Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Prepared for:

Arizona Power Plant and
Transmission Line Siting Committee

Submitted by:

Tucson Electric Power Company

Date: April 17, 2026
Case No. XXX

This page intentionally left blank

BEFORE THE
ARIZONA POWER PLANT AND TRANSMISSION LINE SITING COMMITTEE

In the matter of the Application of Tucson Electric Power, in conformance with the requirements of A.R.S. § 40-360, et seq., for a Certificate of Environmental Compatibility authorizing the Santa Rita Connection 138 kilovolt (kV) Transmission Line Project, which includes the construction of a new 138 kV transmission line originating at the existing Sonoran Substation (Section 2, Township 16 S, Range 14 E), and terminating at the planned Santa Rita Substation (Section 29, Township 17 S, Range 14 E), each located within Pima County, Arizona.	Docket No. L-00000C-26- Case No. XXX

APPLICATION FOR

CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY

This page intentionally left blank

TABLE OF CONTENTS

TABLE OF CONTENTS iii
LIST OF FIGURES vi
LIST OF TABLES vi
LIST OF EXHIBITS viii
LIST OF ACRONYMS AND ABBREVIATIONS xi
INTRODUCTION i
A. Project Overview i
B. Project Components and Location i
C. Transmission Line Characteristics iii
D. Purpose and Need for Project iii
E. Study Area and Development of Proposed Route Alternatives viii
F. Environmental Impacts viii
G. Public Outreach viii
H. Conclusion xi
APPLICATION FOR CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY 1
A.1 Project Information 1
EXHIBIT A: LOCATION AND LAND USE MAPS A-1
EXHIBIT B: LINE SITING STUDY B-1
B.1 Introduction B-1
B.2 Environmental Planning Process B-2
B.3 Environmental Statements B-2
B.3.1 US Fish and Wildlife Service (“USFWS”) B-2
B.3.2 U.S. Army Corps of Engineers (“USACE”) B-2
B.3.3 Federal Aviation Administration (“FAA”) B-2
B.3.4 National Environmental Policy Act (“NEPA”) B-2
B.4 References B-3
EXHIBIT C: AREAS OF BIOLOGICAL WEALTH C-1
C.1 Introduction C-1
C.1.1 Areas of Biological Wealth C-1
C.1.2 Special Status Species C-3

C.2 Conclusion C-8
C.3 References C-8
EXHIBIT D: BIOLOGICAL RESOURCES D-1
D.1 Introduction D-1
D.2 Existing Conditions D-2
D.3 Effects of the Proposed Project D-4
D.4 Conclusion D-5
D.5 References D-5
EXHIBIT E: SCENIC AREAS, HISTORIC SITES AND STRUCTURES, AND ARCHAEOLOGICAL SITES E-1
E.1 Introduction E-1
E.2 Scenic Areas and Visual Resources E-1
E.3 Historic Sites and Structures, and Archaeological Sites E-2
E.3.1 Overview E-2
E.3.2 Inventory Methods and Results E-2
E.4 Historic District Analysis E-4
E.5 Conclusion E-4
E.6 References E-5
EXHIBIT F: RECREATIONAL PURPOSES AND ASPECTS F-1
F.1 Introduction F-1
F.2 Affected Environment F-1
F.3 Potential Effects F-1
F.4 Conclusion F-2
EXHIBIT G: CONCEPTS OF PROPOSED FACILITIES G-1
EXHIBIT H: EXISTING PLANS H-1
H.1 Introduction H-2
H.2 Land Ownership and Jurisdiction H-2
H.3 Local Government Plans and Land Use Ordinances H-2
H.3.1 Pima County Comprehensive Plan H-2
H.3.2 Pima County Zoning H-3
H.3.3 Pima County Major Streets and Scenic Routes H-3
H.3.4 Pima County Sonoran Desert Conservation Plan H-4

H.3.5 City of Tucson Plans H-4
H.3.6 City of Tucson Zoning Code H-5
H.3.7 Town of Sahuarita General Plan H-5
H.3.8 Town of Sahuarita Zoning H-5
H.4 State (including Agencies) Government Plans H-6
H.4.1 Santa Rita Experimental Range H-6
H.4.2 Arizona State Land H-6
H.5 Federal H-6
H.5.1 Military H-6
H.5.2 Federal Aviation Administration ("FAA") H-6
H.5.3 US Army Corps of Engineers ("USACE") H-7
H.6 Tribal H-7
H.7 Existing Land Use H-7
H.8 Proposed Land Uses and Developments H-8
H.9 Potential Effects H-8
H.10 Conclusion H-9
H.11 References H-9
EXHIBIT I: ANTICIPATED NOISE AND INTERFERENCE WITH COMMUNICATION SIGNALS I-1
I.1 Introduction I-1
I.2 Audible Noise I-1
I.2.1 Affected Environment I-1
I.2.2 Potential Effects I-2
I.3 Corona Noise I-4
I.4 Radio Interference I-5
I.5 Television Interference I-5
I.6 Electric and Magnetic Field ("EMF") Effects I-5
I.7 Conclusion I-7
I.8 References I-8
EXHIBIT J: SPECIAL FACTORS J-1
J.1 Introduction J-1
J.2 Public Involvement Program Summary J-1

J.3 Meetings and Briefings J-4
J.3.1 Open Houses J-4
J.3.2 Agency Briefings J-5
J.3.3 Elected Official Outreach J-5
J.3.4 Individual Agency Meetings J-5
J.3.5 Tribal Outreach J-6
J.3.6 State Historic Preservation Office J-7
J.4 External Communication J-7
J.4.1 Postcard Mailers J-7
J.4.2 Email Updates J-8
J.4.3 Public Notices J-8
J.4.4 Social Media Advertisements J-9
J.4.5 Street Signage J-9
J.4.6 Webpage J-9
J.4.7 Media Coverage J-10
J.4.8 Ways to Comment J-10
J.5 References J-12

LIST OF FIGURES

Figure 1. Study Area ii
Figure 2. One-line Diagram of Existing System iv
Figure 3. One-line Diagram of Planned System in 2028 v
Figure 4. One-line Diagram of P6 Event vi
Figure 5. One-line Diagram of Proposed Condition vii
Figure 6. Public Outreach Summary x
Figure 7. Outreach and Engagement Infographic J-3
Figure 8. Social Media Analytics J-9
Figure 9. Public Comment Methods J-11
Figure 10. Public Comment Topics J-11
Figure 11. Public Comment – Routes J-11

LIST OF TABLES

Table 1. Ten Year Filings 1
Table 2. Alternative Route Distances 3

Table 3. Estimated Costs by Alternative Route 4
Table 4. Evaluation Criteria 5
Table 5. Land Ownership Percentages 6
Table 6. Land Jurisdiction Percentages 6
Table 7. Important Riparian Habitat C-3
Table 8. Special Status Species Evaluated C-4
Table 9. Native Plants Observed D-2
Table 10. Non-Native, Invasive Plants Observed D-3
Table 11. Wildlife and/or Sign Observed D-3
Table 12. Summary of Route Analysis from Class I Study E-3
Table 13. Sites and Site Buffers Intersecting Route 1 ..... E-3
Table 14. Sites and Site Buffers Intersecting Route 3 ..... E-4
Table 15. Percentage of Residential Use Along Alternative Routes H-8
Table 16. Typical Noise Levels for Construction Equipment I-2
Table 17. General Construction Noise Assessment Criteria Acceptable Limits I-3
Table 18. Construction Noise Level Estimates* I-4
Table 19. Existing Electric Facilities Along Routes I-6
Table 20. EMF Strength of Various Electrical Sources at Various Distances I-6
Table 21. Open House Overview J-4
Table 22. Agency Briefing Overview J-5
Table 23. Tribal Outreach Overview J-6
Table 24. Postcard Mailer Overview J-7
Table 25. Email Updates Overview J-8
Table 26. Public Notice Overview J-9
Table 27. Webpage Overview J-10

LIST OF EXHIBITS

EXH NO	CONTENT	PDF PAGE
	Introduction	**17**
A	**Location and Land Use Maps**	**37**
A-3	138 kV Transmission Line – Location	39
A-4	138 kV Transmission Line – Land Use	43
B	**Line Siting Study**	**51**
B-1	Line Siting Study Report	57
B-2	Route Map	103
C	**Areas of Biological Wealth**	**107**
C-1	Biological Map	117
C-2	Biological Resources Report	121
D	**Biological Resources**	**233**
E	**Scenic, Historic, Archaeological**	**241**
E-1	Visual Impacts Assessment	249
E-2	Cultural Resources Inventory – Class I (Redacted)	261
F	**Recreation**	**337**
F-1	Recreation Map	341
G	**Concepts of Proposed Facilities**	**345**
G-1.1	Double Circuit Tangent w/o Distribution	351
G-1.2	Double Circuit Deadend w/o Distribution	355
G-2	Visual Simulations	359
H	**Existing Plans**	**389**
H-1	Existing Land Use Map	401
H-2	Zoning Map	405
I	**Noise and Interference with Communication**	**409**
I-1	Federal Communication Commission Towers Map	421
I-2	Letters sent to FCC Tower Holders	425
J	**Special Factors**	**429**
J-1	Public Engagement Plan	443
J-2	Stakeholder Lists	461
J-2.1	Agency List	463
J-2.2	Elected Officials List	467
J-2.3	Tribal Outreach List	471
J-3	Agency Briefing Presentations and Summaries	475
J-3.1	Agency Briefing 1 Presentation (Nov. 2025)	477
J-3.2	Agency Briefing 1 Summary (Nov. 2025)	483

EXH NO	CONTENT	PDF PAGE
J-3.3	Agency Briefing 2 Presentation (Jan. 2026)	487
J-3.4	Agency Briefing 2 Summary (Jan. 2026)	493
J-3.5	Agency Briefing 3 Presentation (Mar. 2026)	497
J-3.6	Agency Briefing 3 Summary (Mar. 2026)	503
J-4	Elected Official Outreach	507
J-4.1	Correspondence with Elected Officials (Oct. 2025)	509
J-4.2	Correspondence with Elected Officials (Feb. 2026)	515
J-4.3	Sahuarita Town Council Meeting Summary	521
J-5	Individual Agency Outreach	529
J-5.1	Correspondence with Individual Agencies	531
J-5.2	Town of Sahuarita Meeting Summary	547
J-5.3	Tucson Airport Authority Meeting Summary	551
J-5.4	Arizona State Land Department Meeting Summary	555
J-5.5	Tucson Water Meeting Summary	559
J-5.6	Robson Communities – Quail Creek Meeting Summary	563
J-6	Tribal Outreach	567
J-6.1	Correspondence to All Tribes (Nov. 2025)	569
J-6.2	Correspondence to All Tribes (Feb. 2026)	575
J-6.3	Correspondence to All Tribes (Mar. 2026)	581
J-6.4	Correspondence with Individual Tribes	585
J-6.5	Yavapai-Apache Nation Briefing Summary	595
J-6.6	Pascua Yaqui Tribe Briefing Summary	599
J-6.7	Four Southern Tribes Cultural Resources Working Group Summary	603
J-7	External Communication	607
J-7.1	Postcard Mailer 1 (Nov. 2025)	609
J-7.2	Postcard Mailer 2 (Jan. 2026)	613
J-7.3	Postcard Mailer 3 (Feb. 2026)	617
J-7.4	Email Update 1 (Nov. 2025)	621
J-7.5	Email Update 2 (Jan. 2026)	627
J-7.6	Email Update 3 (Feb. 2026)	633
J-7.7	Public Notices 1 (Nov. 2025)	639
J-7.8	Public Notices 2 (Feb. 2026)	645
J-7.9	Social Media Advertisements 1 (Nov. 2025)	653
J-7.10	Social Media Advertisements 2 (Feb. 2026)	657
J-7.11	Street Signage 1 (Nov. 2025)	661
J-7.12	Street Signage 2 (Feb. 2026)	669

EXH NO	CONTENT	PDF PAGE
J-7.13	Webpage – English	675
J-7.14	Webpage – Spanish	683
J-7.15	Webpage – Interactive Map	691
J-8	Open House Materials	695
J-8.1	Open House 1 Boards	697
J-8.2	Open House 1 Table Maps	709
J-8.3	Open House 1 Table Signs	713
J-8.4	Open House 2 Boards	717
J-8.5	Open House 2 Table Map	733
J-8.6	Open House 2 Table Signs	737
J-9	Media Coverage	741
J-9.1	Green Valley News	743
J-9.2	AZPM News	747
J-9.3	KOLD News 13	751
J-10	Public Comments Received (redacted)	755

LIST OF ACRONYMS AND ABBREVIATIONS

3D	Three dimensional
AEPCO	Arizona Electric Power Cooperative, Inc.
AM	Amplitude modulation
AMSL	Above mean sea level
AN	Audible noise
ANPL	Arizona Native Plant Law
ARO	Archaeological Records Office
ARS	Arizona Revised Statutes
ASLD	Arizona State Land Department
ASM	Arizona State Museum
AWLW	Arizona Wildlife Linkages Workgroup
AZDA	Arizona Department of Agriculture
AZGFD	Arizona Game and Fish Department
AZ-WIPWG	Arizona Wildlands Invasive Plant Working Group
BRR	Biological Resources Report
CEC	Certificate of Environmental Compatibility
CFPO	Cactus ferruginous-pygmy owl
CLS	Conservation Lands System
Commission	Arizona Corporation Commission
Committee	Arizona Corporation Commission Power Plant and Line Siting Committee
COT	City of Tucson
dBA	A-weighted decibels
DOD	Department of Defense
EMF	Electric and Magnetic Fields
EPA	Environmental Protection Agency
EPM	Environmental Protection Measure
ESA	Endangered Species Act
FAA	Federal Aviation Administration

FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Maps
FM	Frequency Modulation
ft	Feet
FUDS	Formerly Used Defense Site
General Plan	Town of Sahuarita General Plan Council Approved Draft
GIS	Geographic Information System
HDMS	Heritage Data Management System
IBA	Important Bird Area
IPaC	Information for Planning and Consultation
IRA	Important Riparian Area
KOP	Key Observation Point
kV	Kilovolt
Ldn	Weighted day night average noise level
Leq	Equivalent noise level
MBTA	Migratory Bird Treaty Act
mG	Milligauss
MSCP	Multi-Species Conservation Plan
MSRP	Major Streets and Routes Plan
MTR	Military Training Route
NEPA	National Environmental Policy Act
NERC	North American Reliability Corporation
NESC	National Electrical Safety Code
NRHP	National Register of Historic Places
OPGW	Optical ground wire
Plan	Pima Prospers: Pima County Comprehensive Plan Initiative
Plan Tucson	City of Tucson General Plan 2025
PPC	Pima pineapple cactus
Project	Santa Rita Connection Project
PVS	Priority Vulnerable Species

QR	Quick Response
RH	Rural Homestead
ROW	Right-of-way
SAFR	Sahuarita Air Force Range
SDCP	Sonoran Desert Conservation Plan
SGCN	Species of Greatest Conservation Need
SRER	Santa Rita Experimental Range
SHPO	State Historic Preservation Office
TAA	Tucson Airport Authority
TEP	Tucson Electric Power Company
UDC	Unified Development Code
UNSE	UNS Electric, Inc.
USACE	U.S. Army Corps of Engineers
USDOT	US Department of Transportation
USFWS	U.S. Fish and Wildlife Service
WAPA	Western Area Power Administration
WHO	World Health Organization

This page intentionally left blank

INTRODUCTION

Tucson Electric Power Company ("TEP") requests a Certificate of Environmental Compatibility ("CEC") for the Sonoran to Santa Rita 138 kilovolt ("kV") transmission line (the "Santa Rita Connection Project" or "Project"). The Project will provide redundancy and system reliability to the grid south of the City of Tucson ("COT").

A. Project Overview

The Project will consist of building a new 138 kV transmission line approximately 13 to 17 miles in length, in the COT and unincorporated Pima County, Arizona, from the existing Sonoran Substation to the planned Santa Rita Substation (Figure 1). The Project will provide a new 138 kV transmission path, providing greater reliability, power quality, and capacity to existing and future customers south of the COT.

The Project will cross land owned by or under the jurisdiction of Pima County, the COT, the Town of Sahuarita, Arizona State Land Department ("ASLD"), as well as privately-owned land. TEP plans to use existing company land rights or COT and Pima County road rights-of-way ("ROWs"), where possible, or obtain ROW leases and easements for construction, operation and maintenance, in up to 100-foot-wide corridors.

B. Project Components and Location

The Project will consist of one new 138 kV transmission line, originating at the existing Sonoran Substation, and terminating at the planned Santa Rita Substation, with a straight-line distance of 10.7 miles.

Sonoran Substation:

The line will originate at the existing Sonoran Substation, located 0.25 miles east of Swan Road and 5.5 miles south of I-10. The new line would terminate in an existing open bay. No expansion of the substation is required to accommodate the new circuit.

Santa Rita Substation:

The planned Santa Rita Substation will be located on 16 acres of land granted to TEP by ASLD. The site is located 0.75 miles south of the intersection of South Santa Rita Road and South Country Club Road, 0.1 miles west of the intersection of the unpaved extension of South Country Club Road and East Corto Road, approximately 1.9 miles east of Continental Road.

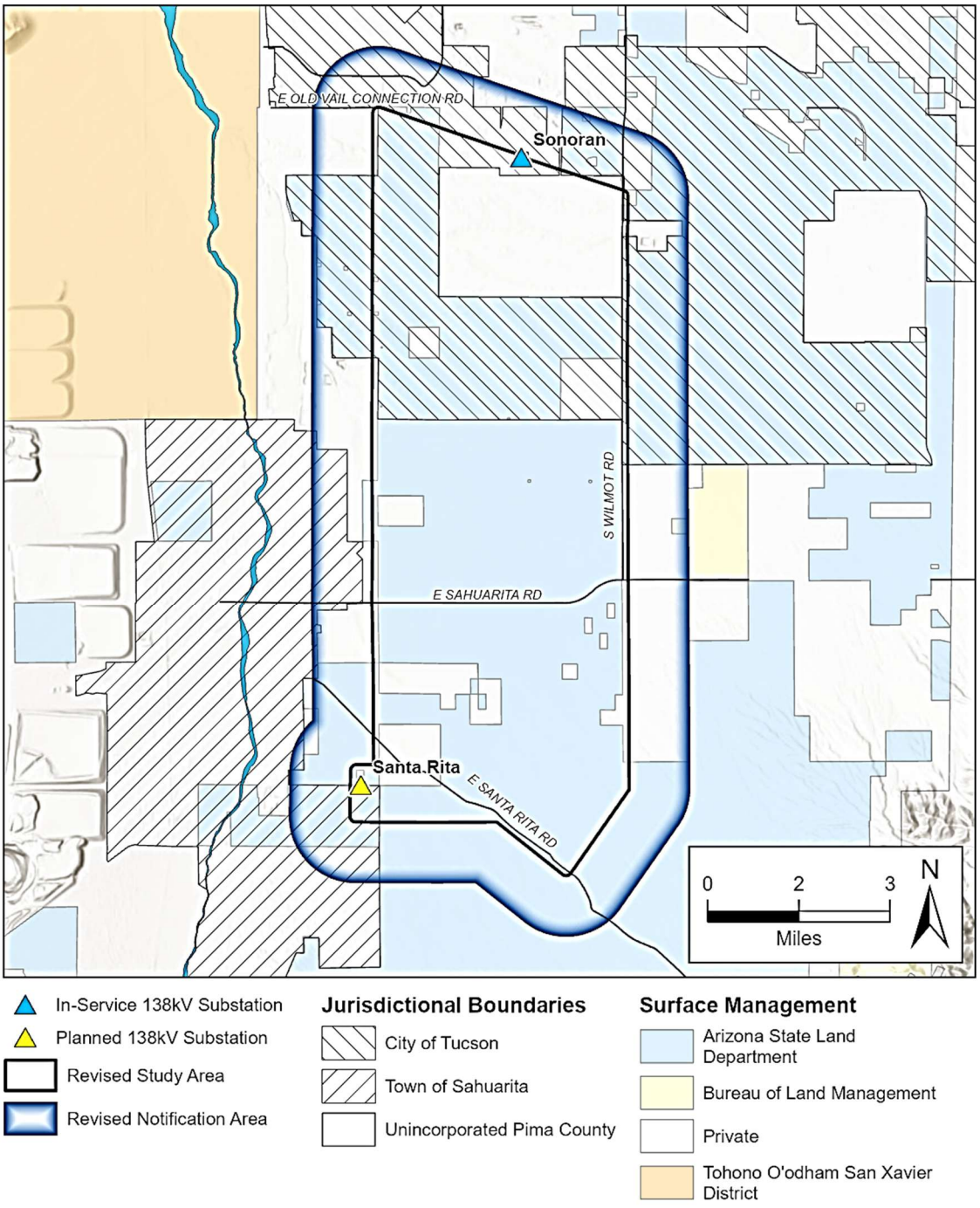


Figure 1. Study Area

C. Transmission Line Characteristics

The proposed 138 kV line will be installed on tubular, weathering steel monopoles with non-reflective surfaces. Structures will typically be 75 to 90 feet in height, with a span of 500 to 600 feet. Taller structures up to 125 feet may be required for site-specific clearance issues. The conductor will have a non-specular finish to reduce visibility. An optical ground wire ("OPGW") will be installed along the entire route to support internal TEP communication needs and provide system grounding. Both proposed route alternatives follow existing, or approved, power line corridors and would be co-located with these facilities to the extent possible.

D. Purpose and Need for Project

The Project will upgrade the reliability of TEP's transmission system serving southeastern Pima County and coupled with the planned Santa Rita Substation, will provide additional capacity to serve the Town of Sahuarita and surrounding communities.

Transmission planning studies, completed annually in compliance with North American Reliability Corporation ("NERC") standards, identified the need for the Project to ensure reliability by mitigating risks of a transmission circuit overload, under certain conditions.

Today, southeastern Pima County is served through a looped transmission system, with two points of interconnection to the regional electric grid, both through TEP's South Loop Substation (Figure 2).

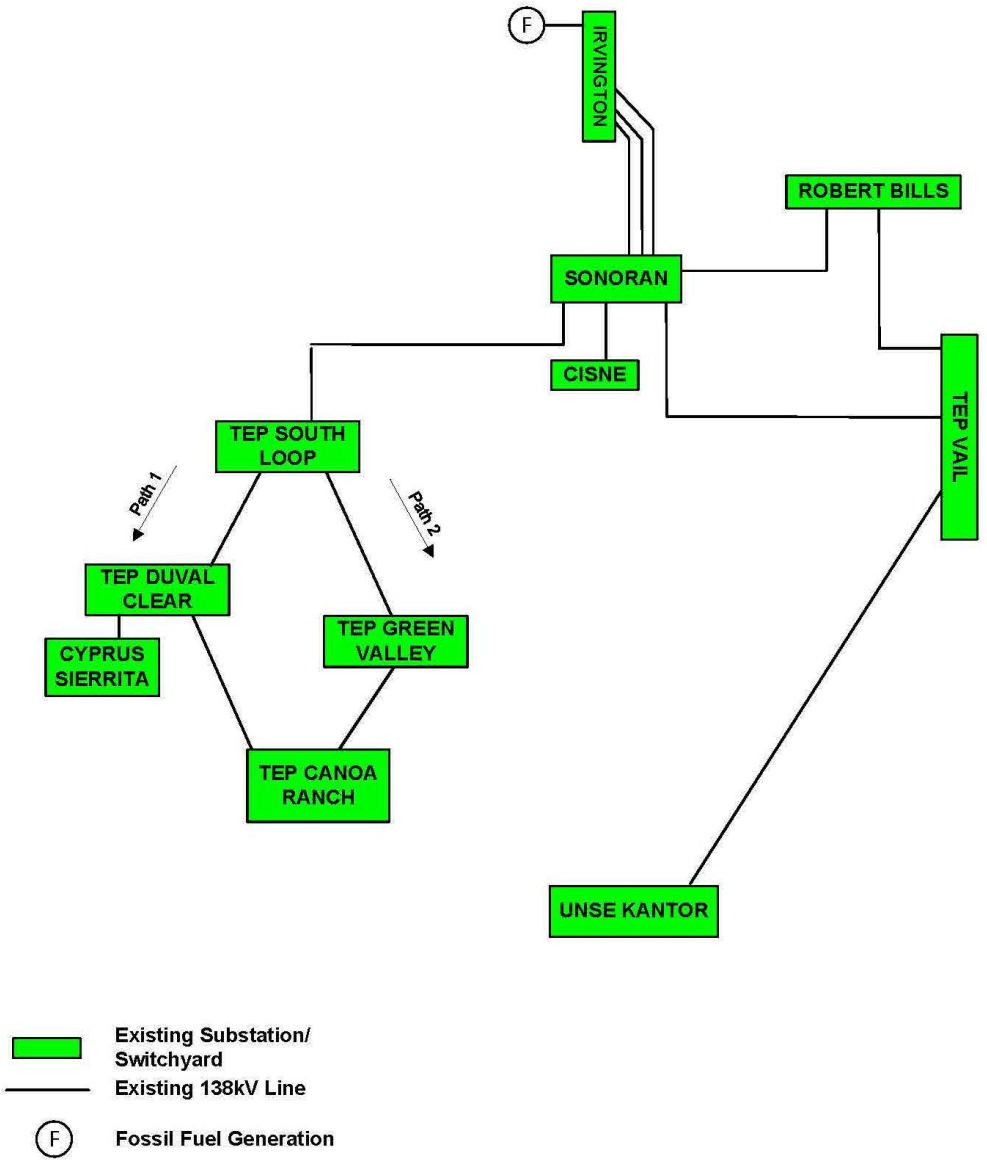


Figure 2. One-line Diagram of Existing System

In 2028, UNS Electric, Inc's ("UNSE") Santa Cruz Reliability Project – North (approved in 2026 under Decision No. 81596) will be in service, thereby creating an additional interconnection with the regional electric grid by linking TEP's Canoa Ranch Substation and Vail Substation through UNSE's Kantor Substation. While the purpose of the Santa Cruz Reliability Project – North is to improve reliability for UNSE customers in Santa Cruz County, it also strengthens the regional electric grid (Figure 3).

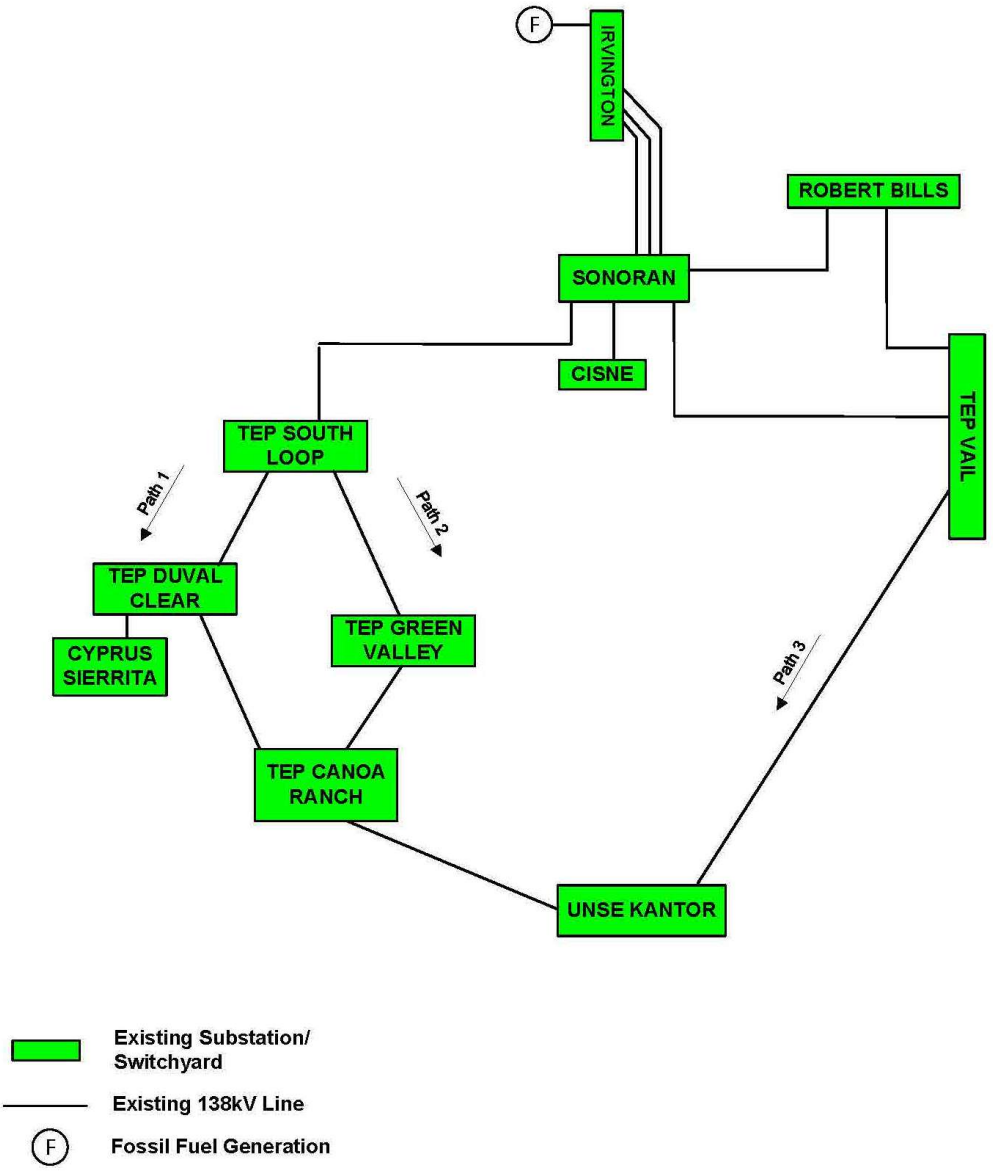


Figure 3. One-line Diagram of Planned System in 2028

While conducting NERC-mandated compliance studies, which includes analyzing the existing and planned future state of the transmission system under required planning events, TEP identified a "P6" transmission planning event which involves the loss of two bulk electric system elements, such as a scheduled maintenance outage on one circuit followed by the unexpected failure of another transmission circuit. This identified "P6" event showed that loss of two circuits serving this region results in an overload of the third remaining circuit (Figure 4). This overload could result in a complete outage of all three lines serving approximately 18,000 TEP customers in southeastern Pima County, as well as approximately 13,000 UNSE customers in Santa Cruz County.

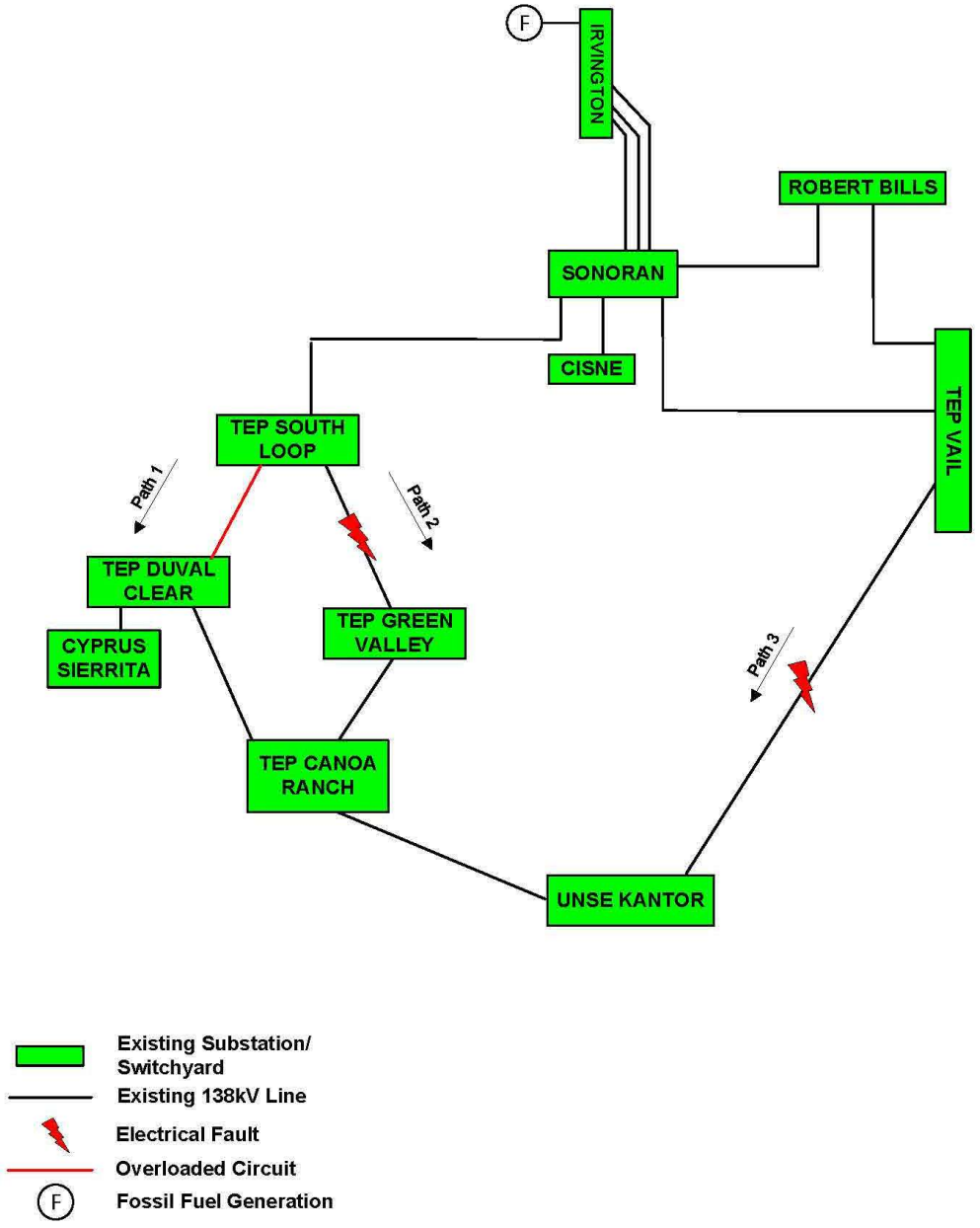


Figure 4. One-line Diagram of P6 Event

To mitigate the risk identified through the transmission planning studies, TEP proposed an additional 138 kV transmission circuit connecting the Sonoran Substation to the planned Santa Rita Substation. This solution provides the necessary redundant support to the transmission system, mitigating a circuit overload by providing a fourth path to reroute power in the event that two elements of the system experience an outage (Figure 5).

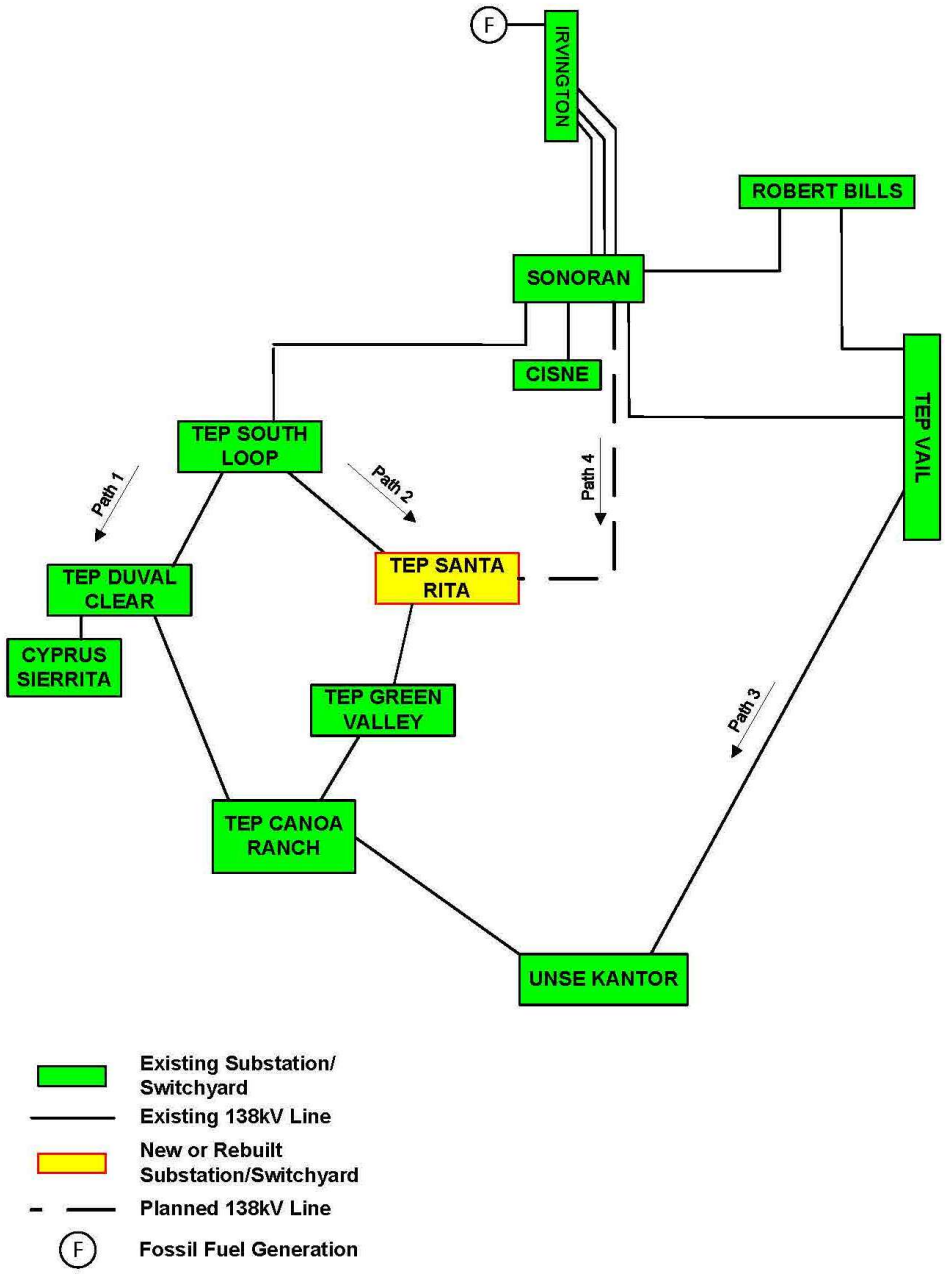


Figure 5. One-line Diagram of Proposed Condition

While approval of the Santa Rita Substation is not requested as part of the Certificate of Environmental Compatibility, the benefits of the Project cannot be fully realized without it. This substation, formerly known as the Hartt substation for planning purposes, was proposed in the 2019 Ten Year Plan tying into the South Loop to Green Valley transmission line to address the need for added capacity and contingency support on the distribution system. The Santa Rita Substation will provide additional capacity and reliability to over 14,000 distribution customers in the area. The Santa Rita Substation will also allow for

the retirement of the existing and aging 46kV sub-transmission system serving portions of the Town of Sahuarita and the surrounding communities.

E. Study Area and Development of Proposed Route Alternatives

TEP identified a Study Area for analysis as the Project was being planned. The Santa Rita Connection Project Study Area defines the area in which potential routes were considered, and the Notification Area encompasses the Study Area and a one-mile buffer. The Study Area boundaries were determined by identifying the beginning and end points of the Project and identifying high-level siting opportunities.

Maps depicting the Project location and Study Area are included in Exhibit A-3. The Notification Area extends approximately one mile beyond the Study Area.

Based on public input and following a detailed siting study, TEP identified the two proposed routes. Route 1 has a length of 17.4 miles and an estimated cost of approximately $16,580,000. Route 3 has a length of 13.3 miles and an estimated cost of $18,020,000. A map illustrating the two proposed routes is attached as Exhibit B-2. Both routes are constructable. Although TEP will only build one of the routes, the Company requests that the Committee and Commission approve both routes for construction.

Route 1 requires co-locating a portion of the Project with a line that is owned by UNS Electric, Inc. ("UNSE"). The UNSE line and related structures are being considered for funding through a grant from the U.S. Department of Energy ("DOE"). The award status of the grant, and terms, conditions, and restrictions on the use of DOE grant funds are currently under review by the DOE. UNSE does not know if the terms of the potential grant would permit co-location of the Project with the UNSE line and cannot assure TEP that those terms will be known at the time TEP needs to begin procurement and construction. Therefore, the Company requests approval of both routes so that TEP may meet the required in-service date for the Project regardless of whether UNSE is awarded a grant that would permit co-location.

F. Environmental Impacts

In the siting process for this Project, TEP selected the most environmentally compatible routes to minimize detrimental environmental impacts. The Company has minimized potential impacts on the environment by following existing utility corridors, locating the proposed line within existing Company land rights as much as possible and co-locating on existing or approved facilities where possible. New construction will be designed to be as close as possible to existing developed corridors. Visual impacts on residents in the vicinity of the Project have been minimized by co-locating lines on the same structures in most areas. The analysis presented in this Application conveys that the Project was designed to balance a reliable, economic supply of power with a desire to minimize impacts on the environment and ecology of the State.

G. Public Outreach

Public participation is a vital part of TEP's process for planning and siting transmission lines. As part of the Project, TEP conducted a comprehensive public involvement and engagement process to allow for meaningful and inclusive conversations that would inform the outcome of the Siting Study (Exhibit B-1). A project notification area was established extending one mile beyond the Study Area, to ensure an ample

reach for our communications. Outreach activities began with efforts to notify and inform the public, agencies, community leaders, and tribal communities about the need for and benefits of the Project. Throughout the Siting Study, TEP sought public and stakeholder input, and incorporated the input received into its analysis. During every step in the process, TEP learned from the community and refined our understanding of the project to find the best solutions for challenges presented.

TEP established project webpages in English and Spanish to provide the public with up-to-date information on the project, including all current and previously distributed materials. TEP held two public open houses, three agency briefings, and one-on-one meetings with several project stakeholders to provide updates and seek feedback. TEP initiated contact with eleven tribal communities with ancestral affiliation to the land within the Study Area, to inform them about the project and invite them to individual briefings. The open houses were advertised through postcards, emails, public notices in local papers, road signs placed throughout the notification area, and social media advertisements. The public and stakeholders were able to continuously provide comments through a variety of bilingual methods, including a dedicated project telephone number, email address, and an online comment form on the project webpages. Figure 6 summarizes TEP's public outreach efforts. Exhibit J contains complete details of TEP's outreach for the Project.



	November 6 - November 13, 2025 English & Spanish Total	February 24 - March 4, 2026 English & Spanish Total
Impressions	92,173	226,481
Reach	64,557	22,784
Clicks	371	1,291
CTR	0.40%	0.57%

Figure 6. Public Outreach Summary

H. Conclusion

The Santa Rita Connection Project will greatly improve the reliability of the TEP electrical system by adding an additional pathway to relieve potential overloads under contingency conditions on the transmission system. In proposing a design that generally co-locates the new circuit on existing or approved structures, the Company has sought to minimize the effect on the ecology and environment. To enable this significant improvement to the regional power grid that will improve electric service quality and reliability for our customers, TEP respectfully asks that the Committee issue a CEC approving both routes for the Santa Rita Connection Project.

This page intentionally left blank

APPLICATION FOR CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY

(Pursuant to A.R.S. §§ 40-360.03 and 40-360.06)

A.1 Project Information

1. *Name and address of Applicant:*
   Tucson Electric Power Company
   88 East Broadway Blvd, Tucson, AZ 85701
   PO Box 711, Tucson, AZ 85702

2. *Name, address and telephone number of a representative of Applicant who has access to technical knowledge and background information concerning this application, and who will be available to answer questions or furnish additional information:*
   Christopher Ortiz y Pino
   Project Manager, Siting, Outreach and Engagement
   Tucson Electric Power Company
   88 East Broadway Blvd, Tucson, AZ 85701
   PO Box 711, Tucson, AZ 85702
   Phone: (520) 633-8693

3. *Dates on which Applicant filed a Ten-Year Plan in compliance with A.R.S. § 40-360.02, and designate each such filing in which the facilities for which this application is made were described. If they have not been previously described in a Ten-Year Plan, state the reasons therefore:*
   The need for this project was identified in 2025, and was outlined in TEP's Ten-Year Plan 2026-2035, filed in January 2026 under Docket No. E-99999A-25-0006.

Table 1. Ten Year Filings

Filing Year	Docket Number	Project Name	Point of Origin	Point of Termination
2026	E-99999A-25-0006	Sonoran to Santa Rita 138kV Transmission Line	Sonoran 138 kV Substation	Planned Santa Rita 138 kV Substation

4. *Description of transmission line:*
   i. *Nominal voltage for which the lines are designed; description of the proposed structures and switchyards or substations; purpose for constructing:*
   Nominal Voltage

   The nominal voltage of the single-circuit transmission line is 138 kV.

