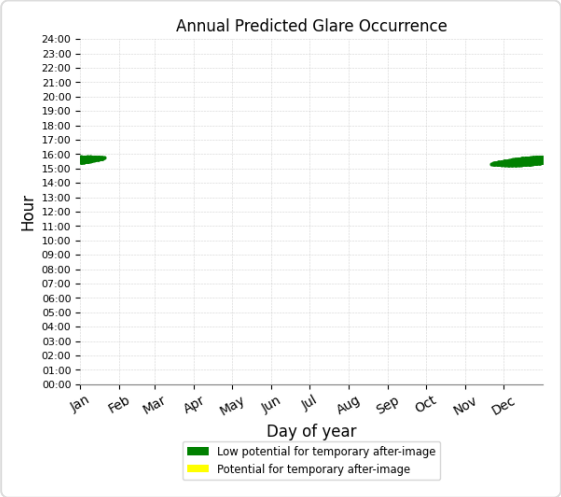
Receptor results ordered by category of glare

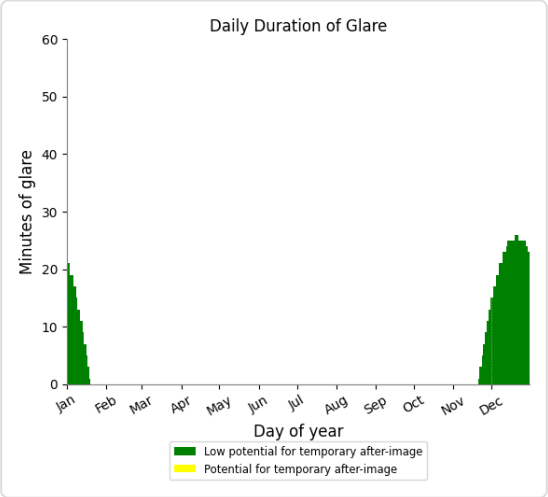
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 12 GA Pattern Route	1,031	17.2	0	0.0
RWY 30 GA Pattern Route	605	10.1	0	0.0
RWY 12 Final	0	0.0	0	0.0
RWY 30 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

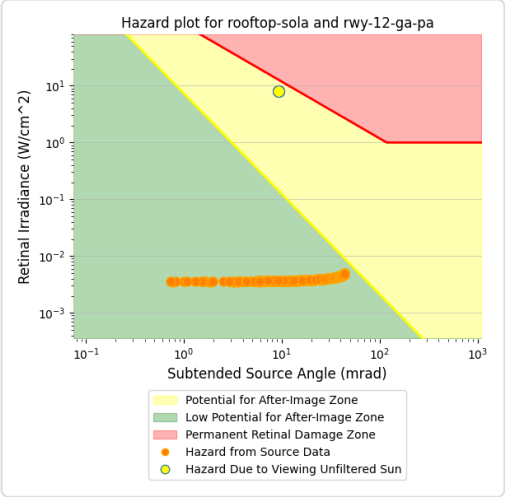
Rooftop Solar PV and Route: RWY 12 GA Pattern Route

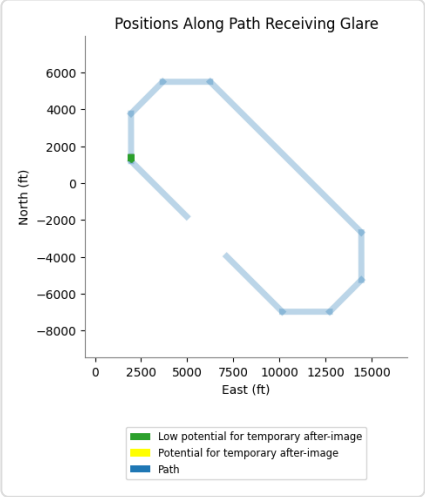
Yellow glare: none

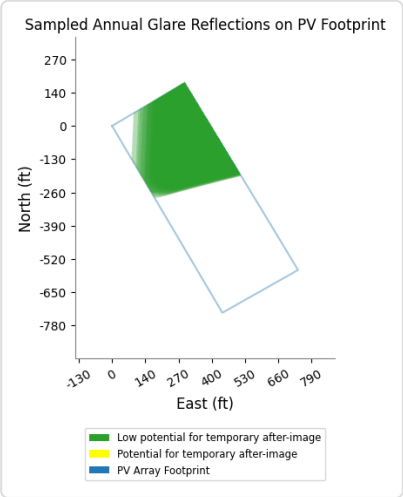
Green glare: 1,031 min.







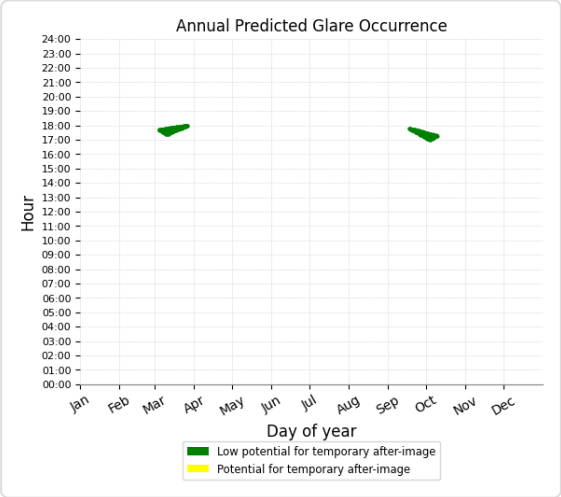


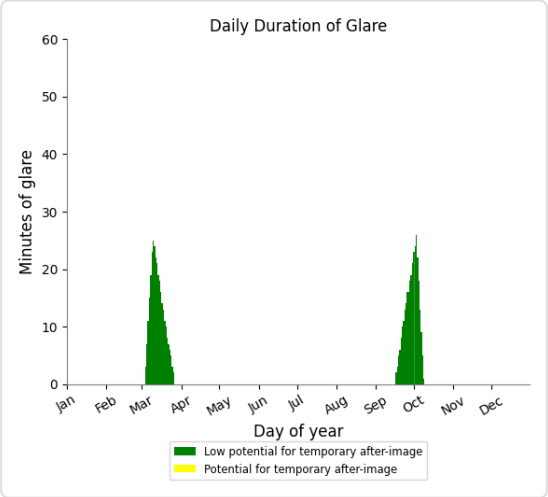


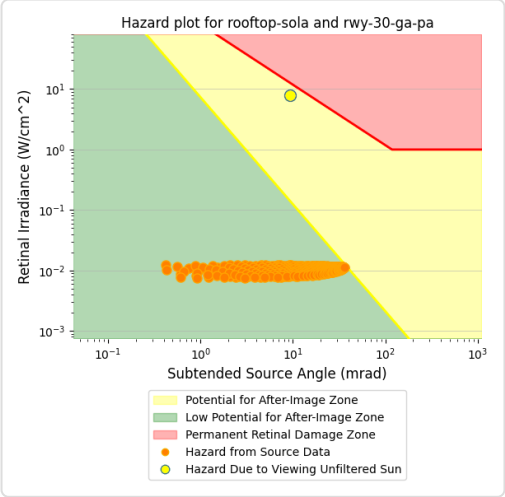
Rooftop Solar PV and Route: RWY 30 GA Pattern Route

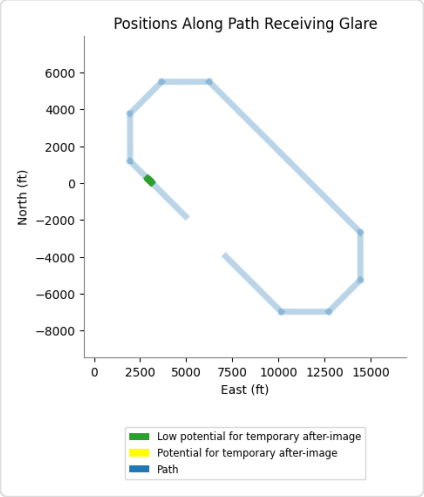
Yellow glare: none

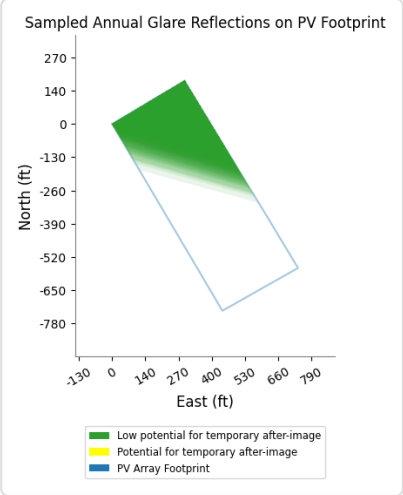
Green glare: 605 min.











Rooftop Solar PV and FP: RWY 12 Final

No glare found

Rooftop Solar PV and FP: RWY 30 Final

No glare found

Rooftop Solar PV and 1-ATCT

No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare. This primarily affects V1 analyses of path receptors.
Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

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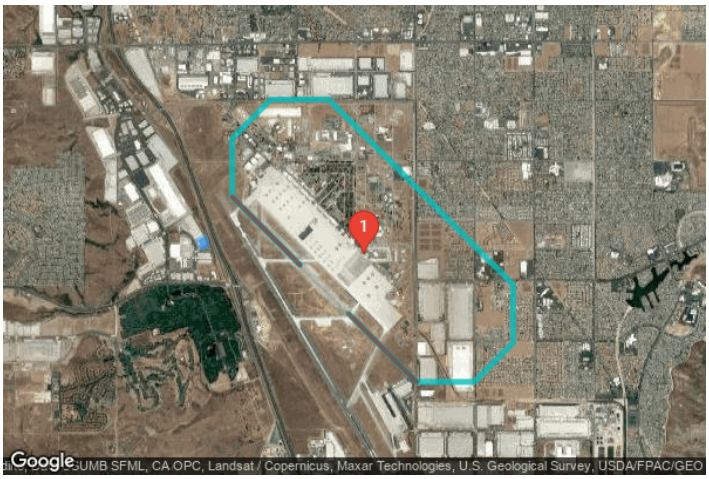
FORGESOLAR GLARE ANALYSIS

Project: **CSG3 Riverside/ Dimension Energy Solar**
Site configuration: **CSG3-MARB Runway 12-30 GA Analysis 3**

Created 18 Oct, 2023
Updated 18 Oct, 2023
Time-step 1 minute
Timezone offset UTC-8
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Category 1 MW to 5 MW
Site ID 103352.17983

Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad
PV analysis methodology V2



Summary of Results No glare predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
Rooftop Solar PV	10.0	238.0	0	0.0	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 12 GA Pattern Route	0	0.0	0	0.0
RWY 30 GA Pattern Route	0	0.0	0	0.0
RWY 12 Final	0	0.0	0	0.0
RWY 30 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

Component Data

PV Arrays

Name: Rooftop Solar PV
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 238.0°
Rated power: -
Panel material: Smooth glass without AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.893224	-117.275628	1551.00	35.00	1586.00
2	33.893687	-117.274645	1549.14	35.00	1584.14
3	33.892716	-117.274189	1547.18	35.00	1582.18
4	33.892244	-117.275091	1550.01	35.00	1585.01
5	33.892445	-117.275257	1554.53	35.00	1589.53
6	33.892525	-117.275117	1550.70	35.00	1585.70

Route Receptors

Name: RWY 12 GA Pattern Route
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.884319	-117.253536	1500.00	50.00	1550.00
2	33.876069	-117.243611	1500.00	1300.00	2800.00
3	33.876081	-117.235119	1500.00	1300.00	2800.00
4	33.880814	-117.229467	1500.00	1300.00	2800.00
5	33.887897	-117.229483	1500.00	1300.00	2800.00
6	33.910333	-117.256469	1500.00	1300.00	2800.00
7	33.910322	-117.264967	1500.00	1300.00	2800.00
8	33.905592	-117.270622	1500.00	1300.00	2800.00
9	33.898508	-117.270608	1500.00	1300.00	2800.00
10	33.890258	-117.260681	1500.00	50.00	1550.00

Name: RWY 30 GA Pattern Route
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.890258	-117.260681	1500.00	50.00	1550.00
2	33.898508	-117.270608	1500.00	1300.00	2800.00
3	33.905592	-117.270622	1500.00	1300.00	2800.00
4	33.910322	-117.264967	1500.00	1300.00	2800.00
5	33.910333	-117.256469	1500.00	1300.00	2800.00
6	33.887897	-117.229483	1500.00	1300.00	2800.00
7	33.880814	-117.229467	1500.00	1300.00	2800.00
8	33.876081	-117.235119	1500.00	1300.00	2800.00
9	33.876069	-117.243611	1500.00	1300.00	2800.00
10	33.884319	-117.253536	1500.00	50.00	1550.00

Flight Path Receptors

Name: RWY 12 Final
Description: None
Threshold height: 50 ft
Direction: 135.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.890258	-117.260681	1500.00	50.00	1550.00
Two-mile	33.898508	-117.270608	1500.00	1300.00	2800.00

Name: RWY 30 Final
Description: None
Threshold height: 50 ft
Direction: 315.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.884319	-117.253536	1500.00	50.00	1550.00
Two-mile	33.876069	-117.243611	1500.00	1300.00	2800.00

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
1-ATCT	1	33.891572	-117.251203	1511.00	118.00

Map image of 1-ATCT

Glare Analysis Results

Summary of Results No glare predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
Rooftop Solar PV	10.0	238.0	0	0.0	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 12 GA Pattern Route	0	0.0	0	0.0
RWY 30 GA Pattern Route	0	0.0	0	0.0
RWY 12 Final	0	0.0	0	0.0
RWY 30 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

PV: Rooftop Solar PV no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 12 GA Pattern Route	0	0.0	0	0.0
RWY 30 GA Pattern Route	0	0.0	0	0.0
RWY 12 Final	0	0.0	0	0.0
RWY 30 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

Rooftop Solar PV and Route: RWY 12 GA Pattern Route

No glare found

Rooftop Solar PV and Route: RWY 30 GA Pattern Route

No glare found

Rooftop Solar PV and FP: RWY 12 Final

No glare found

Rooftop Solar PV and FP: RWY 30 Final

No glare found

Rooftop Solar PV and 1-ATCT

No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
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The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

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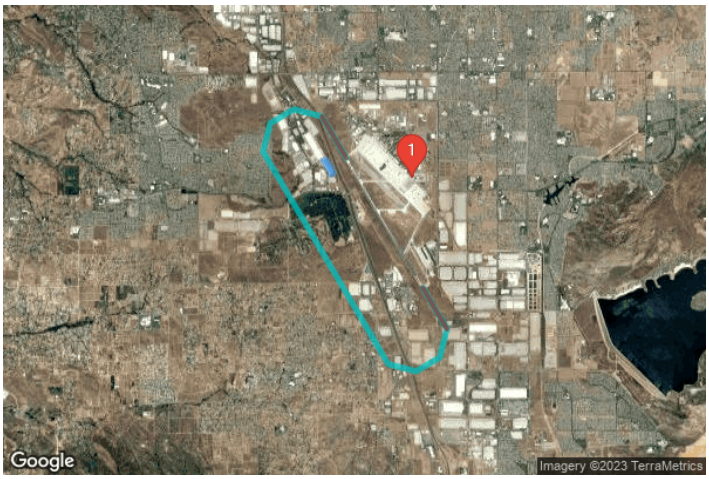
Attachment C
March ARB Runway 14/32 General Aviation Traffic Pattern Analysis

FORGESOLAR GLARE ANALYSIS

Project: **CSG3 Riverside/ Dimension Energy Solar**
Site configuration: **CSG3-MARB Runway 14-32 GA Analysis**

Created 18 Oct, 2023
Updated 18 Oct, 2023
Time-step 1 minute
Timezone offset UTC-8
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Category 1 MW to 5 MW
Site ID 103293.17983

Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad
PV analysis methodology V2



Summary of Results

Glare with low potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
Rooftop Solar PV	10.0	238.0	1,651	27.5	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 14 GA Pattern Route	0	0.0	0	0.0
RWY 32 GA Pattern Route	1,651	27.5	0	0.0
RWY 14 Final	0	0.0	0	0.0
RWY 32 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

Component Data

PV Arrays

Name: Rooftop Solar PV
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 238.0°
Rated power: -
Panel material: Smooth glass without AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.895815	-117.277564	1554.70	35.00	1589.70
2	33.896328	-117.276550	1549.48	35.00	1584.48
3	33.894208	-117.275021	1550.99	35.00	1585.99
4	33.893687	-117.274645	1549.14	35.00	1584.14
5	33.892716	-117.274189	1547.18	35.00	1582.18
6	33.892244	-117.275091	1550.01	35.00	1585.01
7	33.892445	-117.275257	1554.53	35.00	1589.53
8	33.892525	-117.275117	1550.70	35.00	1585.70
9	33.895717	-117.277381	1555.09	35.00	1590.09
10	33.895673	-117.277478	1553.91	35.00	1588.91

Route Receptors

Name: RWY 14 GA Pattern Route
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.864994	-117.248281	1500.00	50.00	1550.00
2	33.854942	-117.241136	1500.00	1500.00	3000.00
3	33.848078	-117.243236	1500.00	1500.00	3000.00
4	33.844669	-117.250119	1500.00	1500.00	3000.00
5	33.846422	-117.258344	1500.00	1500.00	3000.00
6	33.897972	-117.295011	1500.00	1500.00	3000.00
7	33.904833	-117.292903	1500.00	1500.00	3000.00
8	33.908242	-117.286017	1500.00	1500.00	3000.00
9	33.906486	-117.277783	1500.00	1500.00	3000.00
10	33.896431	-117.270636	1500.00	50.00	1550.00

Name: RWY 32 GA Pattern Route
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.896431	-117.270636	1500.00	50.00	1550.00
2	33.906486	-117.277783	1500.00	1500.00	3000.00
3	33.908242	-117.286017	1500.00	1500.00	3000.00
4	33.904833	-117.292903	1500.00	1500.00	3000.00
5	33.897972	-117.295011	1500.00	1500.00	3000.00
6	33.846422	-117.258344	1500.00	1500.00	3000.00
7	33.844669	-117.250119	1500.00	1500.00	3000.00
8	33.848078	-117.243236	1500.00	1500.00	3000.00
9	33.854942	-117.241136	1500.00	1500.00	3000.00
10	33.864994	-117.248281	1500.00	50.00	1550.00

Flight Path Receptors

Name: RWY 14 Final
Description: None
Threshold height: 50 ft
Direction: 149.5°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.896431	-117.270636	1500.00	50.00	1550.00
Two-mile	33.906486	-117.277783	1500.00	1500.00	3000.00

Name: RWY 32 Final
Description: None
Threshold height: 50 ft
Direction: 329.5°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.864994	-117.248281	1500.00	50.00	1550.00
Two-mile	33.854942	-117.241136	1500.00	1500.00	3000.00

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
1-ATCT	1	33.891572	-117.251203	1511.00	118.00

Map image of 1-ATCT

Glare Analysis Results

Summary of Results Glare with low potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
Rooftop Solar PV	10.0	238.0	1,651	27.5	0	0.0	-

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Receptor	Annual Green Glare		Annual Yellow Glare	
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RWY 32 GA Pattern Route	1,651	27.5	0	0.0
RWY 14 Final	0	0.0	0	0.0
RWY 32 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

PV: Rooftop Solar PV low potential for temporary after-image

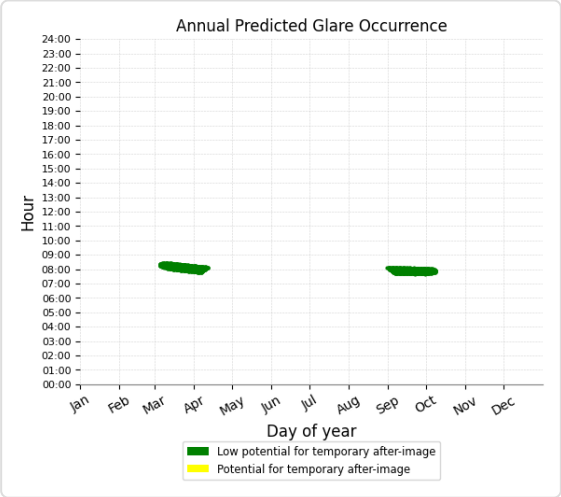
Receptor results ordered by category of glare

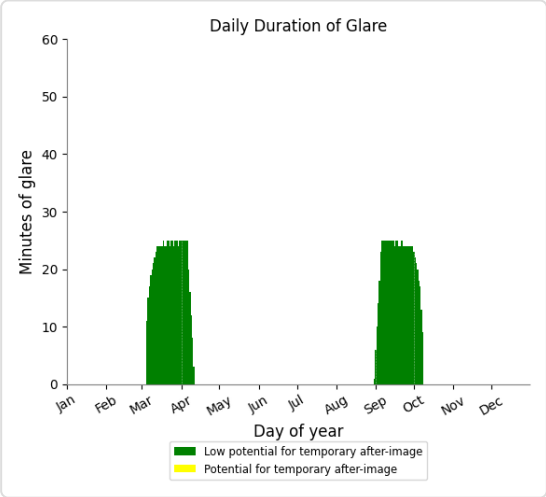
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 32 GA Pattern Route	1,651	27.5	0	0.0
RWY 14 GA Pattern Route	0	0.0	0	0.0
RWY 14 Final	0	0.0	0	0.0
RWY 32 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

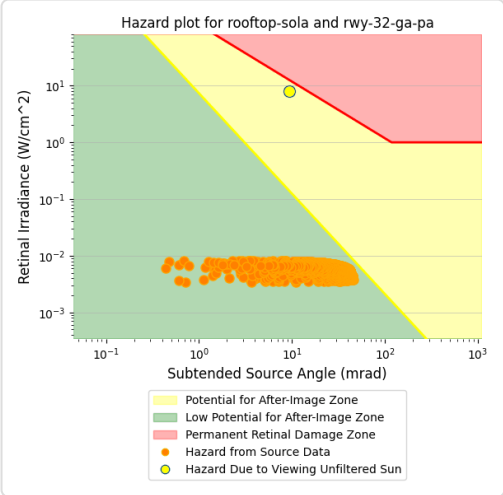
Rooftop Solar PV and Route: RWY 32 GA Pattern Route

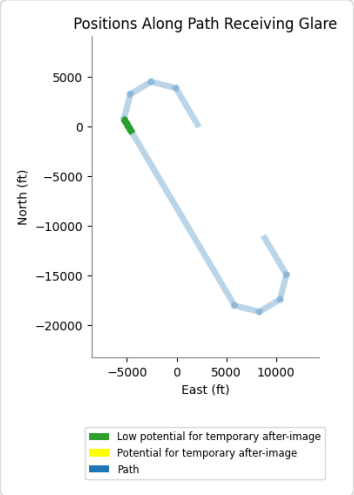
Yellow glare: none

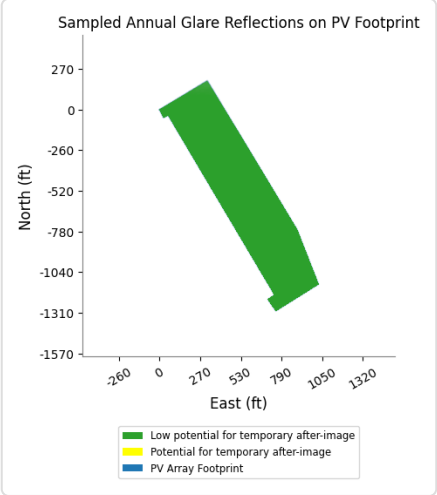
Green glare: 1,651 min.











Rooftop Solar PV and Route: RWY 14 GA Pattern Route

No glare found

Rooftop Solar PV and FP: RWY 14 Final

No glare found

Rooftop Solar PV and FP: RWY 32 Final

No glare found

Rooftop Solar PV and 1-ATCT

No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare. This primarily affects V1 analyses of path receptors.
Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

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Attachment D
March ARB Runway 14/32 C-17/KC-135 Traffic Pattern Analysis

FORGESOLAR GLARE ANALYSIS

Project: **CSG3 Riverside/ Dimension Energy Solar**
Site configuration: **CSG3-MARB RWY 14-32 C-17 Analysis 3**

Created 18 Oct, 2023
Updated 18 Oct, 2023
Time-step 1 minute
Timezone offset UTC-8
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Category 1 MW to 5 MW
Site ID 103294.17983

Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad
PV analysis methodology V2

Summary of Results

Glare with low potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
Rooftop Solar PV	10.0	238.0	1,684	28.1	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 14 C-17 - KC-135 Pattern Route	0	0.0	0	0.0
RWY 32 C-17 - KC-135 Pattern Route	1,684	28.1	0	0.0
RWY 14 Final	0	0.0	0	0.0
RWY 32 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

Component Data

PV Arrays

Name: Rooftop Solar PV
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 238.0°
Rated power: -
Panel material: Smooth glass without AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.895815	-117.277564	1554.70	35.00	1589.70
2	33.896328	-117.276550	1549.48	35.00	1584.48
3	33.894208	-117.275021	1550.99	35.00	1585.99
4	33.893687	-117.274645	1549.14	35.00	1584.14
5	33.892716	-117.274189	1547.18	35.00	1582.18
6	33.892244	-117.275091	1550.01	35.00	1585.01
7	33.892445	-117.275257	1554.53	35.00	1589.53
8	33.892525	-117.275117	1550.70	35.00	1585.70
9	33.895717	-117.277381	1555.09	35.00	1590.09
10	33.895673	-117.277478	1553.91	35.00	1588.91

Route Receptors

Name: RWY 14 C-17 - KC-135 Pattern Route
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.864994	-117.248281	1500.00	50.00	1550.00
2	33.836269	-117.227869	1500.00	1500.00	3000.00
3	33.821961	-117.228367	1500.00	1500.00	3000.00
4	33.813147	-117.244350	1500.00	1500.00	3000.00
5	33.819225	-117.262269	1500.00	1500.00	3000.00
6	33.908131	-117.325528	1500.00	1500.00	3000.00
7	33.922394	-117.325047	1500.00	1500.00	3000.00
8	33.931244	-117.309014	1500.00	1500.00	3000.00
9	33.925156	-117.291061	1500.00	1500.00	3000.00
10	33.896431	-117.270636	1500.00	50.00	1550.00

Name: RWY 32 C-17 - KC-135 Pattern Route
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.896431	-117.270636	1500.00	50.00	1550.00
2	33.925156	-117.291061	1500.00	1500.00	3000.00
3	33.931244	-117.309014	1500.00	1500.00	3000.00
4	33.922394	-117.325047	1500.00	1500.00	3000.00
5	33.908131	-117.325528	1500.00	1500.00	3000.00
6	33.819225	-117.262269	1500.00	1500.00	3000.00
7	33.813147	-117.244350	1500.00	1500.00	3000.00
8	33.821961	-117.228367	1500.00	1500.00	3000.00
9	33.836269	-117.227869	1500.00	1500.00	3000.00
10	33.864994	-117.248281	1500.00	50.00	1550.00

Flight Path Receptors

Name: RWY 14 Final
Description: None
Threshold height: 50 ft
Direction: 149.5°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.896431	-117.270636	1500.00	50.00	1550.00
Two-mile	33.906486	-117.277783	1500.00	1500.00	3000.00

Name: RWY 32 Final
Description: None
Threshold height: 50 ft
Direction: 329.5°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.864994	-117.248281	1500.00	50.00	1550.00
Two-mile	33.854942	-117.241136	1500.00	1500.00	3000.00

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
1-ATCT	1	33.891572	-117.251203	1511.00	118.00

Map image of 1-ATCT

Glare Analysis Results

Summary of Results Glare with low potential for temporary after-image predicted

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Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 14 C-17 - KC-135 Pattern Route	0	0.0	0	0.0
RWY 32 C-17 - KC-135 Pattern Route	1,684	28.1	0	0.0
RWY 14 Final	0	0.0	0	0.0
RWY 32 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

PV: Rooftop Solar PV low potential for temporary after-image

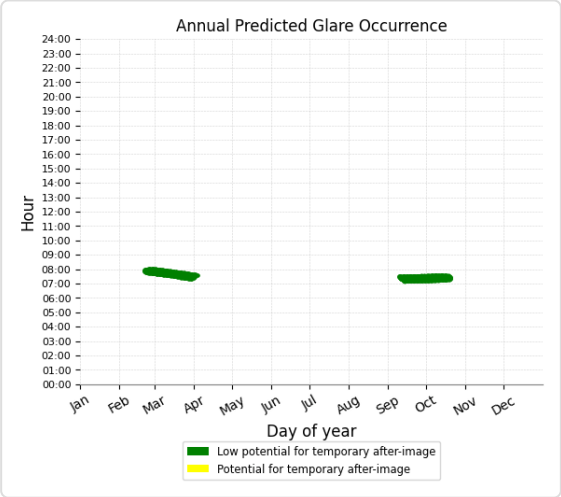
Receptor results ordered by category of glare

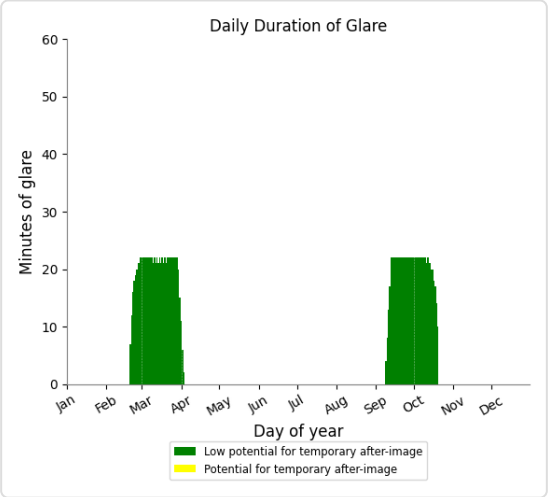
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 32 C-17 - KC-135 Pattern Route	1,684	28.1	0	0.0
RWY 14 C-17 - KC-135 Pattern Route	0	0.0	0	0.0
RWY 14 Final	0	0.0	0	0.0
RWY 32 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

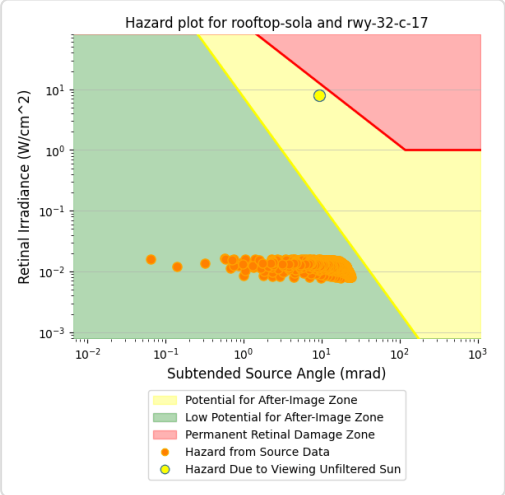
Rooftop Solar PV and Route: RWY 32 C-17 - KC-135 Pattern Route

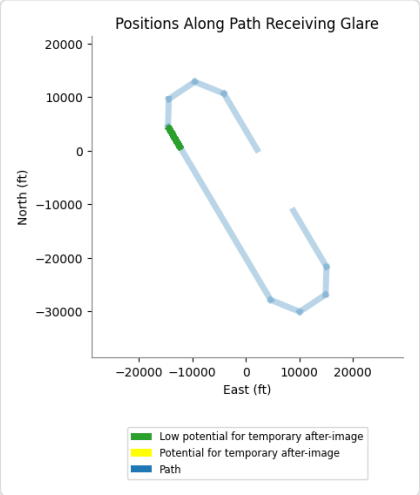
Yellow glare: none

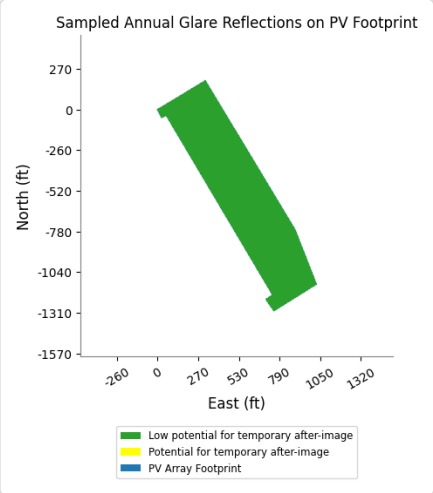
Green glare: 1,684 min.











Rooftop Solar PV and Route: RWY 14 C-17 - KC-135 Pattern Route

No glare found

Rooftop Solar PV and FP: RWY 14 Final

No glare found

Rooftop Solar PV and FP: RWY 32 Final

No glare found

Rooftop Solar PV and 1-ATCT

No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
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Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

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Attachment E
March ARB Runway 14/32 Overhead Traffic Pattern Analysis

FORGESOLAR GLARE ANALYSIS

Project: **CSG3 Riverside/ Dimension Energy Solar**
Site configuration: **CSG3-MARB RWY 14-32 Overhead Analysis**

Created 18 Oct, 2023
Updated 18 Oct, 2023
Time-step 1 minute
Timezone offset UTC-8
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Category 1 MW to 5 MW
Site ID 103295.17983

Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad
PV analysis methodology V2

Summary of Results

Glare with low potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
Rooftop Solar PV	10.0	238.0	2,066	34.4	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 14 Overhead Route	2,066	34.4	0	0.0
RWY 32 Overhead Route	0	0.0	0	0.0
RWY 14 Final	0	0.0	0	0.0
RWY 32 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

Component Data

PV Arrays

Name: Rooftop Solar PV
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 238.0°
Rated power: -
Panel material: Smooth glass without AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.895815	-117.277564	1554.70	35.00	1589.70
2	33.896328	-117.276550	1549.48	35.00	1584.48
3	33.894208	-117.275021	1550.99	35.00	1585.99
4	33.893687	-117.274645	1549.14	35.00	1584.14
5	33.892716	-117.274189	1547.18	35.00	1582.18
6	33.892244	-117.275091	1550.01	35.00	1585.01
7	33.892445	-117.275257	1554.53	35.00	1589.53
8	33.892525	-117.275117	1550.70	35.00	1585.70
9	33.895717	-117.277381	1555.09	35.00	1590.09
10	33.895673	-117.277478	1553.91	35.00	1588.91

Route Receptors

Name: RWY 14 Overhead Route
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.968036	-117.322128	1500.00	2000.00	3500.00
2	33.880706	-117.259453	1500.00	2000.00	3500.00
3	33.863564	-117.293808	1500.00	2000.00	3500.00
4	33.908131	-117.325528	1500.00	2000.00	3500.00
5	33.925156	-117.291061	1500.00	2000.00	3500.00
6	33.896431	-117.270636	1500.00	50.00	1550.00

Name: RWY 32 Overhead Route
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.793375	-117.196878	1500.00	2000.00	3500.00
2	33.880706	-117.259453	1500.00	2000.00	3500.00
3	33.863564	-117.293808	1500.00	2000.00	3500.00
4	33.819225	-117.262269	1500.00	2000.00	3500.00
5	33.836269	-117.227869	1500.00	2000.00	3500.00
6	33.864994	-117.248281	1500.00	50.00	1550.00

Flight Path Receptors

Name: RWY 14 Final
Description: None
Threshold height: 50 ft
Direction: 149.5°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.896431	-117.270636	1500.00	50.00	1550.00
Two-mile	33.906486	-117.277783	1500.00	2000.00	3500.00

Name: RWY 32 Final
Description: None
Threshold height: 50 ft
Direction: 329.5°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.864994	-117.248281	1500.00	50.00	1550.00
Two-mile	33.854942	-117.241136	1500.00	2000.00	3500.00

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
1-ATCT	1	33.891572	-117.251203	1511.00	118.00

Map image of 1-ATCT

Glare Analysis Results

Summary of Results Glare with low potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
Rooftop Solar PV	10.0	238.0	2,066	34.4	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 14 Overhead Route	2,066	34.4	0	0.0
RWY 32 Overhead Route	0	0.0	0	0.0
RWY 14 Final	0	0.0	0	0.0
RWY 32 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

PV: Rooftop Solar PV low potential for temporary after-image

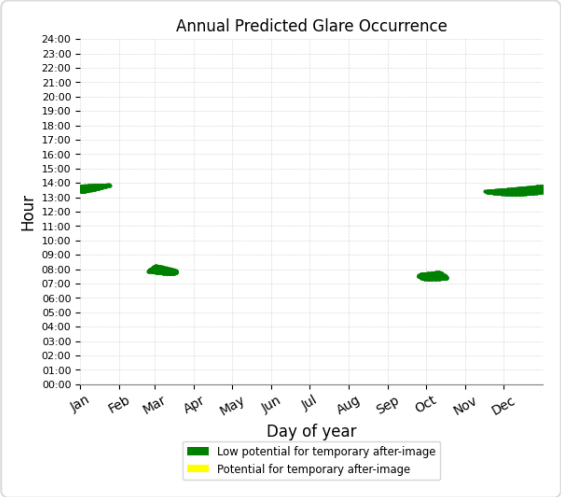
Receptor results ordered by category of glare

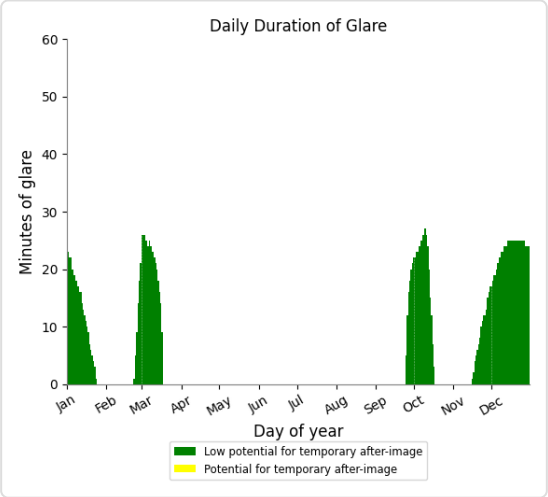
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 14 Overhead Route	2,066	34.4	0	0.0
RWY 32 Overhead Route	0	0.0	0	0.0
RWY 14 Final	0	0.0	0	0.0
RWY 32 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

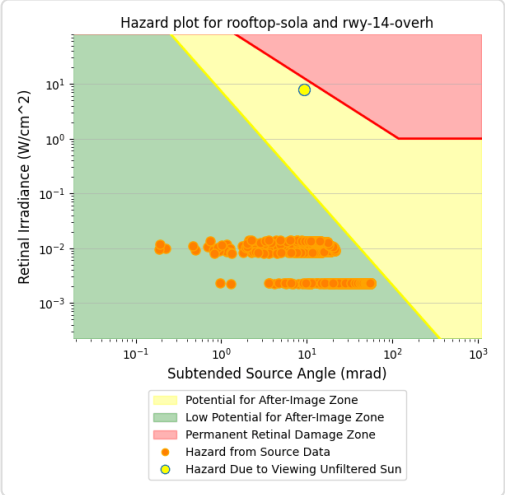
Rooftop Solar PV and Route: RWY 14 Overhead Route

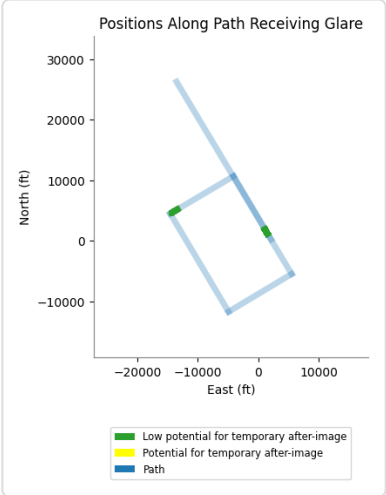
Yellow glare: none

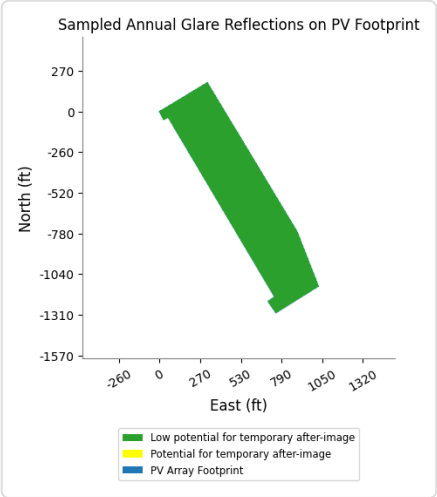
Green glare: 2,066 min.











Rooftop Solar PV and Route: RWY 32 Overhead Route

No glare found

Rooftop Solar PV and FP: RWY 14 Final

No glare found

Rooftop Solar PV and FP: RWY 32 Final

No glare found

Rooftop Solar PV and 1-ATCT

No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare. This primarily affects V1 analyses of path receptors.
Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

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NOTICE OF PUBLIC HEARING

RIVERSIDE COUNTY AIRPORT LAND USE COMMISSION

www.rcaluc.org

A PUBLIC HEARING has been scheduled before the Riverside County Airport Land Use Commission (ALUC) to consider the applications described below.

Any person may submit written comments to the ALUC before the hearing or may appear and be heard in support of or opposition to the project at the time of hearing. **Information on how to participate in the hearing will be available on the ALUC website at www.rcaluc.org.** The ALUC holds hearings for local discretionary permits within the Airport Influence Area, reviewing for aeronautical safety, noise and obstructions. ALUC reviews a proposed plan or project solely to determine whether it is consistent with the applicable Airport Land Use Compatibility Plan. For more information please contact **ALUC Planner Jackie Vega at (951) 955-0982**.

The March Joint Powers Authority Planning Department should be contacted on non-ALUC issues. For more information, please contact March Joint Powers Authority Planner Lauren Sotelo at 951-656-7000.

The proposed project application may be viewed by a prescheduled appointment and on the ALUC website www.rcaluc.org. Written comments may be submitted at the Riverside County Administrative Center, 4080 Lemon Street, 14th Floor, Riverside, California 92501, Monday through Friday from 8:00 a.m. to 3:30 p.m., or by e-mail to javega@rivco.org. Individuals with disabilities requiring reasonable modifications or accommodations, please contact Barbara Santos at (951) 955-5132.

PLACE OF HEARING:	**Riverside County Administration Center** **4080 Lemon Street, 1st Floor Board Chambers** **Riverside California**
DATE OF HEARING:	**February 8, 2024**
TIME OF HEARING:	**9:30 A.M.**

CASE DESCRIPTION:

ZAP1592MA23 – Riverside CSG 3, LLC (Representative: Dimension Renewable Energy) – March Joint Powers Authority Case No. CUP23-03 (Conditional Use Permit). A proposal to construct a solar panel system totaling 498,155 square feet on an existing industrial building on 26.91 acres, located at 22000 Opportunity Way. (Airport Compatibility Zone B2 of the March Air Reserve Base/Inland Port Airport Influence Area).

RIVERSIDE COUNTY
AIRPORT LAND USE COMMISSION

APPLICATION FOR MAJOR LAND USE ACTION REVIEW

ALUC STAFF ONLY

ALUC Case Number: ZAP1093BD23 Date Submitted: 12/27/23

AIA: Bermuda Dunes Zone: C1,D,E Public Hearing ☑ Staff Review ☐

Applicant

Applicant Full Name: B.H. Indio Land LLC, David Um

Applicant Address: 11111 Santa Monica Blvd., Suite 600, Los Angeles, California 90025

Phone: 310-820-8888 **Email:** David.Um@bhproperties.com

Representative/ Property Owner Contact Information

Representative: MIG, Inc., Pam Steele **Email:** pams@migcom.com

Phone: 951-733-5240

Address: 1650 Spruce Street, Ste 106, Riverside, CA 92507

Property Owner: B.H. Indio Land LLC, David Um **Email:** David.Um@bhproperties.com

11111 Santa Monica Blvd., Suite 600 Phone: 310-820-8888

Address: Los Angeles, California 90025

Local Jurisdiction Agency

Agency Name: City of Indio Phone: 760-541-4255

Staff Contact: Kevin Snyder, Community Development Director **Email:** ksnyder@indio.org

Address: 100 Civic Center Dr., Indio, CA 92201 : :

Local Agency Case No.: PLAN-DA-23-0001 DEV AGMT; PLAN-ZMA-23-0001 ZONING MAP AMENDMENT; PLAN-TPM-23-0001 TENTATIVE PARCEL MAP; PLAN-GP-23-000, GENERAL PLAN AMENDMENT; PLAN-SP-23-0001 SPECIFIC PLAN

Project Location

Street Address: S/W corner of Ave 42 and Monroe Street Gross Parcel Size.: 180.29

Assessor's Parcel No.: 610-020-001, -010, -012, -013, -021, -034, -036.

Solar

Is the project proposing solar Panels? Yes ☐ No ☑ If yes, please provide solar glare study. (only if in Zone C or higher)

Data

Site Elevation:(above mean sea level)	5 - 25 feet above mean sea level (AMSL)
Height of Building or structures:	Please see submitted project description
What type of drainage basins are being proposed and the square footage:	Conceptual at this time - this is a Specific Plan

Notice

A. NOTICE: Failure of an applicant to submit complete or adequate information pursuant to Sections 65940 to 65948 inclusive of the California Government Code, MAY constitute grounds for disapproval of actions, regulations, or permits.

B. REVIEW TIME: Estimated time for "staff level review" is approximately 30 days from date of submittal. Estimated time for "commission level review" is approximately 45 days from date of a complete application submittal to the next available commission hearing meeting.

C. SUBMISSION PACKAGE:

Please submit all application items DIGITALLY via USB or CD:

- Completed ALUC Application Form
- Plans Package: site plans, floor plans, building elevations, grading plans, subdivision maps
- Exhibits of change of zone, general plan amendment, specific plan amendment
- Project description of existing and proposed use

Additionally, please provide:

- ALUC fee payment (Checks made out to Riverside County ALUC)
- Gummed address labels of all surrounding property owners within a 300-foot radius of project site. (Only required if the project is scheduled for a public hearing).

Riverside County Airport Land Use Commission, County Administrative Center, 4080 Lemon Street, 14th Floor, Riverside, CA 92501, Phone: 951-955-5132 Fax: 951-955-5177 Website: www.rcaluc.org

RIVERSIDE COUNTY
AIRPORT LAND USE COMMISSION

STAFF REPORT

AGENDA ITEM:	3.3
HEARING DATE:	February 8, 2024
CASE NUMBER:	ZAP1593MA23 – PowerFlex (Representative: Prologis)
APPROVING JURISDICTION:	City of Perris
JURISDICTION CASE NO:	PMT23-02962 (Conditional Use Permit)
LAND USE PLAN:	2014 March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan
Airport Influence Area:	March Air Reserve Base
Land Use Policy:	Zone B1-APZ-II and C1
Noise Levels:	Between 60-65 CNEL contour
MAJOR ISSUES:	**None**

RECOMMENDATION: Staff recommends that the Commission find the proposed Conditional Use Permit CONSISTENT with the 2014 March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan, subject to the conditions included herein.

PROJECT DESCRIPTION: A proposal to construct a solar panel system totaling 82,238 square feet on an existing industrial building on 59.05 acres.

PROJECT LOCATION: The site is located southerly of Sinclair Street, northerly of Rider Street, easterly Indian Street, and westerly of Perris Boulevard, approximately 12,776 feet southerly of the southerly end of Runway 14-32 at March Air Reserve Base.

BACKGROUND:

Non-Residential Land Use Intensity: Pursuant to the Airport Land Use Compatibility Plan for the March Air Reserve Base/Inland Port Airport, the site is located within Compatibility Zone B1-APZ-II, which limits 50 people per acre and 100 people per single acre; and C1, which limits average intensity to 100 people per acre and 250 people per single acre. The proposed rooftop solar panels will not generate any occupancy.

March Air Reserve Base/United States Air Force Input: Given that the project site is located in Zones B1-APZ-II and C1 southerly of the southerly runway at March Air Reserve Base, the March Air Reserve Base staff was notified of the proposal to add rooftop solar panels and sent a solar glare hazard analysis study for their review. On January 17, 2024, the Air Force provided comments

concurring with the analysis and conclusions of the glare study, with the added note that their general concerns regarding cumulative impacts of solar projects are being addressed in the ongoing March Compatibility Use Study update.

Prohibited and Discouraged Uses: The applicant does not propose any uses prohibited or discouraged in Compatibility Zones B1-APZ-II and C1.

Flight Hazard Issues: Structure height, electrical interference, and reflectivity/glare are among the issues that solar panels in the airport influence area must address. The project's 82,238 square foot photovoltaic (PV) panel structures would be located on the rooftop of the apartment buildings within Compatibility Zones B1-APZ-II and C1.

Glint and Glare/Reflectivity

Based on the Federal Aviation Administration's Interim Policy for Review of Solar Energy System Projects on Federally Obligated Airports, no glare potential or low potential for temporary after-image ("green" level) are acceptable levels of glare on final approach (within 2 miles from end of runway) for solar facilities located on airport property. However, potential for temporary after-image" ("yellow" level) and potential for permanent eye damage ("red" level) are not acceptable levels of glare on final approach. No glare is permitted at air traffic control towers.

The project proposes 82,238 square feet of solar panels on the existing building rooftop with a fixed tilt of 10 degrees with no rotation, and an orientation of 181 degrees. The applicant has submitted a glare analysis utilizing the web-based Forge Solar, a copy of which is attached hereto. The analysis was based on a 2 mile straight in approach (as per FAA Interim Policy standards) to runways 14 and 32, and also based on the traffic patterns as identified by March Air Reserve Base staff (Runway 12/30 General Aviation, Runway 14/32 General Aviation, Runway 14/32 C-17/KC-135, Runway 14/32 Overhead). The analysis utilized a glide slope approach of 3.0 degrees. No glare would affect the Air Traffic Control Tower.

The analysis concluded that some glare would occur within the Air Force traffic pattern. Evaluation of the Air Force traffic patterns indicates that the panels would result in a low potential for temporary after-image ("green" level glare) or no glare. All times are in standard time.

Runway 14/32 C-17, KC-135 Aviation traffic pattern (totaling 21,600 minutes of 'green' level glare):

- Runway 14 C-17 KC-135, totaling 17,892 minutes of "green" level glare, lasting up to 100 minutes a day from September to April, from 12:00 p.m.to 2:00 p.m.
- Runway 32 C-17 KC-135, totaling 3,708 minutes of "green" level glare, lasting up to 50 minutes a day, throughout the year, from 6:00 a.m. to 1:00 p.m.

Runway 14/32 Overhead Aviation traffic pattern (totaling 33,855 minutes of 'green' level glare):

- Runway 32 overhead, totaling 33,855 minutes of "green" level glare, lasting up to 200 minutes a day, throughout the year, from 7:00 a.m. to 4:00 pm.

The total of 55,455 minutes of "green" level glare represents less than 21 percent of total day light time.

Electrical and Communication Interference

The applicant has indicated that they do not plan to utilize equipment that would interfere with aircraft communications. The PV panels themselves present little risk of interfering with radar transmission due to their low profiles. In addition, solar panels do not emit electromagnetic waves over distances that could interfere with radar signal transmissions, and any electrical facilities that do carry concentrated current will be buried beneath the ground and away from any signal transmission. There are no radar transmission or receiving facilities within the site.

Noise: The March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan depicts the site below 60-65 CNEL range from aircraft noise. The proposed solar panels are not noise sensitive.

Part 77: The elevation of Runway 14-32 at its southerly terminus is 1,488 feet above mean sea level (AMSL). At a distance of approximately 12,776 feet from the project to the nearest point on the runway, Federal Aviation Administration (FAA) review would be required for any structures with top of roof exceeding 1,616 feet AMSL. The site's finished floor elevation is 1,470 feet AMSL and building height is 35 feet, resulting in a top point elevation of 1,505 feet AMSL. Therefore, review by the FAA Obstruction Evaluation Service was not required. The proposed solar panels will not significantly increase the height of the existing buildings.

Open Area: None of the Compatibility Zones for the March Air Reserve Base/Inland Port ALUCP require open area specifically.

CONDITIONS:

1. Any new outdoor lighting that is installed shall be hooded or shielded so as to prevent either the spillage of lumens or reflection into the sky. Outdoor lighting shall be downward facing.

2. The following uses/activities are not included in the proposed project and shall be prohibited at this site:

   (a) Any use which would direct a steady light or flashing light of red, white, green, or amber colors associated with airport operations toward an aircraft engaged in an initial straight or circling climb following takeoff or toward an aircraft engaged in a straight or circling final approach toward a landing at an airport, other than a DoD or FAA-approved navigational signal light or visual approach slope indicator.

   (b) Any use which would cause sunlight to be reflected towards an aircraft engaged in an initial straight or circling climb following takeoff or towards an aircraft engaged in a straight or circling final approach towards a landing at an airport.

   (c) Any use which would generate smoke or water vapor or which would attract large concentrations of birds, or which may otherwise affect safe air navigation within the area. (Such uses include landscaping utilizing water features, aquaculture, production of cereal grains, sunflower, and row crops, composting operations, wastewater management facilities, artificial marshes, trash transfer stations that are open on one or more sides, recycling centers containing putrescible wastes, construction and demolition debris facilities, fly ash disposal, and incinerators.)

   (d) Any use which would generate electrical interference that may be detrimental to the

operation of aircraft and/or aircraft instrumentation.

(e) Children's schools, day care centers, libraries, hospitals, skilled nursing and care facilities, congregate care facilities, places of assembly (including but not limited to places of worship and theaters)

(f) Highly noise-sensitive outdoor nonresidential uses. Examples of noise-sensitive outdoor nonresidential uses that are prohibited include, but are not limited to, major spectator-oriented sports stadiums, amphitheaters, concert halls and drive-in theaters.

(g) Any other uses not permitted in (Accident Potential Zone I/ Accident Potential Zone II) pursuant to DoDI 4165.57 Appx.2, Tbl.1.

(h) Other Hazards to Flight

3. Prior to issuance of building permits, the landowner shall convey an avigation easement to the March Inland Port Airport Authority or its successor in interest, or provide evidence that such easement has been previously conveyed. The Airport Authority may waive this requirement in the event that the Authority determines that pre-existing avigation easements dedicated to the United States of America are sufficient to address its needs. Contact the March Joint Powers Authority at (951) 656-7000 for additional information.

4. Any proposed stormwater basins or facilities shall be designed and maintained to provide for a maximum 48-hour detention period following the design storm, and remain totally dry between rainfalls. Vegetation in and around the stormwater basins that would provide food or cover for birds would be incompatible with airport operations and shall not be utilized in project landscaping. Trees shall be spaced so as to prevent large expanses of contiguous canopy, when mature. Landscaping in and around the stormwater basin(s) shall not include trees or shrubs that produce seeds, fruits, or berries.

   Landscaping in the stormwater basin, if not rip-rap, should be in accordance with the guidance provided in ALUC "LANDSCAPING NEAR AIRPORTS" brochure, and the "AIRPORTS, WILDLIFE AND STORMWATER MANAGEMENT" brochure available at RCALUC.ORG which list acceptable plants from Riverside County Landscaping Guide or other alternative landscaping as may be recommended by a qualified wildlife hazard biologist.

   A notice sign, in a form similar to that attached hereto, shall be permanently affixed to the stormwater basin with the following language: "There is an airport nearby. This stormwater basin is designed to hold stormwater for only 48 hours and not attract birds. Proper maintenance is necessary to avoid bird strikes". The sign will also include the name, telephone number or other contact information of the person or entity responsible to monitor the stormwater basin

5. March Air Reserve Base must be notified of any land use having an electromagnetic radiation component to assess whether a potential conflict with Air Base radio communications could result. Sources of electromagnetic radiation include, but are not limited to, radio wave transmission in conjunction with remote equipment inclusive of

irrigation controllers, access gates, etc.

6. All solar arrays installed on the project site shall consist of a 82,238 square foot rooftop solar panel system on an existing industrial building, a fixed tilt of 10 degrees and orientation of 181 degrees. Solar panels shall be limited to a total of 498,155 square feet, and the locations and coordinates shall be as specified in the glare study. Any deviation from these specifications (other than reduction in square footage of panels), including change in tilt or orientation, shall require a new solar glare analysis to ensure that the amended project does not result in any glare impacting the air traffic control tower or creation of any "yellow" or "red" level glare in the flight paths, and shall require review by the Airport Land Use Commission.

7. In the event that any glint, glare, or flash affecting the safety of air navigation occurs as a result of project operation, upon notification to the airport operator of an event, the airport operator shall notify the project operator in writing. Within 30 days of written notice, the project operator shall be required to promptly take all measures necessary to eliminate such glint, glare, or flash. An "event" includes any situation that results in an accident, incident, "near-miss," or specific safety complaint regarding an in-flight experience to the airport operator or to federal, state, or county authorities responsible for the safety of air navigation. The project operator shall work with the airport operator to prevent recurrence of the incidence. Suggested measures may include, but are not limited to, changing the orientation and/or tilt of the source, covering the source at the time of day when events of glare occur, or wholly removing the source to diminish or eliminate the source of the glint, glare, or flash. For each such event made known to the project operator, the necessary remediation shall only be considered to have been fulfilled when the airport operator states in writing that the situation has been remediated to the airport operator's satisfaction.

8. In the event that any electrical interference affecting the safety of air navigation occurs as a result of project operation, upon notification to the airport operator of an event, the airport operator shall notify the project operator in writing. Within 30 days of written notice, the project operator shall be required to promptly take all measures necessary to eliminate such interference. An "event" includes any situation that results in an accident, incident, "near-miss," report by airport personnel, or specific safety complaint to the airport operator or to federal, state, or county authorities responsible for the safety of air navigation. The project operator shall work with the airport operator to prevent recurrence of the event. For each such event made known to the project operator, the necessary remediation shall only be considered to have been fulfilled when the airport operator states in writing that the situation has been remediated to the airport operator's satisfaction.

9. This project has been evaluated as consisting of a 82,238 square foot rooftop solar panel system on an existing industrial building. Any increase in building area, change in use to any higher intensity use, change in building location, or modification of the tentative parcel map lot lines and areas will require an amended review to evaluate consistency with the ALUCP compatibility criteria**,** at the discretion of the ALUC Director.

NOTICE OF AIRPORT IN VICINITY

This property is presently located in the vicinity of an airport, within what is known as an airport influence area. For that reason, the property may be subject to some of the annoyances or inconveniences associated with proximity to airport operations (for example: noise, vibration, or odors). Individual sensitivities to those annoyances [can vary from person to person. You may wish to consider what airport annoyances], if any, are associated with the property before you complete your purchase and determine whether they are acceptable to you. Business & Professions Code Section 11010 (b)(13)(A)

NOTICE

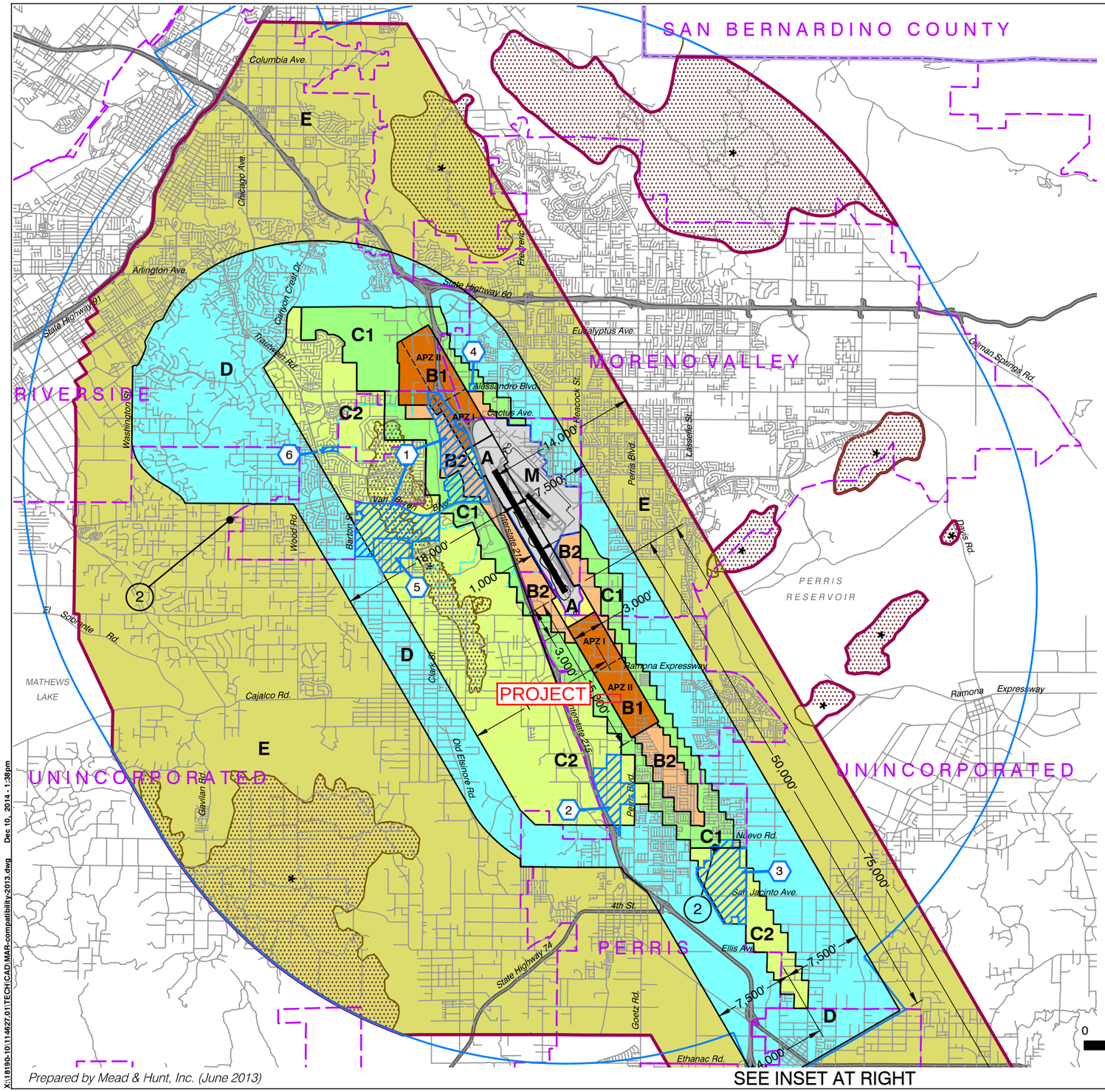
THERE IS AN AIRPORT NEARBY.

THIS STORM WATER BASIN IS DESIGNED TO HOLD STORM WATER FOR ONLY 48 HOURS AND NOT TO ATTRACT BIRDS

PROPER MAINTENANCE IS NECESSARY TO AVOID BIRD STRIKES

IF THIS BASIN IS OVERGROWN, PLEASE CONTACT:

Name: _____ **Phone:** _____



LEGEND

Compatibility Zones

- Airport Influence Area Boundary
- Zone A
- Zone B1
- Zone B2
- Zone C1
- Zone C2
- Zone D
- Zone E
- Zone M
- High Terrain Zone
- FAR Part 77 Military Outer Horizontal Surface Limits
- FAR Part 77 Notification Area

Boundary Lines

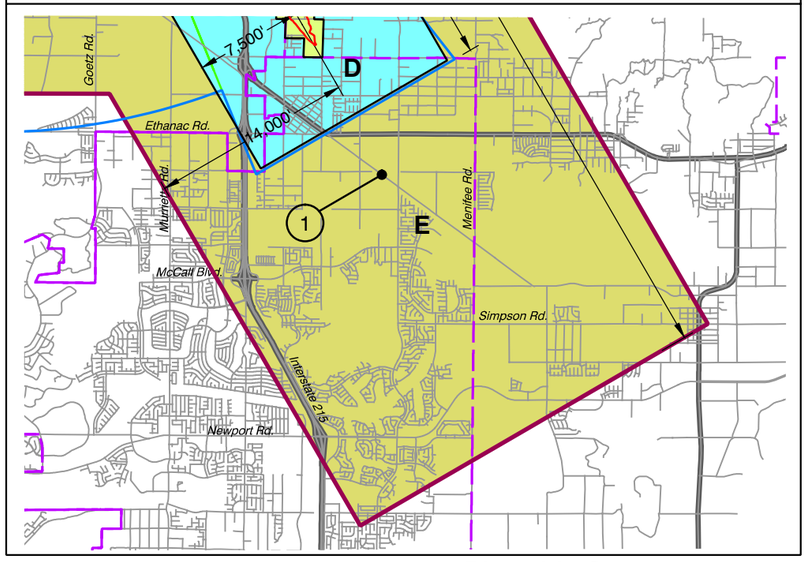
- March Air Reserve Base / Air Force Property
- March Joint Powers Authority Property Line
- County Boundary
- City Limits
- Site-Specific Exceptions (existing local agency commitments to development projects)

1. March JPA: March Business Center/Meridian
2. Perris: Harvest Landing
3. Perris: Park West
4. Moreno Valley: Affordable Housing
5. March JPA: Ben Clark Training Center
6. Riverside: Ridge Crest Subdivision

(1) Point at which aircraft on Runway 32 ILS approach descend below 3,000 feet above runway end. Airport Elevation is 1,535 feet MSL.

(2) Point at which departing aircraft typically reach 3,000 feet above runway end.

INSET



Note:
All dimensions are measured from runway ends and centerlines.

N

0 2 4 MILES

Base map source: County of Riverside 2013

Prepared by Mead & Hunt, Inc. (June 2013)

X:\18190-10\114627.01\TECH\CAD\MAR-compatibility-2013.dwg Dec 10, 2014 - 1:38pm

Riverside County
Airport Land Use Commission

March Air Reserve Base / Inland Port Airport
Land Use Compatibility Plan

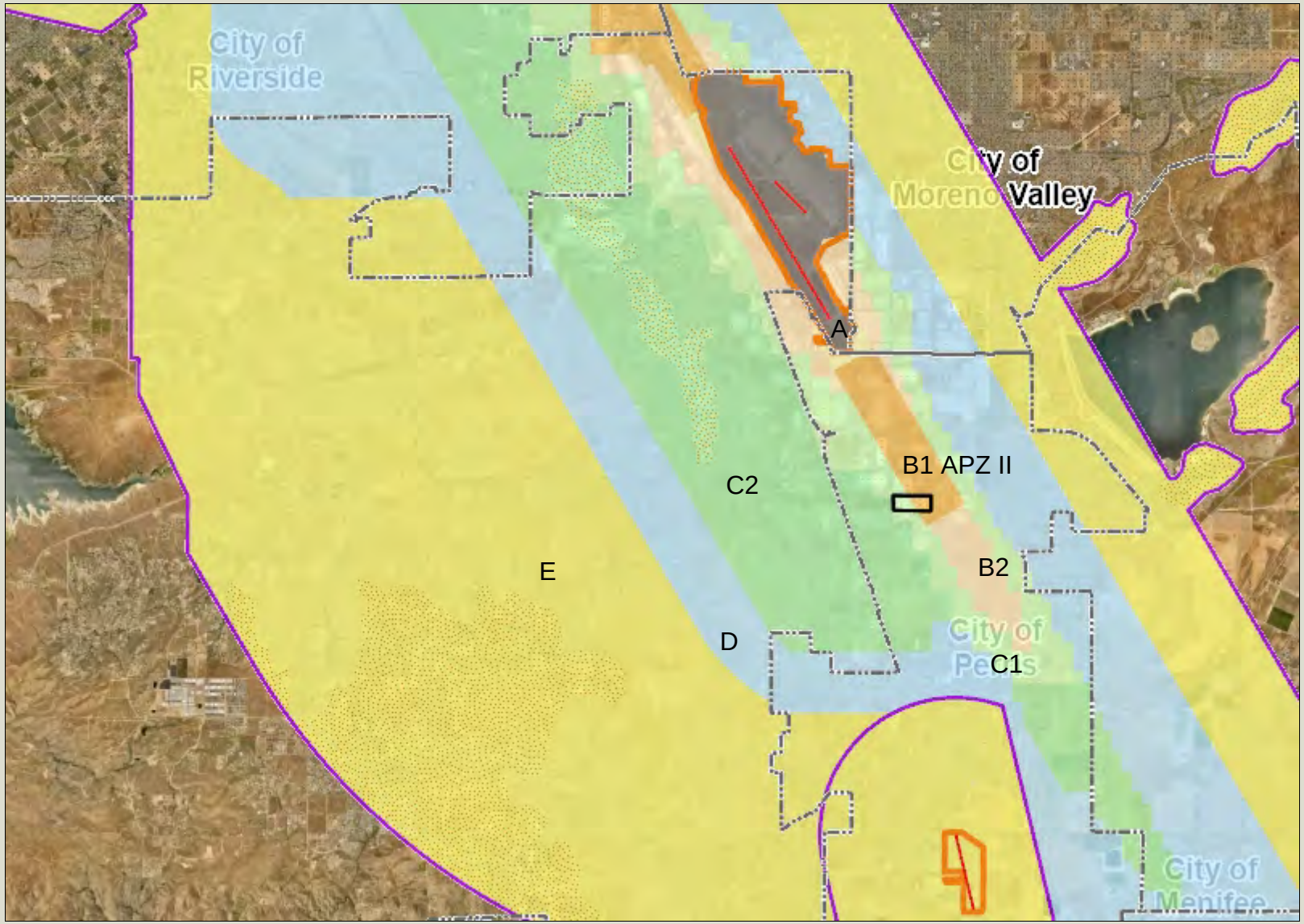
(Adopted November 13, 2014)

Map MA-1

Compatibility Map

March Air Reserve Base / Inland Port Airport

Map My County Map



Legend

- County Boundary
- City Boundaries
- Runways
- Airports
- Airport Influence Areas
- Airport Compatibility Zones
  - A
  - A-EXC1
  - B1
  - B1-APZ I
  - B1-APZ I-EXC1
  - B1-APZ II
  - B1-APZ II-EXC1
  - B1-EXC1
  - B2
  - B2-EXC1
  - C
  - C1
  - C1-EXC1
  - C1-EXC3
  - C1-EXC4
  - C1-HIGHT
  - C2
  - C2-EXC1
  - C2-EXC2
  - C2-EXC3
  - C2-EXC5

0 12,314 24,629 Feet

IMPORTANT Maps and data are to be used for reference purposes only. Map features are approximate, and are not necessarily accurate to surveying or engineering standards. The County of Riverside makes no warranty or guarantee as to the content (the source is often third party), accuracy, timeliness, or completeness of any of the data provided, and assumes no legal responsibility for the information contained on this map. Any use of this product with respect to accuracy and precision shall be the sole responsibility of the user.

REPORT PRINTED ON... 1/2/2024 12:30:39 PM

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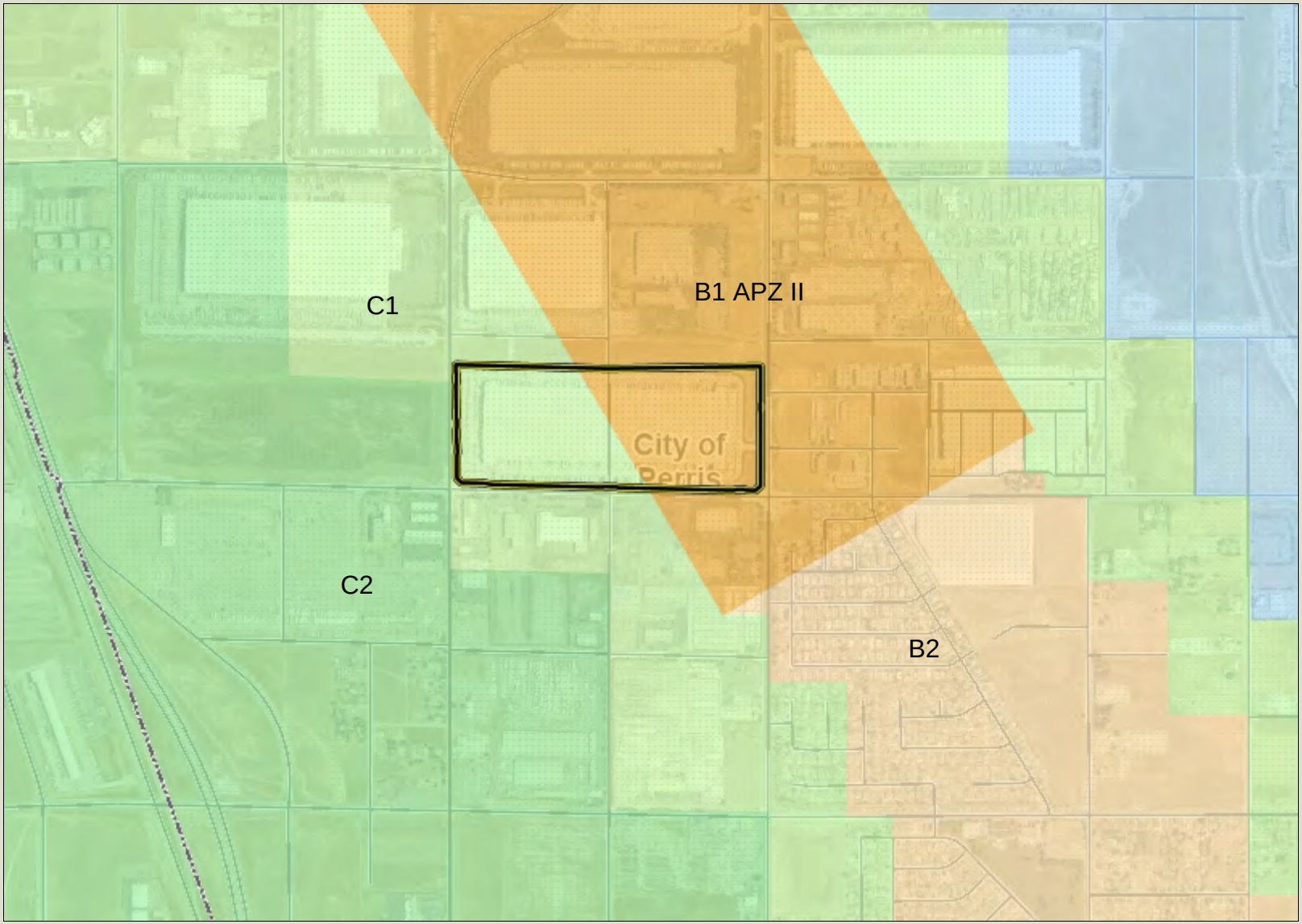
Notes

Map My County Map



Legend

- County Boundary
- City Boundaries
- Runways
- Airports
- Airport Influence Areas
- Airport Compatibility Zones
  - A
  - A-EXC1
  - B1
  - B1-APZ I
  - B1-APZ I-EXC1
  - B1-APZ II
  - B1-APZ II-EXC1
  - B1-EXC1
  - B2
  - B2-EXC1
  - C
  - C1
  - C1-EXC1
  - C1-EXC3
  - C1-EXC4
  - C1-HIGHT
  - C2
  - C2-EXC1
  - C2-EXC2
  - C2-EXC3
  - C2-EXC5

0 1,539 3,079 Feet

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Notes

Map My County Map

Legend

- County Boundary
- City Boundaries
- County Centerline Names
- County Centerlines
- Blueline Streams
- City Areas
- World Street Map

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0 1,539 3,079 Feet

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Notes

Map My County Map

Legend

- County Boundary
- City Boundaries
- Blueline Streams
- City Areas
- World Street Map

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0 3,079 6,157 Feet

REPORT PRINTED ON... 1/2/2024 12:32:53 PM

© Riverside County GIS

Notes

Map My County Map

Legend

- County Boundary
- City Boundaries
- County Centerline Names
- County Centerlines
- Blueline Streams
- City Areas
- World Street Map

IMPORTANT Maps and data are to be used for reference purposes only. Map features are approximate, and are not necessarily accurate to surveying or engineering standards. The County of Riverside makes no warranty or guarantee as to the content (the source is often third party), accuracy, timeliness, or completeness of any of the data provided, and assumes no legal responsibility for the information contained on this map. Any use of this product with respect to accuracy and precision shall be the sole responsibility of the user.

0 1,539 3,079 Feet

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Notes

Map My County Map

Legend

- County Boundary
- City Boundaries
- City Areas
- World Street Map

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0 12,314 24,629 Feet

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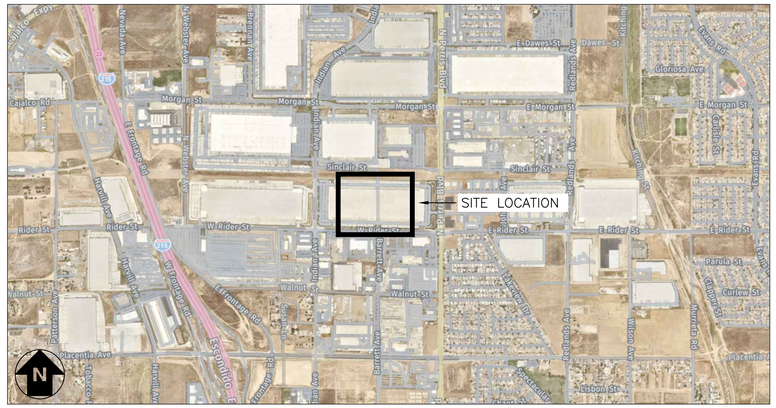
Notes

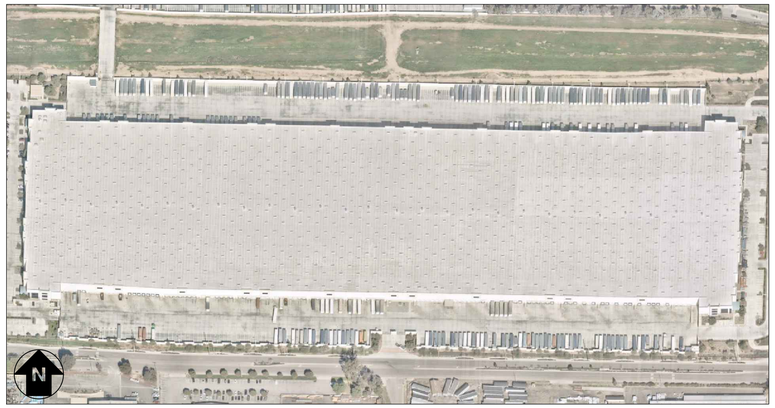
1,193.005 KW BESS + SOLAR SYSTEM AT

PROLOGIS – WAYFAIR 3300

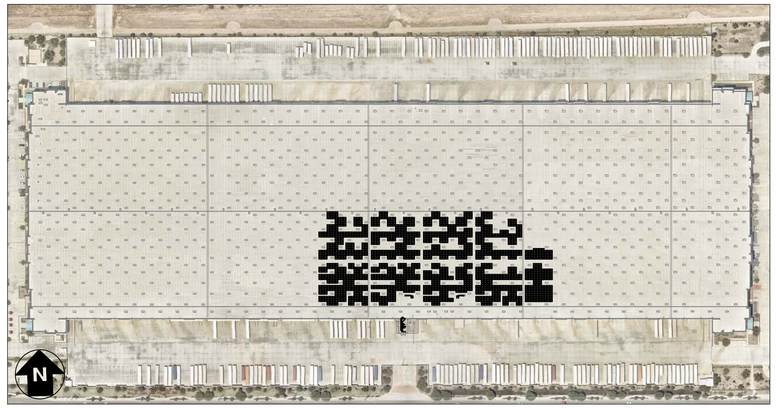
3300 INDIAN AVE., PERRIS, CA 92571



LOCATION MAP
SCALE: 1" = 1500'–0"



BIRDS–EYE VIEW FROM SOUTH
SCALE: 1" = 200'–0"



SYSTEM PLAN
SCALE: 1" = 200'–0"

TOTAL SYSTEM SUMMARY:

TOTAL DC SYSTEM SIZE:	1,193.005 kWDC
AC SYSTEM SIZE:	880.000 kWAC
MODULE MANUFACTURER:	CANADIAN SOLAR
MODULE MODEL:	CS6W–545MB–AG 545W
MODULES PER STRING:	32, 33, 34, 35
MODULE QUANTITY:	2,189
STRING QUANTITY:	66
MODULE TILT:	10°
MODULE AZIMUTH:	181°
INVERTER MANUFACTURER:	SOLAREDGE
INVERTER MODEL 1 (QTY):	SE120KUS (7)
INVERTER MODEL 2 (QTY):	SE40KUS (1)
BESS MANUFACTURER/MODEL:	SUNGROW
BESS TYPE (QTY):	ST556KWH–250UD (2)
BESS BESS UNIT KVA/KWH:	250KVA/556KWH
BESS AC SYSTEM SIZE:	500KW

NOTES SPECIFIC TO CALIFORNIA

ADOPTED ELECTRICAL CODE: 2022 CALIFORNIA ELECTRICAL CODE (BASED ON THE 2020 NEC).

BY LAW, ANYONE PLANNING TO EXCAVATE OR DEMOLISH IS REQUIRED TO CALL 811 AT LEAST TWO FULL BUSINESS DAYS BEFORE WORK BEGINS

SCOPE OF WORK SUMMARY

ROOFTOP PV ARRAY:
- INSTALL SOLAR MODULES AND ROOFTOP RACKING SYSTEM ON TOP OF EXISTING BUILDING.
- INSTALL INVERTERS AND ELECTRICAL DISTRIBUTION EQUIPMENT.
- INTERCONNECT AT EXISTING ELECTRICAL DISTRIBUTION EQUIPMENT.

BATTERY ENERGY STORAGE SYSTEM (BESS):
- INSTALL BESS INVERTER(S), BATTERIES, AND ELECTRICAL DISTRIBUTION EQUIPMENT.
- INTERCONNECT AT EXISTING ELECTRICAL DISTRIBUTION EQUIPMENT.

BILL OF MATERIAL

	FURNISH BY E.C.	FURNISH BY DEVELOPER	EQUIP. NOT APPLICABLE
SOLAR GENERATOR DISCONNECT SWITCH		●	
SOLAR AC SWITCHBOARD		●	
SOLAR AC PANELBOARDS		●	
GROUNDING TRANSFORMER		●	
INVERTERS		●	
RAPID SHUTDOWN DEVICES		●	
DATA MONITORING PANEL, CTs, PTs		●	
UTILITY METER SOCKET OR CT CABINET		●	
DEMAND METER CIRCUIT BREAKER	●		
RELAY CONTROL PANEL		●	
RELAY CT & PTS		●	
RACKING MATERIALS		●	
PV MODULES		●	
AC CONDUIT, TRAY, FITTINGS, & PULLBOXES	●		
DC CONDUIT, TRAY, FITTINGS & PULLBOXES	●		
PV CABLE CONNECTORS	●		
CROSSOVER RAMPS			●
BOLLARDS	●		
MECHANICAL ATTACHMENTS: RACKING		●	
MECHANICAL ATTACHMENTS: NON–RACKING		●	
EQUIPMENT RACKS	●		
INVERTER RACKS		●	
ROOFTOP SUPPORT BLOCKS + SLIPSHEETS	●		

MECHANICAL ATTACHMENT SUMMARY (NON–RACKING ATTACHMENTS ONLY)	
ATTACHMENT LOCATION	QTY
INVERTER RACKS	8
PANELBOARD RACKS	4
CABLE TRAY	TBD
OTHER ELECTRICAL EQUIPMENT	TBD
TOTAL	TBD

NOTE: ATTACHMENT QUANTITIES ARE ESTIMATED BASED ON ENGINEERING REQUIREMENTS. ACTUAL QUANTITY REQUIRED MAY VARY DUE TO FIELD CONDITIONS

DEVELOPER:

powerflex
EDF Renewables
805 THIRD AVE, 20TH FLOOR
NEW YORK, NY 10022

ENGINEERED BY:

PUREPOWER ENGINEERING
111 RIVER STREET, SUITE 1110
HOBOKEN, NEW JERSEY 07030

DRAWING INDEX

		INTERCONNECTION DOCUMENTS 01/23/2023	PRELIMIN. CONCEPTUAL DESIGN 08/02/2023	ISSUE FOR PERMIT 09/14/2023	ISSUE FOR PERMIT REV1 11/13/2023	ISSUE FOR BID 11/20/2023
GENERAL						
G001	TITLE SHEET		●	●	●	●
G100	SITE PLAN			●	○	○
G200	ARRAY PLAN		●	●	○	●
G201	ROOF SLOPE					●
G300	FIRE ACCESS PLAN			●	●	●
ELECTRICAL						
E–1.0	SITE PLAN	×				○
E–2.0	SINGLE LINE DIAGRAM	×				○
E001	ELECTRICAL NOTES & SYMBOLS LIST			●	○	○
E100	OVERALL ELECTRICAL PLAN			●	○	●
E101	PARTIAL ELECTRICAL PLAN					●
E102	PARTIAL ELECTRICAL PLAN					●
E200	DC ELECTRICAL PLAN					●
E300	ONE LINE DIAGRAM		●	●	○	●
E301	INVERTER DETAILS		●	○	○	●
E310	SCHEDULES & CALCULATIONS			●	○	●
E410	GROUNDING DETAILS			●	○	○
E420	ELECTRICAL DETAILS			●	○	○
E421	ELECTRICAL DETAILS			●	○	○
E430	STRUCTURAL DETAILS					●
E500	LABELS & SIGNAGE			●	○	●
E600	EQUIPMENT DATA SHEETS			●	○	○
E601	EQUIPMENT DATA SHEETS			●	○	○
CIVIL						
C–1.0	COVER SHEET	×				

LEGEND:

UPDATED DRAWING ISSUED	●
UNCHANGED, PREVIOUSLY ISSUED DRAWING STILL CURRENT	○
DRAWING REMOVED FROM SET	×

DRAWING TITLE: TITLE SHEET

DRAWING #: G001

DATE	REVISION DESCRIPTION	PM	ENG	CHK
11/20/2023	ISSUE FOR BID	TL	SC	MO
11/13/2023	ISSUE FOR PERMIT REV1	TL	SC	MO
10/26/2023	STRINGING PLAN	TL	SC	MO
09/14/2023	ISSUE FOR PERMIT	TL	SC	MO

PUREPOWER ENGINEERING
111 RIVER STREET, HOBOKEN, NJ 07030
PHONE: 201-963-1600
RICHARD A. IVINS
CA LICENSE No: 20357

LICENSED PROFESSIONAL ENGINEER — RICHARD A. IVINS — ELECTRICAL

DEVELOPER: powerflex EDF Renewables
POWERFLEX
805 THIRD AVENUE 20TH FLOOR
NEW YORK, NY 10022
WWW.POWERFLEX.COM

PAGE SIZE: 36" x 24"
PROJECT #: 06939

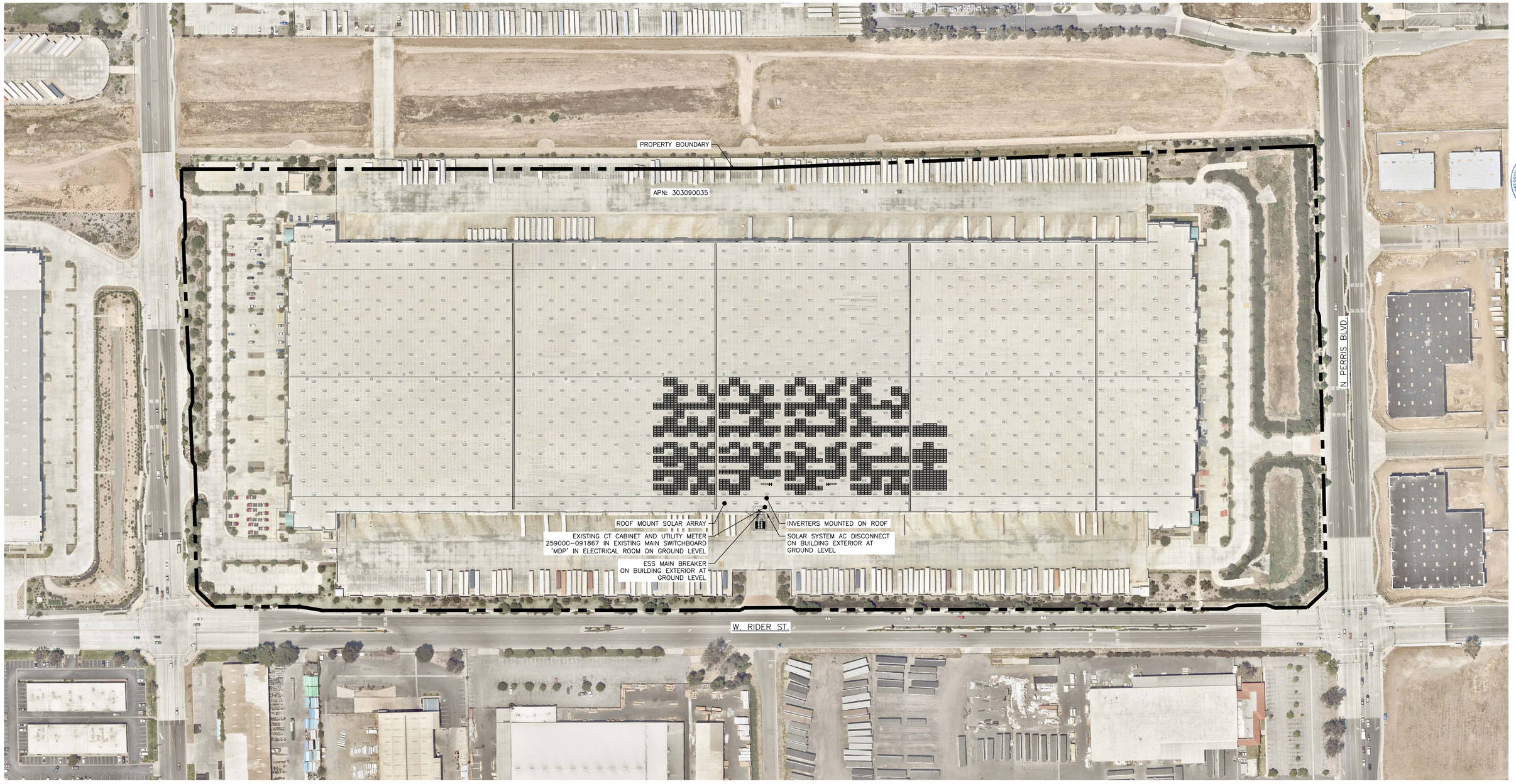
DC SYSTEM SIZE: 1,193.005 kWDC
AC SYSTEM SIZE: 880.000 kWAC
MODULE TYPE: CS6W–545MB–AG
MODULE QUANTITY: 2,189
ORIENTATION: 10° TILT, 181° AZIMUTH

PROJECT: BESS + SOLAR SYSTEM AT PROLOGIS – WAYFAIR 3300
3300 INDIAN AVE.
PERRIS, CA 92571

PLOT DATE: 11/22/2023 12:46 PM

RULER IN INCHES:

PLOT DATE: 11/20/2023 3:40 PM



1 SITE PLAN
SCALE: 1" = 100'

DATE	REVISION DESCRIPTION	PM	ENG	CHK
11/20/2023	ISSUE FOR BID	TL	SC	MD
11/13/2023	ISSUE FOR PERMIT REV1	TL	SC	MD
10/26/2023	STRINGING PLAN	TL	SC	MD
09/14/2023	ISSUE FOR PERMIT	TL	SC	MD

PUREPOWER ENGINEERING
111 RIVER STREET, HOBOKEN, NJ
111 WOODCREEK ROAD
WOODSTOCK, GA
RICHARD A. IVINS
CA LICENSE No. 20357

DEVELOPER
powerflex
EDF Renewables
POWERFLEX
805 THIRD AVENUE 20TH FLOOR
NEW YORK, NY 10022
WWW.POWERFLEX.COM

PAGE SIZE 36" x 24"
PROJECT # 06939

DC SYSTEM SIZE: 1,193.005 kWDC
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MODULE TYPE: CS6W-545MB-AG
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ORIENTATION: 10° TILT, 181° AZIMUTH

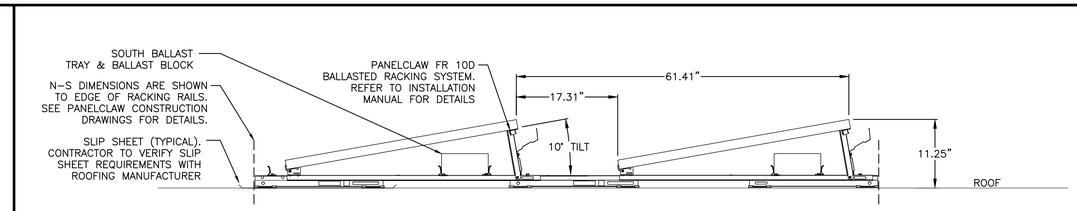
PROJECT
BESS + SOLAR SYSTEM AT
PROLOGIS – WAYFAIR 3300
3300 INDIAN AVE.
PERRIS, CA 92571

DRAWING TITLE
SITE PLAN

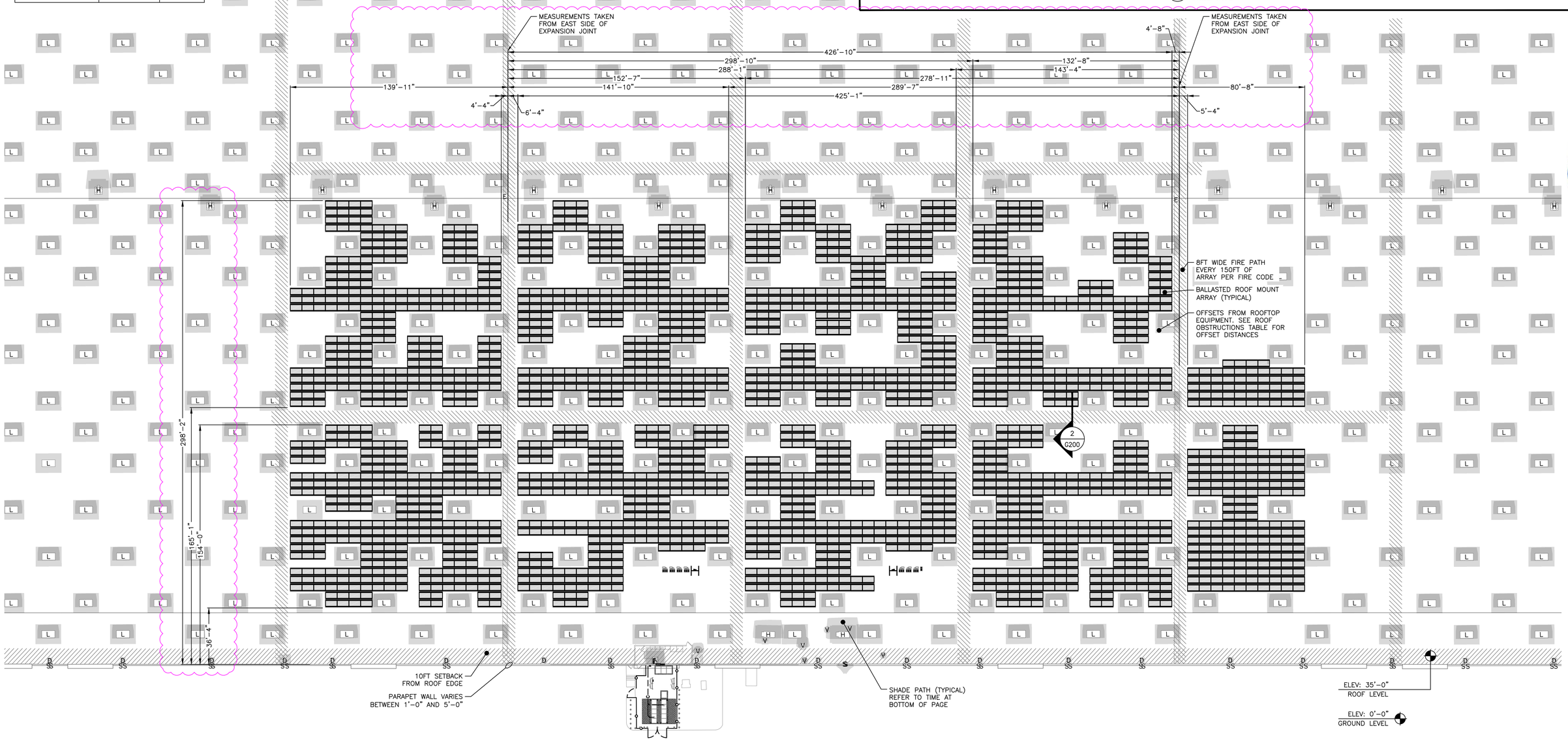
DRAWING #
G100

RULER IN INCHES:

ROOFTOP OBSTRUCTIONS		
OBSTRUCTION TYPE	IDENTIFIER	OFFSET [IN]
ROOF ACCESS	A	48"
DRAINS	D	24"
GAS LINES	G	24"
HVAC	H	48"
LARGE HVAC	H	72"
SATELLITE	S	48"
SKYLIGHTS	L	48"
UNCLASSIFIED	U	48"
VENT PIPES	V	24"
WIRE	W	12"



2 RACKING DETAIL
SCALE: NONE



IMPORTANT:
DO NOT STEP OR KNEEL ON PV MODULES

1 OVERALL ARRAY PLAN
SCALE: 1" = 30'

N

SHADING ZONES:
WINTER: 10:00–2:00
SPRING: 9:00–3:00
SUMMER: 8:00–4:00

DATE	REVISION DESCRIPTION	PM	ENG	CHK
11/20/2023	ISSUE FOR BID	TL	SC	MD
11/13/2023	ISSUE FOR PERMIT REV1	TL	SC	MD
10/26/2023	STRINGING PLAN	TL	SC	MD
09/14/2023	ISSUE FOR PERMIT	TL	SC	MD

PUREPOWER ENGINEERING
111 RIVER STREET, HOBOKEN, NJ
PHONE: (201) 793-1067
RICHARD A. IVINS
CA LICENSE No. 20357

DEVELOPER
powerflex
EDF Renewables

POWERFLEX
805 THIRD AVENUE 20TH FLOOR
NEW YORK, NY 10022
WWW.POWERFLEX.COM

PAGE SIZE: 36" x 24"
PROJECT #: 06939

DC SYSTEM SIZE: 1,193.005 kWDC
AC SYSTEM SIZE: 880.000 kWAC
MODULE TYPE: CS6W-545MB-AG
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ORIENTATION: 10° TILT, 181° AZIMUTH

PROJECT
BESS + SOLAR SYSTEM AT
PROLOGIS – WAYFAIR 3300
3300 INDIAN AVE.
PERRIS, CA 92571

DRAWING TITLE
OVERALL ARRAY PLAN

DRAWING #
G200

PLOT DATE: 11/20/2023 5:57 PM

RULER IN INCHES:

PLOT DATE: 11/22/2023 12:41 PM

1 ROOF SLOPE
SCALE: 1" = 40'

N

DATE	REVISION DESCRIPTION	PM	ENG	CHK
11/20/2023	ISSUE FOR BID	TL	SC	MD
11/13/2023	ISSUE FOR PERMIT REV1	TL	SC	MD
10/26/2023	STRINGING PLAN	TL	SC	MD
09/14/2023	ISSUE FOR PERMIT	TL	SC	MD

PUREPOWER ENGINEERING
111 RIVER STREET, HOBOKEN, NJ
WEBSITE: PUREPOWER.COM
RICHARD A. IVINS
CA LICENSE No. 20357

LICENSED PROFESSIONAL ENGINEER
RICHARD ANDREW IVINS
Expires 12/31/24
Electronically Signed

DEVELOPER
powerflex
EDF Renewables
805 THIRD AVENUE 20TH FLOOR
NEW YORK, NY 10022
WWW.POWERFLEX.COM

PAGE SIZE
36" x 24"

PROJECT #
06939

DC SYSTEM SIZE: 1,193.005 kWDC
AC SYSTEM SIZE: 880.000 kWAC
MODULE TYPE: CS6W-545MB-AG
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ORIENTATION: 10° TILT, 181° AZIMUTH

PROJECT
BESS + SOLAR SYSTEM AT
PROLOGIS – WAYFAIR 3300
3300 INDIAN AVE.
PERRIS, CA 92571

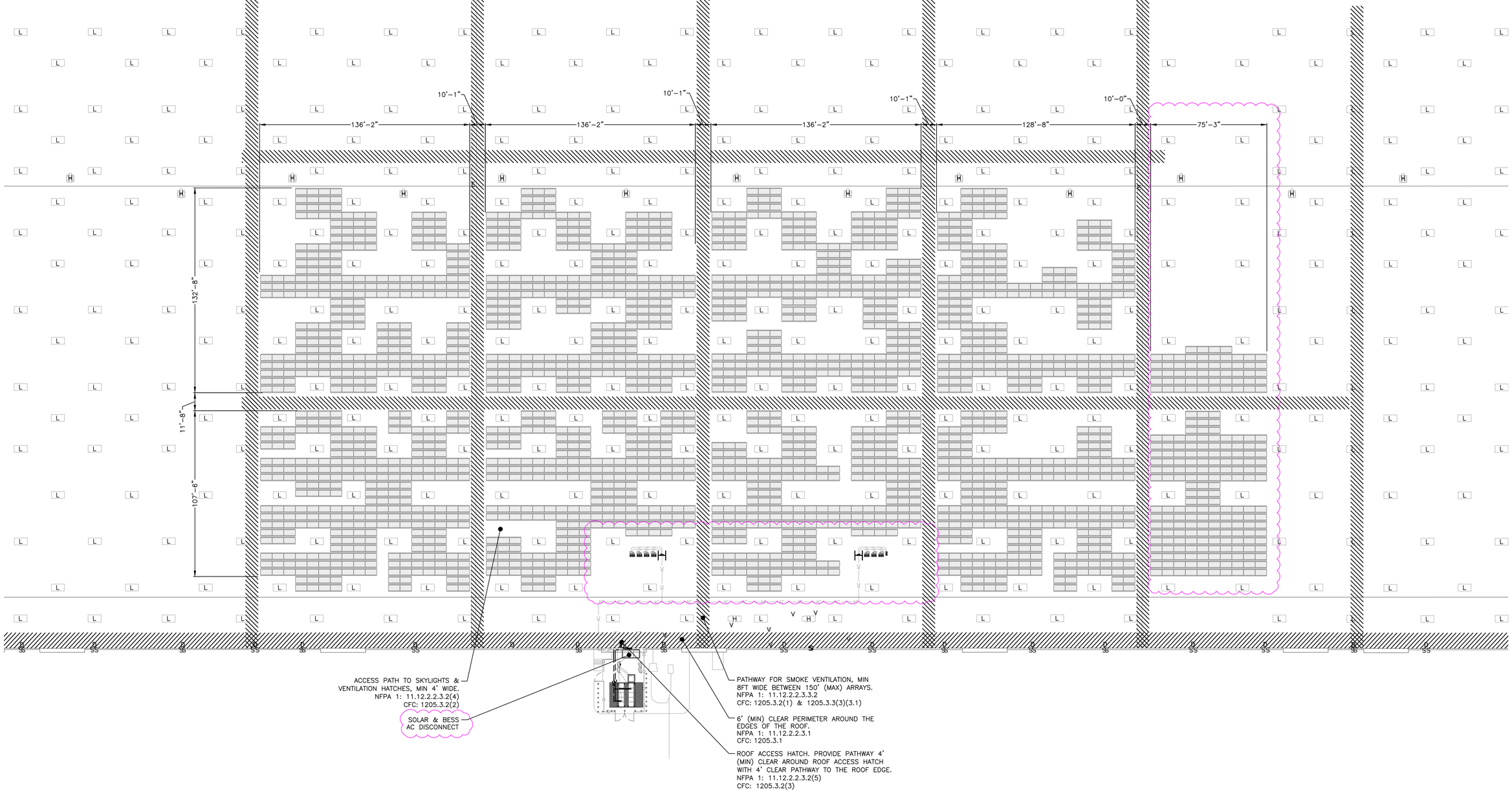
DRAWING TITLE
ROOF SLOPE

DRAWING #
G201

RULER IN INCHES:

NFPA 1 REQUIRED LABELS:

1. MAIN SERVICE DISCONNECT – THE LABEL "WARNING: PHOTOVOLTAIC POWER SOURCE" SHALL BE PERMANENTLY AFFIXED TO THE MAIN SERVICE DISCONNECT. LABEL SHALL BE RED WITH WHITE CAPITAL LETTERS AT LEAST 3/4" HIGH IN NONSERIF FONT. MATERIAL SHALL BE REFLECTIVE, WEATHER RESISTANT, AND SUITABLE FOR THE ENVIRONMENT. (NFPA 1: 11.12.2.1.1)
2. INVERTER DISCONNECTS – THE LABEL "PHOTOVOLTAIC DISCONNECT" SHALL BE AFFIXED TO EACH CIRCUIT BREAKER PANEL SERVING THE INVERTERS. LABEL SHALL BE CONTRASTING COLOR WITH CAPITAL LETTERS AT LEAST 3/8" HIGH IN NONSERIF FONT. THE LABEL SHALL BE CONSTRUCTED OF DURABLE ADHESIVE MATERIAL OR OTHER APPROVED MATERIAL. (NFPA 1: 11.12.2.1.2)
3. SOLAR RACEWAYS – THE LABEL "PHOTOVOLTAIC POWER SOURCE" SHALL BE RED WITH WHITE CAPITAL LETTERS AT LEAST 3/8" HIGH IN NONSERIF FONT. LABELS SHALL BE PERMANENTLY AFFIXED ON ALL EXPOSED RACEWAYS, CABLE TRAYS, PULL BOXES, AND JUNCTION BOXES. LABELS SHALL BE SPACED NO GREATER THAN 10 FEET APART. MATERIAL SHALL BE REFLECTIVE, WEATHER RESISTANT, AND SUITABLE FOR THE ENVIRONMENT. (NFPA 1: 11.12.2.1.3)
4. SEE DRAWING E500 FOR ADDITIONAL LABELS REQUIRED BY THE NATIONAL ELECTRICAL CODE.



1 FIRE ACCESS PLAN – ROOF
SCALE: 1" = 30'

N

ROOFTOP OBSTRUCTIONS	
OBSTRUCTION TYPE	IDENTIFIER
ROOF ACCESS	A
SKYLIGHTS	L

DATE	REVISION DESCRIPTION	PM	ENG	CHK
11/20/2023	ISSUE FOR BID	TL	SC	MD
11/13/2023	ISSUE FOR PERMIT REV1	TL	SC	MD
10/26/2023	STRINGING PLAN	TL	SC	MD
09/14/2023	ISSUE FOR PERMIT	TL	SC	MD

PUREPOWER ENGINEERING
111 RIVER STREET, HOBOKEN, NJ
WWW.PUREPOWER.COM
RICHARD A. IVINS
CA LICENSE No. 20357

DEVELOPER: powerflex

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805 THIRD AVENUE 20TH FLOOR
NEW YORK, NY 10022
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PAGE SIZE: 36" x 24"
PROJECT #: 06939

DC SYSTEM SIZE: 1,193.005 kWDC
AC SYSTEM SIZE: 880.000 kWAC
MODULE TYPE: CS6W-545MB-AG
MODULE QUANTITY: 2,189
ORIENTATION: 10° TILT, 181° AZIMUTH

PROJECT: BESS + SOLAR SYSTEM AT PROLOGIS – WAYFAIR 3300
3300 INDIAN AVE.
PERRIS, CA 92571

DRAWING TITLE: FIRE ACCESS PLAN

DRAWING #: G300

PLOT DATE: 11/20/2023 3:41 PM

RULER IN INCHES:

PLOT DATE: 11/20/2023 3:41 PM

ELECTRICAL NOTES

1. GENERAL
1.A. ALL WORK AND MATERIALS SHALL BE IN FULL ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND ALL EQUIPMENT SHALL BE LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL) TO APPLICABLE UL STANDARDS. THE CONTRACTOR SHALL PROCURE ALL NECESSARY CERTIFICATIONS FOR ALL WORK INSTALLED, PAY ALL FEES AND CHARGES CONNECTED THEREWITH AND DELIVER ALL CERTIFICATES AND INSPECTION APPROVALS TO THE OWNER THROUGH THE ENGINEER, BEFORE WORK WILL BE FINALLY ACCEPTED.
1.B. ALL INVERTERS SHALL BE IEEE 1547 COMPLIANT AND SHALL BE INSPECTED BY LOCAL UTILITY BEFORE COMMISSIONING, TESTING AND OPERATION OF THE SYSTEM.
1.C. REFERENCE POWER STUDY FOR NEW EQUIPMENT INTERRUPT RATING (kAIC) OR SHORT CIRCUIT CURRENT RATING (SCCR).

2. MANNER OF INSTALLATION
2.A. ALL WORK SHALL BE INSTALLED IN A FIRST CLASS, NEAT AND WORKMANLIKE MANNER BY MECHANICS SKILLED IN THE TRADE INVOLVED. ALL DETAILS OF THE INSTALLATION SHALL BE MECHANICALLY AND ELECTRICALLY CORRECT.
2.B. TORQUE AND MARK ALL RACKING AND MECHANICAL LUGS.

3. CONDUCTORS AND CONDUCTOR INSTALLATION
3.A. COMPRESSION LUGS SHALL BE USED ON ALL ALUMINUM CABLE TERMINATIONS. MECHANICAL LUGS MAY ONLY BE USED FOR COPPER CABLE TERMINATIONS OR ALUMINUM CABLE WITH COMPRESSION PIN ADAPTORS.
3.B. IF ALUMINUM MC CABLE IS USED, THHN/THWN-2 INSULATION IS ACCEPTABLE. FOR ALUMINUM CONDUCTORS, XHHW-2 SHALL BE USED.
3.C. ANTI-OXIDANT COMPOUND SHALL BE USED WITH ALL ALUMINUM LUGS. CLEAN OXIDATION FROM WIRE STRANDS WITH STEEL WIRE BRUSH PRIOR TO APPLICATION OF COMPOUND.
3.D. PV SYSTEM CONDUCTORS SHALL BE MARKED AND IDENTIFIED PER NEC 690.31(B).
3.E. INSTALL WIRE AND CABLE IN ACCORDANCE WITH THE NEC AND AS HEREINAFTER SPECIFIED. USE THE NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION'S "STANDARD OF INSTALLATION", THE MANUFACTURER'S WRITTEN INSTRUCTIONS, UNLESS SUPERSEDED BY THESE SPECIFICATIONS. IN ALL CASES THE INSTALLATION SHALL BE IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES.
3.F. THE USE OF WIRE SPLICES AT ANY POINT IN THE INSTALLATION IS STRICTLY PROHIBITED
3.G. THE USE OF WIRE LUBE IS REQUIRED FOR ALL WIRE PULLS THROUGH CONDUIT RUNS OF 20' OR LONGER, OR WITH BENDS IN 180° OR MORE. WIRE LUBE IS REQUIRED EVEN WHEN USING SELF LUBRICATING CABLES SUCH AS SOUTHWIRE 'SIMPULL'.
3.H. STRING WIRING & HOMERUNS SHALL BE SECURED TO UNDERSIDE OF THE RACKING & MODULES USING HEYCO SUNBUNDLER PVC-COATED SS CABLE TIES. TRANSITION TO EMT OUTSIDE OF ARRAY.
3.I. ALL PV SOURCE CIRCUITS WHICH WOULD BE EXPOSED TO PHYSICAL DAMAGE SHALL BE PROTECTED IN CONDUIT OR CABLE TRAY.
3.J. ALL PV SOURCE CIRCUITS WITH DIRECT EXPOSURE TO SUNLIGHT SHALL BE PROTECTED THROUGH THE USE OF CONDUIT, PROTECTIVE WRAP, SPLIT LOOM, OR EQUIVALENT, WHICH ARE DURABLE FOR THE ENVIRONMENT AND RATED FOR THE APPLICATION.
3.K. ALL PLUG AND SOCKET CONNECTORS MATED TOGETHER SHALL BE OF THE SAME TYPE AND OF THE SAME MANUFACTURER. "COMPATIBLE" CONNECTORS SHALL NOT BE ACCEPTED (IEC 62446-1).
3.L. ALL FIELD-MADE PLUG & SOCKET CONNECTORS SHALL BE INSTALLED USING MANUFACTURER APPROVED TOOLS AND METHODS, AND CABLE GLANDS SHALL BE TIGHTENED TO MANUFACTURER'S SPECIFIED TORQUE VALUE.

4. PHASE RELATIONSHIP
4.A. CONNECT FEEDERS TO MAINTAIN PHASE RELATIONSHIP THROUGH SYSTEM. PHASE LEGS OF FEEDERS SHALL MATCH BUS OR CABLE ARRANGEMENTS IN EQUIPMENT TO WHICH THE FEEDERS ARE CONNECTED. COLOR CODING SHALL BE AS FOLLOWS:

208/120 VAC
A PHASE: BLACK, B PHASE: RED, C PHASE: BLUE

277/480 VAC OR 346/600 VAC
A PHASE: BROWN, B PHASE; ORANGE, C PHASE: YELLOW

1500 VDC, 1000 VDC, OR 600 VDC
UNGROUNDED POSITIVE CONDUCTOR: RED
UNGROUNDED NEGATIVE CONDUCTOR: BLACK

AC AND DC SYSTEMS:
GROUNDED CONDUCTOR: WHITE
GROUND: GREEN

4.B. GROUNDED CONDUCTORS (NEUTRAL) AND EQUIPMENT GROUNDING CONDUCTORS SMALLER THAN #4 MUST HAVE COLOR CODED INSULATION. WHERE COLOR CODED CABLE IS NOT USED, TAPE CONDUCTOR WITH OVERLAPPED COLORED TAPE FOR A MINIMUM OF 6" IN ACCESSIBLE LOCATIONS. COLOR CODING MUST BE USED CONSISTENTLY FOR THE ENTIRE PROJECT.
4.C. BARE GROUND WIRE SHALL NOT BE INSTALLED IN GALVANIZED STEEL CONDUIT.

5. CONDUITS AND RACEWAYS
5.A. PROVIDE RACEWAYS MINIMUM SIZE 3/4".
5.B. CONDUITS SHALL BE EMT WHERE NOT SUBJECT TO PHYSICAL DAMAGE. CONDUITS SHALL BE IMC OR RMC WHERE SUBJECT TO PHYSICAL DAMAGE. PVC CONDUITS ONLY PERMITTED IN BELOW GRADE DUCT BANKS.
5.C. DRAWINGS SHOW RACEWAY LOCATIONS DIAGRAMMATICALLY. CONTRACTOR SHALL ADJUST ROUTING TO SUIT FIELD LOCATIONS. ANY CHANGES TO PROPOSED ROUTING SHALL BE SUBMITTED TO ENGINEER FOR REVIEW AND APPROVAL.
5.D. FURNISH AND INSTALL ALL FITTINGS AND SPECIAL DEVICES NECESSARY FOR THE PROPER INSTALLATION, CONNECTION AND OPERATION OF THE SYSTEM. CONDUIT ELBOWS SHALL BE OF THE SAME MAKE, QUALITY AND FINISH AS THE CONDUIT USED.
5.E. A PROTECTIVE COATING OF ASPHALT COMPOUND, PLASTIC SHEATH, OR OTHER EQUIVALENT PROTECTION SHALL BE APPLIED TO ANY GALVANIZED STEEL CONDUITS DIRECTLY BURIED IN EARTH.
5.F. EMT CONDUIT SHALL USE COMPRESSION RAINTIGHT CONNECTORS, FACTORY STAMPED RAINTIGHT WITH COMPONENTS PROPERLY INSTALLED.
5.G. PROVIDE EXPANSION FITTINGS WITH BONDING JUMPERS FOR EVERY 100' OF STRAIGHT METAL CONDUIT RUN.
5.H. CONDUIT EXPANSION AND DEFLECTION FITTINGS WITH BONDING JUMPERS SHALL BE USED WHENEVER CROSSING BUILDING EXPANSION AND SEISMIC SEPARATION JOINTS.
5.I. LEAVE WIRE SUFFICIENTLY LONG TO PERMIT MAKING FINAL CONNECTIONS. ALL EMPTY CONDUITS OVER 10' IN LENGTH SHALL BE PROVIDED WITH SYNTHETIC FIBER ROPE PULL WIRE.
5.J. PATCH AND REPAIR ALL SURFACES DAMAGED BY TRENCHING TO MATCH THE PREVIOUSLY EXISTING CONDITIONS.
5.K. ALL PENETRATIONS SHALL BE SEALED TO MAINTAIN THE EXISTING FIRE RATING.
5.L. ALL ROOFTOP CONDUITS SHALL BE MARKED PER LOCAL FIRE CODES.
5.M. ALL CONDUITS ENTERING ENCLOSURES SHALL BE FITTED WITH PROTECTIVE BUSHINGS, INCLUDING CONDUIT WITH CONDUCTOR SIZES SMALLER THAN #4 AWG. METALLIC CONDUIT/BUSHINGS SHALL BE BONDED PER NEC.
5.N. ALL CONDUIT ENTERING ENCLOSURES SHALL BE SEALED WITH AN APPROVED SEALANT.
5.O. DUAL-RATED, LAY-IN STYLE GROUND LUGS AND GROUND BUSHINGS OR CONDUIT GROUND CLAMPS SHALL BE PROVIDED FOR ALL METALLIC CONDUIT.

6. ELECTRICAL ENCLOSURES
6.A. ALL OUTDOOR ENCLOSURES (PANELBOARDS, DISCONNECT SWITCHES, JUNCTION BOXES, COMBINER BOXES, ETC.) SHALL BE NEMA 3R, 4, OR 4X. ALL WALL OR RACK MOUNTED OUTDOOR ENCLOSURES SHALL HAVE A MINIMUM 2'-0" CLEARANCE ABOVE GRADE. INDOOR ENCLOSURES SHALL BE NEMA 1.
6.B. PANELBOARD DOORS SHALL BE QUARTER TURN LATCHES OR EXTERNAL HANDLE WITH INTERNAL LATCHES, NO SETS OF EXTERNAL SCREW DOWN CLAMPS.
6.C. CONDUIT TERMINATING IN OUTDOOR ENCLOSURES SHALL USE MYERS-TYPE HUBS WITH GROUND SCREW. UTILIZE RAINTIGHT FITTINGS FOR ALL CABLE ENTRIES.
6.D. NO PENETRATIONS OR CABLE ENTRIES IN THE TOP OF OUTDOOR ENCLOSURES. ENTER OUTDOOR ENCLOSURES FROM THE BOTTOM (PREFERRED) OR SIDE.
6.E. ALL ELECTRICAL EQUIPMENT SHALL BE LISTED OR LABELED BY A RECOGNIZED TESTING AGENCY.
6.F. ARC FLASH HAZARD WARNING LABELS SHALL BE PROVIDED AND MOUNTED ON EVERY COMBINER BOX, TERMINAL BOX, INVERTER, AC AND DC SWITCH, TRANSFORMER, AND SWITCHGEAR.
6.G. HAND HOLES, PULL BOXES, OR CONDUIT BODIES SHALL BE INSTALLED (WHETHER OR NOT SHOWN ON DRAWINGS) WHEN THE RACEWAY HAS MORE THAN 360° OF BENDS, OR AS NECESSARY TO NOT EXCEED MANUFACTURER'S MAXIMUM CABLE PULLING TENSION.
6.H. SWITCHBOARDS AND SWITCHGEARS SHALL BE PROVIDED WITH TEMPORARY INTERNAL HEATERS DURING LONG TERM STORAGE WHILE NOT ENERGIZED AS REQUIRED BY THE MANUFACTURER. ALL OTHER EQUIPMENT SHALL BE STORED IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS.
6.I. ALL ELECTRICAL EQUIPMENT CONTAINING A CIRCUIT BREAKER OR FUSE SHALL BE INSTALLED IN COMPLIANCE WITH NEC ARTICLE 240.24.

7. GROUNDING
7.A. THE CONTRACTOR SHALL FURNISH AND INSTALL GROUNDING NECESSARY IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.

8. TESTS
8.A. ALL TESTS SHALL BE PERFORMED BY TRAINED TECHNICIANS CERTIFIED TO DO THE PROCEDURES.
8.B. FINAL TESTS AND INSPECTIONS SHALL BE HELD IN THE PRESENCE OF THE OWNER'S REPRESENTATIVES AND TO THEIR SATISFACTION.
8.C. ALL APPLICABLE TESTS SHALL BE PERFORMED IN ACCORDANCE WITH NETA/ANSI ATS-2021 STANDARDS AND PRACTICES.
8.D. ALL APPLICABLE TESTS SHALL BE PERFORMED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
8.E. ALL TESTS SHALL BE PERFORMED PRIOR TO ENERGIZATION.
8.F. TESTING IS LIMITED TO NEW EQUIPMENT RELATED TO THIS PROJECT.
8.G. Vmp AND ImP READINGS SHALL BE RECORDED FOR THE IV CURVE TRACING OF STRINGS USING THE SOLAREDGE INVERTER INTERFACE AND/OR THE ENNEXOSE.SUNNY PORTAL AND SUBMITTED TO OWNER FOR APPROVAL.
8.H. OPEN-CIRCUIT VOLTAGE (Voc) MEASUREMENTS SHALL BE PERFORMED ON ALL DC STRING CIRCUITS DURING APPROVED WEATHER CONDITIONS. Voc READINGS WILL BE TAKEN TO ASSURE PROPER OPERATION OF RSD
8.I. ALL PV CONNECTORS MATED TOGETHER SHALL BE CONFIRMED TO BE OF THE SAME MAKE/MODEL.
8.J. INSULATION TESTS SHALL BE PERFORMED ON ALL STRING AND FEEDER DC CIRCUIT CABLES.
8.K. INSULATION TESTS SHALL BE PERFORMED ON ALL SERVICE AND FEEDER AC CIRCUIT CABLES.
8.L. GROUND FAULT PROTECTION SYSTEMS SHALL BE FUNCTIONALLY TESTED IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS (NEC 230.95(C)).
8.M. RELAY PROTECTION SYSTEM FUNCTIONAL TESTS SHALL BE IN ACCORDANCE WITH THE SETTINGS PROVIDED AND WITHIN THE OPERATIONAL INTENT OF THIS PROJECT NOTED IN EOR DRAWING.
8.N. ACCEPTANCE TESTING SHALL BE PERFORMED ON ALL COMBINER BOXES, PANELBOARDS SWITCHBOARDS AND SWITCHGEAR.

GENERAL NOTES

1. THE GENERAL NOTES APPLY TO ALL DRAWINGS UNDER THE CONTRACT. REFER TO INDIVIDUAL DRAWINGS FOR ADDITIONAL NOTES.
2. DRAWINGS ARE DIAGRAMS AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. FOLLOW DRAWINGS IN LAYING OUT OF WORK AND CHECK DRAWINGS OF OTHER TRADES TO VERIFY SPACE CONDITIONS. MAINTAIN HEADROOM, SPACE CONDITIONS, AND REQUIRED CLEARANCES.
3. PV SYSTEM CONTRACTOR SHALL COORDINATE ALL THE WORK WITH THE ENGINEER, THE CONSTRUCTION MANAGER AND ALL OTHER CONTRACTORS TO INSURE THAT THE PV SYSTEM IS INSTALLED AS SPECIFIED IN THESE DRAWINGS.
4. PERSONAL PROTECTIVE EQUIPMENT (PPE) SHALL BE PROVIDED AS REQUIRED IN ACCORDANCE WITH NEC 70E AND OSHA REQUIREMENTS.
5. UNFORSEEN OBSTRUCTIONS ON THE SITE MAY NECESSITATE A CHANGE IN THE LAYOUT. ANY CHANGES TO THE RACKING LAYOUT SHOULD BE REPORTED TO THE ENGINEER. CHANGES IN UP TO 5% OF THE MODULES SHOULD BE ANTICIPATED. CHANGES TO THE ARRAY LAYOUT SHOULD BE MADE AS TO NOT IMPACT THE NUMBER OF MODULES ON A COMBINER BOX OR INVERTER.
6. LANDSCAPING: RESTORE TO ORIGINAL CONDITIONS.
7. ALL STRUCTURAL AND MISCELLANEOUS EXTERIOR STEEL, INCLUDING STRUT CHANNEL (SUCH AS UNISTRUT OR KINDORF) SHALL BE CORROSION RESISTANT, HOT DIP GALVANIZED OR GALVANNEALED WITH A COATED FINISH MINIMUM.

NOTES SPECIFIC TO CALIFORNIA

ADOPTED ELECTRICAL CODE: 2022 CALIFORNIA ELECTRICAL CODE (BASED ON THE 2020 NEC).

BY LAW, ANYONE PLANNING TO EXCAVATE OR DEMOLISH IS REQUIRED TO CALL 811 AT LEAST TWO FULL BUSINESS DAYS BEFORE WORK BEGINS

BATTERY ENERGY STORAGE SYSTEM (BESS) NOTES

1. ESS SHALL BE LISTED IN ACCORDANCE WITH UL 9540, UNLESS SPECIFICALLY EXEMPTED IN NFPA 855.
2. A PERMANENT PLAQUE OR DIRECTORY DENOTING THE LOCATION OF ALL ESS POWER SOURCE DISCONNECTING MEANS ON OR IN THE PREMISES SHALL BE INSTALLED AT EACH SERVICE EQUIPMENT LOCATION AND AT THE LOCATION(S) OF THE SYSTEM DISCONNECT(S) FOR ALL ENERGY SOURCES CAPABLE OF BEING INTERCONNECTED.
3. ESS SHALL BE LOCATED OR PROTECTED TO PREVENT PHYSICAL DAMAGE FROM IMPACT WHERE SUCH RISKS ARE IDENTIFIED.
4. ESS SHALL BE SECURED AGAINST UNAUTHORIZED ENTRY AND SAFEGUARDED IN AN APPROVED MANNER.
5. CLEARANCES AROUND OUTDOOR ESS HOUSINGS SHALL COMPLY WITH NFPA 855 SECTION 4.4.3.3.
6. ESS INSTALLED OUTDOORS ON EXTERIOR WALLS OF BUILDINGS SHALL COMPLY WITH NFPA 855 SECTION 4.4.3.10
7. ROOFTOP AND OPEN PARKING GARAGE ESS INSTALLATIONS SHALL COMPLY WITH NFPA 855 SECTION 4.4.4.
8. ESS AND ASSOCIATED EQUIPMENT THAT ARE LOCATED ON ROOFTOPS AND NOT ENCLOSED BY BUILDING CONSTRUCTION SHALL COMPLY WITH NFPA 855 SECTION 4.4.4.4.2(1)-(9)
9. ESS AND ASSOCIATED EQUIPMENT THAT ARE LOCATED IN OPEN PARKING GARAGES SHALL COMPLY WITH NFPA 855 SECTION 4.4.4.5(1)-(5)
10. ESS LOCATED IN WALK-IN ENCLOSURES ON ROOFTOPS, IN OPEN PARKING GARAGES, IN AREAS CONTAINING ESS OTHER THAN WALK-IN UNITS IN OPEN PARKING STRUCTURES NOT OPEN ABOVE TO THE SKY SHALL BE PROVIDED WITH AN AUTOMATIC FIRE SUPPRESSION SYSTEM COMPLYING WITH NFPA 855 SECTION 4.11.
11. OUTDOOR WALK-IN CONTAINERS OR ENCLOSURES HOUSING ESS SHALL NOT EXCEED 53 FT × 8.5 FT × 9.5 FT (16.2 M × 2.6 M × 2.9 M), NOT INCLUDING HVAC AND OTHER EQUIPMENT. OUTDOOR WALK-IN CONTAINERS OR ENCLOSURES EXCEEDING THIS SIZE SHALL BE TREATED AS INDOOR INSTALLATIONS UNDER NFPA 855.
12. BESS UNIT INSTALLATION SHALL BE IN COMPLIANCE WITH SECTION 1207 OF THE 2022 CFC.

LEGEND - GENERAL

SYMBOL	DESCRIPTION
	LIGHT LINE INDICATES EXISTING OR BEYOND THE SCOPE OF PROJECT
	DARK LINE INDICATES NEW OR WITHIN THE SCOPE OF PROJECT
-----	DASHED LINE INDICATES EQUIPMENT AT A DIFFERENT ELEVATION
EXISTING TEXT	LIGHT TEXT INDICATES EXISTING OR BEYOND THE SCOPE OF PROJECT
NEW TEXT	DARK TEXT INDICATES NEW OR WITHIN THE SCOPE OF PROJECT

LEGEND - CIRCUITS

SYMBOL	DESCRIPTION
—xx————xx—	ABOVE-GROUND CABLE
—xx— — — —xx—	UNDER-GROUND CABLE

NOTE: XX REPRESENTS CIRCUIT TYPE BELOW

ABBREVIATION	DESCRIPTION
DC	DIRECT CURRENT
AC	ALTERNATING CURRENT
MV	MEDIUM VOLTAGE
C	COMMUNICATIONS
GND	GROUND
CAB	CAB MESSENGER
FO	FIBER OPTIC

LEGEND - PLAN SYMBOLS

SYMBOL	DESCRIPTION
	RACEWAY TURNING UP OR TOWARDS OBSERVER
	RACEWAY TURNING DOWN OR AWAY FROM OBSERVER
P OR P	PULLBOX
J OR J	JUNCTION BOX
	GROUND FAULT CIRCUIT INTERRUPTER DUPLEX RECEPTACLE, RATED: 125-VOLTS AC, 20A
	GROUND ROD
	GROUND ROD W/ TEST WELL
	SLOPE DIRECTION INDICATOR

LEGEND - ONE LINE DIAGRAM & WIRING DIAGRAM SYMBOLS

SYMBOL	DESCRIPTION
	CIRCUIT BREAKER, FRAME SIZE AND TRIP SETTING AS NOTED
	DISCONNECT SWITCH
	INVERTER
	BUSS CONNECTION POINT
	CROSSING POINT (NO CONNECTION)
	NORMALLY CLOSED - NORMALLY OPEN CONTACTS
	TRANSFORMER CONTROL/POWER, SIZE AND RATING AS NOTED
	CURRENT TRANSFORMER
	POTENTIAL TRANSFORMER
	FUSE, SIZE/RATING AS NOTED
	FUSED DISCONNECT SWITCH
	EARTH GROUND
NC NO	PUSHBUTTON SWITCHES; NUMBER AND TYPE OF CONTACT BLOCKS MAY VARY
NC NO	PUSHBUTTON SWITCHES MUSHROOM HEAD; NUMBER AND TYPE OF CONTACT BLOCKS MAY VARY
K	KEYED INTERLOCK (KIRK KEY OR EQ.)
ST	SHUNT TRIP COIL

ABBREVIATIONS

ABBREVIATION	DESCRIPTION
A	AMPERES
AERMS	ARC ENERGY REDUCING MAINTENANCE SYSTEM
AF	AMPERE FRAME
A.F.F.	ABOVE FINISH FLOOR
A.F.G.	ABOVE FINISH GRADE
AFDI	ARC FAULT DETECTION & INTERRUPTER
AIC	AMPS INTERRUPTING CAPACITY
AL	ALUMINUM
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BKR	CIRCUIT BREAKER
C	CONDUIT
CB	COMBINER BOX
CKT	CIRCUIT
COU	CONDITIONS OF USE
CP	CONTROL PANEL
CT	CURRENT TRANSFORMER
CU	COPPER
DB	DIRECT BURIAL
DISC	DISCONNECT
EGC	EQUIPMENT GROUNDING CONDUCTOR
ELEC	ELECTRIC, ELECTRICAL
EMERG	EMERGENCY
EMT	ELECTRIC METALLIC TUBING
EQUIP	EQUIPMENT
EV	ELECTRIC VEHICLE
EVCS	ELECTRIC VEHICLE CHARGING STATION
EXIST	EXISTING
G, GND	GROUND
GEC	GROUNDING ELECTRODE CONDUCTOR
GFCI	GROUND-FAULT CIRCUIT INTERRUPTER
GFPE	GROUND-FAULT PROTECTION OF EQUIPMENT
HID	HIGH-INTENSITY DISCHARGE (LIGHTING)
HZ	HERTZ
IMC	INTERMEDIATE METAL CONDUIT
kAIC	1000 AMPS INTERRUPT CAPACITY
kCMIL	1000 CIRCULAR MILS
kVA	KILO-VOLT AMPERE
kW	KILOWATT
LA	LIGHTNING & SURGE ARRESTOR
LED	LIGHT-EMITTING DIODE
LSIG	LONG, SHORT, INSTANTANEOUS, & GROUND-FAULT
LTG	LIGHTING
MAX	MAXIMUM
MCM	1000 CIRCULAR MILS
MFG	MANUFACTURER
MLO	MAIN LUGS ONLY
MLPE	MODULE LEVEL POWER ELECTRONICS
MPPT	MAXIMUM POWER POINT TRACKING
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NTS	NOT TO SCALE
OV	OVER VOLTAGE
P	POLE
PF	POWER FACTOR
PLC	PROGRAMMABLE LOGIC CONTROLLER
POA	PLANE OF ARRAY
POI	POINT OF INTERCONNECTION
PRI	PRIMARY
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE
PWR	POWER
RAC	RIGID ALUMINUM CONDUIT
RCPT	RECEPTACLE
RGS	RIGID GALVANIZED STEEL CONDUIT
RMC	RIGID METAL CONDUIT
SA	SURGE ARRESTOR
SEC	SECONDARY
SPD	SURGE PROTECTION DEVICE
SSBJ	SUPPLY SIDE BONDING JUMPER
ST	SHUNT TRIP
STP	SHIELDED TWISTED PAIR
SW	SWITCH
TBD	TO BE DETERMINED
TP	TWISTED PAIR
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
UV	UNDER VOLTAGE OR ULTRAVIOLET
V	VOLT
VA	VOLT-AMPERE
W	WATT
WR	WEATHER RESISTANT
XFMR	TRANSFORMER
ø	DIAMETER OR PHASE

DATE	REVISION DESCRIPTION	PM	ENG	CHK
11/20/2023	ISSUE FOR BID	TL	SC	MD
11/13/2023	ISSUE FOR PERMIT REV1	TL	SC	MD
10/26/2023	STRINGING PLAN	TL	SC	MD
09/14/2023	ISSUE FOR PERMIT	TL	SC	MD

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PAGE SIZE 36" × 24"
PROJECT # 06939

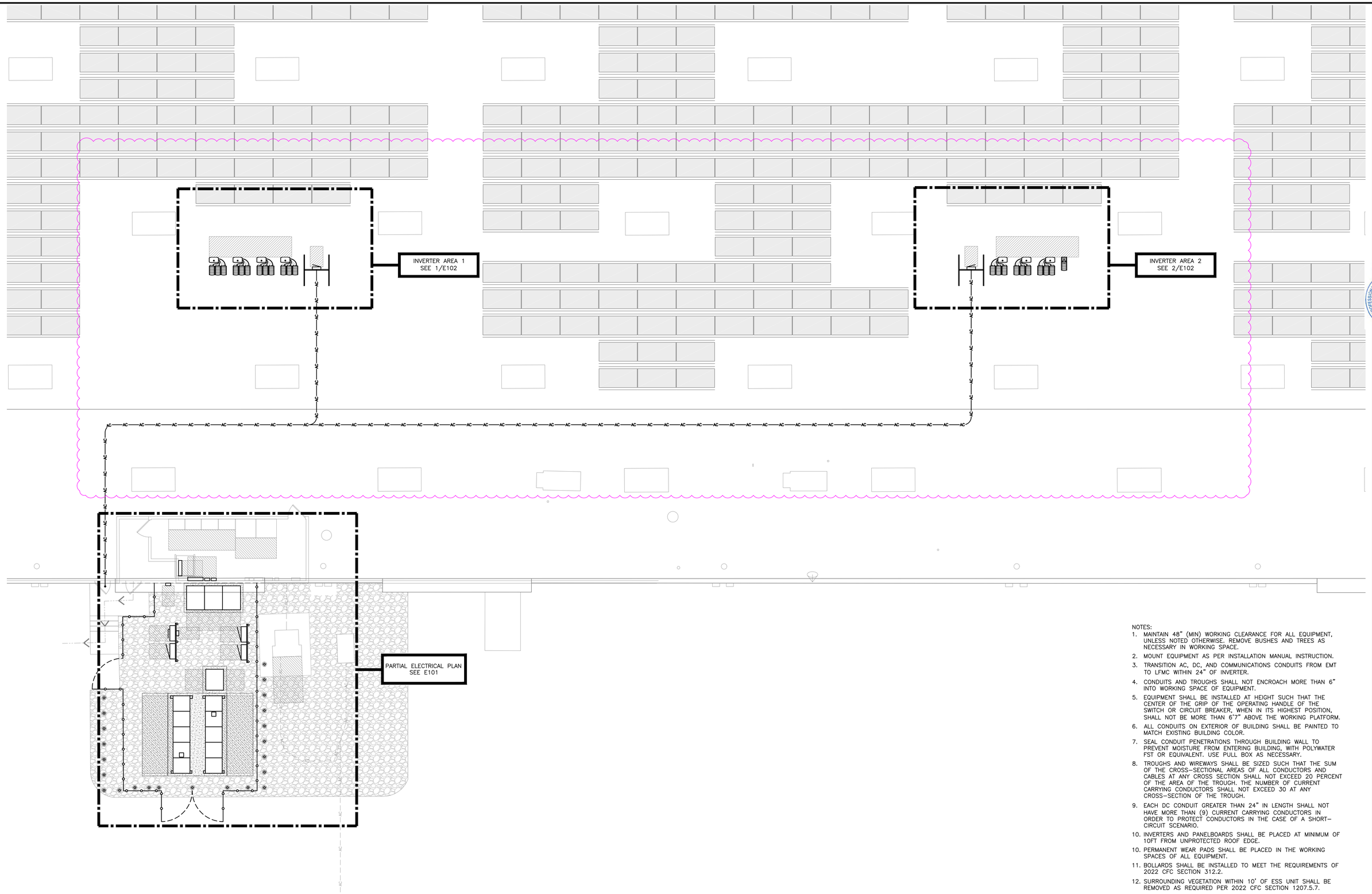
DC SYSTEM SIZE: 1,193.005 kWDC
AC SYSTEM SIZE: 880.000 kWAC
MODULE TYPE: CS6W-545MB-AG
MODULE QUANTITY: 2,189
ORIENTATION: 10° TILT, 181° AZIMUTH

PROJECT
BESS + SOLAR SYSTEM AT
PROLOGIS - WAYFAIR 3300
3300 INDIAN AVE.
PERRIS, CA 92571

DRAWING TITLE
ELECTRICAL NOTES & SYMBOLS LIST

DRAWING #
E001

RULER IN INCHES:



1 OVERALL AC ELECTRICAL PLAN
SCALE: 1/8" = 1'-0"

NOTES:

1. MAINTAIN 48" (MIN) WORKING CLEARANCE FOR ALL EQUIPMENT, UNLESS NOTED OTHERWISE. REMOVE BUSHES AND TREES AS NECESSARY IN WORKING SPACE.
2. MOUNT EQUIPMENT AS PER INSTALLATION MANUAL INSTRUCTION.
3. TRANSITION AC, DC, AND COMMUNICATIONS CONDUITS FROM EMT TO LFMC WITHIN 24" OF INVERTER.
4. CONDUITS AND TROUGHS SHALL NOT ENCROACH MORE THAN 6" INTO WORKING SPACE OF EQUIPMENT.
5. EQUIPMENT SHALL BE INSTALLED AT HEIGHT SUCH THAT THE CENTER OF THE GRIP OF THE OPERATING HANDLE OF THE SWITCH OR CIRCUIT BREAKER, WHEN IN ITS HIGHEST POSITION, SHALL NOT BE MORE THAN 6'7" ABOVE THE WORKING PLATFORM.
6. ALL CONDUITS ON EXTERIOR OF BUILDING SHALL BE PAINTED TO MATCH EXISTING BUILDING COLOR.
7. SEAL CONDUIT PENETRATIONS THROUGH BUILDING WALL TO PREVENT MOISTURE FROM ENTERING BUILDING, WITH POLYWATER FST OR EQUIVALENT. USE PULL BOX AS NECESSARY.
8. TROUGHS AND WIREWAYS SHALL BE SIZED SUCH THAT THE SUM OF THE CROSS-SECTIONAL AREAS OF ALL CONDUCTORS AND CABLES AT ANY CROSS SECTION SHALL NOT EXCEED 20 PERCENT OF THE AREA OF THE TROUGH. THE NUMBER OF CURRENT CARRYING CONDUCTORS SHALL NOT EXCEED 30 AT ANY CROSS-SECTION OF THE TROUGH.
9. EACH DC CONDUIT GREATER THAN 24" IN LENGTH SHALL NOT HAVE MORE THAN (9) CURRENT CARRYING CONDUCTORS IN ORDER TO PROTECT CONDUCTORS IN THE CASE OF A SHORT-CIRCUIT SCENARIO.
10. INVERTERS AND PANELBOARDS SHALL BE PLACED AT MINIMUM OF 10FT FROM UNPROTECTED ROOF EDGE.
10. PERMANENT WEAR PADS SHALL BE PLACED IN THE WORKING SPACES OF ALL EQUIPMENT.
11. BOLLARDS SHALL BE INSTALLED TO MEET THE REQUIREMENTS OF 2022 CFC SECTION 312.2.
12. SURROUNDING VEGETATION WITHIN 10' OF ESS UNIT SHALL BE REMOVED AS REQUIRED PER 2022 CFC SECTION 1207.5.7.
13. ESS UNIT MAY NOT BE LOCATED WITHIN 10'-0" OF EXPOSURES IDENTIFIED PER 2022 CFC 1207.8.3.

DRAWING TITLE
OVERALL ELECTRICAL PLAN

DRAWING #
E100

REVISION	DESCRIPTION	PM	ENG	CHK
DATE				
11/20/2023	ISSUE FOR BID	TL	SC	MD
11/13/2023	ISSUE FOR PERMIT REV1	TL	SC	MD
10/26/2023	STRINGING PLAN	TL	SC	MD
09/14/2023	ISSUE FOR PERMIT	TL	SC	MD

PUREPOWER ENGINEERING
111 RIVER STREET, HOBOKEN, NJ
WWW.PUREPOWER.COM
RICHARD A. IVINS
CA LICENSE No. 20357

POWERFLEX
805 THIRD AVENUE 20TH FLOOR
NEW YORK, NY 10022
WWW.POWERFLEX.COM

DEVELOPER
powerflex
EDF Renewables

PAGE SIZE
36" x 24"

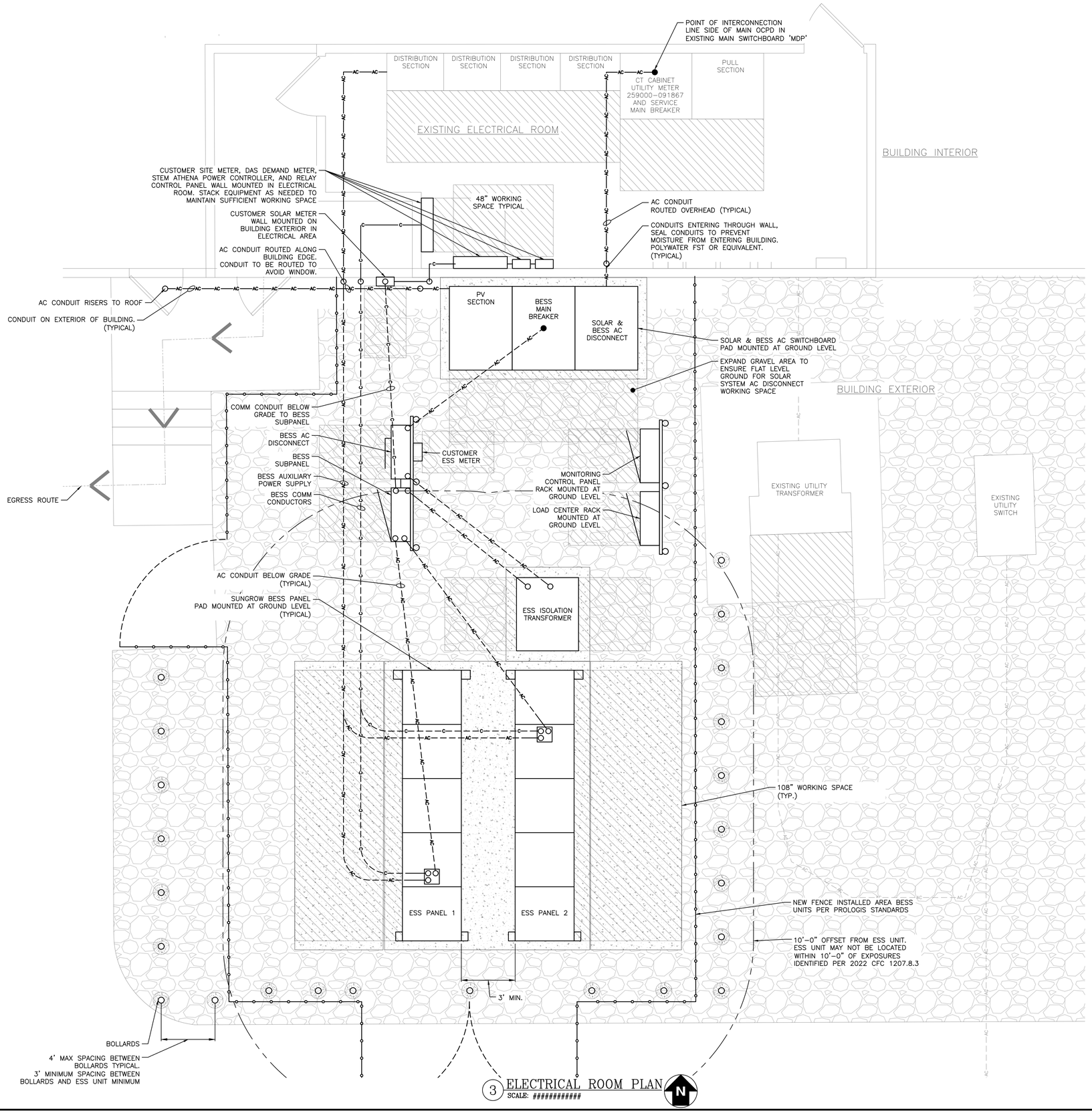
PROJECT #
06939

DC SYSTEM SIZE: 1,193.005 kWdc
AC SYSTEM SIZE: 880.000 kWac
MODULE TYPE: CS6W-545MB-AG
MODULE QUANTITY: 2,189
ORIENTATION: 10° TILT, 181° AZIMUTH

PROJECT
BESS + SOLAR SYSTEM AT
PROLOGIS – WAYFAIR 3300
3300 INDIAN AVE.
PERRIS, CA 92571

PLOT DATE: 11/20/2023 5:21 PM

RULER IN INCHES:



3 ELECTRICAL ROOM PLAN
SCALE: ##########

NOTES:

1. MAINTAIN 48" (MIN) WORKING CLEARANCE FOR ALL EQUIPMENT, UNLESS NOTED OTHERWISE. REMOVE BUSHES AND TREES AS NECESSARY IN WORKING SPACE.
2. MOUNT EQUIPMENT AS PER INSTALLATION MANUAL INSTRUCTION.
3. TRANSITION AC, DC, AND COMMUNICATIONS CONDUITS FROM EMT TO LFMC WITHIN 24" OF INVERTER.
4. CONDUITS AND TROUGHS SHALL NOT ENCROACH MORE THAN 6" INTO WORKING SPACE OF EQUIPMENT.
5. EQUIPMENT SHALL BE INSTALLED AT HEIGHT SUCH THAT THE CENTER OF THE GRIP OF THE OPERATING HANDLE OF THE SWITCH OR CIRCUIT BREAKER, WHEN IN ITS HIGHEST POSITION, SHALL NOT BE MORE THAN 6'7" ABOVE THE WORKING PLATFORM.
6. ALL CONDUITS ON EXTERIOR OF BUILDING SHALL BE PAINTED TO MATCH EXISTING BUILDING COLOR.
7. SEAL CONDUIT PENETRATIONS THROUGH BUILDING WALL TO PREVENT MOISTURE FROM ENTERING BUILDING, WITH POLYWATER FST OR EQUIVALENT. USE PULL BOX AS NECESSARY.
8. TROUGHS AND WIREWAYS SHALL BE SIZED SUCH THAT THE SUM OF THE CROSS-SECTIONAL AREAS OF ALL CONDUCTORS AND CABLES AT ANY CROSS SECTION SHALL NOT EXCEED 20 PERCENT OF THE AREA OF THE TROUGH. THE NUMBER OF CURRENT CARRYING CONDUCTORS SHALL NOT EXCEED 30 AT ANY CROSS-SECTION OF THE TROUGH.
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13. ESS UNIT MAY NOT BE LOCATED WITHIN 10'-0" OF EXPOSURES IDENTIFIED PER 2022 CFC 1207.8.3.

DRAWING TITLE: PARTIAL ELECTRICAL PLAN

DRAWING #: E101

DATE	REVISION DESCRIPTION	PM	ENG	CHK
11/20/2023	ISSUE FOR BID	TL	SC	MD
11/13/2023	ISSUE FOR PERMIT REV1	TL	SC	MD
10/26/2023	STRINGING PLAN	TL	SC	MD
09/14/2023	ISSUE FOR PERMIT	TL	SC	MD

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DEVELOPER
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WWW.POWERFLEX.COM
EDF Renewables

PAGE SIZE: 36" x 24"

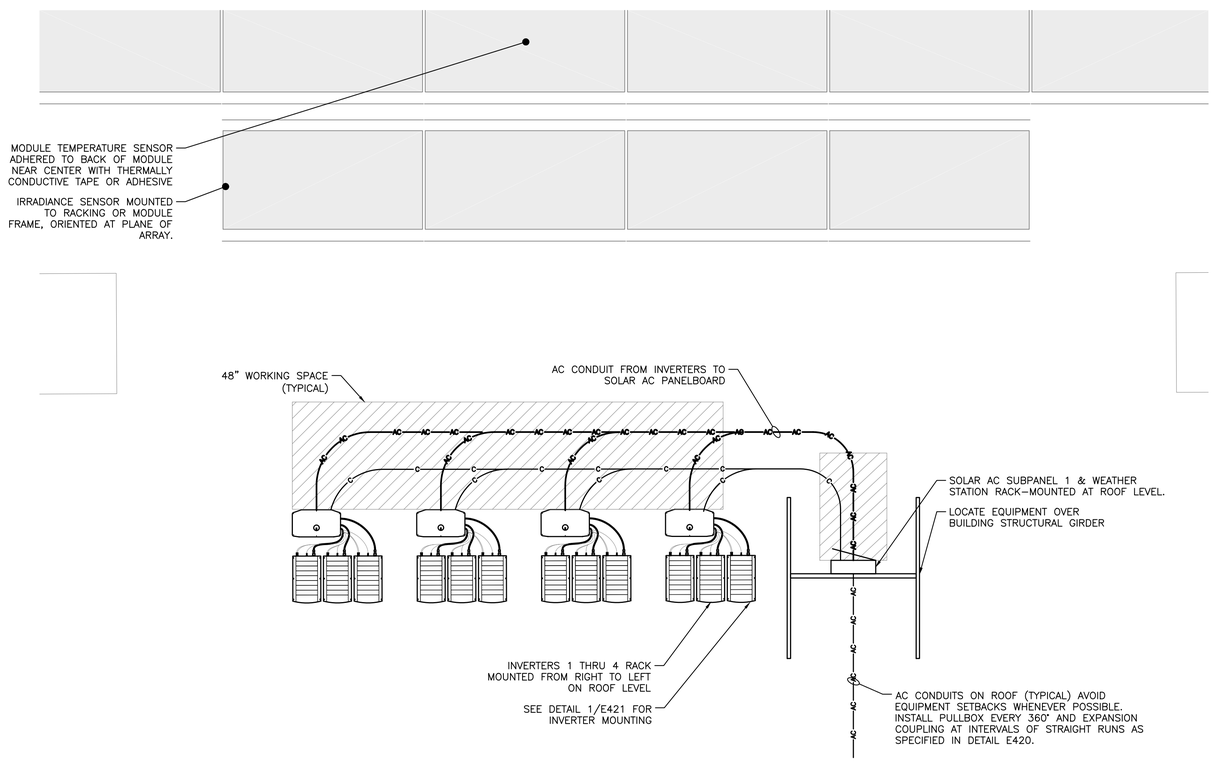
PROJECT #: 06939

DC SYSTEM SIZE: 1,193.005 kWdc
AC SYSTEM SIZE: 880.000 kWac
MODULE TYPE: CS6W-545MB-AG
MODULE QUANTITY: 2,189
ORIENTATION: 10° TILT, 181° AZIMUTH

PROJECT: BESS + SOLAR SYSTEM AT PROLOGIS – WAYFAIR 3300
3300 INDIAN AVE.
PERRIS, CA 92571

PLOT DATE: 11/20/2023 5:21 PM

RULER IN INCHES:



1 INVERTER AREA 1
SCALE: 3/8" = 1'-0"

NOTES:

1. MAINTAIN 48" (MIN) WORKING CLEARANCE FOR ALL EQUIPMENT, UNLESS NOTED OTHERWISE. REMOVE BUSHES AND TREES AS NECESSARY IN WORKING SPACE.
2. MOUNT EQUIPMENT AS PER INSTALLATION MANUAL INSTRUCTION.
3. TRANSITION AC, DC, AND COMMUNICATIONS CONDUITS FROM EMT TO LFMC WITHIN 24" OF INVERTER.
4. CONDUITS AND TROUGHS SHALL NOT ENCROACH MORE THAN 6" INTO WORKING SPACE OF EQUIPMENT.
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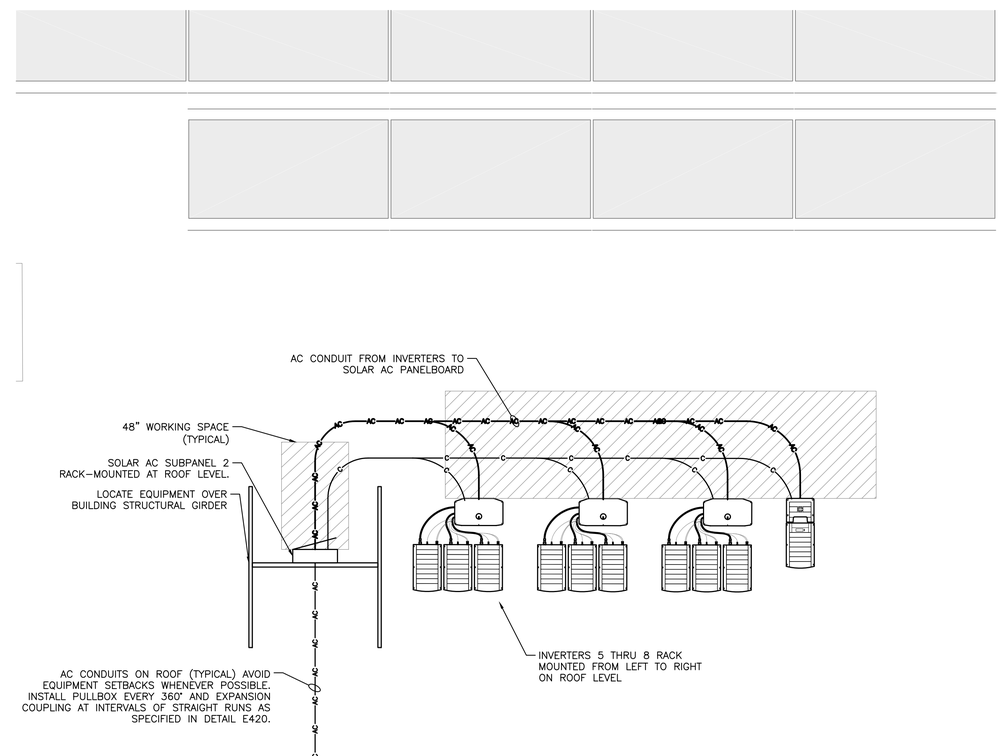

2 INVERTER AREA 2
SCALE: 3/8" = 1'-0"

DATE	REVISION DESCRIPTION	PM	ENG	CHK
11/20/2023	ISSUE FOR BID	TL	SC	MD
11/13/2023	ISSUE FOR PERMIT REV1	TL	SC	MD
10/26/2023	STRINGING PLAN	TL	SC	MD
09/14/2023	ISSUE FOR PERMIT	TL	SC	MD

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RICHARD A. IVINS
CA LICENSE No. 20357

DEVELOPER: powerflex
EDF Renewables

POWERFLEX
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NEW YORK, NY 10022
WWW.POWERFLEX.COM

PAGE SIZE: 36" x 24"
PROJECT #: 06939

DC SYSTEM SIZE: 1,193.005 kWdc
AC SYSTEM SIZE: 880.000 kWac
MODULE TYPE: CS6W-545MB-AG
MODULE QUANTITY: 2,189
ORIENTATION: 10° TILT, 181° AZIMUTH

PROJECT
BESS + SOLAR SYSTEM AT
PROLOGIS – WAYFAIR 3300
3300 INDIAN AVE.
PERRIS, CA 92571

DRAWING TITLE
PARTIAL ELECTRICAL PLAN

DRAWING #
E102

PLOT DATE: 11/20/2023 3:42 PM

RULER IN INCHES:

STRING SUMMARY		
STRING NAME	MODULES PER STRING	OPTIMIZERS PER STRING
1-1(32)	32	16
1-2(32)	32	16
1-3(32)	32	16
1-4(32)	32	16
1-5(32)	32	16
1-6(32)	32	16
1-7(32)	32	16
1-8(32)	32	16
1-9(32)	32	16
2-1(32)	32	16
2-2(32)	32	16
2-3(32)	32	16
2-4(32)	32	16
2-5(32)	32	16
2-6(32)	32	16
2-7(32)	32	16
2-8(33)	33	17
2-9(32)	32	16
3-1(32)	32	16
3-2(32)	32	16
3-3(32)	32	16
3-4(32)	32	16
3-5(32)	32	16
3-6(32)	32	16
3-7(32)	32	16
3-8(32)	32	16
3-9(32)	32	16
4-1(34)	34	17
4-2(34)	34	17
4-3(33)	33	17
4-4(34)	34	17
4-5(34)	34	17
4-6(34)	34	17
4-7(34)	34	17
4-8(34)	34	17
4-9(34)	34	17
5-1(34)	34	17
5-2(34)	34	17
5-3(34)	34	17
5-4(34)	34	17
5-5(34)	34	17
5-6(34)	34	17
5-7(34)	34	17
5-8(34)	34	17
5-9(33)	33	17
6-1(35)	35	18
6-2(34)	34	17
6-3(34)	34	17
6-4(34)	34	17
6-5(34)	34	17
6-6(33)	33	17
6-7(34)	34	17
6-8(34)	34	17
6-9(34)	34	17
7-1(35)	35	18
7-2(34)	34	17
7-3(34)	34	17
7-4(33)	33	17
7-5(35)	35	18
7-6(34)	34	17
7-7(34)	34	17
7-8(34)	34	17
7-9(34)	34	17
8-1(33)	33	17
8-2(34)	34	17
8-3(34)	34	17

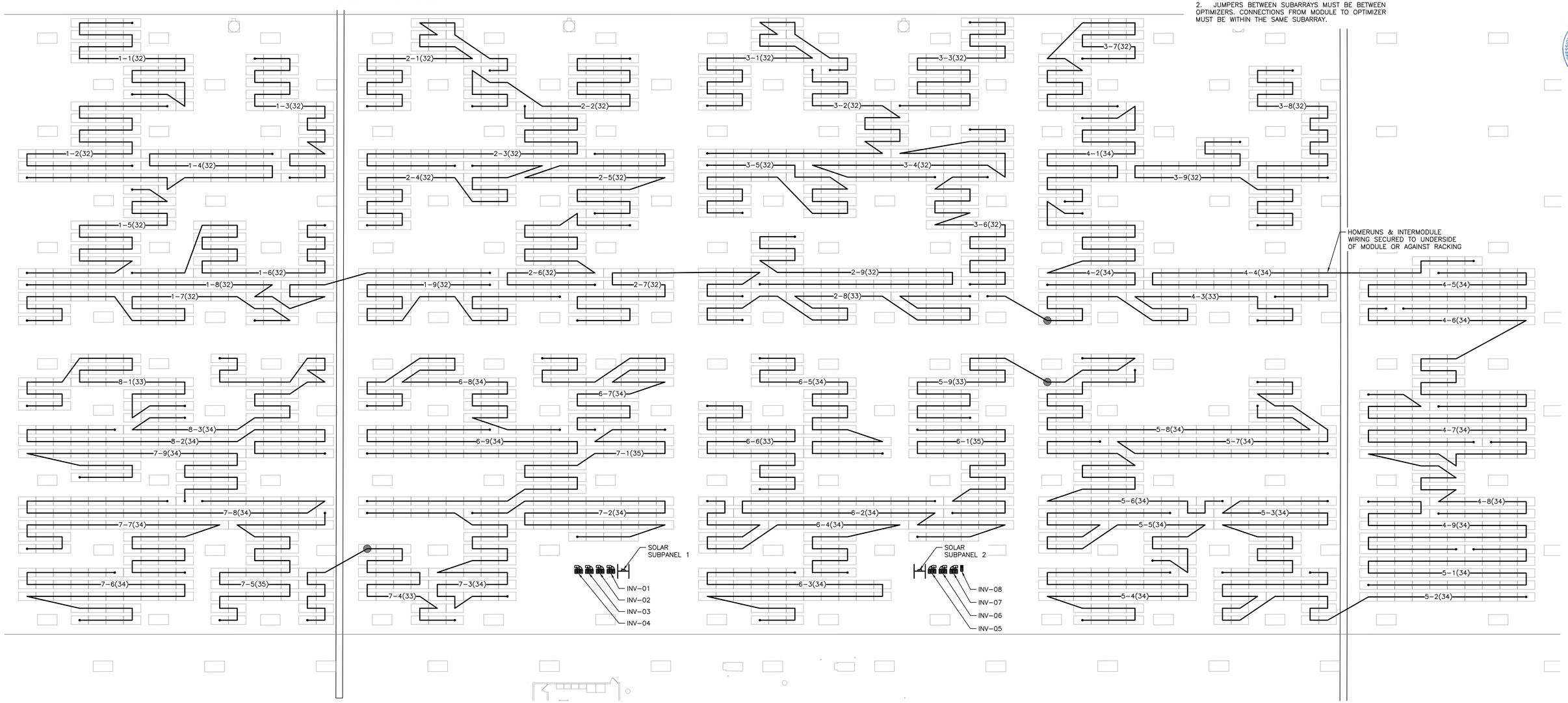
SOLAREDGE OPTIMIZER NOTES:
1. FOR STRINGS WITH AN ODD NUMBER OF MODULES, ONE MODULE WILL BE CONNECTED TO A SINGLE OPTIMIZER. SEAL THE UNUSED OPTIMIZER INPUTS WITH SEALING CONNECTORS.
2. JUMPERS BETWEEN SUBARRAYS MUST BE BETWEEN OPTIMIZERS. CONNECTIONS FROM MODULE TO OPTIMIZER MUST BE WITHIN THE SAME SUBARRAY.

CABLE TRAY FILL TABLE	
MAXIMUM NUMBER OF CU #10 WIRES (PV WIRE + GROUND) IN CABLE TRAY	
CABLE TRAY WIDTH	SINGLE CONDUCTORS
2"	33
4"	76
6"	110
8"	144
9"	161
12"	220

CONDUIT FILL TABLE (PVWIRE, 2000VDC MAX)		
MAXIMUM NUMBER OF CU #10 PV WIRES. (WITH ALLOWANCE FOR AN ADDITIONAL GROUND WIRE)		
CONDUIT TRADE SIZE	CONDUIT LENGTH 24" OR LESS (60% FILL)	CONDUIT LENGTH OVER 24" (40% FILL)
3/4"	4	2
1"	7	5
1.25"	13	9
1.5"	19	9
2"	32	9
2.5"	46	9
3"	72	9
3.5"	97	9
4"	126	9
TABLE ASSUMING: CONDUIT AND CU #10 PV WIRE WITH 0.26in O.D., 0.91 TEMP. DERATE		
DC OPTIMIZER OUTPUT CIRCUIT WITH 18A OUTPUT, 1 IN PARALLEL, AND 25A FUSES		

NEC 690.12 RAPID SHUTDOWN NOTE:
THIS SYSTEM INCLUDES MODULE-LEVEL POWER ELECTRONICS WHICH SHUTDOWN DC VOLTAGE AT THE MODULE LEVEL WHEN AC POWER GOES OUT. TIMING AND VOLTAGE LEVELS ARE IN COMPLIANCE WITH NEC 690.12 RAPID SHUTDOWN.

SOLAREDGE OPTIMIZER NOTES:
1. WHEN USING 2:1 OPTIMIZERS, FOR STRINGS WITH AN ODD NUMBER OF MODULES ONE MODULE WILL BE CONNECTED TO A SINGLE OPTIMIZER. SEAL THE UNUSED OPTIMIZER INPUTS WITH SEALING CONNECTORS.
2. JUMPERS BETWEEN SUBARRAYS MUST BE BETWEEN OPTIMIZERS. CONNECTIONS FROM MODULE TO OPTIMIZER MUST BE WITHIN THE SAME SUBARRAY.



IMPORTANT
CONTRACTOR MUST:
1. REDLINE DRAWINGS TO REFLECT EXACT AS-BUILT STRINGING AND RETURN TO PURE POWER.
2. CREATE MAP OF SOLAREDGE POWER OPTIMIZER ADDRESSING AND RETURN TO SOLAREDGE.

LEGEND (MLPE):
MLPE CONNECTED TO A SINGLE MODULE

1 DC ELECTRICAL PLAN
SCALE: 1" = 20'

STRING LABEL KEY
2-3(38)
MODULES/STRING
STRING #
INVERTER #

DATE	REVISION DESCRIPTION	PM	ENG	CHK
11/20/2023	ISSUE FOR BID	TL	SC	MD
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10/26/2023	STRINGING PLAN	TL	SC	MD
09/14/2023	ISSUE FOR PERMIT	TL	SC	MD

PUREPOWER ENGINEERING
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DEVELOPER
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WWW.POWERFLEX.COM

PAGE SIZE 36" x 24"
PROJECT # 06939

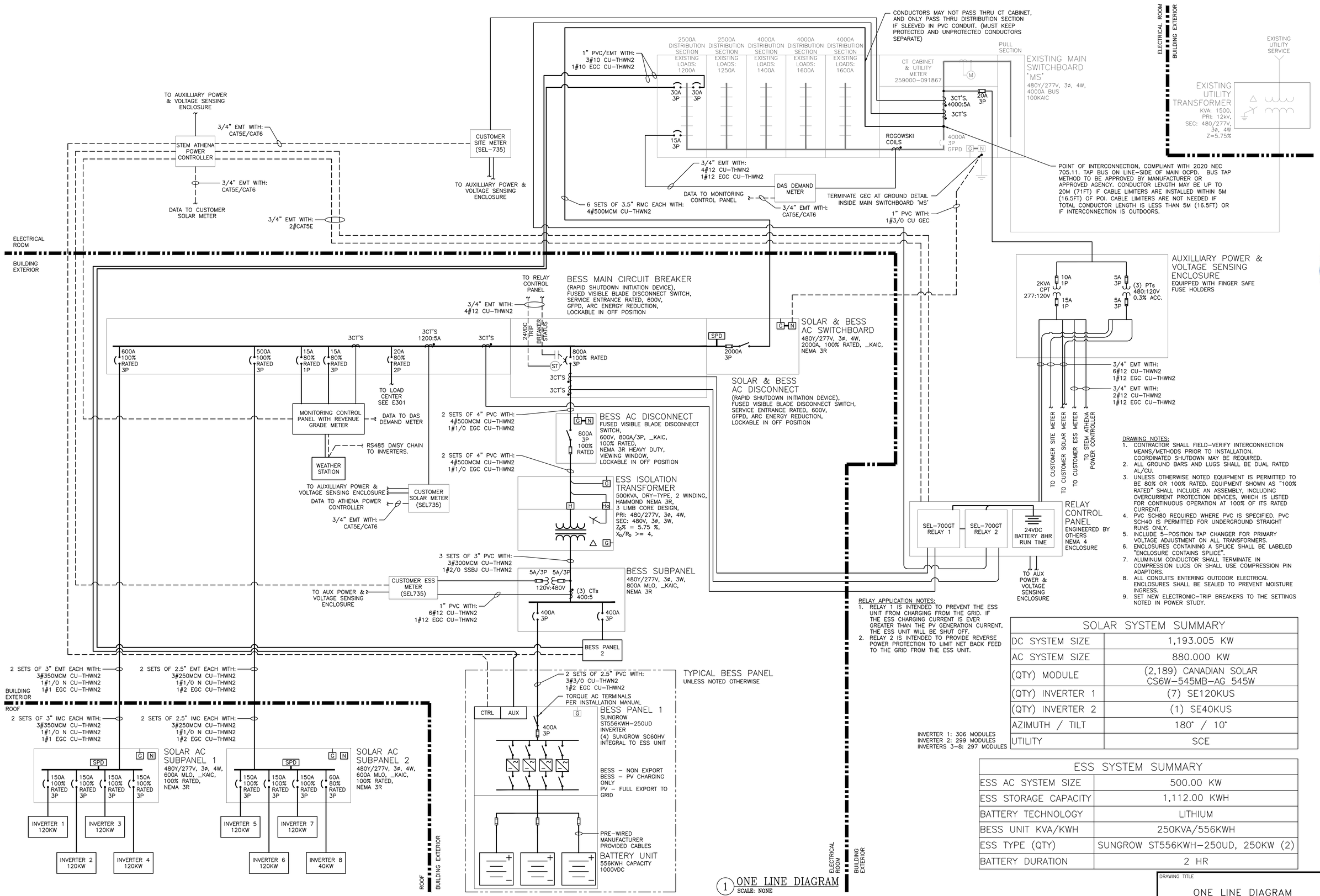
DC SYSTEM SIZE: 1,193.005 kWDC
AC SYSTEM SIZE: 880.000 kWAC
MODULE TYPE: CS6W-545MB-AG
MODULE QUANTITY: 2,189
ORIENTATION: 10° TILT, 181° AZIMUTH

PROJECT
BESS + SOLAR SYSTEM AT
PROLOGIS – WAYFAIR 3300
3300 INDIAN AVE.
PERRIS, CA 92571

DRAWING TITLE
DC ELECTRICAL PLAN

DRAWING #
E200

PLOT DATE: 11/20/2023 5:14 PM
RULER IN INCHES:



DRAWING NOTES:

1. CONTRACTOR SHALL FIELD-VERIFY INTERCONNECTION MEANS/METHODS PRIOR TO INSTALLATION. COORDINATED SHUTDOWN MAY BE REQUIRED.
2. ALL GROUND BARS AND LUGS SHALL BE DUAL RATED AL/CU.
3. UNLESS OTHERWISE NOTED EQUIPMENT IS PERMITTED TO BE 80% OR 100% RATED. EQUIPMENT SHOWN AS "100% RATED" SHALL INCLUDE AN ASSEMBLY, INCLUDING OVERCURRENT PROTECTION DEVICES, WHICH IS LISTED FOR CONTINUOUS OPERATION AT 100% OF ITS RATED CURRENT.
4. PVC SCH80 REQUIRED WHERE PVC IS SPECIFIED. PVC SCH40 IS PERMITTED FOR UNDERGROUND STRAIGHT RUNS ONLY.
5. INCLUDE 5-POSITION TAP CHANGER FOR PRIMARY VOLTAGE ADJUSTMENT ON ALL TRANSFORMERS.
6. ENCLOSURES CONTAINING A SPLICE SHALL BE LABELED "ENCLOSURE CONTAINS SPLICE".
7. ALUMINUM CONDUCTOR SHALL TERMINATE IN COMPRESSION LUGS OR SHALL USE COMPRESSION PIN ADAPTORS.
8. ALL CONDUITS ENTERING OUTDOOR ELECTRICAL ENCLOSURES SHALL BE SEALED TO PREVENT MOISTURE INGRESS.
9. SET NEW ELECTRONIC-TRIP BREAKERS TO THE SETTINGS NOTED IN POWER STUDY.

RELAY APPLICATION NOTES:

1. RELAY 1 IS INTENDED TO PREVENT THE ESS UNIT FROM CHARGING FROM THE GRID. IF THE ESS CHARGING CURRENT IS EVER GREATER THAN THE PV GENERATION CURRENT, THE ESS UNIT WILL BE SHUT OFF.
2. RELAY 2 IS INTENDED TO PROVIDE REVERSE POWER PROTECTION TO LIMIT NET BACK FEED TO THE GRID FROM THE ESS UNIT.

SOLAR SYSTEM SUMMARY	
DC SYSTEM SIZE	1,193.005 KW
AC SYSTEM SIZE	880.000 KW
(QTY) MODULE	(2,189) CANADIAN SOLAR CS6W-545MB-AG 545W
(QTY) INVERTER 1	(7) SE120KUS
(QTY) INVERTER 2	(1) SE40KUS
AZIMUTH / TILT	180° / 10°
UTILITY	SCE

INVERTER 1: 306 MODULES
INVERTER 2: 299 MODULES
INVERTERS 3-8: 297 MODULES

ESS SYSTEM SUMMARY	
ESS AC SYSTEM SIZE	500.00 KW
ESS STORAGE CAPACITY	1,112.00 KWH
BATTERY TECHNOLOGY	LITHIUM
BESS UNIT KVA/KWH	250KVA/556KWH
ESS TYPE (QTY)	SUNGROW ST556KWH-250UD, 250KW (2)
BATTERY DURATION	2 HR

DATE	REVISION DESCRIPTION	PM	ENG	CHK
11/20/2023	ISSUE FOR BID	TL	SC	MO
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10/26/2023	STRINGING PLAN	TL	SC	MO
09/14/2023	ISSUE FOR PERMIT	TL	SC	MO

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DEVELOPER: powerflex EDF Renewables

PAGE SIZE: 36" x 24"
PROJECT #: 06939

DC SYSTEM SIZE: 1,193.005 kWDC
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ORIENTATION: 10° TILT, 181° AZIMUTH

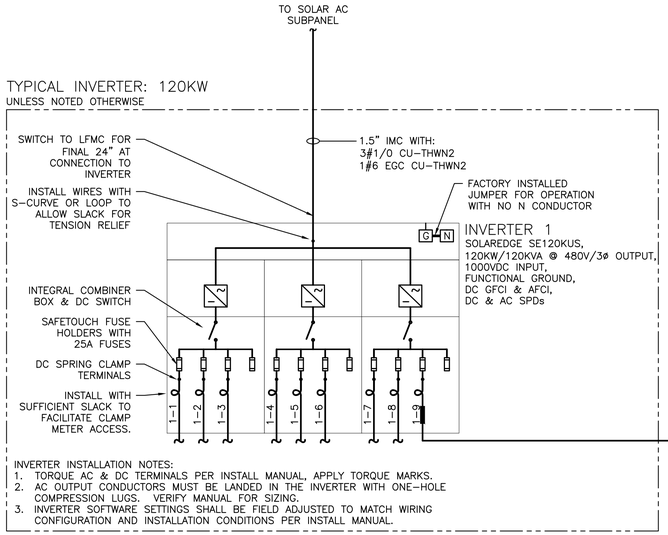
PROJECT: BESS + SOLAR SYSTEM AT PROLOGIS – WAYFAIR 3300
3300 INDIAN AVE.
PERRIS, CA 92571

DRAWING TITLE: ONE LINE DIAGRAM

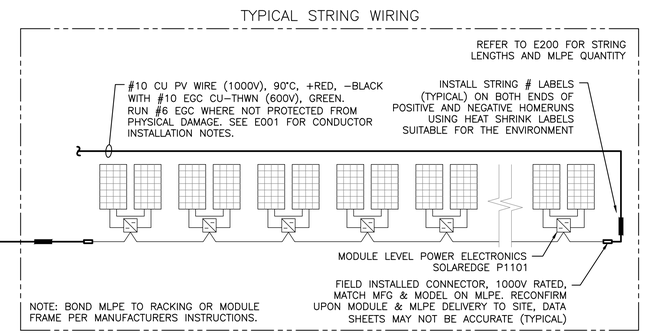
DRAWING #: E300

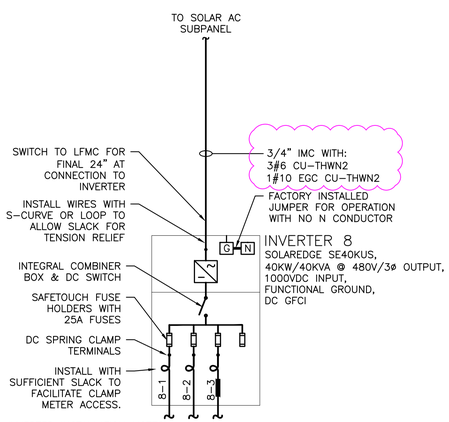
PLOT DATE: 11/20/2023 5:14 PM

RULER IN INCHES:



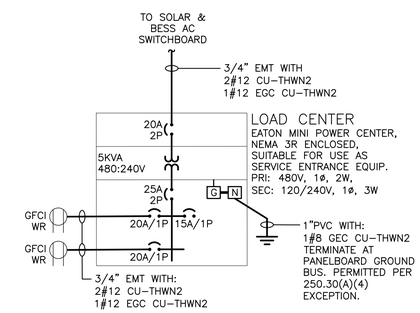
INVERTER INSTALLATION NOTES:
1. TORQUE AC & DC TERMINALS PER INSTALL MANUAL, APPLY TORQUE MARKS.
2. AC OUTPUT CONDUCTORS MUST BE LANDED IN THE INVERTER WITH ONE-HOLE COMPRESSION LUGS. VERIFY MANUAL FOR SIZING.
3. INVERTER SOFTWARE SETTINGS SHALL BE FIELD ADJUSTED TO MATCH WIRING CONFIGURATION AND INSTALLATION CONDITIONS PER INSTALL MANUAL.





INVERTER INSTALLATION NOTES:
1. TORQUE AC & DC TERMINALS PER INSTALL MANUAL, APPLY TORQUE MARKS.
2. AC OUTPUT CONDUCTORS MUST BE LANDED IN THE INVERTER WITH ONE-HOLE STANDARD BARREL 600V LUGS.
3. INVERTER SOFTWARE SETTINGS SHALL BE FIELD ADJUSTED TO MATCH WIRING CONFIGURATION AND INSTALLATION CONDITIONS PER INSTALL MANUAL.

1 INVERTER DETAILS
SCALE: NONE



2 LOAD CENTER DETAILS
SCALE: NONE

DATE	REVISION DESCRIPTION	PM	ENG	CHK
11/20/2023	ISSUE FOR BID	TL	SC	MO
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PERRIS, CA 92571

DRAWING TITLE: INVERTER DETAILS

DRAWING #: E301

PLOT DATE: 11/20/2023 3:43 PM

RULER IN INCHES:

AC CIRCUIT CALCULATIONS

EQUIPMENT SUPPLIED	FED FROM	VOLTAGE	FULL LOAD AMPS 'FLA'	FLA x 1.25	OCPD SIZE [A]	CONDUIT TYPE	CONDUIT SIZE	GROUND SIZE	CONDUCTORS PER PHASE	PHASE CONDUCTOR SIZE	NEUTRAL CONDUCTOR SIZE	75° AMPACITY	90° AMPACITY	90° AMPACITY WITH C.O.U.	C.O.U DERATE AMBIENT TEMP	C.O.U. DERATE CONDUIT FILL	FEEDER LENGTH (FEET)	SEGMENT VOLTAGE DROP AT FLA	TOTAL VOLTAGE DROP AT FLA
SOLAR & BESS AC SWITCHBOARD	POINT OF INTERCONNECTION	480	1692.4	N/A (100% RATED)	2000 (100% RATED)	RMC	3.5"	CU #3/0 GEC	6	CU 500MCM	CU 500MCM	2280	2580	2348	0.91	1.00	20	0.06%	0.06%
SOLAR AC SUBPANEL 1	SOLAR & BESS AC SWITCHBOARD	480	577.2	N/A (100% RATED)	600 (100% RATED)	IMC	3"	CU #1	2	CU 350MCM	CU #1/0	620	700	637	0.91	1.00	160	0.65%	0.71%
SOLAR AC SUBPANEL 2	SOLAR & BESS AC SWITCHBOARD	480	481.2	N/A (100% RATED)	500 (100% RATED)	IMC	2.5"	CU #2	2	CU 250MCM	CU #1/0	510	580	528	0.91	1.00	315	1.48%	1.54%
INVERTER 1	SOLAR AC SUBPANEL 1	480	144.3	N/A (100% RATED)	150 (100% RATED)	IMC	1.5"	CU #6	1	CU #1/0	NONE	150	170	155	0.91	1.00	5	0.03%	0.74%
INVERTER 2	SOLAR AC SUBPANEL 1	480	144.3	N/A (100% RATED)	150 (100% RATED)	IMC	1.5"	CU #6	1	CU #1/0	NONE	150	170	155	0.91	1.00	10	0.06%	0.77%
INVERTER 3	SOLAR AC SUBPANEL 1	480	144.3	N/A (100% RATED)	150 (100% RATED)	IMC	1.5"	CU #6	1	CU #1/0	NONE	150	170	155	0.91	1.00	15	0.09%	0.80%
INVERTER 4	SOLAR AC SUBPANEL 1	480	144.3	N/A (100% RATED)	150 (100% RATED)	IMC	1.5"	CU #6	1	CU #1/0	NONE	150	170	155	0.91	1.00	20	0.12%	0.83%
INVERTER 5	SOLAR AC SUBPANEL 2	480	144.3	N/A (100% RATED)	150 (100% RATED)	IMC	1.5"	CU #6	1	CU #1/0	NONE	150	170	155	0.91	1.00	5	0.03%	1.57%
INVERTER 6	SOLAR AC SUBPANEL 2	480	144.3	N/A (100% RATED)	150 (100% RATED)	IMC	1.5"	CU #6	1	CU #1/0	NONE	150	170	155	0.91	1.00	10	0.06%	1.60%
INVERTER 7	SOLAR AC SUBPANEL 2	480	144.3	N/A (100% RATED)	150 (100% RATED)	IMC	1.5"	CU #6	1	CU #1/0	NONE	150	170	155	0.91	1.00	15	0.09%	1.63%
INVERTER 8	SOLAR AC SUBPANEL 2	480	48.3	60	60	IMC	3/4"	CU #10	1	CU #6	NONE	65	75	68	0.91	1.00	20	0.17%	1.71%
BESS AC DISCONNECT	SOLAR & BESS AC SWITCHBOARD	480	634.0	N/A (100% RATED)	800 (100% RATED)	PVC	4"	CU #1/0	2	CU 500MCM	CU 500MCM	760	860	783	0.91	1.00	15	0.05%	0.11%
ESS ISOLATION TRANSFORMER	BESS AC DISCONNECT	480	634.0	N/A (100% RATED)	800 (100% RATED)	PVC	4"	CU #1/0	2	CU 500MCM	CU 500MCM	760	860	783	0.91	1.00	10	0.03%	0.14%
BESS SUBPANEL	ESS ISOLATION TRANSFORMER	480	634.0	793	800	PVC	3"	CU #2/0 SSBJ	3	CU 300MCM	NONE	855	960	874	0.91	1.00	10	0.03%	0.18%
ESS RACK 1	BESS SUBPANEL	480	317.0	396	400	PVC	2.5"	CU #2	2	CU #3/0	NONE	400	450	410	0.91	1.00	15	0.07%	0.24%

AVERAGE AC VOLTAGE DROP FROM POI TO INVERTERS: 1.03%

INVERTERS 1–8	
STRING WIRE GAUGE	10AWG–CU
DC IMPEDANCE [OHM/KFT]	1.2900
OPERATING VOLTAGE [VDC]	850
OPERATING CURRENT [AMP]	18.0

INVERTERS 1–8		
STRING NUMBER	TOTAL STRING DISTANCE [FT]	STRING VOLTAGE DROP
1–1	430	2.35%
1–2	410	2.24%
1–3	340	1.86%
1–4	350	1.91%
1–5	355	1.94%
1–6	275	1.50%
1–7	305	1.67%
1–8	295	1.61%
1–9	200	1.09%
2–1	300	1.64%
2–2	205	1.12%
2–3	220	1.20%
2–4	250	1.37%
2–5	175	0.96%
2–6	155	0.85%
2–7	145	0.79%
2–8	225	1.23%
2–9	245	1.34%
3–1	295	1.61%
3–2	315	1.72%
3–3	380	2.08%
3–4	315	1.72%
3–5	250	1.37%
3–6	320	1.75%
3–7	455	2.49%
3–8	505	2.76%
3–9	430	2.35%
4–1	405	2.21%
4–2	355	1.94%
4–3	390	2.13%
4–4	420	2.29%
4–5	500	2.73%
4–6	485	2.65%
4–7	440	2.40%
4–8	425	2.32%
4–9	400	2.19%
5–1	230	1.26%
5–2	235	1.28%
5–3	175	0.96%
5–4	100	0.55%
5–5	115	0.63%
5–6	120	0.66%
5–7	190	1.04%
5–8	165	0.90%
5–9	90	0.49%
6–1	70	0.38%
6–2	60	0.33%
6–3	65	0.36%
6–4	70	0.38%
6–5	140	0.76%
6–6	135	0.74%
6–7	220	1.20%
6–8	285	1.56%
6–9	255	1.39%
7–1	190	1.04%
7–2	175	0.96%
7–3	215	1.17%
7–4	250	1.37%
7–5	310	1.69%
7–6	370	2.02%
7–7	375	2.05%
7–8	335	1.83%
7–9	390	2.13%
8–1	440	2.40%
8–2	390	2.13%
8–3	390	2.13%
AVERAGE VOLTAGE DROP		1.53%

DC STRING WIRING CALCULATION – CONDUIT	
OPTIMIZER OUTPUT [A]	18.00
MAX CONTINUOUS FAULT CURRENT FROM PARALLEL SOURCES [AMPS]	18.00
1.25x MAX CONTINUOUS FAULT CURRENT [AMPS]	22.50
MAX # OF WIRES PER CONDUIT	9
DERATE FOR # OF CONDUCTORS IN A CONDUIT	0.7
MAX AMBIENT TEMPERATURE	37
TEMPERATURE DERATE	0.91
WIRE GAUGE	CU #10
75 DEG AMPACITY WITHOUT COU ADJUSTMENT [AMPS]	35
IS 75 DEG AMPACITY WITHOUT COU ADJUSTMENT >= 1.25x MAX CIRCUIT CURRENT?	YES. COMPLIES WITH 690.8(B)(1)
90DEG AMPACITY WITH COU ADJUSTMENT [AMPS]	25.48
IS 90DEG AMPACITY WITH COU ADJUSTMENT >= 1.0x MAX CIRCUIT CURRENT?	YES. COMPLIES WITH 690.8(B)(2)
DC OPTIMIZER OUTPUT CIRCUIT FUSE RATING [AMPS]	25
AVAILABLE FAULT CURRENT FROM ALL PARALLEL SOURCES [AMPS]	18
IS FUSE RATING >= 1.25x MAX CIRCUIT CURRENT?	YES. COMPLIES WITH 690.9(B)

MODULE SPECIFICATIONS		
MAKE/MODEL	CS6W–545MB–AG	CS6W–545MB–AG +20% BIFACIAL GAIN
POWER [W]	545	654
ISC [A]	13.95	16.74
IMP [A]	13.14	15.77
VOC [V]	49.40	49.40
VMP [V]	41.50	41.50
β VOC [%/degC]	–0.260%	–0.260%
SITE CLIMATE CRITERIA		
ASHRAE HIGH [°C]	37	
ASHRAE LOW [°C]	–2	
STRING SPECIFICATIONS AT STC		
MODULES/STRING	2	2
POWER [W]	1090	1308
STRING ISC [A]	13.95	16.74
STRING IMP [A]	13.14	15.77
STRING VMP [V]	83.00	83.00
STRING MAX VOLTAGE CALCULATION		
VOC TEMP ADJUSTMENT @ –2 °C	1.07	1.07
VOC @ –2 °C [V]	52.87	52.87
MAX STRING VOC [V]	105.7	105.7
STRING CALCULATIONS REFER TO THE PV SIDE OF DC OPTIMIZERS, NOT TO THE OPTIMIZER OUTPUT CIRCUIT		

DRAWING NOTES:
1. DISTANCES ARE ESTIMATES GENERATED FOR ENGINEER'S CALCULATIONS, CONTRACTOR IS RESPONSIBLE FOR OWN MEASUREMENTS AND TAKEOFFS.

DRAWING TITLE: SCHEDULES & CALCULATIONS

DRAWING # E310

DATE	REVISION DESCRIPTION	PM	ENG	CHK
11/20/2023	ISSUE FOR BID	TL	SC	MD
11/13/2023	ISSUE FOR PERMIT REV1	TL	SC	MD
10/26/2023	STRINGING PLAN	TL	SC	MD
09/14/2023	ISSUE FOR PERMIT	TL	SC	MD

PUREPOWER ENGINEERING
111 RIVER STREET, HOBOKEN, NJ 07030 USA
RICHARD A. IVINS
CA LICENSE No. 20357

DEVELOPER: powerflex
POWERFLEX
805 THIRD AVENUE 20TH FLOOR
NEW YORK, NY 10022
WWW.POWERFLEX.COM
EDF Renewables

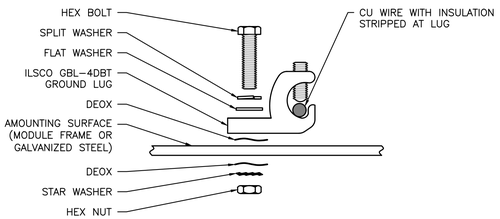
PAGE SIZE: 36" x 24"
PROJECT #: 06939

DC SYSTEM SIZE: 1,193.005 kWdc
AC SYSTEM SIZE: 880.000 kWac
MODULE TYPE: CS6W–545MB–AG
MODULE QUANTITY: 2,189
ORIENTATION: 10° TILT, 181° AZIMUTH

PROJECT: BESS + SOLAR SYSTEM AT PROLOGIS – WAYFAIR 3300
3300 INDIAN AVE.
PERRIS, CA 92571

PLOT DATE: 11/20/2023 3:43 PM

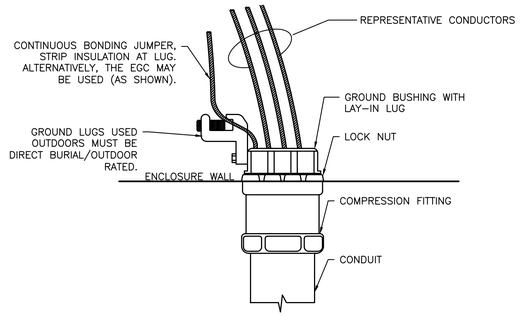
RULER IN INCHES:



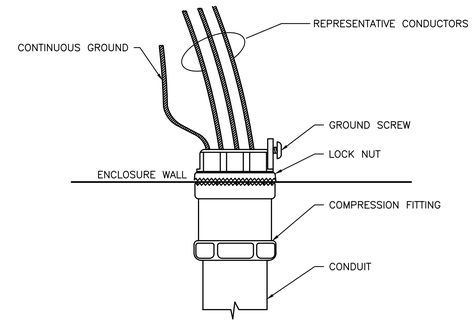
NOTES
1. ALL HARDWARE TO BE STAINLESS STEEL.
2. REFER TO ILSCO LUG MANUAL FOR ADDITIONAL REQUIREMENTS AND TORQUE VALUES

ILSCO

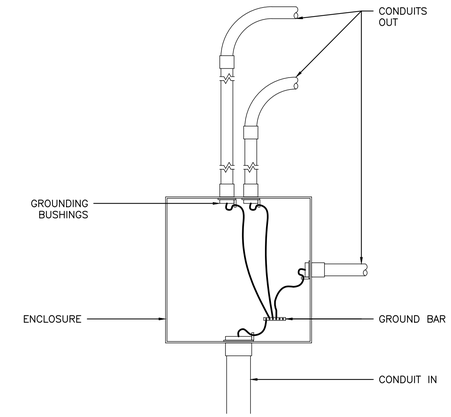
1 GROUND LUG
SCALE: NONE



2 CONDUIT BUSHING GROUNDING
SCALE: NONE

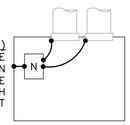


3 MYERS HUB GROUNDING
SCALE: NONE

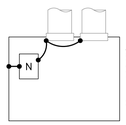


4 PULL BOX/TROUGH GROUNDING
SCALE: NONE

NEC 250.102(C)(1)
SSBJ IS SIZED PER TABLE 250.102(C)(1) BASED ON THE SIZE OF PHASE CONDUCTORS IN EACH INDIVIDUAL CONDUIT



INDIVIDUAL



COMBINED

NEC 250.102(C)(2)
SSBJ IS SIZED PER TABLE 250.102(C)(1) BASED ON THE COMBINED AREA OF PARALLEL PHASE CONDUCTORS

TABLE 250.102(C)(1)			
SIZE OF LARGEST UNGROUNDED CONDUCTOR OR EQUIVALENT AREA FOR PARALLEL CONDUCTORS (AWG/KCMIL)		SIZE OF GROUNDED CONDUCTOR OR BONDING JUMPER (AWG/KCMIL)	
COPPER	ALUMINUM OR COPPER-CLAD ALUMINUM	COPPER	ALUMINUM OR COPPER-CLAD ALUMINUM
2 OR SMALLER	1/0 OR SMALLER	8	6
1 OR 1/0	2/0 OR 3/0	6	4
2 OR 2/0	4/0 OR 250	4	2
OVER 3/0 THROUGH 350	OVER 250 THROUGH 500	2	1/0
OVER 350 THROUGH 600	OVER 500 THROUGH 900	1/0	3/0
OVER 600 THROUGH 1100	OVER 900 THROUGH 1750	2/0	4/0
OVER 1100	OVER 1750	REFER TO NOTES IN NEC TABLE 250.102(C)(1)	

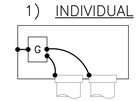
5 SUPPLY SIDE BONDING JUMPERS (SSBJ)
SCALE: NONE

A) FOR CONCENTRIC KNOCKOUTS, USE BONDING JUMPERS AS FOLLOWS:

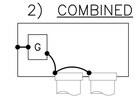
TABLE 250.122		
OVERCURRENT DEVICE CIRCUIT NOT EXCEEDING (AMPERES)	SIZE (AWG OR KCMIL)	
	COPPER	ALUMINUM
15	14	12
20	12	10
60	10	8
100	8	6
200	6	4
300	4	2
400	3	1
500	2	1/0
600	1	2/0
800	1/0	3/0
1000	2/0	4/0
1200	3/0	250
1600	4/0	350
2000	250	400
2500	350	600
3000	400	600
4000	500	750

FOR PARALLEL FEEDERS – NEC 250.102(D)
EQUIPMENT BONDING JUMPER IS SIZED PER TABLE 250.122, REGARDLESS IF COMBINED OR INDIVIDUAL BONDING JUMPERS ARE USED

1) INDIVIDUAL



2) COMBINED

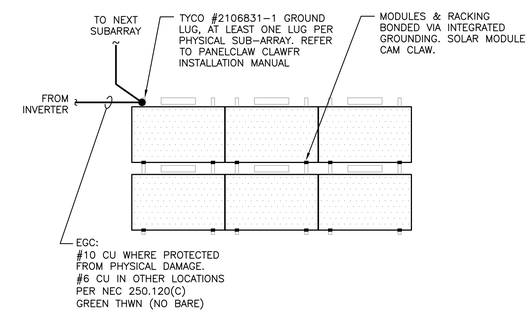


B) FOR NON-CONCENTRIC KNOCKOUTS, FOLLOW PROLOGIS SPECIFICATIONS

PER PROLOGIS SPEC – DUAL-RATED, LAY IN STYLE GROUND LUGS AND GROUND BUSHINGS OR CONDUIT GROUND CLAMPS SHALL BE PROVIDED FOR ALL METALLIC CONDUITS.

6 LOAD SIDE EQUIPMENT BONDING JUMPER
SCALE: NONE

NOTES:
1. EACH SUBARRAY CONNECTED TO AN INVERTER SHALL HAVE AN EGC RUN TO THAT INVERTER
2. PV MODULES AND RAILS GROUNDED PER NEC 690.43



PANELCLAW FR

7 ARRAY GROUNDING
SCALE: NONE

DATE	REVISION DESCRIPTION	PM	ENG	CHK
11/20/2023	ISSUE FOR BID	TL	SC	MD
11/13/2023	ISSUE FOR PERMIT REV1	TL	SC	MD
10/26/2023	STRINGING PLAN	TL	SC	MD
09/14/2023	ISSUE FOR PERMIT	TL	SC	MD

PUREPOWER ENGINEERING
111 RIVER STREET, HOBOKEN, NJ
WWW.PUREPOWER.COM
RICHARD A. IVINS
CA LICENSE No. 20357
PROFESSIONAL ENGINEER RICHARD A. IVINS Electrical
DATE 11/20/23

DEVELOPER
powerflex
805 THIRD AVENUE 20TH FLOOR
NEW YORK, NY 10022
WWW.POWERFLEX.COM
EDF Renewables

PAGE SIZE 36" x 24"
PROJECT # 06939

DC SYSTEM SIZE: 1,193,005 kWDC
AC SYSTEM SIZE: 880,000 kWAC
MODULE TYPE: CS6W-545MB-AG
MODULE QUANTITY: 2,189
ORIENTATION: 10° TILT, 181° AZIMUTH

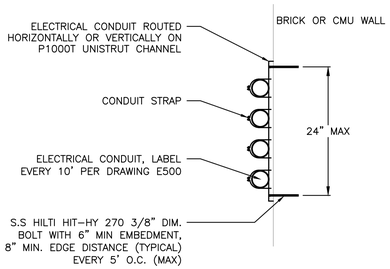
PROJECT
BESS + SOLAR SYSTEM AT
PROLOGIS – WAYFAIR 3300
3300 INDIAN AVE.
PERRIS, CA 92571

DRAWING TITLE
GROUNDING DETAILS

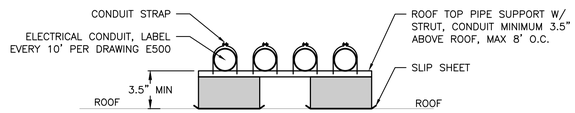
DRAWING #
E410

PLOT DATE: 11/20/2023 3:43 PM

RULER IN INCHES:

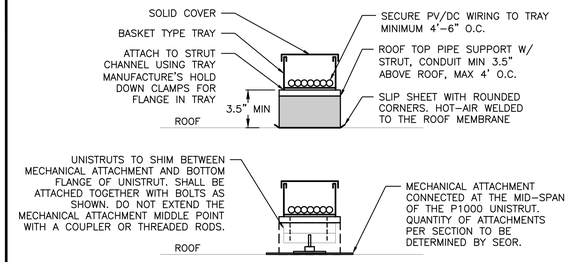


1 CONDUIT WALL ANCHORING
SCALE: NONE



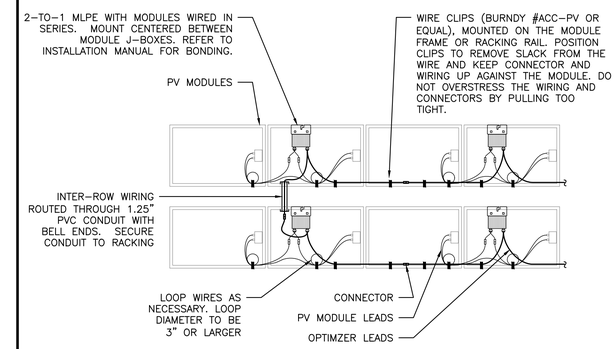
FLAT ROOF

2 ROOF CONDUIT SUPPORT
SCALE: NONE



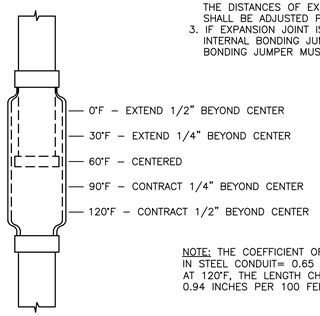
BASKET TRAY (STRING WIRING ONLY)

3 CABLE TRAY FOR PV HOMERUNS
SCALE: NONE



4 STRING WIRING
SCALE: NONE

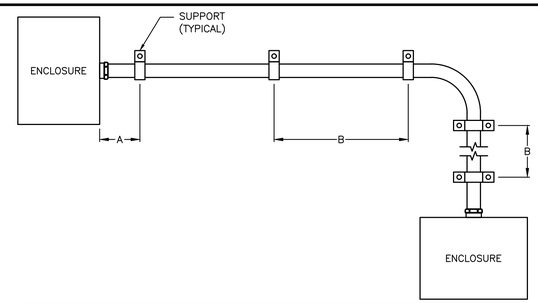
NOTES:
1. INSTALL EXPANSION COUPLING EVERY 100' OF STRAIGHT CONDUIT RUN.
2. IF EXPANSION COUPLINGS ARE INSTALLED AT LENGTHS GREATER OR LESS THAN 100', THE DISTANCES OF EXPANSION/CONTRACTION SHALL BE ADJUSTED PROPORTIONALLY.
3. IF EXPANSION JOINT IS NOT PROVIDED WITH INTERNAL BONDING JUMPER, AN EXTERNAL BONDING JUMPER MUST BE INSTALLED.



NOTE: THE COEFFICIENT OF THERMAL EXPANSION IN STEEL CONDUIT= 0.65 X 10^{-5}IN./IN./°F AT 120°F, THE LENGTH CHANGE IS 0.94 INCHES PER 100 FEET OF CONDUIT RUN.

EMT/RMC/IMC

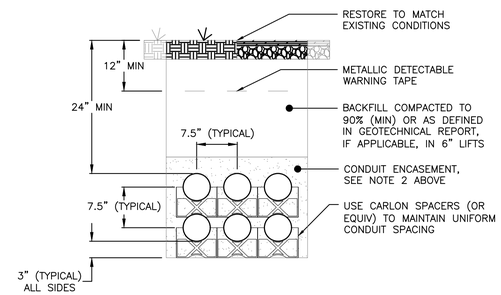
5 EXPANSION COUPLING
SCALE: NONE



MAXIMUM CONDUIT HARDWARE SPACING			
CONDUIT TYPE	ENCLOSURE TO SUPPORT (A)	SUPPORT TO SUPPORT (B)	NEC ARTICLE
ELECTRICAL METALLIC TUBING (EMT)	3'	10'	358
INTERMEDIATE METAL CONDUIT (IMC)	3'	10'	342
RIGID METAL CONDUIT (RMC)	3'	10'	344
LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)	1'	4.5'	350
PVC (SCH40 & 80) [0.5" - 1"]	3'	3'	352
PVC (SCH40 & 80) [1.25" - 2"]	3'	5'	352
PVC (SCH40 & 80) [2.5" - 3"]	3'	6'	352
PVC (SCH40 & 80) [3.5" - 5"]	3'	7'	352
PVC (SCH40 & 80) [6"]	3'	8'	352

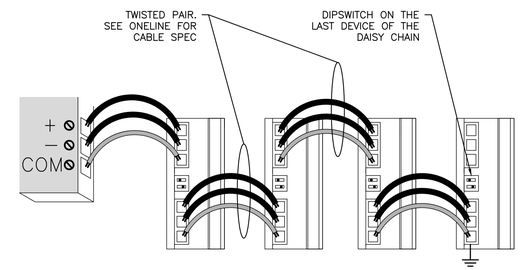
6 CONDUIT SUPPORT SPACING
SCALE: NONE

NOTES:
1. ALL UNDERGROUND CONDUIT SHALL BE PVC AND TRANSITION TO RMC FOR ELBOW. RMC ELBOW DOES NOT NEED TO BE BONDED IF THE ENTIRE ELBOW IS >= 18" DEEP (NEC 250.86 EXCEPTION 3)
2. UNDER ROADS AND PARKING AREAS ENCASEMENT SHALL BE 2500 PSI CONCRETE. UNDER GRASSY AREAS NOT SUBJECT TO VEHICULAR TRAFFIC ENCASEMENT SHALL BE EITHER SAND, NATIVE BACKFILL CONTAINING NO ROCKS LARGER THAN 3/4" AND FREE FROM SHARP ANGULAR SUBSTANCES, OR SOIL ON SITE AS CONFIRMED ACCEPTABLE BY SITE SUPERVISOR.
3. CALL BEFORE YOU DIG, DIAL 811 TO BE CONNECTED TO THE LOCAL ON-CALL CENTER. YOU MUST CALL AT LEAST 48 HOURS BEFORE EXCAVATING.
4. IF DUCTBANK SLOPES SUCH THAT ANY PART OF THE DUCTBANK IS ABOVE STUB UP ELEVATION, INCLUDE HAND HOLE WITH GRAVEL BASE TO ALLOW DRAINAGE AT LOWEST ELEVATION.
5. DUCTBANK SIZE SHOWN IS THE MAXIMUM ALLOWABLE SIZE WITHOUT THERMAL ANALYSIS.



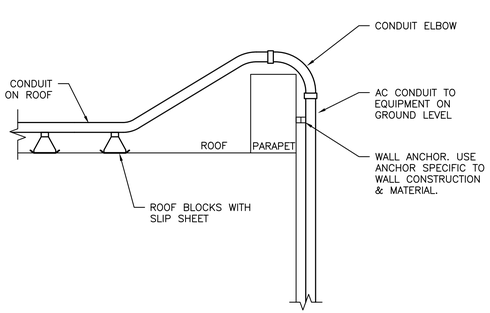
7 TYPICAL AC DUCTBANK
SCALE: NONE

MONITORING NOTES:
1. REFER TO MONITORING SYSTEM INSTALLATION MANUAL FOR DETAILS ON TERMINAL BLOCKS, CABLE TERMINATIONS, AND SYSTEM CONFIGURATION.
2. WIRELESS TRANSCEIVERS MUST HAVE LINE-OF-SIGHT BETWEEN EACH OTHER.
3. PYRANOMETER MUST BE INSTALLED IN UNSHADED LOCATION.



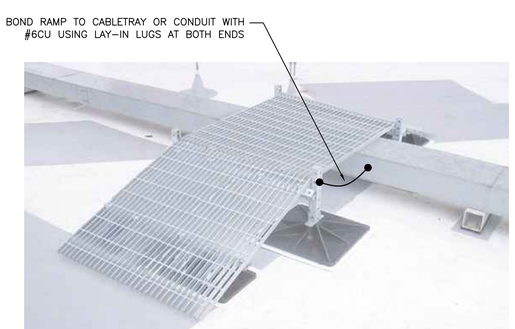
8 MODBUS COMMUNICATIONS
SCALE: NONE

NOTES:
1. DO NOT USE CONDUIT BODIES ON ROOF EDGE FOR POWER CONDUITS.
2. CONDUCTORS IN A VERTICAL RACEWAY SHALL BE SUPPORTED IN COMPLIANCE WITH NEC TABLE 300.19(A). USE OZ GEDNEY WEDGES OR EQUIV.

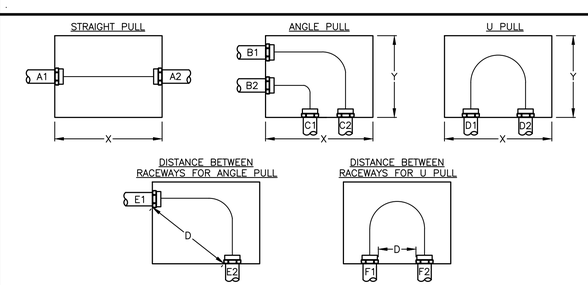


9 ROOF EDGE CONDUIT RISER WITHOUT PARAPET
SCALE: NONE

NOTES:
1. HOT DIP GALVANIZED STEEL RAMP BY PHP SYSTEMS OR APPROVED EQUAL.
2. PROVIDE SLIPSHEETS COMPATIBLE WITH ROOFING MATERIAL AT ALL BASES.
3. ENSURE 1" MIN CLEARANCE BETWEEN RAMP AND CONDUITS OR TRAY



10 CROSSOVER RAMP
SCALE: NONE



NEC 314.28(A)(1)–(3) PULL BOX SIZING (UP TO 1000V)			
BOX TYPE	LENGTH (X)	HEIGHT (Y)	DISTANCE (D)
STRAIGHT PULL	8 X LARGEST OF A1 & A2	AS NEEDED	N/A
ANGLE PULL	6 X (LARGEST OF B1 & B2) + SUM OF OTHER CONDUIT ENTERING THE SAME WALL	6 X (LARGEST OF C1 & C2) + SUM OF OTHER CONDUIT ENTERING THE SAME WALL	6 X LARGEST OF E1 & E2
U PULL	AS NEEDED	6 X (LARGEST OF D1 & D2) + SUM OF OTHER CONDUIT ENTERING THE SAME WALL	6 X LARGEST OF F1 & F2

NOTES:
1. REFER TO NEC 314.28 FOR ADDITIONAL REQUIREMENTS.
2. ENSURE CONDUCTOR BEND RADIUS MINIMUMS ARE MET. REFER TO NEC 312.6 FOR ADDITIONAL REQUIREMENTS.

11 PULL BOX & JUNCTION BOX SIZING
SCALE: NONE

DATE	REVISION DESCRIPTION	PM	ENG	CHK
11/20/2023	ISSUE FOR BID	TL	SC	MD
11/13/2023	ISSUE FOR PERMIT REV1	TL	SC	MD
10/26/2023	STRINGING PLAN	TL	SC	MD
09/14/2023	ISSUE FOR PERMIT	TL	SC	MD

PUREPOWER ENGINEERING
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PHONE: (201) 793-1024
RICHARD A. IVINS
CA LICENSE No. 20357

POWERFLEX
805 THIRD AVENUE 20TH FLOOR
NEW YORK, NY 10022
WWW.POWERFLEX.COM

DEVELOPER: powerflex EDF Renewables

PAGE SIZE: 36" x 24"
PROJECT #: 06939

DC SYSTEM SIZE: 1,193.005 kWDC
AC SYSTEM SIZE: 880.000 kWAC
MODULE TYPE: CS6W-545MB-AG
MODULE QUANTITY: 2,189
ORIENTATION: 10° TILT, 181° AZIMUTH

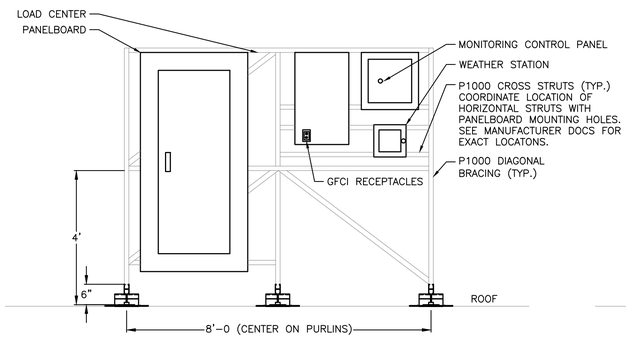
PROJECT
BESS + SOLAR SYSTEM AT
PROLOGIS – WAYFAIR 3300
3300 INDIAN AVE.
PERRIS, CA 92571

DRAWING TITLE
ELECTRICAL DETAILS

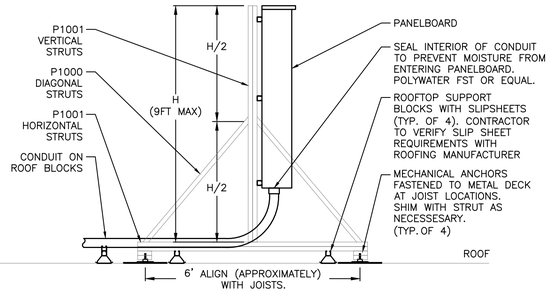
DRAWING #
E420

PLOT DATE: 11/20/2023 3:43 PM

RULER IN INCHES:

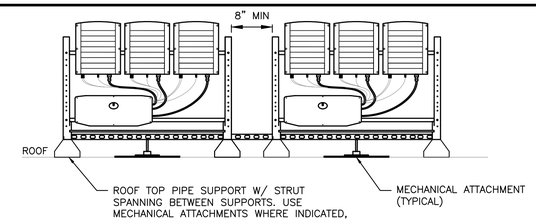


FRONT VIEW

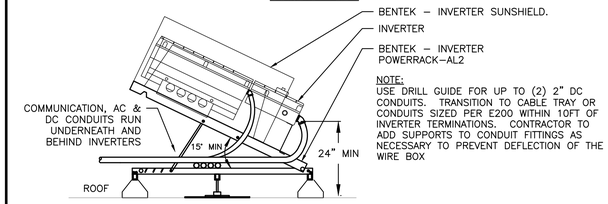


SIDE VIEW

1 RACK-MOUNTED PANELBOARD
SCALE: NONE



FRONT VIEW

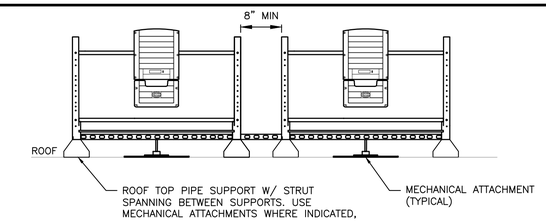


NOTE:
USE DRILL GUIDE FOR UP TO (2) 2" DC CONDUITS. TRANSITION TO CABLE TRAY OR CONDUITS SIZED PER E200 WITHIN 10FT OF INVERTER TERMINATIONS. CONTRACTOR TO ADD SUPPORTS TO CONDUIT FITTINGS AS NECESSARY TO PREVENT DEFLECTION OF THE WIRE BOX

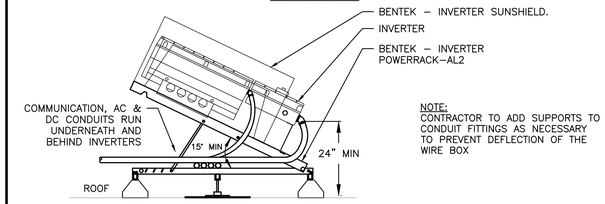
SIDE VIEW

SOLAREDGE

2 TYPICAL INVERTER RACK – FLAT ROOF
SCALE: NONE



FRONT VIEW

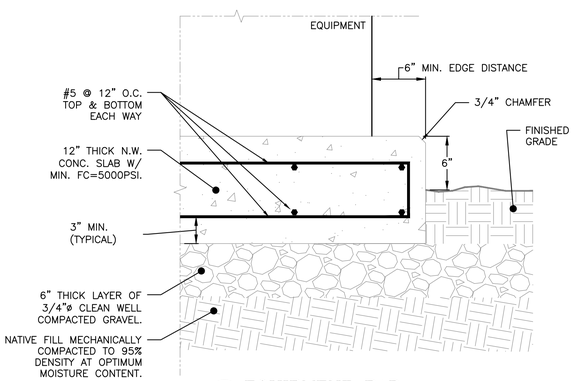


NOTE:
CONTRACTOR TO ADD SUPPORTS TO CONDUIT FITTINGS AS NECESSARY TO PREVENT DEFLECTION OF THE WIRE BOX

SIDE VIEW

SOLAREDGE

3 TYPICAL INVERTER RACK – FLAT ROOF
SCALE: NONE



4 EQUIPMENT PAD
SCALE: 1-1/2" = 1'-0"

DATE	REVISION DESCRIPTION	PM	ENG	CHK
11/13/2023	ISSUE FOR PERMIT REV1	TL	SC	MD
09/14/2023	ISSUE FOR PERMIT	TL	SC	MD
08/02/2023	PRELIM. CONCEPTUAL DESIGN	TL	SC	MD

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RICHARD A. IVINS
CA LICENSE No. 20357

DEVELOPER
POWERFLEX
805 THIRD AVENUE 20TH FLOOR
NEW YORK, NY 10022
WWW.POWERFLEX.COM
EDF Renewables

PAGE SIZE 36" x 24"
PROJECT # 06939

DC SYSTEM SIZE: 1,193.005 kWDC
AC SYSTEM SIZE: 880.000 kWAC
MODULE TYPE: CS6W-545MB-AG
MODULE QUANTITY: 2,189
ORIENTATION: 10° TILT, 181° AZIMUTH

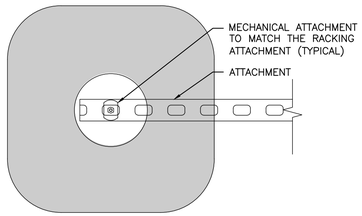
PROJECT
BESS + SOLAR SYSTEM AT
PROLOGIS – WAYFAIR 3300
3300 INDIAN AVE.
PERRIS, CA 92571

DRAWING TITLE
ELECTRICAL DETAILS

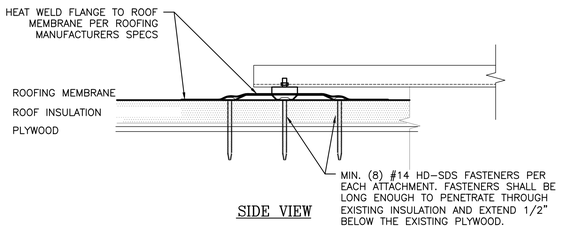
DRAWING #
E421

PLOT DATE: 11/13/2023 3:06 PM

RULER IN INCHES:



FRONT VIEW



SIDE VIEW

1 ROOF ANCHOR ATTACHMENT
SCALE: NONE

DATE	REVISION DESCRIPTION	PM	ENG	CHK
11/20/2023	ISSUE FOR BID	TL	SC	MD
11/13/2023	ISSUE FOR PERMIT REV1	TL	SC	MD
10/26/2023	STRINGING PLAN	TL	SC	MD
09/14/2023	ISSUE FOR PERMIT	TL	SC	MD

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PROJECT
BESS + SOLAR SYSTEM AT
PROLOGIS – WAYFAIR 3300
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PERRIS, CA 92571

DRAWING TITLE
STRUCTURAL DETAILS

DRAWING #
E430

PLOT DATE: 11/22/2023 12:38 PM

RULER IN INCHES:

PLOT DATE: 11/20/2023 5:52 PM

GENERAL NOTES FOR LABELS:
1. LETTERING ON SIGNS SHALL BE CAPITAL LETTERS, MINIMUM SIZE OF 3/16" HIGH FOR GENERAL TEXT. HEADINGS SHALL BE MINIMUM 1/2" HIGH. LETTERING SHALL BE REFLECTIVE RED ON WHITE BACKGROUND OR VICE VERSA.
2. CLEARLY LABEL ALL CIRCUIT BREAKERS IN THE PANELBOARD. THE LABEL SHALL INDICATE THE NAME OF THE DEVICE IT SERVES.
3. ALL LABELS SHALL BE ENGRAVED MELAMINE

LABEL FORMAT NOTES:
1. FORMAT 1: ENGRAVED MELAMINE, WHITE TEXT ON RED BACKGROUND. TEXT HEIGHT: TITLES 3/8", ALL OTHER TEXT 5/32".
2. FORMAT 2: ENGRAVED MELAMINE, BLACK TEXT ON WHITE BACKGROUND. TEXT HEIGHT: TITLES 3/8", ALL OTHER TEXT 5/32".
3. FORMAT 3: REFLECTIVE UV RATED LABEL. RED BACKGROUND WITH WHITE CAPITAL LETTERS AT LEAST 3/8" TALL. LABELS SHALL BE SUITABLE FOR THE ENVIRONMENT IN WHICH THEY ARE INSTALLED.
4. FORMAT 4: ENGRAVED MELAMINE, WHITE TEXT ON RED BACKGROUND. TEXT HEIGHT: TITLES 5/32", ALL OTHER TEXT 3/32".
5. FORMAT 5: VINYL FILM, BLACK TEXT ON WHITE BACKGROUND. TEXT HEIGHT: 3/8"

PER 2020 NEC 690.31(B)(1), PV SYSTEM CIRCUIT CONDUCTORS SHALL BE IDENTIFIED AT ALL ACCESSIBLE POINTS OF TERMINATION, CONNECTION, AND SPLICES.

1. STRING HOMERUNS AT ARRAY
2. DC INPUT TERMINALS OF COMBINER BOX
3. DC OUTPUT TERMINALS OF COMBINER BOX
4. DC INPUT TERMINALS OF INVERTER
5. AC OUTPUT TERMINALS OF INVERTER
6. AC INPUT & OUTPUT TERMINALS OF EACH SUCCESSIVE DEVICE (WHERE APPLICABLE)

CIRCUIT BREAKER AND SWITCH LABELS:
UNLESS LABELLED OTHERWISE, ALL CIRCUIT BREAKERS AND SWITCHES SHALL BE LABELLED WITH THE NAME OF THE EQUIPMENT SUPPLIED.

INVERTER 1
TYPICAL FOR INVERTER BRANCH CIRCUIT BREAKERS. FORMAT 5

ESS MAIN DISCONNECT
TYPICAL FOR PANELBOARD MAIN CIRCUIT BREAKERS. FORMAT 5

BESS INVERTER
TYPICAL FOR INVERTER BRANCH CIRCUIT BREAKERS. FORMAT 5

14" × 10"
DANGER
HIGH VOLTAGE
KEEP OUT
NOTE: INSTALL SIGNAGE EVERY 75' OF FENCELINE
SCALE 1:4

4" × 2"
WARNING
ARC FLASH AND SHOCK HAZARD
Appropriate PPE and Tools Required when working on this equipment.
OUTDOOR RATED STICKER MOUNTED ON ALL EQUIPMENT

6 1/2" × 1"
WARNING: PHOTOVOLTAIC POWER SOURCE
NEC 690.31(G)(3)(4), NFPA11.12.2.1.3.2, HELLERMANNTYTON #: 596-00206 OR EQUAL, FORMAT 3. SHALL BE PERMANENTLY AFFIXED ON ALL DC EXPOSED RACEWAYS, CABLE TRAYS, PULL BOXES, AND JUNCTION BOXES. LABELS SHALL BE SPACED NO GREATER THAN 10 FEET APART.

2 — 6 1/2" × 1"
RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM
NEC 2020 690.56(C)(3), HELLERMANNTYTON#: 596-00890 OR EQUAL, FORMAT 3. INSTALL ON RAPID SHUTDOWN INITIATION DEVICE.

3 — 6" × 6"
PV RAPID SHUTDOWN
PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN
TO START RAPID SHUTDOWN, TURN SWITCH TO OFF POSITION.
WHEN RAPID SHUTDOWN IS INITIATED, EMERGENCY RESPONDERS MAY MOVE AROUND THE ROOF UNDERSTANDING PV SYSTEM CONDUCTORS:
1. LESS THAN 1'-0" FROM AN ARRAY MAY BE ENERGIZED – DO NOT TOUCH!
2. MORE THAN 1'-0" FROM AN ARRAY ARE NOT ENERGIZED AND ARE SAFE TO CONTACT (IF NECESSARY)
NEC SUPPLEMENT, FORMAT 1

4 — 6" × 4"
SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN
TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUTDOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN ARRAY
ARRAYS
NEC 2020 690.56(C)(1)(a), HELLERMANNTYTON #: 596-00885 OR EQUAL, INSTALL ON OR WITHIN 3' OF RAPID SHUTDOWN INITIATION DEVICE AND SERVICE DISCONNECTING MEANS. FOR USE ON PV SYSTEMS THAT SHUTDOWN THE ARRAY AND CONDUCTORS LEAVING ARRAY. TITLE TEXT SHALL BE 3/8" BLACK TEXT ON YELLOW BACKGROUND. ALL OTHER TEXT SHALL BE 3/16" BLACK TEXT ON WHITE BACKGROUND.

7 — 6" × 3"
BESS MAIN BREAKER
WARNING: PHOTOVOLTAIC POWER SOURCE.
OPERATING CURRENT: 317A
NOMINAL VOLTAGE: 480V
NEC 690.54, NFPA 11.12.2.1.1, FORMAT 1

8 — 6" × 3"
SOLAR & BESS AC DISCONNECT
WARNING: PHOTOVOLTAIC POWER SOURCE.
OPERATING CURRENT: 1058A
NOMINAL VOLTAGE: 480V
NEC 690.54, NFPA 11.12.2.1.1, FORMAT 1

16 — 6" × 3"
BESS AC DISCONNECT
WARNING: PHOTOVOLTAIC POWER SOURCE.
OPERATING CURRENT: 317A
NOMINAL VOLTAGE: 480V
NEC 690.54, NFPA 11.12.2.1.1, FORMAT 1

6" × 2 3/4"
INVERTER X DC DISCONNECT
MAXIMUM VOLTAGE: 1000V
NEC 2020 690.53, NFPA 11.12.2.1.1 FORMAT 1

13 — 5" × 3 1/4"
BESS SUBPANEL
WARNING: SUPPLIED BY UTILITY & PV SOURCES.
OPERATING CURRENT: 1058A
OPERATING VOLTAGE: 480V
DO NOT CONNECT NON-SOLAR LOADS TO THIS PANEL
FORMAT 1

9 — 5" × 3 1/4"
SOLAR AC SUBPANEL 1
WARNING: SUPPLIED BY UTILITY & PV SOURCES.
OPERATING CURRENT: 577A
OPERATING VOLTAGE: 480V
DO NOT CONNECT NON-SOLAR LOADS TO THIS PANEL
FORMAT 1

15 — 5" × 3 1/4"
SOLAR AC SUBPANEL 2
WARNING: SUPPLIED BY UTILITY & PV SOURCES.
OPERATING CURRENT: 481A
OPERATING VOLTAGE: 480V
DO NOT CONNECT NON-SOLAR LOADS TO THIS PANEL
FORMAT 1

10
ISOLATION TRANSFORMER
PRIMARY & SECONDARY DISCONNECTING MEANS LOCATION:
PRIMARY: ESS MAIN BREAKER LOCATED ON WALL OF BUILDING NEAR BESS SYSTEM
SECONDARY: INTERNAL BESS DISCONNECT SWITCH LOCATED ADJACENT TO TRANSFORMER

5 — 6" × 3/4"
WEATHER STATION
FORMAT 2

6 — 6" × 3/4"
SOLAR MONITORING
FORMAT 2

14 — 6" × 3/4"
ATHENA POWER CONTROLLER
FORMAT 2

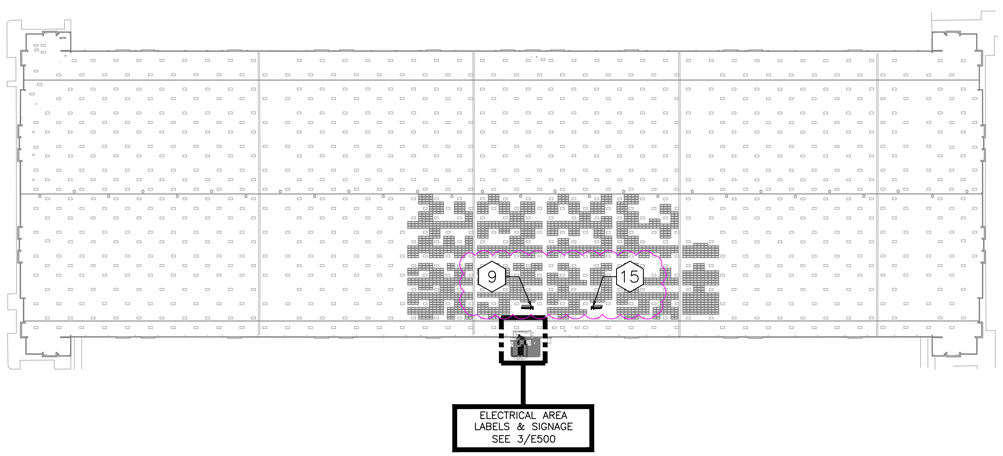
DANGER
Arc Flash and Shock Risk
Appropriate PPE Required

		Protective Device Settings	
XXX in	Arc Flash Boundary	XXXXXXXXXXXXXX	
XXXX cal/cm^2	Incident Energy at XX in		
PPE	Refer to NFPA 70E	Make:	XXXXXXXXXXXXXXXXX
X.XX kA	Arc Fault Current	Mdl:	XXXXXXX
X.XX kA	Available Fault Current	INST:	XXXXXXX
XXX VAC	Nominal System Voltage	LTD:	XXXXXXX
XX in	Limited Approach	LTPU:	XXXXXXX
XX in	Restricted Approach	STD:	XXXXXXX
Company:	Pure Power Engineering	STPU:	XXXXXXX
Equipment:	XXXXXXXXXXXXXXXXXXXX	See Ex. Info	

ARC FLASH LABEL NOTES:
1. THE ARC FLASH LABEL ON THIS DRAWING IS FOR REFERENCE ONLY. REFER TO POWER STUDY FOR ARC FLASH LABELS TO BE INSTALLED AND THEIR APPLIED LOCATIONS.