   Description of Structures

   New transmission line structures will be designed to accommodate a double circuit of 138 kV or lower transmission. The structures will be tubular, weathering steel monopoles, and the conductor will have a non-specular finish to reduce visibility. The structures will

typically be 75 to 90 feet above ground, with taller structures required for site specific clearance issues (up to 125 feet). OPGW will be installed along the entire route to support internal TEP communication needs and provide system grounding.

In general, both route alternatives utilize existing or approved double-circuit capable structures. As a result, an additional set of insulators would be added to the structures to support the second circuit for this Project.

See Exhibit G for typical structures and visual simulations of the transmission line.

Description of Substation and Switchyards

The Project originates at the existing Sonoran 138 kV Substation and terminates at the planned Santa Rita 138 kV Substation. The Sonoran Substation is located 0.25 miles east of Swan Road, 5.5 miles south of I-10. The new line would terminate in an existing open bay. No expansion of the substation is required to accommodate the new circuit.

The planned Santa Rita Substation will be located on 16 acres of land granted to TEP by ASLD. The parcel is located 0.75 miles south of the intersection of South Santa Rita Road and South Country Club Road, 0.15 miles west of the intersection of the unpaved extension of South Country Club Road and East Corto Road, approximately 1.9 miles east of Continental Road.

Project Purpose

The Santa Rita Connection Project is a reliability upgrade to TEP's transmission system serving southeastern Pima County, and coupled with the planned Santa Rita Substation, will provide additional capacity to serve the Town of Sahuarita and surrounding communities. Transmission planning studies identified the need for the Project to ensure reliability by mitigating risks of a transmission circuit overload.

ii. Description of geographic points between which the transmission line will run; Straight-line distance between such geographic points; Length of the transmission line for each alternate route:

Description of Geographic Points

The northernmost point of the Project is the Sonoran Substation, located 0.25 miles east of Swan Road, 5.5 miles south of I-10. The southern point of the Project is the planned Santa Rita Substation, located 0.75 miles south of the intersection of South Santa Rita Road and South Country Club Road, 0.1 miles west of the intersection of the unpaved extension of South Country Club Road and East Corto Road, approximately 1.9 miles east of Continental Road.

Straight-line Distance

The straight-line distance from the existing Sonoran Substation to the planned Santa Rita Substation is approximately 10.7 miles.

Length of Transmission Line Alternative Routes

The distances of the transmission line route alternatives are shown in Table 2:

Table 2. Alternative Route Distances

ROUTES	DISTANCE (MILES)
Route 1	17.4
Route 3	13.3

iii. *Nominal width of right-of-way required; nominal length of span; typical height of supporting structures above ground; minimum height of conductor above ground:*

Nominal Width of Right-of-Way ("ROW")

In areas not covered by existing franchise agreements or easements, TEP plans to acquire up to a 100-foot-wide ROW. TEP is requesting a siting corridor 500- to 1,500-feet wide depending on the route selected for the approved route, to allow for routing flexibility. The corridor width will cover use on either side of roadways, and provide sufficient flexibility to accommodate alignment options when spanning or connecting to other lines. The corridor width requested for Route 1 is 500 feet. For Route 3, most of the corridor width requested is 500 feet. At the location where the line would need to shift east for approximately 1.5 miles to accommodate an existing juncture of other lines, the corridor width requested is 1,500 feet.

Nominal Length of Span

The nominal length of span is 650 feet.

Typical Height of Supporting Structures

Supporting structures typically will range from 75 feet to 90 feet above grade for the transmission lines. Taller structures up to 150 feet may be required to maintain National Electrical Safety Code ("NESC") clearance criteria at utility and roadway crossings.

Minimum Height of Conductor

The minimum height of the 138 kV transmission line conductor above existing grade will be 25 feet at maximum sag.

iv. *Estimated costs of the proposed transmission line and route:*

Estimated costs for the route alternatives are shown in Table 3. Variations in cost depend upon duration of construction and quantity of materials required, as well as mitigation of existing conflicts and acquisition of land rights. The total transmission line cost is

anticipated to range between $16.5 million and $18 million, depending on which route alternative is selected.[1]

Table 3. Estimated Costs by Alternative Route

ROUTE	TRANSMISSION LINE CONSTRUCTION AND MATERIALS	LAND ACQUISITION (ROW COST)	LENGTH (MILES)	COST/MILE	TOTAL COST
Route 1	$ 14,030,000	$ 2,550,000	17.4	$ 952,874	$ 16,580,000
Route 3	$ 17,450,000	$ 570,000	13.3	$ 1,354,887	$ 18,020,000

v. *Description of proposed route and switchyard locations. (If application contains alternative routes, list routes in order of applicant's preference with a summary of reasons for such order of preference and any changes such alternative routes would require in the plans reflected in (i) through (iv) hereof):*

The routes were selected based on the results of a Siting Study, which was informed by engagement with stakeholders, including elected officials, and the public. Please see Section B.2 for additional discussion and Exhibit B-1 for the Final Santa Rita Connection Project Siting Study.

Both route alternatives follow existing, or approved, power line corridors and would be co-located with these facilities to the extent possible.

Description of Proposed Alternative Routes

Route 1

Route 1 generally extends along Wilmot Road. The route originates at the existing Sonoran Substation, where it exits from a bay on the south side. The route proceeds west for approximately 0.3 miles to Swan Road. The line extends south on Swan Road and crosses beneath the TEP/Western Area Power Administration ("WAPA") 230-115 kV line. After crossing the TEP/WAPA 230-115 kV line, the route turns east-southeast and continues parallel and south of the TEP/WAPA line, as a new single-circuit line built on double-circuit capable structures for approximately 2 miles to Wilmot Road. At Wilmot Road, the line will be co-located on existing, or approved (Case 176, Decision No. 76468), double-circuit capable structures owned by UNSE, and continue south for approximately 9.6 miles, and continue on these shared structures as it turns to the southwest, for 1.6 miles to Santa Rita Road. At Santa Rita Road, the line will turn to the northwest, co-locating on double-circuit structures constructed under Case 164, Decision Nos. 73232, 76886, 78598, and 78961. The line will continue on these TEP-owned double-circuit structures to the northwest, paralleling Santa Rita Road, for approximately 2.5 miles, then

[1] The cost of Route 1 does not change if UNSE receives grant funding. The lower cost is the result of factors that are independent of UNSE's funding source for its line.

turn to the west at the Corto Road alignment, continue on these previously approved structures for approximately 1 mile to the planned Santa Rita Substation. The line will enter the Santa Rita Substation from Corto Road.

Route 3

Route 3 generally follows Country Club Road. The route originates at the existing Sonoran Substation, exiting from a bay on the south side. The route proceeds west for approximately 0.3 miles to Swan Road. The line will go south on Swan Road and cross beneath the TEP/WAPA 230-115 kV line. After crossing the TEP/WAPA 230-115 kV line, the route proceeds south approximately 700 feet to an existing double-circuit capable 46 kV line owned by TEP, where it attaches to these poles as a second circuit and extends to the west for approximately 2 miles to Country Club Road. At Country Club Road, the route will co-locate with an existing single-circuit TEP 138 kV line by rebuilding some of the structures to a double-circuit standard and proceed south for approximately 3.5 miles to approximately 750 feet north of the westward turning point of the existing 138 kV line. At this point, the route constructs a new single-circuit line on double-circuit capable structures and turns east for approximately 1,000 feet, to cross under a TEP 345 kV line, and two Arizona Electric Power Cooperative, Inc. ("AEPCO") transmission lines (230 kV and 345 kV). The route then proceeds south for approximately 1 mile, where it turns west to an existing TEP 138 kV line and will be co-located with that existing line by rebuilding the structures to a double-circuit standard, and continue south for approximately 5.7 miles to the Santa Rita Substation.

Reasons for Selection of the Routes

Route selection was based on identifying the routes that best addressed the comments and concerns of the community, minimized environmental impacts, and had the lowest construction cost. This evaluation was conducted through composite scoring of each route alternative with respect to the evaluation criteria (Table 4).

Table 4. Evaluation Criteria

• Cost of transmission line construction, including relocation of distribution lines. • Sensitive plant and wildlife species and/or habitat within the transmission line corridor. • Residential properties adjacent to transmission lines. • Cultural resources adjacent to transmission lines. • Impact on views of mountains from residential areas.	• Impact on the total environment • Noise • Communication Signal Interference • Existing development plans • Engineering feasibility and challenges • ROW Acquisition • Compliance with applicable ordinances, master plans and regulations • Health and safety impacts • Recreation Impacts • Use of existing utility corridors • Impact on native lands

Both routes strike a balance between community values, environmental factors, and constructability within TEP's operational requirements.

For full details on the siting process and data in support of TEP identifying the routes, see the Transmission Line Siting Study Report included in Exhibit B-1.

vi. *For each alternative route for which application is made, list the ownership percentages of land traversed by the entire route (federal, state, Indian, private, etc.):*

The portions of the alternative routes in COT or Pima County Road ROW would use TEP's existing franchise agreements, which allow for TEP facilities to be located within COT or Pima County ROWs. Land ownership percentages for the requested CEC corridor are shown in Table 5. The percentage of the requested CEC corridor for each route located within the jurisdictions is shown in Table 6.

Table 5. Land Ownership Percentages

ROUTE ALTERNATIVE	ACRES	PRIVATE	AZ	BLM*	Total
Route 1	1049.5	39.3%	60.5%	0.2%	100%
Route 3	941.1	13.7%	86.3%	0%	100%

*Anticipate avoiding BLM land by co-locating with existing line along Wilmot Rd.

Table 6. Land Jurisdiction Percentages

ROUTE ALTERNATIVE	ACRES	PIMA COUNTY	COT	TOWN OF SAHUARITA	Total
Route 1	1049.5	77.0%	21.6%	1.4%	100%
Route 3	941.1	45.8%	52.7%	1.5%	100%

vii. *List the areas of jurisdiction [as defined in A.R.S. § 40-360(1)] affected by each alternative site or route and designate those proposed sites or routes, if any, which are contrary to the zoning ordinances or master plans of any of such areas of jurisdiction.*

All portions of the Project are within the jurisdiction of the ASLD, COT, Pima County, and the Town of Sahuarita. The Proposed Routes are compatible with local land use plans and zoning.

viii. Describe any environmental studies applicant has performed or caused to be performed in connection with this application or intends to perform or cause to be performed in such connection, including the contemplated date of completion.

TEP has conducted environmental studies, including field studies and impact assessments, to support this application. Information and reports on these study efforts are contained in Exhibits A-J of this Application.

This page intentionally left blank

EXHIBIT A

This page intentionally left blank

EXHIBIT A: LOCATION AND LAND USE MAPS

1. *Where commercially available, a topographic map, 1:250,000 scale, showing the proposed plant site and the adjacent area within 20 miles thereof. If application is made for alternative plant sites, all sites may be shown on the same map, if practicable, designated by applicant's order of preference.*

2. *Where commercially available, a topographic map, 1:62,500 scale, or each proposed plant site, showing the area within two miles thereof. The general land use plan within this area shall be shown on the map, which shall also show the areas of jurisdiction affected and any boundaries between such areas of jurisdiction. If the general land use plan is uniform throughout the area depicted, it may be described in the legend in lieu of an overlay*

3. *Where commercially available, a topographic map, 1:250,000 scale, showing any proposed transmission line route of more than 50 miles in length and the adjacent area. For routes of less than 50 miles in length, use a scale of 1:62,500. If application is made for alternative transmission line routes, all routes may be shown on the same map, if practicable, designated by applicant's order of preference.*

4. *Where commercially available, a topographic map, 1:62,500 scale, of each proposed transmission line route of more than 50 miles in length showing that portion of the route within two miles of any subdivided area. The general land use plan within the area shall be shown on a 1:62,500 map required for Exhibit A-3, and for the map required by this Exhibit A-4, which shall also show the areas of jurisdiction affected and any boundaries between such areas of jurisdiction. If the general land use plan is uniform throughout the area depicted, it may be described in the legend in lieu of on an overlay.*

EXHIBIT	CONTENTS
A-1	n/a
A-2	n/a
A-3	138 kV Transmission Line and Substation Project – Location
A-4	138 kV Transmission Line and Substation Project – Land Use

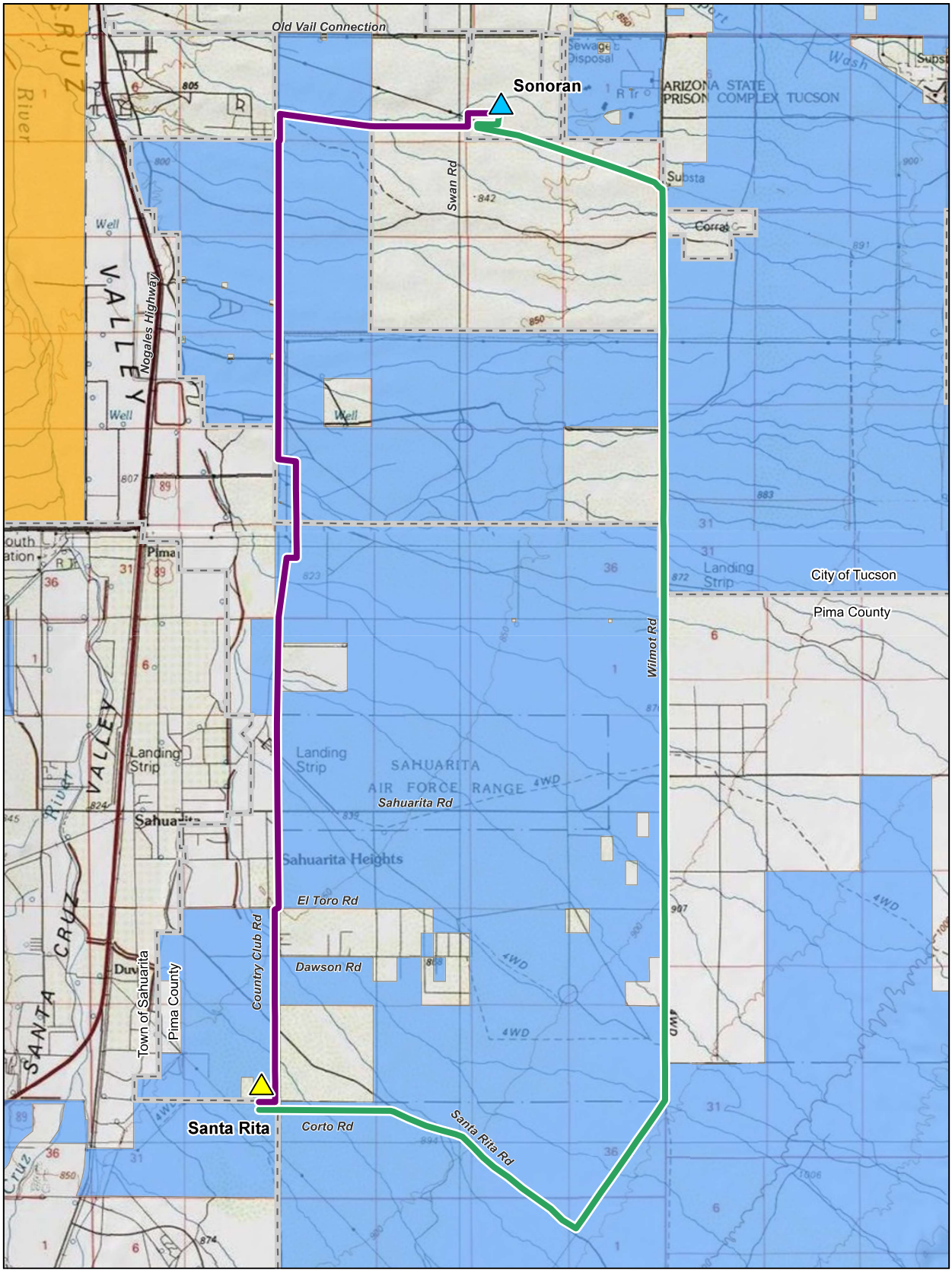
This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit A-3

This page intentionally left blank



Tucson Electric Power

Exhibit A-3

Location

Santa Rita Connection Project

In-Service 138kV Substation

Planned 138kV Substation

Surface Management

Arizona State Land

Tohono O'odham Nation, San Xavier District

Proposed Route Alternatives

Route 1

Route 3

1:62,500

0 1 2

Miles

This map is for planning purposes only. TEP and UNS Energy make no warranty of its accuracy.

Sources: Esri, UNS, TEP, BLM, and Pima County GIS.
Projection: NAD 1983 UTM Zone 12N
Basemap: Esri USA Topo

4/3/2026 User G:\Santa_Rita_Connection_Project\Pro\CEC_Exhibits_starting_20260328.aprx

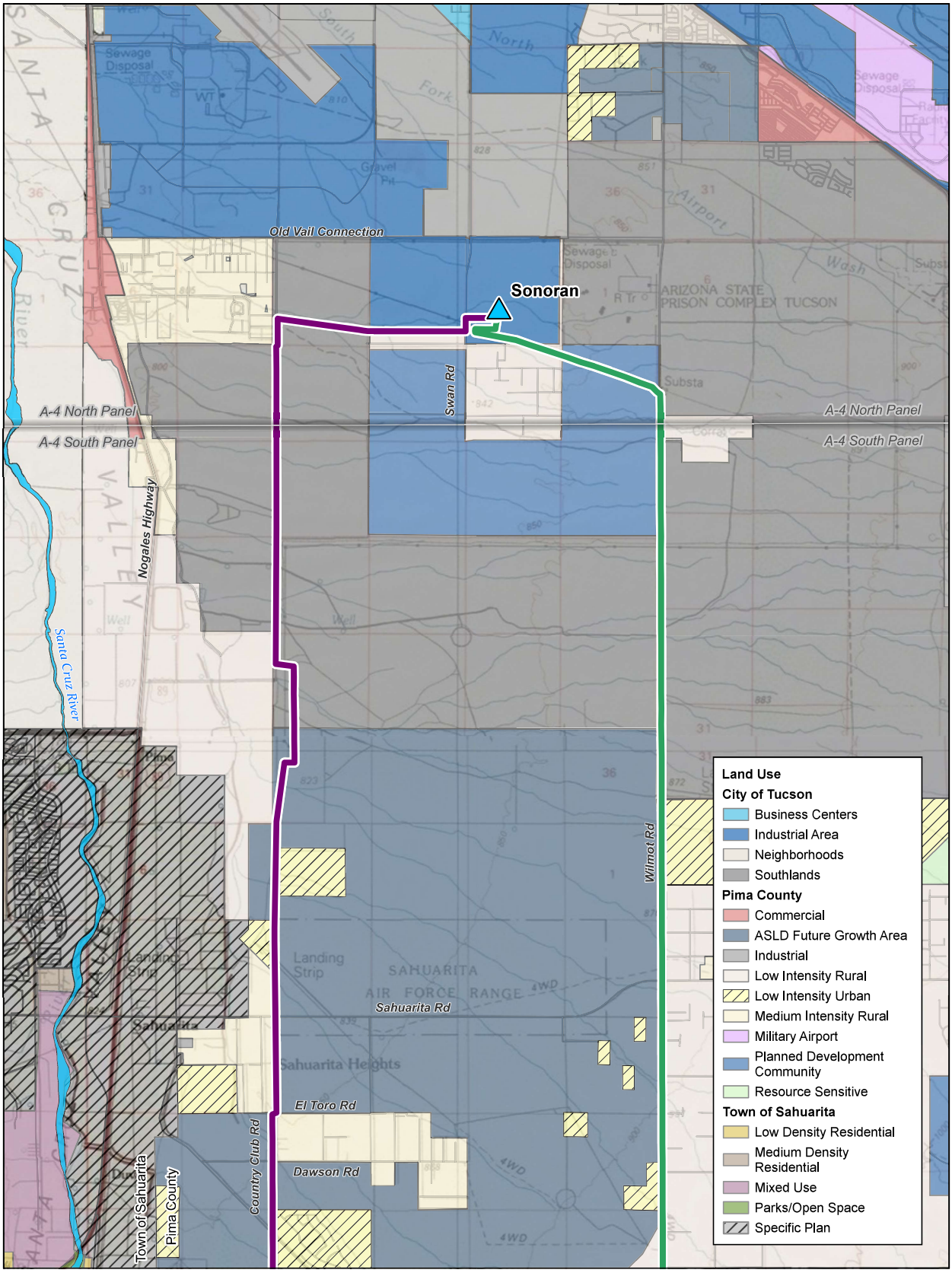
This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit A-4

This page intentionally left blank



TEP
Tucson Electric Power

Exhibit A-4

General Plan: North

Santa Rita Connection Project

In-Service 138kV Substation

Planned 138kV Substation

Proposed Route Alternatives

Route 1

Route 3

1:62,500

0 1 2

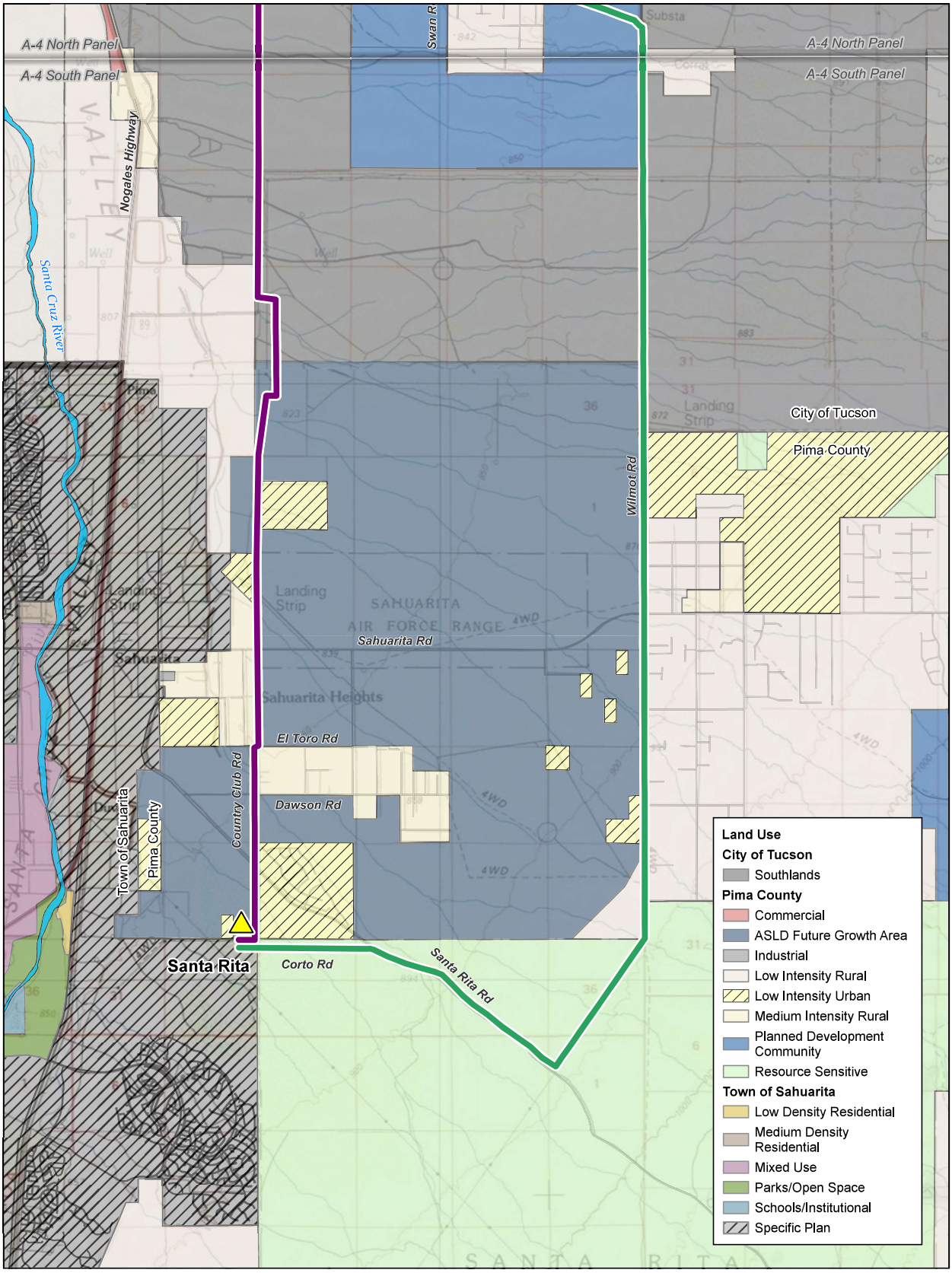
Miles

This map is for planning purposes only. TEP and UNS Energy make no warranty of its accuracy.

Sources: Esri, UNS, TEP, BLM, and Pima County GIS.
Projection: NAD 1983 UTM Zone 12N
Basemap: Esri USA Topo

4/4/2026 User G:\Santa_Rita_Connection_Project\Pro\CEC_Exhibits_starting_20260328.aprx

This page intentionally left blank



TEP
Tucson Electric Power

Exhibit A-4

General Plan: South

Santa Rita Connection Project

In-Service 138kV Substation

Planned 138kV Substation

Proposed Route Alternatives

Route 1

Route 3

1:62,500

0 1 2

Miles

This map is for planning purposes only. TEP and UNS Energy make no warranty of its accuracy.

Sources: Esri, UNS, TEP, BLM, and Pima County GIS.
Projection: NAD 1983 UTM Zone 12N
Basemap: Esri USA Topo

4/4/2026 User G:\Santa_Rita_Connection_Project\Pro\CEC_Exhibits_starting_20260328.aprx

This page intentionally left blank

EXHIBIT B

This page intentionally left blank

EXHIBIT B: LINE SITING STUDY

As stated in Arizona Administrative Code R14-3-219 of the Rules of Practice and Procedure Before Power Plant and Transmission Line Siting Committee, Exhibits to Application, Exhibit B:

"Attach any environmental studies which applicant has made or obtained in connection with the proposed site(s) or route(s). If an environmental report has been prepared for any federal agency or if a federal agency has prepared an environmental statement pursuant to Section 102 of the National Environmental Policy Act, a copy shall be included as a part of this exhibit."

B.1 Introduction B-1
B.2 Environmental Planning Process B-2
B.3 Environmental Statements B-2
B.3.1 US Fish and Wildlife Service ("USFWS") B-2
B.3.2 U.S. Army Corps of Engineers ("USACE") B-2
B.3.3 Federal Aviation Administration ("FAA") B-2
B.3.4 National Environmental Policy Act ("NEPA") B-2
B.4 References B-3

B.1 Introduction

TEP initiated a siting study in 2025 to identify the most economical and environmentally compatible path to connect the future Santa Rita Substation to the existing Sonoran Substation (see Siting Study in Exhibit B-1). The siting study report outlines the process, analysis, and detailed studies conducted to inform the identification of alternative routes. Additional Project studies address a number of components such as biological resources, the built environment, cultural resources, and visual resources.

Study results are reported in exhibits as follows:

- Exhibit C: Areas of Biological Wealth
- Exhibit D: Biological Resources
- Exhibit E: Scenic Areas, Historic Sites and Structures, and Archaeological Sites
- Exhibit F: Recreational Purposes and Aspects
- Exhibit G: Concepts of Proposed Facilities and Visual Simulations/Analysis
- Exhibit H: Existing Plans and Land Use
- Exhibit I: Anticipated Noise and Interference with Communication Signals
- Exhibit J: Special Factors, including Public Outreach

B.2 Environmental Planning Process

The proposed routes presented in this application are the result of the processes outlined in the Siting Study (Exhibit B-1).

B.3 Environmental Statements

B.3.1 US Fish and Wildlife Service ("USFWS")

The results of the Biological Resources Report ("BRR"), included as Exhibit C-2, indicate that three of the seven special status species that may be present in the Project area are federally listed by the USFWS under the Endangered Species Act ("ESA"). The USFWS has no designated critical habitat mapped within the project vicinity (Natural Leaders, 2026).

As discussed in greater detail in Exhibit C and the BRR, the Project has an effects determination of "May Affect but Unlikely to Adversely Affect" for the cactus ferruginous pygmy owl and the Pima pineapple cactus, and a "May impact individuals but not likely to result in a trend toward Federal listing or a loss of viability" for the monarch butterfly.

If construction is scheduled during nesting/breeding seasons, TEP will conduct pre-construction bird surveys to ensure there are no impacts to migratory birds. A "May Affect but Unlikely to Adversely Affect" determination was recommended for this Project regarding its potential impacts on special status species (See Exhibit C-2). No formal or informal consultation with USFWS has occurred or is anticipated to be required, as implementation of recommended environmental protection measures would minimize or avoid impacts.

B.3.2 U.S. Army Corps of Engineers ("USACE")

TEP assessed whether the Project is likely to impact USACE potentially jurisdictional waters, wetlands, or navigable waters in the study area. There are no perennial surface waters or wetlands mapped or observed within the Project Area. Numerous ephemeral drainages cross or are in proximity to route alternatives. Project design would ensure that all drainages would be spanned or paralleled by the transmission line, therefore there would be no impact to wetlands or Waters of the U.S. The Project is not anticipated to require USACE permits.

B.3.3 Federal Aviation Administration ("FAA")

TEP will apply to the FAA for an obstruction evaluation of the new transmission line towers, if required, once the proposed route is approved and designed. Initial analysis has determined that notice will need to be made to the FAA for poles proposed at the northern end of the Project. Three test poles located at the northern limits of Route 1 were submitted to the FAA pre-screening website, and the result was a requirement to notify the FAA. FAA jurisdiction extends three miles to the south from Tucson International Airport, and six miles to the southeast.

B.3.4 National Environmental Policy Act ("NEPA")

This project does not involve any federal agency actions; therefore, studies pursuant to Section 102 of NEPA are not applicable.

B.4 References

Natural Leaders. (2026). Biological Resources Report, Santa Rita Connection Project, Tucson Electric Power. Tucson: Natural Leaders, LLC.

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit B-1

This page intentionally left blank



Santa Rita Connection Project
Line Siting Study

March 2026

TEP
Tucson Electric Power

DOCKIT
Consulting, LLC

Contents

1.0 INTRODUCTION 1
2.0 OBJECTIVE AND METHOD 1
3.0 PHASE 1: PRE-ANALYSIS 3
3.1 Study Area 3
3.2 Evaluation Criteria 4
3.3 Opportunities and Constraints 5
3.4 Field Visit – September 2025 6
3.5 Preliminary Segments 8
3.6 Public Outreach – November 2025 10
3.6.1 Notifications 10
3.6.2 Public Official Outreach – November 2025 10
3.6.3 Agency Briefing – November 12, 2025 10
3.6.4 Open House – November 13, 2025 10
3.6.5 Tribal Outreach – November 19, 2025 11
3.7 Revised Study Area 11
4.0 PHASE 2: DATA INVENTORY 13
5.0 PHASE 3: SUITABILITY ASSESSMENT 13
5.1 Spatial Analysis 13
5.2 Refined Segments 14
5.3 Public Outreach – January 2026 17
5.3.1 Notifications 17
5.3.2 Town of Sahuarita Meeting – January 12, 2026 17
5.3.3 Agency Briefing – January 28, 2026 17
5.3.4 Sahuarita Town Council Meeting – January 26, 2026 17
5.3.5 Tucson Airport Authority (“TAA”) – February 9, 2026 17
5.4 Field Visit – January 2026 17
6.0 PHASE 4: COMPATABILITY ANALYSIS 19
6.1 Subject Matter Expert Review 19
6.2 Route Alternatives 20
6.3 Public Outreach – February/March 2026 22
6.3.1 Notifications 23
6.3.2 Tribal Outreach – February 19, 2025 23
6.3.3 Public Official Outreach – February 2026 23
6.3.4 Agency Briefing – March 3, 2026 23

6.3.5 Field Visit – March 3, 2026 23
6.3.6 Open House – March 4, 2026 24
7.0 PHASE 5: CONCEPT EVALUATION 25
7.1 Proposed Route 25
8.0 CLOSING 26

TABLE OF FIGURES

Figure 1. Siting Process 2
Figure 2. Preliminary Study Area 4
Figure 3. Evaluation Criteria 5
Figure 4. Opportunities and Constraints Map 6
Figure 5. Existing Utility Corridor along Wilmot Road 7
Figure 6. Existing Utility Corridor along Country Club Road 8
Figure 7. Preliminary Segments 9
Figure 8. Revised Study Area 12
Figure 9. Suitability Methodology Flowchart 14
Figure 10. Suitability Criteria Models 15
Figure 11. Refined Segments 16
Figure 12. Existing Utility Corridor –46 kV Line 18
Figure 13. Existing Utility Corridor – AEPCO and TEP lines at El Toro Road and Country Club Road 19
Figure 14. Ranked Segments 21
Figure 15. Route Alternatives 22
Figure 16. Transmission Lines that would be crossed by Route 3 24
Figure 17. Proposed Route Alternatives 26

APPENDICES

Appendix A Suitability Assessment Procedure and Process
Appendix B Compatibility Matrix

1.0 INTRODUCTION

Tucson Electric Power Company (TEP) is evaluating the siting and construction of transmission facilities to increase energy capacity, enhance system reliability, and modernize infrastructure for customers in Sahuarita, Green Valley, and surrounding areas in Pima County south of Tucson. The Santa Rita Connection Project (Project) is a new 138 kilovolt (kV) transmission line with a straight-line distance of 10.7 miles between TEP's existing Sonoran Substation and a proposed Santa Rita Substation.

The Study Area considered for the new transmission line is within unincorporated Pima County, the City of Tucson and the Town of Sahuarita. It is generally bounded to the west by Country Club Road, to the north by Old Vail Connection Road, to the east by Wilmot Road, and to the south by Santa Rita Road. The Project will cross private both land and land owned by the Arizona State Land Department ("ASLD"). TEP plans to obtain rights-of-way ("ROW") and easements for up to 100 feet for the construction, operation, and maintenance of the Project.

2.0 OBJECTIVE AND METHOD

The objective of this study is to determine a proposed route to connect the existing Sonoran Substation to the planned Santa Rita Substation. The following demonstrates the underlying process. The method TEP used to select the proposed routes includes five basic phases, as outlined in Figure 1.

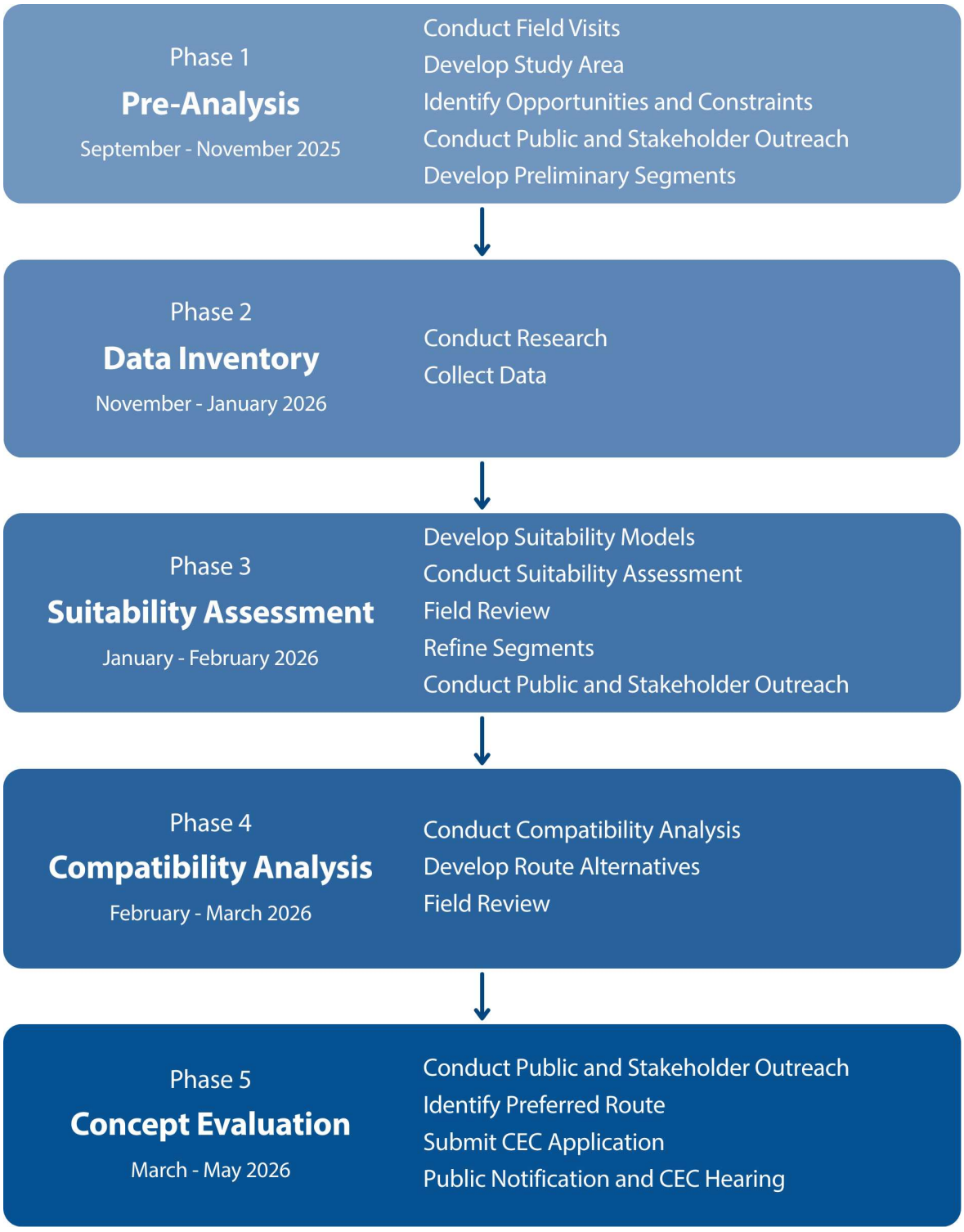


Figure 1. Siting Process

3.0 PHASE 1: PRE-ANALYSIS

3.1 Study Area

The first step in the pre-analysis phase was to define the Project Study Area (“Study Area") (Figure 2). TEP considered the following factors in developing the Study Area:

- The location of the Sonoran Substation
- The location of the planned Santa Rita Substation
- Direct route opportunities that would minimize the cost of the Project
- TEP’s design principles that encourage the use of established linear features, such as roads, washes, and existing utility corridors

The Study Area was presented to stakeholders during an Agency Briefing on November 12, 2025, and to the public at a Public Open House on November 13, 2025.

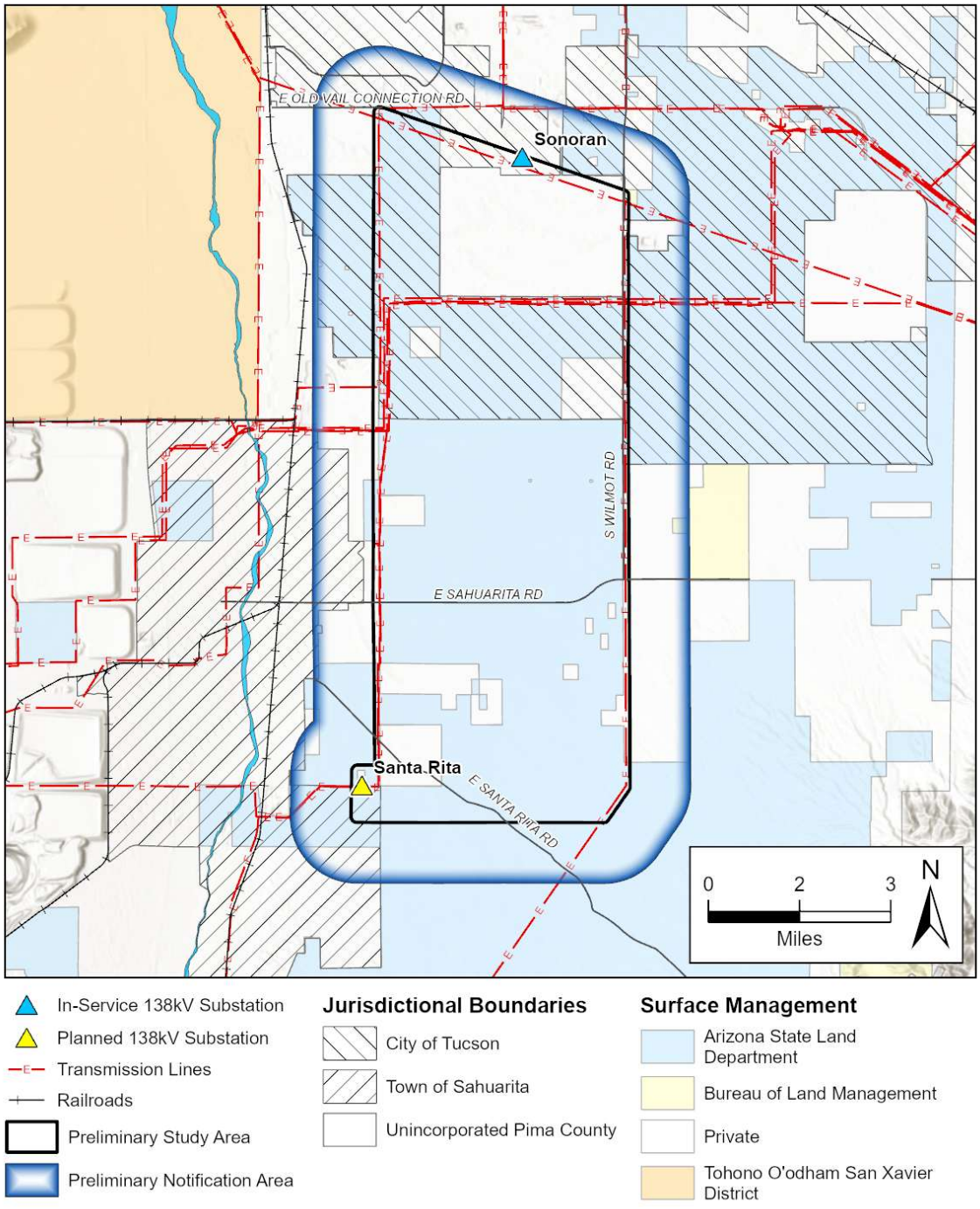


Figure 2. Preliminary Study Area

3.2 Evaluation Criteria

Draft evaluation criteria was proposed and augmented based on community input. This criteria was considered during the analysis phases of the siting process. TEP wanted to ensure that the criteria reflected community values and preferences. The criteria shown in Figure 3 are aligned with Certificate of Environmental Compatibility (CEC) statutory considerations (A.R.S. § 40-360.06), TEP design principles, and topics important to the community.



Figure 3. Evaluation Criteria

3.3 Opportunities and Constraints

Opportunities in the Study Area for siting a transmission line included established linear features, such as existing utility corridors, existing roadways, and washes where environmental impacts can be minimized (Figure 4). Existing 138 kV transmission lines in the Study Area present significant opportunities as they are single-circuit lines within existing land rights. A second circuit could be co-located on the same structures, eliminating the need for a new independent transmission line. This approach reduces additional visual impacts on residents, minimizes new environmental disturbances, and has the potential to reduce overall project cost. Other opportunities assessed included roadways, both paved and unpaved, as they are existing disturbed corridors. The proposed Sonoran Corridor routing was reviewed, but the Project is still in the conceptual planning stage and thus this corridor was considered as both an opportunity and a constraint. For large swaths of undeveloped Arizona State Land, section lines were included as opportunities because development patterns tend to locate future street networks on section lines along which powerlines are a compatible use. It also allows the remainder of the section of land to be developed optimizing future revenues for the State Land Trust. Washes were included as opportunities because they represent linear features generally compatible with powerlines.

Constraints are factors that could make it more challenging to construct and maintain a transmission line (Figure 4). Constraints within the project Study Area include residential areas, an existing solar generation site, resource sensitive or protected lands (biologically and culturally), and areas regulated by zoning ordinances. The Santa Rita Experimental Range, located at the southern end of the Study Area, is a dedicated native rangeland research area that prohibits the development of new transmission lines. Additionally, portions of the Study Area have land use and height restrictions in accordance with airport overlay zones.

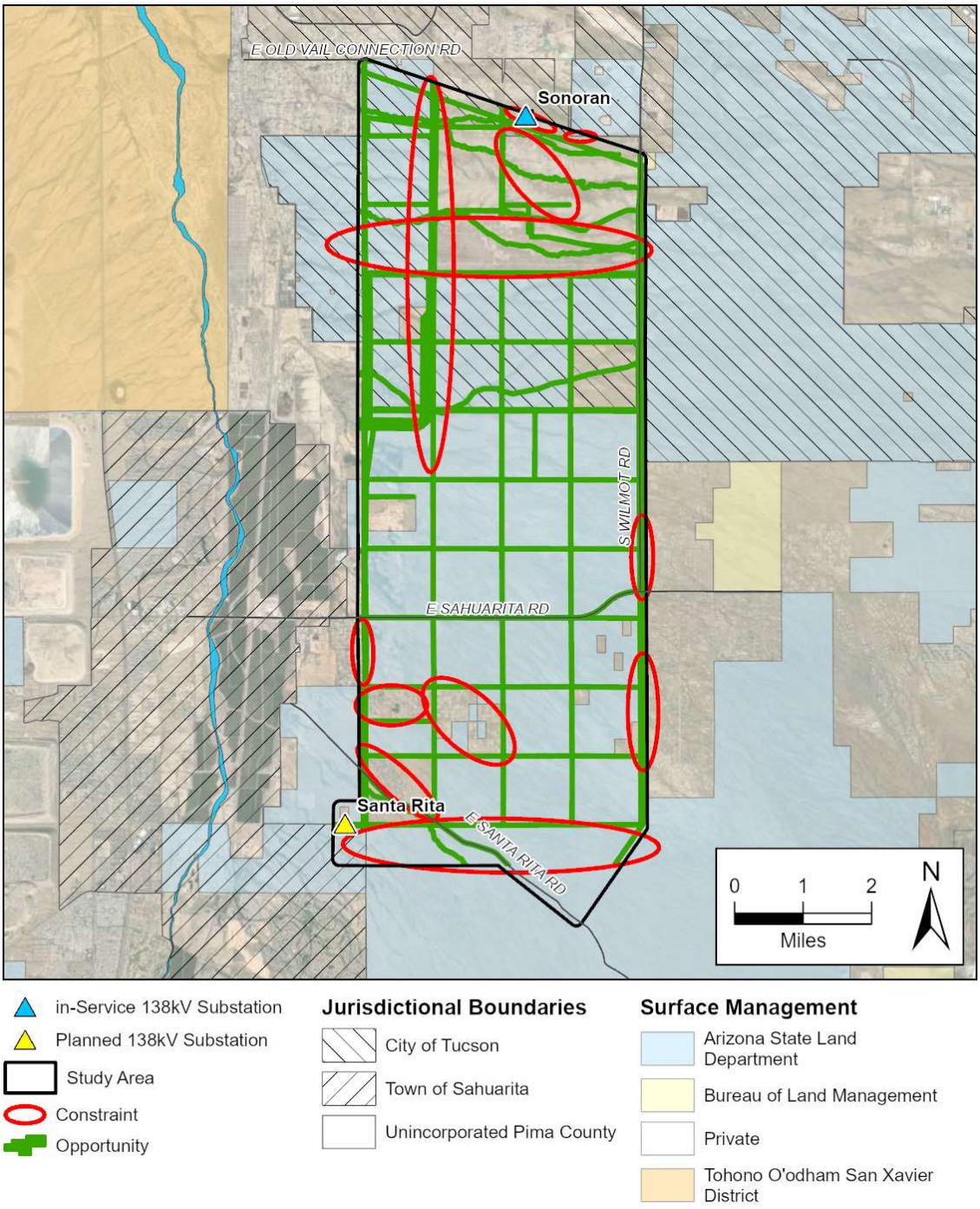


Figure 4. Opportunities and Constraints Map

3.4 Field Visit – September 2025

In addition to learning about the Study Area from available mapping and data, it was important to become familiar with the area, including its character, geography, and existing land uses. The team used this field visit to become acquainted with the area and verify desktop mapping information by "ground truthing." This method was used to identify opportunities and constraints within the project Study Area to form preliminary segments.



Figure 5. Existing Utility Corridor along Wilmot Road



Figure 6. Existing Utility Corridor along Country Club Road

3.5 Preliminary Segments

TEP engineers reviewed each of the opportunities to confirm constructability. Based on their assessment, TEP identified 154 preliminary segments to connect the existing Sonoran Substation to the planned Santa Rita Substation (Figure 7).

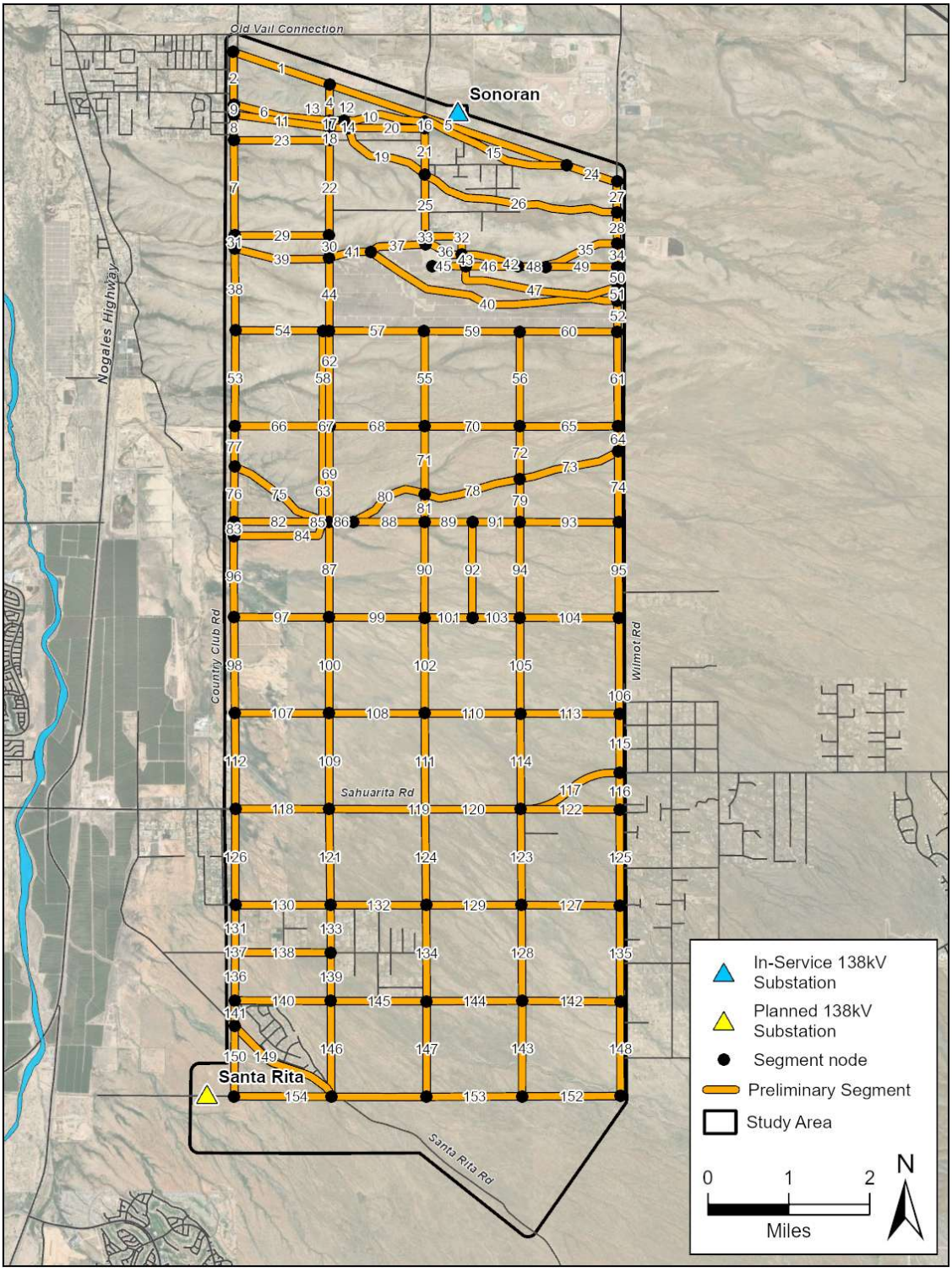


Figure 7. Preliminary Segments

3.6 Public Outreach – November 2025

TEP notified the public and project stakeholders, including elected and public officials, and agency representatives about the Project during phases 1, 3, and 4 of the siting process. Outreach for Phase 1 is summarized below.

3.6.1 Notifications

TEP provided notification of the proposed project to customers, residents, and landowners within the project notification area. Methods consisted of a mailed postcard, an email sent to TEP customers, posted street signs, digital and printed newspaper notices, and ads placed on Facebook and Instagram.

3.6.2 Public Official Outreach – November 2025

Elected officials from Pima County and the State of Arizona (state and federal level) were notified of the Project and offered a project briefing with the siting team. No elected official requested to participate in a project briefing, in response to this outreach.

3.6.3 Agency Briefing – November 12, 2025

Twenty public officials participated in a virtual agency briefing. Participants included representatives from Western Area Power Administration (WAPA), the State Historic Preservation Office (SHPO), Arizona Department of Transportation (ADOT), University of Arizona (UofA), Pima County (Economic Development, Development Services, Sustainability, Administration), City of Tucson (COT) (Tucson Water, Planning and Development Services, Transportation), Town of Sahuarita, Trico Electric Cooperative (Trico), Sahuarita Unified School District, and the Tucson Airport Authority (TAA).

TEP shared a PowerPoint presentation that introduced the Project, its purpose and need, transmission line characteristics, the transmission line siting process, the evaluation criteria, the opportunities and constraints and preliminary segments, the project timeline, and information about how to provide comment. TEP solicited feedback on the Study Area and preliminary segments.

Comments and questions received at the meeting are summarized below.

- Question about the footprint of the planned Santa Rita Substation
- Question about the expansion of infrastructure in the area
- Question about possibility to double-circuit the new line
- Request that TEP engage with the regional tribes
- Question about future public engagement and the project website

3.6.4 Open House – November 13, 2025

TEP held its first open house at the Desert Diamond Casino - Sahuarita Ocotillo Room at 1100 West Pima Mine Road, Sahuarita, AZ, from 6 to 8 pm. Display materials included introductory information about the project's purpose and need, Study Area, preliminary segments, pole characteristics, evaluation criteria, opportunities and constraints, and the siting process. TEP solicited feedback on the Study Area, project opportunities and constraints, and preliminary segments.

The meeting had approximately 13 attendees (eight signed in). Comments received at the meeting are summarized below.

- Preference to construct the line on the east side of the Study Area

Overall, the attendees were supportive of the project and preliminary segments. These comments were carried forward to inform further phases of project analysis.

3.6.5 Tribal Outreach – November 19, 2025

A letter was sent to each of the Native American tribes with ancestral affiliation to the land within the Study Area introducing the project and offering briefings with TEP. A follow-up email was sent December 8, 2025. Briefings were held with the Yavapai Apache Nation and the Pascua Yaqui Tribe in separate meetings on January 9, 2026.

3.7 Revised Study Area

Following the engineering review of the preliminary segments and the Open House, the team revised the Study Area to include the intersection of the existing UNS Electric 138 kV line (Case 176, Decision No. 76468)and the approved TEP 138 kV line (Case 164, Decision Nos. 73232, 76886, 78598, and 78961), located along Santa Rita Road (Figure 8). With this revision, the siting team added additional opportunities along existing utility corridors for consideration as part of the siting study.

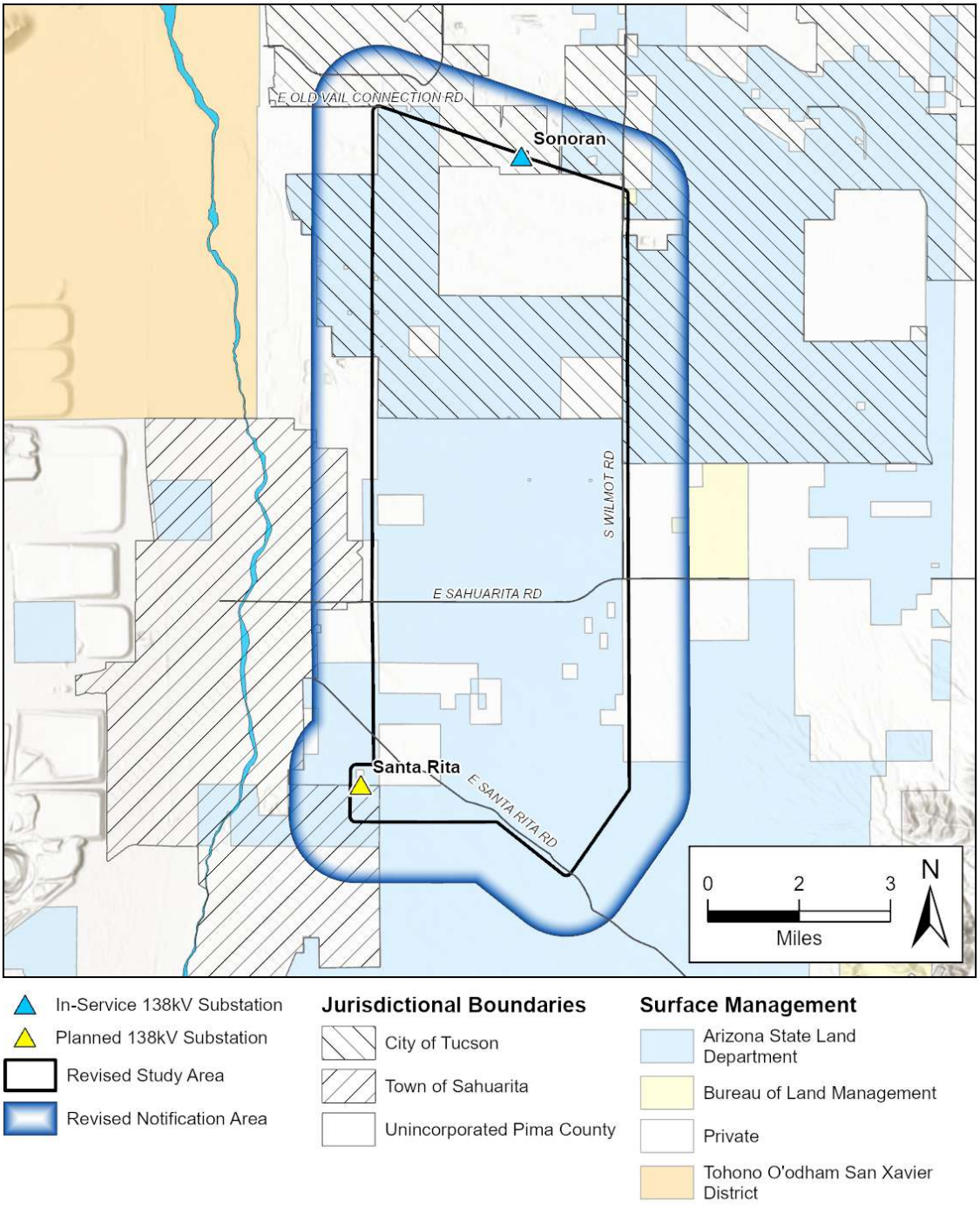


Figure 8. Revised Study Area

4.0 PHASE 2: DATA INVENTORY

To conduct a spatial analysis and build criteria models for the Suitability Assessment in Phase 3 and the Compatibility Analysis in Phase 4, the team collected the best available data in the following areas according to the evaluation criteria in **Section 3.2.**

Data gathered included:

- Existing and Planned Land uses
- Zoning
- Platted subdivisions
- Critical habitat for Threatened and Endangered species
- Landcover
- Floodplains
- Important Riparian Areas
- Important Bird Areas
- Wildlife linkages
- Conservation easements
- FCC licensed communications antennas
- Sensitive receptors
- Scenic roads, viewpoints, or areas managed for scenic integrity
- Designated historic sites
- Cultural Resources
- Existing well sites
- Geology and soils
- Digital Elevation Model (DEM)
- FAA airspace height limitations

5.0 PHASE 3: SUITABILITY ASSESSMENT

5.1 Spatial Analysis

Phase 3 of the line siting process included the development of spatial models—using ESRI ArcGIS Pro Geographic Information System (GIS) software—based on the raw data collected in Phase 2. The spatial models informed which Preliminary Segments received higher or lower levels of suitability (Figure 9).

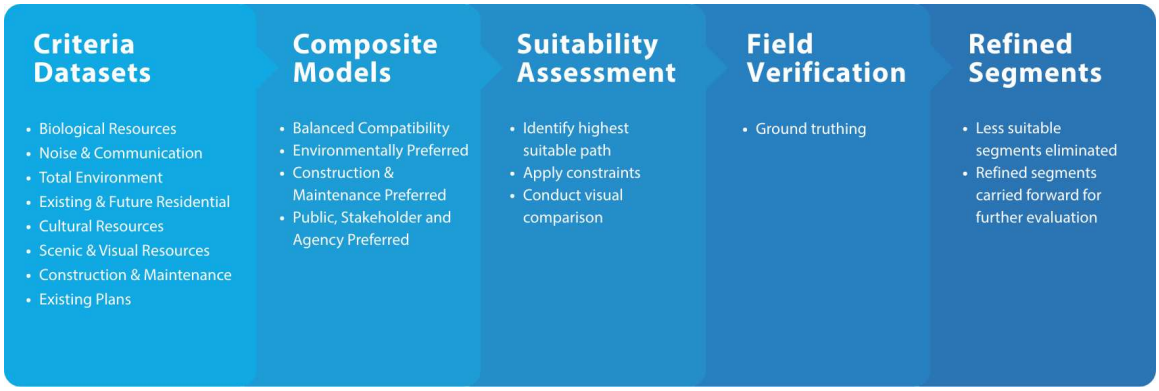


Figure 9. Suitability Methodology Flowchart

The following eight criteria models were created (Figure 10):

- Biological Resources
- Noise & Communications
- Total Environment
- Existing and Future Residential Properties
- Historic Properties & Districts
- Scenic & Visual Resources
- Construction & Maintenance
- Existing Plans

The models were then combined and weighted by different factors to create four composite suitability models to evaluate each preliminary segment according to differing priorities or perspectives (Figure 10).

- Balanced Compatibility Model
- Environmentally Preferred Model
- Construction & Maintenance Preferred Model
- Public, Stakeholder, and Agency Preferred Model

Each model used a scaled color-coding system to depict areas of suitability. The scale varied from green, depicting high suitability, to red, depicting low suitability. An outline of the Suitability Assessment procedure and steps followed are outlined in **Appendix A**.

5.2 Refined Segments

Following the suitability analysis, the Least Cost Path tools in ArcGIS Pro were utilized to identify the most suitable paths of the Preliminary Segments. These paths were visually assessed based on the scaled color-coding system to determine which segments were the most suitable for the Project and those that were the least. Ultimately, 76 preliminary segments were retained for further analysis (refined segments), and 78 preliminary segments were removed from consideration (Figure 11).

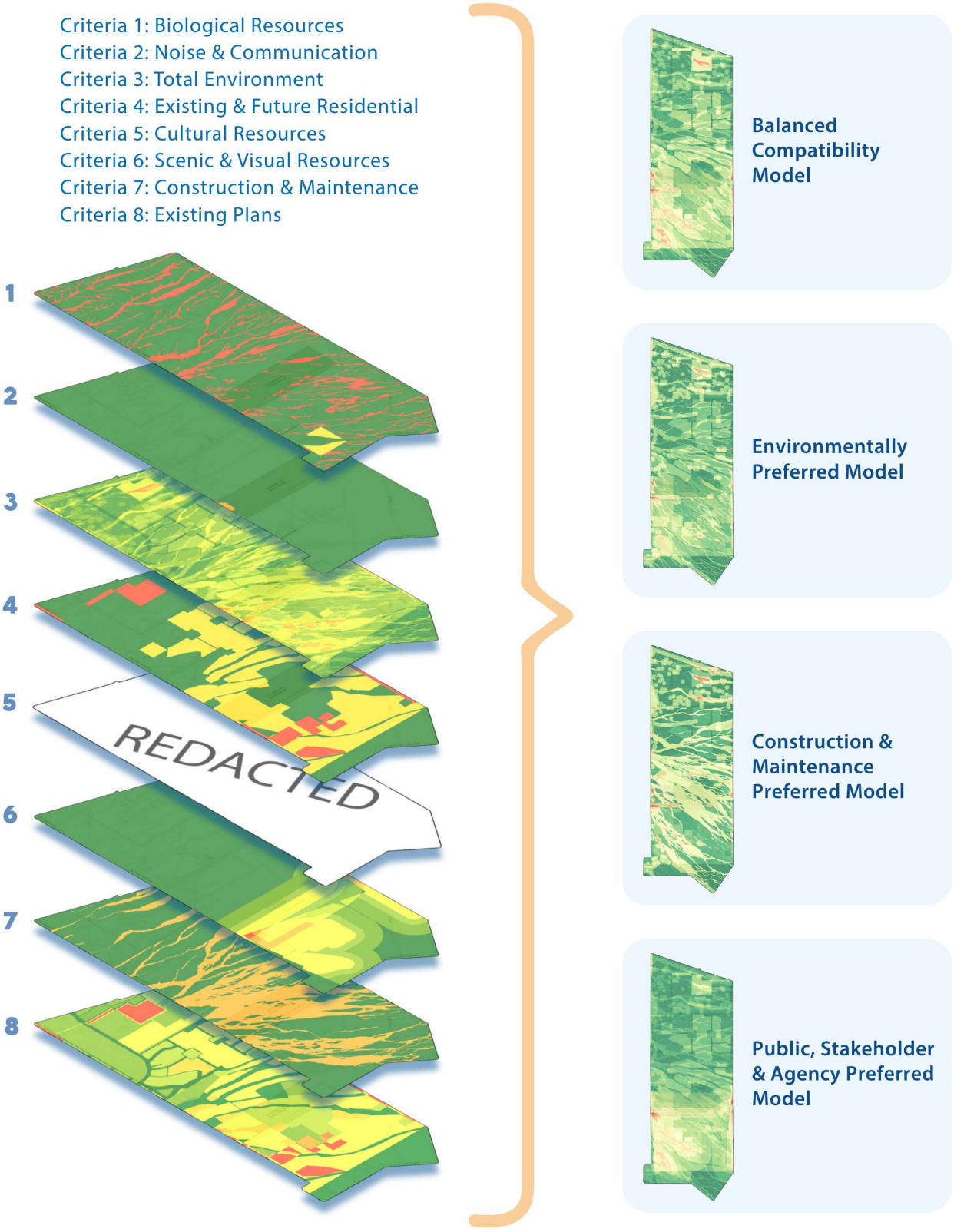


Figure 10. Suitability Criteria Models

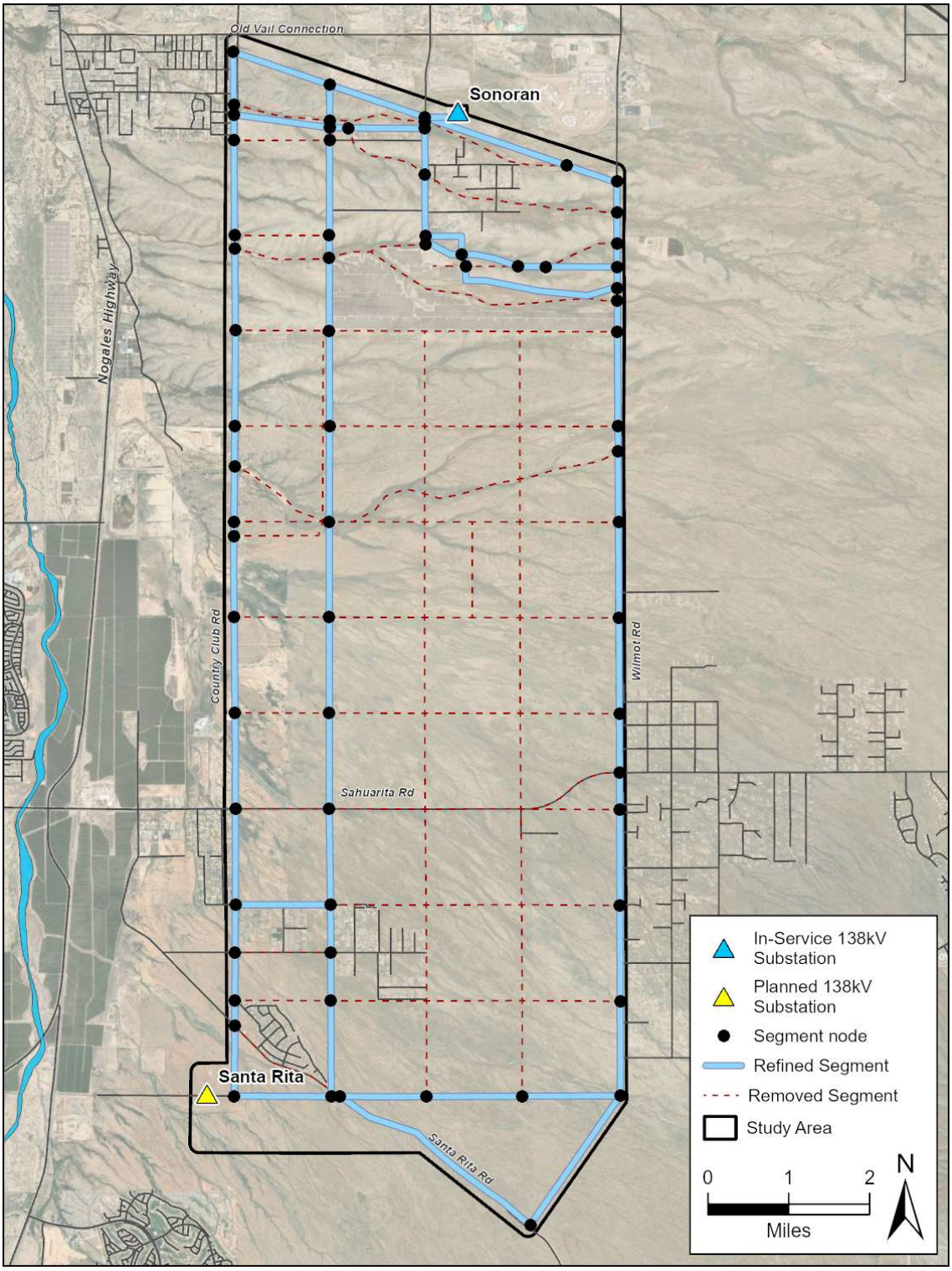


Figure 11. Refined Segments

5.3 Public Outreach – January 2026

TEP notified the public and project stakeholders, including public officials and agency representatives, about the latest project update, including the revised Study Area and the refined segments. Outreach for Phase 3 is summarized below.

5.3.1 Notifications

TEP provided a status update on the proposed project to customers, residents, and landowners within the project notification area. Methods consisted of a mailed postcard, and an email sent to TEP customers.

5.3.2 Town of Sahuarita Meeting – January 12, 2026

TEP met with the Town of Sahuarita Community Development Director, Deputy Director, and Planning and Zoning Manager. The Town asked questions about the need for the project, the benefits it would bring to the Town, which facilities would be retired after the project is completed, and if the Project has any connection to the Copper World Project. They also noted that the substation would need to go through the Pima County substation permit process.

5.3.3 Agency Briefing – January 28, 2026

Eighteen public officials participated in the January virtual agency briefing. Participants included representatives from the Bureau of Land Management, WAPA, Arizona Department of Corrections, ADOT, SHPO, ASLD, Pima County, COT, Town of Sahuarita, AEPCO, Trico, and TAA.

TEP shared a PowerPoint presentation that reintroduced the Project, its purpose and need, transmission line characteristics, the transmission line siting process, and discussed the recently completed suitability assessment with resulting refined segments, required approvals, and timeline for the project.

Comments and questions received at the meeting are summarized below.

- Comment about planned development near TAA property and a request for a one-on-one meeting
- Comment about including Tohono O'odham Nation and request for cultural resources study

5.3.4 Sahuarita Town Council Meeting – January 26, 2026

As a result of the virtual meeting held with the Town of Sahuarita Community Development Department, the Town Manager requested TEP present the project at the Town of Sahuarita Town Council Meeting. Questions were raised about the project purpose and need and connection to the Copper World Mine

5.3.5 Tucson Airport Authority ("TAA") – February 9, 2026

TEP met with the TAA to review their concerns over planned development in the Study Area near the Sonoran substation. TAA indicated their willingness to work with TEP on this project. They requested the proposed route be located on the south side of the existing TEP/WAPA 230-115 kV line due to planned solar development on the north side.

5.4 Field Visit – January 2026

The team participated in a field visit to review the refined segments and collect data on how to evaluate them in the next phase. Attendees included Subject Matter Experts (SMEs) in engineering, transmission planning, biology, spatial analysis, land planning and land right acquisition. Important data was collected on the existing structures and their capability for double-circuiting (Figure 12), and the arrangement of existing power lines owned by other companies (Figure 13). This data was invaluable for refining the constructability engineering review and determining the viability of various refined routes.



Figure 12. Existing Utility Corridor –46 kV Line



Figure 13. Existing Utility Corridor – AEPCO and TEP lines at El Toro Road and Country Club Road

6.0 PHASE 4: COMPATABILITY ANALYSIS

6.1 Subject Matter Expert Review

SMEs were enlisted to review the refined segments and evaluate them using the information gathered during the field visit, through public and stakeholder feedback, in consultation with TEP's technical experts, and through data collected as part of Phase 2. The segments were rated 1, 2, 3, or 100 to assess their compatibility with the criteria factors described in Section 3.2.

Segment ratings:

- 1 = compatible
- 2 = possible negative impact
- 3 = known negative impact
- 100 = unacceptable impacts unlikely to be mitigated

Compatibility scores were then averaged across each of the factors to provide an overall compatibility score between 1 and 3. A score of 1 was the most compatible and 3 was the least compatible.

Compatibility factors:

- Existing and planned land use
- Adjacent residential properties

- Fish, wildlife, plants, including endangered species
- Scenic areas/Residential visual impact
- Archaeological and historical resources
- Noise and communication signal compatibility
- Engineering and construction feasibility
- ROW acquisition
- Cost compatibility
- Public and stakeholder feedback

The refined routes were then mapped according to their average scores from the matrix using a scaled color-coding system where green represents more compatible, and red represents less compatible route segments (Figure 14). Results of the Phase 4 compatibility analysis are included in **Appendix B.**

6.2 Route Alternatives

SMEs evaluated the refined segments mapped by their average compatibility scores and made decisions to either carry refined segments forward as part of an alternative route or eliminate them from further consideration. As a result, four alternative routes were identified (Figure 15).

All route alternatives exit the Sonoran Substation to the south, turn west to Swan Road, and then follow Swan Road to the south, crossing under the TEP/WAPA 230-115 kV line.

Route Alternative 1 is the easternmost route, and from Swan Road turns east to parallel the TEP/WAPA 230-115 line to Wilmot Road, where it would then be co-located with the existing UNSE 138 kV line (Case 176, Decision No. 76468) on a single set of structures. The line continues on the existing line until Santa Rita Road where it would turn northwest and attach as a second circuit on a previously approved 138 kV line (Case 164, Decision Nos. 73232, 76886, 78598, and 78961) to the planned Santa Rita Substation.

Route Alternative 2 turns west from Swan Road as a second circuit on structures that support an existing 46 kV line and then turns south at the Alvernon Road alignment. It follows the Alvernon Road corridor south through undeveloped Arizona State Trust Land to Corto Road. This stretch of line would be new construction. At Corto Road, the line would attach as a second circuit on a previously approved 138 kV line and continue to the planned Santa Rita Substation.

Route Alternative 3 follows Route Alternative 2 and continues past the Alvernon Road alignment on existing structures west to Country Club Road where it would attach as a second circuit to the structures supporting the Sonoran to South Loop 138 kV line. Route Alternative 3 continues south on the Sonoran to South Loop 138 kV line until it diverges west towards the South Loop Substation. At this point, a section of new build transmission line would head east and cross under three extra high voltage transmission lines. The new line would continue south for approximately one mile and then would turn west to join the South Loop to Green Valley 138 kV line. This line would be rebuilt to a double-circuit standard to support both the existing and proposed lines. The line would follow this corridor south along Country Club Road to Corto Road, where it would turn west toward the planned Santa Rita Substation.

Route Alternative 3A follows Route Alternative 3 to the point at which it meets the Sonoran to South Loop 138 kV transmission line. At this point, rather than co-locating as a second circuit, Route Alternative 3A continues south as a parallel line along the Country Club alignment until the intersection with East El Toro Road. Due to ROW constraints at East El Toro Road, Route Alternative 3A ends and continues south to the Planned Santa Rita Substation as described under Route Alternative 3.

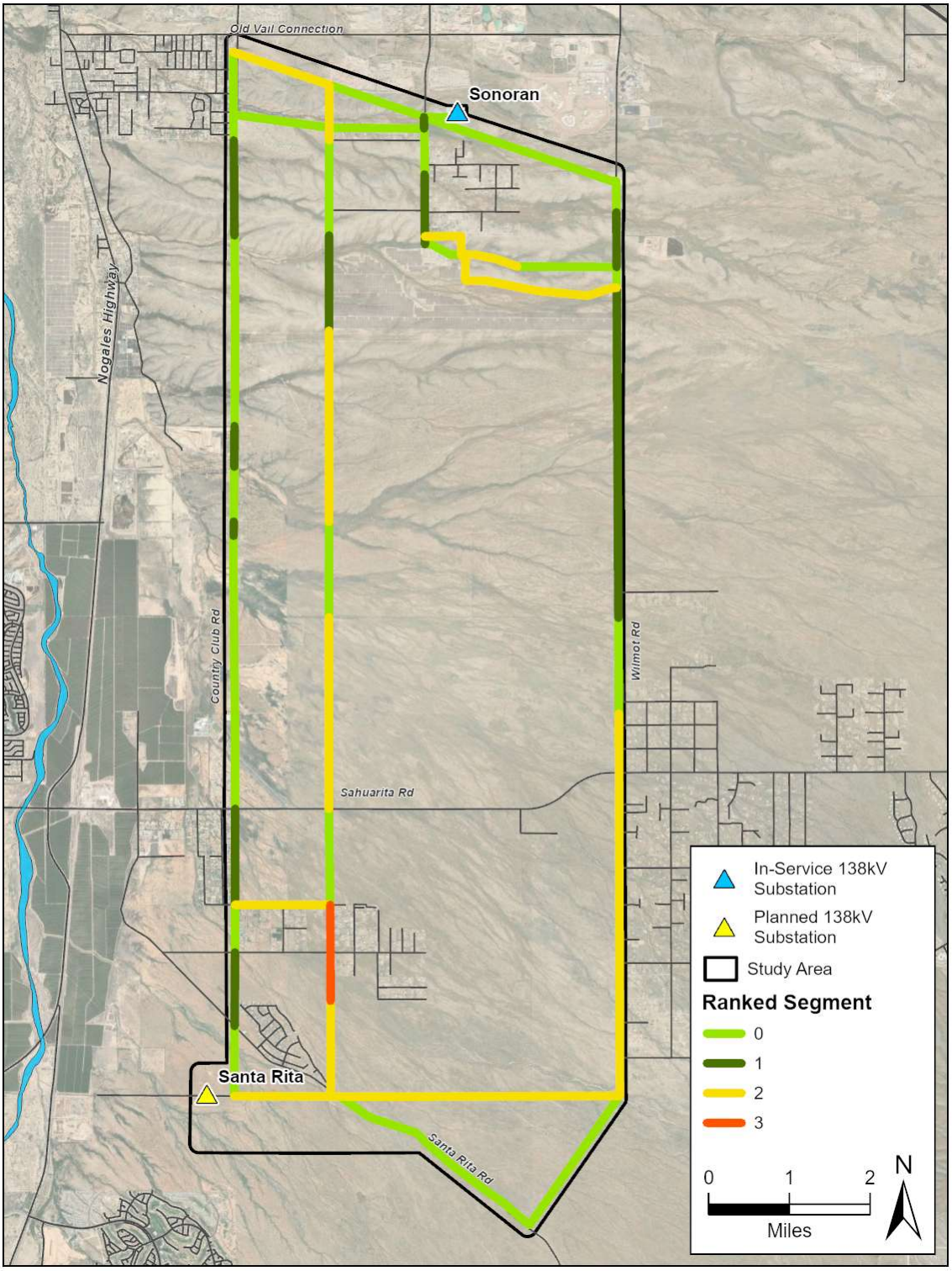


Figure 14. Ranked Segments

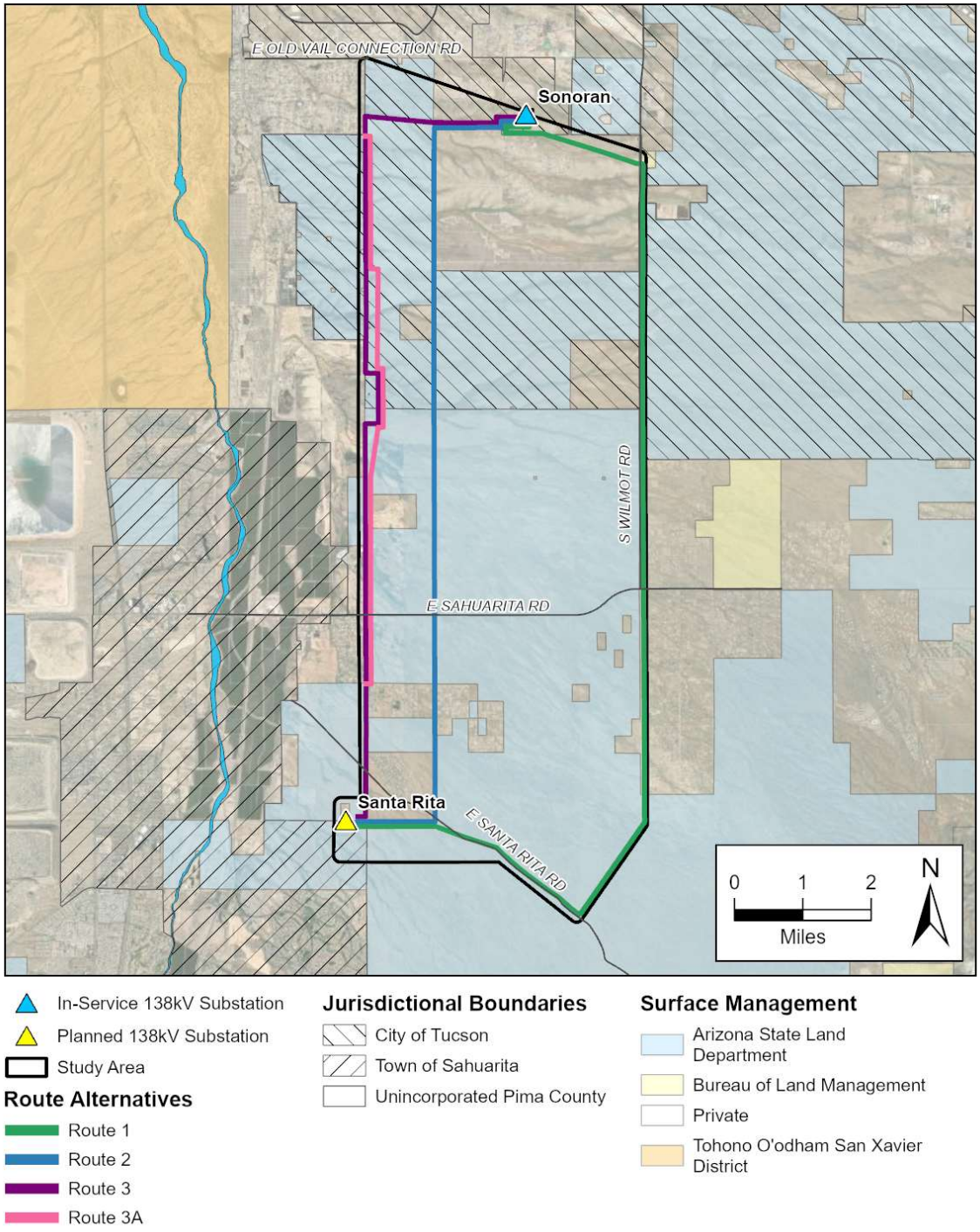


Figure 15. Route Alternatives

6.3 Public Outreach – February/March 2026

Project stakeholders, including elected and public officials, and agency representatives were notified of the results of the compatibility analysis, and the selection of four route alternatives. The public was encouraged to attend the March Open House, visit the project website, and provide comments about the project. Outreach for Phase 4 is summarized below.

6.3.1 Notifications

TEP provided notification of the project updates and the March open house to customers, residents, and landowners within the project notification area. Methods consisted of a mailed postcard, an email sent to TEP customers, posted street signs, digital and printed newspaper notices, and ads placed on Facebook and Instagram.

6.3.2 Tribal Outreach – February 19, 2025

A letter was sent to each of the Native American tribes with ancestral affiliation to the land within the Study Area describing the project updates and offering briefings with TEP. A follow-up email was sent March 11, 2026.

6.3.3 Public Official Outreach – February 2026

Elected officials from Pima County, the Town of Sahuarita, and the State of Arizona were notified of the Project updates and offered a project briefing with the siting team. No elected official requested to participate in a project briefing, in response to this outreach.

6.3.4 Agency Briefing – March 3, 2026

Sixteen representatives participated in a virtual agency briefing. Participants included representatives from the Arizona Department of Corrections, ADOT, SHPO, ASLD, Pima County, COT, Town of Sahuarita, Trico, and TAA, and UofA.

TEP shared a PowerPoint presentation that detailed an overview of the project, the purpose and need of the proposed project, TEP's planning and line siting process, the recently completed compatibility analysis with resulting route alternatives, visual simulations, required approvals, and timeline for the project.

Comments and questions received at the meeting are summarized below.

- Request for cultural resources study
- Interest in viewing more visual simulations
- Question about which routes would have new disturbances
    - Two miles of Route Alternative 1 parallel to the TEP/WAPA line and the Alvernon Road portion of Route 2
- Question about the viability of the project if the 138 kV transmission line along Santa Rita Road is not built on the current timeline
- Question about ranking the routes according to development cost
- Question about additional easement needs from TAA
- Requesting confirmation that the project is not dependent on the Copper World mine project
- Requesting confirmation that none of the route alternatives cross I-19 or I-10

6.3.5 Field Visit – March 3, 2026

The team conducted a final field review to confirm and "ground truth" information gathered through the stages outlined in this report and the proposed routes to (Figure 16).



Figure 16. Transmission Lines that would be crossed by Route 3

6.3.6 Open House – March 4, 2026

TEP held its second and final open house at the Desert Diamond Casino - Sahuarita Cholla Room at 1100 West Pima Mine Road, Sahuarita, AZ, from 6 to 8 pm. Display materials included information about the project's purpose and need, proposed route, suitability assessment, the refined segments, the compatibility analysis, the route alternatives, transmission line and substation characteristics, and visual simulations. TEP solicited feedback on the route alternatives.

The meeting had 34 attendees sign-in, and a head count of approximately 55. Twenty paper comments were received. Comments are summarized below.

- Preference for Route Alternatives 3/3A (2)
- Preference for Route Alternative 1 (14)
- Opposed to Route Alternative 2 (1)
- Concern about EMF impacts from Route Alternative 3
- Support for the project as a whole
- Question about Route Alternative 2 conflict with the Sonoran Corridor
- Request for minimization of night lighting at the Santa Rita Substation

7.0 PHASE 5: CONCEPT EVALUATION

7.1 Proposed Route

Following extensive analysis and public and stakeholder engagement, TEP identified Route Alternative 1 and Route Alternative 3 as the proposed routes to carry forward in the CEC Application (Figure 17). Route Alternative 2 was eliminated from consideration because it would require a large percentage of new construction over previously undisturbed land down the Alvernon Road corridor. Route Alternative 3A also required new construction in an existing transmission line corridor. It was eliminated in favor of Route Alternative 3, which would be co-located on an existing transmission line.

Due to operational constraints described in the CEC Application, TEP will request that the Power Plant and Line Siting Committee (Committee) and Arizona Corporation Commission approve both routes as equal construction alternatives. This will ensure that the in-service date for the Project can be met without the additional regulatory burden and potential delays that could result from only receiving a CEC for a preferred route or placing conditions on when an alternative may be constructed.

TEP's proposed routes are a result of thorough analysis and public outreach efforts. Attendees at each meeting were supportive of the project and the segments and routes presented.