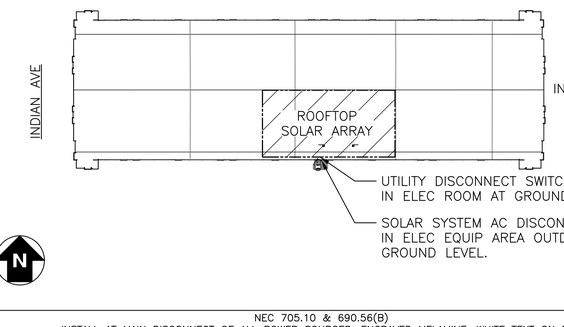
11 — 9" × 2 3/4"
BATTERY ENERGY STORAGE SYSTEM
SUNGROW ST556KWH-250
ENERGIZED ELECTRICAL CIRCUITS
CFC 1207.4.8, FORMAT 4

TYPICAL FOR INVERTER(S):
12 — 8" × 3 1/4"
BESS INVERTER
DC DISCONNECT — MAXIMUM VOLTAGE: 1046 V
AC DISCONNECT — MAXIMUM AC OPERATING CURRENT: 317A; NOMINAL AC OPERATING VOLTAGE: 480V
NEC 2020 690.53, 690.54, NFPA 11.12.2.1.1 FORMAT 1



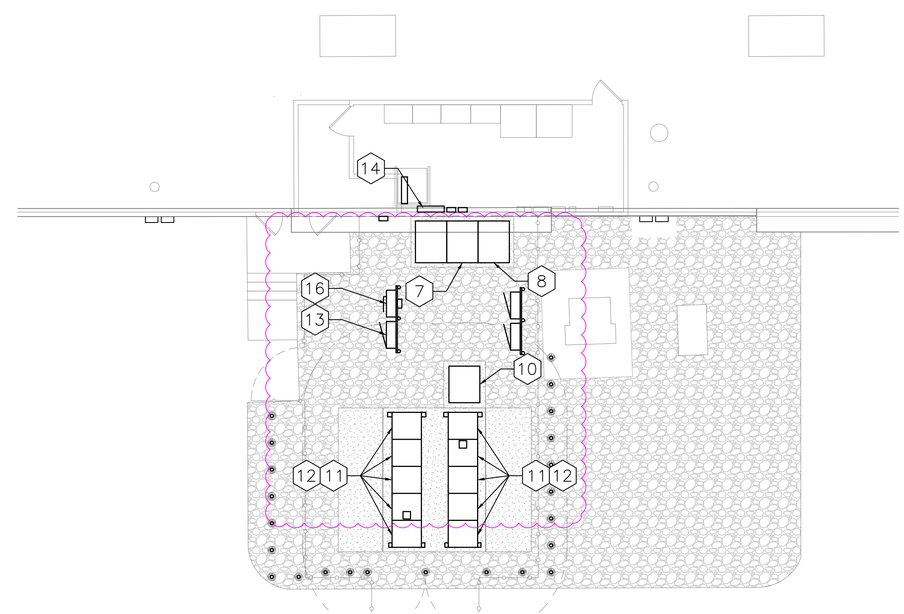
1 LABELS & SIGNAGE
SCALE: 1" = 150'

1 — 10" × 6"
CAUTION:
MULTIPLE POWER SOURCES ARE CONNECTED TO THIS SERVICE WITH DISCONNECTS AS SHOWN:



NEC 705.10 & 690.56(B)
INSTALL AT MAIN DISCONNECT OF ALL POWER SOURCES. ENGRAVED MELAMINE, WHITE TEXT ON RED BACKGROUND, TITLE MIN. 1/2", DESCRIPTION 5/16", ALL OTHER TEXT 1/8"

2 DIRECTORY LABEL
SCALE: 1:1



3 ELECTRICAL ROOM – LABELS & SIGNAGE
SCALE: 1/8" = 1'-0"

REVISION DESCRIPTION	DATE	PM	ENG	CHK
ISSUE FOR BID	11/20/2023	TL	SC	MD
ISSUE FOR PERMIT REV1	11/13/2023	TL	SC	MD
STRINGING PLAN	10/26/2023	TL	SC	MD
ISSUE FOR PERMIT	09/14/2023	TL	SC	MD

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BESS + SOLAR SYSTEM AT
PROLOGIS – WAYFAIR 3300
3300 INDIAN AVE.
PERRIS, CA 92571

DRAWING TITLE
LABELS & SIGNAGE

DRAWING #
E500

RULER IN INCHES:

NEW

CanadianSolar

BiHiKu6

520 W ~ 550 W

BIFACIAL MONO PERC

CS6W-520|525|530|535|540|545|550MB-AG

MORE POWER

- 550 W — Module power up to 550 W; Module efficiency up to 21.4 %
- Up to 12.3 % lower LCOE; Up to 5.2 % lower system cost
- Comprehensive LID / LeTID mitigation technology, up to 50% lower degradation
- Compatible with mainstream trackers, cost effective product for utility power plant
- Better shading tolerance

MORE RELIABLE

- Minimizes micro-crack impacts
- Heavy snow load up to 5400 Pa, wind load up to 2400 Pa*

- 12 Years — **Enhanced Product Warranty on Materials and Workmanship***
- 30 Years — **Linear Power Performance Warranty***

1st year power degradation no more than 2%
Subsequent annual power degradation no more than 0.45%

*According to the applicable Canadian Solar Limited Warranty Statement.

MANAGEMENT SYSTEM CERTIFICATES*

ISO 9001:2015 / Quality management system
ISO 14001:2015 / Standards for environmental management system
ISO 45001: 2018 / International standards for occupational health & safety

PRODUCT CERTIFICATES*

IEC 61215 / IEC 61730 / CE / INMETRO / MCS / UKCA
CEC listed (US California)
UL 61730 / IEC 61701 / IEC 62716 / IEC 60068-2-68
Take-e-way

* The specific certificates applicable to different module types and markets will vary, and therefore not all of the certifications listed herein will simultaneously apply to the products you order or use. Please contact your local Canadian Solar sales representative to confirm the specific certificates available for your Product and applicable in the regions in which the products will be used.

CSI Solar Co., Ltd. is committed to providing high quality solar photovoltaic modules, solar energy and battery storage solutions to customers. The company was recognized as the No. 1 module supplier for quality and performance/price ratio in the IHS Module Customer Insight Survey. Over the past 20 years, it has successfully delivered over 63 GW of premium-quality solar modules across the world.

* For detailed information, please refer to the Installation Manual.

CSI Solar Co., Ltd.
199 Lushan Road, SND, Suzhou, Jiangsu, China, 215129, www.csisolar.com, support@csisolar.com

Three Phase Inverter with Synergy Technology

for the 277/480V Grid for North America

SE66.6KUS / SE80KUS / SE100KUS / SE120KUS

INVERTERS

Specifically designed to work with power optimizers

- Easy 2-person installation – modular design for simple connection of small and lightweight units
- Balance of System and labor reduction compared to using string inverters
- Independent operation of each unit enables higher uptime and easy serviceability
- Integrated PID rectifier to mitigate module PID effect
- No wasted ground area: wall/rail mounted or horizontally mounted under the modules (10° inclination)
- Integrated arc fault protection and optional rapid shutdown for NEC 2014 and 2017, per article 690.11 and 690.12
- Built-in module-level monitoring with Ethernet or cellular GSM for full system visibility
- Fixed voltage inverter for superior efficiency (98.5%) and longer strings
- Integrated DC Safety Switch
- Built-in (optional) DC, AC and RS485 Surge Protection, to better withstand lightning events

solaredge.com

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Three Phase Inverters for the 277/480V Grid

for North America

SE20KUS / SE30KUS / SE33.3KUS / SE40KUS

INVERTERS

The best choice for SolarEdge enabled systems

- Specifically designed to work with power optimizers
- Quick and easy inverter commissioning directly from a smartphone using the SolarEdge SetApp
- Fixed voltage inverter for superior efficiency (98.5%) and longer strings
- Built-in type 2 DC and AC Surge Protection, to better withstand lightning events
- Small, lightest in its class, and easy to install outdoors or indoors on provided bracket
- Integrated arc fault protection and rapid shutdown for NEC 2014 and 2017, per article 690.11 and 690.12
- Built-in module-level monitoring with Ethernet, wireless or cellular communication for full system visibility
- Integrated Safety Switch
- UL1741 SA certified, for CPUC Rule 21 grid compliance

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Power Optimizer

For North America

P1100

POWER OPTIMIZER

PV power optimization at the module-level

The most cost-effective solution for commercial and large field installations

- Specifically designed to work with SolarEdge inverters
- Up to 25% more energy
- Superior efficiency (99.5%)
- Balance of System cost reduction; 50% less cables, fuses and combiner boxes, over 2x longer string lengths possible
- Fast installation with a single bolt
- Advanced maintenance with module-level monitoring
- Module-level voltage shutdown for installer and firefighter safety
- Use with parallel PV modules connected in series

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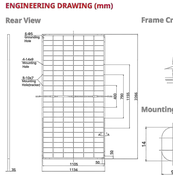
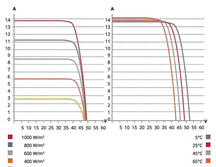
ENGINEERING DRAWING (mm)

Rear View — Frame Cross Section A-A — Mounting Hole



CS6W-530MB-AG / I-V CURVES



ELECTRICAL DATA | STC*

		Nominal Max. Power (Pmax)	Opt. Operating Voltage (Vmp)	Opt. Operating Current (Imp)	Open Circuit Voltage (Voc)	Short Circuit Current (Isc)	Module Efficiency
CS6W-520MB-AG		520 W	40.5 V	12.84 A	48.4 V	13.70 A	20.2%
Bifacial Gain**	5%	546 W	40.5 V	13.48 A	48.4 V	14.39 A	21.2%
	10%	572 W	40.5 V	14.12 A	48.4 V	15.07 A	22.3%
	20%	624 W	40.5 V	15.41 A	48.4 V	16.44 A	24.3%
CS6W-525MB-AG		525 W	40.7 V	12.90 A	48.6 V	13.75 A	20.4%
Bifacial Gain**	5%	551 W	40.7 V	13.55 A	48.6 V	14.44 A	21.4%
	10%	578 W	40.7 V	14.21 A	48.6 V	15.13 A	22.5%
	20%	630 W	40.7 V	15.48 A	48.6 V	16.50 A	24.5%
CS6W-530MB-AG		530 W	40.9 V	12.96 A	48.8 V	13.80 A	20.6%
Bifacial Gain**	5%	557 W	40.9 V	13.62 A	48.8 V	14.49 A	21.7%
	10%	583 W	40.9 V	14.26 A	48.8 V	15.18 A	22.7%
	20%	636 W	40.9 V	15.55 A	48.8 V	16.56 A	24.8%
CS6W-535MB-AG		535 W	41.1 V	13.02 A	49.0 V	13.85 A	20.8%
Bifacial Gain**	5%	562 W	41.1 V	13.68 A	49.0 V	14.54 A	21.9%
	10%	589 W	41.1 V	14.34 A	49.0 V	15.24 A	22.9%
	20%	642 W	41.1 V	15.62 A	49.0 V	16.62 A	25.0%
CS6W-540MB-AG		540 W	41.3 V	13.08 A	49.2 V	13.90 A	21.0%
Bifacial Gain**	5%	567 W	41.3 V	13.73 A	49.2 V	14.60 A	22.1%
	10%	594 W	41.3 V	14.39 A	49.2 V	15.29 A	23.1%
	20%	[illegible]	41.3 V	15.68 A	49.2 V	16.66 A	25.2%
CS6W-545MB-AG		545 W	41.5 V	13.14 A	49.4 V	13.95 A	21.2%
Bifacial Gain**	5%	572 W	41.5 V	13.80 A	49.4 V	14.65 A	22.3%
	10%	600 W	41.5 V	14.46 A	49.4 V	15.35 A	23.3%
	20%	654 W	41.5 V	15.77 A	49.4 V	16.74 A	25.5%
CS6W-550MB-AG		[illegible]	41.7 V	13.21 A	49.6 V	14.01 A	21.4%
Bifacial Gain**	5%	578 W	41.7 V	13.87 A	49.6 V	14.70 A	22.5%
	10%	605 W	41.7 V	14.52 A	49.6 V	15.40 A	23.5%
	20%	660 W	41.7 V	15.84 A	49.6 V	16.80 A	25.7%

* Under Standard Test Conditions (STC) of irradiance of 1000 W/m², spectrum AM 1.5 and cell temperature of 25°C.
** Bifacial Gain: The additional gain from the back side compared to the power of the front side at the standard test condition. It depends on mounting structure, height, tilt angle etc.) and albedo of the ground.

ELECTRICAL DATA

Operating Temperature	-40~C ~ +85°C
Max. System Voltage	1500 V (IEC/UL) or 1000 V (IEC/UL)
Module Fire Performance	TYPE 29 (UL 1730) or CLASS C (IEC61730)
Max. Series Fuse Rating	30 A
Application Classification	Class A
Power Tolerance	0 ~ + 10 W
Power Bifaciality*	70 %

* Power Bifaciality = Pmax_rear / Pmax_front, both Pmax_rear and Pmax_front are tested under STC, Bifaciality Tolerance: ± 5 %

* The specifications and key features contained in this datasheet may deviate slightly from our actual products due to the on-going innovation and product enhancement. CSI Solar Co., Ltd. reserves the right to make necessary adjustment to the information described herein at any time without further notice.
Please be kindly advised that PV modules should be handled and installed by qualified people who have professional skills and please carefully read the safety and installation instructions before using our PV modules.

ELECTRICAL DATA | NMOT*

	Nominal Max. Power (Pmax)	Opt. Operating Voltage (Vmp)	Opt. Operating Current (Imp)	Open Circuit Voltage (Voc)	Short Circuit Current (Isc)
CS6W-520MB-AG	390 W	38.0 V	10.27 A	45.7 V	11.05 A
CS6W-525MB-AG	394 W	38.2 V	10.32 A	45.9 V	11.09 A
CS6W-530MB-AG	397 W	38.3 V	10.38 A	46.1 V	11.13 A
CS6W-535MB-AG	401 W	38.5 V	10.42 A	46.3 V	11.17 A
CS6W-540MB-AG	405 W	38.7 V	10.47 A	46.5 V	11.21 A
CS6W-545MB-AG	409 W	38.9 V	10.52 A	46.7 V	11.25 A
CS6W-550MB-AG	412 W	39.1 V	10.55 A	46.9 V	11.29 A

* Under Nominal Module Operating Temperature (NMOT), irradiance of 800 W/m², spectrum AM 1.5, ambient temperature 20°C, wind speed 1 m/s.

MECHANICAL DATA

Specification	Data
Cell Type	Mono-crystalline
Cell Arrangement	144 [2 x (12 x 6)]
Dimensions	2266 * 1134 * 35 mm (89.2 * 44.6 * 1.38 in)
Weight	32.2 kg (71.0 lbs)
Front Glass	2.0 mm heat strengthened glass with anti-reflective coating
Back Glass	2.0 mm heat strengthened glass
Frame	Anodized aluminium alloy
J-Box	IP68, 3 bypass diodes
Cable	4.0 mm² (IEC), 12 AWG (UL)
Cable Length (Including Connector)	410 mm (16.1 in) (+) / 290 mm (11.4 in) (-) or customized length*
Connector	T4 series or MC4-EVO2
Per Pallet	30 pieces
Per Container (40' HQ)	600 pieces or 540 pieces (only for US)

* For detailed information, please contact your local Canadian Solar sales and technical representatives.

TEMPERATURE CHARACTERISTICS

Specification	Data
Temperature Coefficient (Pmax)	-0.34 % / °C
Temperature Coefficient (Voc)	-0.26 % / °C
Temperature Coefficient (Isc)	0.05 % / °C
Nominal Module Operating Temperature	41 ± 3°C

PARTNER SECTION

CSI Solar Co., Ltd.
199 Lushan Road, SND, Suzhou, Jiangsu, China, 215129, www.csisolar.com, support@csisolar.com

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/ Three Phase Inverter with Synergy Technology

for the 277/480V Grid for North America

SE66.6KUS / SE80KUS / SE100KUS / SE120KUS

	SE66.6KUS	SE80KUS	SE100KUS	SE120KUS	
Applicable to inverter with part number	SExK-U3xxxxxx				
OUTPUT					
Rated AC Power Output	66600	80000	100000	120000	W
Maximum AC Power Output	66600	80000	100000	120000	VA
AC Output Line Connections	3W/PE, 4W/PE				
AC Output Voltage Minimum-Nominal-Maximum[1] (L-N)	244 - 277 - 305				Vac
AC Output Voltage Minimum-Nominal-Maximum[1] (L-L)	422.5 - 480 - 529				Vac
AC Frequency Min-Nom-Max[3]	59.3 - 60 - 60.5				Hz
Maximum Continuous Output Current (per Phase, PF=1)	80	96	120	144	A
GFDI Threshold	1				A
Utility Monitoring, Islanding Protection, Configurable Power Factor, Country Configurable Thresholds	Yes				
Total Harmonic Distortion	≤ 3				%
INPUT					
Maximum DC Power (Module STC), Inverter / Unit	100000 / 50000	120000 / 60000	150000 / 50000	180000 / 60000	W
Transformer-less, Ungrounded	Yes				
Maximum Input Voltage DC to Grid	1000				Vdc
Maximum Input Voltage DC+ to DC-	1000				Vdc
Nominal Input Voltage DC+ to DC-	850				Vdc
Maximum Input Current	80	96	120	144	Adc
Reverse-Polarity Protection	Yes				
Ground-Fault Isolation Detection	150kΩ Sensitivity per Unit				
CEC Weighted Efficiency	98.5				%
Nightime Power Consumption	< 12				W
ADDITIONAL FEATURES					
Supported Communication Interfaces	2 x RS485, Ethernet, WIFI, Cellular (optional)				
Rapid Shutdown	NEC2014 and NEC2017 compliant/certified (optional)				
PID Rectifier	Night-time				
RS485 Surge Protection	Supplied with the inverter				
DC SAFETY SWITCH					
DC Disconnect	1000V / 2 x 40A	1000V / 2 x 48A	1000V / 3 x 40A	1000V / 3 x 48A	
STANDARD COMPLIANCE					
Safety	UL1699B, CSA C22.2#107.1, IEE1547, Canadian AFCI according to T.I.L. M-07				
Grid Connection Standards	IEEE 1547, Rule 21, Rule 14 (HI)				
Emissions	FCC part15 class B				
INSTALLATION SPECIFICATIONS					
Number of Units	2		3		
AC Conduit Size	2 ½				in
Max Wire Gauge Line / PE	4/0 /4				AWG
DC Conduit Size	1 ¼				in
DC Wire Gauge (Model Dependent)	8-14; 2-4				AWG
Number of DC Inputs Pairs, Inverter / Unit	Up to 8 / Up to 4		Up to 12 / Up to 4		
Dimensions (H x W x D)	Synergy Unit: 21.7 x 12.5 x 10.8 / 550 x 317 x 273; Synergy Manager: 14.7 x 22 x 11.6 / 360 x 560 x 295				in / mm
Weight	Synergy Unit: 74 / 33.5; Synergy Manager: 35.3 / 16				lb / kg
Operating Temperature Range	-40 to +140 / -40 to +60[2]				°F / °C
Cooling	Fan (user replaceable)				
Noise	< 50		< 62		dBA
Protection Rating	NEMA 3R				
Mounting	Bracket provided				

[1] For other regional settings please contact SolarEdge support
[2] De-rating from 50°C

* The specifications included in this document are preliminary and subject to change without notice

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CE RoHS

/ Three Phase Inverters for the 277/480V Grid[1]

for North America

SE20KUS / SE30KUS / SE33.3KUS / SE40KUS

MODEL NUMBER	SE20KUS	SE30KUS	SE33.3KUS	SE40KUS	
APPLICABLE TO INVERTERS WITH PART NUMBER	SEXXK - USXXXBXXX	SEXXK-USX8IXAAA			
OUTPUT					
Rated AC Power Output	20000	30000	33300	40000	W
Maximum apparent AC output power	20000	30000	33300	40000	VA
AC Output Line Connections	4W + PE	3W + PE, 4W + PE			
AC Output Voltage Minimum-Nominal-Maximum[2] (L-N)	244 - 277 - 305				Vac
AC Output Voltage Minimum-Nominal-Maximum[2] (L-L)	422.5 - 480 - 529				Vac
AC Frequency Min-Nom-Max[3]	59.3 - 60 - 60.5				Hz
Maximum Continuous Output Current (per Phase)	24	36.25	40	48.25	Aac
GFDI Threshold	1				A
Utility Monitoring, Islanding Protection, Country Configurable Set Points	Yes				
Total Harmonic Distortion	≤ 3				%
Power Factor Range	+/- 0.85 to 1				
INPUT					
Maximum DC Power (Module STC)	27000	45000	50000	60000	W
Transformer less, Ungrounded	Yes				
Maximum Input Voltage DC+ to DC-	1000				Vdc
Nominal Input Voltage DC+ to DC-	850				Vdc
Maximum Input Current	26.5	36.25	40	48.25	Adc
Maximum Input Short Circuit Current	33	55			Adc
Reverse-Polarity Protection	Yes				
Ground-Fault Isolation Detection	1MΩ Sensitivity	167kΩ Sensitivity[8]			
CEC Weighted Efficiency	98	98.5			%
Night-time Power Consumption	<3	<4			W
ADDITIONAL FEATURES					
Supported Communication Interfaces	2 x RS485, Ethernet, Cellular (optional)				
Inverter Commissioning	With the SetApp mobile application using built-in access point for local connection				
Arc Fault Protection	Integrated, User Configurable (According to UL1699B)				
Rapid Shutdown	NEC2014, NEC2017 and NEC2020 compliant/certified				
RS485 Surge Protection Plug-in	Supplied with the inverter, Built-in				
DC Surge Protection	Type II, field replaceable, optional	Type II, field replaceable, Built-in			
AC Surge Protection	-	Type II, field replaceable, Built-in			
DC Fuses (Single Pole)	-	25A, Built-in			
Smart Energy Management	Export Limitation				
DC SAFETY SWITCH					
DC Disconnect	Integrated				
STANDARD COMPLIANCE					
Safety	UL1741, UL1741 SA, UL1699B, CSA C22.2, Canadian AFCI according to T.I.L. M-07				
Grid Connection Standards	IEEE1547, Rule 21, Rule 14 (HI)				
Emissions	FCC part15 class A				
INSTALLATION SPECIFICATIONS					
AC output conduit size / AWG range	3/4" minimum / 12-6 AWG	¾" or 1" / 6 - 10 AWG			
DC input conduit size / AWG range	¾" or 1" / 6 - 12 AWG				
Number of DC Inputs pairs	2	4			
Dimensions with Safety Switch (H x W x D)	30.5 x 12.5 x 10.5 / 775 x 315 x 260	31.8 x 12.5 x 11.8 / 808 x 317 x 300			in / mm
Weight with Safety Switch	74.2 / 33.7	78.2 / 35.5			lb / kg
Cooling	Fans (user replaceable)				
Noise	< 50	< 62			dBA
Operating Temperature Range	-40 to +140 / -40 to +60[4]				°F / °C
Protection Rating	NEMA 3R				
Mounting	Bracket provided				

(1) For 120/208V inverters refer to: https://www.solaredge.com/sites/default/files/se-three-phase-us-inverter-208V-setapp-datasheet.pdf
(2) For other regional settings please contact SolarEdge support
(3) Where permitted by local regulation
(4) For power de-rating information refer to: https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf

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CE

/ Power Optimizer For North America

P1100

Power Optimizer Model (Typical Module Compatibility)	P1100 (for up to 2 x high power or bi-facial modules)	Units
INPUT		
Rated Input DC Power[(1)]	1100	W
Connection Method	Single input for series connected modules	
Absolute Maximum Input Voltage (Voc at lowest temperature)	125	Vdc
MPPT Operating Range	12.5 - 105	Vdc
Maximum Short Circuit Current per input (Isc)	14.1	Adc
Maximum Efficiency	99.5	%
Weighted Efficiency	98.6	%
Overvoltage Category	II	
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREDGE INVERTER)		
Maximum Output Current	18	Adc
Maximum Output Voltage	80	Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREDGE INVERTER OR SOLAREDGE INVERTER OFF)		
Safety Output Voltage per Power Optimizer	1 ± 0.1	Vdc
STANDARD COMPLIANCE		
Photovoltaic Rapid Shutdown System	NEC 2014	
EMC	FCC Part15 Class A, IEC61000-6-2, IEC61000-6-3	
Safety	IEC62109-1 (class II safety), UL1741	
Material	UL94 V-0, UV Resistant	
RoHS	Yes	
INSTALLATION SPECIFICATIONS		
Compatible SolarEdge Inverters	SE30K & larger	
Maximum Allowed System Voltage	1000	Vdc
Dimensions (W x L x H)	129 x 162 x 59 / 5.1 x 6.4 x 2.3	mm / in
Weight	1064 / 2.34	gr / lb
Input Connector	MC4[(2)]	
Input Wire Length	1.6 / 5.24	m / ft
Output Wire Length	2.4 / 7.8	m / ft
Output Wire Type / Connector	Double Insulated / MC4	
Operating Temperature Range[(3)]	-40 to +85 / -40 to +185	°C / °F
Protection Rating	IP68 / NEMA6P	
Relative Humidity	0 - 100	%

(1) Rated power of the module at STC will not exceed the Power Optimizer "Rated Input DC Power". Modules with up to +5% power tolerance are allowed
(2) For other connector types please refer to: https://www.solaredge.com/sites/default/files/optimizer-input-connector-compatibility.pdf
(3) For ambient temperature above +70°C / +158°F power de-rating is applied. Refer to: https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf for more details

PV System Design Using a SolarEdge Inverter[(4)(5)]		208V Grid SE14.4K*	208V Grid SE17.3K*	277/480V Grid SE20K, SE30K	277/480V Grid SE33.3K*, SE40K*	
Compatible Power Optimizer		P1100				
Minimum String Length	Power Optimizers	8	10	14	14	
	PV Modules	10	19	27	27	
Maximum String Length	Power Optimizers	30	30	30	30	
	PV Modules	60	60	60	60	
Maximum Continuous Power per String		7200	8820	15300	15300	W
Maximum Allowed Connected Power per String[(6)]		1 string - 8400	1 string - 10020	1 string 17550	2 strings or less - 17550	
		2 strings or more - 9000	2 strings or more - 10620	2 strings or more - 20300	3 strings or more - 20300	
Parallel Strings of Different Lengths or Orientations		Yes				

* The same rules apply for Synergy units of equivalent power ratings, that are part of the modular Synergy Technology inverter.
(4) For each string, a Power Optimizer may be connected to a single PV module if 1) each Power Optimizer is connected to a single PV module or 2) it is the only Power Optimizer connected to a single PV module in the string.
(5) Design with three phase 208V inverters is limited. Use the SolarEdge Designer for verification.
(6) To connect more STC power per string, design your project using SolarEdge Designer.

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RoHS ETL Intertek

PLOT DATE: 11/20/2023 3:44 PM

RULER IN INCHES:

DATE	REVISION DESCRIPTION	PM	ENG	CHK
11/20/2023	ISSUE FOR BID	TL	SC	MD
11/13/2023	ISSUE FOR PERMIT REV1	TL	SC	MD
10/26/2023	STRINGING PLAN	TL	SC	MD
09/14/2023	ISSUE FOR PERMIT	TL	SC	MD

PUREPOWER ENGINEERING
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WWW.PUREPOWER.COM
RICHARD A. IVINS
CA LICENSE No. 20357

DEVELOPER
powerflex
805 THIRD AVENUE 20TH FLOOR
NEW YORK, NY 10022
WWW.POWERFLEX.COM
EDF Renewables

PAGE SIZE: 36" x 24"

PROJECT #: 06939

PROJECT: BESS + SOLAR SYSTEM AT PROLOGIS – WAYFAIR 3300
3300 INDIAN AVE.
PERRIS, CA 92571

DC SYSTEM SIZE: 1,193.025 kWdc
AC SYSTEM SIZE: 880.000 kWac
MODULE TYPE: CS6W-545MB-AG
MODULE QUANTITY: 2,189
ORIENTATION: 10° TILT, 181° AZIMUTH

DRAWING TITLE: EQUIPMENT DATA SHEETS

DRAWING #: E600

ST556KWH-250UD NEW

Energy Storage System

SUNGROW | SAMSUNG SAMSUNG SDI

HIGH INTEGRATION

- Highly integrated ESS with outdoors cabinet design provides high protection class
- Advanced integration technology ensures optimal system performance and lower cost

SAFE AND RELIABLE

- DC electric circuit safety management includes fast breaking and anti-arc protection
- Multi-state monitoring and linkage actions ensure battery system safety

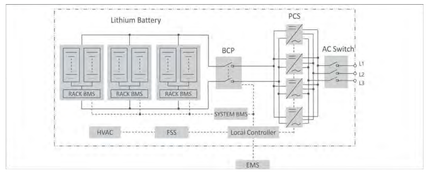
EFFICIENT AND FLEXIBLE

- Top-mounted HVAC and cell-level temperature control ensures longer battery life cycle
- Modular design supports parallel connection and easy system expansion

SMART AND FRIENDLY

- Integrated local controller enables single point of communication interface
- Fast state monitoring and faults record enables pre-alarm and faults location

CIRCUIT DIAGRAM



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ST556KWH-250UD

System Type	ST556KWH-250UD
Battery Data	
Cell type	Samsung SDI Mega E3, 3.68 V / 100 Ah
Configuration of system	2S256P
Battery capacity (BOL)	556 kWh
Battery voltage range	806 ~ 1,046 V
BMS communication interfaces	RS485, Ethernet
BMS communication protocols	Modbus RTU, Modbus TCP
AC Data	
Nominal AC power	250 kVA
Max. AC power	264 kVA
MaxTHD of current	< 3 % (at nominal power)
DC component	< 0.5 % (at nominal power)
Nominal grid voltage	480 V
Grid voltage range	432 ~ 528 V
Power factor	> 0.99 (at nominal power)
Adjustable power factor	1 leading ~ 1 lagging
Nominal grid frequency	60 Hz
Grid frequency range	55 ~ 65 Hz
Isolation method	Transformerless
Nominal output voltage of off-grid	480 V
MaxTHD of off-grid output voltage	< 3 % (linear load)
General Data	
Dimensions (W * H * D)	4,600 * 2,400 * 1,000 mm / 181.1" * 94.5" * 39.4"
Weight (with / without battery)	5.7 T / 2.5 T 12,566 lbs / 5,511 lbs
Degree of protection	IP54 / NEMA 3R
Operating temperature range	-30 to 50 ℃ / -22 to 122 ℉ (> 45 ℃ / 113 ℉ derating)
Relative humidity	0 ~ 95 % (non-condensing)
Max. working altitude	3,000 m / 9,842 ft
Cooling concept of battery chamber	Heating, Ventilation and Air Conditioning
Cooling concept of PCS chamber	Temperature controlled forced air cooling
Fire suppression system of battery unit	FM200 extinguishment system
Communication interfaces	RS485, Ethernet
Communication protocols	Modbus RTU, Modbus TCP, IEC 104
Certificates	UL9540, UL9540A, UL1973, UL1741+SA, IEEE 1547

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DATE	REVISION DESCRIPTION	PM	ENG	CHK
11/20/2023	ISSUE FOR BID	TL	SC	MD
11/13/2023	ISSUE FOR PERMIT REV1	TL	SC	MD
10/26/2023	STRINGING PLAN	TL	SC	MD
09/14/2023	ISSUE FOR PERMIT	TL	SC	MD

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LICENSED PROFESSIONAL ENGINEER
Electronically Signed

DEVELOPER
powerflex
805 THIRD AVENUE 20TH FLOOR
NEW YORK, NY 10022
WWW.POWERFLEX.COM
EDF Renewables

PAGE SIZE 36" x 24"

PROJECT # 06939

DC SYSTEM SIZE: 1,193.05 kWdc
AC SYSTEM SIZE: 880.000 kWac
MODULE TYPE: CS6W-545MB-AG
MODULE QUANTITY: 2,189
ORIENTATION: 10° TILT, 181° AZIMUTH

PROJECT
BESS + SOLAR SYSTEM AT
PROLOGIS – WAYFAIR 3300
3300 INDIAN AVE.
PERRIS, CA 92571

DRAWING TITLE
EQUIPMENT DATA SHEETS

DRAWING #
E601

PLOT DATE: 11/20/2023 3:44 PM

RULER IN INCHES:

FORGESOLAR GLARE ANALYSIS

Project: **Wayfair Rooftops - Perris, CA**
Site configuration: **Wayfair 3300 - Perris CA - Final Approaches**
Analysis conducted by Peter Liang (peter.liang@powerflex.com) at 20:47 on 02 Dec, 2023.

U.S. FAA 2013 Policy Adherence

The following table summarizes the policy adherence of the glare analysis based on the 2013 U.S. Federal Aviation Administration Interim Policy 78 FR 63276. This policy requires the following criteria be met for solar energy systems on airport property:

- No "yellow" glare (potential for after-image) for any flight path from threshold to 2 miles
- No glare of any kind for Air Traffic Control Tower(s) ("ATCT") at cab height.
- Default analysis and observer characteristics (see list below)

ForgeSolar does not represent or speak officially for the FAA and cannot approve or deny projects. Results are informational only.

COMPONENT	STATUS	DESCRIPTION
Analysis parameters	PASS	Analysis time interval and eye characteristics used are acceptable
2-mile flight path(s)	PASS	Flight path receptor(s) do not receive yellow glare
ATCT(s)	PASS	Receptor(s) marked as ATCT do not receive glare

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

FAA Policy 78 FR 63276 can be read at https://www.federalregister.gov/d/2013-24729

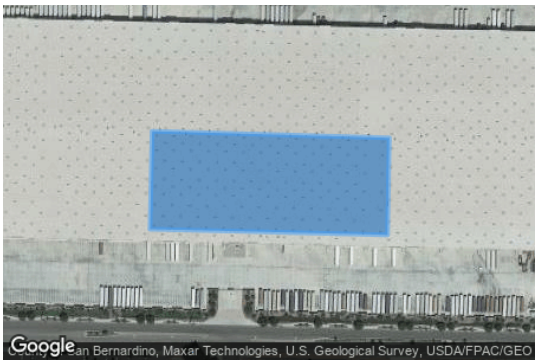
SITE CONFIGURATION

Analysis Parameters

DNI: peaks at 1,000.0 W/m^2
Time interval: 1 min
Ocular transmission coefficient: 0.5
Pupil diameter: 0.002 m
Eye focal length: 0.017 m
Sun subtended angle: 9.3 mrad
Site Config ID: 106922.18549
Methodology: V2

PV Array(s)

Name: PV Array
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 181.0°
Rated power: 1193.0 kW
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.831051	-117.231182	1459.06	35.00	1494.06
2	33.831788	-117.231163	1459.09	35.00	1494.09
3	33.831738	-117.229010	1460.51	35.00	1495.51
4	33.831007	-117.229027	1460.15	35.00	1495.15

Flight Path Receptor(s)

Name: RWY 12 Final
Description: None
Threshold height: 50 ft
Direction: 135.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.890258	-117.260681	1500.00	50.00	1550.00
Two-mile	33.898508	-117.270608	1500.00	1300.00	2800.00

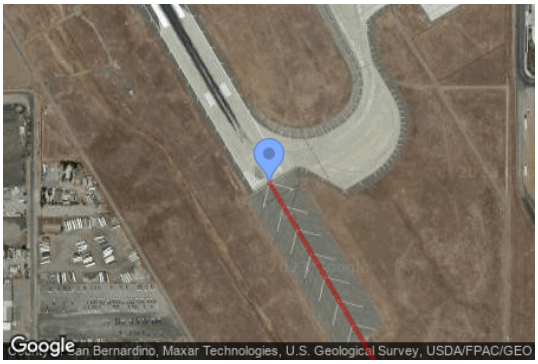
Name: RWY 14 Final
Description: None
Threshold height: 50 ft
Direction: 149.5°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.896431	-117.270636	1500.00	50.00	1550.00
Two-mile	33.906486	-117.277783	1500.00	1500.00	3000.00

Name: RWY 30 Final
Description: None
Threshold height: 50 ft
Direction: 315.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.884319	-117.253536	1500.00	50.00	1550.00
Two-mile	33.876069	-117.243611	1500.00	1300.00	2800.00

Name: RWY 32 Final
Description: None
Threshold height: 50 ft
Direction: 329.5°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°



Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.864994	-117.248281	1500.00	50.00	1550.00
Two-mile	33.854942	-117.241136	1500.00	1500.00	3000.00

Discrete Observation Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
1-ATCT	1	33.891572	-117.251203	1511.00	118.00

Map image of 1-ATCT

GLARE ANALYSIS RESULTS

Summary of Glare

PV Array Name	Tilt (°)	Orient (°)	"Green" Glare min	"Yellow" Glare min	Energy kWh
PV Array	10.0	181.0	0	0	2,669,000.0

Total annual glare received by each receptor

Receptor	Annual Green Glare (min)	Annual Yellow Glare (min)
RWY 12 Final	0	0
RWY 14 Final	0	0
RWY 30 Final	0	0
RWY 32 Final	0	0
1-ATCT	0	0

Results for: PV Array

Receptor	Green Glare (min)	Yellow Glare (min)
RWY 12 Final	0	0
RWY 14 Final	0	0
RWY 30 Final	0	0
RWY 32 Final	0	0
1-ATCT	0	0

Flight Path: RWY 12 Final

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 14 Final

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 30 Final

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 32 Final

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: 1-ATCT

0 minutes of yellow glare
0 minutes of green glare

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions.
Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to V1 algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual results and glare occurrence may differ.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

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FORGESOLAR GLARE ANALYSIS

Project: **Wayfair Rooftops - Perris, CA**
Site configuration: **Wayfair 3300 - Perris CA - Final Approaches**

Created 02 Dec, 2023
Updated 02 Dec, 2023
Time-step 1 minute
Timezone offset UTC-8
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Site ID 106922.18549

Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad
PV analysis methodology V2

Glare Policy Adherence

The following table estimates the policy adherence of this glare analysis according to the **2021** U.S. Federal Aviation Administration Policy:

Review of Solar Energy System Projects on Federally-Obligated Airports

This policy may require the following criteria be met for solar energy systems on airport property:

- No glare of any kind for Air Traffic Control Tower(s) ("ATCT") at cab height.
- Default analysis and observer characteristics, including 1-minute time step.

ForgeSolar is not affiliated with the U.S. FAA and does not represent or speak officially for the U.S. FAA. ForgeSolar cannot approve or deny projects - results are informational only. Contact the relevant airport and FAA district office for information on policy and requirements.

COMPONENT	STATUS	DESCRIPTION
Analysis parameters	PASS	Analysis time interval and eye characteristics used are acceptable
ATCT(s)	PASS	Receptor(s) marked as ATCT do not receive glare

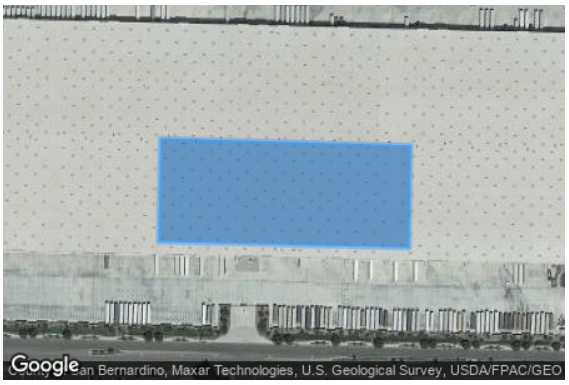
The referenced policy can be read at https://www.federalregister.gov/d/2021-09862

Component Data

This report includes results for PV arrays and Observation Point ("OP") receptors marked as ATCTs. Components that are not pertinent to the policy, such as routes, flight paths, and vertical surfaces, are excluded.

PV Arrays

Name: PV Array
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 181.0°
Rated power: 1193.0 kW
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.831051	-117.231182	1459.06	35.00	1494.06
2	33.831788	-117.231163	1459.09	35.00	1494.09
3	33.831738	-117.229010	1460.51	35.00	1495.51
4	33.831007	-117.229027	1460.15	35.00	1495.15

Observation Point ATCT Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
1-ATCT	1	33.891572	-117.251203	1511.00	118.00

Map image of 1-ATCT

Glare Analysis Results

Summary of Results No glare predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV Array	10.0	181.0	0	0.0	0	0.0	2,669,000.0

Total annual glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
1-ATCT	0	0.0	0	0.0

PV: PV Array

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
1-ATCT	0	0.0	0	0.0

PV Array and 1-ATCT

Receptor type: ATCT Observation Point
No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare. This primarily affects V1 analyses of path receptors.
Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

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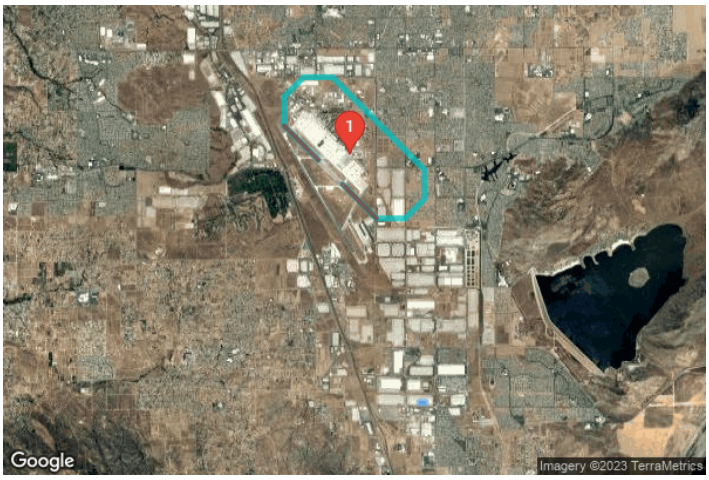
FORGESOLAR GLARE ANALYSIS

Project: **Wayfair Rooftops - Perris, CA**
Site configuration: **Wayfair 3300 - Perris CA - Runway 12-30 GA**

Created 02 Dec, 2023
Updated 02 Dec, 2023
Time-step 1 minute
Timezone offset UTC-8
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Category 1 MW to 5 MW
Site ID 106927.18549

Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad
PV analysis methodology V2



Summary of Results No glare predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV Array	10.0	181.0	0	0.0	0	0.0	2,669,000.0

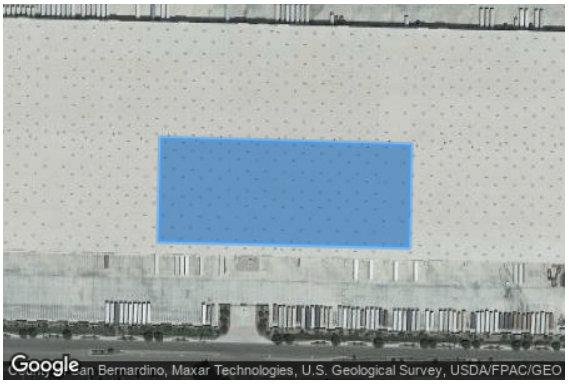
Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 12 GA Pattern Route	0	0.0	0	0.0
RWY 30 GA Pattern Route	0	0.0	0	0.0
RWY 12 Final	0	0.0	0	0.0
RWY 30 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

Component Data

PV Arrays

Name: PV Array
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 181.0°
Rated power: 1193.0 kW
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.831051	-117.231182	1459.06	35.00	1494.06
2	33.831788	-117.231163	1459.09	35.00	1494.09
3	33.831738	-117.229010	1460.51	35.00	1495.51
4	33.831007	-117.229027	1460.15	35.00	1495.15

Route Receptors

Name: RWY 12 GA Pattern Route
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.884319	-117.253536	1500.00	50.00	1550.00
2	33.876069	-117.243611	1500.00	1300.00	2800.00
3	33.876081	-117.235119	1500.00	1300.00	2800.00
4	33.880814	-117.229467	1500.00	1300.00	2800.00
5	33.887897	-117.229483	1500.00	1300.00	2800.00
6	33.910333	-117.256469	1500.00	1300.00	2800.00
7	33.910322	-117.264967	1500.00	1300.00	2800.00
8	33.905592	-117.270622	1500.00	1300.00	2800.00
9	33.898508	-117.270608	1500.00	1300.00	2800.00
10	33.890258	-117.260681	1500.00	50.00	1550.00

Name: RWY 30 GA Pattern Route
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.890258	-117.260681	1500.00	50.00	1550.00
2	33.898508	-117.270608	1500.00	1300.00	2800.00
3	33.905592	-117.270622	1500.00	1300.00	2800.00
4	33.910322	-117.264967	1500.00	1300.00	2800.00
5	33.910333	-117.256469	1500.00	1300.00	2800.00
6	33.887897	-117.229483	1500.00	1300.00	2800.00
7	33.880814	-117.229467	1500.00	1300.00	2800.00
8	33.876081	-117.235119	1500.00	1300.00	2800.00
9	33.876069	-117.243611	1500.00	1300.00	2800.00
10	33.884319	-117.253536	1500.00	50.00	1550.00

Flight Path Receptors

Name: RWY 12 Final
Description: None
Threshold height: 50 ft
Direction: 135.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.890258	-117.260681	1500.00	50.00	1550.00
Two-mile	33.898508	-117.270608	1500.00	1300.00	2800.00

Name: RWY 30 Final
Description: None
Threshold height: 50 ft
Direction: 315.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.884319	-117.253536	1500.00	50.00	1550.00
Two-mile	33.876069	-117.243611	1500.00	1300.00	2800.00

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
1-ATCT	1	33.891572	-117.251203	1511.00	118.00

Map image of 1-ATCT

Glare Analysis Results

Summary of Results No glare predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV Array	10.0	181.0	0	0.0	0	0.0	2,669,000.0

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 12 GA Pattern Route	0	0.0	0	0.0
RWY 30 GA Pattern Route	0	0.0	0	0.0
RWY 12 Final	0	0.0	0	0.0
RWY 30 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

PV: PV Array no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 12 GA Pattern Route	0	0.0	0	0.0
RWY 30 GA Pattern Route	0	0.0	0	0.0
RWY 12 Final	0	0.0	0	0.0
RWY 30 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

PV Array and Route: RWY 12 GA Pattern Route

No glare found

PV Array and Route: RWY 30 GA Pattern Route

No glare found

PV Array and FP: RWY 12 Final

No glare found

PV Array and FP: RWY 30 Final

No glare found

PV Array and 1-ATCT

No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare. This primarily affects V1 analyses of path receptors.
Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

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FORGESOLAR GLARE ANALYSIS

Project: **Wayfair Rooftops - Perris, CA**
Site configuration: **Wayfair 3300 - Perris CA - RWY 14-32 C17 KC-135**

Created 02 Dec, 2023
Updated 02 Dec, 2023
Time-step 1 minute
Timezone offset UTC-8
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Category 1 MW to 5 MW
Site ID 106930.18549

Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad
PV analysis methodology V2

Summary of Results

Glare with low potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV Array	10.0	181.0	21,600	360.0	0	0.0	2,669,000.0

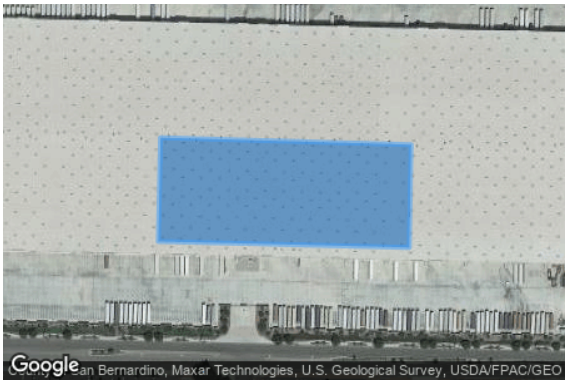
Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 14 C17 KC-135 Pattern Route	17,892	298.2	0	0.0
RWY 32 C17 KC-135 Pattern Route	3,708	61.8	0	0.0
RWY 14 Final	0	0.0	0	0.0
RWY 32 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

Component Data

PV Arrays

Name: PV Array
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 181.0°
Rated power: 1193.0 kW
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.831051	-117.231182	1459.06	35.00	1494.06
2	33.831788	-117.231163	1459.09	35.00	1494.09
3	33.831738	-117.229010	1460.51	35.00	1495.51
4	33.831007	-117.229027	1460.15	35.00	1495.15

Route Receptors

Name: RWY 14 C17 KC-135 Pattern Route
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.864994	-117.248281	1500.00	50.00	1550.00
2	33.836269	-117.227869	1500.00	1500.00	3000.00
3	33.821961	-117.228367	1500.00	1500.00	3000.00
4	33.813147	-117.244350	1500.00	1500.00	3000.00
5	33.819225	-117.262269	1500.00	1500.00	3000.00
6	33.908131	-117.325528	1500.00	1500.00	3000.00
7	33.922394	-117.325047	1500.00	1500.00	3000.00
8	33.931244	-117.309014	1500.00	1500.00	3000.00
9	33.925156	-117.291061	1500.00	1500.00	3000.00
10	33.896431	-117.270636	1500.00	50.00	1550.00

Name: RWY 32 C17 KC-135 Pattern Route
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

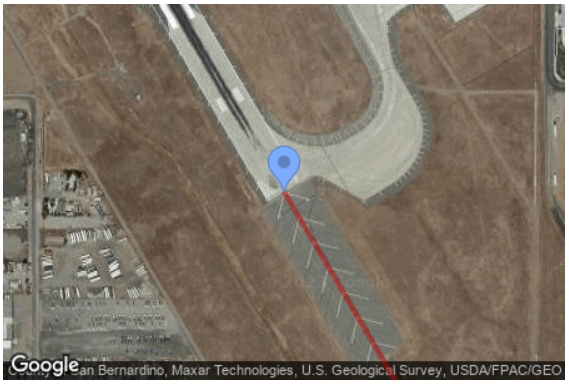
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.896431	-117.270636	1500.00	50.00	1550.00
2	33.925156	-117.291061	1500.00	1500.00	3000.00
3	33.931244	-117.309014	1500.00	1500.00	3000.00
4	33.922394	-117.325047	1500.00	1500.00	3000.00
5	33.908131	-117.325528	1500.00	1500.00	3000.00
6	33.819225	-117.262269	1500.00	1500.00	3000.00
7	33.813147	-117.244350	1500.00	1500.00	3000.00
8	33.821961	-117.228367	1500.00	1500.00	3000.00
9	33.836269	-117.227869	1500.00	1500.00	3000.00
10	33.864994	-117.248281	1500.00	50.00	1550.00

Flight Path Receptors

Name: RWY 14 Final
Description: None
Threshold height: 50 ft
Direction: 149.5°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.896431	-117.270636	1500.00	50.00	1550.00
Two-mile	33.906486	-117.277783	1500.00	1500.00	3000.00

Name: RWY 32 Final
Description: None
Threshold height: 50 ft
Direction: 329.5°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°



Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.864994	-117.248281	1500.00	50.00	1550.00
Two-mile	33.854942	-117.241136	1500.00	1500.00	3000.00

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
1-ATCT	1	33.891572	-117.251203	1511.00	118.00

Map image of 1-ATCT

Glare Analysis Results

Summary of Results Glare with low potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV Array	10.0	181.0	21,600	360.0	0	0.0	2,669,000.0

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 14 C17 KC-135 Pattern Route	17,892	298.2	0	0.0
RWY 32 C17 KC-135 Pattern Route	3,708	61.8	0	0.0
RWY 14 Final	0	0.0	0	0.0
RWY 32 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

PV: PV Array low potential for temporary after-image

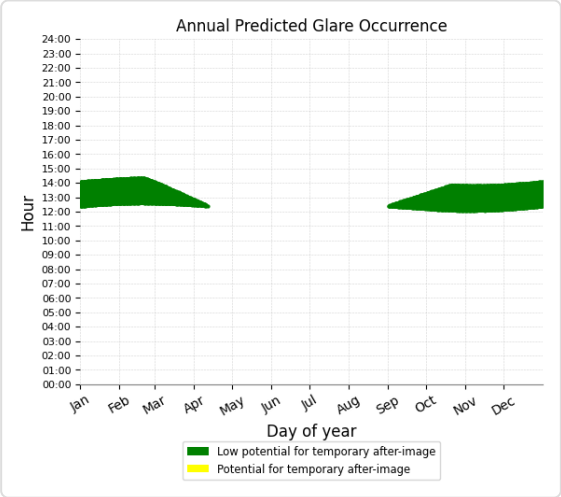
Receptor results ordered by category of glare

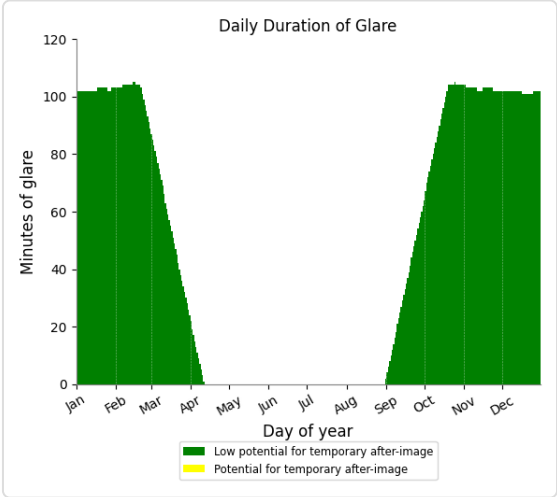
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 14 C17 KC-135 Pattern Route	17,892	298.2	0	0.0
RWY 32 C17 KC-135 Pattern Route	3,708	61.8	0	0.0
RWY 14 Final	0	0.0	0	0.0
RWY 32 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

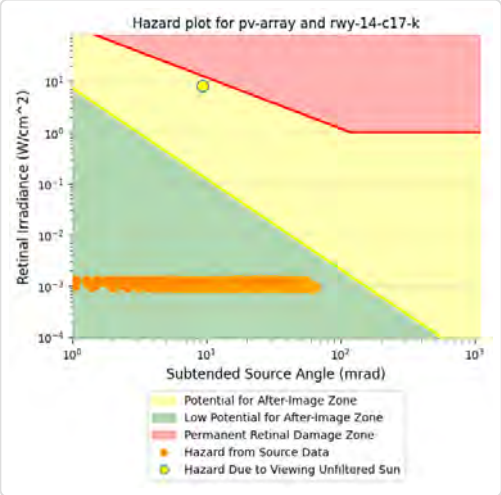
PV Array and Route: RWY 14 C17 KC-135 Pattern Route

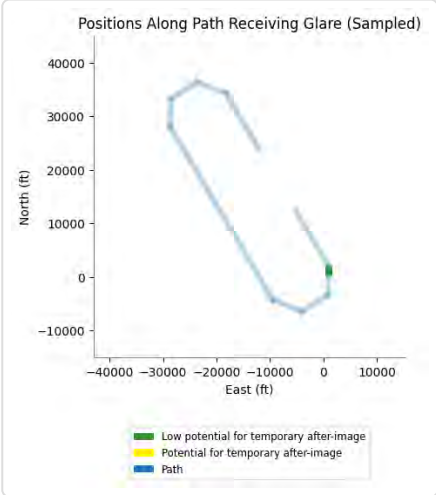
Yellow glare: none

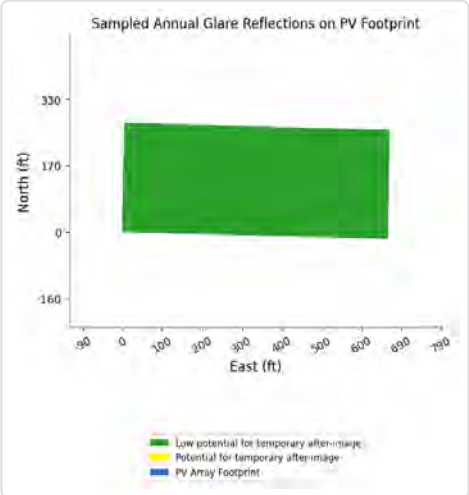
Green glare: 17,892 min.







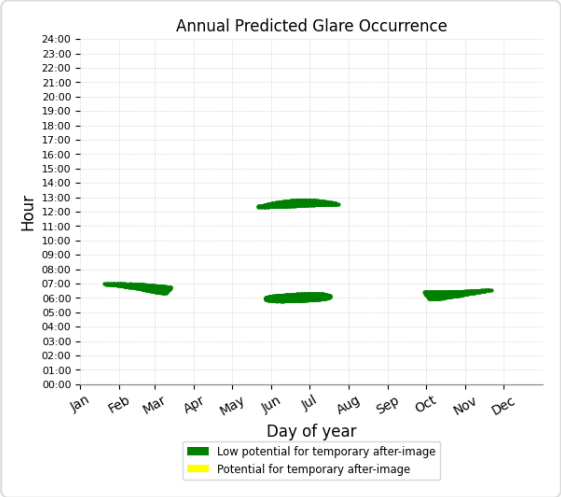


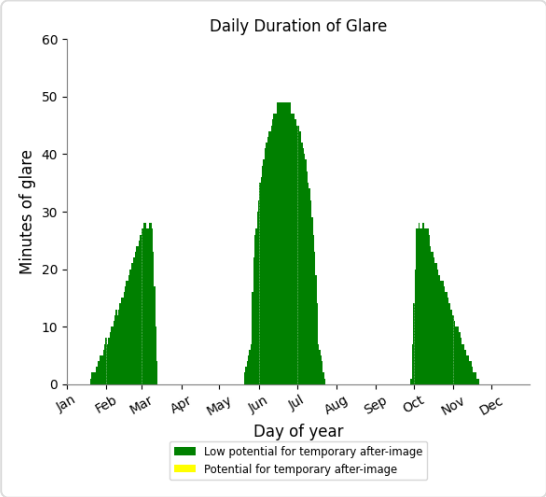


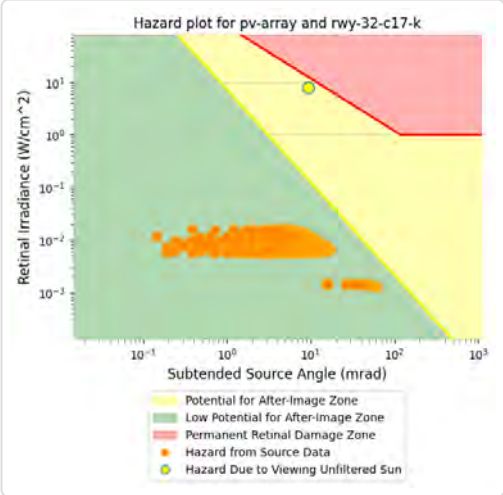
PV Array and Route: RWY 32 C17 KC-135 Pattern Route

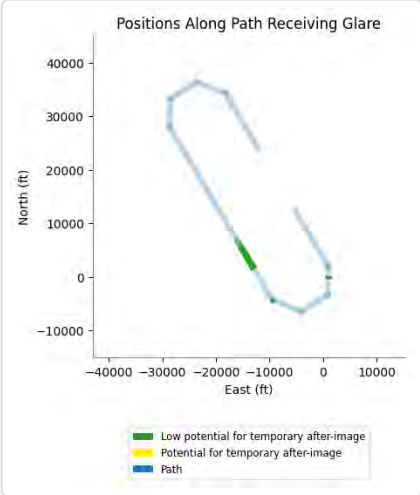
Yellow glare: none

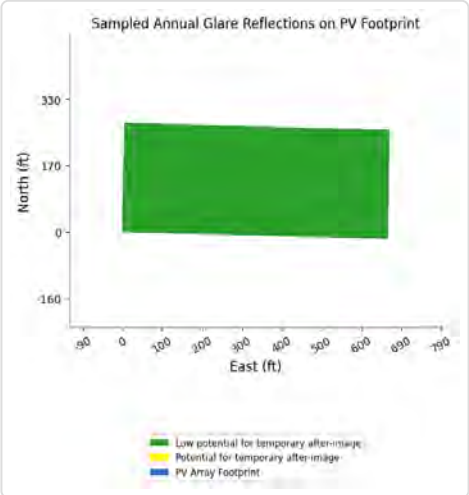
Green glare: 3,708 min.











PV Array and FP: RWY 14 Final

No glare found

PV Array and FP: RWY 32 Final

No glare found

PV Array and 1-ATCT

No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare. This primarily affects V1 analyses of path receptors.
Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

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FORGESOLAR GLARE ANALYSIS

Project: **Wayfair Rooftops - Perris, CA**
Site configuration: **Wayfair 3300 - Perris CA - RWY 14-32 Overhead**

Created 02 Dec, 2023
Updated 02 Dec, 2023
Time-step 1 minute
Timezone offset UTC-8
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Category 1 MW to 5 MW
Site ID 106931.18549

Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad
PV analysis methodology V2

Summary of Results

Glare with low potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV Array	10.0	181.0	33,855	564.2	0	0.0	2,669,000.0

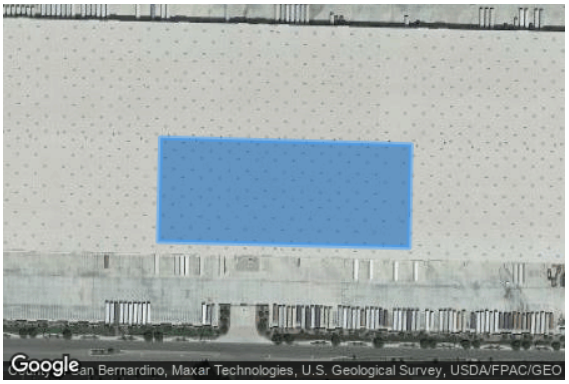
Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 14 Overhead Pattern Route	0	0.0	0	0.0
RWY 32 Overhead Pattern Route	33,855	564.2	0	0.0
RWY 14 Final	0	0.0	0	0.0
RWY 32 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

Component Data

PV Arrays

Name: PV Array
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 181.0°
Rated power: 1193.0 kW
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.831051	-117.231182	1459.06	35.00	1494.06
2	33.831788	-117.231163	1459.09	35.00	1494.09
3	33.831738	-117.229010	1460.51	35.00	1495.51
4	33.831007	-117.229027	1460.15	35.00	1495.15

Route Receptors

Name: RWY 14 Overhead Pattern Route
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.968036	-117.322128	1500.00	2000.00	3500.00
2	33.880706	-117.259453	1500.00	2000.00	3500.00
3	33.863564	-117.293808	1500.00	2000.00	3500.00
4	33.908131	-117.325528	1500.00	2000.00	3500.00
5	33.925156	-117.291061	1500.00	2000.00	3500.00
6	33.896431	-117.270636	1500.00	50.00	1550.00

Name: RWY 32 Overhead Pattern Route
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

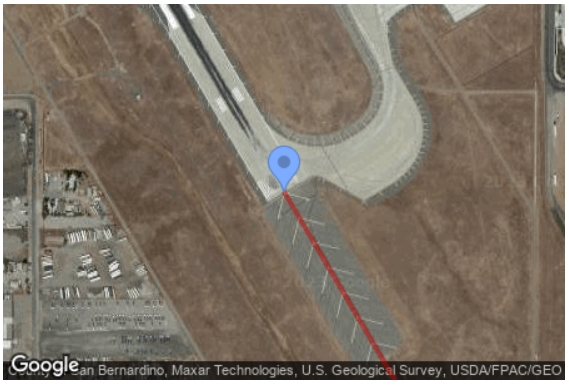
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.793375	-117.196878	1500.00	2000.00	3500.00
2	33.880706	-117.259453	1500.00	2000.00	3500.00
3	33.863564	-117.293808	1500.00	2000.00	3500.00
4	33.819225	-117.262269	1500.00	2000.00	3500.00
5	33.836269	-117.227869	1500.00	2000.00	3500.00
6	33.864994	-117.248281	1500.00	50.00	1550.00

Flight Path Receptors

Name: RWY 14 Final
Description: None
Threshold height: 50 ft
Direction: 149.5°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.896431	-117.270636	1500.00	50.00	1550.00
Two-mile	33.906486	-117.277783	1500.00	1500.00	3000.00

Name: RWY 32 Final
Description: None
Threshold height: 50 ft
Direction: 329.5°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°



Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.864994	-117.248281	1500.00	50.00	1550.00
Two-mile	33.854942	-117.241136	1500.00	1500.00	3000.00

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
1-ATCT	1	33.891572	-117.251203	1511.00	118.00

Map image of 1-ATCT

Glare Analysis Results

Summary of Results Glare with low potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV Array	10.0	181.0	33,855	564.2	0	0.0	2,669,000.0

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 14 Overhead Pattern Route	0	0.0	0	0.0
RWY 32 Overhead Pattern Route	33,855	564.2	0	0.0
RWY 14 Final	0	0.0	0	0.0
RWY 32 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

PV: PV Array low potential for temporary after-image

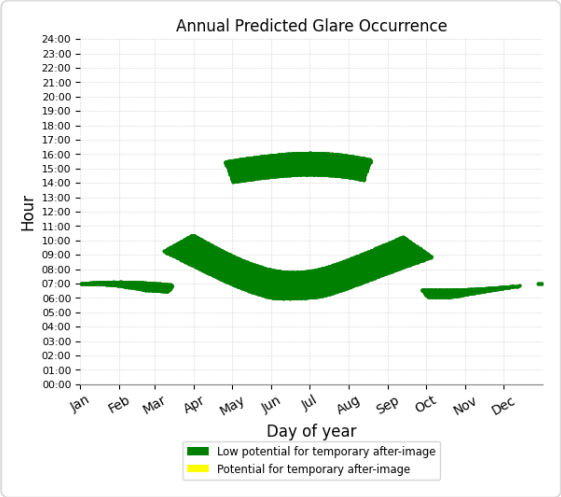
Receptor results ordered by category of glare

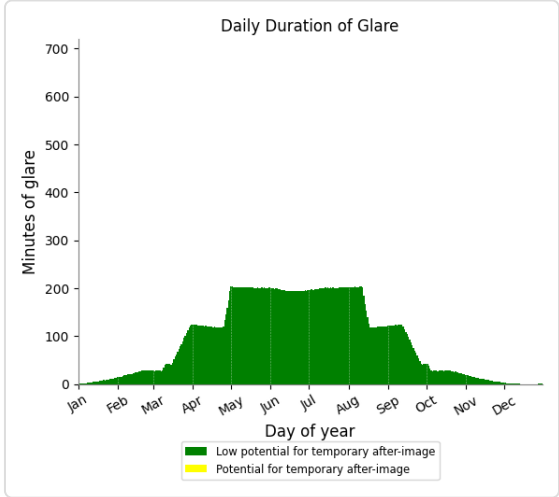
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 32 Overhead Pattern Route	33,855	564.2	0	0.0
RWY 14 Overhead Pattern Route	0	0.0	0	0.0
RWY 14 Final	0	0.0	0	0.0
RWY 32 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

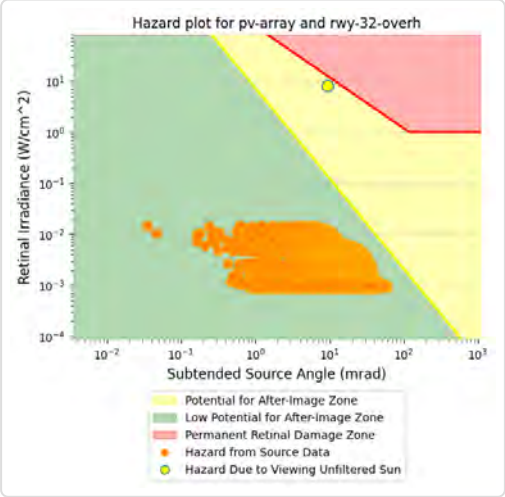
PV Array and Route: RWY 32 Overhead Pattern Route

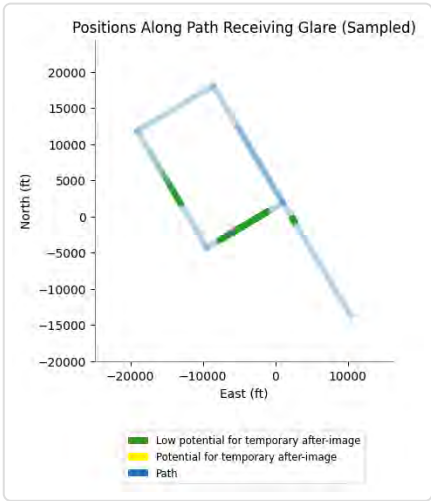
Yellow glare: none

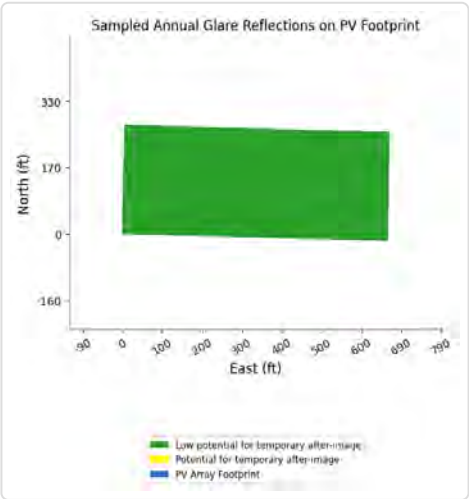
Green glare: 33,855 min.











PV Array and Route: RWY 14 Overhead Pattern Route

No glare found

PV Array and FP: RWY 14 Final

No glare found

PV Array and FP: RWY 32 Final

No glare found

PV Array and 1-ATCT

No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
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The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

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FORGESOLAR GLARE ANALYSIS

Project: **Wayfair Rooftops - Perris, CA**
Site configuration: **Wayfair 3300 - Perris CA - Runway 14-32 GA**

Created 02 Dec, 2023
Updated 02 Dec, 2023
Time-step 1 minute
Timezone offset UTC-8
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Category 1 MW to 5 MW
Site ID 106928.18549

Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad
PV analysis methodology V2

Summary of Results No glare predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV Array	10.0	181.0	0	0.0	0	0.0	2,669,000.0

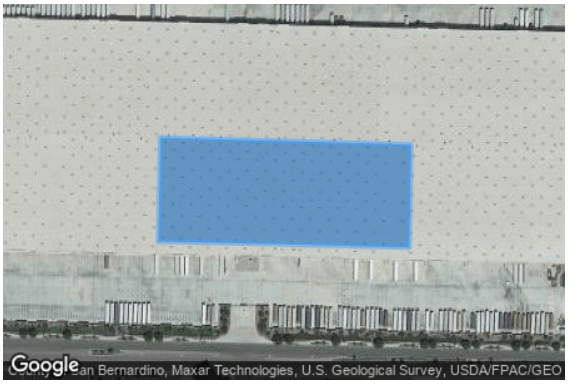
Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 14 GA Pattern Route	0	0.0	0	0.0
RWY 32 GA Pattern Route	0	0.0	0	0.0
RWY 14 Final	0	0.0	0	0.0
RWY 32 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

Component Data

PV Arrays

Name: PV Array
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 181.0°
Rated power: 1193.0 kW
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.831051	-117.231182	1459.06	35.00	1494.06
2	33.831788	-117.231163	1459.09	35.00	1494.09
3	33.831738	-117.229010	1460.51	35.00	1495.51
4	33.831007	-117.229027	1460.15	35.00	1495.15

Route Receptors

Name: RWY 14 GA Pattern Route
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.864994	-117.248281	1500.00	50.00	1550.00
2	33.854942	-117.241136	1500.00	1500.00	3000.00
3	33.848078	-117.243236	1500.00	1500.00	3000.00
4	33.844669	-117.250119	1500.00	1500.00	3000.00
5	33.846422	-117.258344	1500.00	1500.00	3000.00
6	33.897972	-117.295011	1500.00	1500.00	3000.00
7	33.904833	-117.292903	1500.00	1500.00	3000.00
8	33.908242	-117.286017	1500.00	1500.00	3000.00
9	33.906486	-117.277783	1500.00	1500.00	3000.00
10	33.896431	-117.270636	1500.00	50.00	1550.00

Name: RWY 32 GA Pattern Route
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

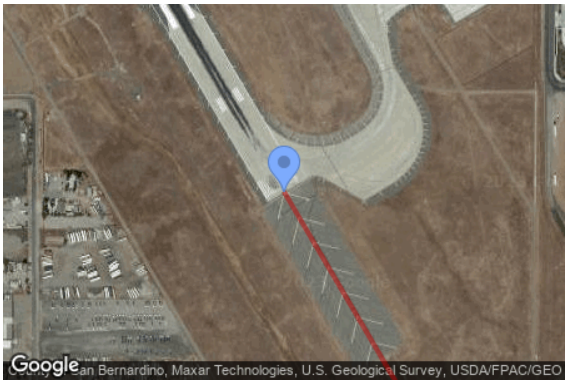
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.896431	-117.270636	1500.00	50.00	1550.00
2	33.906486	-117.277783	1500.00	1500.00	3000.00
3	33.908242	-117.286017	1500.00	1500.00	3000.00
4	33.904833	-117.292903	1500.00	1500.00	3000.00
5	33.897972	-117.295011	1500.00	1500.00	3000.00
6	33.846422	-117.258344	1500.00	1500.00	3000.00
7	33.844669	-117.250119	1500.00	1500.00	3000.00
8	33.848078	-117.243236	1500.00	1500.00	3000.00
9	33.854942	-117.241136	1500.00	1500.00	3000.00
10	33.864994	-117.248281	1500.00	50.00	1550.00

Flight Path Receptors

Name: RWY 14 Final
Description: None
Threshold height: 50 ft
Direction: 149.5°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.896431	-117.270636	1500.00	50.00	1550.00
Two-mile	33.906486	-117.277783	1500.00	1500.00	3000.00

Name: RWY 32 Final
Description: None
Threshold height: 50 ft
Direction: 329.5°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°



Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.864994	-117.248281	1500.00	50.00	1550.00
Two-mile	33.854942	-117.241136	1500.00	1500.00	3000.00

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
1-ATCT	1	33.891572	-117.251203	1511.00	118.00

Map image of 1-ATCT

Glare Analysis Results

Summary of Results No glare predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV Array	10.0	181.0	0	0.0	0	0.0	2,669,000.0

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 14 GA Pattern Route	0	0.0	0	0.0
RWY 32 GA Pattern Route	0	0.0	0	0.0
RWY 14 Final	0	0.0	0	0.0
RWY 32 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

PV: PV Array no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 14 GA Pattern Route	0	0.0	0	0.0
RWY 32 GA Pattern Route	0	0.0	0	0.0
RWY 14 Final	0	0.0	0	0.0
RWY 32 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

PV Array and Route: RWY 14 GA Pattern Route

No glare found

PV Array and Route: RWY 32 GA Pattern Route

No glare found

PV Array and FP: RWY 14 Final

No glare found

PV Array and FP: RWY 32 Final

No glare found

PV Array and 1-ATCT

No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare. This primarily affects V1 analyses of path receptors.
Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
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Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

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NOTICE OF PUBLIC HEARING

RIVERSIDE COUNTY AIRPORT LAND USE COMMISSION

www.rcaluc.org

A PUBLIC HEARING has been scheduled before the Riverside County Airport Land Use Commission (ALUC) to consider the applications described below.

Any person may submit written comments to the ALUC before the hearing or may appear and be heard in support of or opposition to the project at the time of hearing. **Information on how to participate in the hearing will be available on the ALUC website at www.rcaluc.org.** The ALUC holds hearings for local discretionary permits within the Airport Influence Area, reviewing for aeronautical safety, noise and obstructions. ALUC reviews a proposed plan or project solely to determine whether it is consistent with the applicable Airport Land Use Compatibility Plan. For more information please contact **ALUC Planner Jackie Vega at (951) 955-0982**.

The City of Perris Planning Department should be contacted on non-ALUC issues. For more information, please contact City of Perris Planner Nathan Perez at 951-943-5003.

The proposed project application may be viewed by a prescheduled appointment and on the ALUC website www.rcaluc.org. Written comments may be submitted at the Riverside County Administrative Center, 4080 Lemon Street, 14th Floor, Riverside, California 92501, Monday through Friday from 8:00 a.m. to 3:30 p.m., or by e-mail to javega@rivco.org. Individuals with disabilities requiring reasonable modifications or accommodations, please contact Barbara Santos at (951) 955-5132.

PLACE OF HEARING: **Riverside County Administration Center**
4080 Lemon Street, 1st Floor Board Chambers
Riverside California

DATE OF HEARING: **February 8, 2024**

TIME OF HEARING: **9:30 A.M.**

CASE DESCRIPTION:

ZAP1593MA23 – PowerFlex (Representative: Prologis) – City of Perris Case No. PMT23-02962 (Conditional Use Permit). A proposal to construct a solar panel system totaling 82,238 square feet on an existing industrial building on 59.05 acres, located southerly of Sinclair Street, northerly of Rider Street, easterly of Indian Street, and westerly of Perris Boulevard (Airport Compatibility Zones B1-APZ-II and C1 of the March Air Reserve Base/Inland Port Airport Influence Area).

RIVERSIDE COUNTY
AIRPORT LAND USE COMMISSION

APPLICATION FOR MAJOR LAND USE ACTION REVIEW

ALUC STAFF ONLY

ALUC Case Number: ZAP1593MA23 Date Submitted: 12/19/23

AIA: March Zone: C1 &B1 Public Hearing ☑ Staff Review ☐

Applicant

Applicant Full Name: Yuriko Arnott

Applicant Address: 15445 Innovation Dr. San Diego, CA 92128

Phone: 5512749927 **Email:** yuriko.arnott@powerflex.com

Representative/ Property Owner Contact Information

Representative: Juan Burrel **Email:** jburruel@prologis.com

Phone: 5512749927

Address: 1800 WAZEE ST SUITE 500, DENVER,CO 80202

Property Owner: PROLOGIS EXCHANGE STOCKTON 10 & 11 LLC **Email:** jburruel@prologis.com

Phone: 5512749927

Address: 1800 WAZEE ST SUITE 500, DENVER,CO 80202

Local Jurisdiction Agency

Agency Name: City of Perris Phone: (951) 943-5003

Staff Contact: Nathan Perez **Email:** NPerez@cityofperris.org

Address: 135 N. "D" Street Perris, CA 92570

Local Agency Case No.: ~~PMT23-02962~~

Project Location

Street Address: 3300 Indian Avenue Gross Parcel Size.: 59.05

Assessor's Parcel No.: 303-090-035

Solar

Is the project proposing solar Panels? Yes ☑ No ☐ If yes, please provide solar glare study. (Only for zone C or higher.)

Data

Site Elevation:(above mean sea level) 1469.8 feet

Height of Building or structures: 35' -0'

What type of drainage basins are being proposed and the square footage: NA

Notice

A. NOTICE: Failure of an applicant to submit complete or adequate information pursuant to Sections 65940 to 65948 inclusive of the California Government Code, MAY constitute grounds for disapproval of actions, regulations, or permits.

B. REVIEW TIME: Estimated time for "staff level review" is approximately 30 days from date of submittal. Estimated time for "commission level review" is approximately 45 days from date of a complete application submittal to the next available commission hearing meeting.

C. SUBMISSION PACKAGE:

Please submit all application items DIGITALLY via USB or CD:

- Completed ALUC Application Form
- Plans Package: site plans, floor plans, building elevations, grading plans, subdivision maps
- Exhibits of change of zone, general plan amendment, specific plan amendment
- Project description of current and proposed use

Additionally, please provide:

- ALUC fee payment (Checks made out to Riverside County ALUC)
- Gummed address labels of all surrounding property owners within a 300-foot radius of project site. (Only required if the project is scheduled for a public hearing)

Riverside County Airport Land Use Commission, County Administrative Center, 4080 Lemon Street, 14th Floor, Riverside, CA 92501, Phone: 951-955-5132 Fax: 951-955-5177 Website: www.rcaluc.org

RIVERSIDE COUNTY
AIRPORT LAND USE COMMISSION

STAFF REPORT

AGENDA ITEM:	3.4
HEARING DATE:	February 8, 2024
CASE NUMBER:	ZAP1594MA23 – PowerFlex (Representative: Prologis)
APPROVING JURISDICTION:	City of Perris
JURISDICTION CASE NO:	PMT23-02954 (Conditional Use Permit)
LAND USE PLAN:	2014 March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan
Airport Influence Area:	March Air Reserve Base
Land Use Policy:	Zones B1-APZ-II and C1
Noise Levels:	Between 60-65 CNEL contour
MAJOR ISSUES:	**None**

RECOMMENDATION: Staff recommends that the Commission find the proposed Conditional Use Permit CONSISTENT with the 2014 March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan, subject to the conditions included herein.

PROJECT DESCRIPTION: A proposal to construct a solar panel system totaling 60,110 square feet on an existing industrial building on 59.05 acres.

PROJECT LOCATION: The site is located southerly of Morgan Street, northerly of Sinclair Street, easterly Indian Street, and westerly of Barrett Avenue, approximately 10,936 feet southerly of the southerly end of Runway 14-32 at March Air Reserve Base.

BACKGROUND:

Non-Residential Land Use Intensity: Pursuant to the Airport Land Use Compatibility Plan for the March Air Reserve Base/Inland Port Airport, the site is located within Compatibility Zone B1-APZ-II, which limits 50 people per acre and 100 people per single acre; and C1, which limits average intensity to 100 people per acre and 250 people per single acre. The proposed rooftop solar panels will not generate any occupancy.

March Air Reserve Base/United States Air Force Input: Given that the project site is located in Zones B1-APZ-II and C1 southerly of the southerly runway at March Air Reserve Base, the March Air Reserve Base staff was notified of the proposal to add rooftop solar panels and sent a solar glare hazard analysis study for their review. On January 17, 2024, the Air Force provided comments

concurring with the analysis and conclusions of the glare study, with the added note that their general concerns regarding cumulative impacts of solar projects are being addressed in the ongoing March Compatibility Use Study update.

Prohibited and Discouraged Uses: The applicant does not propose any uses prohibited or discouraged in Compatibility Zones B1-APZ-II and C1.

Flight Hazard Issues: Structure height, electrical interference, and reflectivity/glare are among the issues that solar panels in the airport influence area must address. The project's 60,110 square foot photovoltaic (PV) panel structures would be located on the rooftop of the apartment buildings within Compatibility Zones B1-APZ-II and C1.

Glint and Glare/Reflectivity

Based on the Federal Aviation Administration's Interim Policy for Review of Solar Energy System Projects on Federally Obligated Airports, no glare potential or low potential for temporary after-image ("green" level) are acceptable levels of glare on final approach (within 2 miles from end of runway) for solar facilities located on airport property. However, potential for temporary after-image" ("yellow" level) and potential for permanent eye damage ("red" level) are not acceptable levels of glare on final approach. No glare is permitted at air traffic control towers.

The project proposes 60,110 square feet of solar panels on the existing building rooftop with a fixed tilt of 10 degrees with no rotation, and an orientation of 180 degrees. The applicant has submitted a glare analysis utilizing the web-based Forge Solar, a copy of which is attached hereto. The analysis was based on a 2 mile straight in approach (as per FAA Interim Policy standards) to runways 14 and 32, and also based on the traffic patterns as identified by March Air Reserve Base staff (Runway 12/30 General Aviation, Runway 14/32 General Aviation, Runway 14/32 C-17/KC-135, Runway 14/32 Overhead). The analysis utilized a glide slope approach of 3.0 degrees. No glare would affect the Air Traffic Control Tower.

The analysis concluded that some glare would occur within the Air Force traffic pattern. Evaluation of the Air Force traffic patterns indicates that the panels would result in a low potential for temporary after-image ("green" level glare) or no glare. All times are in standard time.

Runway 14/32 General Aviation traffic pattern (totaling 2,119 minutes of 'green' level glare):

- Runway 32 Initial, totaling 2,119 minutes of "green" level glare, lasting up to 35 minutes a day, from November to January, from 7:00 a.m. to 8:30 a.m.

Runway 14/32 C-17, KC-135 Aviation traffic pattern (totaling 1,455 minutes of 'green' level glare):

- Runway 32 C-17 KC-135, totaling 1,455 minutes of "green" level glare, lasting up to 30 minutes a day, from January to March and October to November, from 7:00 a.m. to 8:00 a.m.

Runway 14/32 Overhead Aviation traffic pattern (totaling 9,180 minutes of 'green' level glare):

- Runway 32 overhead, totaling 9,180 minutes of "green" level glare, lasting up to 60 minutes a day, throughout the year, from 7:00 a.m. to 4:00 pm.

The total of 12,754 minutes of "green" level glare represents less than 5 percent of total day light time.

Electrical and Communication Interference

The applicant has indicated that they do not plan to utilize equipment that would interfere with aircraft communications. The PV panels themselves present little risk of interfering with radar transmission due to their low profiles. In addition, solar panels do not emit electromagnetic waves over distances that could interfere with radar signal transmissions, and any electrical facilities that do carry concentrated current will be buried beneath the ground and away from any signal transmission. There are no radar transmission or receiving facilities within the site.

Noise: The March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan depicts the site below 60-65 CNEL range from aircraft noise. The proposed solar panels are not noise sensitive.

Part 77: The elevation of Runway 14-32 at its southerly terminus is 1,488 feet above mean sea level (AMSL). At a distance of approximately 10,936 feet from the project to the nearest point on the runway, Federal Aviation Administration (FAA) review would be required for any structures with top of roof exceeding 1,597 feet AMSL. The site's finished floor elevation is 1,470 feet AMSL and building height is 35 feet, resulting in a top point elevation of 1,505 feet AMSL. Therefore, review by the FAA Obstruction Evaluation Service was not required. The proposed solar panels will not significantly increase the height of the existing buildings.

Open Area: None of the Compatibility Zones for the March Air Reserve Base/Inland Port ALUCP require open area specifically.

CONDITIONS:

1. Any new outdoor lighting that is installed shall be hooded or shielded so as to prevent either the spillage of lumens or reflection into the sky. Outdoor lighting shall be downward facing.

2. The following uses/activities are not included in the proposed project and shall be prohibited at this site:

   (a) Any use which would direct a steady light or flashing light of red, white, green, or amber colors associated with airport operations toward an aircraft engaged in an initial straight or circling climb following takeoff or toward an aircraft engaged in a straight or circling final approach toward a landing at an airport, other than a DoD or FAA-approved navigational signal light or visual approach slope indicator.

   (b) Any use which would cause sunlight to be reflected towards an aircraft engaged in an initial straight or circling climb following takeoff or towards an aircraft engaged in a straight or circling final approach towards a landing at an airport.

   (c) Any use which would generate smoke or water vapor or which would attract large concentrations of birds, or which may otherwise affect safe air navigation within the area. (Such uses include landscaping utilizing water features, aquaculture, production of cereal grains, sunflower, and row crops, composting operations, wastewater management facilities, artificial marshes, trash transfer stations that are open on one or more sides, recycling centers containing putrescible wastes,

construction and demolition debris facilities, fly ash disposal, and incinerators.)

(d) Any use which would generate electrical interference that may be detrimental to the operation of aircraft and/or aircraft instrumentation.

(e) Children's schools, day care centers, libraries, hospitals, skilled nursing and care facilities, congregate care facilities, places of assembly (including but not limited to places of worship and theaters)

(f) Highly noise-sensitive outdoor nonresidential uses. Examples of noise-sensitive outdoor nonresidential uses that are prohibited include, but are not limited to, major spectator-oriented sports stadiums, amphitheaters, concert halls and drive-in theaters.

(g) Any other uses not permitted in (Accident Potential Zone I/ Accident Potential Zone II) pursuant to DoDI 4165.57 Appx.2, Tbl.1.

(h) Other Hazards to Flight

3. Prior to issuance of building permits, the landowner shall convey an avigation easement to the March Inland Port Airport Authority or its successor in interest, or provide evidence that such easement has been previously conveyed. The Airport Authority may waive this requirement in the event that the Authority determines that pre-existing avigation easements dedicated to the United States of America are sufficient to address its needs. Contact the March Joint Powers Authority at (951) 656-7000 for additional information.

4. Any proposed stormwater basins or facilities shall be designed and maintained to provide for a maximum 48-hour detention period following the design storm, and remain totally dry between rainfalls. Vegetation in and around the stormwater basins that would provide food or cover for birds would be incompatible with airport operations and shall not be utilized in project landscaping. Trees shall be spaced so as to prevent large expanses of contiguous canopy, when mature. Landscaping in and around the stormwater basin(s) shall not include trees or shrubs that produce seeds, fruits, or berries.

   Landscaping in the stormwater basin, if not rip-rap, should be in accordance with the guidance provided in ALUC "LANDSCAPING NEAR AIRPORTS" brochure, and the "AIRPORTS, WILDLIFE AND STORMWATER MANAGEMENT" brochure available at RCALUC.ORG which list acceptable plants from Riverside County Landscaping Guide or other alternative landscaping as may be recommended by a qualified wildlife hazard biologist.

   A notice sign, in a form similar to that attached hereto, shall be permanently affixed to the stormwater basin with the following language: "There is an airport nearby. This stormwater basin is designed to hold stormwater for only 48 hours and not attract birds. Proper maintenance is necessary to avoid bird strikes". The sign will also include the name, telephone number or other contact information of the person or entity responsible to monitor the stormwater basin

5. March Air Reserve Base must be notified of any land use having an electromagnetic

radiation component to assess whether a potential conflict with Air Base radio communications could result. Sources of electromagnetic radiation include, but are not limited to, radio wave transmission in conjunction with remote equipment inclusive of irrigation controllers, access gates, etc.

6. All solar arrays installed on the project site shall consist of a 60,110 square foot rooftop solar panel system on an existing industrial building, a fixed tilt of 10 degrees and orientation of 180 degrees. Solar panels shall be limited to a total of 498,155 square feet, and the locations and coordinates shall be as specified in the glare study. Any deviation from these specifications (other than reduction in square footage of panels), including change in tilt or orientation, shall require a new solar glare analysis to ensure that the amended project does not result in any glare impacting the air traffic control tower or creation of any "yellow" or "red" level glare in the flight paths, and shall require review by the Airport Land Use Commission.

7. In the event that any glint, glare, or flash affecting the safety of air navigation occurs as a result of project operation, upon notification to the airport operator of an event, the airport operator shall notify the project operator in writing. Within 30 days of written notice, the project operator shall be required to promptly take all measures necessary to eliminate such glint, glare, or flash. An "event" includes any situation that results in an accident, incident, "near-miss," or specific safety complaint regarding an in-flight experience to the airport operator or to federal, state, or county authorities responsible for the safety of air navigation. The project operator shall work with the airport operator to prevent recurrence of the incidence. Suggested measures may include, but are not limited to, changing the orientation and/or tilt of the source, covering the source at the time of day when events of glare occur, or wholly removing the source to diminish or eliminate the source of the glint, glare, or flash. For each such event made known to the project operator, the necessary remediation shall only be considered to have been fulfilled when the airport operator states in writing that the situation has been remediated to the airport operator's satisfaction.

8. In the event that any electrical interference affecting the safety of air navigation occurs as a result of project operation, upon notification to the airport operator of an event, the airport operator shall notify the project operator in writing. Within 30 days of written notice, the project operator shall be required to promptly take all measures necessary to eliminate such interference. An "event" includes any situation that results in an accident, incident, "near-miss," report by airport personnel, or specific safety complaint to the airport operator or to federal, state, or county authorities responsible for the safety of air navigation. The project operator shall work with the airport operator to prevent recurrence of the event. For each such event made known to the project operator, the necessary remediation shall only be considered to have been fulfilled when the airport operator states in writing that the situation has been remediated to the airport operator's satisfaction.

9. This project has been evaluated as consisting of a 60,110 square foot rooftop solar panel system on an existing industrial building. Any increase in building area, change in use to any higher intensity use, change in building location, or modification of the tentative parcel map lot lines and areas will require an amended review to evaluate consistency with the ALUCP compatibility criteria**,** at the discretion of the ALUC Director.

X:\AIRPORT CASE FILES\March\ZAP1594MA23\ZAP1594MA23sr.doc

NOTICE OF AIRPORT IN VICINITY

This property is presently located in the vicinity of an airport, within what is known as an airport influence area. For that reason, the property may be subject to some of the annoyances or inconveniences associated with proximity to airport operations (for example: noise, vibration, or odors). Individual sensitivities to those annoyances [can vary from person to person. You may wish to consider what airport annoyances], if any, are associated with the property before you complete your purchase and determine whether they are acceptable to you. Business & Professions Code Section 11010 (b)(13)(A)

NOTICE

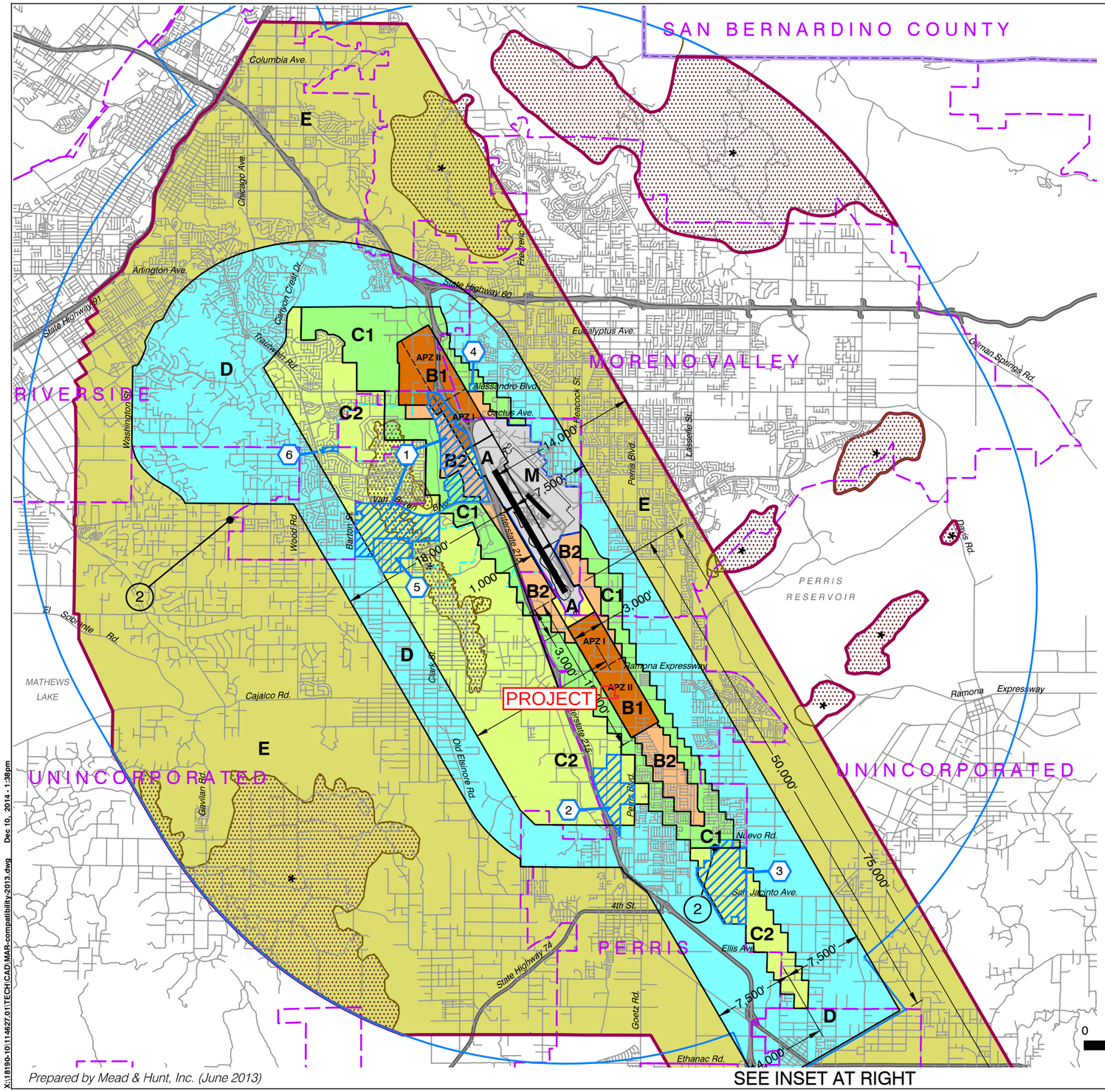
THERE IS AN AIRPORT NEARBY.

THIS STORM WATER BASIN IS DESIGNED TO HOLD STORM WATER FOR ONLY 48 HOURS AND NOT TO ATTRACT BIRDS

PROPER MAINTENANCE IS NECESSARY TO AVOID BIRD STRIKES

IF THIS BASIN IS OVERGROWN, PLEASE CONTACT:

Name: _____ **Phone:** _____



LEGEND

Compatibility Zones

- Airport Influence Area Boundary
- Zone A
- Zone B1
- Zone B2
- Zone C1
- Zone C2
- Zone D
- Zone E
- Zone M
- High Terrain Zone
- FAR Part 77 Military Outer Horizontal Surface Limits
- FAR Part 77 Notification Area

(1) Point at which aircraft on Runway 32 ILS approach descend below 3,000 feet above runway end. Airport Elevation is 1,535 feet MSL.

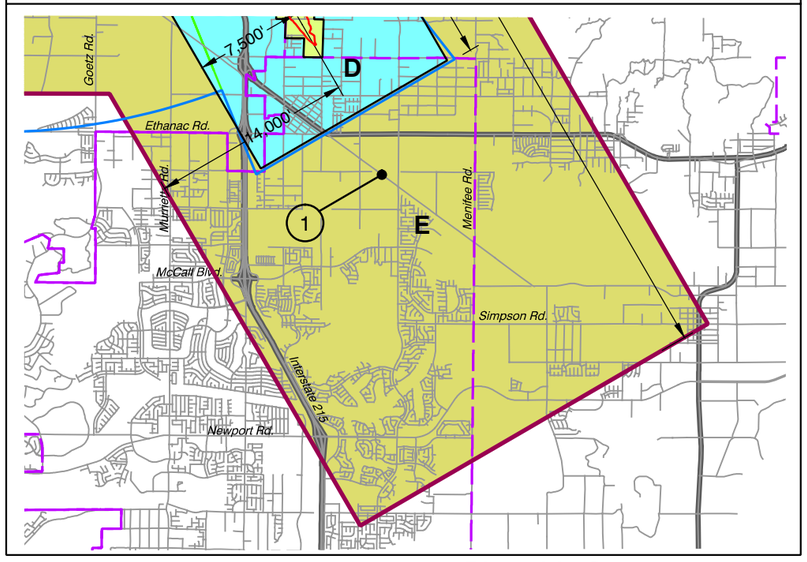
(2) Point at which departing aircraft typically reach 3,000 feet above runway end.

Boundary Lines

- March Air Reserve Base / Air Force Property
- March Joint Powers Authority Property Line
- County Boundary
- City Limits
- Site-Specific Exceptions (existing local agency commitments to development projects)

(1) March JPA: March Business Center/Meridian
(2) Perris: Harvest Landing
(3) Perris: Park West
(4) Moreno Valley: Affordable Housing
(5) March JPA: Ben Clark Training Center
(6) Riverside: Ridge Crest Subdivision

INSET



Note:
All dimensions are measured from runway ends and centerlines.

N

0 2 4 MILES

Base map source: County of Riverside 2013

Prepared by Mead & Hunt, Inc. (June 2013)

Riverside County Airport Land Use Commission

March Air Reserve Base / Inland Port Airport Land Use Compatibility Plan

(Adopted November 13, 2014)

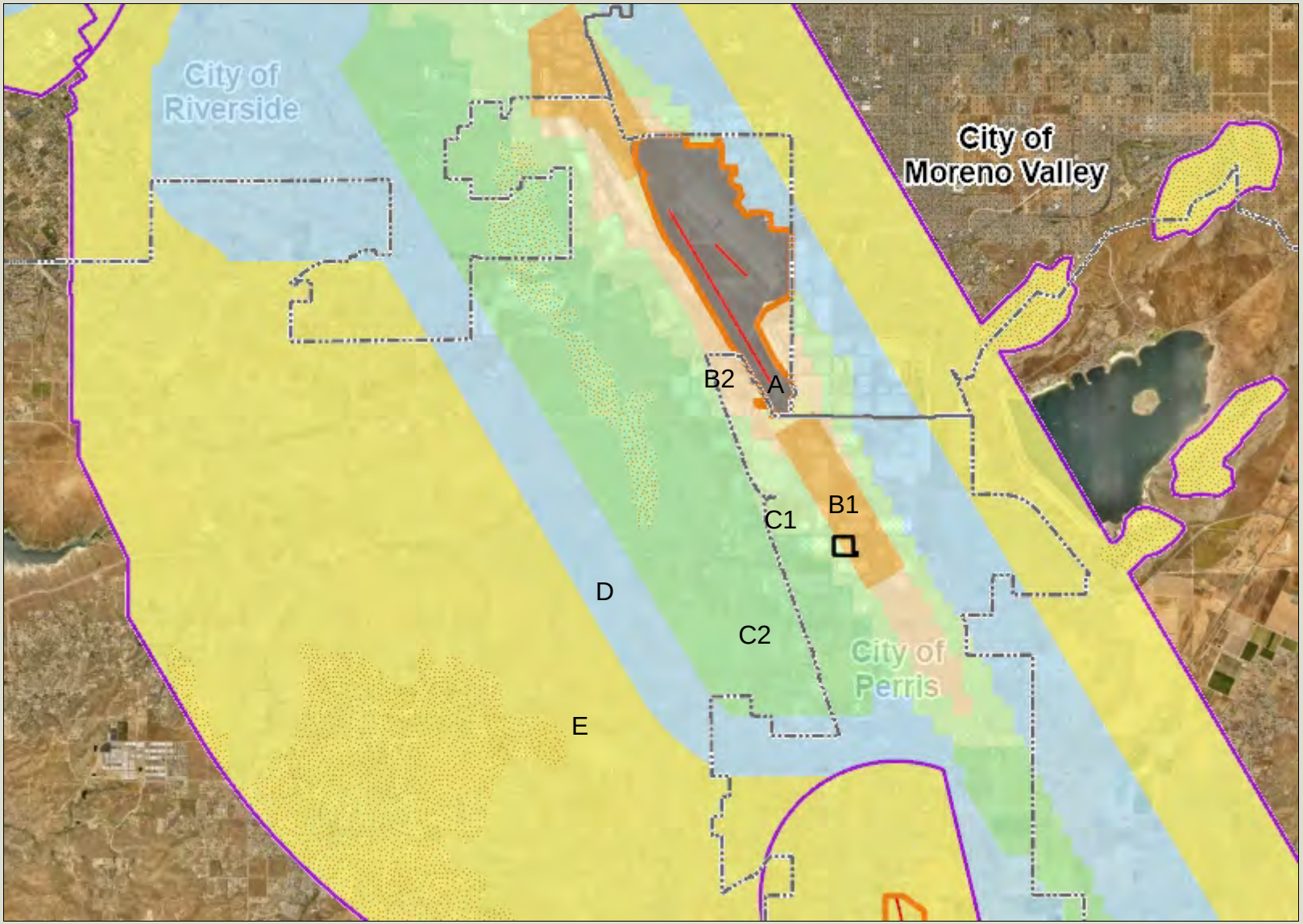
Map MA-1

Compatibility Map

March Air Reserve Base / Inland Port Airport

X:\18190-10\114627.01\TECH\CAD\MAR-compatibility-2013.dwg Dec 10, 2014 - 1:38pm

Map My County Map



Legend

- County Boundary
- City Boundaries
- Runways
- Airports
- Airport Influence Areas
- Airport Compatibility Zones
  - A
  - A-EXC1
  - B1
  - B1-APZ I
  - B1-APZ I-EXC1
  - B1-APZ II
  - B1-APZ II-EXC1
  - B1-EXC1
  - B2
  - B2-EXC1
  - C
  - C1
  - C1-EXC1
  - C1-EXC3
  - C1-EXC4
  - C1-HIGHT
  - C2
  - C2-EXC1
  - C2-EXC2
  - C2-EXC3
  - C2-EXC5

0 12,314 24,629 Feet

IMPORTANT Maps and data are to be used for reference purposes only. Map features are approximate, and are not necessarily accurate to surveying or engineering standards. The County of Riverside makes no warranty or guarantee as to the content (the source is often third party), accuracy, timeliness, or completeness of any of the data provided, and assumes no legal responsibility for the information contained on this map. Any use of this product with respect to accuracy and precision shall be the sole responsibility of the user.

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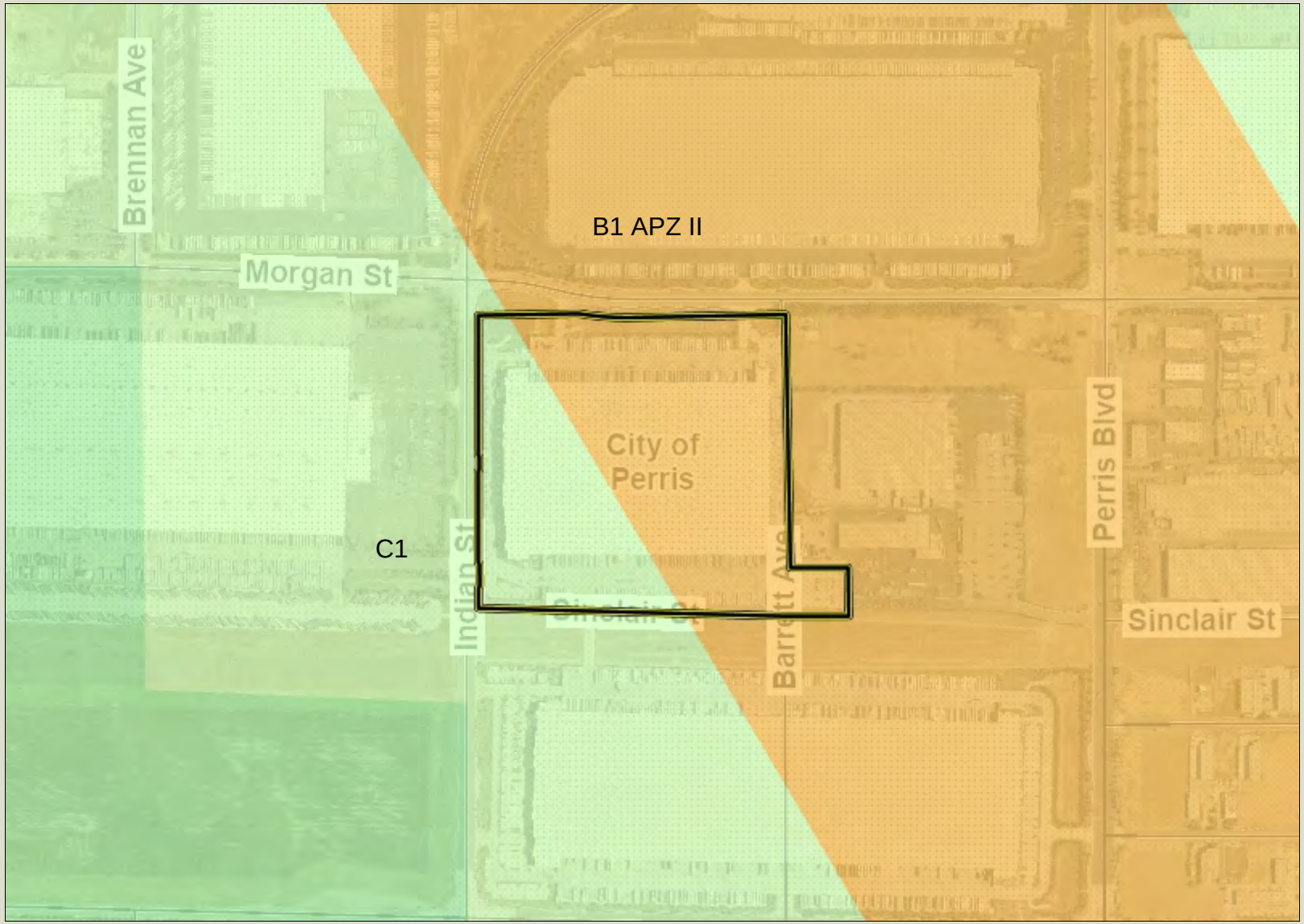
Notes

Map My County Map



Legend

- County Boundary
- City Boundaries
- Runways
- Airports
- Airport Influence Areas
- Airport Compatibility Zones
  - A
  - A-EXC1
  - B1
  - B1-APZ I
  - B1-APZ I-EXC1
  - B1-APZ II
  - B1-APZ II-EXC1
  - B1-EXC1
  - B2
  - B2-EXC1
  - C
  - C1
  - C1-EXC1
  - C1-EXC3
  - C1-EXC4
  - C1-HIGHT
  - C2
  - C2-EXC1
  - C2-EXC2
  - C2-EXC3
  - C2-EXC5

0 770 1,539 Feet

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Notes

Map My County Map

Legend

- County Boundary
- City Boundaries
- County Centerline Names
- County Centerlines
- Blueline Streams
- City Areas
- World Street Map

0 770 1,539 Feet

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Notes

Map My County Map

Legend

- County Boundary
- City Boundaries
- Blueline Streams
- City Areas
- World Street Map

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0 3,079 6,157 Feet

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Notes

Map My County Map

Legend

- County Boundary
- City Boundaries
- County Centerline Names
- County Centerlines
- Blueline Streams
- City Areas
- World Street Map

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0 1,539 3,079 Feet

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Notes

Map My County Map

Legend

- County Boundary
- City Boundaries
- Blueline Streams
- City Areas
- World Street Map

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0 6,157 12,314 Feet

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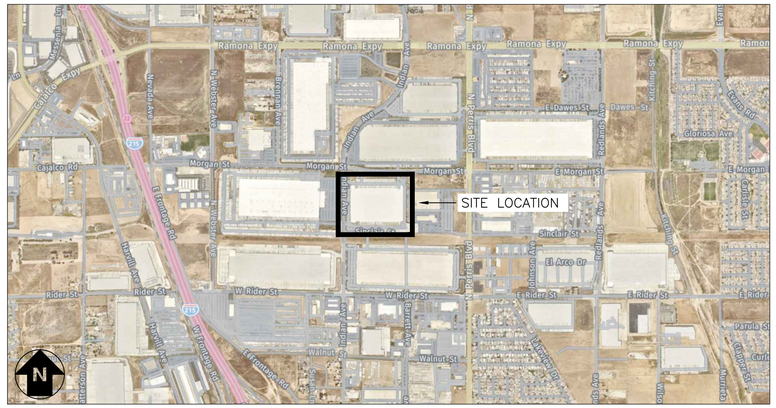
Notes

874.18 KW BESS + SOLAR SYSTEM AT

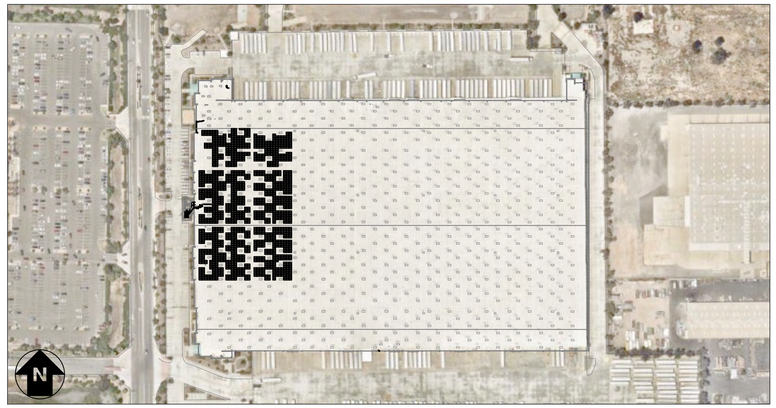
PROLOGIS – WAYFAIR 3500

3500 INDIAN AVE., PERRIS, CA 92571



LOCATION MAP
SCALE: 1" = 1500'–0"

BIRDS–EYE VIEW FROM SOUTH
SCALE: 1" = 200'–0"



SYSTEM PLAN
SCALE: 1" = 200'–0"

TOTAL SYSTEM SUMMARY:

TOTAL DC SYSTEM SIZE:	874.18 kWDC
AC SYSTEM SIZE:	640.00 kWAC
MODULE MANUFACTURER:	CANADIAN SOLAR
MODULE MODEL:	CS6W–545MB–AG 545W
MODULES PER STRING:	34, 33
MODULE QUANTITY:	1,604
STRING QUANTITY:	48
MODULE TILT:	10°
MODULE AZIMUTH:	180°
INVERTER MANUFACTURER:	SOLAREDGE
INVERTER MODEL 1 (QTY):	SE120KUS (5)
INVERTER MODEL 2 (QTY):	SE40KUS (1)
BESS MANUFACTURER/MODEL:	SUNGROW
BESS TYPE (QTY):	ST556KWH–250UD (1)
BESS UNIT KVA/KWH:	250KVA/556KWH
BESS AC SYSTEM SIZE:	250KW

NOTES SPECIFIC TO CALIFORNIA

ADOPTED ELECTRICAL CODE: 2022 CALIFORNIA ELECTRICAL CODE (BASED ON THE 2020 NEC).

BY LAW, ANYONE PLANNING TO EXCAVATE OR DEMOLISH IS REQUIRED TO CALL 811 AT LEAST TWO FULL BUSINESS DAYS BEFORE WORK BEGINS

SCOPE OF WORK SUMMARY

ROOFTOP PV ARRAY:
- INSTALL SOLAR MODULES AND ROOFTOP RACKING SYSTEM ON TOP OF EXISTING BUILDING.
- INSTALL INVERTERS AND ELECTRICAL DISTRIBUTION EQUIPMENT.
- INTERCONNECT AT NEW ELECTRICAL DISTRIBUTION EQUIPMENT.

BATTERY ENERGY STORAGE SYSTEM (BESS):
- INSTALL BESS INVERTER(S), BATTERIES, AND ELECTRICAL DISTRIBUTION EQUIPMENT.
- INTERCONNECT AT NEW ELECTRICAL DISTRIBUTION EQUIPMENT.

BILL OF MATERIAL

	FURNISH BY E.C.	FURNISH BY DEVELOPER	EQUIP. NOT APPLICABLE
SOLAR GENERATOR DISCONNECT SWITCH		●	
SOLAR AC SWITCHBOARD		●	
SOLAR AC PANELBOARDS		●	
ISOLATION TRANSFORMER		●	
INVERTERS		●	
RAPID SHUTDOWN DEVICES		●	
DATA MONITORING PANEL, CTs, PTs		●	
UTILITY METER SOCKET OR CT CABINET		●	
DEMAND METER CIRCUIT BREAKER	●		
RELAY CONTROL PANEL		●	
RELAY CT & PTS		●	
RACKING MATERIALS		●	
PV MODULES		●	
AC CONDUIT, TRAY, FITTINGS, & PULLBOXES	●		
DC CONDUIT, TRAY, FITTINGS & PULLBOXES	●		
PV CABLE CONNECTORS	●		
CROSSOVER RAMPS			●
BOLLARDS	●		
MECHANICAL ATTACHMENTS: RACKING		●	
MECHANICAL ATTACHMENTS: NON–RACKING		●	
EQUIPMENT RACKS	●		
INVERTER RACKS		●	
ROOFTOP SUPPORT BLOCKS + SLIPSHEETS	●		

MECHANICAL ATTACHMENT SUMMARY (NON–RACKING ATTACHMENTS ONLY)	
ATTACHMENT LOCATION	QTY
INVERTER RACKS	6
PANELBOARD RACKS	4
CABLE TRAY	TBD
OTHER ELECTRICAL EQUIPMENT	TBD
TOTAL	TBD

NOTE: ATTACHMENT QUANTITIES ARE ESTIMATED BASED ON ENGINEERING REQUIREMENTS. ACTUAL QUANTITY REQUIRED MAY VARY DUE TO FIELD CONDITIONS

DEVELOPER:

powerflex
EDF Renewables
805 THIRD AVE, 20TH FLOOR
NEW YORK, NY 10022

ENGINEERED BY:

PUREPOWER ENGINEERING
111 RIVER STREET, SUITE 1110
HOBOKEN, NEW JERSEY 07030

DRAWING INDEX

		INTERCONNECTION DOCUMENTS 01/23/2023	PRELIM. CONCEPTUAL DESIGN 08/02/2023	ISSUE FOR PERMIT 09/13/2023	ISSUE FOR PERMIT REV1 09/25/2023	ISSUE FOR PERMIT REV2 11/13/2023	ISSUE FOR BID 11/22/2023
GENERAL							
G001	TITLE SHEET		●	●	●	●	●
G100	SITE PLAN			●	●	○	●
G200	ARRAY PLAN		●	●	●	○	●
G201	ROOF SLOPE						●
G300	FIRE ACCESS PLAN			●	●	●	○
ELECTRICAL							
E–1.0	SITE PLAN	×					
E–2.0	SINGLE LINE DIAGRAM	×					
E001	ELECTRICAL NOTES & SYMBOLS LIST			●	○	○	○
E100	OVERALL ELECTRICAL PLAN			●	○	○	●
E101	PARTIAL ELECTRICAL PLAN						●
E102	PARTIAL ELECTRICAL PLAN						●
E300	ONE LINE DIAGRAM		●	●	○	○	●
E301	INVERTER DETAILS		●	○	○	○	●
E310	SCHEDULES & CALCULATIONS			●	○	○	●
E410	GROUNDING DETAILS			●	○	○	○
E420	ELECTRICAL DETAILS			●	○	○	○
E421	ELECTRICAL DETAILS			●	○	○	×
E430	STRUCTURAL DETAILS						●
E500	LABELS & SIGNAGE			●	○	○	●
E600	EQUIPMENT DATA SHEETS			●	○	○	○
E601	EQUIPMENT DATA SHEETS			●	○	○	○
CIVIL							
C–1.0	COVER SHEET	×					

LEGEND:

UPDATED DRAWING ISSUED	●
UNCHANGED, PREVIOUSLY ISSUED DRAWING STILL CURRENT	○
DRAWING REMOVED FROM SET	×

DRAWING TITLE: TITLE SHEET

DRAWING #: G001

DATE	REVISION DESCRIPTION	PM	ENG	CHK
11/22/2023	ISSUE FOR BID	TL	SC	MD
09/25/2023	ISSUE FOR PERMIT REV1	TL	SC	MD
09/13/2023	ISSUE FOR PERMIT	TL	SC	MD
08/02/2023	PRELIM. CONCEPTUAL DESIGN	TL	SC	MD

PUREPOWER ENGINEERING
111 RIVER STREET, SUITE 1110
HOBOKEN, NJ 07030
PHONE: 201-793-1100
RICHARD A. IVINS
CA LICENSE No: 20357

POWERFLEX
805 THIRD AVENUE 20TH FLOOR
NEW YORK, NY 10022
WWW.POWERFLEX.COM

DEVELOPER: powerflex EDF Renewables

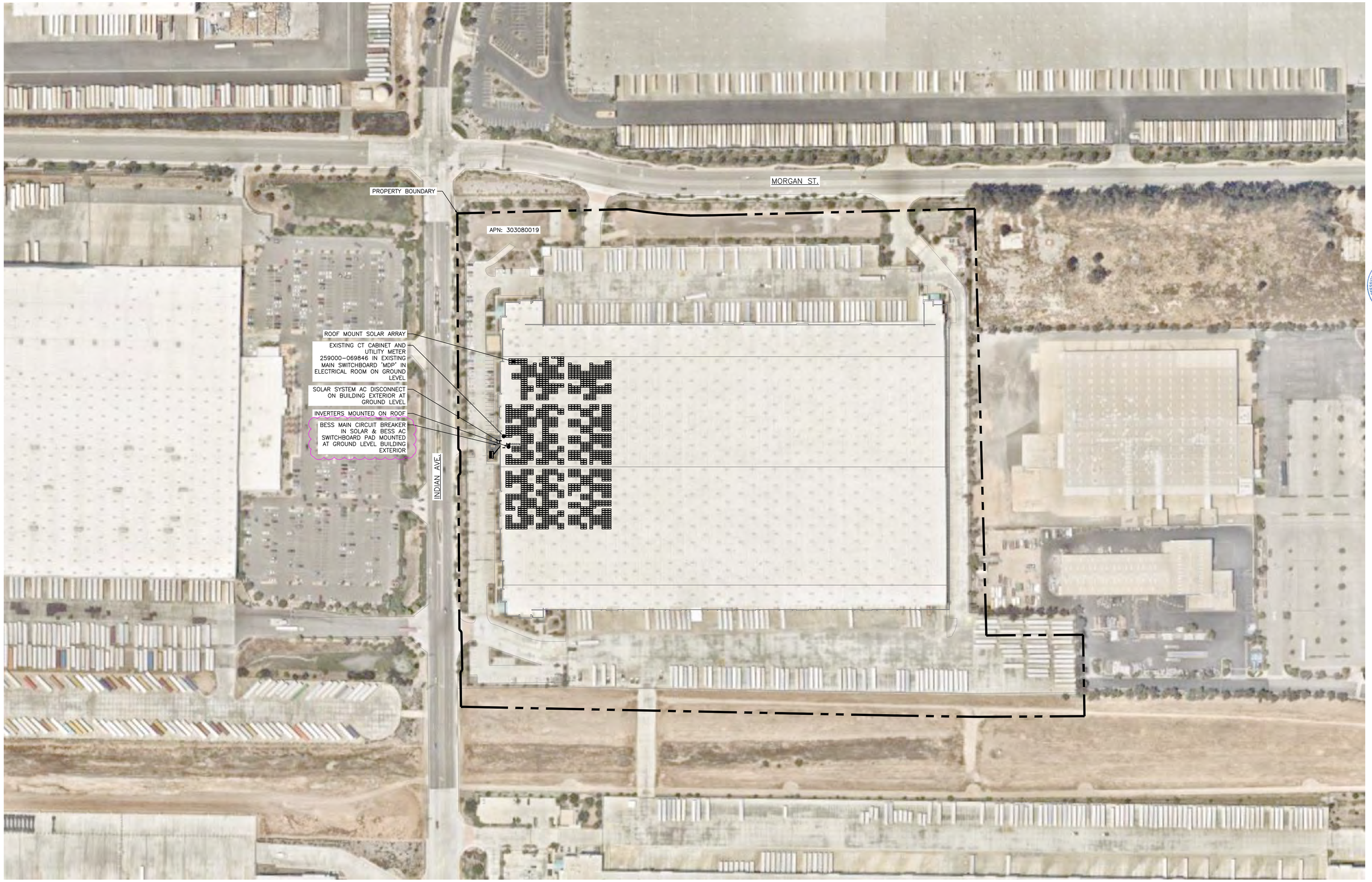
PAGE SIZE: 36" x 24"
PROJECT #: 06941

DC SYSTEM SIZE: 874.18 kWDC
AC SYSTEM SIZE: 640.00 kWAC
MODULE TYPE: CS6W–545MB–AG
MODULE QUANTITY: 1,604
ORIENTATION: 10° TILT, 180° AZIMUTH

PROJECT: BESS + SOLAR SYSTEM AT PROLOGIS – WAYFAIR 3500
3500 INDIAN AVE.
PERRIS, CA 92571

PLOT DATE: 11/22/2023 12:11 PM

RULER IN INCHES:



1 SITE PLAN
SCALE: 1" = 100'

N

PLOT DATE: 11/22/2023 11:09 AM

RULER IN INCHES:

DATE	REVISION DESCRIPTION	PM	ENG	CHK
11/22/2023	ISSUE FOR BID	TL	SC	MD
09/25/2023	ISSUE FOR PERMIT REV1	TL	SC	MD
09/12/2023	ISSUE FOR PERMIT	TL	SC	MD
08/02/2023	PRELIM. CONCEPTUAL DESIGN	TL	SC	MD

PUREPOWER ENGINEERING
111 RIVER STREET, HOBOKEN, NJ
WWW.PUREPOWER.COM
RICHARD A. IVINS
CA LICENSE No. 20357

DEVELOPER
powerflex
805 THIRD AVENUE 20TH FLOOR
NEW YORK, NY 10022
WWW.POWERFLEX.COM
EDF Renewables

PAGE SIZE 36" x 24"

PROJECT # 06941

DC SYSTEM SIZE: 874.18 kWDC
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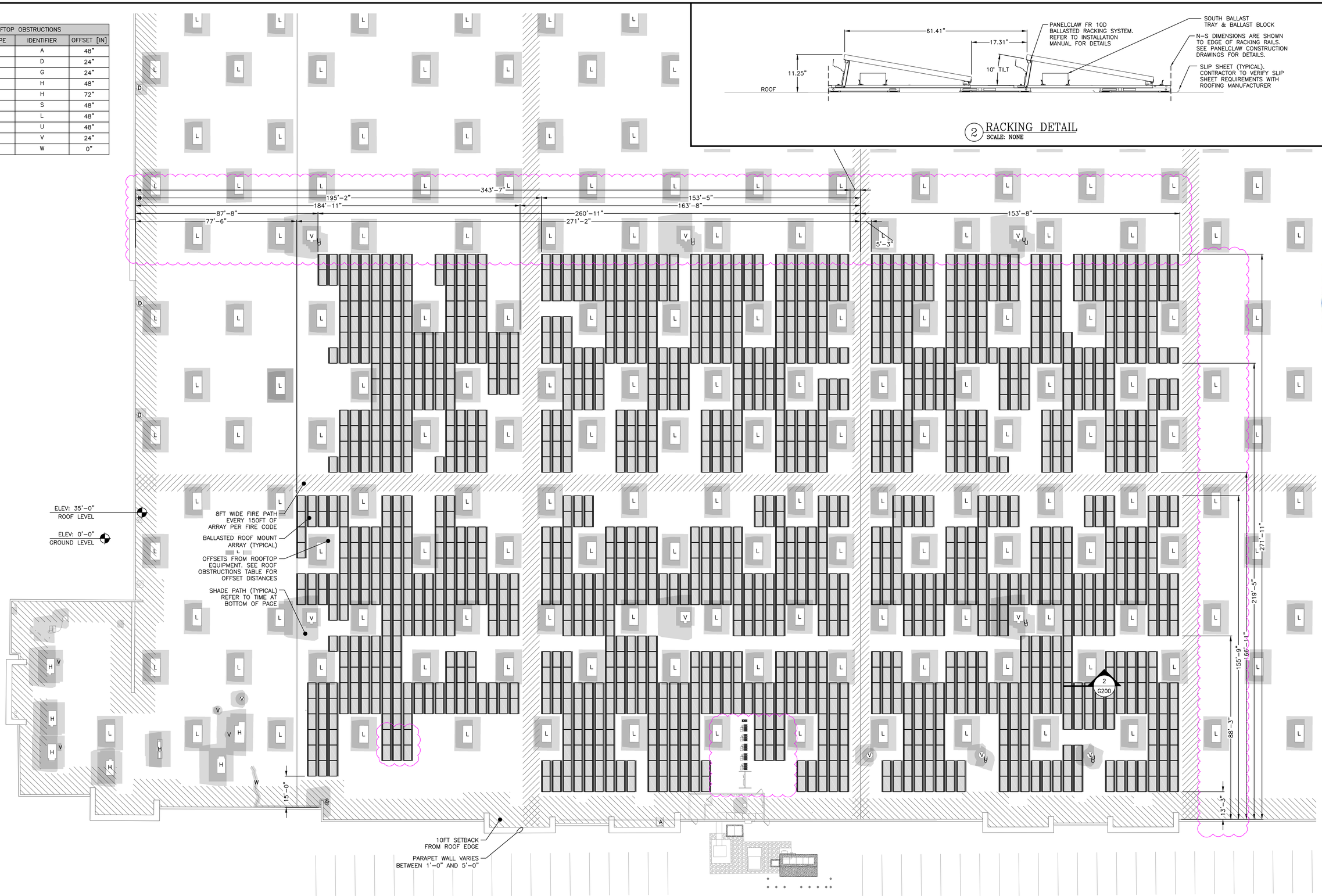
ORIENTATION: 10° TILT, 180° AZIMUTH

PROJECT
BESS + SOLAR SYSTEM AT
PROLOGIS – WAYFAIR 3500
3500 INDIAN AVE.
PERRIS, CA 92571

DRAWING TITLE
SITE PLAN

DRAWING #
G100

ROOFTOP OBSTRUCTIONS		
OBSTRUCTION TYPE	IDENTIFIER	OFFSET [IN]
ROOF ACCESS	A	48"
DRAINS	D	24"
GAS LINES	G	24"
HVAC	H	48"
LARGE HVAC	H	72"
SATELLITE	S	48"
SKYLIGHTS	L	48"
UNCLASSIFIED	U	48"
VENT PIPES	V	24"
WIRE	W	0"



2 RACKING DETAIL
SCALE: NONE

IMPORTANT:
DO NOT STEP OR KNEEL ON PV MODULES

1 OVERALL ARRAY PLAN
SCALE: 1" = 20'

SHADING ZONES:
WINTER: 10:00–2:00
SPRING: 9:00–3:00
SUMMER: 8:00–4:00

DATE	REVISION DESCRIPTION	PM	ENG	CHK
11/22/2023	ISSUE FOR BID	TL	SC	MD
09/25/2023	ISSUE FOR PERMIT REV1	TL	SC	MD
09/12/2023	ISSUE FOR PERMIT	TL	SC	MD
08/02/2023	PRELIM. CONCEPTUAL DESIGN	TL	SC	MD

PUREPOWER ENGINEERING
111 WASHINGTON STREET, HOBOKEN, NJ 07030
RICHARD A. IVINS
CA LICENSE No. 20357

POWERFLEX
805 THIRD AVENUE 20TH FLOOR
NEW YORK, NY 10022
WWW.POWERFLEX.COM

DEVELOPER: powerflex EDF Renewables

PAGE SIZE: 36" x 24"
PROJECT #: 06941

DC SYSTEM SIZE: 874.18 kWDC
AC SYSTEM SIZE: 640.00 kWAC
MODULE TYPE: CS6W-545MB-AG
MODULE QUANTITY: 1,604
ORIENTATION: 10° TILT, 180° AZIMUTH

PROJECT
BESS + SOLAR SYSTEM AT
PROLOGIS – WAYFAIR 3500
3500 INDIAN AVE.
PERRIS, CA 92571

DRAWING TITLE
OVERALL ARRAY PLAN

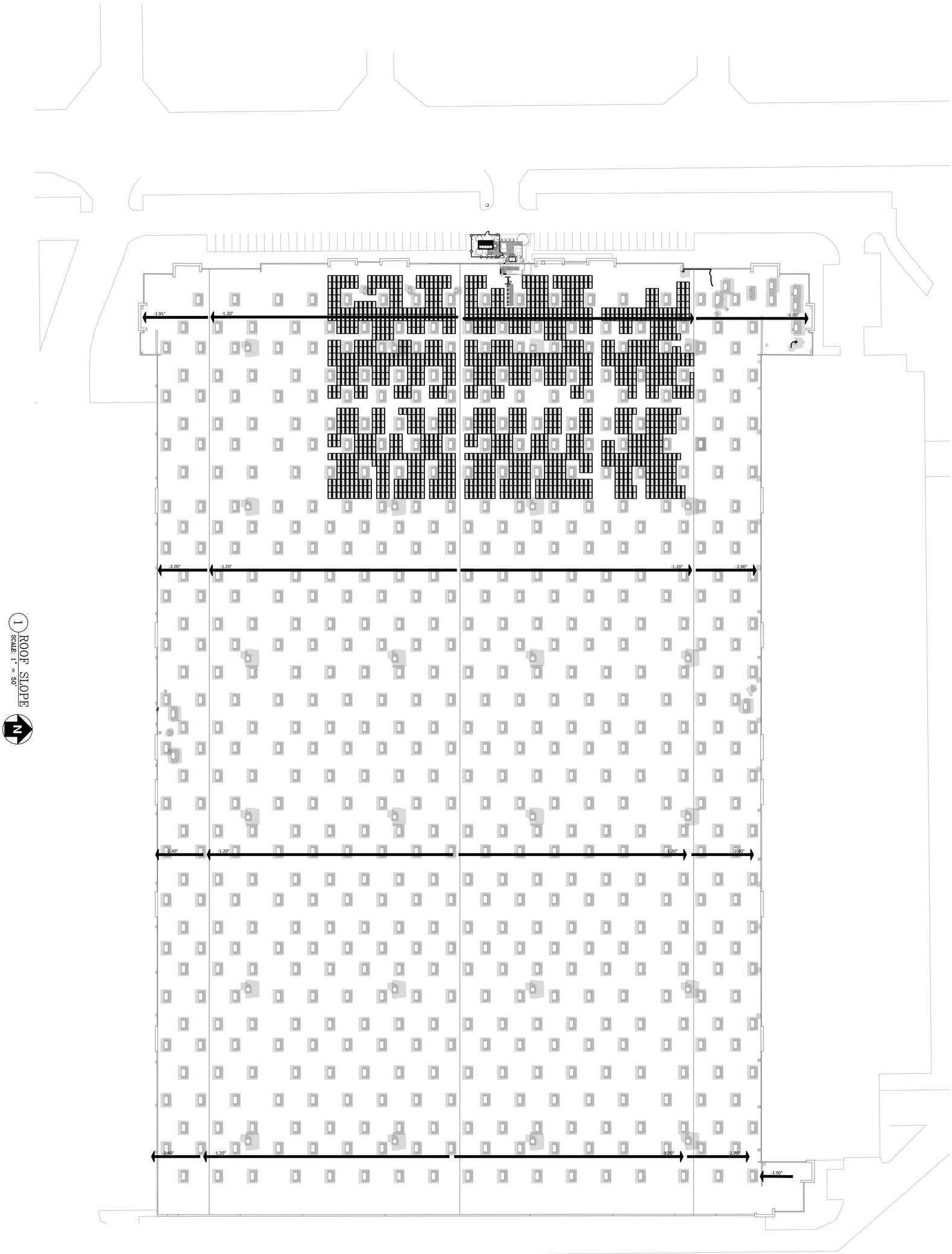
DRAWING #
G200

PLOT DATE: 11/22/2023 1:58 PM

RULER IN INCHES:

RULER IN INCHES: 0 ½ 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

PLOT DATE: 11/22/2023 12:17 PM



1 ROOF SLOPE
SCALE: 1" = 50'

DRAWING TITLE
ROOF SLOPE

DRAWING #
G201

PROJECT
BESS + SOLAR SYSTEM AT
PROLOGIS – WAYFAIR 3500
3500 INDIAN AVE.
PERRIS, CA 92571

DC SYSTEM SIZE: 874.18 kWDC
AC SYSTEM SIZE: 640.00 kWAC
MODULE TYPE: CS6W-545MB-AG
MODULE QUANTITY: 1,604
ORIENTATION: 10° TILT, 180° AZIMUTH

PAGE SIZE
36" x 24"
PROJECT #
06941

DEVELOPER
powerflex
EDF Renewables
POWERFLEX
805 THIRD AVENUE 20TH FLOOR
NEW YORK, NY 10022
WWW.POWERFLEX.COM

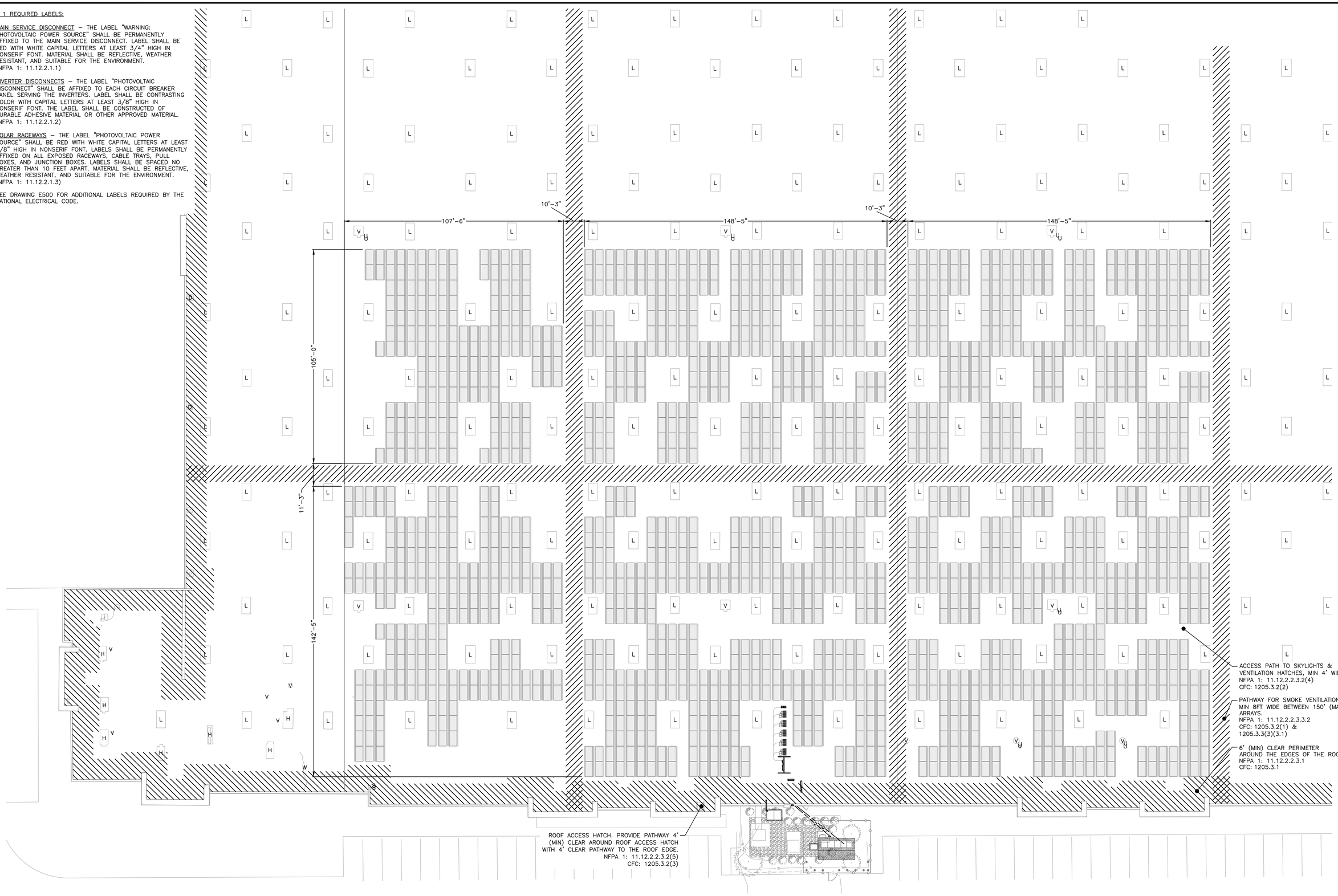
ENGINEER AND PROFESSIONAL ENGINEER
RICHARD A. IVINS
No. 20357
ELECTRICAL
STATE OF CALIFORNIA

PUREPOWER ENGINEERING
111 RIVER STREET, HOBOKEN, NJ
WWW.PUREPOWER.COM
RICHARD A. IVINS
CA LICENSE No. 20357

DATE	REVISION DESCRIPTION	PM	ENG	CHK
11/22/2023	ISSUE FOR BID	TL	SC	MD
09/25/2023	ISSUE FOR PERMIT REV1	TL	SC	MD
09/13/2023	ISSUE FOR PERMIT	TL	SC	MD
08/02/2023	PRELIM. CONCEPTUAL DESIGN	TL	SC	MD

NFPA 1 REQUIRED LABELS:

1. MAIN SERVICE DISCONNECT – THE LABEL "WARNING: PHOTOVOLTAIC POWER SOURCE" SHALL BE PERMANENTLY AFFIXED TO THE MAIN SERVICE DISCONNECT. LABEL SHALL BE RED WITH WHITE CAPITAL LETTERS AT LEAST 3/4" HIGH IN NONSERIF FONT. MATERIAL SHALL BE REFLECTIVE, WEATHER RESISTANT, AND SUITABLE FOR THE ENVIRONMENT. (NFPA 1: 11.12.2.1.1)
2. INVERTER DISCONNECTS – THE LABEL "PHOTOVOLTAIC DISCONNECT" SHALL BE AFFIXED TO EACH CIRCUIT BREAKER PANEL SERVING THE INVERTERS. LABEL SHALL BE CONTRASTING COLOR WITH CAPITAL LETTERS AT LEAST 3/8" HIGH IN NONSERIF FONT. THE LABEL SHALL BE CONSTRUCTED OF DURABLE ADHESIVE MATERIAL OR OTHER APPROVED MATERIAL. (NFPA 1: 11.12.2.1.2)
3. SOLAR RACEWAYS – THE LABEL "PHOTOVOLTAIC POWER SOURCE" SHALL BE RED WITH WHITE CAPITAL LETTERS AT LEAST 3/8" HIGH IN NONSERIF FONT. LABELS SHALL BE PERMANENTLY AFFIXED ON ALL EXPOSED RACEWAYS, CABLE TRAYS, PULL BOXES, AND JUNCTION BOXES. LABELS SHALL BE SPACED NO GREATER THAN 10 FEET APART. MATERIAL SHALL BE REFLECTIVE, WEATHER RESISTANT, AND SUITABLE FOR THE ENVIRONMENT. (NFPA 1: 11.12.2.1.3)
4. SEE DRAWING E500 FOR ADDITIONAL LABELS REQUIRED BY THE NATIONAL ELECTRICAL CODE.



1 FIRE ACCESS PLAN – ROOF
SCALE: 1" = 20'

ROOFTOP OBSTRUCTIONS	
OBSTRUCTION TYPE	IDENTIFIER
ROOF ACCESS	A
SKYLIGHTS	L

DATE	REVISION DESCRIPTION	PM	ENG	CHK
11/22/2023	ISSUE FOR BID	TL	SC	MD
09/25/2023	ISSUE FOR PERMIT REV1	TL	SC	MD
09/12/2023	ISSUE FOR PERMIT	TL	SC	MD
08/02/2023	PRELIM. CONCEPTUAL DESIGN	TL	SC	MD

PUREPOWER ENGINEERING
111 RIVER STREET, HOBOKEN, NJ
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POWERFLEX
805 THIRD AVENUE 20TH FLOOR
NEW YORK, NY 10022
WWW.POWERFLEX.COM

DEVELOPER: powerflex EDF Renewables

PAGE SIZE: 36" x 24"
PROJECT #: 06941

DC SYSTEM SIZE: 874.18 kWDC
AC SYSTEM SIZE: 640.00 kWAC
MODULE TYPE: CS6W-545MB-AG
MODULE QUANTITY: 1,604
ORIENTATION: 10° TILT, 180° AZIMUTH

PROJECT
BESS + SOLAR SYSTEM AT
PROLOGIS – WAYFAIR 3500
3500 INDIAN AVE.
PERRIS, CA 92571

DRAWING TITLE
FIRE ACCESS PLAN

DRAWING #
G300

PLOT DATE: 11/22/2023 11:09 AM

RULER IN INCHES:

PLOT DATE: 11/22/2023 11:09 AM

ELECTRICAL NOTES

1. GENERAL
1.A. ALL WORK AND MATERIALS SHALL BE IN FULL ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND ALL EQUIPMENT SHALL BE LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL) TO APPLICABLE UL STANDARDS. THE CONTRACTOR SHALL PROCURE ALL NECESSARY CERTIFICATIONS FOR ALL WORK INSTALLED, PAY ALL FEES AND CHARGES CONNECTED THEREWITH AND DELIVER ALL CERTIFICATES AND INSPECTION APPROVALS TO THE OWNER THROUGH THE ENGINEER, BEFORE WORK WILL BE FINALLY ACCEPTED.
1.B. ALL INVERTERS SHALL BE IEEE 1547 COMPLIANT AND SHALL BE INSPECTED BY LOCAL UTILITY BEFORE COMMISSIONING, TESTING AND OPERATION OF THE SYSTEM.
1.C. REFERENCE POWER STUDY FOR NEW EQUIPMENT INTERRUPT RATING (kAIC) OR SHORT CIRCUIT CURRENT RATING (SCCR).

2. MANNER OF INSTALLATION
2.A. ALL WORK SHALL BE INSTALLED IN A FIRST CLASS, NEAT AND WORKMANLIKE MANNER BY MECHANICS SKILLED IN THE TRADE INVOLVED. ALL DETAILS OF THE INSTALLATION SHALL BE MECHANICALLY AND ELECTRICALLY CORRECT.
2.B. TORQUE AND MARK ALL RACKING AND MECHANICAL LUGS.

3. CONDUCTORS AND CONDUCTOR INSTALLATION
3.A. COMPRESSION LUGS SHALL BE USED ON ALL ALUMINUM CABLE TERMINATIONS. MECHANICAL LUGS MAY ONLY BE USED FOR COPPER CABLE TERMINATIONS OR ALUMINUM CABLE WITH COMPRESSION PIN ADAPTORS.
3.B. IF ALUMINUM MC CABLE IS USED, THHN/THWN−2 INSULATION IS ACCEPTABLE. FOR ALUMINUM CONDUCTORS, XHHW−2 SHALL BE USED.
3.C. ANTI−OXIDANT COMPOUND SHALL BE USED WITH ALL ALUMINUM LUGS. CLEAN OXIDATION FROM WIRE STRANDS WITH STEEL WIRE BRUSH PRIOR TO APPLICATION OF COMPOUND.
3.D. PV SYSTEM CONDUCTORS SHALL BE MARKED AND IDENTIFIED PER NEC 690.31(B).
3.E. INSTALL WIRE AND CABLE IN ACCORDANCE WITH THE NEC AND AS HEREINAFTER SPECIFIED. USE THE NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION'S "STANDARD OF INSTALLATION", THE MANUFACTURER'S WRITTEN INSTRUCTIONS, UNLESS SUPERSEDED BY THESE SPECIFICATIONS. IN ALL CASES THE INSTALLATION SHALL BE IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES.
3.F. THE USE OF WIRE SPLICES AT ANY POINT IN THE INSTALLATION IS STRICTLY PROHIBITED
3.G. THE USE OF WIRE LUBE IS REQUIRED FOR ALL WIRE PULLS THROUGH CONDUIT RUNS OF 20' OR LONGER, OR WITH BENDS IN 180° OR MORE. WIRE LUBE IS REQUIRED EVEN WHEN USING SELF LUBRICATING CABLES SUCH AS SOUTHWIRE 'SIMPULL'.
3.H. STRING WIRING & HOMERUNS SHALL BE SECURED TO UNDERSIDE OF THE RACKING & MODULES USING HEYCO SUNBUNDLER PVC−COATED SS CABLE TIES. TRANSITION TO EMT OUTSIDE OF ARRAY.
3.I. ALL PV SOURCE CIRCUITS WHICH WOULD BE EXPOSED TO PHYSICAL DAMAGE SHALL BE PROTECTED IN CONDUIT OR CABLE TRAY.
3.J. ALL PV SOURCE CIRCUITS WITH DIRECT EXPOSURE TO SUNLIGHT SHALL BE PROTECTED THROUGH THE USE OF CONDUIT, PROTECTIVE WRAP, SPLIT LOOM, OR EQUIVALENT, WHICH ARE DURABLE FOR THE ENVIRONMENT AND RATED FOR THE APPLICATION.
3.K. ALL PLUG AND SOCKET CONNECTORS MATED TOGETHER SHALL BE OF THE SAME TYPE AND OF THE SAME MANUFACTURER. "COMPATIBLE" CONNECTORS SHALL NOT BE ACCEPTED (IEC 62446−1).
3.L. ALL FIELD−MADE PLUG & SOCKET CONNECTORS SHALL BE INSTALLED USING MANUFACTURER APPROVED TOOLS AND METHODS, AND CABLE GLANDS SHALL BE TIGHTENED TO MANUFACTURER'S SPECIFIED TORQUE VALUE.

4. PHASE RELATIONSHIP
4.A. CONNECT FEEDERS TO MAINTAIN PHASE RELATIONSHIP THROUGH SYSTEM. PHASE LEGS OF FEEDERS SHALL MATCH BUS OR CABLE ARRANGEMENTS IN EQUIPMENT TO WHICH THE FEEDERS ARE CONNECTED. COLOR CODING SHALL BE AS FOLLOWS:

208/120 VAC
A PHASE: BLACK, B PHASE: RED, C PHASE: BLUE

277/480 VAC OR 346/600 VAC
A PHASE: BROWN, B PHASE; ORANGE, C PHASE: YELLOW

1500 VDC, 1000 VDC, OR 600 VDC
UNGROUNDED POSITIVE CONDUCTOR: RED
UNGROUNDED NEGATIVE CONDUCTOR: BLACK

AC AND DC SYSTEMS:
GROUNDED CONDUCTOR: WHITE
GROUND: GREEN

4.B. GROUNDED CONDUCTORS (NEUTRAL) AND EQUIPMENT GROUNDING CONDUCTORS SMALLER THAN #4 MUST HAVE COLOR CODED INSULATION. WHERE COLOR CODED CABLE IS NOT USED, TAPE CONDUCTOR WITH OVERLAPPED COLORED TAPE FOR A MINIMUM OF 6" IN ACCESSIBLE LOCATIONS. COLOR CODING MUST BE USED CONSISTENTLY FOR THE ENTIRE PROJECT.
4.C. BARE GROUND WIRE SHALL NOT BE INSTALLED IN GALVANIZED STEEL CONDUIT.

5. CONDUITS AND RACEWAYS
5.A. PROVIDE RACEWAYS MINIMUM SIZE 3/4".
5.B. CONDUITS SHALL BE EMT WHERE NOT SUBJECT TO PHYSICAL DAMAGE. CONDUITS SHALL BE IMC OR RMC WHERE SUBJECT TO PHYSICAL DAMAGE. PVC CONDUITS ONLY PERMITTED IN BELOW GRADE DUCT BANKS.
5.C. DRAWINGS SHOW RACEWAY LOCATIONS DIAGRAMMATICALLY. CONTRACTOR SHALL ADJUST ROUTING TO SUIT FIELD LOCATIONS. ANY CHANGES TO PROPOSED ROUTING SHALL BE SUBMITTED TO ENGINEER FOR REVIEW AND APPROVAL.
5.D. FURNISH AND INSTALL ALL FITTINGS AND SPECIAL DEVICES NECESSARY FOR THE PROPER INSTALLATION, CONNECTION AND OPERATION OF THE SYSTEM. CONDUIT ELBOWS SHALL BE OF THE SAME MAKE, QUALITY AND FINISH AS THE CONDUIT USED.
5.E. A PROTECTIVE COATING OF ASPHALT COMPOUND, PLASTIC SHEATH, OR OTHER EQUIVALENT PROTECTION SHALL BE APPLIED TO ANY GALVANIZED STEEL CONDUITS DIRECTLY BURIED IN EARTH.
5.F. EMT CONDUIT SHALL USE COMPRESSION RAINTIGHT CONNECTORS, FACTORY STAMPED RAINTIGHT WITH COMPONENTS PROPERLY INSTALLED.
5.G. PROVIDE EXPANSION FITTINGS WITH BONDING JUMPERS FOR EVERY 100' OF STRAIGHT METAL CONDUIT RUN.
5.H. CONDUIT EXPANSION AND DEFLECTION FITTINGS WITH BONDING JUMPERS SHALL BE USED WHENEVER CROSSING BUILDING EXPANSION AND SEISMIC SEPARATION JOINTS.
5.I. LEAVE WIRE SUFFICIENTLY LONG TO PERMIT MAKING FINAL CONNECTIONS. ALL EMPTY CONDUITS OVER 10' IN LENGTH SHALL BE PROVIDED WITH SYNTHETIC FIBER ROPE PULL WIRE.
5.J. PATCH AND REPAIR ALL SURFACES DAMAGED BY TRENCHING TO MATCH THE PREVIOUSLY EXISTING CONDITIONS.
5.K. ALL PENETRATIONS SHALL BE SEALED TO MAINTAIN THE EXISTING FIRE RATING.
5.L. ALL ROOFTOP CONDUITS SHALL BE MARKED PER LOCAL FIRE CODES.
5.M. ALL CONDUITS ENTERING ENCLOSURES SHALL BE FITTED WITH PROTECTIVE BUSHINGS, INCLUDING CONDUIT WITH CONDUCTOR SIZES SMALLER THAN #4 AWG. METALLIC CONDUIT/BUSHINGS SHALL BE BONDED PER NEC.
5.N. ALL CONDUIT ENTERING ENCLOSURES SHALL BE SEALED WITH AN APPROVED SEALANT.
5.O. DUAL−RATED, LAY−IN STYLE GROUND LUGS AND GROUND BUSHINGS OR CONDUIT GROUND CLAMPS SHALL BE PROVIDED FOR ALL METALLIC CONDUIT.

6. ELECTRICAL ENCLOSURES
6.A. ALL OUTDOOR ENCLOSURES (PANELBOARDS, DISCONNECT SWITCHES, JUNCTION BOXES, COMBINER BOXES, ETC.) SHALL BE NEMA 3R, 4, OR 4X. ALL WALL OR RACK MOUNTED OUTDOOR ENCLOSURES SHALL HAVE A MINIMUM 2'−0" CLEARANCE ABOVE GRADE. INDOOR ENCLOSURES SHALL BE NEMA 1.
6.B. PANELBOARD DOORS SHALL BE QUARTER TURN LATCHES OR EXTERNAL HANDLE WITH INTERNAL LATCHES, NO SETS OF EXTERNAL SCREW DOWN CLAMPS.
6.C. CONDUIT TERMINATING IN OUTDOOR ENCLOSURES SHALL USE MYERS−TYPE HUBS WITH GROUND SCREW. UTILIZE RAINTIGHT FITTINGS FOR ALL CABLE ENTRIES.
6.D. NO PENETRATIONS OR CABLE ENTRIES IN THE TOP OF OUTDOOR ENCLOSURES. ENTER OUTDOOR ENCLOSURES FROM THE BOTTOM (PREFERRED) OR SIDE.
6.E. ALL ELECTRICAL EQUIPMENT SHALL BE LISTED OR LABELED BY A RECOGNIZED TESTING AGENCY.
6.F. ARC FLASH HAZARD WARNING LABELS SHALL BE PROVIDED AND MOUNTED ON EVERY COMBINER BOX, TERMINAL BOX, INVERTER, AC AND DC SWITCH, TRANSFORMER, AND SWITCHGEAR.
6.G. HAND HOLES, PULL BOXES, OR CONDUIT BODIES SHALL BE INSTALLED (WHETHER OR NOT SHOWN ON DRAWINGS) WHEN THE RACEWAY HAS MORE THAN 360° OF BENDS, OR AS NECESSARY TO NOT EXCEED MANUFACTURER'S MAXIMUM CABLE PULLING TENSION.
6.H. SWITCHBOARDS AND SWITCHGEARS SHALL BE PROVIDED WITH TEMPORARY INTERNAL HEATERS DURING LONG TERM STORAGE WHILE NOT ENERGIZED AS REQUIRED BY THE MANUFACTURER. ALL OTHER EQUIPMENT SHALL BE STORED IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS.
6.I. ALL ELECTRICAL EQUIPMENT CONTAINING A CIRCUIT BREAKER OR FUSE SHALL BE INSTALLED IN COMPLIANCE WITH NEC ARTICLE 240.24.

7. GROUNDING
7.A. THE CONTRACTOR SHALL FURNISH AND INSTALL GROUNDING NECESSARY IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.

8. TESTS
8.A. ALL TESTS SHALL BE PERFORMED BY TRAINED TECHNICIANS CERTIFIED TO DO THE PROCEDURES.
8.B. FINAL TESTS AND INSPECTIONS SHALL BE HELD IN THE PRESENCE OF THE OWNER'S REPRESENTATIVES AND TO THEIR SATISFACTION.
8.C. ALL APPLICABLE TESTS SHALL BE PERFORMED IN ACCORDANCE WITH NETA/ANSI ATS−2021 STANDARDS AND PRACTICES.
8.D. ALL APPLICABLE TESTS SHALL BE PERFORMED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
8.E. ALL TESTS SHALL BE PERFORMED PRIOR TO ENERGIZATION.
8.F. TESTING IS LIMITED TO NEW EQUIPMENT RELATED TO THIS PROJECT.
8.G. Vmp AND ImP READINGS SHALL BE RECORDED FOR THE IV CURVE TRACING OF STRINGS USING THE SOLAREDGE INVERTER INTERFACE AND/OR THE ENNEXOSE.SUNNY PORTAL AND SUBMITTED TO OWNER FOR APPROVAL.
8.H. OPEN−CIRCUIT VOLTAGE (Voc) MEASUREMENTS SHALL BE PERFORMED ON ALL DC STRING CIRCUITS DURING APPROVED WEATHER CONDITIONS. Voc READINGS WILL BE TAKEN TO ASSURE PROPER OPERATION OF RSD
8.I. ALL PV CONNECTORS MATED TOGETHER SHALL BE CONFIRMED TO BE OF THE SAME MAKE/MODEL.
8.J. INSULATION TESTS SHALL BE PERFORMED ON ALL STRING AND FEEDER DC CIRCUIT CABLES.
8.K. INSULATION TESTS SHALL BE PERFORMED ON ALL SERVICE AND FEEDER AC CIRCUIT CABLES.
8.L. GROUND FAULT PROTECTION SYSTEMS SHALL BE FUNCTIONALLY TESTED IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS (NEC 230.95(C)).
8.M. RELAY PROTECTION SYSTEM FUNCTIONAL TESTS SHALL BE IN ACCORDANCE WITH THE SETTINGS PROVIDED AND WITHIN THE OPERATIONAL INTENT OF THIS PROJECT NOTED IN EOR DRAWING.
8.N. ACCEPTANCE TESTING SHALL BE PERFORMED ON ALL COMBINER BOXES, PANELBOARDS SWITCHBOARDS AND SWITCHGEAR.

GENERAL NOTES

1. THE GENERAL NOTES APPLY TO ALL DRAWINGS UNDER THE CONTRACT. REFER TO INDIVIDUAL DRAWINGS FOR ADDITIONAL NOTES.
2. DRAWINGS ARE DIAGRAMS AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. FOLLOW DRAWINGS IN LAYING OUT OF WORK AND CHECK DRAWINGS OF OTHER TRADES TO VERIFY SPACE CONDITIONS. MAINTAIN HEADROOM, SPACE CONDITIONS, AND REQUIRED CLEARANCES.
3. PV SYSTEM CONTRACTOR SHALL COORDINATE ALL THE WORK WITH THE ENGINEER, THE CONSTRUCTION MANAGER AND ALL OTHER CONTRACTORS TO INSURE THAT THE PV SYSTEM IS INSTALLED AS SPECIFIED IN THESE DRAWINGS.
4. PERSONAL PROTECTIVE EQUIPMENT (PPE) SHALL BE PROVIDED AS REQUIRED IN ACCORDANCE WITH NEC 70E AND OSHA REQUIREMENTS.
5. UNFORSEEN OBSTRUCTIONS ON THE SITE MAY NECESSITATE A CHANGE IN THE LAYOUT. ANY CHANGES TO THE RACKING LAYOUT SHOULD BE REPORTED TO THE ENGINEER. CHANGES IN UP TO 5% OF THE MODULES SHOULD BE ANTICIPATED. CHANGES TO THE ARRAY LAYOUT SHOULD BE MADE AS TO NOT IMPACT THE NUMBER OF MODULES ON A COMBINER BOX OR INVERTER.
6. LANDSCAPING: RESTORE TO ORIGINAL CONDITIONS.
7. ALL STRUCTURAL AND MISCELLANEOUS EXTERIOR STEEL, INCLUDING STRUT CHANNEL (SUCH AS UNISTRUT OR KINDORF) SHALL BE CORROSION RESISTANT, HOT DIP GALVANIZED OR GALVANNEALED WITH A COATED FINISH MINIMUM.

NOTES SPECIFIC TO CALIFORNIA

ADOPTED ELECTRICAL CODE: 2022 CALIFORNIA ELECTRICAL CODE (BASED ON THE 2020 NEC).

BY LAW, ANYONE PLANNING TO EXCAVATE OR DEMOLISH IS REQUIRED TO CALL 811 AT LEAST TWO FULL BUSINESS DAYS BEFORE WORK BEGINS

BATTERY ENERGY STORAGE SYSTEM (BESS) NOTES

1. ESS SHALL BE LISTED IN ACCORDANCE WITH UL 9540, UNLESS SPECIFICALLY EXEMPTED IN NFPA 855.
2. A PERMANENT PLAQUE OR DIRECTORY DENOTING THE LOCATION OF ALL ESS POWER SOURCE DISCONNECTING MEANS ON OR IN THE PREMISES SHALL BE INSTALLED AT EACH SERVICE EQUIPMENT LOCATION AND AT THE LOCATION(S) OF THE SYSTEM DISCONNECT(S) FOR ALL ENERGY SOURCES CAPABLE OF BEING INTERCONNECTED.
3. ESS SHALL BE LOCATED OR PROTECTED TO PREVENT PHYSICAL DAMAGE FROM IMPACT WHERE SUCH RISKS ARE IDENTIFIED.
4. ESS SHALL BE SECURED AGAINST UNAUTHORIZED ENTRY AND SAFEGUARDED IN AN APPROVED MANNER.
5. CLEARANCES AROUND OUTDOOR ESS HOUSINGS SHALL COMPLY WITH NFPA 855 SECTION 4.4.3.3.
6. ESS INSTALLED OUTDOORS ON EXTERIOR WALLS OF BUILDINGS SHALL COMPLY WITH NFPA 855 SECTION 4.4.3.10
7. ROOFTOP AND OPEN PARKING GARAGE ESS INSTALLATIONS SHALL COMPLY WITH NFPA 855 SECTION 4.4.4.
8. ESS AND ASSOCIATED EQUIPMENT THAT ARE LOCATED ON ROOFTOPS AND NOT ENCLOSED BY BUILDING CONSTRUCTION SHALL COMPLY WITH NFPA 855 SECTION 4.4.4.4.2(1)−(9)
9. ESS AND ASSOCIATED EQUIPMENT THAT ARE LOCATED IN OPEN PARKING GARAGES SHALL COMPLY WITH NFPA 855 SECTION 4.4.4.5(1)−(5)
10. ESS LOCATED IN WALK−IN ENCLOSURES ON ROOFTOPS, IN OPEN PARKING GARAGES, IN AREAS CONTAINING ESS OTHER THAN WALK−IN UNITS IN OPEN PARKING STRUCTURES NOT OPEN ABOVE TO THE SKY SHALL BE PROVIDED WITH AN AUTOMATIC FIRE SUPPRESSION SYSTEM COMPLYING WITH NFPA 855 SECTION 4.11.
11. OUTDOOR WALK−IN CONTAINERS OR ENCLOSURES HOUSING ESS SHALL NOT EXCEED 53 FT × 8.5 FT × 9.5 FT (16.2 M × 2.6 M × 2.9 M), NOT INCLUDING HVAC AND OTHER EQUIPMENT. OUTDOOR WALK−IN CONTAINERS OR ENCLOSURES EXCEEDING THIS SIZE SHALL BE TREATED AS INDOOR INSTALLATIONS UNDER NFPA 855.
12. BESS UNIT INSTALLATION SHALL BE IN COMPLIANCE WITH SECTION 1207 OF THE 2022 CFC.

LEGEND − GENERAL

SYMBOL	DESCRIPTION
	LIGHT LINE INDICATES EXISTING OR BEYOND THE SCOPE OF PROJECT
	DARK LINE INDICATES NEW OR WITHIN THE SCOPE OF PROJECT
− − − − −	DASHED LINE INDICATES EQUIPMENT AT A DIFFERENT ELEVATION
EXISTING TEXT	LIGHT TEXT INDICATES EXISTING OR BEYOND THE SCOPE OF PROJECT
NEW TEXT	DARK TEXT INDICATES NEW OR WITHIN THE SCOPE OF PROJECT

LEGEND − CIRCUITS

SYMBOL	DESCRIPTION
—xx————xx—	ABOVE−GROUND CABLE
—xx— — — —xx—	UNDER−GROUND CABLE

NOTE: XX REPRESENTS CIRCUIT TYPE BELOW

ABBREVIATION	DESCRIPTION
DC	DIRECT CURRENT
AC	ALTERNATING CURRENT
MV	MEDIUM VOLTAGE
C	COMMUNICATIONS
GND	GROUND
CAB	CAB MESSENGER
FO	FIBER OPTIC

LEGEND − PLAN SYMBOLS

SYMBOL	DESCRIPTION
	RACEWAY TURNING UP OR TOWARDS OBSERVER
	RACEWAY TURNING DOWN OR AWAY FROM OBSERVER
P OR P	PULLBOX
J OR J	JUNCTION BOX
	GROUND FAULT CIRCUIT INTERRUPTER DUPLEX RECEPTACLE, RATED: 125−VOLTS AC, 20A
	GROUND ROD
	GROUND ROD W/ TEST WELL
	SLOPE DIRECTION INDICATOR

LEGEND − ONE LINE DIAGRAM & WIRING DIAGRAM SYMBOLS

SYMBOL	DESCRIPTION
	CIRCUIT BREAKER, FRAME SIZE AND TRIP SETTING AS NOTED
	DISCONNECT SWITCH
	INVERTER
	BUSS CONNECTION POINT
	CROSSING POINT (NO CONNECTION)
	NORMALLY CLOSED − NORMALLY OPEN CONTACTS
	TRANSFORMER CONTROL/POWER, SIZE AND RATING AS NOTED
	CURRENT TRANSFORMER
	POTENTIAL TRANSFORMER
	FUSE, SIZE/RATING AS NOTED
	FUSED DISCONNECT SWITCH
	EARTH GROUND
NC NO	PUSHBUTTON SWITCHES; NUMBER AND TYPE OF CONTACT BLOCKS MAY VARY
NC NO	PUSHBUTTON SWITCHES MUSHROOM HEAD; NUMBER AND TYPE OF CONTACT BLOCKS MAY VARY
K	KEYED INTERLOCK (KIRK KEY OR EQ.)
ST	SHUNT TRIP COIL

ABBREVIATIONS

ABBREVIATION	DESCRIPTION
A	AMPERES
AERMS	ARC ENERGY REDUCING MAINTENANCE SYSTEM
AF	AMPERE FRAME
A.F.F.	ABOVE FINISH FLOOR
A.F.G.	ABOVE FINISH GRADE
AFDI	ARC FAULT DETECTION & INTERRUPTER
AIC	AMPS INTERRUPTING CAPACITY
AL	ALUMINUM
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BKR	CIRCUIT BREAKER
C	CONDUIT
CB	COMBINER BOX
CKT	CIRCUIT
COU	CONDITIONS OF USE
CP	CONTROL PANEL
CT	CURRENT TRANSFORMER
CU	COPPER
DB	DIRECT BURIAL
DISC	DISCONNECT
EGC	EQUIPMENT GROUNDING CONDUCTOR
ELEC	ELECTRIC, ELECTRICAL
EMERG	EMERGENCY
EMT	ELECTRIC METALLIC TUBING
EQUIP	EQUIPMENT
EV	ELECTRIC VEHICLE
EVCS	ELECTRIC VEHICLE CHARGING STATION
EXIST	EXISTING
G, GND	GROUND
GEC	GROUNDING ELECTRODE CONDUCTOR
GFCI	GROUND−FAULT CIRCUIT INTERRUPTER
GFPE	GROUND−FAULT PROTECTION OF EQUIPMENT
HID	HIGH−INTENSITY DISCHARGE (LIGHTING)
HZ	HERTZ
IMC	INTERMEDIATE METAL CONDUIT
kAIC	1000 AMPS INTERRUPT CAPACITY
kCMIL	1000 CIRCULAR MILS
kVA	KILO−VOLT AMPERE
kW	KILOWATT
LA	LIGHTNING & SURGE ARRESTOR
LED	LIGHT−EMITTING DIODE
LSIG	LONG, SHORT, INSTANTANEOUS, & GROUND−FAULT
LTG	LIGHTING
MAX	MAXIMUM
MCM	1000 CIRCULAR MILS
MFG	MANUFACTURER
MLO	MAIN LUGS ONLY
MLPE	MODULE LEVEL POWER ELECTRONICS
MPPT	MAXIMUM POWER POINT TRACKING
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NTS	NOT TO SCALE
OV	OVER VOLTAGE
P	POLE
PF	POWER FACTOR
PLC	PROGRAMMABLE LOGIC CONTROLLER
POA	PLANE OF ARRAY
POI	POINT OF INTERCONNECTION
PRI	PRIMARY
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE
PWR	POWER
RAC	RIGID ALUMINUM CONDUIT
RCPT	RECEPTACLE
RGS	RIGID GALVANIZED STEEL CONDUIT
RMC	RIGID METAL CONDUIT
SA	SURGE ARRESTOR
SEC	SECONDARY
SPD	SURGE PROTECTION DEVICE
SSBJ	SUPPLY SIDE BONDING JUMPER
ST	SHUNT TRIP
STP	SHIELDED TWISTED PAIR
SW	SWITCH
TBD	TO BE DETERMINED
TP	TWISTED PAIR
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
UV	UNDER VOLTAGE OR ULTRAVIOLET
V	VOLT
VA	VOLT−AMPERE
W	WATT
WR	WEATHER RESISTANT
XFMR	TRANSFORMER
ø	DIAMETER OR PHASE

DATE	REVISION DESCRIPTION	PM	ENG	CHK
11/22/2023	ISSUE FOR BID	TL	SC	MD
09/25/2023	ISSUE FOR PERMIT REV1	TL	SC	MD
09/13/2023	ISSUE FOR PERMIT	TL	SC	MD
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PAGE SIZE: 36" × 24"
PROJECT #: 06941

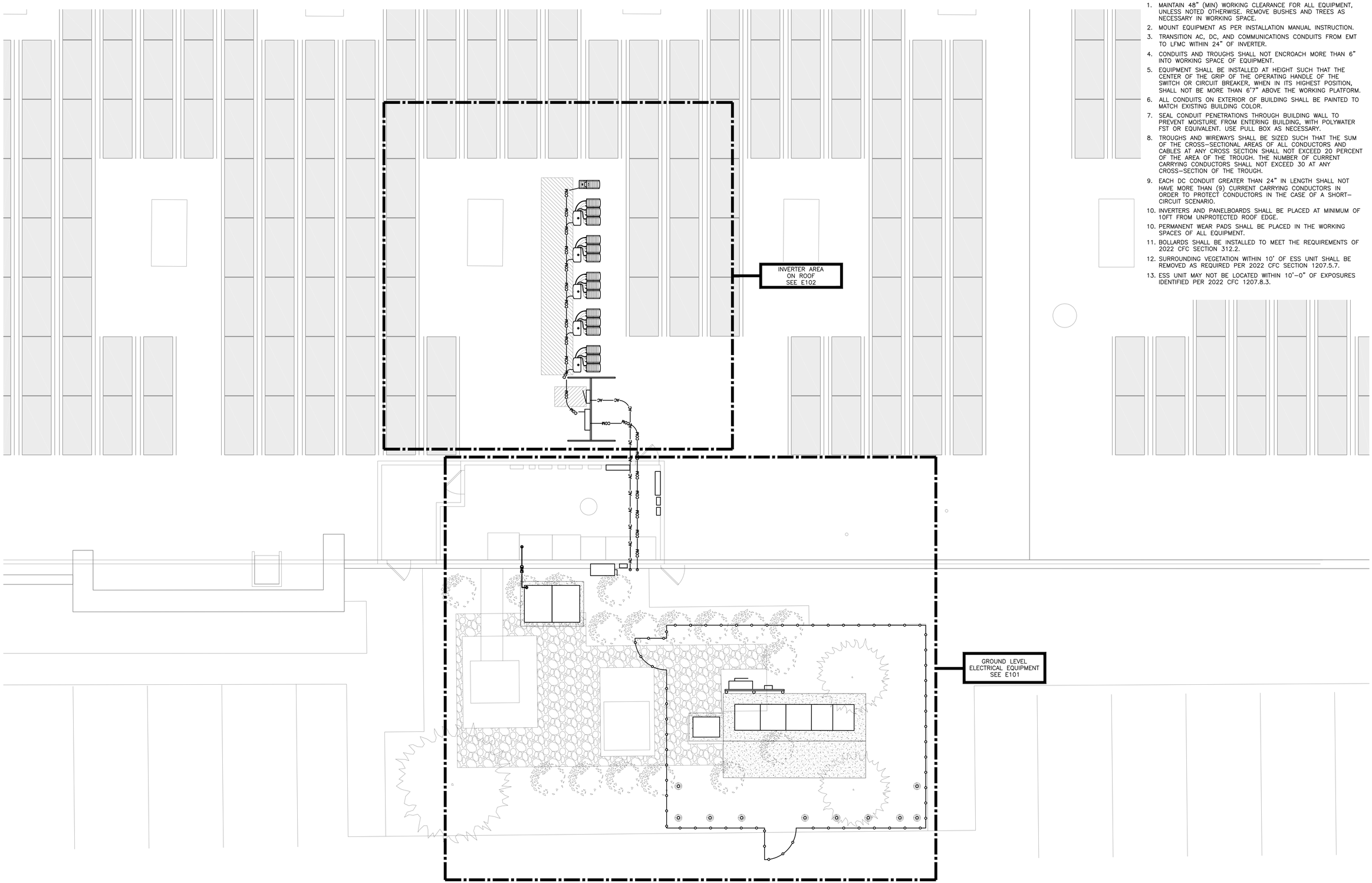
DC SYSTEM SIZE: 874.18 kWDC
AC SYSTEM SIZE: 640.00 kWAC
MODULE TYPE: CS6W−545MB−AG
MODULE QUANTITY: 1,604
ORIENTATION: 10° TILT, 180° AZIMUTH

PROJECT
BESS + SOLAR SYSTEM AT
PROLOGIS − WAYFAIR 3500
3500 INDIAN AVE.
PERRIS, CA 92571

DRAWING TITLE: ELECTRICAL NOTES & SYMBOLS LIST

DRAWING #: E001

RULER IN INCHES:



NOTES:

1. MAINTAIN 48" (MIN) WORKING CLEARANCE FOR ALL EQUIPMENT, UNLESS NOTED OTHERWISE. REMOVE BUSHES AND TREES AS NECESSARY IN WORKING SPACE.
2. MOUNT EQUIPMENT AS PER INSTALLATION MANUAL INSTRUCTION.
3. TRANSITION AC, DC, AND COMMUNICATIONS CONDUITS FROM EMT TO LFMC WITHIN 24" OF INVERTER.
4. CONDUITS AND TROUGHS SHALL NOT ENCROACH MORE THAN 6" INTO WORKING SPACE OF EQUIPMENT.
5. EQUIPMENT SHALL BE INSTALLED AT HEIGHT SUCH THAT THE CENTER OF THE GRIP OF THE OPERATING HANDLE OF THE SWITCH OR CIRCUIT BREAKER, WHEN IN ITS HIGHEST POSITION, SHALL NOT BE MORE THAN 6'7" ABOVE THE WORKING PLATFORM.
6. ALL CONDUITS ON EXTERIOR OF BUILDING SHALL BE PAINTED TO MATCH EXISTING BUILDING COLOR.
7. SEAL CONDUIT PENETRATIONS THROUGH BUILDING WALL TO PREVENT MOISTURE FROM ENTERING BUILDING, WITH POLYWATER FST OR EQUIVALENT. USE PULL BOX AS NECESSARY.
8. TROUGHS AND WIREWAYS SHALL BE SIZED SUCH THAT THE SUM OF THE CROSS-SECTIONAL AREAS OF ALL CONDUCTORS AND CABLES AT ANY CROSS SECTION SHALL NOT EXCEED 20 PERCENT OF THE AREA OF THE TROUGH. THE NUMBER OF CURRENT CARRYING CONDUCTORS SHALL NOT EXCEED 30 AT ANY CROSS-SECTION OF THE TROUGH.
9. EACH DC CONDUIT GREATER THAN 24" IN LENGTH SHALL NOT HAVE MORE THAN (9) CURRENT CARRYING CONDUCTORS IN ORDER TO PROTECT CONDUCTORS IN THE CASE OF A SHORT-CIRCUIT SCENARIO.
10. INVERTERS AND PANELBOARDS SHALL BE PLACED AT MINIMUM OF 10FT FROM UNPROTECTED ROOF EDGE.
10. PERMANENT WEAR PADS SHALL BE PLACED IN THE WORKING SPACES OF ALL EQUIPMENT.
11. BOLLARDS SHALL BE INSTALLED TO MEET THE REQUIREMENTS OF 2022 CFC SECTION 312.2.
12. SURROUNDING VEGETATION WITHIN 10' OF ESS UNIT SHALL BE REMOVED AS REQUIRED PER 2022 CFC SECTION 1207.5.7.
13. ESS UNIT MAY NOT BE LOCATED WITHIN 10'-0" OF EXPOSURES IDENTIFIED PER 2022 CFC 1207.8.3.

1 OVERALL AC ELECTRICAL PLAN
SCALE: 3/16" = 1'-0"

DATE	REVISION DESCRIPTION	PM	ENG	CHK
11/22/2023	ISSUE FOR BID	TL	SC	MD
09/25/2023	ISSUE FOR PERMIT REV1	TL	SC	MD
09/12/2023	ISSUE FOR PERMIT	TL	SC	MD
08/02/2023	PRELIM. CONCEPTUAL DESIGN	TL	SC	MD

PUREPOWER ENGINEERING
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RICHARD A. IVINS
CA LICENSE No. 20357
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Electrical

DEVELOPER
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EDF Renewables
805 THIRD AVENUE 20TH FLOOR
NEW YORK, NY 10022
WWW.POWERFLEX.COM

PAGE SIZE 36" x 24"
PROJECT # 06941

DC SYSTEM SIZE: 874.18 kWDC
AC SYSTEM SIZE: 640.00 kWAC
MODULE TYPE: CS6W-545MB-AG
MODULE QUANTITY: 1,604
ORIENTATION: 10° TILT, 180° AZIMUTH

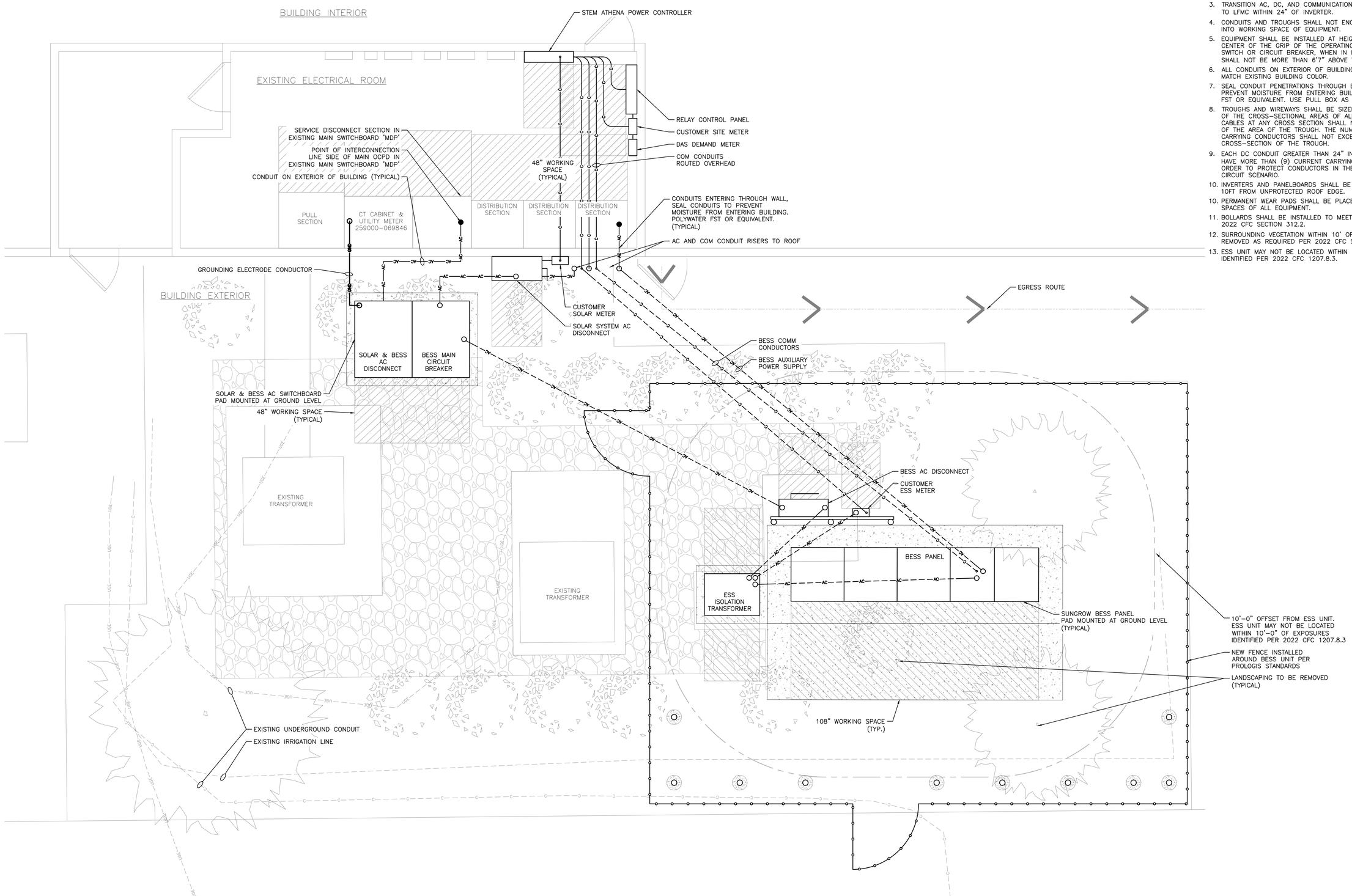
PROJECT
BESS + SOLAR SYSTEM AT
PROLOGIS – WAYFAIR 3500
3500 INDIAN AVE.
PERRIS, CA 92571

DRAWING TITLE
OVERALL ELECTRICAL PLAN

DRAWING #
E100

PLOT DATE: 11/22/2023 11:10 AM

RULER IN INCHES:



1 ELECTRICAL AREA PLAN
SCALE: 3/8" = 1'-0"

NOTES:

1. MAINTAIN 48" (MIN) WORKING CLEARANCE FOR ALL EQUIPMENT, UNLESS NOTED OTHERWISE. REMOVE BUSHES AND TREES AS NECESSARY IN WORKING SPACE.
2. MOUNT EQUIPMENT AS PER INSTALLATION MANUAL INSTRUCTION.
3. TRANSITION AC, DC, AND COMMUNICATIONS CONDUITS FROM EMT TO LFMC WITHIN 24" OF INVERTER.
4. CONDUITS AND TROUGHS SHALL NOT ENCROACH MORE THAN 6" INTO WORKING SPACE OF EQUIPMENT.
5. EQUIPMENT SHALL BE INSTALLED AT HEIGHT SUCH THAT THE CENTER OF THE GRIP OF THE OPERATING HANDLE OF THE SWITCH OR CIRCUIT BREAKER, WHEN IN ITS HIGHEST POSITION, SHALL NOT BE MORE THAN 6'7" ABOVE THE WORKING PLATFORM.
6. ALL CONDUITS ON EXTERIOR OF BUILDING SHALL BE PAINTED TO MATCH EXISTING BUILDING COLOR.
7. SEAL CONDUIT PENETRATIONS THROUGH BUILDING WALL TO PREVENT MOISTURE FROM ENTERING BUILDING, WITH POLYWATER FST OR EQUIVALENT. USE PULL BOX AS NECESSARY.
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PAGE SIZE 36" x 24"
PROJECT # 06941

DC SYSTEM SIZE: 874.18 kWDC
AC SYSTEM SIZE: 640.00 kWAC
MODULE TYPE: CS6W-545MB-AG
MODULE QUANTITY: 1,604
ORIENTATION: 10° TILT, 180° AZIMUTH

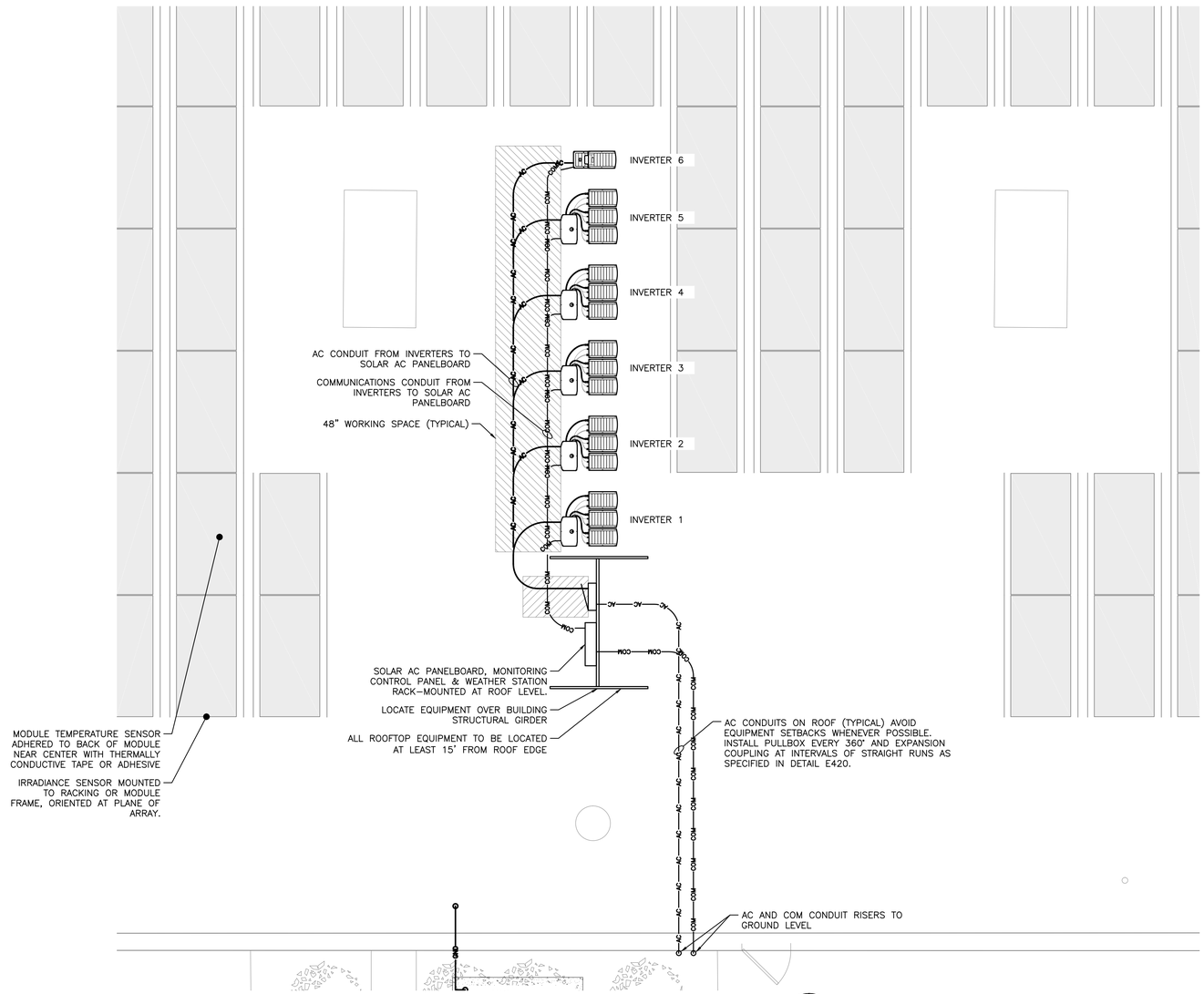
PROJECT
BESS + SOLAR SYSTEM AT
PROLOGIS – WAYFAIR 3500
3500 INDIAN AVE.
PERRIS, CA 92571

DRAWING TITLE
PARTIAL ELECTRICAL PLAN

DRAWING #
E101

PLOT DATE: 11/22/2023 11:10 AM

RULER IN INCHES:



1 INVERTER AREA PLAN
SCALE: 1/4" = 1'-0"

NOTES:

1. MAINTAIN 48" (MIN) WORKING CLEARANCE FOR ALL EQUIPMENT, UNLESS NOTED OTHERWISE. REMOVE BUSHES AND TREES AS NECESSARY IN WORKING SPACE.
2. MOUNT EQUIPMENT AS PER INSTALLATION MANUAL INSTRUCTION.
3. TRANSITION AC, DC, AND COMMUNICATIONS CONDUITS FROM EMT TO LFMC WITHIN 24" OF INVERTER.
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NEW YORK, NY 10022
WWW.POWERFLEX.COM

PAGE SIZE 36" x 24"
PROJECT # 06941

DC SYSTEM SIZE: 874.18 kWDC
AC SYSTEM SIZE: 640.00 kWAC
MODULE TYPE: CSI6W-545MB-AG
MODULE QUANTITY: 1,604
ORIENTATION: 10° TILT, 180° AZIMUTH

PROJECT
BESS + SOLAR SYSTEM AT
PROLOGIS – WAYFAIR 3500
3500 INDIAN AVE.
PERRIS, CA 92571

DRAWING TITLE
PARTIAL ELECTRICAL PLAN

DRAWING #
E102

PLOT DATE: 11/22/2023 11:10 AM

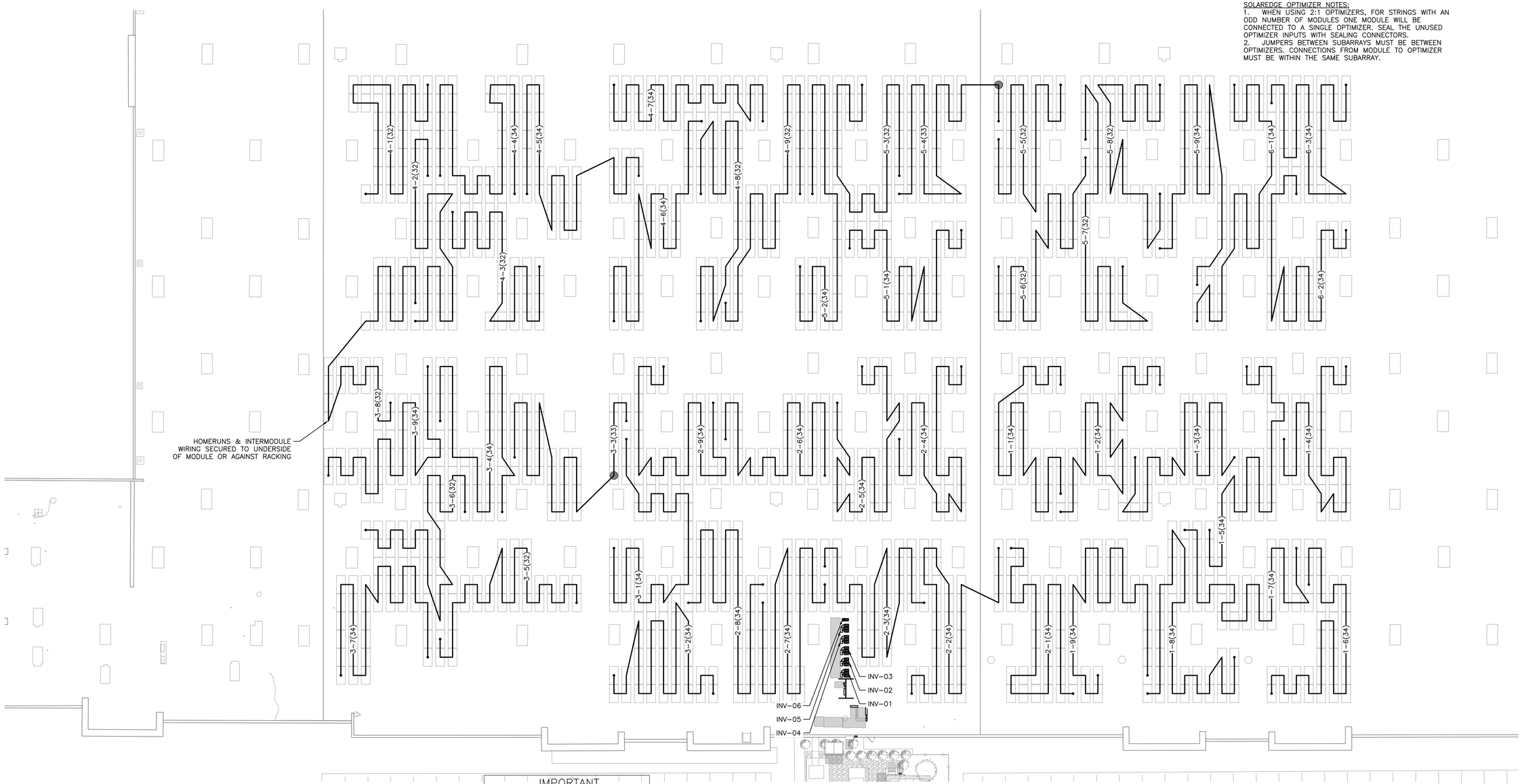
RULER IN INCHES:

STRING SUMMARY		
STRING NAME	MODULES PER STRING	OPTIMIZERS PER STRING
1-1(34)	34	17
1-2(34)	34	17
1-3(34)	34	17
1-4(34)	34	17
1-5(34)	34	17
1-6(34)	34	17
1-7(34)	34	17
1-8(34)	34	17
1-9(34)	34	17
2-1(34)	34	17
2-2(34)	34	17
2-3(34)	34	17
2-4(34)	34	17
2-5(34)	34	17
2-6(34)	34	17
2-7(34)	34	17
2-8(34)	34	17
2-9(34)	34	17
3-1(34)	34	17
3-2(34)	34	17
3-3(33)	33	17
3-4(34)	34	17
3-5(32)	32	16
3-6(32)	32	16
3-7(34)	34	17
3-8(32)	32	16
3-9(34)	34	17
4-1(32)	32	16
4-2(32)	32	16
4-3(32)	32	16
4-4(34)	33	17
4-5(34)	34	17
4-6(34)	34	17
4-7(34)	34	17
4-8(32)	32	16
4-9(32)	32	16
5-1(34)	34	17
5-2(34)	34	17
5-3(32)	32	16
5-4(33)	33	17
5-5(32)	32	16
5-6(32)	32	16
5-7(32)	32	16
5-8(32)	32	16
5-9(34)	34	17
6-1(34)	34	17
6-2(34)	34	17
6-3(34)	34	17

CONDUIT FILL TABLE (PVWIRE, 2000VDC MAX)		
MAXIMUM NUMBER OF CU #10 PV WIRES. (WITH ALLOWANCE FOR AN ADDITIONAL GROUND WIRE)		
CONDUIT TRADE SIZE	CONDUIT LENGTH 24" OR LESS (60% FILL)	CONDUIT LENGTH OVER 24" (40% FILL)
3/4"	4	2
1"	7	5
1.25"	13	9
1.5"	19	9
2"	32	9
2.5"	46	9
3"	72	9
3.5"	97	9
4"	126	9
TABLE ASSUMING: CONDUIT AND CU #10 PV WIRE WITH 0.26in O.D., 0.91 TEMP. DERATE		
DC OPTIMIZER OUTPUT CIRCUIT WITH 18A OUTPUT, 1 IN PARALLEL, AND 25A FUSES		

NEC 690.12 RAPID SHUTDOWN NOTE:
THIS SYSTEM INCLUDES MODULE-LEVEL POWER ELECTRONICS WHICH SHUTDOWN DC VOLTAGE AT THE MODULE LEVEL WHEN AC POWER GOES OUT. TIMING AND VOLTAGE LEVELS ARE IN COMPLIANCE WITH NEC 690.12 RAPID SHUTDOWN.

SOLAREDGE OPTIMIZER NOTES:
1. WHEN USING 2:1 OPTIMIZERS, FOR STRINGS WITH AN ODD NUMBER OF MODULES ONE MODULE WILL BE CONNECTED TO A SINGLE OPTIMIZER. SEAL THE UNUSED OPTIMIZER INPUTS WITH SEALING CONNECTORS.
2. JUMPERS BETWEEN SUBARRAYS MUST BE BETWEEN OPTIMIZERS. CONNECTIONS FROM MODULE TO OPTIMIZER MUST BE WITHIN THE SAME SUBARRAY.



IMPORTANT
CONTRACTOR MUST:
1. REDLINE DRAWINGS TO REFLECT EXACT AS-BUILT STRINGING AND RETURN TO PURE POWER.
2. CREATE MAP OF SOLAREDGE POWER OPTIMIZER ADDRESSING AND RETURN TO SOLAREDGE.

LEGEND (MLPE):
● MLPE CONNECTED TO A SINGLE MODULE

1 DC ELECTRICAL PLAN
SCALE: 1" = 20'

STRING LABEL KEY
2-3(38)
MODULES/STRING
STRING #
INVERTER #

DATE	REVISION DESCRIPTION	PM	ENG	CHK
11/22/2023	ISSUE FOR BID	TL	SC	MD
09/25/2023	ISSUE FOR PERMIT REV1	TL	SC	MD
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EDF Renewables

PAGE SIZE 36" x 24"
PROJECT # 06941

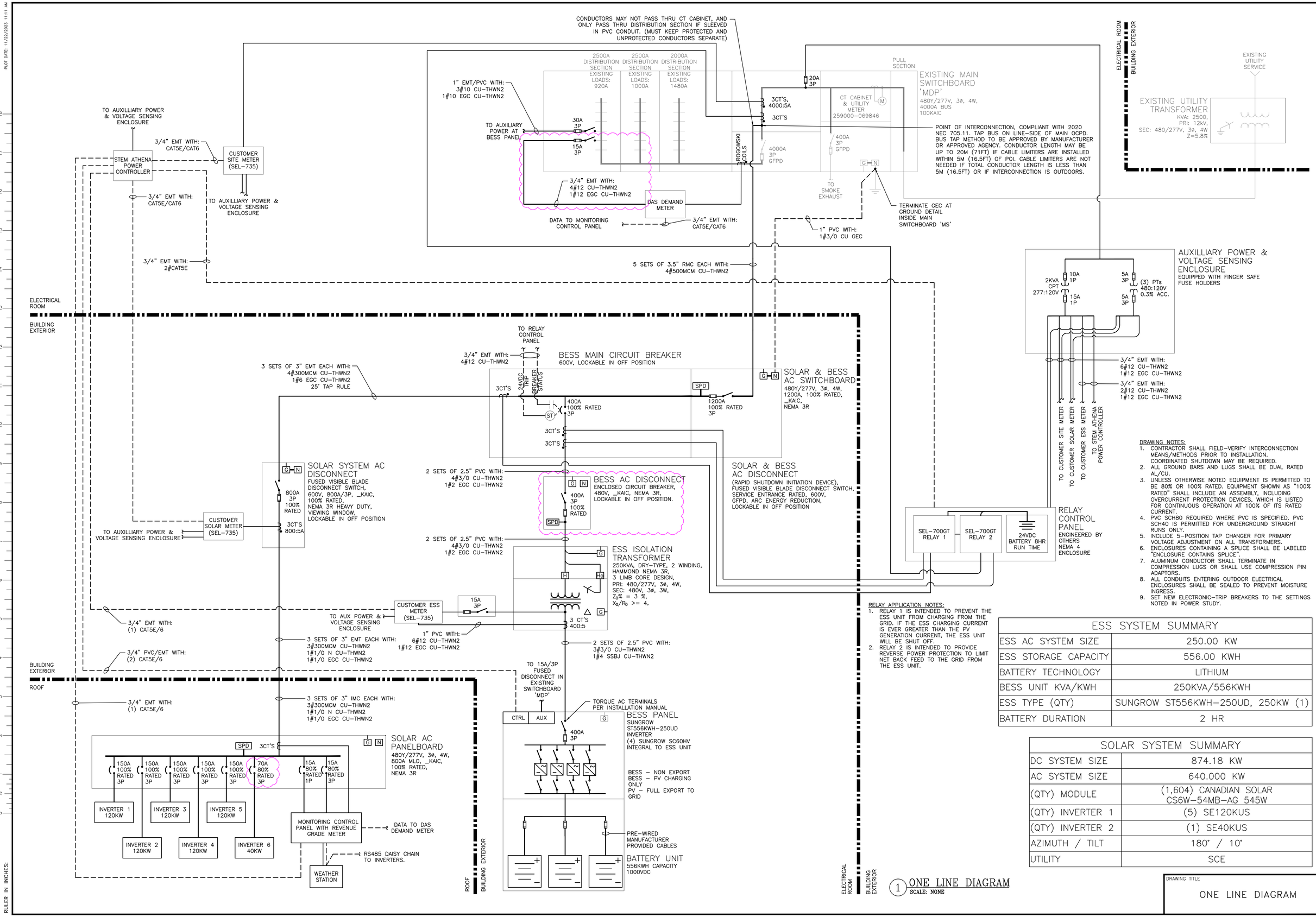
DC SYSTEM SIZE: 874.18 kWdc
AC SYSTEM SIZE: 840.00 kWac
MODULE TYPE: CS6W-545MB-AG
MODULE QUANTITY: 1,604
ORIENTATION: 10° TILT, 180° AZIMUTH

PROJECT
BESS + SOLAR SYSTEM AT
PROLOGIS – WAYFAIR 3500
3500 INDIAN AVE.
PERRIS, CA 92571

DRAWING TITLE
DC ELECTRICAL PLAN

DRAWING #
E200

PLOT DATE: 11/22/2023 11:11 AM
RULER IN INCHES:



RELAY APPLICATION NOTES:

1. RELAY 1 IS INTENDED TO PREVENT THE ESS UNIT FROM CHARGING FROM THE GRID. IF THE ESS CHARGING CURRENT IS EVER GREATER THAN THE PV GENERATION CURRENT, THE ESS UNIT WILL BE SHUT OFF.
2. RELAY 2 IS INTENDED TO PROVIDE REVERSE POWER PROTECTION TO LIMIT NET BACK FEED TO THE GRID FROM THE ESS UNIT.

DRAWING NOTES:

1. CONTRACTOR SHALL FIELD-VERIFY INTERCONNECTION MEANS/METHODS PRIOR TO INSTALLATION. COORDINATED SHUTDOWN MAY BE REQUIRED.
2. ALL GROUND BARS AND LUGS SHALL BE DUAL RATED AL/CU.
3. UNLESS OTHERWISE NOTED EQUIPMENT IS PERMITTED TO BE 80% OR 100% RATED. EQUIPMENT SHOWN AS "100% RATED" SHALL INCLUDE AN ASSEMBLY, INCLUDING OVERCURRENT PROTECTION DEVICES, WHICH IS LISTED FOR CONTINUOUS OPERATION AT 100% OF ITS RATED CURRENT.
4. PVC SCH80 REQUIRED WHERE PVC IS SPECIFIED. PVC SCH40 IS PERMITTED FOR UNDERGROUND STRAIGHT RUNS ONLY.
5. INCLUDE 5-POSITION TAP CHANGER FOR PRIMARY VOLTAGE ADJUSTMENT ON ALL TRANSFORMERS.
6. ENCLOSURES CONTAINING A SPLICE SHALL BE LABELED "ENCLOSURE CONTAINS SPLICE".
7. ALUMINUM CONDUCTOR SHALL TERMINATE IN COMPRESSION LUGS OR SHALL USE COMPRESSION PIN ADAPTORS.
8. ALL CONDUITS ENTERING OUTDOOR ELECTRICAL ENCLOSURES SHALL BE SEALED TO PREVENT MOISTURE INGRESS.
9. SET NEW ELECTRONIC-TRIP BREAKERS TO THE SETTINGS NOTED IN POWER STUDY.

ESS SYSTEM SUMMARY	
ESS AC SYSTEM SIZE	250.00 KW
ESS STORAGE CAPACITY	556.00 KWH
BATTERY TECHNOLOGY	LITHIUM
BESS UNIT KVA/KWH	250KVA/556KWH
ESS TYPE (QTY)	SUNGROW ST556KWH-250UD, 250KW (1)
BATTERY DURATION	2 HR

SOLAR SYSTEM SUMMARY	
DC SYSTEM SIZE	874.18 KW
AC SYSTEM SIZE	640.000 KW
(QTY) MODULE	(1,604) CANADIAN SOLAR CS6W-54MB-AG 545W
(QTY) INVERTER 1	(5) SE120KUS
(QTY) INVERTER 2	(1) SE40KUS
AZIMUTH / TILT	180° / 10°
UTILITY	SCE

1 ONE LINE DIAGRAM
SCALE: NONE

REVISION	DESCRIPTION	DATE	PM	ENG	CHK
1	ISSUE FOR BID	11/22/2023	TL	SC	MD
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DRAWING TITLE: ONE LINE DIAGRAM

DRAWING #: E300

PLOT DATE: 11/22/2023 11:11 AM

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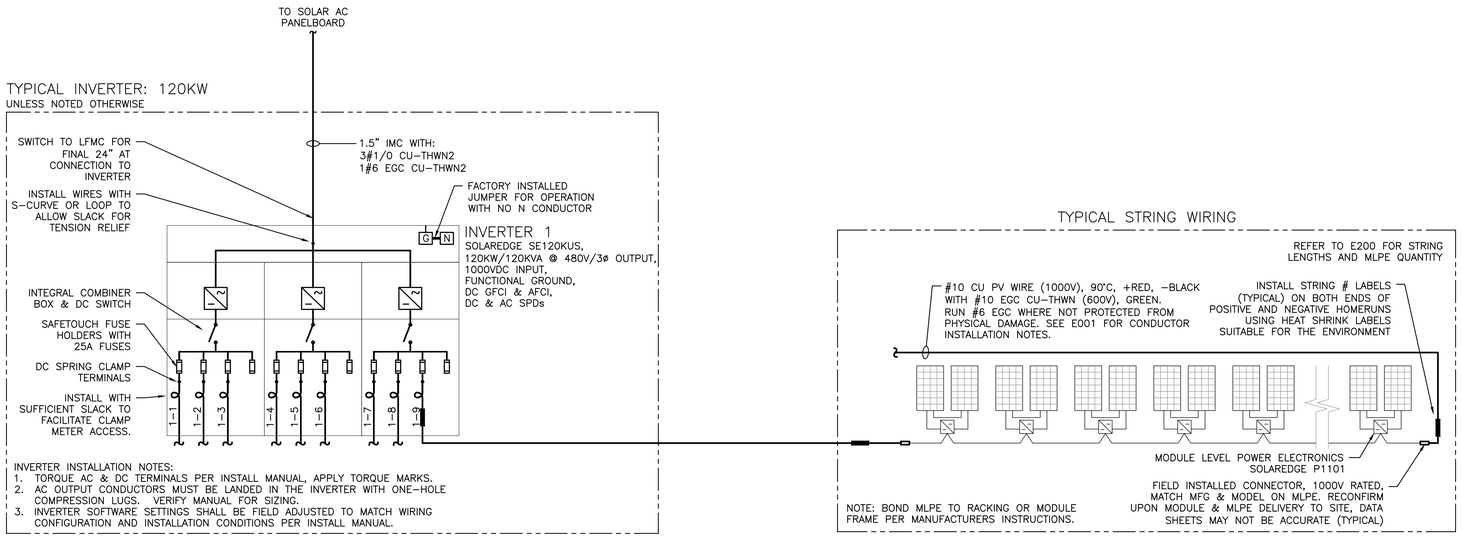

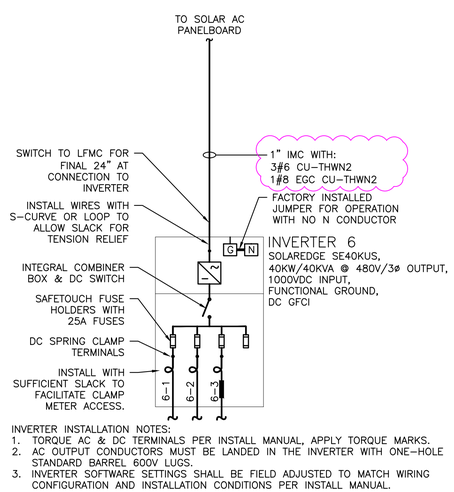

1 INVERTER DETAILS
SCALE: NONE

REVISION	DATE	DESCRIPTION	PM	ENG	CHK
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DRAWING TITLE: INVERTER DETAILS

DRAWING #: E301

PLOT DATE: 11/22/2023 11:11 AM

RULER IN INCHES:

AC CIRCUIT CALCULATIONS

EQUIPMENT SUPPLIED	FED FROM	VOLTAGE	FULL LOAD AMPS 'FLA'	FLA x 1.25	OCPD SIZE [A]	CONDUIT TYPE	CONDUIT SIZE	GROUND SIZE	CONDUCTORS PER PHASE	PHASE CONDUCTOR SIZE	NEUTRAL CONDUCTOR SIZE	75° AMPACITY	90° AMPACITY	90° AMPACITY WITH C.O.U.	C.O.U DERATE AMBIENT TEMP	C.O.U. DERATE CONDUIT FILL	FEEDER LENGTH (FEET)	SEGMENT VOLTAGE DROP AT FLA	TOTAL VOLTAGE DROP AT FLA
SOLAR & BESS AC SWITCHBOARD	POINT OF INTERCONNECTION	480	1086.8	N/A (100% RATED)	1200 (100% RATED)	RMC	3.5"	CU #3/0 GEC	5	CU 500MCM	CU 500MCM	1900	2150	1957	0.91	1.00	15	0.03%	0.03%
SOLAR SYSTEM AC DISCONNECT	SOLAR & BESS AC SWITCHBOARD	480	769.8	N/A (100% RATED)		EMT	3"	CU #6	3	CU 300MCM	CU 300MCM	855	960	874	0.91	1.00	15	0.06%	0.10%
SOLAR AC PANELBOARD	SOLAR SYSTEM AC DISCONNECT	480	769.8	N/A (100% RATED)	800 (100% RATED)	EMT/IMC	3"	CU #1/0	3	CU 300MCM	CU #1/0	855	960	874	0.91	1.00	65	0.27%	0.37%
INVERTER 1	SOLAR AC PANELBOARD	480	144.3	N/A (100% RATED)	150 (100% RATED)	IMC	1.5"	CU #6	1	CU #1/0	NONE	150	170	155	0.91	1.00	5	0.03%	0.40%
INVERTER 2	SOLAR AC PANELBOARD	480	144.3	N/A (100% RATED)	150 (100% RATED)	IMC	1.5"	CU #6	1	CU #1/0	NONE	150	170	155	0.91	1.00	10	0.06%	0.43%
INVERTER 3	SOLAR AC PANELBOARD	480	144.3	N/A (100% RATED)	150 (100% RATED)	IMC	1.5"	CU #6	1	CU #1/0	NONE	150	170	155	0.91	1.00	15	0.09%	0.46%
INVERTER 4	SOLAR AC PANELBOARD	480	144.3	N/A (100% RATED)	150 (100% RATED)	IMC	1.5"	CU #6	1	CU #1/0	NONE	150	170	155	0.91	1.00	20	0.12%	0.49%
INVERTER 5	SOLAR AC PANELBOARD	480	144.3	N/A (100% RATED)	150 (100% RATED)	IMC	1.5"	CU #6	1	CU #1/0	NONE	150	170	155	0.91	1.00	25	0.16%	0.52%
INVERTER 6	SOLAR AC PANELBOARD	480	48.3	60	70	IMC	1"	CU #8	1	CU #6	NONE	65	75	68	0.91	1.00	30	0.26%	0.62%
BESS AC DISCONNECT	SOLAR & BESS AC SWITCHBOARD	480	317.0	396	400	PVC	2.5"	CU #2	2	CU #3/0	CU #3/0	400	450	410	0.91	1.00	15	0.07%	0.10%
ESS ISOLATION TRANSFORMER	BESS AC DISCONNECT	480	317.0	396	400	PVC	2.5"	CU #2	2	CU #3/0	CU #3/0	400	450	410	0.91	1.00	5	0.02%	0.12%
ESS PANEL	ESS ISOLATION TRANSFORMER	480	317.0	396	400	PVC	2.5"	CU #4 SSBJ	2	CU #3/0	NONE	400	450	410	0.91	1.00	15	0.07%	0.19%

AVERAGE AC VOLTAGE DROP FROM POI TO INVERTERS: 0.84%

INVERTERS 1–6	
STRING WIRE GAUGE	10AWG–CU
DC IMPEDANCE [OHM/KFT]	1.2900
OPERATING VOLTAGE [VDC]	850
OPERATING CURRENT [AMP]	18.0

INVERTERS 1–6		
STRING NUMBER	TOTAL STRING DISTANCE [FT]	STRING VOLTAGE DROP
1–1	170	0.93%
1–2	205	1.12%
1–3	245	1.34%
1–4	290	1.58%
1–5	220	1.20%
1–6	225	1.23%
1–7	215	1.17%
1–8	150	0.82%
1–9	110	0.60%
2–1	95	0.52%
2–2	55	0.30%
2–3	35	0.19%
2–4	125	0.68%
2–5	80	0.44%
2–6	115	0.63%
2–7	35	0.19%
2–8	65	0.36%
2–9	155	0.85%
3–1	115	0.63%
3–2	70	0.38%
3–3	185	1.01%
3–4	230	1.26%
3–5	170	0.93%
3–6	230	1.26%
3–7	210	1.15%
3–8	295	1.61%
3–9	275	1.50%
4–1	395	2.16%
4–2	370	2.02%
4–3	295	1.61%
4–4	345	1.88%
4–5	335	1.83%
4–6	255	1.39%
4–7	305	1.67%
4–8	240	1.31%
4–9	230	1.26%
5–1	160	0.87%
5–2	145	0.79%
5–3	220	1.20%
5–4	240	1.31%
5–5	280	1.53%
5–6	220	1.20%
5–7	265	1.45%
5–8	315	1.72%
5–9	350	1.91%
6–1	375	2.05%
6–2	340	1.86%
6–3	395	2.16%
AVERAGE VOLTAGE DROP		1.19%

DC STRING WIRING CALCULATION – CONDUIT	
OPTIMIZER OUTPUT [A]	18.00
MAX CONTINUOUS FAULT CURRENT FROM PARALLEL SOURCES [AMPS]	18.00
1.25x MAX CONTINUOUS FAULT CURRENT [AMPS]	22.50
MAX # OF WIRES PER CONDUIT	9
DERATE FOR # OF CONDUCTORS IN A CONDUIT	0.7
MAX AMBIENT TEMPERATURE	37
TEMPERATURE DERATE	0.91
WIRE GAUGE	CU #10
75 DEG AMPACITY WITHOUT COU ADJUSTMENT [AMPS]	35
IS 75 DEG AMPACITY WITHOUT COU ADJUSTMENT >= 1.25x MAX CIRCUIT CURRENT?	YES. COMPLIES WITH 690.8(B)(1)
90DEG AMPACITY WITH COU ADJUSTMENT [AMPS]	25.48
IS 90DEG AMPACITY WITH COU ADJUSTMENT >= 1.0x MAX CIRCUIT CURRENT?	YES. COMPLIES WITH 690.8(B)(2)
DC OPTIMIZER OUTPUT CIRCUIT FUSE RATING [AMPS]	25
AVAILABLE FAULT CURRENT FROM ALL PARALLEL SOURCES [AMPS]	18
IS FUSE RATING >= 1.25x MAX CIRCUIT CURRENT?	YES. COMPLIES WITH 690.9(B)

MODULE SPECIFICATIONS		
MAKE/MODEL	CS6W–545MB–AG	CS6W–545MB–AG +20% BIFACIAL GAIN
POWER [W]	545	654
ISC [A]	13.95	16.74
IMP [A]	13.14	15.77
VOC [V]	49.40	49.40
VMP [V]	41.50	41.50
β VOC [%/degC]	–0.260%	–0.260%
SITE CLIMATE CRITERIA		
ASHRAE HIGH [°C]	37	
ASHRAE LOW [°C]	–2	
STRING SPECIFICATIONS AT STC		
MODULES/STRING	2	2
POWER [W]	1090	1308
STRING ISC [A]	13.95	16.74
STRING IMP [A]	13.14	15.77
STRING VMP [V]	83.00	83.00
STRING MAX VOLTAGE CALCULATION		
VOC TEMP ADJUSTMENT @ –2 °C	1.07	1.07
VOC @ –2 °C [V]	52.87	52.87
MAX STRING VOC [V]	105.7	105.7
STRING CALCULATIONS REFER TO THE PV SIDE OF DC OPTIMIZERS, NOT TO THE OPTIMIZER OUTPUT CIRCUIT		

DRAWING NOTES:
1. DISTANCES ARE ESTIMATES GENERATED FOR ENGINEER'S CALCULATIONS, CONTRACTOR IS RESPONSIBLE FOR OWN MEASUREMENTS AND TAKEOFFS.

DRAWING TITLE: SCHEDULES & CALCULATIONS

DRAWING # E310

DATE	REVISION DESCRIPTION	PM	ENG	CHK
11/22/2023	ISSUE FOR BID	TL	SC	MO
09/25/2023	ISSUE FOR PERMIT REV1	TL	SC	MO
09/12/2023	ISSUE FOR PERMIT	TL	SC	MO
08/02/2023	PRELIM. CONCEPTUAL DESIGN	TL	SC	MO

PUREPOWER ENGINEERING
111 RIVER STREET, HOBOKEN, NJ
PHONE: (201) 793-0024
RICHARD A. IVINS
CA LICENSE No. 20357

POWERFLEX
805 THIRD AVENUE 20TH FLOOR
NEW YORK, NY 10022
WWW.POWERFLEX.COM

DEVELOPER: powerflex EDF Renewables

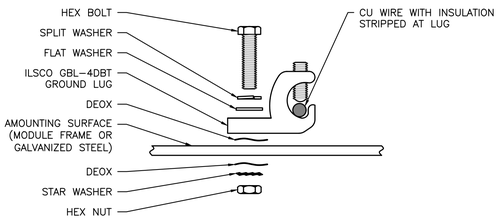
PAGE SIZE: 36" x 24"
PROJECT #: 06941

DC SYSTEM SIZE: 874.18 kWDC
AC SYSTEM SIZE: 640.00 kWAC
MODULE TYPE: CS6W–545MB–AG
MODULE QUANTITY: 1,604
ORIENTATION: 10° TILT, 180° AZIMUTH

PROJECT: BESS + SOLAR SYSTEM AT PROLOGIS – WAYFAIR 3500
3500 INDIAN AVE.
PERRIS, CA 92571

PLOT DATE: 11/22/2023 11:11 AM

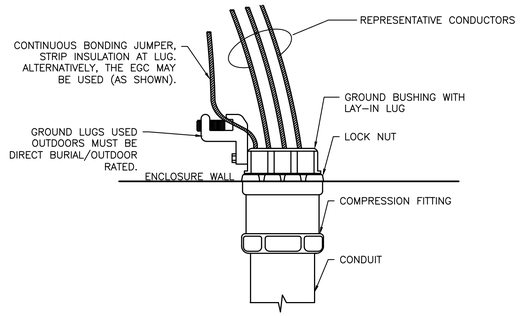
RULER IN INCHES:



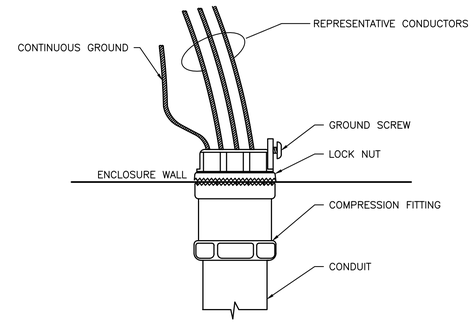
NOTES
1. ALL HARDWARE TO BE STAINLESS STEEL.
2. REFER TO ILSCO LUG MANUAL FOR ADDITIONAL REQUIREMENTS AND TORQUE VALUES

ILSCO

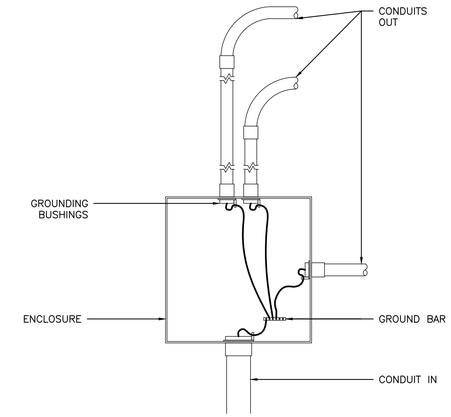
1 GROUND LUG
SCALE: NONE



2 CONDUIT BUSHING GROUNDING
SCALE: NONE

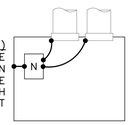


3 MYERS HUB GROUNDING
SCALE: NONE

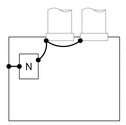


4 PULL BOX/TROUGH GROUNDING
SCALE: NONE

NEC 250.102(C)(1)
SSBJ IS SIZED PER TABLE 250.102(C)(1) BASED ON THE SIZE OF PHASE CONDUCTORS IN EACH INDIVIDUAL CONDUIT



INDIVIDUAL



COMBINED

NEC 250.102(C)(2)
SSBJ IS SIZED PER TABLE 250.102(C)(1) BASED ON THE COMBINED AREA OF PARALLEL PHASE CONDUCTORS

TABLE 250.102(C)(1)			
SIZE OF LARGEST UNGROUNDED CONDUCTOR OR EQUIVALENT AREA FOR PARALLEL CONDUCTORS (AWG/KCMIL)		SIZE OF GROUNDED CONDUCTOR OR BONDING JUMPER (AWG/KCMIL)	
COPPER	ALUMINUM OR COPPER-CLAD ALUMINUM	COPPER	ALUMINUM OR COPPER-CLAD ALUMINUM
2 OR SMALLER	1/0 OR SMALLER	8	6
1 OR 1/0	2/0 OR 3/0	6	4
2 OR 2/0	4/0 OR 250	4	2
OVER 3/0 THROUGH 350	OVER 250 THROUGH 500	2	1/0
OVER 350 THROUGH 600	OVER 500 THROUGH 900	1/0	3/0
OVER 600 THROUGH 1100	OVER 900 THROUGH 1750	2/0	4/0
OVER 1100	OVER 1750	REFER TO NOTES IN NEC TABLE 250.102(C)(1)	

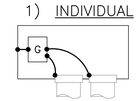
5 SUPPLY SIDE BONDING JUMPERS (SSBJ)
SCALE: NONE

A) FOR CONCENTRIC KNOCKOUTS, USE BONDING JUMPERS AS FOLLOWS:

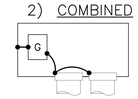
TABLE 250.122		
OVERCURRENT DEVICE CIRCUIT NOT EXCEEDING (AMPERES)	SIZE (AWG OR KCMIL)	
	COPPER	ALUMINUM
15	14	12
20	12	10
60	10	8
100	8	6
200	6	4
300	4	2
400	3	1
500	2	1/0
600	1	2/0
800	1/0	3/0
1000	2/0	4/0
1200	3/0	250
1600	4/0	350
2000	250	400
2500	350	600
3000	400	600
4000	500	750

FOR PARALLEL FEEDERS – NEC 250.102(D)
EQUIPMENT BONDING JUMPER IS SIZED PER TABLE 250.122, REGARDLESS IF COMBINED OR INDIVIDUAL BONDING JUMPERS ARE USED

1) INDIVIDUAL



2) COMBINED

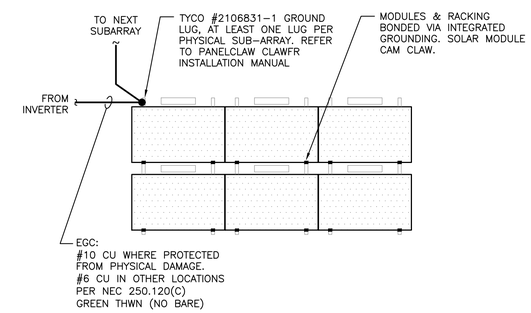


B) FOR NON-CONCENTRIC KNOCKOUTS, FOLLOW PROLOGIS SPECIFICATIONS

PER PROLOGIS SPEC – DUAL-RATED, LAY IN STYLE GROUND LUGS AND GROUND BUSHINGS OR CONDUIT GROUND CLAMPS SHALL BE PROVIDED FOR ALL METALLIC CONDUITS.

6 LOAD SIDE EQUIPMENT BONDING JUMPER
SCALE: NONE

NOTES:
1. EACH SUBARRAY CONNECTED TO AN INVERTER SHALL HAVE AN EGC RUN TO THAT INVERTER
2. PV MODULES AND RAILS GROUNDED PER NEC 690.43



PANELCLAW FR

7 ARRAY GROUNDING
SCALE: NONE

DATE	REVISION DESCRIPTION	PM	ENG	CHK
11/22/2023	ISSUE FOR BID	TL	SC	MD
09/25/2023	ISSUE FOR PERMIT REV1	TL	SC	MD
09/12/2023	ISSUE FOR PERMIT	TL	SC	MD
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DEVELOPER
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PAGE SIZE 36" x 24"
PROJECT # 06941

DC SYSTEM SIZE: 874.18 kWDC
AC SYSTEM SIZE: 640.00 kWAC
MODULE TYPE: CS6W-545MB-AG
MODULE QUANTITY: 1,604
ORIENTATION: 10° TILT, 180° AZIMUTH

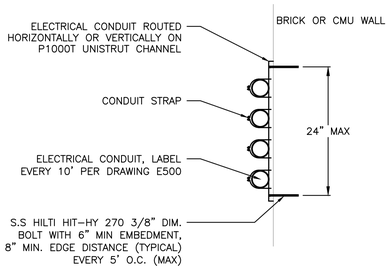
PROJECT
BESS + SOLAR SYSTEM AT
PROLOGIS – WAYFAIR 3500
3500 INDIAN AVE.
PERRIS, CA 92571

DRAWING TITLE
GROUNDING DETAILS

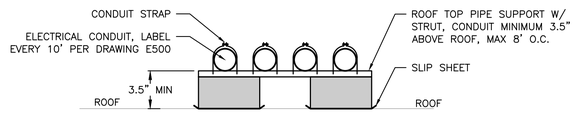
DRAWING #
E410

PLOT DATE: 11/22/2023 11:11 AM

RULER IN INCHES:

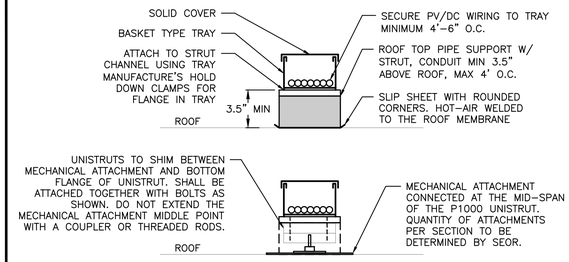


1 CONDUIT WALL ANCHORING
SCALE: NONE



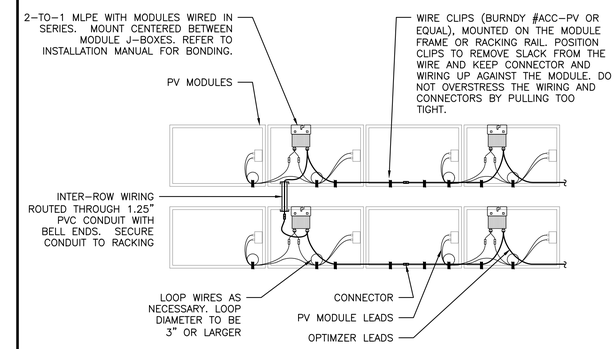
FLAT ROOF

2 ROOF CONDUIT SUPPORT
SCALE: NONE



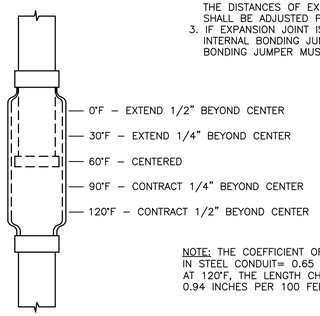
BASKET TRAY (STRING WIRING ONLY)

3 CABLE TRAY FOR PV HOMERUNS
SCALE: NONE



4 STRING WIRING
SCALE: NONE

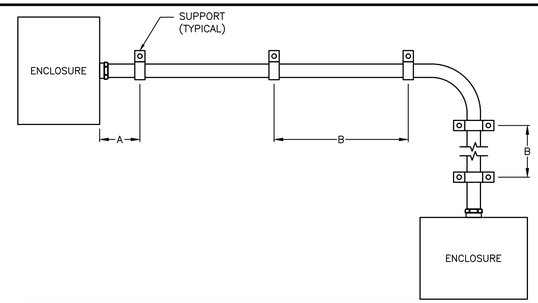
NOTES:
1. INSTALL EXPANSION COUPLING EVERY 100' OF STRAIGHT CONDUIT RUN.
2. IF EXPANSION COUPLINGS ARE INSTALLED AT LENGTHS GREATER OR LESS THAN 100', THE DISTANCES OF EXPANSION/CONTRACTION SHALL BE ADJUSTED PROPORTIONALLY.
3. IF EXPANSION JOINT IS NOT PROVIDED WITH INTERNAL BONDING JUMPER, AN EXTERNAL BONDING JUMPER MUST BE INSTALLED.



NOTE: THE COEFFICIENT OF THERMAL EXPANSION IN STEEL CONDUIT= 0.65 X 10^{-5}IN./IN./°F AT 120°F, THE LENGTH CHANGE IS 0.94 INCHES PER 100 FEET OF CONDUIT RUN.

EMT/RMC/IMC

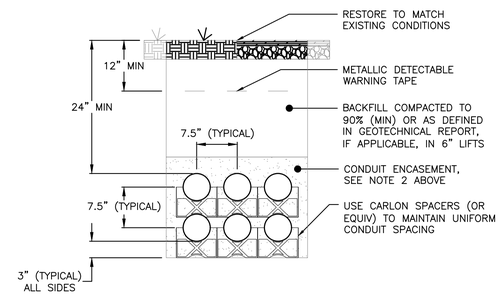
5 EXPANSION COUPLING
SCALE: NONE



MAXIMUM CONDUIT HARDWARE SPACING			
CONDUIT TYPE	ENCLOSURE TO SUPPORT (A)	SUPPORT TO SUPPORT (B)	NEC ARTICLE
ELECTRICAL METALLIC TUBING (EMT)	3'	10'	358
INTERMEDIATE METAL CONDUIT (IMC)	3'	10'	342
RIGID METAL CONDUIT (RMC)	3'	10'	344
LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)	1'	4.5'	350
PVC (SCH40 & 80) [0.5" - 1"]	3'	3'	352
PVC (SCH40 & 80) [1.25" - 2"]	3'	5'	352
PVC (SCH40 & 80) [2.5" - 3"]	3'	6'	352
PVC (SCH40 & 80) [3.5" - 5"]	3'	7'	352
PVC (SCH40 & 80) [6"]	3'	8'	352

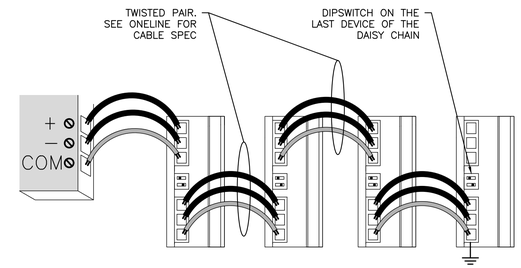
6 CONDUIT SUPPORT SPACING
SCALE: NONE

NOTES:
1. ALL UNDERGROUND CONDUIT SHALL BE PVC AND TRANSITION TO RMC FOR ELBOW. RMC ELBOW DOES NOT NEED TO BE BONDED IF THE ENTIRE ELBOW IS >= 18" DEEP (NEC 250.86 EXCEPTION 3)
2. UNDER ROADS AND PARKING AREAS ENCASEMENT SHALL BE 2500 PSI CONCRETE. UNDER GRASSY AREAS NOT SUBJECT TO VEHICULAR TRAFFIC ENCASEMENT SHALL BE EITHER SAND, NATIVE BACKFILL CONTAINING NO ROCKS LARGER THAN 3/4" AND FREE FROM SHARP ANGULAR SUBSTANCES, OR SOIL ON SITE AS CONFIRMED ACCEPTABLE BY SITE SUPERVISOR.
3. CALL BEFORE YOU DIG, DIAL 811 TO BE CONNECTED TO THE LOCAL ON-CALL CENTER. YOU MUST CALL AT LEAST 48 HOURS BEFORE EXCAVATING.
4. IF DUCTBANK SLOPES SUCH THAT ANY PART OF THE DUCTBANK IS ABOVE STUB UP ELEVATION, INCLUDE HAND HOLE WITH GRAVEL BASE TO ALLOW DRAINAGE AT LOWEST ELEVATION.
5. DUCTBANK SIZE SHOWN IS THE MAXIMUM ALLOWABLE SIZE WITHOUT THERMAL ANALYSIS.



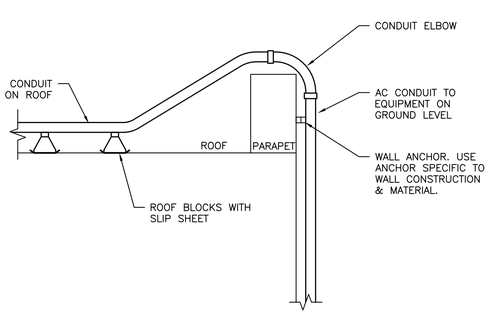
7 TYPICAL AC DUCTBANK
SCALE: NONE

MONITORING NOTES:
1. REFER TO MONITORING SYSTEM INSTALLATION MANUAL FOR DETAILS ON TERMINAL BLOCKS, CABLE TERMINATIONS, AND SYSTEM CONFIGURATION.
2. WIRELESS TRANSCEIVERS MUST HAVE LINE-OF-SIGHT BETWEEN EACH OTHER.
3. PYRANOMETER MUST BE INSTALLED IN UNSHADED LOCATION.



8 MODBUS COMMUNICATIONS
SCALE: NONE

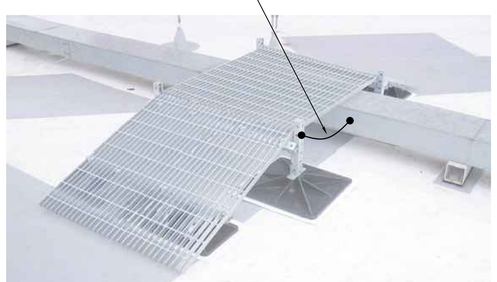
NOTES:
1. DO NOT USE CONDUIT BODIES ON ROOF EDGE FOR POWER CONDUITS.
2. CONDUCTORS IN A VERTICAL RACEWAY SHALL BE SUPPORTED IN COMPLIANCE WITH NEC TABLE 300.19(A). USE OZ GEDNEY WEDGES OR EQUIV.



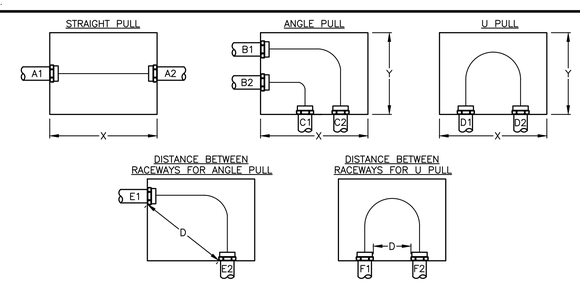
9 ROOF EDGE CONDUIT RISER WITHOUT PARAPET
SCALE: NONE

NOTES:
1. HOT DIP GALVANIZED STEEL RAMP BY PHP SYSTEMS OR APPROVED EQUAL.
2. PROVIDE SLIPSHEETS COMPATIBLE WITH ROOFING MATERIAL AT ALL BASES.
3. ENSURE 1" MIN CLEARANCE BETWEEN RAMP AND CONDUITS OR TRAY

BOND RAMP TO CABLETRAY OR CONDUIT WITH #6CU USING LAY-IN LUGS AT BOTH ENDS



10 CROSSOVER RAMP
SCALE: NONE



NEC 314.28(A)(1)-(3) PULL BOX SIZING (UP TO 1000V)			
BOX TYPE	LENGTH (X)	HEIGHT (Y)	DISTANCE (D)
STRAIGHT PULL	8 X LARGEST OF A1 & A2	AS NEEDED	N/A
ANGLE PULL	6 X (LARGEST OF B1 & B2) + SUM OF OTHER CONDUIT ENTERING THE SAME WALL	6 X (LARGEST OF C1 & C2) + SUM OF OTHER CONDUIT ENTERING THE SAME WALL	6 X LARGEST OF E1 & E2
U PULL	AS NEEDED	6 X (LARGEST OF D1 & D2) + SUM OF OTHER CONDUIT ENTERING THE SAME WALL	6 X LARGEST OF F1 & F2

NOTES:
1. REFER TO NEC 314.28 FOR ADDITIONAL REQUIREMENTS.
2. ENSURE CONDUCTOR BEND RADIUS MINIMUMS ARE MET. REFER TO NEC 312.6 FOR ADDITIONAL REQUIREMENTS.

11 PULL BOX & JUNCTION BOX SIZING
SCALE: NONE

DATE	REVISION DESCRIPTION	PM	ENG	CHK
11/22/2023	ISSUE FOR BID	TL	SC	MD
09/25/2023	ISSUE FOR PERMIT REV1	TL	SC	MD
09/12/2023	ISSUE FOR PERMIT	TL	SC	MD
08/02/2023	PRELIM. CONCEPTUAL DESIGN	TL	SC	MD

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111 RIVER STREET, HOBOKEN, NJ 07030 | (646) 797-9625
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DEVELOPER: powerflex EDF Renewables

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805 THIRD AVENUE 20TH FLOOR
NEW YORK, NY 10022
WWW.POWERFLEX.COM

PAGE SIZE: 36" x 24"
PROJECT #: 06941

DC SYSTEM SIZE: 874.18 kWDC
AC SYSTEM SIZE: 640.00 kWAC
MODULE TYPE: CS6W-545MB-AG
MODULE QUANTITY: 1,604
ORIENTATION: 10° TILT, 180° AZIMUTH

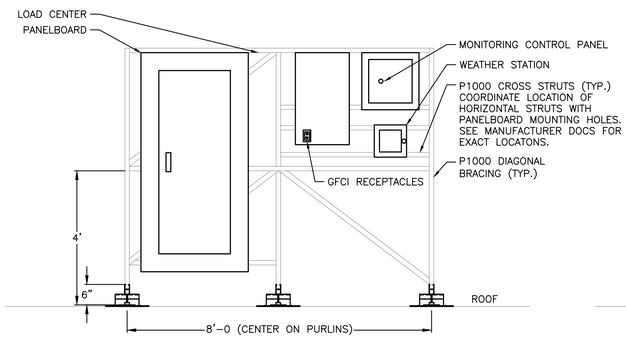
PROJECT
BESS + SOLAR SYSTEM AT
PROLOGIS – WAYFAIR 3500
3500 INDIAN AVE.
PERRIS, CA 92571

DRAWING TITLE
ELECTRICAL DETAILS

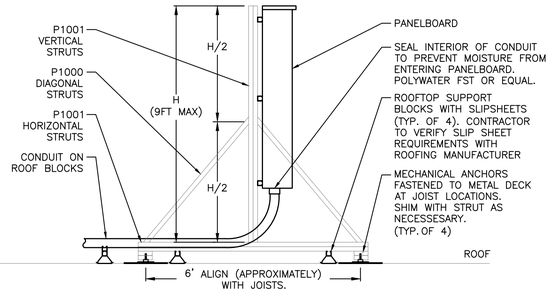
DRAWING #
E420

PLOT DATE: 11/22/2023 11:11 AM

RULER IN INCHES:

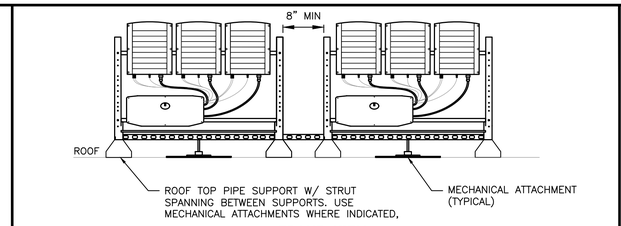


FRONT VIEW

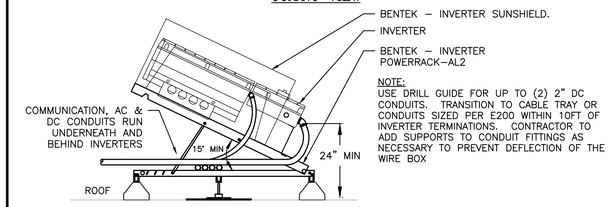


SIDE VIEW

1 RACK-MOUNTED PANELBOARD
SCALE: NONE



FRONT VIEW

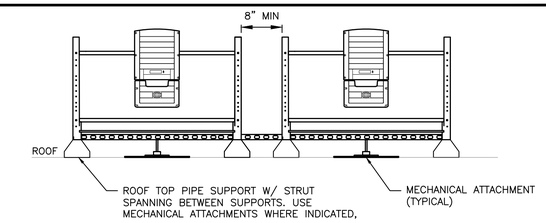


NOTE:
USE DRILL GUIDE FOR UP TO (2) 2" DC CONDUITS. TRANSITION TO CABLE TRAY OR CONDUITS SIZED PER E200 WITHIN 10FT OF INVERTER TERMINATIONS. CONTRACTOR TO ADD SUPPORTS TO CONDUIT FITTINGS AS NECESSARY TO PREVENT DEFLECTION OF THE WIRE BOX

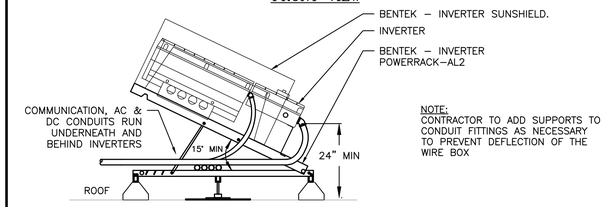
SIDE VIEW

SOLAREDGE

2 TYPICAL INVERTER RACK – FLAT ROOF
SCALE: NONE



FRONT VIEW

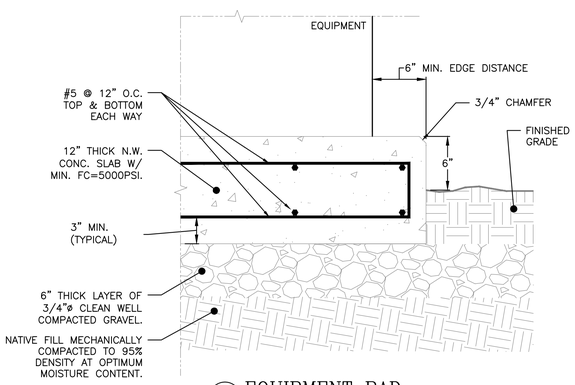


NOTE:
CONTRACTOR TO ADD SUPPORTS TO CONDUIT FITTINGS AS NECESSARY TO PREVENT DEFLECTION OF THE WIRE BOX

SIDE VIEW

SOLAREDGE

3 TYPICAL INVERTER RACK – FLAT ROOF
SCALE: NONE



4 EQUIPMENT PAD
SCALE: 1-1/2" = 1'-0"

REVISION DESCRIPTION	DATE	PM	ENG	CHK
ISSUE FOR PERMIT REV2	11/13/2023	TL	SC	MD
ISSUE FOR PERMIT REV1	09/25/2023	TL	SC	MD
ISSUE FOR PERMIT	09/12/2023	TL	SC	MD
PRELIM. CONCEPTUAL DESIGN	08/02/2023	TL	SC	MD

PUREPOWER ENGINEERING
111 RIVER STREET, HOBOKEN, NJ
WWW.PUREPOWER.COM
RICHARD A. IVINS
CA LICENSE No. 20357

DEVELOPER
powerflex
POWERFLEX
805 THIRD AVENUE 20TH FLOOR
NEW YORK, NY 10022
WWW.POWERFLEX.COM

PAGE SIZE 36" x 24"
PROJECT # 06941

DC SYSTEM SIZE: 874.18 kWDC
AC SYSTEM SIZE: 640.00 kWAC
MODULE TYPE: CS6W-545MB-AG
MODULE QUANTITY: 1,604
ORIENTATION: 10° TILT, 180° AZIMUTH

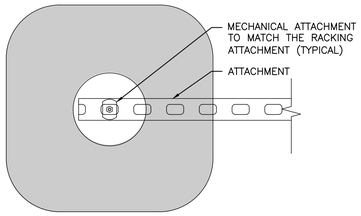
PROJECT
BESS + SOLAR SYSTEM AT
PROLOGIS – WAYFAIR 3500
3500 INDIAN AVE.
PERRIS, CA 92571

DRAWING TITLE
ELECTRICAL DETAILS

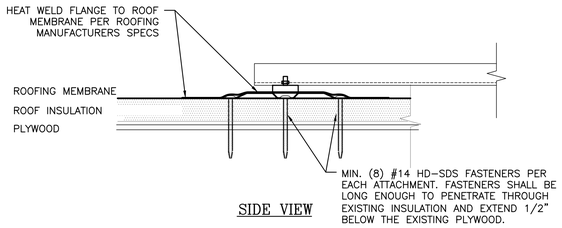
DRAWING #
E421

PLOT DATE: 11/13/2023 3:48 PM

RULER IN INCHES:



FRONT VIEW



SIDE VIEW

1 ROOF ANCHOR ATTACHMENT
SCALE: NONE

DATE	REVISION DESCRIPTION	PM	ENG	CHK
11/22/2023	ISSUE FOR BID	TL	SC	MD
09/25/2023	ISSUE FOR PERMIT REV1	TL	SC	MD
09/12/2023	ISSUE FOR PERMIT	TL	SC	MD
08/02/2023	PRELIM. CONCEPTUAL DESIGN	TL	SC	MD

PUREPOWER ENGINEERING
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EDF Renewables
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PAGE SIZE 36" x 24"
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PROJECT
BESS + SOLAR SYSTEM AT
PROLOGIS – WAYFAIR 3500
3500 INDIAN AVE.
PERRIS, CA 92571

DRAWING TITLE
STRUCTURAL DETAILS

DRAWING #
E430

PLOT DATE: 11/22/2023 12:12 PM

RULER IN INCHES:

GENERAL NOTES FOR LABELS:
1. LETTERING ON SIGNS SHALL BE CAPITAL LETTERS, MINIMUM SIZE OF 3/16" HIGH FOR GENERAL TEXT. HEADINGS SHALL BE MINIMUM 1/2" HIGH. LETTERING SHALL BE REFLECTIVE RED ON WHITE BACKGROUND OR VICE VERSA.
2. CLEARLY LABEL ALL CIRCUIT BREAKERS IN THE PANELBOARD. THE LABEL SHALL INDICATE THE NAME OF THE DEVICE IT SERVES.
3. ALL LABELS SHALL BE ENGRAVED MELAMINE

LABEL FORMAT NOTES:
1. FORMAT 1: ENGRAVED MELAMINE, WHITE TEXT ON RED BACKGROUND. TEXT HEIGHT: TITLES 3/8", ALL OTHER TEXT 5/32".
2. FORMAT 2: ENGRAVED MELAMINE, BLACK TEXT ON WHITE BACKGROUND. TEXT HEIGHT: TITLES 3/8", ALL OTHER TEXT 5/32".
3. FORMAT 3: REFLECTIVE UV RATED LABEL. RED BACKGROUND WITH WHITE CAPITAL LETTERS AT LEAST 3/8" TALL. LABELS SHALL BE SUITABLE FOR THE ENVIRONMENT IN WHICH THEY ARE INSTALLED.
4. FORMAT 4: ENGRAVED MELAMINE, WHITE TEXT ON RED BACKGROUND. TEXT HEIGHT: TITLES 5/32", ALL OTHER TEXT 3/32".
5. FORMAT 5: VINYL FILM, BLACK TEXT ON WHITE BACKGROUND. TEXT HEIGHT: 3/8"

PER 2020 NEC 690.31(B)(1), PV SYSTEM CIRCUIT CONDUCTORS SHALL BE IDENTIFIED AT ALL ACCESSIBLE POINTS OF TERMINATION, CONNECTION, AND SPLICES.

1. STRING HOMERUNS AT ARRAY
2. DC INPUT TERMINALS OF COMBINER BOX
3. DC OUTPUT TERMINALS OF COMBINER BOX
4. DC INPUT TERMINALS OF INVERTER
5. AC OUTPUT TERMINALS OF INVERTER
6. AC INPUT & OUTPUT TERMINALS OF EACH SUCCESSIVE DEVICE (WHERE APPLICABLE)

CIRCUIT BREAKER AND SWITCH LABELS:
UNLESS LABELLED OTHERWISE, ALL CIRCUIT BREAKERS AND SWITCHES SHALL BE LABELLED WITH THE NAME OF THE EQUIPMENT SUPPLIED.

INVERTER 1
TYPICAL FOR INVERTER BRANCH CIRCUIT BREAKERS. FORMAT 5

ESS MAIN DISCONNECT
TYPICAL FOR PANELBOARD MAIN CIRCUIT BREAKERS. FORMAT 5

4"
WARNING
ARC FLASH AND SHOCK HAZARD
Appropriate PPE and Tools Required when working on this equipment.
2"
OUTDOOR RATED STICKER MOUNTED ON ALL EQUIPMENT

6 1/2" × 1"
WARNING: PHOTOVOLTAIC POWER SOURCE
NEC 690.31(G)(3)(4), NFPA11.12.2.1.3.2, HELLERMANNTYTON #: 596-00206 OR EQUAL, FORMAT 3. SHALL BE PERMANENTLY AFFIXED ON ALL DC EXPOSED RACEWAYS, CABLE TRAYS, PULL BOXES, AND JUNCTION BOXES. LABELS SHALL BE SPACED NO GREATER THAN 10 FEET APART.

(2) 6 1/2" × 1"
RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM
NEC 2020 690.56(C)(3), HELLERMANNTYTON#: 596-00890 OR EQUAL, FORMAT 3. INSTALL ON RAPID SHUTDOWN INITIATION DEVICE.

(3) 6" × 6"
PV RAPID SHUTDOWN
PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN
TO START RAPID SHUTDOWN, TURN SWITCH TO OFF POSITION.
WHEN RAPID SHUTDOWN IS INITIATED, EMERGENCY RESPONDERS MAY MOVE AROUND THE ROOF UNDERSTANDING PV SYSTEM CONDUCTORS:
1. LESS THAN 1'-0" FROM AN ARRAY MAY BE ENERGIZED – DO NOT TOUCH!
2. MORE THAN 1'-0" FROM AN ARRAY ARE NOT ENERGIZED AND ARE SAFE TO CONTACT (IF NECESSARY)
NEC SUPPLEMENT, FORMAT 1

(4) 6" × 4"
SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN
TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUTDOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN ARRAY
ARRAYS MAY BE ENERGIZED
NEC 2020 690.56(C)(1)(a), HELLERMANNTYTON #: 596-00885 OR EQUAL, INSTALL ON OR WITHIN 3' OF RAPID SHUTDOWN INITIATION DEVICE AND SERVICE DISCONNECTING MEANS. FOR USE ON PV SYSTEMS THAT SHUTDOWN THE ARRAY AND CONDUCTORS LEAVING ARRAY. TITLE TEXT SHALL BE 3/8" BLACK TEXT ON YELLOW BACKGROUND. ALL OTHER TEXT SHALL BE 3/16" BLACK TEXT ON WHITE BACKGROUND.

(7) 6" × 3"
BESS MAIN CIRCUIT BREAKER
WARNING: PHOTOVOLTAIC POWER SOURCE.
OPERATING CURRENT: 317A
NOMINAL VOLTAGE: 480V
NEC 690.54, NFPA 11.12.2.1.1, FORMAT 1

(8) 6" × 3"
SOLAR & BESS AC DISCONNECT
WARNING: PHOTOVOLTAIC POWER SOURCE.
OPERATING CURRENT: 1087A
NOMINAL VOLTAGE: 480V
NEC 690.54, NFPA 11.12.2.1.1, FORMAT 1

6" × 2 3/4"
INVERTER X DC DISCONNECT
MAXIMUM VOLTAGE: 1000V
NEC 2020 690.53, NFPA 11.12.2.1.1 FORMAT 1

(14) 6" × 3"
BESS AC DISCONNECT
WARNING: PHOTOVOLTAIC POWER SOURCE.
OPERATING CURRENT: 317A
NOMINAL VOLTAGE: 480V
NEC 690.54, NFPA 11.12.2.1.1, FORMAT 1

(15) 6" × 3"
SOLAR SYSTEM AC DISCONNECT
WARNING: PHOTOVOLTAIC POWER SOURCE.
OPERATING CURRENT: 770A
NOMINAL VOLTAGE: 480V
NEC 690.54, NFPA 11.12.2.1.1, FORMAT 1

(9) 5" × 3 1/4"
SOLAR AC PANELBOARD
WARNING: SUPPLIED BY UTILITY & PV SOURCES.
OPERATING CURRENT: 770A
OPERATING VOLTAGE: 480V
DO NOT CONNECT NON-SOLAR LOADS TO THIS PANEL
FORMAT 1

(10) **ISOLATION TRANSFORMER**
PRIMARY & SECONDARY DISCONNECTING MEANS LOCATION:
PRIMARY: ESS MAIN BREAKER LOCATED ON WALL OF BUILDING NEAR BESS SYSTEM
SECONDARY: INTERNAL BESS DISCONNECT SWITCH LOCATED ADJACENT TO TRANSFORMER

(5) 6" × 3/4"
WEATHER STATION
FORMAT 2

(6) 6" × 3/4"
SOLAR MONITORING
FORMAT 2

(13) 6" × 3/4"
ATHENA POWER CONTROLLER
FORMAT 2

14" × 10"
DANGER
HIGH VOLTAGE KEEP OUT
NOTE: INSTALL SIGNAGE EVERY 75' OF FENCELINE
SCALE 1:4

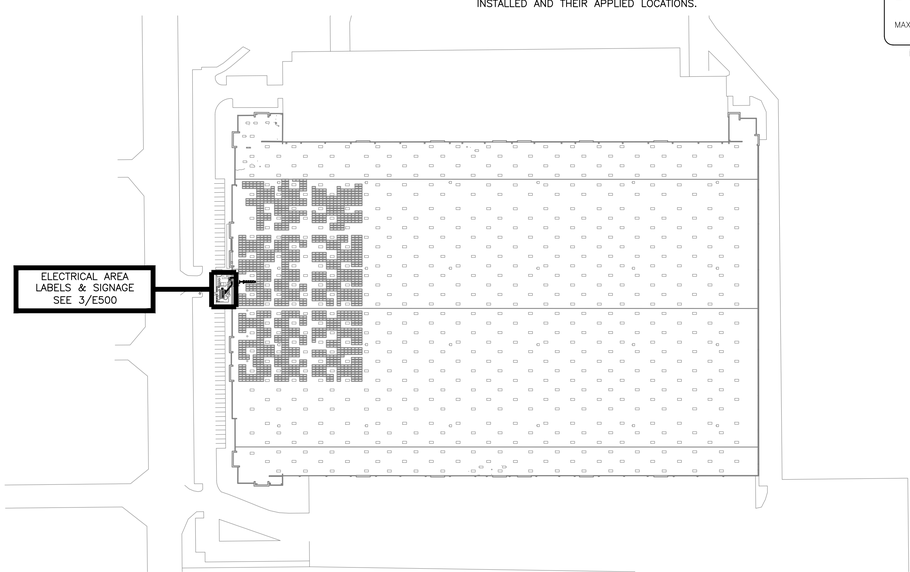
DANGER
Arc Flash and Shock Risk
Appropriate PPE Required

XXX in	Arc Flash Boundary	Protective Device Settings	
XXXX cal/cm^2	Incident Energy at XX in	XXXXXXXXXXXXXX	
PPE	Refer to NFPA 70E	Make:	XXXXXXXXXXXXXXXXXX
X.XX kA	Arc Fault Current	Mdl:	XXXXXXX
X.XX kA	Available Fault Current	INST:	XXXXXXX
XXX VAC	Nominal System Voltage	LTD:	XXXXXXX
XX in	Limited Approach	LTPU:	XXXXXXX
XX in	Restricted Approach	STD:	XXXXXXX
Company:	Pure Power Engineering	STPU:	XXXXXXX
Equipment:	XXXXXXXXXXXXXXXXXXXX	Date Ex. Info:	

ARC FLASH LABEL NOTES:
1. THE ARC FLASH LABEL ON THIS DRAWING IS FOR REFERENCE ONLY. REFER TO POWER STUDY FOR ARC FLASH LABELS TO BE INSTALLED AND THEIR APPLIED LOCATIONS.

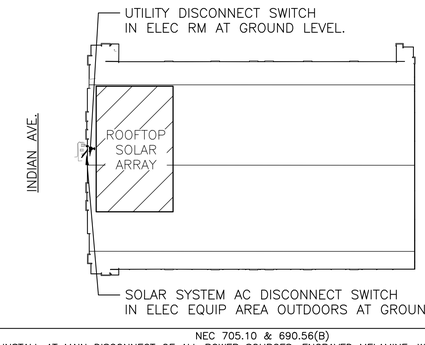
(11) 9" × 2 3/4"
BATTERY ENERGY STORAGE SYSTEM
SUNGROW ST556KWH-250
ENERGIZED ELECTRICAL CIRCUITS
CFC 1207.4.8, FORMAT 4

TYPICAL FOR INVERTER(S):
(12) 8" × 3 1/4"
BESS INVERTER
DC DISCONNECT — MAXIMUM VOLTAGE: 1046 V
AC DISCONNECT — MAXIMUM AC OPERATING CURRENT: 317A; NOMINAL AC OPERATING VOLTAGE: 480V
NEC 2020 690.53, 690.54, NFPA 11.12.2.1.1 FORMAT 1



1 LABELS & SIGNAGE
SCALE: 1" = 150'

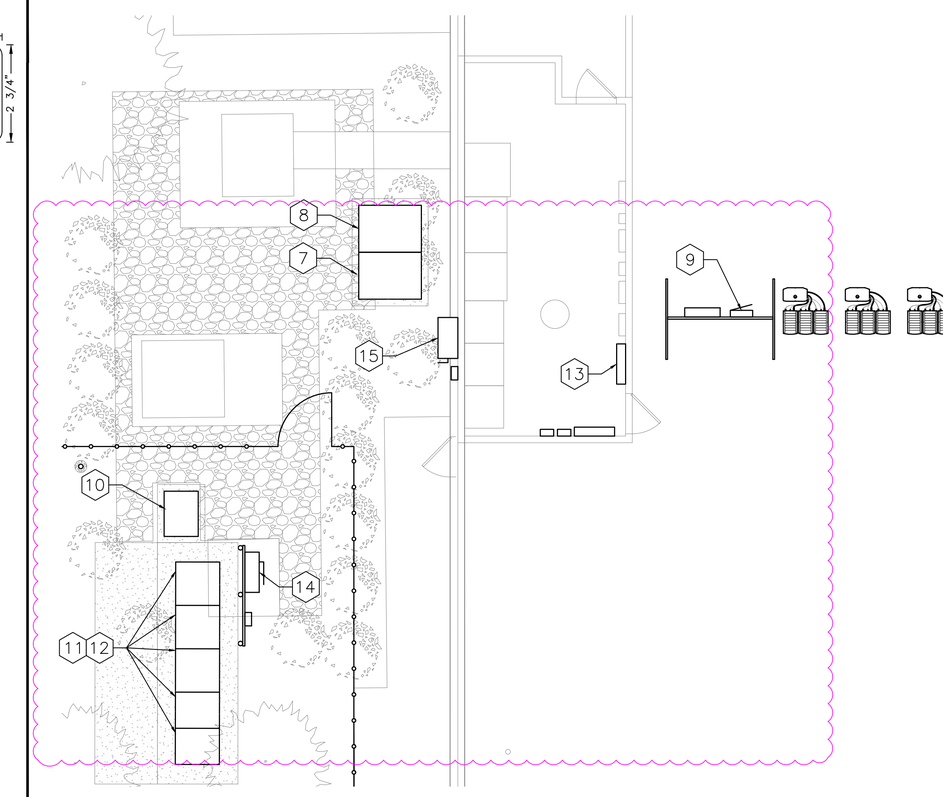
(1) 10" × 6"
CAUTION:
MULTIPLE POWER SOURCES ARE CONNECTED TO THIS BUILDING WITH DISCONNECTS AS SHOWN:



NEC 705.10 & 690.56(B)
INSTALL AT MAIN DISCONNECT OF ALL POWER SOURCES. ENGRAVED MELAMINE, WHITE TEXT ON RED BACKGROUND, TITLE MIN. 1/2", DESCRIPTION 5/16", ALL OTHER TEXT 1/8"

2 DIRECTORY LABEL
SCALE: 1:1

ARRAY AREA



3 ELECTRICAL ROOM – LABELS & SIGNAGE
SCALE: 3/16" = 1'-0"

REVISION DESCRIPTION	DATE	PM	ENG	CHK
ISSUE FOR BID	11/22/2023	TL	SC	MD
ISSUE FOR PERMIT REV1	09/25/2023	TL	SC	MD
ISSUE FOR PERMIT	09/12/2023	TL	SC	MD
PRELIM. CONCEPTUAL DESIGN	08/02/2023	TL	SC	MD

PUREPOWER ENGINEERING
111 RIVER STREET, HOBOKEN, NJ
PHONE: (201) 656-0024
RICHARD A. IVINS
CA LICENSE No. 20357

DEVELOPER: powerflex — EDF Renewables
POWERFLEX
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NEW YORK, NY 10022
WWW.POWERFLEX.COM

PAGE SIZE: 36" x 24"
PROJECT #: 06941

DC SYSTEM SIZE: 874.18 kWDC
AC SYSTEM SIZE: 640.00 kWAC
MODULE TYPE: CS6W-545MB-AG
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ORIENTATION: 10° TILT, 180° AZIMUTH

PROJECT
BESS + SOLAR SYSTEM AT
PROLOGIS – WAYFAIR 3500
3500 INDIAN AVE.
PERRIS, CA 92571

DRAWING TITLE: LABELS & SIGNAGE
DRAWING #: E500

PLOT DATE: 11/22/2023 11:11 AM
RULER IN INCHES:

NEW

CanadianSolar

BiHiKu6

520 W ~ 550 W

BIFACIAL MONO PERC

CS6W-520|525|530|535|540|545|550MB-AG

MORE POWER

- 550 W — Module power up to 550 W; Module efficiency up to 21.4 %
- Up to 12.3 % lower LCOE; Up to 5.2 % lower system cost
- Comprehensive LID / LeTID mitigation technology, up to 50% lower degradation
- Compatible with mainstream trackers, cost effective product for utility power plant
- Better shading tolerance

MORE RELIABLE

- Minimizes micro-crack impacts
- Heavy snow load up to 5400 Pa, wind load up to 2400 Pa*

12 Years Enhanced Product Warranty on Materials and Workmanship*

30 Years Linear Power Performance Warranty*

1st year power degradation no more than 2%
Subsequent annual power degradation no more than 0.45%

*According to the applicable Canadian Solar Limited Warranty Statement.

MANAGEMENT SYSTEM CERTIFICATES*

ISO 9001:2015 / Quality management system
ISO 14001:2015 / Standards for environmental management system
ISO 45001: 2018 / International standards for occupational health & safety

PRODUCT CERTIFICATES*

IEC 61215 / IEC 61730 / CE / INMETRO / MCS / UKCA
CEC listed (US California)
UL 61730 / IEC 61701 / IEC 62716 / IEC 60068-2-68
Take-e-way

* The specific certificates applicable to different module types and markets will vary, and therefore not all of the certifications listed herein will simultaneously apply to the products you order or use. Please contact your local Canadian Solar sales representative to confirm the specific certificates available for your Product and applicable in the regions in which the products will be used.

CSI Solar Co., Ltd. is committed to providing high quality solar photovoltaic modules, solar energy and battery storage solutions to customers. The company was recognized as the No. 1 module supplier for quality and performance/price ratio in the IHS Module Customer Insight Survey. Over the past 20 years, it has successfully delivered over 63 GW of premium-quality solar modules across the world.

* For detailed information, please refer to the Installation Manual.

CSI Solar Co., Ltd.
199 Lushan Road, SND, Suzhou, Jiangsu, China, 215129, www.csisolar.com, support@csisolar.com

Three Phase Inverter with Synergy Technology

for the 277/480V Grid for North America

SE66.6KUS / SE80KUS / SE100KUS / SE120KUS

INVERTERS

Specifically designed to work with power optimizers

- Easy 2-person installation – modular design for simple connection of small and lightweight units
- Balance of System and labor reduction compared to using string inverters
- Independent operation of each unit enables higher uptime and easy serviceability
- Integrated PID rectifier to mitigate module PID effect
- No wasted ground area: wall/rail mounted or horizontally mounted under the modules (10˚ inclination)
- Integrated arc fault protection and optional rapid shutdown for NEC 2014 and 2017, per article 690.11 and 690.12
- Built-in module-level monitoring with Ethernet or cellular GSM for full system visibility
- Fixed voltage inverter for superior efficiency (98.5%) and longer strings
- Integrated DC Safety Switch
- Built-in (optional) DC, AC and RS485 Surge Protection, to better withstand lightning events

solaredge.com

solaredge

Three Phase Inverters for the 277/480V Grid

for North America

SE20KUS / SE30KUS / SE33.3KUS / SE40KUS

INVERTERS

The best choice for SolarEdge enabled systems

- Specifically designed to work with power optimizers
- Quick and easy inverter commissioning directly from a smartphone using the SolarEdge SetApp
- Fixed voltage inverter for superior efficiency (98.5%) and longer strings
- Built-in type 2 DC and AC Surge Protection, to better withstand lightning events
- Small, lightest in its class, and easy to install outdoors or indoors on provided bracket
- Integrated arc fault protection and rapid shutdown for NEC 2014 and 2017, per article 690.11 and 690.12
- Built-in module-level monitoring with Ethernet, wireless or cellular communication for full system visibility
- Integrated Safety Switch
- UL1741 SA certified, for CPUC Rule 21 grid compliance

solaredge.com

solaredge

Power Optimizer

For North America

P1100

POWER OPTIMIZER

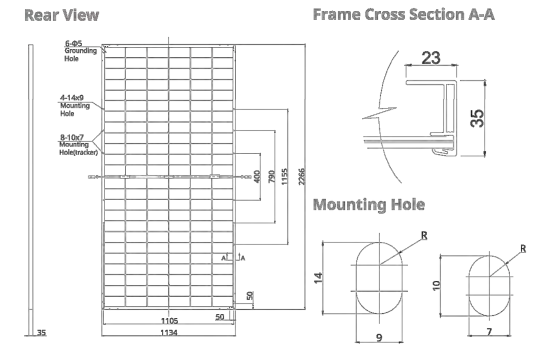
PV power optimization at the module-level
The most cost-effective solution for commercial and large field installations

- Specifically designed to work with SolarEdge inverters
- Up to 25% more energy
- Superior efficiency (99.5%)
- Balance of System cost reduction; 50% less cables, fuses and combiner boxes, over 2x longer string lengths possible
- Fast installation with a single bolt
- Advanced maintenance with module-level monitoring
- Module-level voltage shutdown for installer and firefighter safety
- Use with parallel PV modules connected in series

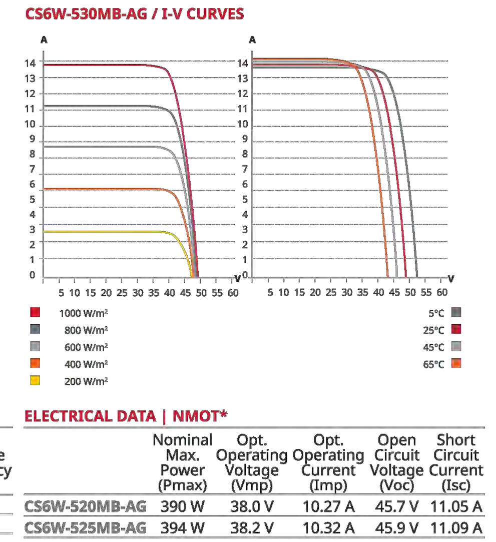
solaredge.com

solaredge

ENGINEERING DRAWING (mm)



CS6W-530MB-AG / I-V CURVES



ELECTRICAL DATA | STC*

		Nominal Max. Power (Pmax)	Opt. Operating Voltage (Vmp)	Opt. Operating Current (Imp)	Open Circuit Voltage (Voc)	Short Circuit Current (Isc)	Module Efficiency
CS6W-520MB-AG		520 W	40.5 V	12.84 A	48.4 V	13.70 A	20.2%
Bifacial Gain**	5%	546 W	40.5 V	13.48 A	48.4 V	14.39 A	21.2%
	10%	572 W	40.5 V	14.12 A	48.4 V	15.07 A	22.3%
	20%	624 W	40.5 V	15.41 A	48.4 V	16.44 A	24.3%
CS6W-525MB-AG		525 W	40.7 V	12.90 A	48.6 V	13.75 A	20.4%
Bifacial Gain**	5%	551 W	40.7 V	13.55 A	48.6 V	14.44 A	21.4%
	10%	578 W	40.7 V	14.21 A	48.6 V	15.13 A	22.5%
	20%	630 W	40.7 V	15.48 A	48.6 V	16.50 A	24.5%
CS6W-530MB-AG		530 W	40.9 V	12.96 A	48.8 V	13.80 A	20.6%
Bifacial Gain**	5%	557 W	40.9 V	13.62 A	48.8 V	14.49 A	21.7%
	10%	583 W	40.9 V	14.26 A	48.8 V	15.18 A	22.7%
	20%	636 W	40.9 V	15.55 A	48.8 V	16.56 A	24.8%
CS6W-535MB-AG		535 W	41.1 V	13.02 A	49.0 V	13.85 A	20.8%
Bifacial Gain**	5%	562 W	41.1 V	13.68 A	49.0 V	14.54 A	21.9%
	10%	589 W	41.1 V	14.34 A	49.0 V	15.24 A	22.9%
	20%	642 W	41.1 V	15.62 A	49.0 V	16.62 A	25.0%
CS6W-540MB-AG		540 W	41.3 V	13.08 A	49.2 V	13.90 A	21.0%
Bifacial Gain**	5%	567 W	41.3 V	13.73 A	49.2 V	14.60 A	22.1%
	10%	594 W	41.3 V	14.39 A	49.2 V	15.29 A	23.1%
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
CS6W-545MB-AG		545 W	41.5 V	13.14 A	49.4 V	13.95 A	21.2%
Bifacial Gain**	5%	572 W	41.5 V	13.80 A	49.4 V	14.65 A	22.3%
	10%	600 W	41.5 V	14.46 A	49.4 V	15.35 A	23.3%
	20%	654 W	41.5 V	15.77 A	49.4 V	16.74 A	25.5%
[illegible]		[illegible]	41.7 V	13.20 A	49.6 V	14.00 A	21.4%
Bifacial Gain**	5%	578 W	41.7 V	13.87 A	49.6 V	14.70 A	22.5%
	10%	605 W	41.7 V	14.52 A	49.6 V	15.40 A	23.5%
	20%	660 W	41.7 V	15.84 A	49.6 V	16.80 A	25.7%

* Under Standard Test Conditions (STC) of irradiance of 1000 W/m², spectrum AM 1.5 and cell temperature of 25°C.
** Bifacial Gain: The additional gain from the back side compared to the power of the front side at the standard test condition. It depends on mounting (structure, height, tilt angle etc.) and albedo of the ground.

ELECTRICAL DATA

Operating Temperature	-40°C ~ +85°C
Max. System Voltage	1500 V (IEC/UL) or 1000 V (IEC/UL)
Module Fire Performance	TYPE 29 (UL 61730) or CLASS C (IEC61730)
Max. Series Fuse Rating	30 A
Application Classification	Class A
Power Tolerance	0 ~ + 10 W
Power Bifaciality*	70 %

* Power Bifaciality = $Pmax_{rear}$ / $Pmax_{front}$, both $Pmax_{rear}$ and $Pmax_{front}$ are tested under STC, Bifaciality Tolerance: ± 5 %

ELECTRICAL DATA | NMOT*

	Nominal Max. Power (Pmax)	Opt. Operating Voltage (Vmp)	Opt. Operating Current (Imp)	Open Circuit Voltage (Voc)	Short Circuit Current (Isc)
CS6W-520MB-AG	390 W	38.0 V	10.27 A	45.7 V	11.05 A
CS6W-525MB-AG	394 W	38.2 V	10.32 A	45.9 V	11.09 A
CS6W-530MB-AG	397 W	38.3 V	10.38 A	46.1 V	11.13 A
CS6W-535MB-AG	401 W	38.5 V	10.42 A	46.3 V	11.17 A
CS6W-540MB-AG	405 W	38.7 V	10.47 A	46.5 V	11.21 A
CS6W-545MB-AG	409 W	38.9 V	10.52 A	46.7 V	11.25 A
CS6W-550MB-AG	412 W	39.1 V	10.55 A	46.9 V	11.29 A

* Under Nominal Module Operating Temperature (NMOT), irradiance of 800 W/m², spectrum AM 1.5, ambient temperature 20°C, wind speed 1 m/s.

MECHANICAL DATA

Specification	Data
Cell Type	Mono-crystalline
Cell Arrangement	144 [2 x (12 x 6)]
Dimensions	2266 × 1134 × 35 mm (89.2 × 44.6 × 1.38 in)
Weight	32.2 kg (71.0 lbs)
Front Glass	2.0 mm heat strengthened glass with anti-reflective coating
Back Glass	2.0 mm heat strengthened glass
Frame	Anodized aluminium alloy
J-Box	IP68, 3 bypass diodes
Cable	4.0 mm² (IEC), 12 AWG (UL)
Cable Length (Including Connector)	410 mm (16.1 in) (+) / 290 mm (11.4 in) (-) or customized length*
Connector	T4 series or MC4-EVO2
Per Pallet	30 pieces
Per Container (40' HQ)	600 pieces or 540 pieces (only for US)

* For detailed information, please contact your local Canadian Solar sales and technical representatives.

TEMPERATURE CHARACTERISTICS

Specification	Data
Temperature Coefficient (Pmax)	-0.34 % / °C
Temperature Coefficient (Voc)	-0.26 % / °C
Temperature Coefficient (Isc)	0.05 % / °C
Nominal Module Operating Temperature	41 ± 3°C

* The specifications and key features contained in this datasheet may deviate slightly from our actual products due to the on-going innovation and product enhancement. CSI Solar Co., Ltd. reserves the right to make necessary adjustment to the information described herein at any time without further notice.
Please be kindly advised that PV modules should be handled and installed by qualified people who have professional skills and please carefully read the safety and installation instructions before using our PV modules.

PARTNER SECTION

CSI Solar Co., Ltd.
199 Lushan Road, SND, Suzhou, Jiangsu, China, 215129, www.csisolar.com, support@csisolar.com

February 2022. All rights reserved, PV Module Product Datasheet V2.1_EN

Three Phase Inverter with Synergy Technology
for the 277/480V Grid for North America

SE66.6KUS / SE80KUS / SE100KUS / SE120KUS

	SE66.6KUS	SE80KUS	SE100KUS	SE120KUS	
Applicable to inverter with part number	SExK-USxxlxxxx				
OUTPUT					
Rated AC Power Output	66600	80000	100000	120000	W
Maximum AC Power Output	66600	80000	100000	120000	VA
AC Output Line Connections	3W/PE, 4W/PE				
AC Output Voltage Minimum-Nominal-Maximum(1) (L-N)	244 - 277 - 305				Vac
AC Output Voltage Minimum-Nominal-Maximum(1) (L-L)	422.5 - 480 - 529				Vac
AC Frequency Min-Nom-Max(1)	59.3 - 60 - 60.5				Hz
Maximum Continuous Output Current (per Phase, PF=1)	80	96	120	144	A
GFDI Threshold	1				A
Utility Monitoring, Islanding Protection, Configurable Power Factor, Country Configurable Thresholds	Yes				
Total Harmonic Distortion	≤ 3				%
INPUT					
Maximum DC Power (Module STC), Inverter / Unit	100000 / 50000	120000 / 60000	150000 / 50000	180000 / 60000	W
Transformer-less, Ungrounded	Yes				
Maximum Input Voltage DC to Gnd	1000				Vdc
Maximum Input Voltage DC+ to DC-	1000				Vdc
Nominal Input Voltage DC+ to DC-	850				Vdc
Maximum Input Current	80	96	120	144	Adc
Reverse-Polarity Protection	Yes				
Ground-Fault Isolation Detection	150kΩ Sensitivity per Unit				
CEC Weighted Efficiency	98.5				%
Nighttime Power Consumption	< 12				W
ADDITIONAL FEATURES					
Supported Communication Interfaces	2 x RS485, Ethernet, WiFi, Cellular (optional)				
Rapid Shutdown	NEC2014 and NEC2017 compliant/certified (optional)				
PID Rectifier	Night-time				
RS485 Surge Protection	Supplied with the inverter				
DC SAFETY SWITCH					
DC Disconnect	1000V / 2 x 40A	1000V / 2 x 48A	1000V / 3 x 40A	1000V / 3 x 48A	
STANDARD COMPLIANCE					
Safety	UL1699B, CSA C22.2#107.1, IEEE1547, Canadian AFCI according to T.I.L. M-07				
Grid Connection Standards	IEEE 1547, Rule 21, Rule 14 (HI)				
Emissions	FCC part15 class B				
INSTALLATION SPECIFICATIONS					
Number of Units	2		3		
AC Conduit Size	2 ½				in
Max Wire Gauge Line / PE	4/0 /4				AWG
DC Conduit Size	1 ¼				in
DC Wire Gauge (Model Dependent)	8-14; 2-4				AWG
Number of DC Inputs Pairs, Inverter / Unit	Up to 8 / Up to 4		Up to 12 / Up to 4		
Dimensions (H x W x D)	Synergy Unit: 21.7 x 12.5 x 10.8 / 550 x 317 x 273; Synergy Manager: 14.7 x 22 x 11.6 / 360 x 560 x 295				in / mm
Weight	Synergy Unit: 74 / 33.5; Synergy Manager: 35.3 / 16				lb / kg
Operating Temperature Range	-40 to +140 / -40 to +60(2)				˚F / ˚C
Cooling	Fan (user replaceable)				
Noise	< 60				dBA
Protection Rating	NEMA 3R				
Mounting	Bracket provided				

(1) For other regional settings please contact SolarEdge support
(2) De-rating from 50˚C

* The specifications included in this document are preliminary and subject to change without notice

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CE RoHS

Three Phase Inverters for the 277/480V Grid(1)
for North America

SE20KUS / SE30KUS / SE33.3KUS / SE40KUS

MODEL NUMBER	SE20KUS	SE30KUS	SE33.3KUS	SE40KUS	
APPLICABLE TO INVERTERS WITH PART NUMBER	SEXXK - USXXXBXXX	SEXXK-USX8IXXXX			
OUTPUT					
Rated AC Power Output	20000	30000	33300	40000	W
Maximum apparent AC output power	20000	30000	33300	40000	VA
AC Output Line Connections	4W + PE	3W + PE, 4W + PE			
AC Output Voltage Minimum-Nominal-Maximum(2) (L-N)	244 - 277 - 305				Vac
AC Output Voltage Minimum-Nominal-Maximum(2) (L-L)	422.5 - 480 - 529				Vac
AC Frequency Min-Nom-Max(2)	59.3 - 60 - 60.5				Hz
Maximum Continuous Output Current (per Phase)	24	36.25	40	48.25	Aac
GFDI Threshold	1				A
Utility Monitoring, Islanding Protection, Country Configurable Set Points	Yes				
Total Harmonic Distortion	≤ 3				%
Power Factor Range	+/- 0.85 to 1				
INPUT					
Maximum DC Power (Module STC)	27000	45000	50000	60000	W
Transformer-less, Ungrounded	Yes				
Maximum Input Voltage DC+ to DC-	1000				Vdc
Nominal Input Voltage DC+ to DC-	850				Vdc
Maximum Input Current	26.5	36.25	40	48.25	Adc
Maximum Input Short Circuit Current	33	55			Adc
Reverse-Polarity Protection	Yes				
Ground-Fault Isolation Detection	1MΩ Sensitivity	167kΩ Sensitivity(3)			
CEC Weighted Efficiency	98	98.5			%
Night-time Power Consumption	<3	<4			W
ADDITIONAL FEATURES					
Supported Communication Interfaces	2 x RS485, Ethernet, Cellular (optional)				
Inverter Commissioning	With the SetApp mobile application using built-in access point for local connection				
Arc Fault Protection	Integrated, User Configurable (According to UL1699B)				
Rapid Shutdown	NEC2014, NEC2017 and NEC2020 compliant/certified				
RS485 Surge Protection Plug-in	Supplied with the inverter, Built-in				
DC Surge Protection	Type II, field replaceable, optional	Type II, field replaceable, Built-in			
AC Surge Protection	-	Type II, field replaceable, Built-in			
DC Fuses (Single Pole)	-	25A, Built-in			
Smart Energy Management	Export Limitation				
DC SAFETY SWITCH					
DC Disconnect	Integrated				
STANDARD COMPLIANCE					
Safety	UL1741, UL1741 SA, UL1699B, CSA C22.2, Canadian AFCI according to T.I.L. M-07				
Grid Connection Standards	IEEE1547, Rule 21, Rule 14 (HI)				
Emissions	FCC part15 class A				
INSTALLATION SPECIFICATIONS					
AC output conduit size / AWG range	3/4" minimum / 12-6 AWG	¾" or 1" / 6 - 10 AWG			
DC input conduit size / AWG range	¾" or 1" / 6 - 12 AWG				
Number of DC inputs pairs	2	4			
Dimensions with Safety Switch (H x W x D)	30.5 x 12.5 x 10.5 / 775 x 315 x 260	31.8 x 12.5 x 11.8 / 808 x 317 x 300			in / mm
Weight with Safety Switch	74.2 / 33.7	78.2 / 35.5			lb / kg
Cooling	Fans (user replaceable)				
Noise	< 50	< 62			dBA
Operating Temperature Range	-40 to +140 / -40 to +60(4)				˚F / ˚C
Protection Rating	NEMA 3R				
Mounting	Bracket provided				

(1) For 120/208V inverters refer to: https://www.solaredge.com/sites/default/files/se-three-phase-us-inverter-208V-setapp-datasheet.pdf
(2) For other regional settings please contact SolarEdge support
(3) Where permitted by local regulations
(4) For power de-rating information refer to: https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf

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CE

Power Optimizer For North America
P1100

Power Optimizer Model (Typical Module Compatibility)	P1100 (for up to 2 x high power or bi-facial modules)	Units
INPUT		
Rated Input DC Power(1)	1100	W
Connection Method	Single input for series connected modules	
Absolute Maximum Input Voltage (Voc at lowest temperature)	125	Vdc
MPPT Operating Range	12.5 - 105	Vdc
Maximum Short Circuit Current per input (Isc)	14.1	Adc
Maximum Efficiency	99.5	%
Weighted Efficiency	98.6	%
Overvoltage Category	II	
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREDGE INVERTER)		
Maximum Output Current	18	Adc
Maximum Output Voltage	80	Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREDGE INVERTER OR SOLAREDGE INVERTER OFF)		
Safety Output Voltage per Power Optimizer	1 ± 0.1	Vdc
STANDARD COMPLIANCE		
Photovoltaic Rapid Shutdown System	NEC 2014	
EMC	FCC Part 15 Class A, IEC61000-6-2, IEC61000-6-3	
Safety	IEC62109-1 (class II safety), UL1741	
Material	UL94 V-0, UV Resistant	
RoHS	Yes	
INSTALLATION SPECIFICATIONS		
Compatible SolarEdge Inverters	SE30K & larger	
Maximum Allowed System Voltage	1000	Vdc
Dimensions (W x L x H)	129 x 162 x 59 / 5.1 x 6.4 x 2.3	mm / in
Weight	1064 / 2.34	gr / lb
Input Connector	MC4(2)	
Input Wire Length	1.6 / 5.24	m / ft
Output Wire Length	2.4 / 7.8	m / ft
Output Wire Type / Connector	Double Insulated / MC4	
Operating Temperature Range(3)	-40 to +85 / -40 to +185	˚C / ˚F
Protection Rating	IP68 / NEMA6P	
Relative Humidity	0 - 100	%

(1) Rated power of the module at STC will not exceed the Power Optimizer "Rated Input DC Power". Modules with up to +5% power tolerance are allowed
(2) For other connector types please refer to: https://www.solaredge.com/sites/default/files/optimizer-input-connector-compatibility.pdf
(3) For ambient temperature above +70˚C / +158˚F power de-rating is applied. Refer to https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf for more details

PV System Design Using a SolarEdge Inverter(4)(5)		208V Grid SE14.4K*	208V Grid SE17.3K*	277/480V Grid SE20K, SE30K	277/480V Grid SE33.3K*, SE40K*	
Compatible Power Optimizer		P1100				
Minimum String Length	Power Optimizers	8	10	14	14	
	PV Modules	15	19	27	27	
Maximum String Length	Power Optimizers	30	30	30	30	
	PV Modules	60	60	60	60	
Maximum Continuous Power per String		7200	8820	15300	15300	W
Maximum Allowed Connected Power per String(6)		1 string - 8400; 2 strings or more - 9000	1 string - 10020; 2 strings or more - 10620	1 string 17550; 2 strings or more - 20300	2 strings or less - 17550; 3 strings or more - 20300	
Parallel Strings of Different Lengths or Orientations		Yes				

* The same rules apply for Synergy units of equivalent power ratings, that are part of the modular Synergy Technology inverter.
(4) For each string, a Power Optimizer may be connected to a single PV module if 1) each Power Optimizer is connected to a single PV module or 2) it is the only Power Optimizer connected to a single PV module in the string.
(5) Design with three phase 208V inverters is limited. Use the SolarEdge Designer for verification.
(6) To connect more STC power per string, design your project using SolarEdge Designer.

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RoHS Intertek

DATE	REVISION DESCRIPTION	PM	ENG	CHK
11/22/2023	ISSUE FOR BID	TL	SC	MD
09/25/2023	ISSUE FOR PERMIT REV1	TL	SC	MD
09/13/2023	ISSUE FOR PERMIT	TL	SC	MD
08/02/2023	PRELIM. CONCEPTUAL DESIGN	TL	SC	MD

PUREPOWER ENGINEERING
111 RIVER STREET, HOBOKEN, NJ
WWW.PUREPOWER.COM
RICHARD A. IVINS
CA LICENSE No. 20357

ENGINEER

DEVELOPER

POWERFLEX
805 THIRD AVENUE 20TH FLOOR
NEW YORK, NY 10022
WWW.POWERFLEX.COM
powerflex EDF Renewables

PAGE SIZE 36" x 24"

PROJECT # 06941

DC SYSTEM SIZE: 874.18 kWDC
AC SYSTEM SIZE: 640.00 kWAC
MODULE TYPE: CS6W-545MB-AG
MODULE QUANTITY: 1,604
ORIENTATION: 10° TILT, 180° AZIMUTH

PROJECT
BESS + SOLAR SYSTEM AT
PROLOGIS – WAYFAIR 3500
3500 INDIAN AVE.
PERRIS, CA 92571

DRAWING TITLE: EQUIPMENT DATA SHEETS

DRAWING #: E600

RULER IN INCHES:

ST556KWH-250UD NEW

Energy Storage System

SUNGROW | SAMSUNG SAMSUNG SDI

HIGH INTEGRATION

- Highly integrated ESS with outdoors cabinet design provides high protection class
- Advanced integration technology ensures optimal system performance and lower cost

SAFE AND RELIABLE

- DC electric circuit safety management includes fast breaking and anti-arc protection
- Multi-state monitoring and linkage actions ensure battery system safety

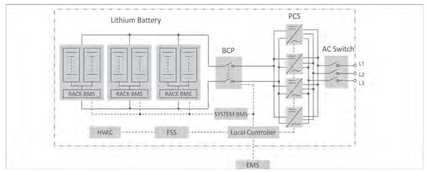
EFFICIENT AND FLEXIBLE

- Top-mounted HVAC and cell-level temperature control ensures longer battery life cycle
- Modular design supports parallel connection and easy system expansion

SMART AND FRIENDLY

- Integrated local controller enables single point of communication interface
- Fast state monitoring and fault record enables pre-alarm and faulty location

CIRCUIT DIAGRAM



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ST556KWH-250UD

System Type	ST556KWH-250UD
Battery Data	
Cell type	Samsung SDI Mega E3, 3.68 V / 100 Ah
Configuration of system	2S256P
Battery capacity (BOL)	556 kWh
Battery voltage range	806 ~ 1,046 V
BMS communication interfaces	RS485, Ethernet
BMS communication protocols	Modbus RTU, Modbus TCP
AC Data	
Nominal AC power	250 kVA
Max. AC power	264 kVA
MaxTHD of current	< 3 % (at nominal power)
DC component	< 0.5 % (at nominal power)
Nominal grid voltage	480 V
Grid voltage range	432 ~ 528 V
Power factor	> 0.99 (at nominal power)
Adjustable power factor	1 leading ~ 1 lagging
Nominal grid frequency	60 Hz
Grid frequency range	55 ~ 65 Hz
Isolation method	Transformerless
Nominal output voltage of off-grid	480 V
MaxTHD of off-grid output voltage	< 3 % (linear load)
General Data	
Dimensions (W * H * D)	4,600 * 2,400 * 1,000 mm / 181.1" * 94.5" * 39.4"
Weight (with / without battery)	5.7 T / 2.5 T 12,566 lbs / 5,511 lbs
Degree of protection	IP54 / NEMA 3R
Operating temperature range	-30 to 50 ℃ / -22 to 122 ℉ (> 45 ℃ / 113 ℉ derating)
Relative humidity	0 ~ 95 % (non-condensing)
Max. working altitude	3,000 m / 9,842 ft
Cooling concept of battery chamber	Heating, Ventilation and Air Conditioning
Cooling concept of PCS chamber	Temperature controlled forced air cooling
Fire suppression system of battery unit	FM200 extinguishment system
Communication interfaces	RS485, Ethernet
Communication protocols	Modbus RTU, Modbus TCP, IEC 104
Certificates	UL9540, UL9540A, UL1973, UL1741+SA, IEEE 1547

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PAGE SIZE 36" x 24"
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DC SYSTEM SIZE: 874.18 kWDC
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MODULE TYPE: CS6W-545MB-AG
MODULE QUANTITY: 1,604
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PROJECT
BESS + SOLAR SYSTEM AT
PROLOGIS – WAYFAIR 3500
3500 INDIAN AVE.
PERRIS, CA 92571

DRAWING TITLE
EQUIPMENT DATA SHEETS

DRAWING #
E601

PLOT DATE: 11/22/2023 11:12 AM

RULER IN INCHES:

FORGESOLAR GLARE ANALYSIS

Project: **Wayfair Rooftops - Perris, CA**
Site configuration: **Wayfair 3500 - Perris CA - Final Approaches**
Analysis conducted by Peter Liang (peter.liang@powerflex.com) at 20:56 on 02 Dec, 2023.

U.S. FAA 2013 Policy Adherence

The following table summarizes the policy adherence of the glare analysis based on the 2013 U.S. Federal Aviation Administration Interim Policy 78 FR 63276. This policy requires the following criteria be met for solar energy systems on airport property:

- No "yellow" glare (potential for after-image) for any flight path from threshold to 2 miles
- No glare of any kind for Air Traffic Control Tower(s) ("ATCT") at cab height.
- Default analysis and observer characteristics (see list below)

ForgeSolar does not represent or speak officially for the FAA and cannot approve or deny projects. Results are informational only.

COMPONENT	STATUS	DESCRIPTION
Analysis parameters	PASS	Analysis time interval and eye characteristics used are acceptable
2-mile flight path(s)	PASS	Flight path receptor(s) do not receive yellow glare
ATCT(s)	PASS	Receptor(s) marked as ATCT do not receive glare

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

FAA Policy 78 FR 63276 can be read at https://www.federalregister.gov/d/2013-24729

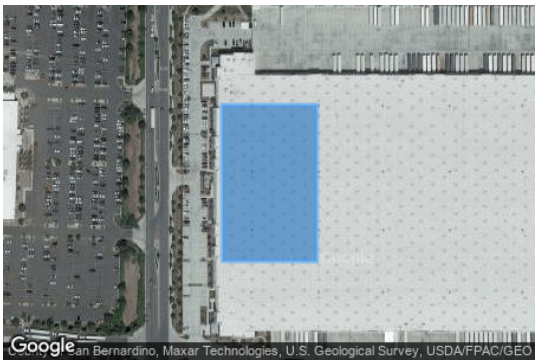
SITE CONFIGURATION

Analysis Parameters

DNI: peaks at 1,000.0 W/m^2
Time interval: 1 min
Ocular transmission coefficient: 0.5
Pupil diameter: 0.002 m
Eye focal length: 0.017 m
Sun subtended angle: 9.3 mrad
Site Config ID: 106926.18549
Methodology: V2

PV Array(s)

Name: PV Array
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 180.0°
Rated power: 874.18 kW
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.836151	-117.234201	1466.07	35.00	1501.07
2	33.836151	-117.233343	1464.71	35.00	1499.71
3	33.834976	-117.233346	1464.45	35.00	1499.45
4	33.834978	-117.234196	1467.07	35.00	1502.07

Flight Path Receptor(s)

Name: RWY 12 Final
Description: None
Threshold height: 50 ft
Direction: 135.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.890258	-117.260681	1500.00	50.00	1550.00
Two-mile	33.898508	-117.270608	1500.00	1300.00	2800.00

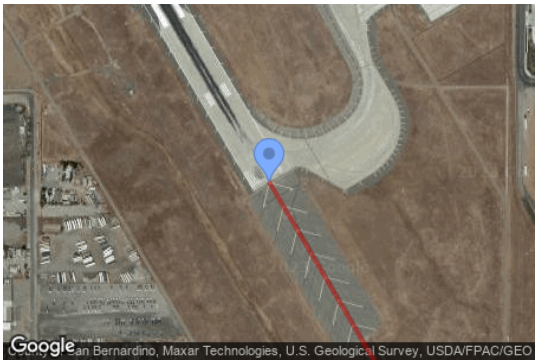
Name: RWY 14 Final
Description: None
Threshold height: 50 ft
Direction: 149.5°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.896431	-117.270636	1500.00	50.00	1550.00
Two-mile	33.906486	-117.277783	1500.00	1500.00	3000.00

Name: RWY 30 Final
Description: None
Threshold height: 50 ft
Direction: 315.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.884319	-117.253536	1500.00	50.00	1550.00
Two-mile	33.876069	-117.243611	1500.00	1300.00	2800.00

Name: RWY 32 Final
Description: None
Threshold height: 50 ft
Direction: 329.5°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°



Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.864994	-117.248281	1500.00	50.00	1550.00
Two-mile	33.854942	-117.241136	1500.00	1500.00	3000.00

Discrete Observation Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
1-ATCT	1	33.891572	-117.251203	1511.00	118.00

Map image of 1-ATCT

GLARE ANALYSIS RESULTS

Summary of Glare

PV Array Name	Tilt (°)	Orient (°)	"Green" Glare min	"Yellow" Glare min	Energy kWh
PV Array	10.0	180.0	0	0	1,957,000.0

Total annual glare received by each receptor

Receptor	Annual Green Glare (min)	Annual Yellow Glare (min)
RWY 12 Final	0	0
RWY 14 Final	0	0
RWY 30 Final	0	0
RWY 32 Final	0	0
1-ATCT	0	0

Results for: PV Array

Receptor	Green Glare (min)	Yellow Glare (min)
RWY 12 Final	0	0
RWY 14 Final	0	0
RWY 30 Final	0	0
RWY 32 Final	0	0
1-ATCT	0	0

Flight Path: RWY 12 Final

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 14 Final

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 30 Final

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 32 Final

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: 1-ATCT

0 minutes of yellow glare
0 minutes of green glare

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions.
Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to V1 algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual results and glare occurrence may differ.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

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FORGESOLAR GLARE ANALYSIS

Project: **Wayfair Rooftops - Perris, CA**
Site configuration: **Wayfair 3500 - Perris CA - Final Approaches**

Created 02 Dec, 2023
Updated 02 Dec, 2023
Time-step 1 minute
Timezone offset UTC-8
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Site ID 106926.18549

Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad
PV analysis methodology V2

Glare Policy Adherence

The following table estimates the policy adherence of this glare analysis according to the **2021** U.S. Federal Aviation Administration Policy:

Review of Solar Energy System Projects on Federally-Obligated Airports

This policy may require the following criteria be met for solar energy systems on airport property:

- No glare of any kind for Air Traffic Control Tower(s) ("ATCT") at cab height.
- Default analysis and observer characteristics, including 1-minute time step.

ForgeSolar is not affiliated with the U.S. FAA and does not represent or speak officially for the U.S. FAA. ForgeSolar cannot approve or deny projects - results are informational only. Contact the relevant airport and FAA district office for information on policy and requirements.

COMPONENT	STATUS	DESCRIPTION
Analysis parameters	PASS	Analysis time interval and eye characteristics used are acceptable
ATCT(s)	PASS	Receptor(s) marked as ATCT do not receive glare

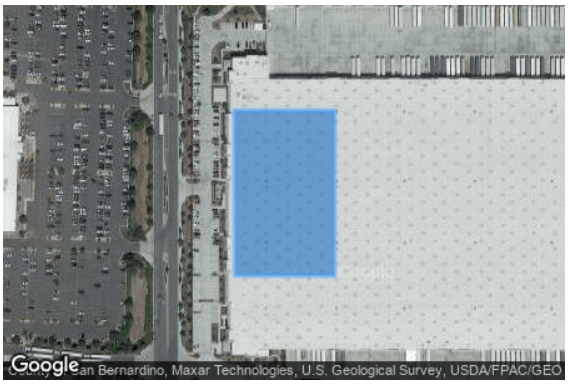
The referenced policy can be read at https://www.federalregister.gov/d/2021-09862

Component Data

This report includes results for PV arrays and Observation Point ("OP") receptors marked as ATCTs. Components that are not pertinent to the policy, such as routes, flight paths, and vertical surfaces, are excluded.

PV Arrays

Name: PV Array
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 180.0°
Rated power: 874.18 kW
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.836151	-117.234201	1466.07	35.00	1501.07
2	33.836151	-117.233343	1464.71	35.00	1499.71
3	33.834976	-117.233346	1464.45	35.00	1499.45
4	33.834978	-117.234196	1467.07	35.00	1502.07

Observation Point ATCT Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
1-ATCT	1	33.891572	-117.251203	1511.00	118.00

Map image of 1-ATCT

Glare Analysis Results

Summary of Results No glare predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV Array	10.0	180.0	0	0.0	0	0.0	1,957,000.0

Total annual glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
1-ATCT	0	0.0	0	0.0

PV: PV Array

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
1-ATCT	0	0.0	0	0.0

PV Array and 1-ATCT

Receptor type: ATCT Observation Point
No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare. This primarily affects V1 analyses of path receptors.
Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

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FORGESOLAR GLARE ANALYSIS

Project: **Wayfair Rooftops - Perris, CA**
Site configuration: **Wayfair 3500 - Perris CA - Runway 12-30 GA**

Created 03 Dec, 2023
Updated 03 Dec, 2023
Time-step 1 minute
Timezone offset UTC-8
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Category 1 MW to 5 MW
Site ID 106935.18549

Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad
PV analysis methodology V2

Summary of Results No glare predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV Array	10.0	180.0	0	0.0	0	0.0	2,671,000.0

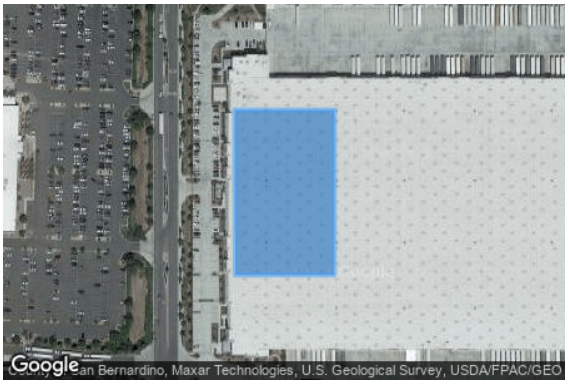
Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 12 GA Pattern Route	0	0.0	0	0.0
RWY 30 GA Pattern Route	0	0.0	0	0.0
RWY 12 Final	0	0.0	0	0.0
RWY 30 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

Component Data

PV Arrays

Name: PV Array
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 180.0°
Rated power: 1193.0 kW
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.836151	-117.234201	1466.07	35.00	1501.07
2	33.836151	-117.233343	1464.71	35.00	1499.71
3	33.834978	-117.233346	1464.45	35.00	1499.45
4	33.834978	-117.234196	1467.07	35.00	1502.07

Route Receptors

Name: RWY 12 GA Pattern Route
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.884319	-117.253536	1500.00	50.00	1550.00
2	33.876069	-117.243611	1500.00	1300.00	2800.00
3	33.876081	-117.235119	1500.00	1300.00	2800.00
4	33.880814	-117.229467	1500.00	1300.00	2800.00
5	33.887897	-117.229483	1500.00	1300.00	2800.00
6	33.910333	-117.256469	1500.00	1300.00	2800.00
7	33.910322	-117.264967	1500.00	1300.00	2800.00
8	33.905592	-117.270622	1500.00	1300.00	2800.00
9	33.898508	-117.270608	1500.00	1300.00	2800.00
10	33.890258	-117.260681	1500.00	50.00	1550.00

Name: RWY 30 GA Pattern Route
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.890258	-117.260681	1500.00	50.00	1550.00
2	33.898508	-117.270608	1500.00	1300.00	2800.00
3	33.905592	-117.270622	1500.00	1300.00	2800.00
4	33.910322	-117.264967	1500.00	1300.00	2800.00
5	33.910333	-117.256469	1500.00	1300.00	2800.00
6	33.887897	-117.229483	1500.00	1300.00	2800.00
7	33.880814	-117.229467	1500.00	1300.00	2800.00
8	33.876081	-117.235119	1500.00	1300.00	2800.00
9	33.876069	-117.243611	1500.00	1300.00	2800.00
10	33.884319	-117.253536	1500.00	50.00	1550.00

Flight Path Receptors

Name: RWY 12 Final
Description: None
Threshold height: 50 ft
Direction: 135.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.890258	-117.260681	1500.00	50.00	1550.00
Two-mile	33.898508	-117.270608	1500.00	1300.00	2800.00

Name: RWY 30 Final
Description: None
Threshold height: 50 ft
Direction: 315.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.884319	-117.253536	1500.00	50.00	1550.00
Two-mile	33.876069	-117.243611	1500.00	1300.00	2800.00

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
1-ATCT	1	33.891572	-117.251203	1511.00	118.00

Map image of 1-ATCT

Glare Analysis Results

Summary of Results No glare predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV Array	10.0	180.0	0	0.0	0	0.0	2,671,000.0

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 12 GA Pattern Route	0	0.0	0	0.0
RWY 30 GA Pattern Route	0	0.0	0	0.0
RWY 12 Final	0	0.0	0	0.0
RWY 30 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

PV: PV Array no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 12 GA Pattern Route	0	0.0	0	0.0
RWY 30 GA Pattern Route	0	0.0	0	0.0
RWY 12 Final	0	0.0	0	0.0
RWY 30 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

PV Array and Route: RWY 12 GA Pattern Route

No glare found

PV Array and Route: RWY 30 GA Pattern Route

No glare found

PV Array and FP: RWY 12 Final

No glare found

PV Array and FP: RWY 30 Final

No glare found

PV Array and 1-ATCT

No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare. This primarily affects V1 analyses of path receptors.
Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

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FORGESOLAR GLARE ANALYSIS

Project: **Wayfair Rooftops - Perris, CA**
Site configuration: **Wayfair 3500 - Perris CA - RWY 14-32 C17 KC-135**

Created 02 Dec, 2023
Updated 02 Dec, 2023
Time-step 1 minute
Timezone offset UTC-8
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Category 1 MW to 5 MW
Site ID 106933.18549

Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad
PV analysis methodology V2

Summary of Results

Glare with low potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV Array	10.0	180.0	1,455	24.2	0	0.0	2,671,000.0

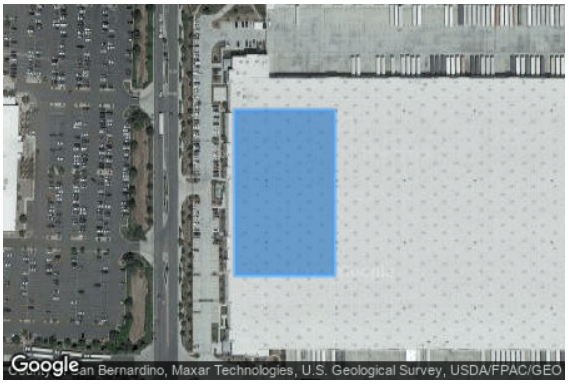
Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 14 C17 KC-135 Pattern Route	0	0.0	0	0.0
RWY 32 C17 KC-135 Pattern Route	1,455	24.2	0	0.0
RWY 14 Final	0	0.0	0	0.0
RWY 32 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

Component Data

PV Arrays

Name: PV Array
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 180.0°
Rated power: 1193.0 kW
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.836151	-117.234201	1466.07	35.00	1501.07
2	33.836151	-117.233343	1464.71	35.00	1499.71
3	33.834976	-117.233346	1464.45	35.00	1499.45
4	33.834978	-117.234196	1467.07	35.00	1502.07

Route Receptors

Name: RWY 14 C17 KC-135 Pattern Route
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.864994	-117.248281	1500.00	50.00	1550.00
2	33.836269	-117.227869	1500.00	1500.00	3000.00
3	33.821961	-117.228367	1500.00	1500.00	3000.00
4	33.813147	-117.244350	1500.00	1500.00	3000.00
5	33.819225	-117.262269	1500.00	1500.00	3000.00
6	33.908131	-117.325528	1500.00	1500.00	3000.00
7	33.922394	-117.325047	1500.00	1500.00	3000.00
8	33.931244	-117.309014	1500.00	1500.00	3000.00
9	33.925156	-117.291061	1500.00	1500.00	3000.00
10	33.896431	-117.270636	1500.00	50.00	1550.00

Name: RWY 32 C17 KC-135 Pattern Route
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

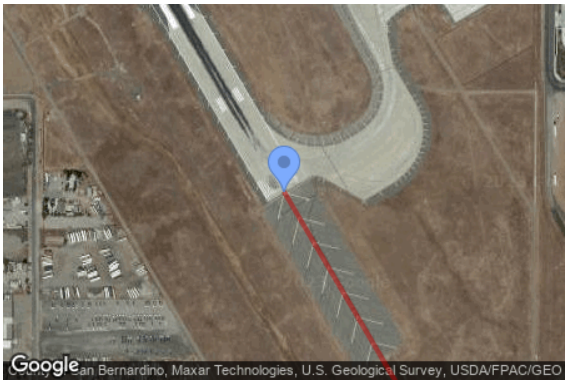
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.896431	-117.270636	1500.00	50.00	1550.00
2	33.925156	-117.291061	1500.00	1500.00	3000.00
3	33.931244	-117.309014	1500.00	1500.00	3000.00
4	33.922394	-117.325047	1500.00	1500.00	3000.00
5	33.908131	-117.325528	1500.00	1500.00	3000.00
6	33.819225	-117.262269	1500.00	1500.00	3000.00
7	33.813147	-117.244350	1500.00	1500.00	3000.00
8	33.821961	-117.228367	1500.00	1500.00	3000.00
9	33.836269	-117.227869	1500.00	1500.00	3000.00
10	33.864994	-117.248281	1500.00	50.00	1550.00

Flight Path Receptors

Name: RWY 14 Final
Description: None
Threshold height: 50 ft
Direction: 149.5°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.896431	-117.270636	1500.00	50.00	1550.00
Two-mile	33.906486	-117.277783	1500.00	1500.00	3000.00

Name: RWY 32 Final
Description: None
Threshold height: 50 ft
Direction: 329.5°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°



Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.864994	-117.248281	1500.00	50.00	1550.00
Two-mile	33.854942	-117.241136	1500.00	1500.00	3000.00

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
1-ATCT	1	33.891572	-117.251203	1511.00	118.00

Map image of 1-ATCT

Glare Analysis Results

Summary of Results Glare with low potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV Array	10.0	180.0	1,455	24.2	0	0.0	2,671,000.0

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 14 C17 KC-135 Pattern Route	0	0.0	0	0.0
RWY 32 C17 KC-135 Pattern Route	1,455	24.2	0	0.0
RWY 14 Final	0	0.0	0	0.0
RWY 32 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

PV: PV Array low potential for temporary after-image

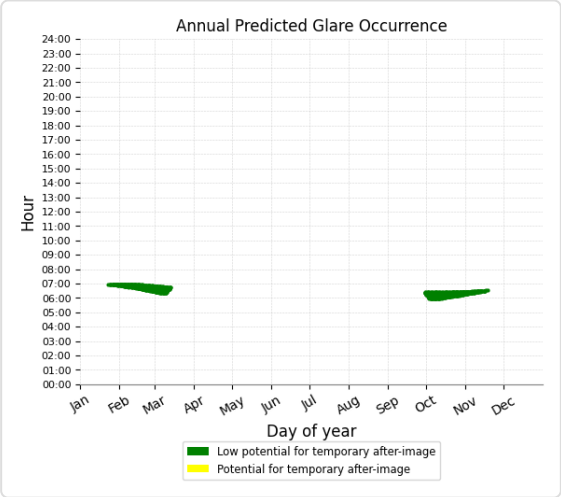
Receptor results ordered by category of glare

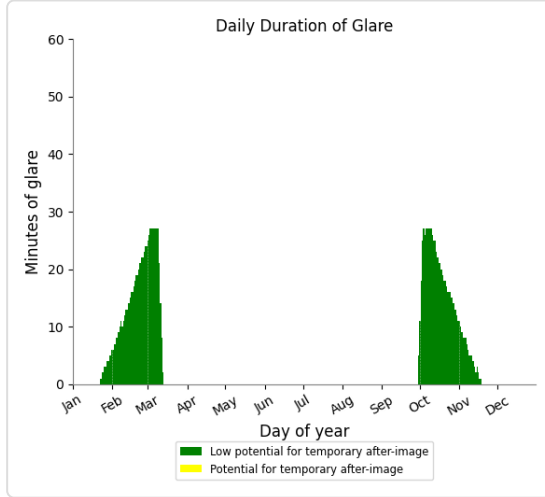
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 32 C17 KC-135 Pattern Route	1,455	24.2	0	0.0
RWY 14 C17 KC-135 Pattern Route	0	0.0	0	0.0
RWY 14 Final	0	0.0	0	0.0
RWY 32 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

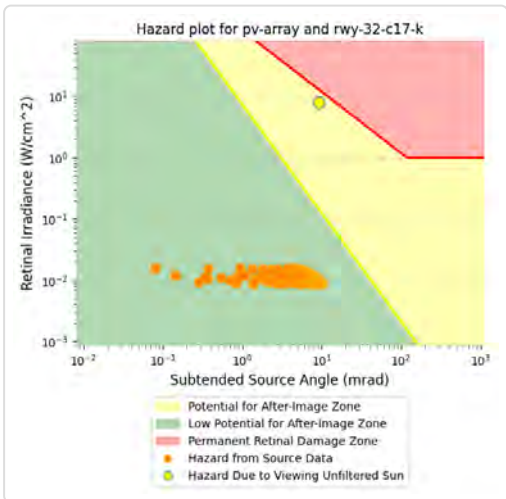
PV Array and Route: RWY 32 C17 KC-135 Pattern Route

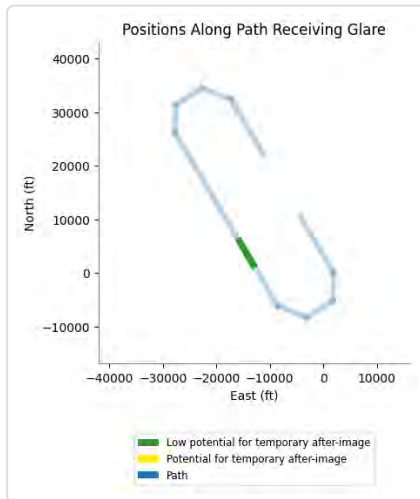
Yellow glare: none

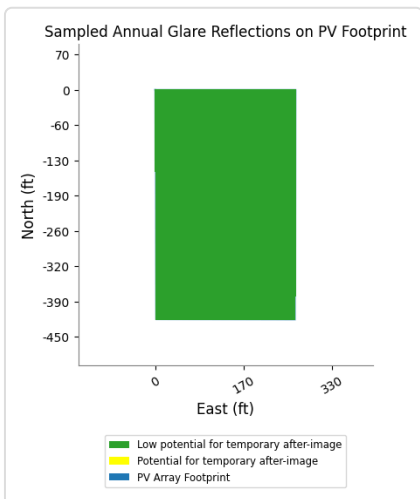
Green glare: 1,455 min.











PV Array and Route: RWY 14 C17 KC-135 Pattern Route

No glare found

PV Array and FP: RWY 14 Final

No glare found

PV Array and FP: RWY 32 Final

No glare found

PV Array and 1-ATCT

No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare. This primarily affects V1 analyses of path receptors.
Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

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FORGESOLAR GLARE ANALYSIS

Project: **Wayfair Rooftops - Perris, CA**
Site configuration: **Wayfair 3500 - Perris CA - RWY 14-32 Overhead**

Created 02 Dec, 2023
Updated 02 Dec, 2023
Time-step 1 minute
Timezone offset UTC-8
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Category 1 MW to 5 MW
Site ID 106932.18549

Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad
PV analysis methodology V2

Summary of Results

Glare with low potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV Array	10.0	180.0	9,180	153.0	0	0.0	2,671,000.0

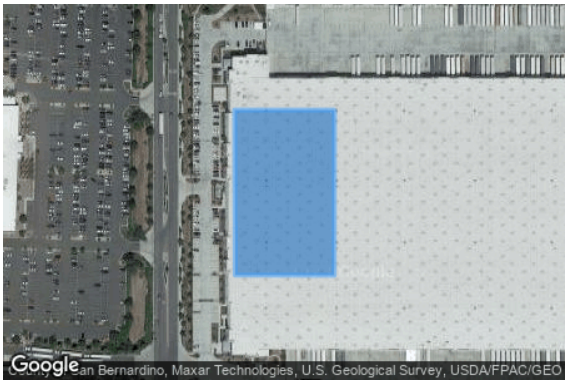
Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 14 Overhead Pattern Route	0	0.0	0	0.0
RWY 32 Overhead Pattern Route	9,180	153.0	0	0.0
RWY 14 Final	0	0.0	0	0.0
RWY 32 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

Component Data

PV Arrays

Name: PV Array
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 180.0°
Rated power: 1193.0 kW
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.836151	-117.234201	1466.07	35.00	1501.07
2	33.836151	-117.233343	1464.71	35.00	1499.71
3	33.834976	-117.233346	1464.45	35.00	1499.45
4	33.834978	-117.234196	1467.07	35.00	1502.07

Route Receptors

Name: RWY 14 Overhead Pattern Route
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.968036	-117.322128	1500.00	2000.00	3500.00
2	33.880706	-117.259453	1500.00	2000.00	3500.00
3	33.863564	-117.293808	1500.00	2000.00	3500.00
4	33.908131	-117.325528	1500.00	2000.00	3500.00
5	33.925156	-117.291061	1500.00	2000.00	3500.00
6	33.896431	-117.270636	1500.00	50.00	1550.00

Name: RWY 32 Overhead Pattern Route
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

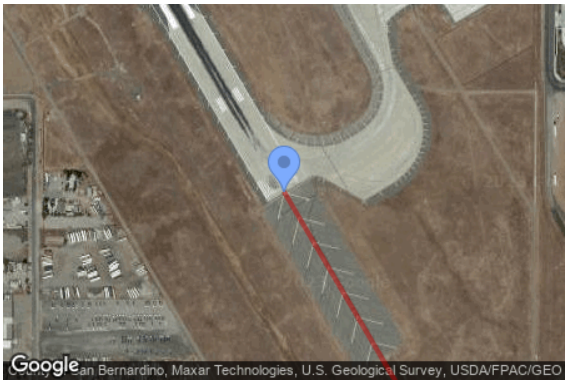
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.793375	-117.196878	1500.00	2000.00	3500.00
2	33.880706	-117.259453	1500.00	2000.00	3500.00
3	33.863564	-117.293808	1500.00	2000.00	3500.00
4	33.819225	-117.262269	1500.00	2000.00	3500.00
5	33.836269	-117.227869	1500.00	2000.00	3500.00
6	33.864994	-117.248281	1500.00	50.00	1550.00

Flight Path Receptors

Name: RWY 14 Final
Description: None
Threshold height: 50 ft
Direction: 149.5°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.896431	-117.270636	1500.00	50.00	1550.00
Two-mile	33.906486	-117.277783	1500.00	1500.00	3000.00

Name: RWY 32 Final
Description: None
Threshold height: 50 ft
Direction: 329.5°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°



Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.864994	-117.248281	1500.00	50.00	1550.00
Two-mile	33.854942	-117.241136	1500.00	1500.00	3000.00

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
1-ATCT	1	33.891572	-117.251203	1511.00	118.00

Map image of 1-ATCT

Glare Analysis Results

Summary of Results Glare with low potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV Array	10.0	180.0	9,180	153.0	0	0.0	2,671,000.0

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 14 Overhead Pattern Route	0	0.0	0	0.0
RWY 32 Overhead Pattern Route	9,180	153.0	0	0.0
RWY 14 Final	0	0.0	0	0.0
RWY 32 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

PV: PV Array low potential for temporary after-image

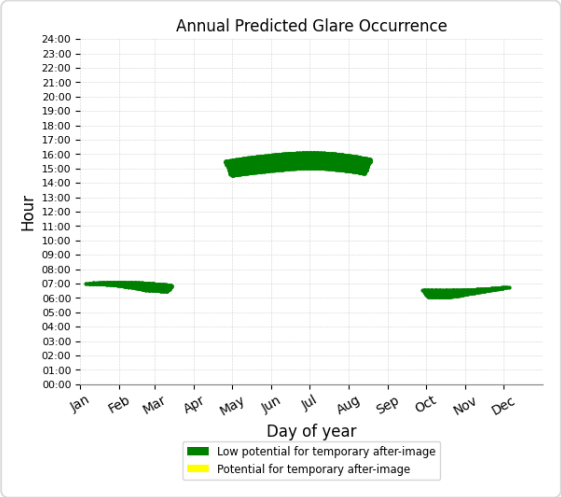
Receptor results ordered by category of glare

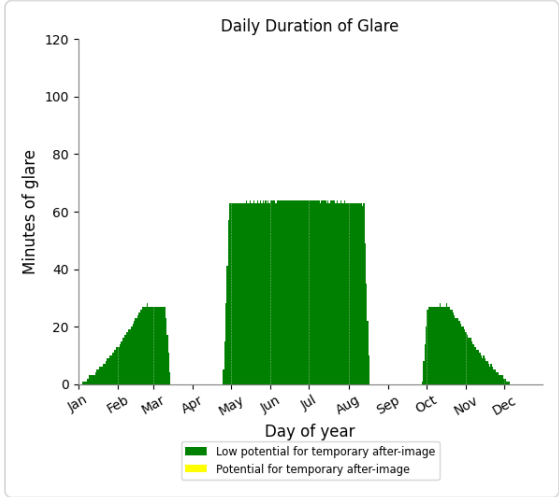
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 32 Overhead Pattern Route	9,180	153.0	0	0.0
RWY 14 Overhead Pattern Route	0	0.0	0	0.0
RWY 14 Final	0	0.0	0	0.0
RWY 32 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

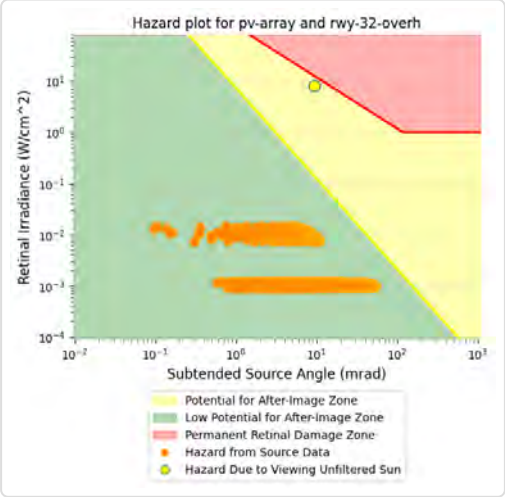
PV Array and Route: RWY 32 Overhead Pattern Route

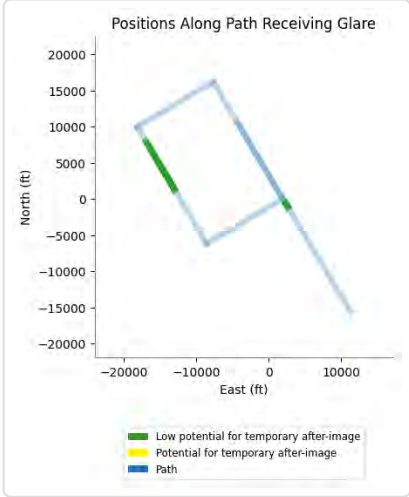
Yellow glare: none

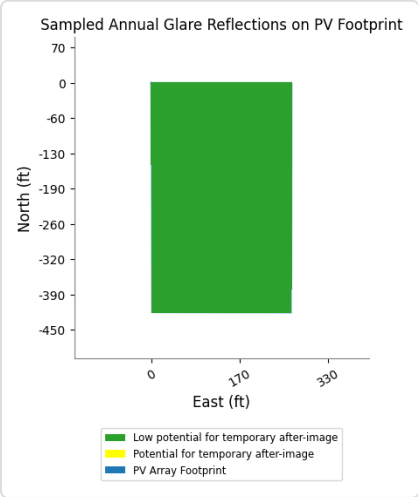
Green glare: 9,180 min.











PV Array and Route: RWY 14 Overhead Pattern Route

No glare found

PV Array and FP: RWY 14 Final

No glare found

PV Array and FP: RWY 32 Final

No glare found

PV Array and 1-ATCT

No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare. This primarily affects V1 analyses of path receptors.
Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

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FORGESOLAR GLARE ANALYSIS

Project: **Wayfair Rooftops - Perris, CA**
Site configuration: **Wayfair 3500 - Perris CA - Runway 14-32 GA**

Created 03 Dec, 2023
Updated 03 Dec, 2023
Time-step 1 minute
Timezone offset UTC-8
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Category 1 MW to 5 MW
Site ID 106934.18549

Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad
PV analysis methodology V2

Summary of Results

Glare with low potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV Array	10.0	180.0	2,119	35.3	0	0.0	2,671,000.0

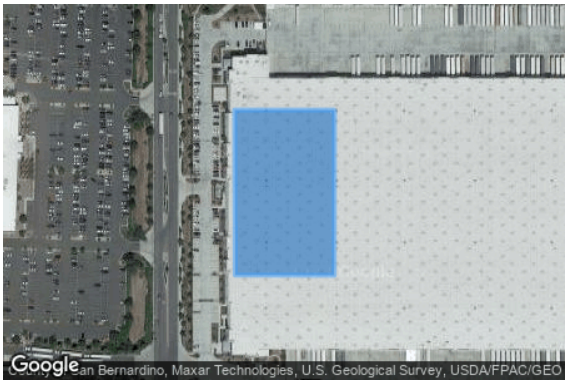
Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 14 GA Pattern Route	0	0.0	0	0.0
RWY 32 GA Pattern Route	2,119	35.3	0	0.0
RWY 14 Final	0	0.0	0	0.0
RWY 32 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

Component Data

PV Arrays

Name: PV Array
Axis tracking: Fixed (no rotation)
Tilt: 10.0°
Orientation: 180.0°
Rated power: 1193.0 kW
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.836151	-117.234201	1466.07	35.00	1501.07
2	33.836151	-117.233343	1464.71	35.00	1499.71
3	33.834976	-117.233346	1464.45	35.00	1499.45
4	33.834978	-117.234196	1467.07	35.00	1502.07

Route Receptors

Name: RWY 14 GA Pattern Route
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.864994	-117.248281	1500.00	50.00	1550.00
2	33.854942	-117.241136	1500.00	1500.00	3000.00
3	33.848078	-117.243236	1500.00	1500.00	3000.00
4	33.844669	-117.250119	1500.00	1500.00	3000.00
5	33.846422	-117.258344	1500.00	1500.00	3000.00
6	33.897972	-117.295011	1500.00	1500.00	3000.00
7	33.904833	-117.292903	1500.00	1500.00	3000.00
8	33.908242	-117.286017	1500.00	1500.00	3000.00
9	33.906486	-117.277783	1500.00	1500.00	3000.00
10	33.896431	-117.270636	1500.00	50.00	1550.00

Name: RWY 32 GA Pattern Route
Path type: One-way (toward increasing index)
Observer view angle: 50.0°

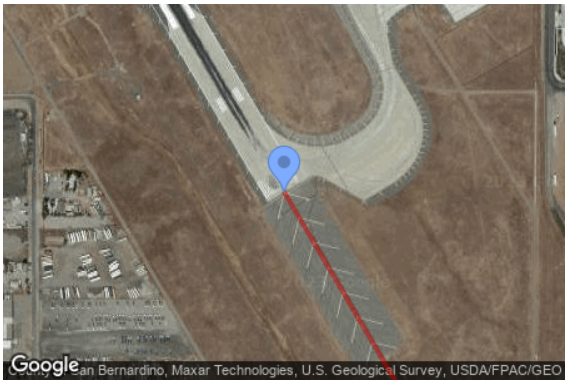
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	33.896431	-117.270636	1500.00	50.00	1550.00
2	33.906486	-117.277783	1500.00	1500.00	3000.00
3	33.908242	-117.286017	1500.00	1500.00	3000.00
4	33.904833	-117.292903	1500.00	1500.00	3000.00
5	33.897972	-117.295011	1500.00	1500.00	3000.00
6	33.846422	-117.258344	1500.00	1500.00	3000.00
7	33.844669	-117.250119	1500.00	1500.00	3000.00
8	33.848078	-117.243236	1500.00	1500.00	3000.00
9	33.854942	-117.241136	1500.00	1500.00	3000.00
10	33.864994	-117.248281	1500.00	50.00	1550.00

Flight Path Receptors

Name: RWY 14 Final
Description: None
Threshold height: 50 ft
Direction: 149.5°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.896431	-117.270636	1500.00	50.00	1550.00
Two-mile	33.906486	-117.277783	1500.00	1500.00	3000.00

Name: RWY 32 Final
Description: None
Threshold height: 50 ft
Direction: 329.5°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°



Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	33.864994	-117.248281	1500.00	50.00	1550.00
Two-mile	33.854942	-117.241136	1500.00	1500.00	3000.00

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
1-ATCT	1	33.891572	-117.251203	1511.00	118.00

Map image of 1-ATCT

Glare Analysis Results

Summary of Results Glare with low potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV Array	10.0	180.0	2,119	35.3	0	0.0	2,671,000.0

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 14 GA Pattern Route	0	0.0	0	0.0
RWY 32 GA Pattern Route	2,119	35.3	0	0.0
RWY 14 Final	0	0.0	0	0.0
RWY 32 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

PV: PV Array low potential for temporary after-image

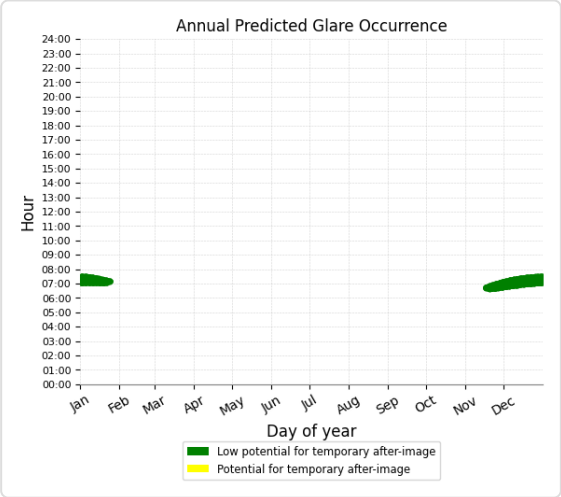
Receptor results ordered by category of glare

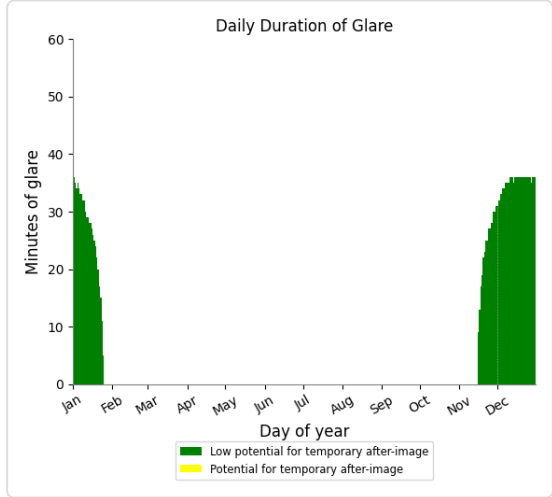
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RWY 32 GA Pattern Route	2,119	35.3	0	0.0
RWY 14 GA Pattern Route	0	0.0	0	0.0
RWY 14 Final	0	0.0	0	0.0
RWY 32 Final	0	0.0	0	0.0
1-ATCT	0	0.0	0	0.0

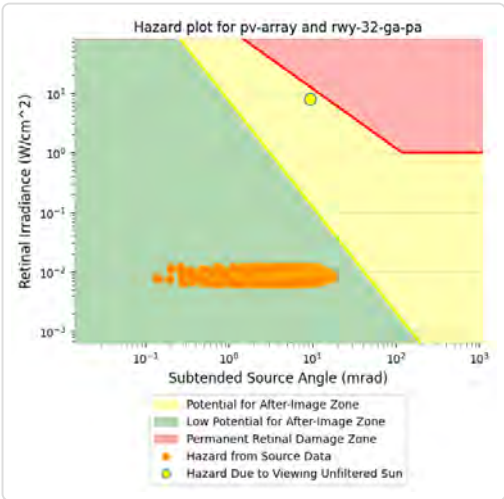
PV Array and Route: RWY 32 GA Pattern Route

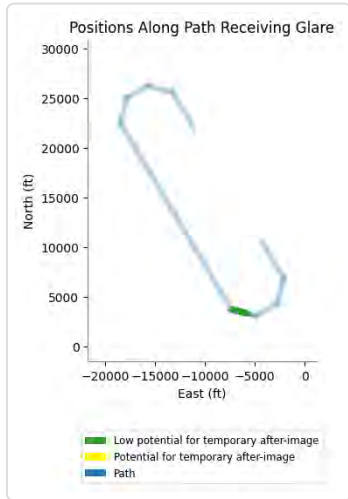
Yellow glare: none

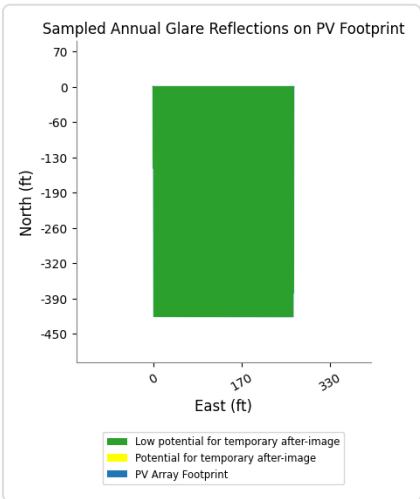
Green glare: 2,119 min.











PV Array and Route: RWY 14 GA Pattern Route

No glare found

PV Array and FP: RWY 14 Final

No glare found

PV Array and FP: RWY 32 Final

No glare found

PV Array and 1-ATCT

No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare. This primarily affects V1 analyses of path receptors.
Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

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NOTICE OF PUBLIC HEARING

RIVERSIDE COUNTY AIRPORT LAND USE COMMISSION

www.rcaluc.org

A PUBLIC HEARING has been scheduled before the Riverside County Airport Land Use Commission (ALUC) to consider the applications described below.

Any person may submit written comments to the ALUC before the hearing or may appear and be heard in support of or opposition to the project at the time of hearing. **Information on how to participate in the hearing will be available on the ALUC website at www.rcaluc.org.** The ALUC holds hearings for local discretionary permits within the Airport Influence Area, reviewing for aeronautical safety, noise and obstructions. ALUC reviews a proposed plan or project solely to determine whether it is consistent with the applicable Airport Land Use Compatibility Plan. For more information please contact **ALUC Planner Jackie Vega at (951) 955-0982**.

The City of Perris Planning Department should be contacted on non-ALUC issues. For more information, please contact City of Perris Planner Nathan Perez at 951-943-5003.

The proposed project application may be viewed by a prescheduled appointment and on the ALUC website www.rcaluc.org. Written comments may be submitted at the Riverside County Administrative Center, 4080 Lemon Street, 14th Floor, Riverside, California 92501, Monday through Friday from 8:00 a.m. to 3:30 p.m., or by e-mail to javega@rivco.org. Individuals with disabilities requiring reasonable modifications or accommodations, please contact Barbara Santos at (951) 955-5132.

PLACE OF HEARING: **Riverside County Administration Center**
4080 Lemon Street, 1st Floor Board Chambers
Riverside California

DATE OF HEARING: **February 8, 2024**

TIME OF HEARING: **9:30 A.M.**

CASE DESCRIPTION:

ZAP1594MA23 – PowerFlex (Representative: Prologis) – City of Perris Case No. PMT23-02954 (Conditional Use Permit). A proposal to construct a solar panel system totaling 60,110 square feet on an existing industrial building on 59.05 acres, located southerly of Morgan Street, northerly of Sinclair Street, easterly Indian Street, and westerly of Barrett Avenue(Airport Compatibility Zones B1-APZ-II and C1 of the March Air Reserve Base/Inland Port Airport Influence Area)

RIVERSIDE COUNTY
AIRPORT LAND USE COMMISSION

APPLICATION FOR MAJOR LAND USE ACTION REVIEW

ALUC STAFF ONLY

ALUC Case Number: ZAP1594MA23 Date Submitted: 12/19/23

AIA: March Zone: C1/B1 Public Hearing ☑ Staff Review ☐

Applicant

Applicant Full Name: Yuriko Arnott

Applicant Address: 15445 Innovation Dr. San Diego, CA 92128

Phone: 5512749927 **Email:** yuriko.arnott@powerflex.com

Representative/ Property Owner Contact Information

Representative: Juan Burrel **Email:** jburruel@prologis.com

Phone: 5512749927

Address: 1800 WAZEE ST SUITE 500, DENVER,CO 80202

Property Owner: PROLOGIS EXCHANGE STOCKTON 10 & 11 LLC **Email:** jburruel@prologis.com

Phone: 5512749927

Address: 1800 WAZEE ST SUITE 500, DENVER,CO 80202

Local Jurisdiction Agency

Agency Name: City of Perris Phone: (951) 943-5003

Staff Contact: Nathan Perez **Email:** NPerez@cityofperris.org

Address: 135 N. "D" Street Perris, CA 92570

Local Agency Case No.: PMT-02954

Project Location

Street Address: 3500 Indian Avenue Gross Parcel Size.: 59.05

Assessor's Parcel No.: 3030800019

Solar

Is the project proposing solar Panels? Yes ☑ No ☐ If yes, please provide solar glare study. (Only for zone C or higher.)

Data

Site Elevation:(above mean sea level) 1469.8 feet

Height of Building or structures: 35' -0'

What type of drainage basins are being proposed and the square footage: NA

Notice

A. NOTICE: Failure of an applicant to submit complete or adequate information pursuant to Sections 65940 to 65948 inclusive of the California Government Code, MAY constitute grounds for disapproval of actions, regulations, or permits.

B. REVIEW TIME: Estimated time for "staff level review" is approximately 30 days from date of submittal. Estimated time for "commission level review" is approximately 45 days from date of a complete application submittal to the next available commission hearing meeting.

C. SUBMISSION PACKAGE:

Please submit all application items DIGITALLY via USB or CD:

- Completed ALUC Application Form
- Plans Package: site plans, floor plans, building elevations, grading plans, subdivision maps
- Exhibits of change of zone, general plan amendment, specific plan amendment
- Project description of current and proposed use

Additionally, please provide:

- ALUC fee payment (Checks made out to Riverside County ALUC)
- Gummed address labels of all surrounding property owners within a 300-foot radius of project site. (Only required if the project is scheduled for a public hearing)

Riverside County Airport Land Use Commission, County Administrative Center, 4080 Lemon Street, 14th Floor, Riverside, CA 92501, Phone: 951-955-5132 Fax: 951-955-5177 Website: www.rcaluc.org

RIVERSIDE COUNTY
AIRPORT LAND USE COMMISSION

STAFF REPORT

AGENDA ITEM:	3.5
HEARING DATE:	February 8, 2024
CASE NUMBER:	ZAP1032PV23 – WLPX Perris Venue, LLC (Representative: Lewis Management Corporation)
APPROVING JURISDICTION:	City of Perris
JURISDICTION CASE NO:	GPA23-05033 (General Plan Amendment), ZC23-05034 (Zone Change), DPR23-00005 (Development Plan Review), DPR23-00006 (Development Plan Review), CUP23-05032 (Conditional Use Permit), TPM35700 (Tentative Parcel Map)
LAND USE PLAN:	2011 Perris Valley Airport Land Use Compatibility Plan, 2014 March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan
Airport Influence Area:	Perris Valley Airport, March Air Reserve Base/Inland Port Airport
Land Use Policy:	Zone E (Perris Valley); Zone D (March)
Noise Levels:	65 - 70 CNEL range from Perris Valley aircraft; Below 60 CNEL from March aircraft
MAJOR ISSUES:	None

RECOMMENDATION: Staff recommends that the Commission find the proposed General Plan Amendment and Zone Change CONSISTENT, with the 2011 Perris Valley Airport Land Use Compatibility Plan and the 2014 March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan, and also find the proposed Development Plan Reviews, Conditional Use Permit, and Tentative Parcel Map CONDITIONALLY CONSISTENT, subject to the conditions included herein, and such additional conditions as may be required by the Federal Aviation Administration Obstruction Evaluation Service.

PROJECT DESCRIPTION: A proposal to construct a nine-building commercial center totaling 142,074 square feet on 15.70 acres, and an 848,000 square foot industrial building with mezzanines on 44.04 acres. The applicant also proposes to amend the site's General Land Use designation and Zoning from Community Commercial to Community Commercial and Light Industrial. The applicant also proposes dividing the site into 10 parcels.

PROJECT LOCATION: The site is located on the southeast corner of San Jacinto Avenue and Redlands Avenue, approximately 4,679 feet northeasterly of the northerly terminus of Runway 15-

33 at Perris Valley Airport.

BACKGROUND:

Non-Residential Intensity: Pursuant to the Perris Valley Airport Land Use Compatibility Plan, the project is located within Zone E, which does not restrict non-residential intensity. The project is also located in Zone D of the March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan, which also does not restrict non-residential intensity.

Prohibited and Discouraged Uses: The applicant does not propose any uses prohibited or discouraged in Compatibility Zones D or E.

Noise: The March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan depicts the site as being in an area below the 60 CNEL range from aircraft noise. The Perris Valley Airport Land Use Compatibility Plan depicts the site as being affected by aircraft noise of 65 - 70 CNEL. As a primarily industrial use not sensitive to noise (and considering typical anticipated building construction noise attenuation of approximately 20 dBA), the industrial building area would not require special measures to mitigate aircraft-generated noise. However, a condition is included to provide for adequate noise attenuation within office areas of the industrial buildings and for all the commercial buildings.

Part 77: The elevation of Perris Valley Airport's Runway 15-33 at its northeasterly terminus is 1,417 feet above mean sea level (AMSL). At a distance of approximately 4,679 feet from the runway to the site, Federal Aviation Administration (FAA) review would be required for any structures with top of roof exceeding 1,464 feet AMSL. The site elevation is 1,422 feet AMSL and the maximum building height is 50 feet, resulting in a top point elevation of 1,472 feet AMSL. Therefore, review of this building by the FAA Obstruction Evaluation Service (FAA OES) is required. The applicant has submitted Form 7460-1, and FAA OES has assigned Aeronautical Study Nos. 2024-AWP-71-OE through 2024-AWP-74-OE to this project and is currently in a 'work in progress' status.

Open Area: The project site is located within Compatibility Zone E of Perris Valley Airport Land Use Compatibility Plan, which does not require open area. None of the Compatibility Zones for the March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan require open area specifically.

Hazards to Flight: Land use practices that attract or sustain hazardous wildlife populations on or near airports significantly increase the potential of Bird Aircraft Strike Hazards (BASH). The FAA strongly recommends that storm water management systems located within 5,000 or 10,000 feet of the Airport Operations Area, depending on the type of aircraft, be designed and operated so as not to create above-ground standing water. To facilitate the control of hazardous wildlife, the FAA recommends the use of steep-sided, rip-rap lined, narrow, linearly shaped water detention basins. All vegetation in and around detention basins that provide food or cover for hazardous wildlife should be eliminated. (FAA Advisory Circular 5200-33C). The project is located 4,679 feet from the runway, and therefore would be subject to the above requirement.

The project includes a 313,632 square foot bioinfiltration basin. Bioinfiltration basins are not recommended in the vicinity of airports due to the potential that such areas could provide food, water, and shelter for hazardous wildlife. Pursuant to the study "Wildlife Hazard Management at Riverside County Airports: Background and Policy", October 2018, by Mead & Hunt, which is the

basis of the brochure titled “Airports, Wildlife and Stormwater Management”, bioinfiltration basins are permissible in Zones D and E provided that the basin has a 48-hour drawdown and proposed landscaping is not attractive to potentially hazardous wildlife. The project has been conditioned to be consistent with the basin criteria.

General Plan Amendment/Zone Change: The applicant also proposes to amend the site’s General Land Use designation and Zoning from Community Commercial to Community Commercial and Light Industrial. The proposed amendments would be as, or more, consistent with the Compatibility Plan as the underlying compatibility zone does not restrict non-residential intensity.

CONDITIONS:

1. Any new outdoor lighting that is installed shall be hooded or shielded so as to prevent either the spillage of lumens or reflection into the sky. Outdoor lighting shall be downward facing.

2. The following uses/activities are not included in the proposed project and shall be prohibited at this site:

   (a) Any use which would direct a steady light or flashing light of red, white, green, or amber colors associated with airport operations toward an aircraft engaged in an initial straight or circling climb following takeoff or toward an aircraft engaged in a straight or circling final approach toward a landing at an airport, other than a DoD or FAA-approved navigational signal light or visual approach slope indicator.

   (b) Any use which would cause sunlight to be reflected towards an aircraft engaged in an initial straight or circling climb following takeoff or towards an aircraft engaged in a straight or circling final approach towards a landing at an airport.

   (c) Any use which would generate smoke or water vapor, or which would attract large concentrations of birds, or which may otherwise affect safe air navigation within the area. (Such uses include landscaping utilizing water features, aquaculture, production of cereal grains, sunflower, and row crops, composting operations, wastewater management facilities, artificial marshes, trash transfer stations that are open on one or more sides, recycling centers containing putrescible wastes, construction and demolition debris facilities, fly ash disposal, and incinerators.)

   (d) Any use which would generate electrical interference that may be detrimental to the operation of aircraft and/or aircraft instrumentation.

   (e) Hazards to flight

3. The attached notice shall be provided to all prospective purchasers of the property and tenants of the building, and shall be recorded as a deed notice.

4. Any proposed detention basins or facilities shall be designed and maintained to provide for a maximum 48-hour detention period following the design storm, and remain totally dry between rainfalls. Vegetation in and around the detention basins that would provide food or cover for birds would be incompatible with airport operations and shall not be utilized in project landscaping. Trees shall be spaced so as to prevent large expanses of contiguous

canopy, when mature. Landscaping in and around the detention basin(s) shall not include trees or shrubs that produce seeds, fruits, or berries.

Landscaping in the detention basin, if not rip-rap, should be in accordance with the guidance provided in ALUC "LANDSCAPING NEAR AIRPORTS" brochure, and the "AIRPORTS, WILDLIFE AND STORMWATER MANAGEMENT" brochure available at RCALUC.ORG which list acceptable plants from Riverside County Landscaping Guide or other alternative landscaping as may be recommended by a qualified wildlife hazard biologist.

A notice sign, in a form similar to that attached hereto, shall be permanently affixed to the stormwater basin with the following language: "There is an airport nearby. This stormwater basin is designed to hold stormwater for only 48 hours and not attract birds. Proper maintenance is necessary to avoid bird strikes". The sign will also include the name, telephone number or other contact information of the person or entity responsible to monitor the stormwater basin.

5. March Air Reserve Base must be notified of any land use having an electromagnetic radiation component to assess whether a potential conflict with Air Base radio communications could result. Sources of electromagnetic radiation include radio wave transmission in conjunction with remote equipment inclusive of irrigation controllers, access gates, etc.

6. The project has been evaluated to construct a nine-building commercial center totaling 142,074 square feet on 15.70 acres, and an 848,000 square foot industrial building with mezzanines on 44.04 acres. Any increase in building area, change in use to any higher intensity use, change in building location, or modification of the tentative parcel map lot lines and areas will require an amended review to evaluate consistency with the ALUCP compatibility criteria**,** at the discretion of the ALUC Director.

NOTICE OF AIRPORT IN VICINITY

This property is presently located in the vicinity of an airport, within what is known as an airport influence area. For that reason, the property may be subject to some of the annoyances or inconveniences associated with proximity to airport operations (for example: noise, vibration, or odors). Individual sensitivities to those annoyances [can vary from person to person. You may wish to consider what airport annoyances], if any, are associated with the property before you complete your purchase and determine whether they are acceptable to you. Business & Professions Code Section 11010 (b)(13)(A)

NOTICE

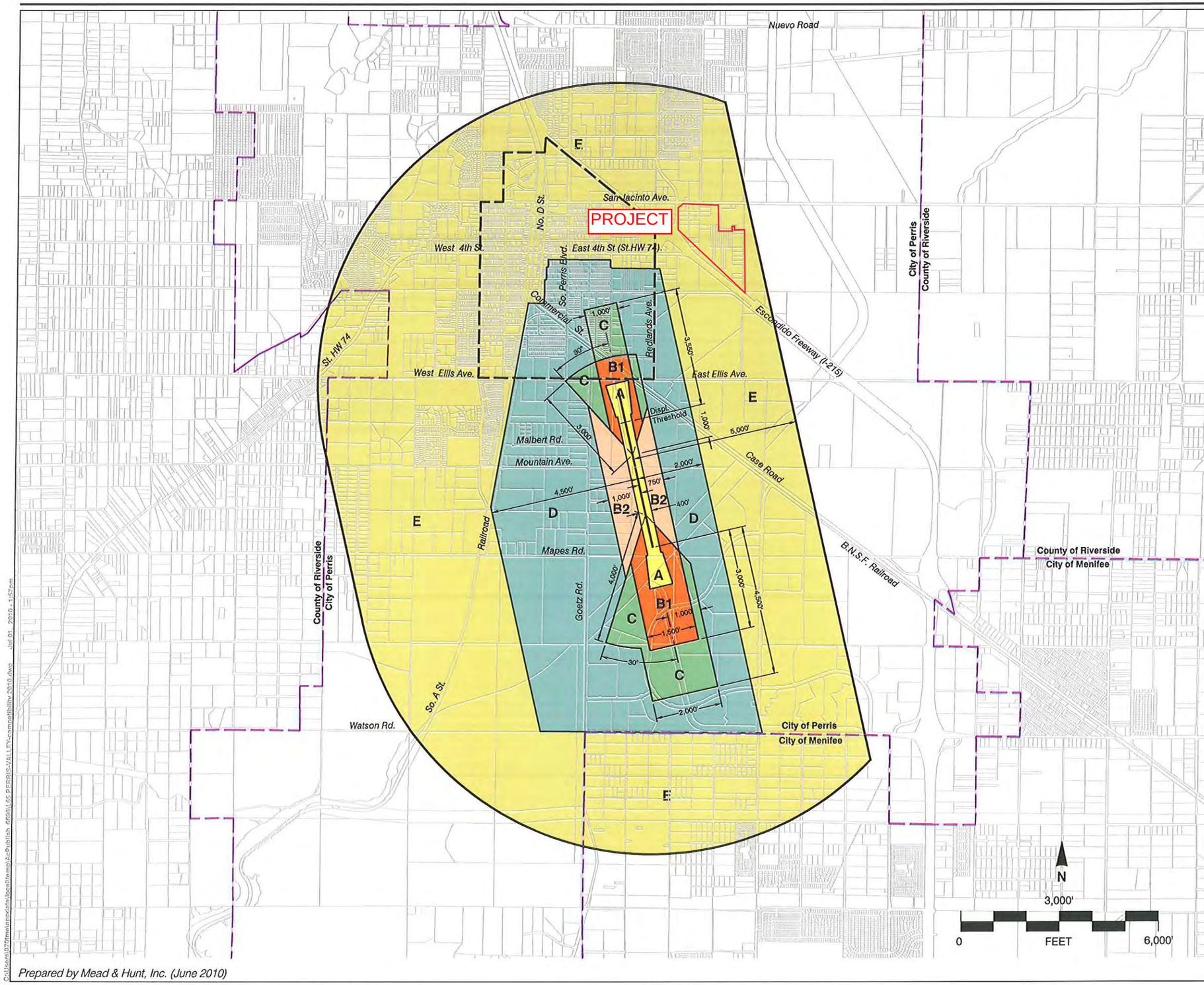
THERE IS AN AIRPORT NEARBY.

THIS STORM WATER BASIN IS DESIGNED TO HOLD STORM WATER FOR ONLY 48 HOURS AND NOT TO ATTRACT BIRDS

PROPER MAINTENANCE IS NECESSARY TO AVOID BIRD STRIKES

IF THIS BASIN IS OVERGROWN, PLEASE CONTACT:

Name: _____ **Phone:** _____



Prepared by Mead & Hunt, Inc. (June 2010)

Legend

Compatibility Zones

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

Boundary Lines

- Airport Property Line
- City Limits
- Downtown Specific Plan

Riverside County
Airport Land Use Commission

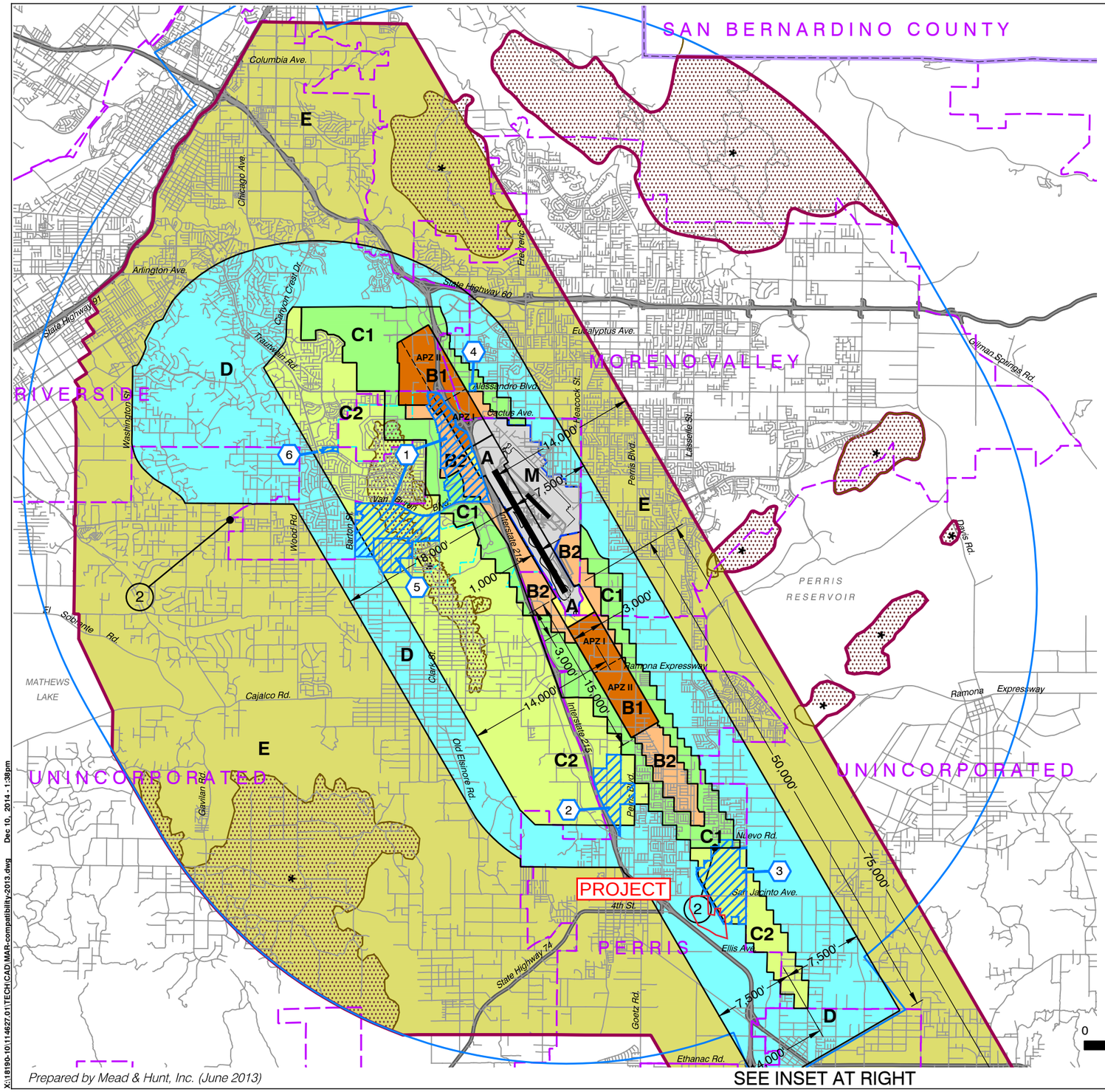
Riverside County
Airport Land Use Compatibility Plan
Policy Document

(July 2010 Draft)

Map PV-1

Compatibility Map

Perris Valley Airport



LEGEND

Compatibility Zones

- Airport Influence Area Boundary
- Zone A
- Zone B1
- Zone B2
- Zone C1
- Zone C2
- Zone D
- Zone E
- Zone M
- High Terrain Zone
- FAR Part 77 Military Outer Horizontal Surface Limits
- FAR Part 77 Notification Area

Boundary Lines

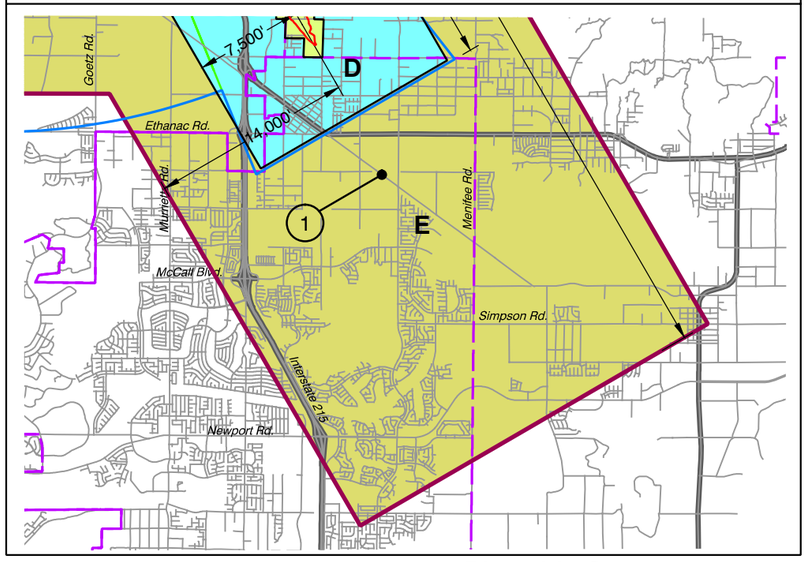
- March Air Reserve Base / Air Force Property
- March Joint Powers Authority Property Line
- County Boundary
- City Limits
- Site-Specific Exceptions (existing local agency commitments to development projects)

1. March JPA: March Business Center/Meridian
2. Perris: Harvest Landing
3. Perris: Park West
4. Moreno Valley: Affordable Housing
5. March JPA: Ben Clark Training Center
6. Riverside: Ridge Crest Subdivision

(1) Point at which aircraft on Runway 32 ILS approach descend below 3,000 feet above runway end. Airport Elevation is 1,535 feet MSL.

(2) Point at which departing aircraft typically reach 3,000 feet above runway end.

INSET



Note:
All dimensions are measured from runway ends and centerlines.

Riverside County Airport Land Use Commission

March Air Reserve Base / Inland Port Airport Land Use Compatibility Plan

(Adopted November 13, 2014)

Map MA-1

Compatibility Map

March Air Reserve Base / Inland Port Airport

Prepared by Mead & Hunt, Inc. (June 2013)

Base map source: County of Riverside 2013

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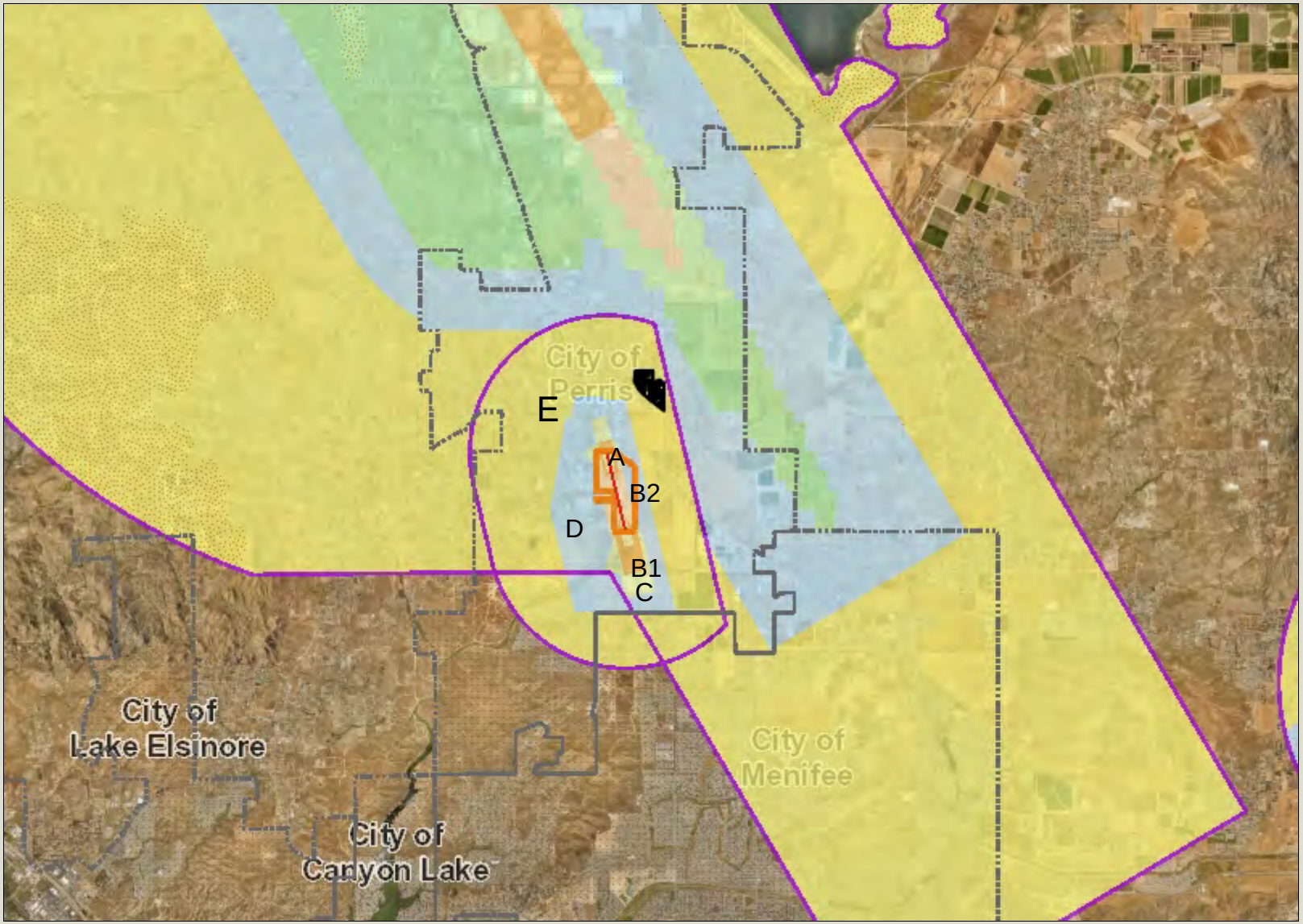
Map My County Map



Legend

- Runways
- Airports
- Airport Influence Areas
- Airport Compatibility Zones
  - OTHER COMPATIBILITY ZONE
  - A
  - A-EXC1
  - B1
  - B1-APZ I
  - B1-APZ I-EXC1
  - B1-APZ II
  - B1-APZ II-EXC1
  - B1-EXC1
  - B2
  - B2-EXC1
  - C
  - C1
  - C1-EXC1
  - C1-EXC3
  - C1-EXC4
  - C1-HIGHT
  - C2
  - C2-EXC1
  - C2-EXC2
  - C2-EXC3
  - C2-EXC5
  - C2-EXC6

0 12,195 24,389 Feet

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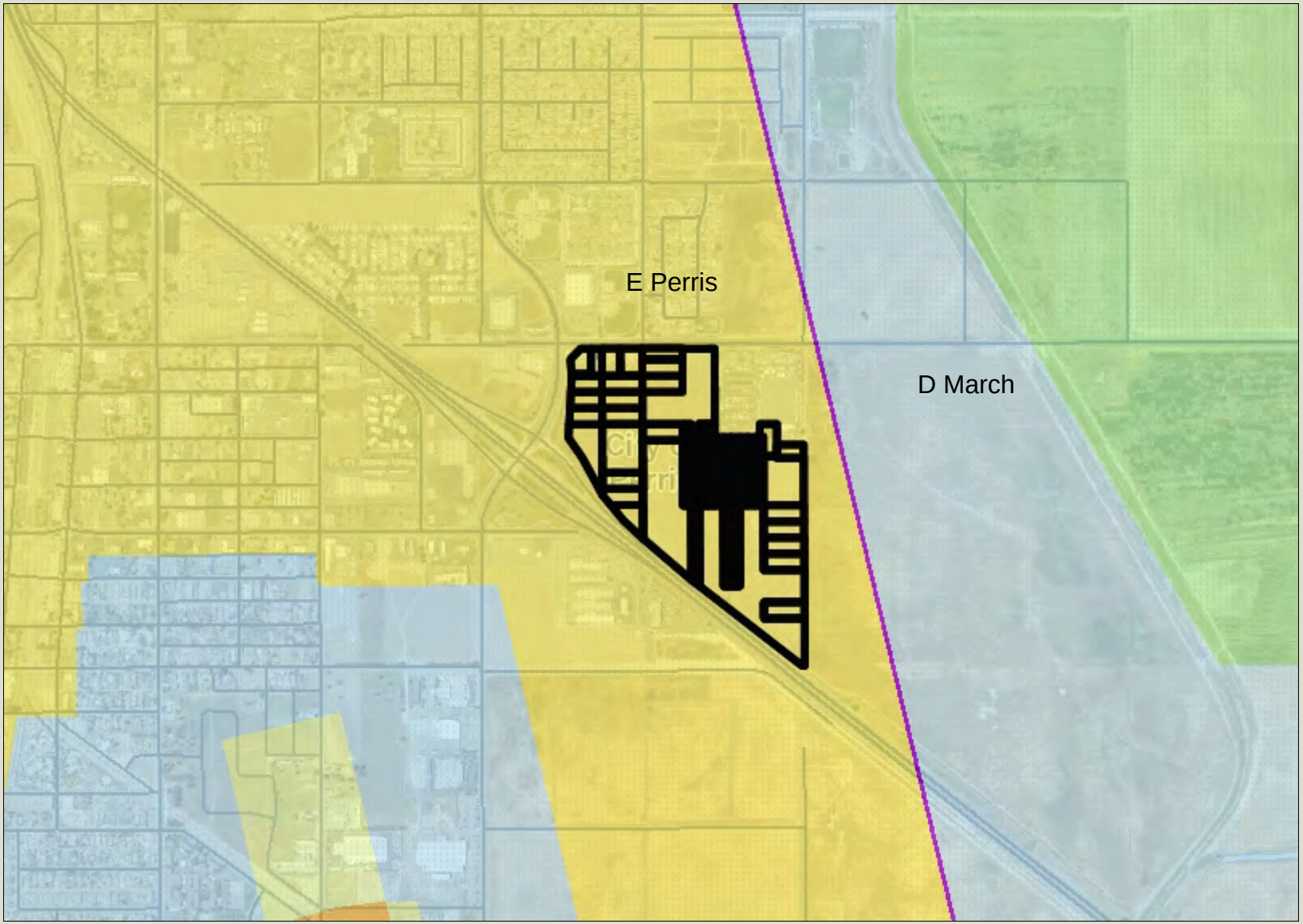
Notes

Map My County Map



Legend

- Runways
- Airports
- Airport Influence Areas
- Airport Compatibility Zones
  - OTHER COMPATIBILITY ZONE
  - A
  - A-EXC1
  - B1
  - B1-APZ I
  - B1-APZ I-EXC1
  - B1-APZ II
  - B1-APZ II-EXC1
  - B1-EXC1
  - B2
  - B2-EXC1
  - C
  - C1
  - C1-EXC1
  - C1-EXC3
  - C1-EXC4
  - C1-HIGHT
  - C2
  - C2-EXC1
  - C2-EXC2
  - C2-EXC3
  - C2-EXC5
  - C2-EXC6

0 1,524 3,049 Feet

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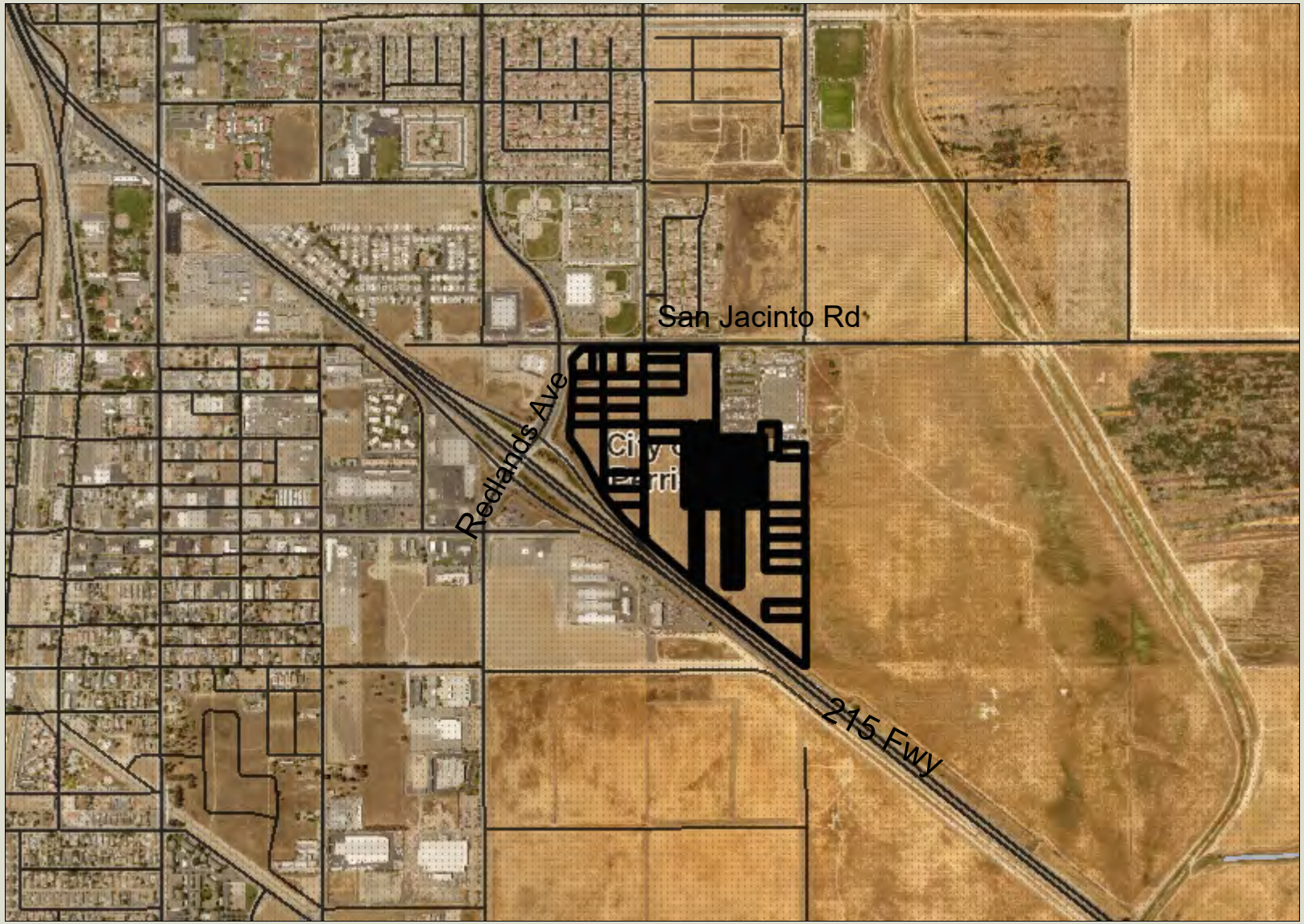
Notes

Map My County Map



Legend

- County Centerline Names
- County Centerlines
- Blueline Streams
- City Areas
- World Street Map

IMPORTANT Maps and data are to be used for reference purposes only. Map features are approximate, and are not necessarily accurate to surveying or engineering standards. The County of Riverside makes no warranty or guarantee as to the content (the source is often third party), accuracy, timeliness, or completeness of any of the data provided, and assumes no legal responsibility for the information contained on this map. Any use of this product with respect to accuracy and precision shall be the sole responsibility of the user.

0 1,524 3,049 Feet

REPORT PRINTED ON... 7/20/2023 9:43:44 AM

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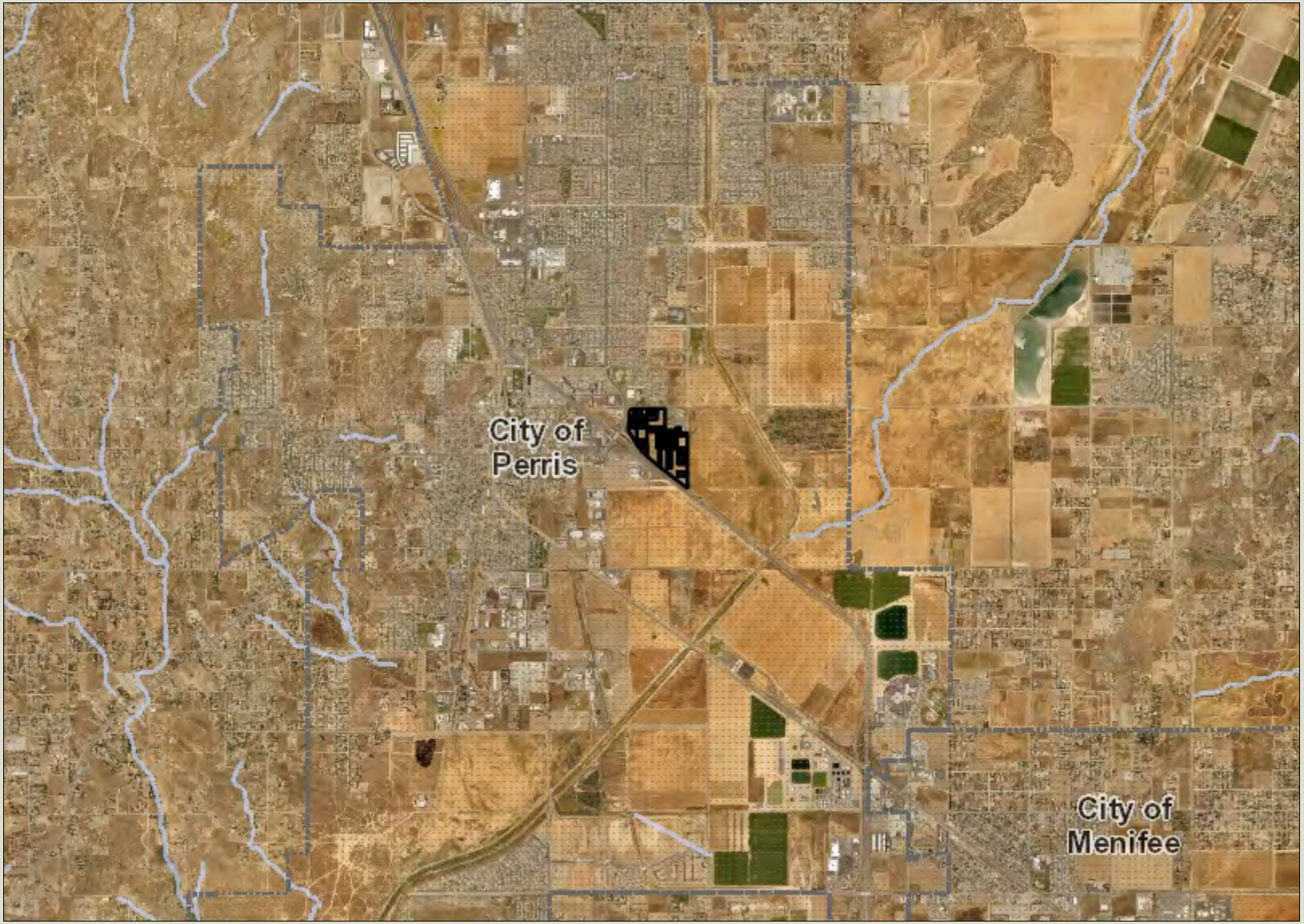
Notes

Map My County Map



Legend

- Blueline Streams
- City Areas
- World Street Map

0 6,097 12,195 Feet

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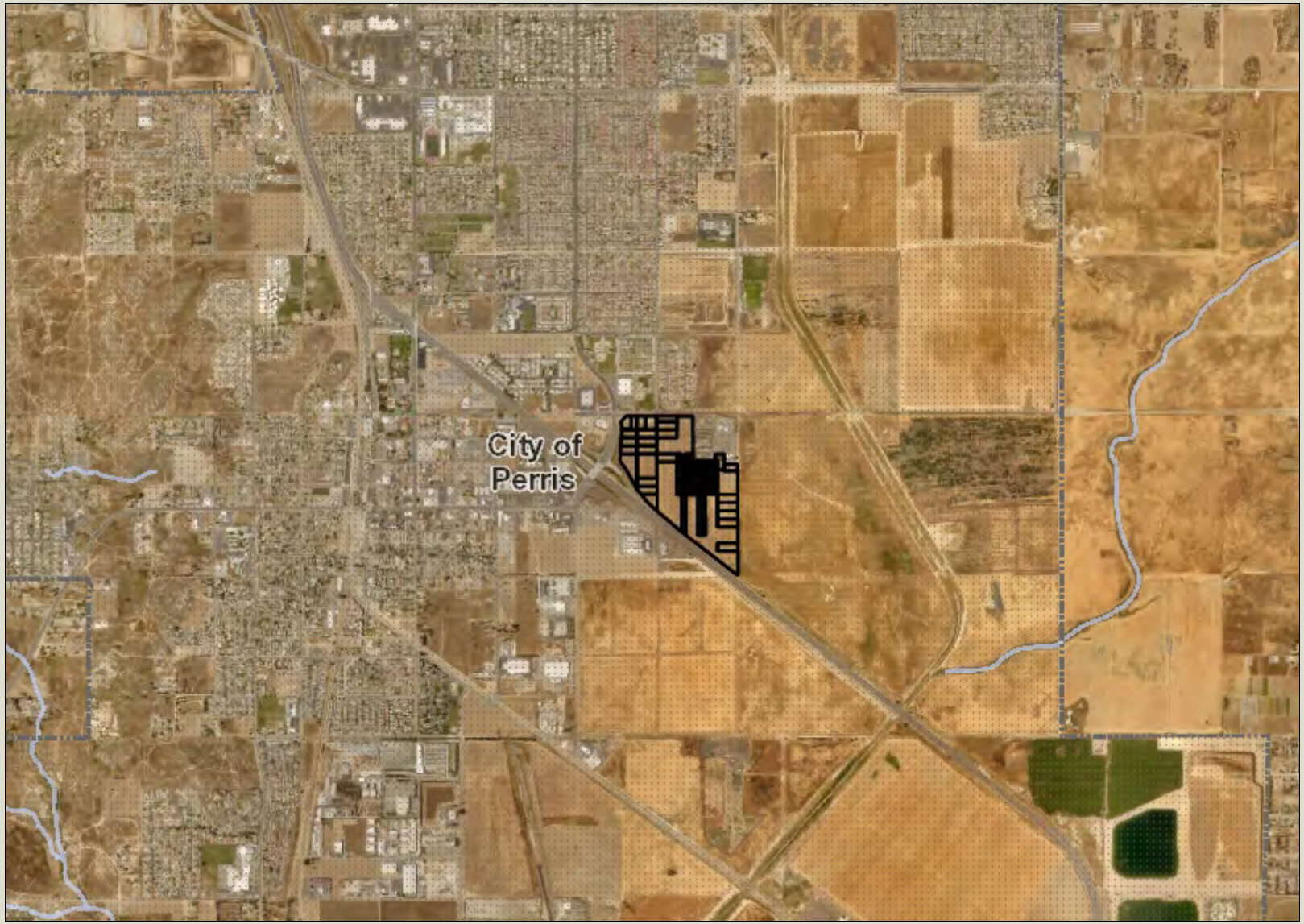
Notes

Map My County Map



Legend

- Blueline Streams
- City Areas
- World Street Map

IMPORTANT Maps and data are to be used for reference purposes only. Map features are approximate, and are not necessarily accurate to surveying or engineering standards. The County of Riverside makes no warranty or guarantee as to the content (the source is often third party), accuracy, timeliness, or completeness of any of the data provided, and assumes no legal responsibility for the information contained on this map. Any use of this product with respect to accuracy and precision shall be the sole responsibility of the user.

0 3,049 6,097 Feet

REPORT PRINTED ON... 7/20/2023 9:44:36 AM

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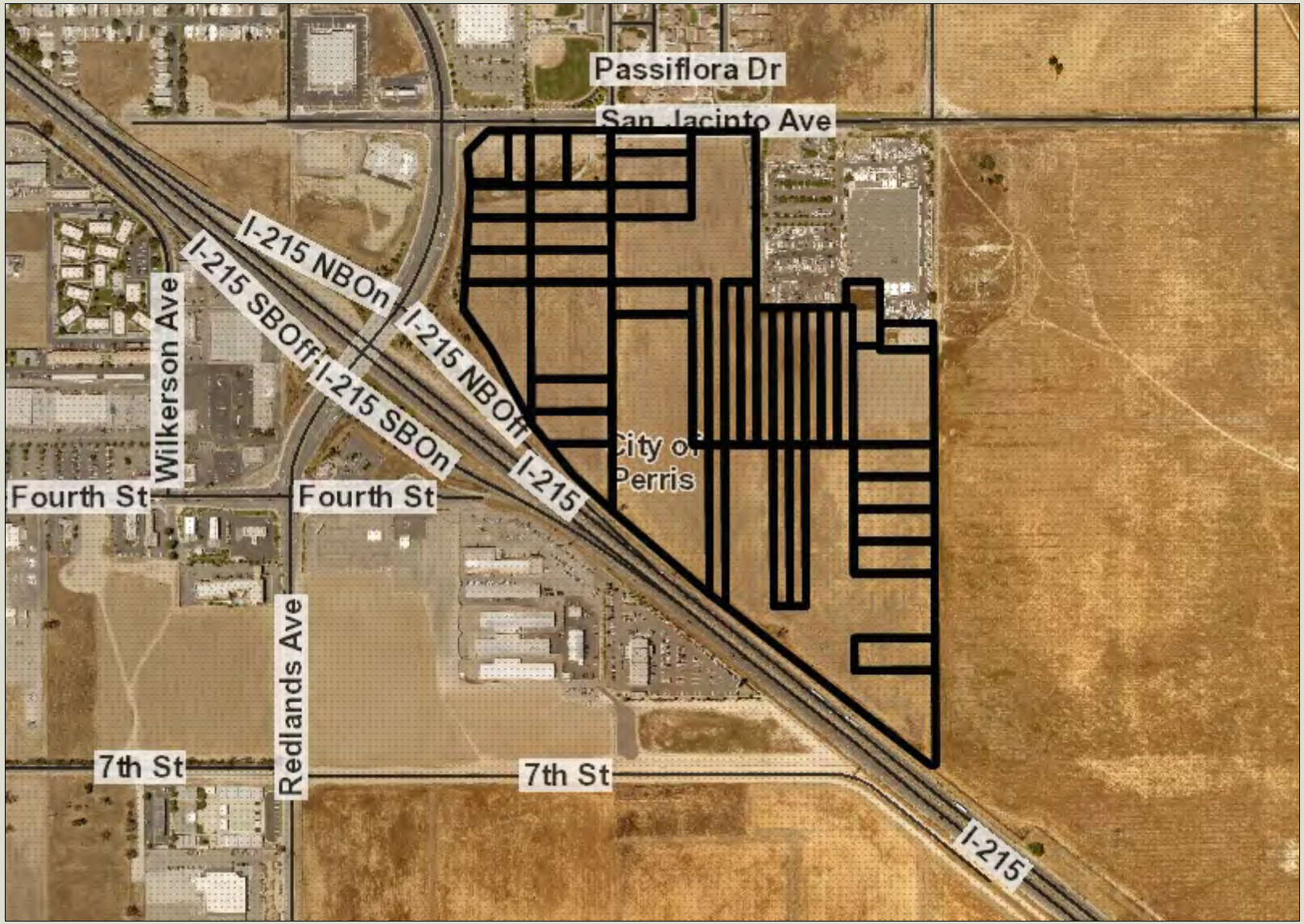
Notes

Map My County Map



Legend

- County Centerline Names
- County Centerlines
- Blueline Streams
- City Areas
- World Street Map

IMPORTANT Maps and data are to be used for reference purposes only. Map features are approximate, and are not necessarily accurate to surveying or engineering standards. The County of Riverside makes no warranty or guarantee as to the content (the source is often third party), accuracy, timeliness, or completeness of any of the data provided, and assumes no legal responsibility for the information contained on this map. Any use of this product with respect to accuracy and precision shall be the sole responsibility of the user.

0 762 1,524 Feet

REPORT PRINTED ON... 7/20/2023 9:45:40 AM

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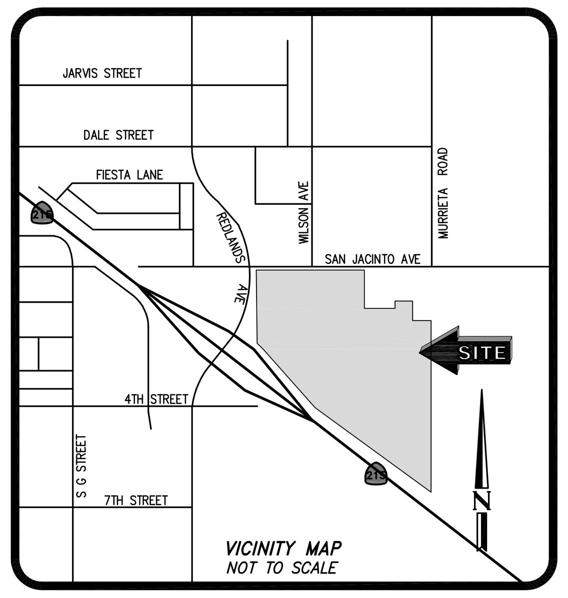
Notes

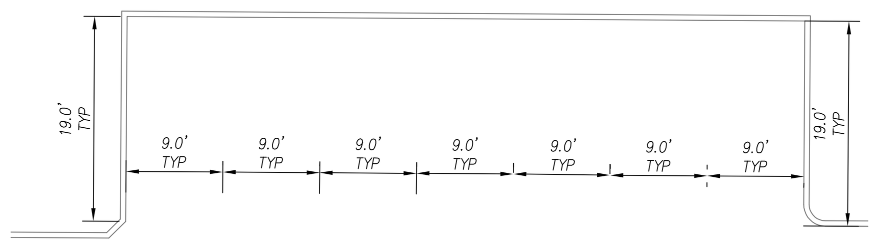
TENTATIVE PARCEL MAP NO. 35700

IN THE CITY OF PERRIS
COUNTY OF RIVERSIDE, STATE OF CALIFORNIA



VICINITY MAP
NOT TO SCALE

SITE SUMMARY	
LOT #	LOT SIZE
PARCEL 1:	39,900.64 SF 0.92 AC
PARCEL 2:	71,505.81 SF 1.64 AC
PARCEL 3:	65,563.13 SF 1.51 AC
PARCEL 4:	39,.427.76 SF 0.91 AC
PARCEL 5:	210,185.90 SF 4.83 AC
PARCEL 6:	47,513.09 SF 1.09 AC
PARCEL 7:	45,358.00 SF 1.04 AC
PARCEL 8:	164,775.79 SF 3.78 AC
PARCEL 9:	1,918,242.59 SF 44.04 AC
PARCEL 10:	287,632.95 SF 6.60AC
PARCEL A:	42,304.23 SF 0.97AC
TOTALS:	2,931,588 SF 67.30AC



PARKING DIMENSIONS (TYP)
SCALE: 1"=10'

LEGAL DESCRIPTION

REAL PROPERTY IN THE CITY OF PERRIS, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

TENTATIVE PARCEL NO. (TO FOLLOW), BEING A DIVISION OF THE FOLLOWING:

PARCEL A: (APN: 310-110-049-1)

THOSE PORTIONS OF BLOCK 41 AND 44 AND LOT P (MURRIETA ROAD) OF FIGADOTA FARMS NO. 5, AS SHOWN BY MAP ON FILE IN BOOK 16, PAGE 78 OF MAPS, RECORDS OF RIVERSIDE COUNTY, CALIFORNIA, DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHEAST CORNER OF SAID LOT P, SAID CORNER BEING THE INTERSECTION OF THE SOUTHERLY RIGHT-OF-WAY LINE OF SAN JACINTO AVENUE (80.00 FEET IN WIDTH) WITH THE CENTER LINE OF SAID MURRIETA ROAD; THENCE SOUTH 00° 16' 35" EAST ALONG SAID CENTER LINE OF MURRIETA ROAD, A DISTANCE OF 4.00 FEET TO A POINT IN A LINE PARALLEL WITH AND DISTANT SOUTHERLY 44.00 FEET, MEASURED AT RIGHT ANGLES, FROM THE CENTER LINE OF SAID SAN JACINTO AVENUE; THENCE CONTINUING SOUTH 00° 16' 35" EAST ALONG SAID CENTER LINE, A DISTANCE OF 787.14 FEET FOR THE TRUE POINT OF BEGINNING; THENCE SOUTH 89° 43' 25" WEST, A DISTANCE OF 219.18 FEET; THENCE NORTH 00° 16' 35" WEST, A DISTANCE OF 170.00 FEET; THENCE SOUTH 89° 43' 25" WEST, A DISTANCE OF 140.00 FEET; THENCE SOUTH 00° 16' 35" EAST, A DISTANCE OF 105.51 FEET; THENCE NORTH 89° 52' 40" EAST, A DISTANCE OF 27.51 FEET TO A POINT IN THE WEST LINE OF LOT A OF SAID BLOCK 44; THENCE SOUTH 00° 13' 27" EAST ALONG SAID WEST LINE AND ALONG THE WEST LINE OF LOT B OF SAID BLOCK 44, A DISTANCE OF 156.52 FEET TO THE SOUTHWEST CORNER OF SAID LOT B; THENCE NORTH 89° 52' 40" EAST ALONG THE SOUTH LINE OF SAID LOT B, A DISTANCE OF 331.81 FEET TO A POINT IN SAID CENTER LINE OF MURRIETA ROAD; THENCE NORTH 00° 16' 35" WEST ALONG SAID CENTER LINE, A DISTANCE OF 92.99 FEET TO THE TRUE POINT OF BEGINNING.

EXCEPTING THEREFROM THAT PORTION AS CONVEYED TO EASTERN MUNICIPAL WATER DISTRICT BY DEED RECORDED MARCH 11, 2004 AS INSTRUMENT NO. 171343 OFFICIAL RECORDS.

PARCEL B: (APNS: 310-110-015-0, 310-110-017-2, 310-110-018-3, 310-110-019-4, 310-100-020-4, 310-110-021-5, 310-110-022-6, 310-110-023-7, 310-110-028-2, 310-110-037-0, 310-100-038-1, 310-110-039-2, 310-110-040-2, 310-110-041-3, 310-110-042-4, 310-110-044-6, 310-110-045-7, 310-110-051-2 AND 310-110-054-5)

BLOCKS 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 44, 45 AND 46 AS SHOWN ON THE MAP OF FIGADOTA FARMS NO. 5 AS FILED IN BOOK 16, PAGE 78 OF MAPS, RIVERSIDE COUNTY RECORDS.

TOGETHER WITH THOSE PORTIONS OF THE STREETS ADJOINING SAID BLOCKS AS VACATED BY RESOLUTION OF RIVERSIDE COUNTY BOARD OF SUPERVISORS, RECORDED JUNE 10, 1952 AS INSTRUMENT NO. 24395, IN BOOK 1375 PAGE 128 OFFICIAL RECORDS.

EXCEPTING THEREFROM BLOCKS 32, 37, 38, 39 AND 46 ALL THOSE PORTIONS THEREOF WHICH LIE SOUTHWEST OF THE NORTHEAST LINE OF STATE HIGHWAY 395 AS DESCRIBED IN THE DEEDS TO THE STATE OF CALIFORNIA RECORDED OCTOBER 30, 1962 AS INSTRUMENT NOS. 100440 AND 100441, BOTH OF OFFICIAL RECORDS.

ALSO EXCEPTING THEREFROM THE FOLLOWING LOTS AND THE VACATED PORTION OF THE STREETS ADJOINING SAID LOTS AS FOLLOWS:

THE NORTH 4 FEET OF LOTS A, B, C AND D IN BLOCK 35, LOTS A AND B IN BLOCK 44, LOT E IN BLOCK 35; THE NORTH 107.52 FEET OF LOT E IN BLOCK 36; THE NORTH 107.52 FEET OF LOTS A, B, C, D, AND E IN BLOCK 41; LOTS A, B AND C IN BLOCK 34; LOT A IN BLOCK 33; AND LOTS C AND D IN BLOCK 36 OF SAID FIGADOTA FARMS NO. 5.

ALSO EXCEPTING THEREFROM THAT PORTION OF LOT C BLOCK 44 AS CONVEYED TO EASTERN MUNICIPAL WATER DISTRICT BY DEED RECORDED MARCH 11, 2004 AS INSTRUMENT NO. 171343 OFFICIAL RECORDS.

ALSO EXCEPTING THEREFROM THE LAND DESCRIBED IN GRANT DEED TO RIVERSIDE COUNTY TRANSPORTATION COMMISSION, A PUBLIC AGENCY OF THE STATE OF CALIFORNIA, RECORDED SEPTEMBER 30, 2010 AS INSTRUMENT NO. 2010-0469343 AND CORRECTIVE GRANT DEED RECORDED JUNE 20, 2013 AS INSTRUMENT NO. 2013-0294974, BOTH OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

PARCEL C: (APNS: 310-110-013-8 AND 310-110-014-9)

LOTS C AND D IN BLOCK 36 OF FIGADOTA FARMS NO. 5, IN THE CITY OF PERRIS, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 16, PAGE 78 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

TOGETHER WITH THAT PORTION OF LOT "F" (HEMET AVENUE) ADJOINING SAID LOTS C AND D ON THE SOUTH, LYING BETWEEN THE SOUTHERLY PROLONGATION OF THE WEST LINE OF LOT "C" AND THE EAST LINE OF LOT "D", AS ABANDONED BY A RESOLUTION OF THE RIVERSIDE COUNTY BOARD OF SUPERVISORS, RECORDED JUNE 10, 1952 AS INSTRUMENT NO. 24395, IN BOOK 1375, PAGE 128, OFFICIAL RECORDS, THAT WOULD PASS BY OPERATION OF LAW.

PARCEL D: (APN: 310-110-027-1)

LOT A, BLOCK 33, FIGADOTA FARMS NO. 5, IN THE CITY OF PERRIS, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 16, PAGE 78 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

TOGETHER WITH THE EASTERLY 30.00 FEET OF LOT "O" ADJOINING SAID LOT A ON THE WEST, WHICH LIES BETWEEN THE WESTERLY PROLONGATION OF THE NORTHERLY AND SOUTHERLY LINES OF SAID LOT A, AS ABANDONED BY A RESOLUTION OF THE RIVERSIDE COUNTY BOARD OF SUPERVISORS, RECORDED JUNE 10, 1952 AS INSTRUMENT NO. 24395, IN BOOK 1375, PAGE 128, OFFICIAL RECORDS, THAT WOULD PASS BY OPERATION OF LAW.

PARCEL E: (APNS: 310-100-053-3, 310-100-054-4, 310-100-055-5 AND 310-100-056-6))

LOTS A, B, C, D AND E IN BLOCK 26 OF FIGADOTA FARMS NO. 5, AS SHOWN BY MAP ON FILE IN BOOK 16, PAGE 78 OF MAPS, RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

TOGETHER WITH THAT PORTION OF THE EAST 1/2 OF MC CANNA STREET, LOT "M" ADJOINING SAID LOT ON THE WEST VACATED BY RESOLUTION OF THE RIVERSIDE COUNTY BOARD OF SUPERVISORS, A CERTIFIED COPY OF SAID RESOLUTION WAS RECORDED JUNE 10, 1952 AS INSTRUMENT NO. 24395, IN BOOK 1375, PAGE 128, OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

EXCEPTING THEREFROM THAT PORTION CONVEYED TO THE STATE OF CALIFORNIA BY DEED RECORDED SEPTEMBER 7, 1960 AS INSTRUMENT NO. 78456, OFFICIAL RECORDS. ALSO EXCEPTING THEREFROM THAT PORTION CONVEYED TO THE COUNTY OF RIVERSIDE BY MAP FILED JULY 18, 1961 AS INSTRUMENT NO. 61268, OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

ALSO EXCEPTING THEREFROM THE LAND DESCRIBED IN GRANT DEED TO RIVERSIDE COUNTY TRANSPORTATION COMMISSION, A PUBLIC AGENCY OF THE STATE OF CALIFORNIA, RECORDED SEPTEMBER 30, 2010 AS INSTRUMENT NO. 2010-0469343 AND CORRECTIVE GRANT DEED RECORDED JUNE 20, 2013 AS INSTRUMENT NO.2013-0294974, BOTH OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

PARCEL F: (APN: 310-100-057-7)

LOTS A, B, C, D AND E IN BLOCK 25 OF FIGADOTA FARMS NO. 5, AS SHOWN BY MAP ON FILE IN BOOK 16, PAGE 78 OF MAPS, RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

TOGETHER WITH THAT PORTION OF THE EAST 1/2 OF MC CANNA STREET, LOT "M" ADJOINING SAID LOT ON THE WEST VACATED BY RESOLUTION OF THE RIVERSIDE COUNTY BOARD OF SUPERVISORS, A CERTIFIED COPY OF SAID RESOLUTION WAS RECORDED JUNE 10, 1952 AS INSTRUMENT NO. 24395, IN BOOK 1375, PAGE 128, OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

EXCEPTING THEREFROM THOSE PORTIONS CONVEYED TO THE STATE OF CALIFORNIA BY DEED RECORDED JULY 29, 1952 IN BOOK 1388, PAGE 424, OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

ALSO EXCEPTING THEREFROM THOSE PORTIONS CONVEYED TO THE STATE OF CALIFORNIA BY DEEDS RECORDED SEPTEMBER 7, 1960 AS INSTRUMENT NOS. 78451 AND 78453, BOTH OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

ALSO EXCEPTING THEREFROM THE LAND DESCRIBED IN GRANT DEED TO RIVERSIDE COUNTY TRANSPORTATION COMMISSION, A PUBLIC AGENCY OF THE STATE OF CALIFORNIA, RECORDED SEPTEMBER 30, 2010 AS INSTRUMENT NO. 2010-0469343 AND CORRECTIVE GRANT DEED RECORDED JUNE 20, 2013 AS INSTRUMENT NO. 2013-0294974, BOTH OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

PARCEL G: (APNS: 310-100-017-1, 310-100-018-2 AND 310-100-019-3)

LOTS C, D AND E IN BLOCK 27 OF FIGADOTA FARMS NO. 5, AS SHOWN BY MAP ON FILE IN BOOK 16, PAGE 78 OF MAPS, RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

TOGETHER WITH THAT PORTION OF THE WEST 1/2 OF WILSON AVENUE, LOT "O" ADJOINING SAID LOTS ON THE EAST, VACATED BY RESOLUTION OF THE RIVERSIDE COUNTY BOARD OF SUPERVISORS, A CERTIFIED COPY OF SAID RESOLUTION WAS RECORDED JUNE 10, 1952 AS INSTRUMENT NO. 24395, IN BOOK 1375, PAGE 128, OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

PARCEL H: (APNS: 310-100-015-9, 310-100-016-0 AND 310-100-059-9)

LOTS A, B, C, D AND E IN BLOCK 28 OF FIGADOTA FARMS NO. 5, AS SHOWN BY MAP ON FILE IN BOOK 16, PAGE 78 OF MAPS, RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

TOGETHER WITH THAT PORTION OF THE WEST 1/2 OF WILSON AVENUE, LOT "O" ADJOINING SAID LOTS ON THE EAST, VACATED BY RESOLUTION OF THE RIVERSIDE COUNTY BOARD OF SUPERVISORS, A CERTIFIED COPY OF SAID RESOLUTION WAS RECORDED JUNE 10, 1952 AS INSTRUMENT NO. 24395, IN BOOK 1375, PAGE 128, OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

ALSO TOGETHER WITH A PORTION OF THE NORTH 1/2 OF HEMET AVENUE, LOT "F" ADJOINING SAID LOT E ON THE SOUTH VACATED BY RESOLUTION OF THE RIVERSIDE COUNTY BOARD OF SUPERVISORS, A CERTIFIED COPY OF SAID RESOLUTION WAS RECORDED JUNE 10, 1952 AS INSTRUMENT NO. 24395, OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

EXCEPTING THEREFROM THOSE PORTIONS CONVEYED TO THE STATE OF CALIFORNIA BY DEEDS RECORDED SEPTEMBER 7, 1960 AS INSTRUMENT NOS. 78450 AND 78453, BOTH OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

ALSO EXCEPTING THEREFROM THE LAND DESCRIBED IN GRANT DEED TO RIVERSIDE COUNTY TRANSPORTATION COMMISSION, A PUBLIC AGENCY OF THE STATE OF CALIFORNIA, RECORDED SEPTEMBER 30, 2010 AS INSTRUMENT NO. 2010-0469343 AND CORRECTIVE GRANT DEED RECORDED JUNE 20, 2013 AS INSTRUMENT NO. 2013-0294974, BOTH OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

PARCEL I: (APN: 310-100-058-8)

LOTS A AND B IN BLOCK 29 OF FIGADOTA FARMS NO. 5, AS SHOWN BY MAP ON FILE IN BOOK 16, PAGE 78 OF MAPS, RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

TOGETHER WITH THAT PORTION OF THE WEST 1/2 OF WILSON AVENUE, LOT "O" ADJOINING SAID LOTS ON THE EAST, VACATED BY RESOLUTION OF THE RIVERSIDE COUNTY BOARD OF SUPERVISORS, A CERTIFIED COPY OF SAID RESOLUTION WAS RECORDED JUNE 10, 1952 AS INSTRUMENT NO. 24395, IN BOOK 1375, PAGE 128, OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

ALSO TOGETHER WITH THAT PORTION OF THE SOUTH 1/2 OF HEMET AVENUE, LOT "F", ADJOINING SAID LOT A ON THE NORTH, VACATED BY RESOLUTION OF THE RIVERSIDE COUNTY BOARD OF SUPERVISORS, A CERTIFIED COPY OF SAID RESOLUTION WAS RECORDED JUNE 10, 1952 AS INSTRUMENT NO. 24395, OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA. EXCEPT THAT PORTION CONVEYED TO THE STATE OF CALIFORNIA BY DEED RECORDED JULY 29, 1952 IN BOOK 1388, PAGE 424, OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

EXCEPTING THEREFROM THOSE PORTIONS CONVEYED TO THE STATE OF CALIFORNIA, BY DEEDS RECORDED SEPTEMBER 7, 1960 AS INSTRUMENT NOS. 78449 AND 78453, BOTH OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

ALSO EXCEPTING THEREFROM THE LAND DESCRIBED IN GRANT DEED TO RIVERSIDE COUNTY TRANSPORTATION COMMISSION, A PUBLIC AGENCY OF THE STATE OF CALIFORNIA, RECORDED SEPTEMBER 30, 2010 AS INSTRUMENT NO. 2010-0469343 AND CORRECTIVE GRANT DEED RECORDED JUNE 20, 2013 AS INSTRUMENT NO. 2013-0294974, BOTH OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

PARCEL J: (APN: 310-100-043-4)

LOTS A AND B IN BLOCK 27 OF FIGADOTA FARMS UNIT 5, AS PER MAP RECORDED IN BOOK 16, PAGE 78 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

TOGETHER WITH THE WEST 1/2 OF WILSON AVENUE ALSO SHOWN AS LOT "O" OF FIGADOTA FARMS NO. 5, AS PER MAP RECORDED IN BOOK 16, PAGE 78 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY, AS ABANDONED BY A RESOLUTION OF THE BOARD OF SUPERVISORS RECORDED JUNE 10, 1952 AS INSTRUMENT NO. 24395, IN BOOK 1375, PAGE 128, OFFICIAL RECORDS.

EXCEPT THE WEST 150.

PARCEL K: (APN: 310-100-052-2)

THAT PORTION OF LOT 16 OF MC CANNA'S SUBDIVISION AS SHOWN BY MAP ON FILE IN BOOK 10, PAGE 494 OF MAPS, RECORDS OF SAN DIEGO COUNTY, CALIFORNIA, DESCRIBED AS FOLLOWS: BEGINNING AT THE NORTHWEST CORNER OF SAID LOT 16; THENCE EAST ALONG THE NORTH LINE OF SAID LOT, 210 FEET TO THE NORTHWEST CORNER OF LOT A IN BLOCK 26 OF FIGADOTA FARMS NO. 5, AS SHOWN BY MAP ON FILE IN BOOK 16, PAGE 78 OF MAPS, RECORDS OF RIVERSIDE COUNTY, CALIFORNIA; THENCE SOUTH, 210 FEET ALONG THE WEST LINE OF LOTS A AND B IN SAID BLOCK 26; THENCE WEST, 210 FEET TO THE WEST LINE OF LOT 16; THENCE NORTH, 210 FEET TO THE POINT OF BEGINNING.

TOGETHER WITH THAT PORTION OF THE EAST 1/2 OF MC CANNA STREET, LOT "M" ADJOINING SAID LOT ON THE WEST VACATED BY RESOLUTION OF THE RIVERSIDE COUNTY BOARD OF SUPERVISORS, A CERTIFIED COPY OF SAID RESOLUTION WAS RECORDED JUNE 10, 1952 AS INSTRUMENT NO. 24395, IN BOOK 1375, PAGE 128, OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

EXCEPTING THEREFROM THAT PORTION CONVEYED TO THE STATE OF CALIFORNIA BY DEED RECORDED SEPTEMBER 7, 1960 AS INSTRUMENT NO 78458, OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

ALSO EXCEPTING THEREFROM THE LAND DESCRIBED IN GRANT DEED TO RIVERSIDE COUNTY TRANSPORTATION COMMISSION, A PUBLIC AGENCY OF THE STATE OF CALIFORNIA, RECORDED SEPTEMBER 30, 2010 AS INSTRUMENT NO. 2010-0469343 AND CORRECTIVE GRANT DEED RECORDED JUNE 20, 2013 AS INSTRUMENT NO. 2013-0294974, BOTH OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

PARCEL L: (APN: 310-100-044-5)

THE WEST 150.00 FEET TO THE FOLLOWING:

LOTS A AND B IN BLOCK 27 OF FIGADOTA FARMS NO. 5, AS SHOWN BY MAP ON FILE IN BOOK 16, PAGE 78 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY,

TOGETHER WITH THE WEST ONE-HALF OF WILSON AVENUE (ALSO SHOWN AS LOT O ON SAID MAP) ADJOINING TO THE EAST AS ABANDONED BY THE COUNTY OF RIVERSIDE BY RESOLUTION RECORDED JUNE 10, 1952 AS INSTRUMENT NO. 24395 IN BOOK 1375 PAGE 128 OFFICIAL RECORDS.

PARCEL M: (APNS: 310-110-001-7, 310-110-002-8 AND 310-110-031-4)

LOTS A, B AND C IN BLOCK 34 OF FIGADOTA FARMS NO. 5, AS SHOWN BY MAP ON FILE IN BOOK 16, PAGE 78 OF MAPS, RECORDS OF RIVERSIDE COUNTY.

TOGETHER WITH THE EAST ONE-HALF OF THAT PORTION OF LOT O (WILSON STREET) LYING ADJACENT TO THE WEST LINE OF SAID LAND BETWEEN THE WESTERLY PROLONGATION OF THE NORTH AND SOUTH LINES OF SAID LAND AS VACATED BY RESOLUTION OF THE BOARD OF SUPERVISORS OF RIVERSIDE COUNTY, RECORDED JUNE 10, 1952 IN BOOK 1375, PAGE 128 OFFICIAL RECORDS.

UTILITY AGENCIES:

SCE
24487 PRIELIPP DR.
WILDOMAR, CA 92595
951-249-8498
CONTACT: JERRY CHAMBERLAIN

GAS
4495 HOWARD AVENUE
RIVERSIDE, CA 92507
909-335-7677
CONTACT: STEVE RUTHERFORD

FRONTIER
9 SOUTH 4TH STREET
REDLANDS, CA 92373
909-217-0116
CONTACT: SEAN MURPHY

CHARTER
7337 CENTRAL AVE.
RIVERSIDE, CA 92504
951-406-1666
CONTACT: KEITH KLUMP

OWNER/DEVELOPER:

WLPX PERRIS VENUE, LLC
A DELAWARE LIMITED LIABILITY COMPANY
1156 NORTH MOUNTAIN AVENUE
P.O. BOX 670
UPLAND, CA 91785-0670
(909) 98X

ARCHITECT:

NADEL, INC
1990 S. BUNDY DRIVE,
FOURTH FLOOR
LOS ANGELES, CA 90025
(310) 826-2100

APPLICANT:

LEWIS RETAIL CENTERS
1156 NORTH MOUNTAIN AVENUE
P.O. BOX 670
UPLAND, CA 91785-0670
(909) 98X

CIVIL ENGINEER:

DRC ENGINEERING, INC
160 S. OLD SPRINGS ROAD, SUITE 210
ANAHEIM, CA 91808
(714) 685-6860

ACREAGE:

67.30 AC GROSS

SCHOOL DISTRICT:

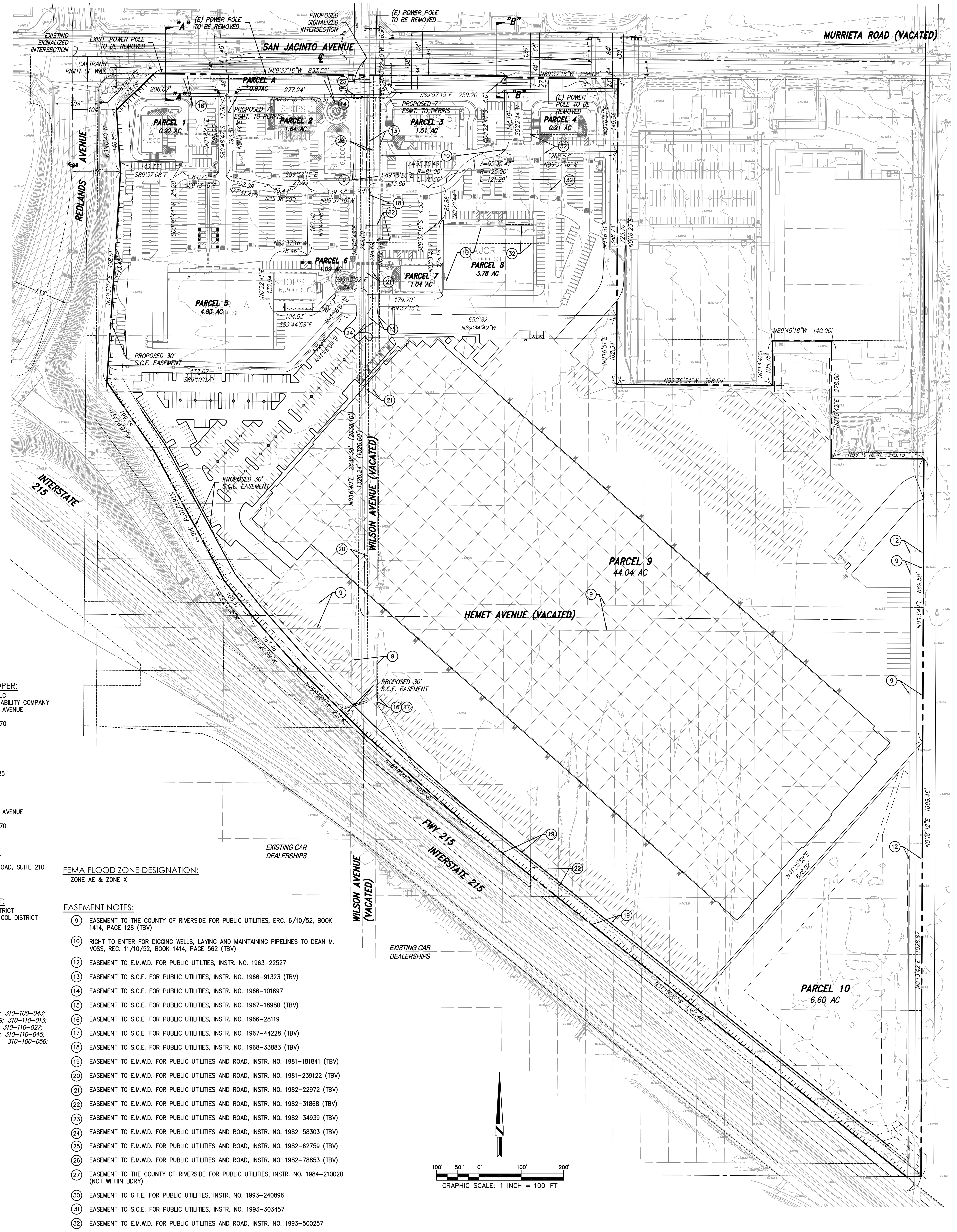
VAL VERDE SCHOOL DISTRICT
PERRIS UNION HIGH SCHOOL DISTRICT

LAND USE/ ZONING:

EXISTING LAND USE:	VACANT
PROPOSED LAND USE:	COMMERCIAL
EXISTING ZONING:	CC-COMMUNITY COMMERCIAL
PROPOSED ZONING:	CC-COMMUNITY COMMERCIAL
EXISTING GENERAL PLAN:	CC-COMMUNITY COMMERCIAL
PROPOSED GENERAL PLAN:	CC-COMMUNITY COMMERCIAL

APN:

310-100-015; 310-100-016; 310-100-017; 310-100-019; 310-100-043; 310-100-044; 310-100-052; 310-100-058; 310-100-059; 310-110-013; 310-110-014; 310-110-015; 310-110-017; 310-110-023; 310-110-027; 310-110-028; 310-110-037; 310-110-042; 310-110-044; 310-110-045; 310-110-049; 310-110-051; 310-110-053; 310-110-054; 310-100-056; 310-110-057;



FEMA FLOOD ZONE DESIGNATION:

ZONE AE & ZONE X

EASEMENT NOTES:

(9) EASEMENT TO THE COUNTY OF RIVERSIDE FOR PUBLIC UTILITIES, ERC. 6/10/52, BOOK 1414, PAGE 128 (TBV)

(10) RIGHT TO ENTER FOR DIGGING WELLS, LAYING AND MAINTAINING PIPELINES TO DEAN M. VOSS, REC. 11/10/52, BOOK 1414, PAGE 562 (TBV)

(12) EASEMENT TO E.M.W.D. FOR PUBLIC UTILTIES, INSTR. NO. 1963-22527

(13) EASEMENT TO S.C.E. FOR PUBLIC UTILITIES, INSTR. NO. 1966-91323 (TBV)

(14) EASEMENT TO S.C.E. FOR PUBLIC UTILITIES, INSTR. NO. 1966-101697

(15) EASEMENT TO S.C.E. FOR PUBLIC UTILITIES, INSTR. NO. 1967-18980 (TBV)

(16) EASEMENT TO S.C.E. FOR PUBLIC UTILITIES, INSTR. NO. 1966-28119

(17) EASEMENT TO S.C.E. FOR PUBLIC UTILITIES, INSTR. NO. 1967-44228 (TBV)

(18) EASEMENT TO S.C.E. FOR PUBLIC UTILITIES, INSTR. NO. 1968-33883 (TBV)

(19) EASEMENT TO E.M.W.D. FOR PUBLIC UTILITIES AND ROAD, INSTR. NO. 1981-181841 (TBV)

(20) EASEMENT TO E.M.W.D. FOR PUBLIC UTILITIES AND ROAD, INSTR. NO. 1981-239122 (TBV)

(21) EASEMENT TO E.M.W.D. FOR PUBLIC UTILITIES AND ROAD, INSTR. NO. 1982-22972 (TBV)

(22) EASEMENT TO E.M.W.D. FOR PUBLIC UTILITIES AND ROAD, INSTR. NO. 1982-31868 (TBV)

(23) EASEMENT TO E.M.W.D. FOR PUBLIC UTILITIES AND ROAD, INSTR. NO. 1982-34939 (TBV)

(24) EASEMENT TO E.M.W.D. FOR PUBLIC UTILITIES AND ROAD, INSTR. NO. 1982-58303 (TBV)

(25) EASEMENT TO E.M.W.D. FOR PUBLIC UTILITIES AND ROAD, INSTR. NO. 1982-62759 (TBV)

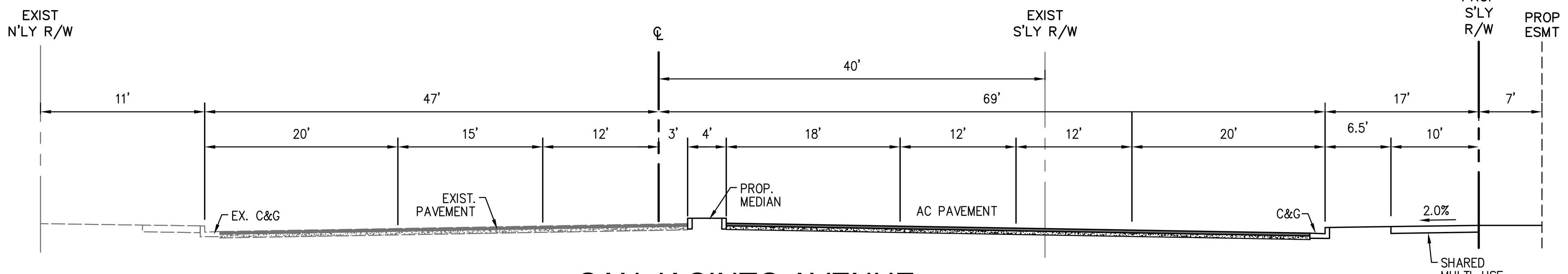
(26) EASEMENT TO E.M.W.D. FOR PUBLIC UTILITIES AND ROAD, INSTR. NO. 1982-78853 (TBV)

(27) EASEMENT TO THE COUNTY OF RIVERSIDE FOR PUBLIC UTILITIES, INSTR. NO. 1984-210020 (NOT WITHIN BDRY)

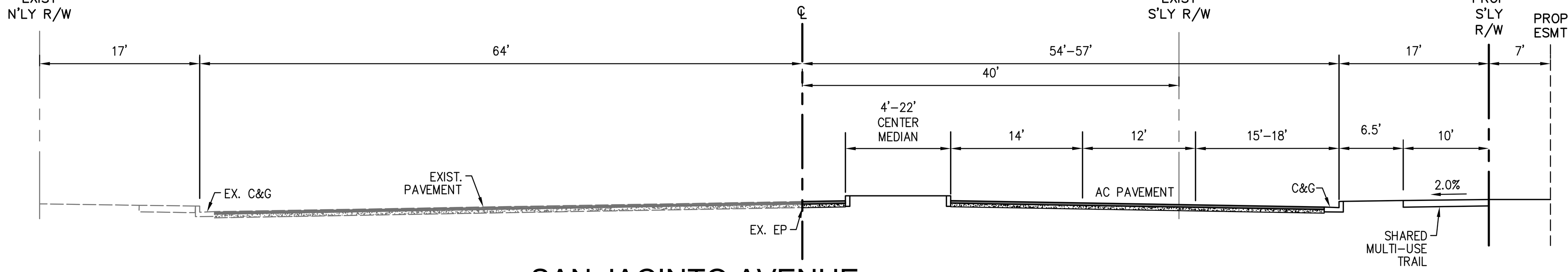
(30) EASEMENT TO G.T.E. FOR PUBLIC UTILITIES, INSTR. NO. 1993-240896

(31) EASEMENT TO S.C.E. FOR PUBLIC UTILITIES, INSTR. NO. 1993-303457

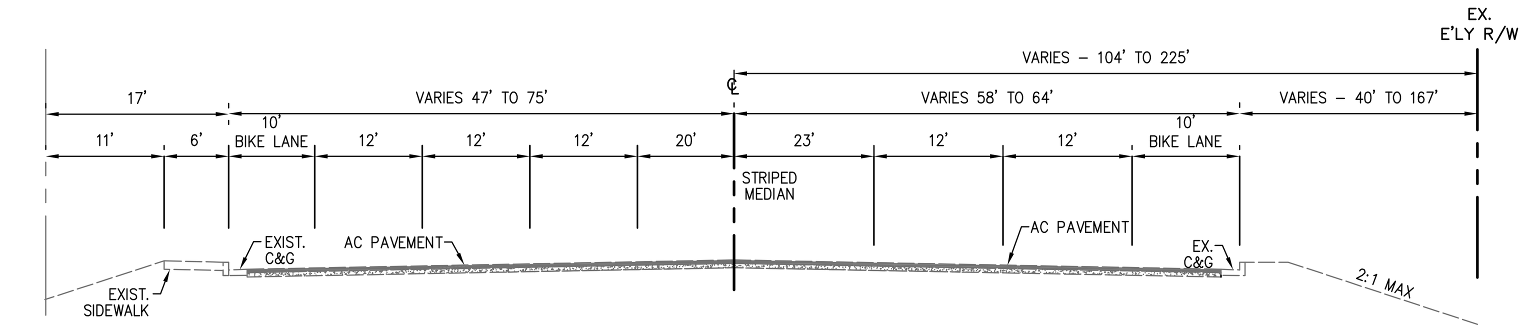
(32) EASEMENT TO E.M.W.D. FOR PUBLIC UTILITIES AND ROAD, INSTR. NO. 1993-500257



SAN JACINTO AVENUE
SECTION A-A
NTS



SAN JACINTO AVENUE
SECTION B-B
NTS



REDLANDS AVENUE
NTS

LINE TABLE		
LINE	BEARING	DISTANCE

CURVE TABLE			
CURVE	DELTA	RADIUS	LENGTH

160 S. Old Springs Road
Suite 210
Anaheim Hills, CA 92808
714-685-6860

DRC Engineering, Inc.
Civil Engineering/Land Surveying/Land Planning

DATE:	NO.:	REVISION:

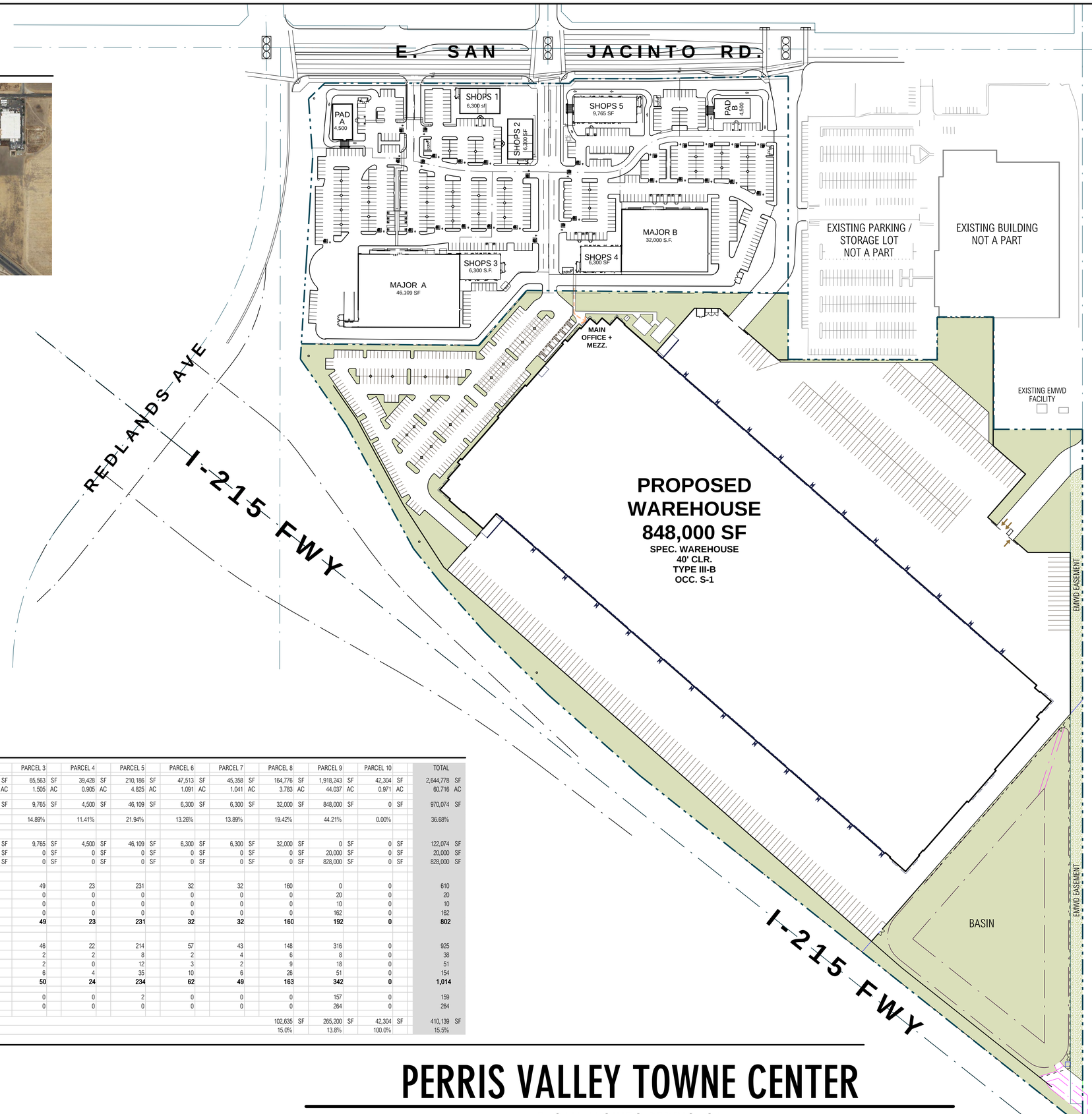
PROJECT: **PERRIS VALLEY TOWNE CENTER**
EAST SAN JACINTO AVENUE
PERRIS, CA

DRAWING NAME: **TENTATIVE PARCEL MAP NO. 35700**

ISSUE:	TPM
DATE:	06-08-2023
CHECKED: CM	DRAWN: SV
DRAWING FILE:	19-065TPM
PROJECT NO.:	22-313
SHEET NUMBER:	1
OF 1	SHEETS
SCALE:	1" = 100'

FILENAME: M:\2022\22-313 Lewis Perris San Jacinto Ave\TPM\22-313 TPM101.dwg, LAST SAVED ON: Jun 15 2023 3:48pm PLOTTED BY: SAADAT, ON: Jun 15 2023 3:53pm, CFG:

VICINITY MAP:



PROJECT DATA:

	PARCEL 1	PARCEL 2	PARCEL 3	PARCEL 4	PARCEL 5	PARCEL 6	PARCEL 7	PARCEL 8	PARCEL 9	PARCEL 10	TOTAL
NET SITE AREA	39,901 SF	71,506 SF	65,563 SF	39,428 SF	210,186 SF	47,513 SF	45,358 SF	164,776 SF	1,918,243 SF	42,304 SF	2,644,778 SF
	0.916 AC	1.642 AC	1.505 AC	0.905 AC	4.825 AC	1.091 AC	1.041 AC	3.783 AC	44.037 AC	0.971 AC	60.716 AC
BUILDING AREA	4,500 SF	12,600 SF	9,765 SF	4,500 SF	46,109 SF	6,300 SF	6,300 SF	32,000 SF	848,000 SF	0 SF	970,074 SF
COVERAGE	11.28%	17.62%	14.89%	11.41%	21.94%	13.26%	13.89%	19.42%	44.21%	0.00%	36.68%
BUILDING AREA BY USE											
RETAIL	4,500 SF	12,600 SF	9,765 SF	4,500 SF	46,109 SF	6,300 SF	6,300 SF	32,000 SF	0 SF	0 SF	122,074 SF
OFFICE	0 SF	0 SF	0 SF	0 SF	0 SF	0 SF	0 SF	0 SF	20,000 SF	0 SF	20,000 SF
WAREHOUSE	0 SF	0 SF	0 SF	0 SF	0 SF	0 SF	0 SF	0 SF	828,000 SF	0 SF	828,000 SF
AUTO PARKING REQUIRED											
RETAIL	23	63	49	23	231	32	32	160	0	0	610
WAREHOUSE 0-20k SF	0	0	0	0	0	0	0	0	20	0	20
WAREHOUSE 20-40k SF	0	0	0	0	0	0	0	0	10	0	10
WAREHOUSE > 40k SF	0	0	0	0	0	0	0	0	162	0	162
TOTAL REQUIRED	**23**	**63**	**49**	**23**	**231**	**32**	**32**	**160**	**192**	**0**	**802**
AUTO PARKING PROVIDED											
STANDARD STALLS	26	53	46	22	214	57	43	148	316	0	925
ADA STALLS	2	4	2	2	8	2	4	6	8	0	38
EVCS	2	3	2	0	12	3	2	9	18	0	51
EV CAPABLE	6	10	6	4	35	10	6	26	51	0	154
TOTAL PROVIDED	**30**	**60**	**50**	**24**	**234**	**62**	**49**	**163**	**342**	**0**	**1,014**
DOCK DOORS	0	0	0	0	2	0	0	0	157	0	159
TRAILER PARKING	0	0	0	0	0	0	0	0	264	0	264
LANDSCAPE AREA								102,635 SF	265,200 SF	42,304 SF	410,139 SF
LANDSCAPE COVERAGE								15.0%	13.8%	100.0%	15.5%

SCALE: 1" = 100'-0" 0' 20' 50' 100' 200'

RGA
Office of Architectural Design
15231 Alton Parkway, Suite 100
Irvine, CA 92618
T 949-341-0920
FX 949-341-0922

Lewis Group Of Companies

PERRIS VALLEY TOWNE CENTER

E. SAN JACINTO PERRIS, CA

PRELIMINARY OVERALL PROJECT SITE PLAN

MARK	DATE	DESCRIPTION
	11/7/23	UPDATED PLOT PLAN SET
	6/7/23	UPDATED PLOT PLAN SET
	4/19/23	UPDATED PLOT PLAN SET
	1/16/23	SCHEMATIC SITE PLAN

RGA PROJECT NO:	21133.00
CAD FILE NAME:	21133-00-A1-1-P
DRAWN BY:	CS
CHK'D BY:	CS

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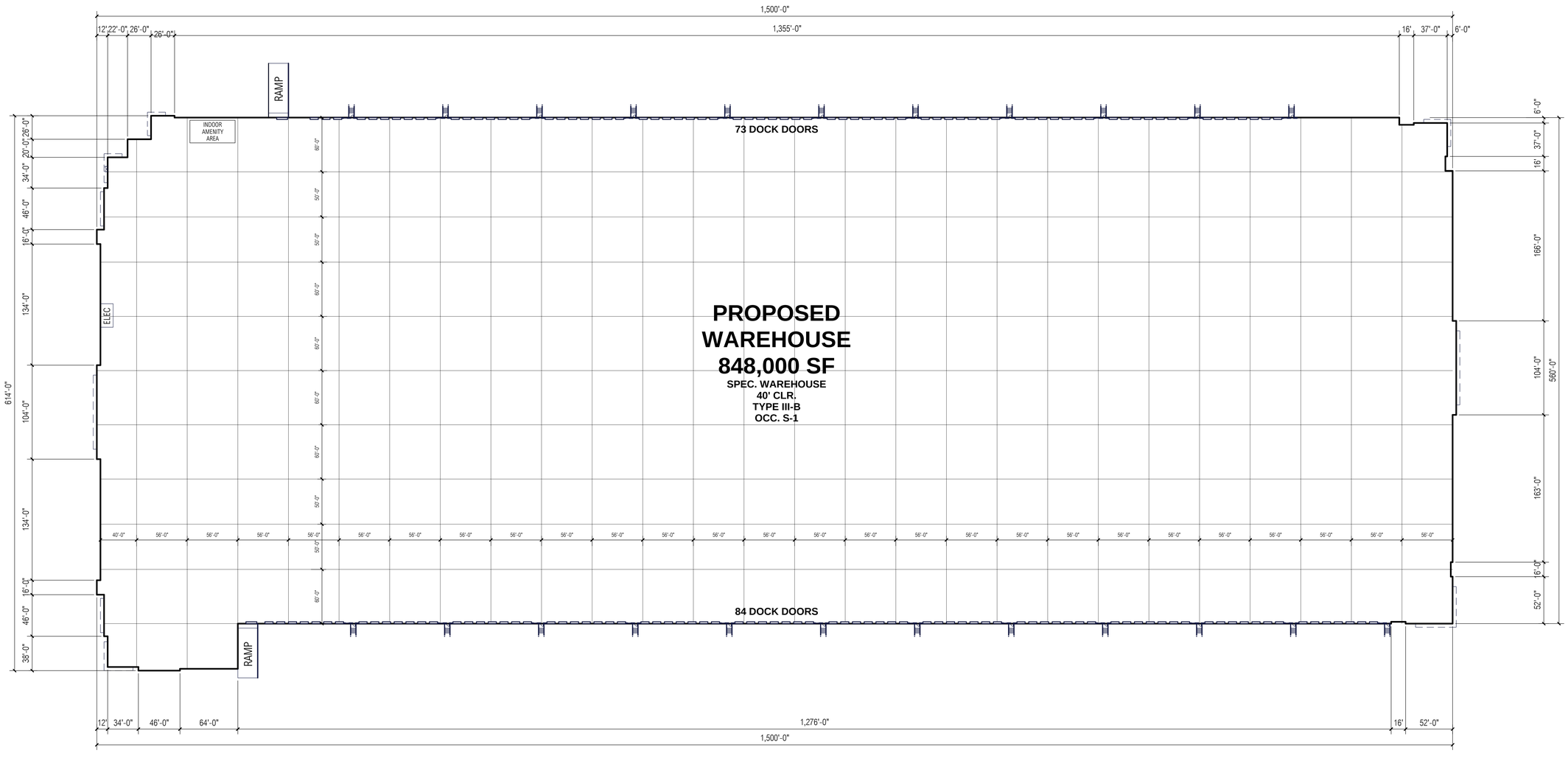
SHEET TITLE

A1-0-P



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Irvine, CA 92618
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FX 949-341-0922

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PERRIS VALLEY TOWNE CENTER

E. SAN JACINTO PERRIS, CA

SCHEMATIC FLOOR PLAN

MARK	DATE	DESCRIPTION
	6/7/23	UPDATED PLOT PLAN SET
	4/19/23	UPDATED PLOT PLAN SET
	1/16/23	SCHEMATIC SITE PLAN

RGA PROJECT NO:	21133.00
CAD FILE NAME:	21133-00-A2-1-P
DRAWN BY:	CS
CHK'D BY:	CS
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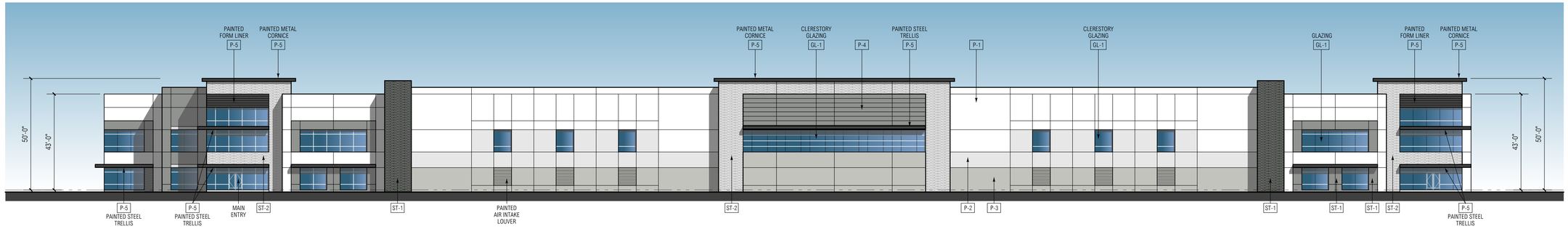
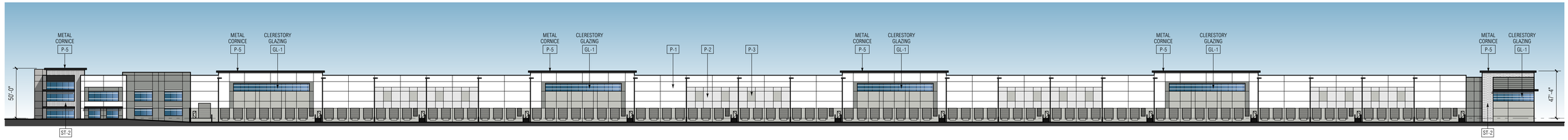
SHEET TITLE	

A2-1-P



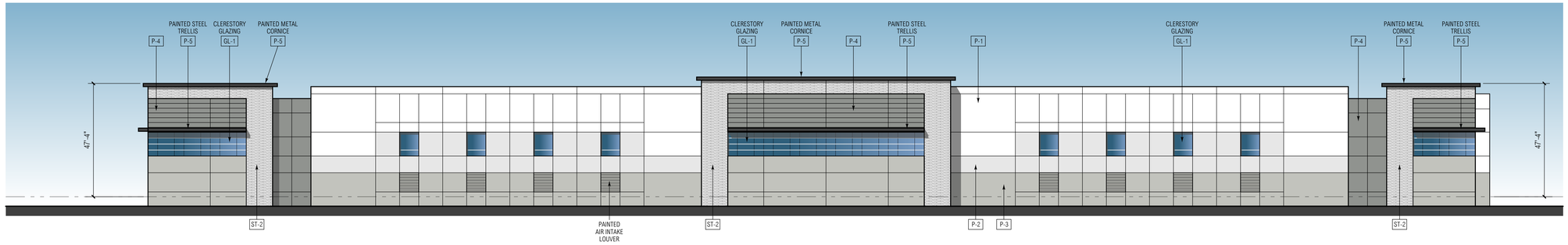
NORTH ELEVATION

SCALE: 1" = 20'-0"



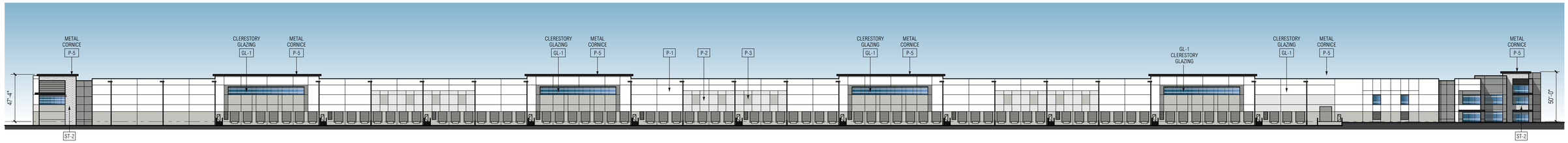
WEST ELEVATION

SCALE: 1" = 40'-0"



SOUTH ELEVATION

SCALE: 1" = 20'-0"



EAST ELEVATION

SCALE: 1" = 40'-0"

NOTES:

1. ALL ROOFTOP MECH. EQUIPMENT SHALL BE SCREENED FROM VIEW.

FINISH LEGEND

	P-1	SHERWIN WILLIAMS SW 7005 - PURE WHITE
	P-2	SHERWIN WILLIAMS SW 7064 - PASSIVE
	P-3	SHERWIN WILLIAMS SW 7015 - GRAY MATTERS
	P-4	SHERWIN WILLIAMS SW 7068 - GRIZZLE GRAY
	P-5	SHERWIN WILLIAMS SW 7674 - PEPPERCORN (STEEL ACCENTS ONLY)
	GL-1	SOLARCOOL PACIFICA W/ ANOD. ALUMINUM STOREFRONT
	ST-1	CORONADO STONE PRO-LEDGE BLACK FOREST
	ST-2	CORONADO STONE ELEMENT LEDGESTONE SILVER ASH

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T 949-341-0920
FX 949-341-0922

Lewis Group Of Companies

PERRIS VALLEY TOWNE CENTER

E. SAN JACINTO PERRIS, CA

SCHEMATIC ELEVATIONS

MARK	DATE	DESCRIPTION
	4/19/23	UPDATED PLOT PLAN SET
	1/16/23	SCHEMATIC SITE PLAN

RGA PROJECT NO:	21133.00
CAD FILE NAME:	21133-00-A2-1-P
DRAWN BY:	CS
CHK'D BY:	CS

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SHEET TITLE

A3-1-P

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FX 949-341-0922

Lewis Group Of Companies

PERRIS VALLEY TOWNE CENTER

E. SAN JACINTO PERRIS, CA

RENDERING

MARK	DATE	DESCRIPTION
	4/19/23	UPDATED PLOT PLAN SET
	1/16/23	SCHEMATIC SITE PLAN

RGA PROJECT NO:	21133.00
CAD FILE NAME:	21133-00-A2-1-P
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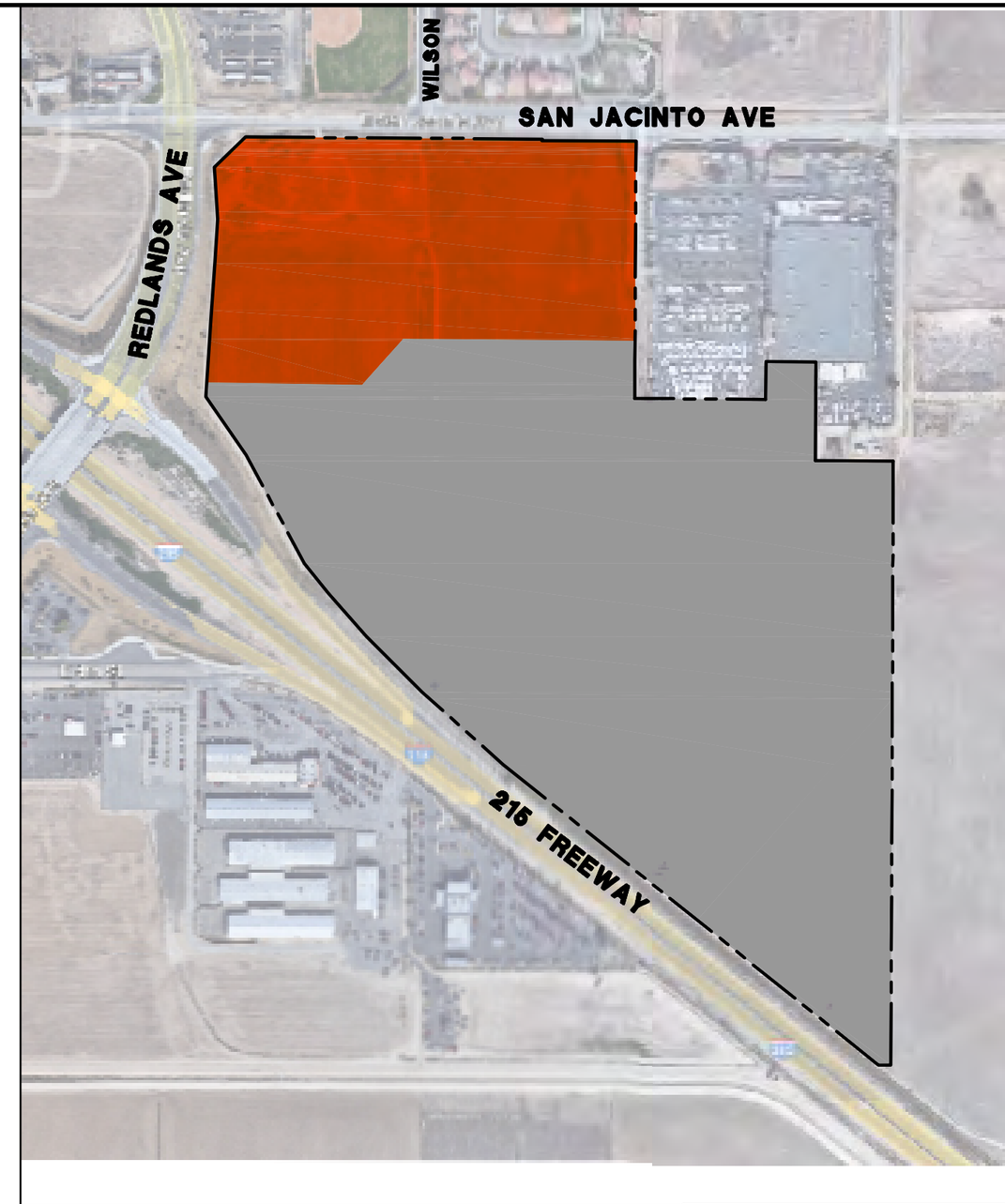


N

SCALE: 1"=400'

LEGEND

- PROJECT BOUNDARY
- EXISTING LAND USE – CC COMMUNITY COMMERCIAL

LEGEND

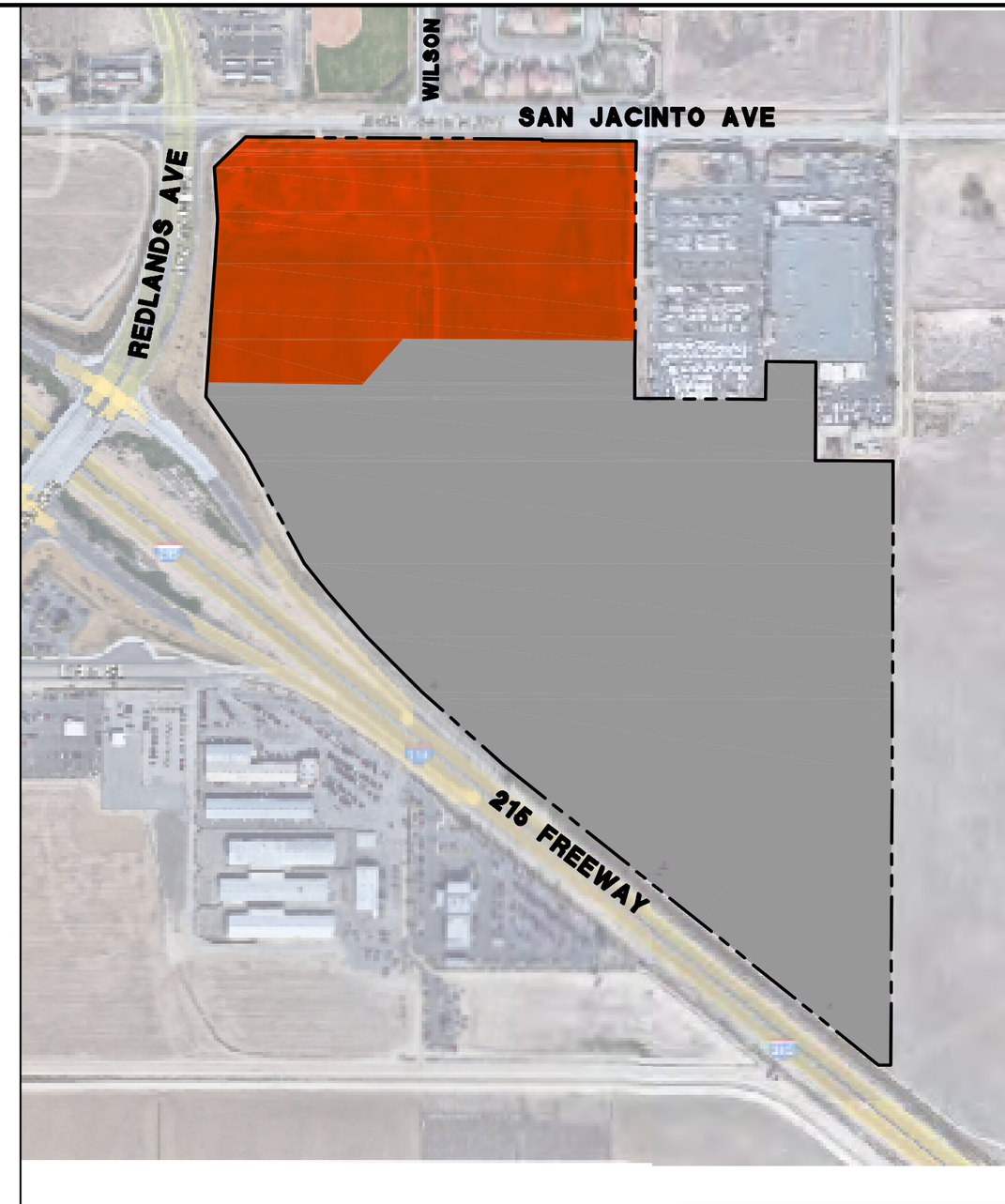
- PROJECT BOUNDARY
- PROPOSED LAND USE – CC COMMUNITY COMMERCIAL
- PROPOSED LAND USE – LIGHT INDUSTRIAL

PERRIS VALLEY TOWNE CENTER

PROPOSED GENERAL PLAN LAND USE AMENDMENT

PERRIS, CA

DRC Engineering, Inc.
Civil Engineering/Land Surveying/Land Planning
160 S. Old Springs Road
Suite 210
Anaheim Hills, CA 92808
714-685-6860



N

SCALE: 1"=400'

LEGEND

PROJECT BOUNDARY

EXISTING ZONING – CC COMMUNITY COMMERCIAL

LEGEND

PROJECT BOUNDARY

PROPOSED ZONING – CC COMMUNITY COMMERCIAL

PROPOSED ZONING – LIGHT INDUSTRIAL

PERRIS VALLEY TOWNE CENTER

PROPOSED CHANGE OF ZONE

PERRIS, CA

DRC Engineering, Inc.
Civil Engineering/Land Surveying/Land Planning
160 S. Old Springs Road
Suite 210
Anaheim Hills, CA 92808
714-685-6860

NOTICE OF PUBLIC HEARING

RIVERSIDE COUNTY AIRPORT LAND USE COMMISSION

www.rcaluc.org

A PUBLIC HEARING has been scheduled before the Riverside County Airport Land Use Commission (ALUC) to consider the applications described below.

Any person may submit written comments to the ALUC before the hearing or may appear and be heard in support of or opposition to the project at the time of hearing. **Information on how to participate in the hearing will be available on the ALUC website at www.rcaluc.org.** The ALUC holds hearings for local discretionary permits within the Airport Influence Area, reviewing for aeronautical safety, noise and obstructions. ALUC reviews a proposed plan or project solely to determine whether it is consistent with the applicable Airport Land Use Compatibility Plan. For more information please contact **ALUC Planner Jackie Vega at (951) 955-0982**.

The City of Perris Planning Department should be contacted on non-ALUC issues. For more information, please contact City of Perris Planner Nathan Perez at 951-943-5003.

The proposed project application may be viewed by a prescheduled appointment and on the ALUC website www.rcaluc.org. Written comments may be submitted at the Riverside County Administrative Center, 4080 Lemon Street, 14th Floor, Riverside, California 92501, Monday through Friday from 8:00 a.m. to 3:30 p.m., or by e-mail to javega@rivco.org. Individuals with disabilities requiring reasonable modifications or accommodations, please contact Barbara Santos at (951) 955-5132.

PLACE OF HEARING:	**Riverside County Administration Center** **4080 Lemon Street, 1st Floor Board Chambers** **Riverside California**
DATE OF HEARING:	**February 8, 2024**
TIME OF HEARING:	**9:30 A.M.**

CASE DESCRIPTION:

ZAP1032PV23 – WLPX Perris Venue, LLC (Representative: Lewis Management Corporation) – City of Perris Case Nos. GPA23-05033 (General Plan Amendment), ZC23-05034 (Zone Change), DPR23-00005 (Development Plan Review), DPR23-00006 (Development Plan Review), CUP23-05032 (Conditional Use Permit), and TPM35700 (Tentative Parcel Map). A proposal to construct a nine-building commercial center totaling 142,074 square feet on 15.70 acres, and a 848,000 square foot industrial building with mezzanines on 44.04 acres, located on the southeast corner of San Jacinto Avenue and Redlands Avenue. The applicant also proposes to amend the site's General Land Use designation and Zoning from Community Commercial to Community Commercial and Light Industrial. The applicant also proposes dividing the site into 10 parcels (Airport Compatibility Zone E of the Perris Valley Airport Influence Area and Zone D of the March Air Reserve/Inland Port Airport Influence Area).

RIVERSIDE COUNTY
AIRPORT LAND USE COMMISSION

APPLICATION FOR MAJOR LAND USE ACTION REVIEW

ALUC STAFF ONLY

ALUC Case Number: ZAP1032PV23 Date Submitted: 6/29/23

AIA: Perris Valley / March Zone: E and D Mar Public Hearing ☐ Staff Review ☑

Applicant

Applicant Full Name: Joseph Edwards /WLPX Perris Venue, LLC

Applicant Address: 1156 North Mountain Avenue, Upland, CA 91785

Phone: (909) 579-1236 or (949) 798-9230 **Email:** joseph.edwards@lewismc.com

Representative/ Property Owner Contact Information

Representative: Joseph Edwards **Email:** joseph.edwards@lewismc.cm

Lewis Management Corp Phone: (909) 579-1236

Address: 1156 North Mountain Avenue, Upland, CA 91785

Property Owner: WLPX Perris Venue, LLC **Email:** joseph.edwards@lewismc.com

Phone: (909) 579-1236

Address: 1156 North Mountain Avenue, Upland, CA 91785

Local Jurisdiction Agency

Agency Name: City of Perris Phone: (951) 943-5003

Staff Contact: Nathan Perez, Senior Planner **Email:** NPerez@cityofperris.org

Address: 135 N. "D" Street, Perris, CA 92570 : :

Local Agency Case No.: DPR 23-00005 and DPR 23-00006, GPA23-05033, ZC23-05034, CUP23-05032, TPM35700

Project Location

Street Address: SEC of Redlands Avenue & San Jacinto Avenue Gross Parcel Size.: 66.33

Assessor's Parcel No.: APNs: 310-100-015 through -018; 310-100-019; 310-110-043 through -044; 310-100-052; 310-110-058 through -059; 310-110-013 through -015; 310-110-017; 310-110-023; 310-110-027 through -028; 310-110-037; 310-110-042; 310-110-044 through -045; 310-110-049; 310-110-051; 310-110-053 through -054; and 310-110-056 through -057)

Solar

Is the project proposing solar Panels? Yes ☑ No ☐ If yes, please provide solar glare study. (only if in Zone C or higher)

Data

Site Elevation:(above mean sea level)	1422 Feet
Height of Building or structures:	Maximum height is 50 feet.
What type of drainage basins are being proposed and the square footage:	(1) 6.6 AC detention basin proposed - 287,496 SF)

Notice

A. NOTICE: Failure of an applicant to submit complete or adequate information pursuant to Sections 65940 to 65948 inclusive of the California Government Code, MAY constitute grounds for disapproval of actions, regulations, or permits.

B. REVIEW TIME: Estimated time for "staff level review" is approximately 30 days from date of submittal. Estimated time for "commission level review" is approximately 45 days from date of a complete application submittal to the next available commission hearing meeting.

C. SUBMISSION PACKAGE:

Please submit all application items DIGITALLY via USB or CD:

- Completed ALUC Application Form
- Plans Package: site plans, floor plans, building elevations, grading plans, subdivision maps
- Exhibits of change of zone, general plan amendment, specific plan amendment
- Project description of existing and proposed use

Additionally, please provide:

- ALUC fee payment (Checks made out to Riverside County ALUC)
- Gummed address labels of all surrounding property owners within a 300-foot radius of project site. (Only required if the project is scheduled for a public hearing).

Riverside County Airport Land Use Commission, County Administrative Center, 4080 Lemon Street, 14th Floor, Riverside, CA 92501, Phone: 951-955-5132 Fax: 951-955-5177 Website: www.rcaluc.org

RIVERSIDE COUNTY
AIRPORT LAND USE COMMISSION

STAFF REPORT

AGENDA ITEM:	3.6
HEARING DATE:	February 8, 2024
CASE NUMBER:	ZAP1113RI23 – Steven Walker Communities, Inc. (Representative: PB Arlington, LLC)
APPROVING JURISDICTION:	City of Riverside
JURISDICTION CASE NO:	PR-2021-000894 ([DP-2021-00099(General Plan Amendment), DP-2021-00103 (Change of Zone), DP-2021-00106 (Development Review), DP-2021-00105 (Conditional Use Permit)])
LAND USE PLAN:	2005 Riverside Municipal Airport Land Use Compatibility Plan
Airport Influence Area:	Riverside Municipal Airport
Land Use Policy:	Compatibility Zone D
Noise Levels:	Below 55 CNEL contour from aircraft noise
MAJOR ISSUES:	None

RECOMMENDATION: Staff recommends that the General Plan Amendment and Change of Zone be found CONSISTENT with the 2005 Riverside Municipal Airport Land Use Compatibility Plan, and that the Development Plan Review and Conditional Use Permit be found CONDITIONALLY CONSISTENT, subject to the conditions included herein, and such additional conditions as may be required by the Federal Aviation Administration Obstruction Evaluation Service.

PROJECT DESCRIPTION: A proposal to construct a 4,650 square foot convenience store/gas station with six fuel pumps on 1.34. The applicant also proposes to amend the General Plan Land Use designation from Office (O) to Commercial Retail (C-R), and to rezone the site from R-1-7000 (Single Family Residential) to Commercial Retail (C-R).