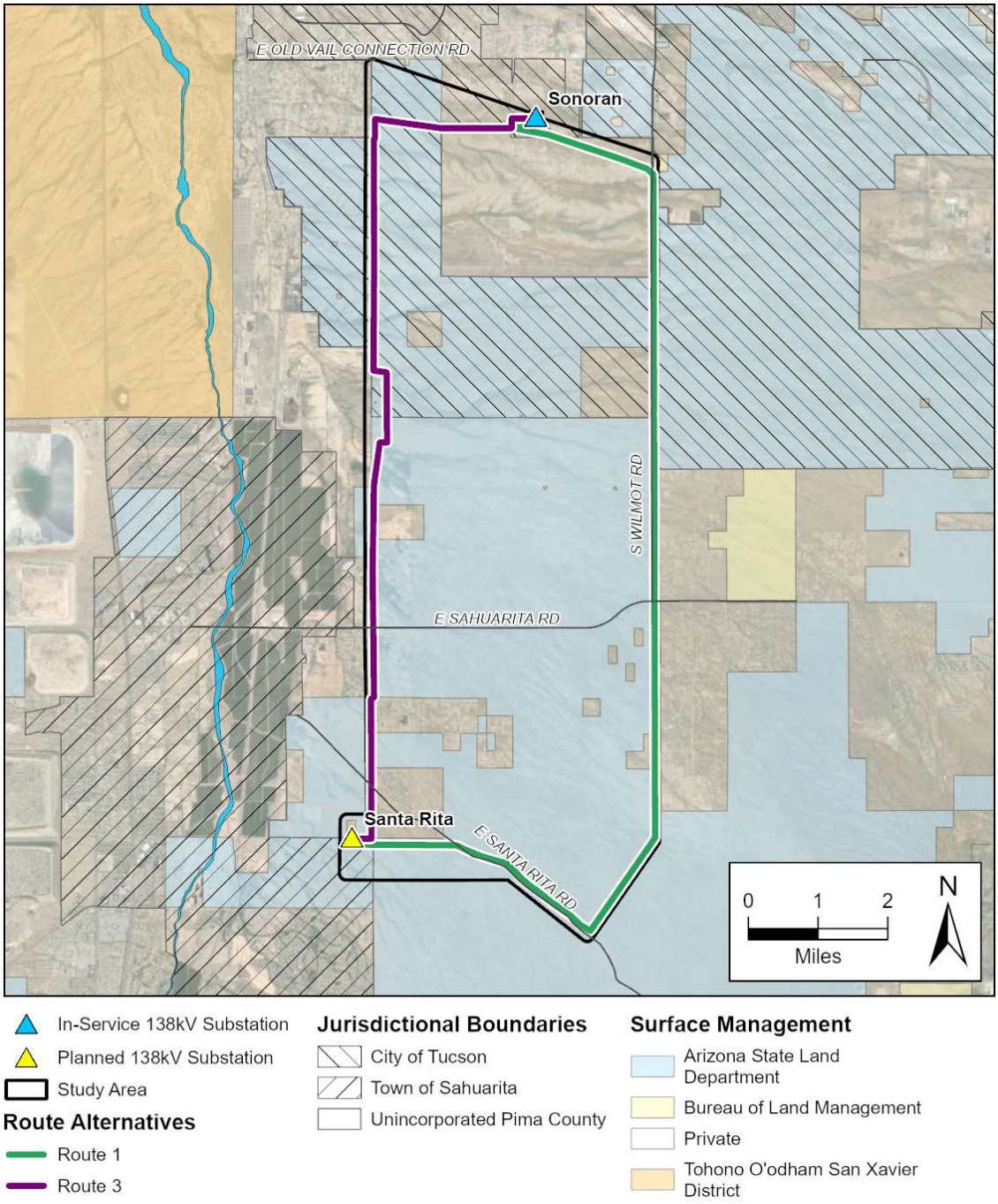


Figure 17. Proposed Route Alternatives

8.0 CLOSING

TEP will submit a CEC application with both Route 1 and Route 3 presented for approval by the Committee, as a result of thorough public and stakeholder outreach and technical analysis following a multiphase planning and siting approach as outlined in this report.



Appendix A

Suitability Assessment Procedure and Process

Alternative Analysis and Suitability Criteria and Procedure

To analyze segments, develop alternatives, and identify a preferred alternative, specific data models need to be created. These data models will then be combined and weighted based on different factors to evaluate alternatives best suited to minimizing impacts to different goals.

Procedure

Create an ArcGIS Pro project titled, "SRCP_Analysis"

Note 1 – Every raster needs to cover the full size of the clip area otherwise raster calculator will not work and will only return a value where one exists for all input layers. The clip area will be a five-mile buffer of the Study Area to ensure full coverage of all segments.

Note 2 – Use dissolve when creating buffers

Note 3 – When using Polygon to Raster tool, under Environments, set Extent to "Clip_Area".

Note 4 – raster cell size 10m (32.8084 feet)

Note 5 – Any criteria that requires weighted layers will be broken up into sub-criteria (e.g. Criteria 1A, 1B, 1C…). The sub-criteria will be implemented into the criteria using **Weighted Sum** tool.

Note 6 – After sub-criteria rasters are created, use **Con** tool to add Cell_Value = 0 in areas with NoData.

1. Create the following datasets:

   A. **Criteria 1 – Biological Resources**: Fish, wildlife and plant life and associated forms of life on which they are dependent.

      Detailed Description

      - Sensitive plant and wildlife species and/or habitat are classified as areas designated as Critical Habitat for a federally listed Threatened, Endangered, or Candidate species under the Endangered Species Act (ESA). In addition, areas classified as Important Bird Areas, wildlife corridors, National Wildlife Refuges, conservation easements/areas, or riparian habitat within the Study Area would also be included.

      Phase 3 Suitability Assessment

      - Critical habitat, Important Bird Areas, wildlife corridors, National Wildlife Refuges, conservation easements/areas, or riparian habitat data will be compiled.
      - Any preliminary segments that pass through areas of habitat, as defined under the detailed description, will be given a lower suitability for this criterion, whereas preliminary segments that do not will be given a higher suitability for this criterion.

Data Required

- Critical habitat for ESA threatened or endangered species
- Riparian areas
- Important Bird Areas
- Wildlife corridors
- National Wildlife Refuges
- Conservation easements/areas

Procedure to create criteria 1 dataset: add a new field "Cell_Value" as type Double to each of the datasets listed above – assign appropriate cell values as noted below; union those results with "Clip_Area" for each dataset; use those results with Feature to Raster classifying by "Cell_Value"; then create a composite raster by weighting each of the datasets as indicated below and adding the results together.

- **Criteria 1A** Critical Habitat (60% weight)
  - Cell Value = 10: critical habitat for ESA threatened or endangered species
  - Cell Value = 0: all other cells
- **Criteria 1B** Wildlife Habitat (40% weight)
  - Cell Value = 10: riparian areas, Important Bird Areas, or existing National Wildlife Refuges
  - Cell Value = 6: buffered area for perennial/open water or wildlife corridor
  - Cell Value = 4: proposed National Wildlife Refuge
  - Cell Value = 0: all other cells

B. **Criteria 2 – Noise & Communication**: Noise emission levels and interference with communication signals.

Detailed Description

- Although a 138kV transmission line is not a significant noise, certain land uses can be more sensitive to noise. For purposes of this study these sensitive noise receptors are classified as schools, hospitals, adult/childcare facilities, and churches. Further, for a very limited distance, transmission lines have the potential to create interference with certain communications signals. For purposes of this study, an area within 250 feet of a communications antenna licensed by the Federal Communications Commission (FCC) will be assessed.

Phase 3 Suitability Assessment

- Geospatial data will be collected on all sensitive noise receptors and FCC licensed antennas as defined under the detailed description. Any preliminary segments that pass through more of these areas will be classified as having greater sensitivity and will be

given a lower suitability for this criterion, whereas preliminary segments that pass through less of these areas will be given a higher suitability for this criterion.

Data Required

- FCC data on licensed antennas (within 250' of antenna)
- Proposed licensed antennas (within 250' of antenna)
- Sensitive receptors: schools, hospitals, adult/childcare facilities, churches (within 500' of property boundary)
- Proposed sensitive receptors: schools, hospitals, adult/childcare facilities, churches (within 500' of property boundary)

Procedure to create criteria 2 dataset: create 250 foot buffer around FCC licensed antenna sites; create 500 foot buffer around sensitive receptor locations; add a new field "Cell_Value" as type Double to each of the datasets listed above – assign appropriate cell values as noted below; union each of these layers, with layers with highest cell value ranked in priority order; union those results with "Clip_Area"; finally use those results with Feature to Raster classifying by "Cell_Value".

- Cell Value = 10: buffered area for FCC licensed antennas
- Cell Value = 8: buffered area for sensitive receptors
- Cell Value = 0: all other cells

C. **Criteria 3 – Total Environment**: Total environment of the Study Area.

Detailed Description

- This is a broad criterion and is inclusive of several other more detailed criteria. For purposes of this study, the total environment will include water resources, biological resources, cultural resources, visual resources, geology and soils, air quality, land uses, sensitive noise receptors, communications interference, and socioeconomic considerations.

Phase 3 Suitability Assessment

- Geospatial data will be collected on each of the resources/factors listed under the detailed description. A composite geospatial model will be created classifying areas where multiple resources/factors exist or where the impact is expected to be greater. Any preliminary segments that pass through more of these areas classified to have greater sensitivity will be given a lower suitability for this criterion, whereas preliminary segments that pass through less will be given a higher suitability for this criterion.

Data Required

- Future land uses, from specific development plans (permits and unbuilt PADs)

- Existing land uses – zoning, airport permit boundaries, heliports, agricultural lands, parks, golf courses, residential areas
- Existing well sites (within 100')
- Existing linear features – Section 368 Energy Corridor, pipelines, railroads, major roads, canals, etc. (within 150')
    - Washes are not included (no washes with the Study Area represent opportunities)
- Existing licensed antennas (incorporated from Criteria 2)
- Sensitive Noise Receptors (incorporated from Criteria 2)
- Geology and soils
- Water resources (incorporated from Criteria 1)
- Biological resources (incorporated from Criteria 1)
- Cultural resources (incorporated from Criteria 5)
- Air quality
- Visual resources (incorporated from Criteria 8)
- Federal Emergency Management Agency (FEMA) Flood hazards

Procedure to create criteria 3 dataset: create buffers as noted above; add a new field "Cell_Value" as type Double to each of the datasets listed above – assign appropriate cell values as noted below; union those results with "Clip_Area" for each dataset; use those results with Feature to Raster classifying by "Cell_Value"; then create a composite raster by weighting each of the datasets as indicated below and adding the results together.

- **Criteria 3A** Existing and Future Land Uses/Well Sites/Linear Features (30% weight) – Future land use would supersede an existing land use.
    - Cell Value = 10: buffered well site
    - Cell Value = 10: High Density Residential, Public/Quasi Public, FAA Notification Required
    - Cell Value = 8: Low/Medium Density Residential
    - Cell Value = 6: Commercial/Mixed Use
    - Cell Value = 4: Industrial
    - Cell Value = 3: Parks and Recreation/vacant State Land
    - Cell Value = 2: Agriculture/Ranching
    - Cell Value = 1: Open Space
    - Cell Value = 0: all other cells
    - Bombing zones
        - Cell Value = 4: Target area
        - Cell Value = 1: OQ range
    - Cell Value = 4: Wilmot Energy Center
    - Cell Value = 3: Santa Rita Experimental Range
- **Criteria 3B** Existing and Future License Antennas/Sensitive Noise Receptors (10% weight)
    - Cell Value – Criteria 2 model
- **Criteria 3C** Water/Biological Resources (10% weight)
    - Cell Value – Criteria 1 model

- **Criteria 3D** Cultural Resources (10% weight)
    - Cell Value – Criteria 5 model
- **Criteria 3E** Visual Resources (10% weight)
    - Cell Value – Criteria 6 model
- **Criteria 3F** Air Quality (10% weight)
    - Cell Value = 2: Nonattainment Area for Particulate Matter (PM) 2.5, PM 10, or Ozone
    - Cell Value = 0: all other cells
- **Criteria 3G** Flood Hazard (10% weight)
    - Cell Value = 10: FEMA floodway
    - Cell Value = 8: FEMA 100-year floodplain
    - Cell Valus = 6: FEMA 500-year floodplain
- **Criteria 3H** Geology and Soils (10% weight)
    - Farmland (50% weight)
        - Cell Value = 5: Prime Farmland
        - Cell Value = 0: all other cells
    - Erosive Soils (50% weight)
        - Cell Value = 10: Very Severe Erosion
        - Cell Value = 7: Severe Erosion
        - Cell Value = 5: Moderate Erosion
        - Cell Value = 2: Light Erosion
        - Cell Value = 0: all other cells

D. Criteria 4 – Existing and Future Residential Properties Adjacent to Transmission Lines:

Detailed Description

- Residential areas are defined as single family residential areas by existing or future land use, or in the case of undeveloped land, planned land use as defined by current zoning. The purpose of this criterion is to identify routes that minimize construction and operation in single family residential areas.

Phase 3 Suitability Assessment

- Existing land use will be inventoried and mapped, with future residential land use added, then supplemented with current zoning data for any undeveloped areas not already mapped for a future land use. Any preliminary segments that pass through, or are located immediately adjacent to residential areas, as defined under the detailed description, will be given a lower suitability for this criterion; whereas preliminary segments that do not will be given a higher suitability for this criterion.

Data Required

- Existing land use

- Future land uses, from specific development plans (permits and unbuilt Planned Area Developments)
- Zoning

Procedure to create criteria 4 dataset: create a single dataset of residential areas, as defined above. Buffer these by 100 feet to represent areas located immediately adjacent to a residential area; add a new field "Cell_Value" as type Double to the dataset listed above – assign appropriate cell values as noted below; union those results with "Clip_Area" for the dataset; use those results with Feature to Raster classifying by "Cell_Value".

- Cell Value = 10: buffered existing residential area
- Cell Value = 6: buffered future residential area
- Cell Value = 0: all other cells

E. **Criteria 5 – Cultural Resources**:

Detailed Description

- Historic properties are those listed, or eligible for listing, on the National Register of Historic Places and/or the Arizona Register of Historic Places.

Phase 3 Suitability Assessment

- A qualified archaeologist will conduct a records review to identify known historic and pre-historic sites, as well as historic districts within the Study Area. Any preliminary segments that pass through or are located within the vicinity of a historic property or historic district, as defined under the detailed description, will be given a lower suitability for this criterion; whereas preliminary segments that do not will be given a higher suitability for this criterion.

Note A – define vicinity as within 500 feet, implies some sort of adjacency.

Data Required

- Listed or eligible sites (buffered by 500')
- Historic Districts (buffered by 500')

Procedure to create criteria 5 dataset: create buffers as noted above; add a new field "Cell_Value" as type Double to each of the datasets listed above – assign appropriate cell values as noted below; union those results with "Clip_Area" for each dataset; use those results with Feature to Raster classifying by "Cell_Value"; then create a composite raster by weighting each of the datasets as indicated below and adding the results together.

- Listed or eligible sites (100% weight)
  - Cell Value = 10: site boundary or district
  - Cell Value = 6: buffered distance to site or district

- Cell Value = 0: all other cells

F. **Criteria 6 – Scenic & Visual Resources**: Existing scenic areas, or visual resources at or in the vicinity of the proposed site.

Data Required

- Scenic roads, viewpoints, or areas designated for this such as a National Park (within ¼ mile, ½ mile, and 1 mile – to capture viewshed)
- Area in between residential areas and the Santa Rita Mountains

Procedure to create criteria 6 dataset: create buffers as noted above; add a new field "Cell_Value" as type Double to each of the datasets listed above – assign appropriate cell values as noted below; union those results with "Clip_Area" for each dataset; use those results with Feature to Raster classifying by "Cell_Value"; then create a composite raster by weighting each of the datasets as indicated below and adding the results together.

Sahuarita Road - criteria A
Santa Rita Road- criteria A
Santa Rita Mountains - criteria B

- Scenic Areas (60% weight) **Criteria 6A**
  - Cell Value = 10: ¼ mile of buffered scenic area
  - Cell Value = 6: ½ mile of buffered scenic area
  - Cell Value = 4: 1 mile of buffered scenic area
  - Cell Value = 0: all other cells
- Visual Resources (30% weight) **Criteria 6B**
  - Cell Value = 10: ¼ mile of residential area and Santa Rita Mountains
  - Cell Value = 6: ½ mile of residential area and Santa Rita Mountains
  - Cell Value = 4: 1 mile of residential area and Santa Rita Mountains
  - Cell Value = 0: all other cells

G. **Criteria 7 – Construction & Maintenance**: The technical practicability of achieving a proposed objective and the previous experience with equipment and methods available for achieving a proposed objective.

Data Required

- Digital Elevation Model (DEM)
- FEMA flood hazards
- Airspace height limitations

Procedure to create criteria 7 dataset: create slopes from DEM; add a new field "Cell_Value" as type Double to each of the datasets listed above – assign appropriate cell values as noted below; union those results with "Clip_Area" for each dataset; use those results with Feature to Raster

classifying by “Cell_Value”; then create a composite raster by weighting each of the datasets as indicated below and adding the results together.

- **Criteria 7A** Digital Elevation Model (30% weight)
  - Cell Value = 10: slopes ≥ 75 and ≤ 90
  - Cell Value = 8: slopes ≥ 50 and < 75
  - Cell Value = 6: slopes ≥ 35 and < 50
  - Cell Value = 4: slopes ≥ 20 and < 35
  - Cell Value = 0: all other cells
- **Criteria 7B** Airspace height limitations (35% weight)
  - Cell Value = 10: height limitation ≤ 50 and > 0
  - Cell Value = 8: height limitation ≤ 75 and > 50
  - Cell Value = 4: height limitation ≤ 95 and > 75
  - Cell Value = 2: height limitation ≤ 140 and > 95
  - Cell Value = 0: all other cells
- **Criteria 7C** Flood Hazard (35% weight)
  - Cell Value = 10: floodway
  - Cell Value = 8: 100-year floodplain
  - Cell Value = 6: 500-year floodplain

H. **Criteria 8 – Existing Plans**: Existing plans of this state, local government and private entities for other developments at or in the vicinity of the proposed site.

Note A – define vicinity as within ¼ mile, implies some sort of adjacency.

Note B – plans should be treated the same as an existing land use of the same type

Data Required

- General/Comprehensive Plans
- Platted, but not developed
- Specific Plans – identified through meetings with jurisdictions and/or public (within ¼ mile)

Procedure to create criteria 8 dataset: create buffers as noted above; combine platted land and specific plans into a single Specific Plans dataset; add a new field “Cell_Value” as type Double to each of the datasets listed above – assign appropriate cell values as noted below; union those results with “Clip_Area” for each dataset; use those results with Feature to Raster classifying by “Cell_Value”; then create a composite raster by weighting each of the datasets as indicated below and adding the results together.

- **Criteria 8A** General/Comprehensive Plans (50% weight)
  - Cell Value = 10: High Density Residential, Institutional
  - Cell Value = 8: Low/Medium Density Residential
  - Cell Value = 6: Commercial/Mixed Use
  - Cell Value = 4: Industrial

        - Cell Value = 3: Parks and Recreation/Preservation
        - Cell Value = 2: Agriculture/Ranching
        - Cell Value = 1: Open Space/Public Lands
        - Cell Value = 0: all other cells
    - **Criteria 8B** Specific Plans or Platted Subdivisions (50% weight)
        - Cell Value = 10: High Density Residential, Institutional
        - Cell Value = 8: Low/Medium Density Residential
        - Cell Value = 6: Commercial/Mixed Use
        - Cell Value = 4: Industrial
        - Cell Value = 3: Parks and Recreation/Preservation
        - Cell Value = 2: Agriculture/Ranching
        - Cell Value = 1: Open Space/Public Lands
        - Cell Value = 0: all other cells

2. Create several composite models, using the criteria above to evaluate the compatibility of segments and segments with respect to the environmental, land use, other factors considered by statute in granting a Certificate of Environmental Compatibility, and other factors raised by the public. At a minimum, a model should be created for each of the following:
    A. Balanced Compatibility Model
        - Criteria 1 – Biological Resources (1/8 weight)
        - Criteria 2 – Noise & Communication (1/8 weight)
        - Criteria 3 – Total Environment (1/8 weight)
        - Criteria 4 – Existing and Future Residential Properties Adjacent to Transmission Lines (1/8 weight)
        - Criteria 5 – Historic Properties & Districts (1/8 weight)
        - Criteria 6 – Scenic & Visual Resources (1/8 weight)
        - Criteria 7 – Construction & Maintenance (1/8 weight)
        - Criteria 8 – Existing Plans (1/8 weight)
    B. Environmentally Preferred Model
        - Criteria 1 – Biological Resources (20% weight)
        - Criteria 2 – Noise & Communication (10% weight)
        - Criteria 3 – Total Environment (20% weight)
        - Criteria 4 – Existing and Future Residential Properties Adjacent to Transmission Lines (10% weight)
        - Criteria 5 – Historic Properties & Districts (20% weight)
        - Criteria 6 – Scenic & Visual Resources (10% weight)
        - Criteria 7 – Construction & Maintenance (5% weight)
        - Criteria 8 – Existing Plans (5% weight)
    C. Construction and Maintenance Preferred Model
        - Criteria 1 – Biological Resources (7 1/7% weight)
        - Criteria 2 – Noise & Communication (7 1/7% weight)

- Criteria 3 – Total Environment (7 1/7% weight)
- Criteria 4 – Existing and Future Residential Properties Adjacent to Transmission Lines (7 1/7% weight)
- Criteria 5 – Historic Properties & Districts (20% weight)
- Criteria 6 – Scenic & Visual Resources (7 1/7% weight)
- Criteria 7 – Construction & Maintenance (50% weight)
- Criteria 8 – Existing Plans (7 1/7% weight)

D. Public, Stakeholder, and Agency Preferred Model (weight based on public feedback, with a minimum weight of 5%)
- Criteria 1 – Biological Resources (5% weight)
- Criteria 2 – Noise & Communication (5% weight)
- Criteria 3 – Total Environment (5% weight)
- Criteria 4 – Existing and Future Residential Properties Adjacent to Transmission Lines (50% weight)
- Criteria 5 – Historic Properties & Districts (5% weight)
- Criteria 6 – Scenic & Visual Resources (20% weight)
- Criteria 7 – Construction & Maintenance (5% weight)
- Criteria 8 – Existing Plans (5% weight)

E. Inclusion Area:
- Existing transmission lines that can be collocated (-10 – 0)
- Approved transmission lines that can be collocated (-5 – 0)
- Existing utility corridors (-2.5 – 0)

On the ground:

- T-Line on Country Club = -10
- T-Line on Wilmot = -10
- Proposed/allocated (Case 164, Decision Nos. 73232, 76886, 78598, and 78961) = -5
- Non UNS Corridors (WAPA) = -2.5

F. **Exclusion Areas**: Any areas where a transmission line cannot be built or maintained due to one of the factors listed below:
- FAA structure height limitation ≤ 0
- Existing/Proposed Areas with Conservation Easements restricting new development – exception is if there is an existing line that can accommodate a second circuit
- Historic national or state parks
- Existing residential (added by team)

Use **Raster Calculator** to add each of the criteria together with the appropriate weights to create the models.

3. Use the composite suitability models to identify the most suitable routes (Refined Segments).

A. Create a buffer, using the "Buffer**"** tool in ArcGIS Pro, of 250 feet (125 feet on either side) around the preliminary segments line layer. All buffers are dissolved to create one preliminary segments "corridor" polygon.
B. Use the "Clip Raster" tool in ArcGIS on all 13 rasters (5 composite model rasters, 8 criteria rasters) with buffered preliminary segments corridor polygon as the extent area. This will result in a raster surface that represents levels of suitability only within the vicinity of the identified preliminary segments.
C. Use the **"**Cost Distance**"** tool with the Sonoran Substation as the feature source input and either a criteria raster or composite model raster as the cost raster input to create a distance raster and backlink raster as the output. Use the "Cost Path**"** tool with the Santa Rita Substation as the feature source destination and the distance and backlink raster (the two outputs of Cost Distance) as inputs to create an optimal path raster. The optimal path raster is a raster consisting of connected 10 meter cells that represents the best possible line from the Sonoran Substation to the Santa Rita Substation.
D. The optimal path raster is then converted into a line feature using the "Raster to Polyline" tool for easier analysis and visualization.
E. Step A (above) is repeated, but any segments through areas identified as a "constraint" in Phase 1 of the planning and siting analysis are eliminated from the preliminary segments layer. Then steps B, C, and D are repeated using this more limited set of options. This results in identifying the most suitable paths if whatever constraints identified cannot be overcome. Each of these paths are then overlaid with the preliminary segments to identify those segments they represent and are added to the new "Refined Segments" feature class.
F. Lastly, the Least Cost Path tool identifies those routes that quantitatively represent the most suitable routes. However, there may be another preliminary segment that represents a nearly identical degree of suitability for a path from a point east to west or north to south as the path that was selected through the tool. A visual analysis of the remaining preliminary segments is conducted to assess their suitability, with respect to each composite suitability model, in comparison with the suitability of the path(s) selected. If the suitability is nearly identical for a given preliminary segment, it is added to the new "Refined Segments" feature class.

Appendix B

Compatibility Matrix



SANTA RITA CONNECTION PROJECT

COMPATIBILITY ANALYSIS

Segment #	Existing & Planned Land Use	Adjacent Residential Properties	Fish, Wildlife, Plants, Includes T&E Species	Scenic Areas	Residential Visual Impact	Archaeological and Historical Resources	Noise and Communication Signal Compatibility	Engineering/ Construction	ROW Acquisition	Cost Compatibility	Public / Stakeholder Feedback	Overall Average
Rubric	1 = compatible existing/planned land use (includes PC Comprehensive Plan; COT Plan Tucson) 2 = possible negative impact to existing/planned land use 3 = known negative impact to existing/planned land use 100 = likely impacts would be unacceptable and could not be mitigated	1 - Does not cross through/adjacent to a residential area OR there is an existing transmission or sub-transmission line today 2 - Adjacent to a residential area 3 - Crosses through on both sides of a residential area 100 - Would require condemnation and/or removal of homes	1 = urban setting; no or low impact 2 = proximal to existing development; no effect with mitigation measures 3 = undisturbed habitat; no effect with mitigation measures 100 = likely to result in adverse impacts that cannot be mitigated	1 = not in proximity to a designated scenic area OR if in proximity to designated scenic area, it is also in proximity to existing overhead transmission or sub-transmission line 2 = within 1/2 mile of a designated scenic area OR perpendicular crossing 3 = within 1/4 mile of a designated scenic area 100 = adjacent to or within a designated scenic area AND likely impacts would be unacceptable and could not be mitigated	1 - would be a new line, located within the background view from a residential area and the Santa Rita Mountains OR there is an existing transmission or sub-transmission line today; 2 - would be a new line, located within the middle ground view from a residential area and the Santa Rita Mountains. 3 - would be a new line, located within the foreground view from a residential area and the Santa Rita Mountains.	1 = not in proximity to a historic/archaeological site 2 = within proximity but not likely to affect a historic district or site without potential to affect 3 = within proximity/potential to affect a historic/archaeological site 100 = likely impacts would be unacceptable and could not be mitigated	1 = not in proximity to a licensed comm site 3 = within 2 SF of a licensed comm site 100 = likely impacts would be unacceptable and could not be mitigated Noise is a not a concern	1 = No special requirements 2 = Some special engineering or construction requirements 3 = Non-standard engineering and/or special construction requirements 100 = cannot be built	1 = agreeable landowners/road ROW 2 = unknown landowners/narrow road ROW, likely need private aerial easements 3 = landowner opposition/private easements required 100 = condemnation likely required	1 - Typical costs 2 - In between 3 - More than typical	1 = Support or no opposition 2 = Some opposition 3 = Lots of opposition proportionate to the affected residents 100 = Too much opposition, likely to result in route not being approved	
1	1	2	2	1	3	2	1	2	1	1	1	1.5
2	1	1	2	1	3	2	1	2	1	1	1	1.5
4	2	2	3	1	1	2	1	2	1	1	1	1.5
5	2	2	2	1	1	3	1	1	1	1	1	1.5
5	2	2	2	1	1	3	1	1	1	1	1	1.5
7	1	1	2	1	1	1	1	1	1	1	1	1.1
8	1	1	2	1	3	1	1	1	1	1	1	1.3
9	1	1	2	1	3	2	1	2	1	1	1	1.5
11	1	1	2	1	1	3	1	1	1	1	1	1.3
13	1	2	3	1	2	2	1	1	1	1	1	1.5
16	1	1	2	1	1	1	1	1	1	1	1	1.1
17	1	1	2	1	3	2	1	1	1	1	1	1.4
18	1	2	2	1	3	2	1	1	1	1	2	1.5
20	1	1	2	1	3	2	1	1	1	1	1	1.4
21	1	1	2	1	3	1	1	1	1	1	1	1.3
22	1	2	3	1	1	3	1	1	1	1	1	1.5
24	2	2	2	1	1	2	1	1	1	1	1	1.4
25	2	1	2	1	1	1	1	1	1	1	1	1.2
27	2	1	2	1	1	2	1	1	1	1	1	1.3
28	2	1	2	1	1	1	1	1	1	1	1	1.2
30	2	2	3	1	1	1	1	1	1	1	1	1.4
31	1	1	2	1	1	3	1	2	1	1	1	1.4
32	2	2	2	1	3	1	1	1	1	1	2	1.5
33	2	1	2	1	1	1	1	1	1	1	1	1.2
34	2	1	2	1	1	1	1	1	1	1	1	1.2
36	2	2	2	1	1	1	1	1	1	1	1	1.3
38	1	1	2	1	1	3	1	1	1	1	1	1.3
42	2	2	3	1	1	3	1	1	2	1	1	1.6
43	2	2	2	1	1	3	1	1	2	1	1	1.5
44	1	2	2	1	1	1	1	1	1	1	1	1.2
47	2	2	3	1	1	3	1	1	2	1	1	1.6
48	2	2	3	1	1	1	1	1	2	1	1	1.5
49	2	2	3	1	1	1	1	1	2	1	1	1.5
50	2	1	2	1	1	3	1	1	1	1	1	1.4
51	2	1	2	1	1	2	1	1	1	1	1	1.3
52	2	1	2	1	1	1	1	1	1	1	1	1.2
53	1	1	2	1	1	3	1	1	1	1	1	1.3
61	1	1	2	1	1	1	1	1	1	1	1	1.1
62	2	2	3	1	1	3	1	2	1	1	1	1.6
64	1	1	2	1	1	1	1	1	1	1	1	1.1
69	2	2	3	1	1	3	1	1	1	1	1	1.5
74	1	1	2	1	1	1	1	1	1	1	1	1.1
76	1	1	2	1	1	3	1	3	1	1	1	1.5
77	1	1	2	1	1	2	1	1	1	1	1	1.2
83	1	1	2	1	1	1	1	1	1	1	1	1.1

SANTA RITA CONNECTION PROJECT

COMPATIBILITY ANALYSIS

Segment #	Existing & Planned Land Use	Adjacent Residential Properties	Fish, Wildlife, Plants, Includes T&E Species	Scenic Areas	Residential Visual Impact	Archaeological and Historical Resources	Noise and Communication Signal Compatibility	Engineering/ Construction	ROW Acquisition	Cost Compatibility	Public / Stakeholder Feedback	Overall Average
Rubric	1 = compatible existing/planned land use (includes PC Comprehensive Plan; COT Plan Tucson) 2 = possible negative impact to existing/planned land use 3 = known negative impact to existing/planned land use 100 = likely impacts would be unacceptable and could not be mitigated	1 - Does not cross through/adjacent to a residential area OR there is an existing transmission or sub-transmission line today 2 - Adjacent to a residential area 3 - Crosses through on both sides of a residential area 100 - Would require condemnation and/or removal of homes	1 = urban setting; no or low impact 2 = proximal to existing development; no effect with mitigation measures 3 = undisturbed habitat; no effect with mitigation measures 100 = likely to result in adverse impacts that cannot be mitigated	1 = not in proximity to a designated scenic area OR if in proximity to designated scenic area, it is also in proximity to existing overhead transmission or sub-transmission line 2 = within 1/2 mile of a designated scenic area OR perpendicular crossing 3 = within 1/4 mile of a designated scenic area 100 = adjacent to or within a designated scenic area AND likely impacts would be unacceptable and could not be mitigated	1 - would be a new line, located within the background view from a residential area and the Santa Rita Mountains OR there is an existing transmission or sub-transmission line today 2 - would be a new line, located within the middle ground view from a residential area and the Santa Rita Mountains. 3 - would be a new line, located within the foreground view from a residential area and the Santa Rita Mountains.	1 = not in proximity to a historic/archaeological site 2 = within proximity but not likely to affect a historic district or site without potential to affect 3 = within proximity/potential to affect a historic/archaeological site 100 = likely impacts would be unacceptable and could not be mitigated	1 = not in proximity to a licensed comm site 3 = within 2 SF of a licensed comm site 100 = likely impacts would be unacceptable and could not be mitigated Noise is a not a concern	1 = No special requirements 2 = Some special engineering or construction requirements 3 = Non-standard engineering and/or special construction requirements 100 = cannot be built	1 = agreeable landowners/road ROW 2 = unknown landowners/narrow road ROW, likely need private aerial easements 3 = landowner opposition/private easements required 100 = condemnation likely required	1 - Typical costs 2 - In between 3 - More than typical	1 = Support or no opposition 2 = Some opposition 3 = Lots of opposition proportionate to the affected residents 100 = Too much opposition, likely to result in route not being approved	
87	1	2	3	1	1	3	1	1	1	1	1	1.5
95	2	1	2	1	1	1	1	1	1	1	1	1.2
96	1	1	2	1	1	3	1	2	1	1	1	1.4
98	1	1	2	1	1	3	1	1	1	1	1	1.3
100	2	2	3	1	1	3	1	1	1	1	1	1.5
106	2	1	2	1	1	1	3	1	1	1	1	1.4
109	2	2	3	2	1	2	1	1	1	1	1	1.5
112	1	1	2	1	1	3	3	1	1	1	1	1.5
115	2	2	2	1	1	2	1	1	3	2	1	1.6
116	2	2	2	1	1	1	1	1	3	2	1	1.5
121	1	2	3	2	1	2	1	1	1	1	1	1.5
125	2	3	2	1	1	1	1	1	3	2	1	1.6
126	1	1	2	1	1	2	1	1	1	1	1	1.2
130	1	2	2	1	1	2	1	1	2	2	2	1.5
131	1	1	2	1	1	3	1	3	1	1	1	1.5
133	1	3	2	1	3	1	1	2	3	3	2	2.0
135	1	3	2	1	1	3	1	1	3	2	1	1.7
136	1	1	2	1	1	2	1	1	1	1	1	1.2
139	1	2	2	1	3	2	1	2	2	2	2	1.8
141	1	1	2	1	1	1	1	1	1	1	1	1.1
146	1	2	3	2	2	2	1	1	1	1	2	1.6
148	2	3	2	1	1	1	1	1	3	2	1	1.6
150	1	1	2	1	1	3	1	1	1	1	1	1.3
152	3	1	3	1	1	2	1	2	1	1	1	1.5455
153	3	1	3	2	1	2	1	1	1	1	1	1.5
154	3	1	2	2	2	3	1	1	1	1	1	1.6364
154.5	3	1	3	2	2	2	1	2	1	1	1	1.7273
155	3	1	2	1	1	3	1	1	1	1	1	1.5
156	3	1	2	3	1	1	1	1	1	1	1	1.5
157	2	1	2	1	1	2	1	1	1	1	1	1.3
158	1	1	2	1	1		1	1	1	1	1	1.1

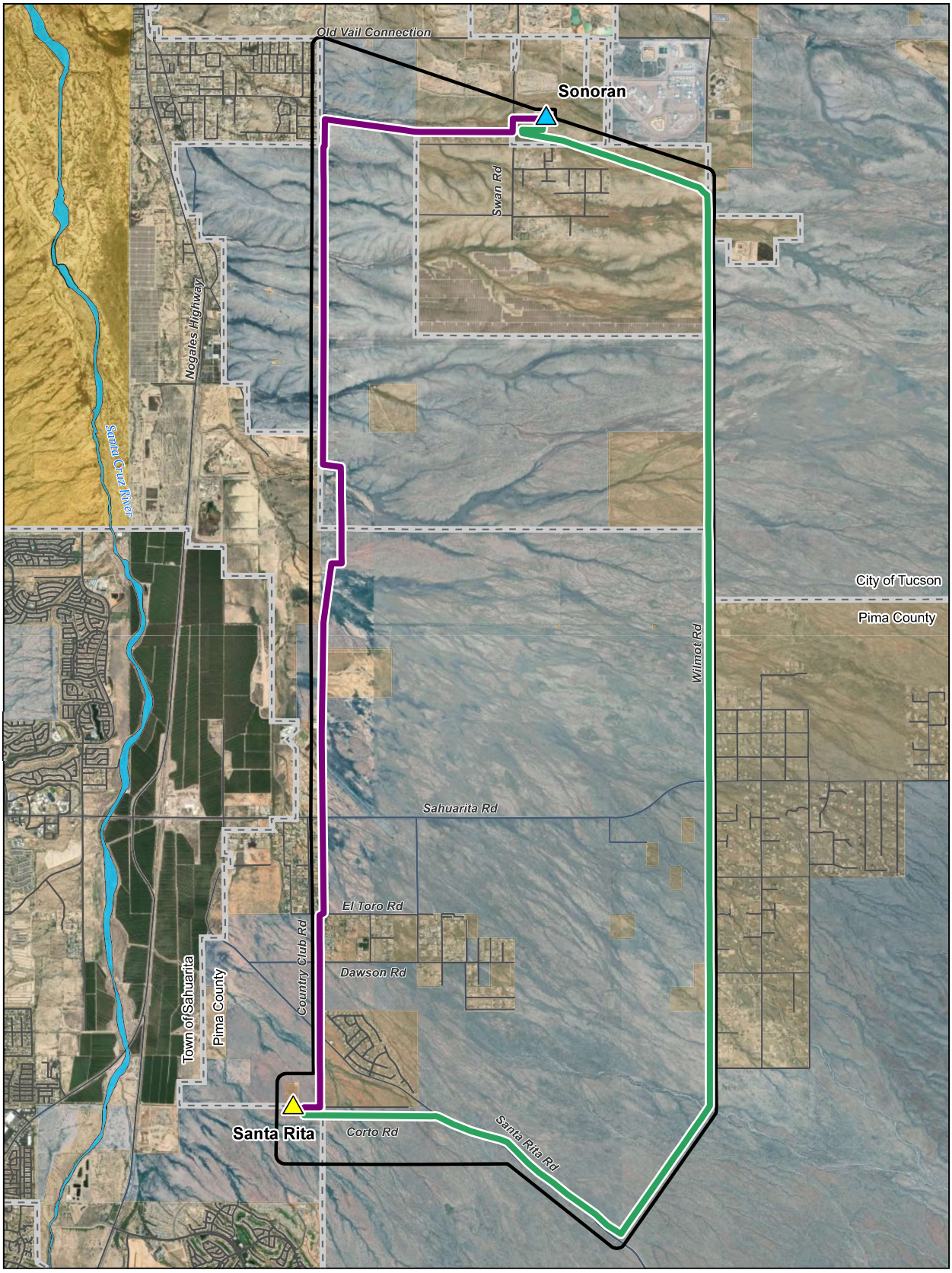
Compatibility Rating Guide
Compatible = 1
Possible Negative Impacts = 2
Known Negative Impacts = 3
Unacceptable Impacts = 100

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit B-2

This page intentionally left blank



TEP
Tucson Electric Power

Exhibit B-2
Route Alternatives

Santa Rita Connection Project

In-Service 138kV Substation
Planned 138kV Substation
Study Area

0 1 2
Miles

Surface Management
Arizona State Land
Tohono O'odham Nation, San Xavier District

Proposed Route Alternatives
Route 1
Route 3

This map is for planning purposes only. TEP and UNS Energy make no warranty of its accuracy.

Sources: Esri, UNS, TEP, BLM, and Pima County GIS.
Projection: NAD 1983 UTM Zone 12N
Basemap: Esri World Imagery

This page intentionally left blank

EXHIBIT C

This page intentionally left blank

EXHIBIT C: AREAS OF BIOLOGICAL WEALTH

As stated in R14-3-219 of the Rules of Practice and Procedure Before Power Plant and Transmission Line Siting Committee, Exhibits to Application, Exhibit C:

Describe any areas in the vicinity of the proposed site or route which are unique because of biological wealth or because they are habitats for rare and endangered species. Describe the biological wealth or species involved and state the effects, if any, the proposed facilities will have thereon.

C.1.1 Areas of Biological Wealth C-1
C.1.1.1 Wetlands and Waterways C-2
C.1.1.2 Important Riparian Habitat C-2
C.1.1.3 Important Bird Areas C-3
C.1.1.4 Linkage Zones C-3
C.1.2 Special Status Species C-3
C.1.2.1 Federally Listed Species C-4
C.1.2.2 Pima County Priority Vulnerable Species C-5
C.1.2.3 Bald and Golden Eagles C-6
C.1.2.4 Potential Effects C-6
C.1.2.5 Environmental Protection Measures C-6
C.2 Conclusion C-8
C.3 References C-8

C.1 Introduction

The following analysis describes impacts on areas of biological wealth within the study area as shown in Exhibit A-3. Analysis methodology is outlined in the BRR (Exhibit C-2).

C.1.1 Areas of Biological Wealth

Areas of biological wealth include Important Riparian Habitat, Important Bird Areas, Wildlife Connectivity Linkages, and designated Critical Habitat. Some of these areas or features are present in the Study Area (Exhibit C-1).

The information analyzed includes a list of special status species obtained from the USFWS, Information for Planning and Consultation ("IPaC") online database, and species lists, ranges, and habitat data obtained from the Arizona Game and Fish Department ("AZGFD"), Heritage Database Management System ("HDMS") On-line Environmental Review tool, National Wetlands Inventory Maps, Federal Emergency Management Agency ("FEMA") Flood Insurance Rate Maps ("FIRM"), and review of habitat and life history requirements. The BRR analyzed the entire Study Area.

The BRR (Exhibit C-2) provides a description of the existing environment with respect to vegetation, wildlife, and the potential for sensitive resources and special status species to occur within the Study Area (Natural Leaders, 2026).

C.1.1.1 Wetlands and Waterways

There are no perennial waterways within the Study Area; however, both routes cross several large ephemeral drainages. The watershed flows generally east to west across the Study Area, ultimately to the Santa Cruz River, less than one mile west of the Study Area. The USFWS National Wetlands Inventory maps seven small, ponded areas and one forested wetland area in the Study Area. There are no ponded areas or mapped wetlands within either proposed corridor. If wetland areas are identified during the design stage, TEP will span these areas to the extent possible, if they are not already spanned by the existing lines.

C.1.1.2 Important Riparian Habitat

Four Classes of Important Riparian Areas ("IRA") are mapped within the Study Area and overlap both routes, including: Class B, Class C, Class D, and Class H (see Exhibit C-1 and Table 7). IRAs typically occur along major river systems and washes and are identified as providing water resource and watershed management functions, and corridors and linkages for movement of wildlife. IRAs are characterized by higher water availability, vegetation density, and biological diversity (Pima County, 2005).

Pima County manages protection of IRAs through the Riparian Habitat Protection Ordinance (Pima County Code Chapter 16.30). Administration and enforcement of the ordinance is applied to building permits, grading, ROW use permits, and land development permits associated with subdivision plats and development plans and applies to all property within the county except for federal, military, and tribal lands. TEP will design the project to protect riparian habitat and IRAs by spanning washes and riparian areas to the maximum extent possible, and minimizing vegetation management.

The northern section of Route 1 is parallel to and crosses mapped IRA-C. This section of the route is new construction, and therefore has more potential to impact the IRA. By following established design guidelines to span washes, and environmental protection measures, such as minimizing vegetation clearing, impacts to this IRA will be minimized. The remainder of Route 1 is co-located onto existing double-circuit capable structures, and therefore will have no impact on IRAs.

The southern portion of Route 3, in which structures are replaced, would cause some general ground disturbance, but would maintain the same avoidance of riparian areas as the existing line.

There are no anticipated impacts to IRAs from either route alternative.

Table 7. Important Riparian Habitat

Important Riparian Habitat	Route 1	Route 3
B		X
C	X	X
D	X	
H	X	

C.1.1.3 Important Bird Areas

The Important Bird Area Program ("IBA") is a global program which identifies a network of sites that maintain the long-term viability of wild bird population (AZIBA, 2026). The sites typically provide essential habitat for one or more species of bird and include sites for breeding, wintering, and/or migrating birds. The Santa Rita Mountains IBA is located within the Santa Rita Mountains, more than six miles southeast of the Study Area. Neither route alternative will impact IBAs.