PROJECT LOCATION: The site is located on the southeast corner of Arlington Avenue and Monroe Street, approximately 1,110 feet southerly of the easterly terminus of Runway 9-27 at Riverside Municipal Airport.

BACKGROUND:

Non-Residential Intensity: Pursuant to the Riverside Municipal Airport Land Use Compatibility Plan, the project site is located within Compatibility Zone D, where Zone D restricts non-residential

average intensity to 100 people per acre.

Pursuant to Appendix C, Table C-1, of the Riverside County Airport Land Use Compatibility Plan, the following rates were used to calculate the occupancy for the proposed project:

- Retail – 1 person per 60 square feet.

The project proposes to construct a 4,650 square foot convenience store/gas station with six pump stations, accommodating an occupancy of 87 people, resulting in an average intensity of 65 people per acre, which is consistent with Zone D average intensity criterion of 100 people per acre.

A second method for determining total occupancy involves multiplying the number of parking spaces provided or required (whichever is greater) by average vehicle occupancy (assumed to be 1.5 persons per standard vehicle). Based on the number of parking spaces provided (36 cars), the total occupancy would be estimated at 54 persons. This results in an average intensity of 40 people per acre, which is consistent with the Zone D average intensity criterion of 100 people per acre.

Non-Residential Single-Acre Intensity: Pursuant to the Riverside Municipal Airport Land Use Compatibility Plan, the project site is located within Compatibility Zone D. Zone D restricts single acre intensity to a maximum of 300 people.

Based on the site plan provided and the occupancies as previously noted. The maximum single-acre area would include 4,650 square feet of retail area and six gas station pumps, resulting in a single acre occupancy of 87 people which is consistent with the Compatibility Zone D single acre criterion of 300 people.

Prohibited and Discouraged Uses: The applicant does not propose any uses specifically prohibited or discouraged in Compatibility Zone D.

Noise: The site is located outside the Riverside Municipal Airport Compatibility Plan 55 CNEL contour relative to aircraft noise contour. Therefore, no special measures to mitigate aircraft noise are required at this location.

Part 77: The elevation of Runway 9-27 at its southerly terminus is 756 feet above mean sea level (AMSL). At a distance of approximately 1,110 feet from the project to the nearest point of the runway, Federal Aviation Administration (FAA) review would be required for any structures with top of roof exceeding 767 feet AMSL. The site's finished floor elevation is 755 feet AMSL and building height is 25 feet, resulting in a top point elevation of 780 feet AMSL. Therefore, review of the building for height/elevation reasons by the FAA Obstruction Evaluation Service (FAAOES) is required. The applicant submitted Form 7460-1 to the FAA OES, and was issued aeronautical study no. 2024-AWP-31-OE, and is currently in a 'work in progress' status.

Open Area: Pursuant to the Riverside Municipal Airport Land Use Compatibility Plan, the project site is located within Compatibility Zones D. The Compatibility Plan requires projects greater than 10 acres to designate 10% of open are in Zone D as ALUC qualifying open area that could potentially serve as emergency landing areas. The site is 1.34 acres and therefore is not subject to the above requirements.

Hazards to Flight: Land use practices that attract or sustain hazardous wildlife populations on or

near airports significantly increase the potential of Bird Aircraft Strike Hazards (BASH). The FAA strongly recommends that storm water management systems located within 5,000 or 10,000 feet of the Airport Operations Area, depending on the type of aircraft, be designed and operated so as not to create above-ground standing water. To facilitate the control of hazardous wildlife, the FAA recommends the use of steep-sided, rip-rap lined, narrow, linearly shaped water detention basins. All vegetation in and around detention basins that provide food or cover for hazardous wildlife should be eliminated. (FAA Advisory Circular 5200-33C). The project is located 1,110 feet from the runway, and therefore would be subject to the above requirement.

The project includes a 1,511 square foot bioretention basin. Pursuant to the study "Wildlife Hazard Management at Riverside County Airports: Background and Policy", October 2018, by Mead & Hunt, which is the basis of the brochure titled "Airports, Wildlife and Stormwater Management", such limited basins are permissible with the appropriate criteria: the basin is used in conjunction with appropriate landscaping for such uses as adjacent to structures, parking islands, medians, site entrances, planter boxes, and vegetation is selected carefully so as not to provide food, shelter, nesting, roosting, or water for wildlife. The project has been conditioned to be consistent with the basin criteria (as well as providing 48-hour draw down of the basin).

General Plan Amendment/Change of Zone: The applicant also proposes to amend the General Land Use designation from Office (O) to Commercial Retail (C-R), and to rezone the site from R-1-7000 (Single Family Residential) to Commercial Retail (C-R). The amendments would be as, or more consistent with the Compatibility Plan as long as the underlying development is consistent with the compatibility criteria.

CONDITIONS:

1. Any outdoor lighting installed shall be hooded or shielded to prevent either the spillage of lumens or reflection into the sky. Outdoor lighting shall be downward facing.

2. The following uses are prohibited:

   (a) Any use which would direct a steady light or flashing light of red, white, green, or amber colors associated with airport operations toward an aircraft engaged in an initial straight climb following takeoff or toward an aircraft engaged in a straight final approach toward a landing at an airport, other than an FAA-approved navigational signal light or visual approach slope indicator.

   (b) Any use which would cause sunlight to be reflected towards an aircraft engaged in an initial straight climb following takeoff or towards an aircraft engaged in a straight final approach towards a landing at an airport.

   (c) Any use which would generate smoke or water vapor or which would attract large concentrations of birds, or which may otherwise affect safe air navigation within the area. (Such uses include landscaping utilizing water features, aquaculture, outdoor production of cereal grains, sunflower, and row crops, composting operations, wastewater management facilities, artificial marshes, trash transfer stations that are open on one or more sides, recycling centers containing putrescible wastes, construction and demolition debris facilities, fly ash disposal, and incinerators.)

(d) Any use which would generate electrical interference that may be detrimental to the operation of aircraft and/or aircraft instrumentation.

(e) Highly noise-sensitive nonresidential uses.

(f) Any use which results in a hazard to flight, including physical (e.g., tall objects), visual, and electronic forms of interference with the safety of aircraft operations.

3. The attached "Notice of Airport in Vicinity" shall be provided to all prospective purchasers and occupants of the property.

4. Any proposed stormwater basins or facilities shall be designed and maintained to provide for a maximum 48-hour detention period following the design storm, and remain totally dry between rainfalls. Vegetation in and around the basins that would provide food or cover for birds would be incompatible with airport operations and shall not be utilized in project landscaping. Trees shall be spaced so as to prevent large expanses of contiguous canopy, when mature. Landscaping in and around the basin(s) shall not include trees or shrubs that produce seeds, fruits, or berries.

   Landscaping in the stormwater basin, if not rip-rap, should be in accordance with the guidance provided in ALUC "LANDSCAPING NEAR AIRPORTS" brochure, and the "AIRPORTS, WILDLIFE AND STORMWATER MANAGEMENT" brochure available at RCALUC.ORG which list acceptable plants from Riverside County Landscaping Guide or other alternative landscaping as may be recommended by a qualified wildlife hazard biologist.

   A notice sign, in a form similar to that attached hereto, shall be permanently affixed to the stormwater basin with the following language: "There is an airport nearby. This stormwater basin is designed to hold stormwater for only 48 hours and not attract birds. Proper maintenance is necessary to avoid bird strikes". The sign will also include the name, telephone number or other contact information of the person or entity responsible to monitor the stormwater basin.

5. The project has been evaluated to construct a 4,650 square foot 7/11 convenience store/gas station with six fuel pumps Any increase in building area, change in use to any higher intensity use, change in building location, or modification of the tentative parcel map lot lines and areas will require an amended review to evaluate consistency with the ALUCP compatibility criteria**,** at the discretion of the ALUC Director.

NOTICE OF AIRPORT IN VICINITY

This property is presently located in the vicinity of an airport, within what is known as an airport influence area. For that reason, the property may be subject to some of the annoyances or inconveniences associated with proximity to airport operations (for example: noise, vibration, or odors). Individual sensitivities to those annoyances [can vary from person to person. You may wish to consider what airport annoyances], if any, are associated with the property before you complete your purchase and determine whether they are acceptable to you. Business & Professions Code Section 11010 (b)(13)(A)

NOTICE

THERE IS AN AIRPORT NEARBY.

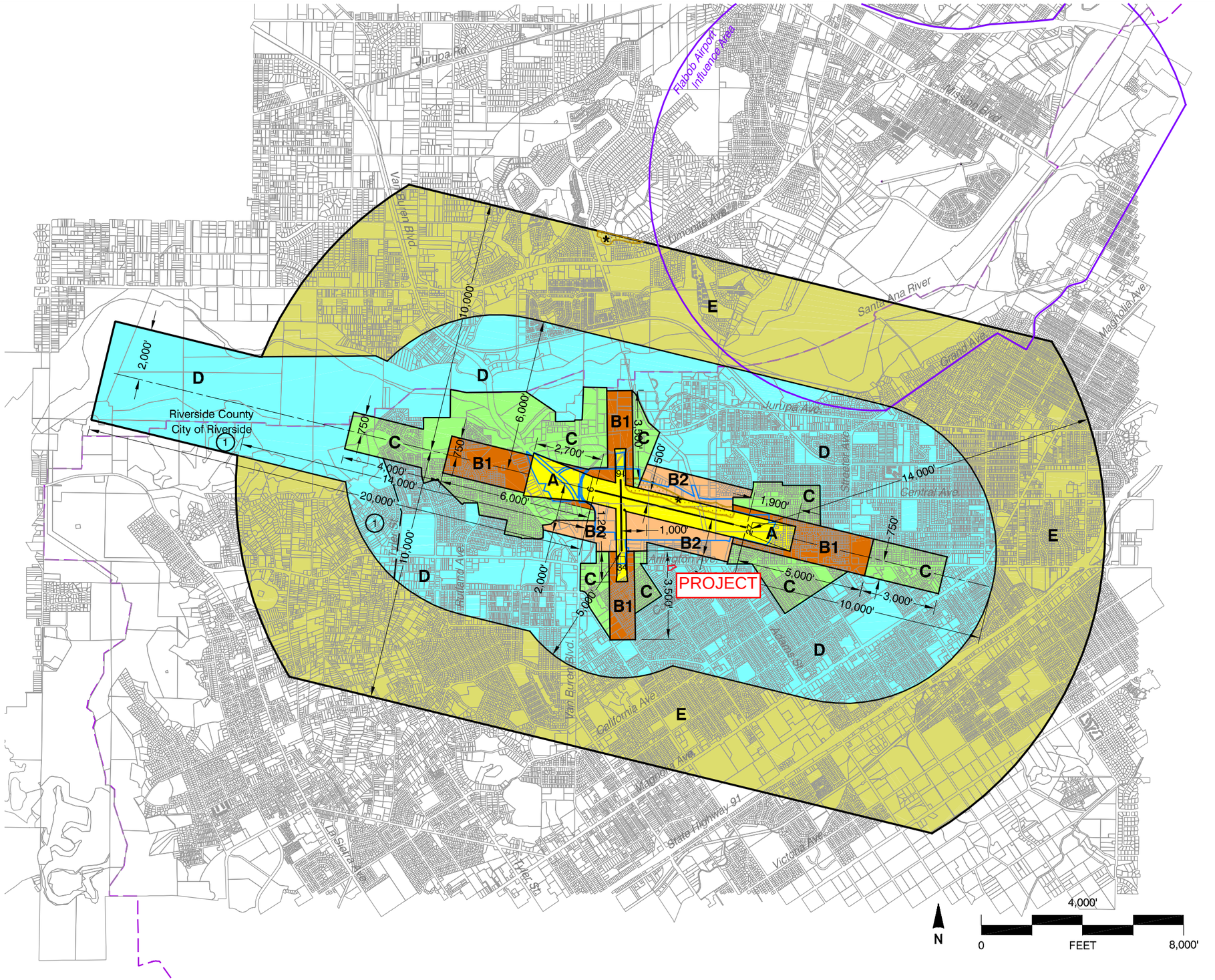
THIS STORM WATER BASIN IS DESIGNED TO HOLD STORM WATER FOR ONLY 48 HOURS AND NOT TO ATTRACT BIRDS

PROPER MAINTENANCE IS NECESSARY TO AVOID BIRD STRIKES

RIVERSIDE COUNTY
ALUC
AIRPORT LAND USE COMMISSION

IF THIS BASIN IS OVERGROWN, PLEASE CONTACT:

Name: _____ **Phone:** _____



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 (FAR 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.

Riverside County
Airport Land Use Commission

Riverside County
Airport Land Use Compatibility Plan
Policy Document

(Adopted March 2005)

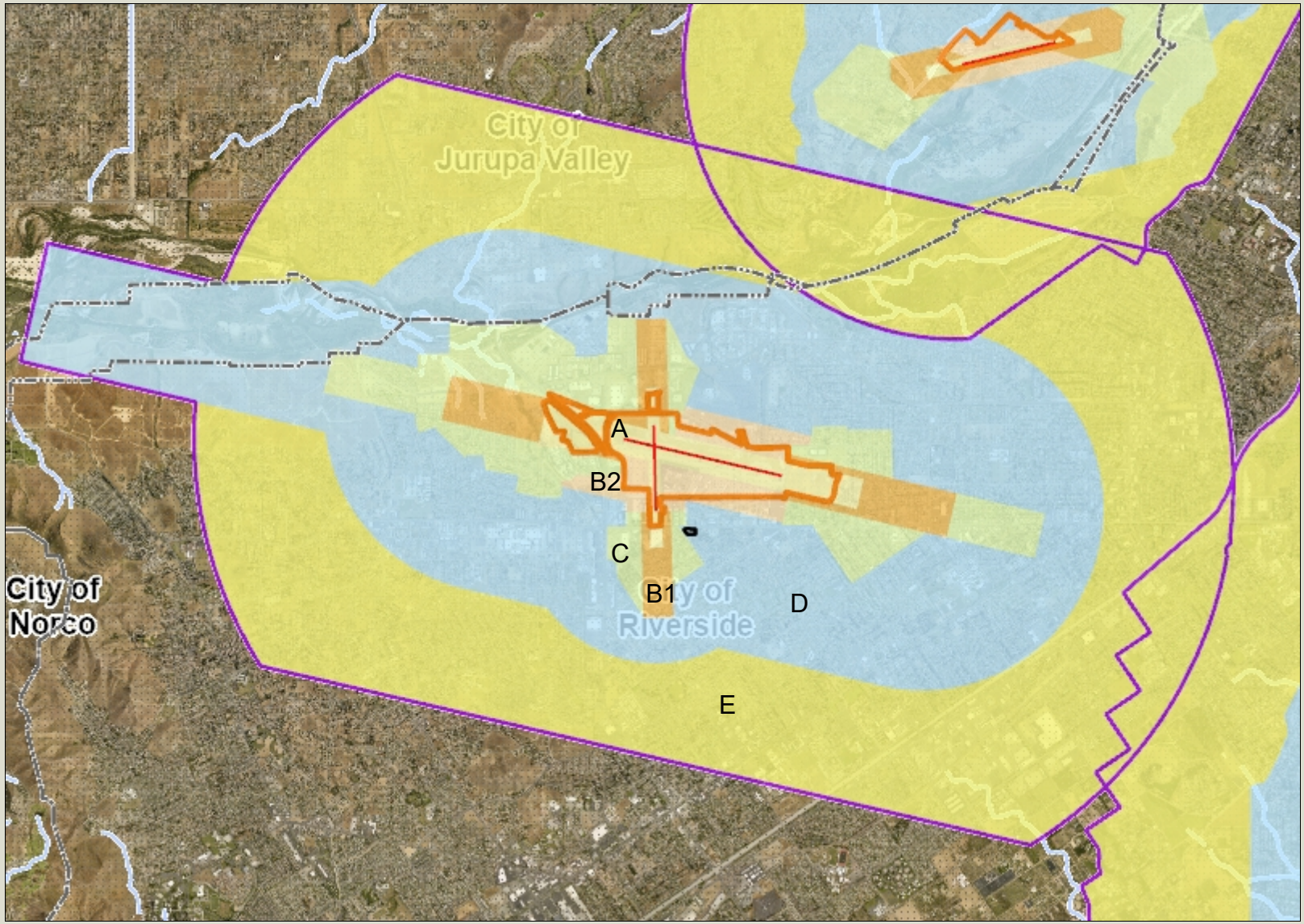
Map RI-1

Compatibility Map

Riverside Municipal Airport

P:\RCO\Dwgs\RAL-compatibility.dwg Mar 22, 2005 - 12:47pm

Map My County Map



Legend

- County Boundary
- City Boundaries
- Runways
- Airports
- Airport Influence Areas
- Airport Compatibility Zones
  - A
  - A-EXC1
  - B1
  - B1-APZ I
  - B1-APZ I-EXC1
  - B1-APZ II
  - B1-APZ II-EXC1
  - B1-EXC1
  - B2
  - B2-EXC1
  - C
  - C1
  - C1-EXC1
  - C1-EXC3
  - C1-EXC4
  - C1-HIGHT
  - C2
  - C2-EXC1
  - C2-EXC2
  - C2-EXC3
  - C2-EXC5

0 6,157 12,314 Feet

IMPORTANT Maps and data are to be used for reference purposes only. Map features are approximate, and are not necessarily accurate to surveying or engineering standards. The County of Riverside makes no warranty or guarantee as to the content (the source is often third party), accuracy, timeliness, or completeness of any of the data provided, and assumes no legal responsibility for the information contained on this map. Any use of this product with respect to accuracy and precision shall be the sole responsibility of the user.

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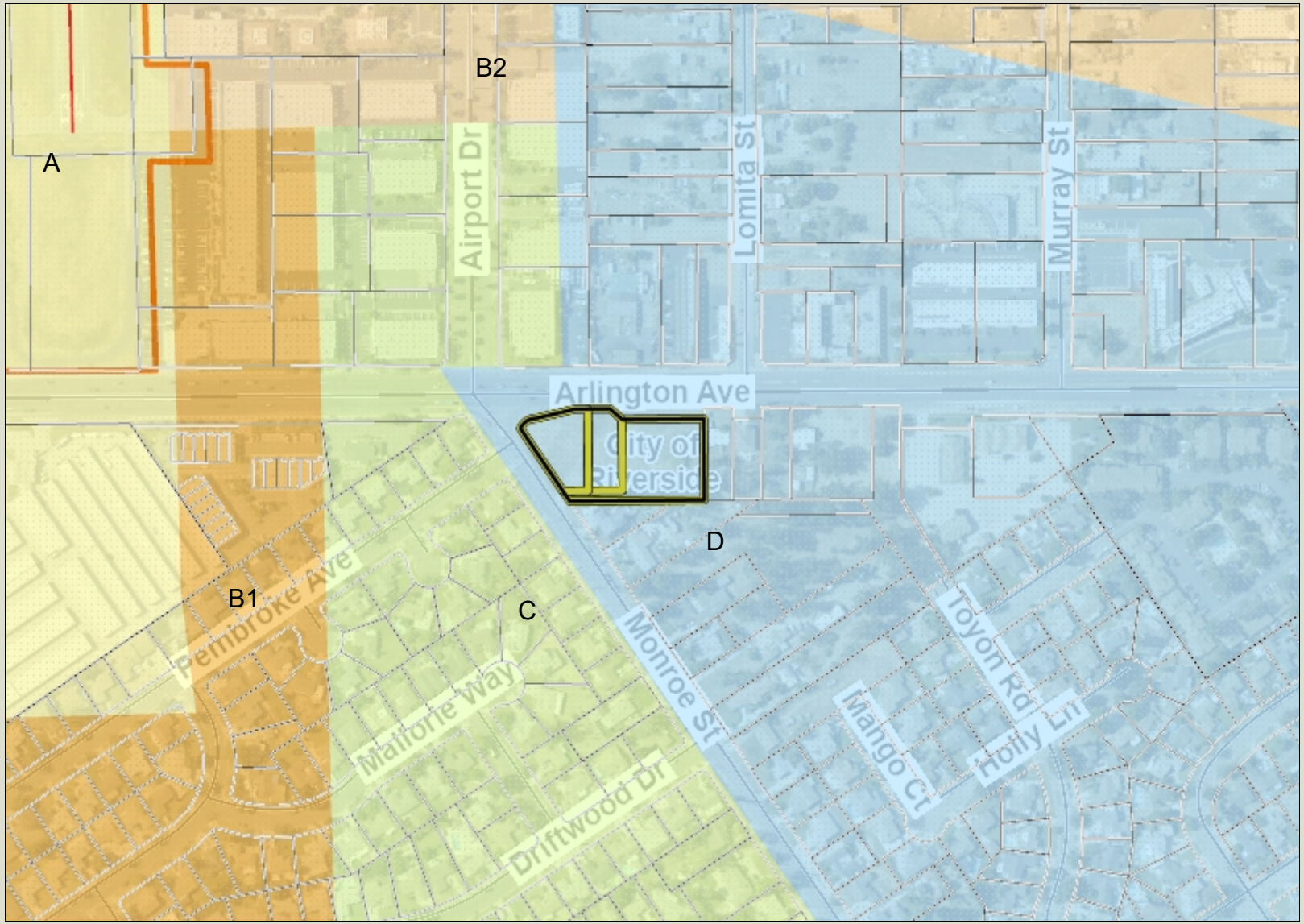
Notes

Map My County Map



Legend

- County Boundary
- City Boundaries
- Parcels, County
- Runways
- Airports
- Airport Influence Areas
- Airport Compatibility Zones
  - A
  - A-EXC1
  - B1
  - B1-APZ I
  - B1-APZ I-EXC1
  - B1-APZ II
  - B1-APZ II-EXC1
  - B1-EXC1
  - B2
  - B2-EXC1
  - C
  - C1
  - C1-EXC1
  - C1-EXC3
  - C1-EXC4
  - C1-HIGHT
  - C2
  - C2-EXC1
  - C2-EXC2
  - C2-EXC3

0 385 770 Feet

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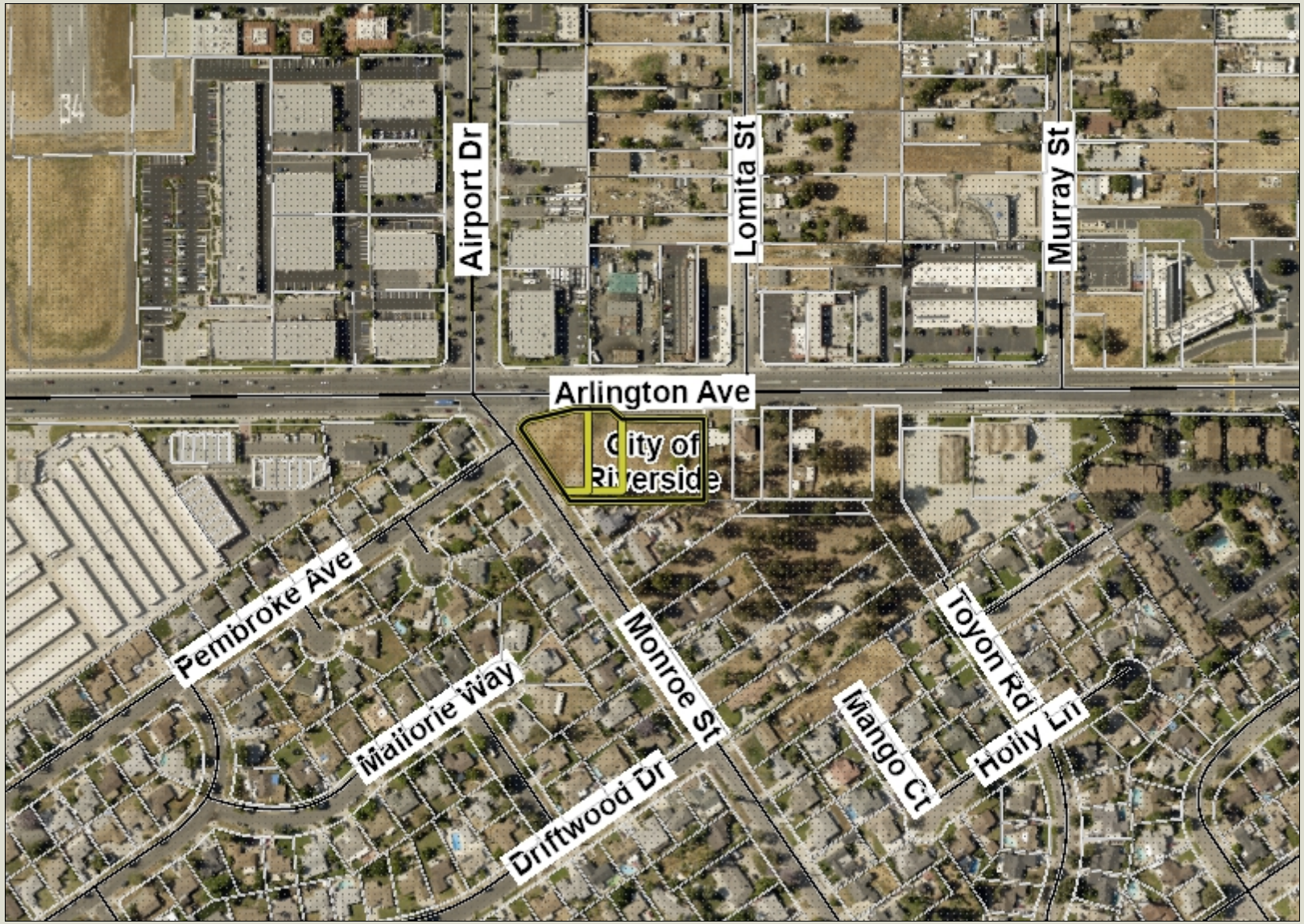
Notes

Map My County Map



Legend

- County Boundary
- City Boundaries
- Parcels, County
- County Centerline Names
- County Centerlines
- Blueline Streams
- City Areas
- World Street Map

0 385 770 Feet

IMPORTANT Maps and data are to be used for reference purposes only. Map features are approximate, and are not necessarily accurate to surveying or engineering standards. The County of Riverside makes no warranty or guarantee as to the content (the source is often third party), accuracy, timeliness, or completeness of any of the data provided, and assumes no legal responsibility for the information contained on this map. Any use of this product with respect to accuracy and precision shall be the sole responsibility of the user.

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Notes

Map My County Map

Legend

- County Boundary
- City Boundaries
- County Centerline Names
- County Centerlines
- Blueline Streams
- City Areas
- World Street Map

0 770 1,539 Feet

IMPORTANT Maps and data are to be used for reference purposes only. Map features are approximate, and are not necessarily accurate to surveying or engineering standards. The County of Riverside makes no warranty or guarantee as to the content (the source is often third party), accuracy, timeliness, or completeness of any of the data provided, and assumes no legal responsibility for the information contained on this map. Any use of this product with respect to accuracy and precision shall be the sole responsibility of the user.

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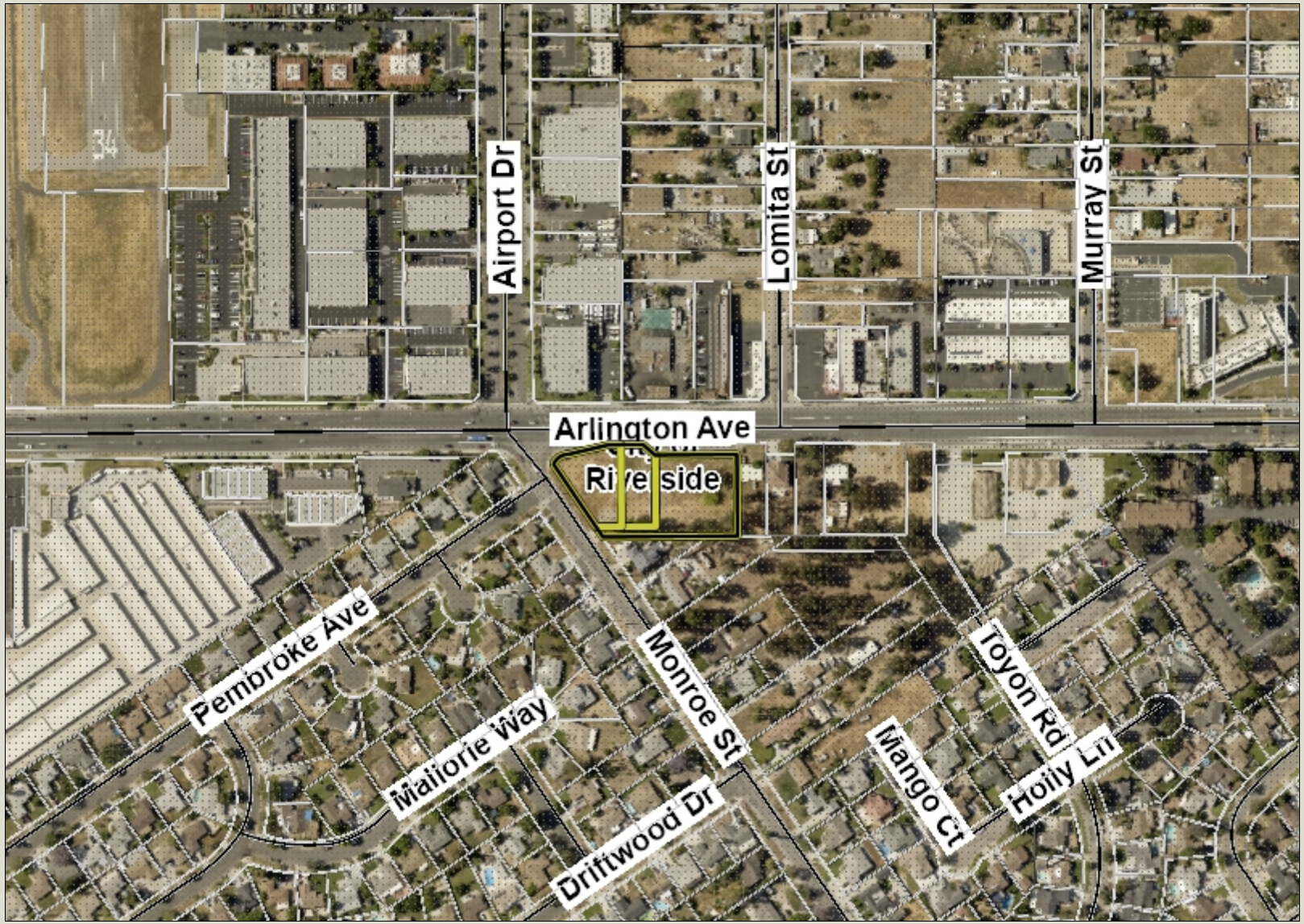
Notes

Map My County Map



Legend

- County Boundary
- City Boundaries
- Parcels, County
- County Centerline Names
- County Centerlines
- Blueline Streams
- City Areas
- World Street Map

0 385 770 Feet

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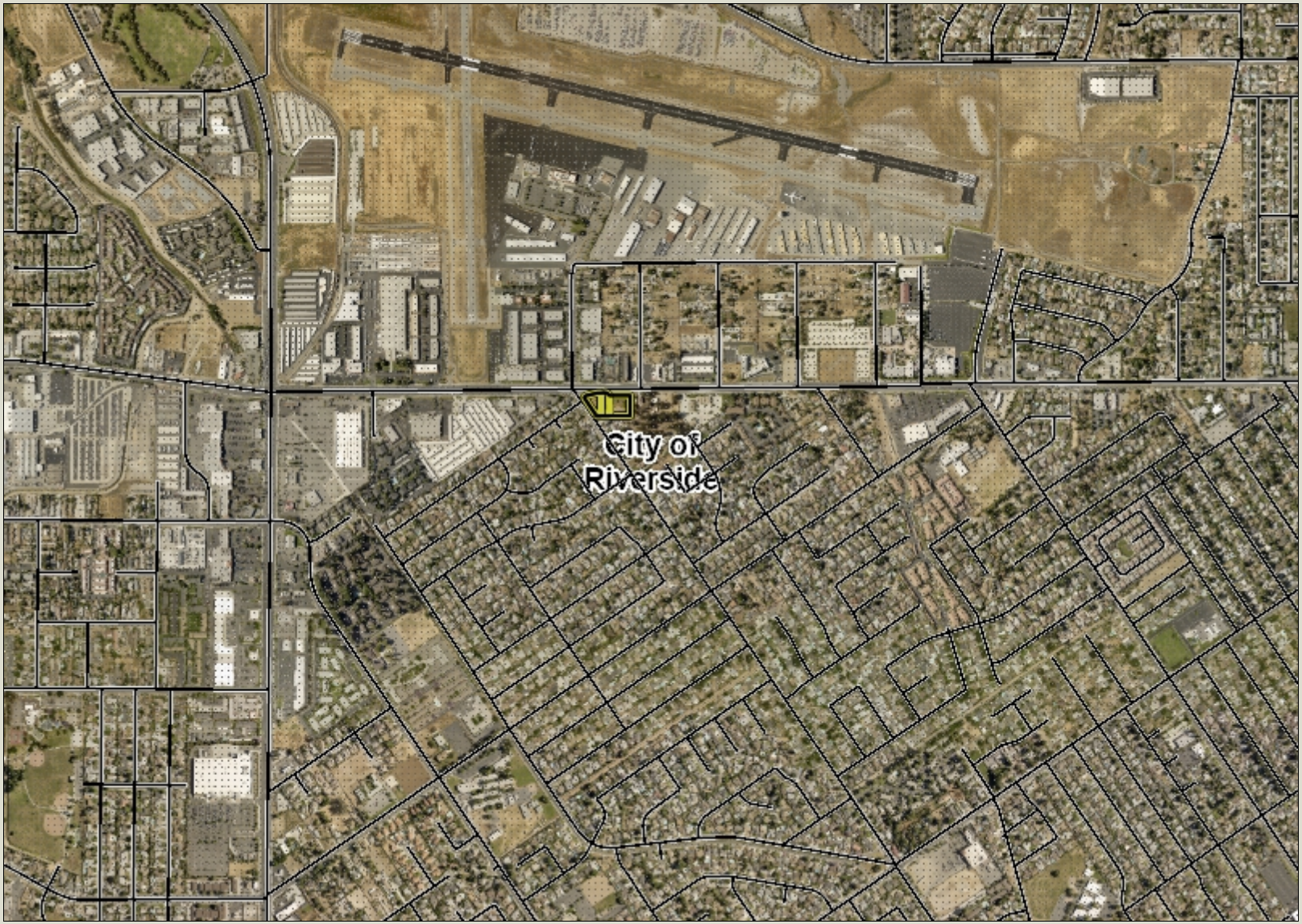
Notes

Map My County Map



Legend

- County Boundary
- City Boundaries
- County Centerline Names
- County Centerlines
- Blueline Streams
- City Areas
- World Street Map

0 1,539 3,079 Feet

IMPORTANT Maps and data are to be used for reference purposes only. Map features are approximate, and are not necessarily accurate to surveying or engineering standards. The County of Riverside makes no warranty or guarantee as to the content (the source is often third party), accuracy, timeliness, or completeness of any of the data provided, and assumes no legal responsibility for the information contained on this map. Any use of this product with respect to accuracy and precision shall be the sole responsibility of the user.

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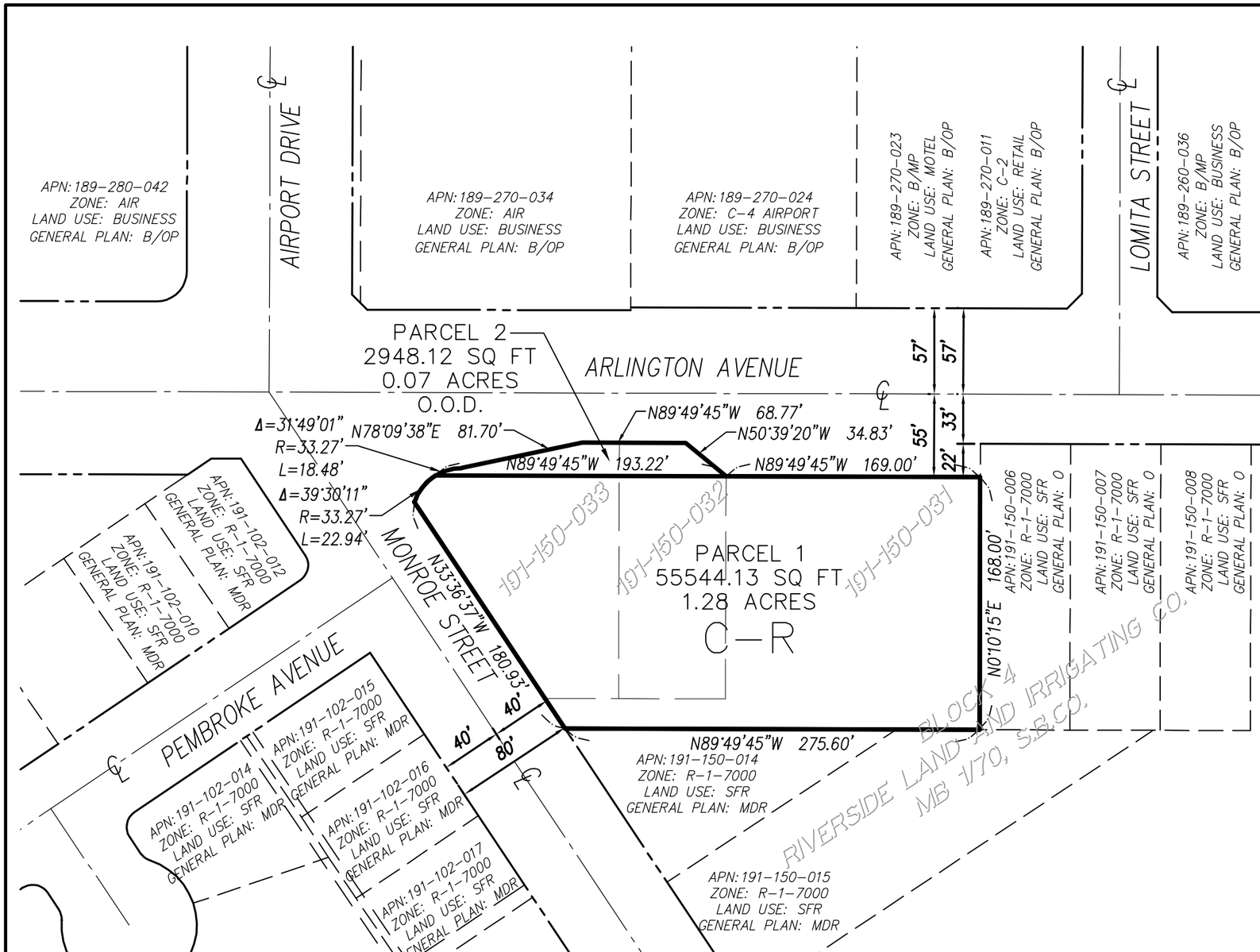
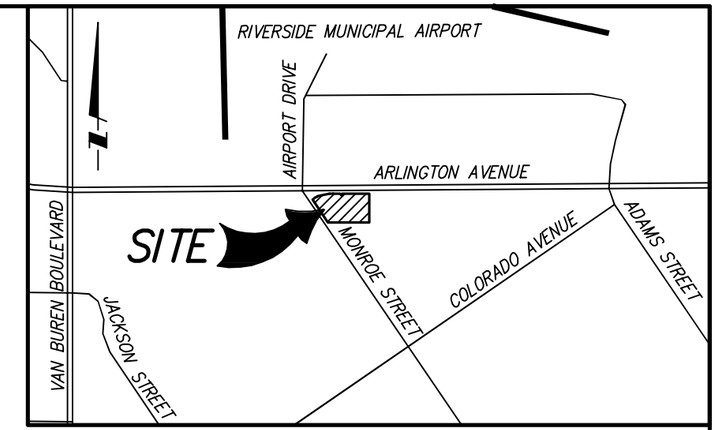
Notes





VICINITY MAP

THOMAS GUIDE – PAGE 714 J-2 (2005 EDITION)
SECTION 6, TOWNSHIP 3 SOUTH, RANGE 5 WEST
NOT TO SCALE

CIVIL ENGINEER

WOODARD GROUP
ANDREW WOODARD
7223 MAGNOLIA AVENUE
RIVERSIDE, CA 92504
PHONE: (951) 907-5077

OWNER/APPLICANT

STEVEN WALKER COMMUNITIES
7111 INDIANA AVENUE, SUITE 300
RIVERSIDE, CA 92504
TEL: (951) 784-0840

SCHOOL DISTRICT

RIVERSIDE UNIFIED SCHOOL DISTRICT

ASSESSOR PARCEL NO

BOOK	PAGE	PARCELS
191	150	031
191	150	032
191	150	033

ZONING/LAND USE/GENERAL PLAN

EXISTING ZONING (191-150-032, 191-150-033)..... R-1-7000
EXISTING ZONING (191-150-031) ..... C-R (COMMERCIAL RETAIL)
EXISTING LAND USE: ..... VACANT
EXISTING GENERAL PLAN: ..... O OFFICE
PROPOSED ZONING: ..... C-R (COMMERCIAL RETAIL)
PROPOSED LAND USE: ..... .SERVICE STATION/RETAIL/RESTAURANT
PROPOSED GENERAL PLAN AMENDMENT: ..... COMMERCIAL RETAIL

LEGAL DESCRIPTION

THOSE PORTIONS OF LOT 5 IN BLOCK 4 OF THE LANDS OF THE RIVERSIDE LAND AND IRRIGATING COMPANY, AS SHOWN BY MAP ON FILE IN BOOK 1 PAGE 70 OF MAPS, RECORDS OF SAN BERNARDINO COUNTY, CALIFORNIA. THOSE PORTIONS ARE SITUATED IN SECTION 6 OF TOWNSHIP 3 SOUTH, RANGE 5 WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE CITY OF RIVERSIDE, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

A MORE DESCRIPTIVE LEGAL DESCRIPTION IS SHOWN PURSUANT TO THAT CERTAIN CERTIFICATE OF COMPLIANCE, PROJECT NUMBER PMW-27-790, RECORDED MAY 18, 1987 AS INSTRUMENT NUMBERS 138925 AND 138926, OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

UTILITY PURVEYOR'S

WATER: ..... CITY OF RIVERSIDE
SEWER: ..... CITY OF RIVERSIDE
ELECTRICITY: ..... CITY OF RIVERSIDE
GAS: ..... THE GAS COMPANY
TELEPHONE: ..... VERIZON
TELEVISION: ..... AIR WAVES / CHARTER COMMUNICATIONS

80' 40' 0 80' 160'

GRAPHIC SCALE
SCALE: 1" = 80'

MARK	REVISIONS	DATE	BY

CHANGE OF ZONE

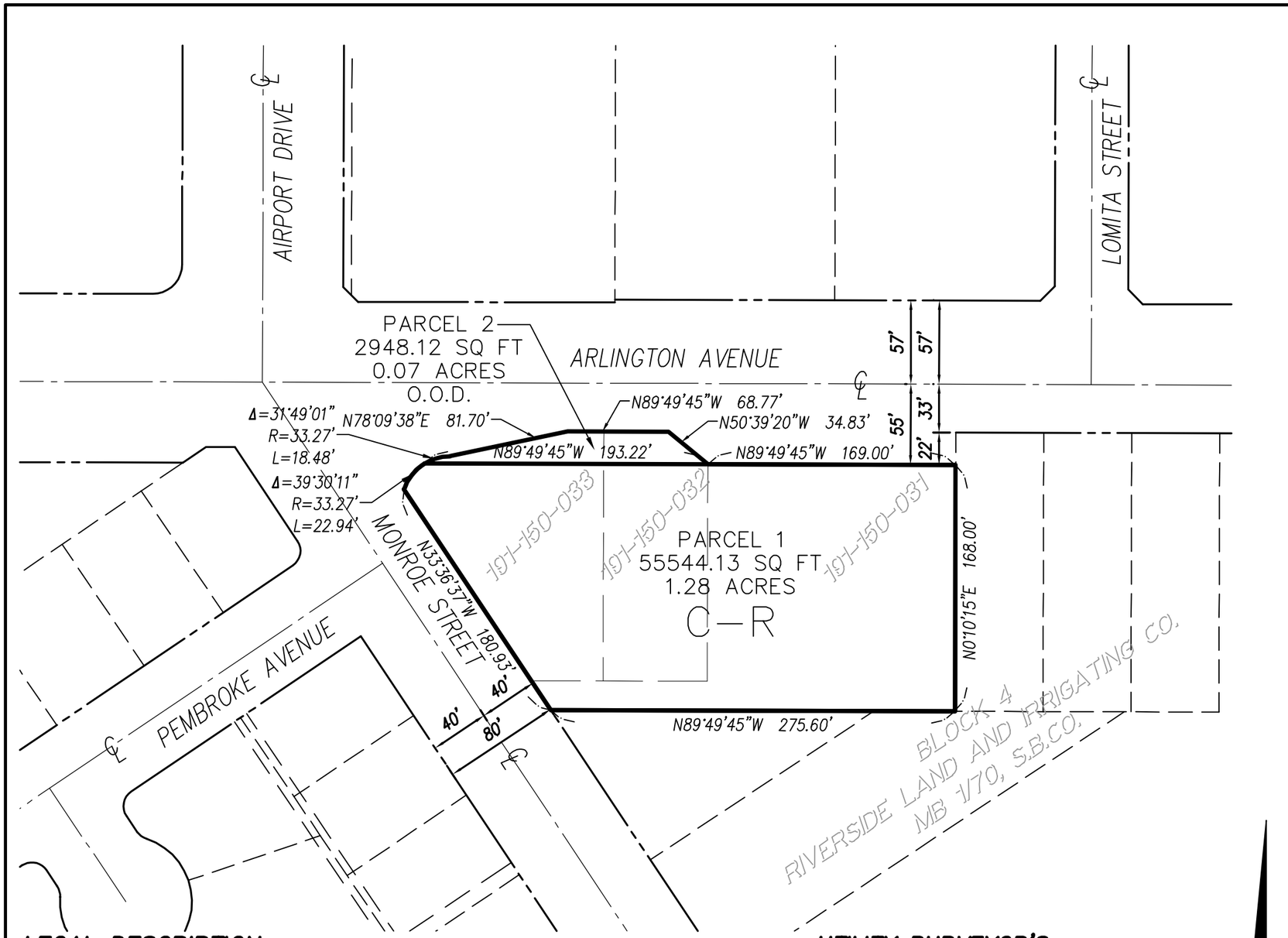
APNS: 191-150-031, 191-150-032, 191-150-033

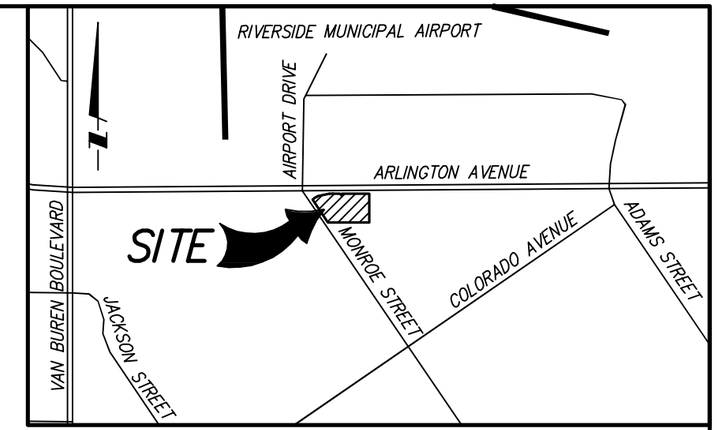
FOR: STEVEN WALKER COMMUNITIES

SCALE:	1"=80'	W.O.	1103
DATE:	07/2020	SHEET	1
DESIGNED:	WW	OF	1 SHEETS
CHECKED:	AW	DWG. NO.	1103.1
PLN CK REF:			
F.B.			

woodard group

Drawing: C:\Users\bwcei\B & W Consulting Engineers, Inc\BWCE-All - Documents\CONSULTANT WORK\SWC\1103-Art-Monroe\Drawings\Prelim\Exhibits\GPA\1103-CZ.dwg Plotted By: bwcei Layout: 11x17 L Last Saved: Tue Jul 21, 2020 - 8:48am Last Plotted: Tue Jul 21, 2020 - 8:59am





VICINITY MAP

THOMAS GUIDE – PAGE 714 J-2 (2005 EDITION)
SECTION 6, TOWNSHIP 3 SOUTH, RANGE 5 WEST
NOT TO SCALE

CIVIL ENGINEER

WOODARD GROUP
ANDREW WOODARD
7223 MAGNOLIA AVENUE
RIVERSIDE, CA 92504
PHONE: (951) 907-5077

OWNER/APPLICANT

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TEL: (951) 784-0840

SCHOOL DISTRICT

RIVERSIDE UNIFIED SCHOOL DISTRICT

ASSESSOR PARCEL NO

BOOK	PAGE	PARCELS
191	150	031
191	150	032
191	150	033

ZONING/LAND USE/GENERAL PLAN

EXISTING ZONING (191-150-032, 191-150-033)..... R-1-7000
EXISTING ZONING (191-150-031) ..... C-R (COMMERCIAL RETAIL)
EXISTING LAND USE: ..... VACANT
EXISTING GENERAL PLAN: ..... O OFFICE
PROPOSED ZONING: ..... C-R (COMMERCIAL RETAIL)
PROPOSED LAND USE: ..... .SERVICE STATION/RETAIL/RESTAURANT
PROPOSED GENERAL PLAN AMENDMENT: ..... COMMERCIAL RETAIL

LEGAL DESCRIPTION

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UTILITY PURVEYOR'S

WATER: ..... CITY OF RIVERSIDE
SEWER: ..... CITY OF RIVERSIDE
ELECTRICITY: ..... CITY OF RIVERSIDE
GAS: ..... THE GAS COMPANY
TELEPHONE: ..... VERIZON
TELEVISION: ..... AIR WAVES / CHARTER COMMUNICATIONS

80' 40' 0 80' 160'

GRAPHIC SCALE
SCALE: 1" = 80'

MARK	REVISIONS	DATE	BY

GENERAL PLAN AMENDMENT

APNS: 191-150-031, 191-150-032, 191-150-033

FOR: STEVEN WALKER COMMUNITIES

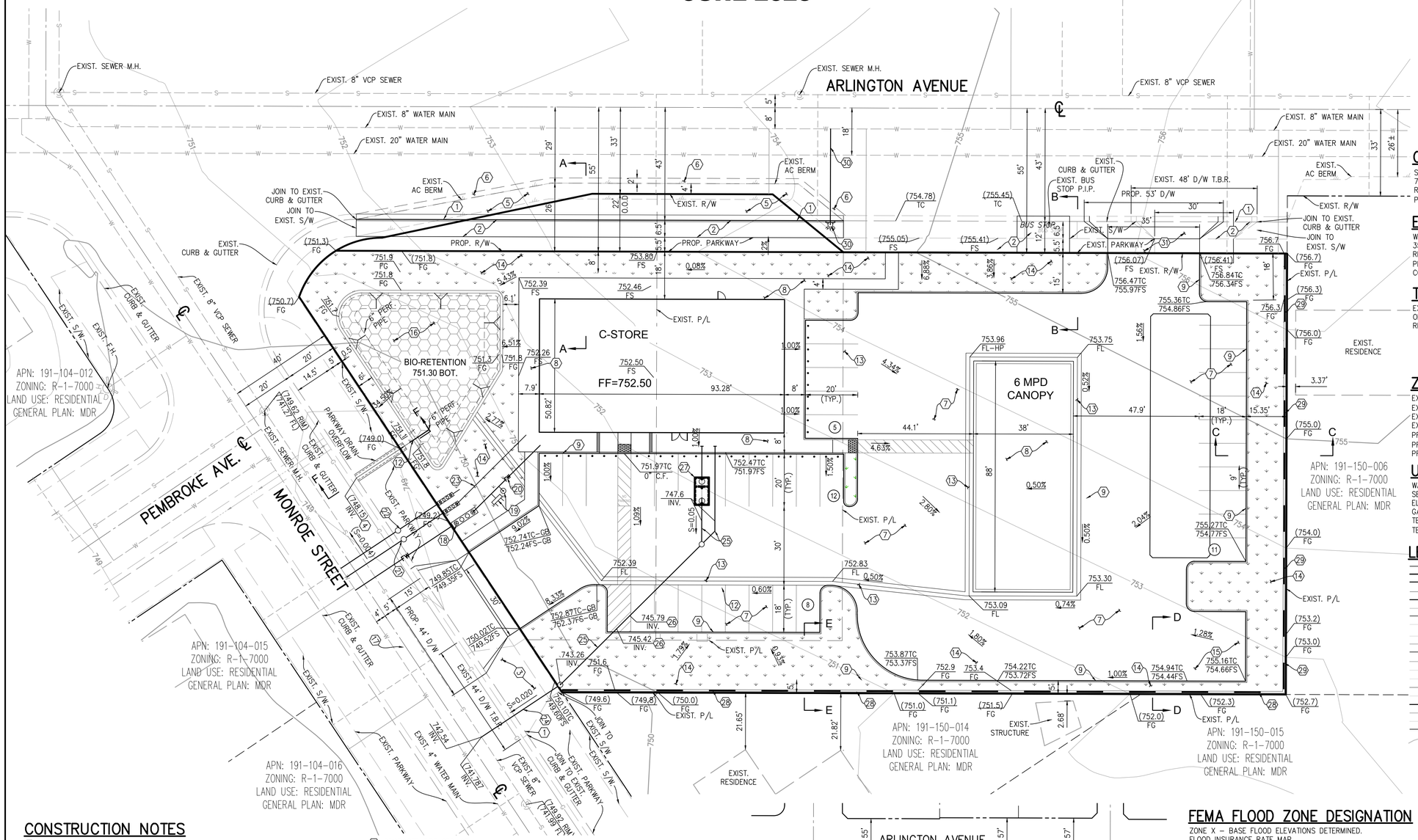
SCALE:	1"=80'
DATE:	07/2020
DESIGNED:	WW
CHECKED:	AW
PLN CK REF:	
F.B.	

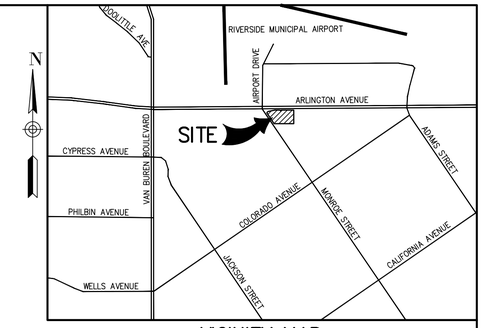
woodard group

W.O.	1103
SHEET	1 OF 1 SHEETS
DWG. NO.	1103.1

Drawing: C:\Users\bwcei\B & W Consulting Engineers, Inc\BWCE-All - Documents\CONSULTANT WORK\SWC\1103-Ari-Monroe\Drawings\Prelim\Exhibits\GPA\1103-GPA.dwg Plotted By: bwcei Layout: 11x17 L Last Saved: Tue Jul 21, 2020 - 8:48am Last Plotted: Tue Jul 21, 2020 - 8:50am

CONCEPTUAL GRADING PLAN
6892 ARLINGTON AVENUE
RIVERSIDE, CALIFORNIA
JUNE 2023





VICINITY MAP

THOMAS GUIDE – PAGE 714 GRID J-2 (2005 EDITION)
SECTION 6, TOWNSHIP 3 SOUTH, RANGE 5 WEST
NOT TO SCALE

OWNER/APPLICANT

STEVEN WALKER COMMUNITIES
7111 INDIANA AVENUE, SUITE 300
RIVERSIDE, CA. 92504
PH: (951) 784-0840

ENGINEER

WOODARD GROUP
3585 MAIN STREET, SUITE 205
RIVERSIDE, CA 92501
PH: (951) 907-5077
CONTACT: ANDREW C. WOODARD

TOPOGRAPHY SOURCE

EXISTING TOPOGRAPHY IS BASED ON CITY OF RIVERSIDE CADME DATABASE AND RECORD INFORMATION

LEGAL DESCRIPTION

APN: 191-150-003, 191-150-031, 191-150-032

THOSE PORTIONS OF LOT 5 IN BLOCK 4 OF THE LANDS OF THE RIVERSIDE LAND AND IRRIGATING CO., AS SHOWN BY MAP ON FILE IN BOOK 1, PAGE 70 THEREOF, OF MAPS, RECORDS OF SAN BERNARDINO COUNTY CALIFORNIA.

ASSESSOR PARCEL NO

BOOK	PAGE	PARCELS
191	150	031
191	150	032
191	150	033

ACREAGE

APN: 191-150-031	0.70 ACRES
APN: 191-150-032	0.27 ACRES
APN: 191-150-033	0.37 ACRES
GROSS	1.34 ACRES
NET	1.28 ACRES
DISTURBED AREA	1.28 ACRES
OFFER OF DEDICATION	0.06 ACRES

ZONING/LAND USE/GENERAL PLAN

EXISTING ZONING (191-150-032, 191-150-033) R-1-7000
EXISTING ZONING (191-150-031) ..... C-R (COMMERCIAL RETAIL)
EXISTING LAND USE: ..... VACANT
EXISTING GENERAL PLAN: ..... O OFFICE
PROPOSED ZONING: ..... CR (COMMERCIAL RETAIL)
PROPOSED LAND USE: ..... SERVICE STATION/RETAIL/RESTAURANT
PROPOSED GENERAL PLAN AMENDMENT: ..... COMMERCIAL RETAIL

UTILITY PROVIDERS

WATER: ..... CITY OF RIVERSIDE
SEWER: ..... CITY OF RIVERSIDE
ELECTRICITY: ..... CITY OF RIVERSIDE
GAS: ..... THE GAS COMPANY
TELEPHONE: ..... VERIZON
TELEVISION: .....AIR WAVES / CHARTER COMMUNICATIONS

LEGEND

EXISTING PROPERTY LINE
PROPOSED RIGHT OF WAY
EXISTING RIGHT OF WAY
EXISTING CENTERLINE
PROPOSED CURB
EXISTING CURB
PROPOSED SIDEWALK
EXISTING SIDEWALK
EXISTING DIRT ROAD
PROPOSED PARKING STRIPE
EXISTING EASEMENT
EXISTING CONTOUR MAJOR
EXISTING CONTOUR MINOR
EXISTING FENCE
EXISTING BUILDING
EXISTING CONCRETE
PROPOSED UNDERGROUND UTILITY
EXISTING UNDERGROUND UTILITY
EXISTING EDGE OF PAVEMENT
PROPOSED EDGE OF PAVEMENT
EXISTING CONTOUR ELEVATION
EXISTING SPOT ELEVATION

PROPOSED AC PAVEMENT
PROPOSED LANDSCAPE
PROPOSED CONCRETE
PROPOSED BIORETENTION AREA

ABBREVIATIONS

R/W	RIGHT OF WAY
P/L	PROPERTY LINE
EXIST.	EXISTING
PROP.	PROPOSED
S.F.	SQUARE FEET
D/W	DRIVEWAY
S/W	SIDEWALK
M.H.	MANHOLE
FS	FINISH SURFACE
TC	TOP OF CURB
FL	FLOW LINE
FG	FINISH GRADE
TG	TOP OF GRATE
INV.	INVERT
S.D.	STORM DRAIN
EG	EXISTING GROUND
T.B.R.	TO BE REMOVED
P.I.P.	PROTECT IN PLACE
P.P.	POWER POLE
F.H.	FIRE HYDRANT
L/S	LANDSCAPE

CONSTRUCTION NOTES

1. PROPOSED 6" CURB AND GUTTER PER CITY OF RIVERSIDE STD. NO. 200. TYPE 1.
2. PROPOSED CURB SIDEWALK PER CITY OF RIVERSIDE STD. NO. 325.
3. PROPOSED TYPE PL 2 DRIVEWAY APPROACH PER CITY OF RIVERSIDE STD. NO. 302.
4. PROPOSED PARKWAY DRAIN PER CITY OF RIVERSIDE STD. NO. 410.
5. PROPOSED STREET A.C PAVING.
6. PROPOSED COLD PLANE AND OVERLAY.
7. PROPOSED ON-SITE A.C PAVING.
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15. PROPOSED TRASH ENCLOSURE.
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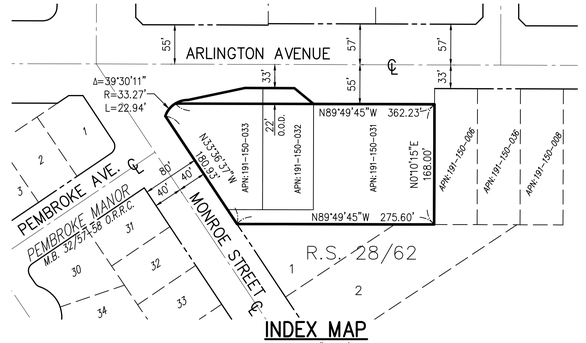
18. PROPOSED DCDA BACKFLOW DEVICE.
19. PROPOSED PIV AND FDC.
20. PROPOSED FIRE WATER LINE (PRIVATE)
21. PROPOSED DOMESTIC SERVICE, METER AND BACKFLOW DEVICE.
22. PROPOSED IRRIGATION SERVICE, METER AND BACKFLOW DEVICE.
23. PROPOSED DOMESTIC WATER LINE (PRIVATE)
24. PROPOSED SEWER LATERAL AND CLEAN OUT.
25. PROPOSED SEWER LINE (PRIVATE)
26. PROPOSED SEWER CLEAN OUT.
27. PROPOSED GREASE INTERCEPTOR.
28. PROPOSED COMBINATION RETAINING/FREE STANDING WALL H=8' MAX.
29. PROPOSED 6' HIGH FREE STANDING WALL.
30. PROPOSED FIRE HYDRANT.
31. PROPOSED TYPE CURB 2 DRIVEWAY APPROACH PER CITY OF RIVERSIDE STD. NO. 302.



INDEX MAP

SCALE: 1"=100'

FEMA FLOOD ZONE DESIGNATION

ZONE X – BASE FLOOD ELEVATIONS DETERMINED.
FLOOD INSURANCE RATE MAP
RIVERSIDE COUNTY, CALIFORNIA AND INCORPORATED AREAS.
PANEL 705 OF 3805
MAP NUMBER 06065C0705G
EFFECTIVE DATE
AUGUST 28, 2008

N

20' 10' 0 20' 40'

GRAPHIC SCALE
SCALE: 1" = 20'

MARK	REVISIONS	DATE	BY

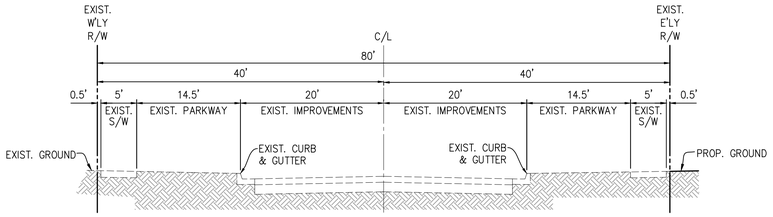
CONCEPTUAL GRADING PLAN
6892 ARLINGTON AVENUE

FOR: STEVEN WALKER COMMUNITIES

SCALE:	1"=20'
DATE:	06/2023
DESIGNED:	JC
CHECKED:	AW
PLN CK REF:	
F.B.	

woodard group

W.O.
SHEET 1
OF 2 SHEETS
DWG. NO. 1103



MONROE STREET

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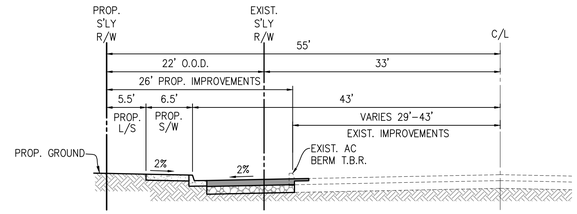

ARLINGTON AVENUE

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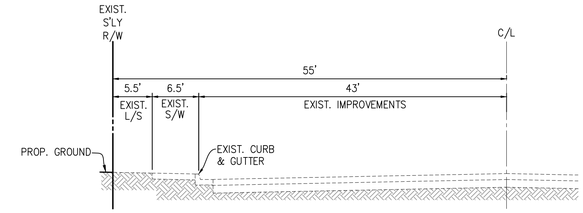
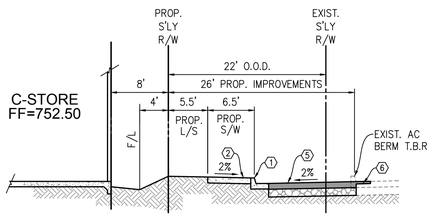


ARLINGTON AVENUE

SCALE: 1"=10'



SECTION "A-A"

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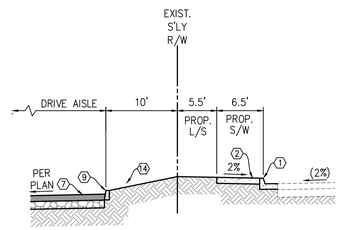

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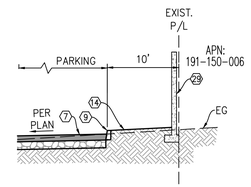

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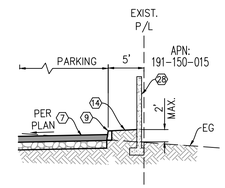

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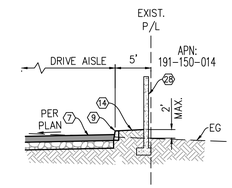

SECTION "E-E"

SCALE: 1"=10'

CONSTRUCTION NOTES

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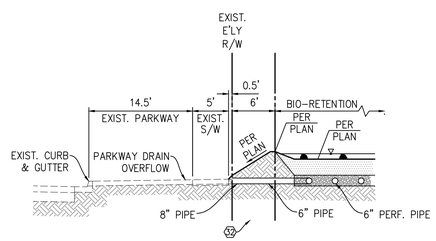

SECTION "F-F"

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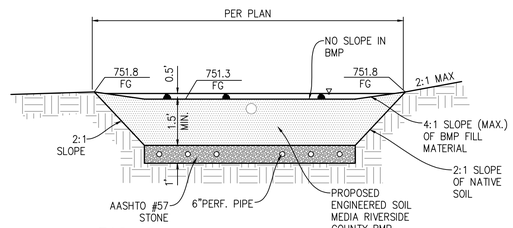


BIO-RETENTION

NOT TO SCALE

MARK	REVISIONS	DATE	BY

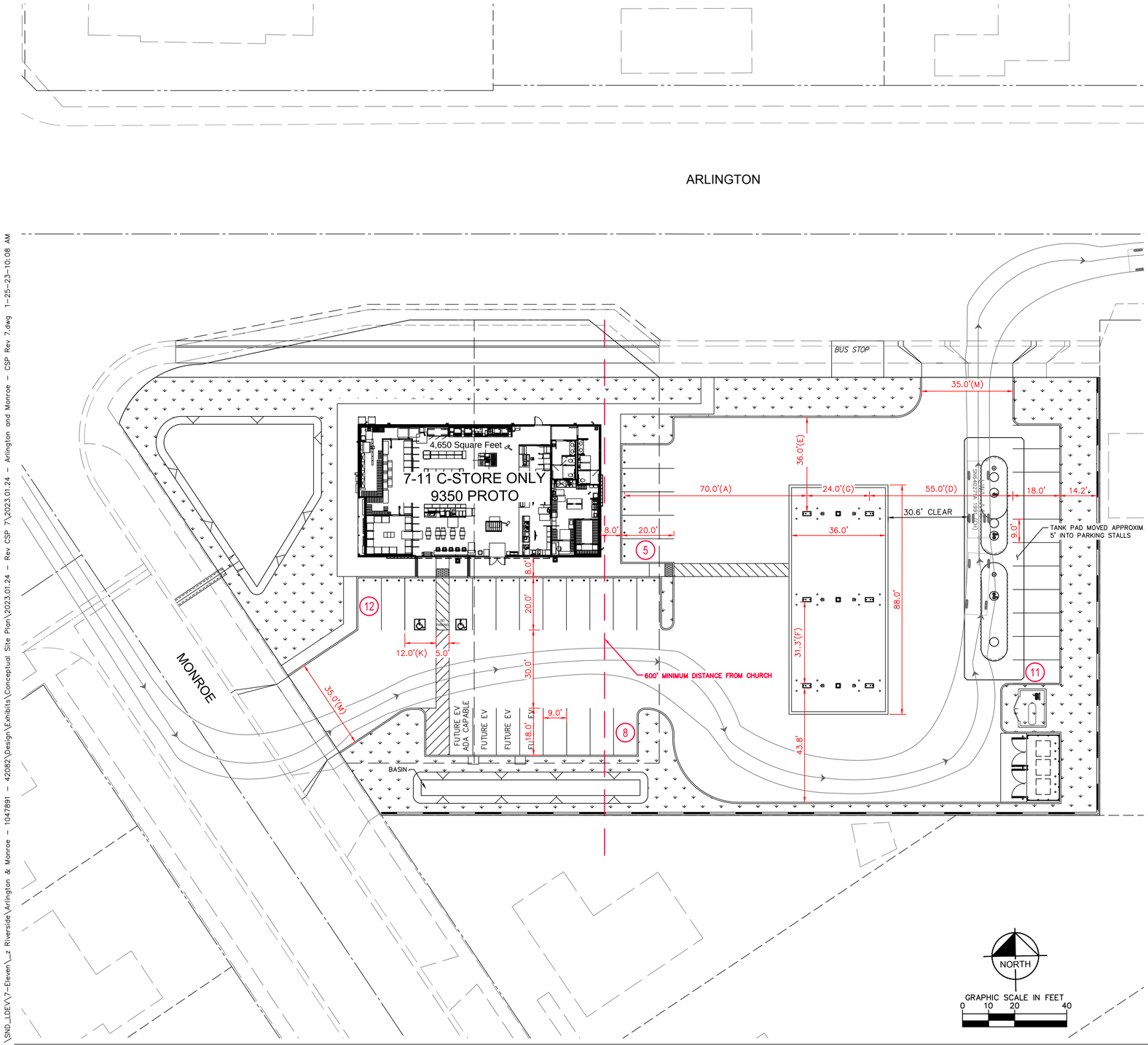
CONCEPTUAL GRADING PLAN
6892 ARLINGTON AVENUE
SECTIONS

FOR: STEVEN WALKER COMMUNITIES

SCALE: AS SHOWN		W.O.
DATE: 08/2021		SHEET 2
DESIGNED: JC		OF 2 SHEETS
CHECKED: AW		DWG. NO.
PLN CK REF:		1103
F.B.		

woodard group

Drawing: Q:\Users\jorge\B & W Consulting Engineers, Inc\BWE - All - Documents\1103CLIENT WORK\1103-Art Morrow\Drawings\Plans\Sheets\CGP\1103-CGP-2(1102).dwg Plotted By: jorge Layout: CGP-02 Last Saved: Tue Jun 13, 2023 - 9:29pm Last Plotted: Wed Jun 14, 2023 - 12:33am



Key	Dimension Element	7-Eleven Standard	1047891 - Arlington and Monroe	Site Comments
A	Center of bollard to center of dispenser	62'	70'	
B	Center of dispenser to edge of front curb with tanks	47'	55'	
C	Center of dispenser to edge of front curb without tanks	39'	N/A	
D	Edge of dispenser to side curb with tanks	54'	N/A	
E	Edge of dispenser to side curb without tanks	46'	36'	Fuel canopy is centered between curb lines to maximum extent possible while allowing for truck route to the south
F	Drive aisle width between the face of dispensers (in stacked position	31.3'	31.3'	
G	Centerline dispenser spacing (in stacked position)	24'	24'	
H	Drive aisle width between the face of dispenser (in starting gate posi	24'	N/A	
I	Sidewalk width	8'	8'	
J	Dimension of typical parking spots	9'X20'	9'X20'	
K	Dimension of ADA parking spots	10'X20'	12' x 20'	
L	Dimension of ADA aisle	5'	5'	
M	Ingress and egress dimension	35'	35'	
	MPDs (min)	6	6'	
	Parking without restaurant	25	N/A	
	Parking with restaurant	40	36	Parking provided to maximum extent feasible

Kimley»Horn
401 B STREET SAN DIEGO, CA 92101
WEBSITE: WWW.KIMLEY-HORN.COM / PHONE: (619) 243-9411

January 25, 2023

7-ELEVEN SITE 1047891 / STORE 42082
ARLINGTON AND MONROE - CONCEPTUAL SITE PLAN - REV 7

K:\SND_LDEV\7-Eleven_z Riverside\Arlington & Monroe - 1047891 - 42082\Design\Exhibits\Conceptual Site Plan\2023.01.24 - Rev CSP 7\2023.01.24 - Arlington and Monroe - CSP Rev 7.dwg 1-25-23-10:08 AM

NOTICE OF PUBLIC HEARING

RIVERSIDE COUNTY AIRPORT LAND USE COMMISSION

www.rcaluc.org

A PUBLIC HEARING has been scheduled before the Riverside County Airport Land Use Commission (ALUC) to consider the applications described below.

Any person may submit written comments to the ALUC before the hearing or may appear and be heard in support of or opposition to the project at the time of hearing. **Information on how to participate in the hearing will be available on the ALUC website at www.rcaluc.org.** The ALUC holds hearings for local discretionary permits within the Airport Influence Area, reviewing for aeronautical safety, noise and obstructions. ALUC reviews a proposed plan or project solely to determine whether it is consistent with the applicable Airport Land Use Compatibility Plan. For more information please contact **ALUC Planner Jackie Vega at (951) 955-0982.**

The City of Riverside Planning Department should be contacted on non-ALUC issues. For more information, please contact City of Riverside Planner Regine Kennedy at (951) 826-3969.

The proposed project application may be viewed by a prescheduled appointment and on the ALUC website www.rcaluc.org. Written comments may be submitted at the Riverside County Administrative Center, 4080 Lemon Street, 14th Floor, Riverside, California 92501, Monday through Friday from 8:00 a.m. to 3:30 p.m., or by e-mail to Javega@rivco.org. Individuals with disabilities requiring reasonable modifications or accommodations, please contact Barbara Santos at (951) 955-5132.

PLACE OF HEARING: **Riverside County Administration Center**
4080 Lemon Street, 1st Floor Board Chambers
Riverside California

DATE OF HEARING: **February 8, 2024**

TIME OF HEARING: **9:30 A.M.**

CASE DESCRIPTION:

ZAP1113RI23 – Steven Walker Communities, Inc. (Representative: PB Arlington, LLC) City of Riverside Case Nos. PR-2021-000894 ([DP-2021-00099(General Plan Amendment), DP-2021-00103 (Change of Zone), DP-2021-00106 (Development Review), DP-2021-00105 (Conditional Use Permit)]). A proposal to construct a 4,650 square foot convenience store/gas station with six fuel pumps on 1.34, located on the southeast corner of Arlington Avenue and Monroe Street. The applicant also proposes to amend the General Plan Land Use designation from Office (O) to Commercial Retail (C-R), and to rezone the site from R-1-7000 (Single Family Residential) to Commercial Retail (C-R) (Airport Compatibility Zone D of the Riverside Municipal Airport Influence Area).

RIVERSIDE COUNTY
AIRPORT LAND USE COMMISSION

APPLICATION FOR MAJOR LAND USE ACTION REVIEW

ALUC STAFF ONLY

ALUC Case Number: zap1113RI23 Date Submitted: 12/19/23

AIA: Airport Zone: Zone Public Hearing ☐ Staff Review ☐

Applicant

Applicant Full Name: Steven Walker Communities Inc.

Applicant Address: 6930 Indiana Avenue, Ste 1 Riverside, CA 92506

Phone: 951-235-5545 Email: halbee@stevenwalker.com

Representative/ Property Owner Contact Information

Representative: The same as below "owner" information Email: Phone:

Address:

Property Owner: PB Arlington LLC Attn: David Peery Email: dpeery@stevenwalke.c Phone: 951-756-4649

Address: 6930 Indiana Avenue, Ste 1, Riverside, CA 92506

Local Jurisdiction Agency

Agency Name: City of Riverside Phone:

Staff Contact: Regine Kennedy Email: rkennedy@riversideca.g

Address: 3900 Main Street, Riverside, CA 92522

Local Agency Case No.: PR-2021-000094

Project Location

Street Address: 6892 Arlington Avenue Gross Parcel Size.: 1.34 acres

Assessor's Parcel No.: 191-150-031, 191-150-032, 191-150-033

Solar

Is the project proposing solar Panels? Yes ☐ No ☒ If yes, please provide solar glare study. (only if in Zone C or higher)

Data

Site Elevation:(above mean sea level) 755 ft above msl

Height of Building or structures: 24' 8"

What type of drainage basins are being proposed and the square footage: Bioretention 1,511

Notice

A. NOTICE: Failure of an applicant to submit complete or adequate information pursuant to Sections 65940 to 65948 inclusive of the California Government Code, MAY constitute grounds for disapproval of actions, regulations, or permits.

B. REVIEW TIME: Estimated time for "staff level review" is approximately 30 days from date of submittal. Estimated time for "commission level review" is approximately 45 days from date of a complete application submittal to the next available commission hearing meeting.

C. SUBMISSION PACKAGE:

Please submit all application items DIGITALLY via USB or CD:

- Completed ALUC Application Form
- Plans Package: site plans, floor plans, building elevations, grading plans, subdivision maps
- Exhibits of change of zone, general plan amendment, specific plan amendment
- Project description of existing and proposed use

Additionally, please provide:

- ALUC fee payment (Checks made out to Riverside County ALUC)
- Gummed address labels of all surrounding property owners within a 300-foot radius of project site. (Only required if the project is scheduled for a public hearing).

Riverside County Airport Land Use Commission, County Administrative Center, 4080 Lemon Street, 14th Floor, Riverside, CA 92501, Phone: 951-955-5132 Fax: 951-955-5177 Website: www.rcaluc.org

RIVERSIDE COUNTY
AIRPORT LAND USE COMMISSION

STAFF REPORT

AGENDA ITEM:	3.7
HEARING DATE:	February 8, 2024
CASE NUMBER:	ZAP1080RG23 – City of Eastvale (Representative: Gustavo Gonzalez)
APPROVING JURISDICTION:	City of Eastvale
JURISDICTION CASE NO:	PLN22-20015 (General Plan)
LAND USE PLAN:	2008 Chino Airport Land Use Compatibility Plan, 2004 Corona Municipal Airport Land Use Compatibility Plan
Airport Influence Area:	Chino Airport
Land Use Policy:	Compatibility Zones B1, C, D, E (Chino); Zone E (Corona)
Noise Levels:	55 CNEL to 60 CNEL from aircraft (Chino); below 55 CNEL from aircraft (Corona)

MAJOR ISSUES: The General Plan proposes a Single-Family – Low (SF-L) land use designation allowing for a density range between 4.0 to 8.0 dwelling units per acre, within Compatibility Zone D of Chino Airport Influence Area, which restricts density to either below 0.2 dwelling units per acre or above 5.0 dwelling units per acre. Therefore, there is the potential for the SF-L designation to be inconsistent with the Zone D residential density criteria. However, the applicant has provided an aerial exhibit of the SF-L parcels within Zone as built-out, which would not be inconsistent in their current use.

Also, the Chino ALUCP includes additional policy #2.3 which allows for (County's Medium Density Residential 2.0 to 5.0 dwelling units per acre) designations to extend below the range of 5.0 dwelling units per acre, provided that it is not implemented through zoning requiring lot sizes exceeding 8,712 square feet (0.2 net acre). Most, if not all of the SF-L parcels have been developed with a residential density (similar to that of MDR) that are below 5.0 dwellings unit per acre.

RECOMMENDATIONS: Staff recommends that the proposed City of Eastvale General Plan be found CONSISTENT with the 2008 Chino Airport Land Use Compatibility Plan and with the 2004 Corona Municipal Airport Land Use Compatibility Plan.

PROJECT DESCRIPTION: A City-initiated proposal to adopt the new General 2040 which includes the following chapters: Land Use, Housing, Mobility and Circulation, Noise and Vibration, Open Space and Conservation, and Safety. The City includes land within Airport Compatibility Zones B1, C, D, and E of the Chino Airport Influence Area, and Zone E of the Corona Airport Influence Area.

PROJECT LOCATION: All land subject to the land use jurisdiction of the City of Eastvale within the Airport Influence Area's (AIA) of Chino Airport and Corona Airport, as delineated in the Chino Airport Land Use Compatibility Plan (ALUCP), and in the Corona Municipal ALUCP.

AIRPORT LAND USE COMPATIBILITY REFERENCES IN GENERAL PLAN: Although Chino AIA makes up the bulk of this staff report's analysis, it is important to note that a small portion of the City located next to the Santa Ana River is being designated as Riverfront Policy Area for natural resource conservation and recreational use, which is within the Corona AIA Zone E. Zone E does not restrict density or intensity, and therefore the proposed land use designation would be consistent with the ALUCP criteria.

The City's proposed Land Use Map identifies the following land use designations within the Chino AIA.

<u>Zone B1:</u>

- Industrial Flex designation allows for light or limited industrial manufacturing with a FAR of 0.25 to 0.60.
- Zone B1 restricts intensity to 25 people per average acre and 50 people per single acre.

<u>Zone C:</u>

- Business Professional designation allows for employee-intensive uses including research and development, technology centers, medical facilities, corporate and professional office uses, and supporting retail uses with a FAR of 0.25 to 0.60.
- Commercial Retail designation allows for retail, services, restaurants, as well as cultural and entertainment uses, professional offices, and hospitality services with a FAR of 0.25 to 0.50.
- Open Space – Recreation designation allows for passive and active recreational uses including parks, trails, and athletic fields.
- Zone C restricts intensity to 75 people per average acre and 150 people per single acre.

<u>Zone D:</u>

- Industrial Flex designation allows for light or limited industrial manufacturing with a FAR of 0.25 to 0.60.
- Commercial Retail designation allows for retail, services, restaurants, as well as cultural and entertainment uses, professional offices, and hospitality services with a FAR of 0.25 to 0.50.
- Open Space – Recreation designation allows for passive and active recreational uses including parks, trails, and athletic fields.
- Chandler Policy Area designation allows for a mix of residential (8.1 to 20 du/ac) and non-residential uses (0.0 to 0.35 FAR).
- Single-Family – Low designation allows for 4.0 to 8.0 dwelling units per acre (further analysis provided below).
- Multi-Family – Moderate allows for 8.1 to 20 dwelling units per acre.
- Multi-Family – Low-Moderate allows for 20.1 to 40 dwelling units per acre.
- Zone D restricts intensity to 100 people per average acre and 300 people per single acre. Residential density is restricted to either below 0.2 dwelling units per or above 5.0 dwelling units per acre.

While no development is proposed at this time, future development will have to be consistent with this compatibility criteria per the City's General Plan goals and policies (mentioned below). A more detailed analysis of the proposed Single-Family – Low (SF-L) designation was warranted as the

proposed density range of 4.0 to 8.0 dwelling units per acre would normally be inconsistent with Zone D density criteria of either below 0.2 dwelling units per acre or above 5.0 dwelling units per acre. However, the City has provided an aerial exhibit showing the SF-L parcels within Zone D as existing and built-out, which would not be inconsistent in their current use. Also, the Chino ALUCP includes additional policy #2.3 which allows for (County's Medium Density Residential 2.0 to 5.0 dwelling units per acre) designations to extend below the range of 5.0 dwelling units per acre, provided that it is not implemented through zoning requiring lot sizes exceeding 8,712 square feet (0.2 net acre). Most, if not all of the SF-L parcels have been developed with a density (similar to that of MDR) that are below 5.0 dwellings unit per acre. The City has incorporated the intent of additional policy #2.3 into their Land Use Element ensuring consistency with the Chino ALUCP:

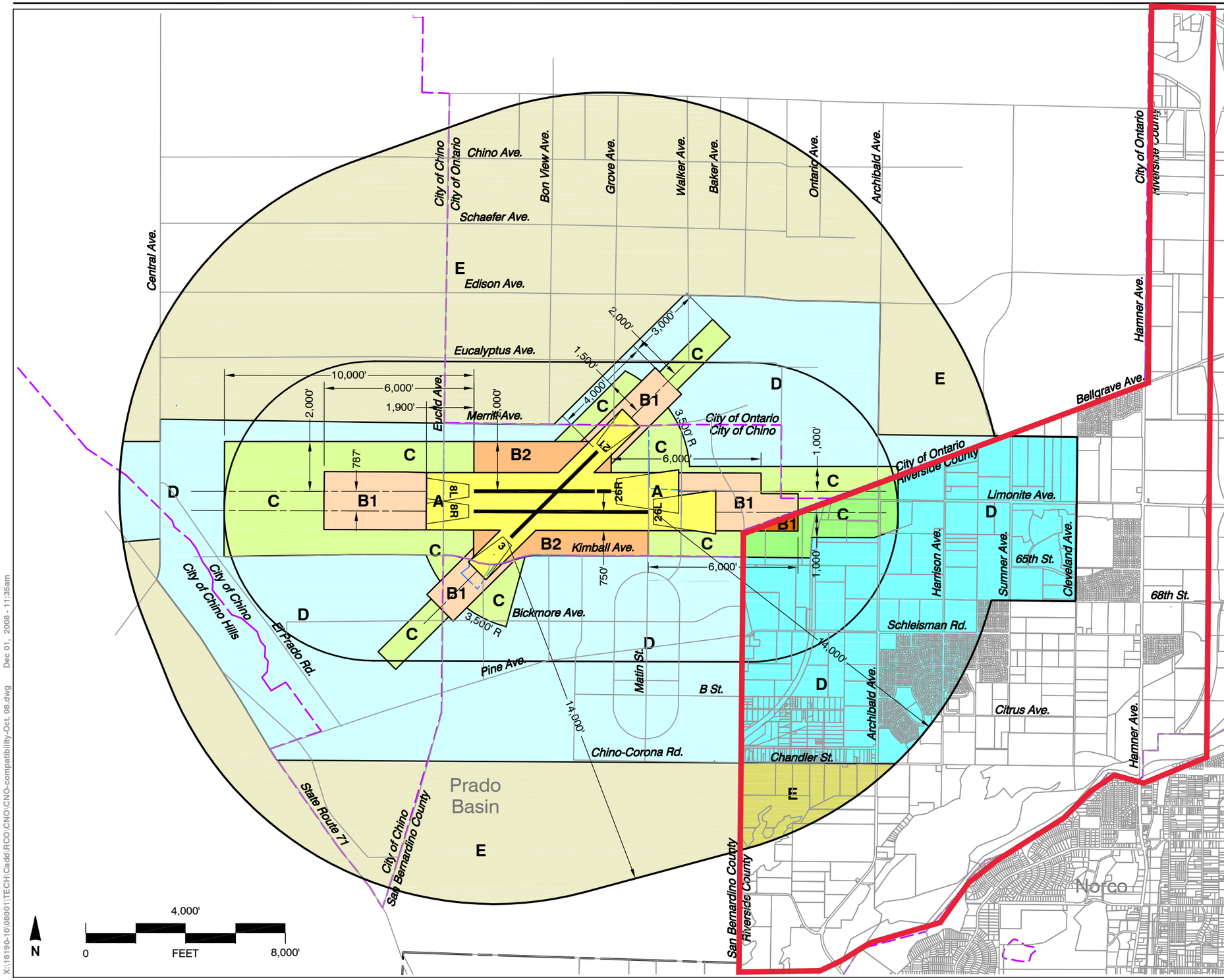
- LU-3.12: Parcels north of Walters Street are within Zone D of the Chino Airport Land Use Compatibility Plan and must have lot sizes no greater than 0.2 acres in size consistent with policy 2.3 of the Chino Airport Land Use Compatibility Plan.

Additionally, the Safety Element provides the following goals and policies ensuring airport land use safety:

- Goal S-7: Minimize the exposure of the public to airport safety hazards through land use controls and policies for property in the vicinity of Chino Airport.

- Policy S-7.2: The City shall consider the compatibility criteria in the Airport Land Use Compatibility Plan for Chino Airport in the review of potential land uses or projects within the area affected by the airport. Projects shall be approved only where constancy with the compatibility criteria in the Airport Land Use Compatibility Plan can be demonstrated. Action S-7.2: Review projects to ensure consistency with the Airport Land Use Compatibility Plan compatibility criteria at the earliest possible stage of the planning and entitlement process.

- Policy S-7.3: The City shall ensure that new development near the Chino Airport is designated to protect public safety from airport operations consistent with recommendations and requirements of the Airport Land Use Commission, the Federal Aviation Administration, and other responsible agencies. It shall be City's intent to comply with all state laws related to airport land use planning.



Source: Mead & Hunt (June 2008)

Legend

Compatibility Zones

- Airport Influence Area Boundary*
- Zone A
- Zone B1
- Zone B2
- Zone C
- Zone D
- Zone E

Boundary Lines

- Airport Property Line
- City Limits
- County Line

Note

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

See Chapter 2, Table 2A, and the Additional Compatibility Policies for Chino Airport for compatibility criteria associated with this map.

*The policies in this plan apply only to the portions of the airport influence area lying within Riverside County. Compatibility Zones in San Bernardino County are shown only to provide context for the Riverside County area.

Riverside County
Airport Land Use Commission

Riverside County
Airport Land Use Compatibility Plan
Policy Document

(Adopted September 2008)

Map CH-1

Compatibility Map

Chino Airport

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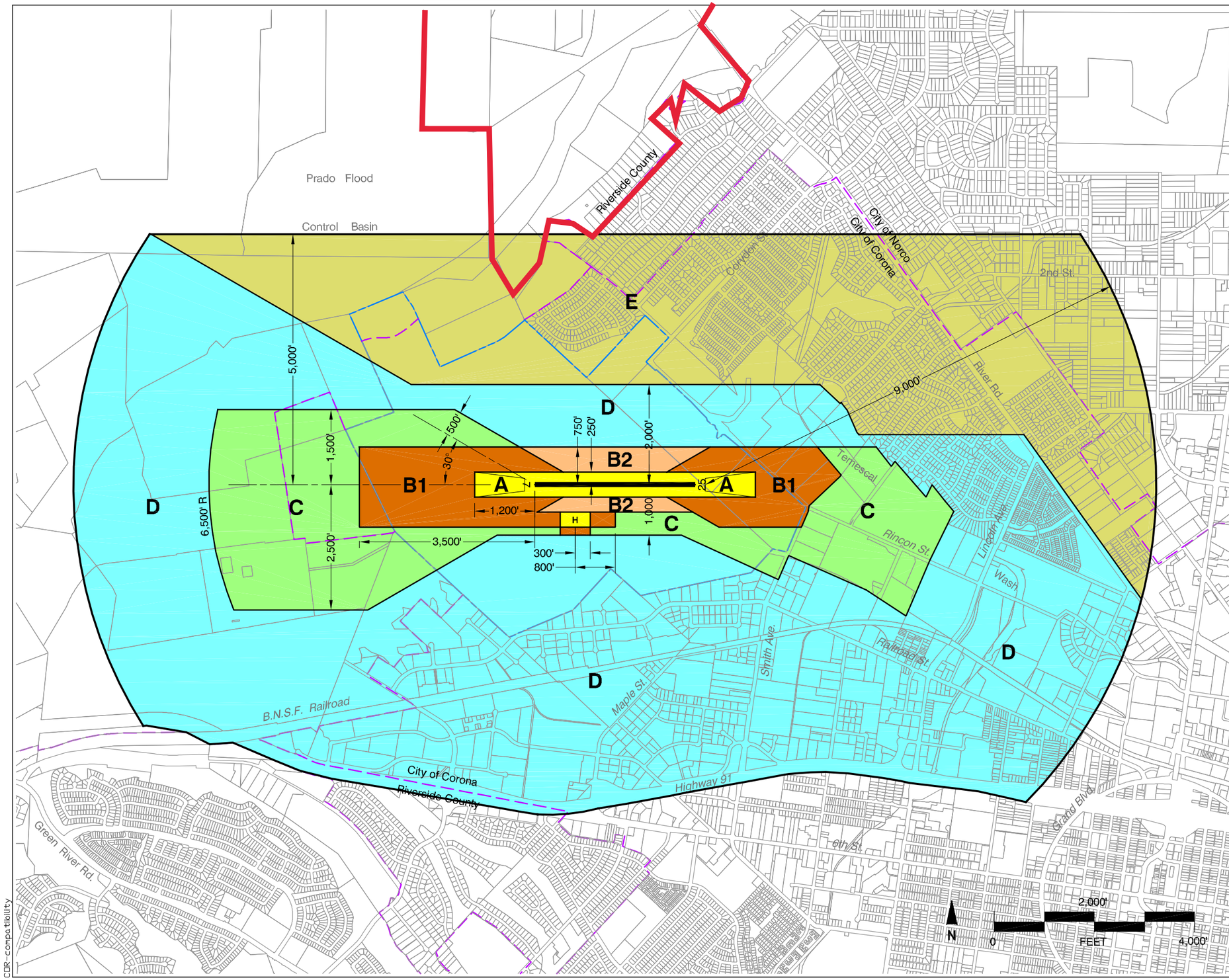


Legend

Compatibility Zones

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

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 (FAR Part 77). All other dimensions measured from runway ends and centerlines.

See Chapter 2, Table 2A for compatibility criteria associated with this map.

Riverside County
Airport Land Use Commission

Riverside County
Airport Land Use Compatibility Plan
Policy Document

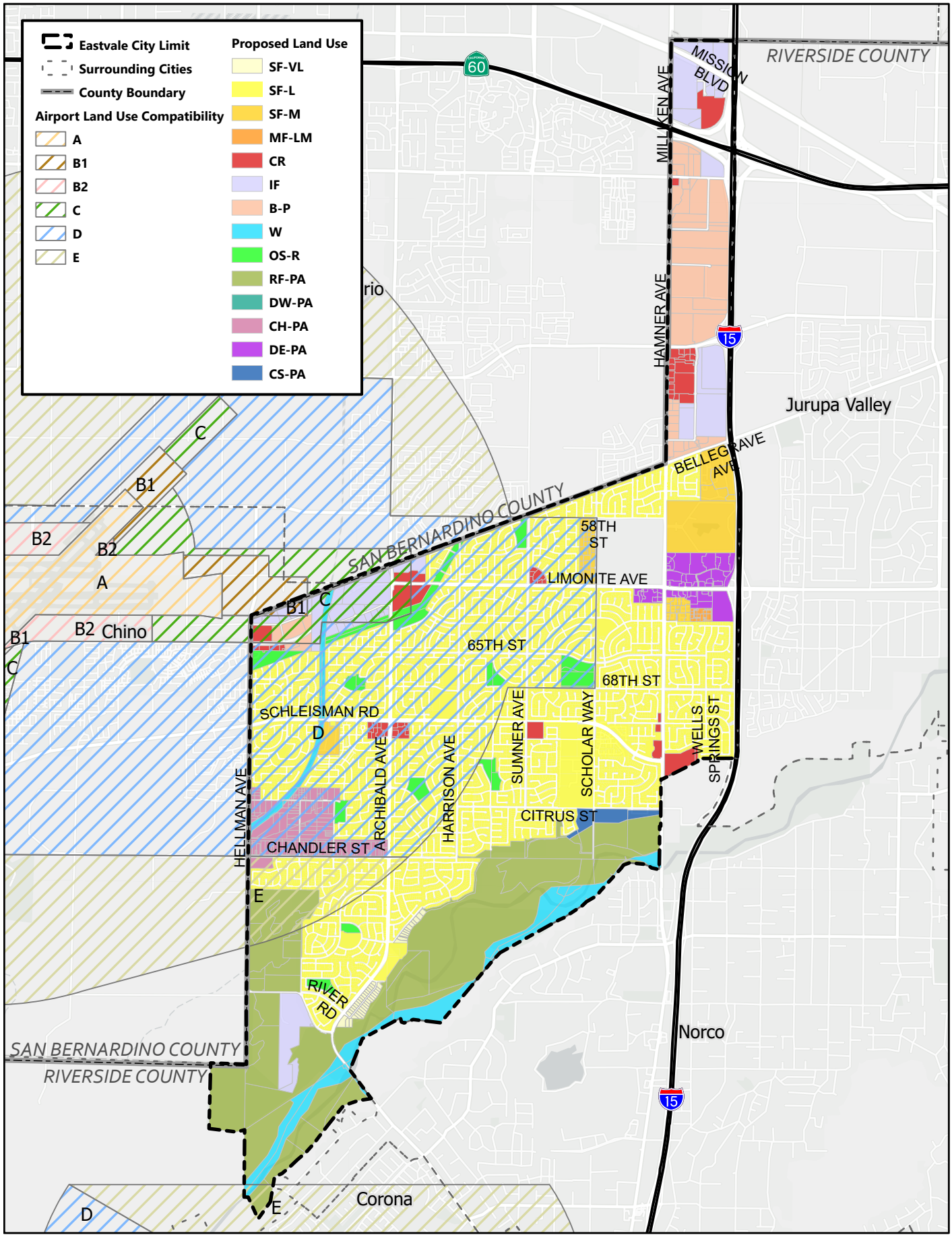
(Adopted October 2004)

Map CO-1

Compatibility Map

Corona Municipal Airport

CDR-compatibility



SOURCE: CITY OF EASTVALE, Riverside County

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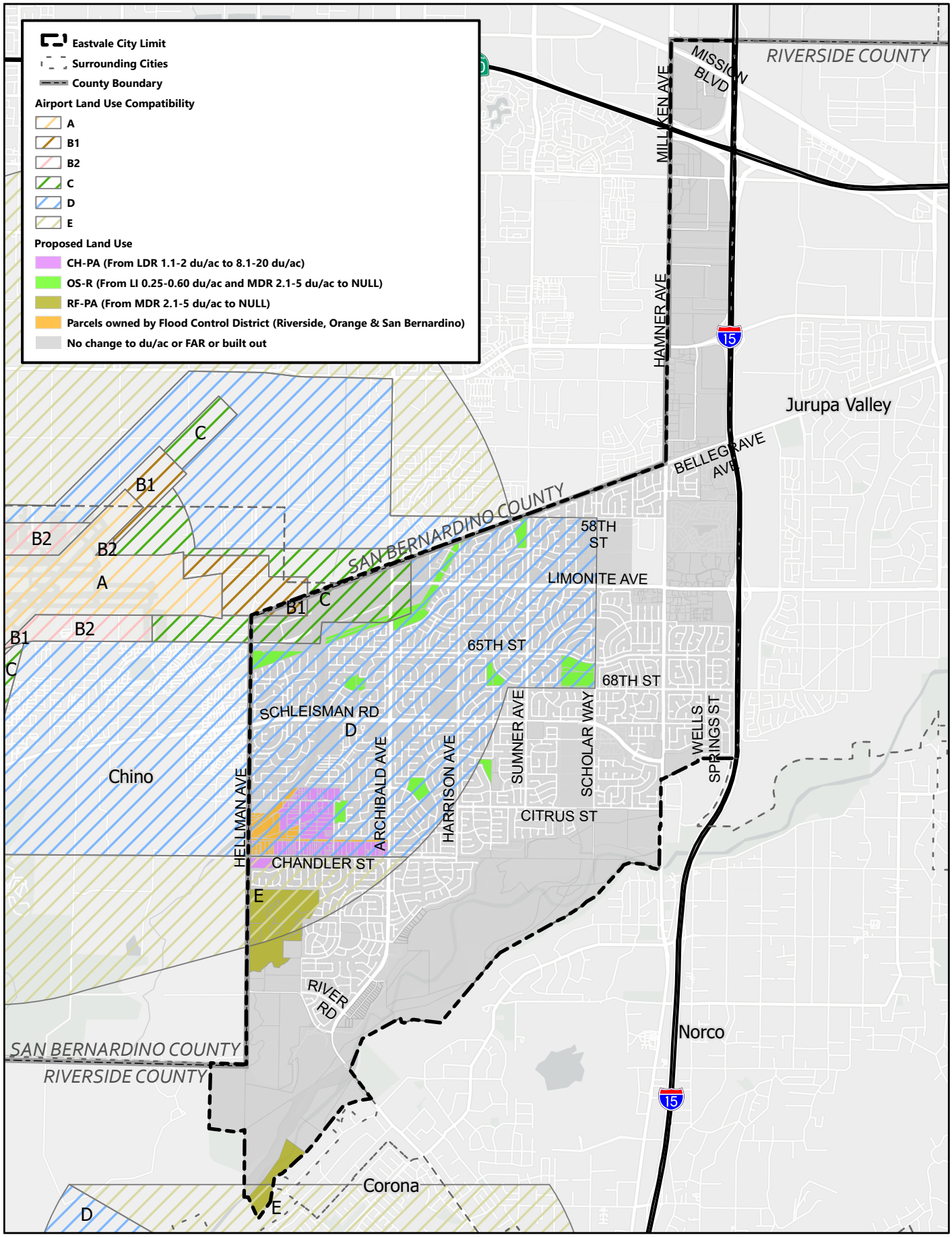
EASTVALE GENERAL PLAN 2040 EIR

Airport Land Use Compatibility Zones

Exhibit 3.5-2



0 0.25 0.5 1 Miles

SOURCE: CITY OF EASTVALE, Riverside County

EASTVALE GENERAL PLAN 2040 EIR

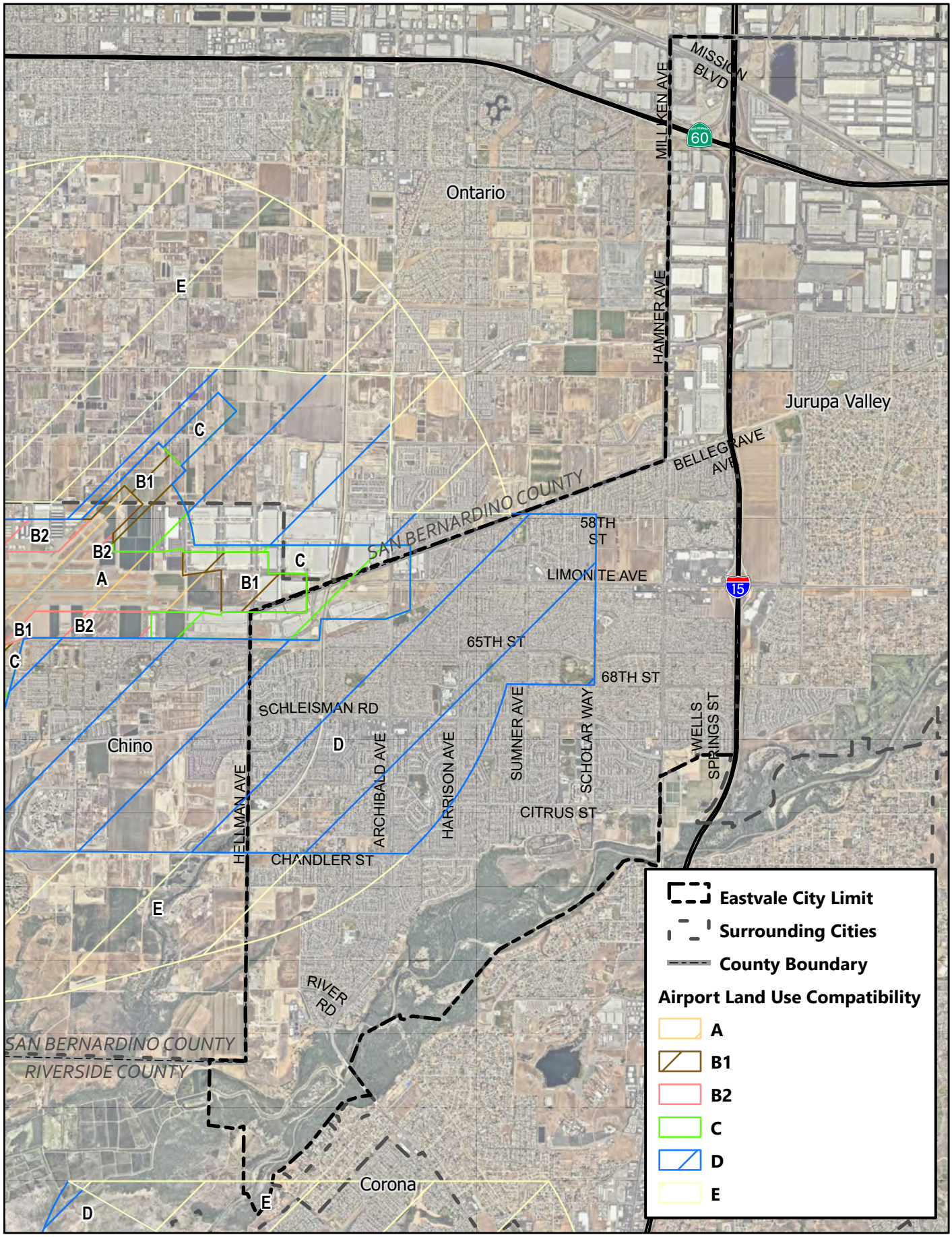
Proposed Land Use Updates Within ALUC

TABLE LU-1 DENSITY & INTENSITY BY LAND USE DESIGNATION

NEIGHBORHOODS	SF-VL	Single-Family - Very Low	Less than 4 DU/AC	16 Persons/AC
	SF-L	Single-Family - Low	4.0 – 8 DU/AC	32 Persons/AC
	SF-M	Single-Family - Moderate	8.1 – 20 DU/AC	80 Persons/AC
	MF-LM	Multi-Family - Low-Moderate	20.1 – 40 DU/AC	160 Persons/AC
EMPLOYMENT	CR	Commercial Retail	.25 - .50 FAR	160 Persons/AC
	IF	Industrial Flex	.25 - .60 FAR	
	B-P	Business - Professional	.25 - .60 FAR	
OPEN SPACE	W	Water	NA	
	OS-R	Open Space - Recreation	NA	
	RF-PA	Riverfront Policy Area	NA	
UNIQUE	DW-PA	Downtown West Policy Area	.25 – 1.5 FAR 20.1 – 40 DU/AC 2,500 DU Minimum	
	CH-PA	Chandler Policy Area	0 - .35 FAR 8.1 – 20 DU/AC Min. 2 acres required for new development	
	DE-PA	Downtown East Policy Area	.25 - 1.5 FAR 20.1 - 40 DU/AC	
	CS-PA	Citrus Policy Area	0 - .35 FAR 8.1 – 20 DU/AC	

Each land use designation is assigned a density, shown in units per acre, or a floor area ratio, which is the ratio of building size to property size. From a practical standpoint in most cases the entire building site will be developed with landscaping, sidewalks, trails, and parking. The density and intensity information is important for planning water, wastewater, and power demands.

The persons per acre figure is required by law and should be considered an estimate as there are several ways where state law allows more units per acre than shown in Table 1, which would increase the population per acre estimate. Except in instances of health and safety concerns the City does not regulate or restrict the number of people per acre.



0 0.25 0.5 1 Miles

SOURCE: CITY OF EASTVALE, NEARMAP

EASTVALE GENERAL PLAN 2040

Airport Land Use Compatibility - Aerial

EASTVALE 2040
Envision Our Future

EASTVALE
GENERAL PLAN 2040

PUBLIC DRAFT
October 2023

EASTVALE 2040
Envision Our Future

EASTVALE
GENERAL PLAN 2040

PUBLIC DRAFT
October 2023

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Michael McMinn, Councilmember

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Incorporated October 1, 2010
ARNAZ RANCH

WELCOME TO EASTVALE 2040!

This mural adorns the wall of the Council Chambers illustrating the City's past and providing a foundation for the future. The mural covers nearly everything important to the community and reminds us that the Eastvale of today was only possible because of the vision and hard work of the past. Members of the Gabrielino tribe who still live in the region, agriculture in the Chandler area, and the housing that provided opportunity for so many, are all represented in this work of art. It is fitting that this image was created by a local artist and resident Rosemary Tuthill who was also active in drafting the General Plan that is Eastvale 2040. This mural both reminds us of the past and challenges us to live up to the vision that created the City.

The vision for Eastvale 2040 is:

"*Eastvale is an innovative and family-friendly city with an abundance of diverse entertainment, recreation, arts, mobility, housing, education, and business opportunities that, combined with its small-town character, makes it a coveted hub in the region. The close-knit community honors its roots as it fosters sustainable economic growth for future generations.*"

Eastvale 2040 represents the first General Plan for one of California's newest cities. With only a population of 54,337 when incorporated on October 1, 2010, the population is now 71,375. While new construction in the early years of the City was from projects approved prior to incorporation, the intent of incorporation was to self-govern the City and ensure that new development aligned with the community vision.

Much of the City is already developed with vibrant neighborhoods, parks, and shopping. One goal of this General Plan is to connect the existing neighborhoods by providing a physical linkage to all that the City has to offer such as schools, parks, and open space.

Eastvale 2040 takes stock of the incredible open space opportunities that exist today along Hellman Avenue to the Santa Ana River, and the potential to link the entire City to the soon-to-be Downtown Eastvale and a future "grand park" that will allow dual use of land owned by the Riverside County Flood Control District. Although Eastvale 2040 respects the past, it is focused on the future.

COMMUNITY OUTREACH

To draft Eastvale 2040, a public engagement program solicited input from community members on their vision for the future. Over the past two years, several outreach methods were used, including:

- Community Champion Stakeholder Interviews, which gathered feedback from a diverse set of City of Eastvale community champions;
- Eastvale2040 Clear Vision Speaker Series, a series of presentations by experts in the fields of urban planning, community design, community diversity, and economic strategy;
- Explore Eastvale, which invited community members to assess segments of the City's streets using an online survey tool;
- Engage Eastvale, the City's online engagement platform which hosted a number of surveys and forms for community members to provide feedback;

- Community Visioning Workshop, a public workshop designed to reintroduce community members to Eastvale 2040 and allow them to provide input on certain focus topics of the General Plan;
- Advisory Circles, four stakeholder meetings held to deliberate on the focus topics of land use, circulation, the Chandler area, as well as open space and conservation;
- Pop-ups, at local events to provide community members with an impromptu opportunity to provide input on the future of Eastvale; and
- General Plan Open House, a “drop-in” open house where community members could share input on draft plans and map concepts of the key elements in the City’s General Plan.
- Workshops, with the Planning Commission and City Council to give the public an opportunity to provide direct input to decision-makers.

Participants provided positive feedback on elements of Eastvale that work well, ranging from its diversity to its smaller size and sense of community, to the approachability of leadership and amenities such as the river walk and other recreational opportunities.

COMMON COMMUNITY THEMES

Common themes emerged during engagement including:

Quality of Life

Residents expressed positive feelings about the small, tighter-knit sense of community in Eastvale. Many felt it was a generally safe place for raising families with good schools, a diverse population, and accessible leadership. There were some concerns raised that an increase in population would lead to more crime and issues of homelessness.

Neighborhood Amenities

Community members had many wide-ranging ideas of features they would like to see introduced or expanded in the City, including more sit-down and/or fine dining establishments, family-friendly activities, recognizable chains such as Trader Joe's, outdoor malls with a more modern design, and nightlife venues. They described a young and active population that doesn't have enough to retain them in Eastvale either for entertainment purposes or for the long-term.

Trails/Parks/Natural Features

Some voiced a desire to see the completion of the trail system plan, while others requested more dirt hiking trails. Planting more trees and covering bare spaces with greenery, fountains and other natural features were popular ideas. Residents clearly enjoy the river walk and existing parks but would like to see more done to maintain and enhance these areas, with an emphasis on green-friendly design and landscaping.

Activity Centers

The most common requests came from community members calling for more places to go and more things to do. While some envision this as more "downtown" and "nightlife" features as mentioned in the previous category, others are asking to build upon existing features such as the river walk and parks, utilizing them to host festivals and events to draw the community together and attract out-of-towners. Others pointed out that the Eastvale community is largely active, youthful and health-focused, and think this should be reflected with better support for physical and recreational activities. Ideas include sports complexes, pools, arenas, and other family-friendly venues.

Housing

The comments that addressed housing centered around a desire for more diversity, entry-level, and mixed-use options. Concerns were expressed that while shortage is not necessarily an issue, the

focus should shift from only traditional single-family homes to denser, more sustainable development that would go together with commercial development to attract more renters and home buyers to the City. Some also expressed a desire to see larger home lots with big yards and noted that if there is additional housing built, there should be more schools to support an increase in children. A concern around building too many apartments or large-scale, dense housing was also noted.

Economy

Respondents offered varying ideas on this subject, pointing out that more attention should be paid to bringing in large businesses or stakeholders such as hospitals, higher learning centers, and tech hubs. They suggested this would help retain young families, young professionals and incentivize adult children of long-time residents to return to Eastvale to meet future economic needs.

Mobility/Infrastructure

Community members have mixed sentiments on this subject. Some believe Eastvale is already fairly pedestrian and bike-friendly, while others feel strongly that connectivity within and access outside the City needs improvement, particularly as some view Eastvale as a "commuter city". They would like to see future development planned with pedestrian and bike-friendly options in mind. Many also expressed concern over the speed of drivers on City streets and the need for safer intersections and a desire for wider sidewalks.

Diverse Community

Residents feel a sense of pride about Eastvale's diverse population. Many suggested ways the City can highlight and celebrate this, including cultural centers, markets, special events and celebrations related to various heritages, as well as hosting visual and performing arts in general. Religious leaders in the community also seek reassurance that the City will keep their communities in mind when planning, allowing space for spirituality, as well as senior centers.

EASTVALE 2040

Eastvale 2040 takes the state mandated General Plan requirements and divides them into the following major sections:

1. **Partnerships and Collaboration.** Recognition that Eastvale must partner with community and business groups, faith-based organizations, and local and regional agencies to achieve its vision.

2. **Built Environment.** As the City is largely developed, this section introduces the focus areas that are expected to be the area of growth for the next 20 years, and protection of established neighborhoods. The built environment also addresses mobility, recognizing the role of the automobile in Eastvale while developing other mobility options.

3. **Nature and Conservation.** With most of the city suburban in design, opportunities exist to connect to the Santa Ana River and extend the connections throughout the City. The opportunity for trails, interpretive centers, rewilding the river, and developing a "grand park" are exciting goals of Eastvale 2040.

4. **Implementation.** Realizing the vision of Eastvale 2040 will require actions ranging from changes to the Municipal Code, to partnering with other agencies. The implementation section is not an exhaustive "to-do" list for implementing Eastvale 2040, but rather a means of prioritizing efforts needed to realize the vision.

Chapters

Each section is divided into chapters that focus on a topic area important to the City. Each chapter follows the same format:

1. **Introduction.** A brief explanation of what the chapter will address.

2. **Eastvale Essence.** A brief summary of the intent of the chapter and how it relates to the rest of Eastvale 2040.

3. **Requirements.** A summary of the legal requirement for each topic area will be provided.

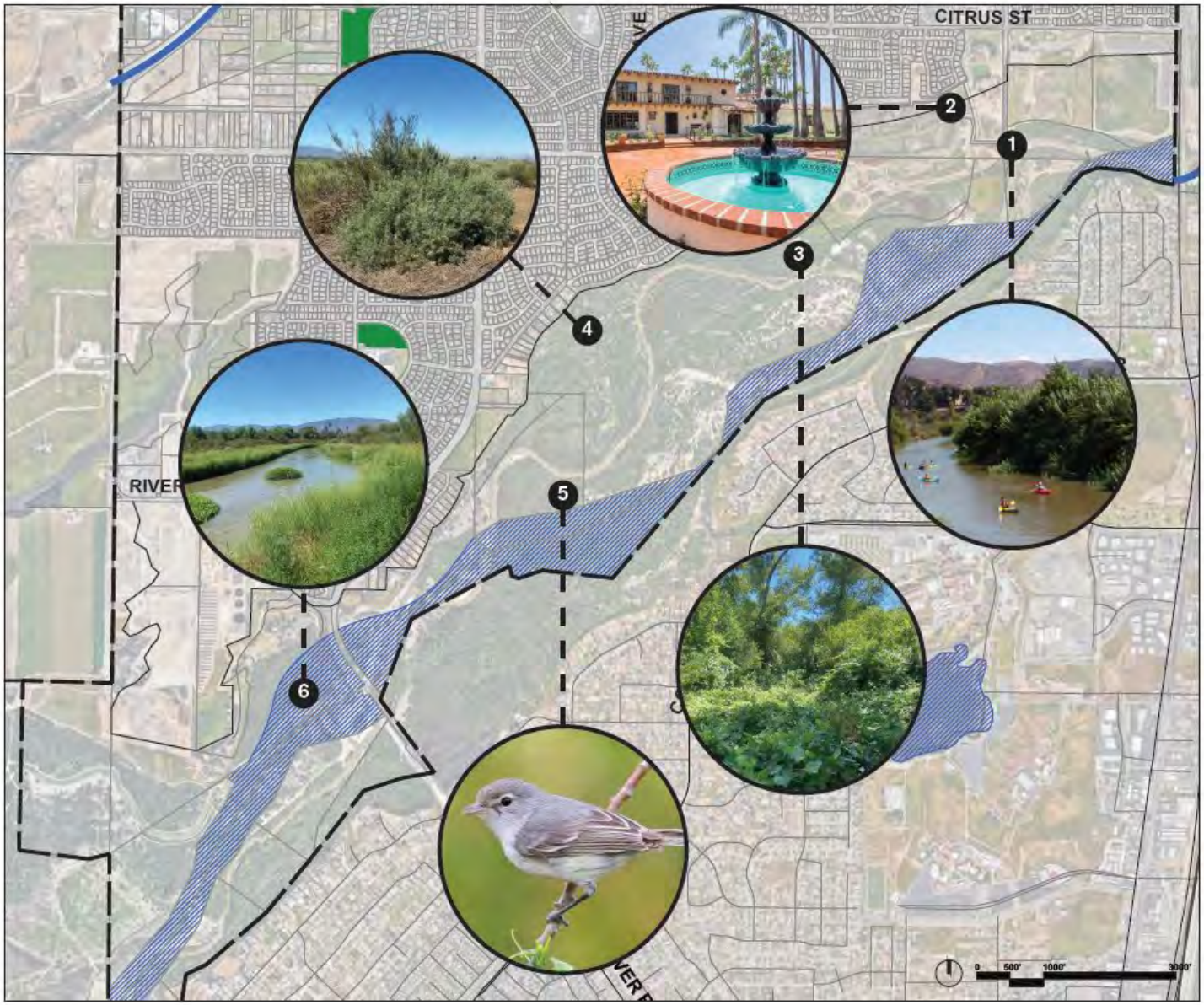
4. **Big Ideas.** The big ideas that inform the chapter will be explained, along with any connectivity to other chapters or topics.

5. **Key Points.** Some topics are easily described in one or two paragraphs, while other topic areas require a bit more discussion. The intent of the key point discussions will be to support the goals in this chapter.

6. **Goals and Policies.** The goals and policies provide support for development codes and standards, as well as providing guidance to decision makers.

1

Partnerships & Collaboration



EDUCATIONAL OPPORTUNITIES

AREAS WITH POTENTIAL FOR ENVIRONMENTAL EDUCATION

A variety of different habitat types as well as different access points along the river creates environmental education opportunities for the community.

In the summer of 2022, a partnership between the City and students from the UCLA School of Landscape Architecture resulted in a communitywide vision for activating and rewilding the Santa Ana River Corridor. This map is from their presentation.

EDUCATION POINTS

1. River life cycle
2. Eastvale history
3. Riparian forest
4. Sage scrub ecosystem
5. Wildlife conservation
6. Marshland ecosystem

PARTNERSHIPS & COLLABORATION

INTRODUCTION

Because Eastvale is bordered by the cities of Norco, Jurupa Valley, Chino, and Ontario there is no ability to expand by annexing land. The ultimate success of Eastvale will rely on the City's partnership and collaboration with others. Examples include the partnership with Western Riverside Council of Governments (WRCOG) for regional transportation planning, Riverside County Flood Control and Water Conservation District for use of land that will someday become the "Grand Park," and the Santa Ana River Conservancy that will help the Eastvale activate the riverfront. This chapter includes policies that continue longstanding collaboration and open the door for new partnerships.

EASTVALE ESSENCE

Collaboration is the essence of any successful city. With an nearly inexhaustible demand for services, and limited resources, collaboration is essential to every city. This chapter highlights the importance of working with others to realize the vision of Eastvale 2040.

REQUIREMENTS

There are no state requirements for a partnerships and collaboration section of a general plan but there are plenty of reasons to continue to work with our local and regional partners to address issues such as transportation, homelessness, and job creation. Environmental Justice must also be considered; however, there is flexibility in how it is addressed in a general plan. For Eastvale 2040, the approach is to include Environmental Justice considerations in every chapter with a summary of how it is considered in Section 4, Implementation. Similarly, while Economic Development is an essential goal of every general plan, the topic is introduced here and policies encouraging investment in Eastvale are carried throughout Eastvale 2040.

BIG IDEAS

- Providing a quality of life requires that the City partner with faith-based organizations, civic groups, and others with the best interest of Eastvale's residents in mind. Together we make Eastvale better.
- We succeed when our businesses succeed. Partnering with our business community is critical to the financial well-being of Eastvale. Supporting our businesses by shopping locally and encouraging new businesses to locate in Eastvale by streamlining the permitting process generates local sales taxes that are used to provide services to our residents.
- Environmental Justice and community health requires a holistic approach that includes physical offices and clinics, but also trails, trees, and programs to encourage exercise, and to reduce pollutants.
- Our success is tied to the success of other cities in the region. Open and constant communication between neighboring cities is essential to addressing regional issues such as traffic circulation and homelessness. The more successful the surrounding cities the less pressure there will be to 'urbanize' Eastvale.
- We must continue our partnership with local, regional, and state agencies to achieve our vision. Eastvale needs transit, roadway improvements, and services that are only available at the regional or statewide level.
- Collaborative and reciprocal partnerships with stakeholders of park spaces, conservation areas, and flood control lands are critical to the Eastvale 2040 vision to activate the riverfront.

KEY POINTS

SCHOOLS

Education is important, and while the Corona-Norco Unified School District (CNUSD) is an independent public agency, coordination with CNUSD is essential when considering new development, overcrowding, or mobility around schools. It is also important that the district and the city communicate roles and responsibilities to the public as it can be unclear which agency has jurisdiction over what types of decisions.

Partnership with schools extends into colleges and universities such as the 2022 UCLA School of Architecture study of how to

activate the Santa Ana River and connect the riverfront to the rest of the City. Elements of this partnership are incorporated into Eastvale 2040. The City welcomes other partnerships to help realize the vision of the community.

PUBLIC AGENCIES

The Jurupa Community Services District (JCSD) provides water distribution, wastewater collection and treatment, parks, and recreation services to the residents of Eastvale. As all new growth depends on JCSD for basic utilities it is important that the city and the district communicate regularly. Other agencies such as the Riverside County Airport Land Use Commission (ALUC), the Western Riverside Council of Governments (WRCOG), Riverside County Flood Control, California Department of Transportation, California Department of Forestry and Fire Protection, California Department of Fish and Wildlife, and the Santa Ana River Conservancy will all play important roles in the future of the city. The city is committed to working with all public agencies to further the vision of Eastvale 2040.

CIVIC MINDED ORGANIZATIONS

Two of the city's churches graciously provided venues to conduct public outreach for Eastvale 2040. Input from faith-based organizations and civic groups helped inform the general plan update process and extend public outreach well into the community. Groups such as the Eastvale Kiwanis Club and landscape architecture graduate students from the University of California Los Angeles (UCLA) provided valuable ideas and concepts for Eastvale 2040. Partnerships like this are important to realizing the vision of the community. Having a network of community champions ensures transparency in decision-making and provides an effective means of identifying and addressing a need.

BUSINESS DEVELOPMENT

As with other aspects of community improvement, business development requires close coordination with property and business owners, and a keen understanding of the business world. The City helps business decisions by streamlining the permitting process, providing information on vacant land and the availability of services, and connecting businesses with local resources such as the Eastvale Chamber of Commerce. Every department of the city is geared toward providing information to potential investors.

ENVIRONMENTAL JUSTICE

Incorporated in 2010, Eastvale is one of the newest cities in the state. As a young city, many of the environmental justice issues of concern are absent in Eastvale. However, as the city grows it will be important to ensure that environmental justice issues do not

arise, and that projects within the city do not exacerbate existing issues in neighboring communities.

COMMUNITY HEALTH

Eastvale lacks a full-service hospital and residents must leave the city to receive critical care. The city will need to work with health care providers to ensure that the healthcare needs of the residents are met, and that all development furthers the goal of providing a healthy community.

CalEnviroScreen, a resource provided by the California Office of Environmental Health Hazard Assessment (OEHHA) shows that diesel emissions from Interstate 15 and State Route 60 affect residents that live along these corridors. Growth along these highly travelled corridors will need to take diesel emissions into account for project design.

GOALS AND POLICIES

GOAL PC-1: Protect and promote health and well-being for all residents.

PC-1.1: Foster the overall health and well-being of City residents, particularly the most vulnerable populations.

PC-1.2: Collaborate with local health care providers and educators to provide input on development design and solutions for public health issues.

PC-1.3: Ensure that health care and mental health facilities are available in and near Eastvale that are transit-accessible and pedestrian-friendly.

PC-1.4: Support community organizations and companies that provide on-demand medical transportation for seniors and others incapable of driving or using transit.

GOAL PC-2: Maintain partnerships with local, regional, and state agencies.

PC-2.1: Support partnerships among entities and institutions that promote art and cultural programs, foster community identity, and enhance neighborhood pride.

PC-2.2: Continue to pursue and leverage State and Federal funding options for economic development activities and infrastructure improvements that promote economic growth opportunities.

PC-2.3: Maintain an ongoing relationship with public and private trade schools, learning centers, universities, colleges, and school districts to create programs that result in a well-trained local workforce.

PC-2.4: Work with the Corona-Norco Unified School District to address issues such as parking, access, open space, and safe routes to school.

PG-2.5: Work with the Orange County Flood Control District to allocate land along Hellman Avenue, south of Chandler Street, to develop Eastvale's future "Grand Park".

PC-2.6: Coordinate with the County Flood Control District to secure leases on adjacent flood control land for a park space, agricultural production, passive and active outdoor recreation, special events, and other uses that can meet flood control regulations.

PC-2.7: Coordinate with the Orange County Flood Control District on the development of a pedestrian bridge over the Cucamonga Creek Channel to connect residents to the Rondo Elementary School.

PC-2.8: Coordinate stakeholder jurisdictions and agencies to provide trail connectivity to the future "Grand Park" and Santa Ana River Trail.

GOAL PC-3: Promote economic growth within the City to provide employment opportunities and goods and services to local residents.

PC-3.1: Consider the use of economic incentives and/or other direct benefits to businesses to encourage commercial and industrial enterprises in the City.

PC-3.2: Continue to pursue and leverage State and Federal funding options for economic development activities and infrastructure improvements that promote economic growth opportunities.

PC-3.3: Ensure that plans for economic incentives or direct benefits are linked to measurable performance metrics resulting in a positive outcome for the City consistent with the business retention, expansion, and attraction program.

PC-3.4: Actively market and promote available locations for expansion of existing, or establishment of new, business in the City.

PC-3.5: Work with local employers and educators to encourage training and hiring of a local workforce.

PG-3.6: Review and update the Zoning Code on an annual basis to ensure that it is responsive to current business trends and practices.

GOAL PC-4: Improve the Riverfront Policy Area to provide for conservation of natural resources, flood control, and a range of recreational uses oriented to the Santa Ana River.

PC-4.1: Coordinate with the agencies that regulate and plan the Santa Ana River and the flood control lands to develop a plan for public use and habitat conservation.

PC-4.2: Coordinate with adjacent jurisdictions as needed regarding recreation along and within the river.

PC-4.3: Support nongovernmental organizations and private entities who purchase, own, maintain, and expand areas for conservation and preservation.

PC-4.4: Develop a citywide public realm plan that improves access, connectivity, and activation of the river's interface with the community fabric.

GOAL PC-5: Maintain a good working relationship with the Corona-Norco Unified School District to ensure a quality education system and quality school facilities for Eastvale students.

PC-5.1: Regularly coordinate with the School District to find solutions to traffic issues and safe routes to schools.

PC-5.2: Regularly coordinate with the School District to address overcrowding and expansion plans.

GOAL PC-6: Work with the Jurupa Community Services District and the Jurupa Area Recreation and Park District to transition responsibility for public parks in Eastvale to the City.

PC-6.1: Until the City establishes its own parks operation the City will work with the Jurupa Community Services District and the Jurupa Area Recreation and Park District to provide parks, recreation, and trails.

eSTEM

2

Built Environment

- *Land Use*
- *Housing*
- *Mobility & Circulation*
- *Noise*

LAND USE

INTRODUCTION

The physical use of land or "land use" is at the heart of Eastvale 2040. Land uses dictate what is on a piece of property (structures, parking areas, etc.) and how it is operated (residences, businesses, etc.) It is what the community sees and feels in the physical environment and how it associates with Eastvale. The purpose of the Land Use Element is to provide a long-range guide for the physical development of the city, reflecting the community's vision for a high quality of life through the built environment. This chapter identifies the range of allowed land use in the city and designates where they are to be located. Land is finite and a valuable resource – its use dictates the city's economic and fiscal future, which in turn results in the city amenities and services that are provided to residents.

EASTVALE ESSENCE

The Land Use Element, and in particular the land use map, describes both the type of development the community expects over time, and where that development should occur. Different uses of the land such as housing, offices, or stores are assigned standards such as housing units per acre, or a ratio of floor square footage to parcel size, so that the approximate size and extent of future development can be predicted. While not all the standards are absolute, the descriptions in this element can be used to

determine the number of new people and jobs expected in the next planning horizon. These estimates are then used to determine what services are needed.

Much of Eastvale is fully developed and not expected to change significantly over the planning horizon. Established residential neighborhoods will remain as they exist today. However, there are three main areas of the city that remain to develop: Downtown Eastvale, Chandler Area, and Riverfront. These areas each offer an opportunity to bring unique and creative land uses that will usher Eastvale into the next phase of its history.

REQUIREMENTS

State law requires that the Land Use Element designates the proposed general distribution, location, and extent of uses for housing, business, industry, open space, natural resources, and recreation, and public facilities. The vehicle to achieve this is the land use map. The Land Use Element must also include a statement of the standards of population density and building intensity for all areas covered by the plan.

BIG IDEAS

- **Respect Eastvale.** Many Eastvale residents left more urban cities in Orange and Los Angeles counties to suburbs like Eastvale. While residents may work in the more urban areas, they want to live in Eastvale where homes are larger, and the streets are shaded by trees and not buildings. Eastvale 2040 assumes modest growth while preserving the essence of what attracted new residents to the area in the first place.
- **Focus Growth into Policy Areas.** New development is focused in areas that are either vacant, or in a suitable location with existing land uses that can support more intensive development. Broad land use and design guidance is provided in this element; however, these areas will require more detailed land use planning in the future. Five policy areas are established in Easvale2040: Downtown East, Downtown West, Chandler, Riverfront, and Citrus. The mixing of uses within the policy areas is also encouraged to create unique destinations within Eastvale.
- **Proximity and Connectivity.** By putting complementary land uses next to each other, the ability to walk or bike between them improves and the land uses work together to create a sense of place and gathering for the community. It makes sense to put homes near schools, people near shopping and jobs, and industry near the freeway. While it may be a while before having a car is optional, use of the car after work and to play can be lessened if the land uses are connected with sidewalks and trails, and if they are near each other to allow not using a car to be enjoyable.

LAND USE PLAN

The Land Use Plan consists of two primary components: land use map and place type designations. The land use map displays the location of the various land uses or place types throughout the city, while the place type designations define the form, character, mix of uses, and intensity levels tied to each area in Eastvale. There is a total of 14 place type designations, each with its own mix of potential uses and development density and/or intensity standards.

See Figure 1 for the Land Use Plan Map, followed by a description of each place type designation.

Figure LU-1 Land Use Diagram

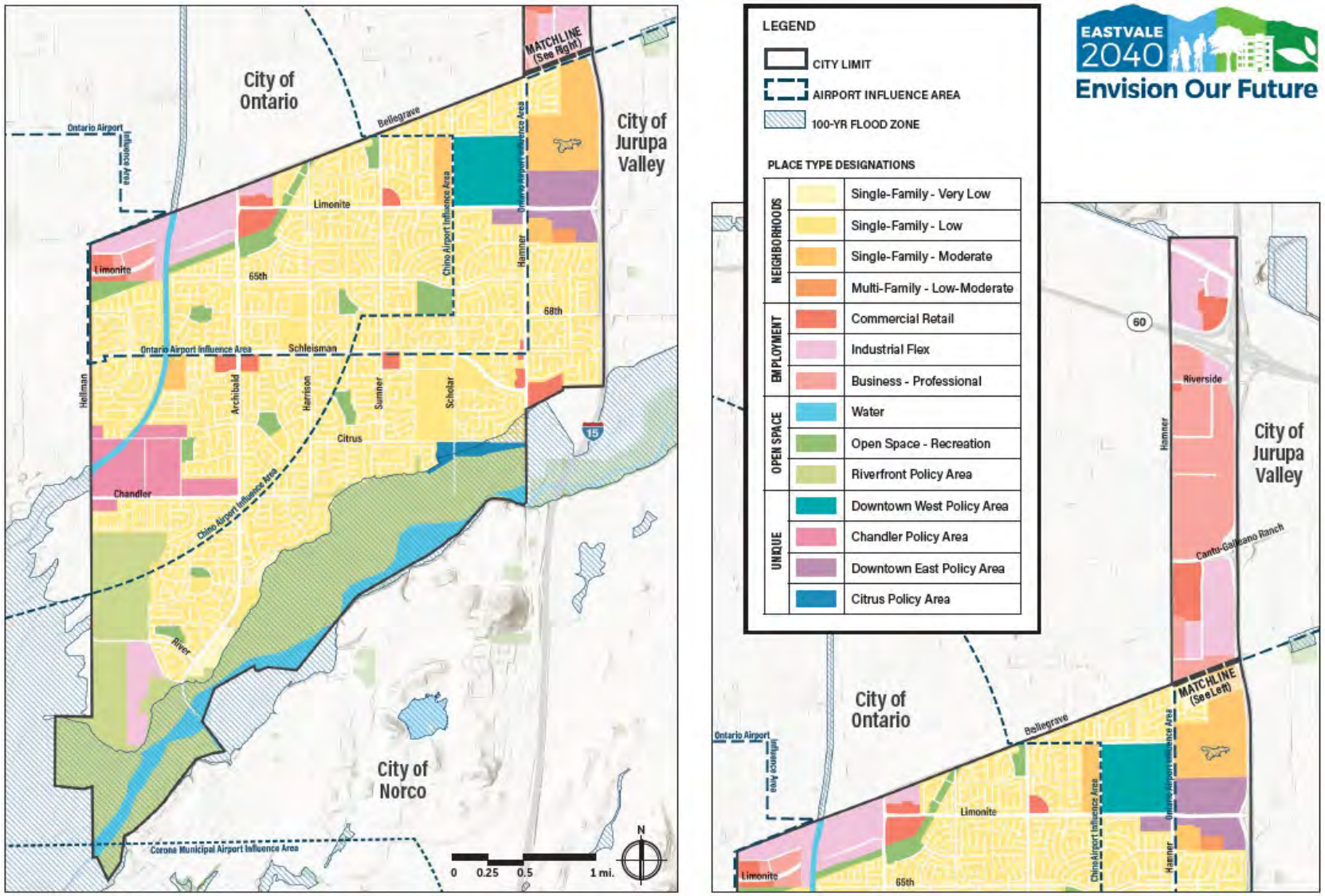


TABLE LU-1 DENSITY & INTENSITY BY LAND USE DESIGNATION

NEIGHBORHOODS	SF-VL	Single-Family - Very Low	Less than 4 DU/AC	16 Persons/AC
	SF-L	Single-Family - Low	4.0 – 8 DU/AC	32 Persons/AC
	SF-M	Single-Family - Moderate	8.1 – 20 DU/AC	80 Persons/AC
	MF-LM	Multi-Family - Low-Moderate	20.1 – 40 DU/AC	160 Persons/AC
EMPLOYMENT	CR	Commercial Retail	.25 - .50 FAR	160 Persons/AC
	IF	Industrial Flex	.25 - .60 FAR	
	B-P	Business - Professional	.25 - .60 FAR	
OPEN SPACE	W	Water	NA	
	OS-R	Open Space - Recreation	NA	
	RF-PA	Riverfront Policy Area	NA	
UNIQUE	DW-PA	Downtown West Policy Area	.25 – 1.5 FAR 20.1 – 40 DU/AC 2,500 DU Minimum	
	CH-PA	Chandler Policy Area	0 - .35 FAR 8.1 – 20 DU/AC Min. 2 acres required for new development	
	DE-PA	Downtown East Policy Area	.25 - 1.5 FAR 20.1 - 40 DU/AC	
	CS-PA	Citrus Policy Area	0 - .35 FAR 8.1 – 20 DU/AC	

Each land use designation is assigned a density, shown in units per acre, or a floor area ratio, which is the ratio of building size to property size. From a practical standpoint in most cases the entire building site will be developed with landscaping, sidewalks, trails, and parking. The density and intensity information is important for planning water, wastewater, and power demands.

The persons per acre figure is required by law and should be considered an estimate as there are several ways where state law allows more units per acre than shown in Table 1, which would increase the population per acre estimate. Except in instances of health and safety concerns the City does not regulate or restrict the number of people per acre.

PLACE TYPES

NEIGHBORHOODS

The residential place types represent the neighborhoods of Eastvale. Residential uses comprise most of the city. Each residential place type designation includes a range of allowable densities, calculated as the number of dwelling units allowed per net acres (units/acre). The maximum density represents a potential maximum number of residential units that could be achieved based on the provisions of both the General Plan and Zoning Code. Each residential place type also includes a minimum density.

Different densities translate to different housing forms, from traditional single-family homes to stacked flats in a multi-story configuration. It is important to note that densities do not determine whether a home is owned or for-rent, nor does it refer to income levels. Densities simply relate to different housing forms and configurations. It is also important to note that housing (and resulting population) is what drives the demand for retail and services, jobs, schools, parkland, public safety and infrastructure.

Single-family homes are defined as either detached or attached. An attached single-family home must be separated from another by a wall that extends from the floor to the roof, such as townhomes. Homes that are stacked on each other are referred to as multifamily residential. Both forms can be for-sale or for-rent. Housing types continue to evolve over time to meet changing demographics and market demands. The residential place types are broad enough to allow the market to determine the form of new homes that are built in Eastvale.

FIGURE LU-2 RESIDENTIAL PROTOTYPE

SF-VL and SF-L

SF-M

MF-LM

Each of the residential place type designations are defined below.

Single Family - Very Low (SF-VL)

Intent. The Intent of this designation is to respect the existing residential homes on larger lots. In addition to single-family homes, this designation also allows for the keeping of animals and limited agriculture. Preferred uses and development standards include:

- Keeping of animals and limited agriculture
- Parks, trails, and other compatible public uses
- Buildings typically limited to two stories in height

Single Family - Low (SF-L)

Intent. This designation encompasses the more traditional detached single-family homes, but also allows for other forms of single-family up to eight (8) units per acre, including cluster homes, patio homes and other single-family detached and attached configurations. Townhomes are also allowed in this category up to 8 units per acre. This designation encompasses most of the City. Preferred uses and development standards include:

- Detached and attached single-family housing
- Parks, trails, schools, and other compatible public uses
- Buildings typically limited to two stories in height

Single Family - Moderate (SF-M)

Intent. This designation provides for single-family detached and attached housing, including small-lot single- family homes, duplexes, triplexes, cluster homes, patio homes, townhomes, and other detached and attached configurations. It also provides for multifamily housing including courtyard housing, and stacked flats. Preferred uses and development standards include:

- Parks, trails, schools, and other compatible public uses
- Buildings typically limited to three stories

Multi-Family - Low Moderate (MF-LM)

Intent. The intent of this designation is to allow for a range of multi-family housing types (either for-sale or for-rent) including motor-courts, green-courts, stacked flats, and other configurations up to 40 units per acre. It is suitable as a buffer use between less intense neighborhoods and commercial areas. This housing designation is only allowed within two of the Policy Areas – the Downtown West and Downtown East Policy Areas. Site design and building design should contribute to walkable streets by incorporating pedestrian-oriented building frontages.

Preferred uses and development standards include:

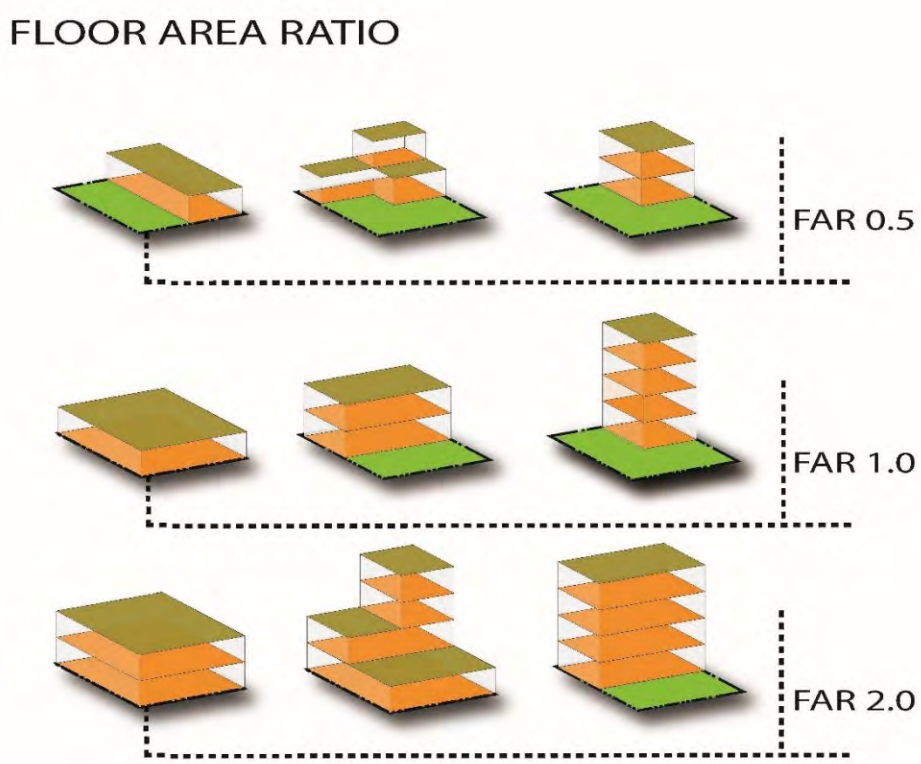
- Usable common and private open space
- Internal and external pedestrian connectivity to provide convenient access to the street and adjacent uses
- Buildings typically limited to six stories

EMPLOYMENT

The land use place types that constitute the employment uses include commercial retail centers, industrial areas, and office uses. Development intensity for non-residential areas is defined by Floor Area Ratio (FAR), which is the ratio of total gross floor area of all buildings on a lot compared to the total area of that lot. Higher FARs generally indicate larger buildings and/or more stories. The driver in determining FAR is the amount of parking that is required and how that parking is satisfied on a site (either surface parking, in a structure, or underground). Figure 3, illustrates how FAR can vary greatly within a site.

Each of the employment place types are defined below.

FIGURE LU-3 FLOOR AREA RATIO GRAPHIC



The ratio of parcel size to building square feet is called the floor area ratio. The intent is to allow design flexibility while limiting the overall size of the building. Building heights are typically limited in the development code but may also be limited for safety and aesthetic reasons.

Commercial Retail (CR)

Intent. The Commercial Retail place type provides highly visible and accessible retail, services and dining opportunities along arterial corridors that serve the needs of residents locally and in surrounding communities. These centers also support nearby businesses and employees. Typical uses also include public uses (e.g., City Hall), cultural and entertainment uses, professional offices and hospitality services.

Development standards include:

- Development intensity or FAR of 0.25 - .50
- Maximum height of 50 feet, with certain exemptions per the Zoning Code
- Design for internal walkability between uses and for easy pedestrian access from surrounding residential neighborhoods

Industrial Flex (IF)

Intent. The Industrial Flex place type provides for light or limited industrial and manufacturing activities where operations are typically enclosed in a structure and limited exterior storage or operations are fully screened from public view. Exceptions would include commercial nursery or agricultural operations. This designation is also suitable for employee- intensive uses, such as corporate offices, research and development, and technology centers with supporting retail uses. It also provides a suitable location for start-up businesses, recreational businesses, and "maker" spaces for breweries, arts & crafts, clothing, food, and similar small-scale industries. Adaptive re-use of older industrial buildings to accommodate the broader mix of uses allowed is encouraged.

Development standards include:

- Development intensity or FAR from 0.25 - .60
- Maximum height of 40 feet, with certain exemptions per the Zoning Code

Business – Professional (B-P)

Intent. The Business-Professional place type provides for employee-intensive uses, including research and development, technology centers, medical facilities, corporate and professional office uses, "clean" industry, and supporting retail uses. This place type also provides a suitable location for innovative start-up businesses and creative design offices in the arts, engineering, media, among others. Maker spaces for breweries, arts & crafts, clothing, food, and similar small-scale industries is also allowed.

Development standards include:

- Development intensity or FAR from 0.25 - 0.60
- Maximum height of 50 feet, with certain exemptions per the Zoning Code

OPEN SPACE

The land use place types that constitute the Open Space category apply to land and water areas that are generally undeveloped or developed with very low-intensity uses. Depending on their function, the open space place types may be used for passive or active recreation, conservation, or flood control.

Water (W)

Intent. The Water designation applies to natural, man-made, and altered water courses, including the Santa Ana River, stream channels, and flood control facilities. The purpose is to designate the location of a water course and ensure that special policies associated with surrounding open space or habitat protection are considered. There is no development allowed within the Water designation, other than flood control facilities as deemed necessary by the governing agency.

Open Space – Recreation (OS-R)

Intent. The Open Space – Recreation place type is intended to provide for and preserve publicly-owned land for passive and active recreational uses including parks, trails, and athletic fields. In addition to the neighborhood parks in Eastvale, it has also been applied to the electric utility easement on the north end of the City where trails and landscaping are allowed with the approval of the utility company. This designation may also be applied to private outdoor recreation facilities. Land within the Open Space – Recreation designation can be subject to occasional flooding.

Riverfront Policy Area (RF-PA)

Intent. The Riverfront Policy Area provides for the conservation of natural resource areas including watersheds, habitat areas and corridors, and areas within flood zones. It also aims to activate the entire interface of the Santa River with various recreational uses to take full advantage of this unique natural asset. This category has been applied to the Santa Ana River watershed, associated habitat areas, and parcels prone to flooding and owned by the flood control district. Potential uses within the Riverfront Policy Area include parks, athletic fields, trails, and other types of recreation uses subject to the approval of the Flood Control District. In addition, agriculture may be an appropriate use, if allowed, on flood control land along Hellman.

UNIQUE

The land use place types within the Unique category encompass four policy areas where there are opportunities for new development to take place over time. Two of the policy areas are currently vacant (Downtown West and Citrus), while the other two have the potential to transition with infill development (Downtown East and Chandler Area). Each policy area requires additional study – either through a future Specific Plan or similar planning/regulatory tool.

Below is the General Plan guidance for the policy areas. The guidance includes the mix of land uses envisioned, maximum density and intensity standards, and design direction.

Downtown West Policy Area

The Downtown West Policy Focus Area is part of a 153-acre area along Limonite that is envisioned as the center piece of Eastvale's future downtown. The property, located at the northwest intersection of Limonite and Hamner Avenues, is intended to provide for a range of housing, retail, restaurants, hospitality, entertainment, and civic uses in a walkable urban environment. The property may also be suitable for a satellite college or university campus, or medical related uses. A range of housing types between 20.1 and 40 dwelling units per acre is allowed, with a minimum requirement of 2,500 units. Non-residential uses can range from .25 to 1.5 FAR.

At the heart of Downtown West is a 16.5-acre area at the corner of Limonite and Hamner Avenue. In May 2022, the City Council approved a Development Agreement between the New Home Company and the city to designate the 16.5-acre area under an option agreement for development of a city hall building, outdoor amphitheater and civic park area, police station, public library and innovation center, hotel, office uses, and a variety of restaurants and retail uses totally 495,000 square feet. Detailed planning and development of the entire Downtown West Policy area is guided by the adopted Leal Master Plan.

Figure 4 illustrates a concept for the development of this area, along with images that reflect the types of uses and activities anticipated.

FIGURE LU-4 DOWNTOWN WEST POLICY AREA CONCEPTUAL PLAN

Downtown East Policy Area

Across Hamner Avenue east of the Downtown West Policy Area, is the existing Eastvale Gateway shopping center. This community commercial center has an abundance of parking that could accommodate new residential development. The intent is to allow for a transition to an integrated, walkable, mixed-use environment for commercial retail and services, entertainment, and residential uses, along with a variety of public open space amenities.

Looking south across Limonite Avenue, is a vacant parcel of land that is at the main entrance to the City from I-15. This important site is proximate to shopping, entertainment, and services, as well as transit. The area is intended to become a mix of low-moderate housing up to 40 dwelling units per acre on the south half of the parcel, with commercial and office uses on the northern half of the site up to 1.5 FAR.

While a specific plan may be considered for the Downtown East Policy area, the City's zoning code and Eastvale 2040, already provide for the ability of these sites to develop with mixed-use. Because of these sites being located near I-15, it is likely that design considerations will be needed to protect against noise and diesel emissions associated with the Interstate.

Figure 5 illustrates a concept for how both areas could be developed overtime. It is anticipated that the Gateway shopping center would see new incremental development as the tenant mix in the shopping center changes and the demand for housing in a more urbanized environment increases. For the vacant parcel south of Limonite, there is an opportunity to create a signature art or open space element near the freeway interchange that announces the City from the freeway.

FIGURE LU-5 DOWNTOWN EAST POLICY AREA CONCEPTUAL PLAN

1 Concept Vision

The concept is designed to accommodate incremental changes to existing uses overtime. As big box uses transition to smaller floor plates, areas can be used for parking to enable residential/mixed-use infill along the "main street". In the long-term, surface parking can transition to residential, office and structured parking.

2 Main Street

Internal "Main Street" with diagonal parking in the median and buildings close to street.

3 Park / Open Space

A village park that is programmed and used by residents and visitors

4 Multifamily

Infill residential focused along "Main Street" to create a walkable neighborhood.

5 Proposed Hotel

6 Creative Offices

7 Multifamily or Mixed-Use

- 4 Story 'Wrap' Residential Structure
- Parking Structure with Super Graphic Facade

8 Fountain Court

Chandler Policy Area

The Chandler Policy Area, named for the roadway that forms its southern boundary, is one of two areas of Eastvale that provided housing for dairy workers until the late 1990s. The Chandler Policy Area contains a mix of land uses that reflect the community's agricultural heritage, including homes on large lots, agriculture-related businesses, horse corrals, barns, and farm animals. The western boundary of this area is formed by land owned by the Orange County Flood Control District (OCFCD) and is not available for development, however open space and some urban agricultural use could be allowed. OCFCD is the lead agency appointed by the U.S. Army Corp of Engineers to manage the improvements at Prado Dam and its effect on communities upstream from the dam.

The Chandler Policy Area encourages a broader mix of low intensity uses, that are compatible with the rural character of the area. The businesses could have housing or offices above them in the same building, or in a separate building nearby. Toward the west where the flooding restricts development potential, agricultural businesses that could farm the land are encouraged. The area is envisioned to allow makerspaces for incubator businesses, artisans, and craft restaurants and breweries. The open space nearby could also be used for festivals and gatherings celebrating the diversity of the community. An important aspect of development in the Chandler Area will be to respect and support the continuation of the existing agricultural and residential uses. A specific plan will be required to guide how new residential and non-residential development can occur sensitively and in a way that creates a unique place in the City. New residential will be allowed up to 20 dwelling units per acre, with a minimum project size of 2 acres. Non-residential uses can range up to .35 FAR, also with a 2-acre minimum size project.

Figure 6 provides an illustrative concept for how Chandler could evolve over time. The design concepts and ideas should become the basis for the future specific plan.

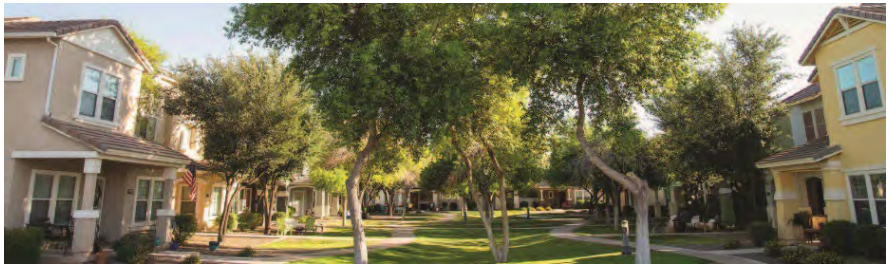


FIGURE LU-6 CHANDLER POLICY AREA CONCEPTUAL PLAN

1 Agricultural Uses

Can include a flower farm similar to Hana Field in Costa Mesa

2 Pedestrian Bridge

3 Low to Medium Density Housing

Allow a variety of residential to occur over time including small-lot single family, townhomes, courtyard housing and other residential types.

4 SB 9 Development

Example of lot split with a second single-family home and ADUs

5 Townhome

Example of rowtown residential along "Main Street"

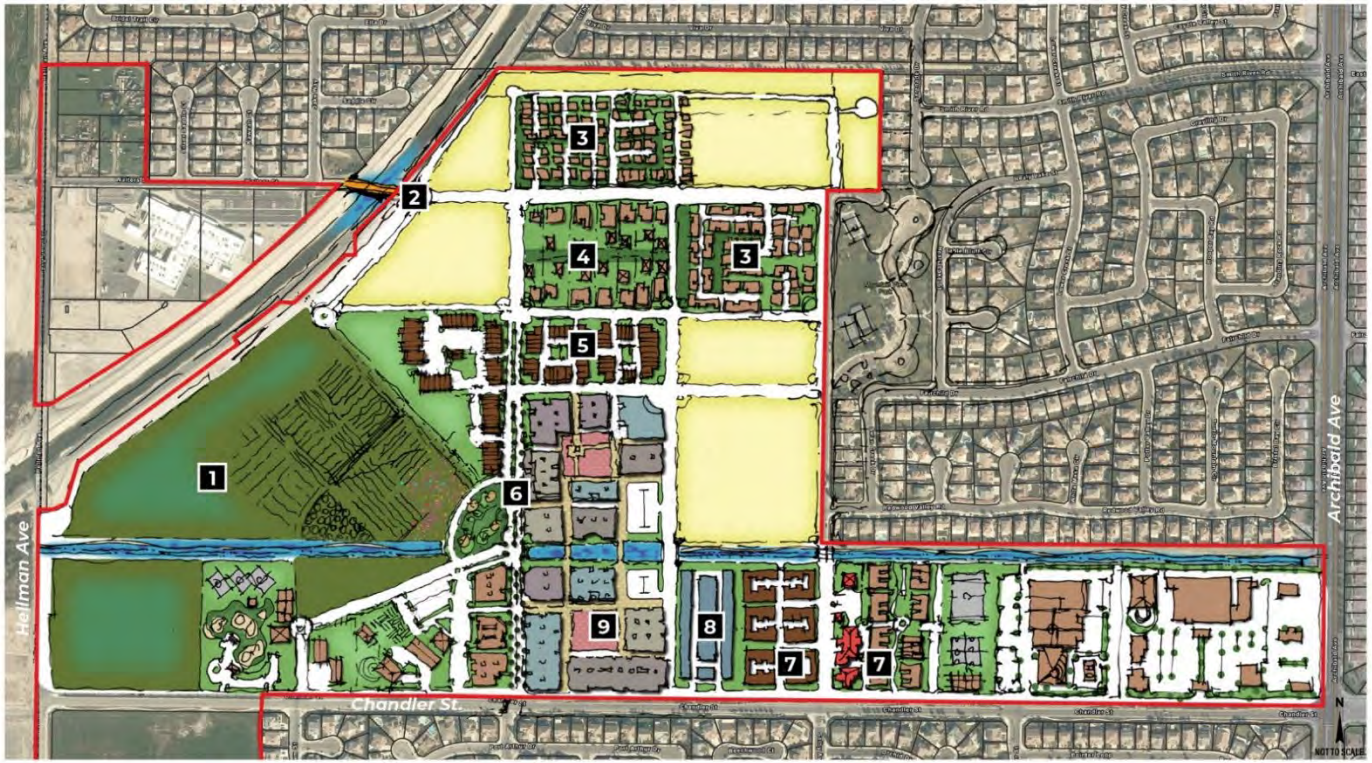
6 Main Street

Create an internal "Main Street" designed to be a walkable mixed-use environment

7 Infill Residential

Infill residential along Chandler Avenue at 30 du/ac minimum

8 Planned Storage Area



9 Signature plaza area reminiscent of Portuguese plazas

Maker area designed with a system of walkable alleyways and internal plaza. Ex: Hugus Alley, Pasadena

Encourage maker spaces along "Main Street".
- Agritopia/Gilbert, AZ
- Incubator Space, Open Works/Baltimore, MD
- Breweries, Farm-to-Table, other restaurant and retail

Citrus Policy Area

The Citrus Policy Area serves as one anchor to the improved Santa Ana River trail and adjacent recreation amenities. A goal of Eastvale 2040 is to enhance the river with more trails, recreational opportunity, and rewilding. While some of the Citrus Policy Area ill accommodate senior housing, most of this area is in the floodplain and unlikely to have more than recreational uses. Working with the Jurupa Community Services District (JCSD), the plan is to expand recreational activities, river access, and improve the quality of the riparian area along the Santa Ana River. As a focal point for the river, the Citrus Policy Area will serve as a trail hub, informational site, and be truly integrated into the Santa Ana River Trail. This Policy Area also includes approximately 20 acres of land owned by the City that will be integrated with the recreation and community-serving uses in this area. Visitor-serving uses, including a hotel, could be accommodated in this area. The Citrus Policy Area on the east will balance the 'Grand Park' proposed in the west along Hellman Avenue. The Santa Ana River will connect the two, as will existing and new trails and pathways through the city.

Figure 7 provides an illustrative for the potential uses within this policy area, along with images for the kinds of activities that are possible as access to the Santa Ana River is provided.

FIGURE LU-7 CITRUS POLICY AREA CONCEPTUAL PLAN

CITRUS PARK CONCEPT

NATURAL HABITAT MEETS HUMAN EXPERIENCE

LEGEND

1. Soccer Fields
2. Visitor Center
3. View Tower
4. View Tower & Community Center
5. Mounded Hills
6. Dry Arroyo
7. Decomposed Granite Pathway
8. Bridge
9. SART (Santa Ana River Trail)
10. Raised Deck
11. Playground
12. Splash Pad
13. Tot Track
14. Gathering Area
15. Parking Lot
16. Gathering Area
17. Shaded Picnic Area
18. Santa Ana River

GOALS AND POLICIES

GOAL LU-1: A balance of growth that maintains and enhances the City's fiscal viability, economic diversity, and environmental integrity and meets the needs of Eastvale residents.

LU-1.1: Designate and support the development of a broad range of land uses, intensities, and densities.

LU-1.2: Encourage a variety of ownership and quality rental housing choices that respond to changes in demographics and homebuyer preferences.

LU-1.3: Provide sufficient commercial and industrial development opportunities to increase local employment levels and reduce vehicle trips.

LU-1.4: Include at least one mobility hub in each of the policy areas.

LU-1.5: Require new construction to participate in the acquisition and installation of public art in accordance with the City Public Arts Program.

LU-1.6: Site new public land uses based on all forms of access available to residents. Satellite offices may be necessary to ensure complete and equitable access.

LU-1.7: Require that new development have adequate public services such as school capacity, parkland, water, wastewater, and storm drainage.

GOAL LU-2: Respect the design character of the existing neighborhoods.

LU-2.1: To soften change in development style, require setbacks, step backs, or other design elements at the transition between existing and proposed land uses if there is a significant increase in density between the existing and proposed land use.

LU-2.2: Require that new public facilities protect sensitive uses, such as schools and residences, from the impacts of noise, light spillover, fumes, odors, vehicular traffic, parking, and operational hazards.

LU-2.3: Support the development of pedestrian trails and pathways that connect existing and proposed neighborhoods.

LU-2.4: Develop and maintain objective design standards for all land use types citywide, or unique to one or more of the policy areas.

LU-2.5: Require the use of Crime Prevention Through Environmental Design (CPTED) techniques such as providing clear lines of sight, appropriate lighting, and wayfinding signs to ensure that new development is visible from public areas and easy to navigate.

LU-2.6: Require new development abutting streets and other public spaces to face the public areas with attractive building facades, and entries to encourage walking, biking, and public transit as primary—not "alternative"—mobility modes.

LU-2.7: Require the planting of trees that shade the sidewalks, buffer pedestrians from traffic, define the public spaces of streets, and moderate high temperatures and wind speeds throughout the city.

LU-2.8: Require that new developments make all possible street, trail, and open space connections to existing adjoining residential or commercial development and provide for future connections into any adjoining vacant parcels.

GOAL LU-3: An improved Chandler Policy Area that provides a better environment for residents and businesses through a comprehensive planning process.

LU-3.1: Develop a specific plan for the Chandler Policy Area that encourages a mix of land uses that results in creating a unique sense of place while respecting the rural character of the area.

LU-3.2: Ensure that existing uses such as agriculture and animal keeping, are allowed to continue within the Chandler Policy Area.

LU-3.3: Require design elements to buffer residential units to the extent possible from the impacts of abutting agricultural, roadway, commercial, and industrial uses.

LU-3.4: Coordinate with OCFCD to secure leases on adjacent flood control land for agricultural production, passive outdoor recreation, special events, and other uses that can meet flood control regulations.

LU-3.5: Coordinate with OCFCD on the development of a pedestrian bridge over the Cucamonga Creek Channel to connect residents to the Rondo Elementary School.

LU-3.6: Through a specific plan, encourage a variety of residential housing types including small-lot single family, walk-up townhomes, courtyard housing, live-work housing, accessory dwelling units on existing large lots, and other housing products up to 20 dwelling units per acre.

LU-3.7: Encourage the creation of an internal "Main Street" off Chandler Street where retail, services, restaurants, plazas, and other uses front onto the street and create a mixed-use, walkable environment.

LU-3.8: Encourage the development of unique artisan-based businesses, including breweries, farm-to-table restaurants, arts and crafts, and other types of makerspaces.

LU-3.9: Through a specific plan, plan for internal pedestrian connectivity throughout the policy area, including paseos, alleyways, and trails along the channels, Require the inclusion of plazas at key locations as a signature design element for the Chandler Policy area.

LU-3.10: Allow non-residential parking to be met through shared lots that are distributed in the commercial areas, and maximum shared parking between land uses.

LU-3.11: Allow interim development within the Chandler Focus Area before adoption of a specific plan only if the development is consistent with the vision for the policy area.

GOAL LU-4: The Downtown West and Downtown East Policy Areas are the 'downtown' of Eastvale containing a mix of civic, office, recreational, retail, and residential land uses.

LU-4.1: The City will encourage a mix of uses to develop in the Downtown West and East Policy Areas in accordance with an approved master plan or updated zoning regulations.

LU-4.2: Implement the master plan for the city-controlled land within the Downtown West Policy Area that includes civic uses, a variety of outdoor spaces, office, residential, and retail uses within a walkable outdoor environment.

LU-4.3: Ensure that residential development is designed to front onto adjacent internal roadways within the Downtown West Policy Area to create accessible and walkable streets and slow-down traffic.

LU-4.4: Coordinate with the property owner of the Eastvale Gateway Shopping Center on a plan for introducing residential development in underutilized parking areas or locations where retail uses have been vacated. Ensure that new residential development includes sufficient private, common, and/or publicly accessible open space. Publicly accessible open space should be in proximity to outdoor dining associated with nearby restaurants and cafes.

LU-4.5: The Downtown East Policy Area south of Limonite Avenue should be comprehensively planned prior to any incremental development. This vacant 20-acre area should include a mix of residential and non-residential uses. Residential should generally be located on the south side of the property and be designed to transition in height from the adjacent single-family homes. The non-residential uses should be site planned to create a "gateway element" at the 1-15 interchange.

LU-4.6: Require that new residential development within the Downtown Policy Areas include pedestrian pathways to Limonite and Hamner Avenues as well as to transit stops.

LU-4.7: Require that right-of-way for at least one transit stop and lane be provided on Hamner Avenue north of Limonite Avenue for a future Bus Rapid Transit or light rail.

GOAL LU-5: The Citrus Policy Area will be the eastern trailhead for the Santa Ana River Trail.

LU-5.1: Develop recreational uses that support the existing sports park and serve as a trailhead for the Santa Ana River Trail.

LU-5.2: Allow for senior housing complementary to the park uses in the policy area.

LU-5.3: Require that new development provide pedestrian connectivity to the Santa Ana River Trail.

LU-5.4: Prevent incompatible development in areas that are environmentally sensitive or subject to severe natural hazards.

LU-5.5: Provide for the re-wilding of the Santa Ana River.

LU-5.6: Create a long-term plan for the use of the city-owned property within the Citrus Policy Area. In addition to public festivals and annual events, consider the addition of hospitality uses that would bring revenues to the City. Coordinate with the flood control district on the development of the open space into a unique park, such as an Adventure Park for children.

HOUSING

INTRODUCTION

The Housing Element presents the City of Eastvale's goals, quantified objectives, and policies relative to the development, improvement, and maintenance of housing within the City, during the period of 2021 to 2029, known as the Regional Housing Needs Allocation (RHNA) for the sixth cycle.

This element's goals, objectives, policies, and programs aim to ensure that the housing inventory of Eastvale is available, adequate, and affordable. The format for a housing element is mandated by the state and quite lengthy. The entirety of the 2021-2029 Housing Element can be found in Volume 2 of this General Plan. Only a summary of the element is included here.

EASTVALE ESSENCE

Housing is essential to a city. While the state mandates the number of units that the city must provide for, the location and design of the units is up to the community to determine. The location for higher density housing in this element was established as a component of the public outreach process conducted for Eastvale 2040. This outreach led to housing in the focus areas of Eastvale's future downtown allowing the rest of the community to remain largely as originally developed.

REQUIREMENTS

The Housing Element is a State mandated chapter of the Eastvale General Plan that sets forth an eight-year plan ("housing cycle") to address the City's identified housing needs. The Housing Element describes, identifies, and analyzes the City's RHNA; and addresses the maintenance and expansion of the housing supply to accommodate the households that currently live and/or are expected to live in Eastvale in the housing cycle. Through research and analysis, the Housing Element identifies available candidate housing sites and establishes a Housing Policy Program to accommodate the RHNA, as determined by the Southern California Association of Governments (SCAG) and approved by the California State Department of Housing and Community Development (HCD). The Housing Element provides the following:

- Summary of the city's community outreach efforts to engage the public in the development of the Housing Element,
- Policies to address the city's housing needs and comply with State law,
- Review of the city's implementation of the 2014-2021 Housing Element,
- Overview of city's housing and population,
- Analysis of opportunities and barriers that affect housing, and
- Identification of sites to accommodate the RHNA.

The 2021-2029 Housing Element represents the City's effort in fulfilling the state's Housing Element requirements. The California State Legislature has identified the attainment of a decent home and suitable living environment for every Californian as a major housing goal. The Legislature mandates that all cities and counties prepare a Housing Element as part of the comprehensive General Plan, while recognizing the significant role of local planning in pursuit of this goal. Unlike other elements

of the General Plan, the Housing Element must be approved by the state, and is updated every eight years.

BIG IDEAS

For this Housing Element (2021-2029), the City of Eastvale has been allocated a RHNA of 3,028 units, divided into the following income categories in relation to Area Median Income (AMI):

- Very Low Income – 1,145 units
- Low Income – 672 units
- Moderate Income – 635 units
- Above Moderate Income – 576 units

The Housing Element must demonstrate adequate sites to accommodate at least 3,028 units. The City is also required to have zoning in place with densities of at least 30 dwelling units per acre to accommodate units for very low- and low-income households. As demonstrated in the complete Housing Element included in Volume 2 to this General Plan, the City has identified adequate sites, primarily in the downtown policy area, to accommodate the need for all these income groups.

KEY POINTS

HOUSING AFFORDABILITY

Housing is generally considered affordable if a household spends no more than 30 percent of its gross household income on housing costs (rent or mortgage, utilities, taxes, and insurance). Households experiencing housing cost burden may face other housing programs such as overcrowding or residing in sub-standard housing. Households experiencing severe cost burden (spending more than 50 percent of household income on housing costs) could be at risk of becoming homeless in the event of loss of employment or income. Affordable housing, especially housing that is affordable to very low- and low-income households, is not typically produced by the market. The City must, through land use policies and development regulations, as well as incentives, facilitate and encourage the development of affordable housing and help mitigate the costs of development.

HOUSING PLAN

The Eastvale Housing Element is the result of a focused and comprehensive effort involving the City and the residents of Eastvale. The City's outreach program included numerous opportunities for public input. The City created a project website to serve as the information portal to this project and an online simulation tool was developed to give the public an opportunity to create a balanced housing plan. In addition, staff interviewed "community champions" to receive input on housing and held 15 community engagement events, including workshops with the Planning Commission and City Council.

With over 90% of the City built out, Eastvale has about 250 acres left of vacant and developable land. In the coming years, the City must make important land use decisions. While vacant land is scarce in Eastvale, most of the land is comprised of large parcels that offer opportunities for housing and other land uses that complement the existing community. In particular, the 160-acre Leal property has the potential to serve as the heartbeat of the City. Envisioned as Eastvale's downtown, development of this property will include 2,500 housing units along with a new civic center and significant amounts of commercial, office, and supported with public transit, open space, and other community gathering spaces. As we chart the course for Eastvale's future, the City is committed to responding effectively to these challenges and opportunities.

GOALS AND POLICIES

GOAL HE-1: Adequate Housing. Assist in the development of adequate housing to meet the city's fair share of the region's housing needs for all income segments of the population.

HE-1.1: Ensure there is a sufficient supply of land zoned to meet the housing needs identified in the Regional Housing Needs Assessment (RHNA).

HE-1.2: Maintain land use policies that allow residential growth consistent with the availability of adequate infrastructure and public services.

HE-1.3: Facilitate the development of all levels of affordable housing by providing, when feasible, appropriate State and Federal financial and regulatory incentives.

HE-1.4: To the extent resources are available, assist in the provision of homeownership assistance for lower- and moderate-income households.

GOAL HE-2: Housing Production Streamlining. Streamline government processes to increase the production of housing.

HE-2.1: Consistently monitor and review the effectiveness of the Housing Element programs and other City activities in addressing housing needs.

HE-2.2: Periodically review the City's regulations, ordinances, and development fees/exactions to ensure they do not unduly constrain the production, maintenance, and improvement of housing.

HE-2.3: Provide streamlined processing of residential projects to minimize time and costs in order to encourage housing production.

HE-2.4: Ensure that all City regulations related to housing are up-to-date and consistent with State housing legislation.

GOAL HE-3: Special Needs Groups. Address the housing needs of special population groups.

HE-3.1: Encourage housing developers to produce affordable units by providing development standard incentives for projects that include new affordable units available to special needs groups.

HE-3.2: Ensure the availability of suitable sites for the development of affordable housing to meet the needs of all household income levels, including special needs populations.

HE 3.3: Promote the development of special needs housing, such as housing for seniors; housing for persons with physical, developmental, or mental disabilities; and housing for extremely low-income persons.

HE-3.4: Support family housing that addresses resident needs for childcare, youth services, recreation opportunities, and access to transit.

HE-3.5: Participate regionally in addressing homelessness issues.

GOAL HE-4: Housing Conservation and Preservation. Conserve and improve the condition of City's existing housing stock.

HE-4.1: As the City's housing stock ages, pursue all available Federal and State funds to establish a housing rehabilitation program.

HE-4.2: Focus rehabilitation assistance and community preservation efforts in the Swan Lake and Chandler areas, which have a concentration of older and/or substandard residential structures.

HE-4.3: Preserve the affordability of Federal- and State-subsidized units at risk of conversion to market rate or other affordable housing resources.

GOAL HE-5: Equal Housing Opportunities. Promote equal housing opportunities for all persons regardless of race, age, sexual orientation, religion, or gender.

HE-5.1: Continue to support fair housing laws and organizations that provide fair housing information and enforcement.

HE-5.2: Support programs that offer low- and moderate-income households the opportunity for homeownership.

HE-5.3: Expand the availability of affordable and/or special needs housing through acquisition or conversion.

GOAL HE-6: Energy Conservation. Conserve energy in the development of new housing and the rehabilitation of existing housing.

HE-6.1: Encourage the use of energy conservation features in residential construction, rehabilitation, and remodeling.

GOAL HE-7: Housing Quality and Design. Provide high quality, well-designed living environments for Eastvale residents.

HE-7.1: Ensure housing quality and good design in all new housing development.

HE-7.2: Ensure adequate open space is available to current and future residents of all income levels.

HE-7.3: Proactively address future demand on infrastructure facilities to support existing and future housing needs

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MOBILITY & CIRCULATION

INTRODUCTION

The Mobility Element provides transportation options supporting the vision of a sustainable, healthy community. This chapter identifies a range of transportation options including walking, bicycling, micro-mobility, driving and riding transit. Eastvale2040 creates a network of integrated roads, trails, sidewalks, and bicycle facilities is essential to reducing emissions and improving air quality, creating safe and healthy streets, and connecting the community to activity centers and resources.

EASTVALE ESSENCE

The Mobility Element describes both the classifications of roadways as well as the typology of the roadway. Classifications are used to define the number of lanes needed to serve auto and transit vehicles along a corridor. Typologies are used to define the intended or desirable use of the corridor including the types of pedestrian and bicycle facilities to be provided, suggested speeds and traffic control as well as streetscape and landscape features. the type of development the community expects over time, and where the development should occur.

Trends in transportation also continue to evolve in both technology and mobility options. Micromobility options – any small, low-speed, human- or electric-powered transportation device, including bicycles, scooters, electric-assist bicycles, electric scooters (e-scooters), and other small, lightweight, wheeled conveyances – have changed the array of transportation options. The use of electric-assist bicycles has become a more viable transportation choice for many users and increased the range of travel when compared to a traditional, human-powered bicycle. Technology has expanded information sharing particularly focused on access to transit, transportation options, fare payment and other and trip planning.

Much of Eastvale's transportation is fully developed. The focus of the Mobility Element is to integrate infrastructure that meets the needs of traditional transportation choices – driving, transit, walking, bicycling.

REQUIREMENTS

The Mobility Element must plan for a "balanced, multimodal transportation network that meets the needs of all users of streets, roads, and highways for safe and convenient travel in a manner that is suitable to the rural, suburban, or urban context of the General Plan. It must also "correlate directly with the Land Use Element, but also has direct relationships with other elements". The provisions of the Mobility Element affect a community's physical, social, and economic environment, as well as its health. The passage of SB 1000 in 2016 requires local governments to address environmental justice considerations related to circulation--such as access to transportation systems, air quality related to transportation, delivery routes and transit options for nutritional food access, and promotion of physical activity.

BIG IDEAS

- Embrace Technology. Traffic signals, mobility options, and traveler information rely on technology to provide a high quality of service to the community. Reliable internet combined with integrated traffic management and information systems will improve traffic flow on the City's busiest arterials while also providing information to

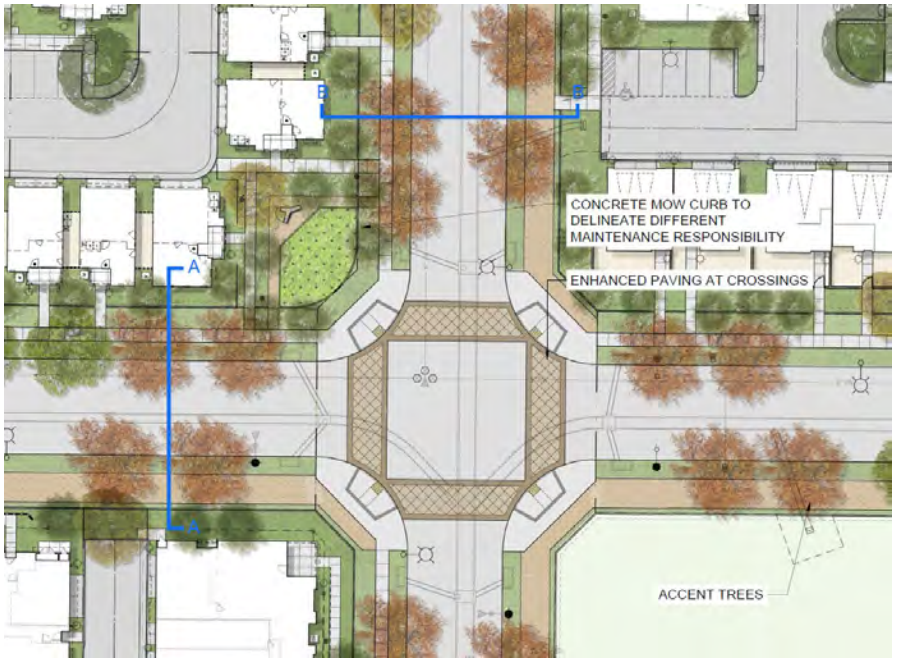
residents and visitors about transportation options that will help streamline the route selection and mode selection process. Technology has presented new travel modes such as e-assist bicycles, electric scooters, neighborhood electric vehicles, and ride share / ride hailing services. Vehicles can now receive more information than ever before, providing drivers real time information about their travel conditions. In the future autonomous and advanced connected vehicles may become part of the fabric of the transportation options. The City should maintain a forward-thinking approach to embracing and preparing for these new travel options and continue to build the transportation infrastructure that can accommodate change.

- Balance Transportation Options. Much of the City's roadway infrastructure is built out and provide for wide roads and high travel speeds. Roadway design standards used when the roads were constructed have evolved. New roads provide space for not only vehicular traffic, but also pedestrians, bicycles, transit and other modes. The opportunity in Eastvale 2040 is to focus on integrating facilities within the existing infrastructure that will accommodate a wider range of users, without reducing the capacity or flow of vehicular traffic. This can be accomplished by restriping roadways to add buffered bicycle lanes, improving sidewalks to include shade or places to sit, and constructing protected, multiuse trails within available right of way. This is also accomplished by coupling future

KEY POINTS

SIDEWALKS

Pedestrian facilities in Eastvale include sidewalks, curb ramps, crosswalks, trails, and one pedestrian bridge. While most sidewalks are located parallel to the travel way and immediately adjacent to the curb, meandering sidewalks with landscaped parkway have been constructed along arterial roadways providing a buffer between people walking and moving vehicles. Gaps in the sidewalk network typically occur along stretches of roadways in older areas of the City such as the Chandler Policy Area, or where development is planned but has not yet occurred.



A private company called Walk Score evaluates the walkability of cities throughout the united states. Eastvale has a walk score of 24 out of 100, characterizing it as a car-dependent City.

The walkability ranks are as follows:

- 0-24 (Car Dependent) - Almost all errands require a car
- 25-49 (Car Dependent) – Most errands require a car
- 50-69 (Somewhat Walkable) – Some errands can be accomplished on foot
- 70-89 (Very Walkable) – Most errands can be accomplished on foot
- 90-100 (Walker's Paradise) – Daily errands do not require a car

Although not considered walkable by this metric, Eastvale's sidewalk network is generally complete with minimal gaps and sidewalks are generally in good condition. The pedestrian network most commonly connects residents from neighborhoods to parks, schools, retail land uses, and transit stops, where present. Table 1 summarizes the City's future plans to expand upon the pedestrian network.

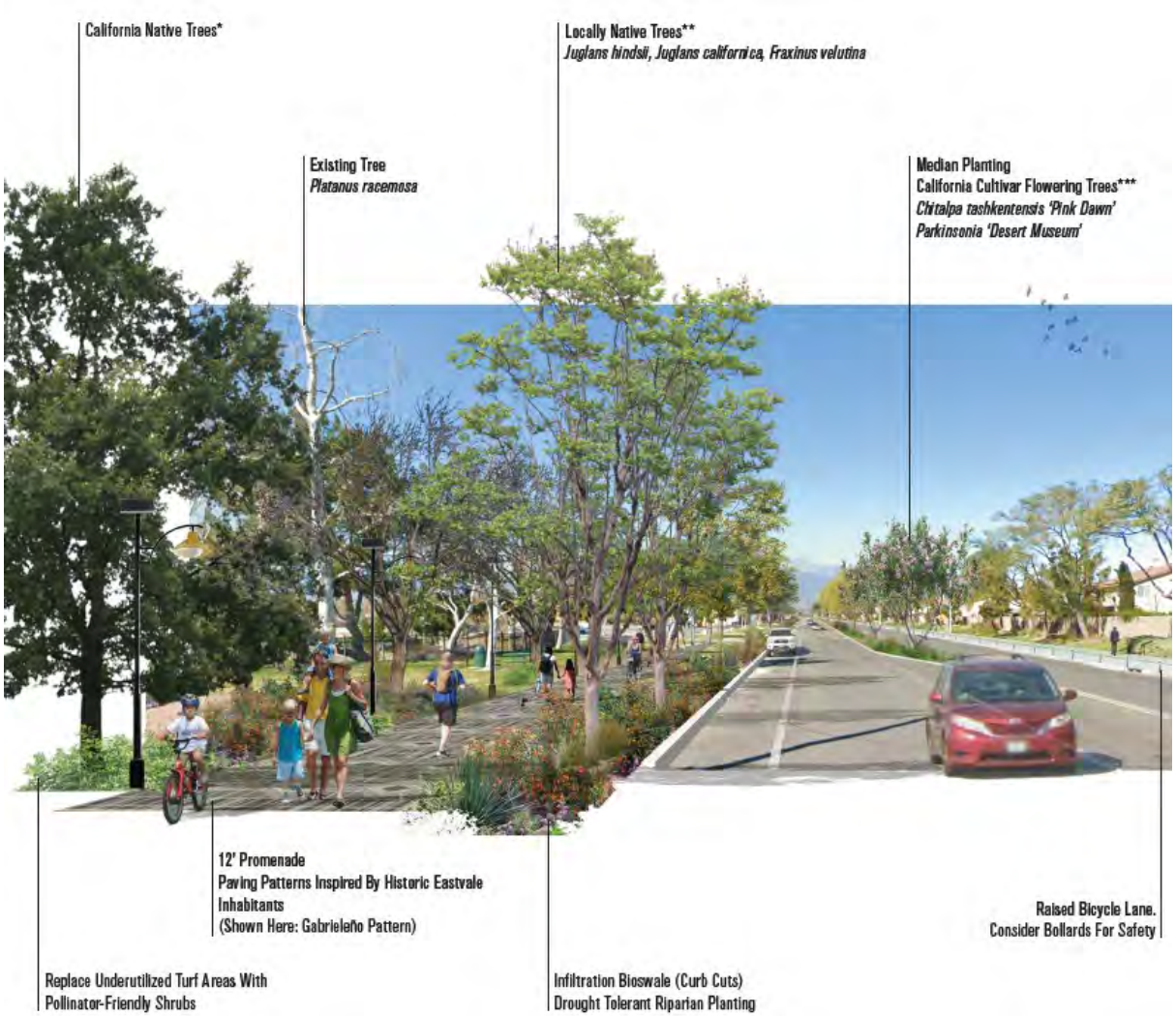


TABLE MC-1 PROPOSED PEDESTRIAN IMPROVEMENTS IN THE CITY OF EASTVALE

Facility Type	Project Name	Project Description
Multi-use Path(s)	Improvement of Bike Network Connectivity/ATP Trails	Design and construct approx. 5 miles of trails running along Scholar Way and Harrison Avenue, providing dedicated non-motorized space and connectivity from the north City to the Santa Ana River Trail.
Trail	Limonite Gap Closure	A trail to the south of Limonite Ave and west of the Cucamonga Creek will be constructed in combination with a pedestrian bridge over the creek.
Multi-use Path	Santa Ana River Trail	A multi-use path along the Santa Ana River connecting Riverside County with the Pacific Ocean. This project would add 3-miles of trail to the southern end of the City.
ADA Enhancements	ADA Transition Plan	Preparation and implementation of an ADA Self Evaluation Plan. Future year funding will support removal of ADA barriers. Annual program to provide improvements focusing on ADA accessibility, including curb ramps and sidewalks.

The UCLA School of Landscape Architecture envisions a connected City where residents can choose to drive, walk, or bike between shopping and homes, recreation, school, and entertainment. The road network will remain intact providing mobility options and improving connectivity. Walking or cycling along busy streets can be unpleasant, which can discourage walking. As shown in the adjacent graphic the existing road right of way can be improved to make walking along the streets more pleasant.

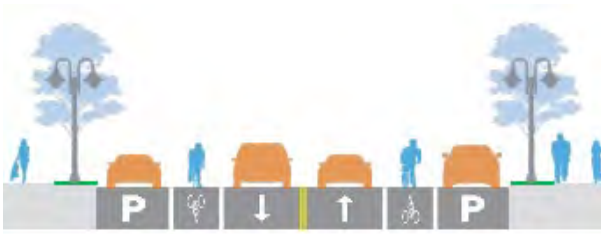
TRAILS

Trails are pathways that are typically separated from the roadway and can provide a shortcut for cyclists or walkers, and access to nature such as the Santa Ana River corridor, and are generally more pleasant to use because of shade, and lack of busy traffic. There are three miles of trail today, with another nine miles planned near Riverwalk Park.

BICYCLE FACILITIES

The Bicycle network in the City will be extended as part of Eastvale2040, taking advantage of the existing landscape areas along major roadways, and be integrated into development of the policy areas. The rising use of electric bikes coupled with the flat terrain and generally nice weather in the City could combine to provide affordable and fun mobility options to the automobile.

Currently, the City of Eastvale has 10 miles of bike lanes and approximately 3 miles of multi-use paths. Eastvale2040 supports expansion of the bike network as illustrated in Table 2.

Types of Bike Facilities	Conceptual Section
Bike Paths (Class I), or multi-use paths are paved facilities that are completely separated from streets. Bike paths are often located along waterways or railroad right of way with a limited number of crossings. This type of facility is often shared with pedestrians.	
Bike Lanes (Class II) are on-street facilities that are delineated by painted stripes and stencils. Bike lanes may include buffer striping to provide greater delineation between bicyclists and parked or moving vehicles.	
Bike Routes (Class III) are streets designated for bicycle travel and shared with motor vehicles. While the only required treatment is signage, streets are designated as bike routes because they have slower speed limits and may have more direct access than other roadways, making them suitable for sharing with motor vehicles. Bike routes often have shared lane bicycle markings (sharrows).	
Separated Bikeways (Class IV), also known as Cycle Tracks, provide space that is exclusively for bicyclists and separated from motor vehicles, parking, and sidewalks. Parked cars, curbs, bollards, or planter boxes provide physical separation between bicyclists and moving cars	

Facility Type	Project Name	Project Description
Bike Lane (Class II)	Limonite Gap Closure	The total length of the project is approx. 3,2000 LF. Project will include a 4-lane roadway with pedestrian and bicycle facilities.
Multi-use Path (Class I)	Improvement of Bike Network Connectivity/ATP Trails	Design and construct approx. 5 miles of trails running along Scholar Way and Harrison Avenue, providing dedicated non-motorized space and connectivity from the north City to the Santa Ana River Trail.
Multi-use Path (Class I)	Santa Ana River Trail	A multi-use path along the Santa Ana River connecting Riverside County with the Pacific Ocean. This project would add 3 miles of trail to the southern end of the City.
Unknown	Cajalco – San Bernardino County Line Route	A north-south regional facility connecting Eastvale, Riverside, and Jurupa Valley. It would start at the northernmost corner of the city and continue southeast beyond city limits.
Bike Lanes (Class II)	I-15 Corridor via Temescal Canyon Road	Starting at the south end of the City along River Rd, this project, if constructed, will help alleviate mobility barriers and better connect communities along Interstate 15.

PUBLIC TRANSPORTATION SYSTEMS

Bus Service

Fixed route bus service within Eastvale is provided by Riverside Transit Agency (RTA). Route 3 and 29 are the only two routes provided by RTA as shown in Figure MC-1, which runs north/south, connects Eastvale with the Cities of Corona and Norco, located south of Eastvale.

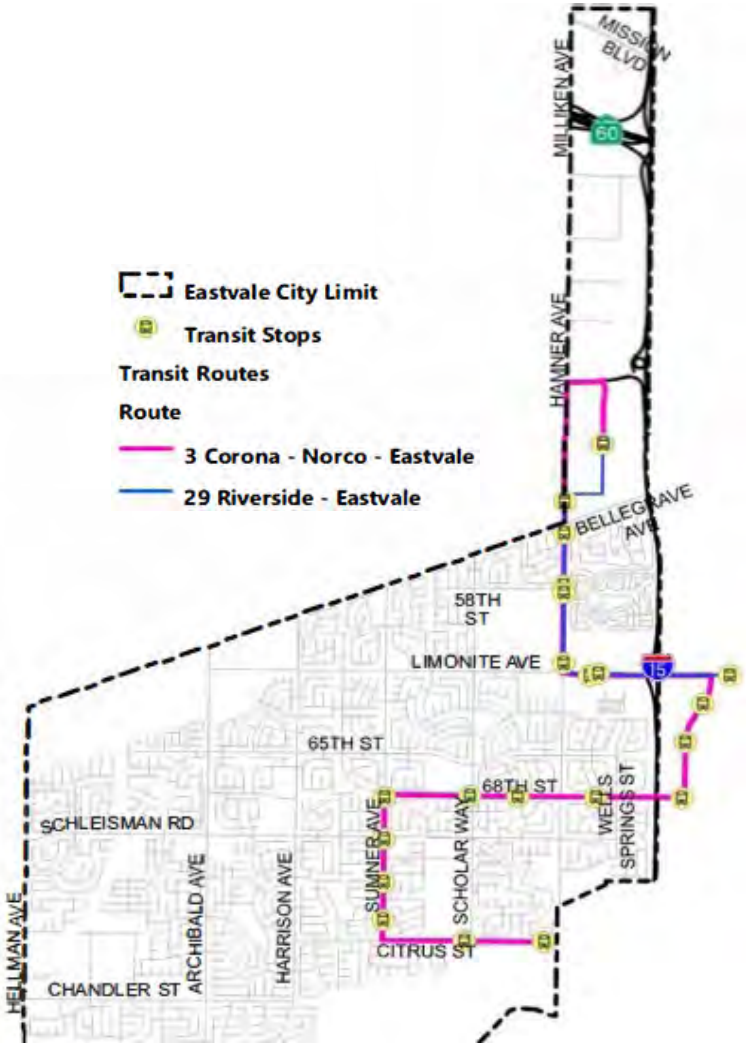
- **Route 3** runs along Hamner Avenue, 68th Street, Limonite Avenue, and terminates at the Amazon warehouse facility located in the north part of the City. Service is provided on weekdays and weekends with 1 ½ to 2-hour headways.
- **Route 29,** an east/west bus route, connects Eastvale with the Riverside Metrolink station, located east of the City. Route 29 primarily runs along Hamner Avenue and Limonite Avenue. Service is provided on weekdays and weekends with 1-hour headways.

Transit stops in Eastvale are commonly equipped with at least one bench and a trash can. The larger bus stops along Limonite Avenue provide multiple benches, trash cans, and bus shelters as shown in the images.

Limonite Avenue near Hammer Avenue

68th Street and Scholar Way

FIGURE MC-1 BUS SERVICE ROUTES



Local Aviation Facilities

Two airports serve Eastvale: Chino Airport and Ontario Airport. The City will continue to work with the regional airport commissions to ensure that development that occurs within the City is consistent with published regulations including Land Use Compatibility Plans. See Figure LU-1 in the Land Use Chapter for the extent of the Airport Influence area on land uses in the City.

ROADWAYS

Roadway Classifications & Level of Service

Roadway classifications define the number of lanes, roadway width, carrying capacity and provides general guidance for the design of the roadway. Roadway capacity is described as level of service (LOS) and ranked A though F representing the volume of traffic compared to the maximum theoretical carrying capacity of the roadway. Generally, the road ranking is used to balance the expense of building and maintaining more lanes and roads against the delay in traffic experienced by the motorist.

In general, LOS A through C represents higher speeds and less motorist delay, while D through F usually results in lower speeds and increased delay. Usually, the ranking is calculated for a peak hour of daily travel during the morning and afternoon. Policy MC-9 strives to maintain LOS C for commuter roadways but acknowledges that constraints on roadway expansion may result in different LOS.

Eastvale's roadways generally consist of local roads, secondary and major collectors, arterials and urban arterials as shown in Figure MC-2 and described in Tables 2 and 3.

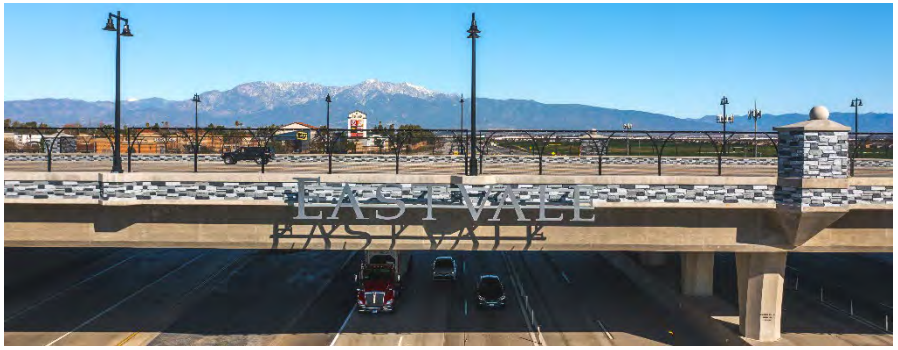


TABLE MC-2 ROADWAY CLASSIFICATIONS

Current Roadway Classifications	ROW Width (ft)	Travel Lanes	Median	Maximum Two-Way Daily Traffic Volume
Urban Arterial	128 – 152	4-6	Raised median with dedicated left-turn lanes.	4 lanes: 35,900 6 lanes: 53,900
Arterial	128 – 152	4	Raised median with dedicated left-turn lanes.	35,900
Major Collector	100 – 118	4	Striped median with dedicated left-turn lanes.	18,000
Secondary Collector	74 – 100	2-4	Striped median with dedicated left-turn lanes	13,000
Local	Min 56	2	No Striped or Raised Median	2,500

TABLE MC-3 DESCRIPTION OF ROADWAY CLASSIFICATIONS

Urban Arterials *have 4 to 6 travel lanes, a raised center median, dedicated turn lanes, and parking lanes on both sides. These roadways are typically used to provide access to employment and retail centers, although they may traverse residential areas. Hamner Avenue, Limonite Avenue, Schleisman Road, Archibald Avenue, and Cantu Galleano Ranch Road are currently classified as Urban Arterials within the City's limits.*

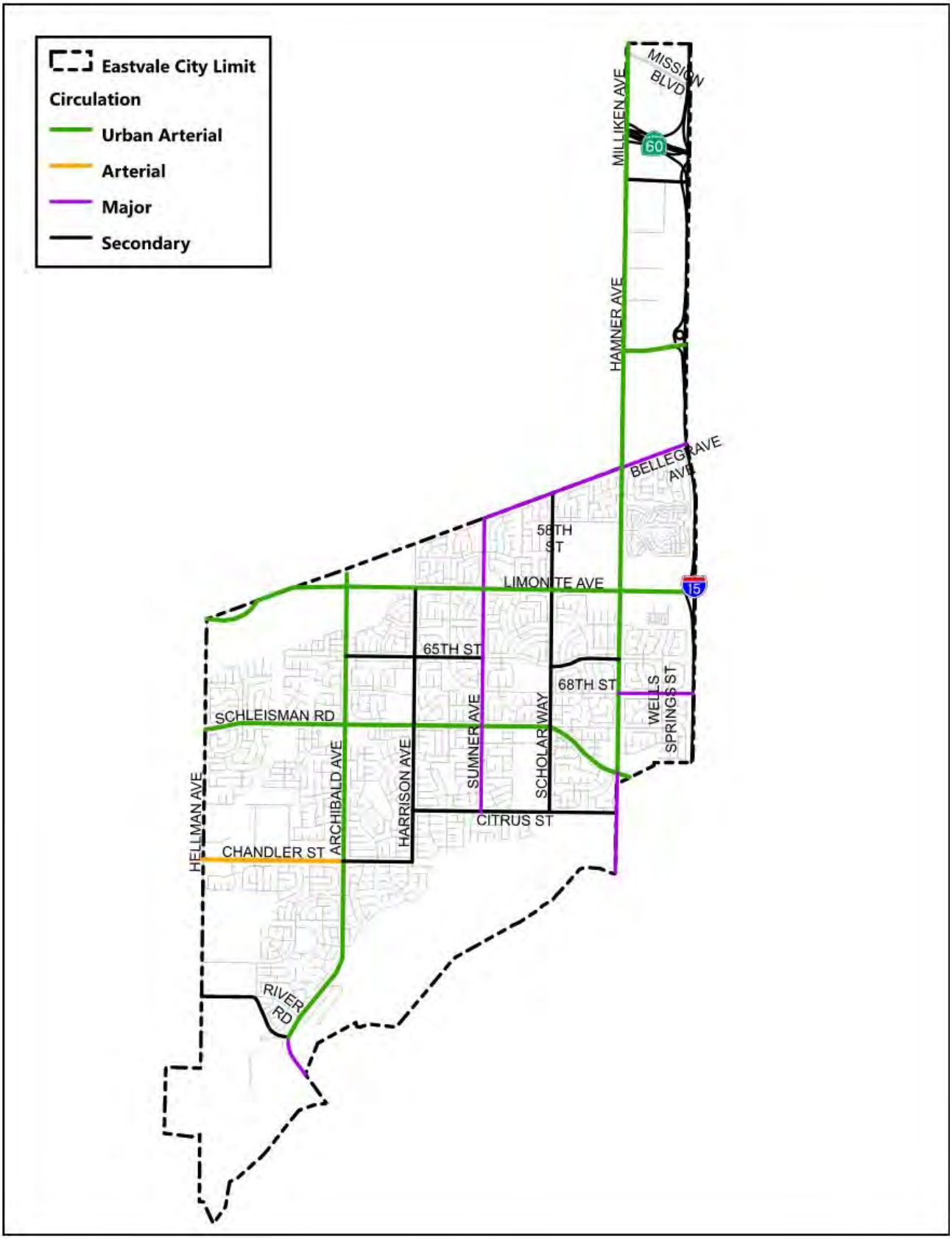
Arterials *have 4 travel lanes, a raised center median, dedicated turn lanes, and parking lanes on both sides. Similar to Urban Arterials, Arterials provide access to employment and retail centers, but also provide connections to residential areas. Chandler Street from Hellman Avenue to Archibald Street is currently classified as an arterial.*

Major Collectors *have 4 travel lanes, center striped median, and dedicated turn lanes. Major Collector roadways are designed to move traffic from local streets to arterial roadways. Sumner Avenue, 68th Street, and Bellegrave Avenue are examples of Major Collectors.*

Secondary Collectors *have 2 to 4 travel lanes, center striped median and dedicated turn lanes. Parking is generally allowed on Secondary Collectors and they are designed to move traffic from Local Streets to Major Collectors and Arterial streets. Harrison Avenue, Scholar Way, Hellman Avenue, Riverside Drive, 65th Street, Citrus Street, River Road, and Chandler Street from Archibald Street to Harrison Avenue are classified as Secondary Collectors.*

Local *roadways generally have only one travel lane in each direction with on-street parking and sidewalks. Local roadways are used to provide direct access to lower density to medium density residential areas.*

FIGURE MC-2 ROADWAY CLASSIFICATION DIAGRAM



VEHICLE MILES TRAVELED

Level of Service estimates the efficiency of a roadway but at the expense of all other modes of travel. Roadways are also expensive to construct and maintain and there are limits to how wide a road can be and still allow the development needed to pay for it. In 2013, the state eliminated LOS as a significance criterion for the California Environmental Quality Act (CEQA) and in 2018 replaced LOS with the concept of reducing vehicle miles traveled (VMT). The concept behind reducing VMT is that if compatible land uses are close to each other and connected with sidewalks and trails, people would have options to the car for moving about the City. The fewer cars the less air quality and greenhouse gas emissions generated which is a goal of the shift to VMT. In June 2020, the City Council adopted VMT thresholds and general guidance on how to evaluate VMT impacts for development projects and transportation projects within the City. The VMT levels change over time and will be revisited periodically to ensure they remain current.

TYPOLOGIES

Roadway classifications describe the number of lanes and daily capacity of a roadway but lack the detail as to how the roadway integrates with the local urban fabric or surrounding land use context. Typologies close that gap by describing the users of the roadway, the types of accommodations for those users and the overall character of the corridor. Table 4 shows the four roadway typologies defined in Eastvale2040, and describes mobility hubs: Commuter, Connector, Active, and Transit Corridor.

Commuter Corridors

Commuter Corridors are roadways that are intended to carry higher traffic volumes and generally experience higher travel speeds due to less friction from on-street parking and driveways along the corridor. Commuter Corridors prioritize the flow of vehicular traffic and provide basic facilities for pedestrians and bicycles. Commuter Corridors are essential in moving traffic and people to the regional transportation network. Figure MC-3 identifies the roadways with the Commuter Corridor typology.

Connector Corridors

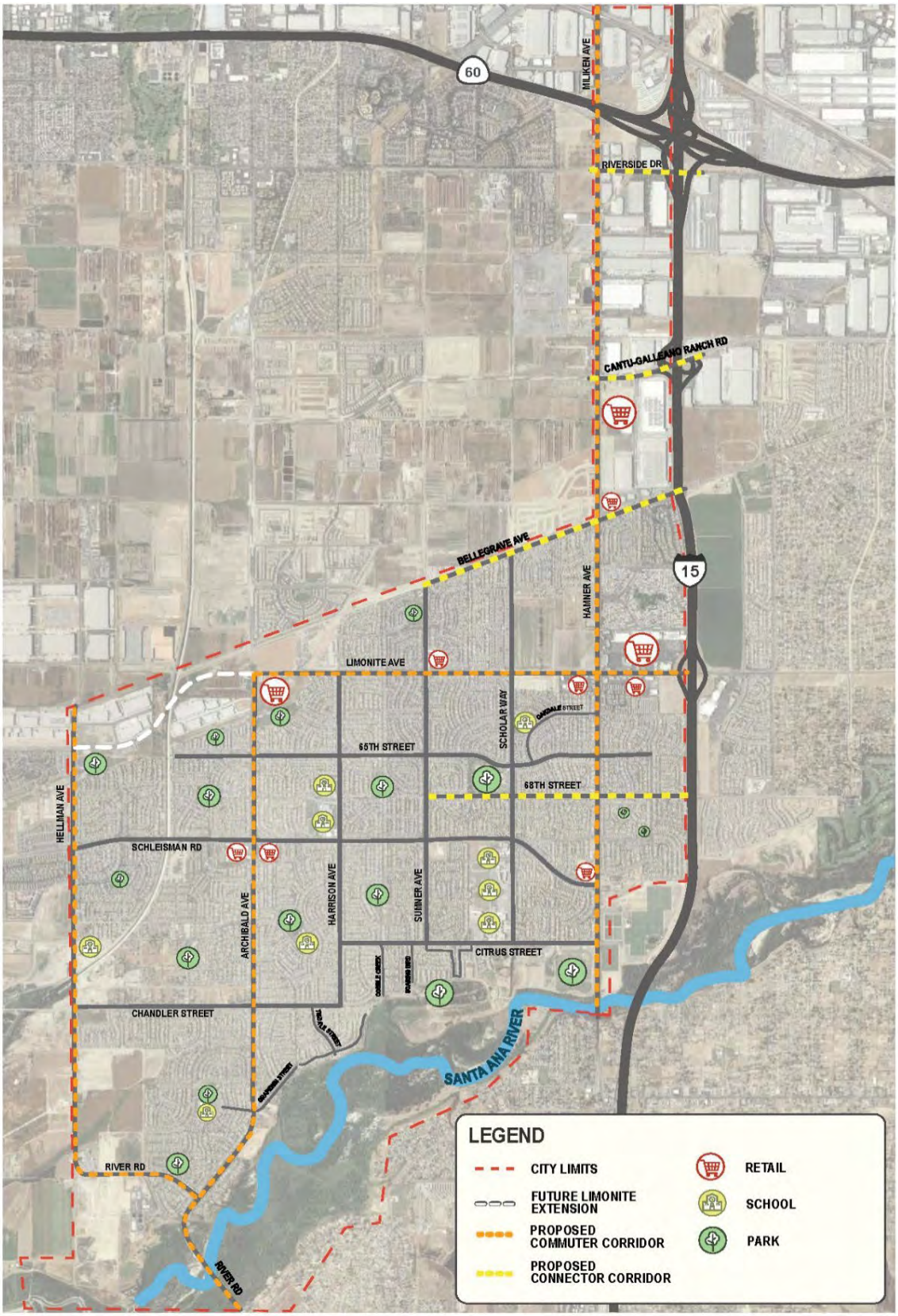
Connector Corridors serve as links in the roadway network and aim to connect vehicular traffic from local, residential streets to Commuter Corridors. They prioritize vehicular flow but are narrower than the Commuter Corridor and provide opportunities for enhanced bicycle and pedestrian facilities. Connector Corridors play a vital role in the community as they connect all modes from residential neighborhoods and retail centers with schools, parks, and other land uses.

Connector Corridors may contain roadway elements that calm traffic and enhance safety for bicyclists and pedestrians such as upgraded crosswalks, dedicated bike facilities with buffers, street trees, and traffic calming features. The center median along Connector Corridors could be either striped or raised with landscaping.

TABLE MC-4 DESCRIPTION OF ROADWAY TYPOLOGIES

Typology	Priority Modes	Discussion	Potential Features	Sample Image
Commuter Corridors		Focus on moving traffic into and out of the City. Carry higher volumes of traffic at higher travel speeds. Traffic signal technology allows signals to be coordinated to reduce the number of stops along the corridor.	✓ Intelligent Transportation Systems (ITS) ✓ Transportation System Management (TSM) ✓ Traffic Signal Upgrades	
Connector Corridors		Focus on connecting neighborhoods and activity centers to the Commuter Corridors. Carry moderate levels of traffic at speeds compatible with a mix of users. Pedestrians and bicycles should be expected as they connect people to the Active Corridors in the City.	✓ Traffic control ✓ Streetscape & Public Art ✓ Sidewalks ✓ Bicycle Lanes ✓ Traffic Calming	
Active Corridors		Focus on connecting people to activity centers in the community. Lower volume, lower speed streets that encourage walking and bicycling.	✓ Landscape & Shade Structures ✓ Streetscape & Public Art ✓ Pedestrian scale lighting ✓ Enhanced Sidewalks with Buffers ✓ Multiuse Trails ✓ Buffered or Separated Bicycle Facilities ✓ Traffic Calming	
Transit Corridors		Focus on providing high quality transit in the City. Should be located in areas with high density housing and retail. Signal system should be improved to provide efficient transit operations. Provide space for future transit improvements within public right of way. In addition, these corridors should provide connections to future Mobility Hubs.	✓ Enhanced Bus Stop Amenities ✓ Transit Signal Priority ✓ Dedicated Bus Lanes ✓ Potential Commuter Rail or Bus Rapid Transit ✓ Locate Near High Density Housing and Commercial Areas	
Mobility Hubs		Provide a concentration of travel choices such as shared mobility (bikes, cars, scooters), transit passes, ride hailing facilities and other features.	✓ Neighborhood Shuttle ✓ Shared Mobility Resources / Kiosk ✓ NEV/EV Charging Stations ✓ Package Lockers ✓ Passenger Pick Up/Drop Off	

FIGURE MC-3 COMMUTER CORRIDOR



Commuter Corridors

Commuter Corridors are roadways that are intended to carry higher traffic volumes and generally experience higher travel speeds due to less friction from on-street parking and driveways along the corridor. Commuter Corridors prioritize the flow of vehicular traffic and provide basic facilities for pedestrians and bicycles. Commuter Corridors are essential in moving traffic and people to the regional transportation network. Figure MC-4 identifies the roadways with the Commuter Corridor typology.

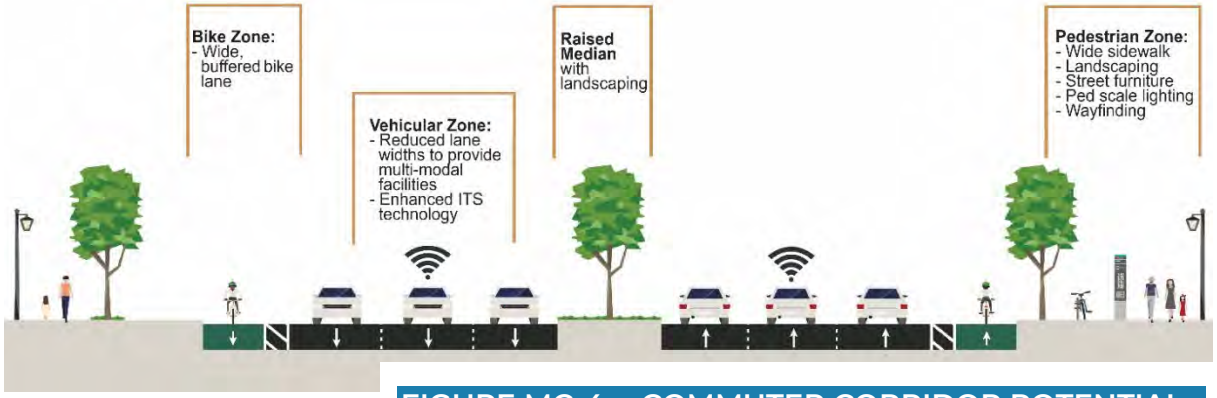


FIGURE MC-4 COMMUTER CORRIDOR POTENTIAL

Connector Corridors

Connector Corridors serve as links in the roadway network to connect vehicular traffic from local, residential streets to Commuter Corridors. They prioritize vehicular flow but are narrower than the Commuter Corridor and provide opportunities for enhanced bicycle and pedestrian facilities. Connector Corridors may contain roadway elements that calm traffic and enhance safety for bicyclists and pedestrians such as upgraded crosswalks, dedicated bike facilities with buffers, street trees, and traffic calming features, as shown in Figure MC-5.

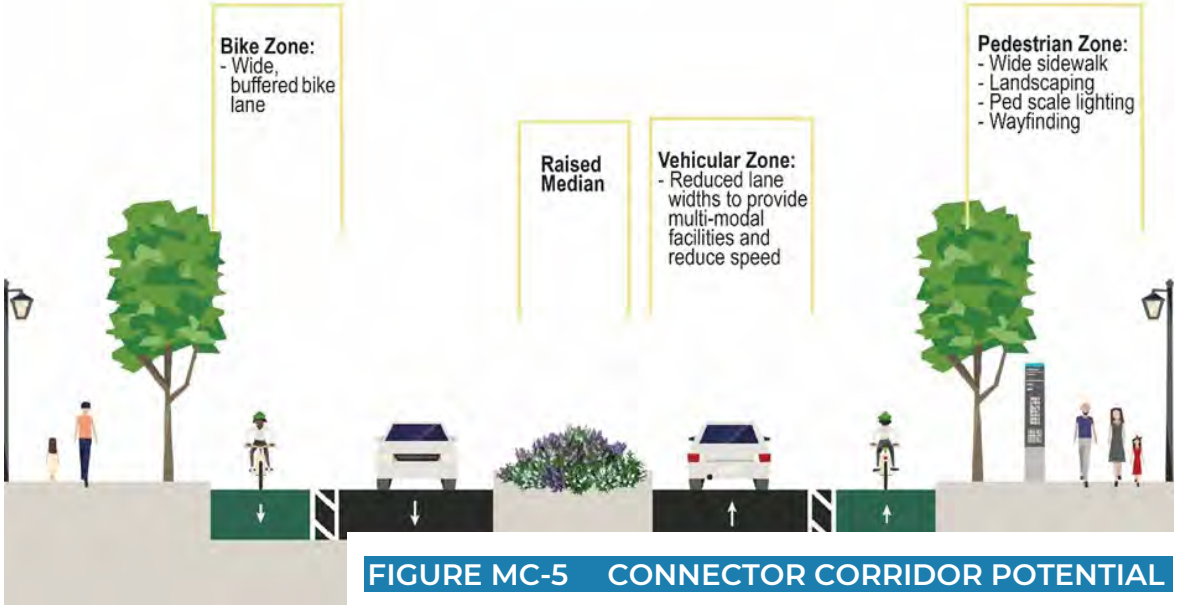


FIGURE MC-5 CONNECTOR CORRIDOR POTENTIAL

Active Corridors

Active corridors are roadways that connect residents with key community destinations such as parks, open space, schools, local retail, and civic centers. Along active corridors, walking and biking should be comfortable, providing a physical separation between the roadway and bicycle facility and/or sidewalks and trails. Active corridors provide enhanced bike and pedestrian-friendly features, such as protected bike lanes, bike parking, conflict zone bike lane striping, wayfinding, street furniture, shade, enhanced crosswalks, and/or wider sidewalks.

Roadways identified as Active Corridors as shown in Figures MC-6A, MC-6B, and MC-7. Physical improvements will be needed along most of these roadways to reach the desired walkability and bicycle comfort. Improvements can range from simple restriping to full reconfiguration of the roadway.

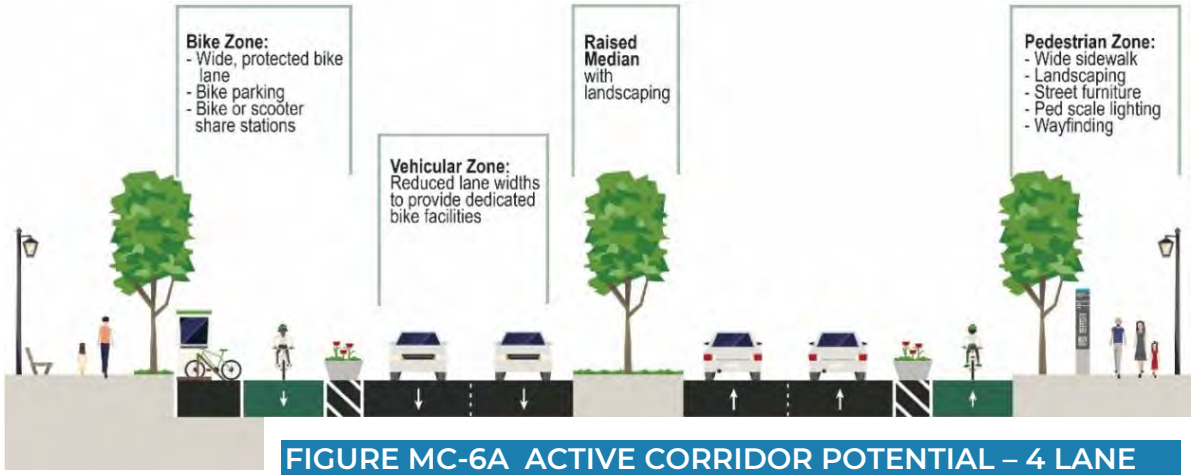


FIGURE MC-6A ACTIVE CORRIDOR POTENTIAL – 4 LANE

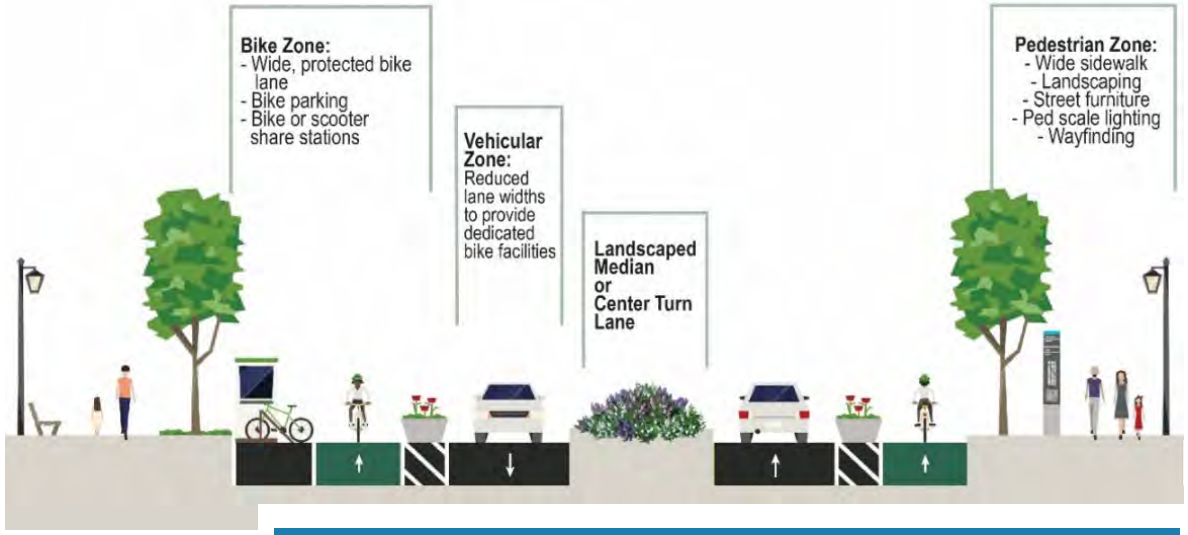
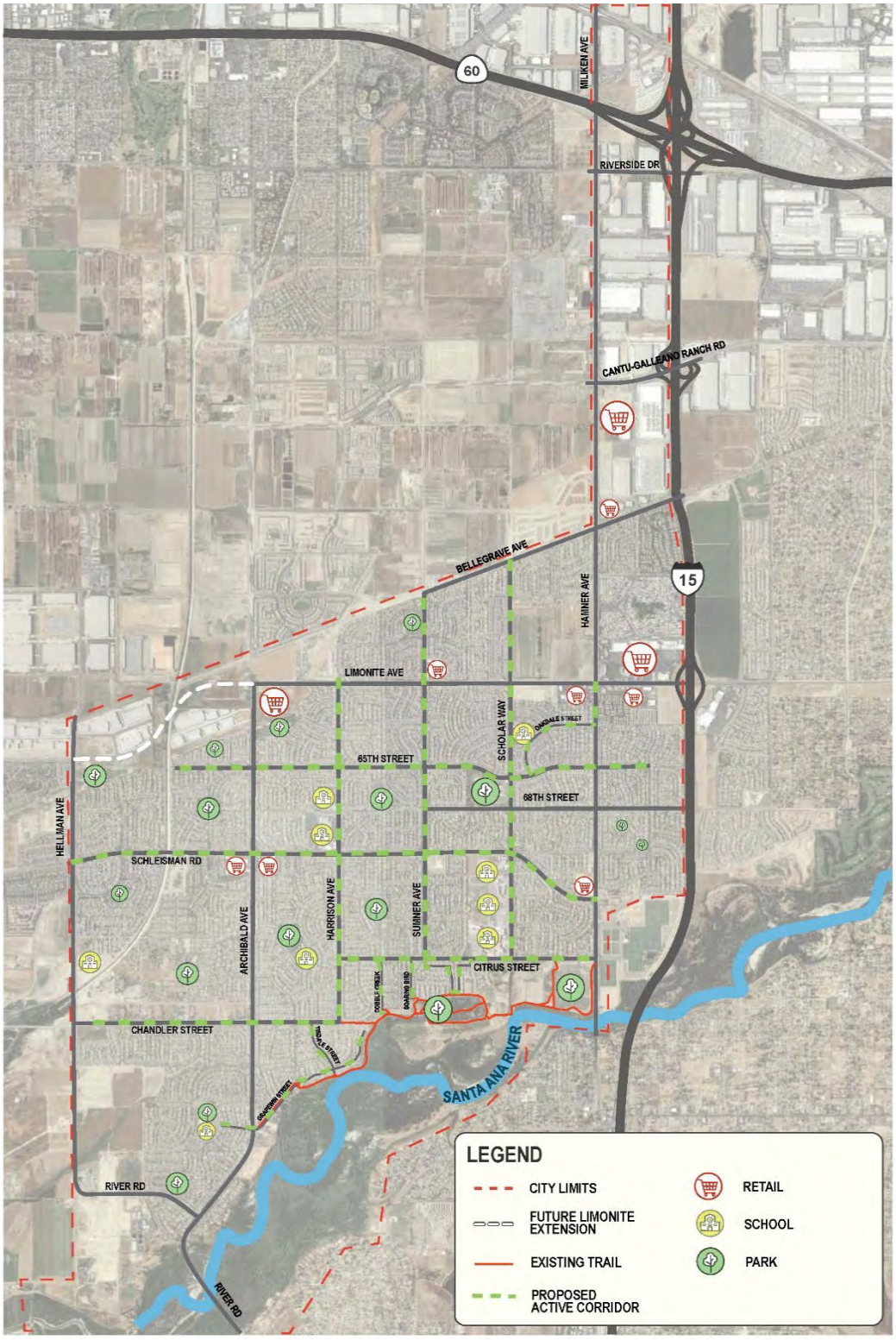


FIGURE MC-6B ACTIVE CORRIDOR POTENTIAL – 2 LANE

FIGURE MC-7 ACTIVE CORRIDORS



Transit Corridor

Transit Corridors are streets where transit currently exists and/or roadways that connect to regional transit facilities such as Metro and Metrolink stations and airports. Transit Corridors will provide residents with quality local and regional transit networks. The updated roadways may contain bus rapid transit, dedicated transit lanes, transit stop shelters, reduced transit headways, connection to Active Corridors, and accommodate bicyclists and pedestrians as shown in Figure MC-8.

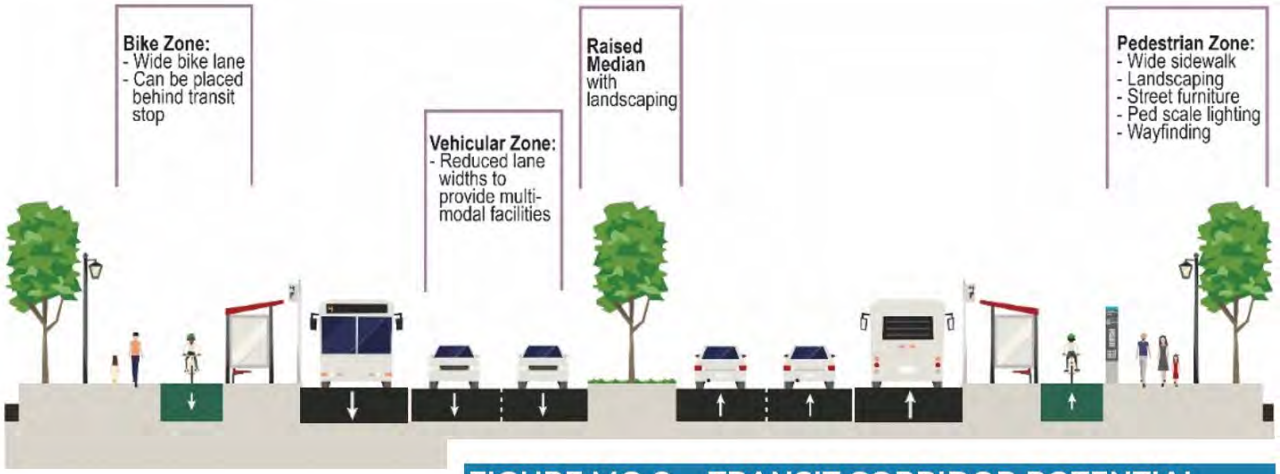


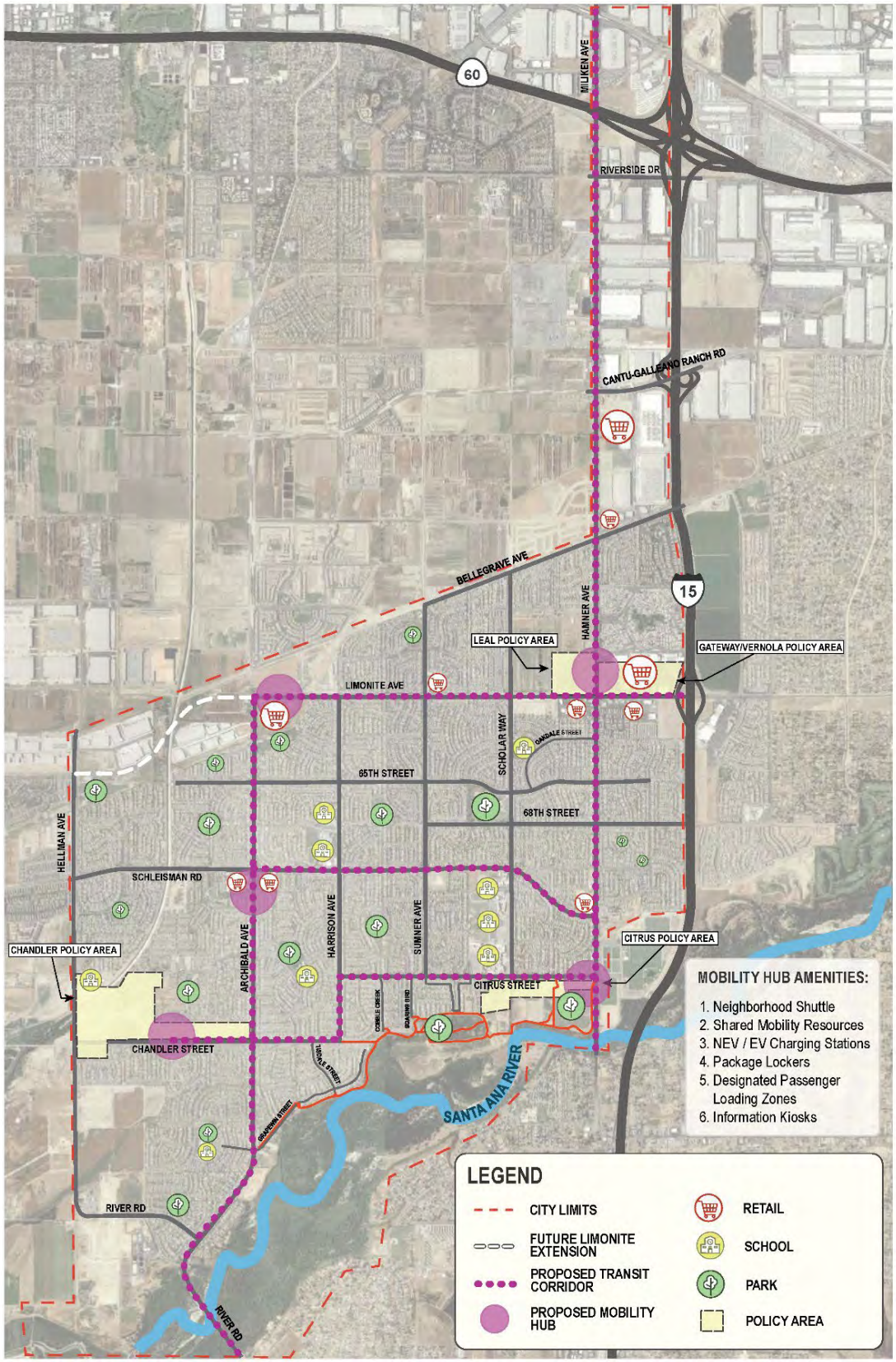
FIGURE MC-8 TRANSIT CORRIDOR POTENTIAL

Roadways that have been identified as Transit Corridors are shown in Figure MC-9. While transit does not exist in much of the City yet, the design and configuration of the arterial roadways allows for future expansion of transit as it becomes available.

Mobility Hub

Mobility Hubs are where different modes of transportation such as walking, bicycling, transit and shared mobility options come together in one place to help people transition from one mode to another. They may include enhanced waiting areas, complimentary WiFi, real-time travel information, pedestrian lighting, shade trees, bike parking, service facilities for shared cars, scooters, and electric vehicles. A Mobility Hub includes not just the transit station can include services and destinations within a 5-minute walk, bike, or drive to/from high-frequency transit.

FIGURE MC-9 TRANSIT CORRIDORS AND MOBILITY HUBS



FREIGHT RAIL

Only a small portion of the northern area of the city has a rail line; however, the area is largely industrial, and additional spur-lines could be constructed if the need arises. In addition to providing rail service, railroad right-of-way is often used for other utilities such as oil and gas pipelines and fiber optic and power lines.

MAJOR UTILITY CORRIDORS

Roadway corridors also provide pathways for utilities such as water and power that are essential to development. Roadway locations and typologies ensure adequate right-of-way or easements for existing and planned utilities. Often the utility easements are owned by service providers and require close coordination to ensure that competing construction demands do not unnecessarily block or limit use of the roadway. The City also coordinates with service providers to ensure that cutting into the asphalt is minimized to prolong the quality of the road surface. Policies showing City coordination with utility providers are included in the Partnerships and Collaboration Chapter of Eastvale2040.

FUTURE PLANNING EFFORTS

The reach of non-auto travel has been greatly extended with the accessibility to e-assist bicycles, e-scooters, NEV's, and other micro-mobility options. Future services to support a range of travel options will be integrated into the land use and transportation planning of development. Including mobility hubs and supportive infrastructure such as charging stations. The City will continue to partner with SCAG and WRCOG in developing Smart City infrastructure, goals and policies that will improve access to and efficiency of the overall regional transportation system.

GOALS AND POLICIES

GOAL CM-1: A balance of growth that maintains and enhances the City's fiscal viability, economic diversity, and environmental integrity and meets the needs of Eastvale's residents.

CM-1.1: Align right-of-way dedications with existing dedications along adjacent parcels and maintain widths consistent with the ultimate design standard of the road, including required turning lanes and utilities.

- **ACTION C-3.1:** Ensure dedications are made during the land division and/or development process for all transportation right-of-way, including easements or areas needed outside the travel way. This includes areas needed for slope stability or drainage and drainage structures.

MC-1.2: The cumulative and indirect transportation impacts associated with developments shall be measured based on vehicle miles traveled (VMT). Impacts of development may be mitigated through implementation of transportation demand management strategies, construction of multimodal infrastructure or payment of impact mitigation fees, if fee program is available.

MC-1.3: Transportation studies prepared for development entitlements (tracks, plot plans, public use permits, conditional use permits, etc.) shall identify project related transportation impacts and determine the "significance" of such impacts in compliance with Senate Bill 743 and CEQA which utilizes vehicle

miles traveled (VMT) as the metric for determining significance.

GOAL C-2 Provide a multimodal, integrated transportation system with sufficient flexibility in design and operation to respond to changes in mobility needs, concentrations of population and employment activities, and technology over time.

MC-2.1: Following the principles of complete streets, maximize comfort, visibility, and access for pedestrians, and encourage the removal of barriers (walls, easements, and fences) for safe and convenient movement of pedestrians. Ensure that the entire travel way is included in the design from building façade to building façade.

- **ACTION C-17.1:** Review all existing roadways for compliance with roadway typologies and the key features that align with the specific typology.
- **ACTION C-17.2:** Create a plan for implementation of Complete Streets throughout the City. The plan should include specific steps for implementing the policy in ways that will make a measurable impact on what gets constructed and where.

MC-2.2: Pedestrian facilities shall be designed based on the roadway typology and provide features that enhance the traveling experience including shade structures or landscaping and places to rest along key routes. When considering new facilities or developments, access shall be provided from developments to existing and future transit routes, park and ride lots, terminal facilities, etc.

MC-2.3: All development located along planned trails shall provide access to the trails system. All developments shall allow for trails to pass their boundaries and shall provide connections to existing and proposed trails in Eastvale and adjacent jurisdictions.

- ACTION C-18.1: Determine if trails, paths, and pedestrian access can be extended into existing neighborhoods to provide for connectivity to transit and pedestrian corridors.
- ACTION C-18.2: Develop a multipurpose recreational trail network with support facilities which provide a linkage with regional facilities.

MC-2.4: Collaborate with schools to ensure that schoolchildren have safe and adequate transportation routes available, such as pedestrian or bike paths, or local bus service. Identify potential off-site drop off / pick up locations to ease traffic congestion near schools. Couple this location with enhanced walking and bicycling features to improve student access to schools.

MC-2.5: Require, where feasible, the construction of overpasses or under-crossings where trails intersect urban arterials or freeways.

MC-2.6: Seek to develop a comprehensive bike and trail plan that would connect existing neighborhoods, schools, and commercial and employment centers.

MC-2.7: Evaluate all roadways for compliance with identified roadway typologies to determine where roadways can be reconfigured or modified within the existing right-of-way to provide for pedestrian facilities, trails, bike lanes, and additional landscaping in medians and parkways. Lane widths shall be no less than 11 feet to maintain adequate traffic flow along roadways.

GOAL C-3: Design for and encourage integration of facilities that provide access for a wide range of users and mode types such as transit, pedestrians, bicyclists, and autos.

MC-3.1: Roadways within the City shall be designed or re-designed to provide the multimodal features that align with the roadway typology.

MC-3.2: Limit access points, parking, turn lanes, and intersections of streets and highways based upon the road's classification and function. Access points must be located a sufficient distance away from major intersections to allow for safe, efficient operation.

MC-3.3: Encourage the installation and use of specialty lanes (i.e. transit only lane or smart lanes) on regional roadways.

MC-3.4: Private developers are responsible for the construction of new streets and providing access to highways for developing commercial, industrial, and residential areas.

MC-3.5: Examine the use of public access utility easements for trail linkages to the regional trails system and/or other open space areas.

MC-3.6: Work with property owners to address concerns about privacy, liability, security, and maintenance associated with abutting trails and paths.

GOAL C-4: Incorporate sustainable design features into roadway design features such as stormwater capture (retain, percolate and discharge stormwater), smart signal technology (synchronized, smart signals, street maintenance), and improved traveler information systems and technology.

MC-4.1: Construct and improve traffic signals at appropriate intersections. Traffic signals should be spaced and operated as part of coordinated systems to optimize traffic operation.

MC-4.2: Continue to support the integration of Intelligent Transportation Systems (ITS) consistent with the principles and recommendations referenced in the Inland Empire ITS Strategic Plan as the transportation system is implemented.

MC-4.3: Provide all roadways located within identified flood areas with adequate flood control measures.

MC-4.4: Regularly monitor and evaluate new vehicle technologies to support future mobility options including autonomous and connected vehicles, e-assist vehicles and scooters, micro-mobility, autonomous shuttles, neighborhood electric vehicles (NEV) and other options.

MC-4.5: Encourage the use of e-assist and NEV by supporting the use of EV's by providing mobility hubs and electric charging stations throughout the City. In addition, design roadways and facilities to accommodate a range of e-assist or NEV's.

GOAL C-5: Coordinate with local, regional, state, and federal agencies to establish, implement, and maintain effective transportation and infrastructure systems.

MC-5.1: Support the Riverside County Transportation Commission (RCTC) on the development of the Short- and Long-Range Transit Plans.

MC-5.2: Coordinate with Caltrans to ensure efficient traffic flows between interchanges and local roadways including signal timing and operations.

MC-5.3: Coordinate with Caltrans, the Riverside County Transportation Commission, transit agencies, and other responsible agencies to identify the need for additional park-and-ride facilities along major commuter travel corridors and at major activity centers.

MC-5.4: The City will explore the feasibility of transportation fee programs to maintain acceptable operations and fund future improvements.

MC-5.5: Support continued operation of the regional freight rail system, which offers safe, convenient, and economical transport of commodities.

- **ACTION C-30.1:** Evaluate the circulation system and determine if a truck route and parking ordinance is appropriate.

MC-5.6: Support programs developed by transit agencies/operators to provide paratransit service, micromobility, ride-hailing or other services.

MC-5.7: Incorporate the potential for public transit service in the design of developments that are identified as major trip attractions (i.e., retail and employment centers). Integrate mobility hubs at key locations throughout the City to provide first/last mile connections to public transit service.

MC-5.8: Design the physical layout of Transit Corridors to provide enhanced transit features, including turnouts and shelters. Encourage transit related uses, high density residential housing, and commercial uses along the Transit Corridors to maximize potential for transit trips.

MC-5.9: Work with regional partners to expand access to public transit throughout the Inland Empire and keep rights of way along arterial roadways for future expansion of public transit such as bus rapid transit lanes or light rail.

Mobility is important at all levels from goods movement to ensuring that employees can get to their jobs. Eastvale2040 recognizes that planning for changes in mobility is essential for residents.

NOISE & VIBRATION

INTRODUCTION

The Noise Element helps with planning the location of planned noise- sensitive land uses and considers noise exposure when placing facilities that generate significant volumes of noise. For purposes of this Noise Element, "noise-sensitive areas and uses" include residential areas, parks, schools, places of worship, hospitals, and long-term care facilities. It is also important that noise generating uses from industry and commerce be protected from incursion by noise sensitive uses.

Specific topics addressed in the Noise Element include:

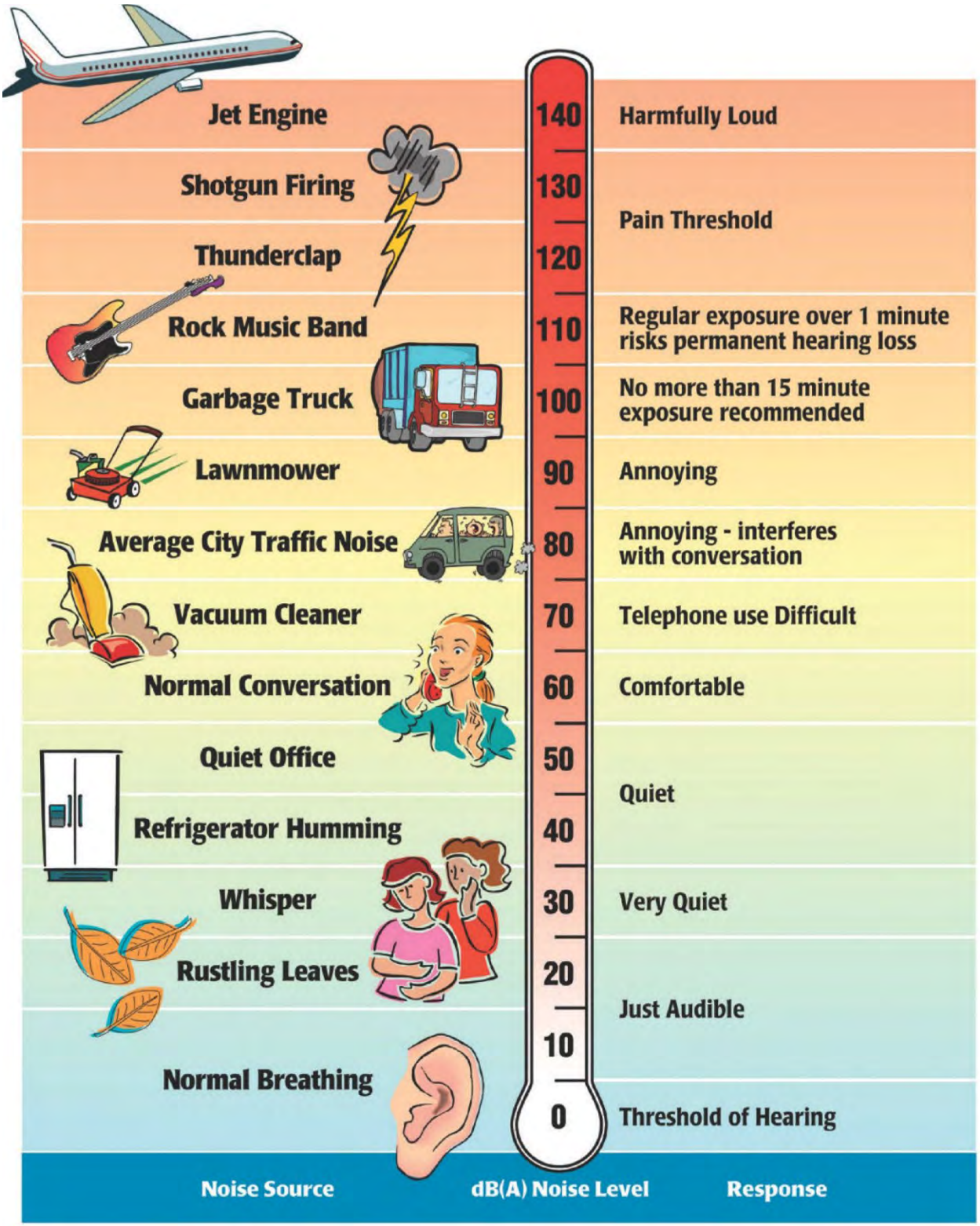
- Noise Environment and Measurements
- Transportation Noise Sources
- Fixed Noise Sources
- Vibration

EASTVALE ESSENCE

The simplest definition of noise is "unwanted sound." This definition is necessarily subjective as people react differently to sound, and even react differently to the same sound. However it is perceived, noise is a quality-of-life issue for residents as noise at the wrong time can have adverse effects on people, by interfering with sleep and communication, causing physiological and psychological stress, and, in extreme circumstances, resulting in health impacts. Too much noise decreases the enjoyment of the home and can interrupt recreational activities. Examples of various sound levels in different environments are illustrated on Figure N-1, Sound Levels and Human Response.

Noise can also indicate a vibrant community or activity, such as a park or playground. Commercial activity can also generate pleasant noise, such as outdoor dining, concert venues, and markets. The noise element helps identify areas where outside noise is both acceptable and expected, and where it is not.

FIGURE N-1 SOUND LEVELS AND HUMAN RESPONSE



Source:

Melville C. Branch and R. Dale Beland, *Outdoor Noise in the Metropolitan Environment*, 1970.

REQUIREMENTS

The General Plan must include a Noise Element that identifies and appraises noise in the community. The Noise Element is required to recognize noise levels for sources such as highways, major roads, rail, aviation, commercial activity, and industry and protect sensitive receptors from such sources.

BIG IDEAS

- Contain noise above certain levels, and during certain times of the day, within property boundaries. While this may not always be possible, the primary effort will be to protect sensitive receptors.
- Recognize that there may be places and times when noise is acceptable. Acceptable noise might be for construction, manufacturing, concert venues, and outdoor events. Both design and regulation must work together to protect the noisy use while minimizing noise impacts on sensitive receptors.
- Provide design options for noise reduction along roadways that still provide opportunities for pedestrian and bicycle connections.

KEY POINTS

Ambient noise, which is the total noise in an environment, is usually measured with an A-weighted decibel scale (dBA). All sound levels referred to in this element are A-weighted, which de-emphasizes the very-low and very-high frequencies of sound in a manner like the human ear. A-weighting is a better measurement of human annoyance and health effects.

However, the decibel scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Several rating scales have been developed to analyze the adverse effect of community noise on people. Because environmental noise fluctuates over time, these scales consider that the effect of noise on people is largely dependent on the total acoustical energy content of the noise, as well as the time of day when the noise occurs. The equivalent noise level (L_{eq}) is a measure of ambient noise, while the day/night average noise level (L_{dn}) and community noise equivalent level (CNEL) are measures of community noise. Each is applicable to this analysis and defined in Table N-1, Definitions of Acoustical Terms.

TABLE N-1 DEFINITIONS OF ACOUSTICAL TERMS

Term	Definitions
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micropascals (or 20 micronewtons per square meter), where 1 pascal is the pressure resulting from a force of 1 newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micropascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, L_{eq}	The average acoustic energy content of noise for a stated period of time. Thus, the L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night. For example, $L_{eq(1)}$ is the equivalent noise level over a one-hour period and $L_{eq(8)}$ corresponds to an eight-hour period.
L_{max}, L_{min}	The maximum and minimum A-weighted noise level during the measurement period.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Day/Night Noise Level, L_{dn} or DNL	A 24-hour average L_{eq} with a 10 dBA "weighting" added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the nighttime. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.4 dBA L_{dn}.
Community Noise Equivalent Level, CNEL	A 24-hour average L_{eq} with a 5 dBA "weighting" during the hours of 7:00 p.m. to 10:00 p.m. and a 10 dBA "weighting" added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the evening and nighttime, respectively. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.7 dBA CNEL.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.

TABLE N-1 DEFINITIONS OF ACOUSTICAL TERMS

Term	Definitions
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends on its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Source: Cyril M. Harris, Handbook of Noise Control, 1979.

The A-weighted decibel sound level scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends on the distance between the receptor and the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dBA.

Ambient noise monitoring was conducted within the Plan Area by Michael Baker International in November 2022 to determine a baseline noise level at different environments (Table N-2, Noise Measurements and Figure N-2, Noise Measurement Locations). The 14 noise measurement sites were representative of different types of existing noise exposure settings throughout Eastvale. Short-term measurements were taken from 9:00 a.m. to 1:25 p.m. for a duration of 10 minutes at each site.

TABLE N-2 NOISE MEASUREMENTS

Site No.	Date	Start Time	Duration	Location	Leq (dBA)
NM-1	11/16/2022	9:00 a.m.	10 min.	Southeast Corner of Sharp St. and Riverside Dr.	68.9
NM-2	11/16/2022	9:23 a.m.	10 min.	Northeast Corner of Jamestown Ave. and 58th St.	63.2
NM-3	11/17/2022	9:41 a.m.	10 min.	Northwest Corner of Sendero Ave. and Limonite Ave.	70.4
NM-4	11/17/2022	10:00 a.m.	10 min.	Northwest Corner of Sendero Ave. and Limonite Ave.	69.7
NM-5	11/17/2022	10:19 a.m.	10 min.	Northeast Corner of Hamner Ave. & Walgreens driveway	64.3
NM-6	11/17/2022	10:42 a.m.	10 min.	Sidewalk in front of 6702 Ground Ivy Ct. residence	47.9
NM-7	11/17/2022	11:01 a.m.	10 min.	Northwest corner of Archibald Ave. and Schleisman Rd.	72.6
NM-8	11/17/2022	11:24 a.m.	10 min.	Northwest corner of Sumner Ave. and Schleisman Rd.	65.6
NM-9	11/17/2022	11:45 a.m.	10 min.	Northwest corner of Sumner Ave. and Schleisman Rd.	66.6
NM-10	11/17/2022	12:06 p.m.	10 min.	Southeast corner of Harrison Ave. and Citrus Street	65.4
NM-11	11/17/2022	12:25 p.m.	10 min.	Sidewalk in front of 13108 Bertz Way	63.9
NM-12	11/17/2022	12:46 p.m.	10 min.	Southeast Corner of Selby Ave. and Redwood Valley Rd.	57.8
NM-13	11/17/2022	1:05 p.m.	10 min.	Sidewalk in front of 8297 Fall Creek Dr. residence	52.0
NM-14	11/17/2022	1:25 p.m.	10 min.	Northwest corner of Archibald Ave. and River Rd.	67.1

Notes: Leq = equivalent sound level; dBA = a-weighted decibel.

Source: Michael Baker International, November 2022.

Meteorological conditions were sunny, cool temperatures (64 degrees Fahrenheit to 66 degrees Fahrenheit), and with medium wind speeds (3 to 18 miles per hour). Measured noise levels during the daytime measurements ranged from 47.9 to 72.6 dBA L_{eq}. Noise monitoring equipment used for the ambient noise survey consisted of a Brüel & Kjær Hand-held Analyzer Type 2250 equipped with a Type 4189 pre-polarized microphone. The monitoring equipment complies with applicable requirements of the American National Standards Institute (ANSI) for sound level meters.

ACCEPTABLE NOISE LEVELS

Guidelines for noise compatible land use are based upon the California Office of Planning and Research's (OPR) Noise Element Guidelines. The noise compatibility guidelines provide an objective means of determining whether the existing or predicted noise is generally acceptable. Table N-3, Acceptable Exterior Noise Levels, provides the City with a tool to gauge the compatibility of land uses relative to existing and future noise levels. As shown, the range of noise exposure levels overlap between the normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable categories. OPR's Noise Element Guidelines note that noise planning policy needs to be rather flexible and dynamic to reflect not only technological advances in noise control, but also economic constraints governing application of noise-control technology and anticipated regional growth and demands of the community. In project-specific analyses, each community must decide the level of noise exposure its residents are willing to tolerate within a limited range of values below the known levels of health impairment. Therefore, the City may use its discretion to determine which noise levels are considered acceptable or unacceptable, based on land use, project location, and other project factors.

TABLE N-3 ACCEPTABLE EXTERIOR NOISE LEVELS

Land Use	Community Noise Exposure (L_{dn} or CNEL, dBA)1			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential – Low Density, Single-Family, Duplex, Mobile Homes	50–60	55–70	70–75	75–85
Residential – Multiple Family	50–65	60–70	70–75	70–85
Transient Lodging – Motel, Hotels	50–65	60–70	70–80	80–85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50–70	60–70	70–80	80–85
Auditoriums, Concert Halls, Amphitheaters	NA	50–70	NA	65–85
Sports Arenas, Outdoor Spectator Sports	NA	50–75	NA	70–85
Playgrounds, Neighborhood Parks	50–70	NA	67.5–75	72.5–85
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50–70	NA	70–80	80–85
Office Buildings, Business Commercial and Professional	50–70	67.5–77.5	75–85	NA

TABLE N-3 ACCEPTABLE EXTERIOR NOISE LEVELS

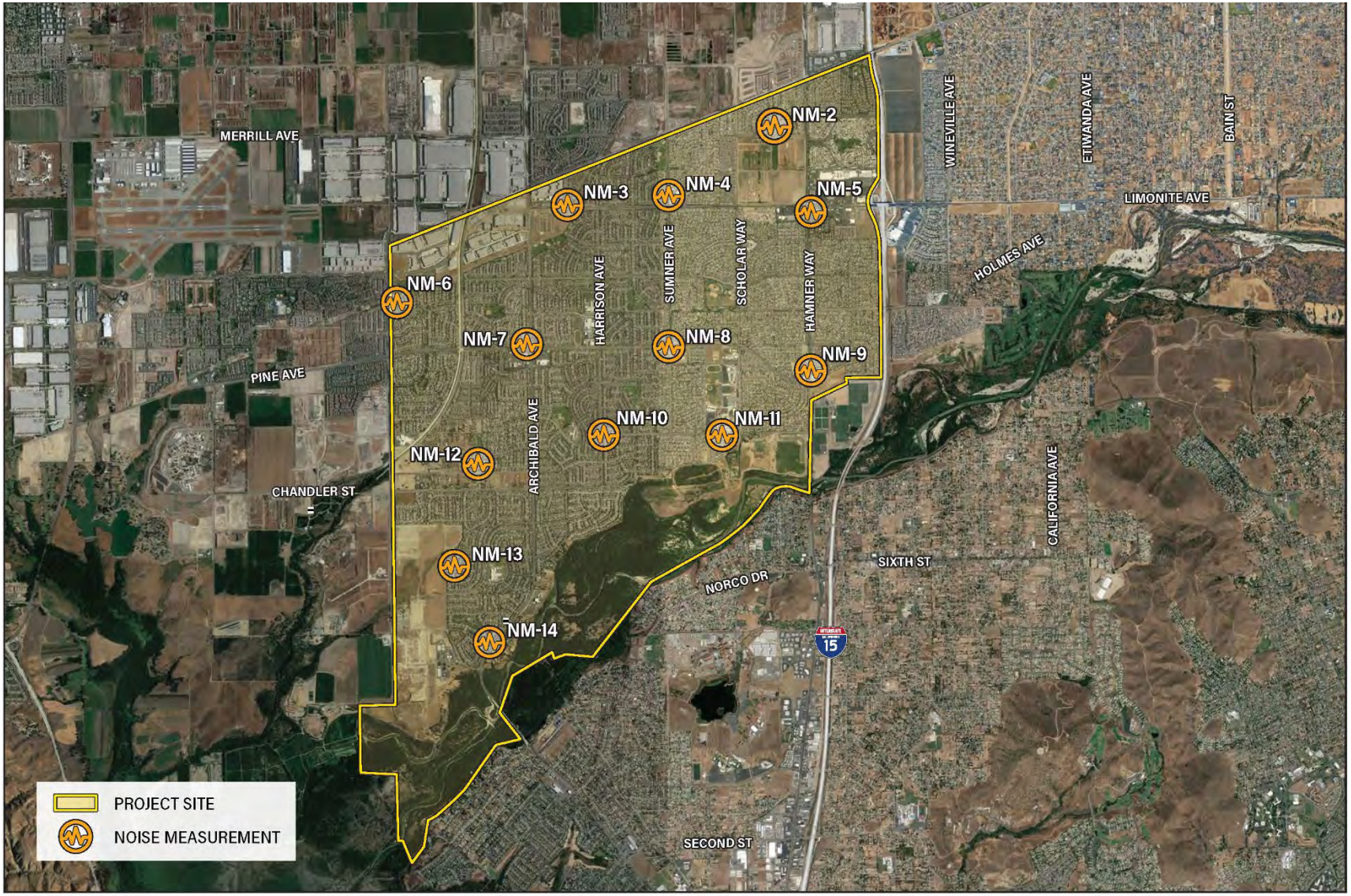
Land Use	Community Noise Exposure (L_{dn} or CNEL, dBA)1			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Industrial, Manufacturing, Utilities, Agriculture	50–75	70–80	75–85	NA

Notes: NA = not applicable; L_{dn} = average day/night sound level; CNEL = community noise equivalent level

1. Normally Acceptable – Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
2. Conditionally Acceptable – New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made, and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.
3. Normally Unacceptable – New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made, and needed noise insulation features included in the design.
4. Clearly Unacceptable – New construction or development should generally not be undertaken.

Source: Office of Planning and Research, *2017 General Plan Guidelines*, Appendix D, Noise Element Guidelines, 2017.

FIGURE N-2 NOISE MEASUREMENT LOCATIONS



Source: Google Earth Pro, June 2023

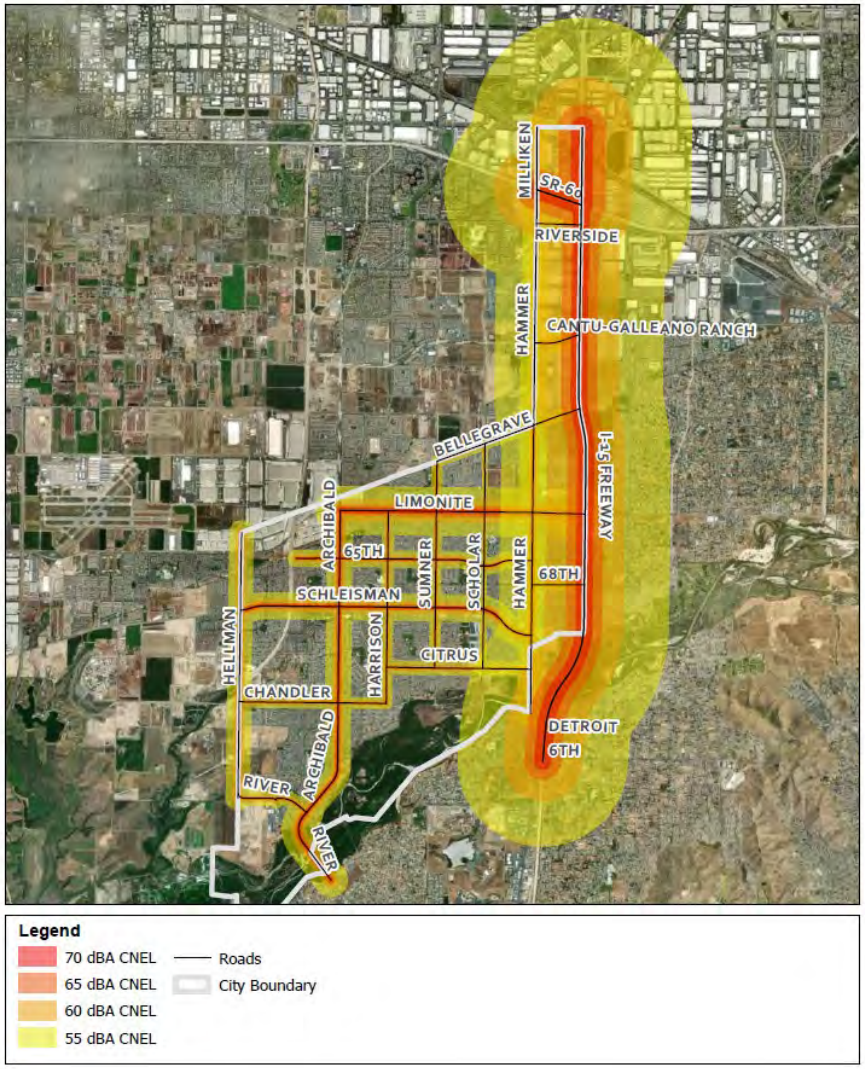
OUTDOOR ACTIVITIES

Festivals and performances can occur in nearly any open space subject to permits that regulate conduct, including noise. In the Downtown West Policy Area, and the Citrus Policy Area, and other commercial or open spaces, however, outdoor dining or performances could include music or other entertainment that could generate noise on a more regular basis. With mixed use or adjacent development there is potential for noise associated with commercial uses to affect residential uses. The celebration of community can sometimes come with elevated noise levels. As such, this element supports appropriate outdoor activity in the focus areas.

NOISE CONTOURS

Using noise measurements, traffic data, and other sources such as the airport master plans, Figure 1, General Plan Noise Contours, provides noise contours that represent different noise levels at physical distance from the noise source. Buildings, topography, and the type of noise can affect the amount of noise heard by a person. For this reason, the contours should be used as a general guideline in determining whether additional analysis for noise exposure is warranted rather than a specific noise measurement at a given location.

FIGURE N-3 GENERAL PLAN NOISE CONTOURS



Noise contours are shown for transportation-related noise sources and stated in terms CNEL or L_{dn}. Noise contours for non-transportation-related noise must be stated in terms of the L_{eq}. The noise contours are prepared based on noise-monitoring and generally accepted noise-modeling techniques for the various sources required by the code.

Noise contours are used as a guide for establishing a pattern of land uses in the Land Use Element that minimizes the exposure of community residents to excessive noise.

TRANSPORTATION NOISE

The Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model was used to develop CNEL contours for all highways and major roadways in the Planning Area. The FHWA Model is the analytical method presently favored for traffic noise prediction by most state and local agencies, including the California Department of Transportation (Caltrans). The FHWA Model predicts hourly Leq values for free-flowing traffic conditions, and it is generally considered to be accurate within 1.5 dB. To establish the baseline noise conditions, traffic data representing annual average traffic volumes for existing conditions on major roadways was obtained from the regional traffic model to allow calculations for existing and projected traffic volumes. As shown in Table N-4, Existing (2022) Roadway Noise Levels within the City range from approximately 57.5 to 69.8 dBA CNEL when measured 100 feet from the roadway centerline. The noise level range is typical for an urban environment.

TABLE N-4 EXISTING (2022) ROADWAY NOISE LEVELS

Roadway Segment	ADT	dBA @ 100 feet from Roadway centerline	Distance from Roadway Centerline (Feet)[1, 2]			
			70 CNEL Noise Contour	65 CNEL Noise Contour	60 CNEL Noise Contour	55 CNEL Noise Contour
Limonite Avenue between Archibald Avenue and I-15 Freeway	49,500	69.8	97	208	448	966
65th Street between Coyote Trail Lane and Hammer Avenue	10,900	60.6	-	51	110	238
68th Street between Hammer Avenue and I-15 Freeway	26,700	65.8	52	113	244	525
Schleisman Road between Hellman Avenue and Hammer Avenue	40,000	67.7	70	151	325	701
Citrus Street between Harrison Avenue and Hammer Avenue	13,200	62.7	-	70	151	325
Chandler Street between Hellman Avenue and Harrison Avenue	7,000	60.1	-	-	101	218
River Road between Hellman Avenue and Archibald Avenue	16,966	63.8	-	84	180	388
River Road between	40,255	69.7	96	206	444	957

TABLE N-4 EXISTING (2022) ROADWAY NOISE LEVELS

Roadway Segment	ADT	dBA @ 100 feet from Roadway centerline	Distance from Roadway Centerline (Feet)[1, 2]			
			70 CNEL Noise Contour	65 CNEL Noise Contour	60 CNEL Noise Contour	55 CNEL Noise Contour
Archibald Avenue and Southern City Limits						
Milliken Avenue between Philadelphia Street and SR-60 EB Ramps	21,300	66.2	-	121	261	562
Hammer Avenue between SR-60 EB Ramps and Southern City Limits	32,600	67.8	71	153	330	710
Scholar Way between Bellegrave Avenue and Schleisman Road	7,300	57.5	-	-	68	147
Scholar Way between Schleisman Road and Citrus Street	7,300	57.7	-	-	70	150
Summer Avenue between Bellegrave Avenue and Citrus Street	11,100	62.0	-	63	136	292
Harrison Avenue between Limonite Avenue and Chandler Street	9,700	61.4	-	58	124	267

TABLE N-4 EXISTING (2022) ROADWAY NOISE LEVELS

Roadway Segment	ADT	dBA @ 100 feet from Roadway centerline	Distance from Roadway Centerline (Feet)[1, 2]			
			70 CNEL Noise Contour	65 CNEL Noise Contour	60 CNEL Noise Contour	55 CNEL Noise Contour
Archibald Avenue between Limonite Avenue and River Road	30,700	67.8	72	154	333	717
Hellman Avenue between Northern Terminus and River Road	21,917	66.0	54	116	250	539
Bellegrave Avenue between Summer Avenue and I-15 Freeway	7,300	61.1	-	55	119	255
Cantu Galleano Ranch Road between Milliken Avenue and I-15 Freeway	12,200	64.7	-	95	204	440

TABLE N-4 EXISTING (2022) ROADWAY NOISE LEVELS

Roadway Segment	ADT	dBA @ 100 feet from Roadway centerline	Distance from Roadway Centerline (Feet)[1,2]			
			70 CNEL Noise Contour	65 CNEL Noise Contour	60 CNEL Noise Contour	55 CNEL Noise Contour
Riverside Drive between Hammer Avenue and I-15 Freeway	6,500	59.5	-	43	93	200

Notes: ADT = average daily trips; dBA = A-weighted decibels; CNEL = community noise equivalent level.

1. Roadway noise levels and contours were calculated using the Federal Highway Administration (FHWA) highway traffic noise prediction model (FHWA RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels.
2. "-" = contour is located within the roadway right-of-way.

Source: Michael Baker International, June 2023.

RAIL

Railroad activity in the Planning Area is limited primarily to the Union Pacific (UP) east west track that runs along Mission Boulevard in the northernmost portion of the City. There are no stations within the City and no noise sensitive uses near the rail line. While rail horns can occasionally be heard in the City, there are no rail crossings within the planning area.

AIRPORTS

The Chino Airport (CNO) area of influence affects land uses in the northwest area of the City around Limonite and Archibald Avenues as shown in Chino Airport Land Use Compatibility Plan. However, the noise influence of the airport does not affect properties in Eastvale. The Chino airport is a non-commercial facility providing services to general aviation, student pilots, and corporate users.

The Ontario International Airport (ONT) is approximately 1.5 miles northwest of the city limits, in the City of Ontario (San Bernardino County). ONT provides both domestic and international commercial flights and serves as a hub for deliveries by UPS and FedEx. While proximate to the City of Eastvale, noise from the Ontario International Airport does not affect the City.

CONSTRUCTION NOISE

The construction process can be noisy and affect people who live and work nearby. Construction is part of any city and while it can be considered temporary, it can also last for several years. Regardless of duration, construction noise impacts are real and must be considered along with the project. Simple things like setting reasonable construction times, ensuring that mufflers and noise suppression features of equipment are working, can help limit the noise intrusion into the surrounding area.

VIBRATION

Sources of vibration include natural phenomena (e.g., earthquakes, volcanic eruptions, tsunamis, landslides) and those introduced by human activity (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, (e.g., operating factory machinery) or transient in nature (e.g., construction). Vibration levels can be depicted in terms of amplitude and frequency, relative to displacement, velocity, or acceleration.

Typical outdoor sources of perceptible ground vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground vibration is rarely

perceptible. The range of vibration is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Construction activities can generate enough ground vibrations to pose a risk to nearby structures. Constant or transient vibrations can weaken structures, crack facades, and disturb occupants.

Indoor sources of vibration can come from heating, ventilation, and air conditioning (HVAC) equipment, and manufacturing processes. Even the fan on a personal computer can cause a small vibration. Most of the interior sources can be screened, or isolated to avoid affecting people who live and work near the source.

Usually vibration is an annoyance, but with fragile buildings, addressing vibration impacts is important. Vibration amplitudes are commonly expressed in peak particle velocity (PPV) or root-mean-square (RMS) vibration velocity. PPV and RMS vibration velocity are normally described in inches per second (in/sec) or in millimeters per second. PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is typically used in the monitoring of transient and impact vibration and has been found to correlate well to the stresses experienced by buildings.

Although PPV is appropriate for evaluating the potential for building damage, it is not always suitable for evaluating human response. It takes some time for the human body to respond to vibration signals. In a sense, the human body responds to average vibration amplitude. As with airborne sound, the RMS velocity is often expressed in decibel notation as vibration decibels (VdB). The typical background vibration-velocity level in residential areas is approximately 50 VdB. Ground vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels.

One of the impacts of construction is vibration that can be felt by people. Vibration can be a short-term sensation like when a heavy truck passes, however if several trucks were to pass by, or machinery nearby creates a constant vibration, the vibration can have negative effects on people. What starts as a minor irritation in people from vibration, over time turn into feelings of unease, disruption of sleep, and result in a constant annoyance that reduces the enjoyment of their home. Vibration can also disrupt delicate procedures such as surgery and manufacturing.

Vibrations generated by construction activity can be transient, random, or continuous. Transient construction vibrations are generated by blasting, impact pile driving, and wrecking balls. Continuous vibrations result from vibratory pile drivers, large pumps, and compressors. Random vibration can result from jackhammers, pavement breakers, and heavy construction equipment. Table N-5 describes the general human response to different ground vibration-velocity levels.

TABLE N-5 HUMAN RESPONSE TO DIFFERENT LEVELS OF GROUND NOISE AND VIBRATION

Vibration-Velocity Level	Human Reactions
65 VdB	Approximate threshold of perception.
75 VdB	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find that transportation-related vibration at this level is unacceptable.
85 VdB	Vibration acceptable only if there are an infrequent number of events per day.

Notes: VdB = vibration decibels referenced to 1 micro inch per second and based on the root-mean-square (RMS) velocity amplitude.

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, Table 5-5 Human Response to Different Levels of Ground-Borne Vibration and Noise, September 2018.

GOALS AND POLICIES

GOAL N-1: Prevent or mitigate the adverse impacts of excessive noise exposure on Eastvale residents, employees, visitors, and other sensitive receptors.

N-1.1: Encourage the use of site planning and building materials/design as primary methods of noise-attenuation.

N-1.2: Discourage use of noise barriers and walls constructed exclusively for noise-attenuation purposes, where possible. In instances where noise barriers cannot be avoided, the use of site planning and building material/design features in conjunction with barriers to mitigate visual impacts and reduce the size of barriers.

N-1.3: Require new development to reduce vibration to 75 VdB or below at the property line.

GOAL N-2: Protect residents from exposure to excessive transportation related noise.

N-2.1: Update existing and projected noise contours periodically for all transportation noise sources.

N-2.2: Prevent development of new projects which contain noise-sensitive land uses in areas exposed to existing or projected levels of noise from transportation sources which exceed the levels specified in Table N-3, unless the project design includes effective mitigation measures to reduce exterior noise and noise levels in interior spaces to the specified levels.

N-2.3: Mitigate noise created by new transportation noise sources consistent with the levels specified in Table 5-4.

N-2.4: Consider the significance of noise-level increases associated with roadway improvement projects needed to accommodate buildout of the General Plan. Since it may be impractical to reduce increased traffic noise to levels in Table N-3 the following criteria may be used as a test of significance for roadway improvement projects:

- Where existing traffic noise levels are less than 60 dB L_{dn} in the outdoor-activity areas of noise-sensitive land uses, roadway improvement

projects which increase noise levels to 60 dB L_{dn} will not be considered significant.

- Where existing traffic noise levels range between 60 and 65 dB L_{dn} in the outdoor-activity areas of noise-sensitive uses, a +3 dB L_{dn} increase in noise levels due to a roadway-improvement project will be considered significant.

- Where existing traffic noise levels are greater than 65 dB L_{dn} in the outdoor- activity areas of noise-sensitive uses, a +1.5 dB L_{dn} increase in noise levels due to a roadway- improvement project will be considered significant.

N-2.5: Require acoustical analysis for noise-sensitive land uses proposed in areas exposed to existing or projected exterior noise levels exceeding the levels specified in Table N-3 to determine appropriate noise mitigation. Single-family dwellings on existing lots are excluded from this review.

N-2.6: Minimize motor vehicle noise impacts from streets and highways through proper route location and sensitive roadway design by employing the following strategies:

- Consider the impacts of truck routes, the effects of a variety of truck traffic, and future motor vehicle volumes on noise levels adjacent to master planned roadways when improvements to the circulation system are planned.

- Mitigate traffic volumes and vehicle speed through residential neighborhoods.

- Work closely with Caltrans in the early stages of highway improvements and design modifications to ensure that proper consideration is given to potential noise impacts on the City.

N-2.7: Require that commercial and residential mixed-use structures minimize the transfer or transmission of noise and vibration from the commercial land use to the residential land use through appropriate building technologies.

GOAL N-3: Protect the economic base by preventing incompatible land uses from encroaching upon existing or planned noise producing uses. Prevent the introduction of new fixed noise sources in noise sensitive areas.

N-3.1: Prohibit the development of noise-sensitive uses where the noise level due to non-transportation sources will exceed the noise-level standards of Table N-3 as measured immediately at the property line of the new development unless effective noise-mitigation measures have been incorporated into the development design to achieve the noise standards.

N-3.2: Mitigate noise created by new proposed non-transportation sources consistent with the noise-level standards of Table N-3 as measured immediately at the property line of lands designated for noise-sensitive land uses.

N-3.3: Require acoustical analysis of new development proposals and the expansion of existing development if likely to produce noise levels exceeding the performance standards of Table N-3

at the property line of existing or planned noise-sensitive uses.

N-3.4: Require the buffering and shielding of parking areas for commercial and industrial land uses with walls, fences, berms, and/or landscape, unless an acoustical study demonstrates that operation of the parking area(s) will comply with the City's noise standards.

N-3.5: Require that parking structures serving commercial or industrial land uses be designed to minimize the potential noise impacts both on site and on adjacent properties. Design measures may include the use of materials that mitigate sound transmission and the configuration of interior spaces to minimize sound amplification and transmission.

N-3.6: Require the installation of noise-buffering or reduction mechanisms, for major fixed noise sources that would exceed the ambient noise by 5 dB or more prior to the issuance of any discretionary permit.

N-3.7: Require new residential development, and new noise-sensitive projects, to be responsible for noise mitigations to lessen the impacts from adjacent and nearby industrial uses and urban activities when the following conditions exist:

- If, at the time of request for new residential or noise-sensitive land use development, the industrial uses complied with all the noise mitigations based on anticipated noise sources and noise levels.
- If, at the time of request for new residential or noise-sensitive land use development, adjacent vacant land is designated for commercial or industrial development.
- The noise level measured at the residential or noise-sensitive use property line exceeds the residential noise standards due to the cumulative effect of nearby existing industrial and new industrial noise sources and increased noise levels of urban activities (i.e., traffic, trains, aircraft, etc.).
- The industrial use emitting the noise conforms with the land use classification of the General Plan, zoning district, and all conditions of City permits.
- The industrial use has not added additional noise-producing equipment or substantially changed its hours of operation from what has been approved by the City.

3

Open Space & Conservation

- *Open Space & Conservation*
- *Safety*

ENVISIONING EASTVALE'S FUTURE

EASTVALE 2040 OPEN SPACE COMMITTEE OBJECTIVES

Based on the Eastvale 2040: Envision Our Future Plan, key objectives were identified for future land use and planning initiatives, some of which are highlighted here.

Establish visible identity throughout the city, integrated placemaking and prioritizing sustainable practices

95% of the City is built out

Focus on vacant and underutilized areas

Innundation considerations along Santa Ana River and Chandler Area - may be used for parks and recreation

Significant opportunity for expanded ecological and community benefits on a regional scale

Strong community desire for expanded recreation, arts and culture, and improved livability

~400 Acres required for new parks to meet Quimby Act requirements of 5 acres per 1,000 residents

Re-integrate the river through connections to the Santa Ana River Trail system

Increase access to nature through increased systems of parks, trails, educational and observational centers

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OPEN SPACE & CONSERVATION

INTRODUCTION

The amount and quality of open space defines the character of a community. The City enjoys many parks, and roughly four miles of frontage along the Santa Ana River. The continued stewardship of these resources is important to maintaining the quality of life in Eastvale as the City grows. This chapter of Eastvale 2040 sets goals and direction for both open space and conservation of natural resources. Conservation also includes stewardship air and water, and the other essential elements to life. This chapter includes high level policies that address these issues and ensure that land use decisions are made with the environment of Eastvale in mind.

EASTVALE ESSENCE

Water is essential to life, and going back far into the history of the region the Santa Ana River has helped support locals. There is interest in making the river an attraction and design elements throughout Eastvale2040 will introduce new residents to this amazing resource. When combined with the "grand park" that makes use of land set aside for potential flooding, and a trail network that links every resident to open space, the riverfront is destined to be a hub of activity. Open space is more than just parks and conservation areas it is important to support both today's residents and their great grandchildren.

There are two exciting initiatives in this chapter. The first is the potential to create a grand park on OCFD land, and the second is completing the portion of the Santa Ana River Trail and activating the riverfront. Conservation is more than protecting land from development, it also includes the stewardship of natural resources. The Santa Ana River Corridor is an example of a natural resource that can become the crowning feature of the City park system. The river corridor brings together opportunities for restoration, education, and recreation in a single amenity. Locally significant, the river corridor is also part of a trail system making Eastvale part of a nearly 100-mile trail system stretching through seventeen cities from the San Bernardino Mountains to the Pacific Ocean. Linked by trails extending to the northern edge of the City and beyond, the river will influence the character of open space in the City.

REQUIREMENTS

Conservation and open space are two general plan elements that are often combined into a single document for ease of consideration. The conservation discussion is required to address natural resources.

BIG IDEAS

- Along Hellman Avenue at the west edge of the City are large areas of land owned by the Orange County Flood Control District (OCFCD). Largely unable to be developed with structures, this land could be used for agriculture and open space to support the Chandler Policy Area, and as active and passive recreation.
- The floodplains areas owned by the OCFCD along Hellman Avenue, south of Chandler Street, should be developed with Eastvale's future "Grand Park."
- With Southern California's amazing weather, there should be trails and connectivity between the places we shop, play,

and gather. The trail system should celebrate the river with design, and have signage guiding residents to employment, shopping, and schools public art and design that allows for each neighborhood to be unique.

- The Santa Ana River Trail has amazing possibilities for education and restoration, with partial rewilding so the river provides a corridor for people and wildlife alike.
- We are the newest of residents of this land and the original inhabitants of the Gabrieliño-Tongva Tribe prospered along the River and in this region for thousands of years. The river corridor should include an interpretive center ensuring that new generations learn from their elders.
- Currently parks are managed by the Jurupa Valley Community Services District. As the City wants to expand the amount of parkland and provide a variety of different open space types unique to Eastvale, it makes sense for the City to eventually manage the park system.

KEY POINTS

ENVIRONMENT

While much of the land within the City has been developed, there remain areas of nature and a reminder of the region's agricultural heritage. Key among these is the Santa Ana River where both disturbed and natural riparian habitat can be turned into recreation and preservation areas.

The Chandler Policy Area is near the future "grand park" and can be developed with a fork-to-table emphasis that supports the existing and future agricultural base of the area.

PARK OWNERSHIP

At present, all parks in the City are owned and managed by the Jurupa Community Services District (JCSD). The District was formed before the City incorporated and serves a larger area than the city. Over time it is anticipated that the park demand for the City will exceed the level provided by JCSD,

As shown in Figure 1, existing parks in the City were created as part of private development and are largely independent of each other. This forces people to drive between parks for events. The vision for Eastvale 2040 is that all parks would be linked with trails, sidewalks, and signage showing direction and distance to each other, and ultimately to both the Grand Park and the Santa Ana River Corridor. Signage along the way could direct pedestrians to key destinations such as other parks, shopping, employment, and of course the river corridor.

GRAND PARK

The OCFCD has several acres of land along Hellman Avenue that is intended to flood during major storm events which prohibits most buildings. Having a large open space near the city provides an amazing opportunity for agriculture, and parks with amenities that might not be possible if the site were fully developable. Figure 2 shows an example of uses that could coexist on land that can flood occasionally would be baseball and soccer fields, cricket pitches, bocce ball, and community gardens. When linked by trails and paths, the "grand park" could provide a regional amenity and serve as a gateway to the Santa Ana River corridor.

As shown in the graphic at the front of this chapter, the UCLA school of landscape architecture partnered with the City to produce *Embracing Eastvale's Riverfront: A Community-Wide Vision.* Key elements of the vision are carried throughout Eastvale2040 with the entire document included in Volume 2. The key points of the vision are to bring aesthetic elements of the riverfront throughout trails and roadways in the community with landscaping and signage.

The Santa Ana River is a valuable resource for the community with parts of the corridor suitable for intense public access and recreation, as well as areas where nature will be encouraged to thrive.

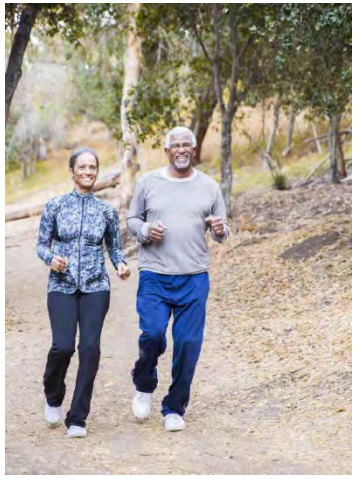


FIGURE OSC-1 EXISTING PARKS

SITE ANALYSIS

PARK DISTRIBUTION AND ACCESS

There is an opportunity to create pedestrian and micro-mobility-friendly green corridors throughout the city; knitting together existing green spaces, extending into under-served neighborhoods, and better integrating the river corridor with the broader public realm.

LEGEND

- Existing Park
- Existing Bike Trail
- ~5 Minute Walk from Park
- Potential Detention Basin Retrofit Park
- Neighborhood Borders
- Potential pedestrian-friendly streets

FIGURE OSC-2 CONCEPTUAL DESIGN OF THE GRAND PARK

PUBLIC ART

Neighborhood parks will benefit from public art and design that reflects the surrounding community, ideally giving each park unique features that strengthen ties to the neighborhood. The public art theme would extend to all public spaces including roadway medians, plazas, and street corners. Art in public spaces can memorialize historic events, accentuate the location, or provide a bit of colorful whimsy with no deeper meaning that to illicit a smile from visitor and resident alike. Public art can also give voice to groups in the community and deepen their sense of belonging.

TRAILS

With an agreeably flat topography and wonderful weather, there are many who would prefer to walk, skate, cycle, or bike rather than driving. The intent of the trail network is to provide opportunities for both recreation and commuting within the city. Coupled with a way finding program that provides both physical and electronic mapping of designations and locations, trails improve the quality of life in the city. Trails and pathways also provide an opportunity to extend design elements of the Santa Ana riverfront through the rest of the City as shown conceptually in **Figure 4** and in the adjacent graphic.

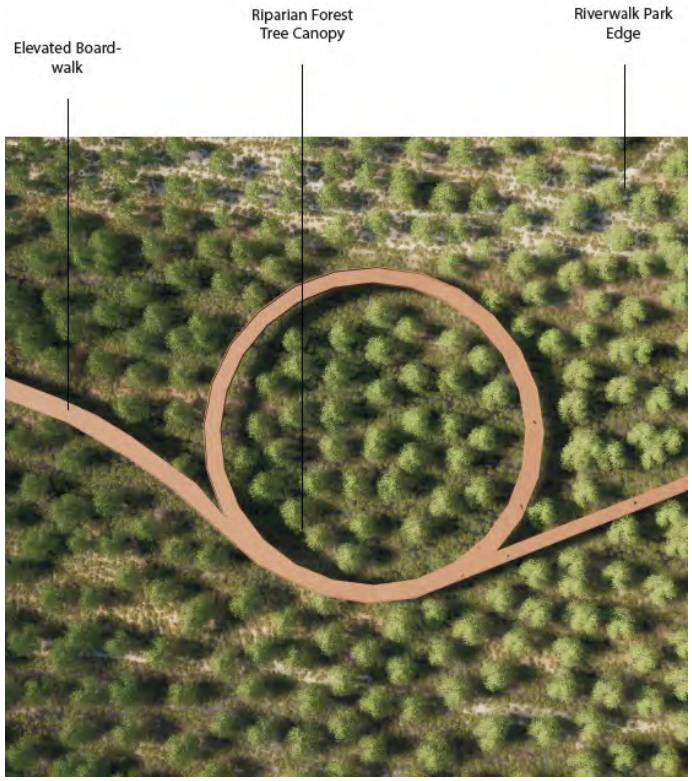
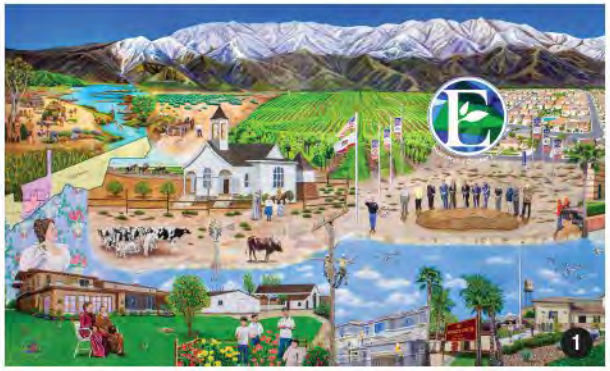


FIGURE OSC-3 CONCEPTUAL ARTERIAL GREEN CORRIDOR



ARTERIAL GREEN CORRIDOR SCHOLAR WAY

OPPORTUNITIES

BRING THE RIVER TO THE CITY

1. Create a storytelling sequence that celebrates the multi-cultural character of Eastvale and its historic inhabitants.
2. Design a multi-use promenade to encourage pedestrian and bicycle transportation.
3. Add tree canopy, increase tree diversity, and replace underutilized turf areas with native water-wise vegetation that supports pollinators and small ground-level wildlife.
4. Incorporate sustainable practices, such as solar street lights and parkway bioswales connected to Citrus Park.
5. Create flexible, multi-cultural gathering spaces for the community.

PUBLIC LANDS

Joint use of public land provides efficiency in taxpayer investment and further strengthens the cooperation between government agencies. An example is the OCFCD has land along Hellman that is part of the flood plain. Rather than being fenced and plowed occasionally for weed control, the City will partner with the District to allow agricultural uses to support the fork to table concepts in the Chandler Policy Area and expand recreational opportunities allowing recreational amenities that can endure the occasional inundation by flood waters. Linked by trails providing mobility options, this Grand Park also provides a separation from and amenity for the City of Chino to the west and a destination for Ontario residents to the north. Together with the Citrus Policy Area, the Grand Park will enhance the River Trail.

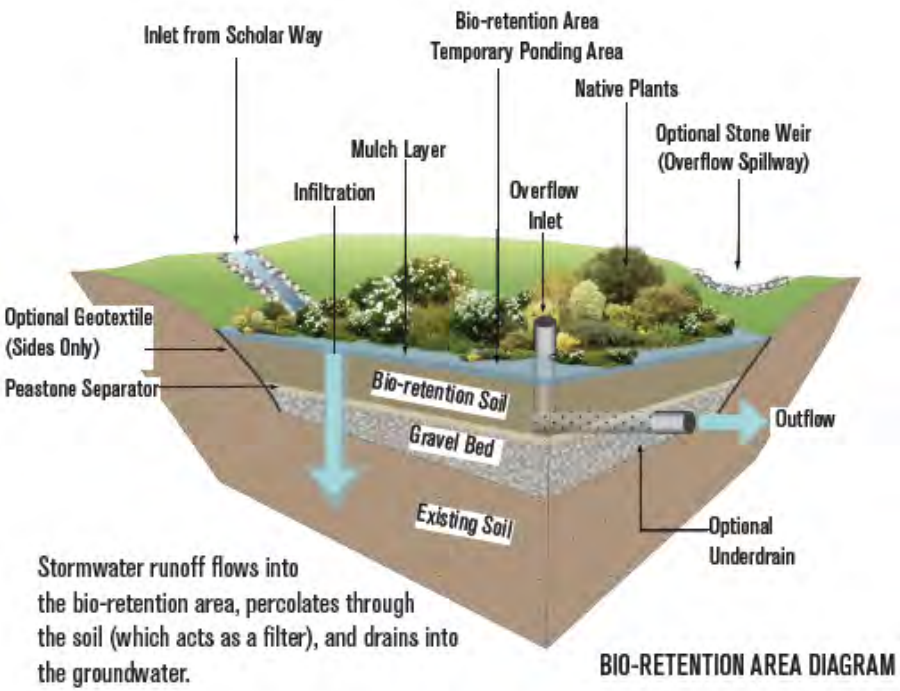
WATER/WASTEWATER/STORM

Water is a precious resource that is worthy of conservation and adaptive reuse. Eastvale2040 raises the awareness of the importance of water by embracing the Santa Ana River and through the careful use of water in development and landscaping as shown in the bio-retention area diagram that can be applied to new open space and trail development. The city relies on its partnership with the Jurupa Valley Community Services District to ensure adequate water and wastewater and collaborates with the District on issues such as the use of reclaimed water.

ENERGY

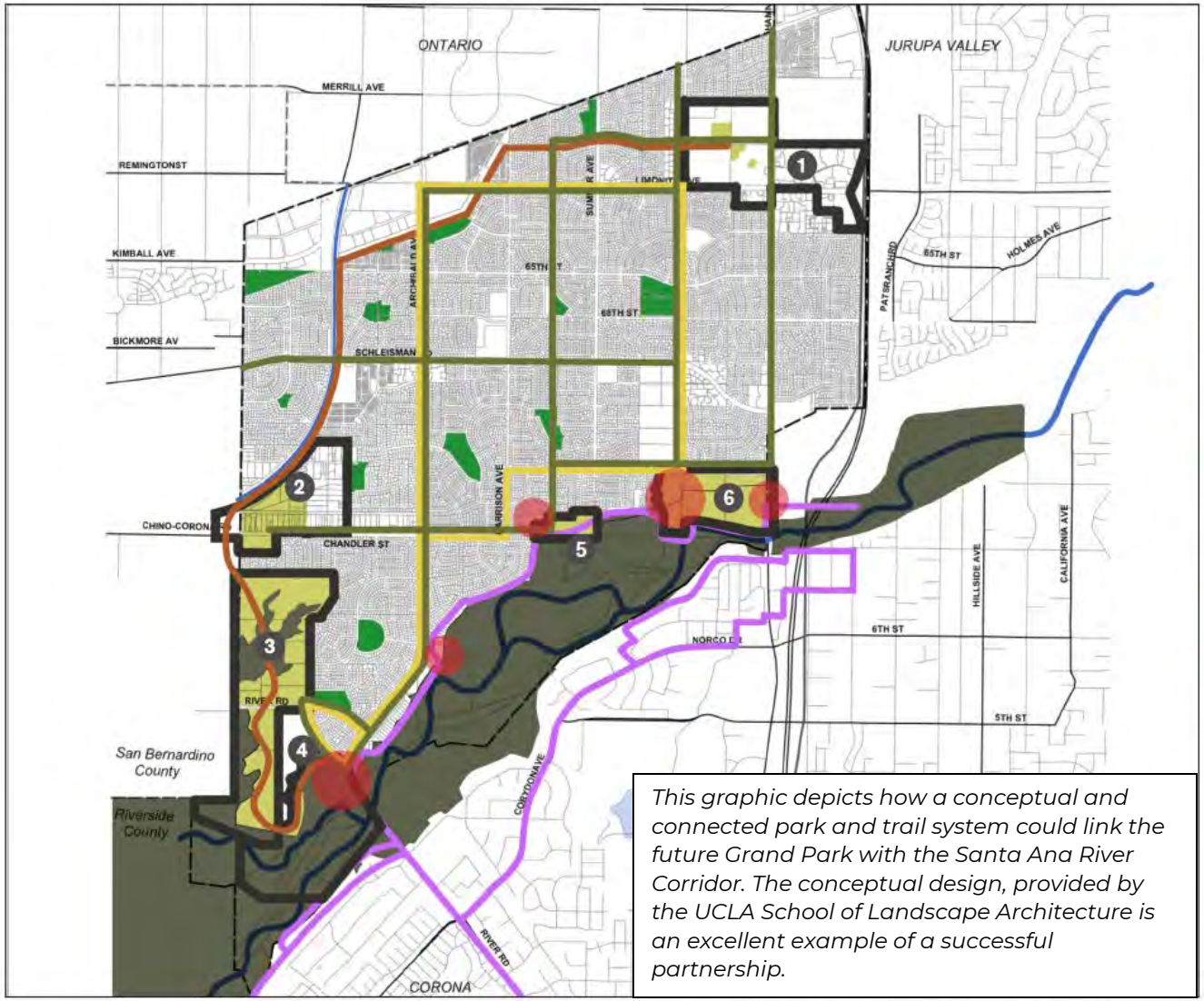
Even as most appliances become more energy efficient, new demands on energy increase. As a single solution to meeting energy demand is unlikely, Eastvale 2040 recognizes that many different energy generation methods may be used. The most prevalent in the city are the solar panels that already adorn many rooftops. New commercial and industrial buildings will also be designed to support solar panels. Even the simple act of planting shade trees can lower energy demand.

From the UCLA study, Figure 4 illustrates how elements of the riverfront can be drawn into the city, providing both visual interest and access to this resource. The concept can use existing right of way and development standards to realize the vision.



BIO-RETENTION AREA DIAGRAM

FIGURE OSC-4 PART OF A ROBUST OPEN SPACE ECOSYSTEM



This graphic depicts how a conceptual and connected park and trail system could link the future Grand Park with the Santa Ana River Corridor. The conceptual design, provided by the UCLA School of Landscape Architecture is an excellent example of a successful partnership.

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DESIGN INTENT

CITY-WIDE CONCEPT FRAMEWORK

By integrating an improved open space network with the broader public realm, a host of community, environmental, and economic benefits may be achieved. The river corridor is connected with the proposed downtown, civic destinations, and community fabric.

LEGEND

- Conservation and Restoration Area
- Existing Park Space
- New Open Space Network
- Connected River Access Destinations
- Improved Pedestrian and Cyclist Corridors
- Trail Connecting River to Proposed Downtown Eastvale
- Public Transit Circulator
- Santa Ana River Trail
- Major City-Wide Civic Destination
- 1 Proposed Downtown Eastvale Development
- 2 Chandler Redevelopment
- 3 Proposed Grand Park Open Space
- 4 Riverview Park Improvements
- 5 Riverwalk Park Improvements
- 6 Citrus Property and Eastvale Community Park Rehabilitation

GOALS AND POLICIES

PARKS, RECREATION, AND OPEN SPACE

GOAL CO-1: Create a Grand Park on Hellman Avenue making use of land identified for flood control and extending to the Santa Ana River.

CO-1.1: Require trails and pedestrian connectivity for development adjacent to the Grand Park or adjacent to trails leading to the Grand Park.

CO-1.2: Include branding promoting the Grand Park, and Santa Ana River Trail, in signage for trails and entry statements.

GOAL CO-2: Develop and maintain a comprehensive system of parks, recreation, and natural open space lands that meet the active and passive recreation and open space needs of all residents and visitors.

CO-2.1: Ensure that parks provide for the needs of all people regardless of their socioeconomic status, ethnicity, physical capabilities, or age.

CO-2.2: Work with adjacent neighborhoods to include design elements in the park such as signage, landscaping, playground equipment or other improvements that reflect the surrounding neighborhood.

CO-2.3: Require new development to provide and fund both active and passive parks and recreational sites to serve the project.

CO-2.4: New residential developments may be required to, at a minimum, provide parks consistent with a standard of 5 acres of land for parks per 1,000 residents. Land dedication and/or payment of in-lieu fees shall be required consistent with state law.

CO-2.5: The City will adopt standards designating which types of lands shall be considered “parks”.

CO-2.6: Work with the Riverside County Parks Department for the City to take ownership of Riverview Park and support the annual Koroneburg Renaissance Festival that takes place at this park.

CO-2.7: Building on the Embracing Eastvale’s Riverfront: A Community-Wide Vision, develop a comprehensive park and trail program linking the Santa Ana River to the City.

GOAL CO-3: Develop a citywide trails system that provides safe, convenient, and attractive off-street opportunities for residents to reach schools, commute, recreate, and exercise.

CO-3.1: The trails system in Eastvale should provide for connectivity, so that all trails are linked to the extent possible for greater use as recreational and travel routes. The following features should be included in the trails system:

- Trails should link residential areas with schools, parks, commercial and office areas, and other destinations.
- Trails along major roadways should avoid meanders or other design features which make bicycle use less convenient.
- Trails should be located off-street to the extent possible.

- Easements such as access roads should be placed in joint use as trails.
- Plant shade trees along trails and pathways.

CO-3.2: Trails which parallel natural drainages, irrigation channels should be primarily located beyond the riparian corridor and wetlands to minimize wildlife impacts.

GOAL CO-4: Maintain and improve the Santa Ana River corridor as an important resource for open space, recreation, wildlife, and scenic beauty.

CO-4.1: The City will promote rewilding efforts of portions of the Santa Ana River consistent with the plan for the River.

CO-4.2: The City will encourage development along the Santa Ana River to take advantage of river views and to provide access to the river consistent with safety and the need to protect sensitive resources. Examples include:

- Orienting development to face the river and take advantage of views.
- Placing single-loaded roadways adjacent to the river to open up and river views and access (where consistent with ownership and restrictions on public access).

GOAL CO-5: Preserve the ecosystem and regional biological diversity and encourage sustainable practices in the open space design and management.

CO-5.1: Develop management programs, including identify, conserve, and restore sensitive vegetation and wildlife resources.

CO-5.2: Protect the community's water quality, wildlife diversity, and cultural and aesthetic characters.

CO-5.3: Encourage the use of Best Management Practices in the watershed lands to prevent erosion and flooding.

GOAL CO-6: Identify, preserve, and enhance the art and cultural heritage of the diverse communities that live in Eastvale.

CO-6.1: Develop management strategies to preserve the memory of important historic periods.

CO-6.2: Support public art as an essential component of open space design and strengthen neighborhood and community identity and pride.

CO-6.3: Ensure that each public area has an opportunity for some form of public art reflecting the surrounding neighborhoods or the community.

CO-6.4: Preserve cultural resources within the City by requiring a Phase I Cultural Resources Assessment for new development proposals which occur on native (e.g.. ungraded, undeveloped) soils.

CO-6.5: Require a historic resources evaluation of buildings over 50 years of age.

GOAL CO-7: Support new and expand existing clean and accessible energy infrastructure.

CO-7.1: Support low- to no-cost retrofits to improve energy efficiency of existing buildings through grant and loan programs.

CO-7.2: Work with public utilities to identify and promote retrofit opportunities with short payback periods, such as variable-speed pool pumps, building air sealing, and attic insulation.

CO-7.3: Include passive solar design requirements in objective design standards.

CO-7.4: Support local workforce development and certification for green trades.

CO-7.5: Promote use of energy storage technologies that are appropriate for the character of the proposed location.

GOAL CO-8: Air quality that promotes health and wellness of residents through reductions in locally-generated emissions.

CO-8.1: Promote compact and efficient development to minimize vehicle miles traveled and greenhouse gas emissions.

CO-8.2: Indoor air quality. Promote the improvement of indoor air quality through the California Building and Energy Codes and through the participation in public health programs and services.

CO-8.3: Consider recommendations from the California Air Resources Board on the siting of new sensitive land uses and exposure to specific source categories.

CO-8.4: Require dust control plans, revegetation, and soil compaction to prevent fugitive dust emissions for both active construction sites, and vacant sites approved for development. Strive to meet the 2040 and 2050 greenhouse gas emission reduction targets in accordance with state law.

CO-8.5: Developing Our Economy. Actively promote and encourage opportunities for local economic development, education, housing, locally hiring, internships and employment from cradle to career so as to increase resident retention, improve and grow a strong local economy, achieve a positive jobs-housing match; retain critical educational resources and human capital, reduce regional commuting, gas consumption and greenhouse gas emissions and ensure equitable opportunities for all residents of the City and region to thrive.

GOAL CO-9: Clean and safe water for human consumption and the natural environment.

CO-9.1: Support the development, update, and implementation of ground and surface water quality management plans emphasizing the protection of water quality from point and non-point source pollution.

CO-9.2: Require new development and significant construction to protect the quality of water and drainage systems through site design, source controls, stormwater treatment, runoff reduction measures, best management practices, low impact development strategies, and technological advances.

GOAL NR-5: Biological Resources

An interconnected landscape of open spaces and habitat areas that promotes biodiversity and healthy ecosystems, both for their intrinsic value and for the value placed on them by residents and visitors.

NR-5.1: Continue participation in the Western Riverside County Multi Species Habitat Conservation Plan (MSHCP), and other existing or proposed habitat conservation and natural resource management plans for private and public lands to increase certainty for both the conservation of species, habitats, wildlife corridors, and other important biological resources and functions; and for land development and infrastructure permitting.

NR-5.2: Prioritize conservation actions that demonstrate multiple resource preservation benefits, such as biology, climate change adaptation and resiliency, hydrology, cultural, scenic, and community character.

NR-5.3: Support the proactive assemblage of lands to protect biological resources and facilitate development through private or public mitigation banking.

NR-5.4: Require the use of non-invasive plant species with new development and encourage the management of existing invasive plant species that degrade ecological function.

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SAFETY

INTRODUCTION

The Safety Element is a state-mandated General Plan element that must identify potential natural and human-created hazards that could affect the City of Eastvale's (City's) residents, businesses, and services. The purpose of the Safety Element is to establish a framework that anticipates these hazards and prepares the community to minimize exposure to these risks.

EASTVALE ESSENCE

The Safety Element conveys the City's goals, policies, and actions to minimize hazardous situations and protect and improve public health in and around Eastvale. It identifies the natural and human-caused hazards that affect existing and future development, describes present and expected future conditions, and sets policies and standards for improved public safety. This includes efforts to minimize physical harm to the buildings and infrastructure in and around Eastvale to reduce damage to local economic systems, community services, and ecosystems.

REQUIREMENTS

The Safety Element addresses the topic of public health and safety following state requirements, as presented in Section 65302(g) of the California Government Code. State law requires that the Safety Element contains background information and policies to address multiple natural hazards, analyze the vulnerabilities from climate change and contain policies to improve climate change resilience, and assess residential areas with evacuation constraints. The public safety issues in Eastvale include emergency preparedness and response, flood and inundation hazards, seismic and geologic hazards, fire hazards, hazardous waste and materials, as well as climate-related hazards, such as drought, extreme heat, and severe weather. The Safety Element identifies goals and policies for each of these hazards.

KEY POINTS

Eastvale's hazards of primary concern include seismic and geologic hazards, flood and inundation hazards, and fire hazards.

Earthquakes are likely to continue to occur on an occasional basis and are likely to be small in most instances. Most are expected to cause no substantive damage and may not even be felt by most people. Major earthquakes are rare, but a possibility in the region. Large earthquakes from faults such as the San Andreas Fault may cause significant damage to homes, businesses, and communities in the county.

Flooding is a significant problem in Riverside County. Flooding has occurred both within the 100- and 500-year floodplains and in other localized areas. As land uses and climate conditions shift and as improvements are made to flood-control channels, the size of these flood zones is likely to change. The potential for a dam failure event in Eastvale does not exist as the city is not in an area that would be affected by inundation due to the failure of an upstream dam.

Risk and vulnerability to Eastvale from wildfire is of significant concern, especially in the Santa Ana riverbeds. Wildfire for Eastvale is a concern given its WUI designations, as well as the area's unique ecology – particularly the topography, climate, and vegetation, which provides the setting for recurrent catastrophic wildfires. As development continues, especially in these interface areas, the risk and vulnerability to wildfires will likely increase.

Wildfire will continue to be a high-risk hazard for personal safety and property damage in Eastvale and smoke impacts from local and regional wildfires are likely to continue to be problematic.

Some degree of risk is inevitable because the potential for many disasters cannot be eliminated completely, and the ability to predict such disasters is limited. However, the Safety Element aims to reduce this risk through the following functions:

- Developing a framework by which safety considerations are introduced into the land use planning process.
- Establishing a policy framework for periodic updates of the hazard mitigation plan.
- Facilitating the identification and mitigation of hazards for new development and strengthening existing codes, project review, and permitting processes.
- Presenting policies directed at identifying and reducing hazards in existing developed areas.
- Strengthening preparedness planning and post-disaster reconstruction policies for earthquake, flood, dam inundation, wildland fire, and other relevant hazards.
- Identifying how natural and climate-related hazards are likely to increase in frequency and intensity in the future and provides policies to increase community resilience through preparedness and adaptation.

RELATIONSHIP TO OTHER DOCUMENTS

The Eastvale Safety Element does not exist in a vacuum but is instead one of several plans that address community public safety and related topics. These other plans include other General Plan elements, the 2018 Eastvale Local Hazard Mitigation Plan (LHMP), the 2018 City of Eastvale Emergency Operations Plan (EOP), and various local regulations. The Safety Element should be consistent with these other elements and plans to minimize conflicts between documents and ensure that the City has a unified strategy to address public safety issues. The Safety Element incorporates information, technical analyses, and policies from these other documents where appropriate to help support this consistency.

General Plan Elements

The City Council adopted the Eastvale General Plan in 2013. It addresses all the state-required elements, including Land Use, Circulation, Housing, Conservation, Open Space, Noise, and Safety, as well as additional topics such as Design, Economic Development, Healthy Community, and Sustainability.

The Safety Element provides policy direction and identifies safety improvements that complement the intent and policies of other General Plan elements. Crucial relationships exist between the Safety Element and the other General Plan elements. How land uses are determined in areas prone to natural hazards, what regulations limit development in these areas, and how hazards are mitigated for existing development, are all among issues that tie the elements together. For instance, the Land Use Element diagrams and policies must consider the potential for various hazards identified in the Safety Element and must be consistent with the policies to address those hazards. The Open Space Element in the is also closely tied to the Safety Element. Floodplains, for example, are not only hazard areas, but often serve as sensitive habitat for threatened or endangered species or provide recreation or passive open space opportunities for residents and visitors. As such, flood and inundation policies balance the need to protect public health and safety with the need to protect habitat and open space. Safety Element policies,

especially those concerning evacuation routes and critical facilities, must also be consistent with those of the Circulation Element. This Safety Element is consistent with the other elements of the Eastvale General Plan.

Eastvale Local Hazard Mitigation Plan

The City of Eastvale prepared the 2018 LHMP in accordance with the federal Disaster Mitigation Act of 2000 and the Federal Emergency Management Agency's (FEMA's) hazard mitigation assistance guidance. Eastvale's LHMP is a plan that assesses hazard vulnerabilities from natural and human-caused hazards, including risk to people and facilities, and identifies mitigation actions to reduce or eliminate hazard risks in Eastvale. The mitigation actions in the LHMP include both short-term and long-term strategies, and involve planning, policy changes, programs, projects, and other activities. These mitigation actions are identified based on assessments of hazards, vulnerabilities, and risks and the participation of a wide range of stakeholders and the public in the planning process. Local governments are required to develop a hazard mitigation plan as a condition for receiving certain types of non-emergency disaster assistance. To comply with the federal Disaster Mitigation Act of 2000,[1] the LHMP City Council adopted the LHMP. The current 2018 LHMP, approved by FEMA in October 2018, is incorporated into this Element by reference, as permitted by California Government Code Section 65302.6 and available online at https://www.eastvaleca.gov/government/community-development/emergency-management/city-emergency-plans. The City of Eastvale is in the process of adopting the 2023 LHMP.

The LHMP and Safety Element address similar issues, but the Safety Element provides a higher-level framework and set of policies that pertain to the safety of the city, while the LHMP focuses on more specific mitigation, often short-term, actions to enable jurisdictions to better protect lives, property, and natural systems. The LHMP, as its name implies, focuses on mitigation-related actions, while the Safety Element also includes policies related to emergency response, recovery, and preparation activities. Hazard mitigation plans form the foundation for a community's long-term strategy to reduce disaster losses and break the cycle of disaster damage, reconstruction, and repeated damage.

City of Eastvale Emergency Operations Plan

The EOP describes planned response to extraordinary emergency situations associated with natural disasters, technological (human-caused) emergencies, and war emergency operations in, or affecting, the City of Eastvale. The EOP establishes an Emergency Management Organization that will respond given any significant emergency or disaster affecting the City of Eastvale; policies, responsibilities, and procedures required to protect the health and safety of the community, public and private property, and the environment from the effects of natural and human-caused (technological) emergencies and disasters; the operational concepts and procedures associated with field response to emergencies, Emergency Operations Center (EOC)

[1] The federal Disaster Mitigation Act of 2000 requires that states review LHMPs as part of their state hazard mitigation planning process. The intent is three-fold:
1. To gather hazard, vulnerability, and mitigation information from the local level for use in state-level planning
2. To ensure that state and local hazard mitigation planning is coordinated to the greatest extent practical
3. To ensure that local jurisdictions are made aware of the hazards and vulnerabilities within their jurisdiction and to develop strategies to reduce those vulnerabilities

activities, and the recovery process; and the organizational framework for implementation of the Standardized Emergency Management System (SEMS) and National Incident Management System (NIMS) within the City of Eastvale. The EOP is the principal guide for the City of Eastvale and responding special districts who respond to and mitigate emergencies and disasters within the City of Eastvale geographic boundaries. It is intended to facilitate multi-agency and multi-jurisdictional emergency operations and coordination, particularly between local government and the operational area (county boundary) and addresses state and federal response upon request.

CLIMATE CHANGE VULNERABILITY ASSESSMENT

Changes to the global climate system are expected to affect future occurrences of natural hazards in and around Eastvale. Many hazards are projected to become more frequent and intense in coming years and decades, and in some cases, these trends have already begun. Key climate change considerations that affect Eastvale include increasing temperatures, changes in precipitation, and severe weather. Overall, precipitation levels are expected to increase slightly; however, there are likely to be more years of extreme precipitation events and droughts that last longer and are more severe. According to California's Fourth Climate Change Assessment,[2] Eastvale can expect to experience various changes to climate-related hazard events.

What is vulnerability?

Vulnerability is the degree to which natural, built, and human systems are susceptible to harm from exposure to stresses associated with environmental and social change and from the absence of a capacity to adapt.

Source: California Governor's Office of Emergency Services. 20202. California Adaptation Planning Guide. https://www.caloes.ca.gov/climate.

- Both droughts and floods are expected to become more frequent as rainfall is expected to occur in fewer, more intense storms due to climate change. Although Eastvale is likely to experience only a slight increase in overall annual precipitation levels from climate change, rainfall is expected to fall in fewer, extreme precipitation events. As a result, floods are expected to occur more often in Eastvale, and climate change may expand the parts of the city that are considered prone to flooding, including areas near the Santa Ana riverbeds.
- Climate change is expected to also increase the frequency and severity of droughts that cause soil to dry out and condense. During droughts, water levels in aquifers may also decline as groundwater is dependent on recharge from infiltration of precipitation. Groundwater is the sole source of water supply for Eastvale. The water level that supplies wells in the city would also decrease. Well pumping would affect the total water supply as water pumped would likely exceed the rate aquifers are recharged by precipitation or other underground flow. When precipitation does return, dry ground means that more water runs off the surface rather than being absorbed into the ground, which can lead to floods. Drought conditions will likely strain local water supplies, causing the water shortage contingency plan and

[2] Bedsworth, Louise, Dan Cayan, Guido Franco, Leah Fisher, Sonya Ziaja. (California Governor's Office of Planning and Research, Scripps Institution of Oceanography, California Energy Commission, California Public Utilities Commission). 2018. Statewide Summary Report. California's Fourth Climate Change Assessment. Publication number: SUMCCCA4-2018-013

demand-reduction actions to go into effect more frequently.

- Severe weather events, such as lightning, hail, heavy rainfall, and high winds, may become more frequent and intense due to climate change. Climate change is expected to cause an increase in intense rainfall, which is usually associated with strong storm systems. Heavy rainfall may also contribute to an increased risk of landslides along the riverbanks of the Santa Ana River. Most severe weather events in Eastvale consists of atmospheric rivers or high winds. Although connection between climate change and severe weather is not as well established as other hazards, severe winds such as Santa Ana winds, which typically occur from October to March, may coincide more frequently with wildfire conditions. This can cause fires to grow and spread more rapidly as well as public safety power shutoff (PSPS) events to occur to prevent wildfires from sparking.
- Warmer temperatures are projected to cause an increase in extreme heat events. The number of extreme heat days, defined in Eastvale as a day when the high temperature is at least 103.8°F, is expected to rise from a historical annual average of 4 to 23 days per year by the middle of the century (2035 to 2064), and to an average of 41 days per year by the end of the century (2070 to 2099). In addition to the increases in extreme heat events, Eastvale is expected to see an increase in the average warmer nights. The number of warm nights, defined in Eastvale as a night when the minimum temperatures stay above 68.4°F, is expected to rise from a historical annual average of 5 to 39 nights per year by the middle of the century (2035 to 2064), and to an average of 79 nights per year by the end of the century (2070 to 2099). Extreme heat and warm nights pose a significant human health risk, especially to senior citizens, outdoor workers, and persons who do not have access to adequate cooling, including people experiencing homelessness. Some buildings and infrastructure systems may be damaged by very high temperatures, constraining their ability to meet community needs.
- Hotter, drier weather because of climate change, is expected to lead to an increase in wildfires in the surrounding area and across Riverside County. Drier conditions earlier in the year could result in a large portion of the region experiencing moderate to extreme drought conditions prior to summer. Consequently, these continued dry conditions with above-normal temperatures will leave fuel moisture levels lower than normal, increasing the potential for wildfire activity and an extended wildfire season. Increased winds may result in more erratic fire behavior, making fires harder to control and increasing the likelihood that wildfires will travel into Eastvale. Furthermore, an extended wildfire season increases the likelihood that Santa Ana winds coincide with wildfires, which can allow wildfires to spread more rapidly. Across the region, more frequent and intense wildfires may also create poor air quality for Eastvale.
- Climate change can increase the rates of infection for various diseases because many of the animals that carry diseases are more active during warmer weather. There are a number of diseases that are linked to climate change and can be harmful to the health of Eastvale community members, such as hantavirus pulmonary syndrome, Lyme disease, and West Nile fever. Many of these diseases are carried by mice and rats, ticks, mosquitos, and other pests. Warmer temperatures earlier in the spring and later in the winter can cause these animals to be active for longer

periods, increasing the time that these diseases can be transmitted.

Vulnerability Assessment Results

Under California law, the Safety Element is required to include a vulnerability assessment that looks at how people, buildings, infrastructure, and other key community assets may be affected by climate change. The City conducted a Climate Change Vulnerability Assessment in the Winter of 2022 to analyze Eastvale's susceptibility to climate-related hazards. Eastvale's vulnerability assessment, prepared in accordance with the most recent available guidance in the California Adaptation Planning Guide, assesses how eight climate-related hazards (drought, extreme heat and warm nights, human health hazards, inland flooding, landslides, severe weather, and wildfire and smoke) may affect 53 different population groups and community assets. Each population or asset received a score of V1 (minimal vulnerability) to V5 (severe vulnerability) for each climate-related hazard. The Climate Change Vulnerability Assessment indicates that Eastvale's populations and assets are most vulnerable to wildfire and smoke, human health hazards, and severe weather. Overall, populations in Eastvale tend to be most vulnerable to extreme heat and warm nights, wildfire and smoke, and human health hazards, which directly affect health outcomes. The most vulnerable communities include households in poverty, low-resourced people of color, and seniors living alone, all of which are highly or severely vulnerable to nearly all climate change hazards. Additional highly vulnerable populations include immigrant communities, persons experiencing homelessness, and persons with chronic illnesses and/or disabilities.

Climate change could affect the transportation network and associated economic activity within Eastvale by creating strain on transportation infrastructure, resulting in impacts to travel behavior, goods movement, and supply chain business continuity. Areas along the Santa Ana riverbeds, Hamner Avenue, and I-15 in the southern part of the community are vulnerable to flooding impacts. Transportation infrastructure such as roadways, bridges, and railways are potentially at increased risk due to flooding and severe weather events. When parts of the transportation infrastructure network fail due to hazard events, typical travel routes for both passenger travel and goods movement may be disrupted, including I-15 and other primary local roadways. Localized disruption of these local transportation roadways due to hazards such as flooding or severe weather could significantly impact the transportation of goods and services provided in the city, the economic vitality of the community, ability to evacuate during an emergency, and the livelihood of many businesses particularly if the impacted areas include key nodes of Eastvale's transportation network. Similarly, residents that rely on I-15 as a means of transportation for work could be greatly impacted by disruptions to this infrastructure. Although the areas affected by hazards may be small, this could still create significant disruptions to freeway traffic.

Citywide, energy delivery is vulnerable to multiple hazards, including severe weather, such as high winds that can trigger PSPS events, extreme heat that reduces the capacity and strains the system, and wildfires that damage the system, ultimately disrupting energy service. Extreme heat can also lead to power outages by causing mechanical failure of grid equipment, heat damage to power lines, and by creating a high demand for electricity to power air conditioners, all of which place stress on the network and lead to rolling blackouts. Electrical transmission infrastructure is subject to harm from landslides and shoreline flooding, which can undermine the foundations of transmission towers and flooding substations, straining the electricity delivery system.

PSPS events or interruptions in energy service due to extreme heat can create vulnerabilities for Eastvale community members. A loss of electricity can cause a loss of refrigeration for food and medical supplies, limit cooking, cause loss of cooling (particularly dangerous during extreme heat events), lighting, and limited or no access to the Internet or other information systems. Many businesses are forced to close during a power outage, causing economic hardships and depriving community members of important services, such as grocery stores, gas stations, and banks/ATMs. Power outages may also be harmful to people who depend on electrically powered medical devices.

Climate change is also expected in the parts of the city that are considered prone to flooding. As a result, residential properties adjacent to the 100-year floodplain (i.e., properties adjacent to the Santa Ana riverbeds) will likely experience an increase in the frequency and magnitude of flood events in future years. Increases in damaging flood events in the city are expected to cause greater property damage, public health and safety concerns, displacement, and loss of life. Increased flooding in the city may also impact the operation of roads as well as electrical substations and transmission lines. Increases in damaging flood events in the city are expected to cause greater property damage, public health and safety concerns, displacement, and loss of life.

The Safety Element includes goals, policies, and implementation actions to increase community resilience and help lower vulnerability scores, particularly for the populations and assets that received a score of V4 or V5 in the Vulnerability Assessment. A full list of the Vulnerability Assessment results can be found in Appendix A.

PUBLIC SAFETY ISSUES

This Safety Chapter contains goals, policies, and actions which seek to make Eastvale a place that is safe for residents, businesses, and visitors. This chapter, therefore, seeks to take a reasonable approach, making those improvements necessary to reduce or eliminate hazards, while recognizing that some hazards will remain despite the best efforts of the City and other agencies.

Like many places in California, Eastvale is subject to a variety of potential safety hazards. Some hazards are created by the natural environment; others are man-made and result from human activities. This chapter outlines the existing and likely future hazardous conditions and other public safety issues in Eastvale and policy responses to these issues. The public safety issues in Eastvale include:

- Emergency preparedness and response
- Flood and inundation hazards
- Seismic and geologic hazards
- Fire hazards
- Hazardous waste and materials
- Additional climate-related hazards (drought, extreme heat, and severe weather)

This section provides details pertaining to probable locations each hazard or issue is likely to occur (per availability of data), past notable events in and around Eastvale, agencies responsible for providing protection from these public safety issues, and other background information required by the State of California Government Code Section 65302(g)(4).

The results of the Vulnerability Assessment are integrated into the hazards and other public safety issues previously mentioned.

Emergency Preparation and Response

Local Emergency Response

The Riverside County Sheriff's Department, Riverside County Fire Department, and the California Department of Forestry and Fire Protection (CAL FIRE) conduct emergency response activities in Eastvale.

Riverside County Sheriff's Department

Police protection in Eastvale is provided by the Eastvale Police Department, whose personnel and equipment are provided by the Riverside County Sheriff's Department under contract to the City of Eastvale. The headquarters for the Eastvale Police Department is located at the Sheriff's Jurupa Valley station located at 7477 Mission Boulevard in Jurupa Valley. Additional information on police services is available at http://www.riversidesheriff.org, the official website of the Riverside County Sheriff.

Riverside County Fire Department/CAL FIRE

Fire protection in Eastvale is provided by the Riverside County Fire Department, which operates in coordination with CAL FIRE. The Riverside County Fire Department provides full service, municipal, wildland fire protection, pre-hospital emergency medical response, technical rescue services, and responds to hazardous material discharges. Additional information on fire protection services is available at www.rvcfire.org, the official website of the Riverside County Fire Department.

Community Warning Systems

The City of Eastvale uses Alert RivCo, a phone alert system to alert residents and businesses in Riverside County who are affected, threatened, or might be endangered by an emergency event or a disaster, such as wildfires, floods, hazardous materials, severe weather, and certain law enforcement incidents. Alert RivCo is part of a group of alert and warning tools used in the county. Other systems include the Emergency Alert Systems (EAS) and the Emergency Digital Information System (EDIS).

Other systems include the Emergency Alert Systems (EAS) and the Emergency Digital Information System (EDIS). The EAS is a national public warning system commonly used by state and local authorities to deliver important emergency information, such as weather and AMBER alerts, to affected communities. EAS participants – radio and television broadcasters, cable systems, satellite radio and television providers, and wireline video providers. FEMA, the Federal Communications Commission, and the National Oceanic and Atmospheric Administration's (NOAA's) National Weather Service (NWS) work collaboratively to maintain the EAS and Wireless Emergency Alerts, which are the two main components of the national public warning system and enable authorities at all levels of government to send urgent emergency information to the public. The EDIS is a wireless emergency and disaster information service operated by the State of California Governor's Office of Emergency Services and is an enhancement to the EAS. These systems are available in multiple languages.

Emergency Evacuation

With advanced warning, evacuation can be effective in reducing injury and loss of life during a catastrophic event. Figure S-1 shows residential parcels with evacuation constraints, as required by Senate Bill 99, and evacuation routes throughout the city. Residential parcels with evacuation constraints are those that are

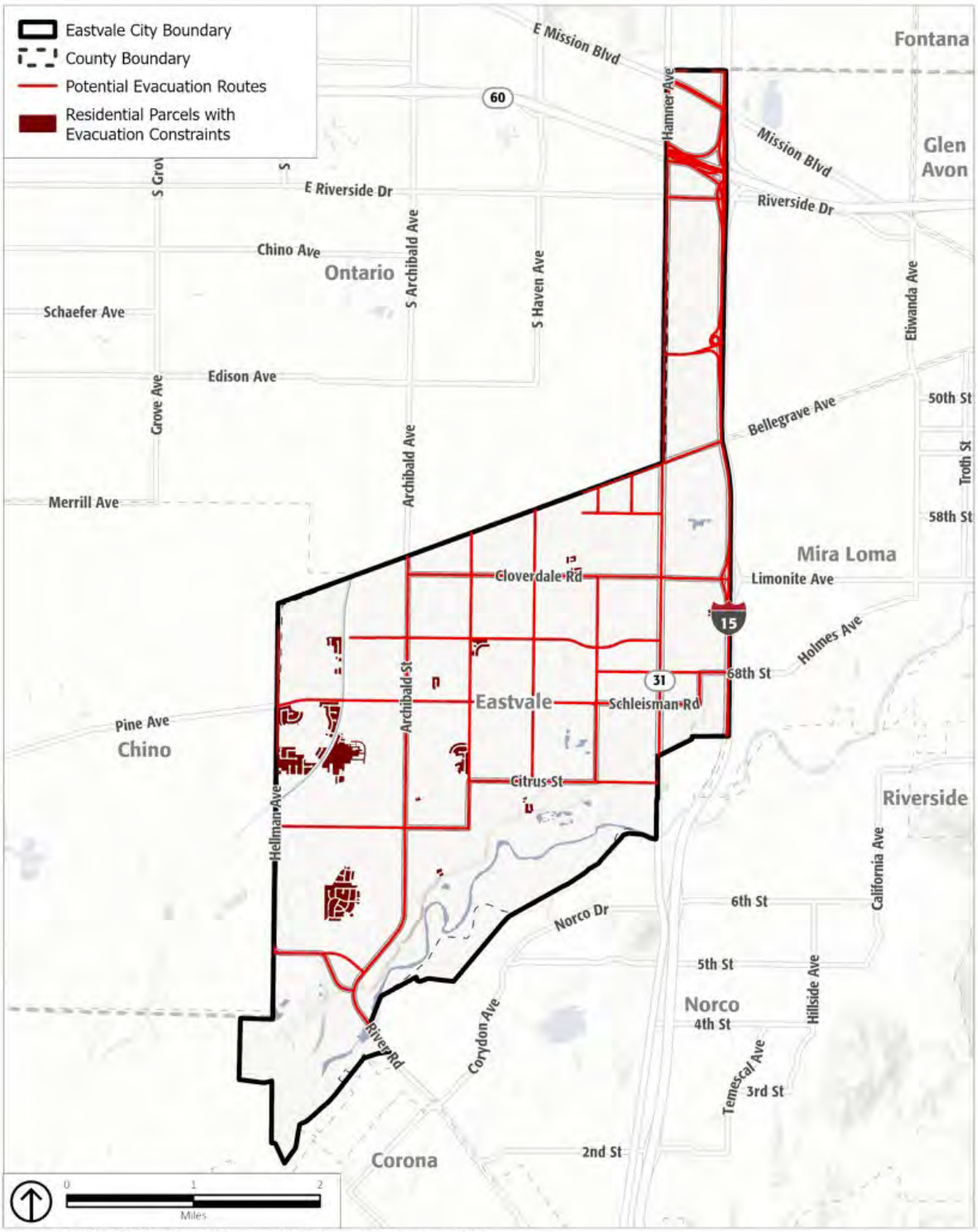
at least a half mile from a major roadway and may have access to only one emergency evacuation route. The lack of multiple emergency access points limits roadway access for these properties, which may create difficulties if there is a need to evacuate. It also shows the evacuation routes throughout the city. Primary emergency access and evacuation routes include I-15, Hamner Avenue, Bellegrave Avenue, Limonite Avenue, Schleisman Road, Chandler Street, Hellman Avenue, Archibald Street, Sumner Avenue, and other primary local roadways. Although limited to a small area, I-15, Hamner Avenue, and Archibald Street face a potential disruption form a flooding event and all evacuation routes in Eastvale face a potential disruption from an earthquake event, which may block roadways, damage the roadway surface, or collapse bridges and overpasses. In the event of widespread disruption to local evacuation routes, remaining evacuation routes may become congested, slowing down evacuation of the community or specific neighborhoods. This issue may be compounded since evacuation routes for Eastvale will also likely serve as evacuation routes for surrounding communities, and so potential disruptions may have regional effects.

Disaster Preparedness

In recent years, the County of Riverside has expanded its emergency preparedness planning. The County of Riverside is required under state law to prepare and maintain a Standardized Emergency Management System (SEMS) Multi-hazard Functional Plan. The California Governor's Office of Emergency Services has extensive guidelines outlining the requirements of the Riverside County SEMS.

In November 2021, SCE conducted one large-scale event, shutting off power to approximately 78,514 customers, including those in Riverside County. In January 2021, SCE conducted one large-scale event in response to a Santa Ana wind event, shutting off power to approximately 114,000 customers, including those in Riverside County. In December 2020, SCE conducted two large-scale events shutting off power to approximately 95,000 customers, including those in Riverside County. The largest PSPS event during this time occurred on December 4 and ended on December 14, 2020. During this event, 197,729 customers in seven counties (San Bernardino, Riverside, Orange, Kern, Los Angeles, Tuolumne, and Ventura) were identified as under consideration for PSPS. During this event, SCE de-energized circuits not originally in scope when unexpected high wind conditions were observed in the areas of concern. Ultimately, SCE proactively de-energized 73,137 customers in areas of Inyo, Kern, Mono, Los Angeles, Orange, Riverside, San Bernardino, and Ventura Counties.

FIGURE S-1 EVACUATION ROUTES AND RESIDENTIAL PARCELS WITH EVACUATION CONSTRAINTS



Source: ESRI, 2022; PlaceWorks, 2022, City of Eastvale, 2022

In October 2019, SCE conducted four large-scale events, shutting off power to approximately 160,000 customers, including those in Riverside County. The largest PSPS event during this time occurred on October 27 and ended on October 31, 2019. During this event, 498,660 customers in 12 counties (Fresno, Inyo, Kern, Los Angeles, Madera, Mono, Orange, Riverside, San Bernardino, Tulare, Tuolumne, and Ventura) served by 352 distribution circuits and seven transmission lines were identified as under consideration for PSPS. Ultimately, proactive de-energization was required for 126 circuits (including three transmission lines) affecting 126,364 customers, including some in Riverside County, over two weather systems. PSPS events can impact emergency management activities. A loss of power can make it more difficult for homes or businesses to receive emergency notifications if needed. PSPS events can also create vulnerabilities for community members that lack backup power supplies and depend on electricity for heating or cooling homes and buildings, lighting, and internet. PSPS events may also be harmful to people who depend on electrically powered medical devices. Additionally, community members may be faced with economic hardships and be deprived of important services, such as grocery stores, gas stations, and banks/ATMs. Traffic lights and other traffic control systems may not work, which can complicate any evacuation needs and may hinder emergency response. Although critical public health and safety facilities often have backup generators, the loss of power may also disable other key infrastructure systems.

Seismic and Geologic Hazards

Seismic and geologic hazards are risks caused by the movement of different parts of the Earth's crust, or surface. Seismic hazards include earthquakes and hazardous events caused by them. Geologic hazards are other hazards involving land movements that are not linked to seismic activity and are capable of inflicting harm to people or property.

Seismic Hazards

Seismic activity occurs along boundaries in the Earth's crust, called faults. Pressure along the faults build over time and is ultimately released, resulting in ground shaking that we refer to as an earthquake. Earthquakes can also trigger other hazards, including surface rupture (cracks in the ground surface), liquefaction (causing loose soil to lose its strength), landslides, and subsidence (sinking of the ground surface). Earthquakes and other seismic hazards often damage or destroy property and public infrastructure, including utility lines, and falling objects or structures pose a risk of injury or death.

Earthquakes

While Eastvale is at risk from many natural and man-made hazards, the event with the greatest potential for loss of life or property and economic damage is an earthquake. This is true for most of Southern California, since damaging earthquakes are frequent, affect widespread areas, trigger many secondary effects, and can overwhelm the ability of local jurisdictions to respond. In Eastvale, earthquake-triggered geologic effects include ground shaking, landslides, liquefaction, and subsidence. Earthquakes can also cause human-made hazards such as fires and toxic chemical releases.

Earthquake risk is very high in western Riverside County (which includes Eastvale), due to the presence of two of California's most active faults: the San Andreas and San Jacinto. The San Andreas and San Jacinto Faults are capable of producing significant earthquakes, with a magnitude of 6.7 or greater. Table S-1 shows the chances of a major earthquake on these two faults within

Riverside County by 2045, according to the Third California Earthquake Rupture Forecast.

TABLE S-1 CHANCES OF SIGNIFICANT EARTHQUAKES ON MAJOR RIVERSIDE COUNTY FAULTS

Fault	Mean Chance by 2045			
	Magnitude 6.7 or greater	Magnitude 7.0 or greater	Magnitude 7.5 or greater	Magnitude 8.0 or greater
San Andreas	24.21%	21.29%	11.62%	3.15%
San Jacinto	6.71%	6.43%	5.29%	2.75%

Source: Third California Earthquake Rupture Forecast

Chances shown are the maximum mean probability for segments of these faults within Riverside County.

Other faults, both in and outside Riverside County, may also be capable of generating significant earthquakes with damaging effects in the county. Figure S-2 shows the location of regional faults.

In the event of an earthquake, the location of the epicenter, as well as the time of day and season of the year, would have a profound effect on the number of deaths and casualties, as well as property damage. There are several small-scale earthquakes that happen weekly and are barely felt or not felt at all by people, but larger-scale or catastrophe shaking is less likely.

Most of the loss of life and injuries from earthquakes are due to damage and collapse of buildings and structures. Building codes have generally been made more stringent following damaging earthquakes. Because most of Eastvale was built after 1990, problems which exist in other parts of Riverside County related to older buildings are either non- existent or very limited in the city.

In addition to ground shaking, earthquakes can also lead to other, secondary effects as described below.

Fault Rupture

Damage due to earthquake fault rupture typically results in a relatively small percentage of the total damage in an earthquake, but proximity to a rupturing fault can cause profound damage. Although this is an issue elsewhere in Riverside County, there are no known faults in Eastvale; fault rupture is therefore not considered an issue.

CERT
COMMUNITY
RESPONSE
Riverside County Operational Area
CERT

FIGURE S-2 REGIONAL FAULT LINES

Source: California Department of Conservation; PlaceWorks, 2022

Liquefaction

In addition to the direct physical damage that can result from the motion of the earthquake, damage can result from liquefaction. Liquefaction occurs where water-logged soils near the ground surface lose compaction during strong ground motion, causing the soils to lose strength and behave as liquid. This can cause building foundations to shift and can result in significant structural damage. Soils susceptible to liquefaction are typically found in areas of low-lying, current, or former floodplains. Liquefaction is most often triggered by seismic shaking, but it can also be caused by improper grading, landslides, or other factors.

Areas with groundwater levels that are less than 10 feet to the surface can cause the highest liquefaction susceptibility, with lower groundwater levels causing lower liquefaction risks. Site-specific geotechnical studies are the only practical and reliable way of determining the specific liquefaction potential of a site; however, a determination of general risk potential can be provided based on soil type and depth of groundwater. The City of Eastvale has been identified as having a moderate to high susceptibility to liquefaction, a very destructive secondary effect of strong seismic shaking.

Areas identified as susceptible to liquefaction are identified in Figure S-3.

Geologic Hazards

Geologic hazards, such as landslides and erosion, depend on the geologic composition of the area. Landslides and rock falls may occur in sloped areas, especially areas with steep slopes, and usually in areas of loose and fragmented soil. Landslides, rockfalls, and debris flows occur continuously on all slopes; some processes act very slowly, while others occur very suddenly, often with disastrous results. There are predictable relationships between local geology and landslides, rockfalls, and debris flows. Slope stability is dependent on many factors and interrelationships, including rock type, pore water pressure, slope steepness, and natural or human-made undercutting

Landslides are often triggered by other natural hazards such as earthquakes, heavy rain, floods, or wildfires, so landslide frequency is often related to the frequency of these other hazards. In Riverside County, landslides typically occur during and after severe storms, so the potential for landslides largely coincides with the potential for sequential severe storms that saturate steep, vulnerable soils. Figure S-4 shows the landslide risk in and around Eastvale. These areas are concentrated primarily along the Santa Ana riverbank and would avoid city infrastructure and buildings.

Subsidence and Expansive & Collapsible Soils

Subsidence refers to the sudden sinking or gradual downward settling and compaction of soil and other surface material with little or no horizontal motion. It may be caused by a variety of human and natural activities, including earthquakes and the long-term extraction of underlying groundwater, oil, or gas. All of Eastvale is susceptible to subsidence. **Figure S-4** shows areas in Eastvale which are subject to subsidence.

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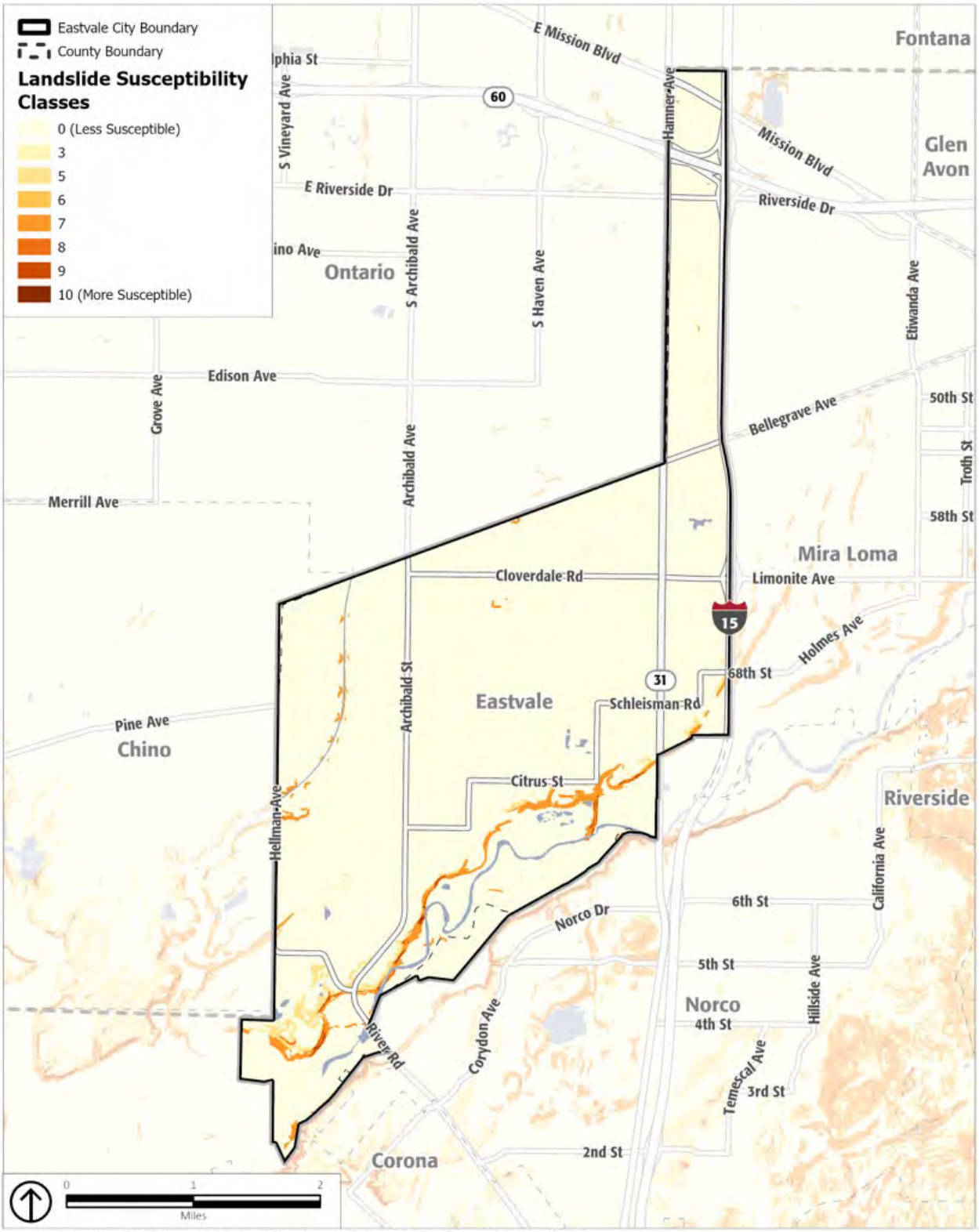
FIGURE S-3 LIQUEFACTION HAZARD ZONES

Source: California Department of Conservation, 2022; PlaceWorks, 2022

FIGURE S-4 LANDSLIDE SUSCEPTIBILITY



Source: California Department of Conservation, 2022; PlaceWorks, 2022

Land subsidence and related issues have been well-documented in Riverside County. Most of the early documented cases of subsidence affected only agricultural land or open space. As urban areas have expanded, so too have the impacts of subsidence on structures for human occupancy. Ground subsidence and associated fissuring in Riverside County have resulted from both falling and rising groundwater tables. In addition, many fissures have occurred along active faults that bound the San Jacinto Valley and the Elsinore Trough. Subsidence typically occurs throughout a susceptible valley. In addition, differential displacement and fissures occur at or near the valley margin, and along faults. In Riverside County, the worst damage to structures as a result of regional subsidence may be expected at the valley margins. Alluvial valley regions are especially susceptible.

Expansive soils have a significant amount of clay particles which can give up water (shrink) or take on water (swell). The change in volume exerts stress on buildings and other loads placed on these soils. The occurrence of these soils is often associated with geologic units having marginal stability. Expansive soils can be widely dispersed and can be found in hillside areas as well as in low-lying alluvial basins.

Expansion testing and mitigation are required by current grading and building codes. Special engineering designs are used effectively to alleviate problems caused by expansive soils. Homeowner involvement is required to maintain these standards. Homeowners are important because moisture control and modified drainage can minimize the effects of expansive soils. Homeowners should be educated about the importance of maintaining a constant level of moisture below their home's foundation.

Hydroconsolidation, or soil collapse, typically occurs in recently deposited, Holocene (less than 10,000 years old) soils that were deposited in an arid or semi-arid environment. These soils collapse when they are saturated by water; rapid, substantial settlement results. An increase in surface water infiltration, such as from irrigation, or a rise in the ground- water table, combined with the weight of a building or structure, can initiate settlement and cause foundations and walls to crack.

In Riverside County, collapsible soils occur predominantly at the base of the mountains, where Holocene-age alluvial fan and wash sediments have been deposited during rapid runoff events. In addition, some windblown sands may be vulnerable to collapse. Typically, differential settlement of structures occurs when lawns or plantings are heavily irrigated in close proximity to the structure's foundation. Forensic indications of collapsible soils include tilting or sagging floors, cracking or separation of structures, and windows and doors that cannot open due to shifts in the building.

Wind erosion is a serious environmental problem attracting global attention. Soil movement is initiated as a result of wind forces exerted against the surface of the ground. Dust particles in the air create major health problems. Atmospheric dust causes respiratory discomfort, may carry pathogens that cause eye infections and skin disorders, and reduces highway and air traffic visibility. Dust storms can cause additional problems; buildings, fences, roads, crops, trees, and shrubs can all be damaged by abrasive blowing soil.

Potential Changes to Geologic and Seismic Risk in Future Years

Likelihood of Future Occurrence

Seismic Risk

Earthquakes are likely to continue to occur on an occasional basis and are likely to be small in most instances. Most are expected to cause no substantive damage and may not even be felt by most

people. Major earthquakes are rare, but a possibility in the region. No major earthquakes have been recorded with epicenters within the county since the 1910 Elsinore earthquake, although the county has felt ground shaking from earthquakes with epicenters located elsewhere. Large earthquakes from faults such as the San Andreas Fault may cause significant damage to homes, businesses, and communities in the county. Based on historical data and the location of Riverside County relative to active and potentially active faults, the Uniform California Earthquake Rupture Forecast projects that southern California has a 93 percent chance of a significantly damaging earthquake (magnitude 6.7 or higher) by 2044.

If serious shaking does occur, newer construction is in general more earthquake resistant than older construction because of improved building codes. While liquefaction often causes severe damage to structures, structural collapse is uncommon. Furthermore, the risk to public safety is relatively low as structures can be protected from liquefaction by special foundations.

Geologic Risk

Geologic risks, such as small landslides, are common occurrences in Eastvale. With significant rainfall, additional slope failures are likely in the community's landslide hazard areas which is primarily along the Santa Ana River and minor landslides will likely continue to impact the area when heavy precipitation occurs, as they have in the past.

Climate Change and Geologic and Seismic Hazards

While climate change is unlikely to increase earthquake frequency or strength, the threats from seismic and geologic hazards are expected to continue. Climate change may result in precipitation extremes (i.e., wetter rainfall periods and drier dry periods). While total average annual rainfall may not change significantly, rainfall may be concentrated in more intense precipitation events. Heavy rainfall could cause an increase in the number of landslides or make landslides larger than normal. Increased wildfire frequency can destabilize hillsides due to loss of vegetation and change in soil composition, which can contribute to greater runoff and erosion. The combination of a generally drier climate in the future, which will increase the chance of drought and wildfires, and the occasional extreme downpour, is likely to cause more mudslides and landslides. Impacts from these conditions would compound landslide potential for the most susceptible locations.

Flood and Inundation Hazards

Flooding is the rising and overflowing of a body of water onto normally dry land. Floods are among the costliest natural disasters in terms of human hardship and economic loss nationwide, significantly threatening the health and life of community members and causing substantial damage to structures, landscapes, and utilities. Flooding can be extremely dangerous, and even six inches of moving water can knock a person over given a strong current. Floodwaters can transport large objects downstream, which can damage or remove stationary structures, such as dam spillways. Ground saturation can result in instability, collapse, or other damage. Objects can be buried or destroyed through sediment deposition. Floodwaters can also break utility lines and interrupt services. Standing water can cause damage to roads, foundations, and electrical circuits. Other problems connected with flooding and stormwater runoff include erosion, degradation of water quality, losses of environmental resources, and certain health hazards.

Floods are usually caused by large amounts of precipitation, either from a period of very intense precipitation or a long period of steady precipitation. Historically, Riverside County has been at risk

of flooding primarily during the spring months when stream systems in the county swell with heavy rainfall. Riverside County has experienced severe flooding many times throughout its history, resulting in the loss of lives and millions of dollars in property damage. Floods are caused by rivers and creeks overrunning their banks, and most property damage has occurred where development has been allowed without regard for flood hazard.

In Eastvale, flood hazards are limited to the area along the Santa Ana River. These areas are planned (Refer to the Land Use Chapter of this General Plan) for uses consistent with periodic flooding (e.g., open space and parks). In the developed areas of Eastvale, flood control facilities are in place that protect homes and businesses from flooding.

Areas at an elevated risk of flooding are generally divided into 100- and 500-year flood zones. A 100-year flood zone has a 1-percent chance of experiencing a major flood in any given year and a 500-year flood zone has a 0.2-percent chance of flooding in any given year. **Figure S-5** shows the 100- and 500-year flood zones in and around Eastvale. FEMA's flood hazard zones are established based on historical data and may not fully predict the future areas that are most at risk of flooding or the frequency of future flood events.

The 100- and 500-year floodplains in Eastvale include the Santa Ana riverbeds as well as some residential properties adjacent to this area, Crossroads Riverview Park, Prado Basin Park, Eastvale Community Park, Swan Lake, and a portion of I-15. During large storm events, Harada Park and James C. Huber Park are designed to be used as detention basins and may be closed to the public.

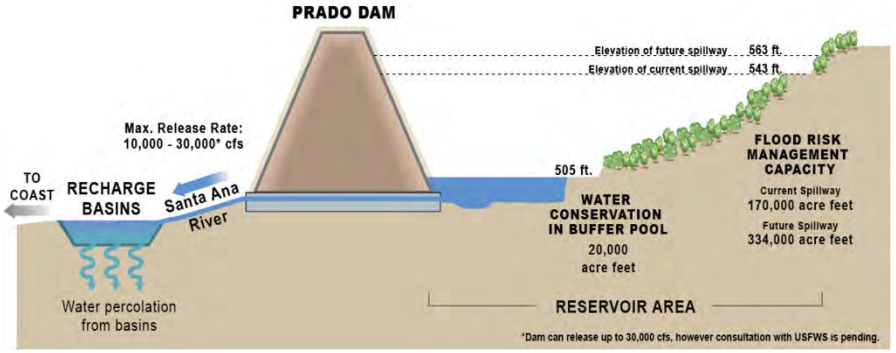
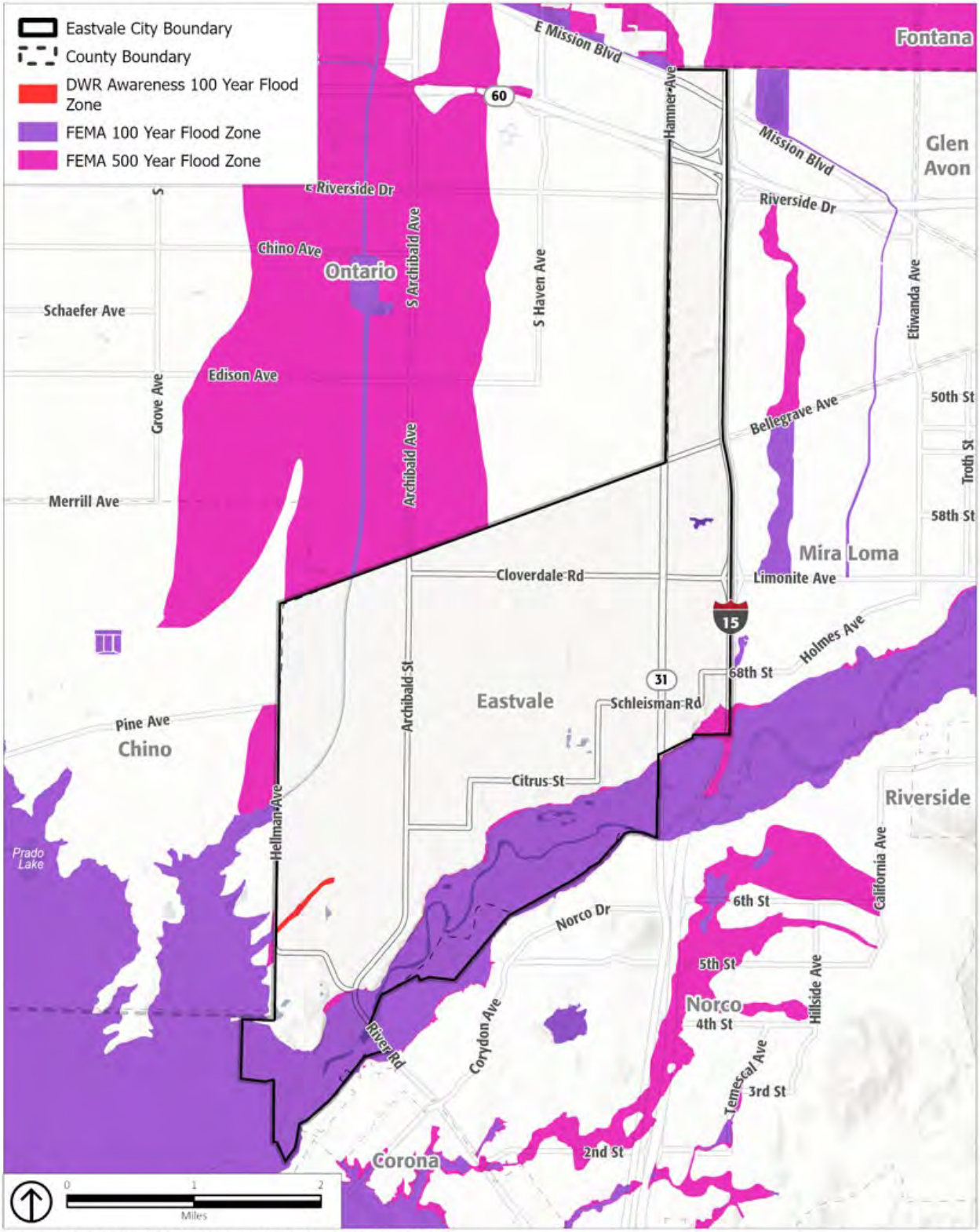


FIGURE S-5 FLOOD HAZARD ZONES



Source: CalDWR, 2022; FEMA, 2022; PlaceWorks, 2022

Agencies responsible for flood control in Eastvale include Riverside County's Flood Control and Water Conservation District (RCFWCD), the Unites States Army Corps of Engineers (USACE), the Eastvale Public Works Department, Federal Insurance Administration (FIA), and the Department of Water Resources (DWR).

- RCFWCD is the regional flood management authority for the western part of Riverside County. RCFWCD provides the following: identification of flood hazards and problems; regulation of floodplains and development; regulation of drainage and development; county watercourse and drainage planning; education for flood prevention and safety; construction of flood control structures and facilities; flood warning and early detection; maintenance and operation of completed structures.
- The USACE identifies the need for and constructs major flood-control facilities. It also develops flood and dam inundation maps and reports.
- The Eastvale Public Works Department is responsible for flood management throughout the city.
- FEMA manages the National Flood Insurance Program (NFIP), providing insurance to the public in communities that participate in the program. FEMA is the main federal government agency contact during natural disasters and publishes the Flood Insurance Rate Maps (FIRM), which identify the extent of flood potential in flood-prone communities based on a 100-year flood (or base flood) event.
- The FIA is the primary agency that delineates potential flood hazard areas and floodways through the FIRMs and the Flood Boundary and Floodway Map. Flood insurance is required of all homeowners who have federally subsidized loans.
- DWR is responsible for managing and protecting California's water. DWR works with other agencies to benefit the state's people, and to protect, restore, and enhance the natural and human environments. DWR also works to prevent and respond to floods, droughts, and catastrophic events that would threaten public safety, water resources and management systems, the environment, and property.

Floodplains can change over time. The floodplain and watercourse of a stream can be affected by anthropogenic (human) influences, such as the development of land into residential or commercial structures and the resulting reduction of pervious land (resulting in increased stream flow), the construction of bridges or culverts, or the creation of levees or other impoundment structures that control the flow in the watercourse.

Dam Failure

One additional type of flooding that can occur is the catastrophic flood caused by the failure of a dam. A dam failure is an uncontrolled release of water from a reservoir through a dam because of structural failures or deficiencies in the dam, usually associated with intense rainfall or prolonged flooding. Dam failures can range from minor to catastrophic and can potentially harm human life and property downstream from the failure. In addition, ecosystems and habitats are destroyed because of waters flooding them. Although dam failures are very rare, these events are not unprecedented. There are four major causes of dam failures:

- **Overtopping:** These failures occur when a reservoir fills too high with water, especially in times of heavy rainfall, leaving water to rush over the top of the dam. Other causes of this type of failure include settling of the crest of the dam or spillway blockage.
- **Foundation defects:** These failures occur as a result of settling in the foundation of the dam, instability of slopes surrounding the dam, uplift pressures, and seepage around the foundation. All these failures result in structural instability and potential dam failure.
- **Piping and seepage failures:** These failures occur as a result of internal erosion caused by seepage and erosion along hydraulic structures such as the spillways. Erosion may also be caused by animal burrows and cracks in the dam structure.
- **Conduit and valve failure:** These failures occur as a result of problems with valves and conduits.

Many dam failures are also the secondary result of other natural disasters, such as earthquakes, landslides, extreme storms, or heavy snow-melt. Other causes include equipment malfunction, structural damage, and sabotage. Eastvale is not in an area that would be affected by inundation due to the failure of an upstream dam. However, some areas in Eastvale are subject to an increased likelihood of flooding since the spillway at Prado Dam was raised from an elevation of 543 feet to 563 feet. In recent years the Orange County Flood Control District purchased land or easements for these affected areas, which in Eastvale are mostly located along the Santa Ana River.

Potential Changes to Flood Risk in Future Years

Likelihood of Future Occurrence

Flooding is a significant problem in Riverside County. Historically, Riverside County has been at risk of flooding primarily during the winter and spring months when river systems in the county swell with heavy rainfall runoff. Normally, storm floodwaters are kept within defined limits by a variety of storm drainage and flood-control measures. Occasionally, extended heavy rains result in floodwaters that exceed normal high-water boundaries and cause damage. Flooding has occurred both within the 100- and 500-year floodplains and in other localized areas. As land uses and climate conditions shift and as improvements are made to flood-control channels, the size of these flood zones is likely to change. The potential for a dam failure event in Eastvale does not exist as the city is not in an area that would be affected by inundation due to the failure of an upstream dam.

Climate Change and Flooding

Floods are among the most damaging natural hazards in Riverside County, and climate change is expected to make flood events worse. Although climate change may not change average precipitation levels significantly, scientists expect that it will cause more years with extreme precipitation events. This means that more years are likely to see particularly intense storm systems that drop enough precipitation over a short enough period to cause flooding. Although Southern California is likely to experience a decrease in overall precipitation levels from climate change, the region is also expected to see an increase in the number of extreme precipitation events. A meteorological phenomenon known as the “atmospheric river,” a narrow stream of extremely moist air, is frequently responsible for the more intense storms that strike California. Atmospheric rivers generally deliver high levels of precipitation, up to 50 percent of the state’s total precipitation in any given year.

Because of this, floods are expected to occur more often in Eastvale and climate change may expand the parts of the city that are considered prone to flood. Flood events are expected to become more frequent, and the areas currently subject to flooding are expected to expand. There are some indirect effects of climate change that may also increase flooding in the city. Climate change is expected to increase the frequency and severity of droughts, which cause soil to dry out and become hard. When precipitation does return, more water runs off the surface than is absorbed into the ground, which can lead to floods.

While the risk and associated short- and long-term impacts of climate change are uncertain, experts in this field tend to agree that among the most significant impacts include those resulting from increased heat and precipitation events that cause increased frequency and magnitude of flooding. Increases in damaging flood events will cause greater property damage, public health and safety concerns, displacement, and loss of life. Displacement of residents can include both temporary and long-term displacement, increase in insurance rates, or restriction of insurance coverage in vulnerable areas.

Fire Hazards

Fire hazards include both wildfires and urban fires. The combination of complex terrain, Mediterranean climate, and productive natural plant communities, along with ample natural ignition sources, has created conditions for extensive wildfires in and around Eastvale. Wildfire is a hazard of high concern for the City of Eastvale. Historically, the fire season extended from early summer through late fall of each year during the hotter, dryer months, although it is increasingly a hazard that can occur year-round. Fire conditions arise from a combination of high temperatures, low-moisture content in the air and plant matter, an accumulation of vegetation, and high winds.

Three types of fires are of concern to Eastvale: (1) wildfires, (2) wildland-urban interface fires, and (3) structural fires.

Wildfires

Wildfires can occur on mountains, hillsides, and grasslands. In Riverside County, native vegetation, such as chaparral, sage, and grassland provide fuel that allows fire to spread easily across large tracts of land. In Eastvale, native vegetation, such as chaparral, sage, and grassland provide fuel that allows fire to spread easily across large tracts of land. These plant species are capable of regeneration after a fire, making periodic wildfires a natural part of the ecology of these areas.

Fire potential for Riverside County is typically greatest in the months of August, September, and October, when dry vegetation coexists with hot, dry Santa Ana winds. However, in Riverside County, fires with conflagration potential can increasingly occur at any time of the year. The portion of Eastvale near the Santa Ana River has been identified as having a moderate susceptibility to wildfire, due to the presence of wild vegetation along the river. The Santa Ana riverbeds provide an untapped fuel base for the City's yearly round of wildfires largely due to vegetation. Because of dry vegetation conditions and Santa Ana winds, the fire danger for Riverside County is considered high. Additionally, the terrain of the Chino Hills has a substantial fire risk due to its undeveloped, rugged topography with highly flammable vegetation.

Wildfire Smoke

Increasing local and regional fire frequency can create recurring air quality degradation events leading to respiratory health effects. Wildfire smoke consists of a mix of gases and fine particulate matter from burning vegetation and materials. The pollutant of most concern from wildfire smoke is fine particulate matter (PM2.5). PM2.5 from wildfire smoke is damaging to human

health due to its ability to deeply penetrate lung tissue and affect the heart and circulatory system. Although wildfire smoke presents a health risk to everyone, sensitive groups may experience more severe acute and chronic symptoms from exposure to wildfire smoke, such as children, older adults, people with chronic respiratory or cardiovascular disease, or people experiencing low socioeconomic status.

Wildland-Urban Interface Fires

The wildland-urban interface (WUI) is an area where buildings and infrastructure (e.g., cell towers, schools, water supply facilities) mix with areas of flammable wildland vegetation. The WUI is composed of both interface and intermix communities. The distinction between these is based on the characteristics and distribution of houses and wildland vegetation across the landscape. Intermix WUI refers to areas where housing and wildland vegetation intermingle, while interface WUI refers to areas where housing is in the vicinity of a large area of dense wildland vegetation. The Wildfire Influence Zone refers to an area made up of wildfire susceptible vegetation up to 1.5 miles from the WUI. The WUI threat zone is an additional strip of vegetation modified to reduce flame heights and radiant heat. Hundreds of homes now border major forests and brush areas in California. According to a publication in the International Journal of Wildfire, the interface WUI in California contained 50 percent of buildings destroyed by wildfire, whereas intermix WUI contained only 32 percent. The proportion of buildings destroyed by fires among classes was similar, though highest in interface WUI areas (15.6 percent). The results demonstrated that the interface WUI is where most buildings were destroyed in California, despite less wildland fuel.[3] Human-caused fires are the leading cause of wildland fires, and with thousands of people living near and visiting wildland areas, the probability of human-caused fires is growing.

In the WUI, efforts to prevent ignitions and limit wildfire loss hinge on hardening structures and creating defensible space through a multi-faceted approach, which includes engineering, enforcement, education, emergency response, and economic incentive. Different strategies in the defense and threat zones of the WUI help to limit the spread of fire and reduce the risk to people and property.

Structural Fires

Eastvale is also at risk from structural fires. These fires occur in built-up environments, destroying buildings and other human-made structures. Structural fires are often due to faulty wiring or mechanical equipment and combustible construction materials. The absence of fire alarms and fire sprinkler systems are often conditions that exacerbate the damages associated with a structural fire. Structural fires are largely from human accidents, although deliberate fires (arson) may be a cause of some events. Older buildings that lack modern fire safety features may face greater risk of damage from fires. To minimize fire damage and loss, the City's Fire and Building Codes, based on the California Fire and Building Codes, sets standards for building and construction. They require the provision of adequate water supply for firefighting, fire-retardant construction, and minimum street widths, among other things.

[3] Kramer, Heather Anu; Mockrin, Miranda H.; Alexandre, Patricia M.; Radeloff, Volker C. 2019. High wildfire damage in interface communities in California. International Journal of Wildland Fire. 28(9): 641-. https://doi.org/10.1071/WF18108.

Fire Hazard Zones

CAL FIRE establishes Fire Hazard Severity Zones (FHSZs), designating each as moderate, high, or very high severity. Incorporated areas where local agencies are responsible for fire protection service, such as Eastvale, are called Local Responsibility Areas (LRAs). Unincorporated areas where state agencies have responsibility for providing fire protection are called State Responsibility Areas (SRAs).

Land in the southwestern portion of the city, which encompasses the Western Riverside County Regional Wastewater Authority Treatment Plant, Kamp Van Loon, and the Santa Ana River, is an SRA, and designated as a moderate FHSZ. Residential uses occur in proximity to these areas, posing potential fire safety problems. The Santa Ana riverbeds provide an untapped fuel base for regular wildfires largely due to its dry vegetation and therefore poses a high wildfire risk. The WUI, where high-value structures such as homes meet highly flammable native vegetation, are more vulnerable and, as a result of serious wildland fires throughout the state in recent years, are more stringently subject to fire-prevention regulations on development.

Residential development in the WUI, the introduction and proliferation of exotic species, accumulated fuel because of the exclusion of naturally occurring fire, and climate change-driven compression of the historic rainy season exacerbates the fire problem. Taken together, these factors result in more people, property, critical infrastructure, and natural resources in harm's way on a more frequent basis. While large-scale wildfires do not occur every year, wildfire incidents driven by extreme weather conditions have repeatedly been difficult to contain.

A combination of factors, including weather, topography, and vegetation put Eastvale, including the WUI, at a high risk. **Figure S-6** shows the wildfire hazard severity zones in and around Eastvale and **Figure S-7** identifies the WUI.

Fire Protection

Fire protection in Eastvale is provided by the Riverside County Fire Department, which operates in coordination with CAL FIRE.

The City of Eastvale is signatory to the California Mutual Aid Fire Protection System. This agreement was established to aid with major emergency incidents anywhere in the state. The City maintains mutual-aid agreements with several agencies. When major incidents occur, the City must deploy all its resources and depend on mutual-aid agreements with neighboring jurisdictions. This includes all other fire departments in Riverside County. Mutual-aid agreements help ensure adequate response times in the outlying areas. The City also has a contract with the State Office of Emergency Services.

The Riverside County Fire Department operates two stations in Eastvale:

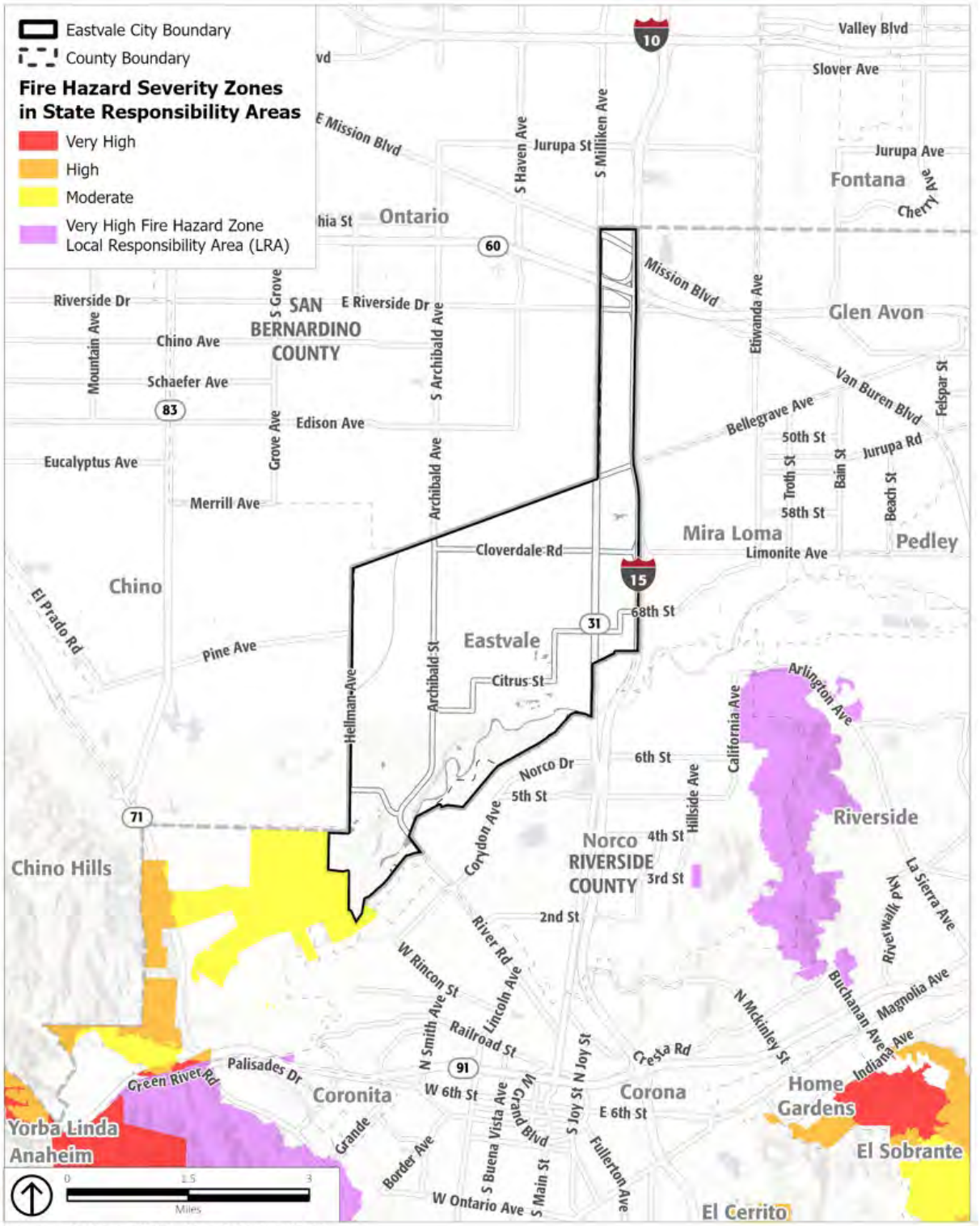
- Fire Station 27 at 7067 Hamner Avenue
- Fire Station 31 at 14491 Chandler Street

Past Occurrences

Historical fires within Eastvale city limits include the 2015 Highway Fire, 1989 River Fire, 1985 River Fire, and the 1980 Fire. The 2015 Highway Fire burned 1,049 acres and encroached the southwestern portion of the city. The 1985 River Fire burned 452 acres in the southern portion of the city, encompassing the Santa Ana River, Prado Basin Park, and Eastvale Community Park. The 1980 Fire burned 257 acres in the southwestern portion of the city which is currently residential land uses.

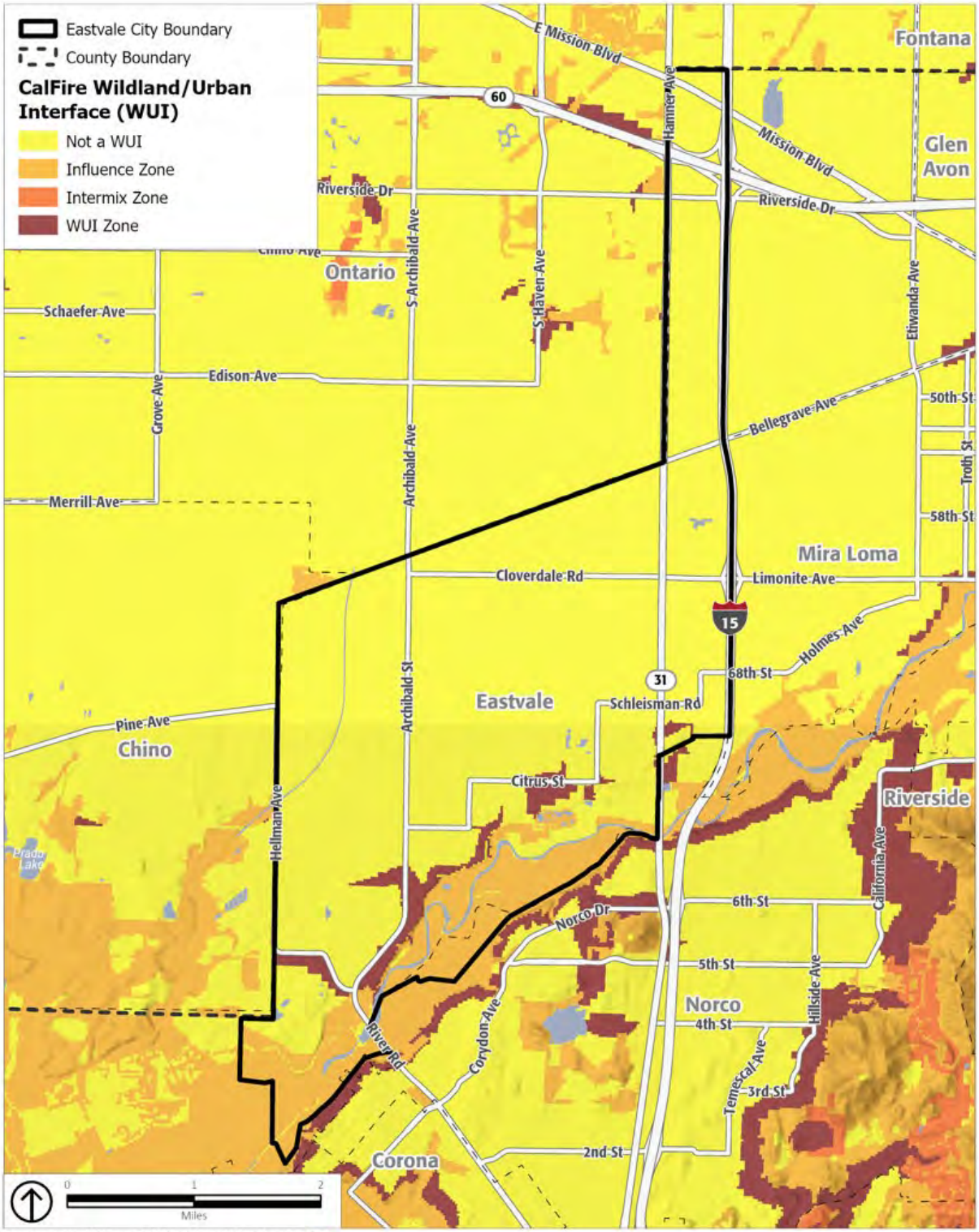
From 2008 to 2021, there were 45 wildfires in Riverside County, some of which overlapped with neighboring counties, each burning over 300 acres in the region. This includes the 2015 Highway Fire which burned over 1,000 acres, including some land in within Eastvale city limits. Some burned considerably more acreage, most notably the 2008 Freeway Complex Fire and the 2013 Mountain Fire which burned 30,305 acres and 27,531 acres, respectively. These events are listed in **Table S-2.**

FIGURE S-6 WILDFIRE HAZARD SEVERITY ZONES



Source: CalFire, 2022; PlaceWorks, 2022

FIGURE S-7 WILDLAND-URBAN INTERFACE ZONES



Source: CalFire, 2022; PlaceWorks, 2022

TABLE S-2 HISTORIC FIRES IN RIVERSIDE COUNTY

Larger Fires 300 Acres and Greater							
Fire Name	Date		Acres Burned	Vegetation Type	Cause	Structures	
	Start	End				Destroyed	Damaged
Davis Fire	5/18/21	5/18/21	300	Grass/Brush	Arson	0	0
Lincoln Fire	03/15/19	03/20/19	560	Grass	Arson	0	0
Jerry Fire	06/21/19	06/21/19	500	Grass	Vehicle	0	0
Tenaja Fire	09/04/19	09/14/19	1,926	Grass/Brush	Under Investigation	0	3
Horseshoe Fire	09/14/19	09/17/19	503	Grass/Brush	Undetermined	0	0
Hill Fire	10/10/19	11/03/19	628	Grass/Brush	Under Investigation	0	0
Sandalwood Fire	10/10/19	10/15/19	1,011	Grass/Timber	Undetermined	73	16
Cranston Fire	07/25/18	08/09/18	13,139	Brush/Grass/Timber	Human	12	5
Patterson Fire	05/17/18	05/18/18	1,261	Grass/Brush	Equipment Use	0	0
Wildomar Fire	10/26/17	11/01/17	866	Grass/Brush	Vehicle	0	0
Palmer Fire	09/02/17	09/09/17	3,800	Grass/Brush	Playing with Fire	0	0
Mias Fire	08/14/17	08/18/17	600	Grass/Brush	Electrical Power	0	0
Blaine Fire	08/13/17	08/16/17	1,500	Grass/Brush	Undetermined	0	46
Manzanita Fire	06/26/17	06/30/17	6,309	Grass/Brush	Vehicle	0	0
Opera Fire	04/30/17	05/02/17	1,350	Grass/Brush	Vehicle	0	0
Bogart Fire	08/30/16	09/05/16	1,470	Grass/Brush	Undetermined	0	0
Anza Fire	08/10/15	08/15/15	500	Brush	Human	0	0
Highway Fire	04/18/15	04/24/15	1,049	Timber/Grass	Equipment	0	0
Pierce Fire	3/15/14	3/16/14	350	Grass/Brush	Arson	0	0
Silver Fire	8/7/13	8/15/13	20,292	Brush	Undetermined	48	8
Mountain Fire	7/15/13	7/31/13	27,531	Timber/Brush	Electrical Power	23	1
Hathaway Fire	6/9/13	10/15/13	3,870	Brush	Under Investigation	0	0
Gorgonio Fire	5/4/13	5/4/13	650	Grass/Brush	Undetermined	0	0

TABLE S-2 HISTORIC FIRES IN RIVERSIDE COUNTY

Larger Fires 300 Acres and Greater							
Fire Name	Date		Acres Burned	Vegetation Type	Cause	Structures	
	Start	End				Destroyed	Damaged
Falls Fire	8/5/13	8/9/13	1,383	Grass/Brush	Under Investigation	0	0
Summit Fire	5/1/13	5/4/13	2,956	Grass/Brush	Undetermined	2	0
Jurupa Fire	2/28/13	3/2/13	300	Timber	Undetermined	0	2
Range Fire	9/29/12	10/1/12	351	Grass/Brush	Miscellaneous	3	0
Vista Fire	8/20/12	8/21/12	500	Grass	Equipment	0	0
Rushmore Fire	8/4/12	8/4/12	1,000	Grass	Undetermined	0	0
Buck Fire	8/14/12	8/18/12	2,681	Grass/Brush	Lightning	4	0
Volcano Fire	8/1/12	8/5/12	356	Grass/Brush	Equipment	1	0
View Fire	6/17/12	6/18/12	375	Brush	Electrical	0	0
Highland Fire	6/16/12	6/18/12	2,171	Grass/Brush	Under Investigation	0	0
Windy Point Fire	9/25/11	10/3/11	541	Grass	Miscellaneous	0	0
Keller Fire	8/29/11	8/31/11	450	Grass/Brush	Equipment	0	0
Gilman Fire	8/06/11	8/07/11	945	Grass	Undetermined	0	0
Skinner Fire	7/15/10	7/18/10	503	Grass	Lightning	0	0
Cactus Fire	7/15/10	7/18/10	720	Grass	Lightning	0	0
McKinley Fire	5/20/10	5/22/10	1,000	Grass	Equipment	0	0
Pedley Fire	5/12/10	5/13/10	850	Grass	Equipment	0	0
Vail Fire	9/19/09	09/20/09	398	Brush	Equipment	0	9
Cottonwood Fire	08/27/09	08/31/09	2,409	Grass/Brush	Miscellaneous	0	0
Oliver Fire	05/27/09	05/27/09	500	Grass	Other	0	0
Freeway Complex Fire	11/15/08	11/22/08	30,305	Grass	Structure	0	245
Apache Fire	4/29/08	5/4/08	769	Timber/Grass/Brush	Smoking	0	0
Source: Cal Fire Historical Wildfire Activity Statistics 2008 - 2021							

2013 Mountain Fire: The Mountain Fire burned 27,531 acres in Mountain Center. The fire burned for 16 days along steep slopes of timber and chaparral primarily in the San Jacinto Mountains of the San Bernardino National Forest. The fire threatened the town of Idyllwild, other small towns, and reached within two miles of Palm Springs. Nearly 6,000 residents of the Idyllwild and Fern Valley areas were ordered to evacuate; however, those communities were not damaged by the fire. While 23 structures were destroyed, and one structure was damaged, no fatalities occurred.

2008 Freeway Complex Fire: The Freeway Complex Fire started along the Riverside Freeway in the riverbed of the Santa Ana River, located in Corona. The fire spread west and north into the hillsides of Yorba Linda and south into Anaheim Hills, where multiple businesses and residences were destroyed. It also burned homes in Olinda Ranch along Carbon Canyon Road in Brea, burned through much of Chino Hills, then spread north into Diamond Bar. Approximately 40,000 residents were evacuated during the fire. Areas under mandatory evacuation during the fire included Anaheim, Carbon Canyon, Chino Hills, Corona, Diamond Bar and Yorba Linda. The fire burned approximately 30,305 acres and resulted in 245 damaged and destroyed structures; no fatalities occurred.

Potential Changes to Fire Risk in Future Years

Likelihood of Future Occurrence

Risk and vulnerability to Eastvale from wildfire is of significant concern, especially in the Santa Ana riverbeds. High fuel loads, along with geographical and topographical features, create the potential for both natural and human-caused fires that can result in loss of life and property. These factors, combined with natural weather conditions common to the area, including periods of drought, high temperatures, low relative humidity, and periodic winds, can result in frequent and sometimes catastrophic fires. During the historic August to October fire season, the dry vegetation and hot and dry Santa Ana winds, combined with continued growth in the wildland-urban interface areas, results in an increase in the number of ignitions. Fires occurring during these times typically burn hot and fast and are difficult to control unless initial suppression occurs immediately. Wildfire for Eastvale is a concern given its WUI designations, as well as the area's unique ecology – particularly the topography, climate, and vegetation, which provides the setting for recurrent catastrophic wildfires. As development continues, especially in these interface areas, the risk and vulnerability to wildfires will likely increase.

Wildfire will continue to be a high-risk hazard for personal safety and property damage in Eastvale and smoke impacts from local and regional wildfires are likely to continue to be problematic. The likelihood of structural fires occurring in the city is low since these fires are usually associated with human accidents or mechanical issues in buildings that rarely happen.

Climate Change and Wildfire

Changing climate conditions are expected to increase the wildfire risk in and around Eastvale. Warmer temperatures brought on by climate change can exacerbate drought conditions. Droughts can kill or dry out plants, creating more fuel for wildfires. Warmer temperatures are also expected to increase the number of pest outbreaks, such as the western pine beetle, creating more dead trees and increasing the fuel load. Hot, dry spells may also increase disease and insect infestations resulting in higher fuel loads. Increased winds may result in more erratic fire behavior, making fires harder to contain. Warmer temperatures are also expected to occur during more of the year, extending the wildfire season, which is likely to begin earlier in the year and extend later than it has historically. Wildfires occurring later or earlier in the

year are more likely to occur during Santa Ana Winds, which can cause wildfires to move more quickly and increase the likelihood of burning in the WUI areas. According to the California Fourth Climate Change Assessment, overall burned area may increase by as much as 60 percent during Santa Ana Wind events (typically October to March), and 75 percent during periods without Santa Ana winds (typically April to September).

Hazardous Materials and Waste

Hazardous materials are materials that pose a significant risk to public safety or human or environmental health. These include toxic chemicals, flammable or corrosive materials, petroleum products, and unstable or dangerously reactive materials. They can be released through human error, malfunctioning or broken equipment, or as an indirect consequence of other emergencies (e.g., if a flood damages a hazardous material storage tank). Hazardous materials can also be released accidentally during transportation, as a consequence of vehicle accidents.

A release or spill of bulk hazardous materials could result in fire, explosion, toxic cloud, or direct contamination of water, people, and property. The effects may involve a local site or many square miles. Health problems may be immediate, such as corrosive effects on skin and lungs, or gradual, such as the development of cancer from a carcinogen. Damage to property could range from immediate destruction by explosion to permanent contamination by a persistent hazardous material.

Most hazardous materials in the region are being transported on truck routes along major roadways that pass through Eastvale, such as I-15 along the eastern border of the city. The most vulnerable areas along this route are the on-/off-ramps and interchanges. Since 1970, there have been no reported roadway hazardous materials incidents in Eastvale.

Hazardous materials and waste within Eastvale are managed by the Certified Unified Program Agency (CUPA), a local administrative agency within the Riverside County Division of Environmental Health. The CUPA consolidates, coordinates, and makes consistent the regulatory activities of several hazardous materials and hazardous waste programs, including Hazardous Materials Management, California Accidental Release Prevention, Hazardous Waste Management, Underground Storage Tanks, Aboveground Storage Tanks, and Emergency Response.

Several state agencies monitor hazardous materials/waste facilities. Potential and known contamination sites are monitored and documented by the Regional Water Quality Control Board (RWQCB) and the California Department of Toxic Substances Control (DTSC). A review of the leaking underground storage tank (LUST) list produced by the RWQCB and the DTSC EnviroStor database indicates two hazardous waste sites which include Rondo Elementary School and the proposed Yorba Elementary School.

If a hazardous material spill poses an imminent public health threat, the City will support local regulating agencies in notifying the public. Caltrans regulates the transport of hazardous materials/wastes and explosives through the city. Transporters of hazardous wastes are required to be certified by the United States Department of Transportation and manifests are required to track the hazardous waste during transport. The danger of hazardous materials/waste spills during transport does exist and will potentially increase as transportation of these materials increase on I-15. The Eastvale Police Department, Riverside County Fire Department, Riverside County Emergency Management Department, and Riverside County Department of Environmental Health are responsible for hazardous materials accidents at all locations within the city.

Critical Facilities and Lifelines

Critical facilities are parts of infrastructure that must remain operational after a disaster or facilities that pose unacceptable risks to public safety if severely damaged. In Riverside County, critical facilities include schools, hospitals, fire and police stations, emergency operation centers, communication centers, dams, and industrial sites that use or store explosives, toxic materials, or petroleum products. It is essential that critical facilities have no structural weaknesses and remain operable in the event of an areawide emergency.

Potential Changes to Hazardous Materials in Future Years

Likelihood of Future Occurrence

Given that there have been no major hazardous materials incidents in transport through the city in the past 52 years, it is unlikely that hazardous materials releases will occur in Eastvale on a frequent basis, although there remains some level of risk. Moreover, according to Caltrans, most incidents are related to releases of fluids from the transporting vehicles themselves and not the cargo. The likelihood of a significant hazardous materials release within the city, from either transportation or stationary sources is considered low, but possible. Future risk from exposure to contaminated soils and water remains a concern due to current industrial uses and past groundwater and soil contamination in the city and surrounding area.

Climate Change and Hazardous Materials

Climate change is unlikely to substantially affect hazardous materials transportation incidents, or conditions relating to the exposure of pollution and contamination in the community. However, increases in the frequency and intensity of hazards, such as floods, landslides, and severe storms, may create a greater risk of hazardous materials releases during these events.

Additional Climate-Related hazards

Drought

A drought is an extended period when precipitation levels are well below normal. Drought is a normal part of the climate cycle. Drought may cause losses to agriculture; affect domestic water supply, energy production, public health, and wildlife; or contribute to wildfire. Like most of California and the western United States, Eastvale chronically experiences drought cycles. Drought impacts the city's water supply, which may in severe instances, ultimately makes less water available for people, businesses, and natural systems.

Less snow falling in mountainous areas causes water levels in lakes and reservoirs to drop, which can affect recreation activities. Local ecosystems that are not well adapted to drought conditions can be more easily harmed by it. Droughts can also indirectly lead to more wildfires, and the stress caused by water shortages can weaken plants, making them more susceptible to pests and diseases.

The U.S. Drought Monitor recognizes a five-point scale for drought events: D0 (abnormally dry), D1 (moderate drought), D2 (severe drought), D3 (extreme drought), and D4 (exceptional drought). According to the U.S. Drought Monitor, the most intensive drought conditions in recent years occurred during most of 2007, when all of Riverside County was classified as being in "extreme" drought. As of December 2022, Riverside County, including Eastvale, was classified as being in "moderate" drought. For 74 percent of the time since 2000, at least half of Riverside County has been under some level of drought conditions. Similarly, 48 percent of the time since 2000, all of Riverside County has faced

drought conditions. These figures do not include times when sources of Riverside County's imported water may have also been under drought events.

In response to the drought conditions that impact Riverside County, the City of Eastvale has measures in place that encourages the installation of water-conserving systems such as dry wells and gray water systems, where feasible, especially in new developments. The installation of cisterns or infiltrators shall also be encouraged to capture rainwater from roofs for irrigation in the dry season and flood control during heavy storms. The City also encourages the decrease of storm water runoff by reducing pavement in development areas, and by design practices such as permeable parking bays and porous parking lots with bermed storage areas for rainwater detention.

During severe drought conditions, water shortages are common and water restrictions may be imposed to meet essential community needs. Jurupa Community Services District's (District) 2020 Water Shortage Contingency Plan contains actions to implement and enforce regulations and restrictions for managing a water shortage when it declares a water shortage emergency under the authority of the Water Code.

The City's water supply comes entirely from local groundwater via the District. The District's current water supply comes almost entirely from the Chino Groundwater Basin, which is 230 square miles and lies under the greater Chino Valley including the District service area. A very small amount of non-potable irrigation water is pumped from District wells in an adjacent groundwater basin called the Riverside South Basin. The Chino Basin is one of the largest groundwater basins in Southern California and has an estimated 12 million acre-feet of water in storage. The Chino Basin has always been a reliable supply of water to the District and unresponsive to short and long-term drought periods. In a water shortage situation, the District can access its groundwater held in storage in the Chino Basin and/or pump up to and exceeding, if necessary, the District's allocated share of the safe yield. The District can also access emergency supplies via connections with neighboring water suppliers.

Potential Changes to Drought in Future Years

Likelihood of Future Occurrence

Drought is different than many of the other natural hazards in that it is not a distinct event and usually has a slow onset. Drought can severely impact a region both physically and economically, affecting different sectors in different ways and with varying intensities. Adequate water is the most critical issue for commercial and domestic use. As the population in the city continues to grow, so will the demand for water. However, water supply is currently considered adequate to meet projected water needs through the year 2045. The 2020 Urban Water Management Plan demonstrates that the District has adequate capacity to accommodate its water demand through 2045 through a diversified and implementation of demand management measures, increased use of recycled water, and enhanced groundwater management.

Based on historical information, the occurrence of drought in California, including Riverside County, is cyclical, driven by weather patterns. Drought has occurred in the past and will occur in the future. Periods of actual drought with adverse impacts can vary in duration, and the period between droughts is often extended. Although an area may be under an extended dry period, determining when it becomes a drought is based on comparing observed precipitation with what is normal (climatologic), comparing soil moisture and crop conditions with what is normal (agricultural), or by looking at how much water is contained in snow, the level or flow rate of moving water, water in

reservoirs, or groundwater levels (hydrologic). However, how individuals recognize drought depends on the ways in which it affects them. The impacts from drought include reduction in water supply and an increase in dry fuels.

Climate Change and Drought

Although droughts are a regular feature of California's climate, scientists expect that climate change will lead to more frequent and intense droughts statewide. Overall, precipitation levels are expected to stay similar, and may even increase in some places. However, the state's current data say that there will be more years with extreme levels of precipitation, both high and low, as a result of climate change. This is expected to cause more frequent and intense droughts compared to historical norms that cause soil to dry out and become hard. When precipitation does return, more water runs off the surface than is absorbed into the ground, which can lead to floods. Higher air temperatures are expected to increase evaporation, causing more water loss from lakes and reservoirs, exacerbating drought conditions.

Extreme Heat

California's Cal-Adapt database of climate change effects defines extreme heat as temperatures that are hotter than 98 percent of the historical high temperatures for the area, as measured between April and October of 1961 to 1990. Days that reach this level are called extreme heat days. In Eastvale, the extreme heat threshold is 103.8°F. An event with five extreme heat days in a row is called a heat wave. Extreme heat can also occur in the form of warm nights when temperatures do not cool down overnight and provide community members with relief from the warm days. This can also cause higher electricity use during the nighttime hours as community residents need more energy to cool homes. In Eastvale, a warm night occurs when the temperature stays above 68.4°F.

Health impacts are the primary concern with this hazard, though economic impacts are also an issue. The Center for Disease Control and Prevention (CDC) recognizes extreme heat as a substantial public health concern. Historically, NOAA data indicates that about 175 Americans succumb to the demands of summer heat, although this number has increased in recent years. From 2004 to 2018, studies by the U.S. Department of Health and Human Services indicate that there is an average of 702 deaths annually that are directly or indirectly linked to extreme heat. Following a record-breaking heat wave in 2006, over 16,000 emergency room visits, more than 1,100 hospitalizations, and at least 140 deaths were reported. As heat events are projected to become more frequent and last longer, preparing for the public health challenges they pose is critical.

Extreme heat events are dangerous because people exposed to extreme heat can suffer heat-related illnesses, including heat cramps, heat exhaustion, and (most severely) heat stroke. Elderly persons, small children, chronic invalids, those on certain medications or drugs, and persons with weight and alcohol problems are particularly susceptible to heat reactions. The elderly and individuals below the poverty level are the most vulnerable to extreme heat. Nursing homes and elder-care facilities are especially vulnerable to extreme heat events if power outages occur, and air conditioning is not available. In addition, individuals below the poverty level may be at increased risk to extreme heat if use of air conditioning is not affordable. Areas with lower extreme heat thresholds are not necessarily at lower risk, as persons and community assets used to cooler temperatures may be less prepared for extreme heat events.

Trees and other vegetation in the natural and urban environment help to lower surface and air temperatures by providing shade and through evapotranspiration. Evapotranspiration, alone or in combination with shading, can help reduce peak summer

temperatures by 2°F to 9°F.[4],[5] Very high temperatures can harm plants and animals that are not well adapted to them, including natural ecosystems. Extreme heat can increase the temperature of water in lakes, streams, creeks, and other water bodies, especially during drought events when water levels are lower. In some cases, water temperatures may exceed comfortable levels for several plants and animals, causing ecological harm. Outdoor workers in construction or landscaping are also much more exposed to the elements than most people, so they are more susceptible to extreme heat conditions and the potential illnesses associated with very high temperatures. Indirectly, extreme heat puts more stress on power lines, causing them to run less efficiently. The heat also causes more demand for electricity (usually to run air conditioning units), and in combination with the stress on the power lines, may lead to brownouts and blackouts. Wildfire risk increases as vegetation dries out. Damage to roadways, bridges, and other transportation infrastructure may also occur.

A small number of all homes in Eastvale are older homes and were constructed over 42 years ago. Given that 587 homes, or 3.4 percent of all housing, were constructed prior to 1980, some homes are unlikely to have air conditioning and may lack effective insulation. Therefore, people living in these homes, especially vulnerable populations, are at higher risk for heat-related illnesses from extreme heat events. To help provide relief from the heat during extreme heat days and heat waves, Riverside County opens cooling centers at locations throughout the county. Some nearby locations include the Eddie Dee Smith Senior Center and Jurupa Community Center in Jurupa Valley and the Rose M. Eldridge Senior Center in Norco. These air-conditioned community spaces provide essential cool spaces for vulnerable populations, especially those susceptible to heat-related illnesses.

Potential Changes to Extreme Heat in Future Years

Likelihood of Future Occurrence

Extreme heat tends to occur on an annual basis and is likely to continue occurring annually. As Eastvale is located in western Riverside County and at relatively low elevation, extremely high temperatures will continue to be a more common occurrence than cold temperatures.

Climate Change and Extreme Heat

The warmer temperatures brought on by climate change are likely to cause an increase in extreme heat events. Depending on the location and emissions levels, the state Cal-Adapt database indicates the number of extreme heat days is expected to rise from a historical annual average of 4 to 23 by the middle of the century (2035 to 2064), and an average of 41 by the end of the century (2070 to 2099), with some years occasionally experiencing much more extreme heat days. The number of warm nights in Eastvale is projected to increase from an average of 5 historically to an average of 39 warm nights per year by mid-century, and an average of 79 warm nights per year by the end of the century.

Overall, Eastvale is expected to see an increase in the average daily high temperatures. Depending on the future severity of climate change, the state Cal-Adapt database indicates the annual average maximum temperature is expected to increase from a historical annual average of 79.0°F to an average of up to

[4] Huang, J., H. Akbari, and H. Taha. 1990. The Wind-Shielding and Shading Effects of Trees on Residential Heating and Cooling Requirements. ASHRAE Winter Meeting, American Society of Heating, Refrigerating and Air-Conditioning Engineers. Atlanta, Georgia.

[5] Kurn, D., S. Bretz, B. Huang, and H. Akbari. 1994. The Potential for Reducing Urban Air Temperatures and Energy Consumption through Vegetative Cooling. ACEEE Summer Study on Energy Efficiency in Buildings, American Council for an Energy Efficient Economy. Pacific Grove, California.

84.9°F by the middle of the century (2035 to 2064), and an average of up to 87.9°F by the end of the century (2070 to 2099). Although the temperature increases may appear modest, the projected high temperatures are substantially greater than historical norms. These increases also make it more likely that an above-average high temperature will cross the extreme heat threshold. As temperatures increase, Eastvale is expected to face increased risk of death from dehydration, heat stroke, heat exhaustion, heart attack, stroke, and respiratory distress caused by extreme heat.

Severe Weather

Severe weather is generally any destructive weather event, but usually occurs in Eastvale as localized storms that bring heavy rain, hail, thunderstorms, and strong winds. Severe weather is usually caused by intense storm systems, although types of strong winds can occur without a storm. The types of dangers posed by severe weather vary widely and may include injuries or deaths, damage to buildings and structures, fallen trees, roads and railways blocked by debris, and fires sparked by lightning. Severe weather often produces high winds and lightning that can damage structures and cause power outages. Lightning from these storms can ignite wildfires and structure fires that can cause damage to buildings and endanger people. Objects such as vehicles, unprotected structures (e.g., bus stops, car ports), fences, telephone poles, or trees can also be struck directly by lightning, which may result in an explosion or fire. Lightning happens occasionally and there have been six injuries and one death reported from lightning events since 1950. Hail events are rare and there have only been two reported injuries from hail in Riverside County since 1950. In Riverside County, most severe weather is linked to high winds. High winds, often accompanying severe storms, can cause significant property and crop damage, threaten public safety, and have adverse economic impacts from business closures and power loss.

Santa Ana winds have caused large amounts of damage and increased the fire damage level dramatically. Santa Ana winds are generally defined as warm, dry winds that blow from the east or northeast (offshore). These winds occur below the passes and canyons of the coastal ranges of Southern California. Santa Ana winds often blow with exceptional speed in the Santa Ana Canyon. The complex topography of Southern California, combined with various atmospheric conditions, creates numerous scenarios that may cause widespread or isolated Santa Ana events. Commonly, Santa Ana winds develop when a region of high pressure builds over the Great Basin (the high plateau east of the Sierra Nevada and west of the Rocky Mountains, including most of Nevada and Utah). Santa Ana winds commonly occur between October and April with December having the highest frequency of events. Summer events are rare. Wind speeds are typically north to east at 40 miles per hour (mph) through and below passes and canyons with gusts to 58 mph. Stronger Santa Ana winds can have gusts greater than 69 mph over widespread areas and, in rare instances, gusts greater than 115 mph in specific areas. Frequently, the strongest winds in the basin occur during the night and morning hours due to the absence of a sea breeze.

All wind events pose several different types of threats. By themselves, the winds pose a threat to the health of people and structures in the county. Dust and plant pollen blown by the wind can create breathing problems. The winds can blow roofs off buildings and cause tree limbs to fall on structures. High winds also increase the threat of wildfires. Winds may dry out brush and forest areas, increasing the fuel load in fire-prone areas. Winds may spark wildfires by knocking down power lines or causing them to arc. If wildfires do start, high winds can push flames quickly into new areas, contributing to rapid spread of wildfires and making them harder to control. This can affect the air quality in Eastvale and may disrupt regional infrastructure networks.

Atmospheric rivers are a relatively common weather pattern that brings southwest winds and heavy rain to California. They can be hundreds to thousands of miles long, and though they are narrow in the context of weather systems, narrow can mean up to 300 miles across. When the atmospheric rivers make landfall, they often release this water vapor in the form of rain or snow, often causing heavy rains that can lead to flooding and mudslide events. On average, California experiences approximately five to six atmospheric rivers per year. However, in some years, California may only experience one to two atmospheric rivers. Up to 50 percent of California's annual precipitation can come from atmospheric rivers.

A thunderstorm is a rain event that includes thunder and lightning. A thunderstorm is classified as "severe" when it contains one or more of the following: hail with a diameter of three-quarter inch or greater, winds gusting in excess of 57.5 miles per hour (mph), or tornado.

Potential Changes to Severe Weather in Future Years

Likelihood of Future Occurrence

According to historical hazard data, severe weather is an annual occurrence in Riverside County. Damage and disaster declarations related to severe weather have occurred and will continue to occur in the future. Heavy rain and thunderstorms are the most frequent type of severe weather occurrences in the county. Wind and lightning often accompany these storms and have caused damage in the past. However, actual damage associated with the primary effects of severe weather have been limited. It is the secondary hazards caused by severe weather, such as floods and fire, which have had the greatest impact on the county. In general, any severe storm that affects Riverside County has local effects in Eastvale as well. Thunderstorms, high winds, and lightning can each have localized impacts on infrastructure, properties, and public safety. Transportation, including freight shipping, faces increased congestion when severe storms occur.

Climate Change and Severe Weather

Climate change is expected to cause an increase in intense rainfall and strong storm systems. This means that Eastvale could see more intense weather resulting from these storms in the coming years and decades, although such an increase may not affect all forms of severe weather. While average annual rainfall may increase only slightly, climate change is expected to cause an increase in the number of years with intense levels of precipitation. Heavy rainfall can increase the frequency and severity of other hazards, including flooding.

GOALS, POLICIES, AND ACTIONS

EMERGENCY PREPARATION AND RESPONSE

GOAL S-1: A community that effectively minimizes threats to public health, safety, and welfare resulting from natural and human-caused hazards.

S-1.1: Damage must be minimized for critical facilities, and susceptibility to structural collapse must be minimized, if not eliminated.

Action S-1.1.1: Ensure that special development standards, designs, and construction practices reduce risk to tolerable levels for projects involving critical facilities, large-scale residential development, and major commercial or industrial development through development review process and the subdivision review process.

Action S-1.1.2: Require that planned lifeline utilities, as a condition of project approval, be designed, located, structurally upgraded, fit with safety shutoff valves, be designed for easy maintenance, and have redundant backup lines where unstable slopes, earth cracks, or areas of liquefaction cannot be avoided.

Action S-1.1.3: Coordinate with the Public Utilities Commission (PUC) and/or utilize the Capital Improvement Program to strengthen, relocate, or take other appropriate measures to safeguard high-voltage lines, water, sewer, natural gas and petroleum pipelines, and major electrical and telephone conduits that:

- Extend through areas of high liquefaction potential;
- Are located on collapsible or expansive soils;
- Traverse earth cracks or landslides; or
- Require extra design considerations for lifelines across subsidence areas.

S-1.2: The City will participate in regional disaster recovery planning and implementation.

S-1.3: The City shall work with the Riverside County Fire Department to ensure the safety and protection of Eastvale and its community members.

Action S-1.3.1: The City will work with the County Fire Department through the review of proposed development projects to ensure that fire safety issues are considered.

S-1.4: The City shall ensure the safety and protection of Eastvale and its community members by providing appropriate first response to emergencies and ensuring that sufficient resources are available to provide adequate protection as the community grows.

Action S-1.4.1: The City will maintain and enhance community safety through coordinated regional emergency, law-enforcement, and protective services systems.

Action S-1.4.2: The City will work with the Police Department through the review of proposed development projects to ensure that public safety

issues are considered prior to construction and occupancy.

S-1.5: The City will seek to maintain and enhance communications between community residents and the police through regular meetings and a visible community policing program.

S-1.6: The City encourages the design of neighborhoods and buildings in a manner that discourages crime and promotes security and safety for people and property.

Please see the Design Chapter of this General Plan for additional policies related to the design of neighborhoods and buildings.

S-1.7: The City encourages the use of Crime Prevention Through Environmental Design (CPTED) principles in the design of private development projects and public facilities. These basic principles include:

Natural Surveillance

A design concept directed primarily at keeping intruders easily observable. Promoted by features that maximize visibility of people, parking areas, and building entrances: doors and windows that look out on to streets and parking areas; pedestrian-friendly sidewalks and streets; front porches; and adequate nighttime lighting.

Territorial Reinforcement

Physical design can create or extend the area in which users develop a sense of territorial control. Potential offenders, perceiving this control, are discouraged. This experience is promoted by features that define property lines and distinguish private spaces from public spaces by using landscape plantings, pavement designs, gateway treatments, and "CPTED" fences.

Natural Access Control

A design concept directed primarily at decreasing crime opportunity by denying access to crime targets and creating a perception of risk in the mind of the offender. This is gained by designing streets, sidewalks, building entrances, and neighborhood gateways to clearly indicate public routes and discouraging general access to private areas through structural and design elements.

Target Hardening

Target hardening is accomplished by features that prohibit entry or access (such as window locks, deadbolts for doors, and interior door hinges). Offenders will seek easier targets, reducing crime in areas where these features are used.

S-1.8: Implement the Eastvale Local Hazard Mitigation Plan, which was adopted by the City Council and certified by FEMA and is incorporated into this Safety Element.

Action S-1.8.1: Update the Eastvale Local Hazard Mitigation Plan as necessary to remain valid, to comply with State and federal laws, and to reflect changing climate conditions.

S-1.9: Coordinate with the Riverside Transit Agency and community service and faith-based organizations

to assist with evacuation efforts and ensure that evacuation services are made available to people with limited English proficiency and access to transportation, communication, and other lifeline resources and services.

S-1.10: Promote community emergency preparedness by distributing flyers for Community Emergency Response Team (CERT) trainings provided by the Riverside County Fire Department.

SEISMIC AND GEOLOGIC HAZARDS

GOAL S-2: A community that seeks to minimize risks to public health, safety, and welfare resulting from geologic and seismic hazards.

S-2.1: The City shall seek to ensure that new structures are protected from damage caused by earthquakes, geologic conditions, soil conditions, and other potential hazards.

Action S-2.1.1: Mitigate hazard impacts through adoption and strict enforcement of current building codes, which will be amended as necessary when local deficiencies are identified.

Action S-2.1.2: Enforce state laws aimed at identification, inventory, and retrofit of existing vulnerable structures.

Action S-2.1.3: Require structural and nonstructural assessment and, when necessary, mitigation, of other types of potentially hazardous buildings that are undergoing substantial repair or improvements resulting in more than half of the assessed property value. Potential implementation measures could include:

a) Use of variances, tax rebates, fee waivers, credits, or public recognition as incentives.

b) Inventory and structural assessment of potentially hazardous buildings based on screening methods developed by the Federal Emergency Management Agency.

c) Development of a mandatory retrofit program for hazardous, high occupancy, essential, dependent, or high-risk facilities.

d) Development of a mandatory program requiring public posting of seismically vulnerable buildings.

S-2.2: All new development shall be designed and constructed to conform with the Building Code and other applicable codes and other safety standards related to seismic and geologic hazards.

Action S-2.2.1: Require geological and geotechnical investigations in areas with potential for seismically induced.

S-2.3: For projects in areas of known or suspected seismic or other geologic hazards, such as Alquist-Priolo Fault Zones and liquefiable soils, require submittal of a geotechnical report and ensure appropriate mitigation measures are incorporated into the project design.

S-2.4: Prohibit construction of buildings intended for human occupancy in areas where seismic and

other geologic hazards (e.g., liquefaction, and fault lines) cannot be adequately mitigated.

S-2.5: Encourage research into new foundation design systems that better resist the climatic, geotechnical, and geological conditions present in Eastvale and Riverside County.

S-2.6: Require automatic natural gas shutoff earthquake sensors in high-occupancy industrial and commercial facilities, as well as new homes, and encourage them for all existing residences.

S-2.7: Encourage retrofits to existing buildings and critical infrastructure, including key roadways, that improve resiliency to geologic and seismic hazards.

S-2.8: Provide educational materials to homeowners about geologic and seismic risks in the community and techniques to mitigate liquefaction risk on their property.

FLOOD AND INUNDATION HAZARDS

GOAL S-3: A community that seeks to avoid and minimize risk and damage from flood hazards in the city.

S-3.1: Development in floodplains or floodways shall not obstruct flows or adversely affect upstream or downstream properties with increased floodwater volumes, velocities, erosion backwater effects, or concentrations of flows.

Action S-3.1.1: Require all proposed projects to address and mitigate any adverse impacts the project may have on the carrying capacity of local and regional storm drain systems.

S-3.2: Critical facilities shall not be permitted in floodplains unless the project design ensures that there are two routes for emergency egress and regress, and minimizes the potential for debris or flooding to block emergency routes, through the construction of dikes, bridges, or large-diameter storm drains under roads used for primary access.

S-3.3: All residential, commercial, and industrial structures shall be flood-proofed from the 200-year storm flow, and the finished floor elevation shall be constructed at such a height as to meet this requirement.

S-3.4: Critical facilities should be constructed at an elevation to the satisfaction of the Building Official, based on federal, state, or other reliable hydrologic studies.

S-3.5: Development using, storing, or otherwise involved with substantial quantities of on- site hazardous materials shall not be permitted, unless all standards for evaluation, anchoring, and flood-proofing have been satisfied, and hazardous materials are stored in watertight containers, not capable of floating, to the extent required by state and federal laws and regulations.

Action S-3.5.1: Enforce provisions of the Building Code as it relates to flooding and hazardous materials. Specific flood-proofing measures may require use of paints, membranes, or mortar to reduce water seepage through walls; installation of watertight doors, bulkheads, and shutters; installation of floodwater pumps in structures; and proper modification and protection of all electrical

equipment, circuits, and appliances so that the risk of electrocution or fire is eliminated. However, fully enclosed areas that are below finished floors shall require openings to equalize the forces on both sides of the walls.

S-3.6: Any substantial modification to a watercourse shall be done in the least environmentally damaging manner possible in order to maintain adequate wildlife corridors and linkages and maximize groundwater recharge.

S-3.7: Update stormwater infrastructure design requirements and retrofit storm drainage systems as needed, subject to funding availability, to maintain consistency with federal, state, and local regulatory requirements and to convey runoff for more intense storms resulting from climate change.

S-3.8: Cooperate with the Riverside County Flood Control and Water Conservation and other jurisdictions to pursue funding to finance improvements to storm drainage and flood control facilities.

S-3.9: Ensure that new development and infrastructure projects do not create or exacerbate flood risks elsewhere in Eastvale or in neighboring communities.

S-3.9: Ensure that new development projects and retrofits to existing large-scale projects incorporate design strategies and features to reduce the area of impervious surfaces and flood risks with natural drainage, as well as groundwater replenishment.

S-3.10: Identify areas of poor drainage and install new or upgrade existing drainage systems to accommodate drainage needs. Use natural infrastructure to the extent possible.

FIRE HAZARDS

GOAL S-4: A community that seeks to avoid and minimize the risk of loss of life, injury, and property loss from wildfires and urban fires.

S-4.1: All proposed development shall meet minimum standards for fire safety as defined in the City's Building or Fire codes, based on building type, design, occupancy, and use.

S-4.2: Development in Fire Hazard Severity Zones shall include secondary public access, unless determined otherwise by the Fire Chief.

S-4.3: Coordinate with the Jurupa Community Services District to perform maintenance including fuel management techniques by eliminating dead vegetation and planting fire-resistant vegetation to prevent or remove the fuel that causes the spread of wildfires.

S-4.4: Coordinate with the Jurupa Community Services District to maintain an adequate, long-term water supply for fire suppression needs for the community.

S-4.5: Support measures that help firefighting crews and emergency response teams respond to fire hazards or work under low-visibility conditions, such as high-visibility signage for streets and building addresses that meet or exceed the standards in the

California Fire Safe Regulations (Sections 1273 and 1274 of the California Code of Regulations – Title 24, Division 1.5, Chapter 7, Articles 2 and 3).

S-4.6: Require proposed development to provide adequate access for fire and emergency vehicles and equipment that meets or exceeds the standards in the California Fire Safe Regulations (Sections 1273 and 1274 of the California Code of Regulations – Title 24, Division 1.5, Chapter 7, Articles 2 and 3).

S-4.7: Require development to be located, designed, and constructed to provide adequate defensibility and minimize the risk of structural loss and life safety resulting from wildfires.

S-4.8: Ensure that water supply infrastructure adequately supports existing and future development and provides adequate water flow to combat structural and wildland fires.

S-4.9: Maintain inter-jurisdictional cooperation and coordination, including automatic aid agreements with fire protection/suppression agencies in Riverside County.

S-4.10: Work with local agencies and community-based organizations to provide resources to help residents respond to poor air quality events (e.g., transportation to resilience centers and N95 masks).

HAZARDOUS MATERIALS AND WASTE

GOAL S-5: A community with effective, citywide management and disposal of hazardous materials and hazardous materials wastes.

S-5.1: The City will work with responsible agencies to identify and prevent potentially hazardous waste releases.

S-5.2: The City will regulate the storage of hazardous materials consistent with state and federal law. The City shall not permit above- or below-ground tanks without considering the potential hazards that would result from the release of stored liquids caused by rupture, collapse, or leaks, and may request applicants to have an emergency response plan.

S-5.3: The City will work with responsible agencies to ensure that all industrial facilities are constructed and operated in accordance with the most current safety and environmental protection standards.

Action S-5.3.1: The City shall require commercial businesses, utilities, and industrial facilities that handle hazardous materials to:

- Install automatic fire and hazardous materials detection, reporting, and shut-off devices; and
- Install an alternative communication system in the event power is out or telephone service is saturated following an earthquake.

Action S-5.3.2: The City will encourage private businesses, consortiums, and neighborhoods to be self-sufficient in an emergency by:

- Maintaining a fire control plan, including an on-site firefighting capability and volunteer fire response teams to respond to and extinguish small fires.

- Identifying medical personnel or residents who are capable and certified in first aid and CPR.
- Providing information on emergency practices and evacuation procedures to all residents, businesses, and participants.

S-5.4: The City will coordinate with all appropriate local, county, state, and federal agencies in hazardous materials route planning, notifications, and incident response to ensure appropriate first response to hazardous material incidents.

S-5.5: Coordinate with the Riverside County Emergency Management Department, Riverside County Department of Environmental Health, and Riverside County Fire Department and support efforts to reduce the level of risk from toxic and hazardous materials in Eastvale by regulating the transportation and storage of these materials in the community, and through an educational program on the proper disposal methods for hazardous, toxic, and polluting materials.

S-5.6: Ensure that the use and disposal of hazardous materials in the city complies with local, state, and federal safety standards.

S-5.7: Maintain the organizational framework for implementation of the California Standardized Emergency Management System (SEMS) and the National Incident Management System (NIMS).

ADDITIONAL CLIMATE-RELATED HAZARDS

GOAL S-6: A resilient community able to adapt to climate-related hazards.

S-6.1: Collaborate with local governments and special districts in western Riverside County as well as with Inland Southern California Climate Collaborative to develop and implement regional climate change adaptation and resilience initiatives.

Action S-6.1.1: Join the Inland Southern California Climate Collaborative to effectively address and build resilience to climate-related hazards that pose a threat to the community.

S-6.2: Support implementation of the Resilient IE project to foster increased community resilience to climate-related hazards in Eastvale and across the wider region.

S-6.3: Use the reported data and findings of applicable local, regional, or state documents or plans pertaining to climate-related hazards that could impact the City of Eastvale, including the California Climate Change Assessment, the California Adaptation Planning Guide, and the Safeguarding California Plan.

Action S-6.3.1: The City shall integrate the results and adaptive policies of the Climate Vulnerability Assessment into other City planning documents where feasible, including this General Plan Safety Element, the Local Hazard Mitigation Plan, Zoning Ordinance, building code, and other applicable codes.

S-6.4: Prepare for a reduced, long-term water supply resulting from more frequent and severe drought events, including working with regional water providers to implement extensive water

conservation measures and ensure sustainable water supplies.

S-6.5: Renovate existing City-owned assets and design future facilities to incorporate renewable energy generation systems, battery storage systems, and energy-efficient design and features, as feasible.

S-6.6: Work with healthcare providers to support free or reduced-cost vaccinations for vector-borne diseases that are widely available for Eastvale residents.

S-6.7: Coordinate with local governments and Riverside Transit Agency to increase shading and heat-mitigating materials on pedestrian walkways and transit stops.

S-6.8: Encourage new developments and existing property owners to incorporate sustainable, energy-efficient, and environmentally regenerative features into their facilities, landscapes, and structures to reduce energy demands and improve on-site resilience. Support financing efforts to increase community access to these features.

Action S-6.8.1: Where feasible, the City shall encourage the use of existing natural features and ecosystem processes, or the restoration of, when considering alternatives and adaptation projects through the conservation, preservation, or sustainable management of open space. This includes, but is not limited to, the conservation, preservation, or sustainable management of any form of aquatic or terrestrial vegetated open space, such as parks, rain gardens, and urban tree canopies.

S-6.9: Ensure that lower-income households have access to low-cost programs (e.g., subsidies for National Flood Insurance Program participation, air-conditioning, low-cost healthcare) to protect their homes and wellbeing from climate-related hazards.

S-6.10: Promote and expand the use of drought-tolerant green infrastructure, including street trees and landscaped areas, as part of cooling strategies in public and private spaces.

S-6.11: Use natural resources and infrastructure to absorb the impacts of climate-related hazards and associated natural hazards, as feasible.

S-6.12: Ensure that workers in outdoor industries have the training and resources to be adequately protected from environmental hazards, including extreme heat, poor air quality, and diseases.

S-6.13: Encourage the use of high-reflectivity pavement in new or significantly retrofitted large-scale paving projects, such as parking lots.

S-6.14: Decrease water usage on public and private parcels through the existing Water Conservation Program implemented by Eastvale's partner agency, Jurupa Community Services District. Encourage contractors for residential and commercial developments to offer options promoting partnering agencies' programs.

AIRPORT SAFETY

GOAL S-7: Minimize the exposure of the public to airport safety hazards through land use controls and policies for property in the vicinity of the Chino Airport.

S-7.1: Develop plans for short- and long-term post-disaster recovery which complement plans of adjacent jurisdictions, Riverside County, and San Bernardino County.

S-7.2: The City shall consider the compatibility criteria in the Airport Land Use Compatibility Plan for Chino Airport in the review of potential land uses or projects within the area affected by the airport. Projects shall be approved only where consistency with the compatibility criteria in the Airport Land Use Compatibility Plan can be demonstrated.

Action S-7.2: Review projects to ensure consistency with the Airport Land Use Compatibility Plan compatibility criteria at the earliest possible stage of the planning and entitlement process.

S-7.3: The City shall ensure that new development near the Chino Airport is designed to protect public safety from airport operations consistent with recommendations and requirements of the Airport Land Use Commission, the Federal Aviation Administration, and other responsible agencies. It shall be the City's intent to comply with all state laws related to airport land use planning.

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4

Implementation

IMPLEMENTATION

IN THIS VOLUME

This implementation strategy is a series of actions designed to reach the goals and implement the policies of Eastvale 2040. Rather than a "to-do" list the implementation chapter provides guidance on how to prioritize limited resources. Most of the measures reflect things that the City already does such as coordinating with local and regional partners to reach a goal. The other measures are items that will take follow up Council action to ensure adequate budget is available.

EASTVALE ESSANCE

City resources are limited in terms of money and staff time. The intent of this work plan is to provide a general idea of which things should be done first. For many of the implementation actions, community input is essential, and it is likely that several drafts will be required before an item can be adopted. The list may also be used for budgeting purposes and reviewed as part of the annual report on the progress of the General Plan. This list supports the General Plan but is expected to be amended regularly.

WORK PLAN

The work plan is organized into the follow topics:

- Funding & Collaboration
- Improvements
- Process & Information
- Rules & Coordination

Each work plan topic includes an implementation matrix that contains individual measures, included in the **Action Item** column, ordered per the volumes in the General Plan. Each measure includes a responsible department as well as an estimated priority for timing. The availability of budget, the extent of public outreach, and changing priorities may affect the timing of adoption. The priorities, shown in the **Timing** column, are:

Ongoing. Represents a constant attention to the issue.

Short-Term. measure that should be adopted within 1 – 3 years from adoption of the General Plan.

Mid-Term. A measure that might not be adopted for 5 – 10 years from adoption of the General Plan.

Late-Term. A measure that might not be adopted for over 10 years from adoption of the General Plan.

The column Work Group Lead represents the department most likely to take a leadership role in the measure. The leadership may shift to a new department depending on circumstances needed for the issue, and resources available at the time.

FUNDING & COLLABORATION

These measures are actions for the City to update fees or seek grants to implement policies in the General Plan, as well as to continue longstanding collaboration.

Action Item	Work Group Lead	Timing
Ensure that the General Plan supports and implements City's Strategic Plan.	Community Development	On-Going
Continue to pursue and leverage State and Federal funding options for economic development activities and infrastructure improvements that promote economic growth opportunities.	Community Development	Short-Term
Work with the Corona-Norco Unified School District to address issues such as parking, access, open space, and safe routes to school.	Community Development/ Public Works	On-Going
Coordinate with the Orange County Flood Control District on the development of a pedestrian bridge over the Cucamonga Creek Channel to connect residents to the Rondo Elementary School.	Public Works	Long-Term
Coordinate with the agencies that regulate and plan the Santa Ana River and the flood control lands to develop a plan for public use and habitat conservation.	Community Development/ Public Works	Short-Term
Work with the Orange County Flood Control District to allocate land along Hellman Avenue, south of Chandler Street, to develop Eastvale's future "Grand Park".	Community Development/ Public Works/ Finance	Long-Term
Regularly coordinate with the School District to address overcrowding and expansion plans.	Community Development/ Public Works/ Finance	On-Going
Collaborate with local health care providers and educators to provide input on development design and solutions for public health issues.	Community Development/ Public Works	On-Going
Coordinate with the County Flood Control District to secure leases on adjacent flood control land for a park space, agricultural production, passive and active outdoor recreation, special events, and other uses that can meet flood control regulations.	Community Development/ Public Works	Long-Term

Action Item	Work Group Lead	Timing
Actively market and promote available locations for expansion of existing, or establishment of new, business in the City.	Community Development	On-Going
Work with the County Fire Department through the review of proposed development projects to ensure that fire safety issues are considered.	Community Development	On-Going
Collaborate with Corona-Norco Unified School District to ensure that school children have safe and adequate transportation routes available, such as pedestrian or bike paths, or local bus service. Identify potential off-site drop off / pick up locations to ease traffic congestion near schools. Couple this location with enhanced walking and bicycling features to improve student access to schools.	Community Development/ Public Works	Short-Term
Work with regional partners to expand access to public transit throughout the Inland Empire and keep rights of way along arterial roadways for future expansion of public transit such as bus rapid transit lanes or light rail.	Community Development/ Public Works	Short-Term
Work with the Riverside County Parks Department for the City to take ownership of Riverview Park and support the annual Koroneburg Renaissance Festival that takes place at this park.	Community Development/ Public Works	Short-Term
Work with the County Fire Department through the review of proposed development projects to ensure that fire safety issues are considered.	Community Development/ Public Safety	On-Going
Work with the Police Department through the review of proposed development projects to ensure that public safety issues are considered prior to construction and occupancy.	Community Development/ Public Safety	On-Going

IMPROVEMENTS

These measures are specific improvements necessary for achieving the vision of this General Plan, and they reflect the community's vision for a high quality of life through the built environment.

Action Item	Work Group Lead	Timing
Adopt an Art in Public Places Ordinance to require new construction to participate in the acquisition and installation of public art in accordance with the City Public Arts Program.	Community Development	Short-Term

Action Item	Work Group Lead	Timing
Encourage the use of existing natural features and ecosystem processes, or the restoration of, when considering alternatives and adaptation projects through the conservation, preservation, or sustainable management of open space. This includes, but is not limited to, the conservation, preservation, or sustainable management of any form of aquatic or terrestrial vegetated open space, such as parks, rain gardens, and urban tree canopies.	Community Development/ Public Works	Long-Term
Adopt objective design standards to require setbacks, step backs, or other design elements at the transition between existing and proposed land uses.	Community Development	Short-Term
Develop and maintain objective design standards for all land use types citywide, or unique to one or more of the policy areas.	Community Development	Short-Term
Develop a specific plan for the Chandler Policy Area that encourages a mix of land uses that results in creating a unique sense of place while respecting the rural character of the area.	Community Development	Short-Term
Coordinate with the property owner of the Eastvale Gateway Shopping Center on a plan for introducing residential development in underutilized parking areas or locations where retail uses have been vacated. Ensure that new residential development includes sufficient private, common, and/or publicly accessible open space. Publicly accessible open space should be in proximity to outdoor dining associated with nearby restaurants and cafes.	Community Development	Mid-Term
Prepare and adopt a Parks Master Plan to develop recreational uses that support the existing sports park and serve as a trailhead for the Santa Ana River Trail.	Community Services/ Community Development	Mid-Term
Review all existing roadways for compliance with roadway typologies and the key features that align with the specific typology.	Public Works	Mid-Term
Join the Inland Southern California Climate Collaborative to effectively address and build resilience to climate-related hazards that pose a threat to the community.	Community Development	Short-Term
Develop a parks and open space plan that builds on the Embracing Eastvale's Riverfront: A Community-Wide Vision, develop a comprehensive park and trail program linking the Santa Ana River to the City.	Community Development/ Community Services/ Public Works	Short-Term

PROCESS & INFORMATION

These measures are actions for the City to undertake to improve, amend, or expand its procedures or inform future actions.

Action Item	Work Group Lead	Timing
Ensure dedications are made during the land division and/or development process for all transportation right-of-way, including easements or areas needed outside the travel way. This includes areas needed for slope stability or drainage and drainage structures.	Public Works	On-Going
Modify the development code to ensure that existing legal uses such as agriculture and animal keeping, are allowed to continue within the Chandler Policy Area.	Community Development/ Community Safety	Short-Term
Consider creation of a plan for implementation of Complete Streets throughout the City. The plan should include specific steps for implementing the policy in ways that will make a measurable impact on what gets constructed and where.	Public Works/ Community Development	Mid-Term
Ensure that the parks master plan includes a multipurpose recreational trail network with support facilities which provide a linkage with regional facilities.	Community Development/ Community Services/ Public Works	Mid-Term
Modify development standards to encourage the use of e-assist and NEV by supporting the use of EV's by providing mobility hubs and electric charging stations throughout the City. In addition, design roadways and facilities to accommodate a range of e-assist or NEV's.	Community Development/ Public Works	Mid-Term
Support the Riverside County Transportation Commission (RCTC) on the development of the Short- and Long-Range Transit Plans.	Community Development/ Public Works	On-Going
Enforce state laws aimed at identification, inventory, and retrofit of existing vulnerable structures.	Community Safety	On-Going
Enforce provisions of the Building Code as it relates to flooding and hazardous materials. Specific flood-proofing measures may require use of paints, membranes, or mortar to reduce water seepage through walls; installation of watertight doors, bulkheads, and shutters; installation of floodwater pumps in structures; and proper modification and protection of all electrical equipment, circuits, and appliances so that the risk of electrocution or fire is eliminated.	Community Safety	On-Going

Action Item	Work Group Lead	Timing
Encourage private businesses, consortiums, and neighborhoods to be self-sufficient in an emergency by: - Maintaining a fire control plan, including an on-site firefighting capability and volunteer fire response teams to respond to and extinguish small fires. - Identifying medical personnel or residents who are capable and certified in first aid and CPR. - Providing information on emergency practices and evacuation procedures to all residents, businesses, and participants	Community Safety/ Riverside County Fire	On-Going
Review projects to ensure consistency with the Airport Land Use Compatibility Plan compatibility criteria at the earliest possible stage of the planning and entitlement process.	Community Development	On-Going
Integrate the results and adaptive policies of the Climate Vulnerability Assessment into other City planning documents where feasible, including this General Plan Safety Element, the Local Hazard Mitigation Plan, Zoning Ordinance, building code, and other applicable codes.	Community Development/Community Safety	Short-Term

RULES & COORDINATION

These are measures that would amend or update the City's ordinances, codes, design guidelines, and other rules and requirements.

Action Item	Work Group Lead	Timing
Require geological and geotechnical investigations in areas with potential for seismically induced.	Community Development	On-Going
Update design standards to include at least one mobility hub in each of the policy areas.	Community Development/ Public Works	Long-Term
Update the developments standards to provide the multimodal features that align with the roadway typology.	Community Development/ Public Works	Short-Term
Update the development code to meet the requirements of the parks master plan.	Community Development	Short-Term
Update the parking requirements to allow non-residential parking to be met through shared lots that are distributed in the commercial areas, and maximum shared parking between land uses.	Community Development	Short-Term

Action Item	Work Group Lead	Timing
Update design standards to require the planting of trees that shade the sidewalks, buffer pedestrians from traffic, define the public spaces of streets, and moderate high temperatures and wind speeds throughout the city.	Community Development/ Public Works	Short-Term
Modify development standards to ensure that trails, paths, and pedestrian access can be extended into existing neighborhoods to provide for connectivity to transit and pedestrian corridors.	Community Development/ Public Works	Short-Term
Require commercial businesses, utilities, and industrial facilities that handle hazardous materials to: - Install automatic fire and hazardous materials detection, reporting, and shut-off devices; and - Install an alternative communication system in the event power is out or telephone service is saturated following an earthquake.	Community Safety/ Riverside County Fire	Mid-Term
Update the Development Code to designate and support the development of a broad range of land uses, intensities, and densities.	Community Development	Short-Term
Coordinate with Caltrans, the Riverside County Transportation Commission, transit agencies, and other responsible agencies to identify the need for additional park-and-ride facilities along major commuter travel corridors and at major activity centers.	Community Development/ Public Works	Long-Term
Require dust control plans, revegetation, and soil compaction to prevent fugitive dust emissions for both active construction sites, and vacant sites approved for development. Strive to meet the 2040 and 2050 greenhouse gas emission reduction targets in accordance with state law.	Community Development	On-Going
Modify procurement requirements to actively promote and encourage opportunities for local economic development, education, housing, locally hiring, internships and employment from cradle to career so as to increase resident retention, improve and grow a strong local economy, achieve a positive jobs-housing match; retain critical educational resources and human capital, reduce regional commuting, gas consumption and greenhouse gas emissions and ensure equitable opportunities for all residents of the City and region to thrive.	Community Development	On-Going
Require new development and significant construction to protect the quality of water and drainage systems through site design, source controls, stormwater treatment, runoff reduction measures, best management practices, low impact development strategies, and technological advances.	Public Works	On-Going
Continue participation in the Western Riverside County Multi Species Habitat Conservation Plan (MSHCP), and other existing or proposed habitat conservation and natural resource management plans for private and public lands to increase certainty for both the conservation of species, habitats, wildlife corridors, and other important biological resources and functions; and for land development and infrastructure permitting.	Community Development	On-Going

Action Item	Work Group Lead	Timing
Require that planned lifeline utilities, as a condition of project approval, be designed, located, structurally upgraded, fit with safety shutoff valves, be designed for easy maintenance, and have redundant backup lines where unstable slopes, earth cracks, or areas of liquefaction cannot be avoided.	Public Works	On-Going
Coordinate with the Public Utilities Commission (PUC) and/or utilize the Capital Improvement Program to strengthen, relocate, or take other appropriate measures to safeguard high-voltage lines, water, sewer, natural gas and petroleum pipelines, and major electrical and telephone conduits that: - Extend through areas of high liquefaction potential; - Are located on collapsible or expansive soils; - Traverse earth cracks or landslides; or - Require extra design considerations for lifelines across subsidence areas.	Public Works	On-Going
Maintain and enhance community safety through coordinated regional emergency, law-enforcement, and protective services systems.	Community Safety	On-Going
Update the Eastvale Local Hazard Mitigation Plan as necessary to remain valid, to comply with State and federal laws, and to reflect changing climate conditions.	Community Safety	Short-Term
Mitigate hazard impacts through adoption and strict enforcement of current building codes, which will be amended as necessary when local deficiencies are identified.	Community Safety	Short-Term

Appendices

APPENDIX A: VULNERABILITY ASSESSMENT RESULTS

The Vulnerability Assessment evaluates the impact and adaptive capacity of 53 populations and assets for each of the relevant 7 hazards. Vulnerability scores of V1 to V5 were assigned to reflect how susceptible the population or asset is to the harm posed by the hazard. The following list describes what each score means:

- V1: Minimal Vulnerability
- V2: Low Vulnerability
- V3: Moderate Vulnerability
- V4: High Vulnerability
- V5: Severe Vulnerability

The City assessed 275 different pairings for vulnerability, 88 of which scored as highly or severely vulnerable. The following matrix provides the scores for each population and assets to each relevant hazard. Gray cells with a dash (-) indicate that a specific hazard is not applicable to a specific population or asset, and therefore was not scored.

Populations and Assets	Drought	Extreme Heat & Warm Nights	Human Health Hazards	Flooding	Landslides	Severe Weather	Wildfire
Children under 10	V2	V5	V3	V3	V2	V3	V4
Cost-burdened households	V3	V3	V3	V3	V2	V2	V3
Households in poverty	V4	V5	V5	V4	V3	V5	V5
Immigrant communities	V3	V5	V4	V4	V3	V4	V4
Linguistically isolated persons	V2	V3	V3	V4	V2	V3	V3
Low-income households	V3	V4	V3	V3	V2	V3	V3
Low-resourced people of color	V4	V5	V5	V4	V3	V4	V4
Outdoor workers	V3	V5	V5	V3	V2	V4	V5

Populations and Assets	Drought	Extreme Heat & Warm Nights	Human Health Hazards	Flooding	Landslides	Severe Weather	Wildfire
Overcrowded households	V1	V3	V4	V2	V2	V1	V2
Persons experiencing homelessness	V3	V5	V5	V4	-	V5	V5
Persons living in mobile homes	V2	V4	V3	V3	-	V5	V3
Persons living on single-access roads	-	V1	V2	V1	V3	V4	V4
Persons with chronic illness and/or disabilities	V3	V4	V5	V3	V3	V4	V5
Persons without a high school degree	V1	V2	V2	V2	V2	V2	V2
Persons without access to lifelines	V2	V3	V4	V5	V3	V4	V4
Renters	V1	V4	V2	V3	V2	V3	V2
Seniors (65+)	V1	V4	V4	V4	V3	V3	V4
Seniors living alone	V2	V5	V5	V5	V4	V4	V5
Unemployed persons	V2	V3	V3	V3	V3	V3	V3
Bicycling and pedestrian trails	V2	V2	-	V2	V2	V2	V2
Bridges	-	V3	-	V4	V4	V5	V2
Communication facilities	-	V3	-	-	-	V4	-
Electrical transmission infrastructure	-	V5	-	V2	-	V5	V3
Electric vehicle charging stations	-	V3	-	-	-	V2	-
Hazardous materials sites	-	V2	-	-	-	V4	-
Major roads and highways	-	V3	-	V3	V4	V3	V3
Natural gas pipelines	-	-	-	V4	V4	-	-
Parks and open space	V3	V3	-	V2	V3	V3	V2
Railway	-	V4	-	-	-	V4	-
Transit facilities	-	V2	-	-	-	V3	-
Water and wastewater infrastructure	V2	V1	-	-	V3	V2	-
Community centers and libraries	-	V1	-	-	-	V2	-

Populations and Assets	Drought	Extreme Heat & Warm Nights	Human Health Hazards	Flooding	Landslides	Severe Weather	Wildfire
Commercial businesses	-	V2	-	-	-	V3	-
Government buildings	-	V1	-	-	-	V2	-
Homes and residential structures	-	V3	-	V4	V3	V4	V4
Medical and care facilities	-	V1	-	-	-	V3	-
Public safety buildings	-	V1	-	-	-	V1	-
Schools	-	V3	-	-	-	V3	-
Education services	V2	V3	V3	-	-	V2	V3
Major employers	V2	V3	V3	-	-	V2	V3
Outdoor recreation	V2	V4	V2	V3	V3	V3	V4
Retail Centers	V1	V2	V3	-	-	V3	V2
Chaparral	V3	V3	-	-	V3	V3	V4
Coastal Sage Scrub	V3	V3	-	V2	V3	V2	V4
Grassland	V3	V3	-	V2	V2	V2	V3
Riparian Scrub, Woodland, and Forest	V4	V3	-	V1	V3	V3	V5
Communications services	-	V2	-	V1	V2	V4	V2
Emergency medical response	-	V3	V4	V3	V3	V3	V3
Energy delivery	V2	V5	-	V3	V4	V5	V5
Government administration & community services	-	V1	V2	V2	V1	V2	V2
Public safety response	-	V2	V2	V3	V3	V3	V3
Public transit access	-	V4	V3	V3	V4	V3	V4
Water and wastewater treatment, delivery, and collection	V4	V3	-	V5	V4	V3	V5

APPENDIX B: GLOSSARY OF TERMS AND ABBREVIATIONS

PURPOSE

The following is a glossary of terms and abbreviations to help users read and understand Eastvale 2040 and the meaning and intent of its goals and policies. Please note that this glossary is not intended to be comprehensive or define terms, acronyms, or abbreviations that are generally well understood or easily looked up using other resources. Additionally, some terms listed in this glossary are not used in the text of Policy Plan. The focus is on terms that have multiple potential meanings (either in or out of Eastvale 2040 text), and to define the intended meaning of such terms to ensure the correct interpretation and implementation of the Eastvale 2040.

A–C

Accommodate: To make room for or provisions for something that is specifically intended to occur.

Action: A specific, measurable step that needs to be taken to meet stated objectives. An action is not mere compliance with the law or a commonly adopted or accepted practice or protocol. An action is short in duration and is meant to be updated and replaced once action has been taken. In the context of the Implementation Plan, the activity is typically to be undertaken by the City or another public entity.

Adaptive Reuse: The conversion of existing, obsolescent or historic buildings from their original or most recent use to a new use.

Advocate: To openly support and promote an action, objective, or goal; also, to speak on behalf of an individual or group.

Airport Land Use Compatibility Plan (ALUCP): The ALUCP provides for the orderly growth of the areas within an airports noise contour, runway protection zones, approach zones, and Part 77 zones and describes appropriate land uses, maximum population density, maximum site coverage, height restrictions, and required notification/disclosure areas.

Airport Master Plan (AMP): An AMP provides for the maintenance, development, and operation of the airport itself and includes operational forecasts, fleet mixes and the ultimate runway configuration and airport plan.

Allow: To be open to something occurring but without any particular effort to make it happen.

Always: The action will apply to future decisions without exception.

Analyze: To methodically examine the desirability or feasibility of something, with a view toward letting the evidence determine the appropriate level of commitment.

Aspire: To direct one's ambitions toward achieving something.

Augment: To add to something that is already in place to make it more desirable, functional, or beneficial.

Avoid: To not enable something that will lead to an undesirable outcome.

Best Management Practices (BMPs): Methods or techniques found to be the most effective and practical means in achieving an objective (such as preventing or minimizing pollution) while making the optimum use of resources.

Buffer / buffer zone: An area of land, structure, feature, or design treatment separating two uses that acts to soften or mitigate the effects of one use on the other.

Building Density and Intensity: Building density and intensity includes both residential density, expressed as units per acre, and non-residential intensity, expressed as floor area ratio, which is the amount of building square feet in relation to the size of the lot.

Buildout: Build-out is an urban planners estimate of the amount and location of potential development for an area. Buildout for The Ontario Plan can be found in Exhibit LU-03.

Built Environment: Human-made buildings and structures, as opposed to natural features.

Carbon Footprint: A carbon footprint is a measure of the impact human activities have on the environment in terms of the amount of greenhouse gases produced.

Carbon Sequestration: The removal and storage of carbon from the atmosphere in carbon sinks (such as oceans, forests, or soils) through physical or biological processes, such as photosynthesis.

Community Development Block Grant (CDBG): A grant program administered by the U.S. Department of Housing and Urban Development (HUD) that provides federal grants directly to larger urban cities and counties for activities that benefit low- and moderate-income individuals, eliminate blight, or address a serious and immediate threat to public health and welfare. States distribute CDBG funds to smaller cities and towns. Grant amounts are determined by a formula based upon need.

California Environmental Quality Act (CEQA): A state law requiring state and local agencies to assess the environmental impacts of public or private projects they undertake or permit. Agencies must mitigate adverse impacts of the project to the extent feasible. If a proposed activity has the potential for significant adverse environmental impacts, an Environmental Impact Report (EIR) must be prepared and certified as legally adequate by the public agency before taking action on the proposed project.

Class I Trail: Known as a Shared-use Path, is a completely separated facility for the exclusive use of bicycles and pedestrians with crossflow by motor vehicles minimized.

Class II Trail: Known as a Bike lane and a Buffered Bike lane, is a portion of the roadway that is designated by striping, signaling, and/or pavement markings for the exclusive use of bicyclists established along streets and corridors where there is significant demand and distinct needs. Bike lanes can be paired with a designated buffer space composed of painted striped and pavement markings adjacent bike lane, known as a Buffered Bike Lane.

Class III Trail: Known as a Bike Boulevard, is a special type of bike route where a street is designed to accommodate bicyclists with a wide variety of skill levels.

Class IV: Known as a Separated Bikeway and Raised Separated Bikeway, also known as a cycle track or protected bike lane, is a one- or two-way bike way for the exclusive use of bicycles that includes a physical, vertical barrier between bicyclists and motor vehicle traffic within the roadway. They can be designed to be

either at the same grade as the adjacent sidewalk or set as an intermediate level mountable curb between the roadway and sidewalk, known as a Raised Separated Bikeway.

"Clean" Industry: "Clean" industries include industrial type uses whose operations produce lower quantities of hazardous substances and air emissions than traditional industrial uses. Operations of such facilities should have minor adverse effects on neighboring land uses and are therefore more compatible in proximity to sensitive uses, like residential development, schools, and childcare facilities than traditional industry. Examples of "clean" industry include incubator space for small start-up and creative businesses, clean/green technology, biomedical device manufacturing, digital arts, furniture, and apparel design, etc.

Collaborate: To intentionally, willingly work together toward a common objective or goal.

Compatible: In relation to use, the ability for two or more uses to coexist without conflict, with minimal conflict that can be mitigated, or in a beneficial manner. When used in relation to a structure, indicates that the structure is built so that its appearance is similar to that of the principal unit to which the structure is accessory or to the general character of the neighborhood or community with regards to color, materials, construction, lighting, signs, or the emission of sounds, noises and vibrations. See also incompatible.

Complete streets network: A system of on- and off-street facilities (e.g., sidewalks, bike lanes, and trails), that enable all users of all ages and abilities to navigate within or through a community area, with an emphasis on mobility focus areas. The system can consist of one or more facility type based on the intended users and access requirements. Individual facilities may overlap or not, serve all or just some users, and be contiguous or disconnected. Complete streets facilities and improvements are subject to physical constraints presented by the local context and financial feasibility limitations.

Comply with: To follow specified existing ordinances, regulations, or procedures.

Complement / complementary: Combining or coexisting (e.g., two buildings or land uses) in such a way as to enhance or emphasize the qualities of each other.

Comprehensive Housing Affordability Strategy (CHAS): A plan prepared by state or local agencies as a prerequisite for receiving assistance under certain U.S. Department of Housing and Urban Development (HUD) programs.

Concurrent: Services, facilities, activities, or other things that are provided or are occurring at the same time as something else.

Consider: To remain open to and evaluate a range of possible actions or outcomes as part of a decision.

Consistent: To be or act in harmony or aligned with something; see also inconsistent.

Consolidate: To bring together aspects, features, or components of a system or locale that can serve better in a consolidated form, compared to existing or provided separately.

Construct: To build something**:** buildings, roads, channels, etc. Context. Local or regional environmental, social, and economic conditions.

Continue: To maintain and/or resume an action.

Cooperate: To work in a positive effort with another entity toward a mutually beneficial end. Such work may take the form of direct action, passive support, or even inaction.

Coordinate: To work in a positive effort with another entity in the process of conducting individual actions or initiatives that relate to each other and that can benefit from concurrent or cooperative activity.

Council of Governments (COG): A single or multi-county entity created by a joint power agreement. COGs are responsible for determining the share of the regional need for housing for each of the counties and cities within the COG's region. In most cases, the COG also serves as the Regional Transportation Planning Agency (RTPA) responsible for preparing regional transportation plans and expenditure programs.

Community Noise Equivalent Level (CNEL): A 24-hour energy equivalent level derived from a variety of single-noise events, with weighting factors of 5 and 10 dBA applied to the evening (7 p.m. to 10 p.m.) and nighttime (10 p.m. to 7 a.m.) periods to allow for greater sensitivity to noise during these hours.

Connect SoCal: The Connect SoCal plan (also known as the 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy or RTP/SCS) represents the vision for Southern California's future, including policies, strategies, and projects for advancing the region's mobility, economy, and sustainability through 2045. The plan details how the region will address its transportation and land use challenges and opportunities in order to achieve its regional emissions standards and greenhouse gas (GHG) reduction targets.

The components of Connect SoCal are required by federal and state legislation and is an important planning document for the region, allowing project sponsors to qualify for federal funding. SCAG is required to update this long-range planning document every four years.

Complete Community: A diversity of housing choices and educational opportunities; jobs for a variety of skills and education; recreation and culture; a full-range of shopping, entertainment and services; and the opportunity to improve individual quality of life.

Crime Prevention Through Environmental Design (CPTED): Crime Prevention through Environmental Design (CPTED) is the proper design and effective use of the built environment which may lead to a reduction in the fear and incidence of crime, and an improvement of the quality of life." – National Crime Prevention Institute.

Critical Facilities: Facilities housing or serving many people, and are necessary in the event of an earthquake or flood, such as hospitals, fire, police, and emergency service facilities, utility lifeline facilities, such as water, electricity, and gas supply. Critical Facilities within Ontario are mapped in the Safety Element.

D–I

Dedicate: To offer or set aside for a specific program, action, or use; when in the context of land dedication, the land is generally set aside for public ownership, use, and/or operation or maintenance.

Department of Housing and Community Development (HCD): A state agency that administers state housing programs. HCD also administers the federal HOME and CDBG programs on behalf of jurisdictions that are not directly assisted by HUD.

Department of Housing and Urban Development (HUD): A federal, cabinet level department responsible for overseeing, implementing, and administering U.S. government housing and urban development programs.

Design: To conceive in advance the size, shape, qualities, appearance, open space, and other attributes of a proposed development, building and related improvements, generally rendered in graphic forms that communicate the anticipated outcome.

Determine: To calculate in advance the nature or outcome of an anticipated action, situation, or proposal.

Discourage: To openly deter (or attempt to deter) an individual, group, or organization from doing something.

Discretionary: An action taken by a governmental agency that calls for the exercise of judgment in deciding whether to approve and/or how to carry out a project.

Emergency Communication & Dispatch Center: The Dispatch center provides daily dispatch services for the Fire & Police Departments and contract fire agencies. The dispatch Center is also a designated facility as part of California's Fire Rescue Mutual Aid System.

Encourage: To promote, support, or champion a concept or action; such support may be in terms of political support and coordination, staff resources, and/or financial resources.

Endangered Species: A native California bird, mammal, fish, amphibian, reptile, or plant (species, subspecies, or variety) is endangered when it is in serious danger of becoming extinct throughout all, or a significant portion of its range due to one or more causes, including loss of habitat, change of habitat, over-exploitation, predation, competition or disease (Section 2062, Fish and Game Code).

Enhance: To improve existing conditions in quality, value, or characteristic.

Equitable: A condition or treatment that is fair and impartial.

Establish: To bring something into being that does not currently exist.

Explore: To search for or examine the nature of a possibility before a commitment is made. See also analyze.

Expand: To increase in detail, extent, number, volume, or scope.

Environmental Justice Areas: Disadvantaged communities that face the highest risk of exposure to pollution and are also burdened by socioeconomic and health issue. Determined using the latest version of CalEnviroScreen, a screening tool developed by the California Office of Environmental Health Hazard Assessment (OEHHA) used to help identify communities disproportionately burdened by multiple sources of pollution and with population characteristics that make them more sensitive to pollution.

Environmental Infrastructure: The basic facilities, services, and installations needed for the functioning of key systems such as the sewerage network, drainage systems as well as improvements made to water courses and habitats.

Feasible: Capable of being done, executed, or managed successfully taking into consideration social, physical, environmental, and/or economic factors.

Facilitate: To make an action or process easier or to help bring about.

Fair share: An allocation of resources, costs, or fees considered equitable and proportional to the needs, impacts, or activity of an existing or proposed project.

Feasible, technically: Capable of being implemented because the industrial, mechanical, or application technology exists.

Feature: A noticeable or important characteristic, attribute, or aspect of something.

Finding(s): The result(s) of an investigation and the basis upon which decisions are made. Findings are used by government agents and bodies to justify action taken or a decision made by the entity.

Fire Conflagration: An uncontrolled burning that threatens human life, health, property, or ecology that may produce a firestorm, in which the central column of rising heated air induces strong inward winds, which supply oxygen to the fire.

Flash Flood: A flash flood is a rapid flooding of geomorphic low-lying areas – washes, rivers, and streams. It is caused by heavy rain associated with a thunderstorm, hurricane, or tropical storm. Flash floods can also occur after the collapse of an ice dam, or a human structure.

Flood Insurance Rate Map (FIRM): For each community, the official map on which the Federal Insurance Administration has delineated areas of special flood hazard and the risk premium zones applicable to that community.

Floodplain: The area, adjacent to a watercourse or other body of water, subject to recurring floods. Floodplains may change over time as a result of natural processes, the characteristics of a watershed, or the construction of bridges or channels. Floodplain can also serve as a reference to areas subject to flooding and mapped under FEMA's NFIP.

Floor Area Ratio (FAR): The gross floor area permitted on a site divided by the total net area of the site, expressed in decimals to one or two places.

Food insecurity: The state of being without reliable access to sufficient quantity of affordable, nutritious food.

Fund: To make money available for a prescribed purpose; may be a one-time, periodic, or ongoing commitment.

Global Warming: An increase in the earth's atmospheric and oceanic temperatures widely predicted to occur due to an increase in the greenhouse effect resulting especially from pollution.

Goal: A statement of desired future conditions regarding a particular topic; a goal paints a picture of how something will be in the future. A goal in and of itself is not sufficient to understand its intent, extent, or context. A goal itself is kept simple, with policies, objectives, and implementation actions providing further definition.

Greenhouse Gases (GHG): A Greenhouse gas is one that contributes to the warming of the Earth's atmosphere by reflecting radiation from the Earth's surface. (e.g., carbon dioxide, ozone, or water vapor).

Green Infrastructure: Green infrastructure is strategically planned and managed networks of natural lands, working landscapes and other open spaces that conserve ecosystem

values and functions and provide associated benefits to human populations.

Harden: The use of site design and materials to make a building or site able to withstand the onset or severity of damage from an event such as a fire, earthquake, flood, or other similar event

Hazard Mitigation Plan: The Local Hazard Mitigation Plan is a comprehensive resource document that serves many purposes, including enhancing public awareness and understanding, creating a decision tool for management, promoting compliance with State and Federal program requirements, enhancing local policies for hazard mitigation capability, and providing inter-jurisdictional coordination. The Federal Disaster Mitigation Act of 2000 requires all local governments to create such a disaster plan in order to qualify for funding in the future. The City's Hazard Mitigation Plan is incorporated by reference into the Policy Plan.

Hazardous Material: Any substance that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. The term includes, but is not limited to, hazardous substances and hazardous wastes.

HOME (HOME Investment Partnership Program): A federal housing program that provides formula grants to states and localities. Communities use the grants (often in partnership with local nonprofit groups) to fund a wide range of activities. These include building, buying, or rehabilitating affordable housing for renters and homeowners, and providing direct rental.

Impact: Generally, the result of an action or inaction; when the term is used in the context of an environmental analysis under the California Environmental Quality Act (CEQA), the term "impact" refers to how a proposed project may directly or indirectly effect specific environmental, infrastructure, and public service factors; a negative impact damages those environmental factors or increases burdens on selected facilities and services).

Impervious Surface: A surface through which water cannot penetrate, such as a roof, road, sidewalk, or paved parking lot. The amount of impervious surface increases with development and establishes the need for drainage facilities to carry the increased runoff.

Identify: To determine characteristics or facts without any predetermination regarding future commitments; gather information only.

Include: To make a part of a consideration or issue under public scrutiny.

Incompatible: To be so opposed in character as to be incapable of existing together without causing conflicts or harm upon one or all parts; conflicting; see also compatible.

Incorporate: The same as include.

Inconsistent: Varying to the point of conflict or contradiction; see also consistent.

Innovative: Methods or approaches that are new and original, often (but not always) more advanced.

Install: To put in place at a specified time or place or in a particular sequence.

Integrate: To blend new and existing projects or activities together in a compatible fashion.

Investigate: To examine the accuracy of information provided in support of a proposed project, process, or program.

J-Q

Jobs-Housing Balance: The jobs/housing ratio divides the number of jobs in an area by the number of households. A ratio greater than 1.0 indicates a net in-commute (job-rich community); less than 1.0 indicates a net out-commute (housing-rich community).

[no terms that begin with the letter "K"]

Land Use Designation Boundary: Where a boundary line is indicated as following a street or alley, the boundary line shall be construed as following the centerline of the right-of way. Where a street or alley is officially vacated or abandoned, the area within vacated street or alley on each side of the centerline shall be classified in the same land use designation as the adjoining property.

Level of Service (Traffic): A scale that measures the amount of traffic that a roadway or intersection can accommodate, based on such factors as maneuverability, driver dissatisfaction, and delay.

Limit: To confine a project or activity within prescribed specifications or performance criteria.

Link: To connect a project, area, function, or activity to another feature or features that would be mutually beneficial and reinforce desired functions.

Locate: To place an improvement, function, or use in a particular locale, on property with certain characteristics, or in proximity to specified features to bring about benefits and/or efficiency.

Maintain: To keep a system, facility, area, or activity in continuously sound condition, as defined by approved standards.

May: To offer the possibility but not the probability or promise of a certain commitment of resources or support; associated with action or activity that is often desirable and allowed, but implementation of such action or activity is often conditional.

Minimize: To reduce something to the smallest amount or degree feasible.

Mixed Use: Development projects that provide more than one land use or purpose within a shared building (vertical mixed use) or development area (horizontal mixed use). Mixed-use projects may include any combination of housing, office, retail, medical, recreational, commercial, or industrial components.

Monitor: To track the performance of a particular physical condition, activity accomplishment or aspect of change, with a view toward using the results to inform City determination of its appropriate commitments.

Multipurpose Trail: An off-street trail that accommodates pedestrian and bicycle travel. These trails typically double as Class I bikeways.

National Flood Insurance Program: A federal program that authorizes the sale of federally subsidized flood insurance in communities where such flood insurance is not available privately. The areas of high risk are mapped by the Federal Emergency Management Agency (FEMA) and are known as Flood Insurance Rate Maps (FIRMs).

Natural Ecosystem: Natural ecosystem is a natural unit consisting of all plants, animals, and microorganisms in an area functioning together with all the non-living physical of the environment. That

or, a place where plants and animals are dependent upon one another—and their particular surroundings—for survival.

Never: Something (e.g., action or land use) will not take place or occur under any circumstance.

Noise-Sensitive Uses: Land uses where quiet environments are necessary for enjoyment and public health and safety. Residences, schools, motels and hotels, libraries, religious institutions, hospitals, and nursing homes are examples. Such uses are also considered vibration-sensitive uses.

Notify: To advise a specified party or parties regarding an event or change for which there is an obligation to inform or need to know.

Parkland: Land used for public recreational and open space purposes. Such spaces and facilities can be public or private.

Particulate Matter: Also known as particle pollution or PM, is a complex mixture of extremely small particles and liquid droplets. Particle pollution is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles.

Partner: To join with another entity in conducting an activity or building a facility that would be mutually beneficial and add value more efficiently than if pursued independently; does not necessarily require financial commitments. See also cooperate.

Periodically: The action will take place or apply to future decisions at specified intervals or times.

Places: Functional and appealing places where people want to live, work, and visit.

Place Types: Distributed throughout Eastvale and are generally centered around areas designed as mixed use. They include a range of scales that are intended to fulfill different roles within city. Such areas are envisioned as walkable and transit-friendly environments with a safe, comfortable, and inviting public realm that encourages people to spend time, whether living, working, or visiting.

Policy: A statement that guides decision-making and specifies public commitment. A policy defines and directs how the City intends to achieve goals.

Potable Water: Water of sufficient quality to serve as drinking water, whether it is used for drinking or not.

Preserve: To maintain something in its original or existing state (verb). An area dedicated to the protection and conservation of biological resources and/or landscapes (noun).

Prevent: To keep a particular use, condition, activity, or circumstance from occurring; it does not imply complete (100 percent) avoidance or elimination.

Prioritize: To intentionally direct discretionary investments or actions to one area ahead of other areas. The act of prioritizing is an ad-hoc process that considers a variety of relevant factors. State and federal law and agency requirements, court orders, and City/county-declared emergencies take precedent over the prioritization direction in the Policy Plan.

Principle: An assumption, fundamental rule, or doctrine that guides Policy Plan policies, proposals, standards, and implementation measures.

Prohibit: To absolutely disallow something from happening or being built.

Promote: To actively stimulate the likelihood and desirability of something happening; does not require investing public resources in its direct development.

Protect: To shield from damage to people or property.

Provide: To make something available, typically to a community, organization, or business; it does not imply that the thing is being made available at no cost.

Public (noun): Residents, businesses, visitors, and travelers.

Public realm: Framework for an urban, mixed use, or transit-oriented area that is vibrant, active, and intense urban environment.

Pursue: To strive to obtain or to seek to accomplish something, often through direct actions, partnerships, or indirect assistance. See also support.

[no terms that begin with the letter "Q"]

R-Z

Rare Species: A native California plant (species, subspecies, or variety) is rare when, although not presently threatened with extinction, it is in such small numbers throughout its range that it may become endangered if its present environment worsens (Section1901, Fish and Game Code). Since 1985, this designation applies to plants only.

Recycled Water: Former wastewater (sewage) that has been treated to remove solids and certain impurities, and then allowed to recharge the aquifer or used for non-potable purposes rather than being discharged to surface water.

Reflect: To embody or represent (something) in a faithful or appropriate way.

Renewable Energy: Energy that is virtually inexhaustible in duration but limited in the amount of energy that is available per unit of time. Renewable energy includes biomass, hydropower, geothermal, solar, wind, ocean thermal, wave action, and tidal action.

Report: To provide public information on a subject or condition.

Require: To absolutely impose an obligation or standard.

Resilience / Resiliency: The capacity of any entity to prepare for disruptions, to recover from shocks and stresses, and to adapt and grow from a disruptive experience. Adaptation actions contribute to increasing resilience.

Respect: To give due regard for something or to hold something in high regard.

SCAG: Southern California Association of Governments.

Sensitive Land Uses: Uses that by their nature and characteristics can be significantly impacted by the noise, odor, vibration, air quality and inherent hazards associated with other uses near it. Sensitive uses include, but are not limited**:** single and multiple family residences, schools, churches, hospitals, day care facilities and nursing homes.

Sensitive Species: Naturally-reproducing fish and wildlife species, subspecies, or populations that are facing one or more threats to their populations and/or habitats.

Shall: Will always be carried out or required; no exceptions.

Should: Will be carried out or required most of the time, unless a very good reason is identified why an exception is acceptable.

Solar Access: The provision of direct sunlight to an area specified for solar energy collection when the suns azimuth is within 45 degrees of true south.

Solid Waste: Any unwanted or discarded material that is not a liquid or gas. Includes organic wastes, paper products, metals, glass, plastics, cloth, brick, rock, soil, leather, rubber, yard wastes, and wood, but does not include sewage and hazardous materials. Organic wastes and paper products comprise about 75 percent of typical urban solid waste.

Sometimes: Will apply to future decisions under specified conditions or circumstances.

Specify: To establish distinct requirements.

Strive: To make great efforts or devote serious effort to achieve or obtain something.

Support: To provide assistance or promotion; see encourage.

Sustainability: A process in which the use of resources, the direction of investments, the orientation of technological development, and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspiration; sustainability integrates the political, social, economic, and environmental. A more common and concise definition of sustainability is a system that "meets the needs of the present without compromising the ability of future generations to meet their own needs".

Sustainable development: Development that maintains or enhances equity, economic opportunity, and community well-being while protecting and restoring the natural environment upon which people and economies depend. Sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs.

Trucking-intensive Business or Use: In the context of defining a trucking-intensive business, a truck is a vehicle identified by the Federal Highway Administration vehicle as Class 4 or higher, with the exception of dually trucks and recreational vehicles. A trucking-intensive business is a permitted use that includes the frequent use of trucks as part of its primary activities including, logistics facilities, warehousing, fulfillment centers, distribution centers, truck yards, hazardous materials or waste facilities, container storage, and container parking.

Urban Run-off: Surface runoff of rainwater over impervious surfaces. During rainstorms and other precipitation events (including run-off from overwatering landscape areas), these surfaces (built from materials such as asphalt, cement, and concrete), along with rooftops, carry polluted stormwater to storm drains, instead of allowing the water to percolate through soil. This causes lowering of the water table (because groundwater recharge is lessened) and flooding since the amount of water that remains on the surface is greater.