C.1.1.4 Linkage Zones

The Arizona Wildlife Linkages Workgroup ("AWLW") has identified wildlife linkage corridors that may provide connectivity between habitats for wildlife species, which is essential to many wildlife population structures and movement. Potential Linkage Zones are areas identified as critical to wildlife movement between habitat blocks. The AWLW uses Potential Linkage Zones as planning areas in which a functional linkage would be designed and conserved (AWLW, 2006). The AWLW identified Linkage 92 – San Xavier-Sierrita-Santa Rita, a Potential Linkage Zone which overlaps the southern portion of the Study Area, and connects habitat blocks in the Santa Rita Mountains and the Tohono O'odham Nation. The AWLW plans to develop a linkage design for this zone in the future and recommends that land managers incorporate the zone into management planning processes to address habitat fragmentation. There is no formal requirement or restriction on activity or development in Potential Linkage Zones. TEP's objective to utilize existing corridors to the maximum extent possible follows the recommendations of the AWLW.

Both route alternatives traverse the San Xavier-Sierrita-Santa Rita Linkage zone. Route 1 would be co-located onto existing double-circuit capable structures throughout the linkage zone, and would not cause any new ground disturbance. Route 3 would install new double-circuit capable structures in a portion of the linkage zone, but this work would be a replacement of existing structures, and not development of a new corridor. Neither route alternative would adversely impact the Potential Linkage Zone.

C.1.2 Special Status Species

The USFWS IPaC Official Species List noted twelve special status species as potentially occurring within the Study Area. The AZGFD report indicated five special status species as having documented occurrences within three miles of the Study Area. Following evaluation of species' life histories and available habitat, seven of those special status species have the potential to occur within the Study Area, three of which are federally listed (Table 8) (Natural Leaders, 2026). Additionally, each of the birds listed below are federally

protected by the Migratory Bird Treaty Act ("MBTA"), as well as by Arizona State law (Arizona Revised Statutes ["ARS"] Title 17). No proposed or designated critical habitats are located in the Study Area.

Table 8. Special Status Species Evaluated

Common Name	Scientific Name	Status*	Potential Project Impact
FEDERALLY LISTED			
Cactus ferruginous pygmy owl	*Glaucidium brasilianum cactorum*	T, PVS, 1	*May affect, but not likely to adversely affect.*
Pima pineapple cactus	*Coryphantha scheeri* var. *robustipina*	E, PVS	*May affect, but not likely to adversely affect.*
Monarch butterfly	*Danaus plexippus*	PT	*May impact individuals but not likely to result in a trend toward Federal listing or a loss of viability.*
PIMA COUNTY PRIORITY VULNERABLE SPECIES			
Western burrowing owl	*Athene cunicularia hypugaea*	PVS, 2	*May impact individuals but not likely to result in a trend toward Federal listing or loss of viability.*
Rufous-winged sparrow	*Peucaea carpalis*	PVS, 2	*May impact individuals but not likely to result in a trend toward Federal listing or loss of viability.*
Sonoran desert tortoise	*Gopherus morafkai*	CCA, PVS, 1	*May impact individuals but not likely to result in a trend toward Federal listing or loss of viability.*
Tumamoc globeberry	*Tumamoca macdougalii*	PVS, SR	*May impact individuals but not likely to result in a trend toward Federal listing or a loss of viability.*

*USFWS (E=Endangered, T=Threatened, PT=Proposed Threatened, CCA=Candidate Conservation Agreement); AZGFD (1 or 2= SGCN Tier); ADOA (HS=Highly Safeguarded, SR=Salvage Restricted); Pima County SDCP (PVS=Priority Vulnerable Species)

C.1.2.1 Federally Listed Species

Cactus Ferruginous Pygmy-owl (*Glaucidium brasilianum cactorum*)

The cactus ferruginous-pygmy owl ("CFPO") is federally listed as Threatened. It is also listed by AZGFD as a Tier 1 Species of Greatest Conservation Need ("SGCN"), as well as a Priority Vulnerable Species ("PVS")

by Pima County's Sonoran Desert Conservation Plan ("SDCP"). It is a small, cavity-nesting owl found in a variety of vegetation communities, including Sonoran Desertscrub and Semidesert Grasslands. There is limited habitat within the Study Area that could be suitable, including mature saguaros (*Carnegia gigantea*) that could provide resources for cavity-nesting. Based upon a review of the Rapid Avian Information Locator, there have been no documented occurrences of the CFPO within the Study Area.

Pima Pineapple Cactus (*Coryphantha scheeri* var. *robustispina*)

Pima pineapple cactus ("PPC") is federally listed endangered, protected as a Highly Safeguarded species by Arizona Native Plant Law, and listed as a PVS in Pima County's SDCP. PPC is a small globular cactus native to Sonoran Desertscrub and Semidesert Grassland communities of southern Arizona (Pima and Santa Cruz counties) and far northern Sonora, Mexico. It is known to grow most often in areas with alluvial fans or hillsides, shallow to deep, rocky soils, and open areas on flat ridgetops/<10 percent slope. There is suitable habitat throughout the Study Area, therefore there is a high likelihood of occurrence.

Monarch Butterfly (*Danaus plexippus*)

The monarch butterfly is currently federally listed as proposed threatened. Monarch butterflies are large and conspicuous, with two sets of bright orange wings that span three to four inches and are covered with black veins and surrounded by a black border with a double row of white spots. Monarchs are known for their long-distance migrations, unique reproductive strategy, and large masses formed while overwintering in Mexico and coastal California. Monarch reproduction is dependent on the milkweed plant. While there is the possibility of milkweeds to be present in or near the Study Area to provide a resource for egg-laying and caterpillar development, the greater likelihood of potential monarch occurrence would be the presence of blooming plants that sustain adults during migration.

C.1.2.2 Pima County Priority Vulnerable Species

Western Burrowing Owl (*Athene cunicularia hypugaea*)

Although not protected under the ESA, the western burrowing owl is listed by USFWS as a National Bird of Conservation Concern, which identifies it as a species that without additional protection is likely to become a candidate for listing under the ESA. It is also listed by AZGFD as a Tier 2 SGCN and a PVS by Pima County's SDCP. It is a small, ground-dwelling diurnal owl that inhabits a variety of habitats, including Semidesert Grassland, Sonoran Desertscrub, barren ground, roads, and rural and residential areas. There is potential for this species to occur within the Study Area, as suitable habitat and an ample prey base of burrowing mammals are available.

Rufous-winged Sparrow (*Peucaea carpalis*)

Rufous-winged sparrow is a migratory bird that is also listed by AZGFD as a Tier 2 SCGN, as well as a PVS by Pima County's SDCP. It is a small, yet tall, masked sparrow that prefers flat to gently rolling areas of Sonoran Desertscrub or Sinaloan Thornscrub, interspersed with grassy, xeroriparian areas. There is suitable habitat throughout the Study Area, therefore there is a high likelihood of occurrence.

Sonoran Desert Tortoise (*Gopherus morafkai*)

Although not federally listed, the Sonoran desert tortoise is protected in Arizona under AZGFD Commission Order 43, which prohibits take, possession, or harassment of desert tortoises unless authorized by AZGFD. It is also an AZGFD Tier 1 SGCN and a PVS per Pima County's SDCP. The tortoise spends a significant amount of its life in burrows and shelters, and its preferred habitat includes steep, rocky slopes and incised washes. Although there are no steep, rocky slopes, incised and vegetated washes occur throughout the Study Area and could offer temporary or permanent shelter. At a minimum, the Study Area could offer uninterrupted open space, forage, and habitat connectivity.

Tumamoc Globeberry (*Tumamoca macdougalii*)

Tumamoc globeberry was listed as endangered under the ESA until 1993. It is listed as Salvage Restricted under Arizona Native Plant Law and as a PVS in Pima County's SDCP. It is a vine found along washes and arroyos at elevations below 3,000 feet ("ft") above mean sea level ("AMSL"). The Study Area is crossed by many small washes that may provide suitable habitat for the globeberry, therefore there is a high likelihood of occurrence.

C.1.2.3 Bald and Golden Eagles

Bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) are both protected by the Bald and Golden Eagle Protection Act, as well as the MBTA. Per the IPaC list, the USFWS indicated that although bald and golden eagles have not been observed in the Study Area, all appropriate measures should be taken to determine if eagles may be present and to minimize harm to both species, if encountered.

C.1.2.4 Potential Effects

The special status species have the same potential to occur across the Study Area and therefore could be affected by either route. The construction of new poles in the northern section of Route 1, and the replacement of structures within the southern portion of Route 3 could both potentially affect sensitive species.

C.1.2.5 Environmental Protection Measures

Based upon review of the species and protection measures published by the USFWS and the AZGFD, the following Environmental Protection Measures ("EPMs") are recommended to avoid, minimize, or mitigate impacts to sensitive and special status species.

Cactus Ferruginous Pygmy-Owl

The USFWS published recommended guidance concerning the CFO. For areas where there is a low potential for presence of CFPO.

- Coordinate with the USFWS to determine if surveys are warranted based on low potential for presence and if warranted, the correct survey protocol.
- If warranted, survey areas of suitable habitat within the area of disturbance to determine if CFPO is present.
- If CFPO is present, avoid construction in suitable or occupied habitat during CFO breeding season (June 15 to August 15).

- If nests are located, establish disturbance-free buffers 0.25 to 0.5 miles from the nests
- Avoid or minimize clearance of riparian vegetation.

Western Burrowing Owl

The Arizona Burrowing Owl Working Group has developed guidelines for surveys and management of burrowing owls on development sites. In addition to standard EPMs for protection of migratory birds, these following guidelines are recommended within the selected ROW:

- Coordinate with the AZGFD to determine need for surveys and other resource protection measures.

Migratory Bird Species

To avoid impacts to migratory birds and/or their nests, the following measures are recommended during the general migratory bird breeding season of March 1 to August 31:

- Conduct preconstruction surveys for migratory bird and raptor nests (by a qualified biologist) within 10 days of construction activities, vegetation clearance, or ground disturbance commencing.
- Conduct additional nest surveys in areas that had no disturbance for 10 days or more.
- Establish avoidance buffers around active nests. No construction activities should occur within the buffer until cleared by a qualified biologist.
- Avoid conducting vegetation clearance of thinning near active nests.
- Identify nesting and foraging areas, and flag to avoid disturbance, with buffers appropriate for expected species.
- Minimize disturbance to riparian zones, dense vegetation, and areas rich in saguaros.
- If listed species are identified during construction, activities should stop work at that location, and notification made to TEP and appropriate federal or state wildlife agencies.

Sonoran Desert Tortoise

The following measures are recommended to avoid impacts to the Sonoran desert tortoise.

- Survey by a qualified biologist for burrows, shelters, and individual tortoises.
- Train site personnel on the appearance of the species and their legal protections.
- Ensure personnel who might handle tortoises have received training on AZGFD Desert Tortoise Handling Guidelines to minimize or eliminate any potential impacts to desert tortoise.
- If construction activities are scheduled to occur during active periods, pre-construction surveys and construction monitoring are recommended.

Monarch Butterfly

The USFWS recommended the following measures to protect the Monarch butterfly:

- Keep vegetation removal to a minimum.

Pima Pineapple Cactus

The USFWS has established standard measures to avoid or minimize impacts to the PPC:

- Conduct pre-construction surveys in suitable habitat to identify individual plants. Follow current survey protocols.
- Establish 10- to 50-foot-wide buffers around identified PPCs to avoid impacting individual PPCs and their surrounding habitat during construction and ground-disturbing activities. These buffered areas should be flagged or fenced.
- Restrict construction during wet seasons to avoid excessive soil compaction.
- Minimize soil disturbance in suitable habitat (e.g., limit grading, vehicle travel, equipment laydowns, trenching).
- Implement appropriate erosion and sediment control measures to protect habitat from runoff.
- Restore disturbed habitat with native seed and/or plantings.
- Educate site personnel on species' appearance and legal protections. Prohibit plant collection and/or removal.

C.2 Conclusion

Neither route would have a permanent adverse effect on areas of biological wealth, species listed under the ESA, state listed species, other sensitive species, , washes, or riparian habitat, with the implementation of recommended EPMs. Both routes have a preliminary effects determination of "May Affect but Unlikely to Adversely Affect" for the cactus ferruginous pygmy owl and the Pima pineapple cactus, and a "May impact individuals but not likely to result in a trend toward Federal listing or a loss of viability" for the monarch butterfly.

C.3 References

AWLW. (2006). Arizona's Wildlife Linkages Assessment. Phoenix: Arizona Wildlife Linkages Workgroup.

AZIBA. (2026). About the Arizona IBA Program. Retrieved from Arizona Important Bird Areas Program: https://aziba.org/?page_id=32

Natural Leaders. (2026). Biological Resources Report, Santa Rita Connection Project, Tucson Electric Power. Tucson: Natural Leaders, LLC.

PCRFCD. (2011). Regulated Riparian Habitat Mitigation Standards and Implementation Guidelines. Tucson: Pima County Regional Flood Control District.

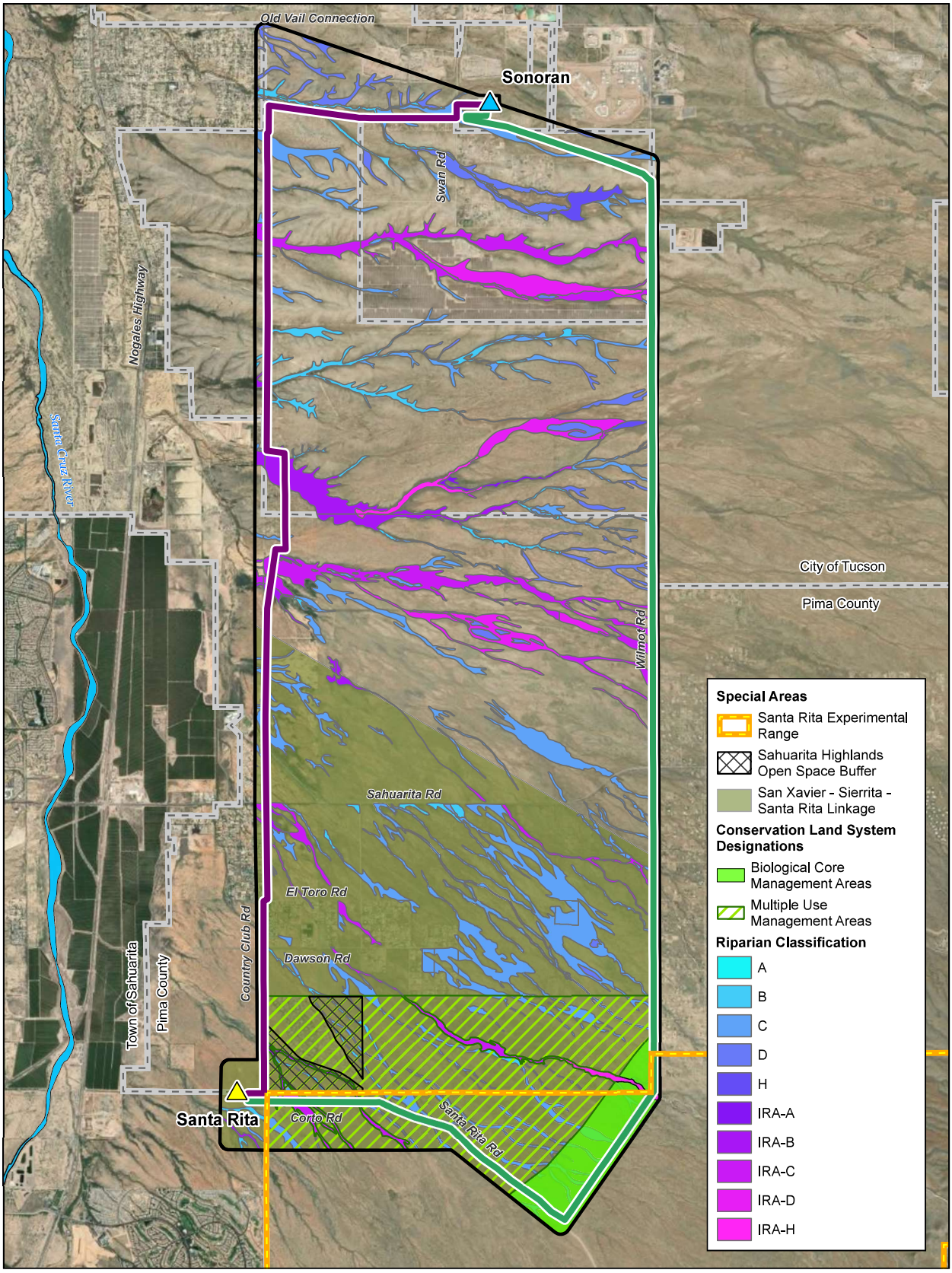
Pima County. (2005). Chapter 16.30 Watercourse and Riparian Habitat Protection and Mitigation Requirements. Tucson: Pima County.

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit C-1

This page intentionally left blank



Tucson Electric Power

Exhibit C-1

Biological

Santa Rita Connection Project

In-Service 138kV Substation

Planned 138kV Substation

Study Area

Proposed Route Alternatives

Route 1

Route 3

0 1 2

Miles

This map is for planning purposes only. TEP and UNS Energy make no warranty of its accuracy.

Sources: Esri, UNS, TEP, BLM, and Pima County GIS.
Projection: NAD 1983 UTM Zone 12N
Basemap: Esri World Imagery

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit C-2

This page intentionally left blank

Santa Rita Connection Project

Biological Resources Report

Tucson Electric Power

Pima County, Arizona

March 19, 2026

Prepared by:

Natural Leaders, LLC
4812 W. Trails End Road
Tucson, AZ 85745

DockIt Consulting
4848 Oak Pointe Way
Sarasota, FL 34233

Prepared for:

Tucson Electric Power Company
3950 East Irvington Road
Tucson, AZ 85714



Table of Contents

1.0 Introduction 1
1.1 Study Area 1
2.0 Methods 1
3.0 Existing Conditions 1
3.1 General Overview 1
3.2 Biotic Communities 4
3.3 Soils 4
3.4 Vegetation 4
3.5 Invasive, Non-Native Plant Species 6
3.6 General Wildlife in the Study Area 8
3.7 Waterways, Floodplains, and Riparian Habitat 9
3.8 Special Areas 12
4.0 Special Status Species and Findings 13
4.1 Special Status Species Evaluation 15
4.1.1 Birds 16
4.1.2 Reptiles and Amphibians 18
4.1.3 Invertebrates 19
4.1.4 Plants 20
4.2 Bald and Golden Eagles 21
5.0 Recommended Environmental Protection Measures 21
5.1 Cactus Ferruginous Pygmy-Owl 21
5.2 Western Burrowing Owl 22
5.3 Migratory Bird Species 22
5.4 Sonoran Desert Tortoise 22
5.5 Monarch Butterfly 22
5.6 Pima Pineapple Cactus 22
5.7 Standard EPMs 23
6.0 Conclusions and Recommendations 23
7.0 References 24

Tables

Table 1. Plants Observed in the Study Area 4
Table 2. Wildlife and/or Sign Observed 8
Table 3. Important Riparian Areas 10
Table 4. Special Status Species and Their Potential to Occur in the Study Area 14
Table 5. Special Status Species Evaluated 15

Figures

Figure 1. Study Area 2
Figure 2. Route Alternatives within the Study Area 3
Figure 3. Typical Vegetation in the Study Area 5
Figure 4. Typical Vegetation in the Study Area 6
Figure 5. Invasive, Non-native Buffelgrass (Cenchrus ciliaris) 7
Figure 6. Invasive, Non-native Bermudagrass (Cynodon dactylon) 7
Figure 7. Eastern Boundary looking north - Undeveloped Land to the West & Residential Development to the East 9
Figure 8. Riparian and Special Areas 11
Figure 9. Boundary of Santa Rita Experimental Range/Wildlife Area COA 13

APPENDICES

A USFWS IPaC Official Species List
B AZGFD Environmental Online Review Tool Report
C Sonoran Desert Tortoise Conservation Guidelines
D Burrowing Owl Project Clearance Guidance for Landowners

1.0 Introduction

Tucson Electric Power Company (TEP) is evaluating the proposed siting and construction of transmission facilities to increase energy capacity, enhance system reliability, and modernize infrastructure for customers in Sahuarita, Green Valley, and surrounding areas in Pima County south of Tucson. Specifically, TEP is proposing to site and construct a new 9-10 mile long 138 kilovolt (kV) transmission line (Project) between TEP's existing Sonoran Substation and a proposed Santa Rita Substation (Study Area).

1.1 Study Area

Located immediately south of Tucson International Airport, the Study Area being considered for the new transmission line is within unincorporated Pima County, the City of Tucson, and the Town of Sahuarita. It is generally bounded to the west by Country Club Road, to the north by Old Vail Connection Road, to the east by Wilmot Road, and to the south by Santa Rita Road (Figure 1).

2.0 Methods

To determine if sensitive natural resources may be present within or near the Study Area, information in this report was gathered from windshield surveys and fenceline evaluations (9/24/2025, 10/15/2025, and 10/30/2025), drone photography, and review of online media, including the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation tool (IPaC), the Arizona Game and Fish Department (AZGFD) Heritage Data Management System (HDMS), Pima County and City of Tucson Geographic Information System (GIS) data, and Google Earth aerial imagery.

The Project team has used information included in this report, as well as public and agency input, to identify four potential route alternatives initially within the Study Area: three main alternatives (1, 2, and 3) and one sub-alternative (3a). Upon further review, Route 1 and Route 3 were selected as the routes to carry forward from the initial four alternatives (Figure 2).

3.0 Existing Conditions

3.1 General Overview

Land within the Study Area is owned or managed by the Arizona State Land Department (ASLD) and numerous private landowners. The Study Area is bounded and intersected by public and private roadways. Land use is mixed and includes residential, solar generation and transmission, agricultural and rangeland, institutional, aggregate production, as well as vacant undeveloped land.

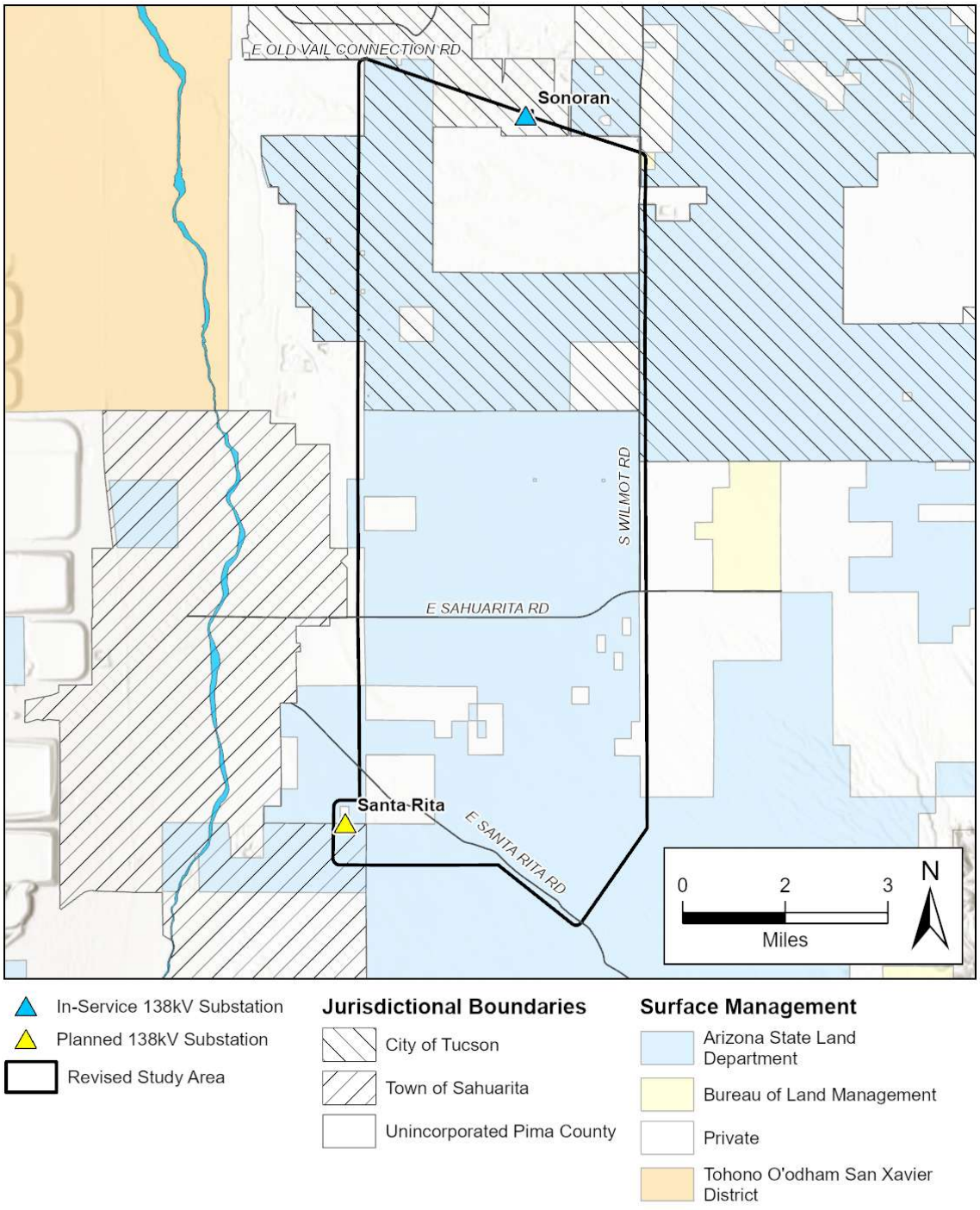


Figure 1. Study Area

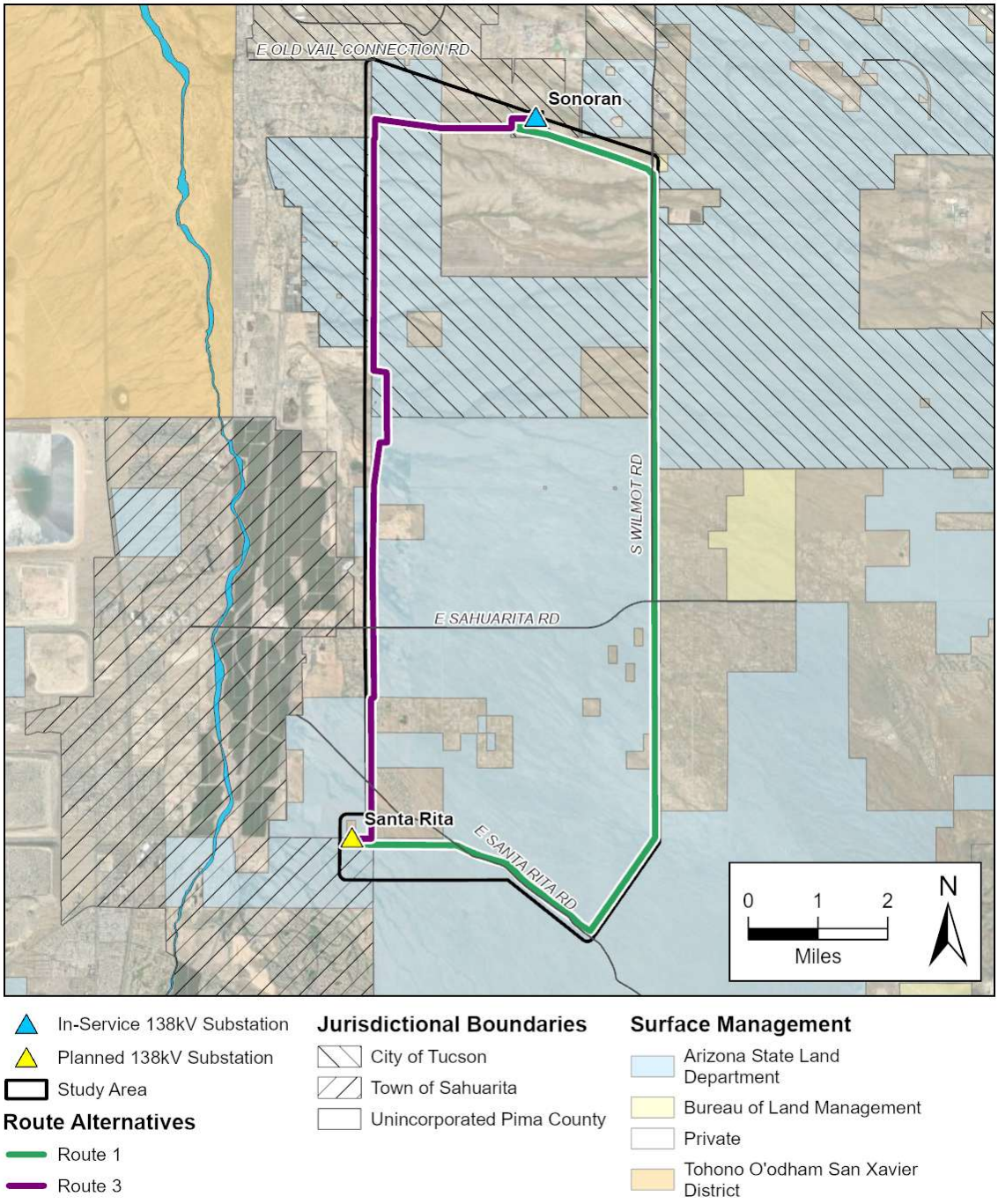


Figure 2. Route Alternatives within the Study Area

3.2 Biotic Communities

The Study Area is dominated by two biotic communities, Arizona Upland Subdivision of Sonoran Desertscrub (Upland Sonoran Desertscrub) and Semidesert Grassland (Brown, 1994).

Upland Sonoran Desertscrub receives more precipitation than other desertscrub habitat types and is characterized by a diverse selection of vegetation. This community appears as a scrubland or low woodland of leguminous trees with intervening spaces held by one or several open layers of shrubs and perennial cacti and succulents (Brown, 1994).

Semidesert Grassland is dominated by perennial grass-scrub. Annual precipitation is approximately 10 inches, with most rain occurring June through August. Winters are mild and summers are hot, with low relative humidity, except during the summer monsoon season (AZGFD, 2026a).

Non-native grasses have significantly impacted these communities, and now outcompete and displace native species, increasing both the frequency and intensity of local and regional wildfires. In addition to invasive and non-natives incursions, extensive areas of Semidesert Grassland have also been replaced through competition with residential development, grazing, fire suppression, and encroachment of shrubs, trees, and cacti (AZGFD, 2026a).

3.3 Soils

The Study Area is underlain primarily by Hartz Loam (0 – 1 percent slopes), Yaqui fine sandy loam (1-3 percent slopes), Tubac gravelly loam (1-8 percent slopes), and Sahuarita soils, Mohave soils, and urban land (1-5 percent slopes). Secondarily, Stagecoach-Sahuarita (1-8 percent slopes), cave soils and urban land (0-8 percent slopes), Glendale silt loam (0-3 percent slopes), Bucklebar-Sahuarita complex (0-3 percent slopes), and Arizo-riverwash complex (0-3 percent slopes) are interspersed throughout the Study Area (USDA, 2026). These soils are predominantly alluvium, consisting of gravelly sandy loam, and derived largely from deposits from the Santa Rita Mountains.

3.4 Vegetation

Vegetation observed in the Study Area is consistent with species characteristic of both Upland Sonoran Desertscrub and Semidesert Grasslands as described in Brown 1994. Species observed during site visits are listed in Table 1, and shown in Figure 3 and Figure 4.

Native plants in Arizona are protected under the Arizona Native Plant Law (ANPL) and Pima County code. Depending on the extent of proposed vegetative clearing, a Notice of Intent to Clear Land may be required for submittal to the AZDA.

Table 1. Plants Observed in the Study Area

Common Name	Species Name
Buffelgrass	*Cenchrus ciliaris*
Creosote	*Larrea tridentata*
Velvet mesquite*	*Prosopis velutina*
Triangle leaf bursage	*Ambrosia deltoidea*
Wolfberry	*Lycium* sp.
Desert hackberry*	*Celtis pallida*

Common Name	Species Name
Burroweed	*Isocoma tenuisecta*
Prickly pear cactus	*Opuntia* spp.
Barrel cactus*	*Ferocactus wislizeni*
Saguaro*	*Carnegia gigantea*
Grama spp.	*Bouteloua* spp.

*protected Arizona native plants



Figure 3. Typical Vegetation in the Study Area



Figure 4. Typical Vegetation in the Study Area

3.5 Invasive, Non-Native Plant Species

Pima County has documented the presence of invasive, non-native plant species throughout the Study Area, primarily along roadways and other areas with disturbed soils (Pima County, 2026c). Species observed during site visits included buffelgrass, fountain grass (*Pennisetum setaceum*), Bermuda grass (*Cynodon dactylon*) and Russian thistle (*Salsola tragus*) (Figure 5 and Figure 6). Each of these is categorized by the Arizona Wildlands Invasive Plant Working Group (AZWIPWG) as having the potential to cause an elevated risk of ecological harm (AWIPWG, 2005). Buffelgrass is also categorized as a Class C Noxious Weed according to the Arizona Department of Agriculture (AZDA) (AZDA, 2026).

Management and control of invasive species is important when developing a site, as these opportunistic plants thrive in disturbed soils. Measures to minimize ground disturbance and decontaminate construction equipment are recommended to help prevent the spread of these species that pose harm to both the surrounding natural and built environments.

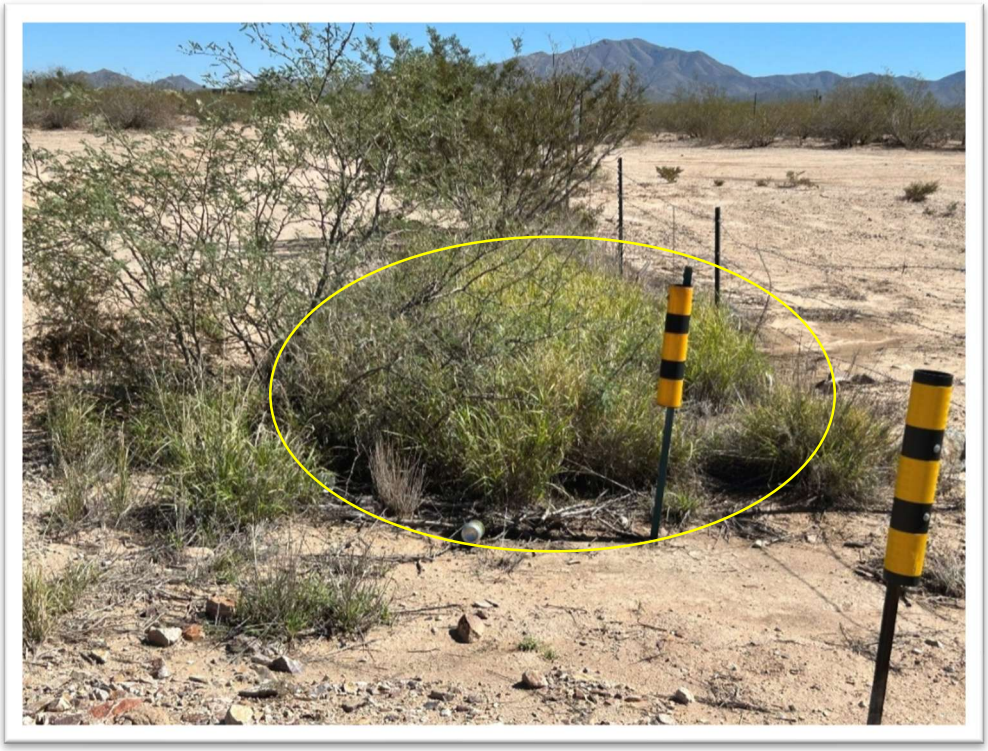


Figure 5. Invasive, Non-native Buffelgrass (Cenchrus ciliaris)



Figure 6. Invasive, Non-native Bermudagrass (Cynodon dactylon)

3.6 General Wildlife in the Study Area

Though the Study Area is intersected and bounded by roads and development on all four sides, wildlife persists and reflects the diversity typical of Upland Sonoran Desertscrub and Semidesert Grasslands. Wildlife in the Study Area are supported by natural features that promote connectivity within the region, including the generally undeveloped center of the Study Area and numerous washes (Figure 7).

Numerous species of both native and non-native wildlife or evidence of their presence were observed during site visits (Table 2).

Table 2. Wildlife and/or Sign Observed

Common Name	Species Name
BIRDS	
Black-tailed gnatcatcher	*Polioptila melanura*
Cactus wren	*Campylorhynchus brunneicapillus*
Chihuahuan raven	*Corvus cryptoleucus*
Costa's hummingbird	*Colypte costae*
Cooper's hawk	*Accipiter cooperi*
Crested caracara	*Caracara plancus*
Curve-billed thrasher	*Toxostoma curvirostre*
Domestic chicken	*Gallus gallus domesticus*
Eurasian collared dove	*Streptopelia decaocto*
European starling	*Sturnus vulgaris*
Flicker sp.	*Colaptes* sp.
Gila woodpecker	*Melanerpes uropygialis*
House sparrow	*Passer domesticus*
Mourning dove	*Zenaida macroura*
Phainopepla	*Phainopepla nitens*
Red-tailed hawk	*Buteo jamaicensis*
Turkey vulture	*Cathartes aura*
Verdin	*Auriparus flaviceps*
MAMMALS	
Bobcat	*Lynx rufus*
Cow	*Bos taurus*
Coyote	*Canis latrans*
Javelina	*Pecari tajacu*

Common Name	Species Name
REPTILES and AMPHIBIANS	
Arizona striped whiptail	*Aspidoscelis arizonae*
INVERTEBRATES	
American snout butterfly	*Libytheana carinenta*
Hackberry emperor	*Asterocampa celtis*
Harvester ant	*Acromyrmex versicolor*
Skimmer sp.	*Libellula* sp.



Figure 7. Eastern Boundary looking north - Undeveloped Land to the West & Residential Development to the East

3.7 Waterways, Floodplains, and Riparian Habitat

Waterways

There are no perennial waterways within the Study Area, however, the route alternatives cross several large ephemeral drainages. Additionally, the USFWS National Wetlands Inventory maps seven small ponded areas and one forested wetland area caused by road development slowing sheet flow and causing ponding. Two ponded areas appear to be within proposed corridors, however, they are of a size that can be spanned by the transmission line. Depending on their current condition, these features may be subject to permitting requirements of the Clean Water Act (CWA) under the jurisdiction of the USACE and / or the

Environmental Protection Agency (EPA), and as currently administered by the Arizona Department of Environmental Quality (ADEQ).

Floodplains

The watershed flows generally east to west, towards the Santa Cruz River, which is approximately ½- to ¾-mile west of the Study Area. The entirety of the Study Area is crossed by washes of varying sizes that range from ephemeral with an unknown discharge volume to major with greater than 10,000 cubic feet per second (CFS). These washes are regulated by Pima County through the Pima County Floodplain Management Ordinance 2010-FC-5 (Ordinance) (Pima County, 2026a). The Ordinance controls construction activity and enforces setback requirements near washes and typically requires permits for improvements that meet a disturbance threshold in regulated floodplains.

Riparian Habitat

Riparian habitat is present along most of the washes. Riparian habitat is also regulated by the Ordinance, which has established guidelines that assist property owners and developers in mitigating impacts to regulated riparian habitat and complying with Chapter 16.30 of the Ordinance, *Watercourse and Riparian Habitat Protection and Mitigation Requirements* (Pima County, 2026a).

The Study Area includes features with the following designations, as defined by the Ordinance:

- *Xeroriparian B, C, and D* – "These riparian habitats are generally associated with an ephemeral water supply. Communities typically contain plant species also found in upland habitats; however, plants are typically larger and/or occur at higher densities than adjacent uplands."
- *Hydromesoriparian or Mesoriparian H* – "These riparian habitats generally are associated with perennial or intermittent watercourses or shallow groundwater. Plant communities may be dominated by species that are also found in drier habitats (e.g., mesquite) but contain some preferential riparian plant species such as ash or netleaf hackberry."
- *IRA – Xeroriparian A, B, and C; IRA H; Important Riparian Areas* (IRA) – "Designated as Important Riparian Areas for their hydrologic, geomorphic, and biological values, these areas provide a critical function for landscape linkage and connectivity with other habitats and provide biological corridors."

Four Classes of IRAs are mapped within the Project Area and overlap the proposed routes, Class B, Class C, Class D, and Class H (Figure 8 and Table 3). IRAs typically occur along major river systems and washes and are identified as providing water resource and watershed management functions, and corridors and linkages for movement of wildlife. IRAs are characterized by higher water availability, vegetation density, and biological diversity (Pima County, 2005). Preconstruction site visits should be conducted to confirm presence/absence, condition, and related regulatory requirements for all waterway, floodplain, and riparian habitat. Depending on findings, it is recommended to keep vegetation clearing and soil disturbance to a minimum.

Table 3. Important Riparian Areas

IRA	Route 1	Route 3
B		X
C	X	X
D	X	
H	X	

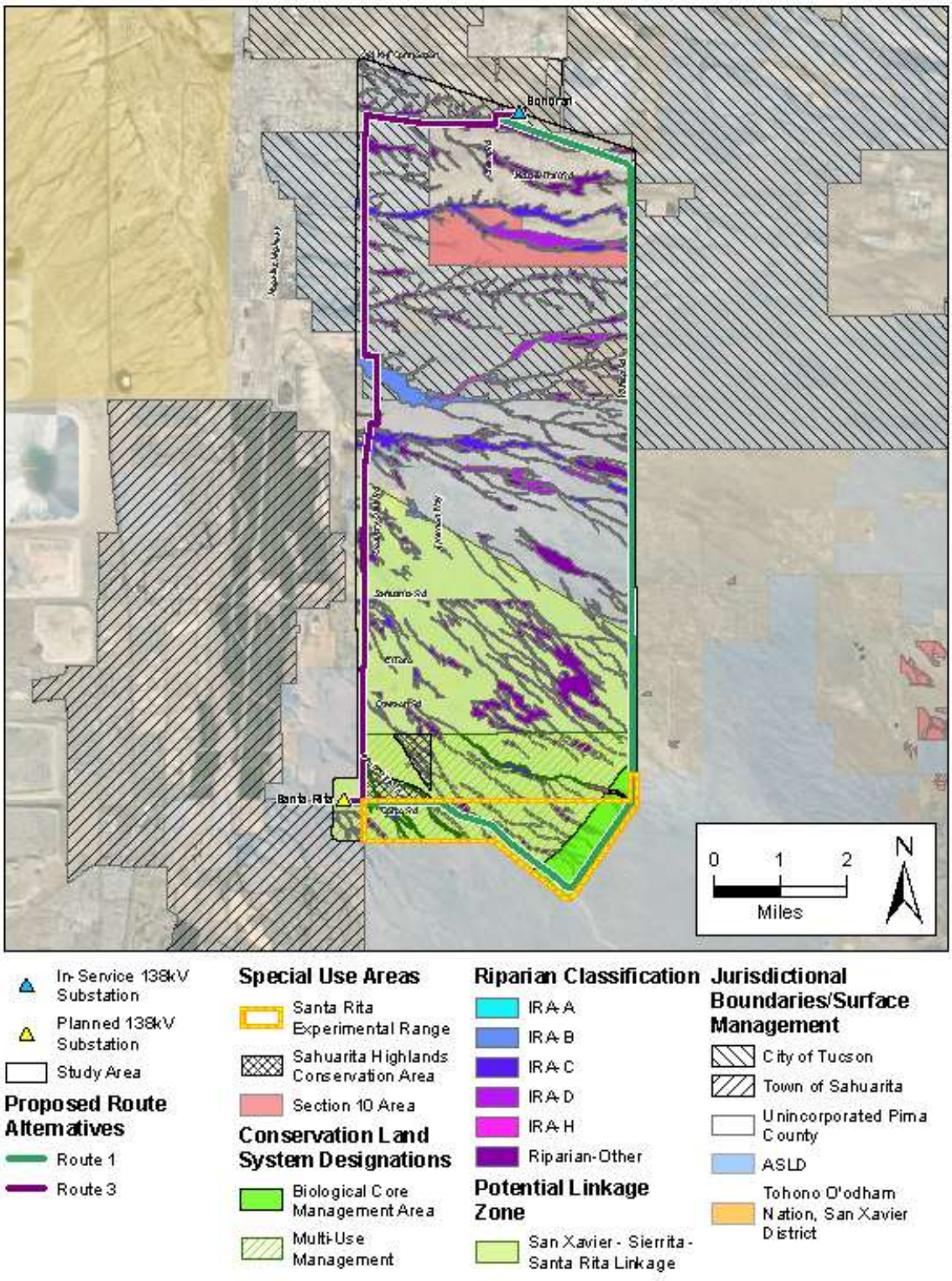


Figure 8. Riparian and Special Areas

3.8 Special Areas

Sonoran Desert Conservation Plan

The Sonoran Desert Conservation Plan (SDCP) is Pima County's plan for balancing the conservation and protection of cultural and natural resource heritage with efforts to maintain an economically vigorous and fiscally responsible community. The SDCP includes five elements: critical habitats and biological corridors, riparian areas, mountain parks, historical and cultural preservation, and ranch conservation. Since 2001, the SDCP has guided where public funds are spent to conserve important natural areas in the county (Pima County, 2026d).