Vibration-Sensitive Uses: Land uses where quiet environments are necessary for enjoyment and public health and safety. Residences, schools, motels and hotels, libraries, religious institutions, hospitals, and nursing homes are examples. Such uses are also considered noise-sensitive uses.

Vehicle Miles Traveled (VMT): The total amount of driving over a given area. In 2013, the State of California passed Senate Bill 743, which mandates that jurisdictions can no longer use automobile

delay – commonly measured by Level of Service – in transportation analysis under the California Environmental Quality Act. The State issued guidelines that direct jurisdictions to use of a broader measure called VMT, with the intent to reduce overall VMT and per capita VMT.

Vulnerability Assessment: An analysis of the vulnerability of various City asset types and people to climate change hazards. A vulnerability assessment is required by state law as part of a jurisdiction's Safety Element and is used to generate policies and actions that will lead to greater safety, climate adaptation, and resiliency. The City's Vulnerability Assessment is incorporated by reference into its Safety Element.

Vulnerable Population or Community: Populations or communities that experience heightened risk and increased sensitivity to natural disasters, emergencies, or severe weather events or conditions; and have less capacity and fewer resources to cope with, adapt to, or recover from such events or conditions.

Waste Diversion: The act of preventing garbage from being disposed of in landfills or incinerators by reducing the amount of materials that you use or buy, reusing products, recycling or composting.

Wastewater: Spent or used water with dissolved or suspended solids, discharged from homes, commercial establishments, farms, and industries.

Williamson Act: Known formally as the California Land Conservation Act of 1965, it was designed as an incentive to retain prime agricultural land and open-space in agricultural use, thereby slowing its conversion to urban and suburban development. The program entails a ten-year contract between a jurisdiction and an owner of land whereby the land is taxed on the basis of its agricultural use rather than its market value. The land becomes subject to certain enforceable restrictions, and certain conditions need to be met prior to approval of an agreement. Contracts may be exited at the option of the landowner or local government by initiating the process of term nonrenewal. Other circumstances and processes may also apply.

[no terms that begin with the letter "X"]

[no terms that begin with the letter "Y"]

Zoning: The division of a jurisdiction by legislative regulations into areas (aka land use zoning districts), which specify allowable uses for real property and size restrictions for buildings within these areas; a program that implements policies and the land use categories of the Policy Plan.

NOTICE OF PUBLIC HEARING

RIVERSIDE COUNTY AIRPORT LAND USE COMMISSION

www.rcaluc.org

A PUBLIC HEARING has been scheduled before the Riverside County Airport Land Use Commission (ALUC) to consider the applications described below.

Any person may submit written comments to the ALUC before the hearing or may appear and be heard in support of or opposition to the project at the time of hearing. **Information on how to participate in the hearing will be available on the ALUC website at www.rcaluc.org.** The ALUC holds hearings for local discretionary permits within the Airport Influence Area, reviewing for aeronautical safety, noise and obstructions. ALUC reviews a proposed plan or project solely to determine whether it is consistent with the applicable Airport Land Use Compatibility Plan. For more information please contact **ALUC Planner Paul Rull at (951) 955-6893**.

The City of Eastvale Planning Department should be contacted on non-ALUC issues. For more information please contact City of Eastvale Community Development Director Gustavo Gonzalez at (951) 703-4499.

The proposed project application may be viewed by a prescheduled appointment and on the ALUC website www.rcaluc.org. Written comments may be submitted at the Riverside County Administrative Center, 4080 Lemon Street, 14th Floor, Riverside, California 92501, Monday through Friday from 8:00 a.m. to 3:30 p.m., or by e-mail to prull@rivco.org. Individuals with disabilities requiring reasonable modifications or accommodations, please contact Barbara Santos at (951) 955-5132.

PLACE OF HEARING: **Riverside County Administration Center**
4080 Lemon Street, 1st Floor Board Chambers
Riverside California

DATE OF HEARING: **February 8, 2024**

TIME OF HEARING: **9:30 A.M.**

CASE DESCRIPTION:

ZAP1080RG23 – City of Eastvale (Representative: Gustavo Gonzalez) – City of Eastvale Case No. PLN22-20015 (General Plan). A City-initiated proposal to adopt the new General 2040 which includes the following chapters: Land Use, Housing, Mobility and Circulation, Noise and Vibration, Open Space and Conservation, and Safety. The City includes land within Airport Compatibility Zones B1, C, D, and E of the Chino Airport Influence Area, and Zone E of the Corona Airport Influence Area (Compatibility Zones B1, C, D, and E of the Chino Airport Influence Area, and Zone E of Corona Airport Influence Area).

RIVERSIDE COUNTY
AIRPORT LAND USE COMMISSION

APPLICATION FOR MAJOR LAND USE ACTION REVIEW

ALUC STAFF ONLY

ALUC Case Number: ZAP1093BD23 Date Submitted: 12/27/23

AIA: Regional Zone: CITYWID Public Hearing ☑ Staff Review ☐

Applicant

Applicant Full Name: B.H. Indio Land LLC, David Um

Applicant Address: 11111 Santa Monica Blvd., Suite 600, Los Angeles, California 90025

Phone: 310-820-8888 **Email:** David.Um@bhproperties.com

Representative/ Property Owner Contact Information

Representative: MIG, Inc., Pam Steele **Email:** pams@migcom.com

Phone: 951-733-5240

Address: 1650 Spruce Street, Ste 106, Riverside, CA 92507

Property Owner: B.H. Indio Land LLC, David Um **Email:** David.Um@bhproperties.com

11111 Santa Monica Blvd., Suite 600 Phone: 310-820-8888

Address: Los Angeles, California 90025

Local Jurisdiction Agency

Agency Name: City of Indio Phone: 760-541-4255

Staff Contact: Kevin Snyder, Community Development Director **Email:** ksnyder@indio.org

Address: 12363 Limonite Avenue, Suite 910, Eastvale, CA 91752

Local Agency Case No.: ~~PLAN DA 23-0001 DEV AGMT; PLAN ZMA 23-0001 ZONING MAP AMENDMENT; PLAN TPM 23-0001 TENTATIVE PARCEL MAP; PLAN GP 23-000, GENERAL PLAN AMENDMENT; PLAN SP 23-0001 SPECIFIC PLAN~~

Project Location

Street Address: S/W corner of Ave 42 and Monroe Street Gross Parcel Size.: 180.29

Assessor's Parcel No.: 100 Civic Center Dr., Indio, CA 92201

Solar

Is the project proposing solar Panels? Yes ☐ No ☐ If yes, please provide solar glare study. (Only for zone C or higher.)

Data

Site Elevation:(above mean sea level)	5 - 25 feet above mean sea level (AMSL)
Height of Building or structures:	Please see submitted project description
What type of drainage basins are being proposed and the square footage:	Conceptual at this time - this is a Specific Plan

Notice

A. NOTICE: Failure of an applicant to submit complete or adequate information pursuant to Sections 65940 to 65948 inclusive of the California Government Code, MAY constitute grounds for disapproval of actions, regulations, or permits.

B. REVIEW TIME: Estimated time for "staff level review" is approximately 30 days from date of submittal. Estimated time for "commission level review" is approximately 45 days from date of a complete application submittal to the next available commission hearing meeting.

C. SUBMISSION PACKAGE:

Please submit all application items DIGITALLY via USB or CD:

- Completed ALUC Application Form
- Plans Package: site plans, floor plans, building elevations, grading plans, subdivision maps
- Exhibits of change of zone, general plan amendment, specific plan amendment
- Project description of current and proposed use

https://www.eastvaleca.gov/our-city/what-s-new/eastvale-2040

Additionally, please provide:

- ALUC fee payment (Checks made out to Riverside County ALUC)
- Gummed address labels of all surrounding property owners within a 300-foot radius of project site. (Only required if the project is scheduled for a public hearing)

Riverside County Airport Land Use Commission, County Administrative Center, 4080 Lemon Street, 14th Floor, Riverside, CA 92501, Phone: 951-955-5132 Fax: 951-955-5177 Website: www.rcaluc.org

RIVERSIDE COUNTY
AIRPORT LAND USE COMMISSION

STAFF REPORT

AGENDA ITEM:	3.8
HEARING DATE:	February 8, 2024
CASE NUMBER:	ZMARCHCUS – County of Riverside (Representative: The Matrix Group)
APPROVING JURISDICTION:	County of Riverside
JURISDICTION CASE NO:	ZMARCHCUS (March Compatible Use Study)
LAND USE PLAN:	2014 March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan
Airport Influence Area:	March Air Reserve Base
Land Use Policy:	Zones A, B1, B1-APZ-I, B1-APZ-II, B2, C1, C2
Noise Levels:	Between 60-75 CNEL contour from aircraft

MAJOR ISSUES: In 2018 the March Air Reserve Base issued it Air Installation Compatible Use Zone (AICUZ) report of future operation plans. The AICUZ included the second runway, 12-30 3,000 feet long. In order to bring the ALUCP into consistency with the AICUZ changes to the boundaries of Compatibility Zones B1 and B2 in the area directly southeasterly of Runway 12-30 are proposed in order to reflect the Clear Zone and Accident Potential Zones for that runway.

RECOMMENDATION: Staff recommends, for the reasons stated herein, that the Commission receive and file the 2023 March Compatible Use study.

PROJECT DESCRIPTION: A County of Riverside initiated proposal to study compatible land use around March Air Reserve Base. Military installations generate thousands of jobs and billions of dollars in regional economic impact across the nation. Sustainment of these military installations, and associated missions and facilities, helps underpin the vitality of local communities, economics, and industries. Ensuring compatibility between military bases and surrounding communities through partnership promotes military mission sustainment and continued presence in the local economy. The March Air Reserve Base Compatible Use Study (MCUS) aims to proactively identify and provide solutions to promote March's mission sustainability, while strengthening coordination efforts between the installation and neighboring communities.

The MCUS, including Appendix 1, the draft proposed March ALUCP 2014 Amendment and Appendix 2 the Cumulative Glare Analysis Report – October 2023. Copies are attached.

PROJECT LOCATION: March ARB is situated southwest of the city of Moreno Valley, northwest of

Perris City, and southeast of the city of Riverside, California just east of Interstate 215 (I-215). The CUS area depicted in Figure 1-1 of the MCUS and covers the vicinity around March ARB that may influence or be influenced by current and future military operations. This includes the local communities of Moreno Valley, Perris City, and Riverside; unincorporated areas of County of Riverside; as well as 4,400 acres under the jurisdiction of March Joint Powers Authority (JPA). Areas of specific analysis include areas within the 2018 March Air Installation Compatible Use Zones (AICUZ) study, as well as areas within the 2014 March Air Reserve Base/Inland Port Airport chapter of the Airport Land Use Compatibility Plan.

BACKGROUND: The County of Riverside became the sponsor of the March Compatible Use Study (MCUS), (formerly known as a Joint Land Use Study (JLUS). The 2010 JLUS was the basis for developing the 2014 March Air Reserve Base/Inland Port Airport Land Use Plan (March ALUCP). On August 4, 2020 the County of Riverside Board of Supervisors accepted the grant from the DoD OLDCC and selected the Airport Land Use Commission as the Sponsoring Agency for the MCUS. After several years of effort, through the pandemic of 2020 the final MCUS is now complete.

The Count of Riverside initiated proposal to study compatible land use around March Air Reserve Base. Military installations generate thousands of jobs and billions of dollars in regional economic impact across the nation. Sustainment of these military installations, and associated missions and facilities, helps underpin the vitality of local communities, economies, and industries. Ensuring compatibility between military bases and surrounding communities through partnership promotes military mission sustainment and continued presence in the local economy. The March Air Reserve Base Compatible Use Study (MCUS) aims to proactively identify and provide solutions to promote March's mission sustainability, while strengthening coordination efforts between the installation and neighboring communities. (March Airport Compatibility Zones A, B1, B2, C1, C2 and D.)

The March Air Reserve Base (ARB) Compatible Use Study (CUS), herein also called the "Study," is a collaborative planning effort between the local project sponsor – County of Riverside – and March ARB. This collaboration also includes surrounding communities, local and regional stakeholders, state and federal agencies, and the public. This Study intends to strengthen working relationships and encourage collaboration between military installations and identified stakeholders. This effort aims to identify, reduce, and/or prevent encroachment issues between military missions and increased development in neighboring communities. Each of the stakeholders adopted resolutions supporting the MCUS financially and their best efforts to implement appropriate recommendations identified through the Study. Copies of those resolutions are attached to this staff report.

The CUS also addresses resiliency challenges to military installations related to the sharing of regional resources such as power and water, as well as the effects of climate change.

These efforts will also help improve existing relationships between the installation and nearby stakeholders and encourage routine communication and partnership for the health, safety, and welfare of the community. To do this, the planning process culminates in a set of agreed-upon recommendations, or implementation strategies, that can be executed by the military and stakeholders to achieve:

- Compatible development
- Improved communication and relationships between installations and neighboring communities, now and in the future
- A decision model to guide the assessment of future land use prospects

- This Study is important for preserving long-term compatibility between March ARB and the surrounding areas, where it will benefit both the base and the region by:
- Protecting the health and safety of nearby residents and workforce
- Enhancing a cooperative spirit between March ARB and local communities that, in turn, promotes comprehensive community planning with attention to compatibility
- Integrating surrounding local jurisdictions' growth policies, plans, and regulations with March ARB's plans

This Study was funded through a grant from the Department of Defense (DoD) Office of Local Defense Community Cooperation (OLDCC), with additional funding and support provided by County of Riverside, The City of Perris, The City of Moreno Valley, The City of Riverside and the March Joint Powers Authority, the local stakeholders. While the OLDCC was the primary source of funding, the content of this Study was produced by and for the local stakeholders. The County of Riverside served as the managing agency for the project, with support from a variety of regional stakeholders including but not limited to the Eastern Metropolitan Water District and the Western Metropolitan Water District. This Study is important for preserving long-term compatibility and fostering mutually beneficial relationships between March ARB and surrounding jurisdictions.

RESOLUTION NO. 23638

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF RIVERSIDE, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA TO SUPPORT THE CREATION OF A MARCH AIR RESERVE BASE COMPATIBILITY USE STUDY UPDATE OF THE 2010 MARCH AIR RESERVE BASE/INLAND PORT JOINT LAND USE STUDY TO ASSURE COMPATIBLE LAND USES NEAR MARCH AIR RESERVE BASE TO PROTECT THE FUTURE AVIATION OPERATIONS OF THE UNITED STATES MILITARY.

WHEREAS, the economic benefit from the continuing operation of March Air Reserve Base is a vital component of the regional economy estimated to be approximately $580 million annually, and thus protection of its operational capacity is vital to the local and regional economy; and

WHEREAS, the City of Riverside supported, participated and adopted the 2010 March Air Reserve Base/Inland Port Joint Land Use Study (2010 JLUS); and

WHEREAS, there is a demonstrated need for the cities of Riverside, Moreno Valley, Perris, the County of Riverside and March Air Reserve Base to work cooperatively to protect the health, safety, and welfare through participation in the March Air Reserve Base Compatibility Study Update (CUS) of the 2010 JLUS and implementation of appropriate measures to assure compatible development.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Riverside, California, as follows:

Section 1: That the City of Riverside pledges support and participation in the process of creating a CUS to update the 2010 JLUS.

Section 2: That the City Council of the City of Riverside specifically ratifies the creation of the March ARB Policy Committee to assure compatible land uses near March Air Reserve Base, that the City Council appoints Councilmembers Andy Melendrez and Chuck Conder to serve on the Policy Committee. The March ARB Policy Committee will be drawn from the membership of the March Joint Powers Authority and expanded to include March ARB Command, Riverside County Airport Land Use Commission and local congressional district representatives and is the appropriate policy committee to provide direction, monitoring and oversight for the creation of the CUS. The members will include elected officials, appointed officials (or their designees). The March Working Group will

CITY ATTORNEY'S OFFICE
3750 UNIVERSITY AVE., STE. 250
RIVERSIDE, CA 92501
(951) 826-5567

provide guidance to the Consultant, and its members will be appointed by the jurisdictions and entities represented on the March Policy Committee. It will also be assisted by additional agencies as technical experts as necessary.

Section 3: That the City Council of the City of Riverside recognizes that the Riverside County Airport Land Use Commission, in recognition of the technical expertise of its personnel in airport land use planning, is the appropriate sponsor of the CUS.

Section 4: That the City Council of the City of Riverside commits to provide in-kind technical support and financial support for the preparation of the CUS. The commitment of technical support shall have a cost value of at least $7,600.00. The commitment of financial support shall not exceed $5,000.00 and the City Council shall deposit such matching funds in a designated MARCH CUS fund at the County of Riverside.

Section 5: That the City Council of the City of Riverside commits to use it best efforts to implement appropriate recommendations identified through the CUS to assure that only compatible development will occur in the Clear Zones, Accident Potential Zones and the areas within the March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan to protect the future aviation operations of the United States Military.

ADOPTED by the City Council this 10th day of November, 2020.

WILLIAM R. BAILEY, III
Mayor of the City of Riverside

Attest:

COLLEEN J. NICOL
City Clerk of the City of Riverside

I, Colleen J. Nicol, City Clerk of the City of Riverside, California, hereby certify that the foregoing resolution was duly and regularly adopted at a meeting of the City Council of said City at its meeting held on the 10th day of November, 2020, by the following vote, to wit:

Ayes: Councilmembers Edwards, Melendrez, Fierro, Conder, and Hemenway and Councilwoman Plascencia

Noes: None

Absent: Councilmember Perry

Disqualified: None

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the City of Riverside, California, this 12th day of November, 2020.

COLLEEN J. NICOL
City Clerk of the City of Riverside

20-1026 KJS 10/14/20

CITY ATTORNEY'S OFFICE
3750 UNIVERSITY AVE., STE. 250
RIVERSIDE, CA 92501
(951) 826-5567

Board of Supervisors County of Riverside

RESOLUTION NO. 2020-187

A RESOLUTION OF THE BOARD OF SUPERVISORS OF THE COUNTY OF RIVERSIDE TO SUPPORT THE CREATION OF A COMPATIBLE USE STUDY (FORMERY KNOWN AS A JOINT LAND USE STUDY) TO ASSURE COMPATIBLE LAND USES NEAR MARCH AIR RESERVE BASE AND TO PROTECT THE FUTURE AVIATION OPERATIONS OF THE UNITED STATES MILITARY

WHEREAS, the economic benefit from the continuing operation of March Air Reserve Base (March ARB) is a vital component of the regional economy estimated to be approximately $579 Million Dollars annually, and thus protection of its operational capacity is vital to the local and regional economy; and

WHEREAS, there is a demonstrated need for the Cities of Riverside, Moreno Valley, Perris and the County of Riverside and the March Joint Powers Authority to work cooperatively to protect the public health, safety, and welfare through participation in a Compatible Use Study (CUS) (formerly known as Joint Land Use Study), and follow implementation of appropriate measures to assure compatible development around March ARB.

NOW, THEREFORE, BE IT RESOLVED by the Board of Supervisors of the County of Riverside, in regular session assembled on August 4, 2020, that the Board of Supervisors shall pledge support and participation in the process of creating the CUS.

BE IT FURTHER RESOLVED that the Board of Supervisors ratifies and approves the application for and acceptance of the Community Planning Assistance Grant from the Department of Defense, Office of Economic Assistance (Attachment A.1) to provide funding for the preparation of the CUS for March ARB.

BE IT FURTHER RESOLVED that the Board of Supervisors designates the Riverside County Airport Land Use Commission (RCALUC) as the appropriate sponsor for the CUS.

FORM APPROVED COUNTY COUNSEL
BY: TIFFANY N. NORTHCUTT DATE 7/28/20

BE IT FURTHER RESOLVED that the RCALUC will establish the March Policy Committee and the March Working Group. The March Policy Committee will provide policy direction, study design oversight, budget approval, monitoring, and support for the CUS report adoption. Committee members will be drawn from the membership of the JPA and expanded to include March ARB Command, RCALUC and local congressional district representatives. The members will include elected officials, appointed officials (or their designees). The March Working Group will provide guidance to the Consultant, and its members will be appointed by the jurisdictions and entities represented on the March Policy Committee. It will also be assisted by additional agencies as technical experts as necessary.

BE IT FURTHER RESOLVED that the Board of Supervisors commits to provide in-kind technical support and financial support for the preparation of the CUS. The commitment of technical support shall have a cost value of at least $7,600.00. The commitment of financial support shall not exceed $5,000.00 and the Board of Supervisors certifies that such matching funds will be available.

BE IT FURTHER RESOLVED that the Board of Supervisors commits to use its best efforts to implement appropriate recommendations identified in the CUS to assure that only compatible development will occur in the Clear Zones, Accident Potential Zones, and the areas within the March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan to protect the future aviation operations of the United States Military.

RESOLUTION NUMBER 5734

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF PERRIS, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA TO SUPPORT THE CREATION OF A MARCH AIR RESERVE BASE COMPATIBILITY USE STUDY UPDATE (CUS) OF THE 2010 MARCH AIR RESERVE BASE/INLAND PORT JOINT LAND USE STUDY (2010 JLUS) TO ASSURE COMPATIBLE LAND USES NEAR MARCH AIR RESERVE BASE TO PROTECT THE FUTURE AVIATION OPERATIONS OF THE UNITED STATES MILITARY

WHEREAS, the economic benefit from the continuing operation of March Air Reserve Base is a vital component of the regional economy estimated to be approximately $580 million annually, and thus protection of its operational capacity is vital to the local and regional economy; and

WHEREAS, the City supported, participated, and adopted the 2010 March Air Reserve Base/Inland Port Joint Land Use Study (2010 JLUS).

WHEREAS, there is a demonstrated need for the cities of Moreno Valley, Riverside, Perris, the County of Riverside, and March Air Reserve Base to work cooperatively to protect the health, safety, and welfare through participation in the March Air Reserve Base Compatibility Study Update (CUS) of the 2010 JLUS and implementation of appropriate measures to assure compatible development;

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF PERRIS, CALIFORNIA, DOES HEREBY RESOLVE that the City shall pledge support and participation in the process of creating a CUS to update the 2010 JLUS; and

BE IT FURTHER RESOLVED that the City Council of the City of Perris specifically ratifies the creation of the March ARB Policy Committee to assure compatible land uses near March Air Reserve Base and that the City Council appoints Mayor Michael M. Vargas and Council Member Rita Rogers to serve on the Policy Committee. The March ARB Policy Committee will be drawn from the membership of the March Joint Powers Authority and expanded to include March ARB Command, Riverside County Airport Land Use Commission and local congressional district representatives and is the appropriate policy committee to provide direction, monitoring, and oversight for the creation of the CUS. The members will include elected officials, appointed officials (or their designees). The March Working Group will provide guidance to the Consultant, and its members will be appointed by the jurisdictions and entities represented on the March Policy Committee. It will also be assisted by additional agencies as technical experts as necessary; and

BE IT FURTHER RESOLVED that the City Council of the City of Perris recognizes that the Riverside County Airport Land Use Commission, in recognition of the technical expertise of its personnel in airport land use planning, is the appropriate sponsor of the CUS; and

BE IT FURTHER RESOLVED that the City Council of the City of Perris commits to provide in-kind technical support and financial support for the preparation of the CUS. The commitment of technical support shall have a cost value of at least $7,600.00. The commitment of financial support shall not exceed $5,000.00, and the City Council certified that such matching funds would be deposited in a designated MARCH CUS fund at the County of Riverside; and

BE IT FURTHER RESOLVED that the City Council of the City of Perris commits to use it best efforts to implement appropriate recommendations identified through the CUS to assure that only compatible development will occur in the Clear Zones, Accident Potential Zones and the areas within the March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan to protect the future aviation operations of the United States Military.

Section 1. The Mayor shall sign this Resolution and the City Clerk shall certify to the adoption of this Resolution.

ADOPTED, SIGNED and ***APPROVED*** this 10th day of November, 2020.

Michael M. Vargas, Mayor

ATTEST:

for City Clerk, Nancy Salazar

STATE OF CALIFORNIA)
COUNTY OF RIVERSIDE) §
CITY OF PERRIS)

I, Nancy Salazar, CITY CLERK OF THE CITY OF PERRIS, DO HEREBY CERTIFY that the foregoing Resolution Number 5734 was duly adopted by the City Council of the City of Perris at a regular meeting of said Council on the 10th day of November, 2020, and that it was so adopted by the following vote:

AYES: CORONA, RABB, ROGERS, MAGAÑA, VARGAS
NOES: NONE
ABSENT: NONE
ABSTAIN: NONE

for City Clerk, Nancy Salazar

RESOLUTION NO. 2020-79

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA TO SUPPORT THE CREATION OF A MARCH AIR RESERVE BASE COMPATIBILITY USE STUDY UPDATE (CUS) OF THE 2010 MARCH AIR RESERVE BASE/INLAND PORT JOINT LAND USE STUDY (2010 JLUS) TO ASSURE COMPATIBLE LAND USES NEAR MARCH AIR RESERVE BASE TO PROTECT THE FUTURE AVIATION OPERATIONS OF THE UNITED STATES MILITARY.

WHEREAS, the economic benefit from the continuing operation of March Air Reserve Base is a vital component of the regional economy estimated to be approximately $580 million annually, and thus protection of its operational capacity is vital to the local and regional economy; and

WHEREAS, the City supported, participated and adopted the 2010 March Air Reserve Base/Inland Port Joint Land Use Study (2010 JLUS).

WHEREAS, there is a demonstrated need for the cities of Moreno Valley, Riverside, Perris, the County of Riverside and March Air Reserve Base to work cooperatively to protect the health, safety, and welfare through participation in the March Air Reserve Base Compatibility Study Update (CUS) of the 2010 JLUS and implementation of appropriate measures to assure compatible development;

NOW THEREFORE, THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, DOES HEREBY RESOLVE that the City shall pledge support and participation in the process of creating a CUS to update the 2010 JLUS; and

BE IT FURTHER RESOLVED that the City Council of the City of Moreno Valley specifically ratifies the creation of the March ARB Policy Committee to assure compatible land uses near March Air Reserve Base, and that the Mayor shall appoint two (2) Council Members to serve on the Policy Committee. The March ARB Policy Committee will be drawn from the membership of the March Joint Powers Authority and expanded to include March ARB Command, Riverside County Airport Land Use Commission and local congressional district representatives and is the appropriate policy committee to provide direction, monitoring and oversight for the creation of the CUS. The members will include elected officials, appointed officials (or their designees). The March Working Group will provide guidance to the Consultant, and its members will be appointed by the jurisdictions and entities represented on the March Policy Committee. It will also be assisted by additional agencies as technical experts as necessary; and

BE IT FURTHER RESOLVED that the City Council of the City of Moreno Valley recognizes that the Riverside County Airport Land Use Commission, in recognition of the

technical expertise of its personnel in airport land use planning, is the appropriate sponsor of the CUS; and

BE IT FURTHER RESOLVED that the City Council of the City of Moreno Valley commits to provide in-kind technical support and financial support for the preparation of the CUS. The commitment of technical support shall have a cost value of at least $7,600.00. The commitment of financial support shall not exceed $5,000.00 and the City Council certified that such matching funds will be deposited in a designated MARCH CUS fund at the County of Riverside; and

BE IT FURTHER RESOLVED that the City Council of the City of Moreno Valley commits to use it best efforts to implement appropriate recommendations identified through the CUS.

APPROVED this 1st day of December, 2020.

Dr. Yxstian A. Gutierrez
Mayor
City of Moreno Valley

ATTEST:

Pat Jacquez-Nares, City Clerk

APPROVED AS TO FORM:

Steven B. Quintanilla, Interim City Attorney

RESOLUTION JURAT

STATE OF CALIFORNIA)

COUNTY OF RIVERSIDE) ss.

CITY OF MORENO VALLEY)

I, Pat Jacquez-Nares, City Clerk of the City of Moreno Valley, California, do hereby certify that Resolution No. 2020-79 was duly and regularly adopted by the City Council of the City of Moreno Valley at a regular meeting thereof held on the 1st day of December, 2020 by the following vote:

AYES: Council Member Thornton, Council Member Cabrera, Council Member Marquez and Mayor Gutierrez

NOES: None

ABSENT: Mayor Pro Tem Baca

ABSTAIN: None

(Council Members, Mayor Pro Tem and Mayor)

PAT JACQUEZ-NARES, CITY CLERK

(SEAL)

RESOLUTION #JPA 20-23

A RESOLUTION OF THE MARCH JOINT POWERS COMMISSION TO SUPPORT THE CREATION OF A MARCH AIR RESERVE BASE COMPATIBILITY USE STUDY UPDATE (CUS) OF THE 2010 MARCH AIR RESERVE BASE/INLAND PORT JOINT LAND USE STUDY (2010 JLUS) TO ASSURE COMPATIBLE LAND USES NEAR MARCH AIR RESERVE BASE TO PROTECT THE FUTURE AVIATION OPERATIONS OF THE UNITED STATES MILITARY.

WHEREAS, the economic benefit from the continuing operation of March Air Reserve Base is a vital component of the regional economy estimated to be approximately $580 million annually, and thus protection of its operational capacity is vital to the local and regional economy; and

WHEREAS, the Authority supported, participated and adopted the 2010 March Air Reserve Base/Inland Port Joint Land Use Study (2010 JLUS); and

WHEREAS, there is a demonstrated need for the cities of Moreno Valley, Riverside, Perris, the County of Riverside and March Air Reserve Base to work cooperatively to protect the health, safety, and welfare through participation in the March Air Reserve Base Compatibility Study Update (CUS) of the 2010 JLUS and implementation of appropriate measures to assure compatible development.

WHEREAS, the March ARB Policy Committee will be drawn from the membership of the March Joint Powers Authority and expanded to include March ARB Command, Riverside County Airport Land Use Commission and local congressional district representatives and is the appropriate policy committee to provide direction, monitoring and oversight for the creation of the CUS. The members will include elected officials, appointed officials (or their designees). The March Working Group will provide guidance to the Consultant, and its members will be appointed by the jurisdictions and entities represented on the March Policy Committee. It will also be assisted by additional agencies as technical experts as necessary

NOW, THEREFORE, THE MARCH JOINT POWERS COMMISSION OF THE MARCH JOINT POWERS AUTHORITY DOES RESOLVE AS FOLLOWS:

SECTION 1. Recitals. The above recitals are true and correct and incorporated herein as findings or fact.

SECTION 2. Support. The Authority shall pledge support and participation in the process of creating a CUS to update the 2010 JLUS.

SECTION 3. Appointment. The Authority ratifies the creation of the March ARB Policy Committee to assure compatible land uses near March Air Reserve Base, that the Authority appoints Commissioner Vargas and Commissioner Thornton to serve on the Policy Committee.

SECTION 4. ALUC. The Authority recognizes that the Riverside County Airport Land Use Commission, in recognition of the technical expertise of its personnel in airport land use planning, is the appropriate sponsor of the CUS.

SECTION 5. Funding. The Authority commits to provide in-kind technical support and financial support for the preparation of the CUS. The commitment of technical support shall have a cost value of at least $7,600.00. The commitment of financial support shall not exceed $5,000.00 and the Authority certified that such matching funds will be deposited is a designated MARCH CUS fund at the County of Riverside

SECTION 6. Implementation. The Authority commits to use it best efforts to implement appropriate recommendations identified through the CUS to assure that only compatible development will occur in the Clear Zones, Accident Potential Zones and the areas within the March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan to protect the future aviation operations of the United States Military

SECTION 7. Execution of Resolution. The Chair of the Commission of March JPA shall sign this Resolution and the Clerk of March JPA shall attest and certify to the passage and adoption thereof.

SECTION 8. Effective Date. This Resolution shall be effective upon its adoption.

PASSED, APPROVED, AND ADOPTED this 18 day of November, 2020.

Marita Rogers, Vice Chair
March Joint Powers Authority Commission

ATTEST:

I, Carey L. Allen, Clerk of the March Joint Powers Commission, do hereby certify that the foregoing Resolution #JPA 20-23 was adopted by the March Joint Powers Commission of the March Joint Powers Authority at a regular meeting thereof held on November 18, 2020, by the following vote of the Commission:

Ayes:	Melendrez (2 votes), Jeffries, Vargas, Hewitt, Rogers, Baca (2 votes)
Noes:	None
Abstain:	None
Absent:	Thornton, Conder

Dated: November 18, 2020

Carey L. Allen, CMC, Clerk
March Joint Powers Authority Commission

MARCH JOINT POWERS COMMISSION
OF THE
MARCH JOINT POWERS AUTHORITY

MJPA Operations – Reports, Discussion and Action Items
Agenda Item No. 9a

Meeting Date: November 18, 2020

Report/Action: **ADOPT RESOLUTION #JPA 20-23 OF THE MARCH JOINT POWERS AUTHORITY OF THE MARCH JOINT POWERS COMMISSION TO SUPPORT THE CREATION OF A MARCH AIR RESERVE BASE COMPATIBILITY USE STUDY UPDATE (CUS) OF THE 2010 MARCH AIR RESERVE BASE/INLAND PORT JOINT USE STUDY (2010 JLUS) TO ASSURE COMPATIBLE LAND USES NEAR MARCH AIR RESERVE BASE TO PROTECT THE FUTURE AVIATION OPERATIONS OF THE UNITED STATES MILITARY**

Motion: Approve Resolution #JPA 20-23 of the March Joint Powers Authority of the March Joint Powers Commission to support the creation of a March Air Reserve Base Compatibility Use Study Update (CUS) of the 2010 March Air Reserve Base/Inland Port Joint Use Study (2010 JLUS) to assure compatible land uses near March Air Reserve Base to protect the future aviation operations of the United States military and assign 2 March Joint Powers Commissioners to serve on the CUS Policy Committee.

Background:

March Air Reserve Base is an essential component of the region's economy, estimated to contribute approximately $580 million annually. It is imperative that March JPA, neighboring cities and the County work together to preserve March ARB's long-term operational capacity, by planning for appropriate development around the base which is compatible with March ARB's mission and functionality.

In 2010, the City of Moreno Valley, City of Perris, City of Riverside, County of Riverside, March ARB and the March Joint Powers Authority jointly participated in and adopted the 2010 March ARB/ Inland Port Joint Land Use Study (2010 JLUS). That study was financed by a Department of Defense, Office of Economic Assistance grant with local financial support from the five stakeholders of $5,000 in funds plus staff time. In 2014, the Riverside County Airport Land Use Commission adopted the 2014 March ARB/Inland Port Airport Land Use Compatibility Plan, based in large part on the 2010 JLUS. In February 2018 the March ARB issued an updated Air Installation Compatibility Use Zone Study (AICUZ).

In June 2018, the March ARB Base Commander requested that the surrounding communities agree to update the 2010 JLUS, in recognition that it would be a multi-year effort to compete for Federal grants, prepare an updated land use study in cooperation with the Cities and County that form the March JPA, and then update the related plans that implement such study. The March JPA and March ARB asked that the Riverside County Airport Land Use Commission (RCALUC) be the lead agency in the study preparation and administration, in recognition of the technical expertise of ALUC personnel in airport compatibility planning.

In June 2020, the Department of Defense, Office of Economic Assistance approved a grant application from the County of Riverside for financial assistance with preparation of a joint land use study, now titled Compatible Use Study for the March ARB. The Grant includes $567,000 in Federal Funds and $63,000 in Local Contributions for a total amount of $630,000. Given the need for timely approval of these funds, the County approved the grant.

The Local Match of $63,000 is intended to be shared equally by the five stakeholders (Riverside County, the Cities of Moreno Valley, Perris, Riverside and the March JPA). March JPA's portion of the Local Match is expected to be $5,000 cash and $7,600 in kind for a total of $12,600. A designated March CUS fund will be created by Riverside County to keep track of the Federal Funds, Local Contributions and future expenditures of the project.

Impact on Residents and Businesses

The economic benefit from the continuing operation of March Air Reserve Base is a vital component of the regional economy. A study of "MARCH AIR RESERVE BASE ECONOMIC IMPACTS ANALYSIS" was commissioned by the Riverside County Economic Development Agency. (Rose Institute of State and Local Government, Claremont McKenna College, January 14, 2016). It concluded that the "Total annual economic impact on the Inland Southern California region (Riverside and San Bernardino counties) is estimated to be $579 Million." Annual payroll to civilians and military personnel by units examined was $267M.

There is a demonstrated need for March JPA, the Cities of Moreno Valley, Riverside, Perris and the County of Riverside to work cooperatively to protect March ARB's long-term viability through participation in the Compatible Use Study, so that adjacent development does not restrict the Base's functionality, and thereby reduce March ARB's vulnerability to a future Base Realignment and Closure (BRAC) process.

Additional Fiscal Information

The Compatible Use Study will include the Joint Environmental Assessment (EA) and Initial Study (IS) to identify if NEPA and CEQA compliance is necessary and the level of compliance for the recommendations. The CUS recommendations will address how to limit development in the "Clear Zones" and "Airport Protection Zones" to the standards set by the Department of Defense and be incorporated in amending the 2014 March ARB/Inland Port Airport Land Use Plan. The Study will also identify best practices to address other issues that may potentially affect the Base such as ground water levels, storm water mitigation, and design landscaping to protect air operations from bird strike hazards.

Contract History and Price Reasonableness

The OEA Grant provides for the Riverside County ALUC to manage the Study process, including 1) establish the Policy Committee of elected officials (March JPA members, Congressional representatives, and include the March ARB Command) and the Working

Group of senior staff (March JPA Technical Advisory Committee) to guide the study; 2) retain a Consultant by a RFP specific to the Study tasks 3) lead public outreach about the Study and circulate drafts; and 4) assist in having the Study adopted by the local jurisdictions. In order to facilitate Riverside County ALUC in the CUS process, the Commission should select 2 of its members to serve on the Policy Committee.

Attachments:

1) Resolution #JPA 20-23.
2) Notice of Award.

Preparation Date: November 12, 2020

MARCH ARB COMPATIBLE USE STUDY

2023

This study was prepared under contract with the County of Riverside, California, with financial support from the Department of Defense Office of Local Defense Community Cooperation. The content reflects the views of the key partners involved in the development of this study and does not necessarily reflect the views of the Office of Local Defense Community Cooperation.

MARCH ARB COMPATIBLE USE STUDY

2023

Prepared for

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Acronyms

#

5G	fifth generation

A

AC	Advisory Circular
ACC	Air Combat Command
ACP	Access Control Point
AD	airworthiness directives
AEDT	Aviation Environmental Design Tool
AFB	Air Force Base
AFCEC	Air Force Civil Engineer Center
AFCP	Air Force Community Partnership
AFFF	aqueous firefighting foam
AFI	Air Force Instruction
AFM	airplane flight manual
AFPD	Air Force Policy Directive
AFRC	Air Force Reserve Command
AICUZ	Air Installations Compatible Use Zones
ALUC	Airport Land Use Commission
ALUCP	Airport Land Use Compatibility Plan
AMC	Air Mobility Command
AMOC	Air and Marine Operations Center
AMW	Air Mobility Wing
AOA	Air Operations Area
AOZ	Airport Overlay Zone
APOE	Aerial Port of Embarkation
APS	Approach Protection Study
APZ	accident potential zone
AQ	Air Quality
ARB	Air Reserve Base
ASR	Airport surveillance radar
AT	Anti-Terrorism/Force Protection
ATC	air traffic control

B

BAH	Basic Allowance for Housing
BASH	Bird/Wildlife Aircraft Strike Hazard
BIO	Biological Resources
BLM	Bureau of Land Management
BRAC	Base Realignment and Closure
BRIC	Building Resilient Infrastructure and Communities

C

C4	Command, Control, Communications, Computers
CA	California
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards

Cal-EPA	California Environmental Protection Agency
Cal-OES	California Governor's Office of Emergency Services
CALTRANS	California Department of Transportation
CBP	Customs and Border Protection
CCAA	California Clean Air Act
CDWR	California Department of Water Resources
CE	Changing Environment
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CMLUCA	California Military Land Use Compatibility Analyst
CNEL	Community Noise Equivalent Level
COM	Communication/Coordination
CPTED	Crime Prevention Through Environmental Design
CR	Cultural Resources
CS	Cyber Security
CSP	concentrated solar power
CUS	Compatible Use Study
CWA	Clean Water Act
CZ	clear zone

D

DAF	Department of the Air Force
dB	decibel
DCIP	Defense Community Infrastructure Pilot (Program)
DHS	Department of Homeland Security
DoD	Department of Defense
DoDI	DoD Instruction
DOE	U.S. Department of Energy
DoT	Department of Transportation
DNL	day/night average sound levels
D/S/S	Dust/Smoke/Steam

E

EA	Environmental Assessment
ECP	Entry Control Point
ECF	Entry Control Facility
ED	Energy Development
EDA	Economic Development Agency
EGETS	Enhanced Groundwater Extraction System
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
EW	Extreme Weather

F

FAA	Federal Aviation Administration
FAR	floor area ratio
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FLPMA	Federal Land Policy and Management Act
FOD	foreign object damage
FONSI	Finding of No Significant Impact
FSC	Frequency Spectrum Capacity
FSI	Frequency Spectrum Impedance/Interference
FW	Fighter Wing

G

GHZ	Gigahertz
GSA	Groundwater Sustainability Agencies
GSP	Groundwater Sustainability Plan

H

HA	Housing Availability

I

IAP	Instrument approach procedures
ICEMAP	Installation Complex Encroachment Management Action Plan
ICRMP	Integrated Cultural Resources Management Plan
IDA	International Dark-Sky Association
IDP	Installation development plan
IE	Infrastructure Extensions
IE CMCP	Inland Empire Comprehensive Multimodal Corridor Plan
IFR	Instrument flight rules
IGSA	Intergovernmental Support Agreement
ILS	instrument landing system
INRMP	Integrated Natural Resources Management Plan
IPA	Inland Port Airport

J

JI-FRAI	Joint Interagency Five G Radar Altimeter Interference
JLUS	Joint Land Use Study
JPA	Joint Powers Authority
JUA	joint use agreement

L

LAANC	Low Altitude Authorization and Notification Capability
LAFCo	Local Agency Formation Commission
LAS	Land/Air Space Competition
LEA	Law Enforcement Agencies
LED	Light Emitting Diode
LG	Light and Glare
LI	Legislative Initiatives
LPS	Low pressure sodium vapor
LU	Land Use
LUCP	Land Use Compatibility Plan

M

MAOZ	March ARB/Inland Port Airport Overlay Zone
MFHD	March Field Historic District
MILCON	military construction
MIP	March Inland Port
MIPAA	March Inland Port Airport Authority
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MPO	Metropolitan Planning Organization
MS4	Municipal Separate Storm Sewer System
MTR	Military Training Route

N

NAAQS	National Ambient Air Quality Standards
NACo	National Association of Counties
NEPA	National Environmental Policy Act
NGO	Non-government Organization
NHPA	National Historic Preservation Act
NM	nautical miles
NOI	Noise
NORAD	North American Aerospace Defense Command
NOTAM	Notice to Air Mission
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NVG	night vision goggles

O

OAPC	Operational Area Planning Committee
OLDCC	Office of Local Defense Community Cooperation
O&M	Operations and Maintenance
OPR	Office of Planning and Research
OSD	Office of Secretary of Defense

P

P4	Public-Public, Public-Private Partnership
PFAS	per-and polyfluoroalkyl substances
PM/CM	preventative and corrective maintenance
PS	Public Services
PT	Public Trespassing
PV	photovoltaic

Q

QRT	quick reaction test

R

RC	Roadway Capacity
RCFC&WCD	Riverside County Flood Control and Water Conservation District
RCHCA	Riverside County Habitat Conservation Agency
RCIP	Riverside County Integrated Project
RE	Resiliency
REPI	Readiness and Environment Protection Integration
ROD	Record of Decision

S

SA	Safety
SAF/IE	Assistant Secretary of the Air Force for Installations, Environment, and Energy
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SDWA	Safe Drinking Water Act
SDDCTEA	Surface Deployment and Distribution Command Transportation Engineering Agency
SGHAT	Solar Glare Hazard Analysis Tool
SGMA	Sustainable Groundwater Management Act
SHW	solar hot water
SIP	State Implementation Plan
SLUCM	Standard Land Use Coding Manual
SM	Stormwater Management
SME	Subject Matter Experts
SNR	Scarce Natural Resources
SWP	State Water Project

T

TAC	Technical Advisory Committee
TAZ	Transportation Analysis Zone
TC	Technical Committee
TWG	Technical Working Group

U

UAS	unmanned aircraft system
UBC	Uniform Building Code
UFC	Unified Facilities Criteria
U.S.	United States
US	Utility Security
USAF	U.S. Air Force
USAHAS	U.S. Avian Hazard Advisory System
USFWS	U.S. Fish and Wildlife Service

V

V	Vibration
VIIRS	Visible Imaging Infrared Radiometer Suites
VFR	visual flight rules
VO	Vertical Obstructions

W

WF	Wildfires
WHO	World Health Organization
WHWG	Wildlife Hazard Working Group
WQQ	Water Quality/Quantity
WRCOG	Western Riverside Council of Governments
WRCRMA	Western Riverside County Regional Wastewater Authority

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1 Introduction

Military installations generate thousands of jobs and billions of dollars in regional economic impact across the nation. Sustainment of these military installations, and associated missions and facilities, helps underpin the vitality of local communities, economies, and industries. Ensuring compatibility between military bases and surrounding communities through partnership promotes military mission sustainment and continued presence in the local economy. The March Air Reserve Base Compatible Use Study aims to proactively identify and provide solutions to promote March's mission sustainability, while strengthening coordination efforts between the installation and neighboring communities.

1.1 What is the March Air Reserve Base Compatible Use Study?

The March Air Reserve Base (ARB) Compatible Use Study (CUS), herein also called the "Study," is a collaborative planning effort between the local project sponsor – Riverside County – and March ARB. This collaboration also includes surrounding communities, local and regional stakeholders, state and federal agencies, and the public. This Study intends to strengthen working relationships and encourage collaboration between military installations and identified stakeholders. This effort aims to identify, reduce, and/or prevent encroachment issues between military missions and increased development in neighboring communities. The CUS also addresses resiliency challenges to military installations related to the sharing of regional resources such as power and water, as well as the effects of climate change. These efforts will also help improve existing relationships between the installation and nearby stakeholders and encourage routine communication and partnership for the health, safety, and welfare of the community. To do this, the planning process culminates in a set of agreed-upon recommendations, or implementation strategies, that can be executed by the military and stakeholders to achieve:

- Compatible development
- Improved communication and relationships between installations and neighboring communities, now and in the future
- A decision model to guide the assessment of future land use prospects

This Study is important for preserving long-term compatibility between March ARB and the surrounding areas, where it will benefit both the base and the region by:

- Protecting the health and safety of nearby residents and workforce
- Enhancing a cooperative spirit between March ARB and local communities that, in turn, promotes comprehensive community planning with attention to compatibility
- Integrating surrounding local jurisdictions' growth policies, plans, and regulations with March ARB's plans

This Study was funded through a grant from the Department of Defense (DoD) Office of Local Defense Community Cooperation (OLDCC), with additional funding and support provided by Riverside County. While the OLDCC was the primary source of funding, the content of this Study was produced by and for the local stakeholders. Riverside County served as the managing agency for the project, with support from a variety of regional stakeholders. This Study is important for preserving long-term compatibility and fostering mutually beneficial relationships between March ARB and surrounding jurisdictions.

CUS Goals

The primary goals of the March ARB CUS are to:

- Protect the viability of current and future military operations while promoting and guiding compatible community growth and development
- Enhance communication and integrate military and community plans, policies, and regulations in support of proactive, comprehensive, and collaborative planning
- Protect and enhance the health, safety, and welfare of residents and military personnel around March ARB and its operating areas
- Support and enhance regional economic vitality and environmental health

CUS Objectives

Understanding

Bring together community and military representatives to discuss compatibility issues in an open forum that considers both community and military perspectives and needs. Understanding is facilitated through a cohesive education and outreach program that increases public awareness regarding land use planning and provides opportunities for input.

Collaboration

Encourage cooperative land use and resource planning among communities and March ARB to ensure compatible community growth while reducing operational impacts.

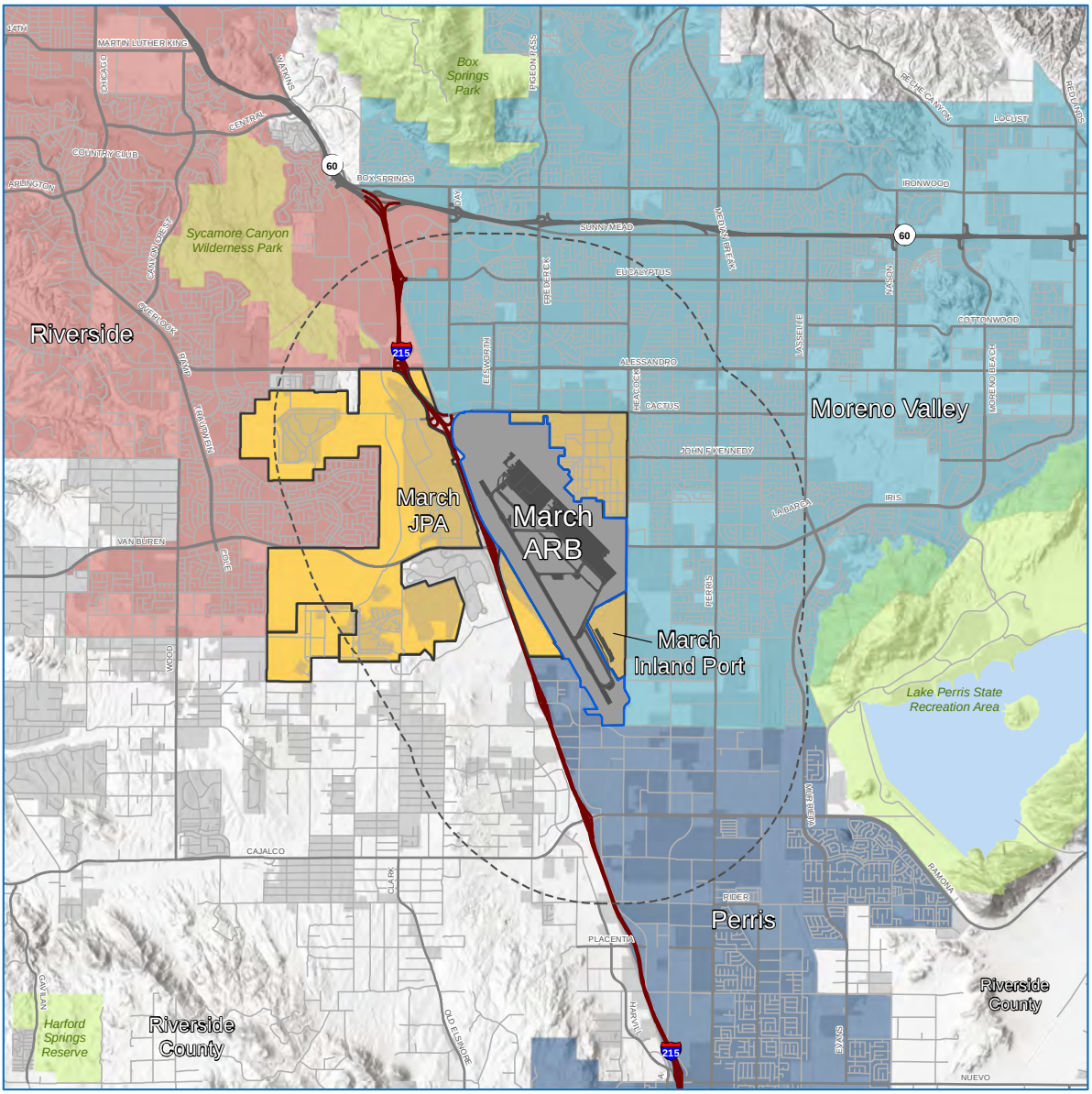
Actions

Provide a set of mutually supported tools and policies that local jurisdictions, agencies, the military, and other stakeholders can implement to address compatibility issues. The actions include operational measures that mitigate installation impacts on surrounding communities, as well as local government protocols that reduce community impacts on military operations. The proactive strategies help decision-makers resolve current issues relative to compatibility concerns.

1.2 Study Area

March ARB is situated southwest of the city of Moreno Valley, northwest of Perris City, and southeast of the city of Riverside, California just east of Interstate 215 (I-215). The CUS area depicted in **Figure 1-1** covers the vicinity around March ARB that may influence or be influenced by current and future military operations. This includes the local communities of Moreno Valley, Perris City, and Riverside; unincorporated areas of Riverside County; as well as 4,400 acres under the jurisdiction of March Joint Powers Authority (JPA). Areas of specific analysis include areas within the 2018 March Air Installation Compatible Use Zones (AICUZ) study, as well as areas within the 2014 March Air Reserve Base/Inland Port Airport chapter of the Airport Land Use Comprehensive Plan.

Figure 1-1 Study Area



Legend

- March Air Reserve
- March ARB 2 Mile
- March Joint Powers
- Moreno Valley
- Perris
- Riverside
- Interstate
- Highway/Expressway
- Major Road
- Local Road
- Airfield Surfaces
- Urban-Built Up Land
- Major Park
- Waterbody

MARCH ARB COMPATIBLE USE STUDY

Source: March ARB 2020/2021

Matrix

0 ½ 1 2 Miles

Study Area

1.3 What is Compatibility?

Compatibility planning aims to promote a collaborative environment in which community and military entities communicate and coordinate to identify compatibility concerns and mutually supportive actions, the implementation of which will allow both parties to achieve their objectives. This collaborative approach provides the context in which policies and actions can be developed and recommended through the CUS Implementation Plan in Chapter 6.

Many variables determine whether military and community plans, programs, and activities are compatible. A set of 29 compatibility factors was initially used during the development of the CUS to identify, assess, and establish the specific compatibility findings that are occurring or could occur in the CUS Study Area. These compatibility factors were further organized into four categories – social, resource, resiliency, and development. The specific compatibility factors and findings identified during the CUS are presented and assessed in Chapter 5: Compatibility Assessment.

Social Factors	Resiliency Factors	Resource Factors
Communication/ Coordination	Changing Environment	Air Quality
Cultural Resources	Cyber Security	Biological Resources
Housing Availability	Extreme Weather	Land/Air Space Competition
Legislative Initiatives	Stormwater Management	Scarce Natural Resources
Public Services	Utilities Security	Water Quality/ Quantity
Public Trespassing	Wildfires	

Development Factors		
Anti-Terrorism/ Force Protection	Infrastructure Extension	Roadway Capacity
Dust/Smoke/Steam	Land Use	Safety
Energy Development	Light & Glare	Vertical Obstructions
Frequency Spectrum	Noise	Vibration

1.4 Why is a Compatible Use Study Important?

Although military installations and nearby communities may be separated by a fence line, they often share resources such as land, water, transportation networks, and other infrastructure. Because so many resources are shared, the activities or actions of one entity can unintentionally impact another, resulting in conflicts – despite positive interactions among local jurisdictions, agencies, and the military.

As communities develop and expand in response to growth and market demands, development that may be considered incompatible can occur close to military installations and associated operational areas. Uncoordinated, incompatible development can generate new, or exacerbate existing, land-use conflicts and other compatibility issues, often referred to as encroachment. Encroachment can have negative impacts on community safety and economic development as well as on the sustainability of military activities and readiness; therefore, addressing encroachment issues is currently one of the military's greatest operational challenges.

Military installations, local communities, agencies, and other stakeholders should collaborate to protect the long-term viability of existing and future military missions. Working together also enhances the health of economies in such communities before incompatible uses become an issue. In recognition of the close relationship that should exist between installations and adjacent communities, the OLDCC implemented the compatible use program to mitigate existing and future conflicts and to enhance communication and coordination among all affected stakeholders. This program aims to preserve the economic viability and quality of life of all community and installation stakeholders.

1.5 March ARB Importance

Local, Regional, and Economic Importance

March ARB is the largest installation in the Air Force Reserve, providing important contributions to the regional economy through sustained direct employment, indirect spending, and construction. In 2016, March ARB employed nearly 9,525 civilian and military personnel and contributed over $579 million in economic impact to the "Inland Empire" or inland Southern California region of Riverside and San Bernardino counties, according to a 2016 March ARB Economic Impact Analysis. This impact directly contributes to the three major local communities where the preponderance of military personnel and civilian employees reside: the cities of Riverside, Moreno Valley, and Perris. Additionally, March ARB helps sustain March Inland Port (MIP) activities and the regional economy by supporting the joint use of its airfield for commercial aviation – principally the diversion of freight cargo aircraft from Ontario International Airport to MIP. The presence of MIP and its access to the interstate transportation system facilitate growth within the increasingly vital regional logistics hub around March ARB.

Military Strategic Importance

March ARB is a critical DoD asset for meeting national security needs. It provides strategic airlift and refueling capability and supports the transportation of people, equipment, and materials across the globe. March is home to the 452nd Air Mobility Wing (AMW), the largest wing in the Air Force Reserve, and hosts the California Air National Guard's 144th Fighter Wing (FW) and 163rd Attack Wing. Additionally, the installation is an important asset to homeland security, as a U.S. Customs and Border Patrol Air and Marine Operations Center (AMOC) is based at March ARB. This key Department of Homeland Security (DHS) operating location received an expansion in 2018, which allowed job increases at the AMOC through Fiscal Year 2021.

Other key tenants at March ARB include the Naval and Marine Corps Reserve Center, 4th Air Force Headquarters, 701st Combat Operations Squadron, 144th FW, 362nd Air Force Recruiting Squadron, Defense Media and Visual Information Centers, 653rd Area Support Group (Army Reserve Center), 604th Sustainment Brigade, Civil Air Patrol (Squadron 45), Defense Commissary Agency, Army & Air Force Exchange Services, DHS, and March JPA.

1.6 Local Stakeholders

An early step in any planning process is the identification of stakeholders. Involving stakeholders at the beginning of the process is instrumental to recognizing compatibility issues that need to be addressed and can be resolved through the collaborative development of mutually beneficial strategies. Stakeholders include individuals, groups, organizations, and government entities interested in, affected by, or affecting compatibility issues and the outcome of the Study. Stakeholders identified for the March ARB CUS included, but were not limited to, the following:

- Local jurisdictions (Riverside County and the cities of Riverside, Moreno Valley, and Perris)
- March ARB, its leadership, and personnel
- Local, regional, state, and federal planning, regulatory, and resource management agencies
- Non-governmental organizations
- Other special interest groups
- The public (including residents and business owners)

1.7 How to Use this Study

The recommendations and strategies presented in Chapter 6: Implementation Plan should be implemented, when possible, to promote compatibility with the military mission as the community continues to develop near March ARB, and to mitigate any existing land use or compatibility issues. The Implementation Plan is the heart of the CUS and provides a toolbox of planning options to ensure that the relationship between the military and the surrounding communities remains strong and mutually beneficial. Each strategy identifies key participants and partners for successful implementation and suggests timelines to aid in implementation. It is important to understand that the CUS is a recommended set of strategies and tools, not an adopted plan. A coordinated and collaborative effort by the CUS partners will be required to successfully carry out its strategies.

1.8 Next Steps: CUS Implementation Team

The CUS will be successful only if the recommendations are carried forward for implementation. As is further described in Chapter 6: Implementation Plan, a CUS Implementation Committee should be established following the completion of the Study. The committee should include representation from each stakeholder that participated in the CUS and additional members as necessary if future issues or concerns arise. Many of the strategies developed in the Implementation Plan are meant to allow local government leaders, land and resource management agencies, and March ARB to roll them into their existing programs. Enhancing existing communication processes and establishing new ones, amending zoning tools, and updating long-range planning policies are some of the most cost-effective ways to ensure compatible development in the long term. This CUS is meant to be a living document, so certain strategies may need to be revisited as the local situation and applicable laws evolve. For more information on the Implementation Plan, see Chapter 6.

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2 Community Profiles

This chapter provides information on communities and jurisdictions surrounding March ARB most impacted by the CUS. These communities include:

- Riverside County
- City of Riverside
- City of Moreno Valley
- City of Perris
- March Joint Powers Authority

2.1 CUS Partner Community Profiles

The thriving and growing urban communities around March ARB include some of California's most prominent and fastest-growing cities. The cities of Moreno Valley, Perris, and Riverside, as well as Riverside County and the March JPA, are critical partners in a collaborative effort with the Air Force Reserve to protect sustainment of the base's current missions *and vital economic impact* while ensuring economic and development opportunities for the region. The once predominantly agricultural region around March today is a robust logistics center, not only because of its central geographic location along I-215 and numerous sub-regional corridors, but also because of the tremendous success of March JPA's redevelopment of land transferred from the Air Force by the 1993 Base Realignment and Closure (BRAC) decision. Additionally, this regional growth is facilitated by the development, under a Joint Use Agreement (JUA) with the Air Force, of the March Inland Port, a civil airport authority with associated commercial and general aviation use. Understanding regional growth dynamics and the nature of critical partners provides an essential context for understanding compatibility and resiliency challenges facing March ARB.

The goal of these profiles is to provide information that informs stakeholders of growth trends that have the potential to affect the future of March ARB, positively or negatively. This information is intended to be considered along with other factors to help public officials mitigate compatibility issues through coherent, informed planning policies and decisions which balance future development and economic growth with sustainment of the current missions and future mission growth potential at March ARB.

Additionally, these profiles inform March base leadership and its installation facilities, engineering, and planning staff of the nature of regional growth and urban development occurring "outside the fence" when considering future missions and installation development.

Source: *Google Earth, 2022*

Source: *Flicker/Daniel Orth, 2021*

County of Riverside

Year Established	Population	Land Area Encompassed
1893	2,418,185 (2020)	7,208 square miles

Riverside County is California's fourth largest county by land area and encompasses all of March ARB in the northwestern portion of the county. The mild climate attracted early settlement and cultivation of navel oranges. Today the climate continues to attract new residents, making Riverside County, at 2.4 million people, the fourth most populous county in California and the 10 largest in the U.S. Economically, Riverside County makes up half of the Inland Empire Metropolitan Statistical Area (MSA), which also contains San Bernardino County to the north. With a population of 4.6 million people, the Inland Empire, or IE, is a thriving MSA with a diverse and growing economy consisting primarily of tourism, direct international trade, professional and business services, wholesale distribution and logistics, health services and biomedical, and manufacturing. The vicinity of March ARB is a microcosm of the larger regional economy.

Riverside County has a five-member Board of Supervisors representing each district in the county. March ARB falls predominantly in District 5 along with Moreno Valley and the City of Perris. District 1 encompasses the City of Riverside and unincorporated areas of the county west of March ARB, with Districts 3 and 4 covering the eastern portion of the County. District 2, in the western portion of the County, includes the cities of Corona and Norco. Riverside County is involved in planning, zoning, and other land management actions for unincorporated areas near March. It cooperates

directly with March ARB through two key county organizations, Riverside County Flood Control and Water Conservation District (RCFC&WCD) and the Airport Land Use Commission (ALUC). The RCFC&WCD works with March ARB and other partners to maintain a comprehensive flood control infrastructure protecting the air base. The ALUC is tasked with compatible land use planning, review, and recommendations on development applications within its purview around 13 military and civilian airports, including March ARB.

Future County of Riverside land uses in the project study area are in the Mead Valley Area Plan and Lake Mathews/Woodcrest Area Plan. As I-215 runs south from the March JPA, the County of Riverside's future land use plans indicate the continued development of light industrial uses, commercial uses, and business parks on the west side of the highway. Residential use is primarily rural residential and very low density, as is encouraged around conservation habitats, and is dispersed around these uses.

City of Riverside

Year of Incorporation	Population	Land Area Encompassed
1870	314,998 (2020)	~82 square miles

Riverside, **"where the American Dream is realized,"** is one of the oldest incorporated cities in the county, predating Riverside County's establishment by 23 years. Situated north and west of March ARB, it does not share a jurisdictional boundary with the base. The city is the largest in Riverside County by area (11th in California) and by population (12th in California). Riverside is the county seat and boasts of being the Inland Empire's true "big city," as home to four colleges and universities: Riverside City College, University of California – Riverside, California Baptist University, and La Sierra University. Riverside has a long and rich pre-colonial, Spanish colonial, and post-statehood history, with 24 nationally registered historical sites and more than 100 city landmarks. It is home to the Mission Inn, the largest Mission Revival building in the United States.

Riverside is an incorporated city governed by an elected mayor and a seven-member city council. As a charter city, it adopted a council-manager form of government with a council-appointed city manager. Riverside follows a 2019 council-approved legislative agenda advocating support for March ARB to maintain and expand its current missions, including through the deployment or assignment of additional assets and resources.

General Plan 2025, Riverside's current general plan (amended 2021), sets planning objectives to:

- Avoid land use/transportation decisions that would adversely impact the long-term viability of the March Air Reserve Base/March Inland Port.
- Complete buildout of the Mission Grove Specific Plan, encouraging development that can harmoniously coexist near the March Airport facility.
- Minimize noise impact through objectives that ensure the viability of March Air Reserve Base/March Inland Port.

The City of Riverside General Plan (GP) 2025 guides future development in the area. The plan's policy identifies similar uses adjacent to existing land use. These include business and office parks and commercial uses along the I-215 corridor. To the west of the March JPA, much of Riverside is (or is designated as) medium- or medium/high-density residential, with small areas of high-density residential south of Alessandro Boulevard and north of Mariposa Avenue.

The Land Use and Urban Design Element of the GP states the long-range development of March ARB/IP as a joint military and air cargo facility will impact land use decisions in Riverside with the potential to affect March's operations. It directs that Sycamore Canyon Business Park be developed with uses complementary to the air cargo operations at March. The element also notes that large portions of Riverside's southeastern neighborhoods, particularly Orangecrest, Mission Grove, and unincorporated Woodcrest, will continue to be impacted by noise associated with March. The Land

Use Policy Map in the Land Use and Urban Design Element was developed to avoid allowing intensive new uses within the airport-influenced areas.

The GP 2025 recognizes the 2014 March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan (March ALUCP) and 2005 AICUZ within the Public Safety Element, including the eight compatibility zones and criteria for March ARB/Inland Port Airport established by the ALUCP.

The GP is buttressed by supportive zoning regulations in the form of an Airport Protection Overlay Zone. Current zoning land use permits heavy commercial and industrial land use within the March aircraft safety zones. Development controls include limiting development within areas subject to high noise levels and limiting the intensity and height of development within aircraft hazard zones.

Source: *Wikimedia Commons/2021*

City of Moreno Valley

Year of Incorporation	Population	Land Area Encompassed
1984	208,634 (2020)	~52 square miles

Moreno Valley, **"where dreams soar,"** is situated north and east of March ARB and adjacent to the main base. The city was incorporated as a general law city in 1984 through a merger of the existing unincorporated communities of Edgemont, Moreno, and Sunnymead – communities that grew from the presence of March Field before World War II. Today Moreno Valley is the second largest city in Riverside County by population and the 20th largest in California. It is part of the Riverside-San Bernardino-Ontario Metropolitan Area, also known as the *Inland Empire*. It is also the second largest city by land area in the county and 17th in the state. It calls itself the *home of March ARB*, a claim bolstered by its shared history and proximity to the installation.

Moreno Valley is a general law city governed by an elected mayor and a four-member city council. As a general law city, it follows state statutes for such municipalities, with subsequent adoption under state law of a council-manager form of government. Moreno Valley follows a 2022 council-approved legislative platform advocating:

- Support for federal legislation that would appropriate funding that would expand both active and reserve operations and the addition of necessary flight crews at March ARB.
- Support for federal legislation to increase joint services' use of March ARB.
- Opposition to legislation that would reduce the joint services' use of March ARB or eliminate the base entirely.

Additionally, Moreno Valley adopted **General Plan 2040** in 2021, which provides strategic goals for conformance with March AICUZ and Airport Land Use Compatibility Plan (ALUCP) in support of military readiness and (in coordination with March ARB, March JPA, and Riverside ALUC) specifically to:

- Consider development impacts, density, and intensity of nearby land use on the military mission.
- Provide airport and aviation safety measures for the March joint use airfield.
- Align planning to AICUZ and ALUCP.
- Consider circulation into and around military airports.
- Incorporate site standards to minimize bird strikes in support of March Bird Air Strike Hazard plans.

While much of Moreno Valley has been built out near the installation, some areas of opportunity exist near the installation's eastern boundary. Future land uses in this area are primarily business parks, open space, and commercial. Following the March ARB boundary from east to west along Cactus Avenue, Moreno Valley's future land use is primarily business park and light industrial. Many parcels just north of Alessandro Boulevard are planned for R-3 residential, business park and light industrial and business flex.

The General Plan 2040 also provides strategic goals for building community resiliency to climate change and other risks, and for collaboration and partnering with local agencies for energy, groundwater, and stormwater infrastructure planning and capital improvements. Specific concerns relative to March ARB are:

- Emergency evacuation routes
- Fire risk
- Flood risk
- Ground liquefaction hazard
- Heat risk

This general plan also advocates the conservation of regional open space and habitat, which are recognized as compatible with military influence areas around installations. Of note in the plan, the city supports the continued development of the Juan Bautista De Anza Trail – a planned and partially developed 1,200-mile recreational and active transportation trail system that will cross the intersection of Cactus Avenue and Heacock Street near the historic front gate of March Field. This trail system follows the historic route from Nogales, Arizona to San Francisco, California. When complete, the trails will connect March ARB to an active walkshed encompassing March Field Park, Patriot Park, and Santiago Park.

Source: *City of Moreno Valley, 2022*

City of Perris

Year of Incorporation	Population	Land Area Encompassed
1911	78,700 (2020)	~32 square miles

The City of Perris is south of March ARB and abuts the base fence line to the southwest. It is named after Fred T. Perris, the chief engineer for the California Southern Railroad who surveyed the area and added a station to what was then the town of Perris. In May 1911, Perris became an incorporated city through a community petition to Riverside County. Today Perris is the 12th largest city by land area in Riverside County and is part of the Inland Empire.

Perris is a general law city governed by an elected mayor and four at-large council members. Like Moreno Valley, the city follows state statutes and appoints a city manager to administer the operations of the city government. Appointed by the city council, the city planning commission has four members whose overarching goals are to:

- Foster sustainable urban design, policy, and development.
- Improve the Zoning Code for clarity, consistency, and flexibility.
- Increase community awareness and involvement in planning.

The 2016 **Perris General Plan** Land Use Element recognizes the March ARB Clear Zone (CZ) and Accident Potential Zones (APZs) by restricting the types of intensities and uses on some properties in the North Perris planning area. A goal of the land use element is to protect the city from natural and man-made disasters. Other goals include policy and implementation measures which align with the ALUCP by:

- Ensuring land use compatibility near March ARB according to policies from the 2014 ALUCP.
- Implementing an Airport Overlay Zone (AOZ) to reflect the boundaries and policies of the ALUCP.
- Circulating all development plans in the APZs and CZs to the Department of the Air Force (DAF) and March ARB per AICUZ guidelines.

The Perris Valley Commerce Center Land Use Plan includes most of the land in the study area. Most future land uses will consist of commercial and business offices, with a small amount of residential, including multifamily. Much of the Perris Valley Commerce Center just south of the March ARB airfield has large warehouse development.

The Perris General Plan Safety Element recognizes specific land use compatibility guidelines, further aligning with policies set forth by the ALUCP and March ARB AICUZ for allowable land uses within the safety zones and noise contours.

The Healthy Community and Safety Elements of the Perris General Plan provide strategic goals for resiliency to climate change and other risks, aligning with specific concerns relative to March ARB, such as: fire hazards, flood risks, and ground liquefaction hazards.

The Healthy Community Element supports goals and objectives to encourage development patterns that reduce commute times and promote public and open spaces. Increased sustainability measures aligning with March ARB goals include supporting regional water quality efforts to balance water conservation and best practices in watershed management and reducing emissions to improve air quality in the South Coast Air Quality Management District (SCAQMD).

Source: *Creative Commons/Doc Searls, 2013*

March Joint Powers Authority

Year Established	Employment Population	Land Area Encompassed
1993	10,336	6.9 square miles

The March JPA was formed by and made up by the County of Riverside and the cities of Moreno Valley, Perris, and Riverside to address use, reuse, and joint use as a response to the 1993 BRAC decision on March Air Force Base. The March JPA agreement created the March Joint Powers Commission (JPC), the authority's governing body which has planning, zoning, and development authority for 4,400 acres of the former Air Force property. The commission comprises eight elected officials (two from each of the four jurisdictions) selected by the jurisdictions' governing bodies. March JPA has land use and planning authority, and is responsible for all entitlements, building permits, and clearances. March Inland Port Airport Authority (MIPAA), described below, is a governing body under the governance umbrella of the March JPA.

The March JPA General Plan addresses future land uses around today's March ARB. Many future uses are industrial, with a small number of business parks, commercial, and mixed uses dispersed throughout. The March JPA General Plan aims to ensure that March JPA development does not negatively impact March ARB.

Today the March JPA continues to build out a regional jobs center with the goal of providing 38,000 jobs within its jurisdictional boundaries. When complete, this jobs center will include the completed development of the Meridian North business campus, development underway for the Meridian South business campus, and planned future development of Meridian West business campus. Successful smaller March JPA developments include the March Veterans Village and the Ben Clark Training Center. Currently, March JPA is home to the March Inland Port, the U.S. Customs and Border Protection Air and Maritime Operations Center, the CALFIRE Southern Geographic Coordination Center, the Armed Forces Reserve Center, and the March Field Air Museum.

March Inland Port Airport Authority

Year Established	Employment Population	Land Area Encompassed
2014	900	261 acres

MIPAA, a governing body under the governance umbrella of the March JPA, was formed by March JPA in 1996 and operates under a revised JUA with the Air Force from 2014. MIPAA is responsible for port operation and the development of the MIP, a joint-use aviation facility targeted for air cargo operations. MIPAA provides land-side support to commercial and general aviation that operates in and out of the port, including more than one million square feet of ramp space that can accommodate large aircraft up to 900,000 pounds. Under the JUA the port is authorized to conduct up to 21,000 aircraft operations annually through 2039, with an option to extend the JUA to 2054. March Inland Port provides the capacity to support air freight companies such as UPS and Prime Air and defense contracting firms such as Omega Air Refueling and Meta Strategic. It offers fixed-base operator aeronautical services through Million Air. Additionally, March Inland Port provides air terminal capacity supporting unit rotations to the Army's National Training Center at Fort Irwin for roughly 43,000 soldiers a year.

Source: *Matrix Design Group/ Bren Cox, 2022.*

2.2 Community Growth Trends

Population Trends (2010 and 2020)

Population trends outline the regional context for projecting growth and development in the surrounding cities. These trends can help highlight future compatibility issues between March ARB and surrounding communities.

Identifying where population growth is occurring is also essential for planning future development. Table 2.1 shows the change in population between 2010 and 2020.

Table 2.1 Population Change

Jurisdiction	2010	2020	Number Change	Percent Change
California	37,253,956	39,538,223	2,284,267	6.1%
City of Moreno Valley	193,365	208,634	15,269	7.9%
City of Perris	68,386	78,700	10,314	15.1%
City of Riverside	303,871	314,998	11,127	3.7%
Riverside County (gross)	2,189,641	2,418,185	228,544	10.4%

Source: *2020 U.S. Census*

Subarea Forecasting

The Southern California Association of Governments (SCAG) develops socioeconomic estimates and growth projections including population, households, and employment for cities and Transportation Analysis Zones (TAZs) in the SCAG region through enhanced forecasting methods and interactive public outreach. These estimates and projections provide the analytical foundations for SCAG's transportation planning and other programs.

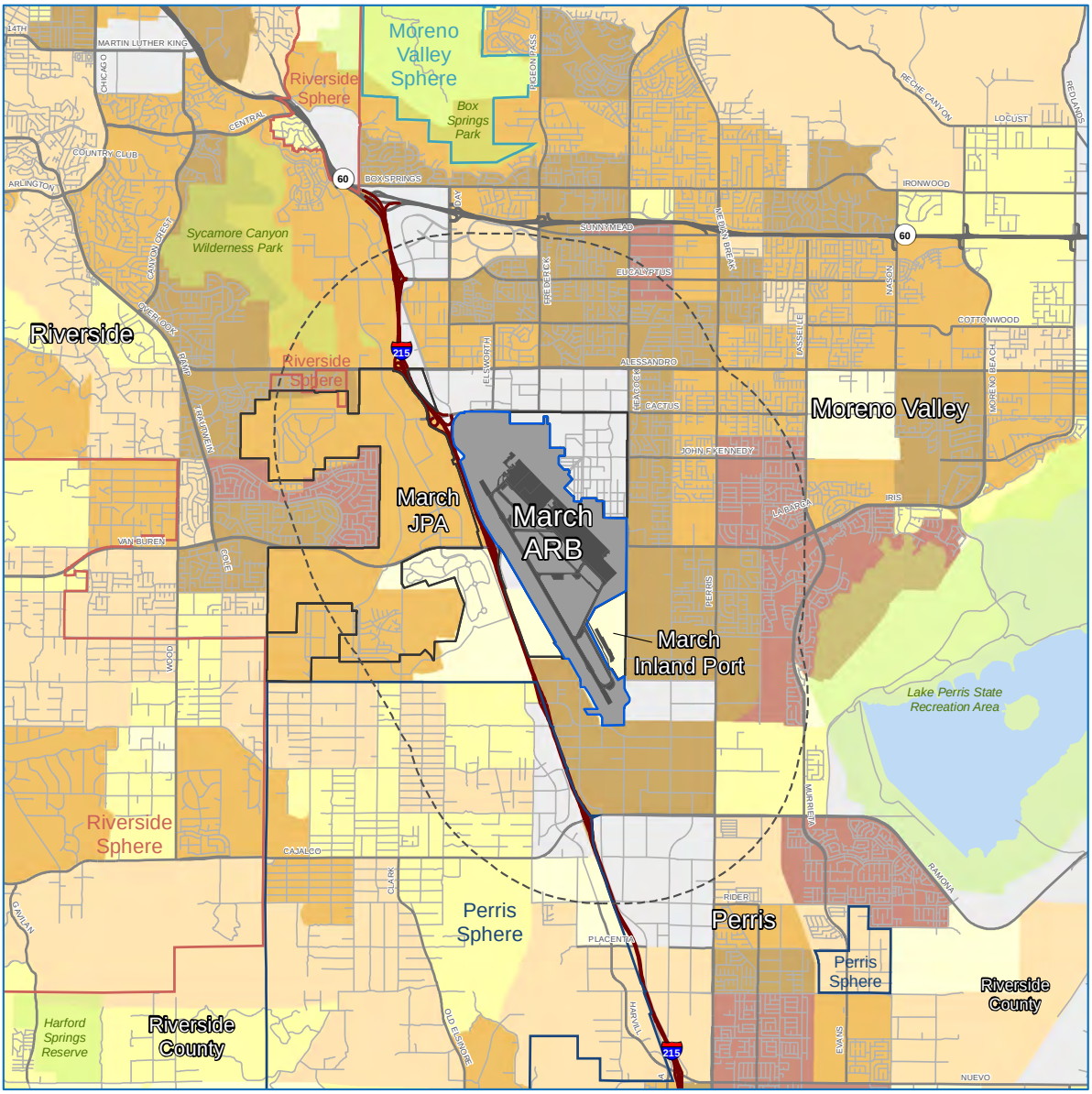
The transportation planning area covers 191 jurisdictions and six unincorporated communities in Southern California. This region is divided into over 11,000 small areas. These small areas are known as the Tier 2 TAZ system. This zone system is uniquely designed to allow highly detailed traffic analysis and predictions using SCAG's sophisticated transportation model.

Population, household and employment estimates, and forecasts are maintained at the jurisdictional and county unincorporated level. This provides SCAG current and future demographic profiles of the region in great geographical detail. These profiles are key inputs not only to SCAG's transportation model, which uses them to help estimate current and future transportation conditions, but also to inform the vicinity around March ARB.

Population Forecast by 2035

The 2035 population forecast using the SCAG TAZ data described above is shown in Figure 2.1. The raw number population projection for each TAZ is geographically displayed on this choropleth map using numeric breaks as displayed in the map legend. This map demonstrates projected increased population densification within the study area over the next 13 years. As indicated by the darker colors, some areas are projected to grow to more than 8,000 people for a multitude of TAZs in the vicinity of March ARB.

Figure 2-1 Forecasted Population by 2035



Legend

Forecasted Population by 2035*
- 0 - 250
- 251 - 500
- 501 - 1,000
- 1,001 - 2,000
- 2,001 - 4,000
- 4,001 - 8,000
- 8,001+

- March Air Reserve Base
- March ARB 2 Mile Buffer
- March Joint Powers Authority
- Airfield Surfaces
- Moreno Valley Sphere of Influence
- Perris Sphere of Influence
- Riverside Sphere of Influence

- Interstate
- Highway/Expressway
- Major Road
- Local Road
- Major Park
- Waterbody

*Areas shown reflect SCAG TAZ areas.

Sources: March ARB, 2020/2021.SCAG, 2022.

Matrix

0 ½ 1 2 Miles

Forecasted Population by 2035

Economic Trends and Growth Potential

March ARB is ranked third among the 10 largest employers in the city of Riverside, surpassed only by the County of Riverside and University of California, Riverside. A 2016 economic impact study conducted by the Rose Institute of State and Local Government at Claremont McKenna College estimated the annual economic regional impact from March ARB to be $579 million: a significant figure when compared to an adjusted 1996 economic impact figure of $758 million (adjusted from $500 million in 1996 using Bureau of Labor Statistics CPI Inflation calculator for 2016 numbers) from the former air force base. Further, a 2020 DoD report states DoD spending during 2020 in Riverside County to be an estimated $453.7 million, making the County California's ninth largest recipient county for DoD spending.[1]

The March JPA projects further economic growth through the creation of 38,000 jobs generated by long-term financial investment and future development of the former air force base property when complete.

Distribution and logistics center development in the vicinity around March ARB reflects the greater global change in consumer preferences. There has been a 17% worldwide increase in digital e-commerce (global retail trade) driven by changes in consumer behavior during the pre-vaccination period of the COVID-19 pandemic[2]. Such increases present an opportunity for growth in jobs and trade, mainly in areas with the resources to provide hub ports to transport e-goods, such as the March Inland Port. The proximity to several airports, a large consumer market, relatively affordable land for large warehouses, and proximity to ports and rail have made this vicinity a destination for large distribution centers. Amazon, Ross Dress for Less, Harbor Freight Tools, and Walgreens all have large facilities adjacent to March ARB.

The lists of each entity's top 10 employers help illustrate the fact that this area is an ideal location for these large distribution centers.

Riverside County[3]

1. County of Riverside - 21,672
2. Amazon - 10,500
3. University of California, Riverside – 9,770
4. March ARB - 9,600
5. Stater Bros - 8,304
6. Kaiser Permanente Riverside Medical Center - 5,700
7. Pechanga Resort & Casino - 5,078
8. Walmart - 4,931
9. Corona-Norco Unified School District - 4,903
10. Ross Stores - 4,321

[1] Defense Spending by State Fiscal Year 2020, DoD OLDDC, 2021.
[2] UNCTAD – How Covid-19 triggered the digital and e-commerce turning point: https://unctad.org/news/how-covid-19-triggered-digital-and-e-commerce-turning-point
[3] https://rivcoeda.org/Portals/0/demographicReports/Major%20Employers%202019.pdf?ver=2020-05-06-080926-827

City of Perris[4]

1. Ross Stores – 1,916
2. Val Verde Unified School District – 1,368
3. Perris Union High School District – 945
4. Perris Elementary School District – 848
5. Lowe's CA Regional Distribution Center – 799
6. NFI Industries – 728
7. Eastern Municipal Water District – 615
8. Home Depot Distribution Center – 543
9. Walmart Supercenter – 405
10. CR & R Waste – 350

City of Moreno Valley – Top 10 Employers[5]

1. March ARB – 9,600
2. Amazon – 7,500
3. Riverside University Health System Medical Center – 3,400
4. Moreno Valley Unified School District – 3,100
5. Ross Stores for Less/dd's Discounts – 2,400
6. Moreno Valley Mall – 1,500
7. Kaiser Permanente Community Hospital – 1,457
8. Skechers USA – 1,200
9. Harbor Freight – 788
10. Deckers Outdoor – 700

[4] https://www.cityofperris.org/home/showpublisheddocument/14418/637643002197400000
[5] https://www.morenovalleybusiness.com/wp-content/uploads/2020/02/Moreno-Valley-Major-Employers-2020-updated.pdf

City of Riverside – Top 10 Employers[6]

1. County of Riverside – 22,000
2. March ARB – 9,600
3. University of California, Riverside – 8,735
4. Kaiser Permanente – 4,346
5. Riverside Unified School District – 4,313
6. City of Riverside – 2,485
7. Riverside Community Hospital – 2,200
8. Riverside Community College District – 2,100
9. Alvord Unified School District – 1,898
10. Cal Baptist University – 1,442

The City of Riverside made economic development one of the most critical goals in its 2021 General Plan, which outlines 12 policies to help guide this growth. Each policy aims to help the city to become more competitive in regional, national, and international markets. The emphasis on sustaining growth across all markets will continue to impact March ARB as the surrounding area is built out and becomes more populated.

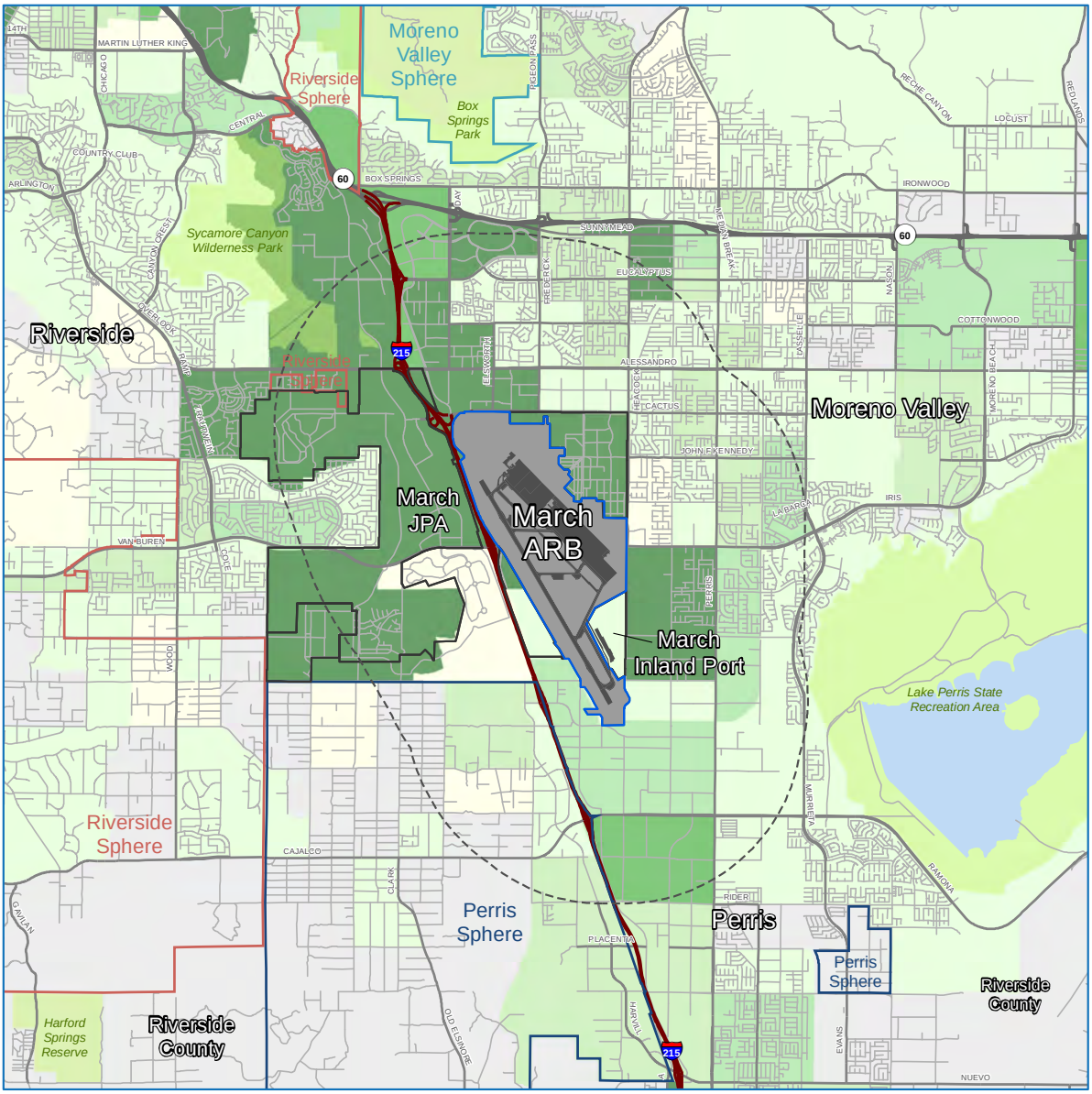
The Western Riverside Council of Governments (WRCOG) also actively supports economic development through support of state legislation to attract and retain more regional businesses[7].

Employment Forecast 2045

The 2045 employment forecast using the SCAG TAZ data described above is shown in Figure 2.2. The total employment projection for each TAZ is geographically displayed on this choropleth map using numeric breaks as displayed in the map legend. This map demonstrates projected increased employment within the study area over the next 20 years. Some areas are projected to grow to more than 4,000 jobs for a multitude of TAZs in the vicinity of March ARB, as indicated by the darker colors.

[6] https://riversideca.gov/cedd/economic-development/data-reports/top-50-employers
[7] https://wrcog.us/155/1-Economic-Development

Figure 2-2 Forecasted Employment by 2045



Legend

Forecasted Employment by 2045*
- 0 - 50
- 51 - 100
- 101 - 500
- 501 - 1,000
- 1,001 - 2,000
- 2,001 - 4,000
- 4,001+

- March Air Reserve Base
- March ARB 2 Mile Buffer
- March Joint Powers Authority
- Airfield Surfaces
- Moreno Valley Sphere of Influence
- Perris Sphere of Influence
- Riverside Sphere of Influence

- Interstate
- Highway/Expressway
- Major Road
- Local Road
- Major Park
- Waterbody

*Areas shown reflect SCAG TAZ areas.

Sources: March ARB, 2020/2021.SCAG, 2022.

Matrix

0 ½ 1 2 Miles

Forecasted Employment by 2045

Housing Trends

Housing trends typically correspond to population growth and can indicate economic activity and vitality in an area. Rapid housing growth or slow-growth areas may reflect population increases, decreases, or migration out of specific communities. The rate of housing development is an indicator of the overall rate of development occurring in the region, which should be considered for compatibility with operations at March ARB.

Housing Units

There is no government-provided military housing on March ARB, except temporary lodging for Reserve/Guard components on temporary assignment to the base or attending annual training or Unit Training Assignments drill weekends. Military personnel and government civilians assigned to March live in the local communities, which provide housing for the more than 7,000 military personnel assigned to March ARB and nearly 2,500 civilian employees who work on the base. There was an increase in housing units in the local vicinity between 2010 and 2020 (Table 2.2). The City of Perris and Riverside County experienced a higher growth rate than the overall state growth while the cities of Moreno Valley and Riverside saw more modest growth.

Table 2.2 Housing Stock Trends

Jurisdiction	2010 (Units)	2020 (Units)	Number Change	Percent Change
California	13,680,081	14,392,140	712,059	5.2%
City of Moreno Valley	55,559	57,413	1,854	3.3%
City of Perris	17,906	19,424	1,518	8.5%
City of Riverside	98,444	100,255	1,811	1.8%
Riverside County	800,707	848,549	47,842	6.0%

Source: *2010 and 2020 U.S. Census*

Housing Values

Housing value trends can indicate the development level occurring near the project study area. These fluctuations can also highlight desirable locations for home buying. Rent trends also provide insight into the local market conditions.

Using the latest Federal Census data, Table 2.3 shows both the median housing purchase price and median monthly gross rent for 2010 and 2019 for each community within the project study area and for California as a whole. Median home value increased substantially over the period. Like median housing values, the median gross rents for all jurisdictions within the project study area experienced an increase between 2010 and 2019; however, median gross housing values on a percentage basis rose more substantially than median gross rent in all instances. All jurisdictions in the project study area had greater percent changes to the median housing value than the state of California, while all median rent percent increases were below the state's median rent increase.

Table 2.3 Change in Median Home Purchase Price and Median Gross Rent Between 2000 and 2019

	Median Home Purchase Price			Median Gross Rent		
Jurisdiction	**2010**	**2019**	**2010 to 2019 % Change**	**2010**	**2019**	**2010 to 2019 % Change**
California	$370,900	$505,000	36.16%	$1,163	$1,614	29.23%
City of Moreno Valley	$167,600	$312,000	46.28%	$1,266	$1,636	22.62%
City of Perris	$156,000	$340,800	54.23%	$1,110	$1,300	14.62%
City of Riverside	$228,100	$411,000	44.50%	$1,081	$1,504	28.13%
Riverside County	$227,900	$384,400	40.71%	$1,121	$1,497	25.12%

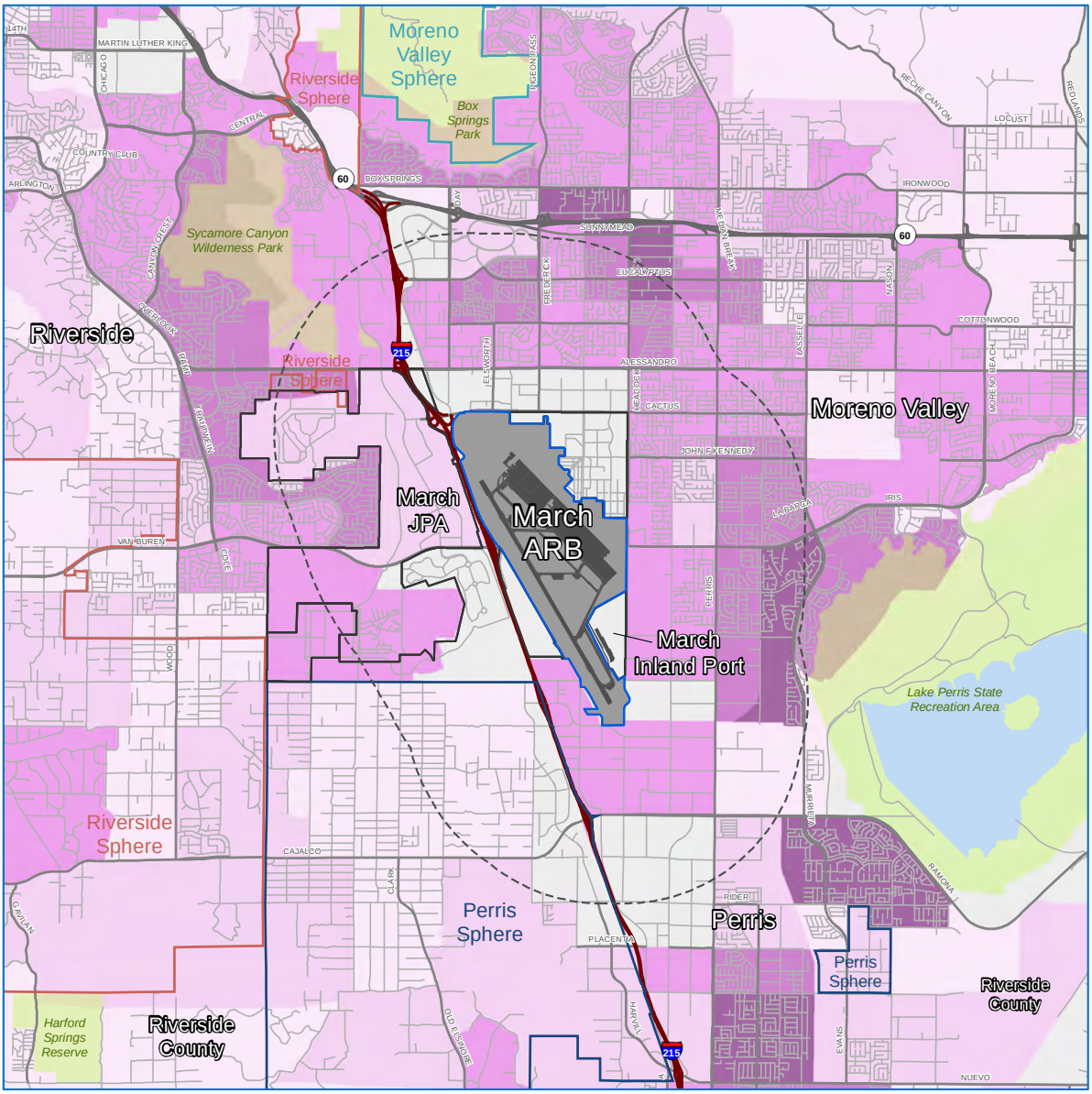
Source: *2019 American Community Survey 1-Year Estimate, 2010 U.S. Census*

Forecasted Housing Growth

Figure 2-3 in section 2.2 details the 2045 housing forecast using the SCAG TAZ data. The forecasted households for each TAZ is geographically displayed using numeric breaks as displayed in the map legend. This map demonstrates projected household densification by TAZ within the study area over the next 20 years. Some areas are projected to grow to more than 3,000 households for a multitude of TAZs in the vicinity of March ARB as indicated by the darker shades.

Notable planned housing growth is indicated in the City of Riverside's amended Canyon Springs Business Park Specific Plan, which will allow up to 2,000 dwelling units.

Figure 2-3 Forecasted Households by 2045



Legend

Forecasted Households by 2045*
- 0 - 100
- 101 - 400
- 401 - 800
- 801 - 1,600
- 1,601 - 3,200
- 3,201+

- March Air Reserve Base
- March ARB 2 Mile Buffer
- March Joint Powers Authority
- Airfield Surfaces
- Moreno Valley Sphere of Influence
- Perris Sphere of Influence
- Riverside Sphere of Influence

- Interstate
- Highway/Expressway
- Major Road
- Local Road
- Major Park
- Waterbody

MARCH ARB COMPATIBLE USE STUDY

*Areas shown reflect SCAG TAZ areas.

Sources: March ARB, 2020/2021.SCAG, 2022.

Matrix

0 ½ 1 2 Miles

Forecasted Households by 2045

2.3 Regional Transportation

March ARB is located along I-215, the primary access-controlled highway that services the base through two exits (25 and 27A). Two miles to the north, State Route 60 provides direct access to downtown Los Angeles.

Metrolink, Southern California's regional passenger rail system, consists of seven lines and 62 stations along 534 miles of the rail network. The system operates in Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties. The newly extended Perris Valley Line (PVL) runs 24 miles from downtown Riverside to a new South Perris station. The Moreno Valley/March Field Station along this new line was built to serve March ARB and the surrounding community. Currently, there are plans to extend the PVL to Hemet.

Amazon Air currently operates five flights a day out of March Air Base to support Amazon's warehouses and distribution centers in the area. Ontario International Airport is located 25 miles northwest of the base and offers daily flights from various airlines. It is also a shipping hub for United Parcel Service and Federal Express.

Roadways

Roadways in the study area are a mix of interstates, U.S. highways, state routes, county roads, and local roads. I-215 is a primary highway that runs in a southeast-to-northwest direction through the study area. The highway bisects the March JPA planning area. I-215 to the north of the study area connects with multiple other state routes, highways, and interstates, most notably I-15. I-215 to the south of the study area connects with State Route 74 which provides access to the City of Hemet before connecting back with I-15. State Route 60 serves Los Angeles County, Riverside County, and San Bernardino County travelers, extending westerly to Los Angeles and easterly to its merger with Interstate 10 in the City of Beaumont. Interstate 10 extends easterly to Arizona and points east.

Close to 40 percent of the nation's goods travel through the Inland Empire and are stored in warehouses[8]. Within the study area, there are primary goods movement routes, which are integral to the distribution of goods to the rest of the state and nation. The primary goods movement routes for the area are I-15, SR-91, and I-215[9].

The movement of goods plays an important role in both the circulation network and the economy of a region. Due to the location of the study area between the Los Angeles metropolitan area and destinations in the remainder of the country, the area serves as an important path for goods movement via airports, railways, and roadways. Goods movement in the study area is accommodated primarily by a set of designated truck routes, even though a rail line is also in the study area. Intermodal freight facilities, major freight generators, and warehouse distribution centers are significant contributors to goods movement in the study area. Warehousing and logistics facilities are major employment and trip generators, with many facilities located along I-215. Many logistics companies, as well as retail and online vendors, have warehouses in the Inland Empire region. Among the largest facilities, Amazon has multiple distribution and fulfillment centers in various cities and uses March ARB, Ontario International Airport, and San Bernardino International Airport for goods movement.

[8] Riverside County Long Range Transportation Study, RCTC, December 2019.

[9] Inland Empire Comprehensive Multimodal Corridor Plan (IE CMCP).

The Inland Empire Comprehensive Multimodal Corridor Plan (IE CMCP) was completed in October of 2020 to help local, regional, and state agencies deal with the balancing of infrastructure, livability, and economic, and sustainability needs as related to the regional transportation system. The IE CMCP covers the urbanized portion of both Riverside and San Bernardino Counties, excluding the Coachella Valley. The original concept for the plan was to have two corridors, one running north/south and the other east/west. However, as the study progressed, it was decided to create focused smaller "sub-corridors" to facilitate a more detailed assessment of corridor conditions and to focus on the recommended improvements and strategies. Five major regional transportation sub-corridors were identified for north/south travel and five for east/west travel, as listed in Table 2.4 and illustrated by Figures 2-4 and 2-5.

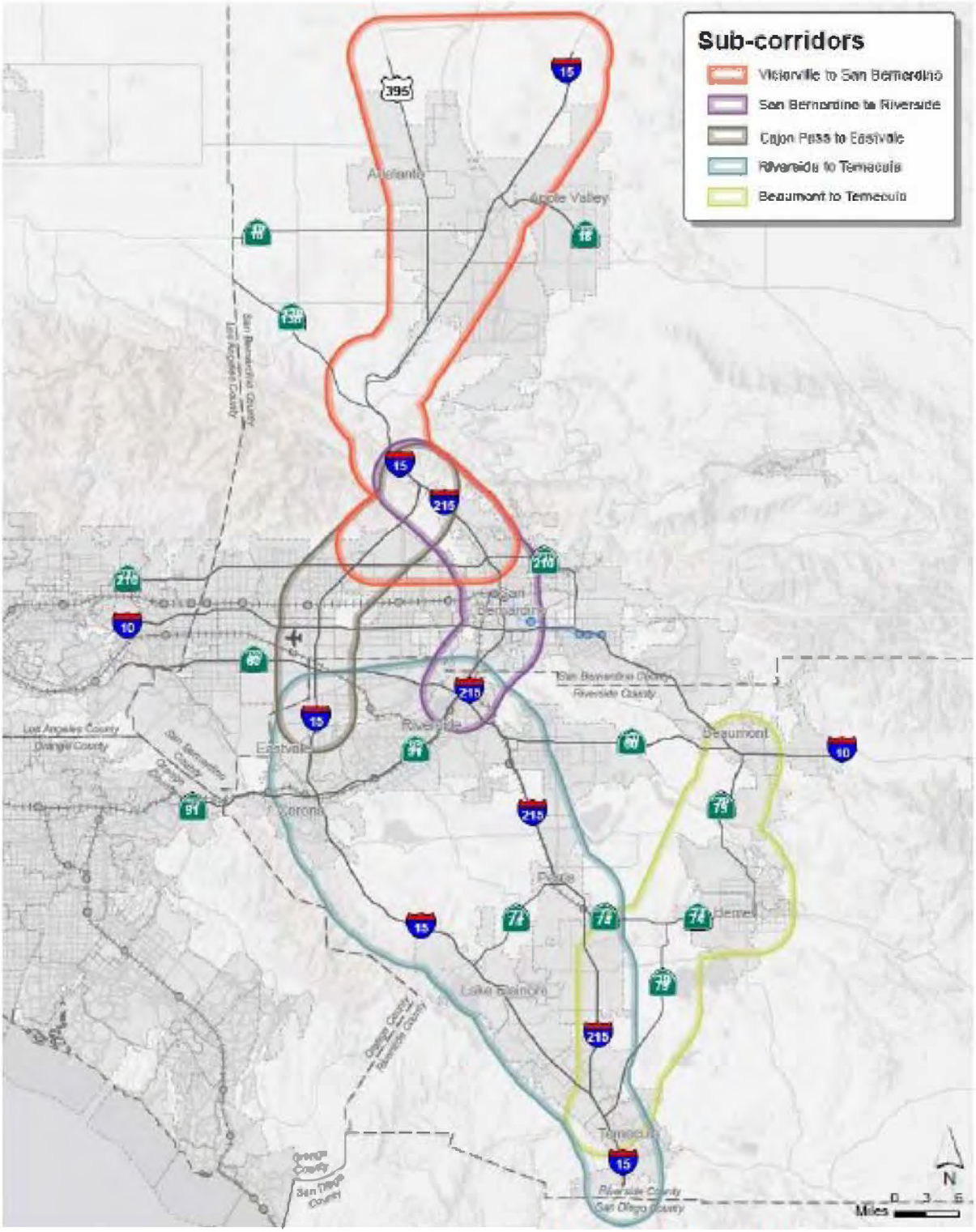
Table 2.4 Major Regional Transportation Sub-Corridors

North-South Sub-corridors:	East-West Sub-corridors:
1. Victorville to San Bernardino	1. Apple Valley to LA County Line
2. San Bernardino to Riverside	2. Banning to Rialto
3. Cajon Pass to Eastvale	3. Riverside/Rialto to LA County Line
4. Riverside to Temecula	4. Riverside to Orange County Line
5. Beaumont to Temecula	5. Hemet to Corona

Source: *2020 Inland Empire Comprehensive Multimodal Corridor Plan*

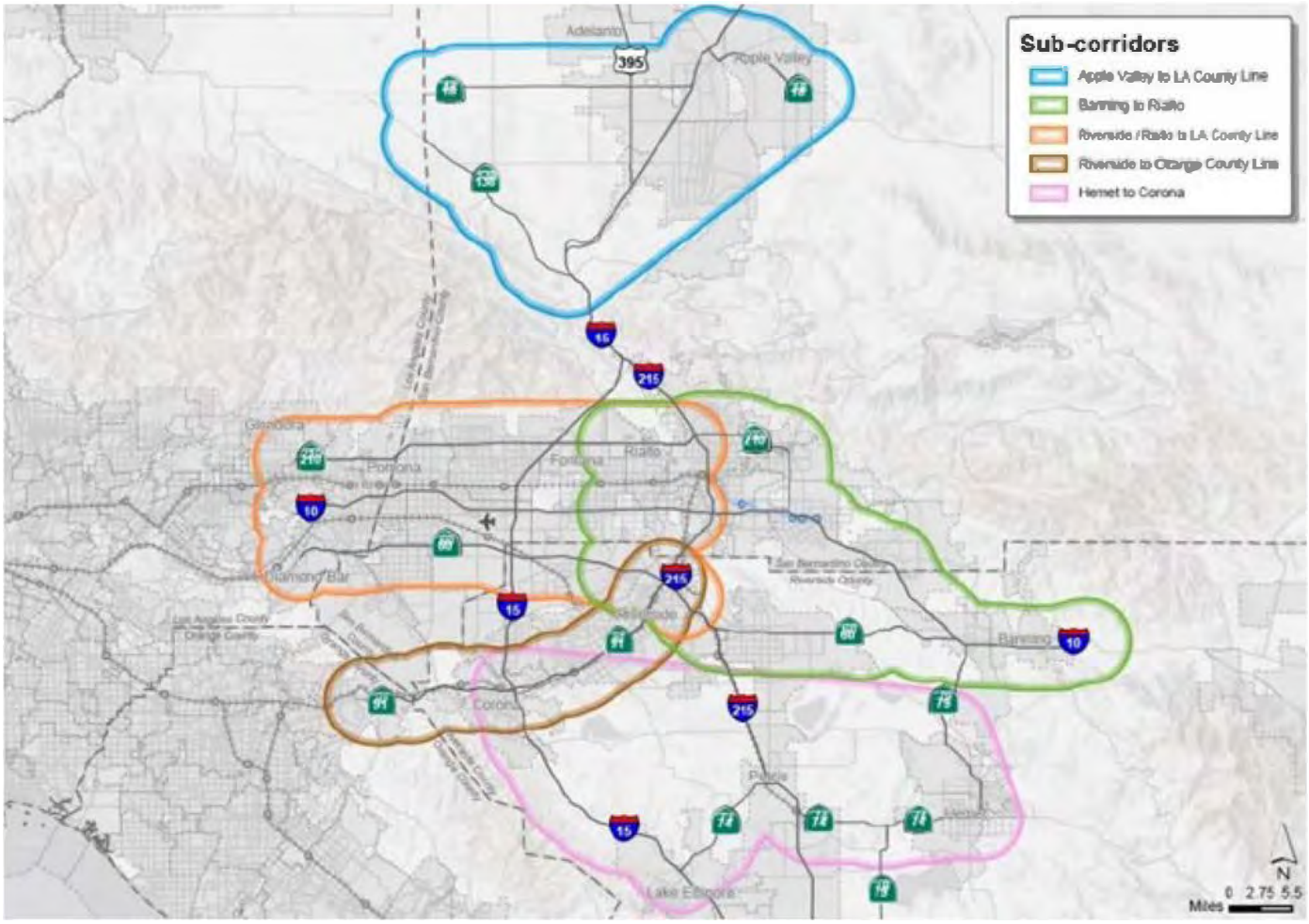
As part of the Inland Empire, the region around March ARB in western Riverside County is a major trade route for the economy at every level: global, national, state, regional, and local. As a result, March ARB is situated in the heart of a logistics network of trucking corridors that transport goods from the ports of Los Angeles and Long Beach to the rest of the country and to Ontario International Airport and San Bernardino International Airport, both of which are major cargo hubs. Concentrations of warehouses are located at the southerly edge of Moreno Valley and the northerly edge of Perris easterly of I-215, as well as in the unincorporated Mead Valley/North Perris area westerly of I-215. (see figure 2-4). The IE has had one of the fastest-growing economies of large metro areas in the country, with job growth in San Bernardino and Riverside counties outpacing the growth statewide. Job growth in the study area has been fueled by new transportation and warehousing, construction, health care, accommodation, and food services jobs. Per the IE CMCP, the area around March ARB is one of the most employment-dense sections of this area of Riverside County.

Figure 2-4 Regional Distribution Economy: North-South Oriented Sub-Corridors



Source: *Inland Empire Comprehensive Multimodal Corridor Plan, October, 2022*

Figure 2-5 Regional Distribution Economy: East-West Oriented Sub-Corridors



Source: *Inland Empire Comprehensive Multimodal Corridor Plan, October, 2022*

The transportation network servicing the area around March ARB cannot be overstated due to the type and size of development that has occurred around the base. In addition, the employment intensity and warehouse density are due, in part, to the success of the Inland Port Airport that has stemmed from the efforts of the March JPA. This effort has created a unique dual mission for the March airfield, serving both as a commercial enterprise and a military base. The employment density of warehouses on a per square-foot basis is very low compared with other types of commercial and industrial land uses, which is appropriate in areas near airports; however, in some cases, the bulk and proximity of these warehouses have led to operational issues for military aircraft in flight.

Railways

The Southern California Regional Rail Authority operates the region's commuter rail service, Metrolink, which serves the counties of Los Angeles, Orange, San Bernardino, Riverside, and Ventura. The study area is served with four Metrolink lines: Inland Empire-Orange County, Riverside, San Bernardino, and 91/Perris Valley. The San Bernardino line, serving San Bernardino to LA Union Station, has the highest daily ridership of any line in the Metrolink system as shown in Table 2.5. The Burlington Northern and Santa Fe (BNSF) Railway currently owns a rail line that runs along the eastern side of I-215, north of I-215 & State Route 60 interchange, and on the westerly side of I-215 in the immediate vicinity of March ARB, which connects to the Union Pacific (UP) line to the north in Riverside and ends in the south at San Jacinto.

Table 2.5 Metrolink Daily Ridership, 2018-2019

Line	Weekday	Saturday	Sunday	Stations
Antelope Valley Line	5,729	2,282	1,818	12
Inland Empire-Orange County Line	4,501	542	373	15
Orange County Line	8,699	2,331	1,794	15
Riverside Line	4,251	n/a	n/a	7
San Bernardino Line	9,736	3,794	2,332	14
Ventura County Line	3,639	n/a	n/a	12
91/Perris Valley Line	2,934	799	548	13

Source: *Southern California Regional Rail Authority, METROLINK Fact Sheet, Q3 2018-2019*

Airports

The Ontario International Airport is the closest major airport to March ARB and handles an average of 454,800 tons of air cargo a year, making it the second largest air cargo operation in the state after Los Angeles International and the fifth largest air cargo port in the United States. March ARB/MIP provides additional aviation capacity to the region, giving air traffic relief for cargo that otherwise would use Ontario International Airport.

Riverside Municipal Airport, owned and operated by the City of Riverside since 1953, is the neighborhood's dominant feature on the north side of the city. The airport was once expected to grow to a substantial scale comparable in site size and runway length to John Wayne Airport in Orange County. Instead, the airport fulfills an important niche in providing private general aviation services, housing the Riverside Police Department's Aviation Unit, and hosting occasional military use (usually helicopter flights associated with the region's military bases).

Perris Valley Airport is a privately-owned general aviation airport. The airport is extensively used for ultralight and parachuting activities. This public-use airport does not have a control tower or runway lighting and only operates during daylight hours.

2.4 Compatibility and Resiliency

What is Compatibility?

The goal of compatibility planning is to promote a collaborative environment in which community and military entities communicate and coordinate to address compatibility concerns and develop mutually supportive actions, the implementation of which will allow both parties to achieve their objectives. This collaborative approach provides the context in which policies and actions can be developed and recommended through the CUS in Chapter 6.

Why is Compatible Land Use Planning Important?

Although military installations and nearby communities may be separated by a physical boundary, they often share natural and man-made resources such as land, water, airspace, transportation networks, and other infrastructure. Because many resources are shared, the activities or actions of one entity can unintentionally impact another, resulting in conflicts despite the many positive interactions among local jurisdictions, agencies, and the military.

As communities develop and expand in response to growth and market demands, there is potential for incompatible development to be located closer to military installations and associated operational areas. New development that is not properly assessed for compatibility can generate new, or exacerbate existing, land use conflicts and other compatibility issues. This process is referred to as encroachment. Encroachment can have negative impacts on community safety and economic development as well as on the sustainability of military activities and readiness; therefore, addressing encroachment issues is currently one of the military's greatest operational challenges nationwide.

Military installations, local communities, agencies, and other stakeholders should collaborate to protect the long-term viability of existing and future military missions. Working together also enhances the health of economies in such communities before incompatible uses become an issue. In recognition of the close relationship that should exist between installations and adjacent communities, the OLDCC implemented the compatible use program to mitigate existing and future conflicts and to enhance communication and coordination among all affected stakeholders. This program aims to preserve the economic viability and quality of life of all community and installation stakeholders.

What is Resiliency?

Resiliency is the ability to bounce back. For this study, it refers to the ability of a military base to withstand the impacts of severe weather and adapt to changes in climate driven by a changing atmosphere. The effects of this, such as increased flood potential and wildland fires, can present operational and planning challenges to the military and surrounding communities as resources are depleted and environments altered. Military resiliency refers to the capacity and redundancies that military installations need to have in place to support critical systems and infrastructure to sustain mission requirements in the event of emergencies, disasters, or prolonged effects related to climate change.

Military installation resilience is defined in 10 U.S.C. §101(e)(8) as: the capability of a military installation to avoid, prepare for, minimize the effect of, adapt to, and recover from extreme weather events, or from anticipated or unanticipated changes in environmental conditions, that do, or have the potential to, adversely affect the military installation or essential transportation, logistical, or other necessary resources outside of the military installation that are necessary in order to maintain, improve, or rapidly reestablish installation mission assurance and mission essential functions.

California is historically prone to a wide range of natural events including earthquakes, wildfires, liquefaction, landslides, flooding (coastal and inland), and most recently the drought that is occurring throughout the southwest United States. March ARB has not been immune to these events and, more specifically, has been prone to flooding which at times has impacted operations at the base. The drainage for the northern portion of March ARB after significant rain events has shut down airfield operation of the runway.

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3 March ARB Overview

This chapter provides an overview of the physical setting, military history, assigned units, and current operations at March ARB. Identifying and describing the activities performed on the military installations provides valuable insight into the importance of the military as both a strong community partner and a national strategic asset. This information will help stakeholders make informed decisions regarding future development and economic growth in their communities, which may be influenced by installation activities because of their relative proximity. These decisions may affect the continued existence and future role of the installation.

3.1 March ARB Setting and History

March ARB is in western Riverside County, California, approximately 70 miles east of Los Angeles. It occupies approximately 2,300 acres of continuous property as well as seven geographically separate properties. The base is situated at an approximate elevation of 1,500 feet on the high valley floor of Perris Valley between the cities of Riverside and Moreno Valley. Directly west of the base, on the other side of I-215, is the March Field Inland Port and the Riverside National Cemetery. The cities of Moreno Valley and Perris are just east of the installation. Lake Perris reservoir is approximately eight miles from the base.

History

March is one of the oldest military airfields in the United States, opening in 1918 as the result of successful lobbying by the City of Riverside to the War Department and Congress. The base was originally named Alessandro Flying Training Field but was renamed March Field shortly after its establishment in honor of Lieutenant Peyton C. March, Jr. The airfield played an important role in the interwar years and during World War II as an Army Air Corps airbase where bombardment groups performed final training before embarking for duty in the Pacific It was designated as March Air Force Base in 1948, when the installation served as a Strategic Air Command base, flying B-29, B-47, and B-52 bomber aircraft for 50 years under the control of the U.S. Air Force (USAF). Its strategic bombing days ended in 1982 with the retirement of its B-52s and the arrival of the KC-10 Extenders. Its KC-135 Stratotankers have been stationed there since the 1960s.

In 1993, the base was subjected to realignment, which subsequently led to its redesignation from an active-duty base to a Reserve Base in 1996[1]. The installation was formally designated as **March Air Reserve Base** and assigned to the command of the 452nd AMW, the host to the Air Force Reserve Command's (AFRC) Fourth Air Force (4th AF). As part of the realignment, approximately 4,400 acres of March AFB land was deemed excess and was ceded to the March JPA, which is a federally recognized reuse authority responsible for activities involving reuse, planning, and development of such land. March ARB is located along I-215, adjacent to the Cities of Riverside, Perris, and Moreno Valley.

[1] About the JPA: https://marchjpa.com/about.php

Source: *March ARB 2021*

3.2 Mission and Operations

Fourth Air Force, Air Force Reserve

Fourth Air Force, headquartered at March ARB, is one of three numbered air forces assigned to the AFRC, Robins Air Force Base, Georgia. As a reserve command, 4th AF directs the activities and supervises the equipping and training of 24,000 Air Force reservists in unit programs across the continental United States, Alaska, Hawaii, and Guam. The command is responsible for 300 units and 33,500 personnel. Its roughly 200-member staff is made up of air reserve technicians, traditional reservists, and civilian employees who are dedicated to ensuring that assigned units and personnel are properly organized, trained, equipped, and ready to support national security requirements across a full spectrum of operations from war to contingency situations. 4th AF Units provide strategic airlift, airdrop, aeromedical, air refueling, and associated expeditionary support activities.

Source: *TSgt Rick Sforza/US Air Force 2022*

452nd Air Mobility Wing, Air Force Reserve

The 452nd AMW is the host organization responsible for all operational functions at March ARB supporting the Air Mobility Command (AMC), Air Combat Command (ACC), and Pacific Air Forces and is the AFRC's largest wing. The primary mission of the U.S. Air Force Reserve Command (AFRC) 452nd AMW is to:

- Provide airlift support for the USAF.
- Train in tactical airlift and airdrop of personnel and supplies in combat, air refueling, and aeromedical evacuation.

The wing conducts essential training and readiness missions, including mid-air refueling and transport of equipment and personnel in airspace across Southern California using C-17 Globemaster III and KC-135R Stratotanker aircraft. Subordinate units include:

- **452nd Operations Group** organizes, trains, and equips aircrews to provide air refueling and strategic airlift. It includes the 336th Air Refueling Squadron, 729th Airlift Squadron, 452nd Aeromedical Evacuation Squadron, 452nd Operations Support Squadron, and 452nd Airlift Control Flight.

- **452nd Maintenance Group** provides fully trained KC-135 and C-17 aircraft maintenance personnel to the 452nd AMW. It includes the 452nd Maintenance Operations, 452nd Aircraft Maintenance, 752nd Aircraft Maintenance, and 452nd Maintenance squadrons.
- **452nd Mission Support Group** provides home station services required for a combat-ready unit-equipped air mobility wing to deploy and employ. It includes the 452nd Headquarters, 452nd Civil Engineering, 452nd Services, 452nd Security Forces, 452nd Communications, 50th Aerial Port, 56th Aerial Port Squadron, and 452nd Logistics Readiness squadrons.
- **452nd Medical Group** provides medical support and enhances AMW readiness. It includes the 452nd Medical, 752nd Medical, and 452nd Aeromedical Staging squadrons.

144th Fighter Wing, California Air National Guard

The 144th FW, based at Fresno-Yosemite International Airport, operates fighter aircraft for **NORAD's Operation NOBLE EAGLE** ready alert missions out of March ARB. Under this real-world mission, NORAD detects airborne objects approaching North America and conducts its air defense mission by tracking, identifying, and taking appropriate action, which may include scrambling fighters to intercept the approaching aircraft, and/or escorting it through the air defense identification zone in coordination with the Federal Aviation Administration (FAA).

163rd Attack Wing, California Air National Guard

In addition to the 144th FW, March ARB is home to the California Air National Guard's 163rd Attack Wing, which operates the MQ-9 Reaper. Its Remotely Piloted Aircraft (RPA) mission is to provide close air support, air interdiction, intelligence, surveillance, and reconnaissance. When federally activated, the multi-role capabilities of the 163rd and its MQ-9s provide extended time over targets to locate, track, target, strike, and assess time-sensitive targets.

March Aerial Port of Embarkation (APOE) Center:

This center conducts deployment and redeployment operations for the DoD and other federal agencies located in the Southern California area. Specifically, March ARB transports troops and materiel from the First Marine Expeditionary Force, the Marine Corps Air Ground Combat Center at Twentynine Palms, and other installations in Southern California. The APOE also supports the transportation of troops and materiel to and from the Army's National Training Center at Fort Irwin.

Television-Audio Support Activity (T-ASA)

T-ASA is a DoD activity under the Defense Media Activity located at Fort Meade, Maryland. T-ASA designs, procures, installs, and supports radio and television, visual information, media archival, storage and duplication, and combat cameral systems with commercial, off-the-shelf equipment and supplies. It also supports the Armed Forces Network Broadcast Center, the sole programming source for military radio and television outlets overseas in over 177 countries around the world.

Department of Homeland Security

The **U.S. Customs and Border Protection (CBP) Air and Marine Operations Center (AMOC)** located at March ARB is a state-of-the-art, multi-domain law enforcement and operations center. AMOC uses sophisticated technology to detect, identify, track, and direct the interdiction of suspect aviation and maritime targets in the Western Hemisphere. AMOC monitors and tracks aircraft flying in U.S. airspace by integrating data from hundreds of domestic and internal radars and optical sensors, including satellite operations centers in Puerto Rico and Washington, D.C.

The **CBP Riverside Aviation Unit** operates two-fixed wing Pilatus PC-12s and one rotary-wing Airbus AS-350 from March ARB in fulfilling its role as the nation's only federal law enforcement center tasked to coordinate interdiction operations in the Western Hemisphere.

Other Tenant Units at March

Additional tenants at March ARB include:

- Air Force Audit Agency
- 912th Air Refueling Squadron 92nd Operations Group, 92nd Wing (Fairchild AFB)
- 701st Combat Operations Squadron, 940th Operations Group, 940th Wing (Beale AFB)
- 362nd Air Force Recruiting Service
- Defense Visual Information Center
- Civil Air Patrol, Squadron 45
- 653rd Regional Support Group, U.S. Army Reserve
- 358th Civil Affairs Brigade, U.S. Army Armed Forces Reserve
- 304th Sustainment Brigade, U.S. Army Reserve
- Naval and Marine Corps Reserve Center
- Army & Air Force Exchange Service
- Defense Commissary Agency

Civilian Joint Use

In addition to the military and homeland security organizations at March ARB, airport facilities are used by civilian aircraft and entities. A JUA was created on May 7, 1997, between the DoD and the March JPA to establish March Airfield as a joint-use airport permitting civil aviation operations. The joint use of March ARB was backed by the FAA in June of 1997 in which the FAA stated its support of the "joint military/civilian" use of March ARB in accordance with the terms and conditions of the JUA. Consequently, the March JUA allows for the establishment and operation of commercial and general aviation, except for civilian pilot training. March ARB provides operations and maintenance of all airfield airside facilities, except March Inland Port facilities, including air traffic control and navigational systems. Table 3.1 displays MIP operations for 2021 as counted against the JUA.

A joint-use airport is defined by the USAF as one where the facilities are owned and operated by the USAF and are made available for use by civil aviation.

Table 3.1 March Inland Port Operational Data 2021 (Number of Flight Operations)

Category of Operations	Annual Operations
Air Carrier	3480
General Aviation	1262
Military	226
Total Operations	4968

Source: *MIPAA, 2022*

3.3 Airfield Operations

Airfield operations at March Field are counted such that one operation equals one takeoff and/or one landing. Total operations include counts for military aircraft (military sorties) and civil aircraft – including those civil air operations supporting military operations such as air refueling tankers and troop movements that are not part of MIP operations or counted against the JUA.

Military usage of the airfield remains lower now than when the base was an active Air Force Base and operations peaked at approximately 125,000 per year[2]. However, the overall variety and pace of aircraft operations are increasing at March. The level of airfield activity is up by nearly 6,000 additional annual airfield operations over previous years (24,414 total operations in 2020, and 24,675 total operations in 2018).[3] The increase in air operations is attributed to increased activity from tenant units, visiting foreign military aircraft, and increased APOE operations. For example, the Army now uses March extensively for the transport of soldiers to and from its National Training Center at Fort Irwin, California. (Civilian aircraft operation numbers above include those in support of military transportation and operations that are not subject to the JUA.)

[2] March Air Reserve Base / Inland Port Airport Land Use Compatibility Plan, 2020
[3] March ARB, 2022

March ARB continues to follow flight paths published in the 2018 AICUZ study with no changes to aircraft arrival, departure, or closed loop routes.

***Source**: March ARB Public Affairs/US Air Force, 2021.*

Airfield Environment

March ARB has two active runways on the southwest side of the installation, Runway 14/32, and Runway 12/30 shown in Figure 3-1. The airfield has an active control tower manned by March ARB air traffic control personnel. The length, width, and pavement strength of Runway 14/32 enable it to accommodate nearly any type of military or civilian aircraft. The smaller secondary runway, Runway 12/30, was once the primary runway, but its length is now reduced to just over 3,000 feet and its use is restricted to light military aircraft (helicopters and Aero Club airplanes).

Runway 14/32 is 13,302 feet in length and contains 1,000-foot overruns at both ends, while Runway 12/30 (3,061 feet in length) has 200-foot overruns at both ends. The aircraft apron and hangars are located to the east of both runways and parallel to 12/30. There are 285 acres of aircraft ramp space. Runway 14/32 is a Class B runway with a width of approximately 200 feet; Runway 12/30, a Class A runway with a width of 100 feet, is closed to the public. There is a southwest-facing blast fence at the southern end of the apron and another blast fence at the midway point of the apron facing northwest.

Figure 3-1 Airfield Environment

Legend

- Control Tower
- Runway
- Airfield Surfaces
- March Air Reserve Base
- March Joint Powers Authority

MARCH ARB COMPATIBLE USE STUDY

Source: March ARB 2020/2021

Matrix

0 ¼ ½ 1 Miles

Airfield Environment

Air Traffic Control Tower

March Air Traffic Control (ATC) controls its airspace to 5,000 feet. In addition to the 30,120 airfield operations in 2021, there were approximately 63,420 ATC operations for aircraft transiting its airspace – up a little more than 7,000 over 2020's rate. Together airfield and other ATC operations combined for a total of 93,560 operations managed by March ARB in 2021.

Ground Operations

Owing to the size and primary use of March ARB, ground operations are fairly limited, and although an outdoor range remains, it is inactive. In 2012, the Small Arms Range was moved to an indoor facility for the 452nd AMW Security Forces Squadron's combat arms training which negated noise from outdoor weapons firing[4]. The indoor range enables shooters to qualify with all weapons, firing from all positions in both day and night fire scenarios. The 28,000-square-foot facility includes 28 range positions, a weapons cleaning room, office space, and a vault to secure weapons and ammunition. This facility also supports the 163rd Air Reconnaissance Wing; 4th Air Force; local Army, Navy and Marine Corps units; and members from Los Angeles Air Force Base.

[4] https://www.march.afrc.af.mil/News/Article-Display/Article/167685/march-field-firing-range-moves-to-other-side-of-tracks-goes-high-tech/

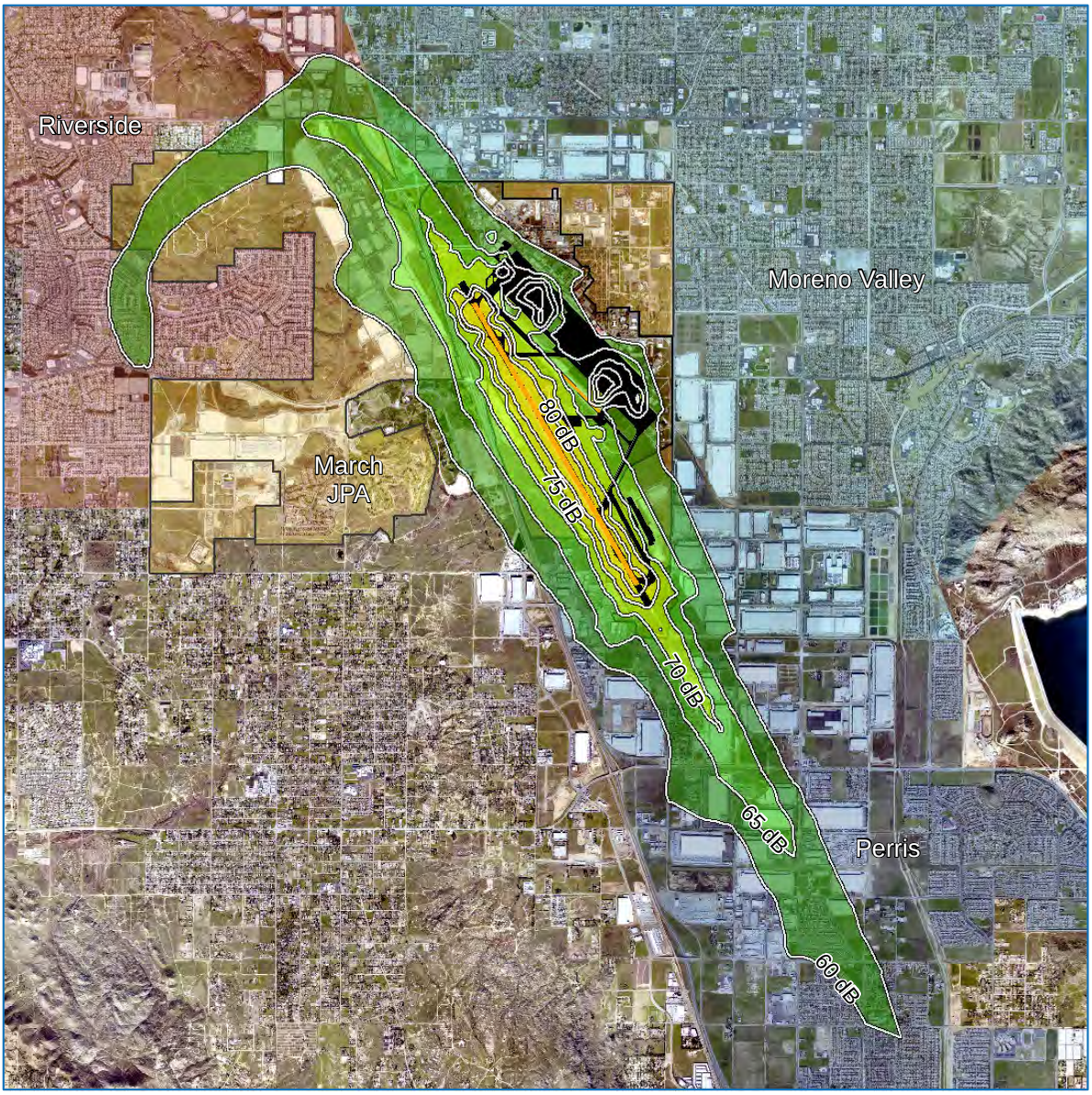
Noise

The most current published noise model (NOISEMAP) for March ARB is found in the 2018 AICUZ study. The NOISEMAP from this model reflects 51,172 air operations, including 21,000 of the maximum number of civil air operations allowed under the JUA. The NOISEMAP (Figure 3-2) combines noise modeling using DoD NOISEMAP 7.3 and the FAA Aviation Environmental Design Tool (AEDT) 2c. The number of air operations has significantly increased since the AICUZ was published. Current guidance from Air Force Instruction 32-1015 Integrated Installation Planning (AFI 32-1015) states that noise studies may be updated when there are:

- Mission changes that include aircraft types, flight operations, and flying tactics.
- Changes in Special Use Airspace or Airspace for Special Use or at ranges.
- Changes in departure/arrival flight tracks or location of Visual Flight Rules (VFR) or Instrument Flight Rules (IFR) traffic patterns.
- Changes of more than 500 feet in downwind altitudes.
- Additions or deletions of runup locations and/or suppression equipment.
- Changes in location or orientation of an unsuppressed engine run-up or trim pad.
- Changes in types of aircraft or engines run at an unsuppressed location.
- Changes in runway usage, including offset thresholds of 500 feet or more.
- Changes in the number of flight operations occurring between 10 p.m. and 7 a.m.
- Mission or flight-path changes that arise as a result of incompatible development, such as wind energy/turbine construction projects in operating areas.
- Changes in locations, operations, or types of munitions in the training of explosives and ground weapons.

March ARB maintains a Noise Abatement Program with published quiet hours that limit pattern work and engine run-ups. In addition, in 2007, a Noise Abatement Departure Profile was applied to civil air carrier departure which subsequently mitigated impacts on residential areas. March publishes notices to air missions to advise of these restrictions. Noise complaints occur infrequently.

Figure 3-2 Airfield Noise Environment



Legend

2018 CNEL Noise Contour
- 60 dB CNEL
- 65 dB CNEL
- 70 dB CNEL
- 75 dB CNEL
- 80 dB CNEL

- Runway
- Airfield Surfaces
- March Air Reserve Base
- March Joint Powers Authority

MARCH ARB COMPATIBLE USE STUDY

Source: March ARB 2020/2021

Matrix

0 ½ 1 2 Miles

Airfield Noise Environment

Future Mission Potential

In 2022, the DAF selected March ARB as the preferred location to host the next generation air tanker aircraft – the KC-46A Pegasus. The decision was based on factors related to mission, infrastructure capacity, community support, environmental considerations, and cost. If the relocation decision is finalized, 12 KC-46As will replace the venerable KC-135 Stratotankers based at March. The Pegasus offers enhanced capabilities such as boom and drogue refueling on the same sortie, worldwide navigation and communication, cargo capacity on the entire main deck floor, receiver air refueling, improved force protection, and multi-point air refueling capability. A final basing decision will be made after an Environmental Impact Analysis, including a new noise study, which is expected to take place in the fall of 2023. Grissom ARB, Indiana and Tinker Air Force Base, Oklahoma are considered reasonable alternatives and will also undergo Environmental Impact Analyses.

3.4 Economic Benefit

A 2016 Economic Impact Analysis report published by Claremont McKenna College found an annual economic impact from March ARB of $579 million on the counties of Riverside and San Bernardino. This economic impact consisted of an estimated $267 million of payroll for active military, reserve, and civilian employees on the base; $183 million for purchases of goods and services for the base; and $129 million in off-base payroll generated by the direct expenditures. Approximately 9,525 people are employed at the base, with another 3,113 jobs resulting indirectly from the expenditure of the employee payroll. The base produces at least $296 million of activity and 1,591 off-base jobs in Riverside County, with the remainder in adjacent San Bernardino County.

3.5 March ARB Community Contributions

March ARB is active throughout the community and has contributed greatly to the overall success and health of the region. The March JPA is an award-winning Base Reuse Authority that fosters public-private partnerships for the development of former March AFB properties. The March JPA is under the joint leadership of the Riverside County Board of Supervisors and the city councils of Moreno Valley, Perris, and Riverside. Together these communities have built one of the most sustainable and progressive business centers in California. Revenue from the JPA supports local communities, education facilities, and utilities.

The March Field Air Museum provides insight into the pivotal role that March Field played in the development of flight. The museum contains over 80 aircraft and more than 30,000 artifacts which help illustrate the importance of the base to aviation advancement.

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4 Planning & Compatibility Tools

This chapter provides an overview of existing programs, plans, policies, governing regulations, government agencies, and other planning tools that are used, applied, or available for evaluating and addressing compatibility issues in the project Planning Area. Several of these tools are designed either to address compatibility directly or to address it indirectly through the topics they cover. This review is meant to provide an overview of applicable planning tools and to determine how each may apply to compatibility as presented under the compatibility factors discussed in Chapter 5.

The tools presented in this chapter are organized by level of government: federal, military, state, regional, and local.

4.1. Federal Programs and Policies

Federal law authorizes federal, state, and local entities to implement regulatory measures and policies to protect the multiple resources that are involved in land use and military compatibility planning. The intent of these measures and policies is to protect the quality of life and general welfare of the public and to preserve military areas. These tools assist land use decision-makers and planners at all levels of government to make informed decisions that ensure compatible land use development between military installations and the surrounding communities.

Federal policy, laws, and programs have evolved to impact almost every aspect of land use. This is particularly true in metropolitan areas that host major military facilities such as March ARB. A broad range of federal plans, programs, and actions impact March ARB both directly and indirectly. Federal programs and policies are carried out by the various arms of the federal government, although in some cases these tools also authorize state, county, regional, or local governmental agencies to implement related policies, programs, and regulations. The following federal programs and policies were evaluated to assist with determining where areas of improvement could enable better compatibility and recommended land use planning at the local level.

The following does not attempt to provide an exhaustive accounting of every relevant federal law or program but simply attempts to capture those considered to be most relevant to the assessment of compatibility issues and to the potential strategies stakeholders might employ to avoid or mitigate conflicts. The federal plans and programs that are included in this section are:

- Air Force Community Partnership (AFCP) Program
- Air Force Installation Energy Strategic Plan 2021
- Air Force Instruction 90-2001
- Air Force Policy Directive (AFPD) 90-17
- Air Installation Compatible Use Zones (AICUZ) Program
- Building Resilient Infrastructure and Communities (BRIC)
- Clean Air Act (CAA)
- Clean Water Act (CWA)
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
- DoD Defense Community Infrastructure Program (DCIP)
- DoD Directive 4170.11 Installation Energy Management
- DoD Directive 4715.21 Climate Change Adaptation and Resilience
- DoD Military Aviation and Installation Assurance Siting Clearinghouse

- DoD Operational Noise Management Program
- DoD Operational Noise Manual
- DoD Readiness and Environmental Protection Integration (REPI)
- Department of Housing and Urban Development (HUD) Noise Regulation
- Endangered Species Act
- Federal Aviation Act
- FAA Guidance on Drone Operations
- FAA Order JO 7110.65T
- FAA Policy: Review of Solar Energy System Projects on Federally-Obligated Airports
- FAA 5-G Guidance
- Federal Land Policy and Management Act of 1976
- FAA Advisory Circular 150/5200-33C - Hazardous Wildlife Attractants on or near Airports
- Intergovernmental Support Agreements
- Migratory Bird Treaty Act
- National Environmental Policy Act (NEPA)
- National Historic Preservation Act
- Noise Control Act of 1972
- Partners in Flight Program
- Safe Drinking Water Act
- Telecommunications Act of 1996 and the Federal Communications Commission
- The Sikes Act
- U.S. Avian Hazard Advisory System

Air Force Community Partnership (AFCP) Program

The AFCP Program is an initiative led by the Office of the Assistant Secretary of the Air Force for Installations, Environment and Energy (SAF/IE) to cultivate partnerships among installations and their host communities and focuses on enhancing military readiness and saving money. Other objectives include fostering installation-community relationships and promoting innovation such as Inter-Governmental Support Agreements. The Air Force currently emphasizes initiatives with greater returns on investment that can be applied across a variety of installations, such as having public entities provide municipal services (water and wastewater service, solid waste collection, etc.) to bases.

Air Force Installation Energy Strategic Plan 2021

The Air Force Installation Energy Strategic Plan 2021 supports mission assurance using a mission-centric view to improve the resilience of energy and water systems that enable DAF capabilities. To execute this approach, the Plan lays out three goals – identify enabling system vulnerabilities, improve resilience planning, and ensure resilience results – that have been selected to support the installation energy vision of Mission Assurance through Energy Assurance. Strategic objectives set the major milestones or actions required to achieve each goal. The Plan includes an overview of the DAF Facility Energy Program governance structure introduced in DAF Instruction 90-1701 (which is an updated instruction to AFPD 90-17, listed below) as well as a suite of assessment, planning, execution, and verification tools to assist the DAF in realizing these goals. The Plan enhances the ability of the DoD to further build military readiness in support of a more lethal force, and reform DoD business practices as outlined in the 2018 National Defense Strategy. By taking a mission-focused approach to mitigate potential vulnerabilities in enabling systems supporting critical infrastructure and key military capabilities, the Plan ensures DAF readiness is not impaired by unexpected disruptions. The content of this Plan will be reviewed every two years and updated as needed to keep pace with the continuously changing operational landscape.

Air Force Instruction 90-2001

Air Force Instruction 90-2001 was published in September 2014 to implement the Encroachment Management Program. The Instruction applies to all Air Force installations to address encroachment issues and prevent or reduce the impacts of encroachment. The Instruction includes an Encroachment Management Framework, which has four elements (Organize, Assess, Act, and Monitor) to address the variety of challenges. Organization requires leadership involvement, a cross-functional management structure, an issue evaluation structure, a designated Executive Director at the installation level, and a geographic scope. Assessment includes studying internal and external relationships and developing encroachment studies, such as an Installation Complex Encroachment Management Action Plan (ICEMAP). Action involves implementation of programs. Lastly, monitoring involves maintaining awareness of mission needs and encroachment issues.

Air Force Policy Directive (AFPD) 90-17

AFPD 90-17 "establishes the framework for energy management within the Air Force; the Air Force energy management program addresses the use, conservation, and security of energy and water across all Air Force missions." AFPD 90-17 requires that the Air Force be able "to power any infrastructure identified as critical to the performance of mission essential functions independent of the utility grid for the period of time needed to relocate the mission or for at least seven days, whichever is longer." As many Air Force missions can be temporarily relocated during disruptive events – e.g., by flying aircraft to other installations – this policy is flexible enough to fit energy resilience capabilities to mission requirements as appropriate.

Air Force Playbook for Foreign Investment Assessments Proximate to Military Equities

The Air Force published this document in 2023. The playbook is designed to inform and educate installation staff and surrounding local governments on protocols for obtaining critical information and identifying and addressing potential concerns related to foreign investment transactions near Air Force installations and training and testing areas. This playbook assists in the flow of information for transaction review by the Committee on Foreign Investment in the United States. This federal interagency committee is charged with the review of certain transactions involving foreign investment in the United States and certain real estate transactions by foreign persons, in order to determine the effect of such transactions on the national security of the United States.[1]

Air Installations Compatible Use Zones (AICUZ) Program

The AICUZ program was created by the DoD in 1973 to address noise and safety hazards associated with aviation operations at military airfields. Air Force Instruction 32-7063 was updated in 2015 to implement the AICUZ and the Air Force Directive 90-20, Encroachment Management. The Instruction applies to all Air Force installations with active runways. The AICUZ program provides guidelines to promote compatible or recommended land development in areas subject to operational noise and accident potential. The program was initiated to protect the public's health, safety, and welfare, as well as to protect military airfields from encroachment by incompatible or discouraged uses and structures. The AICUZ framework evaluates noise from military aircraft, applying the concept of CZs and APZs with corresponding development and building densities and intensities designed to encourage compatible or recommended uses between military operations and communities. An installation's AICUZ study provides land use tables that set land use compatibility guidelines within the CZs, APZs, and noise zones.

Building Resilient Infrastructure and Communities

Building Resilient Infrastructure and Communities (BRIC) is a Federal Emergency Management Agency (FEMA) grant. BRIC will support states, local communities, tribes, and territories as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards. The BRIC program's guiding principles are supporting communities

[1] https://home.treasury.gov/policy-issues/international/the-committee-on-foreign-investment-in-the-united-states-cfius

through capability- and capacity-building, encouraging and enabling innovation, promoting partnerships, enabling large projects, maintaining flexibility, and providing consistency.

Clean Air Act

The Clean Air Act (CAA) is a comprehensive federal law that regulates air emissions from stationary and mobile sources to control air pollution. Under the CAA, the Environmental Protection Agency (EPA) establishes limits on six criteria pollutants through the National Ambient Air Quality Standards (NAAQS). Standards are established to protect public health and public welfare. The CAA also gives the EPA the authority to limit emissions of air pollutants originating from sources such as chemical plants, utilities, and steel mills. Individual states may have more stringent air pollution laws, but they may not have weaker pollution limits than those set by the EPA. Under the law, states must develop State Implementation Plans (SIPs) that outline how each state will control air pollution under the CAA.

Clean Water Act

The Clean Water Act (CWA) governs the management of water resources and controls and monitors water pollution in the U.S. The CWA establishes goals for eliminating the release of toxic substances and other sources of water pollution to ensure that surface waters meet high quality standards. In so doing, the CWA prevents the contamination of nearshore, underground, and surface water sources.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

This legislation was designed to assist with the clean-up of sites with hazardous contaminants to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA has relevance as a potential Compatible Use Plan tool through the Superfund environmental program, established to address hazardous waste sites. Hazardous waste is sometimes present in or around military installations, particularly where munitions and ordnance are stored and used for training purposes, and if not disposed of properly could be potentially harmful to the installation tenants and surrounding communities. While the Superfund cleanup process may be complex, it protects communities and the environment from further contamination.

DoD Defense Community Infrastructure Program

In 2021, DoD awarded $4,329,268 to Western Municipal Water District, California to undertake a $12,457,527 project to build a local groundwater resiliency connection to support March Air Reserve Base.

Piloted in 2019, the Defense Community Infrastructure Program allows the DoD to provide funding to state and local governments for off-base infrastructure projects or on property under the jurisdiction of a Secretary of a military department that is subject to a real estate agreement (including a lease or easement); to support military installations. The program authorizes the department to fund projects that address deficiencies in community infrastructure if the assistance will enhance the value of the military, its resilience, or the quality of life of military families.

Eligible community infrastructure projects are any complete and useable transportation project, community support facilities (e.g., school, hospital, police, fire, emergency response, or other community support facility), and utility infrastructure projects [e.g., water, wastewater, telecommunications, electric, gas, or other utility infrastructure (with necessary cyber safeguards)] that:

- are located off a military installation
- support a military installation
- are owned by a state or local government or a not-for-profit, member-owned utility service
- will enhance military value, military installation resilience and/or military family quality of life at the supported military installation (definitions of these enhancements are provided in Section E., paragraph 1. of the Notice of Funding Opportunity)
- are endorsed by the local installation commander who represents the installation benefitting from the proposed project
- are where ground-disturbing work has not yet commenced and are construction ready

DoD Directive 4170.11 Installation Energy Management

Directive 4170.11 requires that installation energy management meet applicable goals and policies and:

- That utility infrastructure be secure, reliable, and efficient
- That utility commodities be procured effectively and efficiently
- That energy and water conservation efforts be maximized

The availability, reliability, and security of electrical, water, and fuel resources and supporting infrastructure are critical for installation resiliency and continuity in case of events driven by climate change impacts.

DoD Directive 4715.21 Climate Change Adaptation and Resilience

This directive provides DoD policy on adapting current and future military operations to address climate change impacts on mission planning and execution. Key elements of the directive are to:

- Identify and assess the effects of climate change on DoD missions
- Account for climate change effects when developing plans and procedures
- Anticipate and manage risks associated with climate change to ensure resilience

DoD Military Aviation and Installation Assurance Siting Clearinghouse

Section 358 of the 2011 National Defense Authorization Act requires the DoD to study the potential effects of proposed structures on military installations and operations. The Military Aviation and Installation Assurance Siting Clearinghouse (formerly the Energy Siting Clearinghouse) coordinates the review of energy project applications. Key elements of Section 358 include designating a senior official and lead organization to conduct the review of energy project applications, a specific timeframe for completing a hazard assessment associated with an application (30 days), and specific criteria for DoD objections to projects. Section 358 also requires the DoD to provide an annual status report to Congress. This legislation promotes the ongoing development of renewable energy sources and increased resiliency of the commercial electrical grid, while minimizing or mitigating any adverse impacts on military operations and readiness.

This legislation establishes procedural certainty and a predictable process for promoting compatibility between alternative energy development and military capability.

DoD Operational Noise Management Program

The DoD Operational Noise Management Program is the mechanism for addressing military noise-related issues associated with test and training operations consistent with maintaining military readiness and integrating military noise management principles into plans and programs for installations, operational ranges, and other training and offshore operating areas. DoD components are required to analyze and incorporate military noise considerations into environmental reviews, determinations, and decisional documents in accordance with the National Environmental Policy Act, National Historic Preservation Act, Endangered Species Act, and other applicable federal regulations and DoD guidance. This program is intended to promote encroachment prevention through community outreach and compatible land use.

DoD Operational Noise Manual

The Operational Noise Manual was prepared for the DoD by the U.S. Army Center for Health Promotion and Preventive Medicine and released in November 2005. It provides a practical guide for military and civilian personnel with duties and responsibilities in operational noise management so that they can work together to be good neighbors and mitigate noise issues. The manual assists personnel with understanding and implementing current DoD environmental policy and guidance. The majority of the manual is devoted to characteristics of sound, effects of noise, military noise sources, noise monitoring, and reduction of noise conflicts.

DoD Readiness and Environmental Protection Integration

To implement the authority provided by the Department of Defense Conservation Partnering Initiative, the DoD established the Readiness and Environmental Protection Integration (REPI) program. This initiative enables the DoD to work with state and local governments, Non-government Organizations (NGOs), and willing landowners to limit encroachment and incompatible land use. REPI funds are used to support various DoD partnerships that promote compatible and recommended land use. By relieving encroachment pressures, the military can test and train in a more effective and efficient manner. Habitats for plant and animal species are conserved and protected by preserving the land surrounding military installations. It is important for March ARB to ensure that military activities are not encroached upon by incompatible and not recommended land uses. The REPI gives local agencies an opportunity to partner with the military and other local agencies. This will allow for buffers around the base to be established to help further protect its mission.

Department of Housing and Urban Development Noise Regulation

The United States Department of Housing and Urban Development (HUD) has instituted policies through Section 24 Code of Federal Regulations (CFR) Part 51 that are designed to promote the creation of controls and standards for community noise abatement by state and local governments. The focus of these regulations is to reduce noise levels within residential developments funded by HUD. Generally, external noise exposure within Noise Zone 3 (as identified in an installation's AICUZ study) is considered unacceptable without exception, and within Noise Zone 2 exposure is normally unacceptable with respect to new construction. HUD funds may also be available to encourage noise abatement planning and acoustical treatment for proposed and existing incompatible and not recommended land uses within the AICUZ.

HUD may fund residential construction within certain noise contours, provided sound attenuation is accomplished. The added construction expense of sound attenuation, however, may make siting in these noise exposure areas financially less attractive. Since the HUD policy is discretionary, variances may also be permitted, depending on regional interpretation and local conditions. HUD also has a policy (24 CFR 51D) that prohibits funding for projects in runway CZs and APZs, unless the project is compatible and recommended with any applicable AICUZ recommendations.

Endangered Species Act

The Endangered Species Act (ESA) of 1973 established a program for the conservation of threatened and endangered plants and animals and their habitats. Under the ESA, species may be listed as either endangered or threatened.

When a species is proposed for listing as endangered or threatened under the ESA, U.S. Fish and Wildlife Service (USFWS) must consider whether there are areas of habitat believed to be essential to species conservation. Those areas may be proposed for designation as "critical habitat." A critical habitat designation does not necessarily restrict further development; it is a reminder to federal agencies that they must make a special effort to protect the important characteristics of these areas.

The ESA requires federal agencies to ensure that actions they "authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species."

Federal Aviation Act

The Federal Aviation Act was passed in 1958 to oversee and regulate civilian and military use of airspace. The Act requires the Secretary of Transportation to make long-range plans that include policies for the orderly development and use of navigable air space in order to serve both civilian aeronautics and national defense needs. The Act further authorized the FAA to manage airspace over the United States. The primary objectives of the FAA are to promote air safety and the efficient use of navigable airspace.

The Federal Aviation Act is largely implemented through Title 14 Code of Federal Regulation Part 77, commonly referenced as Part 77, which provides standards for determining if a proposed structure or object will create a vertical obstruction or flight hazard in navigable airspace. Local jurisdictions can use a formula provided in the regulation to assess proposed developments relative to height restrictions near airfields. The FAA uses its Obstruction Evaluation/Airport Airspace Analysis tool to make Determinations of Hazards/No Hazards for proposed structures or objects.

Part 77 defines an obstruction to air navigation as an object that meets one or more of the following conditions:

- A height of 499 feet above ground level
- A height that is 200 feet above ground level or 200 feet above the established airport elevation, whichever is higher, and within three nautical miles (NM) of the established reference point of an airport that has a runway that is at least 3,200 feet long. Heliports are excluded from these criteria. The height criterion increases by 100 feet for every additional NM from the airport, up to a maximum of 499 feet.
- A height within a terminal obstacle clearance area, including initial approach segments, departure areas, and circling approach areas, which would result in the vertical distance between any point on the object and an established minimum instrument flight altitude within that area or segment to be less than the required clearance.
- A height within an en-route obstacle clearance area of a federal airway or approved off-airway route, including turn and termination areas, that would increase the minimum obstacle clearance altitude.
- The surface of a takeoff and landing area of an airport, or of any imaginary surface established under 14 CFR 77.19 and 14 CFR 77.21, as well as heliports (14 CFR 77.23). However, no part of the takeoff or landing area will be considered an obstruction.
- Except for traverse ways on or near an airport with an operative ground traffic control service furnished by an airport traffic control tower or by the airport management and coordinated with the air traffic control service, the standards apply to traverse ways used or to be used for the passage of mobile objects only after traverse way heights are increased by the following:
  - 17 feet for an Interstate Highway that is part of the National System of Military and Interstate Highways where overcrossings are designed for a minimum of a 17-foot vertical distance.
  - 15 feet for any other public roadway.
  - 10 feet or the height of the highest mobile object that would normally traverse the road, whichever is greater, for a private road.
  - 23 feet for a railroad.

For a waterway or any other traverse way not previously mentioned, an amount equal to the height of the highest mobile object that would normally traverse it.

When the FAA identifies obstructions, it may require proposed developments to be altered to avoid creating obstructions or minimize their potential impacts. Additional information on Part 77 can be found on the FAA website at http://www.faa.gov/.

Federal Aviation Administration (FAA) Guidance on Drone Operations

The FAA governs unmanned aircraft systems (UAS), commonly known as drones, in the national airspace. Drone operations for small UAS, defined as under 55 pounds, can be conducted under the Small UAS Rule (Title 14 CFR, Part 107), which requires operator certification among other UAS regulations. Recreational use of small UAS is permitted by 49 United States Code § 44809 as an exception to Part 107 provided the operator follows the eight requirements of this exception, which includes registration of UAS vehicles. This exception is sometimes referred to as the Recreational Use of Model Aircraft Rule.

FAA Small Unmanned Aircraft Systems

Title 14 CFR Part 107 specifies operating requirements for all UAS under a weight of 55 pounds. This includes manually operating the UAS, maintaining a visual line-of-sight and getting approval from the relevant air traffic control tower before operating in Class B, C, D, and E airspace using the Low Altitude Authorization and Notification Capability (LAANC) desktop or mobile app. It also sets operational limitations, including a weight limit of 55 pounds, a speed limit of 100 miles per hour, a height limit of 400 feet, and daylight operations only. UAS operators are required to pass a remote pilot certification exam and UAS must be registered with the FAA. Certified UAS operators can request waivers to operational requirements including altitude, special use airspace, and flying at night. Exceptions to this rule under the Recreational Use of Model Aircraft Rule require registration of small UAS with the FAA, marking the aircraft with a registration number, and carrying the registration on the operator's person while operating the UAS.

FAA UAS Registry

All UAS operating in the national airspace are required to be registered with the FAA at its Drone Zone website. The only exception is for model aircraft with weights under 0.55 pounds. The Drone Zone website is https://faadronezone.faa.gov/#/.

The FAA may take enforcement action against anyone who conducts an unauthorized UAS operation or operates a UAS in a way that endangers the safety of the national airspace system. The types of FAA enforcement tools include warning notices, letters of correction, and civil penalties.

FAA Guidance to Law Enforcement

The FAA asks local law enforcement agencies (LEAs) to document and provide the following information to the FAA:

- Identity of operators and witnesses (name, contact information)
- Type of operation (hobby, commercial, public/governmental)
- Type of device(s) and registration information (number/certificate)
- Event location and incident details (date, time, place)
- Evidence collection (photos, video, device confiscation)

Additionally, the FAA recommends law enforcement always follow agency policies and take appropriate action based on the facts and circumstances of the incident and site/area-specific laws and rules. FAA enforcement action does not impact any enforcement action(s) taken by LEAs.

Local ordinances that may apply include, but are not limited to, reckless endangerment, criminal mischief, voyeurism, and inciting violence.

FAA Order JO 7110.65T

The FAA Order JO 7110.65T became effective in February 2010 and set the provisions for safe fuel jettisoning or dumping for aircraft. This order established rules for pilots operating in IFR and VFR conditions to dump fuel in certain situations such as emergencies. This order delineates the means by which fuel dumping can safely occur. This is in response to ensuring the general welfare of the public and the structural integrity of the aircraft during landing operations.

FAA Policy: Review of Solar Energy System Projects on Federally-Obligated Airports

This document establishes FAA policy for proposals by sponsors of federally-obligated airports to construct solar energy systems on airport property. FAA is publishing this policy because it is in the public interest to enhance safety by analyzing the ocular impact of proposed solar energy systems on federally-obligated airport traffic control tower personnel.

FAA 5G Guidance

Radio altimeter interference from 5G, specifically C-Band, communications infrastructure is a documented aviation safety risk. Transmissions from 5G communication towers in the vicinity of airports can interfere with the proper operation of radio altimeters. This interference presents a particular safety risk to aircraft crew and passengers, as several aircraft control systems are reliant on properly functioning radio altimeters. Boeing 737, 757, and 767 series aircraft are particularly impacted (see below). The FAA is actively working with both the aviation industry and communications industry to mitigate this risk by retrofitting aircraft with improved radio altimeters that filter out 5G spectrum interference and limiting full 5G infrastructure implementation near priority airports until this risk can be fully mitigated. The FAA has issued a Notice to Air Missions (NOTAM) to advise pilots to use alternative methods of compliance around certain airports for any aircraft not cleared for operation in 5G environments.

The FAA has issued Airworthiness Directives (AD) for airplanes equipped with a certain flight control system. This AD was prompted by a determination that radio altimeters cannot be relied upon to perform their intended function if they experience interference from wireless broadband operations in the 3.7-3.98 GHz frequency band (5G C-Band). This directive determined that, during the approach, landings, and go-arounds, as a result of this interference, certain airplane systems may not properly function, resulting in increased flight crew workload while on approach with the flight director, auto throttle, or autopilot engaged, which could result in the reduced ability of a flight crew to maintain safe flight and landing of the airplane. This AD requires revising the limitations and operating procedures sections of the existing

airplane flight manual (AFM) to incorporate specific operating procedures for instrument landing system (ILS) approaches, speed brake deployment, go-arounds, and missed approaches, when in the presence of 5G C-Band interference.

Federal Land Policy and Management Act of 1976

The Federal Land Policy and Management Act (FLPMA) established the authority for public agencies that possess public lands to manage and plan according to national and local interests. The law mandates that public lands identified for development shall uphold and protect the scientific, scenic, historical, ecological, environmental, and other values unique to specific geographies. This law provides the impetus for the various resource management plans developed and prepared for public agencies.

FAA Advisory Circular 150/5200-33C - Hazardous Wildlife Attractants on or near Airports

This Advisory Circular (AC) provides guidance on certain land uses that have the potential to attract hazardous wildlife on or near public-use airports. It also discusses airport development projects (including airport construction, expansion, and renovation) affecting aircraft movement near hazardous wildlife attractants.

The FAA recommends the guidance in this AC for land uses that have the potential to attract hazardous wildlife on or near public-use airports. This AC does not constitute a regulation, is not mandatory, and is not legally binding in its own right. It will not be relied upon as a separate basis by the FAA for affirmative enforcement action or other administrative penalties. Conformity with this AC is voluntary, and nonconformity will not affect rights and obligations under existing statutes and regulations, except as follows:

- Airports that hold Airport Operating Certificates issued under Title 14, CFR, Part 139, Certification of Airports, Subpart D, may use the standards, practices, and recommendations contained in this AC as one, but not the only, acceptable means of compliance with the wildlife hazard management requirements of Part 139.
- The FAA recommends the guidance in this AC for airports that receive funding under Federal grant assistance programs, including the Airport Improvement Program. See Grant Assurance #34.

Intergovernmental Support Agreements

Intergovernmental Support Agreements (IGSAs) are formal public-public partnerships between the military and state or local governments. The purpose of IGSAs is to provide, receive, or share installation support services. They can create efficiencies for the military to enhance mission readiness and are an effective partnering strategy. The IGSA statute (10 U.S.C. § 2679) authorizes such agreements based on a determination that the agreement will serve the best interests of the department by creating efficiencies or economies of scale, including by reducing costs or by enhancing mission effectiveness. The law also states that IGSAs are not subject to other provisions of law governing the award of federal government contracts for goods and services. In addition, IGSAs may be entered into on a sole source basis with a state or local government and may use wage rates normally paid by that state or local government.

At the same time, there are limitations on the use of IGSAs. Specifically, any installation services obtained through an IGSA must already be provided by the state or local government for its own use, and any contract awarded by the federal government or by a state or local government pursuant to an IGSA must be awarded competitively. In addition, IGSAs cannot be used to circumvent the requirements of Office of Management and Budget Circular A-76, which governs competitions to determine whether commercial activities should be performed by government employees or by private contractors. Finally, IGSAs are statutorily limited to a term of no more than 10 years, but the statute does not preclude their renewal after the initial agreement period ends.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (16 U.S.C. 703-712) was established in 1918 with Canada, Mexico, Japan, and Russia to protect migratory bird species. This Act prohibits the killing, capturing, and transporting of protected migratory bird species without Department of Interior, or other signatory entity, authorization. Many birds common to Southern California are protected under this Act, including ducks, geese, and gulls. The presence of protected migratory birds within air operational areas could delay or otherwise impact military operations.

National Environmental Policy Act

The National Environmental Policy Act (NEPA) is a federal regulation enacted in 1970 that establishes policies for environmental protection and enhancement. It requires federal agencies to identify and consider the potential impacts of their actions on the environment, as well as on scientific and cultural resources. The purpose of NEPA is to promote informed decision-making by federal agencies by ensuring that detailed information concerning significant environmental impacts is available to both agency leaders and the public.

All federal agencies, including the military, and all federally funded projects must be compliant with NEPA. Federal actions that will result in changes to the environment require the completion of a full Environmental Impact Statement (EIS). Actions that are considered unlikely to cause a significant impact can meet NEPA obligations through an Environmental Assessment (EA). An EIS is a report that describes and assesses the potential environmental effects of a particular action or project in which the federal government is involved. An EIS outlines, in detail, the proposed action, alternative actions, and their probable environmental ramifications.

NEPA compliance is a public process that encourages participation by the community and all stakeholders. Public hearings are required for EIS-level documents. EA documents must be published for a minimum 30-day public comment period, and EIS documents must be published for a minimum 45-day public comment period. Assessments can result in either a Finding of No Significant Impact (FONSI) or a Record of Decision (ROD). The latter records a determination that a project will have a significant impact. The NEPA mandates that the military analyze the impact of its actions and operations on the environment, including surrounding civilian communities. Inherent in this analysis is an exploration of methods to reduce any adverse environmental impact. These NEPA documents can serve as valuable planning tools for local planning officials and specifically for compatibility planning in defense communities.

National Historic Preservation Act

Compatibility issues and associated mitigation strategies have been developed based on the National Historic Preservation Act (NHPA) of 1966, which requires federal agencies and the military to consider the impacts of a proposed action on cultural resources that are listed or eligible for listing on the National Register of Historic Places (NRHP) to mitigate any negative effects. It is typically easiest to avoid the immediate area in which historic properties are found, limiting the amount of land that is available for development but in negligible ways. Because the presence of historic properties may constrain or require modifications to development plans, cultural resources and any needed compliance actions should be identified early in the planning process.

Noise Control Act of 1972

The Noise Control Act of 1972 concluded that noise not adequately controlled has the potential of endangering the health and welfare of people. It states that all Americans are entitled to an environment free from noise that can jeopardize their general health and quality of life. Along with state, local, and territorial governments, actions from the federal government were needed to ensure that the objectives of the Act were met. In 1973, military installations were experiencing the impacts of encroaching urban development located adjacent to the installation and the resulting complaints regarding noise from military flight operations. The DoD responded by establishing the AICUZ program.

The Noise Control Act and the AICUZ program are important because encroaching development and increased population near military installations often creates compatibility concerns. As communities grow, it is important that the military installation, developers, and communities work together to mitigate the issue of noise and develop ways to coexist compatibly.

Partners in Flight Program

The DoD has implemented a program entitled Partners in Flight that sustains and enhances the military testing, training, and safety mission through habitat-based management strategies. The program assists natural resource managers with monitoring, inventory, research, and management of birds and their habitats. As part of the Partners in Flight program, a strategic plan is created that can be incorporated into a Bird/Wildlife Aircraft Strike Hazard (BASH) plan. This program reaches beyond the boundaries of the installation to facilitate community partnerships and determine the status of bird populations to prevent the further endangerment of birds.

Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) is the main federal law that ensures the quality of drinking water in the United States. The SDWA authorizes the EPA to set national health-based drinking water standards to protect against both naturally occurring and man-made water contaminants. The SDWA applies to every public water system in the U.S.

Telecommunications Act of 1996 and the Federal Communications Commission

The Telecommunications Act of 1996 was the first comprehensive update to a federal telecommunications law in over 60 years and was in large part intended to open the marketplace to greater competition. The increasing use and development of personal mobile phones, satellite transmission, high-speed fiber optics, and related technologies continually create demand for new telecommunications technology and infrastructure.

New telecommunication tower siting requires compliance with the Federal Communications Commission's (FCC) environmental standards and procedures (including NEPA and ESA compliance), National Historic Preservation Act compliance, adherence to applicable FAA requirements, and structure registration with the FCC. The actual approval of telecommunication improvements is subject to state and local permitting and review; however, state and local authority is limited by federal law. For instance, states and local jurisdictions cannot base their decisions on any purported environmental effects of radio frequency transmissions.

The Sikes Act

The Sikes Act requires the DoD to develop and implement Integrated Natural Resources Management Plans (INRMPs) for military installations. The INRMPs are prepared in cooperation with the USFWS and state fish and wildlife agencies to ensure proper consideration of fish, wildlife, and habitat needs. The Sikes Act requires INRMPs to be reviewed at least every five years by the military and the states. Air Force Instruction 32-7064, Integrated Natural Resources Management, guides the Air Force implementation of the Sikes Act.

U.S. Avian Hazard Advisory System

The U.S. Avian Hazard Advisory System (USAHAS) is a geographic information system (GIS)-based bird avoidance model developed by the USAF and used for "analysis and correlation of bird habitat, migration, and breeding characteristics, combined with key environmental and manmade geospatial data." The model provides up-to-date information – "near real-time" – about bird activity and movements to assist pilots and flight planners with the scheduling and use of flight routes. The model can also be used as a forecasting tool to estimate bird strike risk. Information from the North American Breeding Bird Survey, Audubon Christmas Bird Count, bird refuge databases, and the U.S. Air Force Bird-Aircraft Strike database as well as public domain information regarding landfill locations is used to formulate the bird activity and movement data. The model is available for use by agencies and the general public, accessible from the USAHAS website at http://www.usahas.com/.

4.2. State of California Legislation and Programs

Plans and programs that originate at the state level provide further assistance with development planning and the protection of lands in the State of California. The tools authorize or mandate local counties and cities to provide for the protection of the state's valuable industries, including the military. In addition, the state's tools require communities and developers to protect and preserve the state's natural resources, including land and water, through regulatory measures that are intended to provide a sustainable water supply.

California has a history of collaboration with the military; at times, compatibility requires legislation to ensure notification, awareness, and review that are inherent in the development process. Compatible growth is related to military training and balanced growth. This section summarizes the legislation and programs that support that collaboration, including legislation that ensures notification, awareness, and review processes that are integral to compatible development.

California Business and Professions Code, Section 115.6

Section 115.6 of the California Business and Professions Code relates to the licensure of veterans and military spouses. After January 1, 2023, the requirements to issue temporary licenses to practice a profession or vocation for a temporary license would be expanded to include licenses issued by any board within the Department of Consumer Affairs.

Government Code, Section 65040.2

California Government Code 65040.2 requires the State Office of Planning and Research (OPR) to provide guidance on incorporating military installation compatibility into a general plan and on how a general plan should consider the impact of civilian growth on readiness activities at military bases, installations, and training areas. The statute includes the following methods to address military compatibility in a general plan:

- In the land use element, it considers the impact of new growth on military readiness activities carried out on military bases, installations, and operating and training areas when proposing zoning ordinances or designating land uses covered by the general plan for land or another territory adjacent to those military facilities, or underlying designated military aviation routes and airspace.
- In the open-space element, it defines open-space land to include areas adjacent to military installations, military training routes (MTR), and restricted airspace.
- In the circulation element, it includes the general location and extent of existing and proposed military airports and ports.

Assembly Bill 2776 (2002)

The Aviation Noise Disclosure legislation (AB 2776, Chapter 496, Statutes of 2002) amended the real estate transfer disclosure statute (California Civil Code, Division 2 – Property, Part 4 – Acquisition of Property, Title 4, Chapter 2 – Transfer of Real Property) to require sellers or lessors to disclose airport proximity if a house is within an airport influence area. An airport influence area is defined as the area in which current or future airport-related noise, overflight, safety, or airspace protection factors may significantly affect land uses or necessitate restrictions on those uses. The intent of the legislation is to notify buyers of the potential noise, vibration, odor, annoyances, or other nuisances now or in the future as a result of the normal operation of an existing or proposed airport.

State Aeronautics Act

The State Aeronautics Act (Public Utilities Code, Section 21001) requires the preparation of a Land Use Compatibility Plan (LUCP) for nearly all public-use airports and military airfields in the state. It requires an ALUC to formulate a LUCP for military airfields with the same requirements as public-use airports, consistent with the safety and noise standards found in the AICUZ study. The intent of a LUCP is to encourage compatibility between airports and the various communities that surround them.

Sustainable Groundwater Management Act (SGMA)

The Sustainable Groundwater Management Act of 2014 (SGMA) legislation provides a framework for long-term sustainable groundwater management across California. Under the roadmap laid out by the legislation, local and regional authorities in high and medium priority basins have formed Groundwater Sustainability Agencies (GSAs) that oversee the preparation and implementation of a local Groundwater Sustainability Plan (GSP).

The California Department of Water Resources (CDWR) has developed regulations governing the content of GSPs, which local stakeholders are required to have. GSAs will have until 2040 to achieve groundwater sustainability.

The Sustainable Groundwater Planning (SGWP) Grant Program provides funds for projects that develop and implement projects consistent with groundwater planning requirements outlined in Division 6 of the California Water Code.

California Environmental Protection Agency

The California Environmental Protection Agency (Cal/EPA) is the agency responsible for the development and implementation of the state's environmental protection laws that provide for clean air, water, and soil as well as safe pesticides, waste reduction, and recycling. The Cal/EPA has several financial assistance programs for both public and private entities to assist with the costs of environmental planning and development. Such programs consist of grants and loans for education and training while other financial assistance programs are loans that subsidize the cost of water resource planning and agricultural drainage planning. Cal/EPA provides Environmental Enforcement and Training Grants to public and private entities to educate and train public servants, such as fire fighters and peace officers, about environmental enforcement actions. The Agricultural Drainage Loan Program provides assistance through low-interest

loans to projects that address treatment, storage, and conveyance of agricultural drainage that threatens the state's natural water resources.

The Cal/EPA offers several programs for technical assistance and environmental education and awareness. One such program is the National Environmental Information Exchange Network Grant Program, a partnership among states, tribes, and the U.S. EPA to share environmental information. The information is organized by medium:

- Air
- Facilities
- Hazardous materials
- Water

California Advisory Handbook for Community and Military Compatibility Planning

The requirement for a compatibility handbook was established in Government Code §65040.9, which directed the Governor's OPR to prepare "an advisory planning handbook for use by local officials, planners, and builders that explains how to reduce land use conflicts between the effects of civilian development and military readiness activities…."

The handbook was updated in 2016 and designed to serve as a resource to help develop processes and plans that would sustain local economies, safeguard military readiness, and protect the health and safety of residents living near military bases. The handbook is a useful tool for developing a Compatible Use Study (CUS), as it describes in detail the different compatibility issues that should be explored and the types of compatibility tools available to address the identified issues. The handbook can be found at: http://www.opr.ca.gov/docs/2016_CA_Handbook_Final.pdf.

California Military Land Use Compatibility Analyst

The California Military Land Use Compatibility Analyst (CMLUCA) is a mapping tool that was developed by the Governor's OPR to assist the development community and local governments to determine if a project affects military training areas and airspace. The CMLUCA identifies where a project is relative to the nearest military installation. This mapping application enables users to assess compliance with state legislation that requires the development community and local government agencies to notify the military of any project that may affect military readiness.

The Airport Land Use Planning Handbook, Caltrans

Prepared by the California Department of Transportation (Caltrans) Division of Aeronautics in 2011, the Airport Land Use Planning Handbook supports the implementation of the State Aeronautics Act (California Public Utilities Code, Section 21670 et seq.), which established statewide requirements for the conduct of airport land use compatibility planning. The Handbook can be found at:
www.dot.ca.gov/hq/planning/aeronaut/documents/alucp/AirportLandUsePlanningHandbook.pdf.

California Clean Air Act

In 1988, the State of California adopted the California Clean Air Act (CCAA) which furthers the mission of the Federal CAA. The CCAA establishes the authority for air pollution control districts or air quality management districts to implement the necessary measures to maintain and/or restore air quality to the state air quality standards for air pollutants. In addition, the CCAA establishes requirements for district plans or measures to ensure that they will achieve the state standards for air pollutants. For example, the CCAA requires either that district plans or measures achieve an annual five percent emission reduction, or the measures and plans must include all feasible measures that could achieve such reduction, which must be implemented on an expeditious schedule.

Per the CCAA, district plans must include the following statement regarding areas that are in serious nonattainment:

> No net increase in emissions from new and modified stationary sources; and best available retrofit technology for existing sources.

The CCAA directly applies to the March ARB CUS area because the area is in nonattainment for ozone and particulate matter 2.5 (PM2.5). For more information about the air quality, see Section 5.3. Air Quality.

California Environmental Quality Act

The California Environmental Quality Act (CEQA) was enacted in 1970 to protect the environment by requiring public agencies to analyze and disclose the potential environmental impacts of proposed land use decisions. CEQA is modeled after the federal NEPA, so fulfilling NEPA compliance obligations will also fulfill CEQA compliance obligations. For example, all of these laws are nested: fulfillment of cultural resources clearance under NEPA can be achieved through compliance actions for Section 106 of the NHPA. Fulfilling compliance obligations under NHPA will fulfill compliance obligations under state historic preservation laws.

The purpose of CEQA is to inform agency decision-makers and the public about the potential environmental effects of proposed activities. Using this information, decision-makers can identify ways that environmental impacts can be avoided or significantly reduced.

California Public Resource, Code Environmental Quality (CEQA statute_ § 21098 LOW-LEVEL FLIGHT PATH; MILITARY IMPACT ZONE; SPECIAL USE AIRSPACE) mandates CEQA lead agencies notify military installations when a project meets certain criteria. The purpose is to ensure the military is aware of proposed projects that could potentially impact military operations. This statute provides military agencies with early notice of proposed projects within two miles of installations, low-level flight paths, and special use airspace. Military installations must provide local planning agencies with relevant information such as land use needs and boundary lines for critical operations and impact areas, as well as a viable point of contact. Local lead agencies must, in turn, give notice to military installations of proposed projects within those boundaries, if: (1) a project includes a general plan amendment, (2) a project is of statewide, regional, or area-wide significance, or (3) a project must be referred to the ALUC or similarly designated body. The CEQA provision allows military installations early input on local projects so that potential conflicts can be identified, evaluated, and addressed proactively.

Porter-Cologne Water Quality Act

Under this Act, last amended in January 2022, the State Water Resources Control Board and the nine Regional Water Quality Control Boards (RWQCB) have broad authority to perform water quality regulatory oversight to preserve and enhance all beneficial uses of the state's water.

4.3. Regional Compatibility Tools

County Of Riverside Multi-Jurisdictional Local Hazard Mitigation Plan

The purpose of the County of Riverside Operational Area Multi-Jurisdictional Local Hazard Mitigation Plan is to identify the County's hazards, review and assess past disaster occurrences, estimate the probability of future occurrences, and set goals to mitigate potential risks to reduce or eliminate long-term risk to people and property from natural and man-made hazards.

The plan was prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 to achieve eligibility and potentially secure funding through FEMA Flood Mitigation Assistance, Pre-Disaster Mitigation, and Hazard Mitigation Grant Programs. Riverside County's continual efforts to maintain a disaster-mitigation strategy are ongoing. The goal is to develop and maintain an all-inclusive plan to include all jurisdictions, special districts, businesses, and community organizations and to promote consistency, continuity, and unification.

The County's planning process followed a methodology presented by FEMA and Cal-OES which included conducting meetings with the Operational Area Planning Committee (OAPC) coordinated by Riverside County Emergency Management Department comprised of participating Federal, State, and local agencies, special districts, school districts, non-profit communities, universities, businesses, tribal leaders, healthcare facilities, and the general public. The plan identifies vulnerabilities, provides recommendations for prioritized mitigation actions, evaluates resources, identifies mitigation shortcomings, and provides future mitigation planning and maintenance of the existing plan.

Riverside County Airport Land Use Commission

The main goal of the ALUC is to protect the public health, safety, and welfare by ensuring the orderly expansion of airports and the adoption of land use measures that minimize the public's exposure to extensive noise and safety hazards within areas around them. Requirements for the creation of ALUCs are established under the California State Aeronautics Act (Public Utilities Code Section 21670). The ALUC reviews land use compatibility issues for development surrounding airports including safety, noise, overflight, and airspace protection. These issues are identified and analyzed in the Airport Land Use Compatibility Plans for each airport, and implementation of these plans promotes compatible development around the airports. The ALUC is comprised of seven Commissioners: two selected by the County Board of Supervisors, two selected by the cities in Riverside County, two selected by the airport managers, and one selected by the other six.

The fundamental relationship between the Riverside County ALUC and the governments of Riverside County and affected cities in the county is set by the State Aeronautics Act. The ALUC is not simply an advisory body for the Riverside County Board of Supervisors or city councils in the manner that their respective planning commissions are. Rather, it is more equivalent to a Local Agency Formation Commission (LAFCo). Within the bounds defined by state law, the decisions of the ALUC are final and are independent of a board of supervisors or city councils. The ALUC does not need county or city approval in order to adopt the compatibility plan or to carry out ALUC land use project review responsibilities.

Another aspect of the relationship between the ALUC and county and city governments concerns the implementation of the compatibility plan. As noted earlier, although the ALUC has the sole authority to adopt this plan and conduct compatibility reviews, the authority and responsibility for implementing the compatibility policies rests with the local governments, after a jurisdiction's General Plan has been reviewed by ALUC and determined to be consistent with the Compatibility Plan.

Riverside County Habitat Conservation Agency

The Riverside County Habitat Conservation Agency (RCHCA) is a JPA comprised of the County of Riverside and the cities of Corona, Hemet, Lake Elsinore, Menifee, Moreno Valley, Murrieta, Perris, Riverside, Temecula, and Wildomar. The RCHCA has managed conserved lands within Southern California and specifically Western Riverside County since 1996. The RCHCA's staff has over 35 years of combined experience working within Southern California's ecological communities, and regularly carries out biological studies, surveys and assessments of natural resources. The RCHCA's mission is to effectively manage conserved and open space lands in Riverside County, and it understands the importance of preserving the plants, animals, and natural communities. The vision of "Conservation, Coordination, Education and Collaboration" creates a sense of public appreciation for the environment.

Riverside County Opportunity Zones

Opportunity Zones are select census tracts in which businesses, equipment, and real property can seek equity-based capital from investors who will receive federal tax benefits for investments made by December 31, 2026. Opportunity Zones allow investors to receive federal tax incentives (temporary deferral, step-up in basis, and permanent exclusion) by investing their short- or long-term capital gains into select communities. These investments are intended to be patient capital, with the maximum benefits received after a 10-year period.

Opportunity Zones were added to the IRS tax code by the 2017 Tax Cuts and Jobs Act, bipartisan legislation designed to spur economic development and job creation in distressed communities throughout the country. Riverside County has 49 Opportunity Zones, the third highest in California.

Southern California Association of Governments

Founded in 1965, the SCAG is a JPA under California state law, established as an association of local governments and agencies that voluntarily convene as a forum to address regional issues. Under federal law, SCAG is designated as a Metropolitan Planning Organization (MPO) and under state law as a Regional Transportation Planning Agency and a Council of Governments.

The SCAG region encompasses six counties (Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura) and 191 cities in an area covering more than 38,000 square miles. The agency develops long-range regional transportation plans including sustainable communities strategy and growth forecast components, regional transportation improvement programs, regional needs allocations, and a portion of the South Coast Air Quality management plans. In 1992, SCAG expanded its governing body, the Executive Committee, to a 70-member Regional Council to help accommodate new responsibilities mandated by the federal and state governments, as well as to provide a more broad-based representation of Southern California's cities and counties. With its expanded membership structure, SCAG created regional districts to provide for more diverse representation. The districts were formed with the intent to serve equal populations and communities of interest. Currently, the Regional Council consists of 86 members.

In addition to the six counties and 191 cities that make up SCAG's region, there are six County Transportation Commissions that hold the primary responsibility for programming and implementing transportation projects, programs, and services in their respective counties. SCAG bylaws also provide for the representation of Native American tribes and Air Districts in the region on the Regional Council and Policy Committees.

Western Riverside Council of Governments

The purpose of the WRCOG is to unify Western Riverside County so that it can speak with a collective voice on important issues that affect its members. Representatives from 18 cities, the Riverside County Board of Supervisors, and the Eastern and Western Municipal Water Districts have seats on the WRCOG Executive Committee, the group that sets policy for the organization, and the Riverside County Superintendent of Schools is an ex-officio member.

Recognizing that many issues related to growth are not constrained by political boundaries, WRCOG focuses on a number of regional matters important to our future. WRCOG is cost-effective because it works together through its committee structure and utilizes resources to reduce duplication of effort and enhance sharing of information, enabling strong advocacy and strengthening Western Riverside's standing in the region and the state. In all its efforts, WRCOG strives to "respect local control, provide regional perspective, and make a difference" to elevate the quality of life throughout the subregion.

Western Riverside County Climate Action Plan

The WRCOG subregion is a diverse area, exhibiting a variety of socioeconomic conditions, infrastructure types, neighborhood compositions, geographies, and character. Nearly two million people live, work, and recreate in Western Riverside County. For the subregion to flourish, it is important to understand how the climate could change and begin implementing strategies that help the subregion thrive in a variety of future climate conditions. To achieve this objective, the Adaptation and Resiliency Strategy provides a brief overview of expected climate change effects, assets in the subregion that are vulnerable to climate change effects, and adaptation strategies intended to reduce vulnerability and increase resilience. The strategies in this document represent actions that increase resilience to natural hazards regardless of the rate and severity of climate change. The Adaptation and Resiliency Strategy concludes with sample work plans to enable local government implementation.

4.4. March ARB Compatibility Tools

Plans and programs that are specific to the March ARB provide guidance for land uses and development activities on and adjacent to the Installations. These tools govern land use decisions that occur inside the fence line or within the boundary of the military mission footprints, as defined by the military missions.

These tools also provide guidance and establish measures for standard operating procedures during certain events, such as bird air strike hazard conditions, and/or establish the parameters for conducting missions within the boundaries of the military complex. There are various installation tools that are instrumental in assisting and guiding land use decisions in regard to base operations.

AICUZ Study

AICUZ studies are required by DoD policy for all military air installations in the United States and are periodically updated based on a variety of factors which may include the introduction of new aircraft, operational changes, or new flight tracks, expansion of airfield infrastructure, or significant development in the vicinity of an air installation. The Air Force's stated purpose of the AICUZ program is to manage mission encroachment while influencing mission sustainability by promoting compatible land use in the community.

The 2018 March ARB AICUZ Study updated the 2005 study. This update was initiated because of the bed down of new aircraft, operational changes, and the introduction of new flight tracks. It is a reevaluation of aircraft noise and accident potential related to Air Force flying operations and is designed to aid with the development of local planning mechanisms which will protect public safety and health, as well as preserve the operational capabilities of March ARB. The AICUZ study contains a summary description of the affected area around the base. It outlines the location of runway CZs, aircraft APZs, and noise contours modeled of the numbers and types of annual aircraft operations (including both civil and military operations) and provides recommendations for development compatible with military flight operations.

As part of the AICUZ program, air installations are required by Air Force Instruction 32-1015 Integrated Installation Planning (AFI 32-1015) to acquire real property within designated runway CZs – the base civil engineer "in cooperation with the Real Property Office, shall identify private lands within the CZ, determine the real property interest to be acquired, and fund the acquisitions through programming avenues."

Integrated Cultural Resources Management Plan

DoD Instruction (DoDI) 4715.3 and AFI 32-7065 require installations to develop an Integrated Cultural Resources Management Plan (ICRMP) as an internal compliance and management tool integrating the entirety of the cultural resources program with ongoing mission activities. As a component of the installation master plan, the ICRMP is the base commander's decision document for conducting cultural resources management actions and specific compliance procedures. It also allows for ready identification of potential conflicts between the USAF mission and cultural resources and identifies compliance actions necessary to maintain the availability of mission-essential properties and acreage.

Installation Development Plan

Installation development plans (IDP) for the Air Force are real property master development plans, which are required for all Air Force bases and satellite operating locations and are intended to guide base development across the long term. One required component of the IDP is an alignment with ICEMAPs. Additional AFI 32-105 guidance states "the Installation Development Plan shall also include an executive summary document that is publicly accessible to outside the fence partners."

Integrated Natural Resources Management Plan

The March ARB Integrated Natural Resources Management Plan (INRMP) was created to ensure that long-range habitat protection and natural resource management occurs at the installation and supports mission readiness. The INRMP outlines various natural resources including, when applicable, threatened and endangered species and important habitat, management of noxious weeds, grasslands and wildland fires, wildlife and riparian management, water resources and water rights, inter-agency responsibilities and coordination efforts, and the overall management plan for natural resources at March to ensure no loss of capability for training exercises. The INRMP serves as a planning tool for future activities at March and as a road map for the stewardship of natural resources found on the base.

March Bird/Wildlife Aircraft Strike Hazard (BASH) Plan 91-212

The current March ARB BASH Plan, effective September 22, 2017, provides guidance for reducing wildlife strike hazards where flying operations are conducted and includes:

- Establishment of a Wildlife Hazard Working Group (WHWG).
- Procedures for reporting hazardous bird activity and altering or discontinuing flying operations.
- Provisions to disseminate information to all assigned and transient aircrews for specific bird hazards and procedures for avoidance.
- Procedures to eliminate or reduce environmental conditions that attract birds and other wildlife to the airfield.
- Procedures to disperse and remove wildlife from the airfield.

March Joint Land Use Study (JLUS) 2010

This study was prepared under contract with the March JPA with financial support from the Office of Economic Adjustment, Department of Defense and completed in December 2010. Much of the material presented is drawn from the January 2002 edition of the California Airport Land Use Planning Handbook The preparation of the JLUS was broadly intended to assist March ARB and the nearby communities with efforts to mitigate and avoid land use compatibility conflicts. A compatibility map and basic compatibility criteria were included to serve as a basis for the development of a Compatibility Plan for the March Air Reserve Base Airport Influence Area, which was adopted in 2014.

Severe Weather and Climate Hazard Screening and Risk Assessment

The Air Force Civil Engineer Center (AFCEC) published the Severe Weather/Climate Hazard Screening and Risk Assessment Playbook (Severe Weather Playbook) (AFCEC, 2020), which provides a framework for installation professionals to address the requirements outlined in Installation Master Planning (UFC 2-100-01, 2020) and other USAF and DoD guidance, that severe weather and climate risk be considered in installation planning and projects. The Severe Weather Playbook outlines a three-phase Severe Weather/Climate Hazard Screening and Risk Assessment process, as follows:

- Phase 1 – Screen Hazards. Screen each potential hazard to identify the ones that could impact an installation currently or in the future.
- Phase 2 – Assess Risk. Assign probability, severity, and risk ratings for applicable current and future hazards.
- Phase 3 – Determine Next Steps. Define next steps needed to address and mitigate the potential impacts of applicable current and future hazards.

The study determined that the most significant severe weather and climate hazards for March ARB are extreme heat and seismicity. Non-storm-surge flooding, high winds, tornados, drought, precipitation changes, annual average temperature increases, and disease vectors pose a medium risk to the installation, and some of these hazard risks may change over time due to climate change. The study indicated that facilities sustainment, restoration, modernization, and military construction projects should be reviewed for relevance to severe weather and climate risks. Mitigation measures that address or lessen the effects of severe weather and climate risks should be considered and incorporated into plans for the development of projects and the sustainment, restoration, or modernization of facilities on the installation.

4.5. CUS Partnership Community Plans & Regulations

This section provides an overview of existing governing regulations, programs, plans, and tools that are available or currently being utilized to evaluate and address compatibility issues for March ARB and the surrounding community.

Regional Tools and Regulations

March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan

The basic function of ALUCPs is to promote compatibility between airports and the land uses that surround them. Compatibility plans serve as a tool for use by airport land use commissions to fulfill their duty to review proposed development plans for airports and surrounding land uses. Additionally, compatibility plans set compatibility criteria applicable to local agencies in their preparation or amendment of land use plans and ordinances and to landowners (including special district and other local government entities as well as private parties) in their design of new development.

As adopted by the Riverside County ALUC, the Riverside County ALUCP Policy Document establishes policies applicable to land use compatibility planning in the vicinity of airports throughout Riverside County, in this case, March ARB. Included in the document are compatibility criteria and maps for the influence areas of individual airports. Also spelled out in the plan are the procedural requirements associated with the compatibility review of development proposals.

This plan replaces compatibility plans for individual airports adopted by the ALUC at various times from 1974 through 1998. The adoption of the March ARB/IP ALUCP in 2014 superseded the previously adopted mapped delineations of the Airport Influence Area that had established boundaries for Areas I, II, and III in accordance with the Riverside County Airport Land Use Plan, as adopted in the 1980s. Jurisdictions affected include:

- City of Moreno Valley
- City of Perris
- City of Riverside
- County of Riverside
- March Joint Powers Authority
- City of Menifee

This fundamental objective notwithstanding, airport land use commissions are limited in their powers to achieve it. Two limitations are explicitly written into the law: ALUCs have no authority over either existing land uses or the operation of airports.

A third, less absolute, limitation concerns the types of land use actions that are subject to ALUC review. The law emphasizes local general plans as the primary mechanism for implementing the compatibility policies set forth in an ALUC's plan. Thus, Riverside County and each city affected by an ALUCP are required to make their general plans consistent with the ALUC plan (or to overrule the commission). Once a local agency has taken this action to the satisfaction of the ALUC, ALUC's authority to review projects within that agency's jurisdiction is narrowly limited..

The only actions for which ALUC review remains mandatory are proposed adoption or amendment of general plans, specific plans, zoning ordinances, and building regulations affecting land within an airport influence area. For an ALUC to review other individual projects, the local agency must agree to submit them.

One final limitation worth noting is that ALUCs have no jurisdiction over federal lands, such as lands controlled by the U.S. Forest Service, Bureau of Land Management, or Indian tribes. ALUCs can merely inform these agencies about the ALUC policies and seek their cooperation.

ALUCPs are distinct from airport master plans in function and content. In simple terms, the issues addressed by airport master plans are primarily on-airport whereas those of concern in a compatibility plan are mostly off-airport. The purpose of airport master plans is to assess the demand for airport facilities and to guide the development necessary to meet those demands. An airport master plan is prepared for and adopted by the agency that owns or operates the airport. In contrast, the major purpose of a compatibility plan is to ensure that incompatible development does not occur on lands surrounding the airports. The responsibility for preparation and adoption of compatibility plans lies with each county's ALUC.

This distinction notwithstanding, the relationship between the two types of plans is close. Specifically, Public Utilities Code Section 21675(a) requires that ALUC plans be based upon a long-range airport master plan adopted by the airport owner/proprietor. If such a plan does not exist for a particular airport, an airport layout plan may be used subject to approval by the California Division of Aeronautics. The compatibility plan for each of the airports within the jurisdiction of the Riverside County ALUC is based upon the respective airport master plan or, as allowed by the statutes, a state-approved airport layout plan.

March ARB Air Installation Compatible Use Zones

The communities surrounding March ARB have each adopted overlay zones for compatibility with March ARB. Four jurisdictions have incorporated standards from the March ARB/Inland Port ALUCP into their respective development regulations:

- City of Moreno Valley
- City of Perris
- City of Riverside
- Riverside County

The March ARB/Inland Port overlay zones include seven subzones:

- **Zone A** clear zone that includes the land at each end of the runway.
- **Zone B1** inner approach/departure zone that includes the land within the March ARB APZ I and II.
- **Zone B2** high noise zone that includes areas beneath or adjacent to final approach and initial departure flight corridors or adjacent to runway, but outside of the APZs.
- **Zone C1** primary approach/departure zone that includes the areas beneath or adjacent to low altitude overflight corridors and have a moderate accident potential risk.
- **Zone C2** flight corridor zone that includes the areas distant (beyond 5 miles) portion of instrument arrival corridor; or closed-circuit flight training activity corridors.
- **Zone D** flight corridor buffer that includes the areas on periphery of flight corridors.
- **Zone E** other airport environs that includes the areas within outer or occasionally used portions of flight corridors

The development standards for March JPA apply land use standards and development standards within an AICUZ Study Overlay District.

County of Riverside Land Use Plans and Regulations

In California, counties and municipalities have the authority to regulate land use. They control land use through various regulations and planning efforts, including general plans, zoning ordinances, and other programs. The communities surrounding March ARB have adopted these local planning tools, zoning ordinances, and general plans to guide future growth.

Riverside County General Plan

The Riverside County General Plan addresses several critical issues facing the county and provides a framework to guide decisions regarding the location of future development. The plan is meant to be a living document that implements the long-term, general policy for the physical development of unincorporated areas of Riverside County. The General Plan is grounded in the Riverside County Integrated Project (RCIP) Vision and sets the direction for Riverside County's land use and development in strategic locations, as well as the development of its economic base, the framework of its transportation system, and the preservation of the extremely valuable natural and cultural resources it contains. The Riverside County General Plan serves as a guidebook containing direction that will enable achievement of its Vision Statement. The General Plan's structure is two-tiered. It covers the entire unincorporated portion of the County of Riverside and is augmented by 19 more detailed Area Plans covering the county's territory except for the undeveloped desert areas and the March Joint Air Reserve Base. The Plan contains eleven elements including land use, safety, noise, and housing, among others. The thrust of the General Plan is to manage the overall pattern of development more effectively. The Area Plans provide a clear and focused opportunity to enhance community identity within the County of Riverside and stimulate quality of life at the community level.

The land use element is broken into several sub-elements that pertain to specific areas of Riverside County. The future land use plan outlines the proposed general distribution of various land uses within the county and consists of a set of goals, objectives, policies, and programs. The plan recommends Riverside County to implement and be consistent with the purposes of the Airport Land Use Law which provides for the creation of the Riverside County ALUC and the adoption of ALUCPs by the Commission to assist the County of Riverside and affected cities in land use planning in the vicinity of public-use airports located in the county. In addition, the Plan's policies recommend for airport facilities to continue operating to meet existing and future needs respecting potential noise and safety impacts as well as review all proposed projects and require consistency with any applicable ALUCP.

Riverside County Zoning Regulations

Title 17, the Zoning Ordinance of the County of Riverside, establishes zoning districts and supporting land use regulations. The purpose of the ordinance is to implement the County's General Plan and to protect the health, safety, and general welfare of residents. The primary zoning districts include residential, business, redevelopment, and special purpose, with multiple zoning categories within each district. Each zoning district category establishes allowable land uses, densities, and specific supporting regulations. The zoning ordinance includes provisions for several specific plans within the County.

Additionally, the Zoning Ordinance for the County does not currently have regulations relating to an airport overlay zone. However, Riverside County ALUC is the recommending body to local jurisdictions and lays out policies for the communities surrounding March ARB.

Riverside County Subdivision Regulations

Title 16 of the Riverside County Code provides regulations regarding the subdivision of land. The regulation provides standards and procedures for the acceptance, processing, hearing, and final action on subdivision and other mapping applications.

Riverside County Building Code

Title 15, Buildings and Construction adopted the 2019 California Building Standards Code, California Code of Regulations, and Title 24; however, there are no specific provisions for military compatibility. The March ARB Chapter 15.68-Airport Approaches Zoning Regulations speaks to restrictions, mostly dealing with height restrictions and nonconforming uses in one of the five zones called out in the chapter.

March Air Reserve Base/Inland Port ALUCP

This plan is one of the fundamental planning tools guiding land use and development around March ARB. The ALUCP is updated based on significant changes to related plans or airfield operations. The ALUCP was last updated in 2014, reflects the latest AICUZ/JLUS study/studies performed at that time and may be updated based on the recommendations of this study. The ALUCP is the fundamental guidance document for use by the Riverside County ALUC when considering development applications in the vicinity of March ARB. Additionally, the ALUCP provides a defined set of compatibility criteria applicable to local agencies in their preparation or amendment of land use plans and

ordinances and to landowners (including special district and other local government entities as well as private parties) in their design of new development.

The Riverside County ALUCP is organized into three volumes. The first volume of the ALUCP contains the policies by which the ALUC operates and conducts compatibility reviews of proposed land use and airport development actions. The second and third volumes present various background data regarding each airport and its environs. Data for airports in western Riverside County is included in Volume 2; data regarding eastern county airports is found in Volume 3. In addition to serving as a convenient information reference for each airport, the material in Volumes 2 and 3 serves to document the data and assumptions upon which the compatibility map for each airport was based.

March Air Reserve Base Approach Protection Study

The 2017 Approach Protection Study (APS) identifies parcels that may be perceived by their owners or by land developers as potential sites for the development of highly intensive, incompatible uses attracting a large number of people to areas susceptible to risk of an aircraft accident. The study was prepared for the County of Riverside Economic Development Agency (EDA), recognizing the EDA's role as managers of the airports owned by Riverside County. The study focuses on actions that can be taken by the EDA to help protect the March ARB from encroachment of incompatible land uses.

The stated purpose of the APS is to further protect the March ARB/Inland Port Airport (IPA) from encroachment of incompatible land uses by identifying parcels that potentially could be acquired by the Riverside County EDA. The APS focuses on properties located within the AICUZ-defined CZs, and APZs I and II. The APS also focused heavily on parcels located south of the March ARB as this area has experienced significant growth in recent years and is considered to be the most vulnerable to encroachment of incompatible development. The APS included a review of some 330 parcels in the southern APZs and CZ off Runway 14-32. The APS identified fifty (50) parcels that would be the highest priority for acquisition, based on the potential for incompatible development.

Municipal Land Use Plans and Regulations

City of Riverside General Plan

The City of Riverside General Plan was developed to provide broad and comprehensive policy direction for future land use decisions and related aspects of community planning. In keeping with its tradition of looking forward and engaging the community in important planning decisions, the City undertook a comprehensive Visioning Riverside program. Riverside's Vision establishes five key themes around which this Plan was crafted; how we work, how we play, how we live, how we get around, and how we learn. There are 12 Elements and a housing technical report within the plan, with the Land Use and Urban Design Element being the largest and most extensive in the document. with numerous neighborhood and specific plans. The Land Use and Urban Design Element also references numerous neighborhood and specific plans.

The objectives and policies set forth in the Land Use and Urban Design Element will be implemented through a variety of planning tools to be adopted separately and refreshed periodically through the 20-year horizon of the General Plan. The Element describes present and planned land uses and their relationship to Riverside's visionary goals and consists of text, maps and diagrams that outline the future land uses within the City and how these uses are integrated with the other General Plan elements, objectives, and policies.

The land use policy map illustrates the various types and distributions of land uses planned for Riverside. The land use classification system includes 24 land use designations which identify the types and nature of development allowed in particular locations depicted on the land use map. These designations provide a spectrum of land use types and intensities, including several categories intended to reduce urban sprawl and conserve public resources by focusing on mixed-use and higher-density residential development along key corridors and at designated activity centers.

The residential categories include nine designations that allow for a range of housing types and densities. The non-residential categories include two different intensities of commercial uses, areas for offices and business parks, and industrial uses, all to promote a range of revenue and employment-generating businesses and a more balanced community. Other non-residential designations include agriculture, public facilities, open space/natural resources and parks, and private recreation.

In addition to these policies, in 2021, the City of Riverside adopted an updated Safety Element that directly addresses aviation-related policies. This Element underscores the value of land planning for public safety, the Riverside County ALUCP, and the role of the ALUC in land use planning within the airport-influence areas around March ARB.

The Public Safety Element complements the Land Use and Urban Design Element's objectives and policies as well as the specific objectives and policies of the General Plan for the Orangecrest and Mission Grove neighborhoods. It reinforces City support for compatible development surrounding March ARB and the continued operation of its airfield, specifically:

> Policy LU-75.1: (Orangecrest) Avoid creating any hindrance to safe operations at the March Air Reserve Base/Inland Port using the Riverside County ALUCP when reviewing projects within the airport influence area for consistency.
>
> Policy LU-69: Complete buildout of the Mission Grove Specific Plan, encouraging development that can harmoniously co-exist near the March Airport facility.

City of Riverside Zoning Regulations

The Zoning Code of the City of Riverside, Title 19, provides regulations for zoning districts and land uses and is intended to be fully consistent with the Riverside General Plan to protect the health, safety, and general welfare of the community. There are several residential, commercial, and industrial district types, as well as various overlay districts and specific plans. Chapter 19.149 – Airport Land Use Compatibility, establishes and implements the requirements of the Riverside County ALUCP for airports that affect land uses within the City of Riverside. Airports that affect land uses within the City of Riverside are the Riverside Municipal Airport, Flabob Airport, and the March ARB/IPA.

Specifically, 19.149.070 – Compatibility zones and criteria for March Air Reserve Base/Inland Port Airport for uses proposed within airport influence areas of the March Air Reserve Base/Inland Port Airport refers to the March ALUCP to determine whether a particular use is compatible with the applicable airport and a permissible use. A general description of each compatibility zone is provided in an accompanying table.

City of Riverside Subdivision Regulations

Title 18 regulates the division of lands for the City. The purpose of this Subdivision Code is to regulate and control the design and improvement of subdivisions in order to achieve the following purposes:

- To assist with implementing the Riverside General Plan adopted by the City Council as a long-range, general comprehensive guide to the physical development of the City
- To provide lots of sufficient size and appropriate design for the purposes for which they are to be used
- To provide streets of adequate capacity and design for the traffic that will utilize them and to ensure maximum safety for pedestrians and vehicles
- To provide sidewalks or pedestrian ways where needed for the safety and convenience of pedestrians
- To preserve the natural assets of the City's setting, to prevent the indiscriminate clearing of property and the destruction of trees and shrubs and other desirable landscape features, to ensure adequate access to each building site, and to create new beauty and safeguard the public safety and welfare through skilled subdivision design
- To provide adequate systems of water supply, sanitary sewage disposal, storm drainage, street lighting, and other utilities needed for public health, safety, and convenience
- To provide adequate sites for other public facilities needed to serve the residents of the new developments
- To ensure that the costs of providing land for streets, alleys, pedestrian ways, easements, and other rights-of-way, and for the improvements therein needed to serve new developments, are borne by the subdividers rather than by the taxpayers of the City at large
- To ensure that, insofar as possible, land is subdivided in a manner that will promote the public health, safety, convenience, and general welfare
- To encourage clustering, preserve natural features, and limit grading.

City of Riverside Building Code

Title 16, Buildings and Construction, of the Riverside Municipal Code adopted the 2019 California Building Standards Code. However, there are no specific provisions for military compatibility and March ARB.

City of Perris General Plan

The General Plan provides direction for local government decisions pertaining to growth, capital investment, and the development of land in the City of Perris, so that the community's vision for its future may be achieved. The Plan includes eight elements: Land Use (including a Land Use Map), Circulation (including a Truck Route Map), Conservation, Noise, Safety, Healthy Community, and Environmental Justice. An Environmental Impact Report was prepared in conjunction with the adoption of the General Plan.

In addition, to the General Plan, the City of Perris has Master Plans for Parks and Recreation and Trails. The Parks and Recreation Plan identifies existing resources in the community, discusses its current and future needs, and includes an action plan to achieve success. The Perris Trail Master Plan is intended to implement a future trail and bikeway network consisting of pedestrian and bicycle facilities that will link neighborhoods, parks, recreational open spaces, transit hubs, employment areas, schools, and places of interest.

The City also has several special plans and policies, including an active transportation plan and an airport plan, as well as City Council policies relating to various topics, such as small wireless facilities and vehicle miles traveled. The airport plan includes the following:

- Air Installation Compatibility Land Use Zone Plan 2005
- Air Installation Compatibility Use Study March ARB 2018
- March Air Reserve Joint Land Use Plan 2010
- Perris Valley Airport Land Use Compatibility Plan 2010

City of Perris Zoning Regulations

The City of Perris Development Code, Title 19, provides regulations for zoning districts. The purpose of this development code is to protect the public health, safety, and welfare of the city by establishing zone districts and development regulations within its boundaries. All established districts are designed to obtain the economic and social advantages resulting from the planned use of land, in accordance with the Land Use Element of the General Plan. The enactment of these regulations encourages the growth and development of the community in a proper and orderly manner, as provided by the City's General Plan for the maximum benefit of the community. To achieve this purpose, the code has the following objectives:

- To implement the goals, policies, and programs of the City General Plan;
- To guide future growth and development in accordance with the policies of the General Plan;
- To adequately accommodate community facilities, including, but not limited to, transportation, utilities, recreation, and open space;
- To attain the physical, social, and economic advantages resulting from a comprehensive approach to orderly land use and resource planning.

The City of Perris Development Code includes Chapter 19.51, which establishes a March ARB/Inland Port Airport Overlay Zone ("AOZ"), regulates the development and those uses within development surrounding the base for compatibility with operations at the airport. The purpose and intent of the airport overlay zoning district is to:

- Implement the City's General Plan policies to ensure that all land uses within the AOZ are consistent with the State Aeronautics Act, state law, FAA regulations, and guidance of the California Airport Land Use Planning Handbook.
- Ensure that land uses and development within the AOZ are compatible with the March Air Reserve Base/Inland Port ALUCP, adopted in 2014.
- Prohibit the establishment or further expansion of incompatible land uses to avoid or minimize exposure of people to potential hazards associated with current and future airport operations.
- Prohibit development, use, or any installation or activity that could represent a hazard to existing and future flight operations.
- Recognize unique constraints and considerations that apply to properties that airport operations potentially affect by establishing regulations and reviewing criteria for land use and development within the AOZ.
- Recognize the boundary of the Riverside County ALUCP within the Perris City limits and Perris Commerce Center Specific Plan (PVCC SP) area by the establishment of an AOZ.

Regulations in this chapter are the same as the City of Riverside for the eight compatibility zones for March Air Reserve Base/IPA.

City of Perris Subdivision Regulations

Title 18.04 of the City of Perris Development Code provides regulations regarding the subdivision of land. The regulation provides standards and procedures for the acceptance, processing, hearing, and final action on subdivision and other mapping applications.

City of Perris Building Code

The City has adopted the 2019 International Building Codes. Title 16 of the City of Perris Code is known as the Buildings and Construction Code and sets forth the minimum requirements for building construction for the city. Section 16.22 includes provisions for noise attenuation standards for buildings located within noise-sensitive areas, establishing standards of insulation against noise for areas in the vicinity of arterials, railroads, and airports where the exterior CNEL exceeds 60 dB.

City of Moreno Valley General Plan

City of Moreno Valley General Plan 2040 was adopted on June 15, 2021. The General Plan is a dynamic document that sets forth conditions to guide how and where Moreno Valley will grow for years to come. This Plan reflects community aspirations to cultivate a family-friendly city with a modern, innovative brand and unique sense of place that reflects its

growing reputation as a model community where people choose to live, work, and play for the next generation and generations to come.

The Moreno Valley General Plan can be considered the City's development constitution, containing a statement of the community's vision of its long-term development and the policies to support that vision by guiding the physical growth of the City. The Moreno Valley General Plan serves to:

- Establish a long-range vision that reflects the aspirations of the community and outlines steps to achieve this vision.
- Guide decision-making related to development, housing, transportation, environmental quality, public services, parks, open space, and agricultural conservation.
- Help Moreno Valley achieve compliance with applicable state and regional policies, including around housing production and environmental regulations.
- Allow city departments, other public agencies, and private developers to design projects that will enhance the character of the community, preserve environmental resources, and minimize hazards.
- Provide the basis for establishing and setting priorities for detailed plans and implementing programs, such as the Zoning Ordinance and future specific plans.

The General Plan's Chapter 7 on noise seeks to proactively address sources of noise in Moreno Valley, protect against excessive noise, and support the social and economic vitality of the community.

The sub-section regarding airport noise states that airport noise levels resulting from air traffic to and from the joint-use airport at March ARB depend on the number, path, elevation, and duration of flights, the characteristics of the aircraft, and the time of day, evening, or night that flights occur. As demand for cargo shipping increases, operations at March ARB are projected to increase. This section has several policies and actions regarding noise from March ARB operations.

City of Moreno Valley Zoning Regulations

Title 9 of the City of Moreno Valley Municipal Code establishes regulations for planning and zoning. It is intended to protect and promote the general health, safety, and welfare of the City's populace. The code also serves as an implementation mechanism for the goals and objectives in the General Plan by providing regulations that set clear standards for how development occurs.

The Municipal Code provides the zoning regulations for the city, along with property development regulation requirements for each zoning district and use type. In addition to the standard zoning designations, the Municipal Code includes zoning special districts with a mixed use and overlay district.

Specifically, Chapter 9.07.060 (ALUCP) establishes and implements the requirements of the Riverside County ALUCP for the portions of the March ARB/IPA Airport Influence Area within the City of Moreno Valley and to encourage future development that is compatible with the continued operation of March ARB. It is also the intent of this chapter to recognize and implement the purpose for the guidelines contained in the March ARB AICUZ report.

City of Moreno Valley Subdivision Regulations

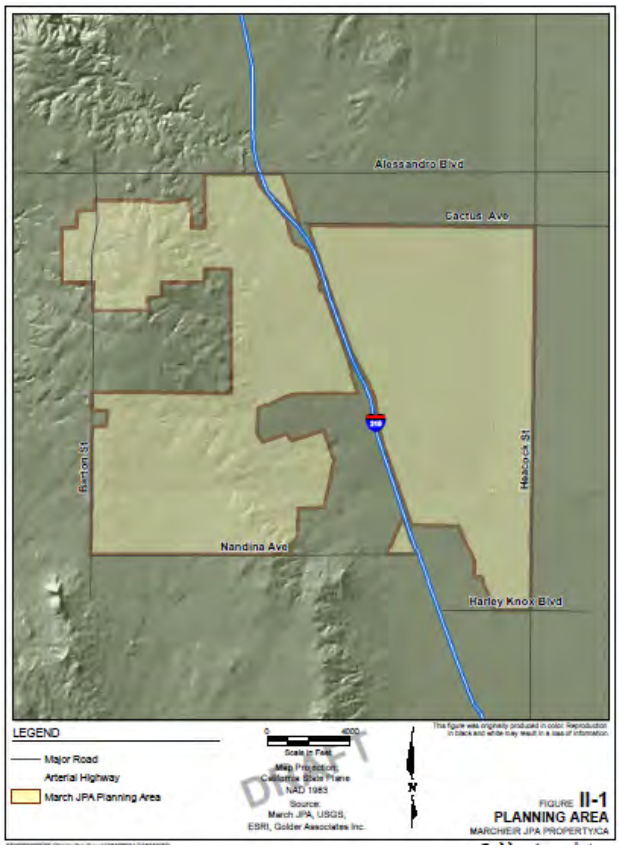
Chapter 9.14 - Land Divisions of the City of Moreno Valley Municipal Code provides regulations regarding the subdivision of land. The regulation provides standards and procedures for the acceptance, processing, hearing, and final action on subdivision and other mapping applications.

City of Moreno Valley Building Code

The City has adopted the California Building Code, 2019 Edition, based on the 2018 International Building Code as published by the International Code Council; however, there are no specific provisions for military compatibility and the March ARB.

March Joint Powers Authority Land Use Plans and Regulations

March JPA General Plan



The March JPA General Plan area is comprised of the federal property transferred from the areas that were formerly part of March AFB. Its planning area is bisected by the I-215 corridor, approximately 3 miles south of State Highway 60.

March JPA is a public entity created for the purpose of addressing the use, reuse, and joint use of March ARB. The four individual public entities that cooperatively formed the March JPA are the cities of Perris, Moreno Valley, and Riverside, and the County of Riverside. The March JPA General Plan is designed to implement the March Air Force Base Master Reuse Plan, which includes the disposal and redevelopment of approximately 4,400 acres of the 6,500 acres of the former March AFB.

The General Plan establishes policies to guide day-to-day decisions based on identified land use, circulation, environmental, economic, and social goals and objectives. The General Plan provides a basis for local government decision-making, including a nexus to support development exactions.

The General Plan's six elements, which cover the seven State-mandated elements, are as follows; Land Use, Transportation, Housing, Noise/Air Quality, Resource Management, and Safety/Risk Management. Each of the General Plan elements consists of four sections: the introduction, the goals and policies, the plan, and the implementation program. The introduction describes the purpose and focus of the element and also introduces other plans and programs outside the General Plan which may be used to achieve specific General Plan goals. The Goals and Policies section presents March JPA's long-term objectives for the subject area of each element. The Plan has several goals that encourage compatible development around March ARB such as support for the continued military mission of March ARB and preservation of the airfield from incompatible land use encroachment, as well as other goals pertaining to adequate water quality, safe and efficient wastewater treatment and disposal, and adequate flood control facilities.

The Land Use Element represents the graphic blueprint for the development and reuse of the March JPA Planning Area, contains the land use map, and sets forth goals, policies, and objectives for the long-term physical development of the Planning Area. The land use map provides the framework for development and establishes classifications of land use,

designates the general location and distribution of these uses, and sets standards of density and development intensity for each identified land use type.

The land use plan contains significant amounts of industrial, business park, aviation, and office land uses. The land use designations are divided into four general classifications with a total of 13 distinct designations:

- Industry
  - Business park
  - Industrial
- Commerce
  - Office
  - Mixed use
  - Commercial
  - Destination recreation
- Special
  - Military operations
  - Aviation
  - Historic district
  - Air Force Village West expansion
  - Cemetery expansion
- Public
- Parks/recreation/open space

The land use plan was designed to create land use patterns that are compatible with March ARB operations and the continuing use of March ARB as a military base. To the extent possible, land use designations minimize the introduction of new residences, which is the use least compatible with aircraft operations. The plan accounts for the recommendations of the AICUZ for March ARB, which sets out guidelines to minimize conflicts between aircraft operations and surrounding development.

March JPA Zoning Regulations

Chapter 9 of the March JPA Development Code, as adopted by the March Joint Powers Commission, establishes standards, guidelines, and procedures to protect and promote the public health, safety, convenience, and welfare of present and future citizens of Riverside County and of the member jurisdictions of the March JPA, and more specifically to:

- Implement the goals, objectives, policies, and programs of the March JPA General Plan, and to manage future growth and change in accordance with that plan.
- Protect the physical, social, and economic stability and the vitality of residential, commercial, industrial, public, institutional, and open space uses within the March JPA Planning Area to ensure their orderly development.
- Reduce or eliminate hazards to the public resulting from potentially inappropriate location, use, or design of buildings and other improvements.
- Attain the physical, social, and economic advantages resulting from comprehensive and orderly land use and resource planning.

The Development Code provides for five distinct districts: residential, commercial, employment, open space and agriculture, and special districts, as well as sections for specific plans, development review process, land use approvals, permitting, and land divisions. Section 9.07.040 AICUZ is the Air Installation Compatibility Use Overlay (AICUZ Overlay) and is intended to limit public exposure to aircraft accidents and noise and to encourage future development that is compatible with the continued operation of March ARB. It is also the intent of the AICUZ Overlay to recognize and implement the purpose for the guidelines contained in the March Air Reserve Base Air Installation Compatible Use Zone Report.

March JPA Building Code

The March JPA adopted the California Building Code, 2019 Edition, as published by the International Code Council.

4.6. Other References

In the interest of land use compatibility between the military and local communities, the DoD OLDCC and public interest groups such as the National Association of Counties (NACo) have prepared educational documents and videos to inform municipalities and the public about encroachment issues and methods that can be used to address existing or future compatibility concerns. Each of the items cited can be accessed at the link that follows its description.

Guides/Resources

State Policy Options: A Report of the National Conference of State Legislatures Task Force on Military and Veterans Affairs (January 2012)

This report provides state legislators and staff with information about the range of policy options available to them to sustain their neighboring military installations and the associated testing and training operations. It is designed to instill a greater understanding of the roles that state legislators, local government officials, land conservation organizations, and the military play in managing development near military bases and protecting natural resources and the health and safety of citizens.

http://www.ncsl.org/documents/environ/NCSL_State_Policy_Options_020112_FINAL.pdf

Collaborative Land Use Planning: A Guide for Military Installations and Local Governments, International City/County Management Association and the Metropolitan Institute at Virginia Tech

This guide provides essential observations about land use policies and procedures, discusses critical questions, and suggests model practices for military commanders to build stronger relationships with local policymakers and planning officials.

www.fedcenter.gov/_kd/Items/actions.cfm?action=Show&item_id=7667&destination=ShowItem

Working with Local Governments: A Practical Guide for Installations, (May 2012), International City/County Management Association and the National Association of Counties

This guide is a primer on how local governments operate and on what installation personnel can do to engage state and local governments in dialogue on compatibility issues.

http://www.repi.mil/Portals/44/Documents/Primers/Primer_LocalGovernments.pdf

Goodfellow Air Force Base and The City of San Angelo: a True Example of a One Community Effort to Integrate Partnerships at All Levels.

This document presents an overview on how, in two years, Goodfellow and San Angelo doubled their community partnerships, increased yearly cost savings from $400,000 to $6 million, and achieved the DoD's first IGSA for contracted quarters with a public university and the USAF's first Base/Wing IGSA for faculty development with a public university. The key to their success is unity of effort focused on co-developing the overall community.

https://knowledge-online-defense-communities.knowledgeowl.com/help/federal-grant-opportunities-for-communities-whats-out-there-beyond-dod

Beyond The Fence Line: Strengthening Military Capabilities Through Energy Resilience Partnerships

This document presents case studies of leading-edge energy resilience projects in which defense community partnerships have been instrumental to success. Each case study provides background on the military installation, details of the energy resilience innovations that were deployed, and an overview of the defense community partnerships involved.

https://knowledge-online-defense-communities.knowledgeowl.com/help/installation-energy-water-beyond-the-fence-line-strengthening-military-capabilities-through-energy-resilience-partnerships

Installation-Community Partnerships: A New Paradigm for Collaborating in the 21st Century, Journal of Defense Communities

This article explores the changes that are prompting military and community leaders to take a closer look at partnerships and provides a template for assessing the success of a prospective collaboration. Two case studies are presented: the arrangement under which the City of Monterey, California provides all facility maintenance at the Presidio of Monterey, and the enhanced use lease at Nellis Air Force Base that resulted in the city of North Las Vegas building a $25 million fitness center for the Air Force.

https://files.monterey.org/Document%20Center/City%20Hall/City%20Manager/Community%20Partnership/The%20Monterey%20Model/Literature/Installation%20-%20Community%20Partnerships.pdf

The Base of the Future: A Call for Action by States and Communities (April 2016), Association of Defense Communities

This article examines the areas of interest that all bases share with their local hosts and proposes an overarching approach to advising defense communities and states in the development of their own policies regarding adaptation and resilience when dealing with infrastructure, service, and economic changes inside and outside the fence line. Five key components focus on economic development and community planning, expanded sharing of services and infrastructure, mission capability and natural resource conservation, and military involvement and engagement for policy and legislation.

https://knowledge-online-defense-communities.knowledgeowl.com/help/base-of-the-future-report

Strengthening National Defense: Countering Encroachment through Military-Community Collaboration (2009), National Academy of Public Administration

This report discusses the significant and growing challenges to military readiness resulting from nearby civilian community growth and proposes recommendations for increasing collaboration among key stakeholders – local and state governments, non-profit organizations, the military services and installations, and other federal agencies – to creatively and effectively address these complex and critical issues.

https://s3.us-west-2.amazonaws.com/napa-2021/studies/strengthening-national-defense-countering-encroachment-through-military-com/09-20.pdf

California Governor's Military Council

According to its website, the Governor's Military Council helps position California to maintain and grow military operations in the state, providing insight and recommendations to state leaders who are developing a strategy to support and grow military operations. As federal leaders consider cuts and realignment of federal military operations, the Council also articulates the unique military value of California's diverse network of installations and of the Californians and businesses that support them. The Council also supports the efforts of local and regional organizations to improve partnerships with military installations in their communities.

https://militarycouncil.ca.gov/

Videos

The Base Next Door: Community Planning and the Joint Land Use Study Program, OLDCC

This informative video discusses the issue of encroachment near military installations as urban development occurs nearby. This video can be accessed on the official OLDCC YouTube channel at:
www.youtube.com/watch?v=6UiyWDqLeJM

Managing Growth, Communities Respond, OLDCC

This video highlights the lessons learned from three communities (Kitsap Naval Base in Bangor, Washington; Fort Drum in Jefferson County, New York; and Fort Leonard Wood in Pulaski County, Missouri) that have successful programs for managing growth near their respective military installations.
https://www.youtube.com/watch?v=rea6d3bDp3c

5 Compatibility Assessment

In relation to military readiness, compatibility can be defined as the balance or compromise between the needs and interests of both the community and the military. The goal of compatibility planning is to promote a collaborative environment in which both community and military entities communicate and coordinate to identify and implement mutually supportive actions that allow both parties to achieve their objectives. This collaborative approach provides the context in which policies and actions can be developed and recommended through a March ARB CUS Implementation Plan.

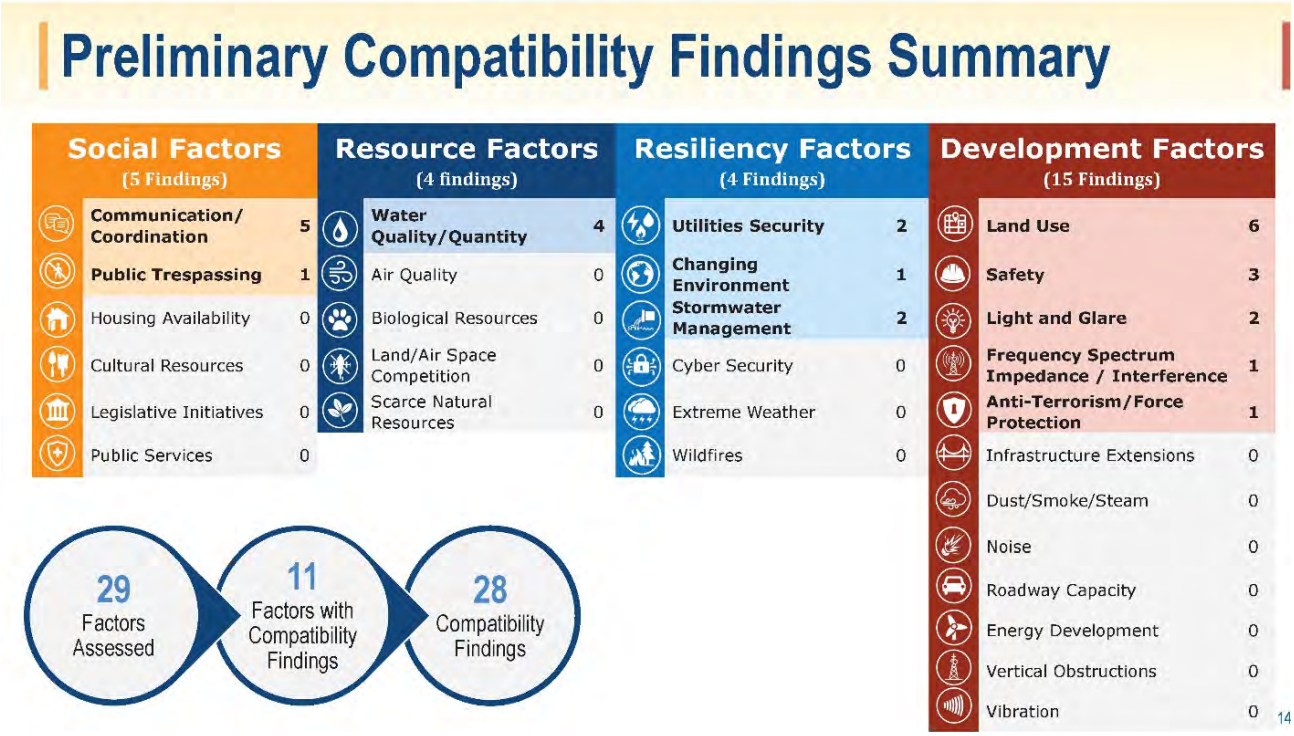
Chapter 5 assesses the compatibility factors and issues applicable to March ARB and discusses key findings therein.

5.1 Compatibility Factor Overview

A number of variables are used to determine whether military and community plans, programs, and activities are compatible or in conflict. For the March ARB CUS, 29 compatibility factors, or general types of compatibility problems (Figure 5-1), were used to identify, assess, and establish the specific set of compatibility issues that are occurring in the Study Area.

A compatibility issue is defined as something that impacts, hinders, or presents an obstacle to either the military mission(s) or to nearby communities and that requires an action to be resolved or effectively mitigated. This chapter provides an assessment of each compatibility issue that was identified through the March ARB CUS. The issues are evaluated in terms of the existing or potential impacts they have or may have on the military and/or surrounding communities and in terms of the severity of those impacts.