The Multi-Species Conservation Plan (MSCP) is the part of the SDCP that addresses compliance with the Endangered Species Act (ESA). The MSCP was developed per the County's ESA Section 10(a) Incidental Take Permit authorized by USFWS in 2016 (Pima County, 2026b). The MSCP includes a Certificate of Coverage Program to create a "bank" of land that can be used to mitigate future impacts under the permit. The program is voluntary and extends the opportunity for private developers to apply to have their projects "covered" by the County's Section 10 permit and designate County banked mitigation land to fulfill their ESA compliance requirements. The Study Area includes properties with Certificates of Coverage that have been executed and/or authorized, and are located on the west side of Wilmot Road (Figure 8). Route 1 is planned to be located on the east side of Wilmot Road, and therefore is not anticipated to impact the area with Certificate of Coverage.

Wildlife Movement Areas

The Study Area intersects three wildlife movement areas: Lee Moore Wash Flow Corridors, Santa Cruz River to Santa Rita Experimental Range, and Santa Rita Experimental Range/Coronado National Forest. Each of these areas provides a vital linkage for wildlife connectivity, preserving the ability of species to move between and within habitat blocks.

Utility infrastructure can impair wildlife connectivity if not thoughtfully developed. Taking measures to accommodate these wildlife linkages by minimizing the Project footprint and favoring previously developed areas to the extent possible will help protect these wildlife movement areas.

Linkage Zones

The Arizona Wildlife Linkages Workgroup (AWLW) has identified wildlife linkage corridors that may provide connectivity between habitats for wildlife species, which is essential to many wildlife population structures and movement (AWLW, 2006). Potential Linkage Zones are areas identified as critical to wildlife movement between habitat blocks. The AWLW uses Potential Linkage Zones as planning areas in which a functional linkage would be designed and conserved. The AWLW identified Linkage 92 – San Xavier-Sierrita-Santa Rita, a Potential Linkage Zone which overlaps the southern portion of the Study Area, and connects habitat blocks in the Santa Rita Mountains and the Tohono O'odham Nation (Figure 8). There is no formal requirement or constriction on activity or development in Potential Linkage Zones. The AWLW plans to develop a linkage design for this zone in the future, and recommends that land managers incorporate the zone into management planning processes to address habitat fragmentation. TEP's objective to utilize existing corridors to the extent possible follows the recommendations of the AWLW.

Santa Rita Wildlife Area Conservation Opportunity Area

The 53,750-acre Santa Rita Wildlife Area (SRWA) is located south of Tucson in the grasslands on the north side of the Santa Rita Mountains in Pima County. Per the AZGFD Arizona Wildlife Conservation Strategy, the boundary for the SRWA Conservation Opportunity Area (COA) is concurrent with the boundary for the Santa Rita Experimental Range, for which management is shared by the Arizona State Land Department

(ASLD) and the University of Arizona (UA) (Figure 8). Founded in 1902, the experimental range acts as an outdoor laboratory for UA's College of Agriculture and Life Sciences and is regarded as one of the longest continuously operating research areas in the world.

The SRWA COA is Semidesert Grassland which has recently been invaded by mesquite, cholla, catclaw acacia, and Lehmann lovegrass (Figure 9). As a result, the semidesert grassland habitat is converting to shrubland. Therefore, many of the common wildlife species found on the SRWA COA are considered Species of Greatest Conservation Need (SGCN) according to AZGFD (AZGFD, 2026b). Similar to the wildlife movement areas, it is recommended to take measures to minimize the Project footprint and favor previously developed areas, to the extent possible.



Figure 9. Boundary of Santa Rita Experimental Range/Wildlife Area COA

4.0 Special Status Species and Findings

Special status species that might be present within the Study Area were identified by obtaining a U.S. Fish and Wildlife Service (USFWS) IPaC Official Species List of Threatened and Endangered species (Appendix A) and an Arizona Game and Fish Department (AZGFD) HDMS Arizona Environmental Online Review Tool report (Appendix B).

The USFWS IPaC Official Species List indicated that nine animal species (six Endangered, two Threatened, and one Proposed Threatened) and three Endangered flowering plant species require consideration in this report. There are no designated critical habitats within the Study Area (USFWS, 2026b). The AZGFD report indicated five special status species have documented occurrences within 3.0 miles of the Study Area. Each

are considered Priority Vulnerable Species (PVS) in Pima County's SDCP. Species are summarized in Table 4.

Table 4. Special Status Species and Their Potential to Occur in the Study Area

Common Name	Scientific Name	Status	Potential to Occur
FEDERALLY LISTED			
Jaguar	*Panthera onca*	E	No
Ocelot	*Felis pardalis*	E	No
Yellow-billed Cuckoo (Western DPS)[a]	*Coccyzus americanus*	T, PVS, 1	No
Cactus ferruginous pygmy owl	*Glaucidium brasilianum cactorum*	T, PVS, 1	Yes
California least tern	*Sterna antillarum browni*	E	No
Southwestern willow flycatcher	*Empidonax traillii extimus*	E, PVS	No
Gila chub	*Gila intermedia*	E, PVS	No
Gila topminnow (incl. Yaqui)	*Poeciliopsis occidentalis*	E, PVS	No
Monarch butterfly	*Danaus plexippus*	PT	Yes
Arizona eryngo	*Eryngium sparganophyllum*	E	No
Huachuca water-umbel	*Lilaeopsis schaffneriana* var. *recurve*	E, PVS	No
Pima pineapple cactus[a]	*Coryphantha scheeri* var. *robustipina*	E, PVS	Yes
STATE LISTED			
Sonoran desert tortoise[a]	*Gopherus morafkai*	CCA, PVS, 1	Yes
Rufous-winged sparrow[a]	*Peucaea carpalis*	PVS, 2	Yes
Western burrowing owl	*Athene cunicularia hypugaea*	PVS, 2	Yes
Tumamoc globeberry[a]	*Tumamoca macdougalii*	PVS, SR	Yes

[a] Species with known occurrences within 3.0 miles of the Study Area (AZGFD).

USFWS (E=Endangered, T=Threatened, PT=Proposed Threatened, CCA=Candidate Conservation Agreement); AZGFD (1 or 2= SGCN Tier); ADOA (HS=Highly Safeguarded, SR=Salvage Restricted); Pima County SDCP (PVS=Priority Vulnerable Species)

4.1 Special Status Species Evaluation

This report evaluates the following seven species (Table 5) for which a potential to occur within the Study Area was indicated in Table 4. Species with no potential to occur were removed from consideration.

Species listed by the USFWS and protected by the Endangered Species Act (ESA) receive the following effects determinations:

- "*May affect, likely to adversely affect*" - the project is likely to adversely affect a species if the species is known to occur in the Study Area; project activities would disturb areas or habitat elements known to be used by the species or would directly affect an individual.
- "*May affect, but not likely to adversely affect*" - the project is not likely to affect a species if the species may occur, but its presence has not been documented; project activities would not result in disturbance to areas or habitat elements known to be used by the species.
- "*No effect*" - the project will have no effect on a species if the species is considered unlikely to occur because the known range, vegetation type, etc. are inappropriate, and the species or its sign was not observed during surveys of the Study Area.

For species not protected under the authority of the ESA, the following impact determinations are applicable:

- "*No impact*" - the project would have no impact on a species, notably if habitat is not present, the Study Area is outside of the known range, and/or evidence of individual(s) was not observed
- "*Beneficial impact*" - the project is likely to benefit the species by creating or enhancing species' habitat elements, regardless if the species is currently present
- "*May impact individuals, but not likely to result in a trend toward Federal listing or loss of viability*" – although a project may have a detrimental impact on individuals, it is not anticipated to reduce overall location use and/or contribute to a future federal listing status
- "*May impact individuals and is likely to result in a trend towards Federal listing or loss of viability*" - the project is likely to have a detrimental impact on individuals and the species as a whole, contributing toward a reduction in location use and/or a future federal listing status

Table 5. Special Status Species Evaluated

Common Name	Scientific Name	Status**	Potential Project Impact
FEDERALLY LISTED			
Cactus ferruginous pygmy owl	*Glaucidium brasilianum cactorum*	T, PVS, 1	*May affect, but not likely to adversely affect.*
Monarch butterfly	*Danaus plexippus*	PT	*May impact individuals but not likely to result in a trend toward Federal listing or a loss of viability.*
Pima pineapple cactus[a]	*Coryphantha scheeri* var. *robustipina*	E, PVS	*May affect, but not likely to adversely affect.*

Common Name	Scientific Name	Status**	Potential Project Impact
STATE LISTED/PIMA COUNTY PRIORITY VULNERABLE SPECIES			
Western burrowing owl	*Athene cunicularia hypugaea*	PVS, 2	*May impact individuals but not likely to result in a trend toward Federal listing or loss of viability.*
Rufous-winged sparrow[a]	*Peucaea carpalis*	PVS, 2	*May impact individuals but not likely to result in a trend toward Federal listing or loss of viability.*
Sonoran desert tortoise[a]	*Gopherus morafkai*	CCA, PVS, 1	*May impact individuals but not likely to result in a trend toward Federal listing or loss of viability.*
Tumamoc globeberry	*Tumamoca macdougalii*	PVS, SR	*May impact individuals but not likely to result in a trend toward Federal listing or a loss of viability.*

[a] Species with known occurrences within 3.0 miles of the Study Area (AZGFD).

**USFWS (E=Endangered, T=Threatened, PT=Proposed Threatened, CCA=Candidate Conservation Agreement); AZGFD (1 or 2= SGCN Tier); ADOA (HS=Highly Safeguarded, SR=Salvage Restricted); Pima County SDCP (PVS=Priority Vulnerable Species)

4.1.1 Birds

4.1.1.1 *Migratory Bird Treaty Act*

Status

The Migratory Bird Treaty Act (MBTA) was developed in 1918, and established a federal prohibition of any person, business, agency, or organization conducting activities that might impact migratory birds or their nests (USFWS, 2026c). The list of migratory bird species applies to birds native to the United States. A review of the Rapid Avian Information Locator (RAIL) produced a list of at least 32 bird species currently on the MBTA list that could occur within the Study Area.

Along with their individual listing statuses, each of the birds listed individually below are also federally protected by the Migratory Bird Treaty Act (MBTA), as well as by Arizona State law (Arizona Revised Statutes [ARS] Title 17) (USFWS, 2026c).

Potential to Occur

Suitable nesting habitat for a number of these bird species is present within the Study Area, and nesting activity is likely to be high throughout the Study Area, including all potential routes, during the breeding season (i.e., generally March 1 to August 31).

Potential for Impact by the Project

Due to the small size of many MBTA bird nests, and the temporary nature of the nests, there is high potential to disturb or destroy a nest during vegetation thinning or clearing. Compliance with recommended EPMs will substantially reduce impacts to migratory birds.

4.1.1.2 *Cactus Ferruginous Pygmy-Owl (Glaucidium brasilianum cactorum)*

Status

The cactus ferruginous pygmy-owl (CFO) is federally listed as Threatened. It is also listed by AZGFD as a Tier 1 SGCN, as well as a Priority Vulnerable Species (PVS) by Pima County's SDCP.

Description, Habitat and Threats

The CFO is a small, cavity-nesting owl found in a variety of vegetation communities, including Sonoran Desertscrub and Semidesert Grasslands. Its distribution range extends from southern U.S. through northern Mexico. In Arizona, this species has been found in the western and southernmost portion of the state north to Pinal County. The USFWS notes that more research is needed to determine the full extent of its range (USFWS, 2024). Primary threats to the CFO are habitat loss and fragmentation due to development, and climate conditions affecting habitat, prey base, and wildfire due to intrusion of non-native invasive vegetation.

Potential to Occur

There is limited habitat that could be suitable for the CFO within the Study Area. Mature saguaros (*Carnegia gigantea*), present throughout the Study Area, could provide cavity-nesting resources. However, disturbance from development in the surrounding perimeter of the Study Area may affect occupancy of the undeveloped interior. Based upon a review of the RAIL, there have been no documented occurrences of the CFO within the Study Area (AKN, 2026).

Potential for Impact by the Project

There is limited CFO habitat within the Study Area, and current development is proximal to the proposed corridors, therefore the presence of CFOs is likely also limited. However, Project activities do have the potential to impact the CFO species or their habitat. Compliance with recommended environmental protection measures (EPMs) would reduce or avoid impacts to the CFO.

The Project may affect but is not likely to adversely affect cactus ferruginous pygmy owl.

4.1.1.3 *Western Burrowing Owl (Athene cunicularia hypugaea)*

Status

Although not protected under the ESA, the western burrowing owl is listed by the USFWS as a National Bird of Conservation Concern, which identifies it as a species that without additional protection is likely to become a candidate for listing under the ESA. It is also listed by AZGFD as a Tier 2 SGCN and a PVS by Pima County's SDCP.

Description, Habitat and Threats

Western burrowing owl is a small (19-25 cm), ground-dwelling diurnal owl with yellow eyes, long legs, and characteristic head-bobbing behavior when disturbed. It inhabits a variety of habitats, including semidesert grassland, plains grassland, cropland, Great Basin Desertscrub, the Lower Colorado and Arizona Upland subdivisions of the Sonoran Desertscrub formation, barren ground, Great Basin Grassland, Mojave Desertscrub, and rural and residential areas, including roads, airports, orchards, vacant urban lots, parks, and orchards (USFWS, 2026a). Primary threats are habitat loss and elimination of their prey base of burrowing mammals through control programs.

Potential to Occur

There is a potential for western burrowing owls to occur within the Study Area. Their prey base of fossorial, burrowing mammals is present throughout. In addition, along with natural flat, open areas, there are also

disturbed areas with culverts, debris piles, and access to water, such as the western and northern sections near the pecan orchards and the sand and gravel operations.

Potential for Impact by the Project

Though the majority of the Project would have limited activity in areas suitable for borrows, there is the potential for Project activities to impact the western burrowing owl. Compliance with recommended EPMs would reduce or avoid impacts to the western burrowing owl.

The Project may impact individuals but is not likely to result in a trend toward federal listing or a loss of viability.

4.1.1.4 *Rufous-winged Sparrow (Peucaea carpalis)*

Status

Rufous-winged sparrow is listed by AZGFD as a Tier 2 SCGN, as well as a PVS by Pima County's SDCP.

Description, Habitat and Threats

The Rufous-winged sparrow is a small yet tall (13 –14 cm), masked sparrow. A year-round resident, its range in Arizona includes the central and southern portions of Pinal County, eastern two-thirds of Pima County, and the western half of Santa Cruz County. It prefers flat or gently rolling areas in Sonoran Desertscrub or Sinaloan Thornscrub that is characterized by scattered spiny trees and shrubs (i.e. cholla, palo verde spp., and hackberry spp.). Grasses are also an important component of its habitat, with xeroriparian habitat typically included in its territories. Threats include habitat loss from urban development and overgrazing.

Potential to Occur

Suitable habitat is located throughout the Study Area, therefore, there is a high likelihood of occurrence.

Potential for Impact by the Project

If the route favors disturbed areas, such as paved and unpaved roads, clearing of vegetation clearing is minimized, and construction is timed to occur outside of April to September, then the proposed transmission line is not expected to have a permanent impact on this species. Compliance with recommended EPMs for migratory birds would further avoid and minimize impacts to the species.

The Project may impact individuals but is not likely to result in a trend toward federal listing or a loss of viability.

4.1.2 Reptiles and Amphibians

4.1.2.1 *Sonoran Desert Tortoise (Gopherus morafkai)*

Status

Since 1982, the federal listing status for the Sonoran desert tortoise has changed multiple times. Most recently, in 2022 the USFWS determined that the species did not warrant listing as endangered or threatened and removed it from the candidate list. It remains protected by a 2015 Candidate Conservation Agreement (CCA) administered by the USFWS, though, which includes 16 state and federal partners. In Arizona, the Sonoran desert tortoise has been protected under AZGFD Commission Order 43 since 1989, which prohibits take, possession, or harassment of desert tortoises unless specifically authorized by the AZGFD (AZGFD 2025). It is also listed by AZGFD as a Tier 1 SGCN and by Pima County's SDCP as a PVS.

Description, Habitat and Threats

The Sonoran desert tortoise is native to the Sonoran Desert, occurring in western, central and southern Arizona, U.S. and in northwest Sonora, Mexico. It eats a variety of herbs, woody plants, grasses, and succulents. Its preferred habitat includes steep, rocky slopes of mountains and the incised washes that drain the slopes. Tortoises are long-lived (>50 years) and spend a significant proportion of life in burrows/shelters. The availability of shelter sites and drinking water strongly influences population density and species survival (AZGFD, 2026c). Threats to the species include depredation, habitat degradation and loss, illegal collection, vehicle collisions, wildfires, drought and disease.

Potential to Occur

The Study Area does not contain steep, rocky slopes, but vegetated washes are common and could offer temporary or permanent shelter sites and sources of drinking water. At minimum the Study Area could offer uninterrupted open space, forage, and possible habitat connectivity.

Potential for Impact by the Project

Compliance with recommended EPMs for the Sonoran desert tortoise would avoid and minimize impacts to the species. By implementing these recommendations, the Project may impact individuals but is not likely to result in a trend toward Federal listing or a loss of viability.

4.1.3 Invertebrates

4.1.3.1 *Monarch Butterfly (Danaus plexippus)*

Status

In December 2024, the USFWS proposed a listing status of Threatened (to include designation of critical habitat) for the monarch butterfly. In March 2025, USFWS reopened the public comment period through May 2025, and is currently evaluating all comments received.

Description, Habitat and Threats

Monarch butterflies are large and conspicuous, with two sets of bright orange wings that span three to four inches and are covered with black veins and surrounded by a black border with a double row of white spots. A monarch caterpillar has black, yellow, and white stripes and can reach up to two inches before metamorphosis, during which it pupates into a green and gold chrysalis before emerging as an adult butterfly six to 14 days later. Adult monarchs feed on the nectar of many flowers during breeding and migration, but they lay eggs on various species of milkweeds which are the only food the caterpillars eat (USFWS, 2026a).

Known for their long-distance migrations, unique reproductive strategy, and large masses formed while overwintering in Mexico and coastal California, monarch populations have been in a steady decline since the mid-1990's, presumably due to habitat alteration and pesticides.

Potential to Occur

There is a large diversity of vegetation within the Study Area, which is located where monarchs both migrate through twice a year and potentially breed year-round. While there is the possibility of milkweeds to be present on site to provide a resource for egg-laying and caterpillar development, the greater likelihood of potential monarch occurrence would be the presence of blooming plants that sustain adults during migration. The typical time periods for monarch butterflies to migrate through southern Arizona are September to November, and March to April (AZAnimals, 2025).

Potential for Impact by the Project

Although the proposed transmission line will be aerial, construction activity could potentially impact habitat. However, if ROW selection favors previously disturbed areas such as paved and unpaved roads, and EPMs are followed, then the Project may impact individuals but is not likely to result in a trend toward Federal listing or a loss of viability.

4.1.4 Plants

4.1.4.1 *Pima Pineapple Cactus (Coryphantha scheeri var. robustipina)*

Status

The USFWS listed Pima pineapple cactus (PPC) as Endangered in 1993. It is protected by Arizona Department of Agriculture (ADOA) (Arizona Native Plant Law) as a Highly Safeguarded species. It is also included as a PVS in Pima County's SDCP.

Description, Habitat and Threats

PPC is a small globular cactus native to Sonoran Desertscrub and semi-desert grassland communities of southern Arizona and far northern Sonora, Mexico. In the U.S., it is found in only Pima and Santa Cruz counties, between approximately 2,400 to 4,500 feet in elevation. Individual plants typically occur in low densities, grow 5-46 centimeters in height and 5-21 centimeters in diameter, and can have one to many stems. Individual flowers bloom in summer for a single day and are primarily pollinated by a native, solitary, ground-nesting bee (*Diadasia rinconis*). Threats include illegal collection, development, non-native invasive plants, drought, and alteration of fire regimes.

Potential to Occur

PPC are known to grow most often in areas with the following characteristics: alluvial fans or hillsides; shallow to deep and silty to rocky soils with a preference for silty to gravelly, deep alluvial soils; and open areas on flat ridge tops or areas with less than 10 percent slope. There is suitable habitat for PPC located generally throughout the Study Area, with the majority bisected by alluvial fans and silty soils.

Potential for Impact by the Project

The proposed transmission line will be aerial and span washes. However, during construction, vehicles may cross washes and surrounding alluvial fans. If route selection favors previously disturbed areas such as paved and unpaved roads, and vegetation removal is minimized, the amount of potential habitat that may be removed during site preparation and construction would likely be minimal. Compliance with recommended EPMs would reduce or avoid impacts to the PPC.

The Project may affect but is not likely to adversely affect PPC.

4.1.4.2 *Tumamoc Globeberry (Tumamoca macdougalii)*

Status

Tumamoc globeberry was formerly listed as Endangered by USFWS but was delisted in 1993, after it was determined to be less habitat specific and occur across a more extensive range (USFWS, 2026a). It is protected by Arizona Native Plant Law as Salvage Restricted and is identified as a PVS in Pima County's SDCP.

Description, Habitat and Threats

Tumamoc globeberry is a vine with grasping tendrils. It generally flowers in August, then produces grape-sized, globe-shaped fruit. It is found along washes and arroyos at elevations below 3,000 ft AMSL but is

difficult to locate, as its foliage intermingles with neighboring species (Center for Plant Conservation, 2026). Primary threats are habitat loss, habitat degradation, climate conditions, and non-native invasive species.

Potential to Occur

The Study Area is crossed by many small washes that may provide suitable habitat for Tumamoc globeberry.

Potential for Impact by the Project

The proposed transmission line will be aerial and span washes. During construction, vehicles may cross washes, which could impact the globeberry. If ROW selection favors previously disturbed areas such as paved and unpaved roads and does not closely parallel drainages and/or clear large swaths of vegetation, the amount of potential habitat that may be removed during site preparation and construction would likely be minimal. Compliance with standard Project EPMs would reduce or avoid impacts to the globeberry.

The Project may impact individuals but is not likely to result in a trend toward Federal listing or a loss of viability.

4.2 Bald and Golden Eagles

Bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) are both protected by the Bald and Golden Eagle Protection Act, as well as the MBTA (USFWS, 1940). Per the IPaC list, the USFWS indicated that although bald and golden eagles have not been observed in the Study Area, all appropriate measures should be taken to determine if eagles may be present and to minimize harm to both species, if encountered (USFWS, 2026b).

5.0 Recommended Environmental Protection Measures

The following EPMs are designed to reduce the impact to special status species, risk of animal injury, or spread of invasive species.

5.1 Cactus Ferruginous Pygmy-Owl

The USFWS published recommended guidance concerning the CFPO. For areas where there is a low potential for presence of CFPO.

- Coordinate with the USFWS to determine if surveys are warranted based on low potential for presence and if warranted, the correct survey protocol.
- If warranted, survey areas of suitable habitat within the area of disturbance to determine if CFPO is present.
- If CFPO is present, avoid construction in suitable or occupied habitat during CFO breeding season (June 15 to August 15).
- If nests are located, establish disturbance-free buffers 0.25 to 0.5 miles from the nests
- Avoid or minimize clearance of riparian vegetation.

5.2 Western Burrowing Owl

The Arizona Burrowing Owl Working Group has developed guidelines for surveys and management of burrowing owls on development sites (AZGFD, 2009). In addition to standard EPMs for protection of migratory birds, these following guidelines are recommended within the selected ROW:

- Coordinate with the AZGFD to determine need for surveys and other resource protection measures.

5.3 Migratory Bird Species

To avoid impacts to migratory birds and/or their nests, the following measures are recommended during the general migratory bird breeding season of March 1 to August 31:

- Conduct preconstruction surveys for migratory bird and raptor nests (by a qualified biologist) within 10 days of construction activities, vegetation clearance, or ground disturbance commencing.
- Conduct additional nest surveys in areas that had no disturbance for 10 days or more.
- Establish avoidance buffers around active nests. No construction activities should occur within the buffer until cleared by a qualified biologist.
- Avoid conducting vegetation clearance of thinning near active nests.
- Identify nesting and foraging areas, and flag to avoid disturbance, with buffers appropriate for expected species.
- Minimize disturbance to riparian zones, dense vegetation, and areas rich in saguaros.
- If listed species are identified during construction, activities should stop work at that location, and notification made to TEP and appropriate federal or state wildlife agencies.

5.4 Sonoran Desert Tortoise

The following measures are recommended to avoid impacts to the Sonoran desert tortoise.

- Survey by a qualified biologist for burrows, shelters, and individual tortoises.
- Train site personnel on the appearance of the species and their legal protections.
- Ensure personnel who might handle tortoises have received training on AZGFD Desert Tortoise Handling Guidelines (Rubke, 2024) (Appendix C) to minimize or eliminate any potential impacts to desert tortoise.
- If construction activities are scheduled to occur during active periods, pre-construction surveys and construction monitoring are recommended (AIDTT, 2008).

5.5 Monarch Butterfly

The USFWS recommended the following measures to protect the Monarch butterfly:

- Keep vegetation removal to a minimum.

5.6 Pima Pineapple Cactus

The USFWS has established standard measures to avoid or minimize impacts to the PPC:

- Conduct pre-construction surveys in suitable habitat to identify individual plants. Follow current survey protocols.
- Establish 10- to 50-foot-wide buffers around identified PPCs to avoid impacting individual PPCs and their surrounding habitat during construction and ground-disturbing activities. These buffered areas should be flagged or fenced.
- Restrict construction during wet seasons to avoid excessive soil compaction.
- Minimize soil disturbance in suitable habitat (e.g., limit grading, vehicle travel, equipment laydowns, trenching).
- Implement appropriate erosion and sediment control measures to protect habitat from runoff.
- Restore disturbed habitat with native seed and/or plantings.
- Educate site personnel on species' appearance and legal protections. Prohibit plant collection and/or removal.

5.7 Standard EPMs

- Minimize vegetation clearing and ground disturbance
- Provide construction period monitors in areas where pre-construction surveys indicate a presence of sensitive species.
- Follow TEP established raptor protection protocols, as well as guidelines published by the Edison Electric Institute and the Avian Power Line Interaction Committee (Suggested Practices for Avian Protection on Power Lines: State of the Art in 2024, and Reducing Bird Collisions with Power Lines: State of the Art in 2012).
- Inspect and wash all construction equipment before entering or leaving the site to prevent the spread of invasive, non-native species.
- Follow standard Best Management Practices (BMPs) to prevent contamination of downstream waters from stormwater exiting the site.
- Implement a stormwater pollution prevention plan (SWPPP) as required.
- Implement a spill prevention, control, and countermeasures plan (SPCCP) as required.
- Implement worker environmental awareness training to inform site personnel on the appearance of protected species and their legal protections.
- Clear the construction site of project or construction-related trash each day.
- Restore disturbed areas to pre-construction or native condition following completion of project activities, by planting seeds or native vegetation.
- If native plants listed under the ANPL are proposed for removal, a Notice of Intent to Clear Land should be submitted to the AZDA prior to commencing ground disturbance.

6.0 Conclusions and Recommendations

Impacts to wildlife and vegetation are anticipated to be limited, and potential impacts to sensitive resources can be minimized or avoided, with implementation of the recommended EPMs.

7.0 References

AIDTT. (2008). *Recommended Standard Mitigation Measures for Projects in Sonoran Desert Tortoise Habitat.* Phoenix, AZ: Arizona Interagency Desert Tortoise Team.

AKN. (2026). *Rapid Avian Information Location (RAIL) Tool*. Retrieved from Avian Knowledge Network: https://data.pointblue.org/apps/rail/

AWIPWG. (2005, August). *Invasive Non-native Plants that Threaten Wildlands in Arizona.* Retrieved from Arizona Wildlands Invasive Plant Working Group: https://www.swvma.org/wp-content/uploads/Invasive-Non-Native-Plants-that-Threaten-Wildlands-in-Arizona.pdf

AWLW. (2006). *Arizona's Wildlife Linkages Assessment.* Retrieved from Arizona Wildlife Linkages Workgroup: https://azdot.gov/sites/default/files/2019/06/awlw-linkages-assessment-intro.pdf

AZAnimals. (2025, 05 22). *When to Spot Monarch Butterflies in Arizona*. Retrieved from A-Z Animals: https://a-z-animals.com/articles/when-and-where-to-see-monarch-butterflies-in-arizona/

AZDA. (2026). *Noxious Weeds*. Retrieved from Arizona Department of Agriculture: https://agriculture.az.gov/pestspest-control/agriculture-pests/noxious-weeds

AZGFD. (2009). *Burrowing Owl Project Clearance Guidance for Landowners.* Phoenix, AZ: Arizona Burrowing Owl Working Group, AZGFD.

AZGFD. (2012). *The Pima County Wildlife Connectivity Assessment: Report on Stakeholder Input.* Tucson: Arizona Game and Fish Department.

AZGFD. (2014). *Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects.* Retrieved from AZ Game and Fish Department, on AZ Department of Transportation: https://azdot.gov/sites/default/files/2019/06/desert_tortoise_guidelines.pdf

AZGFD. (2026a). *Arizona Wildlife Conservation Strategy*. Retrieved from Arizona Game and Fish Department: https://awcs.azgfd.com/

AZGFD. (2026b). *Arizona's Online Environmental Review Tool*. Retrieved from Arizona Game and Fish Department: https://ert.azgfd.gov/content/home

AZGFD. (2026c). *Desert Tortoise*. Retrieved from Arizona's Wildlife, Arizona Game and Fish Department: https://www.azgfd.com/species/desert-tortoise/

Brown, D. E. (1994). *Biotic Communities: Southwestern United States and Northwestern Mexico.* Salt Lake City: University of Utah Press.

Center for Plant Conservation. (2026). *Tumamoc Globeberry*. Retrieved from Center for Plant Conservation: https://saveplants.org/plant-profile/4354/Tumamoca-macdougalii/Tumamoc-Globeberry/

Pima County. (2005). *Chapter 16.30 Watercourse and Riparian Habitat Protection and Mitigation Requirements.* Tucson: Pima County.

Pima County. (2026a). *Flood Management Ordinance*. Retrieved from Pima County Public Works: https://www.pima.gov/1569/Ordinance

Pima County. (2026b). *Multi-Species Conservation Plan (MSCP)*. Retrieved from Pima County Conservation Lands & Resources: https://www.pima.gov/635/Multi-Species-Conservation-Plan-MSCP

Pima County. (2026c). *Sonoran Desert Conservation Plan PimaMaps Map*. Retrieved from Pima County GIS: https://gis.pima.gov/maps/sdcp/

Pima County. (2026d). *The Sonoran Desert Conservation Plan*. Retrieved from Pima County Conservation Lands and Resources: https://www.pima.gov/787/The-Sonoran-Desert-Conservation-Plan

Rubke, C. A. (2024). *Sonoran Desert Tortoise (Gopherus morafkai) Conservation Guidelines. Nongame and Endangered Wildlife Program Technical Report 368.* Phoenix, Arizona: Arizona Game and Fish Department.

SJV. (2023). *Semi-desert Grasslands Habitat Account.* Retrieved from Arizona Bird Conservation Initiative and Sonoran Joint Venture: https://sonoranjv.org/accounts/semi-desert-grasslands.pdf

SonoranJV. (2023). *Semi-desert Grasslands Habitat Account.* Arizona Bird Conservation Initiative and Sonoran Joint Venture.

USDA. (2026). *Web Soil Survey*. Retrieved from USDA Natural Resources Conservation Service: https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

USFWS. (1940). *Bald and Golden Eagle Protection Act*. Retrieved from US Fish and Wildlife Service: https://www.fws.gov/law/bald-and-golden-eagle-protection-act

USFWS. (2002). *Final Recovery Plan Southwestern Willow Flycatcher.* Retrieved from US Fish and Wildlife Service: https://ecos.fws.gov/docs/recovery_plan/southwestern%20willow%20flycatcher%20recovery%20plan%202002%20-%20complete.pdf

USFWS. (2023). *Western Monarch Butterfly Conservation Recommendations.* Retrieved from US Fish and Wildlife Service: https://wafwa.org/wp-content/uploads/2023/03/Western-Monarch-Sec-7-Conservation-Recs-02.2023.pdf

USFWS. (2024). *Recovery Outline for the Cactus Ferruginous Pygmy-Owl.* Retrieved from US Fish and Wildlife Service: https://ecos.fws.gov/docs/recovery_plan/Cactus%20Ferruginous%20Pygmy-Owl%20Recovery%20Outline%2020241005_sgd.pdf

USFWS. (2026a). *ECOS Environmental Conservation Online System*. Retrieved from US Fish and Wildlife Service: https://ecos.fws.gov/ecp/

USFWS. (2026b). *IPaC Information for Planning and Consultation*. Retrieved from US Fish and Wildlife Service: https://ipac.ecosphere.fws.gov/

USFWS. (2026c). *Migratory Bird Treaty Act of 1918*. Retrieved from US Fish and Wildlife Service: https://www.fws.gov/law/migratory-bird-treaty-act-1918

USFWS. (2026d). *Species*. Retrieved from US Fish and Wildlife Service: https://www.fws.gov/species

Appendix A. USFWS IPaC Official Species List

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

NOT FOR CONSULTATION

Location

Pima County, Arizona



Local office

Arizona Ecological Services Field Office

(602) 242-0210
(602) 242-2513

9828 North 31st Ave
#c3

Phoenix, AZ 85051-2517

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., *placing a dam upstream of a fish population even if that fish does not occur at the dam site*, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

---

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

NOT FOR CONSULTATION

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Jaguar Panthera onca Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/3944	Endangered
Ocelot Leopardus (=Felis) pardalis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4474	Endangered

Birds

NAME	STATUS
Cactus Ferruginous Pygmy-owl Glaucidium brasilianum cactorum Wherever found There is **final** critical habitat for this species. https://ecos.fws.gov/ecp/species/1225	Threatened
California Least Tern Sternula antillarum browni Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8104	Endangered
Southwestern Willow Flycatcher Empidonax traillii extimus Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/6749	Endangered
Yellow-billed Cuckoo Coccyzus americanus There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/3911	Threatened

Fishes

NOT FOR CONSULTATION

NAME	STATUS
Gila Chub Gila intermedia Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/51	Endangered
Gila Topminnow (incl. Yaqui) Poeciliopsis occidentalis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1116	Endangered

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/9743	Proposed Threatened

Flowering Plants

NAME	STATUS
Arizona Eryngo Eryngium sparganophyllum There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/10705	Endangered
Huachuca Water-umbel Lilaeopsis schaffneriana var. recurva Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/1201	Endangered
Pima Pineapple Cactus Coryphantha scheeri var. robustispina Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4919	Endangered

NOT FOR CONSULTATION

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act [2] and the Migratory Bird Treaty Act (MBTA) [1]. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their nests, should follow appropriate regulations and implement required avoidance and minimization measures, as described in the various links on this page.

The data in this location indicates that no eagles have been observed in this area. This does not mean eagles are not present in your project area, especially if the area is difficult to survey. Please review the 'Steps to Take When No Results Are Returned' section of the Supplemental Information on Migratory Birds and Eagles document to determine if your project is in a poorly surveyed area. If it is, you may need to rely on other resources to determine if eagles may be present (e.g. your local FWS field office, state surveys, your own surveys).

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

Bald and Golden Eagle information is not available at this time

NOT FOR CONSULTATION

Bald & Golden Eagles FAQs

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are an eagle (Bald and Golden Eagle Protection Act requirements may apply).

Proper interpretation and use of your eagle report
On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort line or no data line (red horizontal) means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide you in knowing when to implement avoidance and minimization measures to eliminate or reduce potential impacts from your project activities or get the appropriate permits should presence be confirmed.

How do I know if eagles are breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If an eagle on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your “IPaC PROBABILITY OF PRESENCE SUMMARY” at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:
The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

NOT FOR CONSULTATION

Breeding Season ()
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Migratory birds

The Migratory Bird Treaty Act (MBTA) [1] prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (FWS).

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

Migratory bird information is not available at this time

Migratory Bird FAQs

Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds.

NOT FOR CONSULTATION

Nationwide Avoidance & Minimization Measures for Birds describes measures that can help avoid and minimize impacts to all birds at any location year-round. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is one of the most effective ways to minimize impacts. To see when birds are most likely to occur and breed in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location, such as those listed under the Endangered Species Act or the Bald and Golden Eagle Protection Act and those species marked as "Vulnerable". See the FAQ "What are the levels of concern for migratory birds?" for more information on the levels of concern covered in the IPaC migratory bird species list.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) with which your project intersects. These species have been identified as warranting special attention because they are BCC species in that area, an eagle (Bald and Golden Eagle Protection Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, and to verify survey effort when no results present, please visit the Rapid Avian Information Locator (RAIL) Tool.

Why are subspecies showing up on my list?

Subspecies profiles are included on the list of species present in your project area because observations in the AKN for **the species** are being detected. If the species are present, that means that the subspecies may also be present. If a subspecies shows up on your list, you may need to rely on other resources to determine if that subspecies may be present (e.g. your local FWS field office, state surveys, your own surveys).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your IPaC migratory bird

NOT FOR CONSULTATION

species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your “IPaC PROBABILITY OF PRESENCE SUMMARY” at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Bald and Golden Eagle Protection Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially BCC species. For more information on avoidance and minimization measures you can implement to help avoid and minimize migratory bird impacts, please see the FAQ “Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds”.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Proper interpretation and use of your migratory bird report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list does not represent all birds present in your project area. It is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide implementation of avoidance and minimization measures to eliminate or reduce potential impacts from your project activities, should presence be confirmed. To learn more about avoidance and minimization measures, visit the FAQ "Tell me about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

NOT FOR CONSULTATION

Interpreting the Probability of Presence Graphs
Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:
The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

NOT FOR CONSULTATION

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER FORESTED/SHRUB WETLAND
- PSS1J

FRESHWATER POND
- PUBF
- PUSJx
- PUSAx

RIVERINE
- R4SBC
- R4SBJ
- R5UBH

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error

NOT FOR CONSULTATION

is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

Appendix B. AZGFD Environmental Online Review Tool Report

Arizona Environmental Online Review Tool Report

Arizona Game and Fish Department Mission
To conserve Arizona's diverse wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations.

The Department requests further coordination to provide project/species specific recommendations. Please use the Project Evaluation Form to submit your project to the Project Evaluation Program at PEP@azgfd.gov.

Project Name:
Santa Rita Connection

Project Type:
Energy Production/Storage/Transfer, Energy Transfer, Power line/electric line (new)

Project ID:
HGIS-26441

User Project Number:
TELPS-25002

Project Description:
138 kV new Transmission line

Contact Person:
CeCe Aguda

Submitted By:
Celia Aguda

Organization:
DockIt Consulting, LLC

On Behalf Of:
PRIVATE

Disclaimer:

1. This Environmental Review is based on the project study area that was entered. The report must be updated if the project study area, location, or the type of project changes.
2. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area. This review is also not intended to replace environmental consultation (including federal consultation under the Endangered Species Act), land use permitting, or the Departments review of site-specific projects.
3. The Departments Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. HDMS data contains information about species occurrences that have actually been reported to the Department. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. Arizona Wildlife Conservation Strategy (AWCS), specifically Species of Greatest Conservation Need (SGCN), represent potential species distribution models for the State of Arizona which are subject to ongoing change, modification and refinement. The status of a wildlife resource can change quickly, and the availability of new data will necessitate a refined assessment.

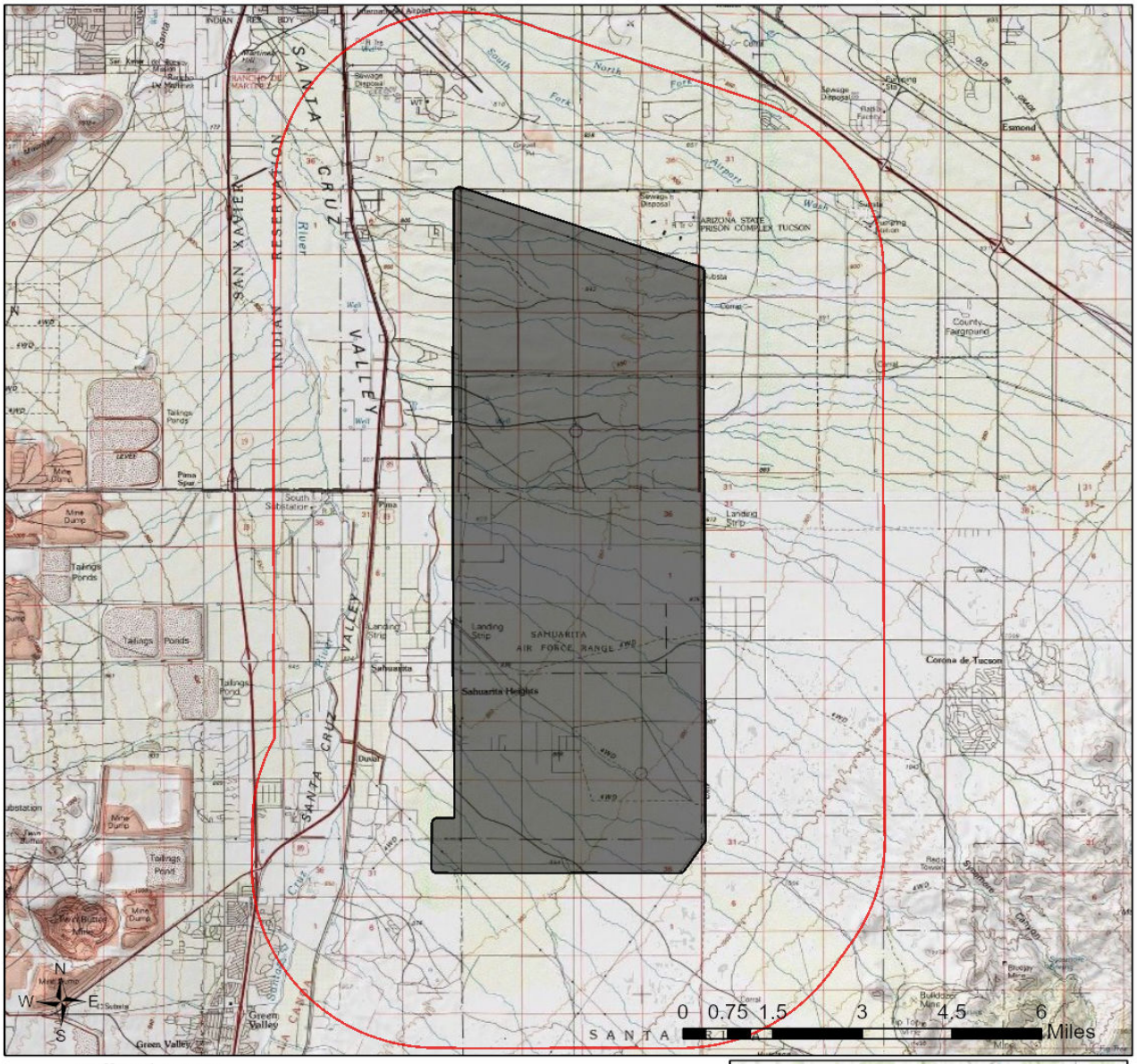
Locations Accuracy Disclaimer:
Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Report is solely responsible for the project location and thus the correctness of the Project Review Report content.

Recommendations Disclaimer:

1. The Department is interested in the conservation of all fish and wildlife resources, including those species listed in this report and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
2. Recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation).
3. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project. These recommendations are preliminary in scope, designed to provide early considerations on all species of wildlife.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. Further coordination with the Department requires the submittal of this Environmental Review Report with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map). Once AGFD had received the information, please allow 30 days for completion of project reviews. Send requests to:
   Project Evaluation Program, Habitat Branch
   Arizona Game and Fish Department
   5000 West Carefree Highway
   Phoenix, Arizona 85086-5000
   Phone Number: (623) 236-7600
   Fax Number: (623) 236-7366
   Or
   PEP@azgfd.gov
6. Coordination may also be necessary under the National Environmental Policy Act (NEPA) and/or Endangered Species Act (ESA). Site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies.

Santa Rita Connection

USA Topo Basemap With Locator Map



Buffered Project Boundary

Project Boundary



Project Size (acres): 29,979.20

Lat/Long (DD): 31.9853 / -110.8944

County(s): Pima

AGFD Region(s): Tucson

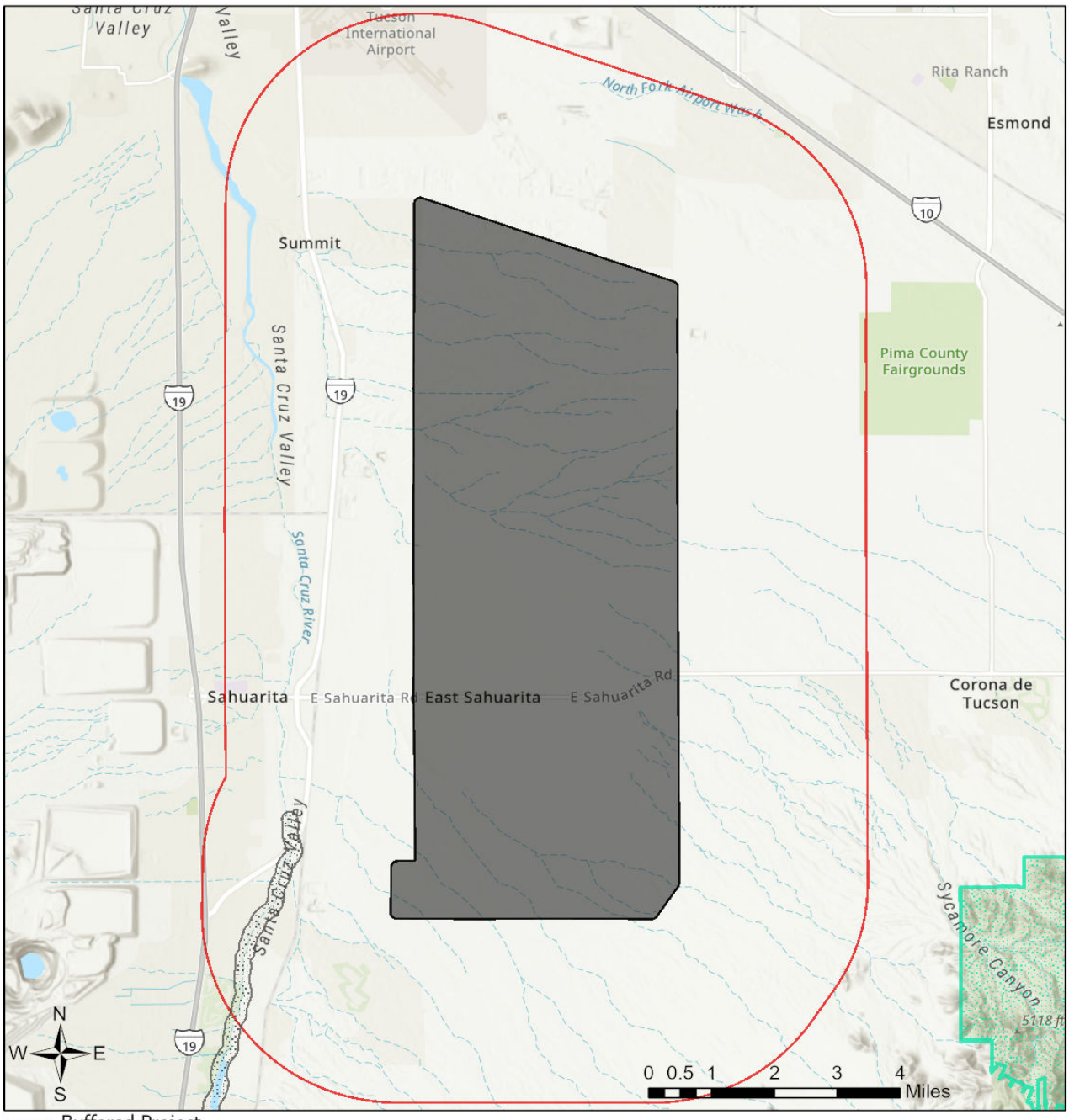
Township/Range(s): T16S, R14E; T16S, R15E; T17S, R14E +

USGS Quad(s): CORONA DE TUCSON; SAHUARITA +

County of Yavapai, Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS
Copyright:© 2013 National Geographic Society, i-cubed
Esri, USGS

Santa Rita Connection

Important Areas



- Buffered Project Boundary
- Project Boundary
- Important Bird Areas
- Critical Habitat
- Pinal County Riparian
- Wildlife Connectivity

Project Size (acres): 29,979.20

Lat/Long (DD): 31.9853 / -110.8944

County(s): Pima

AGFD Region(s): Tucson

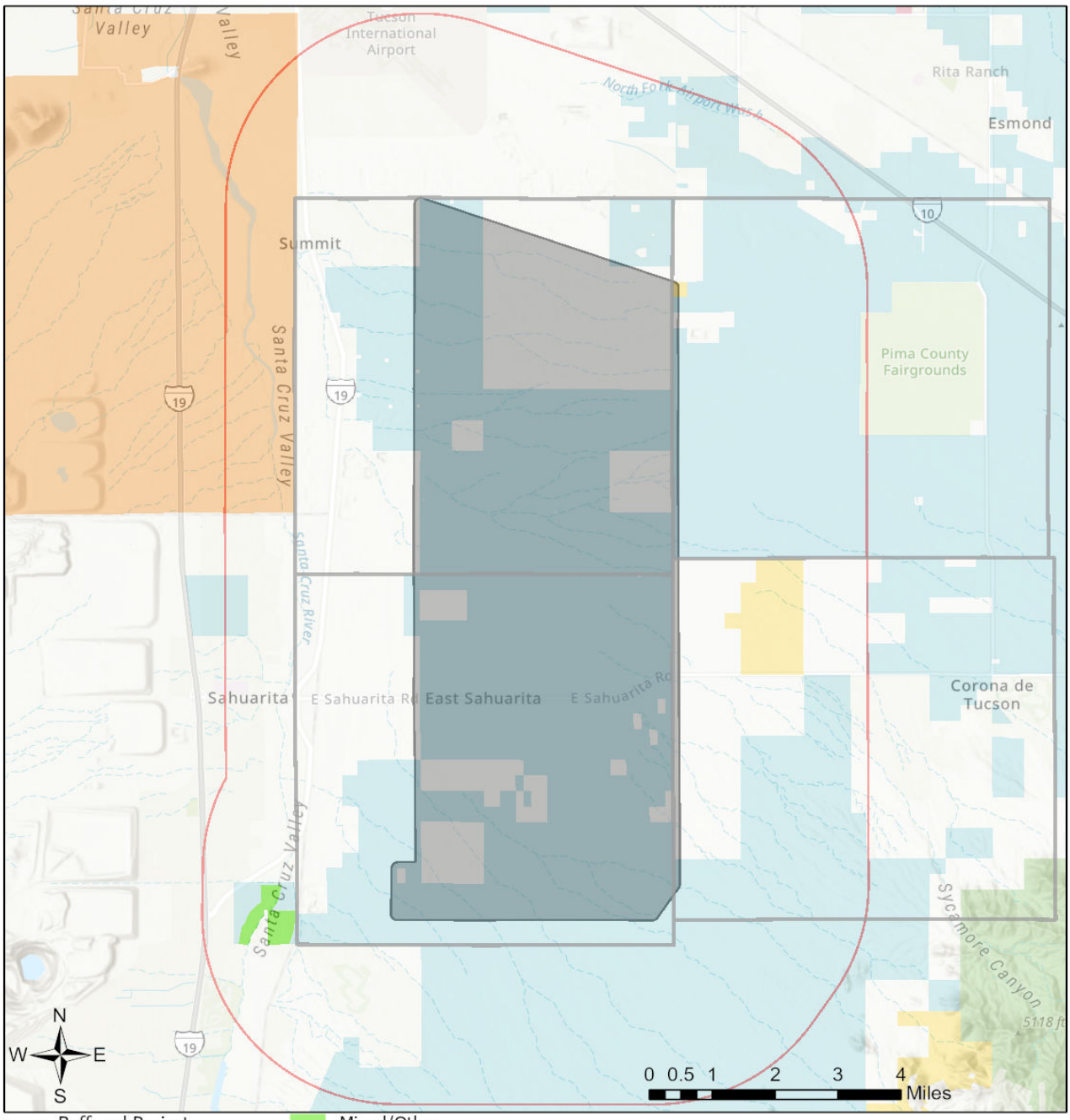
Township/Range(s): T16S, R14E; T16S, R15E; T17S, R14E +

USGS Quad(s): CORONA DE TUCSON; SAHUARITA +

Esri, NASA, NGA, USGS
CONANP, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA, USFWS

Santa Rita Connection

Township/Ranges and Land Ownership



- Buffered Project Boundary
- Project Boundary
- AZ Game & Fish Dept.
- BLM
- BOR
- Indian Res.
- Military
- Mixed/Other
- National Park/Mon.
- Private
- State & Regional Parks
- State Trust
- US Forest Service
- Wildlife Area/Refuge
- Township/Ranges

Project Size (acres): 29,979.20

Lat/Long (DD): 31.9853 / -110.8944

County(s): Pima

AGFD Region(s): Tucson

Township/Range(s): T16S, R14E; T16S, R15E; T17S, R14E +

USGS Quad(s): CORONA DE TUCSON; SAHUARITA +

Esri, NASA, NGA, USGS
CONANP, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA, USFWS

Special Status Species Documented within 3 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Ammospermophilus harrisii	Harris' Antelope Squirrel					2
Aspidoscelis sonorae	Sonoran Spotted Whiptail					2
Auriparus flaviceps	Verdin					2
Bat Colony						
Campylorhynchus brunneicapillus	Cactus Wren					2
Cardinalis sinuatus	Pyrrhuloxia					2
Chaetodipus baileyi	Bailey's Pocket Mouse					2
Chilomeniscus cinctus	Banded Sandsnake					2
Chordeiles minor	Common Nighthawk					2
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S	S		1
Colaptes chrysoides	Gilded Flicker			S		2
Coryphantha scheeri var. robustispina	Pima Pineapple Cactus	LE		S		
Coryphantha scheeri var. robustispina	Pima Pineapple Cactus	LE		S	HS	
Cynanthus latirostris	Broad-billed Hummingbird		S			2
Didelphis virginiana californica	Mexican Opossum					2
Echinocereus fasciculatus	Magenta-flower Hedgehog-cactus				SR	
Falco sparverius	American Kestrel					2
Gastrophryne mazatlanensis	Sinoloan Narrow-mouthed Toad			S		2
Gopherus morafkai	Sonoran Desert Tortoise	CCA	S	S		1
Heloderma suspectum	Gila Monster					1
Icterus bullockii	Bullock's Oriole					2
Incilius alvarius	Sonoran Desert Toad					2
Lasiurus xanthinus	Western Yellow Bat		S			2
Melanerpes uropygialis	Gila Woodpecker					2
Melozone aberti	Abert's Towhee		S			2
Melozone fusca	Canyon Towhee					2
Micruroides euryxanthus	Sonoran Coralsnake					2
Myotis velifer	Cave Myotis			S		2
Parabuteo unicinctus	Harris's Hawk					2
Perognathus amplus	Arizona Pocket Mouse					2
Peucaea carpalis	Rufous-winged Sparrow					2
Phrynosoma solare	Regal Horned Lizard					2
Phyllorhynchus browni	Saddled Leaf-nosed Snake					2
Progne subis hesperia	Desert Purple Martin			S		2
Tadarida brasiliensis	Brazilian Free-tailed Bat					2
Tumamoca macdougalii	Tumamoc Globeberry		S	S	SR	

Note: Status code definitions can be found at https://www.azgfd.com/wildlife-conservation/on-the-ground-conservation/state-wildlife-action-plan/state-wildlife-action-plan-status-definitions/.

Special Areas Documented that Intersect with Project Footprint as Drawn

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Lee Moore Wash Flow Corridors	Pima County Wildlife Movement Area - Riparian/Wash					
Santa Cruz River to Santa Rita Experimental Range	Pima County Wildlife Movement Area - Landscape					
Santa Rita Experimental Range/Coronado National Forest Wildland Block	Pima County Wildlife Movement Area - Diffuse					
Santa Rita Wildlife Areas	Conservation Opportunity Area					

Note: Status code definitions can be found at https://www.azgfd.com/wildlife-conservation/on-the-ground-conservation/state-wildlife-action-plan/state-wildlife-action-plan-status-definitions/.

Species of Greatest Conservation Need Predicted that Intersect with Project Footprint as Drawn, based on Predicted Range Models

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Accipiter atricapillus	American Goshawk		S	S		2
Ammodramus savannarum perpallidus	Western Grasshopper Sparrow					2
Ammospermophilus harrisii	Harris' Antelope Squirrel					2
Anthus spragueii	Sprague's Pipit					2
Aquila chrysaetos	Golden Eagle	BGA		S		2
Asio otus	Long-eared Owl					2
Aspidoscelis sonorae	Sonoran Spotted Whiptail					2
Athene cunicularia hypugaea	Western Burrowing Owl		S	S		2
Auriparus flaviceps	Verdin					2
Botaurus lentiginosus	American Bittern					2
Buteo regalis	Ferruginous Hawk			S		2
Buteo swainsoni	Swainson's Hawk					2
Buteogallus anthracinus	Common Black Hawk					2
Calcarius ornatus	Chestnut-collared Longspur					2
Callipepla squamata	Scaled Quail					2
Calypte costae	Costa's Hummingbird					2
Camptostoma imberbe	Northern Beardless-Tyrannulet		S			2
Campylorhynchus brunneicapillus	Cactus Wren					2
Catharus ustulatus	Swainson's Thrush					2
Chaetodipus baileyi	Bailey's Pocket Mouse					2
Charadrius montanus	Mountain Plover					2
Chilomeniscus cinctus	Variable Sandsnake					2
Choeronycteris mexicana	Mexican Long-tongued Bat		S	S		2

Species of Greatest Conservation Need Predicted that Intersect with Project Footprint as Drawn, based on Predicted Range Models

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Chordeiles minor	Common Nighthawk					2
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S	S		1
Colaptes chrysoides	Gilded Flicker			S		2
Columbina inca	Inca Dove					2
Corvus cryptoleucus	Chihuahuan Raven					2
Corynorhinus townsendii pallescens	Pale Townsend's Big-eared Bat		S	S		1
Crotalus tigris	Tiger Rattlesnake					2
Cynanthus latirostris	Broad-billed Hummingbird		S			2
Empidonax wrightii	Gray Flycatcher					2
Eumops perotis californicus	Greater Western Bonneted Bat			S		2
Falco mexicanus	Prairie Falcon					2
Falco peregrinus anatum	American Peregrine Falcon		S	S		1
Falco sparverius	American Kestrel					2
Gastrophryne mazatlanensis	Sinoloan Narrow-mouthed Toad			S		2
Glaucidium brasilianum cactorum	Cactus Ferruginous Pygmy-owl	LT	S	S		1
Gopherus morafkai	Sonoran Desert Tortoise	CCA	S	S		1
Haemorhous cassinii	Cassin's Finch					2
Heloderma suspectum	Gila Monster					1
Icterus bullockii	Bullock's Oriole					2
Icterus cucullatus	Hooded Oriole					2
Icterus parisorum	Scott's Oriole					2
Incilius alvarius	Sonoran Desert Toad					2
Kinosternon sonoriense sonoriense	Desert Mud Turtle			S		2
Lanius ludovicianus	Loggerhead Shrike					2
Lasiurus cinereus	Hoary Bat					2
Lasiurus frantzii	Desert Red Bat		S			2
Lasiurus xanthinus	Western Yellow Bat		S			2
Leptonycteris yerbabuenae	Lesser Long-nosed Bat			S		1
Lepus alleni	Antelope Jackrabbit					2
Macrotus californicus	California Leaf-nosed Bat			S		2
Megascops kennicottii	Western Screech-owl					2
Melanerpes uropygialis	Gila Woodpecker					2
Melospiza lincolnii	Lincoln's Sparrow					2
Melozone aberti	Abert's Towhee		S			2
Micrathene whitneyi	Elf Owl					3
Micruroides euryxanthus	Sonoran Coralsnake					2
Myadestes townsendi	Townsend's Solitaire					2
Myotis auriculus	Southwestern Myotis					2
Myotis thysanodes	Fringed Myotis					2

Species of Greatest Conservation Need Predicted that Intersect with Project Footprint as Drawn, based on Predicted Range Models

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Myotis velifer	Cave Myotis			S		2
Myotis yumanensis	Yuma Myotis					2
Neotoma mexicana mexicana	Mexican Woodrat					2
Notiosorex cockrumi	Cockrum's Desert Shrew					2
Nyctinomops femorosaccus	Pocketed Free-tailed Bat					2
Nyctinomops macrotis	Big Free-tailed Bat					2
Parabuteo unicinctus	Harris's Hawk					2
Passerculus sandwichensis	Savannah Sparrow					2
Perognathus amplus	Arizona Pocket Mouse					2
Peucaea carpalis	Rufous-winged Sparrow					2
Phrynosoma solare	Regal Horned Lizard					2
Phyllorhynchus browni	Saddled Leaf-nosed Snake					2
Pooecetes gramineus	Vesper Sparrow					2
Progne subis hesperia	Desert Purple Martin			S		2
Rana yavapaiensis	Lowland Leopard Frog		S	S		1
Setophaga nigrescens	Black-throated Gray Warbler					2
Sigmodon arizonae cienegae	Arizona Cotton Rat					2
Spizella breweri	Brewer's Sparrow					2
Tadarida brasiliensis	Brazilian Free-tailed Bat					2
Terrapene ornata	Ornate Box Turtle			S		1
Thomomys umbrinus intermedius	Southern Pocket Gopher					2
Toxostoma bendirei	Bendire's Thrasher					2
Troglodytes pacificus	Pacific Wren					2

Species of Economic and Recreation Importance Predicted that Intersect with Project Footprint as Drawn

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Callipepla gambelii	Gambel's Quail					
Callipepla squamata	Scaled Quail					
Odocoileus hemionus	Mule Deer					
Pecari tajacu	Javelina					
Puma concolor	Mountain Lion					
Zenaida asiatica	White-winged Dove					
Zenaida macroura	Mourning Dove					

Project Type: Energy Production/Storage/Transfer, Energy Transfer, Power line/electric line (new)

Project Type Recommendations:
Minimize the potential introduction or spread of exotic invasive species, including aquatic and terrestrial plants, animals, insects and pathogens. Precautions should be taken to wash and/or decontaminate all equipment utilized in the project activities before entering and leaving the site. See the Arizona Department of Agriculture website for a list of prohibited and restricted noxious weeds at https://www.invasivespeciesinfo.gov/ and the Arizona Native Plant Society https://aznps.com/invas for recommendations on how to control these species. To view a list of documented invasive species or to report invasive species in or near your project area visit iMapInvasives - a national cloud-based application for tracking and managing invasive species at https://imap.natureserve.org/imap/services/page/map.html.

- To build a list: zoom to your area of interest, use the identify/measure tool to draw a polygon around your area of interest, and select “See What’s Here” for a list of reported species. To export the list, you must have an account and be logged in. You can then use the export tool to draw a boundary and export the records in a csv file.

The AZGFD recommends that wildlife surveys are conducted to determine if noise-sensitive species, such as birds or mammals, occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

The AZGFD recommends following the Avian Power Line Interaction Committee (APLIC) guidelines for new power lines, which can be found in the current version of *Suggested Practices for Avian Protection on Power Lines and Reducing Avian Collisions with Power Lines*. Large bodied birds, such as hawks, owls, vultures, and eagles, may be vulnerable to line strikes and electrocution during construction and operation of power lines and substations; power poles can also serve as perches for large-bodied birds. These potential impacts can be avoided or minimized by following the APLIC guidelines which include designing the power lines with enough space between energized components to reduce the likelihood of a bird electrocution or installing bird flight diverters in sections of line where elevated bird strikes are anticipated (e.g. lines over water bodies or in the path of colonial roosting locations). The AZGFD’s Raptor Coordinator, who can be contacted at raptors@azgfd.gov or 623-236-7575, can provide further information on specific design features and best management practices.

The AZGFD recommends that a qualified biologist conduct a survey for nesting birds within the project area prior to removal or trimming of trees/vegetation, if the removal or trimming occurs during the breeding season (the Project Evaluation Program can be contacted at PEP@azgfd.gov or 623-236-7600 to determine the appropriate breeding season within the project area). Trees and/or vegetation within the project area may provide nesting opportunities for avian species that are regulated under the Migratory Bird Treaty Act (MBTA) and protected under state law. If it is anticipated the project will not be in compliance with MBTA, the AZGFD recommends contacting the U.S. Fish and Wildlife Service (https://www.fws.gov/office/arizona-ecological-services) for technical assistance. The USFWS will provide options to comply with the MBTA.

The AZGFD recommends revegetating disturbed areas with native drought-tolerant species that represent the natural surrounding landscape. Landscaping with native plants can help support wildlife and pollinator species in the area while reducing dust and erosion. In addition, the applicable land management agencies should be consulted regarding guidelines for revegetation efforts. The AZGFD also recommends the development of a short and long-term monitoring plan, including adaptive management guidelines to address invasive species control and maintain native vegetation.

Project Location and/or Species Recommendations:
HDMS records indicate that one or more native plants listed on the **Arizona Native Plant Law and Antiquities Act** have been documented within the vicinity of your project area. Please contact:
Arizona Department of Agriculture
1688 W Adams St.
Phoenix, AZ 85007
Phone: 602.542.4373
https://agriculture.az.gov/sites/default/files/Native%20Plant%20Rules%20-%20AZ%20Dept%20of%20Ag.pdf starts on page 44

Analysis indicates that your project is located in the vicinity of an identified **Conservation Opportunity Area (COA)**. While there are many areas in Arizona that present abundant conservation opportunities, COAs are specific areas on the landscape that the Department identified as having the greatest potential for conservation efforts. COAs were identified using species and habitat data, the presence of unique landscape features, and Departmental expertise. COAs range in size, scope, and focal species and/or habitats and are strictly a non-regulatory conservation tool for the public and our conservation partners to consider. For more information regarding this particular COA near your project area and the Department's suggestions for potential conservation efforts, please visit the COA profile at https://awcs.azgfd.com/conservation-opportunity-areas.

Analysis indicates that your project is located in the vicinity of an identified ***wildlife habitat connectivity feature***. The **County-level Stakeholder Assessments** contain five categories of data (Barrier/Development, Wildlife Crossing Area, Wildlife Movement Area- Diffuse, Wildlife movement Area- Landscape, Wildlife Movement Area- Riparian/Washes) that provide a context of select anthropogenic barriers, and potential connectivity. The reports provide recommendations for opportunities to preserve or enhance permeability. Project planning and implementation efforts should focus on maintaining and improving opportunities for wildlife permeability. For information pertaining to the linkage assessment and wildlife species that may be affected, please refer to: https://www.azgfd.com/wildlife-conservation/planning-for-wildlife/planning-for-wildlife-identifying-corridors/.
Please contact the Project Evaluation Program (pep@azgfd.gov) for specific project recommendations.

HDMS records indicate that one or more **Listed, Proposed, or Candidate** species or **Critical Habitat** (Designated or Proposed) have been documented in the vicinity of your project. The Endangered Species Act (ESA) gives the US Fish and Wildlife Service (USFWS) regulatory authority over all federally listed species. Please contact USFWS Ecological Services Offices at https://www.fws.gov/office/arizona-ecological-services or:

Phoenix Main Office
9828 North 31st Avenue #C3
Phoenix, AZ 85051-2517
Phone: 602-242-0210
Fax: 602-242-2513

Tucson Sub-Office
201 N. Bonita Suite 141
Tucson, AZ 85745
Phone: 520-670-6144
Fax: 520-670-6155

Flagstaff Sub-Office
SW Forest Science Complex
2500 S. Pine Knoll Dr.
Flagstaff, AZ 86001
Phone: 928-556-2157
Fax: 928-556-2121

HDMS records indicate that **Sonoran Desert Tortoise** have been documented within the vicinity of your project area. Please review the Tortoise Handling Guidelines found at https://s3.amazonaws.com/azgfd-portal-wordpress/PortalImages/files/wildlife/2014%20Tortoise%20handling%20guidelines.pdf.

Appendix C. Sonoran Desert Tortoise Conservation Guidelines

SONORAN DESERT TORTOISE (*GOPHERUS MORAFKAI*) CONSERVATION GUIDELINES

Chad A. Rubke, Turtles Project Coordinator

Terrestrial Wildlife Branch, Wildlife Management Division
Arizona Game and Fish Department



Technical Report 368
Nongame and Endangered Wildlife Program
Program Chief: Josh Avey
Arizona Game and Fish Department
5000 W. Carefree Highway
Phoenix, Arizona 85086

May 2024

Civil Rights And American's With Disabilities Act (ADA) Notification Language; Grievance Procedure

The Arizona Game and Fish Department (AGFD) prohibits discrimination on the basis of race, color, sex, national origin, age, or disability in its programs and activities. If anyone believes that they have been discriminated against in any of the AGFD's programs or activities, including its employment practices, the individual may file a complaint alleging discrimination directly with the AGFD Ombudsman, 5000 W. Carefree Highway, Phoenix, AZ 85086, (602) 942-3000 or U.S. Fish and Wildlife Service, Office of Diversity, Inclusion, and Civil Rights, U.S. Department of the Interior, 1849 C St., NW, Washington, D.C. 20240. It is against the law to retaliate against anyone who takes action to oppose discrimination, files a grievance, or participates in the investigation of a grievance.

Persons with a disability may request a reasonable accommodation, such as a sign language interpreter, or this document in an alternative format, by contacting the AGFD Ombudsman, 5000 W. Carefree, Phoenix, AZ 85086, (602) 942-3000 or (623) 236-7373. Requests should be made as early as possible to allow sufficient time to arrange for accommodation.

Si desea hablar con un representante de servicio al cliente bilingüe para obtener información llame al (602) 942-3000 de lunes a viernes de 8:00 a.m. A 5:00 p.m. Y luego ingrese el número. 5 durante el mensaje grabado.

Recommended Citation

Rubke, C.A. 2024. Sonoran Desert Tortoise (*Gopherus morafkai*) Conservation Guidelines. Nongame and Endangered Wildlife Program Technical Report 368. Arizona Game and Fish Department, Phoenix, Arizona.

Acknowledgments

I would like to thank the Arizona Interagency Desert Tortoise Team for their contributions to these conservation guidelines. Special thanks to Cristina Jones, Daren Riedle, and Roy Averill-Murray for their foundational documents that provided the basis for this larger compilation. Helpful comments and edits of the draft provided by Tom Jones. Cover image by George Andrejko.

Project Funding

Funding for this project was provided by Arizona Game and Fish Department's Heritage Fund, State Wildlife Grants, and voluntary contributions to Arizona's Nongame Wildlife Checkoff.

TABLE OF CONTENTS

1.0 Introduction 1
2.0 General Biology 3
2.1 Reproduction 3
2.2 Movement 4
2.3 Habitat Requirements 4
2.4 Sheltersite Use 5
2.5 Food Habits 6
2.6 Predators and Disease 6
2.7 Legal Protections 7
3.0 General Handling Guideline For Sonoran Desert Tortoises 7
4.0 Projects Occurring Within Sonoran Desert Tortoise Habitat 9
4.1 Disturbance Type 9
4.2 Coordination 10
4.3 Site Assessment 10
4.4 Assessing Habitat Conditions in the Action Area 11
5.0 Types of Project Surveys – Linear Project 11
5.1 Linear Project Surveys 11
5.2 Field Methods 12
5.3 Reporting 12
6.0 Types of Project Surveys – Small Project 12
6.1 Small Project Surveys 12
6.2 Field Methods 13
6.3 Reporting 13
7.0 Types of Project Surveys – Large Project 13
7.1 Large Project Surveys 13
7.2 Field Methods 14
7.3 Reporting 14
8.0 Clearance Survey Protocol for the Sonoran Desert Tortoise 14
8.1 Objectives of Clearance Surveys 14
8.2 Applicability of Clearance Surveys 14
8.3 Methods 15
8.4 Extracting Desert Tortoises from Shelters 16

8.5 Excavating Shelters 17
8.6 Nest and Egg Handling Protocol 17
8.7 Constructing Artificial Shelters 18
8.8 Temporarily Confining Desert Tortoises 19
9.0 Avoidance, Minimization, and Mitigation Measures For The Sonoran Desert Tortoise 21
9.1 Generic Mitigation Plan for Projects in Desert Tortoise Habitat 21
9.2 Priority 1: Avoid the Impacts 21
9.3 Priority 2: Minimize the Impacts 21
9.4 Priority 3: Rectify the Impacts 23
9.5 Priority 4: Reduce or Eliminate the Impacts over Time 23
10.0 Specifications For Desert Tortoise Exclusion Fencing 25
10.1 Fence Construction 25
10.2 Materials 25
10.3 Retrofitting Existing Livestock Fence 25
10.4 New Fence Construction 26
10.5 Inspection of Desert Tortoise Barriers 26
10.6 Repair and Maintenance of Desert Tortoise Barriers 26
11.0 Culverts and Passageways for Desert Tortoises 27
11.1 Design Recommendations 27
11.2 Maintenance and Monitoring 28
11.3 Research and Adaptation 28
12.0 Earthen V-Ditches 29
12.1 Design Specifications 29
13.0 Literature Cited 30
Appendix A Tortoise Exclusion Fencing ..... A
Appendix B Field Survey Datasheet ..... B

SONORAN DESERT TORTOISE (*GOPHERUS MORAFKAI*) CONSERVATION GUIDELINES

Chad A. Rubke

1.0 INTRODUCTION

The Sonoran desert tortoise (*Gopherus morafkai*) can be found in both the United States and Mexico, with a distribution split approximately 60:40 between Arizona and Mexico (U.S. Fish and Wildlife Service [USFWS] 2015). In Arizona, its range includes a hybridization zone with the Mojave desert tortoise (*Gopherus agassizii*) in Mohave County, extending from the Black Mountains west of Kingman, south to at least the Buck Mountains, and east to the Hualapai Mountains' western foothills (McLuckie et al. 1999; Edwards et al. 2015; Dolby et al. 2021). The tortoise's range spans across southern Arizona beneath the Mogollon Rim, reaching as far southeast as the Pinaleno Mountains in Graham County and extending to the Pajarito and Atascosa mountains in Santa Cruz County (Babb et al. 2013). In Arizona, the Sonoran desert tortoise generally ranges from 155 to 1500 meters (500 to 5,000 feet) above sea level (ASL), but individuals have been recorded at near or over 1500 meters (m) ASL in several areas with a single report at over 2300 m in the Rincon Mountains, Pima County (Aslan et al. 2003; USFWS 2015). The management of suitable tortoise habitat involves various stakeholders, including federal agencies such as the U.S. Forest Service (USFS), U.S. Fish and Wildlife Service (USFWS), Bureau of Land Management (BLM), National Park Service (NPS), Department of Defense (DoD), as well as the Arizona State Land Department, Tribal Nations, and private landowners.

Zylstra et al. (2013) reported generally high rates of annual survival (~92%) among 15 large, long-term *G. morafkai* mark-recapture plots surveyed between 1987 and 2008. These plots were distributed throughout the species' range within Arizona. Survival of adult tortoises on the plots decreased with drought severity, especially in portions of the range that were most arid, and in plots nearest to cities (Zylstra et al. 2013). Re-surveys between 2008 and 2020 at 13 of those plots, revealed annual survival of adults at 95–96% and juveniles averaged 82%. (Zylstra and Steidl 2021). Drought and closer proximity to cities continued to affect survivorship negatively.

To maintain viability over the long term, the Sonoran desert tortoise requires populations of adequate size and distribution to support resiliency, redundancy, and representation (USFWS 2022). Populations need large numbers of individuals to improve the chances of withstanding stochastic events. Resilient populations need to be spread across its range in both Arizona and Sonora, Mexico, supported by suitable habitat quantity and quality, to provide for range-wide redundancy and representation.

The USFWS reviewed the Sonoran desert tortoise for listing under the Endangered Species Act (ESA) twice since its identification as a distinct species in 2011. Most recently the USFWS found that the species was not considered to be at risk of extinction and that ESA listing was not warranted (USFWS 2022). *Gopherus morafkai* is protected throughout its range in Arizona through state laws (Arizona Revised Statute Title 17) and regulations approved by the Arizona Game and Fish Commission. Under Arizona Game and Fish Commission Order 43, take from the wild is prohibited, and possession is prohibited by AZGFD Rules (Article 4), except under special license or exemption.

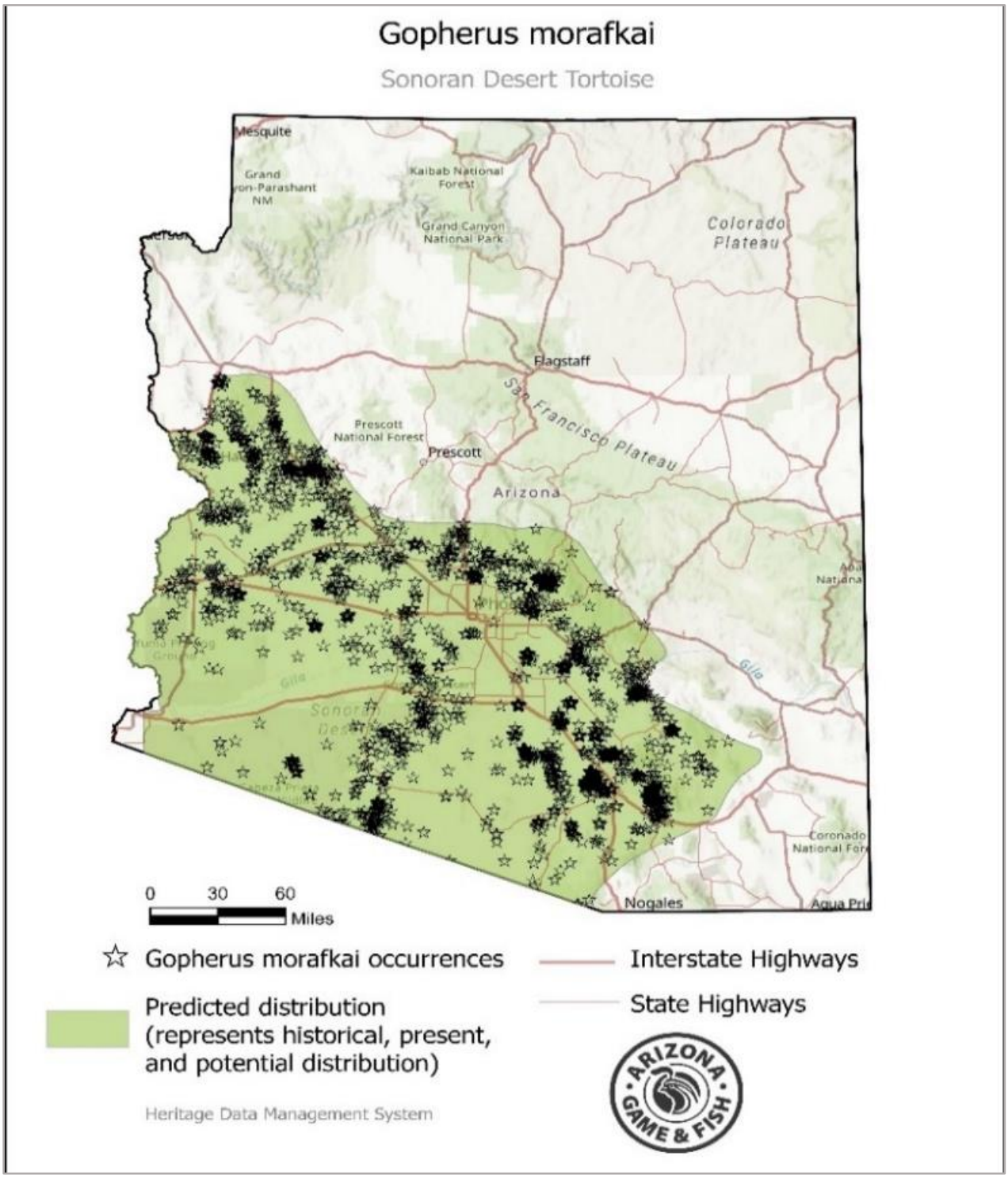


Figure 1. Distribution of the Sonoran desert tortoise in Arizona

The Arizona Interagency Desert Tortoise Team (AIDTT) completed a Candidate Conservation Agreement (CCA) for *G. morafkai* in Arizona to encourage, facilitate, and direct tortoise conservation actions across agencies (AIDTT 2015). Management actions in the agreement include reducing the spread of non-native grasses, reducing or mitigating dispersal barriers, reducing the risk and impact of desert wildfires, reducing the impact of off-highway vehicles, conducting population monitoring, and reducing illegal collection of tortoises. The Arizona Game and Fish Department has developed the following guidelines to reduce potential impacts to Sonoran desert tortoises, and to promote the continued existence of this species throughout the state.

2.0 General Biology

Gopherus morafkai is a large tortoise (up to 320 mm) with a dorsally flattened, pyriform carapace and an elongated, hingeless plastron with a deep posterior notch. Similar to other *Gopherus* species, substantial variability exists among individuals for many morphological features. The carapace is often widest behind the center and generally flares or becomes serrated over the posterior marginals. Paired gulars project anteriorly past the carapacial edge, and the species is sexually dimorphic with males having longer, more forked and upturned gulars. Body mass of adults can exceed 5 kg for large individuals, though 2.5–3.5 kg is more common (Dickinson et al. 2002).

The Sonoran desert tortoise occurs in various habitat types, mainly mixed cactus-paloverde associations along rocky slopes of mountain ranges and, to a lesser degree, they use incised washes with adequate caliche sheltersites draining into intervening lands. *Gopherus morafkai* is slow-growing, taking 18-20 years to reach sexual maturity, and is long-lived (living more than 50 years in the wild; Curtin et al. 2009). Tortoises feed on a variety of vegetation and spend the majority of their time in underground shelters, emerging mainly in the relatively cooler morning and evening hours of the summer or following precipitation events at any time of year. During the spring months, reproductive females emerge to take advantage of new growth following winter rains which provide important energy reserves for subsequent egg development. The most active season is from July through October, coinciding with the summer monsoon and the arrival of new growth in perennial plants and the germination of summer annuals. For the Sonoran desert tortoise, summer is key for feeding, movement, and reproduction.

As temperatures decline in October and November, tortoises reduce their surface activity, contract their movements, and shift their active periods to the warmer temperatures of midday (Averill-Murray et al. 2002; Woodman et al. 2002). The onset of winter inactivity among tortoises varies widely, with some starting to become inactive when daily high temperatures can still reach 30° C, while others may remain active. Tortoises in southern Arizona primarily used overwintering shelters on steep south-facing slopes, and males used deeper, more thermally buffered shelters than females (Bailey et al. 1995). Strong shelter site fidelity has also been noted, with some individuals using the same overwintering shelters for several consecutive years (Rubke and O'Donnell 2020).

2.1 Reproduction

Sonoran desert tortoises have relatively low fecundity. Females lay about 4–6 eggs (observed range 1-9; Averill-Murray et al. 2018), and roughly 50% of females reproduce each year, though this proportion is highly variable (Campbell et al. 2018).

Egg development is correlated with heat accumulation in the spring, with ovarian eggs formed earlier in warmer springs, and egg-laying varying from mid-May through late August (Lovich et al. 2017). Females that emerge earlier from hibernation are more likely to produce eggs, and early-emerging females also produce larger eggs than females that emerge later. The smallest gravid female was measured at 22.0 cm carapace length (CL). The smallest mature male was observed at 21.0 cm CL. Large females are more likely to reproduce in a given year and produce larger eggs than smaller females, but body size does not affect clutch size (Averill-Murray et al. 2018).

2.2 Movement

During their active period, tortoises may travel considerable distances. Home ranges vary from 3–112 hectares (ha) (Riedle et al. 2008; Sullivan et al. 2016; Rubke and Leavitt 2016; Averill-Murray et al. 2020). Long-distance movements of 14–32 km also have been recorded (Edwards et al. 2004; Rubke and Leavitt 2017), though movements of this magnitude typically span more than one season. Within-season movements of >1.5 km have been frequently documented (Barrett 1990; Sullivan et al. 2016; Rubke and O'Donnell 2018). These forays may be prompted by a lack of resources or potential mates in an area, or dispersal of younger tortoises to new territory. Immature tortoises are reported to be 47% more likely to disperse than mature tortoises and movements lasted 5–26 weeks in duration (Averill-Murray et al. 2020). Once established, female *G. morafkai* may overlap significantly in their home range with other females, while males appear less likely to do so (Sullivan et al. 2016). Females, on average, have smaller home ranges than males (Averill-Murray et al. 2020).

2.3 Habitat Requirements

Throughout most of its range *G. morafkai* occurs in subdivisions of the Sonoran Desert (summarized in USFWS 2021). It is a common inhabitant of the Arizona Upland Subdivision. Numerous populations also exist in the Lower Colorado River Subdivision in western Arizona, but it occurs in very low abundance at scattered localities in the hot and dry lower Gila Valley region of extreme southwestern Arizona. Populations are found marginally in Semi-desert Grassland and Madrean Evergreen Woodland (Martin 1995; Babb et al. 2013) in southeastern Arizona. Populations where *G. morafkai* coexists or hybridizes with *G. agassizii* in western Arizona occur in or have influences from the Mojave Desert. Range-wide geospatial modeling of habitat based on vegetation, slope, and elevation resulted in an estimate of approximately 79,000 km^2 of potential habitat in Arizona (USFWS 2021; Figure 2).

Habitat characteristics are influenced more by topographic and geomorphologic features than vegetation communities (Riedle et al. 2008; Zylstra and Steidl 2009). *Gopherus morafkai* most typically occupies steep slopes with boulders and bedrock outcrops in and under which individuals shelter and burrow (Burge 1979, 1980; Barrett 1990; Rosen et al. 2014). However, they are also closely associated with dry washes, extending more than 1.7 km away from rock slopes, where they often shelter in cavities in consolidated alluvial rock such as caliche (Averill-Murray and Averill-Murray 2005; Riedle et al. 2008). Desert washes are an important component of *G. morafkai* habitat, as they provide access to shelter sites outside of rocky bajadas and serve as

linkages between disjunct populations on the various desert mountain ranges throughout its distribution (Edwards et al. 2004; Grandmaison et al. 2010). Populations and individuals are rarely observed in deep, sandy loam soils in semi-desert grassland and Sonoran desert scrub.

2.4 Sheltersite Use

Gopherus morafkai typically emerges from overwintering shelters with the warming temperatures of early spring (Martin 1995; Sullivan et al. 2014). While their activity is reduced in winter, opportunities to drink, forage, and bask prompt individuals to leave shelters briefly, even during cool winter months (Sullivan et al. 2014; Rubke and O'Donnell 2021). Male *G. morafkai* terminate hibernation on average in late April, and females emerge one month earlier in March (Vaughan 1984). Tortoise activity in the spring is variable as temperatures increase. The earlier emergence by females may provide reproductive advantages as access to spring forage is gained (Averill-Murray 2002). Male tortoises have been recorded leaving overwintering shelters as late as June (Bailey et al. 1995).