Each compatibility issue is identified under one of the 29 compatibility factors used as the basis for the compatibility analysis. The compatibility factors with findings are assessed in alphabetical order in Section 5.3 of this chapter. Each finding has an alphanumeric compatibility factor code numbered in the order the findings are presented within the specific compatibility factor. For example, LU-1 stands for Land Use and refers to the first finding within this development factor.



Compatibility Factor Evaluation Methods

This section outlines the methodology that was used in assessing each factor for compatibility issues of specific concern for the March ARB and surrounding communities.

The identification of compatibility issues consisted of a comprehensive and inclusive discovery process to identify significant stakeholder issues relative to the 29 factors. During the beginning phase of the project, interviews were conducted with key project stakeholders to discuss the CUS process and document any compatibility issues they felt existed or could exist in the future. The following stakeholder groups participated:

- County of Riverside
- City of Riverside
- City of Moreno Valley
- City of Perris
- March Joint Powers Authority
- March Inland Port Airport Authority

Additional compatibility issues were identified through meetings with the CUS Policy Committee and Technical Working Group (TWG), at public workshops, and based on the technical evaluation and experience of the project consultant. Opportunities for additional stakeholder input were provided on the project website and at other stakeholder events throughout the project.

The development of strategies that address the identified compatibility issues (see the March ARB CUS, Chapter 6: Implementation Plan) was both directly and indirectly affected by the evaluation process. Issue assessment included determining the severity of each issue's impact(s) on both the missions at March ARB and the quality of life of nearby residents. The severity of impacts was also used to help prioritize implementation.

When reviewing the assessment information that is provided in this chapter, it is important to note the following:

- This chapter provides technical background on the compatibility issues that were identified as relevant to the March ARB CUS. The intent is to provide appropriate information for stakeholders to be sufficiently aware of and knowledgeable about the issues and the potential mitigation strategies to assess the viability of specific CUS recommendations. The discussion is not designed or intended to be utilized as an exhaustive technical evaluation of existing or future conditions within the CUS Area.

- Of the 29 compatibility factors considered, 18 were determined to be inapplicable to this CUS based on the lack of issues identified by stakeholders and the public, as well as CUS Team experience. The 18 factors are listed below.
  - Air Quality
  - Biological Resources
  - Cultural Resources
  - Cyber Security
  - Dust/Smoke/Steam
  - Energy Development
  - Extreme Weather
  - Housing Availability
  - Infrastructure Extension
  - Land/Airspace Competition
  - Legislative Initiatives
  - Noise
  - Public Services
  - Public Trespass
  - Scarce Natural Resources
  - Vertical Obstructions
  - Vibration
  - Wildfires

Although there were no compatibility issues identified relating to these 18 factors, they are defined and briefly summarized in this section in order to define all the factors that were considered and so represent the actual analysis conducted.

Air Quality (AQ)

Air quality is defined by criteria air pollutants and hazardous air pollutants that are regulated at the federal and state level. For compatibility, the primary concerns are pollutants that limit visibility (such as particulates, ozone, etc.) and potential non-attainment of air quality standards that may limit future operational changes or new growth/development at the installation or limit growth and development in surrounding jurisdictions.

Biological Resources (BIO)

Biological resources include threatened and endangered species and the habitats they live in or utilize, such as wetlands and migratory corridors. The presence of sensitive biological resources may require special development considerations. Biological resources may also include "species of concern," which are living organisms in need of concentrated conservation efforts, as well as areas such as wetlands and migratory corridors that are critical to the overall health and productivity of an ecosystem. The presence of sensitive biological resources in an area where increased use or development is planned may prompt special development considerations or limitations and protective measures and should be identified as a concern early in the planning process. Several threatened, endangered, and species of concern, species and habitats are present at March ARB and managed by U.S. Fish and Wildlife Service staff.

Cultural Resources (CR)

Cultural resources are objects, places, and practices that are especially representative of, and/or meaningful to, a specific group of people, their worldview, belief system, or way of life. Cultural resources include prehistoric and historic-period artifacts, archaeological sites, buildings, structures, districts, and landscapes, as well as historic-period records and photographs.

Cyber Security (CS)

The continued advancement of computers and other technology has drastically expanded the Air Force's capabilities. However, these same advancements have created vulnerabilities in security. The need to prevent, detect, and repel cyber-attacks is critical; today's military must ensure the security of their computer networks and online communications to maintain combat effectiveness. From programming to hardware, the need to keep systems and information safe is imperative in keeping an effective fighting force.

Dust/Smoke/Steam (D/S/S)

Particles of dust and other materials found in the air are referred to as particulate matter. PM10 and PM2.5, with particles less than 10 µm (micrometer) in diameter and less than 2.5 µm (micrometer), respectively, and considered toxic, can be caused by many phenomena, including vehicular traffic on unpaved roads and surfaces, wind blowing over unpaved and unvegetated areas, vehicle maneuvers, explosions, aircraft operations, and other earth-moving activities such as construction, demolition, and grading. Smoke can be created by fire (controlled burns, agricultural burning, and artillery exercises), industrial activities, and other similar processes. Similarly, steam can be created by industrial and other activities and is more prominent during cooler weather. Dust, smoke, and steam are compatibility issues if sufficient in quantity to impact flight operations, such as by reducing visibility or damaging equipment.

Energy Development (ED)

The development of energy sources, including alternative energy sources such as solar, wind, or geothermal, could pose compatibility issues related to glare (solar photovoltaic (PV) panels), vertical obstructions (wind turbines and geothermal steam plumes), and radar operations (wind energy disturbance). It is in the military's interests, as well as in communities' interests, to support alternative energy development for both energy security and economic reasons. The emphasis of this analysis is to identify gaps in coordination and/or communication regarding energy development and to increase understanding of communities' pursuits, opportunities sought by alternative energy developers, and the intersection of these endeavors with military missions in order to improve communication and coordination efforts that ensure mutually compatible development. By identifying potential sources of conflict if uncoordinated or pursued in isolation from either the community, private development, or the military unilaterally, this process serves to highlight the existence of potential conflict and (as discussed in strategies later in the CUP Implementation Plan) address technological approaches or processes and communication and coordination approaches to prevent any entity from encroaching upon the other.

Extreme Weather (EW)

Increasingly more extreme weather is the result of atypical shifts in global atmospheric conditions and temperatures caused by natural factors and human activities such as burning fossil fuels that impact ozone levels and other variables. Extreme weather is linked to excessive wind force, flooding, drought, and wildland fire with associated risks to life, property, infrastructure, and resource availability. Defense readiness and community safety and sustainability hinge on the ability to withstand extreme weather and both short- and long-term impacts through mitigation efforts and adaptive methods.

Housing Availability (HA)

Housing availability refers to the supply and demand for housing in a region. It also identifies the competition for housing that may result from changes in the number of military personnel and/or the supply of military family housing provided by an installation.

Infrastructure Extension (IE)

Infrastructure plays an important role in land use compatibility. It can enhance the operations of an installation and nearby communities by providing needed services, which, in turn, eliminates or reduces competition for those resources. Conversely, infrastructure can create encroachment issues if facilities are expanded without considering the consequences of future development. The extension or expansion of community infrastructure to areas adjacent to an installation can induce growth that may result in incompatible uses and conflicts between a military mission and community activities and needs. Within general planning efforts and through appropriate consideration and guidance, infrastructure extensions can serve as a mechanism to guide development toward appropriate areas, protect sensitive land uses, enhance resiliency, and improve compatibility between community land uses and military missions.

Land/Airspace Competition (LAS)

The military manages and uses land and air space for testing, training, and operational missions. These resources must be available and of sufficient size, cohesiveness, and quality to accommodate effective training and testing. Military and civilian land and air operations can compete for limited land and air space, especially when the usage areas are near each other. The use of these shared resources can impact future development and operations for all users.

Legislative Initiatives (LI)

State and local legislation can have a significant impact on compatibility planning by allowing or restricting local jurisdictions' ability to control land use and planning activities near military assets. Legislation can prompt changes in state and local laws and ordinances to support the objectives of recommended CUS strategies. Military compatibility-related legislation in the State of California is robust and addresses many compatibility factors within this study. As such, no legislative initiatives are identified within this study.

Noise (NOI)

Noise is sound that reaches unwanted levels. The impacts, or perceived impacts, of noise on people and both wild and domestic animals, can pose notable concerns. Exposure to high noise levels can have a significant impact on activities, health, safety, and quality of life.

Public Trespassing (PT)

Public trespassing onto military installations, whether intentional or unintentional, is a safety concern and can also be a potential concern with regard to malicious threats to military personnel and assets. The potential for trespassing increases with ease of access due to proximity of development, public use areas such as parks, and access to public transportation. Intentional and unintentional trespass occurs at March ARB. Base Security Forces continuously monitor and frequently respond to trespassing incidents. Due to the nature of military missions and routine airfield operations, this can present a public safety issue as well.

Public Services (PS)

Public services concerns include assurances that services such as police, fire, emergency medical services, parks and recreation, and infrastructure are of good quality and available to the installation and surrounding communities as the area develops. The supply and demand of these public services in the event of emergency situations are also considered.

Scarce Natural Resources (SNR)

Pressure to gain access to valuable natural resources (such as oil, natural gas, minerals, and water) that are located on military installations, within military training areas, or on public lands historically used for military operations can impact land utilization and military missions. Natural resources are assets for installations, and ensuring that the resources and associated environment are properly conserved, managed, and used sustainably is critical to support the current and future military mission.

Vertical Obstructions (VO)

Vertical obstructions are buildings, trees, structures, and other features that encroach into airspace used for military operations. Vertical obstructions can present safety hazards for both the public and military personnel. Vertical obstructions are addressed by FAA Part 77 authority near civilian airports and military airfields.

Vibration (V)

Vibration is an oscillation or motion that alternates in opposite directions and may occur as a result of an impact, explosion, noise, mechanical operation, or other change in the environment. Vibrations may be caused by military and/or civilian activities and can disrupt civilian activities and impact the quality of life.

Wildfires (WF)

Wildland fire intensities have increased throughout the West, with large fires able to cause severe impacts on operations and military readiness. California is historically prone to wildland fires. According to the California Department of Forestry and Fire Protection Fire Siege report, wildland fires claimed the lives of 28 civilians and three firefighters, destroyed 9,248 structures, and consumed 4.2 million acres in 2020. California experienced its first "Gigafire," with the August Complex consuming over 1 million acres alone. Wildland fires can occur through man-made or natural events. As the climate continues to change with increasingly drier conditions, the threat of wildland fires is exacerbated, especially in areas of lower elevation where non-native grasses are prevalent. Wildland fires can threaten the public safety and welfare for all community members. Wildland fires also threaten the integrity of military installation facilities and can affect military training and operations. Installation facilities include the natural landscape as well as the built facilities needed to meet training and mission requirements.

5.2 Previous Compatibility Studies

2018 Air Installation Compatible Use Zones Study

This AICUZ Study for March ARB is an update of the AICUZ study dated 2005. This update was initiated because of the beddown of new aircraft, operational changes, and the introduction of new flight tracks. It is a reevaluation of aircraft noise and accident potential related to Air Force flying operations and is designed to aid in the development of local planning mechanisms which will protect public safety and health, as well as preserve the operational capabilities of March ARB.

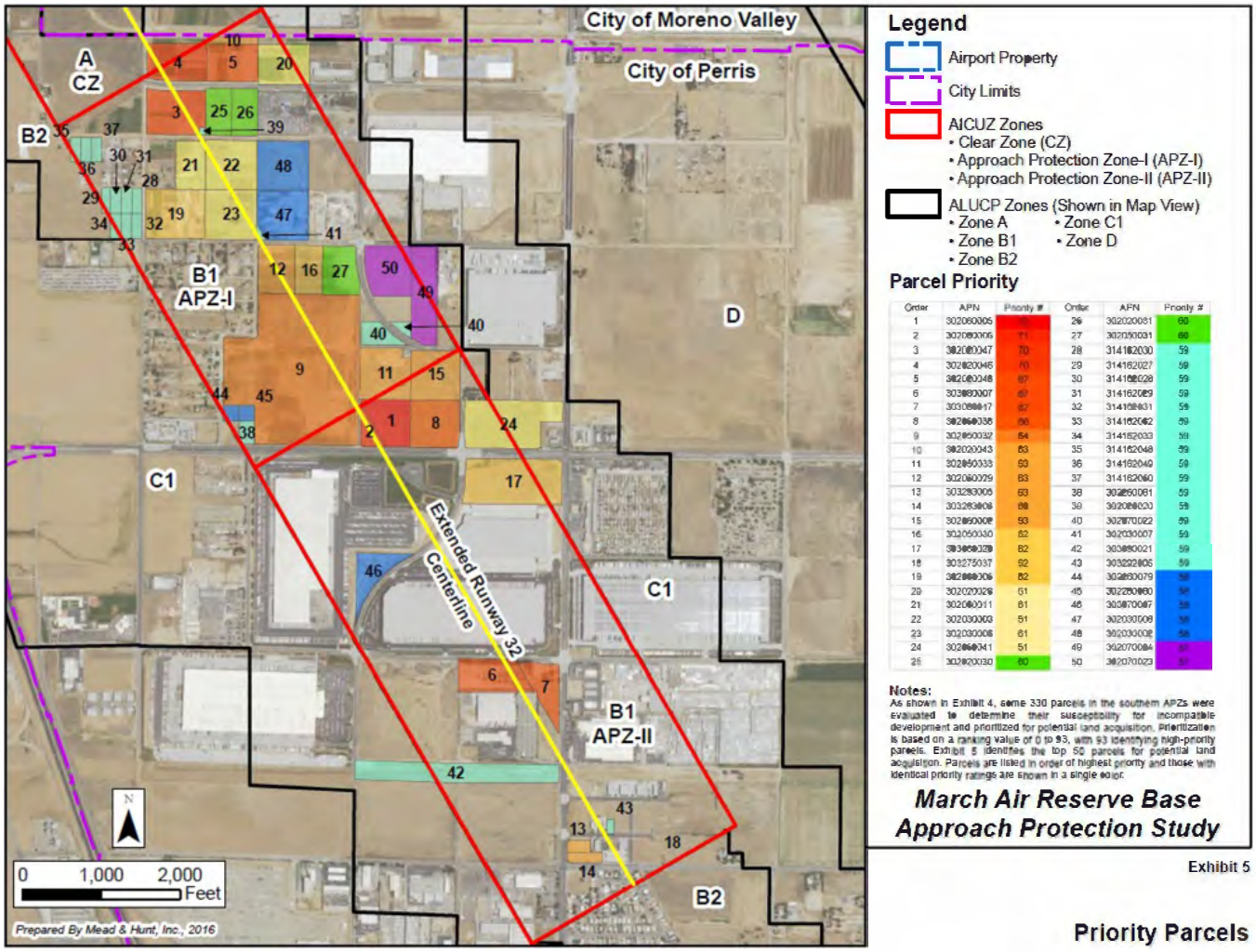
The AICUZ study contains a summary description of the affected area around the base. It outlines the location of runway CZs, aircraft APZs and noise contours and provides recommendations for development compatible with military flight operations. It is the intent of the designers of the AICUZ program that local governments incorporate these recommendations into community plans, zoning ordinances, subdivision regulations, building codes, and other related documents.

The 2018 AICUZ update provided noise contours, including a planning noise contour utilizing the CNEL metric. Long-range planning by local land use authorities involves strategies to influence present and future uses of land. Due to the long-range nature of planning, the Air Force provides planning contours–noise contours based on reasonable projections of future missions and operations. AICUZ studies using planning contours provide a description of the long-term (5-10 year) aircraft noise environment for projected aircraft operations that is more consistent with the planning horizon used by state, tribal, regional, and local planning bodies.

2017 March ARB Approach Protection Study (APS)

The stated purpose of the 2017 March ARB APS was to "further protect the March ARB/IPA from encroachment of incompatible land uses by identifying parcels that potentially could be acquired by the Riverside EDA." The APS conducted a detailed analysis of all property within the southern safety zones, including the CZ and both APZs of Runway 14-32. This study identified 50 property parcels with the highest potential for incompatible development and "highly intensive uses" which could attract "a large number of people to areas susceptible to risk of an aircraft accident." These parcels are shown in the Priority Parcel map from the APS (Figure 5-1 below). The APS provides a complete Parcel Report for each parcel identified by Riverside County as a priority for potential acquisition.

Figure 5-1 Exhibit 5 March ARB Approach Protection Study



Source: *March ARB/IPA, Riverside County Economic Development Agency, 2017*

2010 Joint Land Use Study

The 2010 March ARB/IPA JLUS was created to serve as the March JPA's land use compatibility planning recommendations to each of these entities. It need not be adopted by the March JPA except as it applies to the lands under the March JPA's direct control. Additionally, though, the JLUS was to be recommended to the Riverside County ALUC for adoption as the ALUCP for March ARB/IPA, then each of the five jurisdictions exercising land use authority would be obligated to either bring its general plan and any specific plans into consistency with the ALUC plan.

Given the original direction of the document, the JLUS recognized four compatibility factors: noise, overflight, safety, and airspace protection, which are discussed below.

Compatibility Factor 1: Noise. The purpose of noise compatibility policies is to avoid the establishment of noise-sensitive land uses in the portions of airport environs that are exposed to significant levels of aircraft noise. Noise contours and interior noise reduction were found to further these policies.

Compatibility Factor 2: Overflight. Noise from individual operations, especially by comparatively loud aircraft, can be intrusive and annoying in locations beyond the limits of the mapped noise contours. Sensitivity to aircraft overflights varies from one person to another. The purpose of overflight compatibility policies is to help notify people about the presence of overflights near airports so that they can make more informed decisions regarding acquisition, or lease of property in the affected areas, especially regarding residential land uses. Avigation easements, deed notices, and disclosures as required by California law were recognized as means of providing awareness of overflight.

Compatibility Factor 3: Safety. The intent of land use safety compatibility criteria is to minimize the risks associated with an off-airport aircraft accident or emergency landing.

- Risks both to people and property in the vicinity of an airport and to people on board the aircraft shall be considered.
- The most stringent land use controls shall be applied to the areas with the greatest potential risks.

Vulnerable occupants, maximum number of people, multi-story buildings, hazardous materials, open land, limitations to clustering, risk reduction through building design (concrete walls, strength of roof), and critical community infrastructure (power plants) were determined to be issues for this factor.

Compatibility Factor 4: Airspace protection; tall structures, trees, and other objects, particularly when located near airports or on high terrain, may constitute hazards to aircraft in flight. Federal regulations establish the criteria for evaluating potential obstructions (Part 77 of Federal Aviation Regulations). These regulations also require that the FAA be notified of proposals for creation of certain such objects. The FAA conducts "aeronautical studies" of these objects and determines whether they would be hazards, but it does not have the authority to prevent their creation. The purpose of ALUC airspace protection policies, together with regulations established by local land use jurisdictions and the state government, is to ensure that hazardous obstructions to the navigable airspace do not occur. The FAA's Form 7460-1 online process is the means by which ALUC and the local land use jurisdictions prevent the establishment of hazardous obstructions.

Key 2010 JLUS Recommendations

March ARB:

- Ensure that wherever possible, flights be routed over sparsely populated areas so as to reduce the exposure of lives and property to a potential accident.
- Periodically review existing traffic patterns, instrument approaches, weather conditions, and operating practices and evaluate these factors in relationship to populated areas and other local situations.
- Limit, reduce, and control the impact of noise from flying operations on surrounding communities.
- Establish a community forum between the installation and surrounding stakeholders to discuss land use and other issues of concern; these meetings should be held on a quarterly basis.
- Schedule land use planning meetings to provide a forum for agencies to meet and discuss future developments and to address issues that may surface as a result of new proposals. In an effort to further information sharing.
- Provide copies of AICUZ studies to local, county, tribal, and regional planning departments and zoning administrators to aid in the planning process. Also, provide copies of the AICUZ study to appropriate state and federal agencies.

Local Government:

- Recommend local government planners consider AICUZ policies and guidelines when developing or revising city comprehensive plans and use AICUZ overlay maps and Air Force Land Use Compatibility Guidelines to evaluate existing and future land use proposals.
- Ensure that new development applications or "changed use of property" are submitted to March ARB to afford the opportunity to assess those applications for potential impacts on defense missions.
- Recommend zoning ordinances be adopted or modified to reflect the compatible land uses outlined in the AICUZ report, including the creation of military airport overlay zones.
- Recommend local government and county planners establish procedures to consult on land use matters within overlapping extra-territorial jurisdictions near March ARB.
- Recommend local governments review their capital improvement plan infrastructure investments and development policies to ensure they do not encourage incompatible land use patterns near March ARB, with particular emphasis on utility extension and transportation planning.
- Recommend local governments implement height and obstruction ordinances that reflect current Air Force and Title 14 of the CFR Part 77 requirements, presented in this study as Hazards to Aircraft Flight Zones.
- Recommend fair disclosure ordinances be enacted to require disclosure to the public for those AICUZ items that directly relate to aircraft operations at March ARB.

- Recommend local governments, where allowed, require real estate disclosure for individuals purchasing property within noise contours or CZs/APZs.
- Enact or modify building/residential codes to ensure that any new construction near March ARB has the recommended noise-level reduction measures incorporated into the design and construction of structures.
- Recommend government planning bodies monitor proposals for tall structures such as wind turbines and communication towers to ensure that new construction does not pose a hazard to navigable airspace around March ARB. Where appropriate, coordinate with the FAA on height of structures.
- Recommend that local government land use plans and ordinances reflect AICUZ recommendations for development in CZs/APZs and noise zones.
- Recommend that local governments consult with March ARB on planning and zoning actions that have the potential to affect base operations.
- Invite the Air Force leadership to sit on as an ex officio member on boards, commissions, and regional councils addressing long-range development and other planning policies.
- Encourage the development of a working group of city, county, and March ARB representatives to discuss land use concerns and major development proposals that could affect aircraft operations.

5.3 Awareness Topics

The following three awareness topics are drawn from the 18 compatibility factors that were determined not to present significant issues for March ARB or the surrounding communities. These three topics -, air quality, cultural resources, and military housing availability - are offered for awareness and as potential future concerns for either the air base or the surrounding communities.

Air Quality (AQ)

Air quality is defined by criteria air pollutants and hazardous air pollutants that are regulated at the federal and state level. For compatibility, the primary concerns are pollutants that limit visibility (such as particulates, ozone, etc.) and potential non-attainment of air quality standards that may limit future operational changes and new growth/development at the installation or in the surrounding jurisdictions.

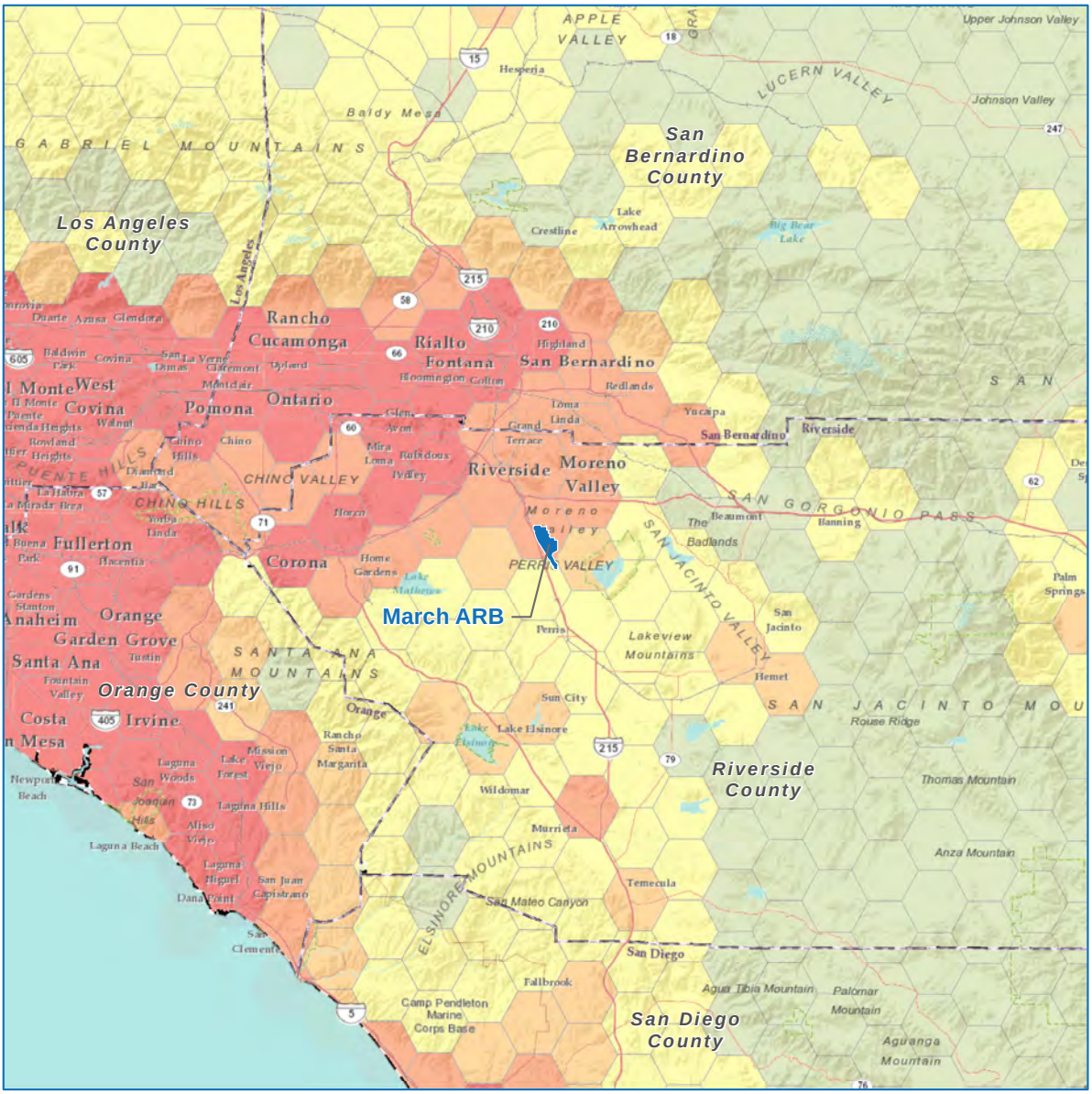
Certain factors can influence air quality in a region. These include the variety of emission sources and types of pollutants emitted, topographic conditions, weather, and other factors. California has unique issues related to attaining and maintaining compliance with both the federal NAAQS and the state California Ambient Air Quality Standards (CAAQS) due to weather patterns and topography (e.g., mountain ranges) that can impede airflow resulting in air pollutants being trapped and causing exceedances of the ambient air quality standards.

Air quality was not identified as having a specific issue during engagement with regional stakeholders, and as a result, there is no air quality compatibility assessment. However, air quality is identified as an awareness issue due to the general concerns and potential impacts to March ARB and the surrounding communities. At certain concentrations, this particulate matter can be harmful to humans and animals if inhaled and strain is placed on the heart and lungs that provide oxygen to the body.

March ARB is located in the SCAQMD, which is classified as non-attainment for the NAAQS and CAAQS standards for ozone and particulate matter 2.5 (PM-2.5) as well as the state standard for PM-10. These non-attainment classifications have the potential to impact future air permitting for new or modified stationary emission sources (e.g., generators, paint booths, etc.) at March ARB. In addition, new mission growth related to mobile emission sources (e.g. aircraft, vehicles, etc.) may be impacted depending on the outcome of a conformity analysis required under the federal CAA.

The region is also identified as marginal non-attainment for the World Health Organization (WHO) guidelines for PM2.5. The average PM levels were between 10.1 and 11.0 micrograms per cubic meter from 1998 through 2016 and are depicted in Figure 5-2. The WHO assesses and rates outdoor air quality in terms of health impacts for the general population. According to the WHO, chronic exposure to particles contributes to the risk of developing cardiovascular and respiratory diseases, as well as of lung cancer.

Figure 5-2 Regional Air Quality Near March ARB.



Legend

Average PM 2.5 from 1998-2016 (micrograms per cubic meter)

- 2.4 - 5.0
- 5.1 - 8.0
- 8.1 - 10.0 Approaching WHO Guideline
- 10.1 - 11.0 WHO Guideline
- 11.1 - 14.0
- 14.1 - 18+

Source: NASA: Global Annual PM2.5 Grids from MODIS, MISR and SeaWiFS Aerosol Optical Depth (AOD) with GWR, v1 (1998–2016); Esri, 2021.

Matrix

0 5 10 20 Miles

Air Quality (PM 2.5)

Cultural Resources (CR)

Cultural resources are objects, places, and practices that are especially representative of, and/or meaningful to, a specific group of people, their worldview, belief system, or way of life. Cultural resources include pre-contact period and historic-period artifacts, archaeological sites, buildings, structures, districts, and landscapes, as well as historic-period records and photographs. Historic properties are cultural resources that are listed or eligible to be listed on the NRHP and are protected under the NHPA and other federal and state laws. The presence of cultural resources on an installation or in the surrounding jurisdictions has the potential to impact military mission growth and community development. Under the NHPA and associated implementing regulations, federal entities must consider the effects of their projects on historic properties and take action to mitigate negative impacts. The most common mitigation strategy is to avoid the immediate area where historic properties are found, which can limit the amount of land that is available for development, but typically in negligible ways. In some cases, historic structures can be re-utilized or incorporated into new structures. In other cases, the nature and/or location of a proposed project may require alternate siting, and in rare instances, projects may be abandoned altogether to protect important cultural resources. Because the presence of historic properties may constrain or alter development plans, these properties and any needed compliance actions should be identified early in the planning process.

The March Field Historic District (MFHD) is listed on the NRHP under Criterion A for its significance in the area of military history and under Criterion C for architectural significance. The entire MFHD consists of 158 acres and 228 buildings, including administrative buildings, hangars, support facilities, and housing, of which 71 are on March ARB. Currently, a portion of the MFHD is located on March ARB, and a portion is on property owned by the March JPA as a result of past BRAC actions.

Green Acres is a housing area owned and managed by the March JPA and consists of 111 residential homes that are part of the MFHD. Future changes involving Green Acres must be in compliance with the NHPA and NRHP requirements as it is part of the larger MFHD. Because the MFHD is split between the Air Force and the March JPA (or any subsequent entity as the JPA evolves), ensuring the integrity of the historic properties has the potential to become more complicated than it would be under single ownership. It is important that March ARB, the March JPA, and any other involved parties work closely together to ensure the MFHD is maintained in accordance with federal and state requirements.

March ARB has completed an ICRMP and multiple surveys for prehistoric and historic sites. Both archeological resources and historic properties have been identified on the installation. No traditional cultural properties related to Indian tribes have been identified on March ARB. However, 12 tribes have historic relations to land at March ARB and are actively involved during ground disturbing activities on base.

Housing Availability (HA)

There is limited military housing at March ARB. What housing exists is reserved for temporary lodging requirements for military personnel. The March Inn currently has 455 rooms in 10 buildings and 15 houses for temporary lodging. Full-time personnel and their families must compete for available housing options. Due to the transient nature of many military personnel, they may wish to rent properties instead of purchasing. Military demand for off-base homes to purchase and rent is impacting the housing market in the area near March ARB.

The BAH that provides Airmen equitable housing compensation to rent or purchase a home is based on housing costs in local civilian housing markets. Table 5-1 identifies the BAH rates for March ARB personnel.

Table 5.1 BAH Rates for March ARB, 2022.

Grade	With Dependents	Without Dependents	Grade	With Dependents	Without Dependents
E-1	$2,985	$2,433	O-1E	$3,696	$3,117
E-2	$2,985	$2,433	O-2E	$3,750	$3,348
E-3	$2,985	$2,433	O-3E	$3,909	$3,642
E-4	$2,985	$2,433	O-1	$3,180	$2,850
E-5	$3,117	$2,706	O-2	$3,639	$3,075
E-6	$3,645	$2,862	O-3	$3,756	$3,453
E-7	$3,687	$2,985	O-4	$4,095	$3,681
E-8	$3,732	$3,225	O-5	$4,338	$3,705
E-9	$3,855	$3,381	O-6	$4,374	$3,744
WO-1	$3,663	$2,949	O-7	$4,410	$3,801
WO-2	$3,705	$3,222			
WO-3	$3,759	$3,399			
WO-4	$3,891	$3,651			
WO-5	$4,044	$3,693			

Source: *DoD, 2022 (https://www.defensetravel.dod.mil)*

Local housing availability addresses the supply and demand for housing in the region, the competition for housing that may result from changes in the number of military personnel stationed at an installation, and the supply of military family housing provided by the DoD.

Basic Allowance for Housing (BAH) refers to a monthly allowance that the military provides personnel who live off base to offset the cost of housing in the public sector. Factors determining the specific BAH provided include pay grade, location, and number of dependents.

Regional housing rental prices and purchasing prices continue to increase in the project study area. Increasing housing rents and prices could present challenges for military personnel and other community members when looking for housing. Local housing availability addresses the supply and demand for housing in the region, the competition for housing that may result from changes in the number of military personnel stationed at an installation, and the supply of military family housing provided by the DoD.

Rising home prices could be a challenge for the community, including military personnel that are currently living in the area, looking to relocate within the area, or relocating to the area from a different region or state. The rising housing prices will continue to be a factor in the overall affordability within the region, which can ultimately impact recruitment and retention for the military and its civilian workforce.

Table 5.2 shows the housing trends for the cities within the study area. As the table shows, the housing selling prices and rents have increased for all cities within the study area within the last three years. These trends show a competitive housing market within the study area, which can continue to drive up prices and create conditions for military personnel and other members of the community to choose to live in areas farther away from the base.

Table 5.2 Median Home Prices and Rents near March ARB

	Median Home Purchase Price			Median Gross Rent		
Jurisdiction	2010	2019	2010 to 2019 % Change	2010	2019	2010 to 2019 % Change
California	$370,900	$505,000	36.16%	$1,163	$1,614	29.23%
City of Moreno Valley	$167,600	$312,000	46.28%	$1,266	$1,636	22.62%
City of Perris	$156,000	$340,800	54.23%	$1,110	$1,300	14.62%
City of Riverside	$228,100	$411,000	44.50%	$1,081	$1,504	28.13%
Riverside County	$227,900	$384,400	40.71%	$1,121	$1,497	25.12%

Source: *2019 American Community Survey 1-Year Estimate, 2010 U.S. Census*

5.4 Compatibility Findings

Anti-Terrorism/Force Protection (AT)

Anti-Terrorism/Force Protection (AT/FP) relates to the safety and security of personnel, facilities, and information on a military installation. The DoD AT/FP standards require that all installation components, such as access gates, adhere to design/planning criteria and minimum construction standards that mitigate vulnerabilities and threats to an installation and its occupants. Important aspects of these criteria and standards include access control and clearance zones around installation perimeters to maintain sight lines and manage access to the installation. Due to current domestic and global conditions, military installations have implemented more restrictive standards to address AT/FP concerns. These measures may vary based on daily activities and include increased security checks and/or the creation of physical barriers at entry points (e.g., gates, spike barriers, tire shredders).

Key Terms

Antiterrorism. Defensive measures used to reduce the vulnerability of individuals and property to terrorist acts, to include limited response and containment by local military and civilian officials.

Controlled perimeter. A physical boundary at which vehicle access is controlled with sufficient means to channel vehicles to the access control points. At a minimum, access control at a controlled perimeter requires the demonstrated capability to search for and detect explosives.

Clear Zone. Areas commonly associated with perimeters that are free of all obstacles, topographical features, and vegetation exceeding 8 inches in height that could impede observation or provide cover and concealment of malicious intent.

Force Protection. Preventive measures taken to mitigate hostile actions against DoD personnel (to include family members), resources, facilities, and critical information. Force protection does not include actions to defeat the enemy or protect against accidents, weather, or disease.

Installation Perimeter. A demarcation identifying the limit of DoD property and directly or indirectly indicating that unauthorized access is prohibited. The landside perimeter may be established with fences, walls, signage, natural barriers, or other means.

Setback. Local government zoning requirement which establishes by code the minimum distances from front, side, and rear property lines where building structures are not permitted to be constructed.

Uncontrolled Public Access. Spaces within and beneath buildings where there is insufficient positive access control to preclude unauthorized access. For the purposes of these standards, positive access control will be considered to include, but not be limited to, electronic access control on all exterior doors or personnel controlling visitor access.

Unobstructed space. Space around inhabited buildings in which there are no opportunities for concealment from observation of explosive devices in areas of no less than a 6 inch by 6 inch by 6-inch cube.

Technical Background

Antiterrorism (AT) Standards authorize commanders at all levels to enforce security measures at their will and are charged with the responsibility of the protection of persons and property under their control. As such, numerous Unified Facilities Criteria (UFC) guidance publications outline various fencing and security measures appropriate for military installations. The following are UFC criteria applicable to security engineering:

- 4-022-01 Security Engineering: Entry Control Facilities/Access Control Points, 2005
- 4-010-01 DoD Minimum Antiterrorism Standards for Buildings
- 4-020-01 Security Engineering: Facility Planning Manual
- 4-022-02 Security Engineering: Design and Selection of Active Vehicle Barriers
- 4-022-03 Security Fences and Gates
- 3-530-01 Design: Interior, Exterior Lighting, Security Lighting, and Controls

The Military Handbook (MIL HNDBK 1013/10) Design Guidelines for Security Fencing, Gates, Barriers, and Guard Facilities indicates that installations should use signage at 200-foot intervals on the exterior installation fencing to inform and warn potential trespassers that there is a U.S. military installation at the specified location. All military services recognize the importance of a secured installation; however, only the U.S. Navy has published specific guidelines for the installation of warning/no trespassing signs.

There are concerns about development next to or along the March ARB security perimeter fence line. (See also PT-1)

AT-1

Physical development of large warehouses and other tall structures directly along the perimeter of March ARB presents security challenges to Air Force security requirements. Current setbacks and building height restrictions for new construction along the boundary of the air reserve base may not be compatible with air installation security requirements.

Compatibility Assessment

Encroachment can take a variety of forms. For this finding, building form and property setback requirements constitute the primary issues. Tall structures built in close proximity to March's security fence can provide advantages for surreptitious activities, such as surveillance or malicious attacks against base personnel. Additionally, massive structures such as warehouses or distribution centers can block security cameras and security forces' line of sight when conducting routine patrols along the installation boundary.

There is a potential for future growth in surrounding communities to encroach on the boundaries of March ARB. Encroachment is generally understood as ground-level horizontal development and use of land near military facilities; however, encroachment can also take a more vertical form in the development of taller buildings or exist via proximity of structures due to an increased intensity of activity immediately adjacent to military installations and access control points.

Under the March JPA Development Code, commercial and industrial sites are subject to the following rear setbacks.

Section 9.04.040 Commercial Site Development Standards. There is no specific standard rear property setback established, and structures can be built on the property line. One special setback for commercial abutment to residential areas that would be effective for March, if modified and adopted, is based on this rule: "Wherever a lot in any commercial district abuts a lot in any residential district, a minimum setback equal to the building height, but not less than 10 feet shall be required." For industrial properties, the setback rule is that "structures shall be constructed on the property line or a minimum of 3 feet from the property line." A second rule allows for building heights up to 80 feet, subject to FAA Part 77 clearance if the setback is at or greater than the proposed height. If the second rule is enforced, the angle of visibility from the top of a structure's roof to March's fence line would be 45 degrees.

DoD sets installation AT/FP standards for internal and external setbacks, or required buffers. The standoff, or setback, standards for the perimeter fence on a military installation are a minimum 30-foot inside standoff distance for internal buffers, if a minimum 50-foot external buffer outside the perimeter security fences exists. The internal buffer requirement is 50 feet if the external buffer is less than 50 feet.

AT-2

Transfer of Green Acres from March JPA to private commercial property presents a force protection risk for unvetted individuals to gain access or conduct surveillance/data collection

The potential future transfer of Green Acres to private commercial interest presents an unusual force protection concern and potential risk for March ARB. Currently, the base perimeter security fence follows a gerrymandered path that divides this contiguous historic district between JPA-managed properties and installation facilities including headquarters facilities. The effectual subdivision of Green Acres from the historic March Field district presents a unique security challenge as the recommended minimum standoff distances for an external buffer cannot be achieved without the demolition of existing structures.

Compatibility Assessment

The Green Acres neighborhood, formerly March AFB military family housing, is a gated property managed by March JPA as Green Acres Rental Homes. Residents are currently vetted following Fair Housing Laws for personal identification, credit and criminal background checks, and verification of employment. The vetting process requires two forms of identification, including social security number, tax, credit and employment information, and requires a minimum credit score of 625 for obtaining residency in this gated community. In effect, the current gated community and vetting of residents provide an additive security buffer to the March ARB security perimeter within the March Field historic district.

Management and occupant stability mitigate the risk related to the perimeter of the Base adjoining the Green Acres property. The JPA has a two-year waiting list for Green Acres. Excellent customer service and property management leadership by a single owner controlling the entire project consistent with the historical preservation requirements is attributable for the stable occupancy. It is important to note that the JPA residents are long-time occupants of existing historical homes with an average occupancy rate of 15 years. The longest resident, a military veteran, has resided in Green Acres for more than 23 years. More than half of current residents are affiliated with the military (active duty/guard/reservists/military veterans); remaining homes are occupied by working professionals including healthcare (nurses and doctors) and administrative professionals (government and labor workers).

NOTE: In March 2023, the MJPA voted to retain ownership of the Green Acres community and work with March ARB on a military housing program. This strategic action by MJPA negates the potential of real property transfer to private ownership in this finding.

Changing Environment (CE)

The effect of the changing environment, both physical and environmental changes, presents shared challenges for a region, requiring the need for adaptation and mitigation strategies. It is critical for community and military leaders to be aware of and prepare for such changes to implement measures that minimize adverse impacts on development, military readiness, and overall quality of life.

Key Terms

Climate Adaptation. The process of adjusting to the effects of the changing climate.

Changing Environment. Changes in the earth's environment, including the atmosphere, as a result of natural ecological processes and human activities.

Greenhouse Gases. Gases emitted into the atmosphere that trap reflected solar heat.

Groundwater. Water found underground in cracks and spaces among soils, sand, and rocks.

Radiative Forcing. Positive radiative forcing results when solar heat reflected by the earth's surface is trapped by greenhouse gases and temperatures in the atmosphere increase.

Resilience. The condition or capacity of a system and its components to absorb and recover from the effects of a disruptive hazard or threat.

Soil Liquefaction. Liquefaction occurs when saturated soils experience stresses such as movement and pressure associated with earthquakes that undermine soil integrity and cause soils to behave like liquids.

Soil Saturation. Saturation occurs when soil pore spaces are completely filled with water, reducing the soil's structural integrity.

Technical Background

The environmental changes that are occurring across the globe are related to shifts in temperatures and weather patterns. While the exact causes of these changes are not fully understood, a combination of natural cycles and human activities is considered the likely drivers. The buildup of greenhouse gases, including carbon dioxide, methane, nitrous oxide, and fluorinated gases, causes solar heat to be trapped in the atmosphere instead of radiated back into space. Changes in the earth's climate that result in cooling or heating of the atmosphere, land, and oceans are referred to as radiative forcing.

Carbon dioxide emissions are the primary human drivers of the changing environment, accounting for nearly 80% of U.S. greenhouse gas emissions in 2020. Primary carbon dioxide emitters in the U.S. are listed below:

- Transportation activities
- Electric power generation
- Industrial processes
- Residential and commercial activities
- Other non-fossil fuel combustion

The military has identified multiple threats and hazards to military installations as a result of conditions due to environmental changes:

- Temperature extremes
- Precipitation extremes
- Extreme weather, including hurricanes, tornados, and other intense storms
- Flooding, including riverine, coastal, and flash floods
- Sea level rise
- Land degradation, including excessive soil erosion and desertification
- More frequent and intense wildland fires
- Drought conditions
- Increased energy demand

The long-term prognosis indicates that conditions causing the changing environment, such as increasing temperatures and extreme weather patterns, are likely to continue without aggressive measures to reduce greenhouse gas emission sources and mitigate the associated impacts. Efforts are underway at federal, state, and local levels, including military installations and communities, to identify and implement actions to adapt to the changing environment to increase resiliency and reduce the impacts of threats and hazards.

Rising groundwater impacts existing facilities and the design and construction of new facilities on March ARB.

CE-1

The rising groundwater table has the potential to impact existing facilities/infrastructure on March ARB. This includes impacts to the airfield runways and related facilities. In addition, new designs and construction projects must account for impacts such as saturated soils that create significant technical, budget, and schedule challenges (see also WQQ-3).

Compatibility Assessment

In recent years, groundwater levels under March ARB and in the immediate surrounding area have risen above historic normal levels. The groundwater levels in the area have been rising at varying rates of up to three feet, annually. The specific causes of rising groundwater levels are not fully understood, although there are several potential reasons:

- Reduced groundwater pumping in the region partially due to change in land use
- Seepage of water from the Lake Perris Dam
- Limited groundwater outflow in the area

As a result of the rising levels, installation development activities, such as new construction and maintenance and/or the renovation of existing facilities and infrastructure, may face challenges associated with high water tables. One of the more serious concerns is the potential for soil liquefaction created by soil saturation.

Soil saturation can occur when the space between soil particles fills completely with water. The soil becomes fully saturated, and the strength of the soil structure decreases, resulting in a compromised soil foundation. Existing building foundations, no longer fully supported by stable ground, may crack and fail. In addition, existing infrastructure such as roads, flood channels, and utilities may be impacted by increased pressures causing them to move or float and eventually crack and deteriorate. When earthquakes occur in areas where soils are completely saturated, soil liquefaction may occur as shown in Figure 5-3, and the impacts can be greatly exacerbated with catastrophic results, including building collapse.

Short of soil liquefaction, rising groundwater can create other serious issues for facilities, including water intrusion through foundations and into voids, shifting pipelines, and similar impacts for underground infrastructure.

March ARB recognized the potential for liquefaction due to intense ground shaking. In 2016, the installation reported that normal construction methods, such as remedial grading and shallow foundations, could mitigate this risk.

New construction, when encountering unusually high groundwater levels and/or polyfluoroalkyl (PFAS), can be impacted by both project delays and increased costs. The degree to which facility designs must account for high water tables depends on several factors. Foundation load-bearing capacities must be considered to ensure safe facilities can be built. Simple construction techniques such as dewatering or increasing grade elevations may need to be employed in minor cases, while in more severe situations, below-grade, deep-pile foundations may be required to overcome challenges.

There are typically three primary alternatives when dealing with high groundwater levels and new construction:

- Avoid building sites with high groundwater
- Apply the required engineering and design specifications to overcome the problem
- Lower the groundwater levels

In 2010, the Eastern Municipal Water District and Western Municipal Water District completed a joint feasibility study to assess groundwater resource opportunities in and around March ARB. The intent was to determine the feasibility of using the available groundwater as an additional potable water source to lower the water table and alleviate rising groundwater impacts. In 2020, the Eastern Municipal Water District initiated the $90 million Perris North Groundwater Program with multiple goals:

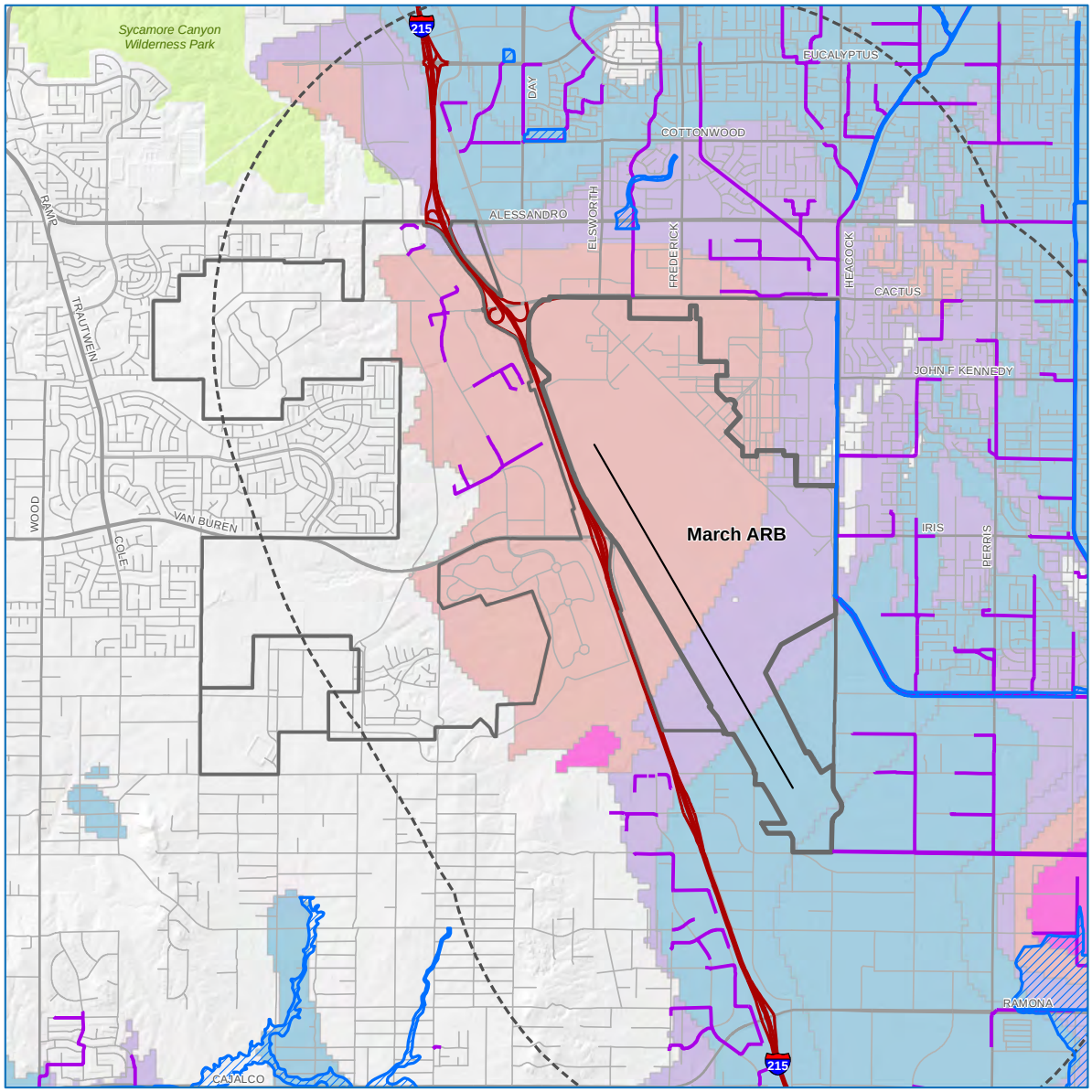
- Remediate contamination in the Perris North Groundwater Sub-basin.
- Protect non-contaminated portions of the sub-basin.
- Develop an alternative source of potable water for the Western Municipal Water District and March ARB.
- Reduce rising groundwater levels under March ARB and the immediate region.

When fully operational in 2023, the project will employ six groundwater extraction wells, two water treatment facilities and associated monitoring wells, and equipment to pump water from the sub-basin. Approximately 7,000 acre-feet of groundwater will be pumped annually, which may result in reduced groundwater levels under the installation.

In a separate effort, the CDWR has undertaken the Lake Perris Seepage Recovery Project to collect and distribute water currently seeping out of Lake Perris near the dam. The draft Environmental Impact Report notes that the local groundwater levels, including in the Perris North Sub-basin, have risen approximately 100 feet since Lake Perris was placed in operation in 1978 as part of the California State Water Project (SWP). The plan is to install six seepage recovery wells south of the Lake Perris Dam and deliver the collected water to the Colorado River Aqueduct for use as potable water. One of the goals of the project would be to reduce any unintended recharge of the Perris North Groundwater Sub-basin. This, in turn, may potentially alleviate the rising groundwater directly below March ARB and the surrounding area.

Rising groundwater below March ARB is causing and will continue to cause impacts to installation operations. Ongoing maintenance and repair of existing facilities and infrastructure will likely increase in frequency and cost as a result. In addition, new installation development will be impacted by having to account for higher water tables during the design and construction of required projects. Rising groundwater is a current and ongoing concern for present and future construction.

Figure 5-3 Liquefaction



Legend

Liquefaction Susceptibility
- Very High
- High
- Moderate
- Low
- Very low

- Riverside County Flood Control Facility Lines
- 100-year Flood Zone
- March Air Reserve
- March ARB 2 Mile Buffer
- March Joint Powers

- Interstate
- Highway/Expressway
- Major Road
- Local Road
- Airport Runway
- Major Park

MARCH ARB COMPATIBLE USE STUDY

Source: Riverside County, 2021; Earth Consultants International.

Matrix

0 ½ 1 2 Miles

Liquefaction

Communication/Coordination (COM)

Communication/coordination (COM) refers to programs, plans, and partnerships that promote interagency communication and coordination, as well as the dissemination of information to the public and other stakeholders. Interagency communication serves the general welfare by promoting a comprehensive planning process inclusive of all stakeholders. Interagency coordination also supports the development and inclusion of mutually beneficial policies for local communities and the military in local planning documents, such as comprehensive plans. Providing relevant and timely information to the public keeps residents and other stakeholders informed of activities and instills confidence and support.

Key Terms

Memorandum of Agreement/Understanding. A memorandum of agreement (MOA) or memorandum of understanding (MOU) is an agreement between parties to cooperatively work together on an agreed upon project or meet an agreed upon objective.

Air Force Community Partnership Program. The AFCP Program is a framework through which installation and community leaders can leverage their unique capabilities to enhance mission performance, reduce costs, and improve quality of life.

COM-1

Formalized communication is limited between March ARB and regional planning entities.

There are no formalized communication protocols or official standing forum for March ARB and the communities/agencies around the installation to identify, communicate, and coordinate on topics of interest to all parties. March ARB currently works individually with local communities/agencies on an as-needed basis. As issues arise, communication and coordination are handled on a case-by-case basis through the exchange of emails, phone calls, or other methods between March ARB and the jurisdiction/agency representatives. Lack of a formalized communication/coordination process increases the likelihood of missed opportunities and risks dealing with issues "late to need" or "after the fact."

Compatibility Assessment

The cities, the county, and the military installation in the study area use informal means of communication to coordinate and share information about activities based on individual staff knowledge, experience, and professional network. This professional network is personality based, not organizationally based. As such, there are no established memoranda of agreement or written protocols that outline communication practices. Additionally, informal communication is discretionary; therefore, there is potential for incompatible development to occur if such developments are not communicated in advance and if March ARB is not included in the review of development plans. Establishing formal communication practices could allow stakeholders to collaborate regarding military activities and needs regardless of position or personal relationship and would ensure greater consistency in communication and collaboration.

The lack of established communication protocols can have numerous negative impacts, including overlooked or neglected development application reviews that could lead to incompatible land development or an ill-informed public review process. Surrounding communities and government staff may not always understand the issues that are particularly relevant to March ARB. Additionally, there can be inconsistency for when each of the military installations should be consulted regarding the potential for compatibility issues. Likewise, local government and the public should be notified when events or other unusual base activities occur and when these activities may impact residents in terms of noise and vibration nuisance, traffic congestion, public health, or viewshed considerations. Public notification can be facilitated through the establishment and application of formalized communication protocols.

Formalized communication processes would set clear roles and responsibilities for how and with whom to communicate at communities and March ARB when compatibility issues and concerns arise related to community growth, or when changes in military operations or planning may impact surrounding communities.

Presently, outside of NEPA requirements, there is no standing forum dedicated exclusively to local and regional planning coordination and communication between March ARB and surrounding communities. This issue was noted as a finding in the 2018 AICUZ as well.

Having an established forum for planning and partnership would provide a collaborative venue for military leadership to provide information to community leadership, and in turn, for community leadership to provide information to the military to include long-range planning discussions on land development and capital projects in the region. Such a venue would also promote a greater understanding of mission sustainment challenges to March ARB and how the Air Force could promote partnership with surrounding communities. March ARB is routinely invited to attend ALUC Technical Advisory Committee (TAC) meetings and ALUC meetings however, these meetings are focused on development application reviews, and do necessarily provide a venue for holistic coordination on related matters, such as installation resiliency issues. Potentially the ALUC forums could be better leveraged to enhance coordination between the installation and surrounding communities.

The AFCP program offers a holistic approach to address the full range of compatibility and resiliency issues, such as discussed in COM-5 below. The SAF/IE created a centralized program to promote the idea of partnerships, support installations and communities as they pursued collaborations, and develop policy that furthers these objectives.

Over the years, the AFCP program has evolved to meet the ever-changing needs of our environment. Community partners have confronted challenges ranging from infrastructure, base operational support, cooperative purchasing, education, public safety, energy, and natural resources to health care, recreation, transportation, and workforce development. This partnership program has a structured process for:

- Identifying requirements
- Liaising with collaborators
- Formulating a course of action
- Troubleshooting legal and policy obstacles
- Executing a course of action and maintaining partner relationships

The following are examples of communication that occurs between other installations and communities for routine visibility and general information sharing of a holistic range of partnerships.

- Joint Base San Antonio Public-Public, Public-Private Partnership (P4) Meeting
- Monterey Bay Defense Alliance
- Wright-Patterson Regional Council of Governments

Tyndall AFB established five partnerships following Hurricane Michael in 2018.

COM-2

Leadership rotation in key organizations can create strategic communication gaps.

Leadership changes at the installation level at March ARB and with the directors of the ALUC, the March JPA, and MIPAA can impact the relationship between these organizations and affect positive communication, which can, depending on timing, also affect development application reviews.

Compatibility Assessment

Military installation level leadership at March ARB rotates on a two-year cycle during the summer command rotation cycle. Leadership changeovers can change priorities and impact organizational relationships, either positively or negatively. There is concern that sometimes these leadership changes, can affect the responsiveness to community development review requests and impact the ALUC review process overall.

COM-3

March ARB is required to route proposed installation responses for development reviews through its parent headquarters at AFRC at Robins AFB, Georgia.

The requirement to route proposed development application review through its parent headquarters may delay response to the review request, thus, not allowing for formal March ARB review and comment to be considered in a timely manner.

Compatibility Assessment

Unlike active-duty Air Force bases, March ARB has a requirement to route all development reviews to AFRC at Dobbins AFB. This can create staffing delays as it adds another level of bureaucratic staff review to the local development review process. This challenge can be addressed in a variety of ways, but local empowerment of the installation command to conduct reviews should be considered. This concern was not noted in the 2018 AICUZ.

COM-4

Formalized communication is limited between March ARB and the Eastern Municipal Water District.

March ARB has minimal communication/coordination with the Eastern Municipal Water District. While the Eastern Municipal Water District does not provide services directly to the installation, they are very closely involved with projects and actions that directly impact the installation mission essential operations. In some cases, the Eastern Municipal Water District is in close partnership with agencies, such as the Western Municipal Water District, that directly support March ARB. The lack of a formal communication/coordination process with the Eastern Municipal Water District increases the potential for impacts on March ARB activities.

Compatibility Assessment

The Eastern Municipal Water District borders March ARB to the north, east, and south of the installation boundary. The water district does not currently provide any services directly to March ARB. The Western Municipal Water District, located to the west of the base, provides both potable water and sanitary sewer services for March ARB. Because the Western Municipal Water District provides critical services for the base, effective lines of communication and coordination have been established between the base and the utility. Similar lines of communication and coordination do not currently exist between March ARB and Eastern Municipal Water District.

The Eastern Municipal Water District undertakes various projects and provides water and sanitary sewer services for communities surrounding March ARB on three sides. The Eastern Municipal Water District also supplies wholesale water to various organizations, including the Western Municipal Water District to help ensure adequate supplies for their customers, including March ARB.

Currently, the Western Municipal Water District has one water main supplying March ARB from the west side of the installation. In order to improve potable water resiliency for the base, the Western Municipal Water District is working to leverage the Eastern Municipal Water District's existing facilities and infrastructure to add an additional water service line to March ARB. The intent is for the availability of potable water service from the east side of the installation.

Recently the Eastern Municipal Water District has undertaken the Perris North Basin Groundwater Program. The district is taking action to prevent the spread of contaminants in the aquifer, accelerate the cleanup of existing contamination and protect the aquifer for continued use as a water source. The program has several goals including two that directly affect March ARB:

- Develop a local source of water that will provide a secondary source of potable water for March ARB via the Western Municipal Water District, increasing installation resiliency
- Mitigate the ongoing problem of rising groundwater under and around March ARB, which has a significant impact on installation facilities, infrastructure, and development

There are other areas of interest between March ARB and Eastern Municipal Water District, including:

- Investigation of PFAS groundwater contamination from historic firefighting operations at March ARB that has the potential of impacting Eastern Municipal Water District groundwater wells
- Potential impacts to the existing Air Force groundwater cleanup along the eastern boundary of the installation from the Perris North Basin Groundwater Program

The information mentioned above makes it clear that there are multiple areas of mutual interest/concern that involve March ARB and the Eastern Municipal Water District. While informal communications or project working teams occur, establishing formal lines of communication and coordination between the base and the Eastern Municipal Water District would be beneficial to both organizations to ensure an efficient/effective exchange of relevant planning information and to avoid miscommunication that has the potential to impact the operations of both the base and water district.

In addition, while March ARB and the Western Municipal Water District may have good lines of communication and coordination that exist informally, it is important that those relationships be formalized via a MOU or similar document to ensure long-term viability.

COM-5

Post March JPA Sunset Communication with March ARB.

The March JPA currently functions as the liaison agency for March ARB on development review requests. With the anticipated sunset of the March JPA and transition of authority back to the conferring local governments, there is concern that future development on former Air Force property currently under the March JPA may not be adequately communicated with the installation.

Compatibility Assessment

The March JPA is currently preparing to initiate active planning for the dissolution of the March JPA and return its jurisdictional planning authority back to the local governments, which conferred this authority to the March JPA upon its establishment. The expressed concern is that dissolution will eliminate this liaison function unless specific liaison roles are established with either the ALUC or MIPAA. Although the MIPAA was established by March JPA, it will continue its port authority role on the joint use airfield and assume the authority for any subsequent airfield JUA. The MIPAA will also retain oversight of the March Air Museum. The ALUC's state and county authority will not be affected by sunset of the JPA. Both the ALUC and MIPAA will maintain routine communications with March ARB after the March JPA sunset but have varying roles and responsibilities that may not fully account for all issues related to liaison with the surrounding communities and governments.

This concern is directly related to the proceeding five communications factor assessments. Any future liaison role should address the related communications issues.

Frequency Spectrum Interference/Impedance (FSI)

Frequency spectrum refers to the entire range of electromagnetic frequencies used for communications and other transmissions, which includes communication channels for radio, cellular phones, and television. In the performance of typical operations, the military relies on a range of frequencies for communications and support systems. Similarly, public and private users rely on a range of frequencies in the use of cellular telephones and other wireless devices on a daily basis.

Key Terms

Airport surveillance radar. Referred to ASR, this radar is deployed at certain airports to detect, identify, and visually display the spatial location of aircraft operating in the airspace around the airfield, assisting ATC to maintain safe flight conditions.

Frequency impedance. Impedance is the interruption of electronic signals due to the existence of a structure or object between the source of the signal and its destination (receptor). Certain structures have the potential to block or impede the transmission of signals from antennas, satellite dishes, or other transmission/reception devices affected by line-of-sight requirements.

Frequency interference. Interference is the inability to effectively distribute or receive a particular frequency because of competition for the same or similar frequencies. As the use of the frequency spectrum increases, such as with the rapid advances in cellular phone technology and cellular phone usage over the last decade, and as development expands near military installations and operational areas, the potential for frequency spectrum interference increases.

Frequency spectrum. The frequency spectrum is the entire range of electromagnetic frequencies used for communications and other transmissions, which includes communication channels used for radio, cellular phones, and television.

Radio altimeter. Radio altimeters are a type of avionic equipment used by pilots to accurately determine aircraft altitude, especially during low-altitude operations. Radio altimeter technology is sometimes referred to as radar altimeter.

Technical Background

The DoD's use of frequency spectrum supports safe operations and the effective delivery of weapons. The DoD's frequency spectrum needs for testing, evaluation, and training are constantly increasing, while the spectrum available for DoD use is decreasing. The National Telecommunications Industry Association Office of Spectrum Management explains that:

> *...almost every agency of the Federal Government uses the spectrum in performing mandated missions. The DoD uses the spectrum extensively for tactical uses and non-tactical uses. In the United States, tactical uses are generally limited to a number of specific testing sites and training facilities, but DoD's non-tactical applications are extensive and include aircraft command and*

control, mobile communication in and around military bases, and airfields and long-distance communications using satellites.

Frequency interference is related to other transmission sources. Interference can result from several factors, as listed below:

- Using a new transmission frequency that is near an existing frequency
- Reducing the distance between two antennas transmitting on a similar frequency
- Increasing the power of a similar transmission signal
- Using poorly adjusted transmission devices that transmit outside their assigned frequency or produce an electromagnetic signal that interferes with a signal transmission
- Existing electronic sources and uses created by portable systems affecting entire communities utilizing Wi-Fi broadband systems
- Industrial sources that produce electronic noise by-product

The military relies on a range of frequencies for communications and support systems. Since 1993, Congress has been selling federal spectrum bands for reallocation to the private sector, promoting the development of new telecommunications technologies, products and services. The expanding public and commercial use of the frequency spectrum, from wireless transmitters to consumer electronics, can encroach on the military's use of the frequency spectrum. Increasing community and DoD demands for this important resource can create conflicts for all users.

FS-1

Implementation of 5G cell phone service in the airfield vicinity may impact flight safety.

There is a concern that the new 5G cell phone service may cause interference with aircraft radar altimeter readings. This poses a flight safety hazard, especially during instrument landings. In addition, there is a possibility that 5G may also impact the ASR systems at March ARB.

Compatibility Assessment

March ARB has expressed concerns for flight safety in relationship to new 5G cell phone technology operating in the vicinity of the installation's airfield. There are two specific concerns that flight safety personnel raised during stakeholder interviews:

- Potential interference with aircraft radio altimeter functionality
- Questions regarding potential impacts to the ASR

Radio altimeter interference from 5G communications, specifically C-Band interference, is a documented aviation safety risk. Interference from 5G communications involving towers in the vicinity of airports can interfere with radio altimeters. The potential interference is primarily related to the relative closeness of the frequency spectrum used by 5G cell service (3.7-3.98GHz) and aircraft radio altimeters (4.2-4.4 GHz). This presents a particular risk to aircraft control systems that are reliant on radio altimeters. The C-17 currently operated by the 452nd AMW at March ARB, and the soon-to-be-fielded KC-46A depend on radio altimeters to conduct their flight missions safely. Modern aircraft radio altimeters transmit a continuous radio wave from the aircraft to the ground using frequency-modulated continuous-wave (FMCW) radar. The distance to the ground, or altitude of the aircraft, is determined by the size of the shift in the signal's frequency from the returning signal. Radio altimeters are essential during autopilot landings. They are also effective during low visibility conditions when the pilot's ability to see the ground is limited and during other low altitude operations.

To date, the FAA has not documented any specific threats to ASR from 5G cell phone operations. In the U.S., ASR is operated at a frequency of 2.7-2.9 GHz, making the potential for interference less likely due to the wider separation of the ASR and 5G cell phone frequencies.

The FAA is actively working with both the aviation and communications industries to mitigate risks by retrofitting aircraft with improved radio altimeters that filter out 5G spectrum interference and by limiting full 5G infrastructure implementation near priority airports until this risk can be fully mitigated. The FAA has issued a Notice to Air Missions to advise pilots when using certain airports to use alternative methods of compliance for any aircraft not cleared for operation in 5G environments. The FAA has also issued AD for airplanes equipped with a certain flight control system. This AD was prompted by a determination that radio altimeters cannot be relied on to perform their intended function if they experience interference from wireless broadband operations in the 3.7-3.98 GHz frequency band (5G C-Band), and a recent determination that, during the approach, landings, and go-arounds, certain airplane systems may not properly function as a result of this interference, resulting in increased flight crew workload while on approach with the flight director, auto throttle, or autopilot engaged. These demands could reduce the ability of a flight crew to fly and land an aircraft safely. This AD requires revising the limitations and operating procedures sections of the existing AFM to incorporate specific operating procedures for ILS approaches, speed brake deployment, go-arounds, and missed approaches when in the presence of 5G C-Band interference.

Land Use (LU)

Land use planning and regulation issues from the government's responsibility to protect public health, safety, and welfare. Local jurisdictions' general plans and zoning ordinances can be the most effective tools for preventing or resolving land use compatibility issues. These tools ensure the separation of land uses that differ significantly in character. For instance, industrial uses are often separated from residential uses to avoid impacts from noise, odors, and lighting. Land use separation also applies to properties with similar uses where the use of one property may nevertheless adversely impact the use of another.

Key Terms

Air Installation Compatible Use Zone study. AICUZ studies explore issues of encroachment, public safety and welfare related to military air installation operations.

Accident Potential Zone I. APZs and CZs correspond to areas adjacent to airfields where the potential for aircraft accidents is highest. APZ I begins at the end of each CZ. This area has a lower potential for aircraft mishaps in comparison to the CZ, and therefore, less prohibitive development restrictions are recommended. Residential and other uses that congregate people are still not recommended.

Accident Potential Zone II. APZ II begins at the end of each APZ I. This APZ can also be curved, as flight patterns are taken into consideration during zone identification. The potential for aircraft mishaps in the APZ II is lower than in the CZ and in APZ I, with some additional development types allowed.

Clear Zone. The CZ is the area with the highest statistical potential for an aircraft mishap. As the name implies, the DoD recommends that this area be kept clear of all development or structures.

Encroachment. In terms of compatibility, encroachment refers to the development of conflicting uses of land, air, water, and other resources that may individually or cumulatively impact the military's ability to carry out its testing and training mission. This may include private development being built near a military installation, whether or not it is within a specific military operational footprint that may be related to noise or safety.

Floor-to-Area Ratio. Ratios that are established by a zoning regulatory authority to guide building form on a particular property parcel.

Technical Background

It is important that current and planned land uses around the military installation are compatible to prevent impacts on residents in nearby communities and to ensure that the military mission is not constrained by nearby development, particularly along military installation boundaries. As outlined in Chapter 4, the vicinity around March ARB is increasingly more populated and urbanized within cities and unincorporated portions of the county near the base. Chapter 4: Community Overview summarizes the current and future growth (population, housing, and employment) anticipated within these communities and portions of Riverside County.

In this Study, land use, per se, is not the major concern. With a few notable exceptions outlined here, land use around the March ARB installation is dominated by limited manufacturing, wholesale trade, and warehousing and is consistent with AICUZ recommendations and ALUCP planning guidance. Development applications within the municipal airport or AICUZ overlay districts receive a thorough review by planning or development departments within their respective development codes, with subsequent review by the ALUC for consistency with the ALUCP. This provides a two-step review process for ensuring development consistency within adopted standards for the vicinity around March.

Of concern, however, are the potential types of uses and possible intensity of buildings and facilities around the base. The warehouses and distribution centers around March are among the largest structures in the world, as measured by the structure footprints. This increased density and form can also induce a higher level of activity around these

predominantly urban, light industrial, and heavy commercial facilities, which could present public safety and/or force protection and security concerns, as well as exacerbate existing traffic congestion near military access control points.

Current DoD-recommended zoning standards do not address the mass of structures, nor their proximity to installation boundaries. DoD standards only address vertical height (FAA Part 77 and Federal Aviation Regulation). This issue is addressed in AT-1 and LU-2.

Riverside County ALUCP does not fully identify aircraft safety zones for Runway 12-30.

LU-1

The 2014 ALUCP for March identifies Runway 12-30 as a 3,000-foot, B-1 small runway rated at 12,500 lbs. and primarily for small single- and twin-engine aircraft. The ALUCP also notes that the runway's 1,000-foot CZs do not extend off Air Force property. No aircraft APZs are identified or mapped for this runway in the ALUCP.

Compatibility Assessment

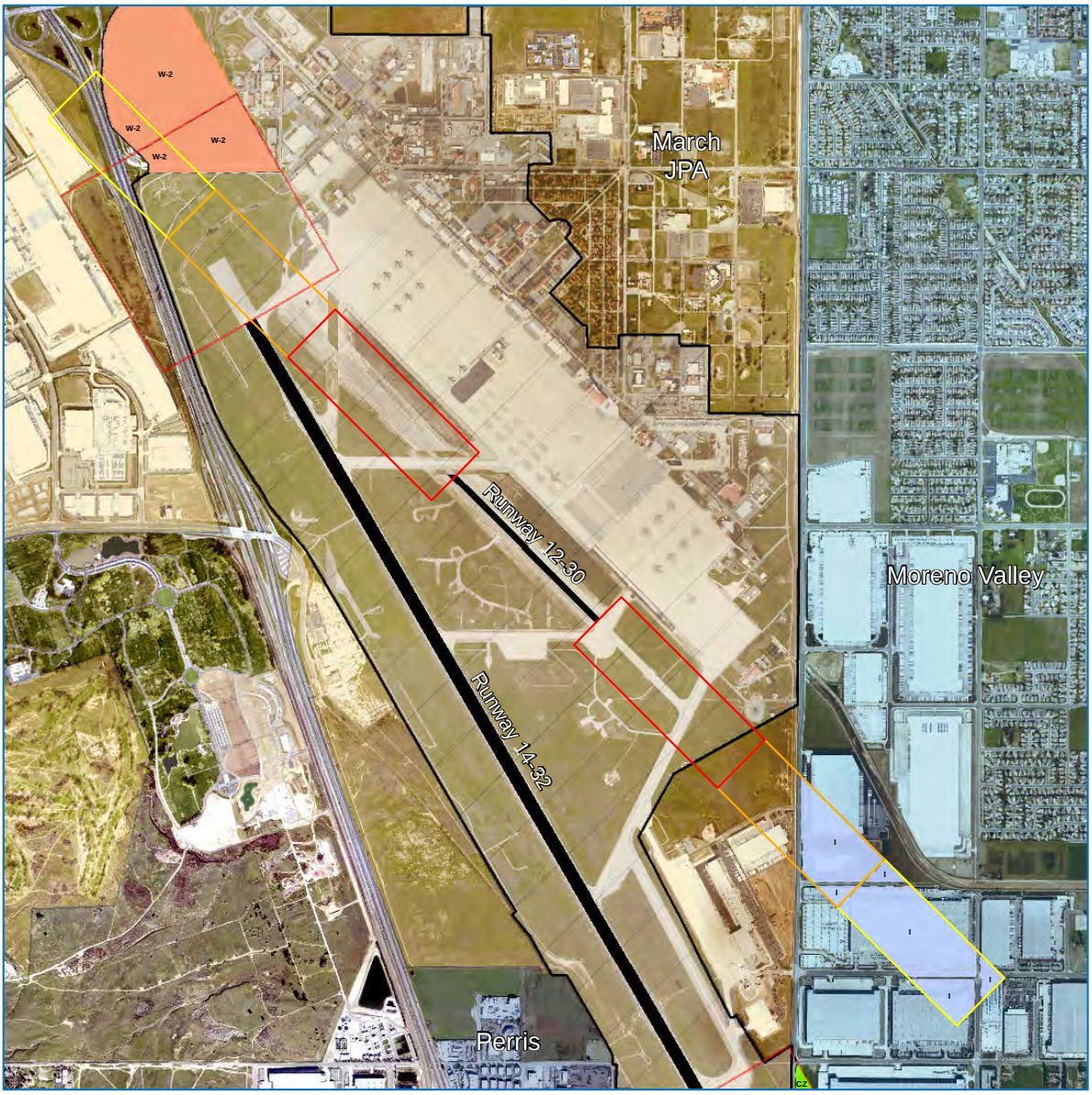
APZs are identified for Runway 12-30 in Figure 5.4, Runway 14 in Figure 5.5, and Runway 32 in Figure 5.6. There are two APZs that cover airspace outside the airfield installation boundary. On the north end of the runway as shown in Figure 5-5, APZ II overlays small areas of the City of Riverside, the City of Moreno Valley, March JPA, and the right of way for I-215. No specific compatibility assessment is provided by the 2018 AICUZ for this area. It should be identified as compatible with restrictions.

On the south end as shown in Figure 5-6, the CZ, APZs I and II overlay an area of the City of Perris – the 2018 AICUZ indicates developed areas here as "compatible with restrictions," referring to land use and FAR recommendations in Appendix A of the AICUZ, which are applied by the city. Areas within APZ I and APZ II in the City of Perris are predominantly zoned industrial.

Within APZs I and II, zoning is in alignment with 2018 AICUZ recommendations with appropriate development FARs established within respective municipal codes. As shown in Figure 5.5, the area within APZ I and II in Moreno Valley is zoned business park or industrial. The areas within APZ I in the City of Riverside and March JPA are controlled development areas. All areas are within the ALUCP airport zone and require ALUC review.

March ARB has targeted Runway 12-30 for capital improvements, including the potential extension of the runway to 5,000 feet.

Figure 5-4 Runway 12-30 Safety Zones



Legend

Moreno Valley Zoning Code
- Industrial (I)
- Open Space/Park (CZ)

Riverside Zoning Code
- Controlled Development Areas (W-2)

Airfield Safety Zones
- Clear Zone
- Accident Potential Zone I
- Accident Potential Zone II
- Runway
- March Air Reserve
- March Joint Powers

MARCH ARB COMPATIBLE USE STUDY

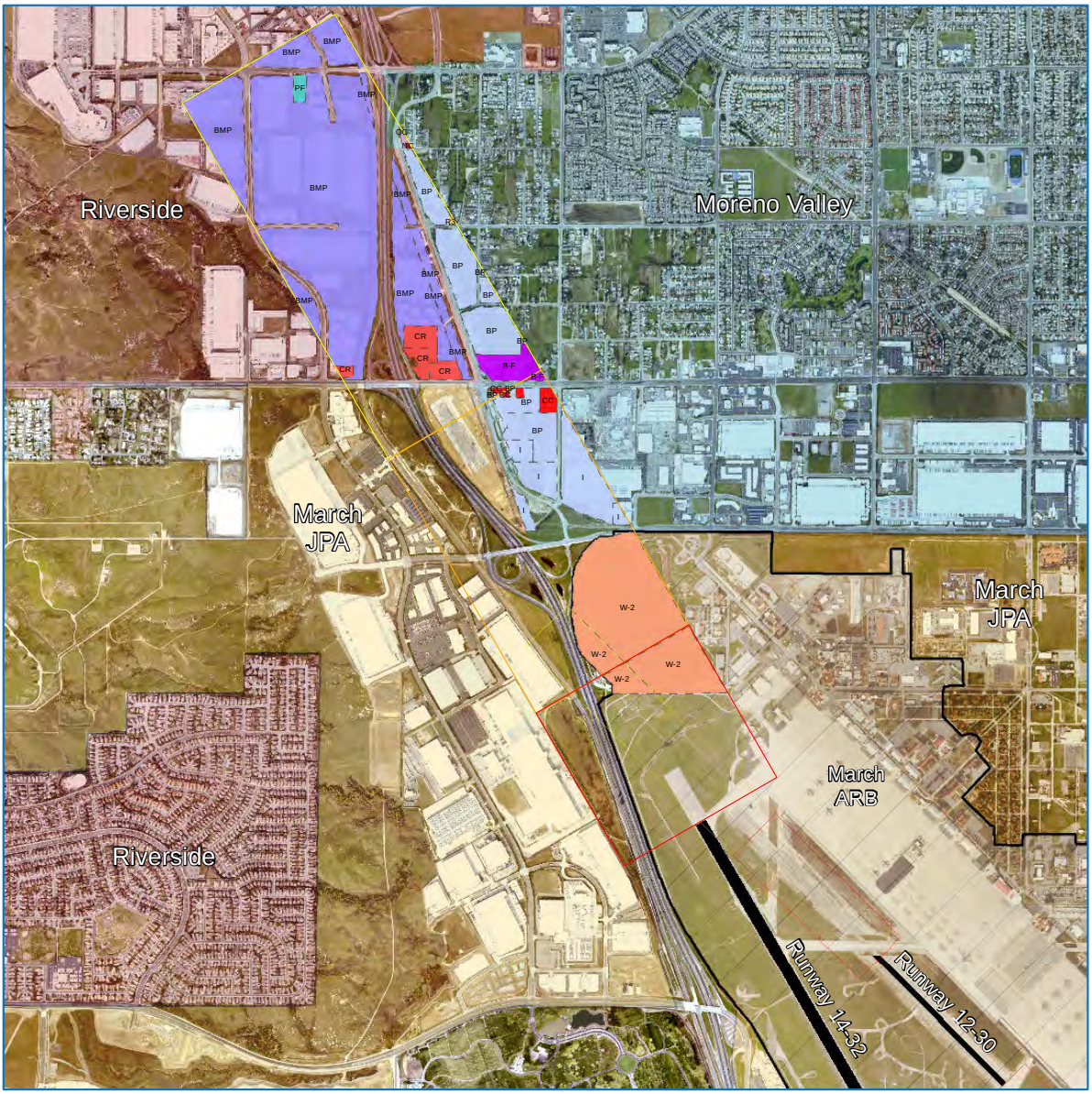
Source: March ARB 2020/2021

Matrix

0 ¼ ½ 1 Miles

Runway 12-30 Safety Zones

Figure 5-5 Runway 14 Safety Zones



Legend

Riverside City Zoning Code
- Business and Manufacturing Park (BMP)
- Commercial/Retail (CR)
- Public Facilities (PF)

Riverside County Zoning Code
- Controlled Development Areas (W-2)

Moreno Valley Zoning Code
- Commercial (CC/NC)
- Residential Agriculture (R3)
- Business Flex (B-F)
- Industrial/Business Park (I/BP)
- Office (OC)

Airfield Safety Zones
- Clear Zone
- Accident Potential Zone I
- Accident Potential Zone II

- March Joint Powers Authority
- March Air Reserve
- Runway

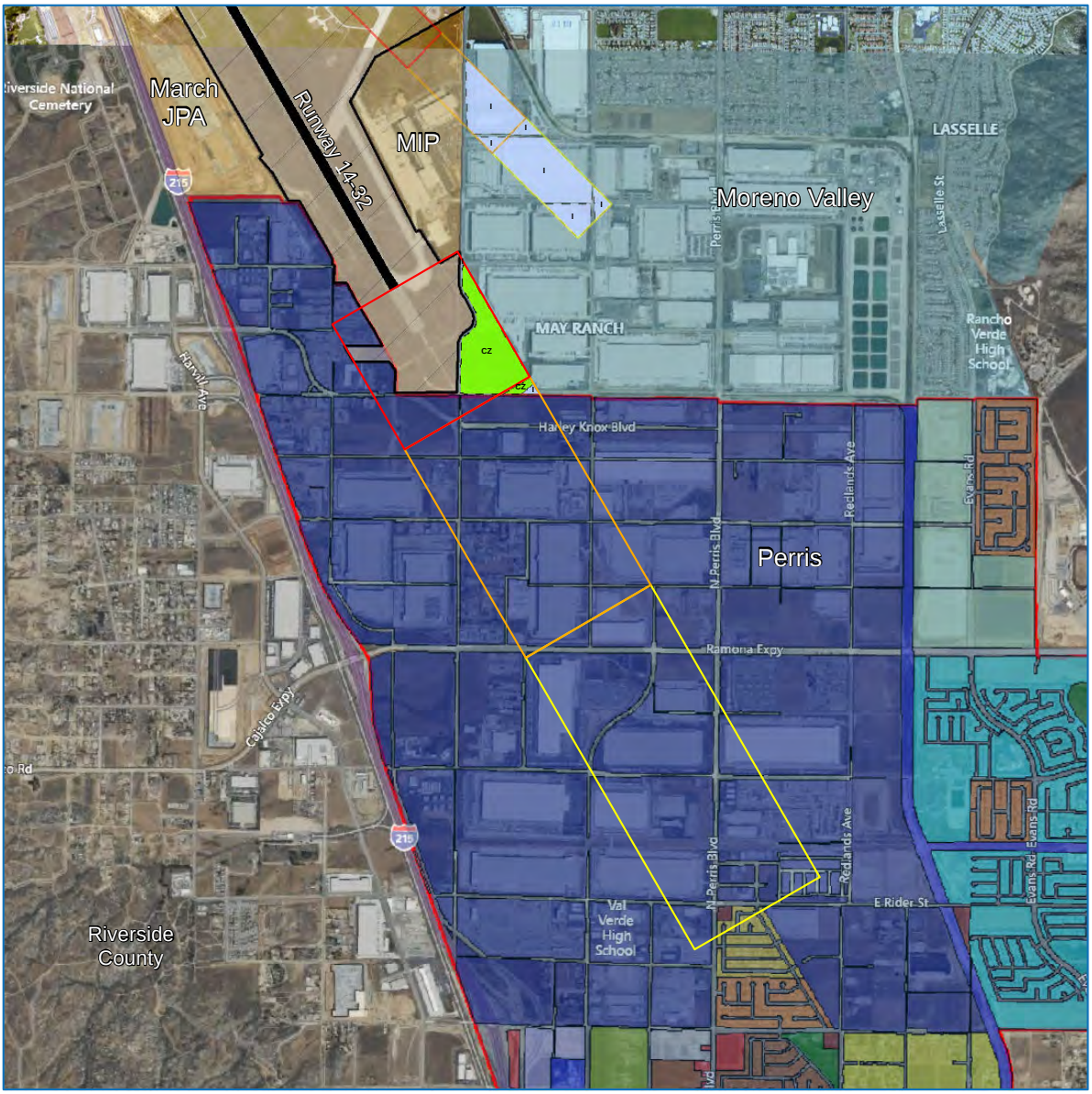
Source: March ARB 2020/2021

Matrix

0 ¼ ½ 1 Miles

Runway 14 Safety Zones

Figure 5-6 Runway 32 Safety Zones



Legend

Moreno Valley Zoning Code
- Industrial (I)
- Open Space/Park (CZ)

Airfield Safety Zones
- Clear Zone
- Accident Potential Zone I
- Accident Potential Zone II
- Runway
- March Air Reserve
- March Joint Powers Authority

Source: March ARB 2020/2021

0 ¼ ½ 1 Miles

Runway 32 Safety Zones

LU-2

Commercial and industrial land use inside the APZs I and II of Runway 14-32 and Runway 12-30 south is nearing complete build-out at a maximum lot coverage of 50%.

Heavy commercial and industrial development within the main runway APZs constitutes a potentially significant risk for structural impact from air mishaps occurring within the APZs. The standard probability of mishap, if one occurs, is 10% within APZ I is 10%; the probability of mishap within APZ II is 5.6%.

Compatibility Assessment

Land uses within the APZs for March's airfield are generally consistent with AICUZ recommendations, which principally include limited miscellaneous manufacturing for which the production process is not considered an additive risk due to production chemicals and/or fire and explosives hazards, wholesale trade, and warehouses. The predominant uses for industrial and commercial properties within the March APZs for Runway 14-32 are fulfillment centers, warehouses, and commercial distribution centers or logistics hubs. These facilities and operations generally involve loading and unloading of commercial freight trucks.

DoD AICUZ land use and FAR recommendations have remained virtually unchanged since the program was first established by the Air Force in 1972. The land use and FAR tables published in AICUZ studies are derived from the 1965 Standard Land Use Classification Manual.

Figure 5.7 shows building footprints for the currently developed areas within APZs I and II for March's main runway (Runway 14-32). The urban form within these zones north and south of the runway is predominantly large commercial warehouse/logistics distribution centers and include some of the largest structures in the world – with some buildings in excess of 1.5 million square feet of ground floor area. These structures are consistent with the AICUZ-recommended FAR of 0.28 in APZ I and 0.56 in APZ II for the "wholesale trade" sector. The 2018 AICUZ for March ARB and DoDI 4165.57 as issued in 2021 allow a maximum FAR of 1.0 in APZ I and 2.0 in APZ II for "warehousing and storage services".

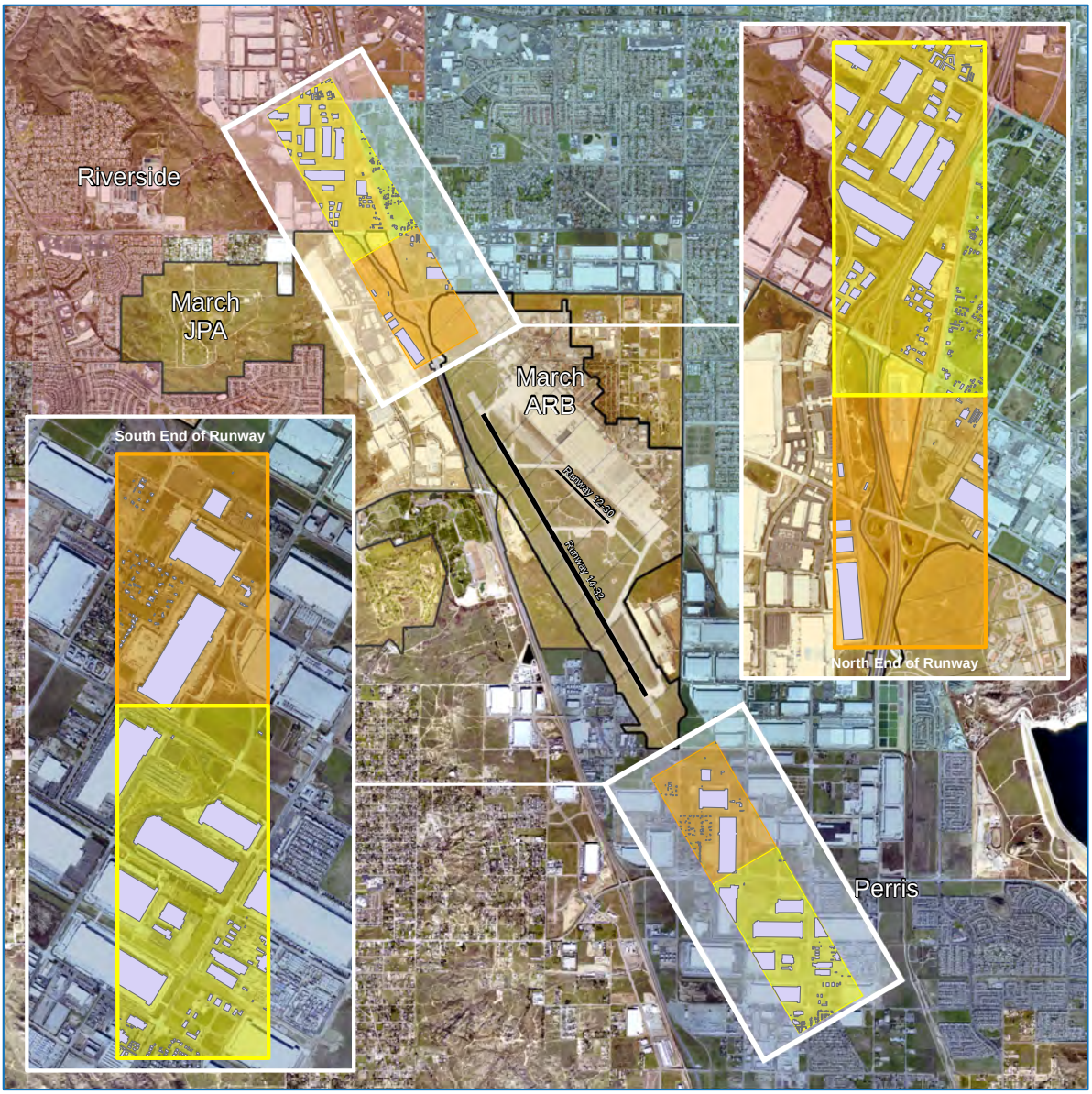
Existing commercial and industrial properties within APZ I and II appear to fall within the 2014 ALUCP open land requirement of 50% maximum lot coverage within the APZs (Table MA-2). This ALUCP requirement differs significantly from the recommended FARs for APZ I (0.28 FAR) and APZ II (0.56 FAR), per the AICUZ program. Spot checks of various warehouses and distribution centers within the APZs that were conducted using geospatial information systems identified various properties where the building footprint of a vertical structure was near or at 50% lot coverage.

Although this accident occurred outside the APZs, the 2020 aircraft mishap involving a South Dakota Air National Guard F-16 fighter jet that struck a warehouse in Riverside is a reminder of the risk of aircraft mishaps involving large, modern logistics facilities and structures. While parking, drainage, and other non-frangible site requirements, such as fire hydrants, power substations, street curbing, and stormwater components are not factors in FAR determination, these components of site development can pose an additive risk. Figure 5.4 demonstrates the scale of large logistics and distribution facilities within the APZs.

This project conducted a FAR Working Group on September 28, 2022 to address whether recommended FAR determination methodology should apply any 'single acre of the site' or 'any single acre of the facility' standard. This study recommends consideration of the 'any single acre of the site' methodology.

The areas identified as W-2 on the map in Figure 5.2 are compatible, based on design and intended use of application for development and should be reviewed for consistency with land use and FAR recommendations found in adopted municipal code and the ALUCP.

Figure 5-7 Existing Structures within Accident Potential Zones Runway 14-32



Legend

- Building Footprints
- Accident Potential Zone I
- Accident Potential Zone II
- Runway
- March Air Reserve Base
- March Joint Powers Authority

MARCH ARB COMPATIBLE USE STUDY

Source: March ARB 2020/2021

Matrix

0 ¼ ½ 1 Miles

Built Environment in Accident Potential Zones

There is concern regarding the inconsistent application of community intensity standards for developments within the March ARB runway safety zone.

LU-3

Floor-to-area ratio (FAR) recommendations for APZs are sometimes interpreted, or applied, differently by different jurisdictions during review of development applications. This can create challenges during ALUC review of project development applications within its purview.

Compatibility Assessment

The City of Moreno Valley and March JPA have adopted the AICUZ standards within their respective development codes, while other municipalities and the County of Riverside have adopted the March ARB ALUCP standards. The Riverside County ALUCP specifically addresses intensity in Table MA-2 of the March ARB/March Inland Port Airport Land Use Compatibility Plan chapter: "Non-residential uses are limited to 25 people per gross acre in APZ I and 50 people per acre in APZ II and elsewhere in Zone B1. Single-acre intensity limits are 100 people per acre throughout Zone B1." This varies somewhat from Appendix A of the 2018 March ARB AICUZ, which states:

> *Within each, uses exist where further evaluation may be needed in each category as to whether it is clearly compatible, normally compatible, or not compatible due to the variation of densities of people and structures. In order to assist air installations and local governments, general suggestions as to FARs are provided as a guide to density in some categories. In general, land use restrictions that limit occupants, including employees, of commercial, service, or industrial buildings or structures to 25 acre in APZ I and 50 acre in APZ II are considered to be low density (sic).*

The 2014 ALUCP intensity standards stated above are applied within the plan's defined Inner Approach/Departure Zone (B1), compatibility zone, and on each end of the runway that is analogous to the combined area of the AICUZ-defined APZ I and II. As such, the ALUCP applies a more liberal occupancy standard for APZ I than the AICUZ standard of no more than 25 persons per acre. The intensity standard for the B1 zone for March ARB ALUCP is no more than 100 people on any single acre and no more than 25 people, on average, in APZ I and 50 people, on average, in APZ II. This standard is universal for all non-residential uses.

Using the ALUCP standard for a hypothetical 217,800-square-foot facility on a 10-acre parcel within APZ I results in a maximum parcel occupancy of 250 people, on average, with no more than 100 people in any single acre of the facility (also 250 people) structure itself, or within an area of 43,560 square feet. This equates to a minimum area per occupant of 435.6 square feet within the structure itself. If this hypothetical case were moved into APZ II, then the maximum building occupancy changes to 500.

Another area of variance can occur with the interpretation of the AICUZ intensity standards. For some cases, the intensity recommendation of no more than 25 persons per acre for APZ I and 50 persons for APZ II is interpreted as applying to the entire parcel. In other cases, the standard is interpreted as applying only to occupancy rates within a structure's footprint. For example, with the first interpretation, a 5-acre facility on a 10-acre lot within APZ II would be allowed an

occupancy intensity of 500 persons, whereas in the second interpretation, the same facility would be limited to 250 persons. For APZ I, the allowable occupancy would be 250 and 125, respectively.

Appendix C of the 2014 ALUCP provides an alternative approach to evaluating concentrations of people occupying a structure linked to California Uniform Building Code (UBC) standards. This alternative sets maximum allowable building occupancy based on a formula using the total floor area of the structure divided by UBC standards for minimum square feet per occupant by type of building. The standard for warehouses is a minimum of 500 square feet per occupant. For the hypothetical case above with a 5-acre (217,800 square feet) facility on 10 acres, this calculates to a maximum occupancy of 435 people. Appendix C states the total parcel acreage should be divided by the building maximum occupancy to determine intensity for the property – in this case, 43.5 people per acre, which meets AICUZ recommendations for APZ II but not APZ I. However, Appendix C also asserts a rule of thumb discount factor to determine the expected occupancy based on historic survey data for any final intensity determination. Using this 50% methodology for the case above results in an expected occupancy of 217 people, or a intensity of 21.7 people per acre, which falls within the intensity threshold for APZ I.

It should be noted that ALUCP building intensity bonuses for risk reduction through a variety of design and construction techniques and materials are not authorized for Compatibility Zone B1. The 100-person maximum per any single acre discourages other facility uses with a lower minimum area per person for occupancy standards and establishes a minimum of 435 square feet per occupant within any single area of the structure. Table 5.3 below demonstrates this intensity variance.

Table 5.3 Variance in Intensity Standards for Aircraft Safety Zones

	AICUZ		ALUCP		UBC	
Safety Zone	People/AC	Max Occ	People/AC	Max Occ	People/AC	Max Occ
APZ I	25	125	25	250	21.7	217
APZ II	50	250	50	500	43.5	435
B1	n/a	n/a	100	500	n/a	435

Source: *Matrix Design Group, 2022*

Existing infrastructure and development within the CZs for March ARB runway creates a potential safety hazard.

LU-4

Private and commercial structures inside the southern CZ of Runway 14-32 conflict with DoD AICUZ guidance and Air Force recommendations for graded CZs. The presence of activities within the CZ presents public safety hazards and risks to flight crews.

Compatibility Assessment

DoD AICUZ guidance states "no structures (except airfield lighting and navigational aids necessary for the safe operation of the airfield when there are no other siting options), buildings, or above-ground utility and communications lines should normally be located in CZ areas on or off the air installation." Air Force Instruction 32-1015 Integrated Installation Planning (AFI 32-1015) requires Air Force air installations to acquire real property interest through fee simple or through appropriate restrictive easements relative to all land within CZs. The policy requires the Air Force to fund the acquisition of real property in CZs. This policy is nested under the Air Force's Mission Sustainment Policy Directive 90-20 Mission Sustainment (AFI 90-20) to preserve and protect military readiness by mitigating or preventing mission sustainment hazards. The AICUZ program is one form of mitigation. The execution of this policy at other Air Force installations has focused on fee simple acquisition, demolition of existing non-airport systems structures, surface clear grading, and the installation of security fencing.

The 2017 March ARB/IPA APS specifically did not address CZ hazards or obstructions, stating that, "the USAF either owns outright or holds development easements on all of the south CZ to prevent incompatible growth in the area."

The March ARB ALUCP prohibits "all structures except ones with location set by aeronautical function" within Runway Protection Zones, i.e., March runway CZs, and within building restriction lines. The ALUCP also specifically prohibits three other activities:

- Manufacture or storage of any hazardous materials
- Construction of critical community infrastructure, including power substations
- Reconstruction of existing structures

A major concern with both CZs for Runway 14-32 is with existing federal, state, and local transportation infrastructure (streets and highways) located within the CZs (Figure 5-8 & 5-9). These public rights-of-way pre-exist the establishment of AICUZ standards and planning. I-215 and the Cactus Avenue interchange traverse the north CZ. Harley Knox Boulevard, Heacock Street, and North Webster Avenue traverse the south CZ. Additionally, there are two commercial truck and container storage yards, one heavy equipment salvage yard, a flood channel, and two residences within this CZ.

Figure 5-8 Runway 14-32 North Clear Zone

Legend

- Riverside County Metrolink Railway
- Interstate 215 Roadway Infrastructure
- Clear Zone
- March Air Reserve Base

Source: March ARB 2020/2021

0 250 500 1,000 Feet

Runway 14-32 North Clear Zone

Figure 5-9 Runway 14-32 South Clear Zone

Legend

- Streets / Roads
- Proposd Heacock St. Connector
- Clear Zone
- March Air Reserve Base

Source: March ARB 2020/2021

0 250 500 1,000 Feet

Runway 14-32 South Clear Zone

LU-5

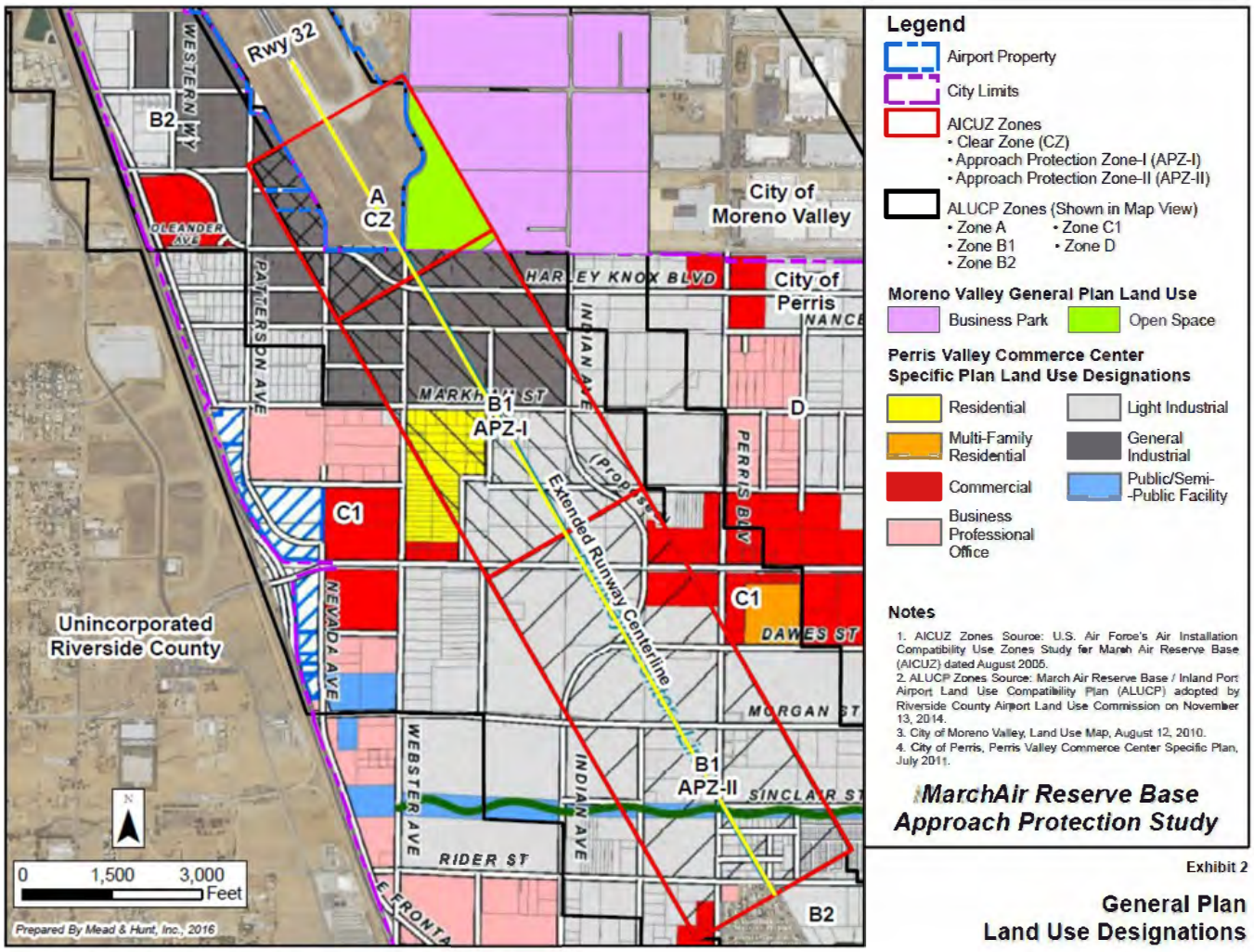
The location of existing residential areas within the March ARB airfield runway APZ creates a potential safety hazard.

The presence of an existing residential neighborhood at Ramona Expressway and Webster Avenue inside the southern APZ-I of Runway 14-32 conflicts with DoD AICUZ and Air Force recommendations for APZs. DoD recommends no residential land use in APZ I and no more than two dwelling units per acre within APZ II.

Compatibility Assessment

The 2018 AICUZ identifies 60 acres of incompatible use within the APZs, including 41 acres of residential use in APZ I and 19 acres in APZ II. The March ARB ALUCP states that no new dwellings are permitted within ALUCP compatibility zone B1, which, as previously stated, is analogous to a combined APZ I and II. However, residential use exists in APZ I in the residential neighborhood at Ramona Expressway and Webster Avenue, which appears to be grandfathered use. The future land use plan (Perris Valley Commerce Center Specific Plan12) identifies this same area for future industrial land use. This neighborhood was not identified in the 2017 March ARB APS as a priority for Riverside County EDA acquisition. Residential land use in APZ II is not within AICUZ-recommended density standards of no more than two dwelling units per acre.

Figure 5-10 Exhibit 2 – 2017 March ARB Approach Protection Study



Source: *March ARB/IPA, Riverside County Economic Development Agency, 2017*

Concern with altimeter inaccuracy on approach/departure due to incompatible development.

LU-6

Air Force pilots report "bouncing readouts" on final approach due the significant size and placement of commercial buildings beneath the flight path within APZs I and II. This can affect aircraft flight controls and creates additional pilot demand to ensure flight controls are stable during landings.

Compatibility Assessment

Air Force pilots interviewed for this study reported that there is significant altimeter "bounce" on final approach to Runway 14-32. This bounce occurs due to the rapid fluctuations in altitude readings associated with the variable heights of large warehouses and distribution centers beneath the flight path (These buildings are identified in Figure 5.7.) Radio altimeters on large military aircraft such as the C-17s and KC-135s stationed at March, and many commercial models, feed into the automated systems that can act without input from pilots. This creates a higher aircrew management load during landings at the airfield as the potential for correction of flight controls may occur. This altimeter bounce management load may be exacerbated by weather conditions such as rain and high winds, as well as by dust and nighttime landing conditions. The ALUCP limits construction of new buildings to one story in APZ I and two stories in APZ II.

Light and Glare (LG)

This compatibility factor refers to man-made lighting (streetlights, airfield lighting, building lights) and glare (direct or reflected light) that disrupts vision. Light sources from commercial, industrial, recreational, and residential uses can cause glint and glare during daylight and excessive illumination and glare at night, impacting the use of military night vision devices and aircraft operations. Conversely, high-intensity lights in military areas, such as airfield lighting, may have a negative impact on adjacent communities.

Key Terms

Glare. Glare is the presence of excessively bright natural light, such as direct or reflected sunlight, and some artificial light, such as from sport field and stadium lighting and solar panel installations. Glare reduces visibility and can impair vision when very intense.

Light pollution. Light pollution is the artificial brightening of the sky that results from development, including from streetlights and other man-made light sources.

Light Pollution Map Info. Light pollution map info is a computer application that projects light pollution data on top of other data layers, such as roadway maps.

Light Radiance. Light radiance measured in radiance units (W/cm2 * sr) is the radiant flux emitted, reflected, transmitted, or received by a surface, per unit solid angle, per unit projected area.

Solar Energy Systems. As defined by the FAA, solar energy systems are solar-powered, electrical power generation systems that include PV systems, solar hot water (SHW) systems, and concentrated solar power (CSP).

Light Trespass. Light trespass is light that encroaches onto neighboring properties.

Visible Imaging Infrared Radiometer Suite. Visible Imaging Infrared Radiometer Suites (VIIRS) collect visible and infrared imagery via satellite. The data is used to support land-, ocean-, and cloud-centric science. Improving scientists' understanding of climate change is one domain where VIIRS data is used. The data is also used to project light pollution around the world using the "Light Pollution Map Info"
computer application.

Technical Background

Under dark sky conditions, the use of night vision goggles (NVG) allows military personnel to view objects up to 984 feet (300 meters) away; however, nearby sources of light can decrease NVG effectiveness to 164 feet (50 meters) or less, depending on the amount of light and how close it is. Off-installation lighting, such as streetlights and other elevated lights, produces a halo effect around objects that further reduces visibility and resolution for air and ground personnel. The amount of ambient light experienced on the ground is a function of several variables:

- Intensity of nearby light sources (up to 20 miles away)
- Distance from the light sources
- Light source spectra
- Cloud density
- Cloud height
- Relative humidity

The use of VIIRS data allows the quantification of light pollution in any location around the world. The VIIRS data shows the light pollution as measured in radiance units (W/cm2 * sr). The larger the number, the greater the light pollution. As expected, greater amounts of light pollution are associated with cities and other developed areas. The application of VIIRS data in developing light pollution maps can provide a useful reference tool for understanding the location and extent of light pollution in a particular region and the potential impacts on military installations and communities.

In general, the following trends have been demonstrated:

- The denser the urban development, the greater the potential for light trespass.
- The closer a development is to an installation, the greater the potential for light trespass.
- The United States Army Corps of Engineers has developed studies that indicate light pollution has an impact on nighttime military training activities in locations upwards of 10 miles away from an installation.

LG-1

Increased glare from residential and commercial solar array installations may pose a potential hazard to safe flight operations and ATC operations at March ARB.

The installation of multiple rooftop solar energy systems on residential homes and commercial facilities around March ARB may increase light reflection and glare/glint, which may have ocular impacts on flight crews or air traffic control tower personnel operating on or near the airfield.

Compatibility Assessment

The FAA retains review authority for all on-airport solar projects but has delegated initial review to local airport authorities. The FAA maintains an interest in off-airport projects. Per the **2018 FAA Technical Guidance for Evaluating Solar Technologies on Airports**, local governments, solar developers, and other stakeholders in the vicinity of an airport have a responsibility to inform the FAA about proposed solar projects so that the agency can determine if the project, especially if large, presents any safety or navigational problems. However, there are no defined thresholds for project size, type, or distance from the airport available that automatically trigger FAA airspace review. Proximity to the airport and CSP technology are two indicators of likely FAA interest in a solar project.

Numerous independent studies indicate that PV solar systems reflect less than 2% to 3% of incoming light and that the potential for hazardous glare, or flash blindness, is similar to, or less than, the potential for hazardous glare from light reflected off smooth water surfaces. In its 2021 **Review of Solar Energy System Projects on Federally-Obligated Airports**, which supersedes the 2013 FAA interim policy, the FAA concluded:

> *...in most cases, the glint and glare from solar energy systems to pilots on final approach is similar to glint and glare pilots routinely experience from water bodies, glass-facade buildings, parking lots, and similar features. However, in this same ruling, the FAA also acknowledges the potential for glint and glare from solar energy systems to result in an ocular impact to airport traffic control tower personnel working in the tower and compromise the safety of the air transportation system.*

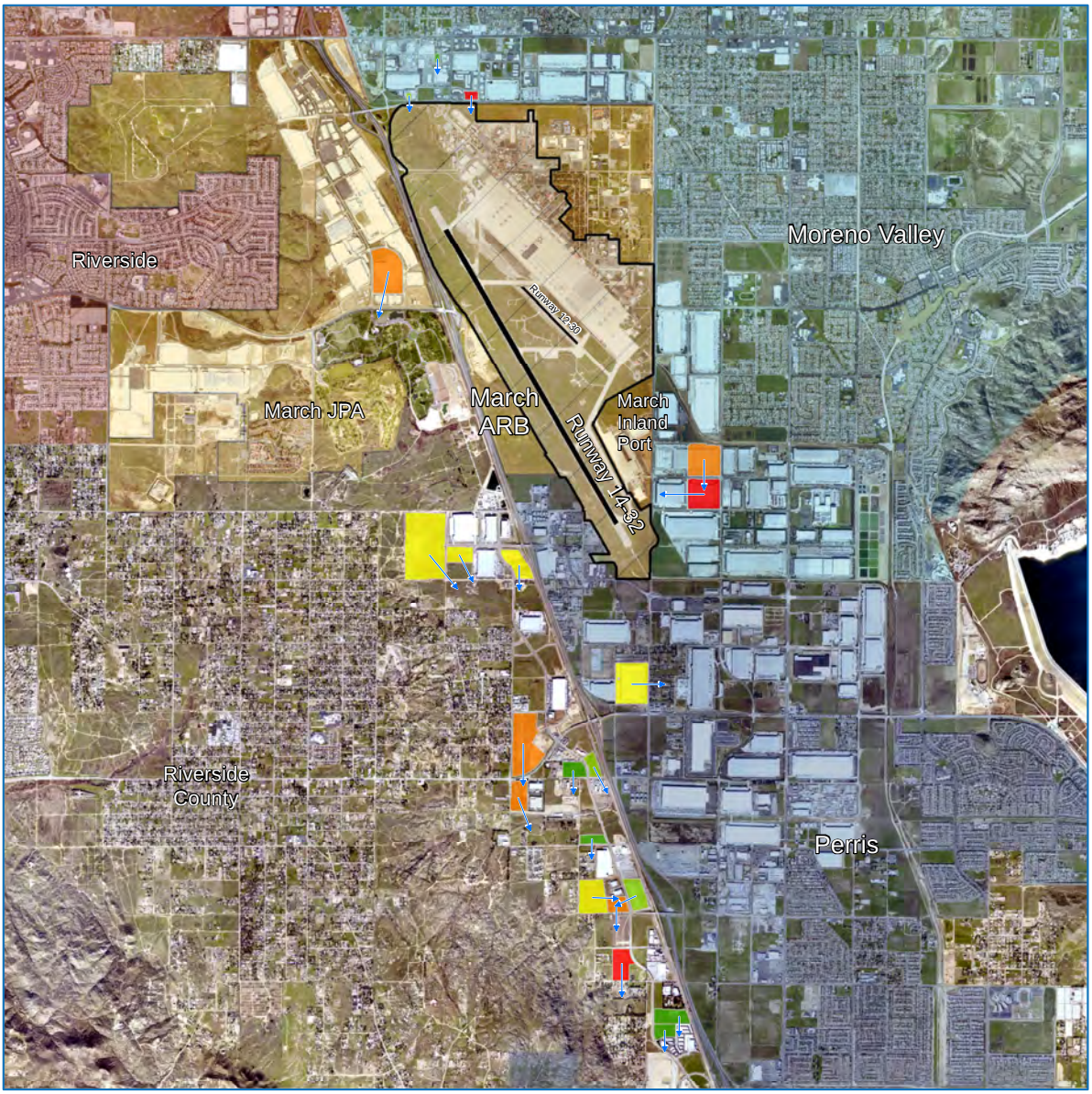
This 2021 ruling shifted the emphasis of the FAA's concern for glint and glare from aircrew to tower personnel, thus shifting agency interest in reviewing solar energy systems development applications from potential impacts on final approach to an airport to that of potential impact to airports' traffic control towers. Airport sponsors are no longer required to conduct and submit an ocular analysis of potential impacts, but instead are required to simply demonstrate compliance with the policy on submittal of a Notice of Proposed Construction or Alteration Form 7460-1. In this ruling, the FAA also rescinded mandated use of the Sandia National Laboratories Solar Glare Hazard Analysis Tool (SGHAT) or comparable commercial glint/glare analysis tools if there is no compelling requirement by the airport sponsor to do so. Compelling requirements could include a potential solar project obscured by another existing structure. This places any subsequent liability on the airport sponsor if ocular impacts are discovered after construction. This policy ruling is not applicable to solar energy systems not located on airport property.

Source: *Wikimedia/Christoffer Riemer, 2009.*

The 2021 FAA ruling essentially places both development vigilance and the burden of proof on the airport sponsor to determine if a proposed solar energy systems project creates the potential for ocular impacts to tower personnel, specifically, and to flight crews during final approach. Any development application for PV or SHW utility-scale, ground-mounted or industrial building rooftop installation projects should be required to submit an ocular impact assessment for ALUC review. Additionally, jurisdictions could consider the adoption of liability statements by developers to establish clear liability for any post-construction ocular impacts affecting the March airfield ATC tower or final approaches to its runways.

Figure 5-11 shows the aggregated rooftop PV projects submitted for ALUC review from 2016 to 2022. This data has been assembled for the ALUC based on independent projects and represents the total amount of glare minutes. It should be noted that the total amount of glare potentially impacting operations may be greater, as some property owners installed solar prior to the time that ALUC began to require glare studies.

Figure 5-11 Riverside County ALUC Rooftop PV Project Cases



Legend

Glare (Total)*

- 38,047 - 61,647
- 21,150 - 38,046
- 7,633 - 21,149
- 2,299 - 7,632
- 265 - 2,298
- Solar Panel Orientation

- March Air Reserve
- March Joint Powers Authority
- Moreno Valley
- Perris
- Riverside

*The glare value represents the total number of minutes of glare in any given year.

MARCH ARB COMPATIBLE USE STUDY

Source: March ARB 2020/2021. Riverside County, 2022.

Matrix

0 ¼ ½ 1 Miles

Riverside County ALUC Rooftop PV Cases

The cumulative impacts of ambient lighting due to increased development beyond ALUC authority is a potential concern.

LG-2

Operational flying units at March ARB routinely conduct night training operations. March ARB has identified concerns with ambient artificial nighttime outdoor lighting around the base that is affecting the unit's ability to meet military readiness training requirements for aircrew proficiency. Over the last 10 to 15 years, development has increased the cumulative effects of artificial nighttime outdoor lighting.

Compatibility Assessment

Light pollution, which can be defined as the upward and outward distribution of light directly from fixtures, such as up-lighting without terminus on buildings, or as reflected off the ground or other surfaces, can interfere with military mission activities such as nighttime training activities and can temporarily impair pilot's vision, causing pilot confusion regarding night vision instrumentation or equipment. Unshielded lighting systems, lighting systems that are not planned with minimizing sky glow, or excess or wasteful light emission and (Light Emitting Diode) LED billboards can increase the amount of ambient light in the sky. This increase can degrade the natural environment for nighttime military operations.

March ARB conducts nighttime flying operations to ensure pilots have the necessary training to effectively operate in real-world mission environments. In many cases, these training operations require the use of NVG that allows pilots to see in low light conditions typically found in many locations around the world. March ARB personnel have indicated that an increase in the ambient light conditions around the installation has made it more difficult to conduct nighttime training with NVGs. In some cases, when possible, this may require aircraft to fly to other locations where dark sky conditions provide a better training environment. Flying to other locations will increase costs and result in lost training time. In addition, alternate locations may not always be available to support the required training.

Figure 5-11 provides an overview of light pollution around March ARB and the surrounding region. The map shows nighttime light pollution as measured in radiance units. The larger the number, the greater the light pollution.

The maps were created using the "Light Pollution Map Info" computer application. The application projects VIIRS data on top of other data layers such as roadway maps. Data collected from light/darkness measurements collected by application users can also be projected. Areas colored red and yellow have greater light pollution, whereas gray and blue areas have lower levels of light pollution. As expected, greater amounts of light pollution are associated with cities and other developed areas. The integration of lighting and other land use data can be critical in informing discussions and decisions regarding compatibility issues related to light pollution and have informed the assessments here.

The military does not have lighting standards that apply to off-base locations; however, UFC 3-530-01, Interior and Exterior Lighting Systems and Controls applies to locations on the installation. The guidance requires the use of energy efficient lighting and systems/fixtures that reduce ambient light and associated light pollution:

- Avoid creating direct glare from light fixtures.
- Use shielded light sources at the lowest wattage possible.
- Use fully shielded light fixtures to eliminate direct light above the horizontal plane.

The UFC also establishes lighting zones that define acceptable light levels for specific areas on the installation and operational activities. March ARB must comply with the DoD requirements.

Riverside County has general lighting standards in Ordinance 348 Land Use Planning and Zoning that are intended to reduce light trespass onto adjacent properties and prevent glare or direct illumination on adjoining properties. In some cases, such as in the Citrus/Vineyard (C/V) Zone, nonessential outdoor lighting must be turned off during non-business hours. County Ordinance 655, Regulating Light Pollution, provides more specific requirements for use of light fixtures and to reduce the ambient light from outdoor lighting in specific locations. The provisions of this ordinance apply to locations within 15 miles (Zone A) and 45 miles (Zone B) of the Palomar Observatory. Requirements include the use of shielded light fixtures and low-pressure sodium lighting. County Ordinance 915, Regulating Outdoor Lighting, applies to all unincorporated areas of the County. The ordinance requires adequately shielded light fixtures to prevent light trespass from properties.

The City of Riverside Zoning Ordinance, Chapter 19.556, Outdoor Lighting, establishes requirements that ensure lighting is adequate for safety and security while preserving dark sky condition by mitigating or preventing glare and light trespass. The ordinance establishes light zones zero through three where lighting is managed based on allowable land uses in each zone. Specific requirements, such as shielded fixtures, apply or don't apply to the zones based on the desire to reduce light pollution.

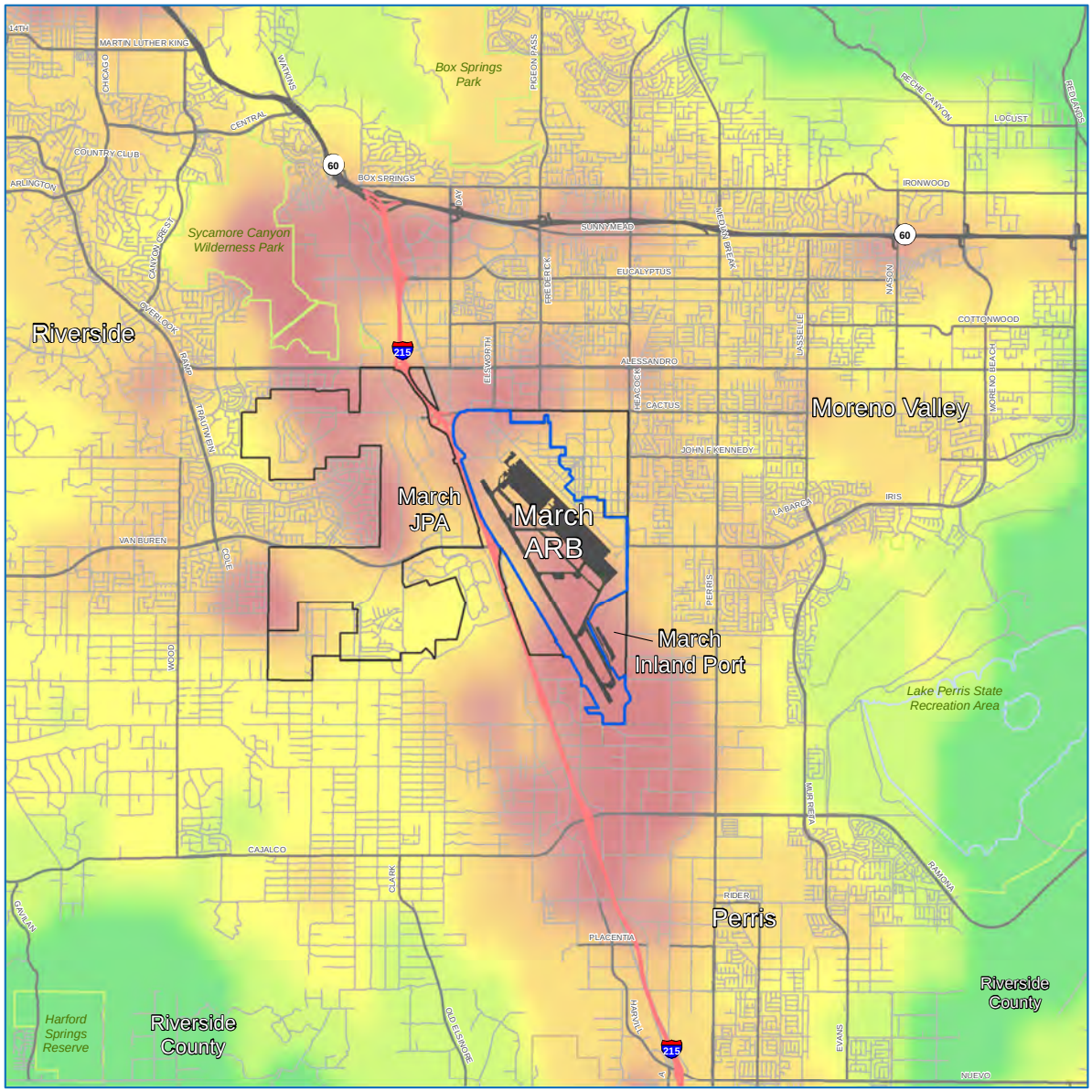
The City of Perris has outdoor lighting regulations identified in its zoning ordinance, Title 19, City of Perris Development Code. The nature and extent of the requirements are based on the specific land uses within the city. For example, commercial areas must ensure lighting is directed away from adjoining properties, while residential zones require fully shielded light fixtures. The ordinance also establishes an AOZ that applies to areas around March ARB and precludes the use of lighting that creates glare or is distracting to aircraft operating in the area.

The City of Moreno Valley has lighting standards in its zoning code, Title 9 Planning and Zoning, Chapter 9.08 General Development Standards. The regulation is intended to reduce outdoor light pollution, conserve energy, and maintain safety/security in all lighting applications across the city. The regulation requires use of shielded light fixtures and establishes maximum light wattage and other energy/dark sky provisions across all land uses and zoning areas. Lighting curfews that reduce light usage are also applied in nonresidential areas.

The March JPA development code has lighting standards identified in Section 9.08.100, Lighting. The code requires all nonresidential outdoor lighting to be shielded and directed away from residential properties. It also establishes a one-foot-candle illumination minimum for parking lot lighting/exterior door lighting requirement per square foot. Additional minor requirements are identified in the code related to outdoor lighting.

Beyond the outdoor lighting requirements identified here, it is worth noting that the International Dark-Sky Association (IDA) is an organization dedicated to the education and promotion of dark skies and dark sky preservation. The IDA has worked with communities around the world to develop methods for reducing light pollution. IDA outdoor lighting recommendations and approved light fixtures assist in reducing light pollution in communities where they have been adopted. In addition to supporting dark skies, reduced energy costs is also a benefit typically seen as a result of implementing measures to reduce ambient light that provides no benefit.

Figure 5-12 Nighttime Light Pollution Near March ARB



Legend

Light Pollution Radiance 10^{-9} W / cm² * sr

- < 0.25
- 0.25 - 0.40
- 0.41 - 1.00
- 1.01 - 3.00
- 3.01 - 6.00
- 6.01 - 20.0
- 20.1 - 40.0
- > 40.0

- March Air Reserve
- March Joint Powers
- City

- Interstate
- Highway/Expressway
- Major Road
- Local Road
- Airfield Surfaces
- Major Park
- Waterbody

Source: Earth Observation Group, NOAA National Geophysical Data Center, VIIRS, 2021.

Matrix

0 ½ 1 2 Miles

Nighttime Light Pollution Near March ARB

Roadway Capacity (RC)

Roadway capacity refers to the adequacy of existing freeways, highways, arterials, and local roads in providing sufficient mobility, connectivity, and access to military installations and points of interest in surrounding communities.

As urban development expands, roads and streets once used primarily to provide access for agricultural, commercial, or residential use and limited local traffic may begin to function as urban arterials. These once low-traffic routes often become the main transportation corridors for all types of traffic – from residential to commercial trucking – and can assist or impede access to military installations. As transportation systems grow and provide more capacity, these facilities may induce and encourage more growth, densification, and intensity of use.

Key Terms

Access Control Point (ACP)/Entry Control Point (ECP). Access control/entry control points, sometimes referred to as military gates, are an evolution of military base gates as these are specifically designed to meet DoD force protection requirements and must provide for full vehicle inspection for all vehicles entering a military installation during periods of heightened threat alerts.

Entry Control Facility (ECF). Entry control facilities include ACP/ECPs as well as visitor centers and vehicle parking used to process entry authorization and badging for installation visitors. ECFs also often have more entry checkpoints and more security infrastructure, such as improved anti-vehicle access and all-weather vehicle inspection facilities, than basic access/ECPs and can require significant area to accommodate all design and facility requirements.

Serpentine. Serpentines are traffic lanes designed to eliminate straight-line entry through an ECP to reduce the risk of vehicle-borne improvised explosive attacks. Additionally, serpentine lanes provide additional area to absorb traffic queueing and to separate vehicles by type at the ECP.

Military Surface Deployment and Distribution Command Transportation Engineering Agency (SDDCTEA). SDDCTEA is an Army agency charged with providing traffic studies and ECP design recommendations for military installations throughout the DoD.

Access Control Point/Entry Control Facility (ACP/ECF) Studies. These are studies conducted by SDDCTEA to assess the four priorities of an ACP or ECF consisting of:

- Security and functional requirements
- Safety (guards and motorists)
- Traffic flow and congestion
- Aesthetics

There is concern that traffic queueing to enter March ARB impedes the flow of traffic along Cactus Avenue.

RC-1

Concern was noted specific to long lines of traffic queueing to enter through the main ACP for March ARB, which is accessed directly from Cactus Avenue. The location of the ACP, and its current design may impede the free flow of local traffic along Cactus Avenue.

Compatibility Assessment

Traffic queueing along Cactus Avenue at the main March ACP/ECF is a local concern. This ACP is also the base ECF. The existing ECF was constructed after designation of March as an ARB, and transfer of Air Force real property to the March JPA. Urban growth over the last 15 years has likely exacerbated the queueing at this ECF as there is now significant commercial truck traffic along this corridor due to development of warehouses and distribution centers along Cactus Avenue.

Proposals to alleviate this issue include moving the main ACP/ECF from Cactus Avenue to Riverside Drive. As discussed in the key terms above, current DoD force protection requirements could require significant area – as much as 15 acres - to accommodate full ECF specifications. There are two challenges for this proposal. First is the requisite military construction funding required to construct an ECF, and second, is the acquisition of property through fee simple or long-term lease necessary to support construction of an ECF on Riverside Drive. Due to DoD military construction (MILCON) programming requirements and funding priority decisions, this is likely a long-term, 7- to 10-year issue requiring considerable collaboration between March ARB, the March JPA, and the City of Moreno Valley.

Safety (SA)

Safety zones are areas in which land uses that concentrate large numbers of people should be restricted due to higher (than normal) risks to public safety. Activities that can create such a risk, and that are considered when defining safety zones, include aircraft operations and live-fire weapon ranges.

Military installations often engage in activities or contain facilities that, due to public safety concerns, require special consideration by local jurisdictions when evaluating compatibility. It is important to establish compatible land use policies near military airfields and live-fire weapon ranges to minimize risk from potential accidents.

Key Terms

Air Operations Area (AOA). The AOA is an area used or intended to be used for landing, takeoff, or surface maneuvering of aircraft, including the runway and associated paved areas.

Accident Potential Zone I. The APZ I begins at the end of each CZ. This area has a lower potential for aircraft mishaps in comparison to the CZ and, therefore, less prohibitive development restrictions are recommended. Residential and other uses that congregate people are still not recommended.

Accident Potential Zone II. The APZ II begins at the end of each APZ I. This APZ can also be curved, as flight patterns are a consideration in its design. Again, the potential for aircraft mishaps in this area is lower in comparison to the CZ and to APZ I, with some additional development types allowed.

Bird/Wildlife Aircraft Strike Hazard (BASH). Bird/Wildlife Aircraft Strike Hazard refers to the likely occurrence of a collision between an animal (usually a bird) and an aircraft.

BASH Relevancy Area. The BASH Relevancy Area is a five-mile area radiating outward from the AOA. The FAA has defined this as an area where BASH incidents are likely to occur due to the types of flying operations near the airfield; such operations are typically at slower speeds and lower altitudes that have a higher risk of strikes.

Clear Zone. The CZ is the area with the highest statistical potential of an aircraft mishap. As the name implies, the DoD recommends that this area be kept clear of all development or structures.

Technical Background

Safety zones are areas in which development should be more restrictive in terms of use and concentrations of people due to the higher risks to public safety. The DoD has designated Safety Zones around military airfields comprising the CZ, APZ I, and APZ II that extend out from each end of a runway. Development is a concern in these areas because this is statistically where aircraft accidents have occurred in the past around military installations due to aircraft flying at lower speeds and altitudes, including during landing and takeoff operations. The risk to people on the ground in the event of an aircraft accident is small; however, the consequences associated with these incidents are high. Because of this potential impact, the Air Force has identified recommended land uses within airfield safety zones. The land uses are incorporated in AFI 32-7063, AICUZ Program. The land uses that are evaluated for compatibility in the AFI are based on the national Standard Land Use Coding Manual (SLUCM) developed by U.S. Department of Transportation (DoT) in 1977.

Because the CZ is the area of highest probability where an accident is likely to occur, only open space and agricultural uses (without structures) are recommended within the CZ. Due to the potential hazard to the public, an installation may sometimes either acquire property within the CZ or purchase avigation easements on private property within the CZ to ensure the CZ is free from development. Both APZ I and APZ II, located just at the ends of the CZ, have a lower safety risk potential due to their proximity to the runway. Though still considered a risk, land uses with restrictions are recommended in the APZs to protect the public safety.

BASH is another safety concern on and around military and civilian airfields. The BASH prevention program was implemented by the DoD to address the reduction of wildlife hazards through proactive mitigation of resident bird and

wildlife species and proximity to migratory routes. Both regular and seasonal bird movements increase the risk of potential hazards, especially in the months of April and October. The Air Force BASH Team, Installation Natural Resources Manager, and Installation Pest Manager assists in bird hazard reduction Air Force-wide. Wildlife entering a base and causing issues with regular activities is manageable with planning and implementation of proper mitigation measures. The BASH Team is comprised of aircraft safety personnel, airfield management, and a BASH program manager who are trained in bird control and have experience in wildlife ecology, land management, and flight operations. The team also has current information on authorized control equipment and techniques and works within the wildlife permitting authority working closely with Fish and Wildlife agencies. Air Force Instruction 91-212, BASH Management Program, outlines the requirements for installation BASH plans.

The FAA has also developed guidance for managing bird-attractant uses around airports, including military airfields. This guidance recommends the establishment of a BASH Relevancy Area that is a five-mile radius around the entire perimeter of an airport's AOA. Land uses that should not be located within the BASH Relevancy Area include the following:

- Waste disposal operations
- Wastewater treatment facilities
- Transfer stations
- Landfills
- Golf courses
- Wetlands
- Storm water ponds

Over the past 20 years, more than 69,000 wildlife aircraft strikes have occurred with USAF aircraft and have resulted in the deaths of more than 20 aviators, the destruction of nearly a dozen aircraft, and more than $400 million worth of equipment damage (not including the cost of the destroyed aircraft). Air Force INRMP consider wetland implications to BASH management programs.

Increased development encouraging wildlife to utilize March ARB airfield as habitat.

SA-1

Increased development in the direct vicinity of March ARB, along with ponding stormwater on the airfield, has the potential to encourage of movement of birds and wildlife to the airfield, causing increased safety concerns for airfield management and pilots. The abundance of ground squirrels and stray animals increases the chances of large predators moving into the airfield environment in search of food and water. This also creates the increased potential for FOD to aircraft, and damage to critical systems on the airfield, due to animals potentially chewing wires.

Compatibility Assessment

As the area immediately adjacent to March ARB, as well as the larger region, have continued to develop, there is less natural habitat in the communities for birds and other wildlife to live. Urban development in the vicinity of March ARB includes some of the largest warehouses in the world. While the development is generally consistent with DoD land use recommendations, it can cause any wildlife living in previously fragmented habitat to look for locations of refuge such as the large open space on March. The open space wildlife refugia provided by March ARB also increases the installations federal and state species and habitat protection requirements.

As the increased development adds more impervious surfaces, stormwater runoff can also increase and flow to lower elevations where it will pond. Because the March ARB airfield has small areas of open space habitat, wildlife will tend to move to those locations on the installation. In essence, the installation and airfield can become an "island" where birds and other small wildlife will take up residence either permanently or on a transient basis. The wildlife will move to the locations that afford the best opportunities for food, water and habitat. Increased numbers of smaller sized wildlife (e.g., ground squirrels) on the airfield also increase the risks of larger predators (e.g., coyotes) coming to the installation in search of prey.

Increasing bird and wildlife populations on the installation and airfield create multiple hazards and impacts for military operations. Most important are the increased threats to airfield operations including flying aircraft and associated personnel. According to data from March ARB, between 2005 and 2020 there were 381 recorded incidents involving birds/wildlife and aircraft operating from the airfield. Of the 381 incidents, 261 occurred on the installation including 235 bird strikes and 26 other types of wildlife incidents. These incidents resulted in varying damage to aircraft and impacted the ongoing flying mission.

Other impacts from wildlife taking up residence on the installation and airfield include damaged facilities and infrastructure. Of specific concern are buried utilities that are critical to continued safe aircraft operation. Ground squirrels and other burrowing animals can chew and damage underground cables that power airfield navigation and lighting systems. March ARB personnel have indicated that ongoing and increasing instances of damage regularly occur. Associated with this is the increased potential for foreign object damage (FOD) to aircraft engines from damaged infrastructure and loosened rocks and dirt on and around runways and taxiways.

The base has prepared a March ARB BASH Plan in accordance with AFI 91-212. The BASH plan complements the base's INRMP and outlines specific procedures, roles and responsibilities, and warning systems to help reduce the potential for BASH and other wildlife hazards and minimize the impacts when incidents do occur. In addition, March ARB updated its INRMP in 2021. The updated INRMP lays out a series of goals and objectives related to the management of natural resources on the installation. This INRMP was developed in cooperation with applicable stakeholders, which includes Sikes Act cooperating agencies and/or local equivalents, to document how natural resources will be managed. The INRMP addresses management of birds and wildlife including the depredation of nuisance species that impact airfield operations.

SA-2

Concern with the location of critical roadways (I-215 + Cactus Avenue) within the March ARB runway CZ and APZ.

The presence of I-215 and its interchange with Cactus Avenue through the northern CZ of Runway 14-32, as well as local street infrastructure within the southern CZ, conflicts with USAF AICUZ recommendations for graded CZs.

Compatibility Assessment

As discussed in the LU-4 assessment, Air Force Instruction 32-1015 Integrated Installation Planning (AFI 32-1015) requires that its air installations acquire real property interest through fee simple or through appropriate restrictive easements over all land within CZs. The presence of significant federal and state public transportation infrastructure within these zones precludes full application of this policy within the CZs due to competing public interests and sunk capital investments. This concern is not specific to the presence of the public infrastructure and risk to aircrew, but with risk to public safety, and interruption of highway transportation, if an aviation mishap were to occur within any of the associated public rights-of-way which transect both main runway CZs.

CZs are intended to be graded and free of non-frangible equipment and structures as these are the most probable areas for a mishap to occur. Graded and clear areas provide an additive measure of safety to aircraft and aircrew as it mitigates the potential for structural failure of the airframe and provides open area for emergency response. The presence of overpasses, off- and on-ramps, drainage and other types of transportation infrastructure increases the potential for aircraft structural failure for mishaps which may occur in these zones. The 2020 DoD Instruction 4165.57 AICUZ makes specific recommendations regarding public transportation through CZs: all roads within the clear zone are discouraged, but if required, they should not be wider than two lanes and the rights-of-way should be fenced (i.e., frangible) and not include sidewalks or bicycle trails. Nothing associated with these roads should violate obstacle clearance criteria.

The presence of traffic and public operation of private vehicles raises the potential for mishaps to involve the public, and/or create highway obstructions which could impede traffic or in severe cases shut down these arterials for prolonged periods.

Existing, privately owned properties with grandfathered land use within CZ 14-32 (south runway) present additive risk if avigation easements are not in place, nor adhered to. Avigation easements, secured through real property deeds, can serve to restrict specific areas of a property to be free of activity, structures, or obstacles. Further public or private development, or intensified land use, within CZs should be discouraged or prohibited.

Stormwater Management (SM)

Stormwater management concerns include the availability of adequate infrastructure, both built and natural, to manage water runoff for current and future storm events. The built environment surrounding communities and military installations is a primary factor in managing stormwater runoff due to the increased span of impervious surfaces associated with buildings, roadways, and other physical structures. Additional factors that affect stormwater management include regional topography, soil types and porosity, typical and extreme storm event duration/intensity, and the size of an area from which stormwater is collected.

Key Terms

Floodplain. An area of land that is subject to recurring flooding, generally located near a waterway such as a river, with flat topography or other similar conditions that cause water to stand and pool.

Impervious Surface. Manmade structures, typically buildings, roadways, parking lots, and sidewalks, that prohibit stormwater from percolating into the soil.

Municipal Separate Storm Sewer Systems (MS4). MS4 is regulated under the CWA via National Pollutant Discharge Elimination System (NPDES) permits.

Stormwater Best Management Practices. Stormwater best management practices include built infrastructure, engineered control devices, and non-structural procedures/processes designed to reduce stormwater discharges and associated pollutants.

Stormwater Management Plan. Stormwater management plans address stormwater regulatory requirements and compliance and are required for MS4 permitting.

Stormwater Master Plan. Stormwater master plans address stormwater infrastructure conditions, capacity, deficiencies, and related issues, such as jurisdictional boundaries.

Technical Background

Stormwater is a regional concern that is best managed on a watershed scale or, in some cases, a sub-watershed basis. Development or changes to infrastructure or natural features in one location can create stormwater impacts in surrounding areas as stormwater moves across the landscape. Impacts vary depending on specific circumstances, but can typically include flooding, contaminated discharges, and other events that are not compliant with regulations. When dealing with stormwater policy, establishing regulatory fees, quantifying stormwater inflow/outflow and identifying best management practices, adopting a regional or sub-regional perspective can provide benefits and improve compliance for all parties.

Development and associated impervious surfaces are a major contributor to increases in stormwater runoff, especially in urban areas. Impervious surfaces are manmade structures that are impermeable to rainfall and runoff. New or modified development can increase the amount of impervious surfaces on an installation or in a community and result in significant increases in stormwater runoff. As the stormwater runs off these surfaces, it can pick up pollutants as it flows

into storm drains, which then flow directly into rivers, lakes, and wetlands in the region. Contaminated runoff can have negative effects on the environment and public health. Another impact of impervious surfaces is the increased quantities of storm runoff. Where water once permeated the soil, it is now flowing into developed areas where buildings and homes may flood. Runoff eventually flows into nearby rivers and streams that are unable to handle the increased volume of water, causing more flooding of developed areas downstream, as well as erosion throughout the flow area. Increased development and associated impervious surfaces can, in some cases, also reduce the total amount of water recharging groundwater aquifers. This lack of groundwater recharge can affect the water resources in regions that depend on groundwater as a potable water supply.

Stormwater master planning across jurisdictions and military installations provides an opportunity to prevent or minimize stormwater impacts through the communication of stormwater concerns, the coordination of future planning efforts and approved development, and the identification of joint stormwater improvement opportunities that can benefit multiple parties and enhance regulatory compliance.

Flooding occurs along the perimeter of March ARB during significant rainfall events.

SM-1

Flooding along Cactus Avenue, on the northern border between March ARB and the City of Moreno Valley, occurs during heavy rainfall. The flooding impacts traffic entering and leaving the base at ECP. Heavy flooding has historically occurred along the eastern and western installation boundaries, resulting in infrastructure damage and traffic impacts both on and off the installation. The area along the western boundary of the base is impacted by stormwater runoff from I-215 and locations to the west.

Compatibility Assessment

March ARB is located in western Riverside County where the climate is classified as Arid Subtropical. The average annual rainfall from 2000 to 2021 was approximately eight inches. The range of annual rainfall over the same years was between 3.40 inches in 2013 and 16.22 inches in 2005. Winter months – December through February – are typically the wettest months with maximum rainfall amounts exceeding six inches in some years. The region is subject to intense storms on occasion, where the stormwater infrastructure can be overwhelmed and flooding can occur on and around the installation. The surrounding areas are heavily developed and have significant amounts of impervious surfaces, including roadways, buildings, and other structures.

Source: *March JPA, 2023*

The RCFC&WCD is responsible for managing flood hazards in the western portion of the county, including the area where March ARB is located. The core mission of the district is, "responsibly manage stormwater in service of safe, sustainable and livable communities." The district's responsibilities include the following:

- Identification of flood hazards
- Regulation of floodplains and development
- Regulation of drainage
- Construction of flood control structures and facilities
- Maintenance of flood control structure and facilities

March ARB is subject to periodic floods and flooding conditions as a result of both on-base and off-base conditions. These conditions include relatively heavy rainfall events primarily during winter months, a built environment with large areas of impervious surfaces, generally less than 1% slope, and in some locations, inadequate stormwater infrastructure – both on and around the installation. As a result of ground surface elevations, stormwater tends to flow from the west/north to the east/south onto, across, and then off of installation property. Under heavy rainfall or storm events, existing flood channels may not meet FAA 72-hour drainage criteria.

Regular maintenance, as well as post-event debris removal and vegetation clearance are not enough to meet maximum stormwater flow. In recent years, the RCFC&WCD has made significant investments and developed plans for new flood control channels:

- Completion of the northern Heacock Channel along the eastern boundary of March ARB
- Completion of portions of the Perris Valley Lateral along the northwestern boundary of March ARB
- Ongoing construction of Perris Valley Lateral Stage 5 along the western boundary of March ARB
- Proposed construction of the Perris Valley Lateral Stage 4 along the southwestern boundary of March ARB
- Planned construction of the Perris Valley Lateral Stage 6 to be built by others
- Proposed construction of the Cactus Channel along the northern boundary of March ARB

These flood control channels, once fully constructed, will generally surround the perimeter of the installation and are designed to protect against 100-year flood events. Per the district, they have been designed for full "build-out."

Challenges still remain in completing the needed flood control channels, particularly the Cactus Channel, where issues of multi-agency funding and right-of-way for construction persist. In addition, maintenance of the existing and planned stormwater flood control channels is critical to ensuring the facilities work as intended and safely move stormwater away from the installation and surrounding communities.

Beyond the planning and construction of stormwater control structures around the perimeter of the installation by the RCFC&WCD, March ARB needs to reassess and evaluate stormwater management requirements internal to the installation. While the new stormwater channels will solve many of the stormwater issues the base has experienced in the past and is currently experiencing, additional stormwater issues within installation control are possible. Installation stormwater infrastructure and/or maintenance procedures may require reassessment to ensure movement of stormwater away from key locations such as the airfield.

Rising groundwater in the vicinity of March ARB may potentially exacerbate stormwater sheet flow and flooding.

SM-2

Rising groundwater levels on and around March ARB may potentially exacerbate stormwater sheet flows and flooding in the area. As the ground becomes more saturated and groundwater levels rise, portions of stormwater flow that might typically permeate the ground will remain on the surface and create additional sheet flow and/or ponding on and around the installation.

Compatibility Assessment

In recent years, groundwater levels below March ARB and the immediate surrounding area have risen above historic normal levels. The groundwater levels have been rising at varying rates of up to three feet annually in the area. The specific causes of the rising groundwater levels are not fully understood, although there are several potential reasons:

- Reduced groundwater pumping in the region partially due to change in land use
- Seepage of water from the Lake Perris Dam
- Limited groundwater outflow in the area

As a result of the rising groundwater, installation development activities, such as new construction and maintenance and/or the renovation of existing facilities and infrastructure, may be subject to challenges associated with high water tables. One of the more serious concerns is the potential for increased stormwater sheet flow and/or ponding.

The area surrounding March ARB is extensively developed. As discussed under SM-1, the region is subject to occasional intense storms that, when coupled with large areas of impervious surfaces, can result in relatively significant stormwater flows. With rising groundwater levels and soils that are more water saturated, areas where there are no impervious surfaces may not be able to absorb the amount of stormwater needed to avoid flooding. Under ideal conditions, land areas without built structures allow stormwater to permeate the soil, reducing stormwater flow and ponding. The degree of water percolation into the soil is dependent upon several variables, including the level of soil saturation.

The continued rise of groundwater and associated soil saturation on and around March ARB has the potential to impact stormwater flows, and in turn, can impact military activities at the installation, including airfield operations. Moreover, standing stormwater on and around the airfield can attract wildlife, which can pose a safety threat for aircraft operating on and around March ARB. An additional concern is the spread of groundwater contamination during flood events.

Stormwater collects around the south end of Graeber Street and Riverside Drive causing heavy flooding.

SM-3

During heavy rain events stormwater tends to flow towards the southeastern end of Graeber Street and the southern end of Riverside Drive. The intersection of the roadways and the immediate surrounding area floods as a result. It is reported that Graeber Street lacks adequate stormwater drainage.

Compatibility Assessment

Riverside Drive and Graeber Street intersect just to the east of the March ARB airfield and west of the FamCamp RV Park. During discussions with March ARB civil engineers, this area was identified as subject to periodic flooding during and after heavy rains.

Stormwater flow on the installation typically travels across the installation in a southeasterly direction. This can expose the area surrounding the intersection to stormwater runoff from the airfield and built-up areas to the north. In addition, the volume of impervious surfaces is significant and includes airfield ramps, roadways, and parking lots in the immediate area surrounding the intersection. Immediately to the south of the roadway intersection, an open stormwater channel collects runoff from underground stormwater infrastructure on the airfield. In addition, stormwater collected along Riverside Drive is directed into the same open stormwater channel that then travels to the east, ultimately dumping into the Heacock Flood Channel along the installation boundary. This convergence of storm flow at "Outfall 2" may overwhelm the stormwater infrastructure during heavy rain events and result in flooding. The civil engineers also noted that Graeber Street may lack adequate stormwater drainage infrastructure and that regular and before/after event maintenance is required to maintain maximum stormwater flow capacity for this flood channel.

This area is also within the 100-year floodplain, as indicated in the March ARB Severe Weather/Climate Hazard Screening and Risk Assessment. This report identifies a medium risk of non-storm-surge flooding events on the installation.

Storm flooding in the area around the intersection of Riverside Drive and Graeber Street has the potential to impact March ARB operations. At a minimum, it may create an occasional traffic safety hazard and may also pose a safety hazard to installation personnel.

Utilities Security (US)

The assurance of reliable energy and other utilities against the vulnerability of disruption from natural or actor-induced outages, such as physical or cyberattacks, is critical to maintaining operational viability and quality of life. Utility security includes security in emergency power production, alternative energy, efficiency gains, and network reliability.

Key Terms

Redundant Utility Service. Redundant utility service includes more than one main service connection for needed resources, such as potable water or electricity, on a military installation or in a community.

Utility Resilience. Utility resilience involves creating or enhancing the conditions or capacity that allows a utility system to withstand and recover from the effects of a disruptive hazard or threat.

Utility Service Vulnerability. Utility vulnerability exists when a utility system or its associated critical infrastructure is exposed to a threat or hazard, such as extreme weather or human activities (e.g., cyberterrorism).

Technical Background

The DoD continues to emphasize and plan for increased utility security for military installations. The DoD's installation energy strategy is designed to ensure mission assurance for the warfighter, reduce energy costs, and improve the energy resilience of fixed installations. DoD efforts include the following:

- Reducing the demand for installation energy and water through conservation and efficiency
- Expanding on-site energy for mission assurance
- Improving the energy grid and storage resiliency on installations
- Leveraging advanced technology for energy resource efficiencies and increased security
- Improving the cybersecurity of mission-critical, facility-related control systems

The Air Force has similarly developed a "resilience focus" to ensure installations have adequate power and water supplies to meet mission needs. Three goals have been identified as part of a strategic approach to energy and water utilities:

- Identifying both internal and external energy/water system vulnerabilities
- Improving the resilience planning to address identified vulnerabilities
- Ensuring investments in energy/water utility systems provide the desired results

Multiple planning processes and implementation tools have been developed to assist military installations with improving utility resiliency. These include installation energy readiness exercises, installation energy plans, public-private partnerships, and direct investment in energy resilience and conservation projects.

Finally, the military recognizes that working with local communities is critical to ensuring energy/water resilience for installations. This is of particular importance where installations depend on utility services from a public or private entity that is not located on the base. Programs such as the Defense Community Infrastructure Pilot (DCIP) Program can assist with addressing community infrastructure deficiencies where those systems support military installations.

March ARB lacks a redundant power connection to an off-base supplier.

US-1

Currently March ARB is provided electrical power service via a single connection to the off-base electrical utility power grid. Redundant connections to the power grid increase installation resiliency in the event of a failure of a single point grid connection. Failure to provide an alternate connection to the power grid or provide an alternate redundant electrical power supply increases the likelihood of temporary power interruptions and possible mission failure in the event of longer disruptions to service.

Compatibility Assessment

March ARB is supplied electricity by Southern California Edison (SCE). Currently, that electric service is provided via a single 115kV line to the installation. This service line provides electricity that is then distributed throughout the base by both above- and below-ground infrastructure, including transmission lines, substations, and transformers. City Light & Power, Inc. owns, operates, and maintains the high voltage power and distribution system on March ARB.

March ARB and City Light & Power, Inc. have developed a system restoration and recovery plan in the event of a disruption to the SCE service line or power distribution system on the installation. Even under the best of circumstances, the disruption of the electric power service line would likely cause impacts to installation operations and mission success.

The Air Force, as identified in the 2021 Installation Energy Strategic Plan, is focusing on three primary goals related to energy assurance:

- Identifying enabling system vulnerabilities
- Improving resilience planning
- Ensuring resilience results

While the overarching and longer-term objective for energy resilience is to evaluate opportunities to separate the installation from the commercial electric grid, the more immediate need is to ensure a redundant capability for electric power. The March ARB Installation Energy Plan should highlight the need to plan for the development of a redundant electric power service line connection to the commercial grid.

In the longer term, identifying and evaluating opportunities to increase March ARB energy resilience should remain a focus of the base civil engineer and the Installation Facility Board. The Air Force Installation Energy Strategic Plan identifies several potential tools that may be useful in the design and construction of March ARB energy resilience projects.

March ARB has no redundant water supply service line.

US-2

Currently March ARB is provided potable water from the Western Municipal Water District via a single water service line. A project that will allow Western Municipal Water District to provide an additional service line via the Eastern Municipal Water District water distribution system has been funded. Lack of a redundant water service line has the potential to impact military operations in the event of a single point failure.

Compatibility Assessment

March ARB has a single 14-inch main water line that provides potable water to the installation. The water line enters the installation from the west and is used by the Western Municipal Water District to provide potable water for both the cantonment and non-cantonment areas of the base. This single main water service line is not adequate to provide the necessary volume and pressure required to meet all March ARB water needs on a continuous basis. The Western Municipal Water District has agreements with the Eastern Municipal Water District whereby additional water volume and pressure are provided to March ARB using Eastern Municipal Water District infrastructure systems. These Eastern Municipal Water District interconnections are used when the Western Municipal Water District systems are unable to meet March ARB demands. In addition, the Eastern Municipal Water District system is used to ensure adequate fire suppression flows for portions of March ARB.

The Western Municipal Water District is currently constructing a new 24-inch water main that will provide March ARB with a second water service line. The new line, partially funded with Defense Community Infrastructure Program monies, is part of an effort by the Western Municipal Water District to improve water supply reliability for both March ARB and the surrounding communities. Recent communications with the water district indicate the project has been delayed but is expected to be completed in the near future. Once the second water supply line is in place, the potable water infrastructure on the installation may need additional enhancements to ensure the additional capability can be fully exploited. The Western Municipal Water District is responsible for capital improvements, operation, and maintenance of the potable water infrastructure on March ARB.

March ARB personnel have also indicated a desire to remove existing water towers located on the installation. These water towers are primarily used to ensure adequate water volume and flow are available for aircraft hangar fire suppression systems. It may be possible to take the water towers out of service if the new water service line connection provides adequate fire suppression water volume and pressure to support the aircraft hangars and related facilities. The removal of the water towers, which are old, would reduce the infrastructure footprint, saving periodic capital improvement costs along with recurring operations and maintenance costs.

Water Quality/Quantity (WQQ)

Water quality/quantity concerns include the assurance that adequate water supplies of good quality are available for use by the military and surrounding communities to support current needs and future planned growth. Water supply for agriculture and industrial use is also considered.

Key Terms

Acre-Foot. An acre-foot is the volume of one acre of surface area to a depth of one foot. It is equal to approximately 325,851 gallons or approximately enough water for a family of four for one year.

Aquifer. An aquifer consists of a layer of porous substrate that contains and transmits groundwater and where water can flow directly between the surface and the saturated zone.

Groundwater. Groundwater is water that is held underground in the soil or in pores and crevices in rock.

Public-Supply Water Use. Public-supply water use is water withdrawn by public and private water suppliers that furnish water to groups of users. Public suppliers provide water for a variety of uses, such as domestic, commercial, industrial, thermoelectric power, and public water use.

Reclaimed/Recycled Wastewater. Reclaimed and recycled wastewater includes treated wastewater plant effluent that has been diverted for current/future beneficial uses such as groundwater injection, irrigation, industry, or other similar purposes.

Surface Water. Surface water is derived from waters that flow continuously over land surfaces in a defined channel or bed, such as streams and rivers; standing water in basins such as lakes, wetlands, marshes, swamps, ponds, sinkholes, impoundments, and reservoirs either natural or man-made; and all waters flowing over the land as runoff, or as runoff confined to channels with intermittent flow.

Water Credit. A water credit is a documented record that allows the reuse of a specific quantity of water at a specific site. A water credit is typically based on a temporarily discontinued use of water.

Water Use Credit. A water use credit is a limited entitlement allowing the use of a specific quantity of water at a specific site. A water use credit is generally limited by time and other conditions.

Water Year. The period from October 1 to September 30 of the following year.

Technical Background

At the federal level, the EPA is responsible for the oversight of public water systems and enforcement of the Safe Drinking Water Act of 1974. The EPA has delegated primacy enforcement responsibility for public water systems in California to the state. The Bureau of Reclamation, an agency within the U.S. Department of Interior, manages, develops, and protects water resources, including raw water supply, for the benefit of the public. Region 10 of the Bureau of Reclamation covers the California Great Basin where the Study Area is located. Other federal land management agencies are involved in helping to protect watersheds across the country, including in the State of California.

Because of the importance of safe drinking water and the challenges faced by the State of California with water supply, there are myriad agencies and organizations involved with the oversight and implementation of drinking water programs in the state.

At the state level, there are several key organizations that help manage drinking water.

- California Department of Water Resources (CDWR): The CDWR, a department of the California Natural Resources Agency, manages water resources, systems and infrastructure across the state. CDWR has primary responsibility for management of the SWP resources and infrastructure, including the California Aqueduct and the Sacramento-San Joaquin Delta, along with multiple dams, reservoirs, and underground water storage facilities.
- California Environmental Protection Agency (Cal-EPA): Within Cal-EPA, the California State Water Resources Control Board (State Water Board) works to ensure the quality of drinking water for the state. The Board sets statewide policy and provides support for the regional boards. There are nine RWQCB whose job is to develop implementation plans and enforce standards that protect the State's waters within their area of responsibility.
- California Water Quality Monitoring Council: The monitoring Council is tasked with coordinating efforts between Cal-EPA and the California Natural Resources Agency to improve water quality and ecosystem management, enhance integration of water monitoring data and availability of assessment information.

In addition, there are multiple other state agencies with responsibilities that involve direct or indirect activities related to supply and quality of potable water.

SWP and RWQCB: In California, the State Water Board and the Regional Water Quality Boards manage drinking water to protect beneficial water use. The Porter-Cologne Water Quality Control Act provides this authority. The Santa Ana RWQCB oversees rulemaking and regulatory activities for Region 8, which includes the study area and surrounding communities.

Groundwater Sustainability Agencies (GSA): The California SGMA enacted in 2014 is another key law. The Act provides a framework for managing groundwater basins across the state. In addition, local agencies are required to form GSA, to develop GSP which prevent the over-pumping of groundwater and mitigate undesirable effects of pumping.

In addition to federal and state agencies, there are multiple agencies, organizations and corporations involved with the efforts to provide drinking water, in adequate quantity and level of safety, to the region.

The Western Municipal Water District is responsible for managing, protecting, and conserving water for beneficial use within the county. Their mission is to provide water supply, wastewater disposal, and water resource management to the public in a safe, reliable, environmentally sensitive, and financially responsible manner. The district provides reliable water and wastewater services to wholesale and retail customers from Corona to Temecula. This regional area includes the cities of Corona, Norco and Riverside and the water agencies serving Box Springs, Eagle Valley, Lake Elsinore, Temescal Valley and Temecula. Western directly services approximately 25,000 residential and business retail connections located within portions of the cities of Riverside and Perris, as well as the unincorporated communities of El Sobrante, Eagle Valley, Lake Mathews, portions of Mead Valley and March ARB.

The Eastern Municipal Water District provides safe, reliable, economical and environmentally sustainable water, wastewater and recycled water services to nearly 1 million people living and working within a 558-square mile service area in western Riverside County. The retail service area includes the cities of Canyon Lake, Hemet, Menifee, Moreno Valley, Murrieta, Perris, San Jacinto, and Temecula, as well as the unincorporated communities of French Valley, Good Hope, Homeland, Lakeview, Mead Valley, Murrieta Hot Springs, Nuevo, Romoland, Valle Vista and Winchester.

WQQ-1

Concern with the prioritization of potable water deliveries to March ARB in the event of major shortages.

There is a concern that there is no formal agreement that ensures that the Western Municipal Water District would prioritize delivery of adequate potable water supplies to March ARB in the event of local/regional major water shortages.

Compatibility Assessment

There is no formal agreement, such as a MOA, between March ARB and the Western Municipal Water District to ensure the installation is prioritized to receive minimum supplies of potable water to meet operational requirements. In the event of major water supply shortages in the region, the March ARB mission could potentially be at risk if installation minimum needs were not met.

Historically, March AFB met its potable water needs by pumping groundwater from wells located on the installation. In 1988, the Air Force discontinued pumping groundwater and established utility connections to water suppliers located off the installation. Currently, March ARB receives its potable water from the Western Municipal Water District.

The Western Municipal Water District depends on a combination of imported water, local groundwater and recycled water to meet its demand commitments in the region. From 2016 through 2020, total water use has remained relatively constant in the service area, ranging between 220,000 and 245,000 acre-feet per year, with approximately 31% of this amount provided by Western Wholesale. The remaining 69% of the water comes from the State Water Project, the Colorado River Aqueduct, and other regional and local water sources. The district is projecting an increase in wholesale and retail water demand from 74,927 acre-feet in 2020 to more than 121,000 acre-feet in 2045.

Typically, about 50% of the water used in the district is imported via the California State Water Project (SWP). In recent years, as ongoing drought impacts continue, the amount of water provided by the state has been reduced dramatically. In 2022, the Western Municipal Water District expects to receive no water supplies from the SWP.

Southern California continues to be affected by an ongoing drought that has the potential to impact potable water deliveries throughout the region. A combination of reduced supply and increased demand for water in the state has created the potential for water shortages in the future. March ARB is identified in the Western Municipal Water District Urban Water Management Plan as a key retail customer stakeholder and a member of the Drought Task Force for the district. The Western Municipal Water District has prepared a Water Shortage Contingency Plan that addresses requirements for both wholesale and retail water needs.

March ARB should investigate the possibility of establishing an agreement with the Western Municipal Water District to prioritize a minimum supply of water be made available to the installation in the event of a major shortage or service disruption.

WQQ-2

The wastewater infrastructure serving March ARB is in need of repair/replacement.

The infrastructure that provides sanitary sewer service to March ARB is old and in some cases is failing. The Western Municipal Water District is responsible for the capital repairs, maintenance and operation of the sanitary sewer system, including the infrastructure located on the installation. The March ARB mission is at risk without an adequate sanitary sewer capability.

Compatibility Assessment

In stakeholder discussions with the Western Municipal Water District, concerns were raised regarding the condition of the sanitary sewer system on March ARB. The district noted that the sanitary sewer line connecting the installation to the district wastewater treatment plant has failed. Currently, the district is using the installation's Enhanced Groundwater Extraction System (EGETS) infrastructure as a work around to convey sewage to the plant. The EGETS is the system used to treat contaminated groundwater on the installation and sends treated groundwater to the district wastewater treatment plant. The district is investigating the best approach to fixing the sewer line.

The Western Municipal Water District is responsible for capital improvements, operation and maintenance of the system on the installation. While the 2019 Western Municipal Water District Sanitary Sewer Management Plan indicates that depredated sewer lines on the base have been replaced, it is likely that there are additional lines that are in need of repair and/or replacement, along with other conditions that may impact the system. The sewer plan noted efforts to manage groundwater infiltration into the sewer lines on March ARB. Part of the concern with groundwater infiltration includes the potential for the presence of PFAS compounds.

The PFAS contamination is from past use of aqueous firefighting foam (AFFF) for suppressing fires in aircraft hangars and on airfield ramp areas. Much of the contamination is from the use of the AFFF during training exercises in fighting aircraft

fires. Both the Air Force and federal/state regulatory agencies are investigating for PFAS contamination on and around March ARB. Infiltration of PFAS into the sanitary sewer system lines can impact the operations of the district wastewater treatment plant.

The 2020-2025 Western Municipal Water District Capital and Facilities Improvement Plan identifies other infrastructure concerns that have potential to impact sanitary sewer operations for March ARB. One concern is the reliability of the lift station that conveys sewage from the March ARB cantonment and non-cantonment areas on the installation. The plan calls for a redesign of the pump station, along with replacement of the aging submersible pumps, which are operating well below district standards for pump efficiency. Three longer-term projects identified in the plan are related to March ARB sanitary sewer system:

- March ARB sewer collection PFAS mitigation
- March ARB sewer infiltration reduction
- Pump Station 1269 Force Main Replacement

The ability to collect, convey and treat sanitary sewage from March ARB is a critical support capability to ensure continuity of operations at the base. It is important that the Western Municipal Water District work closely with March ARB to ensure the following:

- A complete understanding of required sanitary sewer system upgrades and repairs
- A documented investment plan that lays out current and future sanitary sewer projects
- The construction of all required sanitary sewer capital projects and ongoing repair/maintenance work

WQQ-3

Planned pump and treat operations to address rising groundwater may impact March ARB's ongoing contamination cleanup.

The Eastern Municipal Water District is implementing the North Perris Groundwater Project operations to try and lower the level of groundwater on and around March ARB. The cause of the rising groundwater is not fully understood. While pumping and treating the groundwater may help address other concerns, it can potentially affect the current March ARB efforts to ameliorate existing groundwater contamination that resulted from past installation activities.

Compatibility Assessment

As discussed in CE-1, the groundwater under and around March ARB has been rising for a number of years, although the exact causes are not fully understood at this time. The Eastern Municipal Water District is undertaking the Perris North Groundwater Program in an effort to alleviate the rising groundwater and to use the treated water as an additional source of water for March ARB. One of the concerns related to the rising groundwater is the potential impact to the ongoing cleanup of contaminated groundwater at March ARB.

March ARB has been conducting environmental cleanup for contaminated soils and groundwater since 1983, when the facility was still an Air Force Installation. Groundwater was found to be contaminated with aircraft fuel, various solvents and other chemicals used in the past at the installation. In 1992, the Air Force installed the EGETS, a groundwater interception and treatment system, to capture and treat the contaminated groundwater. The treated groundwater is conveyed to the Western Municipal Water District's wastewater treatment plant. The system has proven effective in treating the groundwater contamination and preventing further spread of the plume. The groundwater interception and treatment system is designed to maintain an inward gradient at the extent of the contaminated plume. This ensures that the plume does not spread beyond the intended area of treatment.

The Air Force has expressed a concern that the groundwater pumping activities associated with the North Perris Groundwater Project could potentially affect the March ARB groundwater cleanup activities. The Eastern Municipal Water District has indicated the operation of the North Perris extraction wells should have no impact on the EGETS nor the contaminated groundwater plumes the system is treating. The monitoring of both systems and the associated groundwater plumes by the responsible parties, along with ongoing communication between the Air Force and the Eastern Municipal Water District, should help avoid any unanticipated impacts to either groundwater treatment operation.

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6 Implementation Plan

The Implementation Plan presents the recommended courses of action (strategies) that have been developed through collaboration among project partners. Since the March ARB CUS is the result of a collaborative planning process, the strategies truly represent a consensus-based plan and a realistic and coordinated approach to compatibility planning.

The Implementation Plan is the heart of the March ARB CUS and includes a variety of actions that promote education, communication, compatible land use, and resource planning. Upon implementation of the strategies, existing and potential compatibility issues arising from the civilian/military interface can be eliminated.

The CUS is not an enforceable plan, but rather a set of recommendations. The key to successfully implementing the strategies is the establishment of a March ARB CUS Partnership Committee to monitor progress and to address future compatibility issues as they arise.

The March ARB CUS serves as a planning tool to assist in guiding compatible growth and maintaining the balance between the needs and interests of both the community and the military. The goal of compatibility planning is to promote an environment where both community and military entities communicate, coordinate, and implement mutually supportive actions.

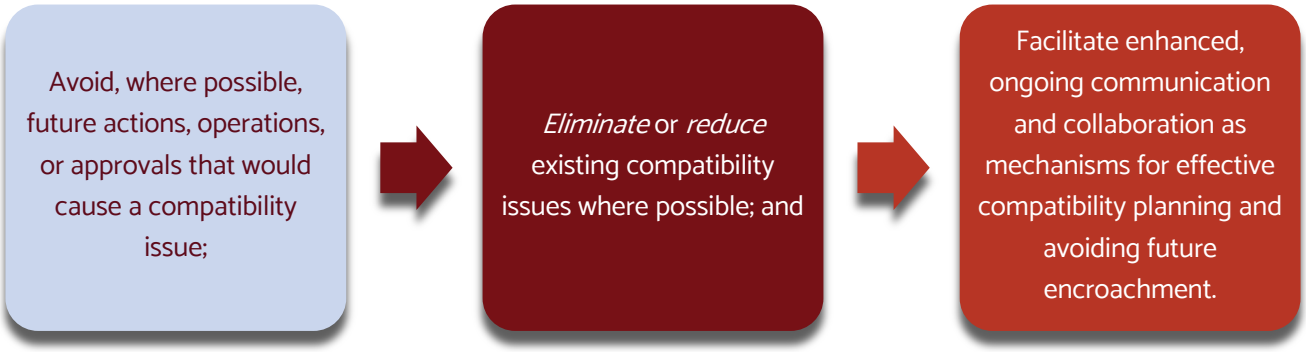
6.1 Implementation Plan Guidelines

The key to a successful implementation plan is balancing the different needs of all the involved stakeholders. To produce an equitable plan, several guidelines were used as the basis for strategy development:

- Recommended strategies must not result in the taking of property value, meaning rendering the property undevelopable or unable to achieve economic gain by the removal of development rights defined by state law. Some of the recommended strategies may involve establishing conservation easements on private property, but only if landowners are willing to take such actions.
- To avoid issues relating to the non-compliance of existing land uses, any zoning amendments or regulatory changes should include "grandfather" clauses to allow existing legal uses to be retained.
- Any proposed changes to regulatory or policy guidance, such as to zoning ordinances or general/comprehensive plans, should not affect properties that have existing entitlements or that have been previously approved for development.
- To minimize regulation, implementation of some strategies is recommended only for the specific geographic areas within which relevant issues occur.
- Some recommended strategies can be implemented only with new legislation.
- Any strategy that involves developing new regulatory measures or updating existing ones, such as amending zoning ordinances or adding new zoning overlay districts to existing zoning ordinances, and any strategy that amends municipal guidance documents, such as community general plans or county comprehensive plans, is subject to all legal processes required by California legislation and local regulations before implementation. Consequently, some recommended strategies may involve the notification of affected and potentially affected property owners and/or land management entities, as well as public hearings.
- As in other planning processes that include numerous stakeholders, the challenge here is to create a solution or strategy for outcomes that meet the needs of all parties. In lieu of eliminating strategies that do not have complete buy-in from all stakeholders, each strategy may be further refined to create multiple approaches that address the same issue in tailored, community-specific ways.
- Since state and federal regulations are subject to change, implementing jurisdictions or parties should ensure that no conflicts have arisen between strategies and local, state, or federal laws prior to implementation.

6.2 How to Read the Implementation Plan

The strategies presented in this chapter address the compatibility issues that were identified while preparing the March ARB CUS and constitute the CUS Implementation Plan. The purpose of each strategy is to:



The strategies include information about when and how they should be implemented and are grouped according to the compatibility issue they address. The following paragraphs provide an overview of how to read the Implementation Plan.

Issue Box. The issue box that identifies the specific compatibility issue being addressed is presented before each recommended strategy or set of strategies.

Strategy Box. The descriptive title of each strategy is presented in bold in the strategy box. Each title starts with a unique alphanumeric identifier that provides an easy reference and further encodes the related, general compatibility factor abbreviation and a unique numeric identifier (e.g., COM-1, COM 1B, etc.). This descriptive title is followed by the complete strategy statement or recommended action.

Strategy Rows. Each strategy is presented in two rows in the table. The first row includes a description of the strategy and the parties who are responsible for its implementation. The second row identifies the type of strategy, the timeframe suggested for implementation, the area where the strategy should be implemented, and the level at which implementation is prioritized.

Party Column. A column along the right side of the strategy boxes identifies the stakeholders who should serve as either a "Responsible Party" or a "Partner." Responsible Parties are responsible for implementing the strategy, while Partners play supporting roles.

Strategy Type. This box identifies the type of tool that a strategy constitutes. Strategy types are indicated by the icons shown below. Some strategies constitute multiple types, such that multiple icons will be listed.

Acquisition	Coordination/Communication
Education/Awareness	Easement
Legislative	General Plan/Comprehensive Plan
Partnership	Planning
Policies	Process
Real Estate Disclosure	Regulations
Study	Zoning

Strategies that are marked with an icon may be eligible for follow-on implementation funding from the OLDCC. Parties responsible for implementation will have to apply for and be awarded OLDCC or other grants. Designation via this icon in the CUS Implementation Plan represents a potential funding opportunity, with eligibility determined by the granting agency or agencies. It should be noted that OLDCC provides funding to communities and local government organizations, but not to the U.S. Army or other DoD entities.

Timeframe Box. This box presents the recommended timeframe in which a strategy should be implemented. The timeframes represent multi-year periods during which strategies should be initiated or indicate actions that should be ongoing, whether continuous, intermittent, or as needed.

Short-term (0-2 years). Strategy is to be initiated within 0-2 years following March ARB CUS completion.

Mid-term (2-5 years). Strategy is to be initiated within 2-5 years following March ARB CUS completion.

Long-term (5+ years). Strategy is to be initiated in 5 or more years following March ARB CUS completion.

Ongoing. Strategy is to be implemented on a continuous, intermittent, or as-needed basis.

Priority Box. Similar to level of importance, the priority box indicates the degree to which implementation of a strategy is a priority. Implementation may be a low, medium, or high priority.

6.3 Implementation Plan

Anti-Terrorism/Force Protection (AT/FP) Issues

AT-1: There are concerns about development next to or along the March ARB security perimeter fence line.

Physical development of large warehouses and other tall structures directly along the perimeter of March ARB presents security challenges to Air Force security requirements. Current setbacks and building height restrictions for new construction along the boundary of the air reserve base may not be compatible with air installation security requirements.

Recommended Strategy

AT-1A: Establish setbacks and maximum allowable heights for future development.

Revise setback requirements and/or maximum allowable heights for structures to be consistent with primary structures for zoning districts that abut March ARB installation boundary. Setback requirements and maximum allowable heights for structures should be established in consideration of military force protection and base security.

Responsible Party(ies)

- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside
- March JPA/MIPAA
- ALUC

Partner(s)

- March ARB
- March IPA

Strategy Type

Timeframe

Priority

AT-1B: Continue collaboration and coordination with March JPA and adjacent commercial activities regarding base security.

March ARB security forces need to work with March JPA and adjacent commercial businesses and activities to address security issues that are occurring on properties that can be potential risks to the March mission. March ARB should work with March JPA and local law enforcement on security design (CPTED principles) when developing properties adjacent to the base.

Responsible Party(ies)

- March ARB

Partner(s)

- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside
- March JPA/MIPAA

Strategy Type

Timeframe

Priority

AT-1C: Foster collaborative efforts with local law enforcement agencies.

March ARB security forces should continue to work with local LEAs to address crime prevention and security concerns surrounding the base. The base security forces should also improve communication and coordination with local law enforcement to provide layered security for surrounding areas and businesses while protecting the March mission and force protection.

Responsible Party(ies)

- March ARB

Partner(s)

- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside

Strategy Type

Timeframe

Priority

AT-1D: Promote commercial security awareness.

Work with the CUS Partners regarding land use control in the immediate area surrounding March ARB to develop security awareness targeted towards commercial activities. Information should address March ARB security considerations and be made available on CUS Partner websites to maximize awareness.

Responsible Party(ies)

- City of Perris
- City of Moreno Valley
- City of Riverside
- March ARB
- March JPA/MIPAA

Partner(s)

- Riverside County Office of Economic Development

Strategy Type

Timeframe

Short

Priority

Medium

AT-1E: Initiate "Eyes on March ARB" Program.

Engage local community groups and jurisdictions to work with LEAs to create a March ARB Community Watch Program, whereby citizens and public safety officers that witness trespassing onto the installation inform a designated point of contact at the base.

Responsible Party(ies)

- March ARB

Partner(s)

- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside
- March JPA/MIPAA

Strategy Type

Timeframe

Short

Priority

High

AT-2: Transfer of Green Acres from March JPA to private commercial property presents a force protection risk for unvetted individuals to gain access or conduct surveillance/data collection.

The potential future transfer of Green Acres to private commercial interests presents an unusual force protection concern and potential risk for March ARB. Currently, the base perimeter security fence follows a gerrymandered path that divides this contiguous historic district between JPA-managed properties and installation facilities, including headquarters facilities. The effectual subdivision of Green Acres from the March Field Historic District presents a unique security challenge as the recommended minimum standoff distances for an external buffer cannot be achieved without the demolition of existing structures.

Recommended Strategy

AT-2A: Continue ongoing coordination with March ARB regarding final disposition and conditions of acceptance for future property transfer of Green Acres during the sunset of March JPA reuse authority.

Continued ongoing coordination between March ARB and March JPA with regard to the final disposition of projects and properties within the Northeast Corner of March JPA will mitigate any perceived or potential risk. Record any conditions of transfer with deed restrictions to ensure that setback requirements are enforced in perpetuity.

NOTE: During the completion of the MCUS, the MJPA voted to retain ownership of the Green Acres community and work with March ARB on a military housing program. This decision by the MJPA implements this recommended strategy

Responsible Party(ies)

- March JPA/MIPAA

Partner(s)

- March ARB

Strategy Type

Timeframe

Priority

AT-2B: Upgrade perimeter security fencing and stand-off distances within the March Field Historic District between Green Acres and March ARB on-base facilities.

March ARB should prioritize installation security upgrades within the March Field Historic District that incorporate DoD force protection standards, while ensuring historic district architectural integrity.

Responsible Party(ies)

- March JPA/MIPAA

Partner(s)

- March ARB

Strategy Type

Timeframe

Priority

Climate Change (CE) Issues

CE-1: Rising groundwater impacts existing facilities and the design and construction of new facilities on March ARB.

The rising groundwater table has the potential to impact existing facilities/infrastructure on March ARB. This includes impacts to the airfield runways and related facilities. In addition, new designs and construction projects must account for impacts such as saturated soils that create significant technical, budget, and schedule challenges.
(See also WQQ-3)

Recommended Strategy

CE-1A: Collaborate with agencies involved with the North Perris Groundwater Project.

March ARB should collaborate with the Eastern Municipal Water District and the Western Municipal Water District for the implementation/execution of the North Perris Groundwater Project to monitor groundwater levels, which may affect new designs and construction projects on the airfield. When fully operational the project will result in reduced groundwater levels under the installation. This, in turn, may potentially alleviate the rising groundwater directly below March ARB and the surrounding area.

Responsible Party(ies)

- March ARB
- Eastern Municipal Water District
- Western Municipal Water District

Partner(s)

- Riverside County
- March JPA/MIPAA

Strategy Type

Timeframe

Priority

CE-1B: Establish local design standards for rising groundwater.

Until the rising groundwater is reduced, March ARB should continue to ensure all new construction and major repair projects account for high water tables and associated soil issues that can affect the stability of facility foundations and other underground infrastructure. March ARB should ensure that the required engineering and design specifications, such as remedial grading and shallow foundations, are incorporated to overcome high water table issues and mitigate this risk.

Responsible Party(ies)

- March ARB
- Eastern Municipal Water District
- Western Municipal Water District

Partner(s)

- CDWR
- March JPA/MIPAA

Strategy Type

Timeframe

Priority

CE-1C: March ARB should closely monitor groundwater levels.

March ARB should closely monitor groundwater under the installation to assess if levels are rising or falling during the North Perris Groundwater Project execution. Continually rising and /or excessively falling water levels may be a cause for concern.

Responsible Party(ies)

- March ARB
- Eastern Municipal Water District
- Western Municipal Water District

Partner(s)

- City of Perris
- CDWR
- March JPA/MIPAA

Strategy Type

Timeframe

Ongoing

Priority

Medium

CE-1D: Update local groundwater management plans for March installation projects and requirements.

Groundwater management plans should be updated to incorporate provisions and coordination with military operations in the area to ensure future actions and improvements do not adversely impact the March ARB facilities and operations.

Responsible Party(ies)

- March ARB
- Eastern Municipal Water District
- Western Municipal Water District

Partner(s)

- CDWR
- March JPA/MIPAA

Strategy Type

Timeframe

Mid

Priority

Medium

CE-1E: Evaluate buried utilities on the installation for the effects of rising groundwater levels.

March ARB should evaluate buried utilities during preventative and corrective maintenance (PM/CM) actions that require access to underground systems. Any deficiencies noted with regard to groundwater intrusion should be documented for future permanent resolution. In addition, actions that can be implemented during PM/CM to temporarily mitigate the problem should be taken.

Responsible Party(ies)

- March ARB
- Eastern Municipal Water District
- Western Municipal Water District

Partner(s)

- March JPA/MIPAA

Strategy Type

Timeframe

Ongoing

Priority

Medium

CE-1F: March ARB should advocate for a study to investigate existing and potential future impacts to submerged underground utilities.

The study should include recommendations to eliminate or mitigate any identified concerns.

Responsible Party(ies)

- March ARB

Partner(s)

- Riverside County
- ALUC
- City of Riverside
- City of Perris
- City of Moreno Valley
- RCFC&WCD
- March JPA/MIPAA
- Eastern Municipal Water District
- Western Municipal Water District

Strategy Type

Timeframe

Long

Priority

Medium

Communication/Coordination (COM) Issues

COM-1 Formalized communication is limited between March ARB and regional planning entities.

There is no official standing forum for March ARB and the communities/agencies around the installation to identify, communicate and coordinate on topics of interest to all parties. March ARB currently works individually with local communities/agencies on an as-needed basis. As issues arise, communication and coordination are handled on a case-by-case basis through the exchange of emails, phone calls, or other methods between March ARB and individuals of the jurisdiction/agency. Lack of a formal standing communication/coordination process increases the likelihood of missed opportunities and risks dealing with issues "late to need" or "after the fact." Staffing shortages on base further undermine responsiveness as it concerns formalized communication between March ARB and surrounding planning entities/community partners.

Recommended Strategy

COM-1A: Establish a CUS Implementation Coordination Committee.

Establish a CUS Implementation Coordination Committee to provide oversight and monitoring of the CUS implementation and facilitate efficient and effective coordination among the CUS partners. Consider establishing a subcommittee comprising CUS Technical Advisory Group members to provide technical assistance during the CUS implementation.

Responsible Party(ies)

- Riverside County

Partner(s)

- Air Force
- March ARB
- City of Riverside
- City of Perris
- City of Moreno Valley
- March JPA/MIPAA
- ALUC
- Other stakeholder groups

Strategy Type

Timeframe

Priority

COM-1B: Invite March ARB representative to serve as a non-voting technical advisor.

Invite a March ARB representative to serve as a non-voting technical advisor to nearby jurisdiction planning commission/group to allow for March ARB to provide input on proposed developments that may impact the mission. Formalize the position through a resolution or an MOA. It may not be necessary for the March ARB representative to attend every meeting, and they will attend based on relevance and staff availability. Consideration should be given to the formation of March ARB/Inland Port Military Affairs Sub-Committee.

Responsible Party(ties)

- ALUC

Partner(s)

- March ARB
- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside
- March JPA/MIPAA

Strategy Type

Timeframe

Short

Priority

Medium

COM-1C: Incorporate March ARB as one of the agencies that review development applications at the initial stages.

Establish an MOU between March ARB and the jurisdiction, formalizing a process that provides copies of all conditional use, master plan, subdivision, rezoning, annexation, etc. to be reviewed by March ARB Subject Matter Experts (SMEs). Such review periods shall conform with existing community review periods for comment. This supports a proactive approach to identifying potential conflicts early in the proposed development application phase. Thus, coordination needs to be made externally to ensure a "one-stop" source is requesting input from the Base. This strategy could be further aligned to a March ARB/Inland Port Military Affairs Sub-Committee, if formed as recommended in COM-1B. A standardized MOU with the ALUC instead of 5 separate MOUs could provide efficiency and consistency among jurisdictions for March ARB development reviews.

Responsible Party(ies)

- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside
- March JPA/MIPAA
- ALUC

Partner(s)

- March ARB

Strategy Type

Timeframe

Short

Priority

Medium

COM-1D: Provide mutual briefings.

To perpetually enhance support and cooperation and reinforce the partnership between March ARB and local jurisdictions, the installation should annually present a "state of the installation" briefing including strategic goals, operational changes, and proposed construction projects that may impact the greater community to county commissions, city councils, congressional delegations, regional elected and appointed officials, and key partners within the project area. The counties and cities should provide annual briefings to March ARB of changes within the communities that may impact the installation including comprehensive plans, master plans, transportation plans, zoning, development projects, and capital improvement plans.

Responsible Party(ies)

- March ARB

Partner(s)

- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside
- March JPA/MIPAA
- ALUC

Strategy Type

Timeframe

Mid

Priority

Medium

COM-1E: March ARB should establish a local Air Force Partnership program.

March ARB should formally establish an Air Force P4 Partnership with local community partners. This partnership should establish a quarterly (or other time interval) P4 forum to share information. The P4 should consist of military installation leadership, local officials, and key staff. March ARB could provide updated information to the partners and/or local communities when changes in operations or mission arise, among other updates. The communities should regularly communicate relevant military-related information to the public through public websites, social media platforms, and other forms of noticing. Potential issues to be addressed:

- Capital infrastructure projects
- Environmental projects
- Resiliency
- Security
- Housing

Responsible Party(ies)

- March ARB

Partner(s)

- Riverside County
- ALUC
- City of Perris
- City of Moreno Valley
- City of Riverside
- March JPA/MIPAA

Strategy Type

Timeframe

Mid

Priority

Low

COM-2: Changes in key organization leadership can create strategic communication gaps.

Leadership changes at the installation level at March ARB, and with the directors of the ALUC, the March JPA, and MIPAA, can impact the relationship between these organizations and affect positive communication, which can, depending on timing, also affect development application reviews

Recommended Strategy

COM-2A: Conduct formal office calls and mission briefings to incoming organization directors and March ARB commanders.

March ARB and CUS partner entities and organizations should conduct office calls when a change in leadership has occurred to discuss the CUS purpose, current issues, and general relationship and expectations between the various groups.

Responsible Party(ies)

- ALUC
- March ARB

Partner(s)

- March JPA/MIPAA

Strategy Type

Timeframe

Short

Priority

High

COM-2B: Provide ALUC agenda and projects to March ARB SME for project reviews, prior to the ALUC meeting.

ALUC should continue to work with local SME, such as the installation community planner, to formalize a review process that will facilitate receipt of March ARB feedback on projects sufficiently in advance of the ALUC meeting. March ARB is responsible for providing a SME for project reviews.

Responsible Party(ies)

- ALUC

Partner(s)

- March ARB

Strategy Type

Timeframe

Short

Priority

Low

COM-2C: Provide March JPA/TAC agenda and projects to March ARB SME for project reviews, prior to the TAC meeting.

March ARB representatives should routinely attend TAC monthly meetings to maintain situational awareness.

Responsible Party(ies)

- March JPA/MIPAA

Partner(s)

- March ARB

Strategy Type

Timeframe

Short

Priority

High

COM-2D: Foster key staff relationships between key organizations.

Develop relationships at the senior staff level between March ARB and March JPA, and March ARB and ALUC. Fostering key staff relationships, especially with civil service deputies, will mitigate leadership turnover by leveraging the positional longevity of civil service senior staff with external counterparts at ALUC, March JPA, and other external organizations. This strategy can be incorporated into a March ARB Air Force Partnership Program (COM-1E), if established.

Responsible Party(ies)

- ALUC
- March ARB

Partner(s)

- March JPA/MIPAA

Strategy Type

Timeframe

Mid

Priority

Low

COM-3: In certain circumstances, March ARB is required to route proposed installation responses for development reviews through its parent headquarters at AFRC at Robins AFB, Georgia.

The requirement to route proposed development application review through its parent headquarters may delay response to the review request, thus not allowing for formal March ARB review and comment to be considered in a timely manner.

Recommended Strategy

COM-3A: Seek authority from AFRC for March ARB to provide local response for routine development review requests.

Capital improvement projects may still require AFRC review. May require MOUs/MOAs to codify the process.

Responsible Party(ies)

- AFRC
- March ARB

Partner(s)

- Riverside County
- ALUC
- City of Perris
- City of Moreno Valley
- City of Riverside
- March JPA/MIPAA

Strategy Type

Timeframe

Short

Priority

High

COM-4: Formalized communication is limited between March ARB and the Eastern Municipal Water District.

March ARB has minimal communication/coordination with the Eastern Municipal Water District. While the Eastern Municipal Water District does not provide services directly to the installation, they are very closely involved with projects and actions that directly impact the installation mission essential operations. In some cases, the Eastern Municipal Water District is in close partnership with agencies, such as the Western Municipal Water District, that directly support March ARB. The lack of a formal communication/coordination process with the Eastern Municipal Water District increases the potential for impacts on March ARB activities.

Recommended Strategy

COM-4A: Host bi-annual or quarterly regional water coordination meetings.

March ARB, Eastern Municipal Water District, and Western Municipal Water District should create a bi-annual or quarterly forum to discuss upcoming projects directly affecting the base. Work with installation SME to establish a charter for the regional water coordination meetings. This strategy can be incorporated into a March ARB Air Force Partnership Program (COM-1E), if established.

Responsible Party(ies)

- March ARB
- Eastern Municipal Water District
- Western Municipal Water District

Partner(s)

- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside
- March JPA/MIPAA

Strategy Type

Timeframe

Priority

COM-4B: Develop MOU between March ARB, Eastern Municipal Water District, and Western Municipal Water District for reviews on upcoming capital improvement projects directly affecting the base.

Ensure proper contact information, project location information, a project description, and a deadline for comments are provided to the base representative as part of the agreement.

Responsible Party(ies)

- March ARB
- Eastern Municipal Water District
- Western Municipal Water District

Partner(s)

- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside
- March JPA/MIPAA

Strategy Type

Timeframe

Priority

COM-5: Post March JPA sunset communication with March ARB.

The March JPA currently functions as the liaison agency for March ARB on development review requests. With the anticipated sunset of the March JPA and transition of authority back to the conferring local governments, there is concern that future development on former Air Force property currently under the March JPA may not be adequately communicated to the installation.

Recommended Strategy

COM-5A: Riverside County ALUC, MIPAA, and March ARB should continue to communicate and collaborate on future development projects, both for private development and public capital improvement projects.

Riverside County ALUC, MIPAA, and March ARB should consider working with local jurisdictions and relevant agencies for planning review and comment. This would include the review process for certain types of development proposals, development applications, and other land use policy or regulatory changes that may impact military mission at the March ARB. Special consideration/attention should be given to the conveyance of land in CZs and APZs. March JPA should convey any property inside CZs to the Air Force or other controlling interest which can assure no further development on property. This strategy could be further aligned to a March ARB/Inland Port Military Affairs Sub-Committee, if formed as recommended in COM-1B.

Responsible Party(ies)

- March ARB
- ALUC
- March JPA/MIPAA

Partner(s)

- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside

Strategy Type

Timeframe

Priority

Frequency Spectrum (FS) Issues

FS-1: Implementation of 5G networks in the airfield vicinity may impact flight safety.

There is a concern that the new 5G networks may cause interference with aircraft radar altimeter readings. This poses a flight safety hazard, especially during instrument landings. In addition, there is a possibility that 5G may also impact the ASR systems at March ARB.

Recommended Strategy

FS-1A: Apply 5G "clear corridors", per FAA guidance, for/around March ARB.

Consider revising operating procedures and applying clear corridors, as identified in CFR 87 FR 4787, when the presence of 5G C-Band interference has been identified by Notices to Air Missions or by other means.

Responsible Party(ies)

- March ARB
- March JPA/MIPAA

Partner(s)

- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside

Strategy Type

Timeframe

Short

Priority

High

FS-1B: Monitor FAA 5G policy changes and DoD Joint Interagency 5G research.

In addition to staying current with FAA 5G policy guidance and notices, March ARB and MIPAA should monitor results from DoD Joint Interagency 5G Radar Altimeter Interference (JI-FRAI) Team which has been tasked with evaluating the impact of 5G on military avionics. Gather information as applicable from Office of Secretary of Defense (OSD) Joint Test and Evaluation funded quick reaction test (QRT) on 5G interference.

Responsible Party(ies)

- March ARB
- March JPA/MIPAA

Partner(s)

- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside

Strategy Type

Timeframe

Short

Priority

High

FS-1C: Establish a 5G buffer zone.

Establish a 5G buffer zone of at least one mile around the runways, to identify and evaluate 5G tower development applications, or consider adoption of a temporary moratorium on 5G tower construction, until such time as national FAA and FCC guidance is mature. The FAA has established a 1-mile 5G-free buffer zone at 50 major airports across the country. With this precedent set and potential new airframes coming online for March ARB, it is important to ensure pilots are able to receive key landing instructions without signal interference on initial approach and departure.

Note: The State of California has imposed fast-track processing requirements as part of a California state policy to quickly complete 5g which may severely limit the ability of local jurisdictions to regulate these projects.

Responsible Party(ies)

- March ARB
- ALUC
- March JPA/MIPAA

Partner(s)

- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside

Strategy Type

Timeframe

Priority

Land Use (LU) Issues

LU-1: Riverside County ALUCP does not fully identify aircraft safety zones for Runway 12-30.

The 2014 ALUCP for March ARB identifies Runway 12-30 as a 3,000-foot, B-1 small runway rated at 12,500 lbs. and primarily for small single- and twin-engine aircraft. The ALUCP also notes that the runway's 1,000-foot CZs do not extend off Air Force property. No aircraft APZs are identified or mapped for this runway in the ALUCP.

Recommended Strategy

LU-1A: Update the Airport Compatible Use Land Use Compatibility Plan to include recommendations from the 2018 AICUZ with regards to Runway 12-30.

Riverside County and the ALUC should work with March ARB to update the ALUCP to account for current and future operational requirements.

Responsible Party(ies)

- Riverside County
- ALUC

Partner(s)

- March ARB
- March JPA/ MIPAA

Strategy Type

Timeframe

Short

Priority

High

LU-1B: Involve communities in future ALUCP updates.

ALUC should involve CUS partner community staff in all future ALUCP updates. These updates should include determining incompatibilities related to General Plan designations and/or zoning of vacant or underutilized land and ensuring that CUS partner communities are aware of any changes to noise contours or safety zones that should be updated in their respective general plans and/or zoning maps.

Responsible Party(ies)

- March ARB
- ALUC

Partner(s)

- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside
- March JPA/MIPAA

Strategy Type

Timeframe

Short

Priority

High

LU-2: Commercial and industrial land use inside the APZs I and II of Runway 14- 32 and Runway 12-30 south is nearing complete buildout at a maximum lot coverage of 50%.

Heavy commercial and industrial development within the main runway APZs constitutes a potentially significant risk for structural impact from air mishaps occurring within the APZs. The standard probability of a mishap, if one occurs, is 10% within APZ I; the probability of a mishap within APZ II is 5.6%.

Recommended Strategy

LU-2A: Ensure that future development complies with 2018 AICUZ recommendations.

The development reviewing authority for the CUS partner communities should require proof of compliance with human intensity requirements identified in DoD AICUZ Guidance, also described in the 2018 March ARB AICUZ Study.

Responsible Party(ies)

- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside
- March JPA/MIPAA
- Riverside County ALUC

Partner(s)

- March ARB

Strategy Type

Timeframe

Short

Priority

High

LU-2B: Foster enhanced public awareness and education through accurate mapping.

Participate in the regional GIS consortium to share and exchange current and accurate GIS data relevant to base planning and military compatibility. Make changes available to the public.

Responsible Party(ies)

- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside
- March JPA/MIPAA
- Riverside County ALUC

Partner(s)

- March ARB

Strategy Type

Timeframe

Mid

Priority

Medium

LU-3: There is concern regarding the inconsistent application of community intensity standards for developments within the March ARB runway safety zone.

Floor-to-area ratio (FAR) recommendations for APZs as recommended by DoDI 4165.57 are sometimes interpreted, or applied, differently by different jurisdictions during review of development applications. This can create challenges during ALUC review of project development applications within its purview.

Recommended Strategy

LU-3A: Clarify and standardize the intensity standards in the ALUCP and local zoning ordinances.

The APZ limitations for the people per acre intensity need to be standardized to make the application of AICUZ recommendations more consistent between jurisdictions and planning entities. In some cases, the intensity recommendation of no more than 25 persons per acre for APZ I and 50 persons for APZ II is interpreted as applying to the entire parcel. In other cases, the standard is interpreted as applying only to occupancy rates within a structure's footprint. These regulations need to be standardized among the surrounding communities for consistent application and enforcement. Reduce maximum intensity per any single acre clause in ALUCP to be more consistent with AICUZ intensity recommendations.

Responsible Party(ies)

- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside
- March JPA/MIPAA

Partner(s)

- March ARB

Strategy Type

Timeframe

Priority

LU-4: Existing infrastructure and development within the CZs for the March ARB runway create a potential safety hazard.

Private and commercial structures inside the southern CZ of Runway 14-32 conflict with DoD AICUZ guidance and Air Force recommendations for graded CZs. The presence of activities within the CZ presents public safety hazards and risks to flight crews.

Recommended Strategy

LU-4A: Secure runway Clear Zones.

Secure runway Clear Zone (CZ) fee simple acquisition through the use of Readiness and Environmental Protection Integration (REPI) authority using Air Force service funding. For properties that are partially within and partially outside the CZ, with structures outside the CZ, pursue the acquisition of avigation easements to ensure that no structures are built or extended into the CZ. Establish safety area setback standards in the local zoning code for any new development. This will facilitate the protection of this area for aviation operations and protect the public from safety hazards associated with aviation operations.

Responsible Party(ies)

- Air Force
- March ARB

Partner(s)

- DoD
- Private property owners

Strategy Type

Timeframe

Priority

LU-4B: Address current public infrastructure inside runway Clear Zones.

Ensure public roadways, utilities, and other public infrastructure within the CZ comply with ALUCP obstruction requirements for Zone A. Consider relocation, rerouting, and/or adoption of frangibility standards for critical components that cannot avoid crossing the clear zone. This will help minimize risks to flight crews. Projects identified by this strategy may qualify for DCIP grant award. Extreme consideration should be given to not widen existing, or extending new, road segments and adding additional above-ground utilities within the CZs.

Responsible Party(ies)

- March ARB
- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside
- March JPA/MIPAA

Partner(s)

- Caltrans
- Riverside Co. Flood Control
- Local utilities

Strategy Type

Timeframe

Priority

LU-4C: Develop a Clear Zone strategy.

CUS partner communities located within the March ARB CZs should develop a strategy to address existing private and public structures within the CZ. CUS partner communities located within the March ARB CZs should develop a strategy to address existing private and public structures within the CZ. Develop a strategy considering recommended acquisition, planning, and coordination strategies this CUS recommends. Consider developing an incentive program to purchase CZ parcels from willing private landowners.

Responsible Party(ies)

- March ARB
- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside
- March JPA/MIPAA

Partner(s)

- Riverside County Office of Economic Development
- Private property owners

Strategy Type

Timeframe

Priority

LU-4D: Continue coordination for infrastructure planning with March ARB.

March ARB and the CUS partnership communities should continue to coordinate on any current or future infrastructure projects within the CZ. Coordination should begin early in the process and continue throughout the life of the project to reduce costs and lost time on plan changes.

Responsible Party(ies)

- March ARB
- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside
- March JPA/MIPAA
- Caltrans

Strategy Type

Timeframe

Priority

LU-5: The location of existing residential areas within the March ARB airfield runway APZ creates a potential safety hazard.

The presence of an existing residential neighborhood at Ramona Expressway and Webster Avenue inside the southern APZ I of Runway 14-32 conflicts with DoD AICUZ and Air Force recommendations for APZs. DoD recommends no residential land use in APZ I and no more than two dwelling units per acre within APZ II.

Recommended Strategy

LU-5A: Increase Public Awareness of CZs and APZs.

Increase information sharing between March ARB and the community regarding CZs and APZs, development compatibility, and mitigation options. Develop educational materials or maps displaying March ARB CZs and APZs with the goal of dissuading new residential development within these aircraft accident potential zones.

Responsible Party(ies)

- March ARB
- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside
- March JPA/MIPAA
- ALUC

Partner(s)

- Riverside County Office of Economic Development

Strategy Type

Timeframe

Priority

LU-5B: Incentivize the transfer of residential property to industrial property by means of a buyout or relocation package.

As noted in the 2017 March APS, leverage economic development grants, industry partnership, and government tax incentives or relocation assistance through voluntary programs with willing landowners to transfer existing residential land use to industrial or commercial use. Additionally, FEMA offers Hazard Mitigation Assistance (HMA) grant programs through buyouts of individual properties to relocate homeowners from hazard prone areas. The BRIC grant program is authorized for this purpose.

Responsible Party(ies)

- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside

Partner(s)

- March JPA/MIPAA
- Riverside County EDA
- Local real estate organizations
- NAIOP So Cal

Strategy Type

Timeframe

Priority

LU-5C: Consider application of mandatory plat note recording.

Consider requiring recording of plat note for future transfer of property for all residential properties located within any APZ of March ARB that the property is within an aviation APZ.

Responsible Party(ies)

- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside

Partner(s)

- Riverside County Office of Economic Development
- Local real estate organizations
- NAIOP So Cal

Strategy Type

Timeframe

Priority

LU-5D: Amend state law to address additional dwelling units inside APZs.

Amend state law to allow jurisdictions to limit additional dwelling units on properties in CZ and APZs. The existence of legal nonconforming residential uses within the APZs south of March ARB creates the need for legislation at the state level to allow jurisdictions to limit the potential expansion of residential use on these properties.

Responsible Party(ies)

- Riverside County
- City of Riverside
- City of Perris
- City of Moreno Valley
- Other appropriate entities

Partner(s)

- March ARB

Strategy Type

Timeframe

Mid

Priority

Medium

LU-6: There is concern with altimeter inaccuracy on approach/departure due to incompatible development.

Air Force pilots report "bouncing readouts" on final approach due to the significant size and placement of industrial buildings beneath the flight path within APZs I and II. This can affect aircraft flight controls and creates additional pilot demand to ensure flight controls are stable during landings.

Recommended Strategy

LU-6A: Advise all pilots flying aircraft equipped with radio altimeters of this issue.

Develop a NOTAM for pilots flying aircraft equipped with radio altimeters that inaccurate readings may occur beneath the flight path within APZs I and II upon approach/departure.

Responsible Party(ies)

- March ARB
- MIPAA

Partner(s)

- FAA

Strategy Type

Timeframe

Short

Priority

High

Light and Glare (LG) Issues

LG-1: Increased glare from residential and commercial solar array installations may pose a potential hazard to safe flight operations and ATC operations at March ARB.

The installation of multiple rooftop solar energy systems on residential homes and commercial facilities around March ARB may increase light reflection and glare/glint, which may have ocular impacts on flight crews or air traffic control tower personnel operating on or near the airfield.

Recommended Strategy

LG-1A: Update plans and regulations for commercial solar energy development.

Update plans and regulations to include guidance for commercial solar energy development within ALUC-prescribed airport influence areas for March Airfield. CUS partner communities should consider code updates including requirements for commercial solar energy development that align with Military and Aviation and Installation Assurance Siting Clearinghouse processes. Updated regulations should also include coordination with the ALUC, March JPA, and March ARB community planning office.

Responsible Party(ies)

- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside
- March JPA/MIPAA
- ALUC

Partner(s)

- March ARB

Strategy Type

Timeframe

Priority

LG-1B: Require Solar Glare Hazard Analysis for all solar projects within the airport influence area.

Require any proposed commercial, industrial or subdivision installation of ground-based, parking shade, or rooftop solar energy (PV or SHW) project to provide ocular impact assessment using the SGHAT or other similar glare analysis tool to evaluate potential glare impacts on airfield landing approaches and ATC tower. Require developers to provide an ocular impact statement for any roof structures which install solar roof panels (many current commercial solar systems are compliant). Consider the application of compliance standards for existing solar or high-light reflective roof surfaces.

Responsible Party(ies)

- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside
- March JPA/MIPAA
- ALUC

Partner(s)

- March ARB

Strategy Type

Timeframe

Priority

LG-2: Address the cumulative impacts of ambient lighting due to increased development outside of ALUC authority.

Operational flying units at March ARB routinely conduct night training operations. March ARB has identified concerns with ambient artificial nighttime outdoor lighting around the base that is affecting the unit's ability to meet military readiness training requirements for aircrew proficiency. Over the last 10 to 15 years, development has increased the cumulative effects of artificial nighttime outdoor lighting.

Recommended Strategy

LG-2A: March ARB should adopt dark skies compliant installation design standards.

Consider adopting DoD guidance on same UFC 3-530-01, Interior and Exterior Lighting Systems and Controls.

Responsible Party(ies)

- March ARB
- March JPA/MIPAA

Partner(s)

- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside

Strategy Type

Timeframe

Short

Priority

Medium

LG-2B: Adopt lighting ordinances for dark skies.

Communities should consider adopting dark sky ordinances or amend current dark sky ordinances to decrease light pollution in the region.

Responsible Party(ies)

- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside
- March JPA/MIPAA

Partner(s)

- March ARB

Strategy Type

Timeframe

Mid

Priority

Medium

LG-2C: Enforce all lighting and dark sky ordinances.

Enforcement of current lighting and dark sky ordinances is important for maintaining effective ordinances.

Responsible Party(ies)

- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside
- March JPA/MIPAA

Partner(s)

- March ARB

Strategy Type

Timeframe

Ongoing

Priority

Medium

LG-2D: Create a dark sky educational awareness program.

Demonstrate the importance of dark skies for the region, its cumulative effect, and provide information on light glow effects.

Responsible Party(ies)

- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside
- March JPA/MIPAA

Partner(s)

- March ARB

Strategy Type

Timeframe

Long

Priority

Low

Roadway Capacity (RC) Issues

RC-1: There is concern that traffic queueing to enter March ARB impedes the flow of traffic along Cactus Avenue.

Specific concerns have been expressed regarding long lines of traffic queueing to enter through the main ACP for March ARB, which is accessed directly from Cactus Avenue. The location of the ACP, and its current design, may impede the free flow of local traffic along Cactus Avenue.

Recommended Strategy

RC-1A: Conduct a Military Needs Study for March ARB.

The Riverside County Transportation Commission, working with March ARB, should conduct a military transportation needs study for March ARB. The study should serve, at a minimum, the following purposes: Determine military transportation needs. Provide a safe and efficient transportation network for the military and civilian community around March ARB. Identify areas of greatest traffic congestion and times it occurs. Establish priority areas for improvement. Develop strategies to address the issues/concerns identified. Increase active transportation options around March ARB.

Responsible Party(ies)

- March ARB
- City of Moreno Valley
- Riverside County Transportation Commission

Partner(s)

- Caltrans
- March JPA/MIPAA
- City of Riverside
- City of Perris
- County of Riverside

Strategy Type

Timeframe

Mid

Priority

Medium

RC-1B: Request SDDCTEA Traffic Engineering Study.

March ARB should make a request through AFRC for SDDCTEA to conduct a traffic engineering study of the current ACP/ECF and evaluate relocation of the current gate from Cactus Avenue to Riverside Drive.

Responsible Party(ies)

- March ARB
- AFRC

Partner(s)

- March JPA/MIPAA
- County of Riverside
- ALUC

Strategy Type

Timeframe

Short

Priority

High

RC-1C: Coordinate with City of Moreno Valley for road enhancements to support access/gate improvements.

After Strategy RC-1A is completed, the City of Moreno Valley and March ARB should coordinate to develop a set of priorities and request funding for roadway and gate improvements.

Responsible Party(ies)

- March ARB
- City of Moreno Valley

Partner(s)

- Caltrans

Strategy Type

Timeframe

Priority

RC-1D: Partner with City of Moreno Valley, Caltrans, and Riverside County to build a DCIP grant funding request.

DCIP application should be based on requirements supported by traffic engineering or needs study (Strategy RC-1A or RC-1B).

Responsible Party(ies)

- March ARB
- ALUC
- Riverside County
- City of Moreno Valley

Partner(s)

- Caltrans
- AFRC
- Riverside County Transportation Commission
- SCAG

Strategy Type

Timeframe

Mid

Priority

Medium

RC-1E: Evaluate staggered work shifts.

March ARB should evaluate, on an ongoing basis, utilizing and optimizing staggered work shift start times to spread out the number of personnel entering and exiting the base and reduce vehicle volumes during peak traffic.

Responsible Party(ies)

- March ARB

Partner(s)

- March JPA/MIPAA

Strategy Type

Timeframe

Ongoing

Priority

Medium

Safety (SA) Issues

SA-1: Increased development is encouraging wildlife to utilize March ARB airfield as habitat.

Increased development in the direct vicinity of March ARB, along with ponding stormwater on the airfield, has the potential to encourage bird/wildlife movement to the airfield, causing increased safety concerns for airfield management and pilots. The abundance of ground squirrels and stray animals increases the chances of large predators moving into the airfield environment in search of food and water. This also creates the increased potential for FOD to aircraft, and damage to critical systems on the airfield, due to animals potentially chewing wires. *This finding includes concerns with, but is not exclusive to, the California ground squirrel, horned larks, and coyotes.*

Recommended Strategy

SA-1A: March ARB should continue to take actions to eliminate small low areas on and around the airfield.

Fill dirt should be used to raise low spots to level with surrounding land. Larger areas susceptible to ponding should be regraded to direct water away from the airfield and towards stormwater flow channels. See Strategies SM-1A, SM-1B and SM-1C, CE-1A, CE-1B, CE-1C, and CE-1D, all of which apply to this issue.

Responsible Party(ies)

- March ARB
- March JPA/MIPAA

Partner(s)

- Air Force Civil Engineering Center
- Riverside County Flood Control

Strategy Type

Timeframe

Priority

SA-1B: Research and consider modifying local CEQA implementation guidance to address bird attractant potential as part of project design and conditions of approval.

Increasing bird and wildlife populations on the installation and airfield create multiple hazards and impacts for military operations, presenting an increased threat to airfield operations, including flying aircraft and associated personnel. There is a need to research possible modification of local CEQA regulations for guidance in an effort to reduce the potential bird attractants while maintaining compliance with CEQA.

Responsible Party(ies)

- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside
- March JPA/MIPAA

Partner(s)

- Air Force

Strategy Type

Timeframe

Priority

SA-1C: Coordinate on wildlife policies.

Continue to coordinate and collaborate with the California Department of Fish and Wildlife and U.S. Fish and Wildlife Service on the inclusion of additional or revised wildlife policies that incorporate concerns related to BASH and assist in minimizing the risk of bird/wildlife airstrikes in areas proximate to military training sites. Formalize this coordination through an MOU.

Responsible Party(ies)

- March ARB
- Air Force
- California Department of Fish and Wildlife
- U.S. Fish and Wildlife Service

Partner(s)

- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside
- March JPA/MIPAA

Strategy Type

Timeframe

Mid

Priority

High

SA-1D: March ARB should continue to survey for California ground squirrels to identify population locations.

Additionally, March ARB should continue to implement depredation actions for California ground squirrels in accordance with the installation 2021 INRMP.

Responsible Party(ies)

- March ARB

Partner(s)

- California Department of Fish and Wildlife
- U.S. Fish and Wildlife Service

Strategy Type

Timeframe

Ongoing

Priority

Low

SA-1E: Increase surrounding landowner awareness.

March ARB and the JPA should develop a detailed outreach and educational program to inform surrounding landowners on the impacts, scope, and effects of BASH and outline compatible solutions and techniques to minimize conflicts. Share ALUC wildlife hazard policies on CUS partnership websites.

Responsible Party(ies)

- March ARB
- March JPA/MIPAA
- ALUC

Partner(s)

- Riverside County
- City of Riverside
- City of Perris
- City of Moreno Valley

Strategy Type

Timeframe

Mid

Priority

Medium

SA-1F: Amend zoning ordinances.

Amend zoning ordinances to incorporate Air Force AICUZ recommended guidance to ensure future land uses and zoning will be compatible with airfield operations and do not create increased risks for BASH incidents.

Responsible Party(ies)

- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside
- March JPA/MIPAA

Partner(s)

- Air Force Safety Office/BASH Program
- ALUC

Strategy Type

Timeframe

Mid

Priority

High

SA-2: There is concern with the location of critical roadways (I-215 and Cactus Avenue) within the March ARB runway CZ and APZ.

The presence of I-215 and its interchange with Cactus Avenue through the northern CZ of Runway 14-32, as well as local street infrastructure within the southern CZ, conflicts with USAF AICUZ recommendations for graded CZs.

Recommended Strategy

SA-2A: Secure runway CZ to gain positive control of non-public properties using REPI authority and Air Force funding to acquire fee simple title from willing landowners.

Partner with Riverside County EDA to pursue alternate acquisition strategies. This will facilitate the protection of this area for aviation operations and protect the general public from safety hazards associated with aviation operations.

Responsible Party(ies)

- March ARB

Partner(s)

- Air Force
- DoD
- Riverside County EDA

Strategy Type

Timeframe

Priority

SA-2B: Continue coordination for infrastructure planning with March ARB.

March ARB and the CUS partnership communities should continue to coordinate on current and future infrastructure extensions or capital improvements within CZs. Coordination should begin early in the process and continue throughout the life of the project to reduce costs and lost time on plan changes.

Responsible Party(ies)

- March ARB

Partner(s)

- Riverside County
- City of Perris
- City of Moreno Valley
- City of Riverside
- March JPA/MIPAA
- Caltrans
- Riverside County Flood Control

Strategy Type

Timeframe

Priority

SA-2C: March ARB should routinely conduct aviation mishap response training and exercises.

March ARB should routinely conduct aviation mishap response training and exercises with local emergency preparedness and response agencies for scenarios involving public roadways.

Responsible Party(ies)

- March ARB
- Riverside County Emergency Operations Center

Partner(s)

- City of Perris
- City of Moreno Valley
- City of Riverside
- March JPA/MIPAA
- Caltrans

Strategy Type

Timeframe

Priority

Stormwater Management (SM) Issues

SM-1: Flooding occurs along the perimeter of March ARB during significant rainfall events.

Flooding along Cactus Avenue, on the northern border between March ARB and the City of Moreno Valley, occurs during heavy rainfall. The flooding impacts traffic entering and leaving the base at the ECP. Heavy flooding has historically occurred along the eastern and western installation boundaries, resulting in infrastructure damage and traffic impacts both on and off the installation. The area along the western boundary of the base is impacted by stormwater runoff from I-215 and locations to the west.

Recommended Strategy

SM-1A: Riverside County Flood Control, March ARB, and managers for local USDA facilities should partner to fund and construct the 100% designed Cactus Avenue flood control channel along the northern base boundary and resolve any outstanding easement or rights-of-way acquisitions.

If necessary, seek federal grant funding from DCIP. Other stakeholder(s): Riverside County Flood Control, U.S. Department of Agriculture.

Responsible Party(ies)

- March ARB
- March JPA/MIPAA

Partner(s)

- Riverside County Flood Control
- U.S. Department of Agriculture
- DoD
- Air Force

Strategy Type

Timeframe

Priority

SM-1B: Riverside County Flood Control should continue to work with March ARB and affected stakeholders to complete the Perris flood control channel along the western and southwestern base boundary.

These flood control channels are part of a planned system around the base designed to protect from flood events and safely move stormwater away from the installation and surrounding communities. The completion of these channels, and others, should solve many of the stormwater issues the base has experienced in the past and is currently experiencing. The completion may require reassessment to ensure movement of stormwater is occurring as designed.

Responsible Party(ies)

- Riverside County Flood Control

Partner(s)

- March ARB
- City of Perris
- March JPA/MIPAA

Strategy Type

Timeframe

Priority

SM-1C: Once all flood control channels are constructed around the perimeter of March ARB, the installation should monitor stormwater flows during rain events to identify/document any additional flooding concerns.

In recent years, the RCFC&WCD has made significant investments and developed plans for new flood control channels:

- Completion of the northern Heacock Channel along the eastern boundary of March ARB
- Completion of portions of the Perris Valley Lateral along the northwestern boundary of March ARB
- Ongoing construction of Perris Valley Lateral Stage 5 along the western boundary of March ARB
- Proposed construction of the Perris Valley Lateral Stage 4 along the southwestern boundary of March ARB
- Planned construction of the Perris Valley Lateral Stage 6 to be built by others
- Proposed construction of the Cactus Avenue Channel along the northern boundary of March ARB

These flood control channels, once fully constructed, will generally surround the perimeter of the installation and are designed to protect against 100-year flood events. Installation stormwater infrastructure and/or maintenance procedures may require reassessment to ensure movement of stormwater away from key locations, such as the airfield.

Responsible Party(ies)

- March ARB
- March JPA/MIPAA

Partner(s)

- Riverside County Flood Control

Strategy Type

Timeframe

Priority

SM-2: Rising groundwater in the vicinity of March ARB may potentially exacerbate stormwater sheet flow and flooding.

Rising groundwater levels on and around March ARB may potentially exacerbate stormwater sheet flows and flooding in the area. As the ground becomes more saturated and groundwater levels rise, portions of stormwater flow that might typically permeate the ground will remain on the surface and create additional sheet flow and/or ponding on and around the installation.

Recommended Strategy

SM-2A: See Strategies SM-1A, SM-1B and SM-1C, CE-1A, CE-1B, CE-1C, and CE-1D, all of which apply to this issue.

Responsible Party(ies)

- March ARB
- March JPA/MIPAA

Partner(s)

- Eastern Municipal Water District
- Western Municipal Water District

Strategy Type

Timeframe

Priority

SM-3: Stormwater collects around the south end of Graeber Street and Riverside Drive, causing heavy flooding.

During heavy rain events, stormwater tends to flow towards the southeastern end of Graeber Street and the southern end of Riverside Drive. The intersection of the roadways and the immediate surrounding area flood, as a result. It is reported that Graeber Street lacks adequate stormwater drainage.

Recommended Strategy

SM-3A: March ARB needs to fully assess stormwater flows on the installation to identify the source of flooding near the intersection of Graeber Street and Riverside Drive.

Graeber Street and Riverside Drive intersect in an area that was identified as subject to periodic flooding during and after heavy rains. Storm flooding in the area around the intersection of Riverside Drive and Graeber Street has the potential to impact March ARB operations, by creating a traffic safety hazard and potentially threatening the safety of installation personnel in severe flooding events. March ARB should apply for appropriate funding to have a drainage study conducted to fully understand the stormwater flows and mitigation needs.

Responsible Party(ies)

- March ARB
- March JPA/MIPAA

Partner(s)

- Riverside County Flood Control

Strategy Type

Timeframe

Priority

SM-3B: March ARB needs to evaluate existing stormwater infrastructure along Graeber Street and Riverside Drive to determine if existing infrastructure is adequate for stormwater flows identified in strategy SM-3A.

Stormwater collected along Riverside Drive is directed into the same open stormwater channel that runoff from the airfield is directed into and ultimately dumping into the Heacock flood channel along the installation boundary. This convergence of storm flow at "Outfall 2" may overwhelm the stormwater infrastructure during heavy rain events and result in flooding. It has been noted that Graeber Street may lack adequate stormwater drainage infrastructure.

Responsible Party(ies)

- March ARB
- March JPA/MIPAA

Partner(s)

- Riverside County Flood Control

Strategy Type

Timeframe

Priority

Utility Security (US) Issues

US-1: March ARB lacks a redundant power connection to off-base supplier.

Currently, March ARB is provided electrical power service via a single connection to the off-base electrical utility power grid. Redundant connections to the power grid increase installation resiliency in the event of a failure of a single-point grid connection. Failure to provide an alternate connection to the power grid or provide an alternate redundant electrical power supply increases the likelihood of temporary power interruptions and possible mission failure in the event of longer disruptions to service.

Recommended Strategy

US-1A: March ARB should work with the SCE and the City of Moreno Valley to explore opportunities to add a redundant electrical power service line.

March ARB should partner with local utility provider to pursue infrastructure improvements to ensure redundancy and the availability of power during any possible regional service disruptions.

Responsible Party(ies)

- March ARB

Partner(s)

- City of Moreno Valley
- Air Force
- SCE

Strategy Type

Timeframe

Priority

US-1B: March ARB should prepare and/or update the installation energy plan in accordance with USAF 2017-2036 Energy Flight Plan.

The plan should include goals/objectives to enhance installation energy resilience and decrease reliance on fossil fuels.

Responsible Party(ies)

- March ARB

Partner(s)

- Air Force

Strategy Type

Timeframe

Priority

US-1C: March ARB should explore energy resiliency initiatives such as microgrids to ensure reliable backup power in the event of service disruption.

March ARB should pursue the development and construction of a microgrid in collaboration with SCE, in order to meet critical mission assurance requirements. Consideration should be given to partnerships to pursue DoD funding and incorporation of renewable energy generation technology.

Responsible Party(ies)

- March ARB

Partner(s)

- Air Force
- DoD

Strategy Type

Timeframe

Priority

US-2: March ARB has no redundant water supply service line.

Currently March ARB is provided potable water from the Western Municipal Water District via a single water service line. A project that will allow Western Municipal Water District to provide an additional service line via the Eastern Municipal Water District water distribution system has been funded. Lack of a redundant water service line has the potential to impact military operations in the event of a single point failure.

Recommended Strategy

US-2A: The Western Municipal Water District, Eastern Municipal Water District, and March ARB should continue to implement the funded project to install a second potable water service line from the east side of the installation.

Western Municipal Water District, Eastern Municipal Water District, and March ARB should continue infrastructure improvements to ensure redundancy and the availability of water during any possible service disruptions.

Responsible Party(ies)

- March ARB

Partner(s)

- Air Force
- DoD
- Eastern Municipal Water District
- Western Municipal Water District

Strategy Type

Timeframe

Priority

Water Quality/Quantity (WQQ) Issues

WQQ-1: There is concern with the prioritization of potable water deliveries to March ARB in the event of major shortages.

There is a concern that there is no formal agreement that ensures that the Western Municipal Water District would prioritize delivery of adequate potable water supplies to March ARB in the event of local/regional major water shortages.

Recommended Strategy

WQQ-1A: March ARB should work with the Western Municipal Water District to establish a formal agreement that ensures a continuous water supply in the event of regional shortages.

This agreement would be similar to those used for community critical facilities/operations, such as medical, emergency support, etc.

Responsible Party(ies)

- March ARB

Partner(s)

- Western Municipal Water District
- Eastern Municipal Water District

Strategy Type

Timeframe

Short

Priority

High

WQQ-1B: March ARB should prepare or update a water conservation plan to guide efforts to reduce installation water demand and use.

Southern California continues to be affected by an ongoing drought that has the potential to impact potable water deliveries throughout the region. A combination of reduced supplies and increased demand for water in the state has created the potential for water shortages. March ARB needs to prepare/update a Conservation Plan that will help reduce the current water demands on base.

Responsible Party(ies)

- March ARB

Partner(s)

- Western Municipal Water District
- California Department of Water Resources

Strategy Type

Timeframe

Mid

Priority

Low

WQQ-1C: March ARB should develop/update local guidelines or establish regulations that mandate conservation/demand reduction actions in the event of regional water delivery reductions.

In addition to WQQ-1B, March ARB should provide regulations for water use in the event of delivery reductions or extended disruption of service.

Responsible Party(ies)

- March ARB

Partner(s)

- Western Municipal Water District
- California Department of Water Resources

Strategy Type

Timeframe

Mid

Priority

Medium

WQQ-2: The wastewater infrastructure serving March ARB is in need of repair/replacement.

The infrastructure that provides sanitary sewer service to March ARB is old and, in some cases, is failing. The Western Municipal Water District is responsible for the capital repairs, maintenance, and operation of the sanitary sewer system, including the infrastructure located on the installation. The March ARB mission is at risk without an adequate sanitary sewer capability.

Recommended Strategy

WQQ-2A: The Western Municipal Water District should complete the current project to replace the failed sewer line between March ARB and the Western Riverside County Regional Wastewater Authority (WRCRWA) facility.

The District noted that the sanitary sewer line connecting the installation to the District wastewater treatment plant has failed. The Western Municipal Water District is responsible for capital improvements, operation and maintenance of the system on the installation. Consideration should be given to a partnership to pursue DCIP or other grant funding.

Responsible Party(ies)

- Western Municipal Water District

Partner(s)

- March ARB

Strategy Type

Timeframe

Priority

WQQ-2B: The Western Municipal Water District should conduct a sanitary sewer survey.

In addition to the failed sewer line referenced in Strategy WQQ-2A above, there are likely additional lines in need of repair and/or replacement, along with other conditions that may impact the usability of the system; therefore, a survey should be conducted to determine the current status of all sewer lines on March ARB.

Responsible Party(ies)

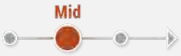
- Western Municipal Water District

Partner(s)

- March ARB

Strategy Type

Timeframe



Priority

WQQ-2C: Identify and address installation wastewater deficiencies.

Consideration should be given to address any major deficiencies identified in public infrastructure supporting March ARB wastewater as part of any survey. WQQ-2B should be identified and appropriate repair/replacement projects programmed in the Western Municipal Water District sanitary sewer capital improvement plan. March ARB should continue to upgrade sewer lines on base as part of ongoing line improvements.

Responsible Party(ies)

- Western Municipal Water District

Partner(s)

- March ARB

Strategy Type

Timeframe

Priority

WQQ-2D: The Western Municipal Water District should continue to repair and upgrade the failing portions of the March ARB sanitary sewer system as part of its ongoing routine O&M operations.

Consideration should be given to replacing aging portions of the system before line failure occurs.

Responsible Party(ies)

- Western Municipal Water District

Partner(s)

- March ARB

Strategy Type

Timeframe

Priority

WQQ-3: Planned pump and treat operations to address rising groundwater may impact March ARB's ongoing contamination cleanup.

The Eastern Municipal Water District is implementing the North Perris Groundwater Project operations to try to reduce the level of groundwater on and around March ARB. The cause of the rising groundwater is not fully understood. While pumping and treatment may help alleviate the concern regarding rising groundwater levels, such activities could potentially affect March ARB's ongoing efforts to mitigate existing groundwater contamination that resulted from past activities on the installation.

Recommended Strategy

WQQ-3A: Ensure March ARB and AFCEC are provided regular updates on current and upcoming actions related to the North Perris Groundwater Pumping Project.

The Air Force has expressed a concern that the groundwater pumping activities associated with the North Perris Groundwater Project could potentially affect the March ARB groundwater cleanup activities. The ongoing communication between the Air Force and the Eastern Municipal Water District should help avoid any unanticipated impacts to either groundwater treatment operation.

Responsible Party(ies)

- Eastern Municipal Water District

Partner(s)

- March ARB
- March JPA/MIPAA

Strategy Type

Timeframe

Priority

WQQ-3B: Closely monitor existing ongoing installation remediation plan projects.

This should be addressed to ensure no negative impacts, such as contamination plume mobility, are occurring as a result of the Eastern Municipal Water District groundwater pumping operations.

Responsible Party(ies)

- Eastern Municipal Water District

Partner(s)

- March ARB
- March JPA/MIPAA

Strategy Type

Timeframe

Priority

Matrix

Cumulative Glare Analysis Report

March Air Reserve Base Compatible Use Study

OCTOBER 2023

Prepared for:

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APPENDIX

A Detailed Modeling Results

Acronyms and Abbreviations

Acronym/Abbreviation	Definition
ATCT	air traffic control tower
ALUC	County of Riverside Airport Land Use Commission
AOI	area of influence
FAA	Federal Aviation Administration
GIS	geographic information system
I	Interstate
OCR	optical character recognition
PV	photovoltaic
ZAP ID	zoning application identification number

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1 Introduction

1.1 Purpose and Scope

The purpose of this Cumulative Glare Analysis Report (report) is to assess the potential for concurrent glare impacts associated with the development of rooftop solar photovoltaic projects within the area of influence (AOI) of March Air Reserve Base (MARB) in Riverside County, California.

This report assesses the collective potential for 26 previously approved rooftop solar projects to cast glare on sensitive receptors associated with flight operations at MARB including two active runways and the single air traffic control tower (ATCT). All of the projects included in this analysis had previously performed and submitted glare studies in accordance with County of Riverside Airport Land Use Commission (ALUC) requirements for approval. This analysis does not attempt to assess or call into question the validity of those previous analyses, but instead quantify their combined potential to cause glare impacts using uniform modeling parameters and methodology. See Figure 1, Analysis Study Area, for the project locations within the AOI of MARB.

In addition, this report does not attempt to qualify whether glare produced by photovoltaic (PV) systems is or is not a hazard to operations at airports like MARB. Instead, the goal of this report is to quantify the cumulative glare produced by the 26 projects analyzed and provide insight into when and where a cumulative glare effect might be experienced by personnel at MARB and what that effect might look like. Glare reflected from PV systems can be received by various ground-based receptors such as motorists and the public; however, this report focuses specifically on the effects to flight operations at MARB and does not attempt to quantify cumulative impacts to other land uses.

All the projects included in this analysis fall within the AOI and are off federal/U.S. Air Force property. Nevertheless, the analysis was conducted per Federal Aviation Administration (FAA) recommended procedures described in the Technical Guidance for Evaluating Selected Solar Technologies on Airports (FAA 2018); the geometric glare modeling software used adheres to FAA policy regarding solar energy system projects on federally obligated airports (86 FR 25801–25803).

This report includes an introduction to PV technologies and their potential to result in glare. Chapter 2, Source and Receptor Overview, provides a description of the projects included in the analysis, as well as the potential receptors associated with MARB, and Chapter 3, Cumulative Glare Analysis, describes the methodology used to perform the glare analysis and provides a summary of the analysis results. Chapter 4, References Reviewed, provides a list of the references cited in this report, and Chapter 5, Document Preparers, provides a list of those involved in the preparation of this report. Lastly, the complete detailed glare results generated by the modeling software are provided in Appendix A, Detailed Modeling Results.

1.2 General Concepts of Solar Technologies and Glare

All projects analyzed in this report involve the installation of PV panels to convert the sun's light into electrical energy. To increase the efficiency of this conversion process, designers of solar systems strive to maximize the amount of solar energy that can be absorbed by solar cells. Increased efficiency has the added benefit of reducing the amount of light that could potentially reflect off the solar panels. Reflected light can cause glint (a quick

reflection) and glare (reflection that lasts for a longer duration), which can create hazards for air-traffic-control personnel, motorists, and other potential receptors. For the purpose of this report, any light reflected off the solar panels or any other reflective surface is referred to as "glare." These reflected beams of light that make up the glare are generally shaped like 3D cones extending from the source of the glare into infinity. The size, shape, and direction of this cone are a function of the angle of the solar panels relative to the sun's location, as well as the texture of the material making up the surface of the solar panels.

There are several key design considerations that can reduce glare from solar panels. One of the main factors of reflectance is the position of the PV modules relative to the sun. A panel that has been designed to absorb 90% of the sunlight that directly meets the face of the panels (perpendicular to the sun's rays) may have that absorption significantly reduced if the panel is not directly facing the sun (ForgeSolar 2023). Because the sun tracks across the sky over the course of a day, fixed-mount stationary panels can only maximize their efficiency for a few minutes out of the day when the sunlight is directly perpendicular to the face of the panel. To maximize the amount of solar energy generated from the solar array, some PV systems employ tracking mechanisms that adjust the angle of the panels to track the sun's trajectory as it crosses the sky. Figure 2, Comparison of Photovoltaic Tracking Systems, provides an illustrative example of a fixed-mount panel system, single-axis tracking system, and dual-axis tracking system and their relative potential to create glare.

In addition to panel orientation, the materials used in the panel construction play an important role in reducing glare and maximizing efficiency. For example, different glass textures can be used to absorb light beams into the solar array, and anti-reflective coatings can be added to the glass to further reduce reflectivity at high-incidence angles (the angle at which the light hits the solar array)(Yellowhair 2015).

All the projects analyzed in this report utilized a fixed-mount system, as illustrated by the leftmost system in Figure 2. Generally, the panels are tilted to the south to reduce the angle of incidence of the incoming sunlight but remain in a fixed position relative to the earth's surface. Because of this fixed alignment, the potential for these systems to generate glare will increase as the angle of incidence with the sun's rays increases, resulting in a greater chance of glare in the mornings and evenings when the sun is closer to the horizon.

The surface texture of the panels and the presence/absence of antireflective coatings vary on a per-project basis. See Appendix A for information regarding the per-project material parameters used in the analysis.

Glare can result in visual hazards and temporary loss of vision (also known as flash blindness). The hazard level of glare depends on the ocular impact to the observer. Generally, an ocular impact is calculated as a function of the size of the glare spot and the intensity of the light. For the purpose of this report, an ocular impact is classified in one of three categories, as follows:

- Green: Low potential for the glare to cause an after-image
- Yellow: Potential to cause a temporary after-image
- Red: Potential to cause retinal burn and permanent eye damage

2 Source and Receptor Overview

2.1 Potential Glare Sources

A total of 26 previously approved rooftop solar PV projects were analyzed for this report, all of which are located within MARB's AOI. Distances from MARB to the projects vary significantly, with some projects located directly adjacent to the MARB property boundary while others are up to 3.5 miles away. A total of 17 of the projects are located within an unincorporated area of Riverside County to the west and southwest of MARB, with three of these projects also falling within the March Joint Powers Authority (JPA) Boundary. Fourof the projects are located in the City of Perris to the south of MARB, and the remaining five projects are located within the City of Moreno Valley to the east and north of MARB.

The projects are identified in this report's text and figures using their county-assigned zoning application identification numbers (ZAP ID). The age of the permit applications for the 26 projects ranges from April 2016 at the earliest, to March 2023 at the most recent. Nearly all the PV arrays that were analyzed are mounted on or are planned to be mounted on large industrial warehouse buildings, in locations characterized by predominantly industrial land uses. See Table 1 for the ZAP ID, address, number of PV array groups, and approximate PV square footage for each project analyzed in this report. Each project analyzed is comprised of at least one PV array group, representing the outer boundary of the PV arrays, with some projects containing up to seven PV array groups. See Figure 1 for the location of each project, labeled by their ZAP ID number, as well as the MARB property boundary, JPA Boundary and AOI, with the surrounding cities of Riverside, Moreno Valley, Perris, Menifee, Canyon Lake, and Lake Elsinore.

Table 1. Projects Included in the Cumulative Analysis

ZAP ID	Address	No. of Panel Groups	Approximate Area of PV Modules (square feet)
1216	24300 Nandina Ave, Moreno Valley, CA	2	125,714 sq ft
1302	Southeast Corner of Placentia Ave and Harvill Ave, Perris, CA	1	93,009 sq ft
1314	22690, Cactus Ave, Moreno Valley, CA	7	38,762 sq ft
1371	Southwest Corner of Nandina Ave and Decker Rd, County of Riverside, CA	2	60,049 sq ft
1386	21362 Harvill, Perris, CA	1	200,218 sq ft
1388	24208 San Michele Rd, Moreno Valley, CA	2	559,071 sq ft
1391	Southeast Corner of Harley Know Blvd and Harvill Ave, Moreno Valley, CA	6	328,065 sq ft
1396	Northeast Corner of Placentia Ave and Patterson Ave, County of Riverside, CA	1	50,997 sq ft
1398	19972 Patterson Ave, Perris, CA	1	206,555 sq ft
1400	20463 Sharon Ann Ln, Perris, CA	1	38,063 sq ft
1404	4200 Webster Ave, Perris, CA	1	161,403 sq ft
1411	21600 Cactus Ave, Riverside, CA	2	326,360 sq ft

Table 1. Projects Included in the Cumulative Analysis

ZAP ID	Address	No. of Panel Groups	Approximate Area of PV Modules (square feet)
1421	Northwest Corner of Cajalco Rd and Harvill Ave, Perris, CA	1	209,299 sq ft
1425	21500 Harvill Ave, Perris, CA	1	226,105 sq ft
1458	14114 Business Center Dr, Moreno Valley, CA	1	19,200 sq ft
1462	14451 Commerce Center Dr, Moreno Valley, CA	1	15,405 sq ft
1488	Northeast Corner of Decker Rd and W Oleander Ave, County of Riverside, CA	1	311,653 sq ft
1493	19580 Seaton Ave, Perris, CA	1	325,200 sq ft
1509	15750 Meridian Pkwy, Riverside, CA	1	225,888 sq ft
1517	Northeast Corner of the Intersection of Harvill Ave, Cajalco Rd, Perris, CA	1	99,543 sq ft
1518	Southwest Corner of the Intersection of Harvill Ave and Water Street, Perris, CA	1	345,172 sq ft
1535	19115 Harvill Ave, County of Riverside, CA	1	25,327 sq ft
1541	South of Ramona Expressway, East of Nevada Road, Perris,, CA	1	621,695 sq ft
1558	14100 Meridian Pkwy, County of Riverside, CA	3	2,539 sq ft
1564	460 Harley Knox Blvd, Perris, CA	1	18,424 sq ft
1566	400 Harley Knox Blvd, Perris, CA	1	36,460 sq ft

The projects analyzed included other components that do not have potential for significant glare and therefore were not analyzed in this report. These components included but were limited to PV panel mounting brackets, electrical inverters, electrical conduits, alternating current disconnects, and PV production metering and control systems.

2.2 Potential Receptors

To ensure that land uses around the base are compatible with the base's flight operations, MARB staff in conjunction with the ALUC have established a standard list of potential receptors to be analyzed for glare impact. These receptors include eight air traffic patterns associated with the two active runways on the base, and the single operating ATCT.

2.2.1 Typical Rectangular Airport Traffic Pattern

Traffic patterns are standardized flight paths around an airfield that help manage the flow of air traffic. They ensure that all pilots know what to expect in terms of other aircraft movements, making it easier to maintain safe distances and avoid collisions. A typical traffic pattern, known as a rectangular pattern, is made of five components: the upwind leg, the crosswind leg, the downwind leg, the base leg, and the final approach.

The first leg of a traffic pattern, the upwind leg, describes the aircraft's movement immediately after takeoff, as the aircraft climbs straight along the extended centerline of the runway. Next, the during the crosswind leg, the aircraft

makes a 90-degree turn to the left or right, flying perpendicular to the runway. After another 90-degree turn, the aircraft will begin the downwind leg, flying parallel to the runway but in the opposite direction of landing or takeoff. At the base leg, the aircraft makes another 90-degree turn, this time flying perpendicular to the runway again, but aligned with the approach end of the pattern. When the pilot prepares for the final approach, they make one last 90-degree turn to align with the runway and follow a straight-in path to landing (FAA 2021).

2.2.2 Overhead Traffic Pattern

More commonly used in military aviation, overhead traffic patterns are designed to allow for faster aircraft to re-enter the pattern and land in a more expedient manner. This pattern is often used by faster aircraft to integrate into the airfield traffic pattern, it eliminates the crosswind and base legs of a rectangular pattern, leaving only three legs: the initial, the downwind, and the final.

On initial approach to an overhead pattern, the aircraft approaches the airfield at a higher altitude than the standard rectangular traffic pattern (500 feet higher in the case of MARB), usually aligned with the runway's extended centerline. As the aircraft reaches a point above the runway's threshold, it makes a quick 180-degree turn to the left or right (depending on the direction of traffic flow) and begins the downwind leg, traveling in the opposite direction of a landing. Instead of a separate base leg, the aircraft then makes a single continuous descending turn from the downwind leg to align with the runway and begins the final approach.

2.2.3 Traffic Patterns Analyzed

The traffic patterns included in the cumulative analysis describe the expected aircraft flight paths for general aviation and military grade aircraft. Each traffic pattern is made up of up to five 3D line segments, one segment for each leg of the traffic pattern. These 3D line segments are described by their starting and ending latitude, longitude, and elevation and were used to simulate the path along which an aircraft would typically be piloted while maneuvering an air traffic pattern. A total of 36 line segments were analyzed for this report. See Table 2 for their descriptions and line segment counts, as well as Figures 3A through 3H, Airport Receptor Locations, for maps of their locations.

Table 2. Analyzed Traffic Patterns

Pattern Description	Number of Line Segments Analyzed	See Figure
Runway 12 General Aviation Rectangular Traffic Pattern	5	3A
Runway 30 General Aviation Rectangular Traffic Pattern	5	3B
Runway 14 General Aviation Rectangular Traffic Pattern	5	3C
Runway 32 General Aviation Rectangular Traffic Pattern	5	3D
Runway 14 C-17/KC-135 Rectangular Traffic Pattern	5	3E
Runway 32 C-17/KC-135 Rectangular Traffic Pattern	5	3F
Runway 14 Overhead Traffic Pattern	3	3G
Runway 32 Overhead Traffic Pattern	3	3H

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3 Cumulative Glare Analysis

In evaluating the potential cumulative glare effects on daily flight operations at MARB, Dudek staff applied a systematic multistep methodology. The process began with collecting data on the locations and specifics of the 26 PV array projects being analyzed and the locations of the potential receptors (i.e. flight paths and ATCT). This was followed by the implementation of an industry standard 3D geometric modeling tool to pinpoint and assess the glare potential at each project site. Finally, the output data from the modeling were processed, analyzed, and interpreted for this report.

3.1 Data Collection

At the outset of the cumulative analysis, ALUC staff provided Dudek with the glare analysis reports that had been submitted to the County of Riverside as part of the standard permitting process and a text file containing the precise coordinates of the flight path and ATCT receptors. The reports were provided to Dudek as PDFs. These 26 glare analysis reports, one for each project being analyzed, utilized the same geometric modeling software as was used in this cumulative analysis, making the transfer of parameters a relatively straightforward process.

The modeling parameters in the provided PDF reports describe the geometry of each PV array group (in latitude, longitude, and elevation coordinates), as well as the implementation details of each modeled array, such as PV module tilt, orientation, and material. With the help of optical character recognition (OCR) features available in Adobe Acrobat, Dudek staff was able to transfer the parameter data from the PDF documents into a Microsoft Excel spreadsheet.

The resulting spreadsheet contained hundreds of rows describing the precise location, size, and shape of the PV arrays, along with the other implementation parameters needed to perform the cumulative analysis. Dudek staff developed a Python programming script to convert the Excel spreadsheet into a file format that could be directly read by the glare modeling software. To further assist in the quality control checks on data entry, another Python script was developed to convert the PV array data into a 3D geographic information system (GIS) layer that could be overlayed on aerial imagery for visual confirmation. Because the data entry task utilized automated technologies, the number of errors detected in the data made up a very small percentage of the total and were mostly due to issues with the OCR process.

Another Python script was used to convert the air base flight path and ATCT receptors to a format that could be directly entered into the glare modeling software, as well as a GIS layer for mapping and quality control. Because these data originated in an easily processable digital format, the conversion process was entirely free of data entry errors.

3.2 Geometric Glare Modeling

3.2.1 Software Overview

For this analysis, Dudek staff used the industry standard GlareGauge by ForgeSolar, a 3D geometric glare analysis software tool used to disclose potential glare impacts associated with the operation of PV arrays. This software is based on Sandia National Laboratories' Solar Glare Hazard Analysis Tool, an FAA approved tool for modeling glare

on or near airports. With the Solar Glare Hazard Analysis Tool, standardized safety metrics define the anticipated glare intensity that would cause unwanted visual impacts to ATCTs and airplane pilots.

Glare intensity is described by the potential for after-image in the vision of the observer. Low potential for after-image is referred to as "green" glare, and potential for after-image is referred to as "yellow" glare. "Red" glare is representative of glare conditions with potential for permanent eye damage and is not typically possible for PV glare because PV arrays do not concentrate or focus reflected sunlight.

By inputting the solar panel locations and characteristics, as well as the locations and elevations of the receptors, the software can simulate the sun's progression across the sky over the course of a year and model the potential glare caused by the proposed solar arrays. If glare is detected, the software can quantify the level of ocular impact hazard (green or yellow) and pinpoint the exact time of year the glare would occur. This analysis is automatically performed for every minute of the calendar year for each PV array and for each potential receptor defined in the model. See Section 3.2.5, Limitations of the Geometric Analysis, for more information about the known limitations in the modeling.

3.2.2 Analysis Setup

The glare analysis software has several constraints that had to be addressed before running the analysis. The software permits a maximum of 20 PV array groups per run of the analysis. Furthermore, these PV array groups must be geographically proximate, with all arrays situated within a 3-mile radius of each other. For the assessment of flight path receptors, the software has limits of a maximum of 20 distinct flight paths per run. Because the cumulative analysis covers 26 projects comprising 43 individual panel groups spread across an area of more than 9 miles and would need to be analyzed against 36 distinct flight paths, Dudek staff opted to break the analysis into six batches as described in Table 3. These six batches ensured that every PV array group was modeled against every airport receptor exactly once. The batch names correspond to the raw modeling outputs that can be found in Appendix A, which also provides details on the modeling parameters used for each modeled PV array group.

Table 3. Analysis Batches

Batch Name	ZAP IDs Included in Batch	Receptors Included in Batch
Northern Projects, Runway 12/30 with ATCT	1314, 1411, 1458, 1462, 1509, 1558	Flight Paths Associated with Runway 12/30 and the ATCT
Northern Projects, Runway 14/32	1314, 1411, 1458, 1462, 1509, 1558	Flight Paths Associated with Runway 14/32
Central Projects, Runway 12/30 with ATCT	1216, 1371, 1388, 1391, 1404, 1488, 1564, 1566	Flight Paths Associated with Runway 12/30 and the ATCT
Central Projects, Runway 14/32	1216, 1371, 1388, 1391, 1404, 1488, 1564, 1566	Flight Paths Associated with Runway 14/32
Southern Projects, Runway 12/30 with ATCT	1302, 1386, 1396, 1398, 1400, 1421, 1425, 1493, 1517, 1518, 1535, 1541	Flight Paths Associated with Runway 12/30 and the ATCT
Southern Projects, Runway 14/32	1302, 1386, 1396, 1398, 1400, 1421, 1425, 1493, 1517, 1518, 1535, 1541	Flight Paths Associated with Runway 14/32

3.2.3 Analysis Parameters

All six analysis batches utilized the same "Site Settings," which GlareGauge uses to define the environmental parameters used in the analysis. The parameters used in this analysis are the default parameters recommended by ForgeSolar and required by regulatory authorities for analyzing hazards to airport receptors for projects on airport property. See Table 4 for the precise environmental parameters used, as well as a description of each parameter.

Table 4. Site Settings

Setting Name	Description	Value
Time Interval	The time step, or sampling interval, for the annual glare hazard analysis.	1 minute
Minimum Sun Altitude	Lower bound denoting the minimum altitude at which the sun is visible (year-round).	0 degrees
Peak DNI	The maximum direct normal irradiance (DNI) at the given location at solar noon. DNI is the amount of solar radiation received on a surface facing the sun during a 60-minute period. On a clear sunny day at solar noon, a typical peak DNI is approx. 1,000 watts per square meter (W/m2).	1,000 W/m2
DNI Varies?	If set to true, the peak DNI will be scaled at each time step according to the changing position of the sun and reduced DNI in the mornings and evenings.	TRUE
Sun angle (mrad)	The average subtended angle of the sun as viewed from earth is approx. 9.3 mrad or 0.5°.	9.3 mrad
Use enhanced subtended source angle calculation?	If set to true, the analysis will utilize improved computation of subtended source angle.	TRUE
Ocular Transmission Coefficient	Coefficient accounting for radiation that is absorbed in the eye before reaching the retina. A value of 0.5 is typical.	0.5
Pupil Diameter	Defines the diameter of the pupil of the observer receiving predicted glare. The size impacts the amount of light entering the eye and reaching the retina. A typical value for daylight adjusted eyes is 2 mm.	2 mm
Eye Focal Length	Distance between the nodal point (where rays intersect in the eye) and the retina. This value is used to determine the projected image size on the retina for a given subtended angle of the glare source. A typical eye focal length is 17 mm.	17 mm

The PV array group parameters used in this cumulative analysis, including PV array geometry and implementation details, were transferred from the original glare analysis reports provided by the ALUC and were only checked for consistency with those reports. Assessing the correctness or validity of those parameters was not within the scope of this analysis, and therefore not confirmed by Dudek staff before running the cumulative analysis. See Appendix A for the analysis parameters used for each PV array group.

Because the GlareGauge modeling software was intended specifically to address the FAA's concerns regarding flights approaching airports, the software only includes functionality intended to model 2-mile direct flight approach paths to runway thresholds. These approach paths are the only supported way to model flight paths while retaining the ability to restrict the maximum downward and azimuthal (left-to-right) viewing angle of the pilot. Without these settings, modeled air traffic could potentially receive glare from sources that they couldn't realistically see, such as PV arrays directly below or behind the airplane.

Since the flight paths provided by the ALUC describe flight paths for the entire flight pattern and not only the approach paths, Dudek staff chose to generate model configuration files that altered the 2-mile approach path receptor types from their intended use by manually setting their start and end coordinates to match those provided by the ALUC. Dudek staff confirmed that this methodology was valid by comparing the results of an analysis using modified 2-mile approach path receptors, with the results of an analysis that used standard route receptor lines. The results that utilized the standard route receptor lines without downward and azimuthal view restrictions yielded glare totals that were slightly greater than the results that did utilize view restrictions, as was expected.

The default maximum azimuthal view parameter for flight paths is set to 50 degrees, meaning that the pilot can receive glare from sources 50 degrees to the left or right of the center. This default is based on FAA research that determined that the impact of glare appearing beyond 50 degrees is mitigated because it is outside the peripheral view of a pilot focused on a runway directly in their line of travel (straight ahead) (ForgeSolar 2023). In this cumulative analysis, some of the flight path receptors are not approach paths, meaning the pilot's attention would not necessarily be focused straight ahead, but could potentially be focused on air traffic or runway thresholds as much as 90 degrees to the left or right of center. For this reason, Dudek staff conservatively set the maximum azimuthal view of the pilot to 90 degrees for the crosswind, downwind, and base flight paths and retained the 50-degree setting for only those paths on direct approach to or take-off from a runway. Table 5 describes the parameters used for each of the 36 flight paths, as well as the short names that were used in the analysis software. A shortened name for each flight path receptor was needed due to software limitations; these are only used to reference the flight paths in the detailed modeling results found in Appendix A.

Table 5. Flight Path Receptor Analysis Names and Parameters

Flight Pattern Leg	Pilot Vertical View	Pilot Azimuthal View	Analysis Short Name
Runway 12 General Aviation Rectangular Traffic Pattern			
Upwind	30	50	FP11
Crosswind	30	90	FP08
Downwind	30	90	FP09
Base	30	90	FP07
Final	30	50	FP10
Runway 30 General Aviation Rectangular Traffic Pattern			
Upwind	30	50	FP16
Crosswind	30	90	FP13
Downwind	30	90	FP14
Base	30	90	FP12
Final	30	50	FP15

Table 5. Flight Path Receptor Analysis Names and Parameters

Flight Pattern Leg	Pilot Vertical View	Pilot Azimuthal View	Analysis Short Name
Runway 14 General Aviation Rectangular Traffic Pattern			
Upwind	30	50	FP31
Crosswind	30	90	FP28
Downwind	30	90	FP29
Base	30	90	FP27
Final	30	50	FP30
Runway 32 General Aviation Rectangular Traffic Pattern			
Upwind	30	50	FP36
Crosswind	30	90	FP33
Downwind	30	90	FP34
Base	30	90	FP32
Final	30	50	FP35
Runway 14 C-17/KC-135 Rectangular Traffic Pattern			
Upwind	30	50	FP21
Crosswind	30	90	FP18
Downwind	30	90	FP19
Base	30	90	FP17
Final	30	50	FP20
Runway 32 C-17/KC-135 Rectangular Traffic Pattern			
Upwind	30	50	FP26
Crosswind	30	90	FP23
Downwind	30	90	FP24
Base	30	90	FP22
Final	30	50	FP25
Runway 14 Overhead Traffic Pattern			
Initial	30	90	FP03
Downwind	30	90	FP01
Final	30	50	FP02
Runway 32 Overhead Traffic Pattern			
Initial	30	90	FP06
Downwind	30	90	FP04
Final	30	50	FP05

The single ATCT operating at MARB was included in this cumulative analysis as a point observer. The location and height of the ATCT cab was provided by the ALUC in latitude/longitude coordinates and in feet above ground level. Ground level elevation was obtained from the U.S. Geological Survey and was determined to be 1,510 feet above mean sea level. Modeled point receptors such as ATCTs can receive glare from any direction or distance.

3.2.4 Analysis Techniques

The GlareGauge modeling software outputs the results of the geometric analysis as one Excel workbook per PV array group, with each workbook containing a spreadsheet for each receptor impacted by that panel array group. Because there are 37 receptors (including the ATCT) and 43 individual panel groups included in this analysis, there could have been up to 1,591 spreadsheets output by the analysis software for this analysis. Since not all panel array groups were predicted to affect all receptors, only approximately 250 spreadsheets resulted from the glare analysis.

The spreadsheets output by GlareGauge include one row for every minute that glare was predicted to be generated by a panel array group towards a receptor. In addition, the spreadsheets contain columns that describe various information about that minute of glare, including the exact time the glare occurred (formatted as a date/time field); the estimated ocular hazard of the glare, either "1" for green or "2" for yellow; and other fields that were used to calculate the ocular hazard, such as the direct normal irradiance, retinal irradiance, and subtended glare angle. For this analysis the only information Dudek staff needed was the time glare occurred and the level of predicted glare hazard.

In order to examine the cumulative effects of all of the projects' glare towards every receptor at MARB, Dudek staff had to combine the approximately 250 spreadsheets into one database table that could then be further analyzed as a whole. To accomplish this, Dudek staff created a Python script that combined all of the spreadsheets into one database table containing nearly 1.2 million rows of data.

As mentioned previously, some projects are comprised of up to seven panel groups. The number of panel groups associated with each project has little relationship to the size of the project and has more to do with the shape or layout of the proposed solar array, making the number of panel groups an arbitrary number to this analysis. Because the GlareGauge software counts each minute of glare per panel group, it is entirely possible for some projects to cast multiple minutes of glare (one for each panel group in the project) towards a receptor within 1 minute of elapsed time. This would essentially overestimate the number of minutes a pilot receives glare from a project, and potentially result in more glare minutes than there are daylight minutes in a year. To remedy this, Dudek staff eliminated any duplicate minutes of glare from a project towards a given receptor, resulting in a maximum of 1 minute of "discrete" glare between a project/receptor combination for any given minute of the year.

Conversely, to gauge the cumulative effect of the 26 projects on receptors at MARB, Dudek staff needed to quantify how many projects might cast glare towards the same receptor during the same minute of the year. This number is referred to in this report as the "source count," or the count of sources predicted to cast glare onto a receptor in any given minute of the year. With 26 projects in this analysis, this number could range from "0," meaning no projects are casting glare to a particular receptor in that minute, to "26," meaning all projects are casting glare to a given receptor within that minute. To generate this number, Dudek staff tallied the number of records in the database that shared the same minute in time, the same ocular hazard, and the same receptor name. This resulted in a new table with roughly 411,000 records, each record containing the date/time field, receptor name, ocular hazard, and source count.

With this information, Dudek staff utilized Excel to generate charts depicting the average hours per day of glare that a given receptor might receive during a given month of the year. The bars of the charts were colorized to depict what time of day the glare was predicted to be received, either in the morning (sunrise to 9:59 a.m.), midday (10:00 a.m. to 1:59 p.m.), or evening (2:00 p.m. to sunset). All times are based on Pacific Standard Time or Coordinated Universal Time (UTC) 8. In addition to charts, Dudek staff created maps depicting each flight pattern analyzed and which projects were predicted to contribute the most glare to that flight pattern.

3.2.5 Limitations of the Geometric Analysis

The following are known limitations in the glare analysis software:

- The GlareGauge software was developed to support the FAA's recommended procedures described in the Technical Guidance for Evaluating Selected Solar Technologies on Airports and was not intended to gauge the potential cumulative effects of multiple off-airport solar projects on airport operations. Additional analysis might be necessary to better determine safe or acceptable thresholds for cumulative glare.
- The geometric modeling algorithm uses bounding polygons to represent PV array groups and therefore does not rigorously represent the detailed geometry of a PV array. Detailed features such as gaps between modules, variable height of the PV arrays within the bounding polygons, and support structures are not represented in the model and therefore could vary from real-life conditions.
- The geometric modeling algorithm does not account for intervening terrain, structures, or vegetation between the PV arrays and the receptors. This could result in more minutes of glare being predicted towards a receptor than is realistic.
- The geometric modeling software does not report length of the flight path that is affected by glare produced by a given PV array within a given minute, only whether a flight path is affected or not.

3.3 Glare Analysis Results

This cumulative glare analysis was conducted in compliance with the FAA's recommended procedures described in the Technical Guidance for Evaluating Selected Solar Technologies on Airports (FAA 2018), and the geometric glare modeling software used adheres to FAA policy regarding solar energy system projects on federally obligated airports (86 FR 25801–25803). This policy does not apply to the projects being analyzed in this report but was included in this reporting to describe the standard methodologies used to assess solar glare near operating airports. Specifically, the glare analysis and software quantify the level of ocular impact hazard (reported as green or yellow glare) and pinpoint the time of year the glare is likely to occur.

This report does not attempt to qualify whether glare produced by PV systems is or is not a hazard to operations at airports like MARB. Instead, the goal of this analysis is to quantify the cumulative glare produced by the 26 projects analyzed and provide insight into when and where a cumulative glare affect might be experienced by personnel at MARB and what that effect might look like.

The results of the glare analysis indicate that all 26 projects analyzed could result in green glare (low potential to cause an after image) towards some of the flight path receptors associated with daily operations at MARB. No yellow glare (potential to cause a temporary after image) was predicted towards any of the receptors at MARB and no glare of any level was predicted towards the single operating ATCT. This is consistent to the present Riverside County Airport Land Use Commission standards. These findings are generally in line with the previous analyses done for the projects. Any discrepancy between the previous analyses can likely be explained by changes in the Solar Glare Hazard Analysis Tool modeling algorithm since those results were initially published, as well as differences in the receptor parameters used for this report.

3.3.1 Per-Project Glare Analysis Results

Table 6 shows the total minutes of green glare predicted for each project. The "Discrete Green Glare" column describes how many minutes each project is predicted to cast green glare to any receptor at MARB. If the project is predicted to cast green glare on multiple receptors (flight paths) within the same minute, that minute is only accounted for once in this column. The "Average Concurrent Receptors" column describes how many receptors, on average, received glare from that project within the same minute. Numbers closer to 1 indicate that the project only cast glare towards one receptor at a time for most of the year. The "Maximum Concurrent Receptors" column describes the maximum number of receptors that received glare from that project during the same minute.

Table 6. Per-Project Discrete Glare

Project by ZAP ID	Discrete Green Glare (minutes per year)	Average Concurrent Receptors Affected	Maximum Concurrent Receptors Affected
1216	18,899	1.43	3
1302	38,652	1.20	2
1314	29,187	6.45	14
1371	33,024	2.16	6
1386	13,595	1.08	2
1388	14,771	2.43	6
1391	76,024	2.42	9
1396	33,216	1.17	2
1398	26,932	1.19	2
1400	31,712	1.17	2
1404	7,168	1.00	1
1411	35,263	1.17	3
1421	22,811	1.16	3
1425	11,855	1.06	2
1458	20,645	1.15	3
1462	32,353	1.04	2
1488	27,763	1.24	3
1493	29,320	1.17	2
1509	25,732	1.08	2
1517	19,545	1.21	3
1518	29,900	1.06	2
1535	29,851	1.30	3
1541	39,287	1.33	3
1558	15,630	3.43	6
1564	14,622	2.01	4
1566	11,127	2.02	5

3.3.2 Per-Receptor Glare Analysis Results

To assess the cumulative effects of the 26 PV projects on receptors at MARB, Dudek staff first had to quantify both the total minutes of glare received by each flight path, as well as the number of projects that contributed to that glare. As mentioned previously, all 26 projects are predicted to cast glare towards receptors at MARB, but not all receptors at MARB were equally affected by those projects. Per the results, out of the 36 flight path receptors analyzed, 28 were predicted to receive glare from any of the projects. Table 7 details which receptors received glare and the total minutes of discrete glare received. In addition to that total, an "Average Concurrent Source Count" describes, on average, how many projects are predicted to cast glare on that receptor at any given time during the year (excluding the times of year where no glare is predicted). Similarly, a maximum concurrent source count is included to illustrate which receptors are predicted to be affected by the most projects during a single moment in time that glare is predicted.

Table 7. Per-Receptor Cumulative Glare Results

Flight Pattern Leg	Discrete Green Glare (minutes per year)	Average Concurrent Source Count	Maximum Concurrent Source Count
Runway 14 Overhead Traffic Pattern			
Initial	37,284	1.37	3
Downwind	0	0.00	0
Final	14,405	1.07	2
Runway 32 Overhead Traffic Pattern			
Initial	62,043	3.06	10
Downwind	43,291	3.30	8
Final	18,433	1.46	3
Runway 12 General Aviation Rectangular Traffic Pattern			
Upwind	2,612	1.00	1
Crosswind	0	0.00	0
Downwind	15,586	1.44	3
Base	9,168	1.22	2
Final	0	0.00	0
Runway 30 General Aviation Rectangular Traffic Pattern			
Upwind	841	1.00	1
Crosswind	0	0.00	0
Downwind	0	0.00	0
Base	7,809	1.00	1
Final	2,784	1.00	1
Runway 14 C-17/KC-135 Rectangular Traffic Pattern			
Upwind	1,768	1.44	2
Crosswind	28,479	1.26	3
Downwind	5,090	1.00	1
Base	13,053	1.26	4
Final	11,350	1.13	2

Table 7. Per-Receptor Cumulative Glare Results

Flight Pattern Leg	Discrete Green Glare (minutes per year)	Average Concurrent Source Count	Maximum Concurrent Source Count
Runway 32 C-17/KC-135 Rectangular Traffic Pattern			
Upwind	7,534	1.00	2
Crosswind	0	0.00	0
Downwind	38,537	4.30	12
Base	4,711	1.00	1
Final	15,899	1.59	4
Runway 14 General Aviation Rectangular Traffic Pattern			
Upwind	4,044	1.44	2
Crosswind	3,937	1.00	1
Downwind	113	1.00	1
Base	8,277	1.00	1
Final	0	0.00	0
Runway 32 General Aviation Rectangular Traffic Pattern			
Upwind	0	0.00	0
Crosswind	2,523	1.00	1
Downwind	34,625	1.88	5
Base	82	1.00	1
Final	16,569	1.26	3

3.3.3 Discussion of Results by Traffic Pattern

Runway 12 General Aviation Rectangular Traffic Pattern

This traffic pattern is expected to receive a moderate amount of green glare, with a total of approximately 27,000 minutes per year. As shown in Figure 4A, Cumulative Glare Analysis Results – Runway 12 General Aviation Rectangular Traffic Pattern, the most affected legs are the base and downwind legs. Both of these legs of the pattern experience glare in the late afternoon hours of the spring and summer months, averaging between 1 and 2 hours per day.

This pattern does not experience a significant cumulative effect from the 26 projects analyzed, with only one or two of those projects contributing glare at any time.

Runway 30 General Aviation Rectangular Traffic Pattern

This traffic pattern received the least amount of green glare of all the traffic patterns analyzed, at approximately 11,500 minutes per year total. As shown on Figure 4B, Cumulative Glare Analysis Results – Runway 30 General Aviation Rectangular Traffic Pattern, most of the glare predicted to be received by this traffic pattern was on the base leg, which for most of the year receives less than 20 minutes of glare per day, exclusively in the daylight evening hours. The upwind and final legs of the pattern receive less than 30 minutes per day, restricted to the

evening hours of a select few months of the year. This pattern also experiences the least cumulative effect, receiving glare from only one project at a time.

Runway 14 General Aviation Rectangular Traffic Pattern

As shown in Figure 4C, Cumulative Glare Analysis Results - Runway 14 General Aviation Rectangular Traffic Pattern, this traffic pattern is expected to receive relatively little green glare, at nearly 16,300 minutes per year. Glare towards any leg of this traffic pattern is predicted to stay below 1 hour per day, on average. The base leg of this pattern is predicted to receive the most glare, at 8,277 minutes per year, occurring primarily in the morning hours of the summer and winter months.

The upwind and crosswind legs of this pattern are both predicted to receive roughly 4,000 minutes of green glare per year. They both receive glare in the late winter and early fall months, with the upwind leg receiving glare in the morning and the crosswind leg receiving glare in the evening.

The downwind leg only receives a handful of minutes of glare per day on average in June, and the final leg is predicted to receive no glare. The cumulative effect on this traffic pattern is relatively low, with most legs of the pattern receiving glare from only one project at a time, with the exception of the upwind leg, which receives glare from two projects at a time in February and October.

The reason for the relatively low glare prediction for this pattern is the short length of the legs of the pattern when compared to the military aircraft patterns, which tend to be longer, as well as the lower count of PV projects that intersect the lines of flight.

Runway 32 General Aviation Rectangular Traffic Pattern

As shown on Figure 4D, Cumulative Glare Analysis Results - Runway 32 General Aviation Rectangular Traffic Pattern, this traffic pattern is expected to receive approximately 53,800 minutes of green glare per year from the 26 projects analyzed. The majority of the glare is received by the downwind leg of this pattern, with between 1 and 2 hours of glare per day on average. All the glare towards this leg is received in the morning hours, and the average source count hovers around two for most of the year. Glare towards the downwind leg comes mainly from the projects directly in the flight line, west of MARB and west of Interstate (I) 215, with some additional glare being received from the projects east/southeast of MARB.

The final approach of this pattern also receives between 1 and 2 hours of green glare per day, on average, occurring in the evening hours from April through August. The source count for glare on this leg stays between 1 and 1.5 on average and is generated by projects to the west-southwest of MARB, the same projects that generate most of the glare for the downwind leg.

The crosswind leg also receives afternoon glare, ranging between 15 and 45 minutes of green glare per day on average, but only during the months of May, June, and July. The glare directed towards this leg is predicted to come from only one source, ZAP ID 1411.

The base leg receives just a few minutes of glare per day on average, and only during the months of December and January, while the upwind leg is predicted to receive no glare year-round.

Runway 14 C-17/KC-135 Rectangular Traffic Pattern

As shown of Figure 4E, Cumulative Glare Analysis Results - Runway 14 C-17/KC-135 Rectangular Traffic Pattern, this traffic pattern receives almost 60,000 minutes of green glare per year, with nearly half of that glare being received in the crosswind leg. This leg of the pattern experiences between 1 and 2 hours of glare per day, on average, primarily in the evening hours, with less glare being received in the winter months. This glare is caused by the high density of projects to the southwest of MARB, west of I-215. As aircraft following this leg of the traffic pattern are flying west, into the setting sun, the projects directly off the right side of the aircraft are predicted to reflect some of that light into the line of flight. At any given time, this glare is expected to come from between one and two sources on average, peaking at three sources at select times in June.

The upwind, downwind, base, and final legs of this traffic pattern receive between 0.5 and 1.5 hours of green glare per day, on average, with that glare occurring in the morning hours of the fall and winter months, with the exception of the downwind leg, which receives morning glare in during the summer months. The source count for these legs of the pattern typically stays in the low digits between one and two, occasionally receiving glare from up to four sources on the base leg of the pattern in February. Glare towards the base and final leg of this pattern is due to the projects directly north/northeast of MARB.

Runway 32 C-17/KC-135 Rectangular Traffic Pattern

This traffic pattern receives approximately 66,500 minutes of glare per year. As shown on Figure 4F, Cumulative Glare Analysis Results - Runway 32 C-17/KC-135 Rectangular Traffic Pattern, the downwind leg receives almost 60% of the total glare of this pattern, exclusively in the morning hours. Glare towards the downwind leg is predicted to occur for between 1 and 2.3 hours per morning, with the shortest durations occurring in the winter months and the longest durations in May through August. This leg experiences the largest cumulative effect of the analysis, receiving glare from between 3 and 5 projects at a time for most of the year, peaking at 12 projects in at very select times in the winter months. The high levels of glare towards this leg are due to its relatively long length and the fact that the direction of flight lines up with the area of highest density of projects in the area to the southwest of MARB, west of I-215.

The final leg of this pattern receives nearly 16,000 minutes of glare per year, averaging between 1 and 2 hours per day in the evenings of the spring and summer months. The analysis predicts that, as aircraft are approaching runway 32, they will receive glare from between one and two projects, on average, off the lefthand side of the aircraft in the same direction as the setting sun.

The upwind leg of this pattern is predicted to receive between 0.5 and 1.5 hours of glare per day, on average, in the evenings of the spring and summer months, while the base leg is predicted to receive less than 1 hour of glare per day in the midday hours of May, June, and July. Both of these legs are predicted to only receive glare from one source at a time. The crosswind leg of this pattern is not predicted to receive any green glare.

Runway 14 Overhead Traffic Pattern

Per the results of the cumulative analysis and as shown on Figure 4G, Cumulative Glare Analysis Results – Runway 14 Overhead Traffic Pattern, this traffic pattern is predicted to receive approximately 37,000 minutes of green glare on the initial leg of the pattern, no glare on the return downwind leg, and then an additional approximately 14,000

minutes per year on the final approach to runway 14. This glare is expected the occur mainly in the fall and winter months, throughout the day, though on the final approach, glare is expected to be limited to the morning hours.

The glare towards this pattern is usually generated by only one or two projects at a time and is predominantly due to the projects to the north and east of MARB.

Runway 32 Overhead Traffic Pattern

This traffic pattern is expected to receive the most minutes of green glare per year out of all the traffic patterns analyzed, with approximately 123,000 minutes of green glare received by receptors in this pattern per year. As shown on Figure 4H, Cumulative Glare Analysis Results – Runway 32 Overhead Traffic Pattern, as aircraft approach the overhead pattern from the south on the initial leg, they will receive between 2 and 3.5 hours per day of green glare, throughout the year. This glare will occur almost exclusively in the evening hours and can be attributed to the large number of projects to the south/southwest of MARB, west of I-215. When glare is received by this flight path, it will be originating from between three and four different projects at a time.

Conversely, on the return downwind leg of this flight path, glare will be received in the morning hours throughout the year, averaging between 1 and 2.5 hours per morning. The morning occurrence of glare on this leg of the flight pattern is due to all of the projects being on the east side of the flight path. The modeling predicts that, on average, between two and four projects could produce glare towards this flight path at a time.

The final approach to this traffic pattern could experience up to 2 hours of green glare per day in the summer evenings, but this approach will experience a lesser cumulative effect than the other legs of this pattern, with only one to two projects contributing glare at any given time. This is likely due to this leg of the pattern being positioned to the north of many of the projects.

3.4 Multiple Sources of Glare

While this report does not attempt to make a qualitative determination on the severity of impacts due to PV glare on flight path receptors at MARB, it does aim to present a comprehensive overview of what the glare from the 26 projects analyzed might look like to pilots navigating the various traffic patterns at MARB. The challenge of this task lies in addressing the multiple dimensions of glare effect, including intensity, spatial coordinates, elevational differences, and temporal factors. A pilot following a path of a particular leg of a flight pattern will be traveling through all these dimensions, experiencing varying degrees of the effects of glare during their navigational course. This section will attempt to illustrate what it might look like from a pilot's point of view as they travel in and out of a beam of light reflected from a solar array and how multiple sources of glare might also affect this traversal.

To assist in describing the potential effect of multiple sources of glare towards flight receptors at MARB, Dudek staff selected one example flight path that exhibited a range of cumulative glare effects. The downwind leg of the Runway 32 C-17/KC-135 rectangular traffic pattern was selected because of its relatively high duration of morning glare during the summer months, as well as the relatively high average source count predicted for that leg. It would typically take between 2 and 3 minutes for an aircraft to travel the length of this leg, so a representative 3-minute period of time was selected that would provide representative example of cumulative glare.

On the summer solstice (June 21, 2023), between 6:41 a.m. and 6:43 a.m., the downwind leg of the flight pattern receives glare from nine concurrent sources for all 3 minutes. As shown in Figure 5, Simulated Example of

Cumulative Glare, an aircraft starting at the beginning of the leg on June 21 at 6:41 a.m. (labeled as Viewpoint #1) and traveling along the downwind flight path is predicted to receive no glare for that first minute of travel. The simulated view of Viewpoint #1 shows no sources of glare within the pilot's frame of view. This is because, as the sun rises at an azimuth of approximately 76 degrees (east-northeast) at that time, the light rays bounce off the panels at an angle that does not intersect the northern half of that leg of the pattern. These reflected beams of light that make up the glare are shaped like 3D cones extending into infinity, with the point of the cone starting at the surface of the PV array. Wherever these cones intersect the flight path in 3D space, glare will occur.

As the plane continues to travel south for about 1.5 minutes, it will first enter the glare cone of ZAP ID 1216. From the perspective of the pilot, a bright light will slowly appear on the left side of the aircraft. Though the flight path is still receiving glare from nine sources during this minute, only one source is affecting the pilot at this precise location. As the plane approaches Viewpoint #2, a second bright light off the left-hand side of the cockpit will appear, this time from ZAP ID 1371. This is simulated in the middle image on Figure 5. Now two separate projects are creating glare cones that are intersecting Viewpoint #2. As the plane continues to travel south for another 30 seconds, those two sources of glare will slowly fade, starting with ZAP ID 1216 and then ZAP ID 1371.

As the plane continues south for another minute, it will enter and exit the glare cone created by ZAP ID 1535. Again, this will appear to the pilot as a reflected light source off the left-hand side of the aircraft, slowly appearing and then disappearing. As the plane reaches Viewpoint #3, it will first enter the glare cone of ZAP ID 1421, followed by ZAP ID 1493 a few seconds later. Because ZAP ID 1493 is closer and larger than any of the glare sources experienced along this leg so far, it is likely going to be the brightest source of glare from the pilot's perspective. This is illustrated in the simulated view shown on the bottom image on Figure 5.

As the aircraft passes Viewpoint #3, it will enter and exit the glare cone of ZAP ID 1398 and then enter the glare cones of ZAP IDs 1396, 1400, and 1302. At this point, while within these glare cones, the aircraft will begin its turn to the base leg of the flight pattern and slowly exit all of the glare cones shown on Figure 5.

It is important to note that ocular hazard from multiple distinct sources towards a flight path is not likely to be additive, meaning that multiple sources of concurrent glare in the green ocular hazard category will not likely add up to glare in the yellow ocular hazard category. This is due to the way the ocular hazard is calculated as a function of the retinal irradiance (the intensity of light hitting the retina) and the diameter of the glare spot on the retina. For a given glare intensity, a smaller glare spot will result in a smaller glare intensity (Ho 2011).

A pilot traveling a flight path might experience multiple points of glare on different areas of their retina at different times over the course of their travel, but those points of glare will likely not be seen as a single larger point of glare in their vision unless the PV arrays from the multiple projects occupy the same uninterrupted surface (rooftop) and are utilizing the same tilt and orientation. A larger, uninterrupted, set of PV arrays utilizing the same parameters will have more potential to increase the size of the glare spot, thus increasing the ocular hazard. For this reason, projects that propose to expand their footprint on a given rooftop should be required reanalyze the project as-a-whole for glare.

As illustrated in this section, the impact of glare on an aircraft has a temporal as well as spatial component to it. Glare received by a flight path receptor will only affect an aircraft as it travels through that cone of glare, and that duration of effect will be dictated by the speed of the aircraft and the size of the cone of glare. Multiple sources of glare towards a flight path will result in either staggered or overlapping cones of glare, which will appear to the pilot as separate sources of light that will fade in and fade out as the aircraft travels into and out of each cone of glare.

3.5 Conclusion

This report assesses the collective potential for 26 previously approved rooftop solar projects to cast glare on sensitive receptors associated with flight operations at MARB including two active runways and the single ATCT. It does not attempt to qualify whether glare produced by PV systems is or is not a hazard to operations at airports like MARB. Instead, the goal of this report is to quantify the cumulative glare produced by the 26 projects analyzed and provide insight into when and where a cumulative glare affect might be experienced by personnel at MARB and what that effect might look like.

The per-receptor cumulative glare results predict that none of the receptors analyzed will receive yellow glare (potential to cause after image), but they do indicate that every flight pattern will receive some amount of green glare. The ATCT was not predicted to receive glare at any intensity level. It has also been made evident that there is a wide range of total glare minutes predicted for the eight flight patterns analyzed, from approximately 11,000 minutes predicted for the Runway 30 General Aviation Rectangular traffic pattern, up to roughly 123,000 minutes of green glare for the Runway 32 Overhead traffic pattern.

As expected, the analysis shows that, as the number of projects increase within the AOI of MARB, the potential for intersections between glare cones and flight paths will increase. In addition, because the implementation details of each project differ from one another in panel location, elevation, tilt, orientation, and build material, their glare cones will more likely intersect flight paths at different times of day and year, essentially spreading out the potential effects. A single leg of a flight path might receive glare from over a dozen different sources over the course of the year, but the glare cones from those sources often do not intersect simultaneously with an aircraft traveling along that flight path.

The analysis confirms that the number of sources of glare adjacent to MARB does not influence the overall glare intensity; two separate sources of green glare do not add up to a yellow glare hazard. Instead, as the number of green glare sources increases, so too will opportunities for glare to intersect with a flight path or ATCT at MARB.

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5 Document Preparers

This report was prepared by Christopher Starbird.

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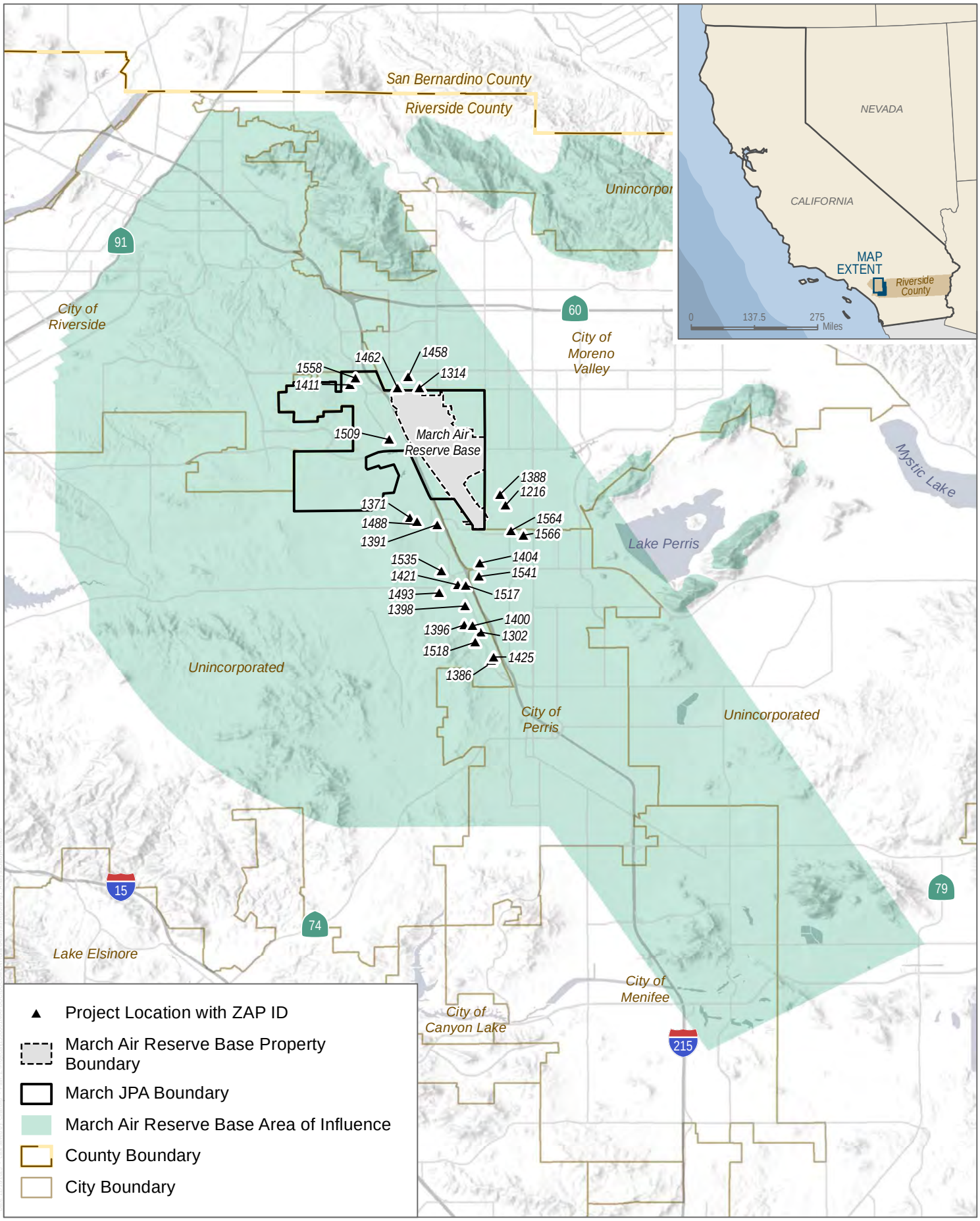

SOURCE: Esri and Digital Globe 2023

DUDEK

0 1.6 3.2 Miles

FIGURE 1

Analysis Study Area

March Air Reserve Base Compatible Use Study, Cumulative Glare Analysis

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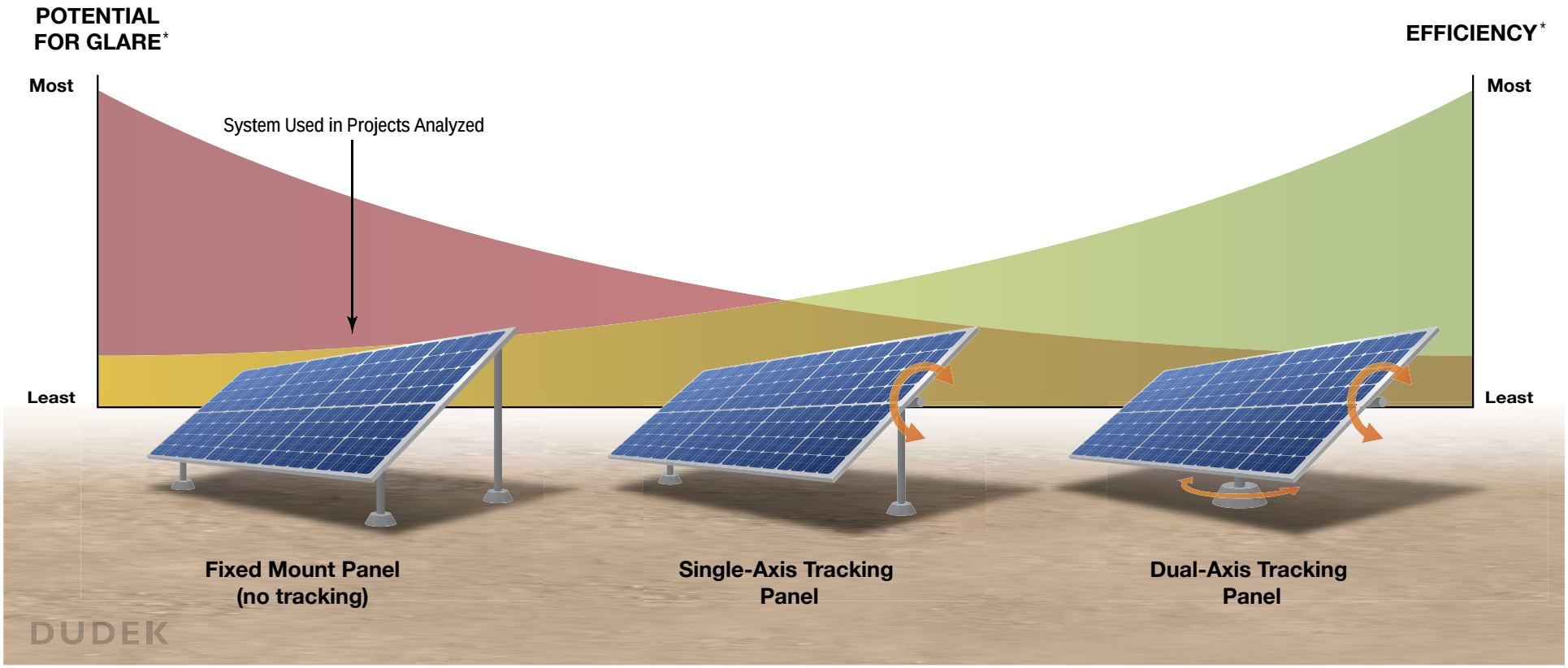

** Efficiency and glare relationships represented in this graphic have been exaggerated and are for illustrative purposes only.*

SOURCE: DUDEK 2023

DUDEK

FIGURE 2

Comparison of Photovoltaic Tracking Systems

March Air Reserve Base Compatible Use Study, Cumulative Glare Analysis

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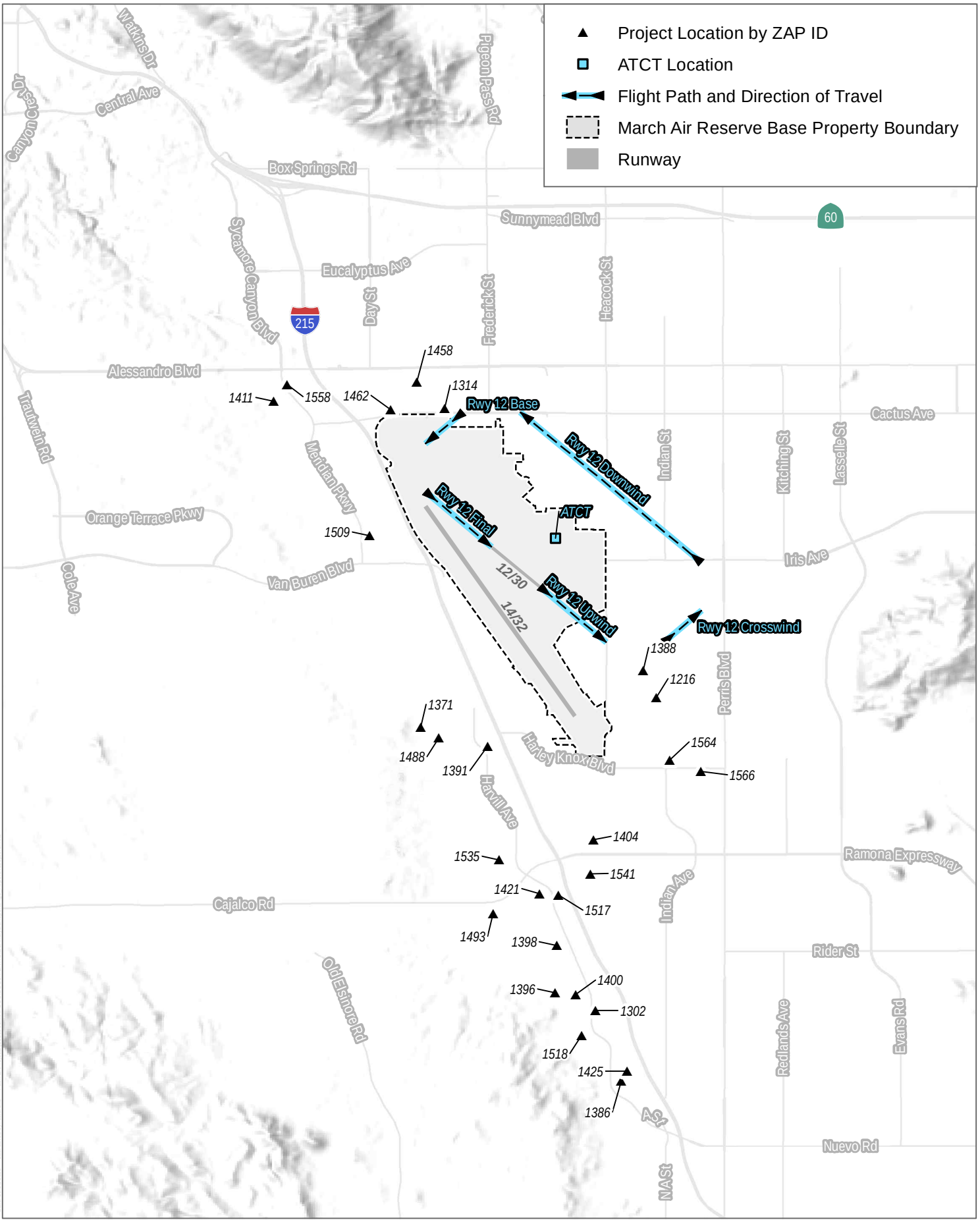

SOURCE: Esri and Digital Globe 2023

FIGURE 3A

Airport Receptor Locations - Rwy 12 GA Rectangular Traffic Pattern

March Air Reserve Base Compatible Use Study, Cumulative Glare Analysis

DUDEK

0 0.65 1.3 Miles

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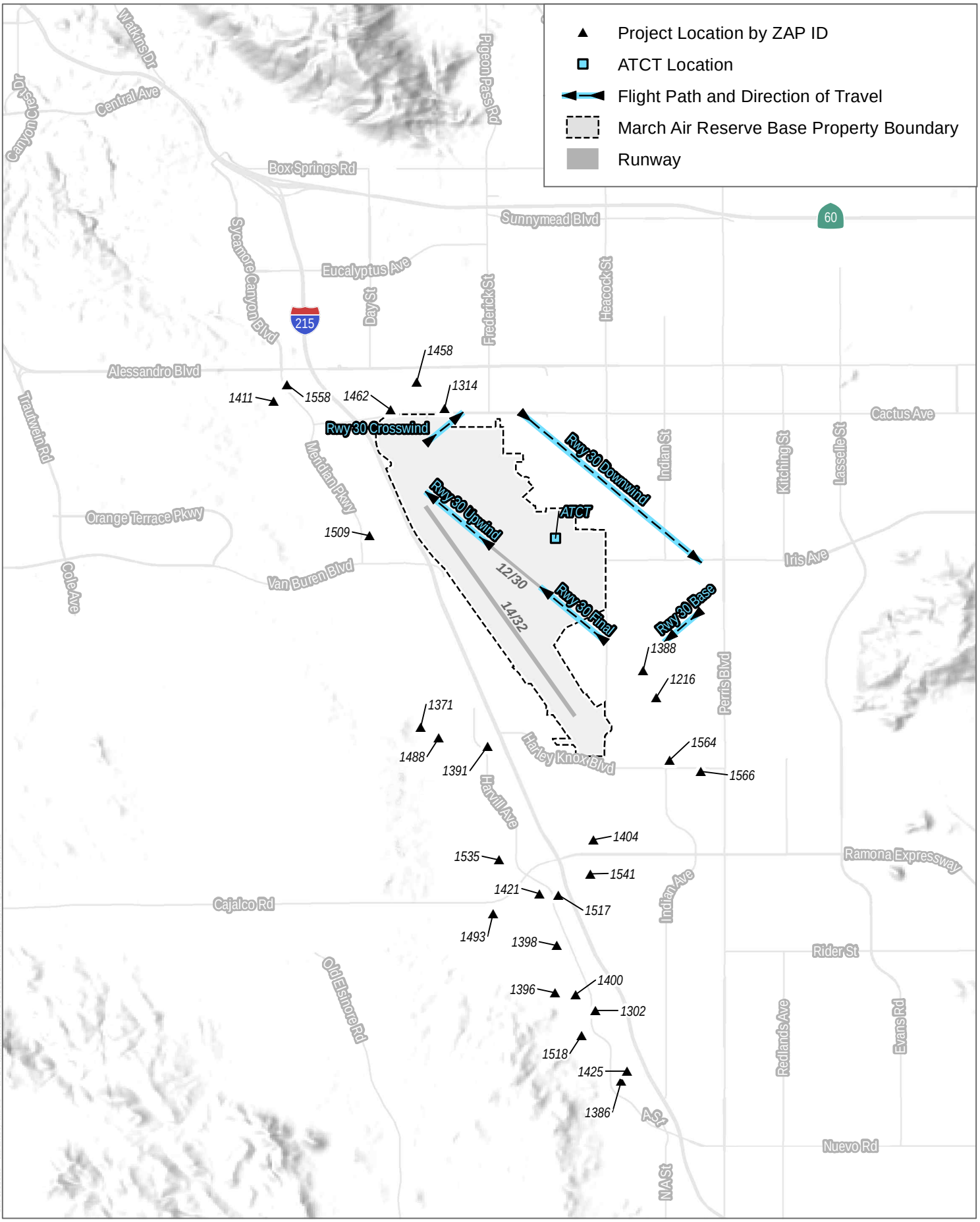

SOURCE: Esri and Digital Globe 2023

FIGURE 3B

Airport Receptor Locations - Rwy 30 GA Rectangular Traffic Pattern

March Air Reserve Base Compatible Use Study, Cumulative Glare Analysis

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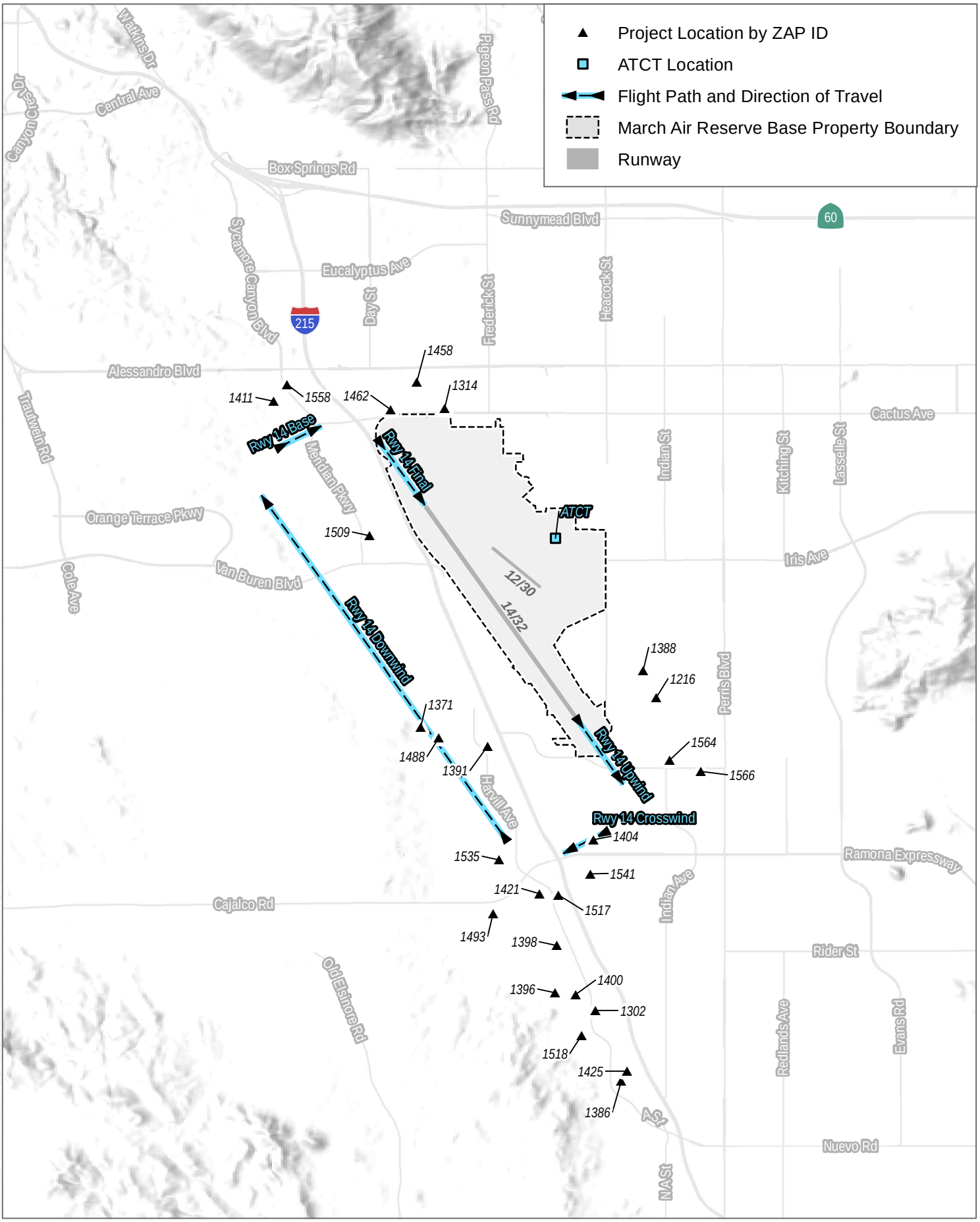

SOURCE: Esri and Digital Globe 2023

FIGURE 3C

Airport Receptor Locations - Rwy 14 GA Rectangular Traffic Pattern

March Air Reserve Base Compatible Use Study, Cumulative Glare Analysis

DUDEK

0 0.65 1.3 Miles

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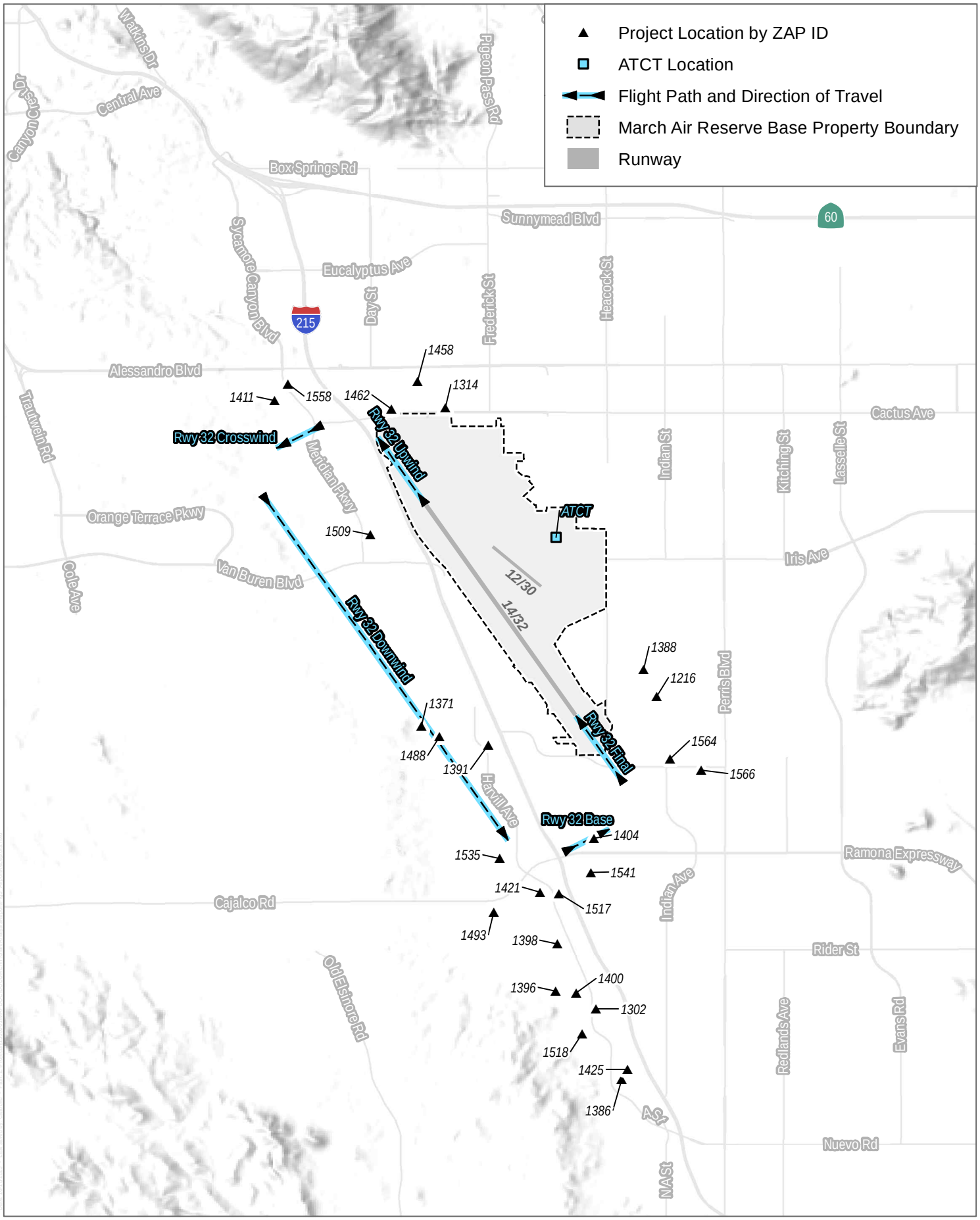

SOURCE: Esri and Digital Globe 2023

DUDEK

0 0.65 1.3 Miles

FIGURE 3D

Airport Receptor Locations - Rwy 32 GA Rectangular Traffic Pattern

March Air Reserve Base Compatible Use Study, Cumulative Glare Analysis

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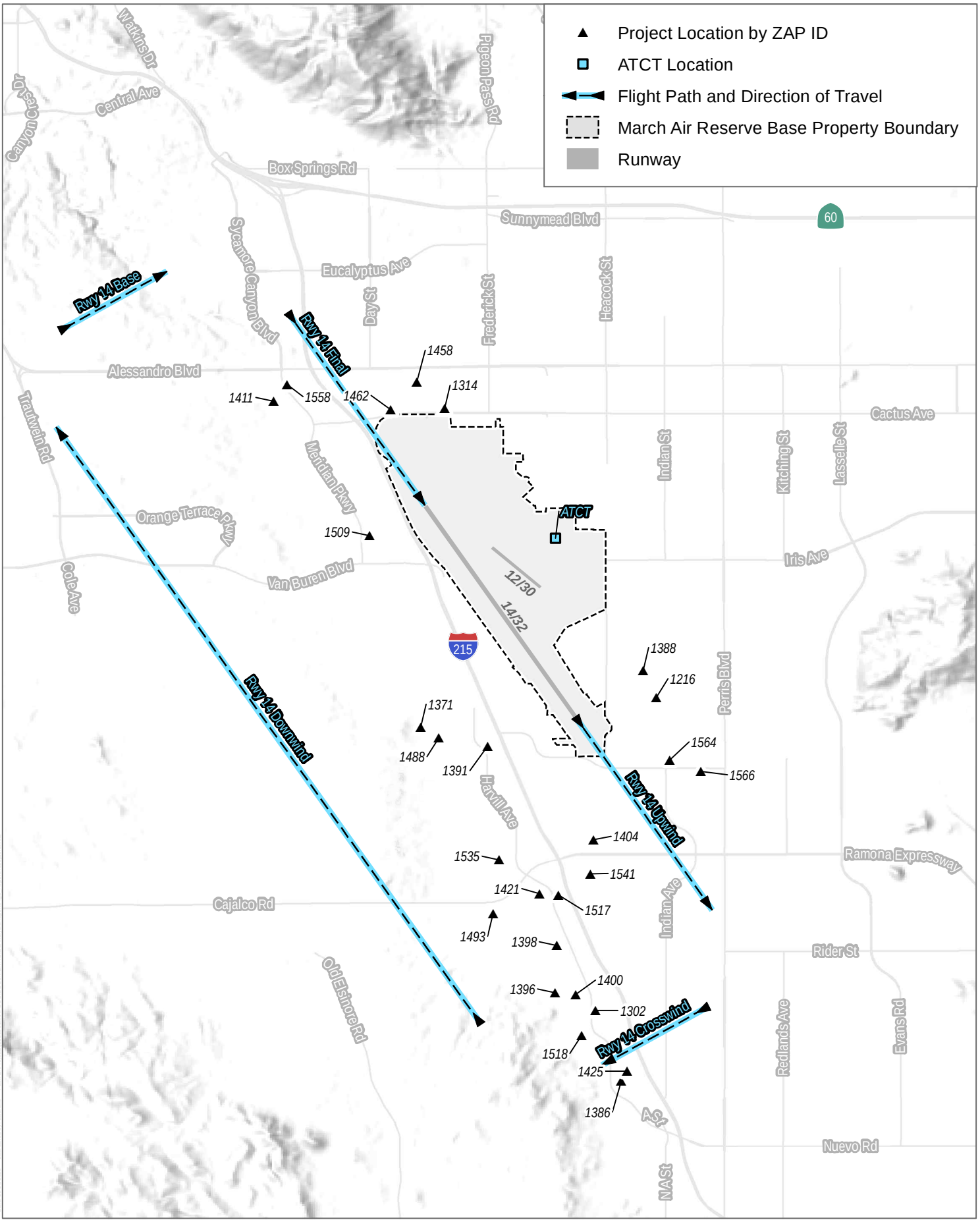

SOURCE: Esri and Digital Globe 2023

FIGURE 3E

Airport Receptor Locations - Rwy 14 C-17/KC-135 Rectangular Traffic Pattern

March Air Reserve Base Compatible Use Study, Cumulative Glare Analysis

DUDEK

0 0.65 1.3 Miles

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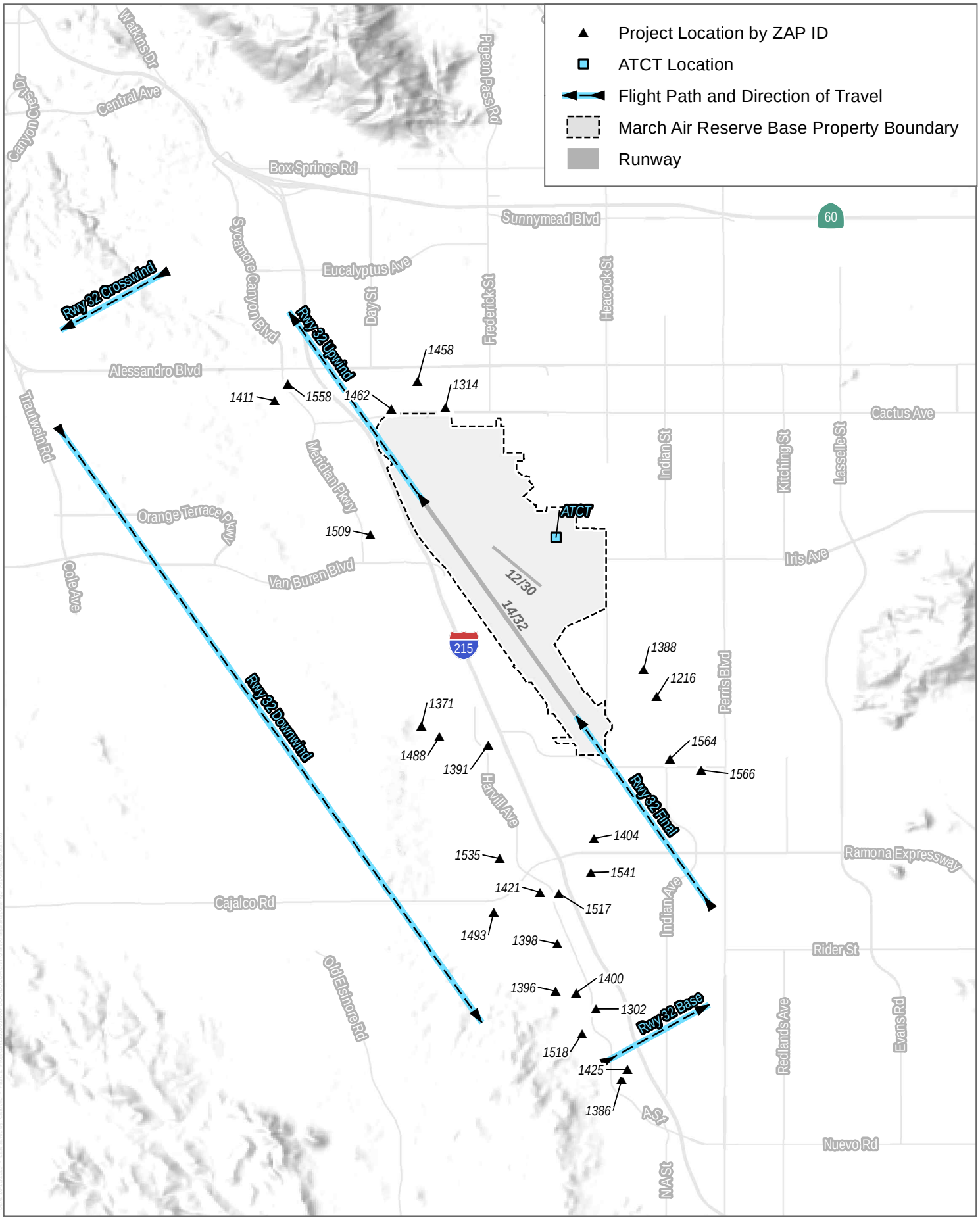

SOURCE: Esri and Digital Globe 2023

FIGURE 3F

Airport Receptor Locations - Rwy 32 C-17/KC-135 Rectangular Traffic Pattern

March Air Reserve Base Compatible Use Study, Cumulative Glare Analysis

DUDEK

0 0.65 1.3 Miles

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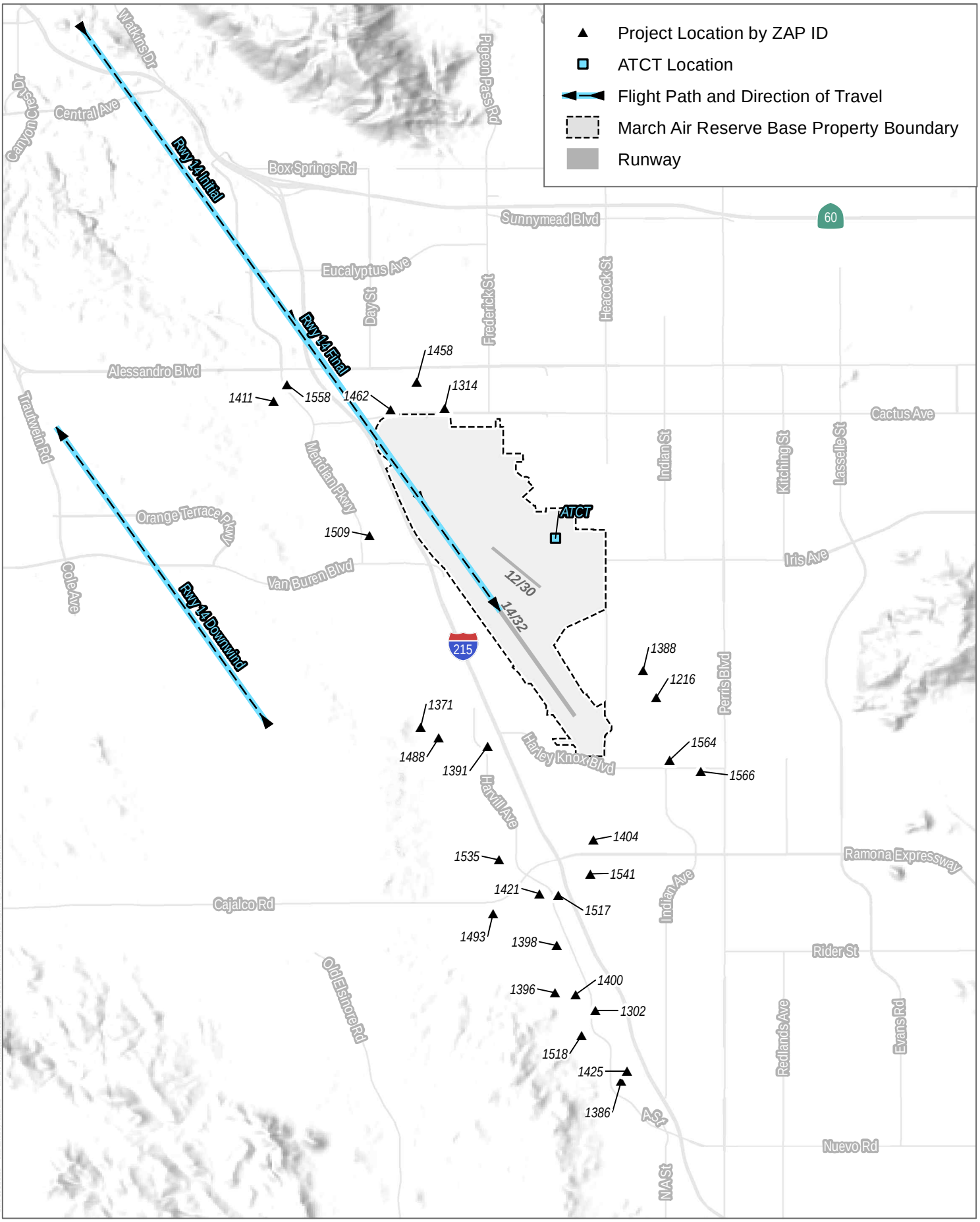

SOURCE: Esri and Digital Globe 2023

FIGURE 3G

Airport Receptor Locations - Rwy 14 Overhead Traffic Pattern

March Air Reserve Base Compatible Use Study, Cumulative Glare Analysis

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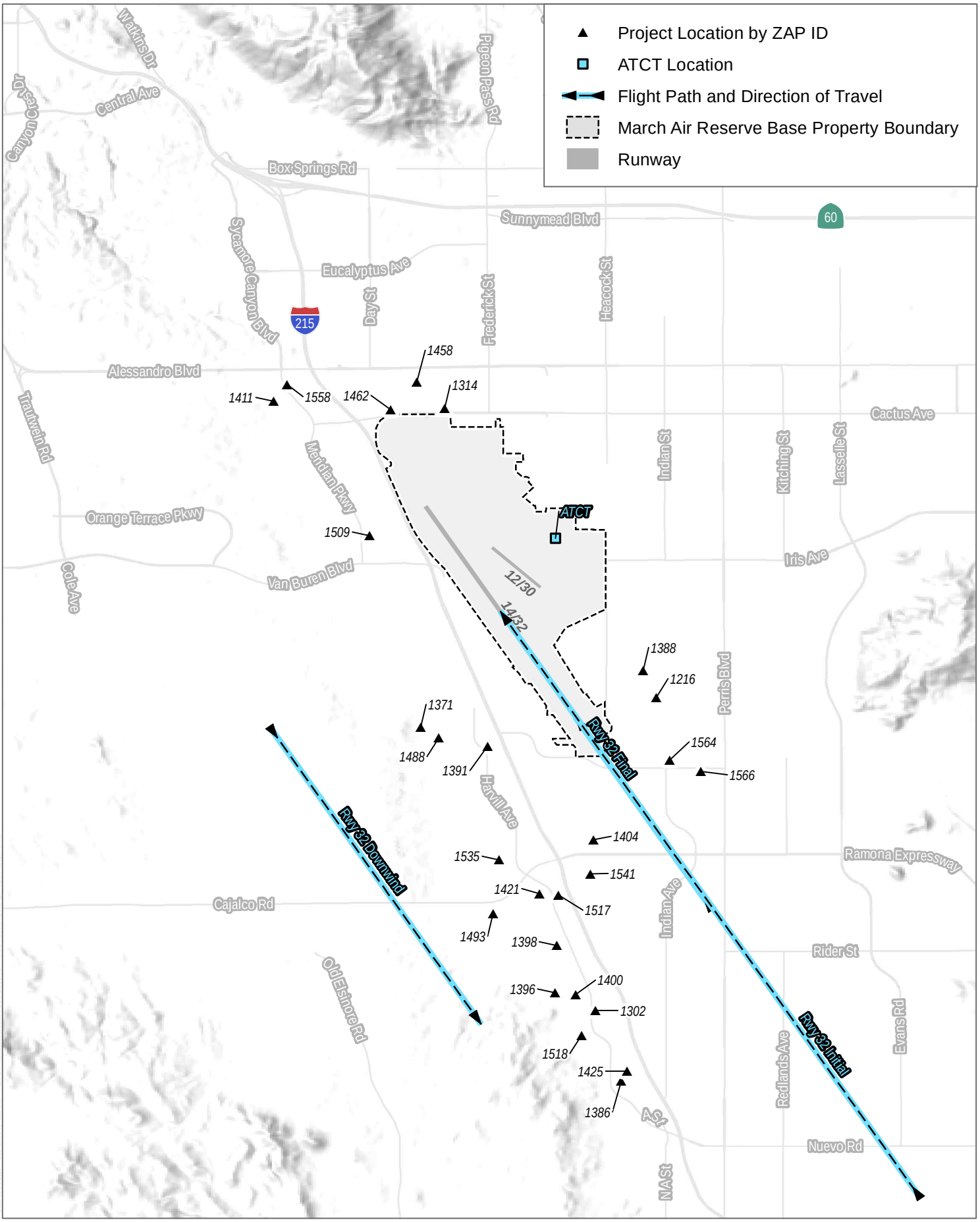

SOURCE: Esri and Digital Globe 2023

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0 0.65 1.3 Miles

FIGURE 3H

Airport Receptor Locations - Rwy 32 Overhead Traffic Pattern

March Air Reserve Base Compatible Use Study, Cumulative Glare Analysis

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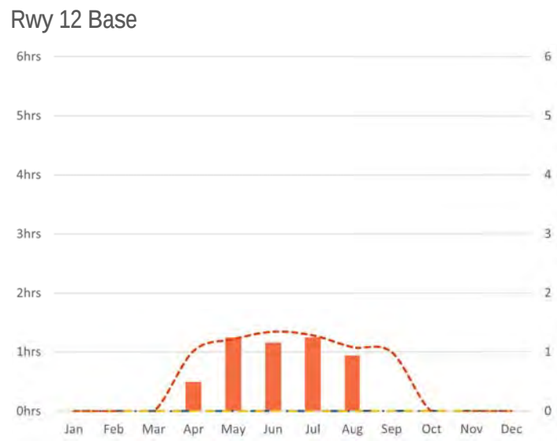
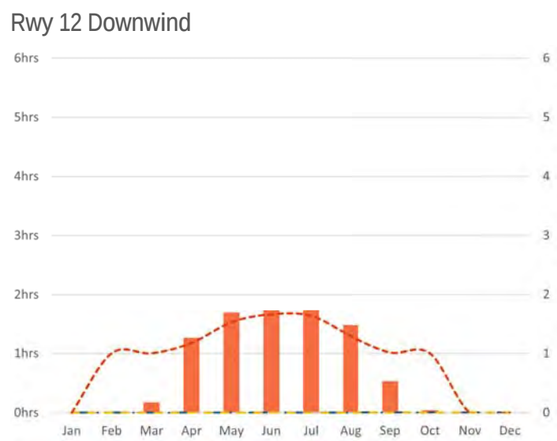
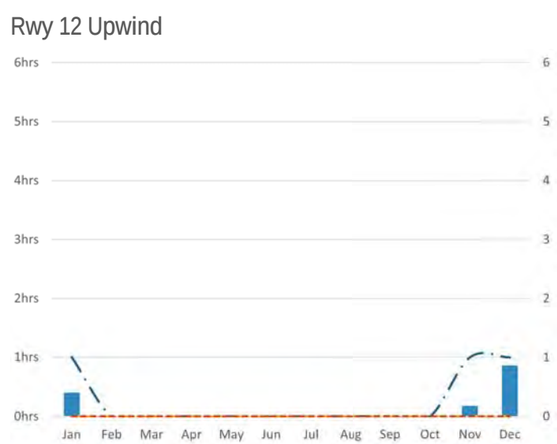
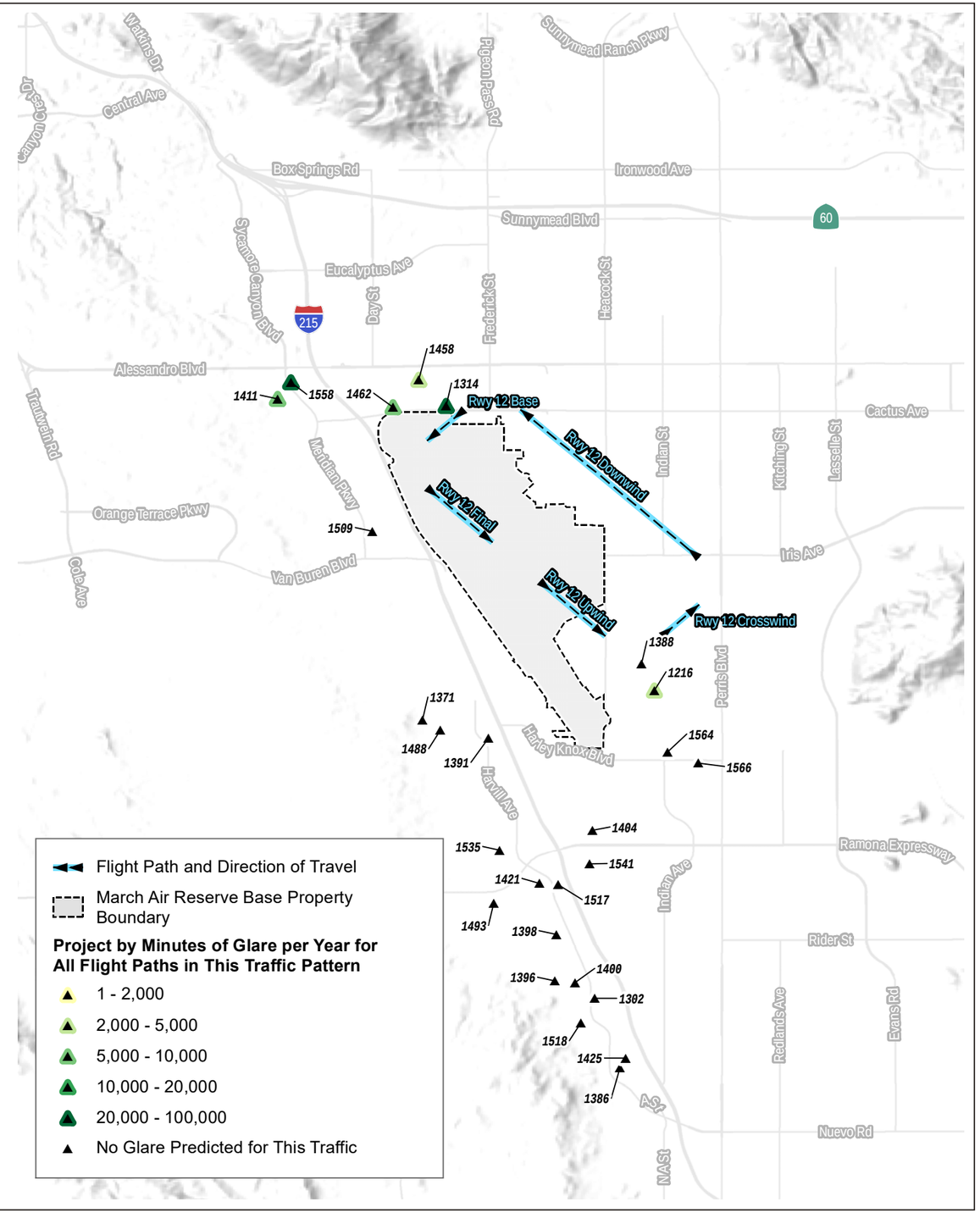






Key

- Evening - Avg. Daily Hours of Glare
- Midday - Avg. Daily Hours of Glare
- Morning - Avg. Daily Hours of Glare
- Morning - Avg. Source Count
- Midday - Avg. Source Count
- Evening - Avg. Source Count



SOURCE: Open Street Map 2019, County of Riverside

FIGURE 4A

Cumulative Glare Analysis Results – Runway 12 General Aviation Rectangular Traffic Pattern

March Air Reserve Base Compatible Use Study, Cumulative Glare Analysis

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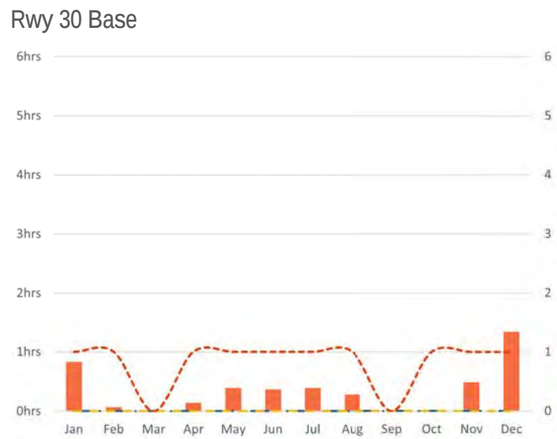
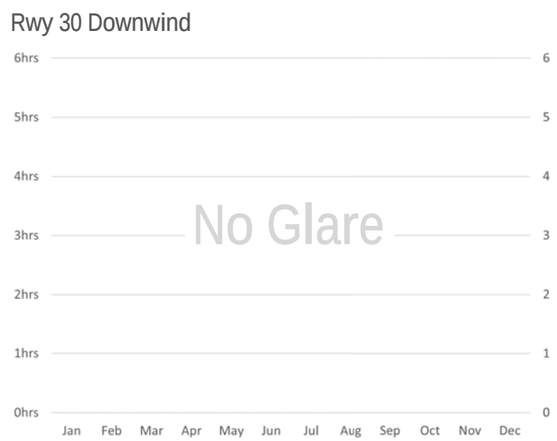
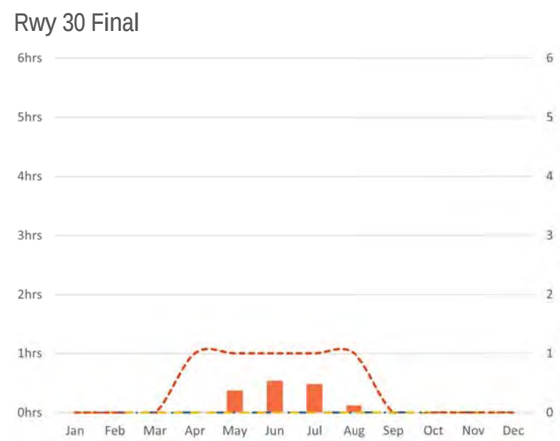
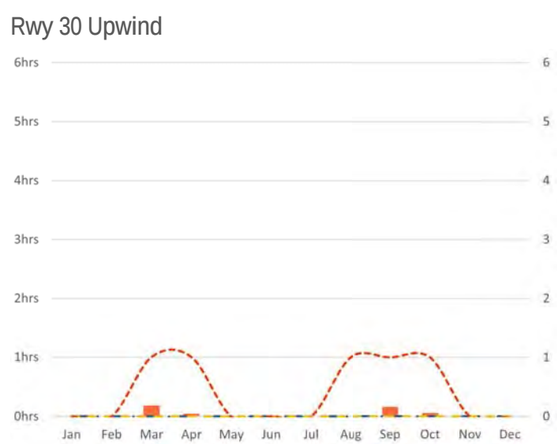


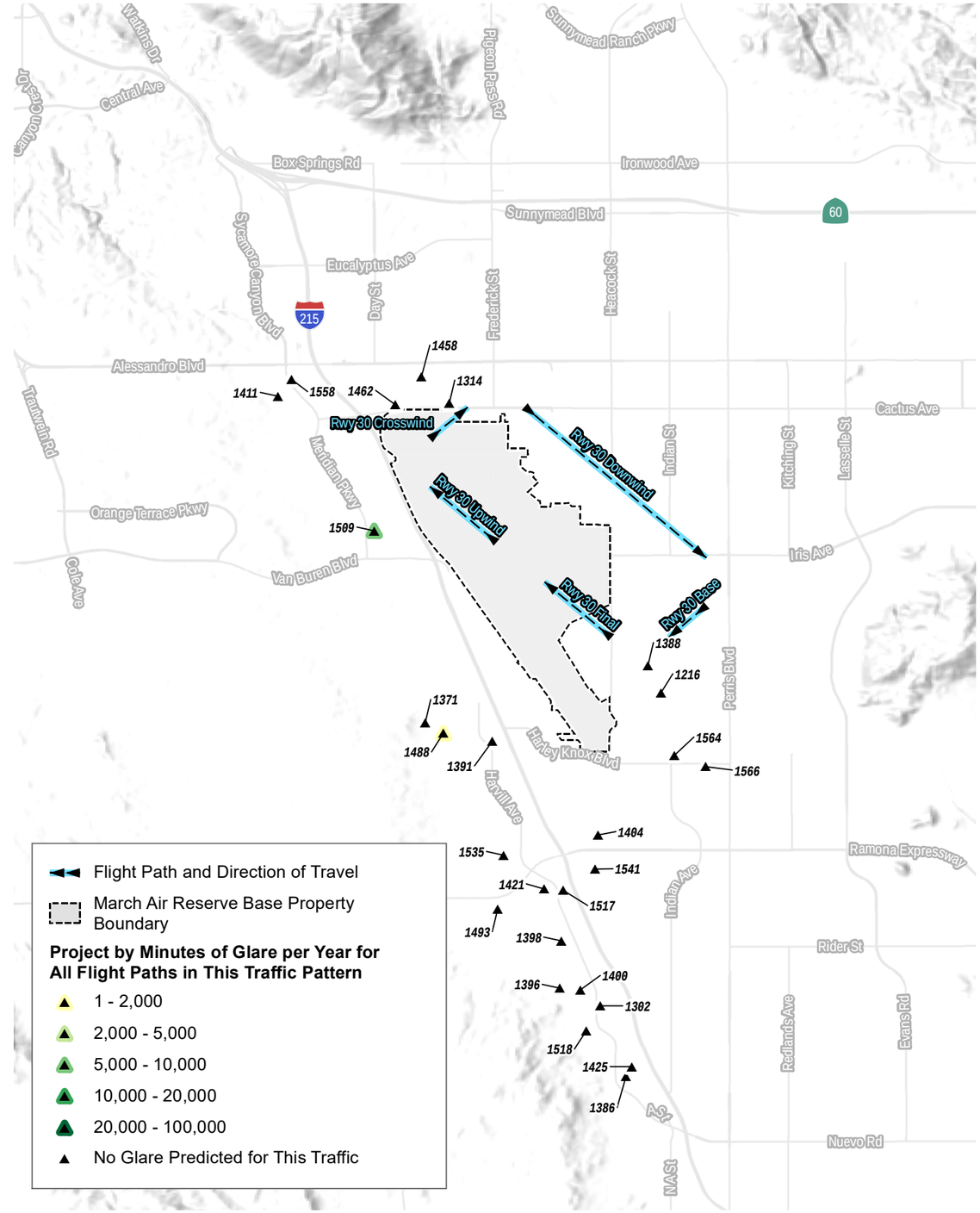






Key

- Evening - Avg. Daily Hours of Glare
- Midday - Avg. Daily Hours of Glare
- Morning - Avg. Daily Hours of Glare
- Morning - Avg. Source Count
- Midday - Avg. Source Count
- Evening - Avg. Source Count



SOURCE: Open Street Map 2019, County of Riverside

FIGURE 4B

Cumulative Glare Analysis Results – Runway 30 General Aviation Rectangular Traffic Pattern

March Air Reserve Base Compatible Use Study, Cumulative Glare Analysis

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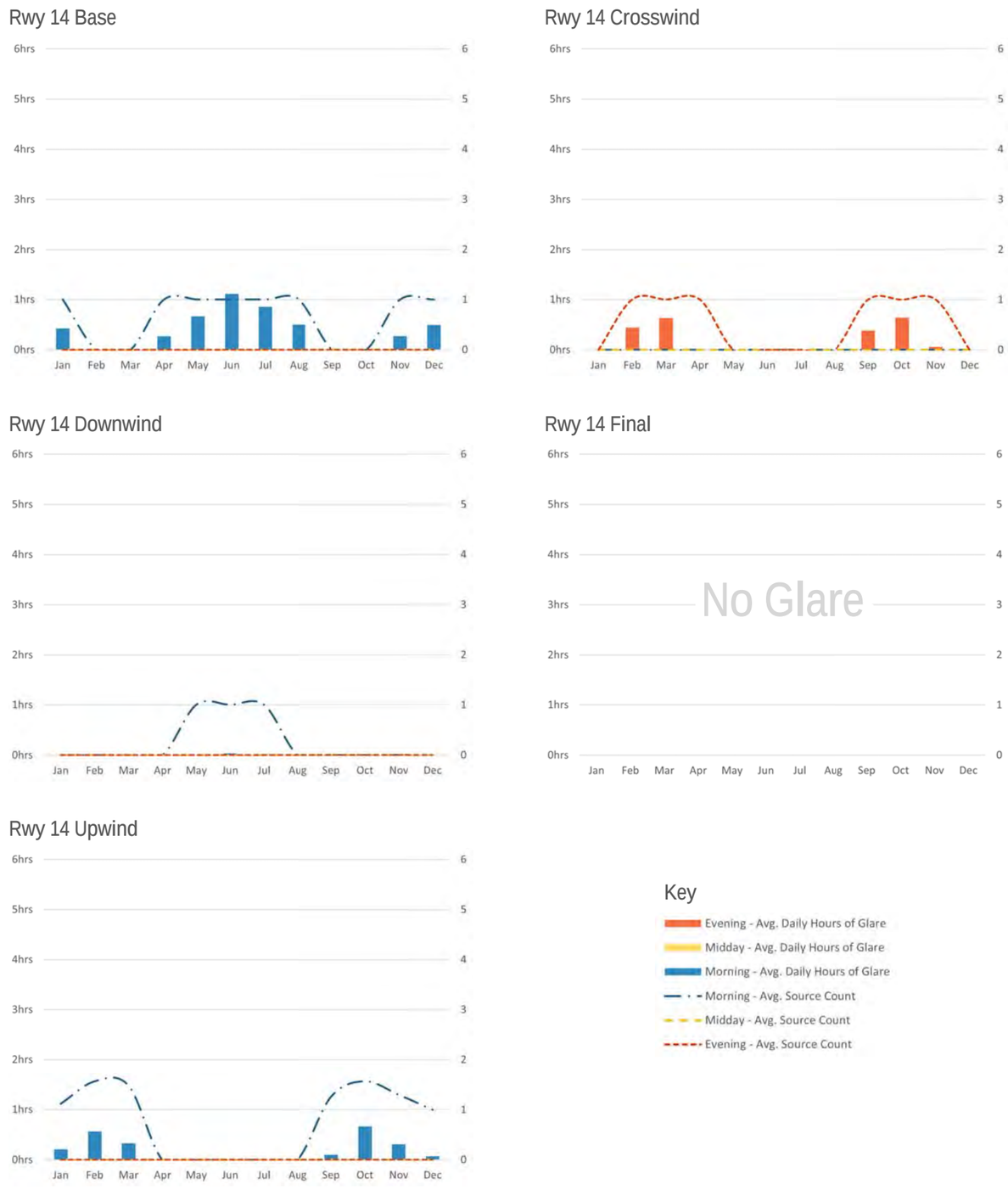

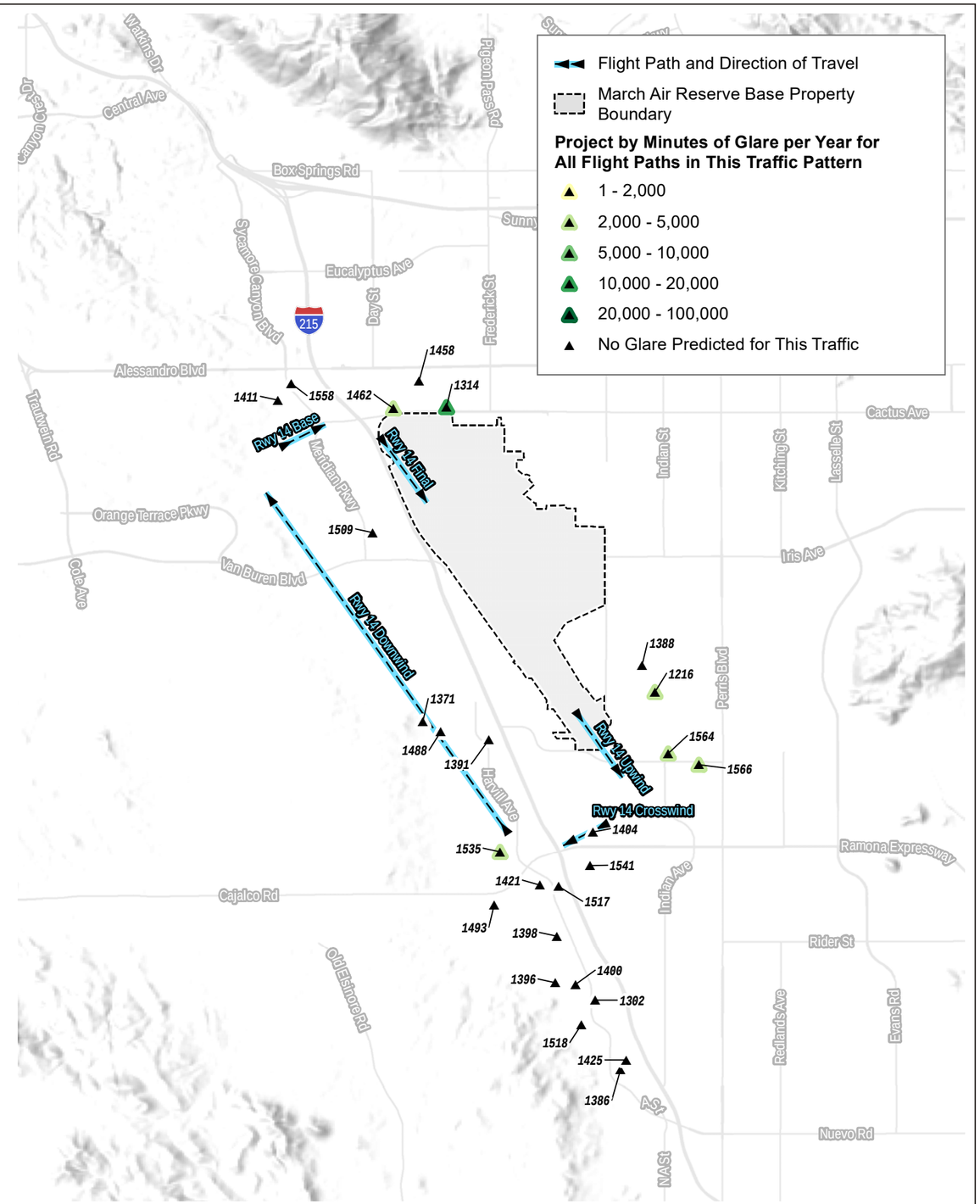

SOURCE: Open Street Map 2019, County of Riverside

FIGURE 4C

Cumulative Glare Analysis Results - Runway 14 General Aviation Rectangular Traffic Pattern

March Air Reserve Base Compatible Use Study, Cumulative Glare Analysis

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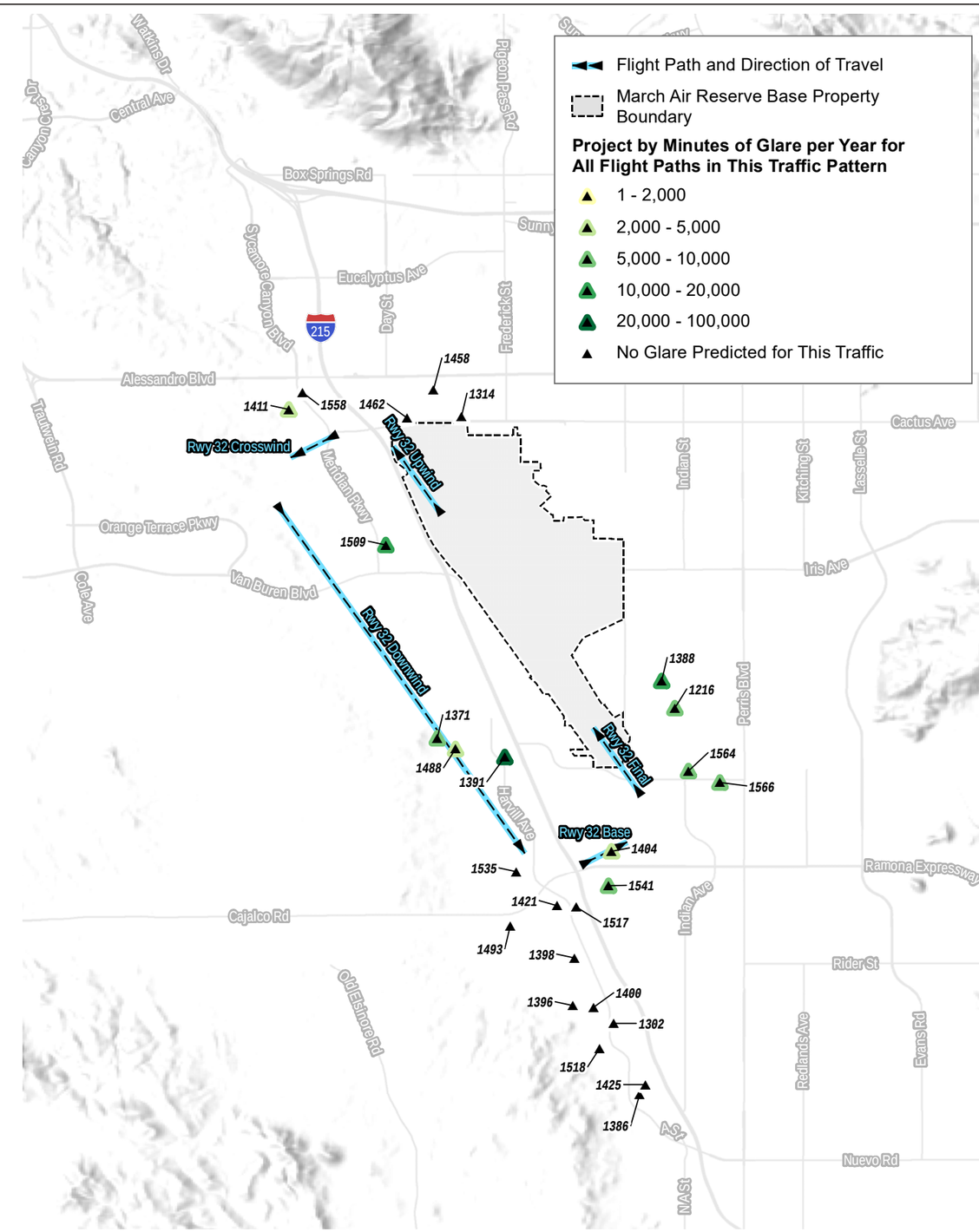

SOURCE: Open Street Map 2019, County of Riverside

FIGURE 4D

Cumulative Glare Analysis Results - Runway 32 General Aviation Rectangular Traffic Pattern

March Air Reserve Base Compatible Use Study, Cumulative Glare Analysis

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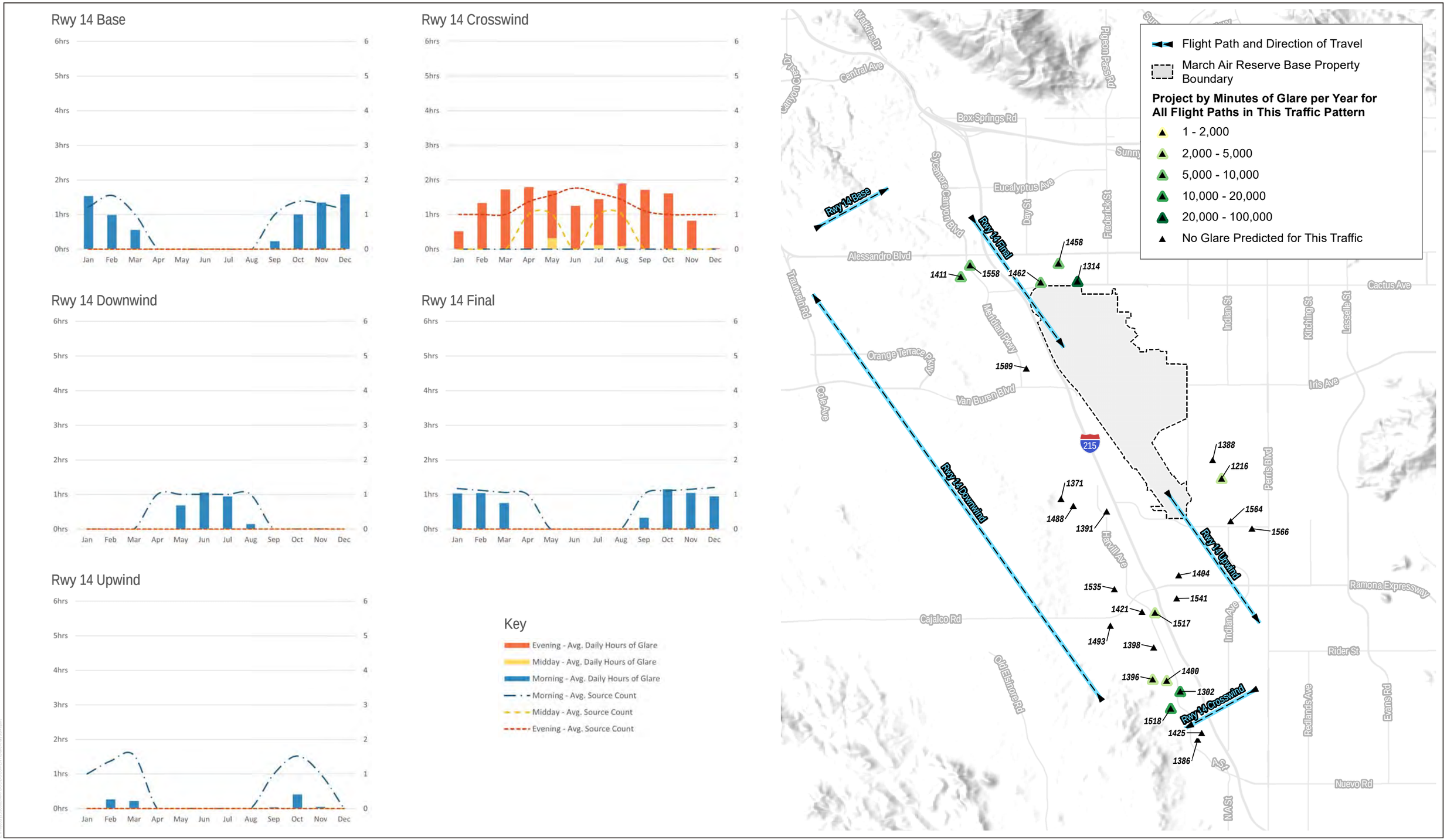

SOURCE: Open Street Map 2019, County of Riverside

FIGURE 4E

Cumulative Glare Analysis Results - Runway 14 C-17/KC-135 Rectangular Traffic Pattern

March Air Reserve Base Compatible Use Study, Cumulative Glare Analysis

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SOURCE: Open Street Map 2019, County of Riverside

FIGURE 4F

Cumulative Glare analysis Results - Runway 32 C-17/KC-135 Rectangular Traffic Pattern

March Air Reserve Base Compatible Use Study, Cumulative Glare Analysis

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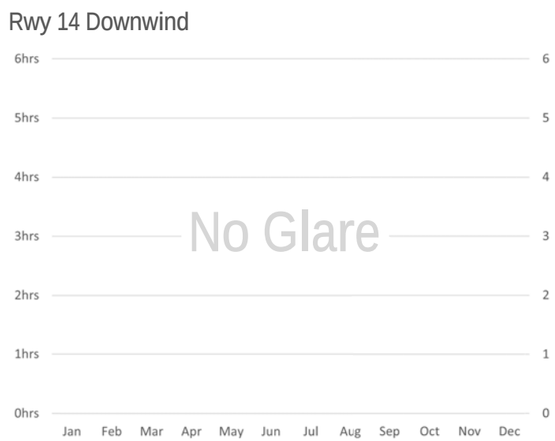
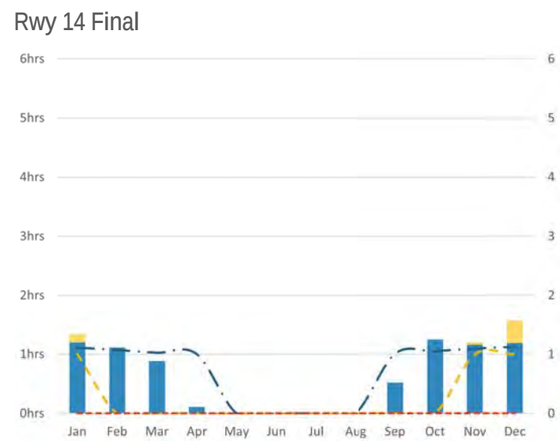
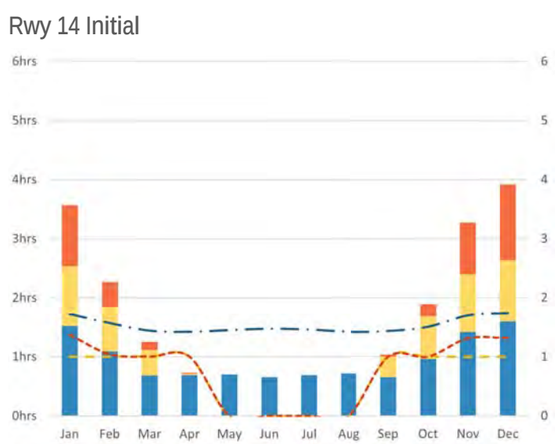
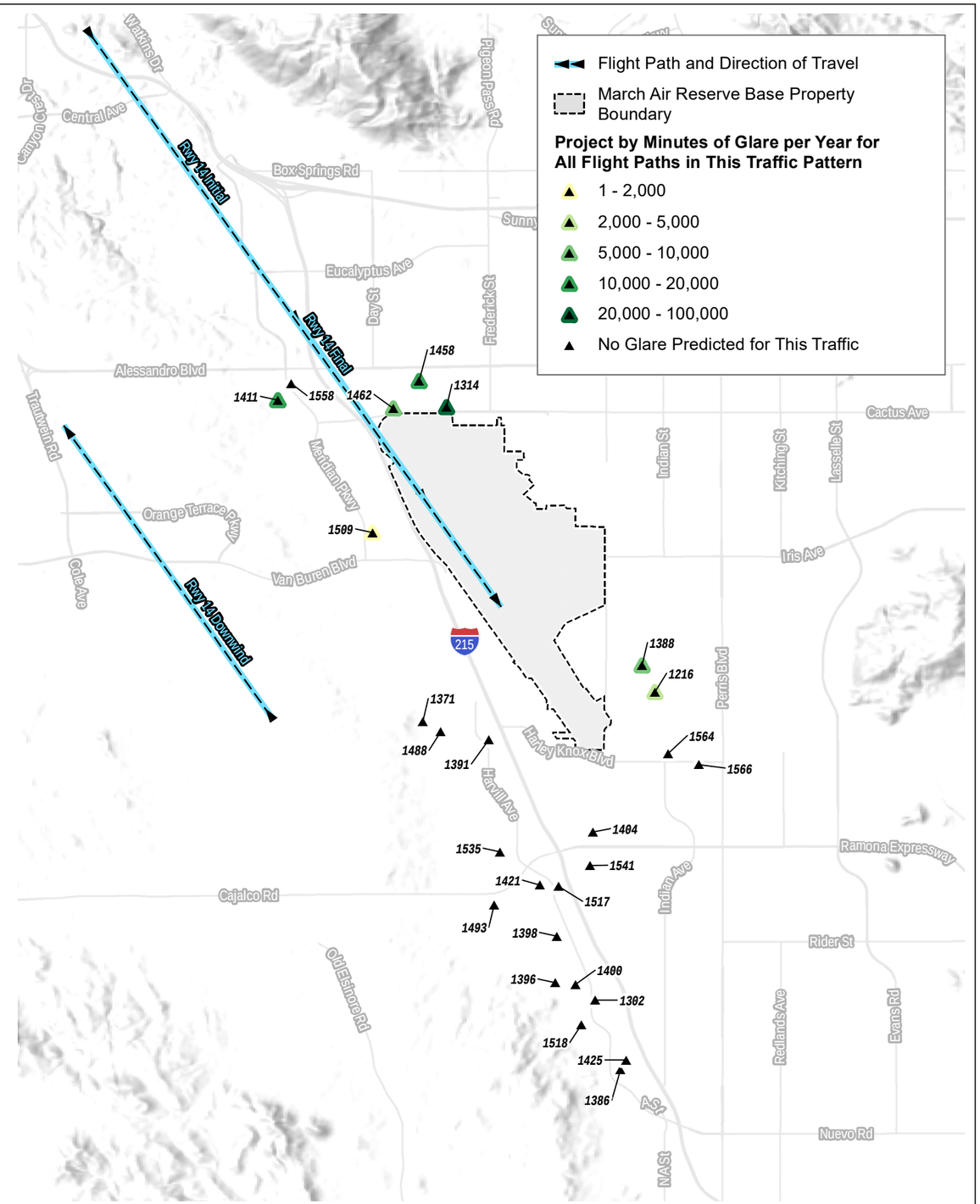






Key

- Evening - Avg. Daily Hours of Glare
- Midday - Avg. Daily Hours of Glare
- Morning - Avg. Daily Hours of Glare
- Morning - Avg. Source Count
- Midday - Avg. Source Count
- Evening - Avg. Source Count



SOURCE: Open Street Map 2019, County of Riverside

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FIGURE 4G

Cumulative Glare Analysis Results – Runway 14 Overhead Traffic Pattern

March Air Reserve Base Compatible Use Study, Cumulative Glare Analysis

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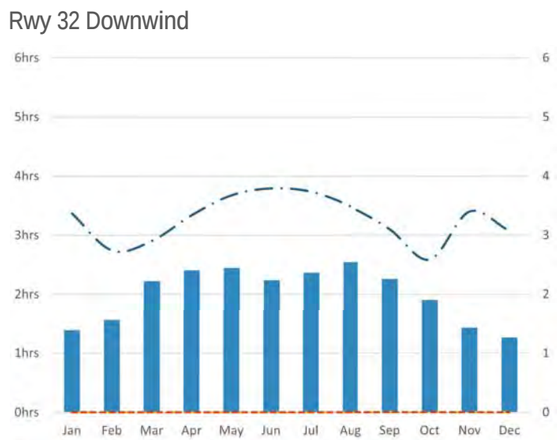
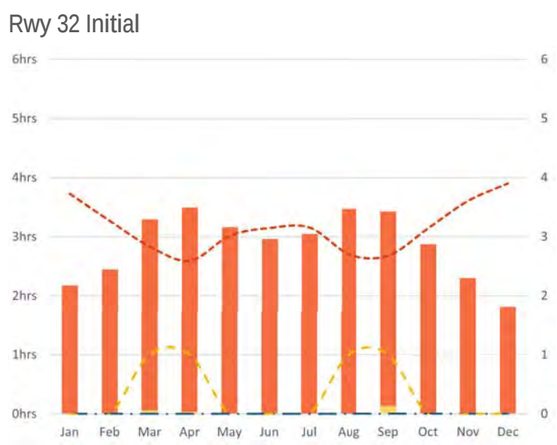
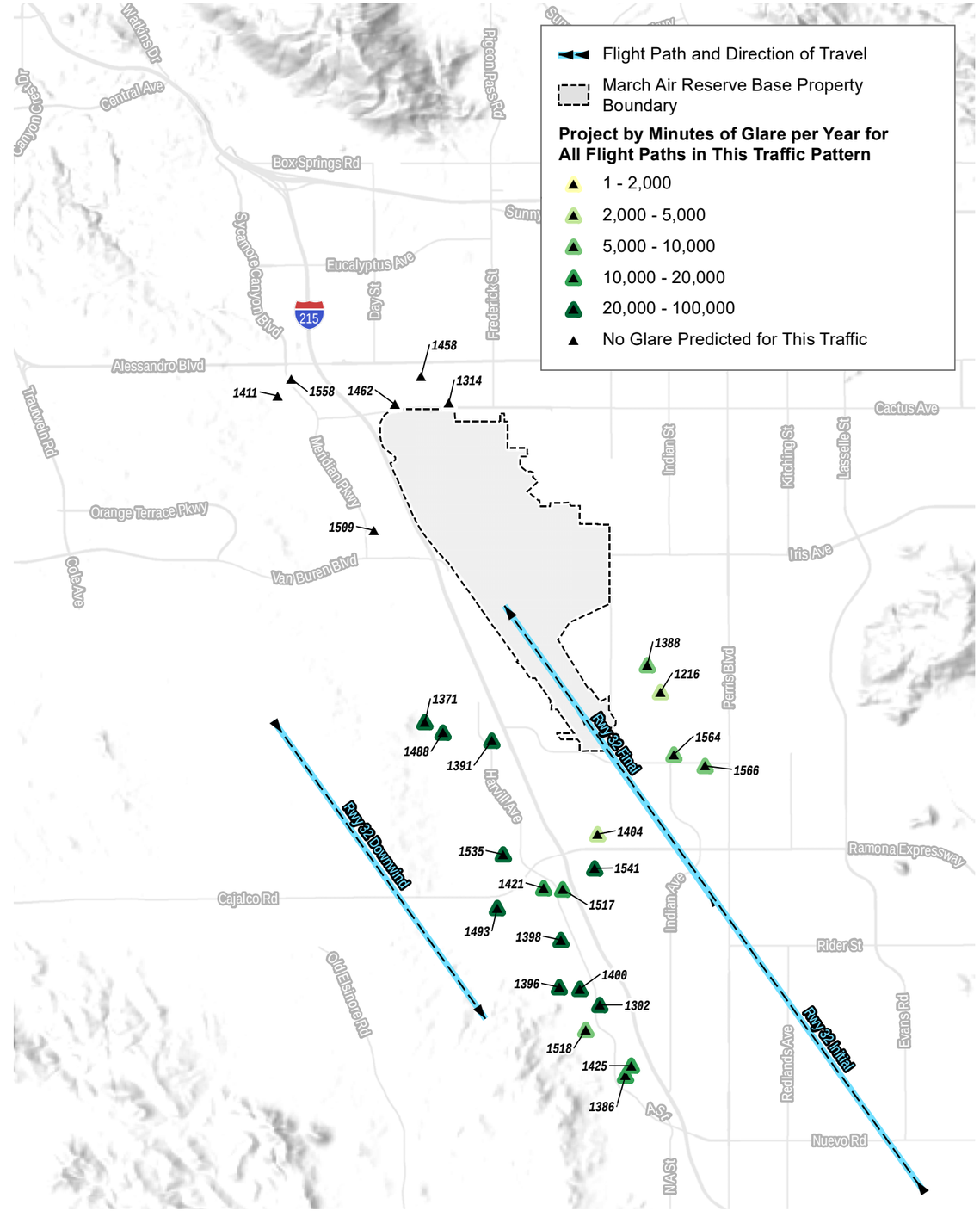




Key

- Evening - Avg. Daily Hours of Glare
- Midday - Avg. Daily Hours of Glare
- Morning - Avg. Daily Hours of Glare
- Morning - Avg. Source Count
- Midday - Avg. Source Count
- Evening - Avg. Source Count



SOURCE: Open Street Map 2019, County of Riverside

FIGURE 4H

Cumulative Glare Analysis Results – Runway 32 Overhead Traffic Pattern

March Air Reserve Base Compatible Use Study, Cumulative Glare Analysis

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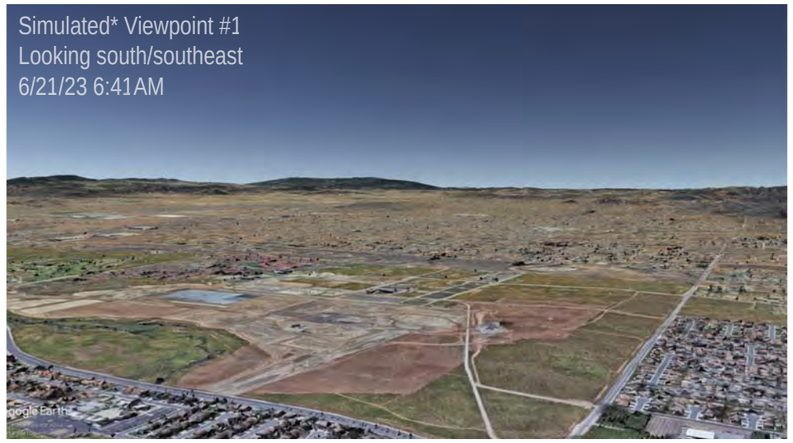
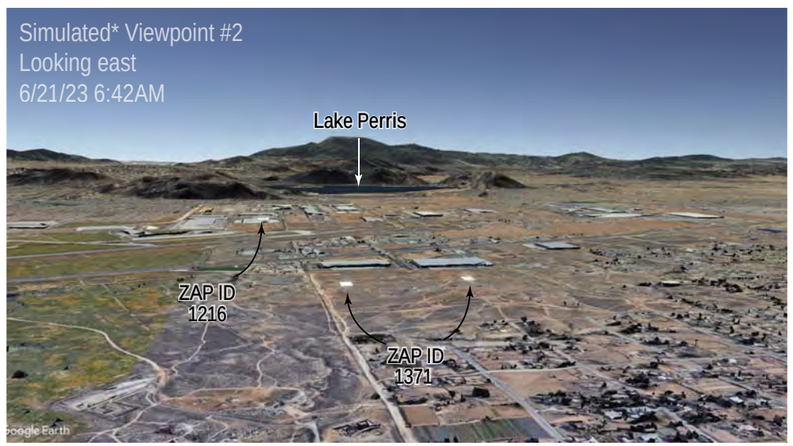
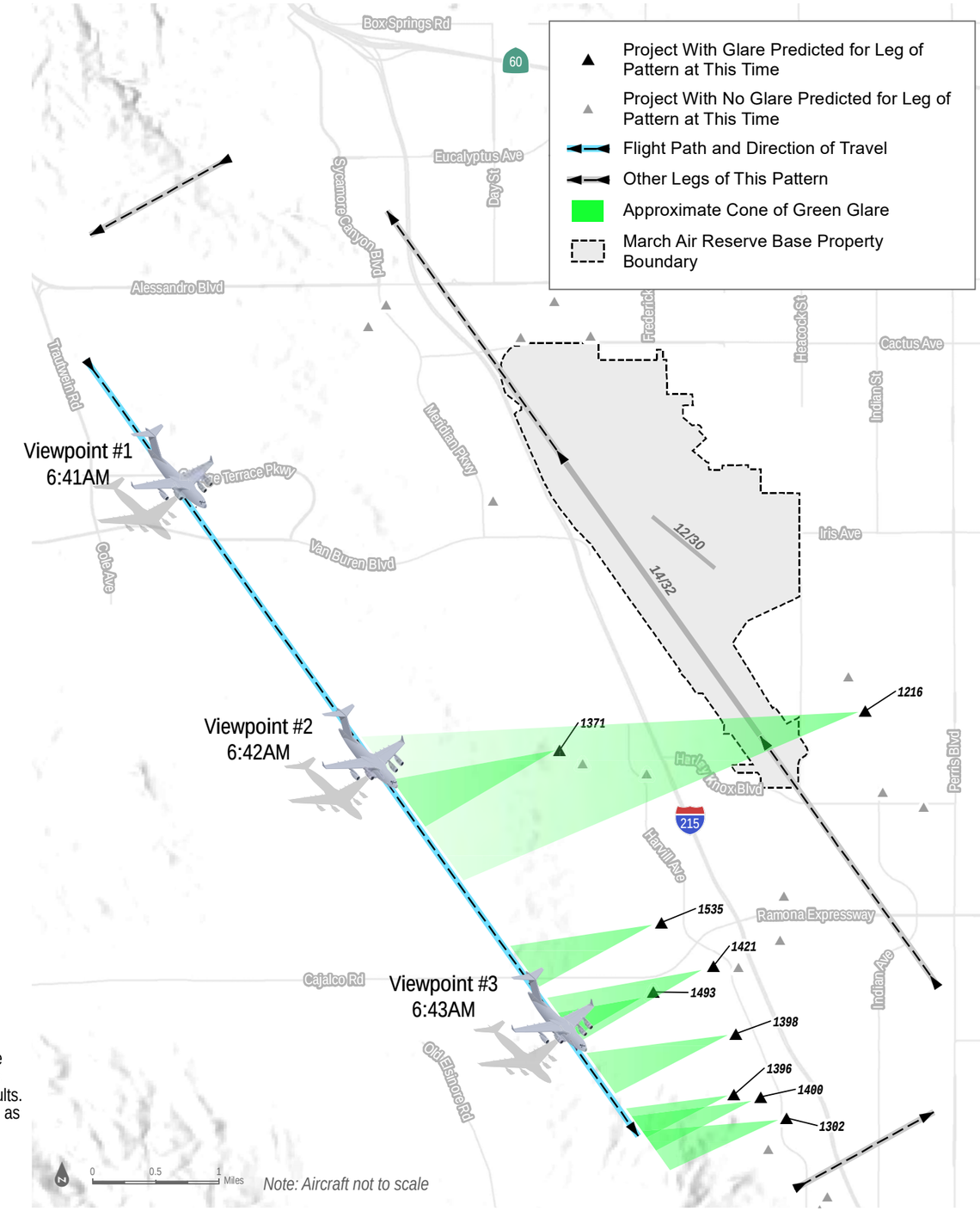




*Note: The glare depicted in these simulations is based on an artist's interpretation of the modeling results. The level of glare intensity as well as the glare spot size as depicted in these simulations may differ from actual conditions.



SOURCE: Open Street Map 2019, County of Riverside, Google Earth

FIGURE 5

Simulated Example of Cumulative Glare

March Air Reserve Base Compatible Use Study, Cumulative Glare Analysis

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Appendix A
Detailed Modeling Results

MARCH AIR RESERVE BASE / INLAND PORT AIRPORT LAND USE COMPATIBILITY PLAN

Adopted November 13, 2014

AMENDED (TBD) 2023

Editorial Note: In this document, bold text *is used to identify textual changes (added text) associated with the 2023 Amendment and* ~~strikethrough text~~ *is used to identify text from the 2014 Plan proposed for deletion as part of the 2023 Amendment..*

OVERVIEW

The 2014 ~~This~~ *March Air Reserve Base / Inland Port Airport Land Use Compatibility Plan (March ARB/IPA ALUCP)* was prepared for and adopted by the Riverside County Airport Land Use Commission (RCALUC). In accordance with provisions of the California State Aeronautics Act (Public Utilities Code Section 21670 *et seq.*), the RCALUC has been assigned the lead responsibility for airport land use compatibility planning around each of the public-use and military airports in Riverside County, including the preparation of an ALUCP for each airport.

Beginning in 2004, the RCALUC began adopting new versions of the ALUCPs for most of these airports. **The** ~~Each of these~~ individual ALUCPs ~~is~~ **adopted in 2004 and 2005 were** contained within a single, countywide document entitled *Riverside County Airport Land Use Compatibility Plan*. **Subsequent ALUCPs have been adopted using this same format.** The ALUCP for each airport consists of the policies in Chapter 2 of that document that are applicable to all of the airports in the county together with airport-specific policies and maps in Chapter 3. This material plus an introductory chapter (Chapter 1) and a set of appendices comprise Volume I. Background data regarding each airport and its environs is included in Volumes 2 and 3.

This *March ARB/IPA ALUCP* maintains this established format. Thus, only the policies and maps specific to March ARB/IPA for insertion into Chapter 3 and the background data to be added to Volume 2 are presented here. All of the countywide policies in Chapter 2 of Volume 1 are considered to be part of the *March ARB/IPA ALUCP* unless explicitly modified or supplemented by the March-specific policies. The introductory and appendix content is also applicable although no ALUC policy is included therein.

This 2023 Amendment to the *March ARB/IPA ALUCP* has been prepared to bring the document into consistency with the 2018 Air Installation Compatible Use Zones (AICUZ) study for March Air Reserve Base. The 2023 Amendment also has been informed by the *March Air Reserve Base Compatible Use Study (MCUS) ([insert publication date of MCUS when final])*, a collaborative, inter-jurisdictional planning effort which – among other topics - addresses compatibility factors impacting March ARB and local jurisdictions.

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Insert for Riverside County ALUCP, Volume 1, Chapter 3, Individual Airport Policies and Compatibility Maps

MA. MARCH AIR RESERVE BASE/INLAND PORT AIRPORT

MA.1 COMPATIBILITY MAP DELINEATION

1.1 *Airport Master Plan Status:* The *Compatibility Plan* for March ARB/IPA is primarily based upon the U.S. Air Force's *Air Installation Compatibility Use Zones Study* for March Air Reserve Base (AICUZ) dated ~~August 2005~~ **2018. A Master Plan for the Airport is currently in process.** ~~Noise contours included in the AICUZ have been supplemented by more recent contours prepared for the Air Force and March Joint Powers Authority. These contours reflect current and projected fleet mix changes as indicated in Policy MA.1.3 below.~~ The compatibility zones and associated criteria set forth in the *March ARB/IPA Compatibility Plan***, as amended,** provide noise and safety compatibility protection equivalent to or greater than the Air Force recommended criteria presented in the AICUZ.

1.2 *Airfield Configuration:* The airfield consists of two runways. The primary runway (Runway 14-32)—oriented north-northwest/south-southwest—is 13,300 feet in length and is the longest runway open to civilian use in the state. The second smaller runway, Runway 12-30, is just over 3,000 feet; its use is and will continue to be restricted to military-related light aircraft ~~(primarily Aero Club activity)~~. The airport has straight-in instrument approach capabilities to Runway 32 and a non-precision approach to Runway 14. No changes in the existing configuration of the airport runways and approaches are ~~anticipated~~ **evaluated in the AICUZ.**

1.3 *Airport Activity:* **According to the *Air Installation Compatible Use Zones (AICUZ) study* issued by the Department of the Air Force in 2018, the total number of aircraft operations taking place at this airport during each calendar year from 2012 through 2016 was less than 35,000. The AICUZ projected a total of up to 52,172 aircraft operations in 2018, including 31,172 military aircraft and Base governmental tenant operations and allowing for up to 21,000 by civilian aircraft. This is not an increase from the potential annual maximum of 75,104 operations (54,104 military and 21,000 civilian) evaluated in the 2014 Environmental Impact Report (EIR) for the 2014 March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan (2014 ALUCP). However, the AICUZ did not purport to estimate mid-term or long-term operations by the military, which may reasonably be expected to vary, based on future changes to the mission and world events. Therefore, the 2023 Amendment to the 2014 ALUCP retains reliance on the previously evaluated projection of 75,104 total aircraft operations per year.**

The ~~*Compatibility Plan* reflects~~ **2014 ALUCP reflected** a composite of potential future military and civilian aircraft activity scenarios (see discussion in ~~Chapter W7~~ **Volume 2 of the 2014 ALUCP on pages MA-1 and MA-2**). ~~The data primarily relied upon for future mission military activity is as indicated in the 2013 environmental study analyzing the impacts~~ **The impacts** of a fleet mix conversion from F-16 to F-15 fighter aircraft **at both March ARB and Fresno-Yosemite International Airport had been analyzed in a 2013 environmental study** [*F-15 Aircraft Conversion Environmental Impact Statement 144th Fighter Wing*

California Air National Guard Fresno-Yosemite International Airport (National Guard Bureau, March 2013)]. This study ~~indicates~~ **projected** potential maximum **military** mission activity as 54,104 annual operations by military transport, tanker, fighter, and helicopter aircraft, ~~together~~ **along** with military contract air carrier and military Aero Club aircraft.

Additionally, for the purposes of assessing land use noise compatibility, noise impacts reflected in three other studies ~~are~~ **were** taken into account in the compatibility zones shown on Map MA-1, Compatibility Map, of ~~this chapter:~~ **the 2014 ALUCP:** the 2005 *AICUZ Study [Air Installation Compatible Use Zone Study for March Air Reserve Base (**2005** AICUZ)* (Department of the Air Force, August 2005)]; the Total Force Integration study [*Environmental Assessment for Proposed Military Construction and Total Force Integration at March Air Reserve Base* (Air Force Reserve Command, June 2010)]; and a study of general aviation facility needs done for the March Joint Powers Authority [*Environmental Impact Report for March Inland Port General Aviation Facilities Development* (March Joint Powers Authority, August 2012)]. Future maximum civilian aircraft activity is limited by the joint use agreement and related air quality conformity determination to 21,000 annual operations. While the number of future aircraft operations indicated in each of these studies is similar, the mix of aircraft types and other factors that affect noise impacts differ.

1.4 *Airport Influence Area:* The factors used in defining the airport influence area for March ARB/IP and the individual compatibility zones within the airport influence area are indicated in Table MA-1. Table 3A which is applicable to other airports in the county does not apply to March ARB/IP. Table MA-1 makes adjustments to Table 3A that take into account the comparatively large geographic extent of the airport's impacts. Also, Compatibility Zone C is divided into two separate zones, C1 and C2.

The outer limits of *Zone E* and the areas within the *High Terrain Zone* define the airport influence area for March ARB/IPA. On the east side of the airfield, Zone E is established at 14,000 feet from the runway centerline. This distance is equivalent to the outer limits of the civilian airport conical surface, as established by FAR Part 77. The compatibility zones on the west side of the airport are more extensive because those areas are routinely overflown by both military and civilian aircraft.

No changes to the boundaries of the Airport Influence Area are proposed by this 2023 Amendment. However, changes to the boundaries of Compatibility Zones in the area directly southeasterly of Runway 12-30 are proposed by this Amendment in order to reflect the Clear Zone and Accident Potential Zones for that Runway.

MA.2 Additional/Specific Compatibility Policies

Policies set forth in Chapter 2, Countywide Policies, shall be modified or supplemented for the *March ARB/IPA ALUCP* as follows.

2.1 *Basic Land Use Compatibility Criteria:*

(a) Countywide Table 2A: The basic compatibility criteria listed in Table 2A do not apply to the environs of March ARB/IPA. The compatibility criteria that shall be applicable to the March ARB/IPA influence area are set forth in Table MA-2. For the purposes of land use compatibility matters involving the March ARB/IPA influence area, any reference to Table 2A in the policies of Chapter 2 shall instead be taken as a reference to Table MA-2.

(b) Countywide Policy 3.1.3(b): The policy concerning residential densities in Compatibility Zone D is not applicable to March ARB/IPA.

(c) Countywide Policy 3.1.4(b): The reference to special risk-reduction building design measures is not applicable to March ARB/IPA.

2.2 *Infill:* Countywide Policy 3.3.1(a)(2) notwithstanding, infill residential development in the vicinity of March ARB/IPA need only be 50% bounded by similar uses to qualify as infill. All other provisions of Countywide Policy 3.3.1 apply.

2.3 *Supporting Compatibility Criteria for Noise:*

(a) Countywide Policy 4.1.5: The CNEL considered normally acceptable for new residential land uses in the vicinity of March ARB/IPA is 65 dB. Table 2B is not applicable.

(b) Countywide Policy 4.1.6: Single-event noise levels from aircraft operations can be particularly intrusive at night. Compared to other airports in the county, current and projected nighttime activity by large aircraft at March ARB/IPA warrants a greater degree of sound attenuation for the interiors of buildings housing certain uses as cited below.

(1) The maximum, aircraft-related, interior noise level that shall be considered acceptable shall be CNEL 40 dB for all new residences, schools, libraries, museums, hotels and motels, hospitals and nursing homes, places of worship, and other noise-sensitive uses. For office uses, the interior standard shall be CNEL 45 dB, the same as the countywide criterion.

(2) To ensure compliance with these criteria, an acoustical study shall be required to be completed for any development proposed to be situated where the aviation-related noise exposure is more than 20 dB above the interior standard (e.g., within the CNEL 60 dB contour where the interior standard is CNEL 40 dB). Standard building construction is presumed to provide adequate sound attenuation where the difference between the exterior noise exposure and the interior standard is 20 dB or less.

Zone	Noise and Overflight Factors	Safety and Airspace Protection Factors
M *(Military)*	*Federal Lands* ➤ No ALUC authority	*Federal Lands* ➤ No ALUC authority
A *Clear Zone (if not on base)*	*Noise Impact: Very High* ➤ High CNEL and single-event noise levels	*Risk Level: Very High* ➤ Dimensions set to include Clear Zone as indicated in Air Installation Compatible Use Zone (AICUZ) study for airport ➤ Generally on air base property or controlled by easements
B1 *Inner Approach/ Departure Zone*	*Noise Impact: High* ➤ Within or near 65-CNEL contour ➤ Single-event noise sufficient to disrupt many land use activities including indoors if windows open	*Risk Level: High* ➤ Within Accident Potential Zone I or II ➤ Additionally, zone boundary to north reflects turning flight tracks
B2 *High Noise Zone*	*Noise Impact: High* ➤ Within or near 65-CNEL contour ➤ Single-event noise sufficient to disrupt many land use activities including indoors if windows open	*Risk Level: Moderate* ➤ Beneath or adjacent to final approach and initial departure flight corridors or adjacent to runway ➤ Not within Accident Potential Zones
C1 *Primary Approach/ Departure Zone*	*Noise Impact: Moderate to High* ➤ Within or near 60-CNEL contour ➤ Single-event noise may be disruptive to noise-sensitive land use activities; aircraft <2,000 feet above runway elevation on arrival and generally <3,000 feet above runway elevation on departure	*Risk Level: Moderate* ➤ Beneath or adjacent to low altitude overflight corridors
C2 *Flight Corridor Zone*	*Noise Impact: Moderate* ➤ Within 60 CNEL contour, but more than 5 miles from runway end; or ➤ Outside 60-CNEL contour, but regularly overflown in mostly daytime flight training ➤ Single-event noise may be disruptive to noise-sensitive land use activities; aircraft <3,000 feet above runway elevation on arrival	*Risk Level: Moderate to Low* ➤ Distant (beyond 5 miles) portion of instrument arrival corridor; or ➤ Closed-circuit flight training activity corridors
D *Flight Corridor Buffer*	*Noise Impact: Moderate to Low* ➤ Mostly within 55-CNEL contour ➤ More concern with respect to individual loud events than with cumulative noise contours	*Risk Level: Low* ➤ On periphery of flight corridors ➤ Risk concern primarily with uses for which potential consequences are severe (e.g. very-high-intensity activities in a confined area)
E *Other Airport Environs*	*Noise Impact: Low* ➤ Beyond 55-CNEL contour ➤ Occasional overflights intrusive to some outdoor activities	*Risk Level: Low* ➤ Within outer or occasionally used portions of flight corridors
* *High Terrain Zone*	*Noise Impact: Low* ➤ Individual noise events slightly louder because high terrain reduces altitude of overflights	*Risk Level: Moderate* ➤ Moderate risk because high terrain constitutes airspace obstruction ➤ Concern is tall single objects (e.g., antennas)

Table MA-1

Compatibility Zone Factors

March Air Reserve Base / Inland Port Airport

2.4 *Supporting Compatibility Criteria for Safety:*

(a) Countywide Policy 4.2.3: The acceptability of land uses of special concern within certain compatibility zones around March ARB/IPA shall be evaluated in accordance with the criteria indicated in Table MA-2. The criteria listed in Countywide Policy 4.2.3 do not apply.

(b) Countywide Policy 4.2.4: The requirements for open land do not apply to the vicinity of March ARB/IPA except with regard to Compatibility Zones A and B1.

(c) Countywide Policy 4.2.5: For the vicinity of March ARB/IPA, new nonresidential development shall not be clustered in a manner that would result in a usage intensity within any one acre (the number of people per single acre) exceeding the limits specified in Table MA-2. Clustering of residential development **is not permitted in Compatibility Zones A, B1 (including, but not limited to, B1-APZ I and B1-APZ II), and B2. Clustering of residential development** ~~is encouraged,~~ **is permissible in Compatibility Zones C1 and C2, provided that** ~~but~~ the density within any one acre shall be limited to no more than 4.0 times the allowable average density for the zone in which the development is proposed **(12 dwelling units in Compatibility Zone C1 and 24 dwelling units in Compatibility Zone C2)**. **Unless a finding of infill is made for the development, its overall density shall not exceed 3 dwelling units per acre in Compatibility Zone C1 and 6 dwelling units per acre in Compatibility Zone C2.**

(d) Countywide Policy 4.2.6: The policy concerning risk reduction through building design is not applicable to the March ARB/IPA influence area.

(e) Calculation of Usage Intensities for Retail Uses: Notwithstanding the provisions of Appendix C and Table C1 of the *Riverside County Airport Land Use Compatibility Plan*, the usage intensities of retail sales and display areas (a.k.a. mercantile areas) or "showrooms" (excluding restaurants and other uses specifically identified separately from retail/mercantile in Table C1) shall be evaluated as having an occupancy level of 115 gross square feet per person without eligibility for the 50 percent reduction in the resulting usage intensity (people per acre) as described in the appendix.

(f) Calculation of Usage Intensities for Warehouse Uses: Notwithstanding the provisions of Appendix C and Table C1 of the *Riverside County Airport Land Use Compatibility Plan*, the usage intensities of warehouses, distribution centers, e-commerce centers, fulfillment centers, and similar uses in buildings larger than 200,000 gross square feet, exclusive of offices, conference rooms, break rooms and other uses identified separately from warehouses in Table C1, shall be calculated as follows:

(1) High-cube warehouses and distribution centers, other than e-commerce centers and fulfillment centers, shall be evaluated on the basis of 35% of the usage intensity that results from the occupancy level indicated in Table C1.

(2) E-commerce centers, fulfillment centers, and other similar uses shall be evaluated on the basis of 50% of the usage intensity that results from the occupancy level indicated in Table C1.

(3) Office space in these buildings shall be evaluated on the basis of 50% of the usage intensity that results from the occupancy level indicated in Table C1. All other separately identified uses shall be evaluated on the basis of the occupancy level listed for the respective use in Table C1.

(g) As noted in the discussion of Issue AT-1 in the *MCUS*, the "development of large warehouses and other tall structures directly along the perimeter of March ARB presents security challenges to Air Force security requirements." Therefore, *MCUS* Strategy AT-1A recommends the establishment of "[s]etback requirements and maximum allowable heights for structures … in consideration of military force protection and base security."

Consistent with U.S. Department of Defense standards, the *March ARB/IPA ALUCP* establishes a "Boundary Observation Clear Zone" buffer of at least 50 feet that is "free of all obstacles, topographical features, and vegetation exceeding eight (8) inches in height that could impede observation or provide cover and concealment," given the unique risks around military installations. (See *MCUS*, page 5-20.) Site-specific security concerns may necessitate a larger Boundary Observation Clear Zone buffer.

As such, proponents of new development on parcels adjoining, or within 50 feet of, the perimeter of March ARB/IPA shall consult with March ARB officials and design their projects with consideration for the security of March ARB. If there are existing structures within March ARB that are less than 50 feet from the base perimeter, the design of the new development outside the base perimeter shall provide for such a "Boundary Observation Clear Zone" buffer as is necessary to ensure a combined buffer of at least 50 feet.

2.5 *Supporting Compatibility Criteria for Airspace Protection:*

(a) *Countywide* Policy 4.3.3: For proposed objects in the March ARB/IPA vicinity, the heights requiring ALUC review shall be as specified in Table MA-2.

(b) Countywide Policy 4.3.4: Heights of objects shall be restricted in accordance with the airspace protection surfaces depicted in Table MA-2.

(c) Countywide Policy 4.3.5: The compatibility zones within which dedication of an avigation easement shall be required as a condition of development is as indicated in Table MA-2. Except within Compatibility Zone A, avigation easements shall be dedicated to the March Inland Port Airport Authority or other civilian agency that may supersede it (successor-in-interest). Any avigation easements required within Zone A shall be dedicated to the United States of America.

(d) Countywide Policy 4.3.7: Additional hazards to flight as listed in Table MA-2 are to be avoided in the vicinity of March ARB/IPA.

(e) **A Solar Glare Hazard Analysis shall be required for solar energy facilities (whether ground-based, on rooftops, or atop carports/parking shade structures) proposed within Compatibility Zones A, B1-APZ I, B1-APZ II, B1, B2, C1, and C2, consistent with *MCUS* Strategy LG-1B. This requirement shall not apply to the installation of photovoltaic solar panels on existing (as of the date of adoption of this Plan amendment) individual single-family residences and duplexes**

and/or their associated garages or carports, or to such installation on future single-family residences on lots established through the recordation of a parcel map of four or less residential lots. The analysis shall demonstrate that: (i) no glare is produced at the Air Traffic Control Tower, and (ii) any glare affecting the airport approaches or traffic patterns as identified by March ARB/IPA is at the "green" level (low potential for after-image), as defined by the creators of the Solar Glare Hazard Analysis Tool (SGHAT) and determined through a similar tool in accordance with [the cumulative impacts of solar glare in the March Compatible Use Study and] Federal Aviation Administration testing standards.

(f) **Any applicants proposing 5G telecommunication facilities to be located within one mile from any point on either runway at March ARB/IPA shall coordinate with March ARB/IPA, the Federal Aviation Administration, and the applicable land use jurisdiction to determine and, to the extent possible, mitigate the potential interference of such facilities with safe aeronautical operations.**

2.6 *Supporting Compatibility Criteria for Overflight:*

(a) Countywide Policy 4.4.3: The compatibility zones within which a deed notice shall be required as a condition of development are as indicated in Table MA-2.

2.7 *Site-Specific Exceptions:*

Four development projects near March ARB have received entitlements in the form of Development Agreements or Disposition and Development Agreements from the respective jurisdictions prior to adoption of the *ALUCP* by the Riverside County ALUC. As such, exceptions to the compatibility criteria outlined in the preceding subsections are granted for these projects provided that they meet the conditions indicated below. (The locations of these exceptions are shown on Map MA-1 and the numbers below correspond to the numbering on that map.)

Exceptions for Sites 1 through 4 are valid only as long as the indicated specific plans and associated development agreements remain in effect. Any changes to the specific plans must be reviewed by the ALUC to ensure that increases in intensity of the proposed development would not result from the changes. Further, if the development agreements should expire, the criteria applicable to the property for which these exceptions apply shall revert to the underlying compatibility criteria indicated in this *ALUCP*.

(a) *(Exception Site 1) March Business Center Specific Plan (SP-1) and Meridian (SP-5), March Joint Powers Authority*

(1) Situated in Compatibility Zones B1, B2, C1, C2 and D.

(2) March Business Center, a 1,032-acre, non-residential business park located at the southwest corner of Alessandro Boulevard and I-215 freeway within the March Joint Powers Authority, approved with specific airport compatibility provisions (Ord. #JPA 03-01, SP-1), subject to March JPA Resolution #JPA 11-17 limiting development within the Accident Potential Zones and vested through a development Agreement recorded on June 7, 2004.

(3) Meridian, a 258-acre portion of the original March Business Center, consisting of a nonresidential business park located at the southwest corner of Alessandro Boulevard and I-215 freeway within the March Joint Powers Authority, approved with specific airport compatibility provisions (Ord. #JPA 10-02, SP-5), subject to March JPA Resolution #JPA 11-17 limiting development within the Accident Potential Zones and vested through a development Agreement recorded on June 7, 2004.

(4) For the purpose of this *Compatibility Plan*, the Meridian exception area specifically allows development of a hotel or hotels on the 13-acre site situated within Compatibility Zone B2 and bordered by Interstate 215 on the east and Van Buren Boulevard on the south. Any such hotel or hotels shall be limited as follows: maximum of 100 people per acre; maximum of 250 people per single acre; maximum of 3 aboveground habitable floors; no conference facilities (however, small meeting room(s) for a total of up to 50 people is (are) acceptable). Sound attenuation as appropriate for the combined airport and freeway noise levels shall be provided.

(5) The Development Agreement referenced in Paragraphs (2) and (3) above expires on December 27, 2016. After that, the agreement provides for two more 5-year automatic extensions. The developer must request the Development Agreement extensions and the Authority must make findings that the development is still in substantial conformance.

(b) *(Exception Site 2) Harvest Landing Specific Plan, City of Perris*

(1) Situated in Compatibility Zone C2.

(2) A 341-acre mixed-use Specific Plan located south of Placentia Avenue and east of Interstate 215 within the City of Perris and authorizing 1,860 residential units and 1,306,582 square feet of business/commercial uses. The Specific Plan and associated Development Agreement were adopted in May 2011.

(3) Agreement will expire 15 years from the approval date plus extensions in 5-year increments subject to City Council approval.

(c) *(Exception Site 3) Park West Specific Plan, City of Perris*

(1) Situated in Compatibility Zones C1 and C2.

(2) A 534.3-acre residential Specific Plan located south of Nuevo Rd and east of the Perris Valley Storm Channel within the City of Perris and authorized for a maximum of 2,027 residential units as identified in the Specific Plan and Development Agreement approved by Council on January 30, 2007.

(3) Agreement for Phase I expires 10 years from the approval date. Phases II and III extend the agreement to 2027 or 10 years after the developer submits an application for approval of a tentative tract map for any portion of these phases.

(d) *(Exception Site 4) Day/Alessandro Affordable Housing Site, City of Moreno Valley*

(1) Situated in Compatibility Zone C1.

(2) A planned 8.43-acre multifamily site located at the northeast corner of Day Street and Alessandro Boulevard within the City of Moreno Valley approved as a maximum 225 unit multifamily development through an existing Disposition and Development Agreement approved on May 26, 2009.

(3) The city owns the site, thus an expiration date is not applicable.

(e) *(Exception Site 5) Ben Clark Training Center*

(1) Situated in Compatibility Zones C2 and D. This site specific exception is applicable to the portion of the property located within Zone C2.

(2) An approximately 375-acre property located within unincorporated Riverside County deeded to the County by the U.S. Department of Defense as part of the 1996 instrument of transfer. Provisions of the transfer explicitly restrict use of the property to training of law enforcement and public safety personnel.

(3) Notwithstanding the criteria set forth in Table MA-2, the following provisions shall apply to future development of the portions of Ben Clark Training Center situated within Compatibility Zone C2:

- Future development of the property shall be consistent with the deed restrictions.
- Any overnight occupancy of facilities must pertain to and be in furtherance of the function and purpose of the property as dictated by the property's deed restrictions.
- Use of part of the property as an educational facility operated by the Riverside Community College District, Moreno Valley College, is permitted and not considered to be a "general college" provided that this use continues to be related to law enforcement and public safety training purposes.
- Use of the property shall adhere to the average-acre intensity limit of 200 people per acre as established in Table MA-2. However, the single-acre intensity limit of Table MA-2 shall not apply.
- New buildings shall be restricted to three (3) floors except that training towers or similar structures used specifically for the purpose of training law enforcement and public safety personnel may exceed this limit.
- All other requirements applicable to Zone C2 as set forth in Table MA-2 shall continue to apply, including those pertaining to airspace review, electromagnetic radiation notification, and deed notice and disclosure.

(f) *(Exception Site 6) Ridge Crest Cardinal Subdivision, City of Riverside*

(1) Situated in Compatibility Zone C2.

(2) A 13.54-acre proposed single-family residential subdivision located east of Trautwein Road and north of Grove Community Avenue within the City of Riverside.

(3) Notwithstanding the criteria set forth in Table MA-2, the following provisions shall apply to future development of this property:

- An average-acre density of up to 6.5 dwelling units per acre (a maximum of 87 dwelling units) shall be allowed in lieu of the 6.0 dwelling units per acre set by Table MA-2.

- Exception Site 6 is a portion of an area covered by a Development Agreement between the City of Riverside and The Grove Community Church recorded on November 26, 2003 as Instrument No. 2003-934365. The Development Agreement provided for a senior housing facility, elementary school, and preschool within the area where the Ridge Crest Cardinal subdivision is now proposed. Development of the proposed single-family residential subdivision would utilize the area previously proposed for these facilities and thereby reduce the potential number of vulnerable occupants at this location, in comparison to these entitled but unbuilt uses. The above allowance for up to 6.5 dwelling units per acre on the property is only applicable if these previously entitled uses are not constructed within the boundaries of Exception Site 6.

- **On July 14, 2015, the Riverside City Council approved the First Amendment to the Development Agreement providing for an 85-unit residential subdivision within this area and deleting the provisions for senior housing and schools. The development has since been constructed and occupied.**

Table MA-2 (separate pages)

Zone	Locations	Density / Intensity Standards: Residential (d.u./ac) [1]	Other Uses (people/ac) [2]: Average [5]	Other Uses (people/ac) [2]: Single Acre [6]	Req'd Open Land	Additional Criteria: Prohibited Uses [3]	Additional Criteria: Other Development Conditions [4]
M	Military					• No ALUC authority	
A	Clear Zone [7]	No new dwellings allowed	0	0	All Remaining	• All non-aeronautical structures • Assemblages of people • Objects exceeding FAR Part 77 height limits • All storage of hazardous materials • Hazards to flight [8]	• Electromagnetic radiation notification [9] • Avigation easement dedication and disclosure [4, 7]
B1	Inner Approach/ Departure Zone	No new dwellings allowed [10]	25 (APZ I) 50 (APZ II and outside APZs) [11]	**25 (APZ I)** **50 (APZ II)** 100 **(outside APZs)**	Max. 50% lot coverage within APZs [12]	• **Educational services (including c**hildren's schools**)**, day care centers, libraries • Hospitals, congregate care facilities, hotels/ motels, restaurants, places of assembly • Bldgs with >1 aboveground habitable floor in APZ I or >2 floors in APZ II and outside of APZs [13] • Hazardous materials manufacture/storage[14] • Noise sensitive outdoor nonresidential uses [15] • Critical community infrastructure facilities [16] • Hazards to flight [8] • Uses listed in AICUZ as not compatible in APZ I or APZ II [17]	• Locate structures maximum distance from extended runway centerline • Sound attenuation as necessary to meet interior noise level criteria [18] • Zoned fire sprinkler systems required • Airspace review req'd for objects >35 ft. tall [19] • Electromagnetic radiation notification [9] • Avigation easement dedication and disclosure [4] • **Boundary Observation Clear Zone evaluation**
B2	High Noise Zone	No new dwellings allowed [10]	100	250	No Req't	• Children's schools, day care centers, libraries • Hospitals, congregate care facilities, hotels/ motels, places of assembly • Bldgs with >3 aboveground habitable floors • Noise-sensitive outdoor nonresidential uses [15] • Critical community infrastructure facilities [16] • Hazards to flight [8]	• Locate structures max. distance from runway • Sound attenuation as necessary to meet interior noise level criteria [18] • Aboveground bulk storage of hazardous materials discouraged [14, 20] • Airspace review req'd for objects >35 ft. tall [19] • Electromagnetic radiation notification [9] • Avigation easement dedication and disclosure [4] • **Boundary Observation Clear Zone evaluation**
C1	Primary Approach/ Departure Zone	≤3.0	100	250	No Req't	• Children's schools, day care centers, libraries • Hospitals, congregate care facilities, places of assembly • Noise-sensitive outdoor nonresidential uses [15] • Hazards to flight [8]	• Critical community infrastructure facilities discouraged [16, 20] • Aboveground bulk storage of hazardous materials discouraged [14, 20] • Sound attenuation as necessary to meet interior noise level criteria [18] • Airspace review req'd for objects >70 ft. tall [19] • Electromagnetic radiation notification [9] • Deed notice and disclosure [4] • **Boundary Observation Clear Zone evaluation**
C2	Flight Corridor Zone	≤ 6.0	200	500	No Req't	• Highly noise-sensitive outdoor nonresidential uses [15] • Hazards to flight [8]	• Children's schools discouraged [20] • Airspace review req'd for objects >70 ft. tall [19] • Electromagnetic radiation notification [9] • Deed notice and disclosure [4]
D	Flight Corridor Buffer	No Limit	No restriction [21]		No Req't	• Hazards to flight [8]	• Major spectator-oriented sports stadium, amphitheaters, concert halls discouraged [21] • Electromagnetic radiation notification [9] • Deed notice and disclosure [4] • **Boundary Observation Clear Zone evaluation**
E	Other Airport Environs	No Limit	No Restriction [21]		No Req't	• Hazards to flight [8]	• Disclosure only [4]
*	High Terrain	Same as Underlying Compatibility Zone			Not Applicable	• Hazards to flight [8] • Other uses restricted in accordance with criteria for underlying zone	• Airspace review req'd for objects >35 ft. tall [19] • Avigation easement dedication and disclosure [4]

Table MA-2 Basic Compatibility Criteria

NOTES:

Policies referenced here are from the *Riverside County Airport Land Use Compatibility Plan* adopted by the Riverside County ALUC for other airports beginning in October 2004. The countywide policies are hereby incorporated into the *March ARB/IPA ALUCP* except as modified or supplemented by the policies in Section MA.2 of this chapter. A complete copy of the *Riverside County Airport Land Use Compatibility Plan* is available on the Riverside County Airport Land Use Commission website at www.rcaluc.org.

[1] Residential development must not contain more than the indicated number of dwelling units (excluding secondary units) per gross acre. Clustering of units is encouraged provided that the density is limited to no more than 4.0 times the allowable average density for the zone in which the development is proposed. Gross acreage includes the property at issue plus a share of adjacent roads and any adjacent, permanently dedicated, open lands. Mixed-use development in which residential uses are proposed to be located in conjunction with nonresidential uses in the same or adjoining buildings on the same site shall be treated as nonresidential development for the purposes of usage intensity calculations; that is, the occupants of the residential component must be included in calculating the overall number of occupants on the site. A residential component shall not be permitted as part of a mixed use development in zones where residential uses are indicated as incompatible. See Countywide Policy 3.1.3(d). All existing residential development, regardless of densities, is not subject to ALUC authority.

[2] Usage intensity calculations shall include all people (e.g., employees, customers/visitors, etc.) who may be on the property at a single point in time, whether indoors or outside.

[3] The uses listed here are ones that are explicitly prohibited regardless of whether they meet the intensity criteria. In addition to these explicitly prohibited uses, other uses will normally not be permitted in the respective compatibility zones because they do not meet the usage intensity criteria. See *Riverside County Airport Land Use Compatibility Plan*, Volume 1, Appendix D for a full list of compatibility designations for specific land uses.

[4] As part of certain real estate transactions involving residential property within any compatibility zone (that is, anywhere within an airport influence area), information regarding airport proximity and the existence of aircraft overflights must be disclosed. This requirement is set by state law. See Countywide Policy 4.4.2 for details. Easement dedication and deed notice requirements indicated for specific compatibility zones apply only to new development and to reuse if discretionary approval is required. Except within Zone A (Clear Zone), avigation easements are to be dedicated to the March Inland Port Airport Authority. See sample language in www.marchjpa.com/docs_forms/avigationeasement.pdf. Any avigation easements required within Zone A shall be dedicated to the United States of America.

[5] The total number of people permitted on a project site at any time, except rare special events, must not exceed the indicated usage intensity times the gross acreage of the site. Rare special events are ones (such as an air show at the airport) for which a facility is not designed and normally not used and for which extra safety precautions can be taken as appropriate.

[6] Clustering of nonresidential development is permitted. However, no single acre of a project site shall exceed the indicated number of people per acre. See Countywide Policy 4.2.5 for details.

[7] Clear zone (equivalent to runway protection zone at civilian airports) limits that delineate Zone A are derived from locations indicated in the March Air Reserve Base AICUZ study. See Note 4 for avigation easement dedication requirements in this zone.

[8] Hazards to flight include physical (e.g., tall objects), visual, and electronic forms of interference with the safety of aircraft operations. Land use development that may cause the attraction of birds to increase is also prohibited. Man-made features must be designed to avoid heightened attraction of birds. In Zones A, B1, and B2, flood control facilities should be designed to hold water for no more than 48 hours following a storm and be completely dry between storms (see FAA Advisory Circular 150/5200-33B). Additionally, certain farm crops and farming practices that tend to attract birds are strongly discouraged. These include: certain crops (e.g., rice, barley, oats, wheat – particularly durum – corn, sunflower, clover, berries, cherries, grapes, and apples); farming activities (e.g., tilling and harvesting); confined livestock operations (i.e., feedlots, dairy operations, hog or chicken production facilities, or egg-laying operations); and various farming practices (e.g., livestock feed, water, and manure). Fish production (i.e., catfish, trout) conducted outside of fully enclosed buildings may require mitigation measures (e.g., netting of outdoor ponds, providing covered structures) to prevent bird attraction. Also see Countywide Policy 4.3.7 and Policy 2.5(e) in this *March ARB/IPA ALUCP* as to visual interference in the form of solar glare.

[9] March ARB must be notified of any land use having an electromagnetic radiation component to assess whether a potential conflict with Air Base radio communications could result. Sources of electromagnetic radiation include microwave transmission in conjunction with a cellular tower, radio wave transmission in conjunction with remote equipment inclusive of irrigation controllers and other similar EMR emissions. See also Policy 2.5(f) in this *March ARB/IPA ALUCP.*

[10] Other than in Zone A, construction of a single-family home, including a second unit as defined by state law, on a legal lot of record is exempted from this restriction where such use is permitted by local land use regulations. Interior noise level standards and avigation easement requirements for the compatibility zone in which the dwelling is to be located are to be applied.

[11] Non-residential uses are limited to 25 people per acre in those portions of Zone B1 within Accident Potential Zone (APZ) I (Zone B1-APZ I) and 50 people per acre in those portions of Zone B1 within APZ II (Zone B1-APZ II). Within each APZ, the single-acre intensity limit (the maximum number of people allowed in any given acre) shall not exceed the above intensity limits. In those portions of Zone B1 outside APZ I and APZ II, average intensity is limited to 50 people per gross acre, and the single-acre intensity limit is 100 people in any given acre.

[12] In APZ I, any proposed development having more than 20% lot coverage must not provide on-site services to the public. Zoned fire sprinklers are required. Also, in APZ I, site design of proposed development should to the extent possible avoid placement of buildings within 100 feet of the extended

Table MA-2, continued

runway centerline; this center strip should be devoted to parking, landscaping, and outdoor storage. Maximum lot coverage is not limited outside the APZs.

[13] Within APZ II and outside APZs, two-story buildings are allowed.

[14] Storage of aviation fuel and other aviation-related flammable materials on the airport is exempted from this criterion. In APZ I, manufacture or bulk storage of hazardous materials (toxic, explosive, corrosive) is prohibited unless storage is underground; small quantities of materials may be stored for use on site. In APZ II and elsewhere within Zone B1, aboveground storage of more than 6,000 gallons of nonaviation flammable materials per tank is prohibited. In Zones B2 and C1, aboveground storage of more than 6,000 gallons of hazardous or flammable materials per tank is discouraged.

[15] Examples of noise-sensitive outdoor nonresidential uses that should be prohibited include major spectator-oriented sports stadiums, amphitheaters, concert halls and drive-in theaters. Caution should be exercised with respect to uses such as poultry farms and nature preserves.

[16] Critical community facilities include power plants, electrical substations, and public communications facilities. See Countywide Policy 4.2.3(d).

[17] For properties in either APZ I or II, any use listed as "N – not compatible" for that particular APZ in Table A-1 of Appendix A of the 2018 *Air Installation Compatible Use Zone Study for March Air Reserve Base*. A copy of Table A-1 of Appendix A is attached hereto and incorporated herein. Beyond the boundaries of the APZs in Zone B1, such uses are discouraged, but not necessarily prohibited unless otherwise specified herein.

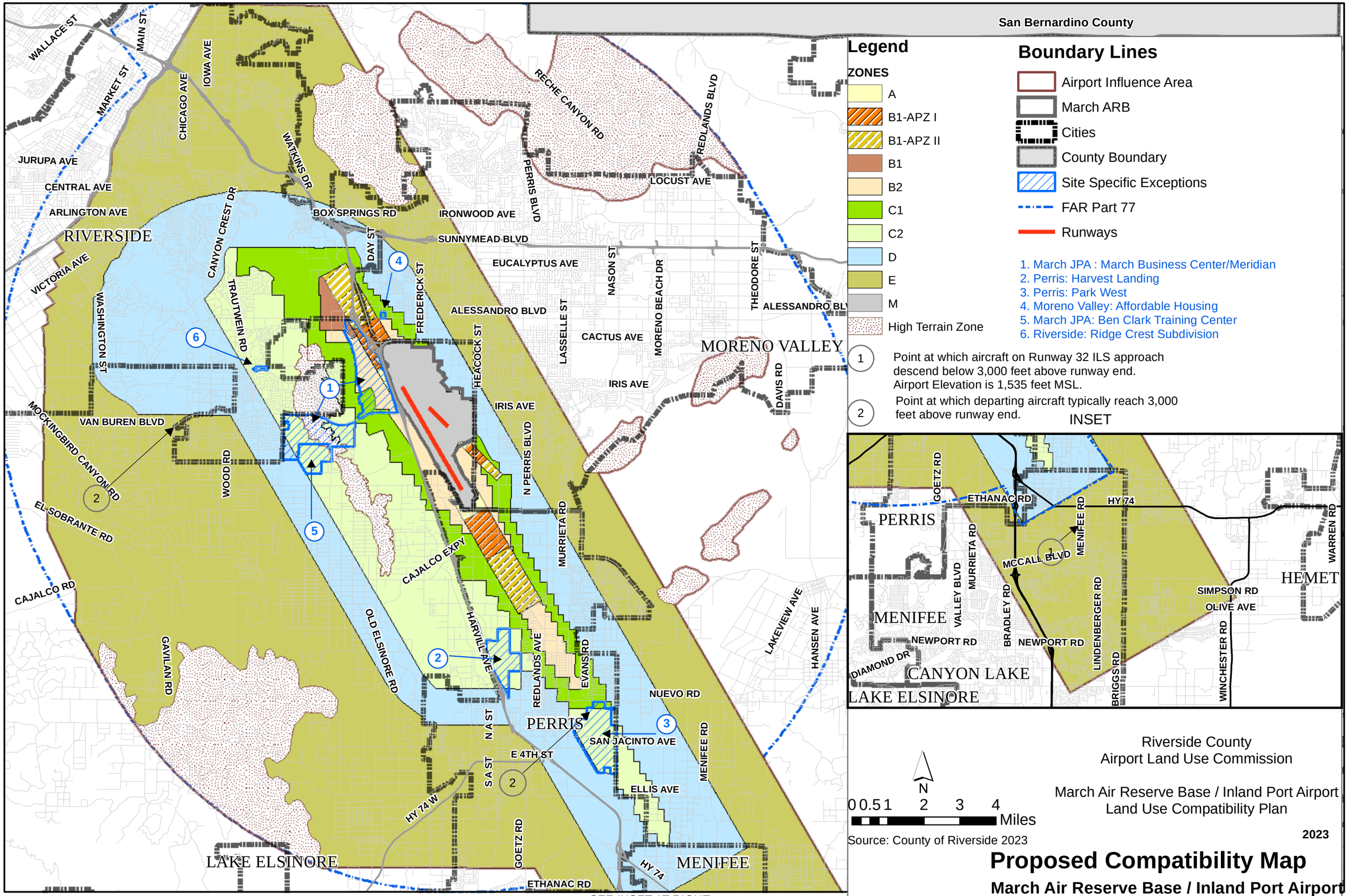
[18] All new residences, schools, libraries, museums, hotels and motels, hospitals and nursing homes, places of worship, and other noise-sensitive uses must have sound attenuation features incorporated into the structures sufficient to reduce interior noise levels from exterior aviation-related sources to no more than CNEL 40 dB. This requirement is intended to reduce the disruptiveness of loud individual aircraft noise events upon uses in this zone and represents a higher standard than the CNEL 45 dB standard set by state and local regulations and countywide ALUC policy. Office space must have sound attenuation features sufficient to reduce the exterior aviation-related noise level to no more than CNEL 45 dB. To ensure compliance with these criteria, an acoustical study shall be required to be completed for any development proposed to be situated where the aviation-related noise exposure is more than 20 dB above the interior standard (e.g., within the CNEL 60 dB contour where the interior standard is CNEL 40 dB). Standard building construction is presumed to provide adequate sound attenuation where the difference between the exterior noise exposure and the interior standard is 20 dB or less.

[19] This height criterion is for general guidance. Airspace review requirements are determined on a site-specific basis in accordance with Part 77 of the Federal Aviation Regulations. Shorter objects normally will not be airspace obstructions unless situated at a ground elevation well above that of the airport. Taller objects may be acceptable if determined not to be obstructions. The Federal Aviation Administration or California Department of Transportation Division of Aeronautics may require marking and/or lighting of certain objects. See Countywide Policies 4.3.4 and 4.3.6 for additional information.

[20] Discouraged uses should generally not be permitted unless no feasible alternative is available.

[21] Although no explicit upper limit on usage intensity is defined for *Zone D and E*, land uses of the types listed—uses that attract very high concentrations of people in confined areas—are discouraged in locations below or near the principal arrival and departure flight tracks.

Table MA–2, continued


San Bernardino County
Legend
ZONES
A
B1-APZ I
B1-APZ II
B1
B2
C1
C2
D
E
M
High Terrain Zone
Boundary Lines
Airport Influence Area
March ARB
Cities
County Boundary
Site Specific Exceptions
FAR Part 77
Runways
1. March JPA : March Business Center/Meridian
2. Perris: Harvest Landing
3. Perris: Park West
4. Moreno Valley: Affordable Housing
5. March JPA: Ben Clark Training Center
6. Riverside: Ridge Crest Subdivision
1 Point at which aircraft on Runway 32 ILS approach descend below 3,000 feet above runway end. Airport Elevation is 1,535 feet MSL.
2 Point at which departing aircraft typically reach 3,000 feet above runway end.
INSET
RIVERSIDE
MORENO VALLEY
PERRIS
MENIFEE
LAKE ELSINORE
CANYON LAKE
HEMET
WALLACE ST
MAIN ST
MARKET ST
CHICAGO AVE
IOWA AVE
JURUPA AVE
CENTRAL AVE
ARLINGTON AVE
VICTORIA AVE
WASHINGTON ST
CANYON CREST DR
WATKINS DR
BOX SPRINGS RD
IRONWOOD AVE
SUNNYMEAD BLVD
EUCALYPTUS AVE
ALESSANDRO BLVD
CACTUS AVE
IRIS AVE
VAN BUREN BLVD
MOCKINGBIRD CANYON RD
EL SOBRANTE RD
CAJALCO RD
GAVILAN RD
WOOD RD
TRAUTWEIN RD
DAY ST
FREDERICK ST
HEACOCK ST
LASSELLE ST
NASON ST
MORENO BEACH DR
THEODORE ST
DAVIS RD
RECHE CANYON RD
REDLANDS BLVD
LOCUST AVE
PERRIS BLVD
N PERRIS BLVD
MURRIETA RD
CAJALCO EXPY
OLD ELSINORE RD
HARVILLE AVE
REDLANDS AVE
EVANS RD
NUEVO RD
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HANSEN AVE
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ELLIS AVE
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HY 74
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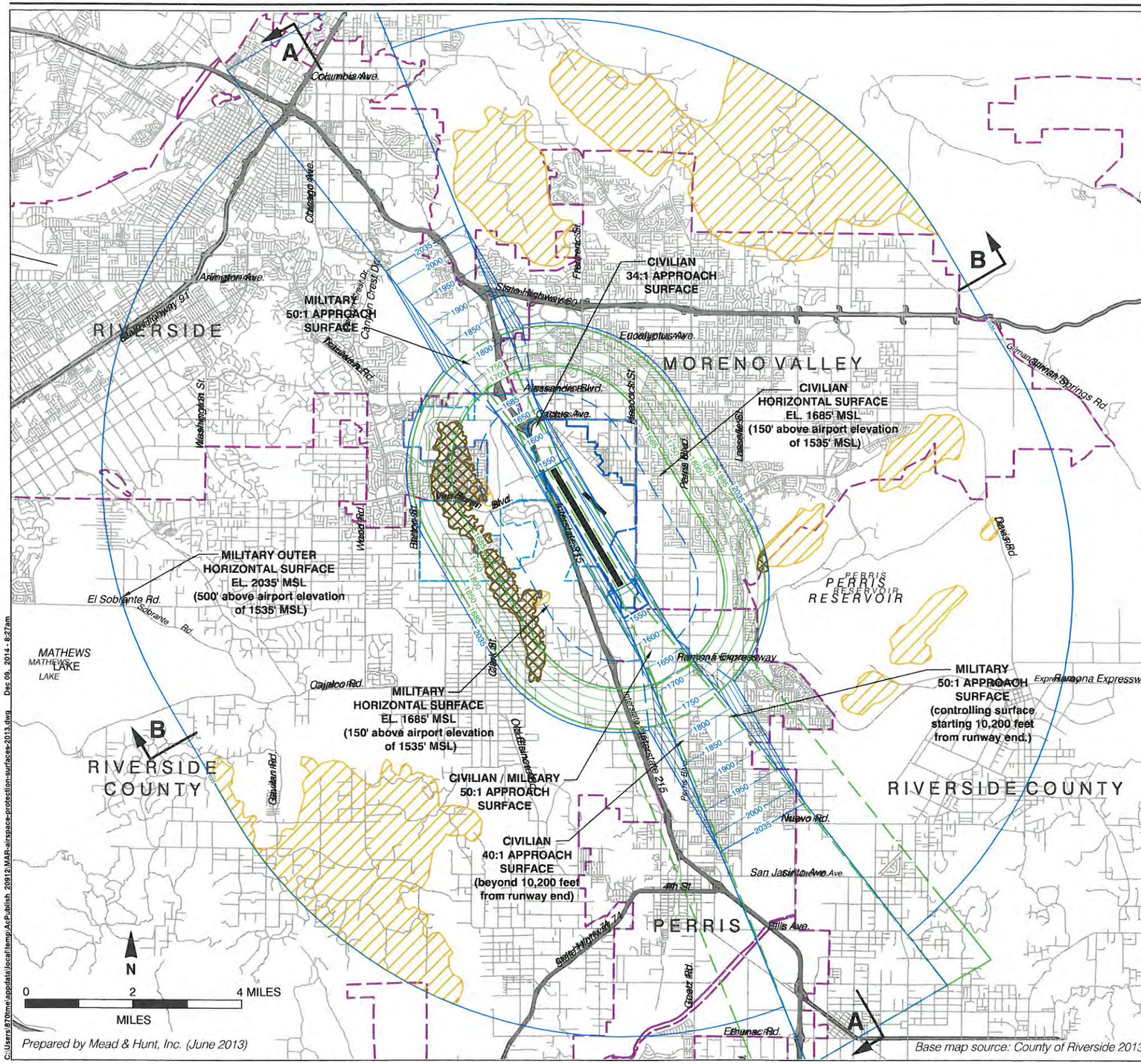
GOETZ RD
MENIFEE RD
HY 74
MCCALL BLVD
VALLEY BLVD
MURRIETA RD
BRADLEY RD
NEWPORT RD
DIAMOND DR
LINDENBERGER RD
BRIGGS RD
SIMPSON RD
OLIVE AVE
WINCHESTER RD
WARREN RD
N
0 0.5 1 2 3 4 Miles
Source: County of Riverside 2023
Riverside County
Airport Land Use Commission
March Air Reserve Base / Inland Port Airport
Land Use Compatibility Plan
2023
Proposed Compatibility Map
March Air Reserve Base / Inland Port Airport
Mickey Zolezio \\rcit-16fs02\gis\Workspace\Zolezio\Airports2005\MarchUpdate\ProposedCompatibility.mxd



LEGEND

FAR Part 77

- Military Surfaces
- Civilian Surfaces

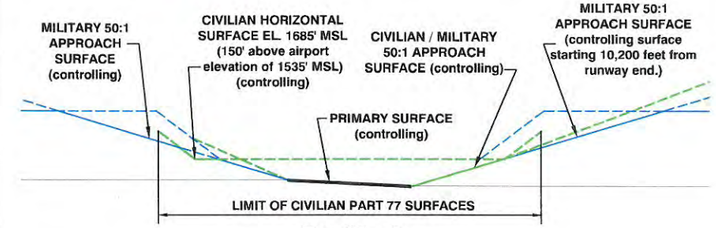
} Dashed line indicates other set of surfaces is controlling

Terrain Penetration of FAR Part 77 Surfaces

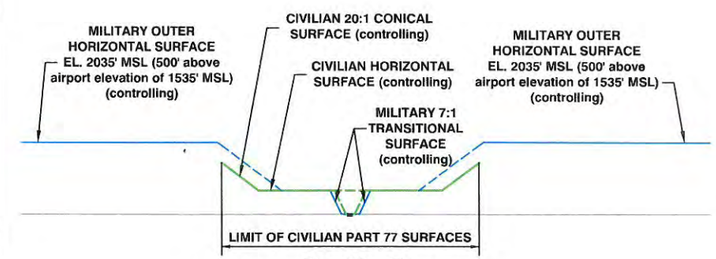
- Military
- Civilian

Boundary Lines

- March Air Reserve Base / Inland Port Airport
- March Joint Powers Authority Property Line
- City Limits



Profile A



Profile B

Source:
Civilian airspace protection surfaces from March Air Force Base Joint Use Feasibility Study (January 1997). Military airspace protection surfaces from Air Installation Compatible Use Zone Study for March Air Reserve Base (August 2005).

Riverside County
Airport Land Use Commission

March Air Reserve Base / Inland Port Airport
Land Use Compatibility Plan

(Adopted November 13, 2014)

Map MA-2

Airspace Protection Surfaces

March Air Reserve Base / Inland Port Airport

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Appendix A. Land Use Compatibility Tables

Table A-1. Land Use Compatibility Recommendations in APZs and CZs

SLUCM NO.	LAND USE NAME	CLEAR ZONE Recommendation[1]	APZ-I Recommendation[1]	APZ-II Recommendation[1]	DENSITY Recommendation[1]
10	Residential				
11	Household Units				
11.11	Single units: detached	N	N	Y[2]	Maximum density of 2 Du/Ac
11.12	Single units: semi-detached	N	N	N	
11.13	Single units: attached row	N	N	N	
11.21	Two units: side-by-side	N	N	N	
11.22	Two units: one above the other	N	N	N	
11.31	Apartments: walk-up	N	N	N	
11.32	Apartment: elevator	N	N	N	
12	Group quarters	N	N	N	
13	Residential hotels	N	N	N	
14	Mobile home parks or courts	N	N	N	
15	Transient lodgings	N	N	N	
16	Other residential	N	N	N	
20	Manufacturing [3]				
21	Food and kindred products; manufacturing	N	N	Y	Maximum FAR 0.56 IN APZ II
22	Textile mill products; manufacturing	N	N	Y	Maximum FAR 0.56 IN APZ II
23	Apparel and other finished products; products made from fabrics, leather and similar materials; manufacturing	N	N	N	
24	Lumber and wood products (except furniture); manufacturing	N	Y	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
25	Furniture and fixtures; manufacturing	N	Y	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II

SLUCM NO.	LAND USE NAME	CLEAR ZONE Recommendation[1]	APZ-I Recommendation[1]	APZ-II Recommendation[1]	DENSITY Recommendation[1]
26	Paper and allied products; manufacturing	N	Y	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
27	Printing, publishing, and allied industries	N	Y	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
28	Chemicals and allied products; manufacturing	N	N	N	
29	Petroleum refining and related industries	N	N	N	
30	Manufacturing[3] (continued)				
31	Rubber and miscellaneous plastic products; manufacturing	N	N	N	
32	Stone, clay, and glass products; manufacturing	N	N	Y	Maximum FAR 0.56 in APZ II
33	Primary metal products; manufacturing	N	N	Y	Maximum FAR 0.56 in APZ II
34	Fabricated metal products; manufacturing	N	N	Y	Maximum FAR 0.56 in APZ II
35	Professional, scientific, and controlling instruments; photographic and optical goods; watches and clocks	N	N	N	
39	Miscellaneous manufacturing	N	Y	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
40	Transportation, communication, and utilities[3, 4]				
41	Railroad, rapid rail transit, and street railway transportation	N	Y[6]	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
42	Motor vehicle transportation	N	Y[6]	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
43	Aircraft transportation	N	Y[6]	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
44	Marine craft transportation	N	Y[6]	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
45	Highway and street right-of-way	Y[5]	Y[6]	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II

SLUCM NO.	LAND USE NAME	CLEAR ZONE Recommendation[1]	APZ-I Recommendation[1]	APZ-II Recommendation[1]	DENSITY Recommendation[1]
46	Automobile parking	N	Y[6]	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
47	Communication	N	Y[6]	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
48	Utilities[7]	N	Y[6]	Y[6]	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
48.5	Solid waste disposal (landfills, incinerators, etc.)	N	N	N	
49	Other transportation, communication, and utilities	N	Y[6]	Y	See Note 6 below
50	Trade				
51	Wholesale trade	N	Y	Y	Maximum FAR of 0.28 in APZ I & .56 in APZ II
52	Retail trade – building materials, hardware and farm equipment	N	Y	Y	See Note 8 below
53	Retail trade – including, discount clubs, home improvement stores, electronics superstores, etc.	N	N	Y	Maximum FAR of 0.16 in APZ II
53	Shopping centers-Neighborhood, Community, Regional, Super-regional[9]	N	N	N	
54	Retail trade – food	N	N	Y	Maximum FAR of 0.24 in APZ II
55	Retail trade – automotive, marine craft, aircraft, and accessories	N	Y	Y	Maximum FAR of 0.14 in APZ I & 0.28 in APZ II
56	Retail trade – apparel and accessories	N	N	Y	Maximum FAR of 0.28 in APZ II
57	Retail trade – furniture, home, furnishings and equipment	N	N	Y	Maximum FAR of 0.28 in APZ II

SLUCM NO.	LAND USE NAME	CLEAR ZONE Recommendation[1]	APZ-I Recommendation[1]	APZ-II Recommendation[1]	DENSITY Recommendation[1]
58	Retail trade – eating and drinking establishments	N	N	N	
59	Other retail trade	N	N	Y	Maximum FAR of 0.16 in APZ II
60	Services[10]				
61	Finance, insurance and real estate services	N	N	Y	Maximum FAR of 0.22 in APZ II
62	Personal services	N	N	Y	Office uses only. Maximum FAR of 0.22 in APZ II.
62.4	Cemeteries	N	Y[11]	Y[11]	
63	Business services (credit reporting; mail, stenographic, reproduction; advertising)	N	N	Y	Maximum FAR of 0.22 in APZ II
63.7	Warehousing and storage services[12]	N	Y	Y	Maximum FAR of 1.0 in APZ I; 2.0 in APZ II
64	Repair Services	N	Y	Y	Maximum FAR of 0.11 APZ I; 0.22 in APZ II
65	Professional services	N	N	Y	Maximum FAR of 0.22 in APZ II
65.1	Hospitals, nursing homes	N	N	N	
65.1	Other medical facilities	N	N	N	
66	Contract construction services	N	Y	Y	Maximum FAR of 0.11 APZ I; 0.22 in APZ II
67	Government Services	N	N	Y	Maximum FAR of 0.24 in APZ II
68	Educational services	N	N	N	
68.1	Child care services, child development centers, and nurseries	N	N	N	
69	Miscellaneous Services	N	N	Y	Maximum FAR of 0.22 in APZ II
69.1	Religious activities (including places of worship)	N	N	N	
70	Cultural, entertainment and recreational				
71	Cultural activities	N	N	N	
71.2	Nature exhibits	N	Y[13]	Y[13]	
72	Public assembly	N	N	N	

SLUCM NO.	LAND USE NAME	CLEAR ZONE Recommendation[1]	APZ-I Recommendation[1]	APZ-II Recommendation[1]	DENSITY Recommendation[1]
72.1	Auditoriums, concert halls	N	N	N	
72.11	Outdoor music shells, amphitheaters	N	N	N	
72.2	Outdoor sports arenas, spectator sports	N	N	N	
73	Amusements – fairgrounds, miniature golf, driving ranges; amusement parks, etc.	N	N	Y[20]	
74	Recreational activities (including golf courses, riding stables, water recreation)	N	Y[13]	Y[13]	Maximum FAR of 0.11 in APZ I; 0.22 in APZ II
75	Resorts and group camps	N	N	N	
76	Parks	N	Y[13]	Y[13]	Maximum FAR of 0.11 in APZ I; 0.22 in APZ II
79	Other cultural, entertainment and recreation	N	Y[11]	Y[11]	Maximum FAR of 0.11 in APZ I; 0.22 in APZ II
80	Resource production and extraction				
81	Agriculture (except live-stock)	Y[4]	Y[14]	Y[14]	
81.5-81.7,	Agriculture-Livestock farming, including grazing and feedlots	N	Y[14]	Y[14]	
82	Agriculture related activities	N	Y[15]	Y[15]	Maximum FAR of 0.28 in APZ I; 0.56 in APZ II, no activity which produces smoke, glare, or involves explosives
83	Forestry activities[16]	N	Y	Y	Maximum FAR of 0.28 in APZ I; 0.56 in APZ II, no activity which produces smoke, glare, or involves explosives

SLUCM NO.	LAND USE NAME	CLEAR ZONE Recommendation[1]	APZ-I Recommendation[1]	APZ-II Recommendation[1]	DENSITY Recommendation[1]
84	Fishing activities[17]	N[17]	Y	Y	Maximum FAR of 0.28 in APZ I; 0.56 in APZ II, no activity which produces smoke, glare, or involves explosives
85	Mining activities[18]	N	Y[18]	Y[18]	Maximum FAR of 0.28 in APZ I; 0.56 in APZ II, no activity which produces smoke, glare, or involves explosives
89	Other resource production or extraction	N	Y	Y	Maximum FAR of 0.28 in APZ I; 0.56 in APZ II, no activity which produces smoke, glare, or involves explosives
90	Other				
91	Undeveloped land	Y	Y	Y	
93	Water areas[19]	N[19]	N[19]	N[19]	

1. A "Yes" or a "No" designation for compatible land use is to be used only for general comparison. Within each, uses exist where further evaluation may be needed in each category as to whether it is clearly compatible, normally compatible, or not compatible due to the variation of densities of people and structures. In order to assist air installations and local governments, general suggestions as to FARs are provided as a guide to density in some categories. In general, land use restrictions that limit occupants, including employees, of commercial, service, or industrial buildings or structures to 25 an acre in APZ I and 50 an acre in APZ II are considered to be low density. Outside events should normally be limited to assemblies of not more than 25 people an acre in APZ I, and maximum assemblies of 50 people an acre in APZ II. Recommended FARs are calculated using standard parking generation rates for various land uses, vehicle occupancy rates, and desired density in APZ I and II. For APZ I, the formula is FAR = 25 people an acre/ (Average Vehicle Occupancy x Average Parking Rate x (43560/1000)). The formula for APZ II is FAR = 50/ (Average Vehicle Occupancy x Average Parking Rate x (43560/1000)).

2. The suggested maximum density for detached single-family housing is two Du/Ac. In a planned unit development (PUD) of single family detached units, where clustered housing development results in large open areas, this density could possibly be increased slightly provided the amount of surface area covered by structures does not exceed 20 percent of the PUD total area. PUD encourages clustered development that leaves large open areas.

3. Other factors to be considered: Labor intensity, structural coverage, explosive characteristics, air-pollution, electronic interference with aircraft, height of structures, and potential glare to pilots.

4. No structures (except airfield lighting and navigational aids necessary for the safe operation of the airfield when there are no other siting options), buildings, or above-ground utility and communications lines should normally be located in Clear Zone areas on or off the air installation. The Clear Zone is subject to the most severe restrictions.

5. Roads within the graded portion of the Clear Zone are prohibited. All roads within the Clear Zone are discouraged, but if required, they should not be wider than two lanes and the rights-of-way should be fenced (frangible) and not include sidewalks or bicycle trails. Nothing associated with these roads should violate obstacle clearance criteria.

6. No above ground passenger terminals and no above ground power transmission or distribution lines. Prohibited power lines include high-voltage transmission lines and distribution lines that provide power to cities, towns, or regional power for unincorporated areas.

7. Development of renewable energy resources, including solar and geothermal facilities and wind turbines, may impact military operations through hazards to flight or electromagnetic interference. Each new development should to be analyzed for compatibility issues on a case-by-case basis that considers both the proposal and potentially affected mission.

8. Within SLUCM Code 52, maximum FARs for lumberyards (SLUCM Code 521) are 0.20 in APZ-I and 0.40 in APZ-11; the maximum FARs for hardware, paint, and farm equipment stores, (SLUCM Code 525), are 0.12 in APZ I and 0.24 in APZ II.

9. A shopping center is an integrated group of commercial establishments that is planned, developed, owned, or managed as a unit. Shopping center types include strip, neighborhood, community, regional, and super-regional facilities anchored by small businesses, a supermarket or drug store, discount retailer, department store, or several department stores, respectively.

10. Ancillary uses such as meeting places, auditoriums, etc. are not recommended.

11. No chapels or houses of worship are allowed within APZ I or APZ II.

12. Big box home improvement stores are not included as part of this category.

13. Facilities must be low intensity, and provide no playgrounds, etc. Facilities such as club houses, meeting places, auditoriums, large classes, etc., are not recommended.

14. Activities that attract concentrations of birds creating a hazard to aircraft operations should be excluded.

15. Factors to be considered: labor intensity, structural coverage, explosive characteristics, and air pollution.

[16.] Lumber and timber products removed due to establishment, expansion, or maintenance of Clear Zone lands owned in fee will be disposed of in accordance with applicable DoD guidance.
[17.] Controlled hunting and fishing may be permitted for the purpose of wildlife management.
[18.] Surface mining operations that could create retention ponds that may attract waterfowl and present bird/wildlife aircraft strike hazards (BASH), or operations that produce dust or light emissions that could affect pilot vision are not compatible.
[19.] Naturally occurring water features (e.g., rivers, lakes, streams, wetlands) are pre-existing, nonconforming land uses. Naturally occurring water features that attract waterfowl present a potential BASH. Actions to expand naturally occurring water features or construction of new water features should not be encouraged. If construction of new features is necessary for storm water retention, such features should be designed so that they do not attract waterfowl.
[20]. Amusement centers, family entertainment centers or amusement parks designed or operated at a scale that could attract or result in concentrations of people, including employees and visitors, greater than 50 people per acre at any given time are incompatible in APZ II.

NOTICE OF PUBLIC HEARING

RIVERSIDE COUNTY AIRPORT LAND USE COMMISSION

www.rcaluc.org

A PUBLIC HEARING has been scheduled before the Riverside County Airport Land Use Commission (ALUC) to consider the applications described below.

Any person may submit written comments to the ALUC before the hearing or may appear and be heard in support of or opposition to the project at the time of hearing. **Information on how to participate in the hearing will be available on the ALUC website at www.rcaluc.org.** The ALUC holds hearings for local discretionary permits within the Airport Influence Area, reviewing for aeronautical safety, noise and obstructions. ALUC reviews a proposed plan or project solely to determine whether it is consistent with the applicable Airport Land Use Compatibility Plan. For more information please contact **Simon Housman Project Director at (760) 328-7995**.

The proposed project application may be viewed by a prescheduled appointment and on the ALUC website www.rcaluc.org. Written comments may be submitted at the Riverside County Administrative Center, 4080 Lemon Street, 14th Floor, Riverside, California 92501, Monday through Friday from 8:00 a.m. to 3:30 p.m., or by e-mail to shousman@rivco.org. Individuals with disabilities requiring reasonable modifications or accommodations, please contact Barbara Santos at (951) 955-5132.

PLACE OF HEARING: **Riverside County Administration Center**
4080 Lemon Street, 1st Floor Board Chambers
Riverside California

DATE OF HEARING: **February 8, 2024**

TIME OF HEARING: **9:30 A.M.**

CASE DESCRIPTION:

ZMARCHCUS – County of Riverside (Representative: The Matrix Group) – March ARB Compatible Use Study – 2023. A County of Riverside initiated proposal to study compatible land use around March Air Reserve Base. Military installations generate thousands of jobs and billions of dollars in regional economic impact across the nation. Sustainment of these military installations, and associated missions and facilities, helps underpin the vitality of local communities, economies, and industries. Ensuring compatibility between military bases and surrounding communities through partnership promotes military mission sustainment and continued presence in the local economy. The March Air Reserve Base Compatible Use Study (MCUS) aims to proactively identify and provide solutions to promote March's mission sustainability, while strengthening coordination efforts between the installation and neighboring communities. (March Airport Compatibility Zones A, B1, B2, C1, C2 and D.)

RIVERSIDE COUNTY
AIRPORT LAND USE COMMISSION

STAFF REPORT

ADMINISTRATIVE ITEMS

5.1 Director's Approvals

A. During the period of December 16, 2023, through January 15, 2024, ALUC Director Paul Rull reviewed one local jurisdiction non-impact legislative case pursuant to ALUC Resolution No. 2011-02, and issued a determination of consistency.

ZAP1016CO23 (citywide) pertains to City of Corona GPA2023-0005 (General Plan Amendment), a proposal for an Affordable Housing Overlay Zone on several properties within the City to meet its Regional Housing Needs Assessment by amending the General Plan to allow high-density residential in the General Commercial land use designation, and amending the General Plan Land Use Table to allow high-density residential at a density of 36 to 60 dwelling units per acre in the General Commercial Zone. This density is consistent with the Zone D residential density criteria of either below 0.2 dwelling units per acre or above 5.0 dwelling units per acre. Lastly, the City's General Plan contains language requiring project to be consistent with the Corona Municipal Airport Land Use Compatibility Plan.

ALUC Director Paul Rull issued a determination of consistency for this project on January 15, 2024.

5.2 Update March Air Reserve Base Compatibility Use Study (CUS)
Presentation by Project Director Simon Housman or his designee.

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RIVERSIDE COUNTY
AIRPORT LAND USE COMMISSION

CHAIR
Steve Manos
Lake Elsinore

VICE CHAIR
Russell Betts
Desert Hot Springs

COMMISSIONERS

John Lyon
Riverside

Steven Stewart
Palm Springs

Richard Stewart
Moreno Valley

Michael Geller
Riverside

Vernon Poole
Murrieta

STAFF

Director
Paul Rull

Simon Housman
Jackie Vega
Barbara Santos

County Administrative Center
4080 Lemon St.,14th Floor.
Riverside, CA 92501
(951) 955-5132

www.rcaluc.org

January 15, 2024

Joanne Coletta, Director
City of Corona Planning & Development Department
400 S. Vicentia Avenue
Corona CA 92882

RE: AIRPORT LAND USE COMMISSION (ALUC) DEVELOPMENT REVIEW – DIRECTOR'S DETERMINATION

File No.:	ZAP1016CO23
Related File No.:	GPA2023-0005 (General Plan Amendment)
APN:	Citywide

Dear Ms. Coletta,

As authorized by the Riverside County Airport Land Use Commission (ALUC) pursuant to its Resolution No. 2011-02, as ALUC Director, I have reviewed City of Corona GPA2023-0005 (General Plan Amendment), a proposal for an Affordable Housing Overlay Zone on several properties within the City to meet its Regional Housing Needs Assessment by amending the General Plan to allow high-density residential in the General Commercial land use designation, and amending the General Plan Land Use Table to allow high-density residential at a density of 36 to 60 dwelling units per acre in the General Commercial Zone. This density is consistent with the Zone D residential density criteria of either below 0.2 dwelling units per acre or above 5.0 dwelling units per acre. Lastly, the City's General Plan contains language requiring project to be consistent with the Corona Municipal Airport Land Use Compatibility Plan.

As ALUC Director, I hereby find the above-referenced project **CONSISTENT** with the 2004 Corona Municipal Airport Land Use Compatibility Plan.

This determination of consistency relates to airport compatibility issues and does not necessarily constitute an endorsement of the proposed amendment.

If you have any questions, please contact me at (951) 955-6893.

Sincerely,
RIVERSIDE COUNTY AIRPORT LAND USE COMMISSION

Paul Rull

Paul Rull, ALUC Director

cc: ALUC Case File

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GPA2023-0005
General Plan Land Use Table – Amendment
(Added text shown in red underline)

Table LU-1 Corona General Plan Land Use Designations

Land Use Designation	Description	Density/ Intensity
Agriculture	Accommodates agricultural activities, such as citrus crops, and allows for housing and ancillary facilities.	1 du/5 acres
Rural Residential I	Accommodates large lot residential development to maintain the area's low density, rural, and natural character.	Density: 0.2–0.5 du/adj. gross acre
Rural Residential II	Accommodates large lot residential development to reflect estate and/or rural qualities.	Density: 0.5–1 du/adj. gross acre
Estate Residential	Accommodates moderate to larger size lots for single-family detached housing units.	Density: 1–3 du/adj. gross acre
Low Density Residential	Accommodates detached single-family homes. For properties within Airport Compatibility Zone D, new development shall have a density of at least 5 du/ac	Density: 3–6 du/adj. gross acre
Low Medium Density Residential	Accommodates detached single-family houses or detached or attached condominium ownership.	Density: 6–8 du/adj. gross acre
Medium Density Residential	Accommodates townhomes, duplexes, and single-family detached units in condo developments, with smaller lots to facilitate clustering of units and expanded recreational amenities and preserve open spaces and topography.	Density: 6–15 du adjusted gross acre
High Density Residential	Accommodates multi-family residential (e.g., garden apartments and condos, including common open space, landscaping, and other site amenities.	Density: 15–36 du/adj. gross acre, up to 75 du/adj gross acre for senior units
Urban Density Residential	Accommodates high density residential development primarily through innovative infill design in the city's opportunity districts and sites.	Density: 36–60 du/adj. gross acre Density with an Affordable Housing Overlay Zone: 45-60 du/adj. gross acre
General Commercial[3]	Accommodates a range of commercial uses that serve local neighborhoods, the community, and visitors. Typical uses are governed by implementing zones. Accommodates 100% residential use if affordable housing is provided pursuant to the requirements of the Affordable Housing Overlay (AHO) Zone.	Intensity: FAR of 0.5 Density with an Affordable Housing Overlay Zone: 36-60 du/adj. gross acre
Office Professional[3]	Accommodates general business offices, banks, finance, insurance, and real estate offices, medical offices, professional offices, and compatible uses.	Intensity: FAR 2.0

Table LU-1 Corona General Plan Land Use Designations

Land Use Designation	Description	Density/ Intensity
General Industrial[3]	Accommodates a wide range of manufacturing, construction, transportation, wholesale trade, warehousing, vehicle storage, and related service activities. Mineral resource activities are included in this category.	Intensity: FAR 0.5
Light Industrial[3]	Accommodates low intensity, nonpolluting manufacturing, R&D, e-commerce, wholesale, and distribution facilities. Also includes campus-style industrial and business parks. These are intended to provide a job base for residents in "clean" industries that do not generate nuisance or unsafe levels of noise, vibration, air emissions, or waste.	Intensity: FAR 0.5
Mixed Use I Commercial and Residential[1, 2]	Accommodates retail commercial and office uses or an integrated mix of commercial and residential uses along arterials or at primary community activity centers and transit stations. Commercial and office uses primarily serving neighborhood and community needs, is permitted. Accommodates 100% residential use if affordable housing is provided pursuant to the requirements of the Affordable Housing Overlay (AHO) Zone.	Mixed Use Commercial and Residential Intensity: FAR 2.0 Density for 100% residential use: 45-60 du/adj. gross acre
Downtown Commercial/ Mixed Use[2]	Accommodates the development of properties exclusively for retail commercial uses or an integrated mix of commercial and residential uses. Commercial uses are permitted along the street frontages that cumulatively create a pedestrian-oriented and active street environment, including retail shops, services, offices, cultural facilities, entertainment, public and civic buildings, and similar and compatible uses.	Intensity: FAR 3.0
Mixed Use II—Industrial and Commercial[1]	Accommodates the development of light industrial uses or a mix of industrial and commercial uses. Generally, these should be recognized "clean" types of industries, typified by light manufacturing, research and development, and e-commerce. Accommodates 100% residential use if affordable housing is provided pursuant to the requirements of the Affordable Housing Overlay (AHO) Zone.	Intensity: FAR 2.0 Density for 100% residential use: 45-60 du/adj. gross acre
Open Space General	Accommodates lands permanently committed or protected for open space due to value as habitat, topography, scenic quality, public safety (e.g., flood control channels), or comparable purpose.	Not applicable
Parks and Open Space Recreational	Accommodates lands committed as open space for public or private recreational purposes, such parks and golf courses.	Not applicable
Public and Institutional	Accommodates public and institutional uses within areas specifically designated on the land use plan or within any other land use designation in accordance with policies under Goal LU-15. General categories include schools, civic uses, fire stations, utilities, and other institutional uses, except for public and private parks.	Based on implementing zone

Table LU-1 Corona General Plan Land Use Designations

Land Use Designation	Description	Density/ Intensity

Notes
1. Approval of a Specific Plan or adoption of citywide development standards and design guidelines is required for entitlement of a mixed-use project.
2. Residential uses may be integrated into the upper floors of structures developed for retail or office uses on the lower floors or horizontally on the same site.
3. Permissible intensity levels (maximum FARs) are lower within Airport Compatibility Zones C and D of the Corona Municipal Airport Influence Area, where limitations on the number of persons per acre apply. Refer to the Corona Municipal Airport Land Use Compatibility Plan for developments in this area.

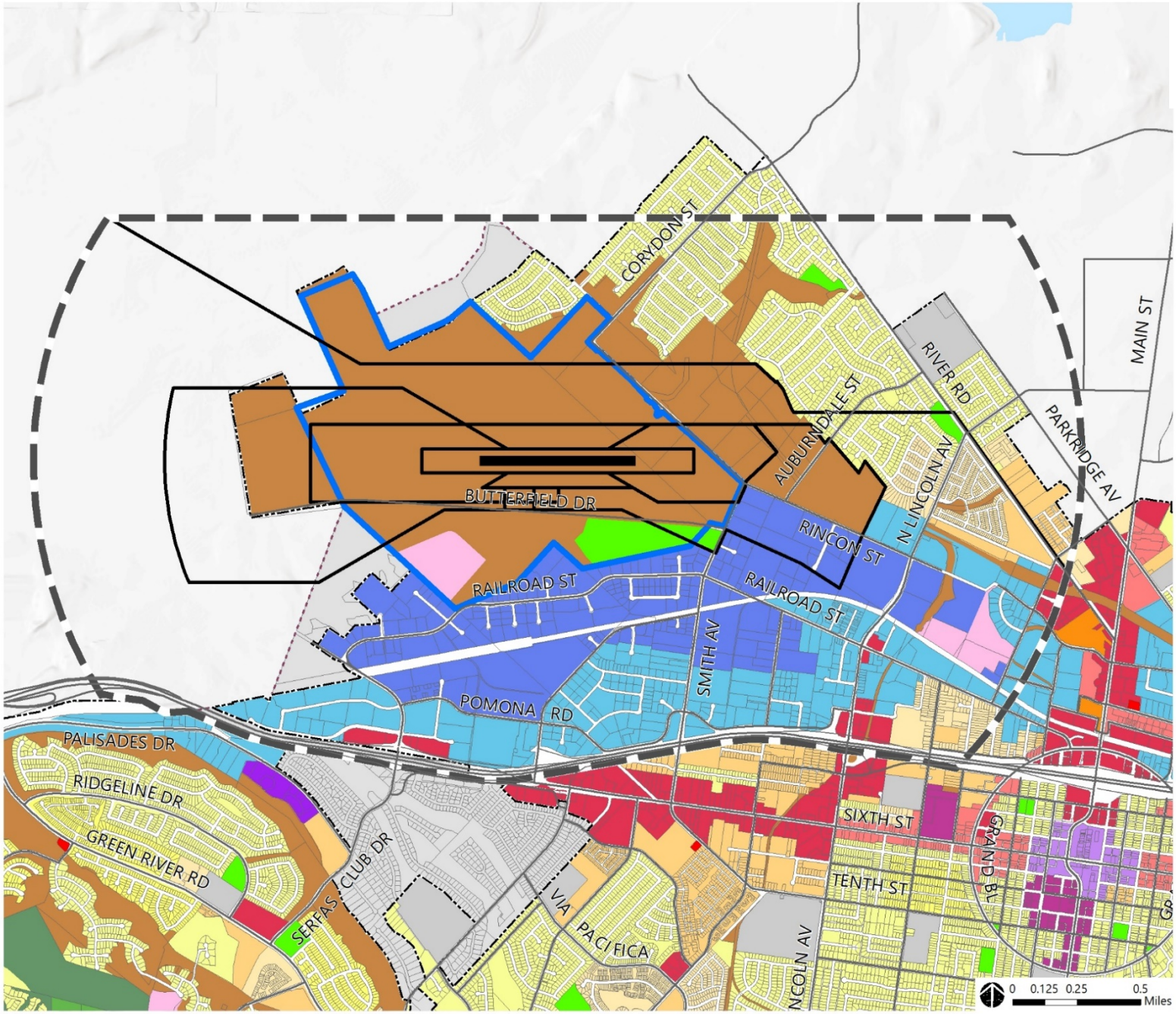

Figure 5-10 Corona Municipal Airport Land Use Compatibility

Legend

- AirportCompatibilityZones
- Corona Municipal Airport
- Runway
- Agriculture
- Estate Residential
- Rural Residential
- Low Density Residential
- Low Medium Density Residential
- Medium Density Residential
- High Density Residential
- Urban Density Residential
- General Commercial
- Office Professional
- Mixed Use Downtown
- Mixed Use: Commercial/Residential
- Mixed Use: Industrial/Commercial
- Light Industrial
- General Industrial
- Open Space General
- Parks & Open Space Recreational
- School
- Fire Station
- Utility
- City Boundary
- Sphere of Influence Areas

Source:
City of Corona, 2019; Riverside County Land Use Compatibility Plan Policy Document October 2004

CORONA General Plan

AIRPORT LAND USE COMMISSION MEETING
MINUTES
January 11, 2024

DRAFT

1-18-24

COMMISSIONERS PRESENT: Steve Manos, John Lyon, Vernon Poole, Michael Lewis (alternate for Steven Stewart), Maartin Rossouw (alternate for Michael Geller)

COMMISSIONERS ABSENT: Russell Betts, Richard Stewart

2.0 PUBLIC HEARING: CONTINUED ITEMS

None

3.0 PUBLIC HEARING: NEW CASES

3.1 Staff report recommended: **CONSISTENT**

Staff recommended at hearing: **CONSISTENT**

ALUC Commission Action: **CONSISTENT**
(Vote 5-0; Absent: Russell Betts, Richard Stewart)

Motion: Maartin Rossouw
Second: Vernon Poole

ZAP1042FL23 – City of Jurupa Valley – City of Jurupa Valley Case No MA23177 (General Plan Amendment and Change of Zone). A City-initiated proposal to amend its General Plan Lan Use designation from Commercial Retail (CR) to Medium High Density Residential (MHDR) in an effort to correct erroneous GIS mapping information, located northerly of Wallace Street at 3883 Wallace Street. The City also proposes to change sites zoning from Rubidoux Village Commercial (R-VC) to General Residential (R-3). (Airport Compatibility Zone D of the Flabob Airport Influence Area.) Staff Planner: Jackie Vega at (951) 955-0982, or e-mail at javega@rivco.org

3.2 Staff report recommended: **CONSISTENT**

Staff recommended at hearing: **CONSISTENT**

ALUC Commission Action: **CONSISTENT**
(Vote 5-0; Absent: Russell Betts, Richard Stewart)

Motion: Michael Lewis
Second: Maartin Rossouw

ZAP1589MA23 – Hinoodeh Holdings, LLC (Representative: Corinne Mostad) – City of Perris Case Nos. PLN22-05380 (Specific Plan Amendment), PLN22-05379 (Tentative Parcel Map), PLN22-00037 (Development Plan Review), PLN22-00038 (Development Plan Review). A proposal to construct a 291,098 square foot industrial building with mezzanines, a 52,008 square foot hotel, and two restaurant buildings totaling 9,000 square feet on 16.84 acres, located southerly of Ramona Expressway, northerly of Dawes Street, easterly of Perris Boulevard, and westerly of Redlands Avenue. The applicant also proposes to amend the Perris Valley Commerce Center Specific Plan to change the sites zoning from Commercial (C) to Light Industrial (LI). The applicant also proposes to split 16.84 aces into four separate parcels (Airport Compatibility Zone D of the March Air Reserve Base/Inland Port Airport Influence Area). Staff Planner: Jackie Vega at (951) 955-0982, or e-mail at javega@rivco.org

VIDEO:

A video recording of the entire proceedings is available on the ALUC website at www.rcaluc.org. If you have any questions please contact Barbara Santos, ALUC Commission Secretary, at (951) 955-5132 or E-mail at basantos@rivco.org

3.3 Staff report recommended:
CONTINUE to 2-8-24

Staff recommended at hearing:
CONSISTENT

ALUC Commission Action:
CONSISTENT
(Vote 5-0; Absent: Russell Betts, Richard Stewart)

Motion: Maartin Rossouw
Second: Michael Lewis

ZAP1586MA23 – Apollo IV Development (Representative: NOAA Group Architects) – City of Moreno Valley Case No. BFR21-0167 (Building Permit). A proposal to construct a solar panel system totaling 6,100 square feet on four separate buildings on 3.41 acres, located northerly of Dracaea Avenue, westerly of Edgemont Street, and easterly of Gina Avenue (Airport Compatibility Zone C1 of the March Air Reserve Base/Inland Port Airport Influence Area). Staff Planner: Jackie Vega at (951) 955-0982, or e-mail at javega@rivco.org

3.4 Staff report recommended:
CONTINUE to 2-8-24

Staff recommended at hearing:
CONSISTENT

ALUC Commission Action:
CONSISTENT
(Vote 5-0; Absent: Russell Betts, Richard Stewart)

Motion: Michael Lewis
Second: Maartin Rossouw

ZAP1591MA23 – Bay & Day, LLC (Representative: T&B Planning) – City of Moreno Valley Case Nos. PEN23-0076 (Change of Zone), PEN23-074 (Plot Plan), PEN23-0075 (Tentative Parcel Map). A proposal to construct a 194,775 square foot industrial building with mezzanines on 9.95 acres, located on the southwest corner of Bay Avenue and Day Street. The applicant also proposes to change the sites zoning from Business Park (BP) to Light Industrial (LI), and merge four separate parcels into one. (Airport Compatibility Zones B1-APZ-II and C1). Staff Planner: Jackie Vega at (951) 955-0982, or e-mail at javega@rivco.org

3.5 Staff report recommended:
CONSISTENT (Change of Zone); CONDITIONALLY CONSISTENT (Plot Plan, Parcel Map)

Staff recommended at hearing:
CONSISTENT (Change of Zone); CONDITIONALLY CONSISTENT (Plot Plan, Parcel Map)

ALUC Commission Action:
CONSISTENT (Change of Zone); CONDITIONALLY CONSISTENT (Plot Plan, Parcel Map)
(Vote 5-0; Absent: Russell Betts, Richard Stewart)

Motion: Maartin Rossouw
Second: Steve Manos

ZAP1590MA23 – Industrial VI Enterprises, LLC (Representative: Albert A. Webb Associates) – County of Riverside Case Nos. CZ2200062 (Change of Zone), PPT220050 (Plot Plan), TPM38601 (Tentative Parcel Map). A proposal to construct a 1,003,510 square foot industrial building with mezzanines on 44.84 acres, and a recreational park consisting of a sports field, picnic area, tot lot, and a 3,110 square foot snack bar on a separate 4.19 acres, located on the southwest corner of Cajalco Road and Seaton Avenue. The applicant also proposes to change the site's zoning from Light Agriculture (A-1-1), Rural Residential (R-R-1/2) to Industrial Park (I-P). The applicant also proposes dividing 58.19 acres into three separate parcels. The applicant also proposes to construct a 1,003,510 square foot solar panel on the industrial building rooftop and 3,110 square foot solar panel system on the proposed snack bar (Airport Compatibility Zone C2 of the March Air Reserve Base/Inland Port Airport Influence Area). Staff Planner: Jackie Vega at (951) 955-0982, or e-mail at javega@rivco.org

VIDEO:

A video recording of the entire proceedings is available on the ALUC website at www.rcaluc.org. If you have any questions please contact Barbara Santos, ALUC Commission Secretary, at (951) 955-5132 or E-mail at basantos@rivco.org

3.6 Staff report recommended:
INCONSISTENT

Staff recommended at hearing:
CONSISTENT, pursuant to Countywide Policy 3.3.6 and the adoption of special findings

ALUC Commission Action:
CONSISTENT, pursuant to Countywide Policy 3.3.6 and the adoption of special findings.
(Vote 5-0; Absent: Russell Betts, Richard Stewart)

Motion: Michael Lewis
Second: Steve Manos

ZAP1078TH23 – Thermal Operating Company, LLC (Representative: Albert A. Webb Associates) County of Riverside Case No. MTE230043 (Minor Temporary Event). A proposal for a Minor Temporary Event to host an IndyCar pre-season testing and sprint races, from March 22 to March 24, 2024, from 8:00 a.m. to 4:00 p.m. at the 139 acres Thermal Motorclub facility, located southerly of Avenue 60, westerly of Polk Street, northerly of Avenue 62, and easterly of Tyler Street. The Event proposes a maximum 3,500 people per day including staff, racers and general public. The Event will be open to the public with approximately 1,200 tickets sold to the general public (which directly conflicts with the underlying conditions of approval for the original Thermal Motorclub project). Approximately 1,200 people will occupy temporary bleacher seating and paddock viewing area, and approximately 1,500 people will occupy the 80 trackside units and 48 spa casitas, and approximately 800 people will make up staff and racers. Food and live entertainment will also be provided within the existing buildings. The Event will be televised with on-track cameras (Airport Compatibility Zones B1, C, and D of the Jacqueline Cochran Regional Airport Influence Area). Staff Planner: Paul Rull at (951) 955-6893, or e-mail at prull@rivco.org

4.0 PUBLIC HEARING: MISCELLANEOUS ITEMS

None

5.0 ADMINISTRATIVE ITEMS

5.1 Director's Approvals - Information Only

5.2 Update March Air Reserve Base Compatibility Use Study (CUS)

Simon Housman, Project Director for the March CUS informed the Commission that next month's February 8 agenda will include an item on the agenda for the adoption of the March Compatible Use Study.

6.0 APPROVAL OF MINUTES

Commissioner Michael Lewis motioned to approve the December 14, 2023 minutes. Seconded by Maartin Rossouw. Vote 5-0; Absent: Russell Betts, Richard Stewart

7.0 ORAL COMMUNICATION ON ANY MATTER NOT ON THE AGENDA

Paul Rull, ALUC Director briefed the Commission regarding an overrule notice of intent to override one of the ALUC decisions from the City of Jurupa Valley that came in to us just before the new year.

8.0 COMMISSIONER'S COMMENTS

None

9.0 ADJOURNMENT

Steve Manos, Chair adjourned the meeting at 10:55 a.m.

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VIDEO:

A video recording of the entire proceedings is available on the ALUC website at www.rcaluc.org. If you have any questions please contact Barbara Santos, ALUC Commission Secretary, at (951) 955-5132 or E-mail at basantos@rivco.org