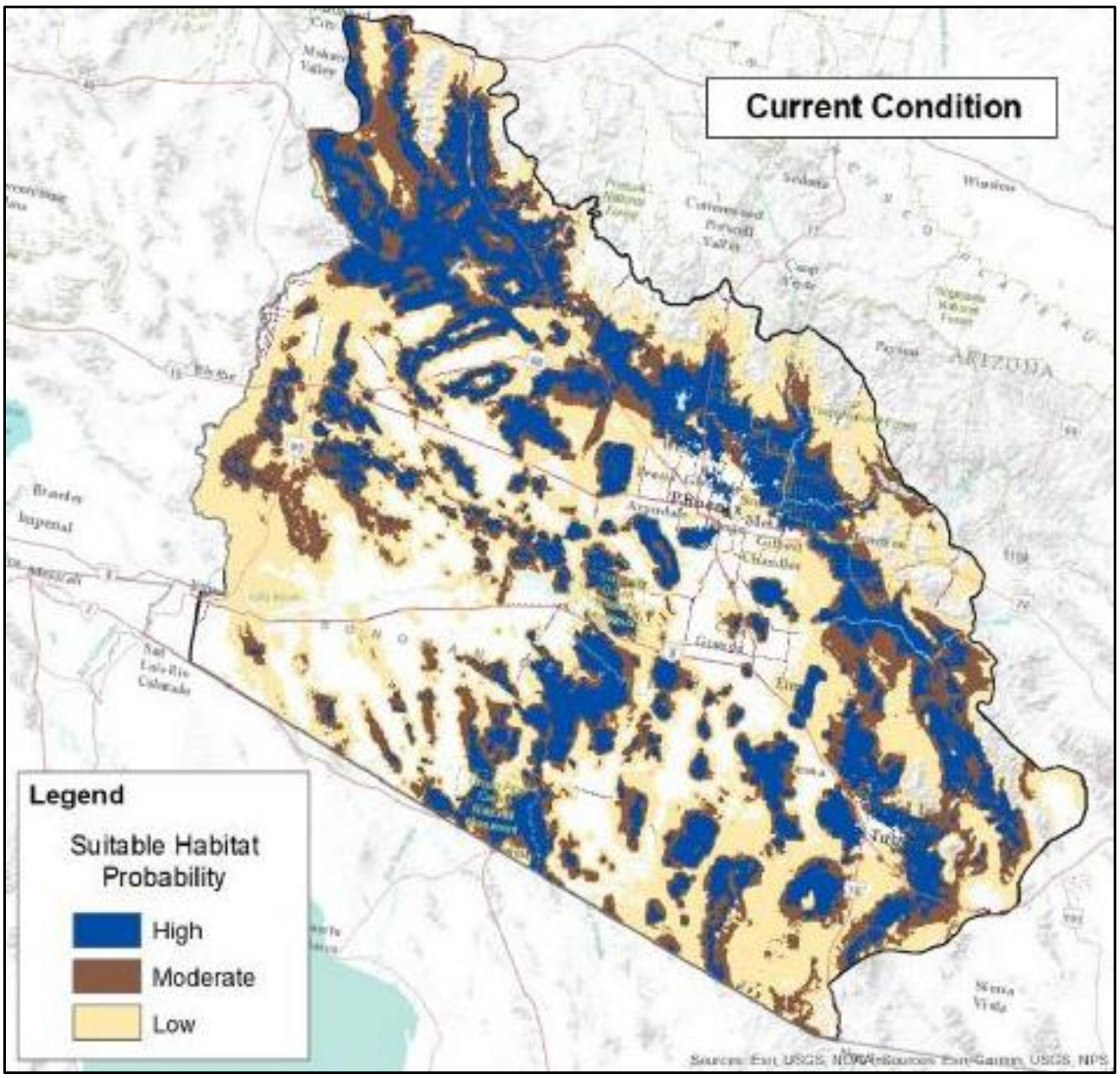


Figure 2. Suitable Sonoran desert tortoise habitat probability, current condition, as modeled by USFWS Species Status Assessment, 2021.

The arrival of summer rainfall, typically beginning in July, rouses tortoises to emerge from deep, thermally insulated shelters to which most individuals retreated during the hot, dry period of mid-May through June. These shelters often consist of caliche caves, rock overhangs, soil burrows, or even *Neotoma* sp. (wood rat) nests. Shelters frequently extend greater than a meter in depth (Grandmaison et al. 2010; Sullivan et al. 2016). When monsoon rains begin, tortoises begin surface activity behaviors and are primarily diurnal, but as critical thermal maxima are regularly reached by mid-morning at the height of summer, they may shift active periods to become more crepuscular and even be sporadically active into the night.

2.5 Food Habits

In Arizona's Sonoran Desert, the distinct winter and summer rainfall patterns provide *Gopherus morafkai* with greater access to food and water than its counterpart, *G. agassizzi*. An analysis of scat fragments collected from seven locations across *G. morafkai*'s range in Arizona identified 104 plant species, with herbaceous annuals making up nearly half of this diversity (Van Devender et al. 2002). Perennial shrubs and trees, herbaceous perennials, succulents, and both annual and perennial grasses were also present. Data from Van Devender et al. (2002) resulted in over 200 plant species in the diet of *G. morafkai*. Spring-season diets encompass a broad spectrum of herbaceous annuals, leading to greater diversity. Diets in the summer are less diverse, but include a wider, more balanced selection across different growth forms.

Gopherus morafkai diets are diverse when considered as a group, but each tortoise usually focuses on a few species, and similarly each location where tortoise diets are studied has a subset of species that comprise the majority of their diets. Summer staples included mallows (desert rose-mallow [*Hibiscus coulteri*], globe-mallow [*Sphaeralcea ambigua*], bladder-mallow [*Herissantia crispa*], Indian mallow [*Abutilon incanum*]), and spreading fanpetals (*Sida abutifolia*), as well as desert vine (*Janusia gracilis*), and a wide variety of grasses. There are also invasive species in the diets of *G. morafkai*, such as *Erodium cicutarium* (redstem filaree) (Van Devender et al. 2002).

Many plant species contain potassium. Sonoran desert tortoises lose water in the process of metabolizing potassium (Oftedal 2002). The potassium excretion potential (PEP) is an index of water, nitrogen, and potassium levels in a plant that affects the ability of all desert tortoises to efficiently excrete potassium. Sonoran desert tortoises have been documented selectively foraging on high PEP plant species (Oftedal 2002; Oftedal 2007) such as certain species of primroses, filaree, legumes, mustards, and spurges (Ernst and Lovich 2009). Selecting for PEP plant species may be especially important for Sonoran desert tortoises to overcome the effects of drought (Ernst and Lovich 2009).

Summer rains bring opportunities to drink from small pools occurring in natural depressions and to forage on new plant growth. Natural and artificially induced drinking behavior in free-ranging tortoises reveals their ability to rapidly and efficiently drink from very small catchments, in part because of the suction they generate using the nares to drink (Sullivan and Sullivan 2016). Individuals will often completely submerge their head in order to effectively imbibe water.

2.6 Predators and Disease

The most commonly documented mammalian predator of *G. morafkai* is *Puma concolor* (Mountain Lion). Predation by *P. concolor* on adult *G. morafkai* was documented or suspected at

several demographic plots across Arizona, often repeatedly. Chew marks indicative of attempted canid predation, most likely by *Canis latrans* or *Urocyon cinereoargenteus* (Coyote, Gray Fox), have been reported on adult tortoises at numerous populations, and a *C. latrans* scat included remains of a juvenile tortoise in at least one case (*e.g.*, Shields and Woodman 1987; Woodman et al. 2001). Domestic dogs are also known to kill tortoises (*e.g.*, Woodman et al. 1993).

Despite the fact that *Corvus corvax* (Common Raven) commonly preys on juvenile *G. agassizii* in the Mojave Desert (Boarman and Berry 1995), evidence of avian predation on juvenile *G. morafkai* has only occasionally been documented (*e.g.*, Woodman et al. 1999). Predation by ravens on *G. morafkai* was never confirmed during surveys of 22 demographic plots between 1980 and 2020. Minimal impact on *G. morafkai* likely results from the more complex habitat and less dense raven populations in the Sonoran Desert (Averill-Murray et al. 2002; Howland and Rorabaugh 2002).

Even though *Mycoplasma agassizii* (the causative agent of Upper Respiratory Tract Disease [URTD]) has been detected in captive *G. morafkai* in Arizona (Jones 2008), prevalence has been low to undetected in wild populations, and population declines in Arizona have not been observed in conjunction with disease (Dickinson et al. 2002, 2005). The shell disease cutaneous dyskeratosis has been reported at variable frequencies between 0% and 65% in *G. morafkai* populations in Arizona (Dickinson et al. 2002). Two populations that suffered marked declines had relatively high frequencies of cutaneous dyskeratosis, but this association was correlated with concurrent periods of severe drought (Averill-Murray et al. 2002, Dickinson et al. 2002, Zylstra et al. 2013). Soft-bodied ticks (*Ornithodorus* spp.) and sandflies (*Lutzomyia* spp.) also have been reported from *G. morafkai*, although without observed detrimental effects (*e.g.*, Woodman et al. 2009; Gray and Steidl 2015).

2.7 Legal Protections

Legal protections pertaining to collection are afforded to the Sonoran desert tortoise in Arizona by state laws (i.e., Arizona Revised Statute Title 17) and regulations imposed by the Arizona Game and Fish Commission. Unless otherwise prescribed in Title 17, it is unlawful to "take, possess, transport, buy, sell, or offer to expose for sale wildlife except as expressly permitted by this title" (ARS 17-309). As restricted live wildlife (R12-4-406), Sonoran desert tortoises cannot be imported, exported, or possessed without special license or lawful exemption. Individuals must be permitted by Arizona Game and Fish Department (AZGFD) in order to conduct scientific research and perform other activities for the Sonoran desert tortoise. Personnel should obtain a Scientific Activities License from AZGFD to allow handling and temporary possession of tortoises. For additional permitting information contact scpermits@azgfd.gov. There are currently no laws prohibiting the incidental take of Sonoran desert tortoises by otherwise lawful activities, nor are there any legal protections afforded to occupied habitat.

It is important to note that private citizens throughout Arizona can legally adopt and hold in their possession Sonoran desert tortoises if they are acquired through state-sanctioned adoption programs operated by AZGFD and the Arizona-Sonora Desert Museum.

3.0 General Handling Guideline For Sonoran Desert Tortoises

If a tortoise is located within an area of potential harm, it should be moved out of harm's way to

adjacent appropriate habitat. If an occupied shelter is determined to be in jeopardy of destruction, the tortoise should be relocated to the nearest shelter of appropriate size and depth, as determined by a qualified biologist. Tortoises should be moved less than 48 hours in advance of the habitat disturbance so they do not return to the area in the interim. A tortoise may be moved up to one kilometer, but no farther than necessary from its original location. If a release site or alternate burrow is unavailable within this distance, and ambient air temperature exceeds 40° Celsius (105° Fahrenheit), contact the Department for guidance.

Tortoises have little effective physiological capacity to dissipate heat, so it is the handler's responsibility to guard against over-heating. Desert tortoises should not be exposed to direct sunlight. Keep tortoises in the shade of a shrub or your body. Ground temperatures are much hotter than air temperatures, so minimize tortoise/ground contact when temperatures are hot. The critical maximum body temperature of desert tortoises is between 40° C and 44° C (103° F and 112° F). Tortoises must not be moved if ambient air temperature exceeds 40° C (105° F) unless an alternate shelter is available or the tortoise is in imminent danger.

To avoid transmission of diseases between tortoises, do not allow tortoises to come into contact with clothing or skin. A fresh pair of non-porous disposable gloves must be used for each tortoise (e.g. latex, nitrile, vinyl, or similar material). Keep gloves on during the entire time you handle a tortoise. If your glove is torn during handling of a tortoise, put a new one over the torn glove. Once used, gloves and any other disposable materials must be contained so as not to come into contact with disinfected materials, fresh gloves, equipment, or any other item that might come into contact with a tortoise. All non-disposable equipment that comes into contact with any part of a tortoise, or any instrument or item that has been in contact with a tortoise, must be treated with an approved disinfectant. Currently, trifectant or chlorhexidine diacetate (or chlorhexidine gluconate) are approved for use, prepared according to manufacturers' instructions. A 30% bleach solution is acceptable, but not preferred.

It is important to minimize risk to tortoises when they are handled in the course of data collection. Special precautions must be taken to prevent or minimize the fluid loss that occurs if tortoises void their bladder during handling. Do not handle the tortoise more than necessary. Always use two hands when picking up a tortoise, and do not turn it on its back or move it rapidly. Sudden movements can cause the tortoise to void (urinate), which can result in dehydration and increases risk of death. Tortoises found in shelters should only be extracted if deemed necessary (see 8.3 Methods section of Clearance Survey Protocol, below, for more details on approved extraction methods).

If the tortoise urinates, it should be rehydrated. To rehydrate a tortoise, you may either soak it in a shallow tub or offer fluids via a shallow bowl and a syringe (without needle attached). For the soak method, soak the tortoise at the release location in a tub with a clean, unused plastic disposable liner for a minimum of 10 to 20 minutes in a quiet protected area. An unused paint tray often works well for this application. Water level shall not be higher than the lower jaw of the animal; the water temperature should be tepid. Desert tortoises must be soaked individually. After each soaking, change the water and disinfect the tub to prevent the transmission of disease between individual tortoises. When offering fluids using an oral syringe, avoid touching the syringe to the tortoise. Instead, create a slow, steady flow that moves over the tortoise's nares and mouth and drips into

the shallow bowl below the tortoise's head (Figure 3). The dripping water will often stimulate the tortoise to take up water from the bowl. Offer fluids while positioning yourself away from the tortoise's line of sight; standing behind the tortoise and holding the syringe behind the tortoise's face is best. This may minimize the stress response from the tortoise and should avoid pushing material back into the nares. Offer at least a full [50 ml] syringe of fluids and as many as 2 more if the tortoise appears to be accepting fluids. Discard the syringe if it touches the tortoise.



Figure 3. Offering fluids to a Sonoran desert tortoise via the syringe and bowl method.

4.0 PROJECTS OCCURRING WITHIN SONORAN DESERT TORTOISE HABITAT

Presence of Sonoran desert tortoises can often be confirmed by contacting biologists with AZGFD, the Bureau of Land Management, or other local biologists that have knowledge of specific areas or access to AZGFD's Heritage Data Management System or other databases that list locality data for desert tortoises. Sonoran desert tortoises can be expected to occur in desert mountains, rocky areas, washes cut through caliche, and bajadas in desert scrub vegetation communities. Tortoises typically inhabit areas with elevations ranging from sea level to 5,000 feet. Presence surveys and mitigation for Sonoran desert tortoise will generally not be needed above 5,000 feet.

4.1 Disturbance Type

The selection of appropriate conservation measures will depend on whether the disturbance is temporary or permanent:

- Temporary action – leaves no permanent structures and results in no permanent habitat loss.

- Permanent action –causes a loss of tortoise habitat or permanently displaces tortoises through the creation of permanent structures.

This guidance closely follows many aspects of the Mojave Desert Tortoise Pre-project Survey Protocol (USFWS 2018) and the Clearance Survey Protocol for the Mojave Desert Tortoise (USFWS 2020). The purpose of this guidance is to:

1. Offer instruction on how to approach projects within desert tortoise habitat;
2. Determine whether desert tortoises are present in a project area; and
3. Provide measures to reduce potential impacts to desert tortoises.

4.2 Coordination

This document provides general guidance but you are encouraged to contact the appropriate land management or resource management agencies when planning surveys so that any site-specific issues can be addressed. Complete results of work should be reported so that a full understanding of the project-specific circumstances are conveyed. Reports should include the conditions under which the surveys were conducted (e.g., weather, experience of surveyors, access to the survey area, degree of disturbance of the land, etc.). Complete results allow for a more thorough understanding of the potential effects of a project. Using desert tortoise surveyors with appropriate qualifications and previous Sonoran desert tortoise experience will improve confidence in the survey results. Note that handling Sonoran desert tortoises is not required to implement pre-project surveys. When planning projects, we recommend working with AZGFD and the other appropriate agencies concurrently to ensure a consistent approach to work planning.

Arizona Game and Fish Department (AZGFD)
5000 W. Carefree Highway
Phoenix, Arizona 85086
623-236-7606
PEP@azgfd.gov

4.3 Site Assessment

If tortoises have been found in the project area or nearby areas of similar habitat, the species can be presumed present, and appropriate mitigation must be included in the proposed project (see 9.0 Mitigation Measures section, below). If presence is questionable, surveys by qualified biologists should be conducted. Often, casual surveys by qualified biologists that focus on microsites with the greatest potential for supporting tortoises can confirm the presence of the species. More intensive work is needed to suggest absence of tortoises.

AZGFD strongly recommends that pre-project surveys cover the entire area of the proposed action. For each action, we also recommend that you discuss with AZGFD the extent of the action area prior to beginning surveys; this is to reduce the likelihood of requests for additional surveys later. Action areas (all areas that may be affected directly or indirectly by the action) frequently include the project site, access routes, and the areas into which desert tortoises may need to be translocated. If the entire action area cannot be accessed at the time of surveys, make note of that in the survey report. Pre-project surveys are valid for 1 year.

4.4 Assessing Habitat Conditions in the Action Area

Being aware of the habitat conditions in the action area allows AZGFD to more effectively assess the results of the surveys and to consider the effects of the proposed action on suitable habitat. Descriptions of the plant communities, level of disturbance, elevation, general soils, and proximity to humans will be advantageous.

- Factors to consider for habitat physical and biological features:
    - Does the action area contain any natural or anthropogenic features that would preclude desert tortoises from residing or moving through the area?
    - Does the action area support native annual plants upon which desert tortoises forage? Are the soil conditions appropriate to support these species?
    - Is the substrate appropriate for desert tortoises to burrow, nest, and overwinter?
    - Does the action area support burrows, rock overhangs, caliche caves, and other sheltersites or have the ability to support such sites
    - Is there an area with a slope >5% or a deeply incised wash crossing the area that might contain tortoises or their shelters?
    - What is the status of the perennial plant community? Are shrubs large enough to provide shelter to desert tortoises? Are they too dense or too sparse to allow for desert tortoises to reside in the area?
    - What evidence is there of past or ongoing disturbance as a result of human activities? Does the area show evidence (i.e., garbage, targets) of past recreational shooting in the area? Do common ravens seem to be overly abundant? Are feral or free-roaming dogs present?

The primary purpose of these surveys is to provide information on whether desert tortoises are likely to be present. Determining whether desert tortoises are present based primarily on sign (rather than live animals) requires biologists to be diligent in observing and describing sign. When evaluating survey results, AZGFD considers other factors, including type and condition of habitat, the general location of the survey area, the experience of the surveyors, the time and weather when the survey was conducted, how much time surveyors spent at the site, and whether they were conducting a focused survey for tortoises or looking for a suite of biological and/or cultural resources.

5.0 TYPES OF PROJECT SURVEYS – LINEAR PROJECT

5.1 Linear Project Surveys

If an action area is elongated and less than 600 m wide, linear project surveys are appropriate. The narrower action areas associated with linear projects, like rights-of-way, are less likely to include the entire home ranges of desert tortoises, so that animals that use the area may not be present during surveys. The primary purpose of surveys for linear projects is to provide information on where most tortoises may be encountered along the project. We recommend that surveys be done during the summer monsoon season (July – September) when possible. Tortoise surveys conducted before April or after October may not be accepted as a suitable survey and could necessitate return visits to the site. Contact AZGFD regarding sections of the proposed right-of-way where surveys may not be necessary or appropriate.

5.2 Field Methods

For linear projects, the action area is the right-of-way, and the adjacent areas on both sides of the right-of-way where tortoises may be moved from harm's way during implementation of the project. To adequately determine where most tortoises may be found, complete at least one 10-m-wide belt transect for every 100 m of the width of the action area or portion thereof. For example, if the right-of-way is 50 m wide and tortoises will be moved no more than 200 m from either edge of the right-of-way, the action area would be 450 m wide. A surveyor would need to complete 5 10-m-wide transects. Once 10-m-wide belt transects have been established, survey by walking a straight path on the centerline of each transect. Surveyors should report what they see or are drawn to investigate while walking on the centerline, whether a tortoise is visible on the surface or somewhat concealed in vegetation or in a shelter. If a surveyor detects a shelter while walking on the centerline, it should be examined to determine if a desert tortoise is present, or at or near the entrance. Use mirrors or flashlights to inspect any and all shelters. If the back of a shelter cannot be seen due to shelter depth or configuration, an endoscope or borescope can be used to determine occupancy or absence of a tortoise.

Surveyors should record on datasheets all evidence that indicates desert tortoises may be present (e.g., scat, tracks, shelters, carcasses, etc., in addition to live tortoises). To the best of the surveyor's ability, condition of the sign should be categorized (e.g., fresh, < 1 year, > 1 year old). If sign is detected off-transect, it should be recorded and then noted that it was found off-transect.

For each tortoise that is encountered, at a minimum it should be recorded whether it is ≥ 180 mm. If feasible, obtain the most accurate midline carapace length (MCL) measurement possible without touching the tortoise or if the animal is partially concealed, estimate its length and note on a datasheet. If personnel have obtained a Scientific Activities License from AZGFD, or are named as agents under one, handling of tortoises is acceptable. If no Scientific Activities License has been obtained, and personnel are not named as agents under one, handling of tortoises is not permissible.

5.3 Reporting

Provide the data sheets, a map of the action area that includes the locations of the transects, desert tortoises, and sign, and a description of the habitat conditions onsite to AZGFD at the email address provided above. Ensure these materials are sent as soon after completion of the surveys as possible. Spatial information can be provided in pdf and GIS formats. In order to protect sensitive data, it is advisable to either discourage the sharing of geographic locations on social media platforms and citizen science applications or to encourage users to obscure or privatize these details.

6.0 TYPES OF PROJECT SURVEYS – SMALL PROJECT

6.1 Small Project Surveys

Operationally, AZGFD considers sites < 200 ha (500 ac) to be "small." The action areas of small projects are less likely to include the entire home ranges of desert tortoises, therefore, desert tortoises that regularly use the area may be off site during surveys. The primary purpose of these surveys is to provide information on where tortoises may be encountered in the action area of the project. We recommend that surveys be done during the summer monsoon season (July – September) when possible. Tortoise surveys conducted before April or after October may not be

accepted as a suitable survey and could necessitate return visits to the site. Contact AZGFD regarding sections of the project action area where surveys may not be necessary or appropriate.

6.2 Field Methods

Establish 10-m-wide belt transects to cover the entirety of the action area. Survey by walking a straight path on the centerline of each transect. Surveyors should report what they see or are drawn to investigate while walking on the centerline, whether a tortoise is visible on the surface or somewhat concealed in vegetation or in a shelter. If a surveyor detects a shelter while walking the centerline, it should be examined to determine if a desert tortoise is present, or at or near the entrance. Use mirrors or flashlights to inspect any and all shelters. If the back of a shelter cannot be seen due to shelter depth or configuration, an endoscope or borescope can be used to determine occupancy or absence of a tortoise.

Surveyors should record on datasheets all evidence that indicates desert tortoises may be present (e.g., scat, tracks, shelters, carcasses, etc., in addition to live tortoises). To the best of the surveyor's ability, condition of the sign should be categorized (e.g., fresh, < 1 year, > 1 year old). If sign is detected off-transect, it should be recorded and then noted that it was found off-transect.

For each tortoise that is encountered, at a minimum it should be recorded whether it is ≥ 180 mm. If feasible, obtain the most accurate MCL measurement possible without touching the tortoise or if the animal is partially concealed, estimate its length and note on a datasheet. If personnel have obtained a Scientific Activities License from AZGFD, or are named as agents under one, handling of tortoises is acceptable. If no Scientific Activities License has been obtained, and personnel are not named as agents under one, handling of tortoises is not permissible.

6.3 Reporting

Provide the data sheets, a map of the action area that includes the locations of the transects, desert tortoises, and sign, and a description of the habitat conditions onsite to AZGFD at the email address provided above. Ensure these materials are sent as soon after completion of the surveys as possible. Spatial information can be provided in pdf and GIS formats. In order to protect sensitive data, it is advisable to either discourage the sharing of geographic locations on social media platforms and citizen science applications or to encourage users to obscure or privatize these details.

7.0 TYPES OF PROJECT SURVEYS – LARGE PROJECT

7.1 Large Project Surveys

The AZGFD considers sites > 200 hectares (500 acres) to be "large." The action areas of large projects could include the entire home ranges of desert tortoises. AZGFD will always consider it acceptable to survey the entire action area with transect centerlines spaced 10 m apart. However, large projects may reach a scale where it becomes unreasonable to cover entire action areas using transects spaced at 10 m. In this case, transect spacing can be increased to 20 m or 30 m between surveyors. The primary purpose of large project surveys is to provide information on where desert tortoises are occurring within the action area. Surveys to enumerate the number of individuals should be conducted when Sonoran desert tortoises are most active (monsoon season [July – September], but also in the spring [April] and fall [October]).

7.2 Field Methods

Establish 10, 20, or 30 m-wide belt transects to cover the action area. Survey by walking a straight path on the centerline of each transect. Surveyors should report what they see or are drawn to investigate while walking on the centerline, whether the tortoise is visible on the surface or somewhat concealed in vegetation or a shelter. If a surveyor detects a shelter while walking the centerline, it should be examined to determine if a desert tortoise is present or at or near the entrance. Flashlights or a hand-held mirror should be used to illuminate and examine the shelter. If the back of a shelter cannot be seen due to shelter depth or configuration, an endoscope or borescope can be used to determine occupancy or absence of a tortoise.

Surveyors should record on datasheets all evidence that indicates desert tortoises may be present (e.g., scat, tracks, shelters, carcasses, etc., in addition to live tortoises). To the best of the surveyor's ability, condition of the sign should be categorized (e.g., fresh, < 1 year, > 1 year old). If sign is detected off-transect, it should be recorded and then noted that it was found off-transect.

For each tortoise that is encountered, at a minimum it should be recorded whether it is ≥ 180 mm. If feasible, obtain the most accurate MCL measurement possible without touching the desert tortoise or if the animal is partially concealed, estimate its length and note on a datasheet. If personnel have obtained a Scientific Activities License from AZGFD, or are named as agents under one, handling of tortoises is acceptable. If no Scientific Activities License has been obtained, and personnel are not named as agents under one, handling of tortoises is not permissible.

7.3 Reporting

Provide the data sheets, a map of the action area that includes the locations of the transects, desert tortoises, and sign, and a description of the habitat conditions onsite to AZGFD at the email address provided above. Ensure these materials are sent as soon after completion of the surveys as possible. Spatial information can be provided in pdf and GIS formats. In order to protect sensitive data, it is advisable to either discourage the sharing of geographic locations on social media platforms and citizen science applications or to encourage users to obscure or privatize these details.

8.0 CLEARANCE SURVEY PROTOCOL FOR THE SONORAN DESERT TORTOISE

8.1 Objectives of Clearance Surveys

- Locate as many desert tortoises as possible within the project area.
- Remove all desert tortoises encountered from the project site.
- Safely excavate, collect, and rebury desert tortoise eggs if found within the project area.

8.2 Applicability of Clearance Surveys

For projects located in occupied desert tortoise habitat (as evidenced by presence of live tortoises or recent sign) we strongly recommend a clearance survey. This is especially appropriate for projects with a permanent or linear disturbance (roads, transmission lines, etc.). This survey is intended to reduce the likelihood that desert tortoises are injured or killed as a result of the proposed action. Clearance survey methods may include temporarily penning desert tortoises within the area surrounding its shelter, moving desert tortoises out of harm's way a short distance from the impact area, or translocating desert tortoises to a designated area outside its home range in accordance with an AZGFD—and other appropriate agency—approved translocation plan. It is

the project proponent's responsibility to obtain all necessary authorizations from AZGFD and applicable land management agencies.

8.3 Methods

Clearance surveys require 100% coverage of the project area, with a focus on locating all desert tortoises above and below ground within the project area. Clearance surveys should be conducted immediately prior to surface disturbance at each site within the project area or following construction of a desert tortoise-proof fence encompassing the project area. A desert tortoise-proof fence ensures tortoises cannot enter the project area after clearance surveys are completed.

Desert tortoises often pace along new fences attempting to gain access to the other side or return to areas from which they were removed. After the desert tortoise exclusion fence has been installed, the fencing should be checked several times a day when temperatures are expected to exceed 95°F (35°C) to ensure tortoises are not trapped within the fence or are fence-walking; these animals may be exposed to lethal temperatures. If a suspected hyperthermic tortoise or excessively stressed tortoise (see Figure 4) is found along a fence and temperatures are above 95°F (35°C), the tortoise should be moved to a climate-controlled area and rehydrated (following methods described above).



Figure 4. Signs associated with hyperthermia include lethargy, weakness, edema, neurological signs, and excessive, frothy oral discharge as seen in these extremely stressed tortoises (*Gopherus Polyphemus*) (Wendland et al. 2009).

Clearance surveys at the site must consist of at least 2 consecutive surveys of the site. Surveys will involve walking transects ≤ 5-m wide under typical conditions. In areas of dense vegetation or when conditions limit the ability of the surveyor to locate desert tortoises, transects should be reduced in width accordingly. To maximize effectiveness and gather useful data, surveys should be conducted around sunrise and/or sunset, particularly during the desert tortoises' peak activity periods in the monsoon season (July – September), with additional opportunities in spring (April) and fall (October). Clearance surveys should not be conducted November – March. The ultimate number of surveys required may depend on the scale of the project and the number of tortoises found on the last survey.

All methods used for handling desert tortoises during the clearance surveys must be in accordance with AZGFD handling guidelines and procedures. Anyone that handles desert tortoises during clearance activities must have the appropriate authorizations from AZGFD.

During clearance surveys, desert tortoises in shelters may be removed through tapping or careful excavation (see Extracting Desert Tortoises from Shelters, and Excavating Shelters sections, below). Multiple visits occurring at sunrise and/or sunset may be necessary if desert tortoises are inaccessible in deep shelters. Tortoises are often most active around sunrise and sunset during the height of summer. During all handling procedures, desert tortoises will be treated in a manner to ensure they do not overheat or exhibit signs of overheating (e.g., gaping, foaming at the mouth, etc.), or are placed in a situation where they cannot maintain surface and core temperatures necessary to their well-being. Desert tortoises will be kept shaded at all times until it is safe to release them. Tortoises must not be moved if the ambient air temperature exceeds 105°F (40°C) unless an alternate shelter of appropriate size and depth is available, or the tortoise is in imminent danger. Ambient air temperature will be measured in the shade, protected from the wind, at a height of 5 cm above the ground surface.

The area cleared and number of tortoises found within that area must be reported to the AZGFD or appropriate management agency. The report should be made in writing, preferably by email. Provide data sheets, maps of the clearance surveys, and include the locations of desert tortoises, sign, and shelter sites. Spatial information can be provided in pdf and GIS formats.

If a desert tortoise is encountered after clearance surveys have been completed, process the tortoise according to the methods described above.

8.4 Extracting Desert Tortoises from Shelters

Before reaching into a desert tortoise shelter, examine the entrance for other occupants. Rattlesnakes, spiders, scorpions, skunks, and Gila monsters often inhabit tortoise shelters. To determine if a tortoise resides within the shelter, firmly pound the soil at the side of the "apron" or soil mound at the entrance of the shelter 5 – 6 times with an open hand, then listen for desert tortoise movement; wait 30 seconds and repeat several times if the tortoise does not readily emerge. Avoid disturbing or pounding the center of the apron or entrance of the shelter where desert tortoises typically dig nests and lay their eggs. If the desert tortoise is visible deep in its shelter, the observer can gently tap the carapace 3 – 4 times with a stick (Medica et al. 1986). The observer should then remove the stick and move away from the shelter entrance. If tapping is successful, the desert tortoise will emerge, usually to the shelter entrance. If desert tortoise movements are not heard within a few minutes, discontinue tapping.

If the desert tortoise is within arm's reach, first ensure you are wearing a fresh pair of non-porous disposable gloves, then firmly grasp the gular, plastron, or posterior edge of the carapace and gently pull the tortoise towards the shelter entrance. If the desert tortoise resists to the point where moderate pulling effort is unsuccessful, stop pulling but maintain a grip on the tortoise; allow the tortoise to relax. When the tortoise has relaxed, again pull the tortoise towards the shelter entrance; this pattern of pulling, allowing the tortoise to relax, and then pulling again may need to be repeated many times until the animal can be extracted entirely. Try not to compromise the integrity of a

shelter if the desert tortoise will remain within the project area. If the area is to be cleared of all desert tortoises, excavate the shelter as described in the section below.

8.5 Excavating Shelters

Desert tortoise shelters should be excavated only if they occur within a planned disturbance area. As an alternative to excavation in certain circumstances, the immediate area surrounding a shelter occupied by a desert tortoise may be temporarily penned (see 8.8 Temporarily Confining Desert Tortoises section, below), but this should be coordinated and approved by AZGFD and any other appropriate land management agency.

Before excavation, feel for desert tortoise eggs by gently probing (with your fingers) the soil in front of the shelter opening and along the floor of the shelter as you excavate the shelter. The purpose of probing is to locate areas of excavated soil that are less compacted and may indicate a nest. Eggs have been found up to 6 ft (1.9 m) in front of shelter openings and up to 6 ft (1.9 m) within the entrance of a shelter; they may also occur in the mound at the shelter opening. To avoid crushing eggs, do not scrape tools such as shovels, across the bottom of the shelter, but continue to probe the area with your fingers as you proceed. Removal of the top 10 in (25 cm) of soil (or until a hard layer of soil is encountered) will typically ensure that you find any desert tortoise eggs. Be particularly careful from mid-May through late August when eggs are most likely to be present. If found, follow egg handling protocols detailed in the following section.

Excavators should wear leather or cloth gloves during shelter excavation to avoid bites or stings by wildlife. Use blunt-nosed shovels or garden trowels. The preferred method involves two individuals, each with a shovel, to excavate a shelter. Place a shovel in the shelter entrance, or garden trowel for small shelters, and slice away the ceiling with the second shovel or trowel. Remove the soil with the first shovel or trowel as excavation proceeds and repeat. Excavate the shelter slowly and carefully and stop often to see if a tortoise is within reach. Do not collapse the shelter ahead of the shovel or trowel inside the shelter. You should feel the shovel contact the other shovel with each stroke to avoid striking a desert tortoise. It may take several minutes or several hours to excavate a desert tortoise shelter, depending on its length and other characteristics.

Always excavate the shelter to its absolute end(s), and then excavate an additional foot-or-so (0.3 m) of harder soil beyond the suspected end to ensure that a desert tortoise is not behind a dirt plug or mound. Search all side tunnels within the shelter for tortoises, especially in kit fox dens. If a desert tortoise is found, do not assume that it is alone. After removing the first desert tortoise encountered, return to the shelter and continue to excavate it looking for additional tortoises. After excavating the shelter, leave it collapsed so that no desert tortoise may reuse it.

A tortoise may be moved up to one kilometer but no further than necessary from its original location. Irrespective of the time of year and temperature, relocate the desert tortoise to a suitable shelter and contact AZGFD for additional guidance and coordination if needed.

8.6 Nest and Egg Handling Protocol

Sonoran desert tortoise nest and egg handling involves specialized protocols that require technical expertise and are not intended for the general public. If a tortoise nest or eggs are encountered, it

is critical not to disturb them. The AZGFD should be contacted and consulted for guidance on appropriate measures.

Desert tortoises may lay eggs during the months of May through August and usually hatch September through October. Some eggs may not hatch, or hatchlings may not emerge until the following spring. Desert tortoise eggs will need to be moved to a similarly constructed artificial nest in the wild. If unemerged hatchlings are encountered, release them into an unoccupied shelter in the wild unless otherwise directed by AZGFD.

Any nest that is found will be carefully excavated by hand at a time of day when the air temperature 15 cm above the ground is approximately equal to the soil temperature at egg level. Excavate suspected nests by hand. Disposable rubber, latex, or nitrile gloves should be worn when marking and handling eggs. Before disturbance of nest contents, each egg will be gently marked with a small dot on the top using a felt-tipped pen to establish the egg's orientation in the nest. In handling nest contents, eggs must be maintained in this orientation at all times. Because egg shells become extremely fragile in the last few weeks before hatching, special care will be taken with eggs found from August to mid-October. Because the egg is very fragile, it may break during handling; this will be lethal to the developing tortoise inside. Broken eggs will be buried nearby and left in the field, or the contents preserved and made available for research projects. Report broken eggs to AZGFD.

Measure and record the depth of the nest below the soil surface and the position of the nest relative to the shelter entrance (or other shelter cover). Place approximately 1 in (2.5 cm) of soil from the nest area in a bucket and carefully transfer the eggs to the bucket, maintaining egg orientation. Gently cover the eggs with soil that is free of cobbles and pebbles, to a depth equivalent to that of the original nest.

A nest will be prepared (or a natural one found) at the release site with the same depth and location in relation to the shelter entrance as the original nest. The eggs will be transferred to the new nest, maintaining their original orientation. The eggs will be replaced so that they touch one another. Gently cover with soil from which cobbles and pebbles have been removed so that all the air spaces around the eggs are filled.

8.7 Constructing Artificial Shelters

Constructing artificial shelters generally is not necessary when translocating Sonoran desert tortoises. Often, ample shelters can be found in surrounding habitat. However, in the infrequent case that an artificial shelter may be needed (coordinate with AZGFD), the information below provides a general description of the methods for constructing artificial shelters taken from the Tortoise Group’s adoption and care pamphlet.

Create an artificial shelter that is the same orientation and size as the shelter from which the desert tortoise was taken. The burrow for a juvenile desert tortoise should be 0.9–1.2 m (3–4 ft) long, and an adult tortoise shelter should be 1.5–1.8 m (5–6 ft) long. Shelter construction involves digging a three-sided shelf upon which plywood will be placed to serve as the roof of the shelter. A channel is dug below the level of the shelf which approximates the width of the tortoise and functions as the actual shelter.

Determine the width and length to dig the shelf, and place the plywood on the ground. Use corner stakes and twine to delineate the perimeter. Dig the shelter in a downward slant 15–20° below the horizontal line of the ground (Figure 5). Place the plywood onto the shelf. Fit the plywood snugly and then remove it. Next, dig the channel and loosen the soil along the floor of the channel to a depth of 15 cm (6 in) to allow a tortoise to dig its way out should the plywood sag and possibly trap or pin it in the shelter. Replace the plywood and shovel dirt on top. Place rocks along the eave of the shelter roof, above the opening (Figure 5). Mound the dirt so that rain water will not puddle on top of the finished shelter.

Alternatively, the tortoise and its shelter may be temporarily penned (see section below).

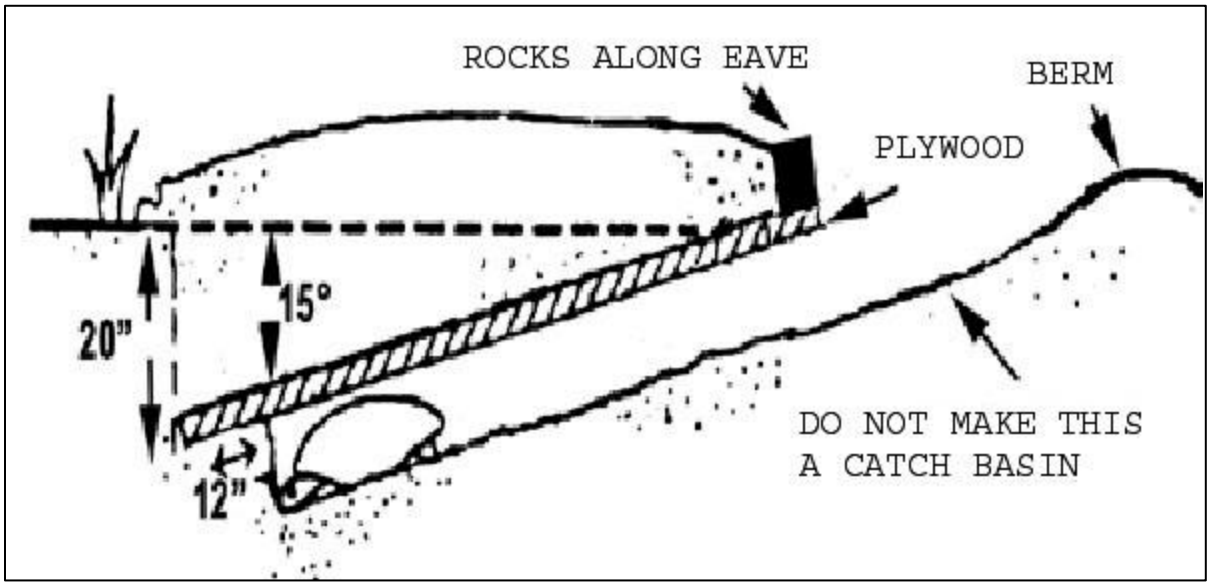


Figure 5. Diagram of an artificial tortoise shelter (Tortoise Group 2019).

8.8 Temporarily Confining Desert Tortoises

Occasionally, desert tortoises may be found on the periphery of the project area that may need to be temporarily penned to prevent them from moving onto the project site and then needing to be physically moved. These situations should be coordinated with AZGFD and construction activity will need to be carefully monitored in the area around the penned tortoise. The methodology for penning desert tortoises (U.S. Department of Defense 2005) is adapted from a methodology developed by Gilbert Goodlett (EnviroPlus Consulting, Ridgecrest, California). Generally, desert tortoises should not be penned in areas of moderate or heavy public use. Penning will be accomplished by installing a circular fence, approximately 6 m (20 ft) in diameter to enclose the tortoise/shelter (Figure 6). The pen should be constructed with durable materials (*i.e.*, 16 gauge or heavier) suitable to resist desert environments. Fence material should consist of 1-in horizontal by 2-in (2.5 by 5.0 cm) vertical, galvanized welded wire. Pen material should be 50 cm (24 in) in width. Steel T-posts or rebar (0.6–0.9 m [2–3 ft]) should be placed every 1.5–1.8 m (5–6 ft) to support the pen material. The pen material should extend 46 cm (18 in) aboveground. The bottom of the enclosure will be buried 15–30 cm (6–12 in) or bent inward (towards the burrow), soil

mounded along the base, and implement other measures to ensure zero ground clearance. Care will be taken to minimize visibility of the pen by the public. A designated "Desert Tortoise Monitor" will check the pen at least daily and ensure that the desert tortoise is in the shelter or pen, the desert tortoise is alive and well, and the pen is intact. All instances of penning or issues associated with penning will be reported to AZGFD within 3 days.



Figure 6. Example of fencing designed for the temporary penning of a desert tortoise. Note: this fencing is currently under installation; the open trench at the base of the fence must be backfilled to eliminate gaps that could entrap tortoises.

9.0 Avoidance, Minimization, and Mitigation Measures For The Sonoran Desert Tortoise

Mitigation should be tailored to the nature of the proposed action, its anticipated effects, and the density and expected response of desert tortoises to the action. The following mitigation actions are grouped to assist in selection of appropriate actions for specific projects. Nevertheless, each project is different and development of an appropriate mitigation plan will require the input of a desert tortoise biologist and authorizing agencies. Mitigation measures suggested herein are recommendations to be used in developing mitigation plans for specific projects. Required mitigation will be developed by permitting agencies and project proponents in accordance with land management plans, the National Environmental Policy Act (NEPA), and other applicable guidance and regulations.

The first set of mitigation measures are presented as a generic mitigation outline. Within the outline, measures are listed in the general order and priority in which they should be applied to project proposals. This step-down process is in accordance with NEPA regulations and Fish and Wildlife Service mitigation policy. A second set of measures follow the outline and consist of project-specific mitigation recommendations. These and/or other measures developed during project planning should be added to the generic mitigation outline as appropriate.

Some of the following recommended measures are defined fairly specifically; others provide more general guidance to be considered in the process of developing a project mitigation plan. When integrating these measures into a mitigation plan, replace “should” with “shall” to reflect their obligatory status.

9.1 Generic Mitigation Plan for Projects in Desert Tortoise Habitat

9.2 Priority 1: Avoid the Impacts

To the extent possible, project features should be located in previously disturbed areas or outside of desert tortoise habitat.

If impacts to desert tortoises or their habitat cannot be avoided, then:

9.3 Priority 2: Minimize the Impacts

A. **Scheduling Activities to Reduce Potential Adverse Effects:**

To the extent possible, project activities should be scheduled when tortoises are inactive (typically November 1 to March 1).

B. Information and Education of Project Personnel:

A desert tortoise protection education program should be presented to all employees, inspectors, supervisors, contractors, and subcontractors who carry out proposed activities at the project site. The education program should include discussions of the following:

1. The legal and sensitive status of the tortoise;
2. a brief discussion of tortoise life history and ecology;
3. mitigation measures designed to reduce adverse effects to tortoises;
4. and protocols to follow if a tortoise is encountered, including appropriate contact points.

C. Designation of a Desert Tortoise Coordinator:

The project proponent should designate a desert tortoise coordinator who should be responsible for overseeing compliance with the mitigation program, coordination with permitting agencies, land managers, and Arizona Game and Fish Department; and as a contact point for personnel that encounter desert tortoises. The desert tortoise coordinator should be on site during project activities and should be familiar with and have a copy of the desert tortoise mitigation plan.

D. Removal of Harm to Desert Tortoises on Project Sites:

If a tortoise is found in a project area, activities should be modified to avoid injuring or harming it. If activities cannot be modified, tortoises in harm's way should be moved in accordance with guidelines established above (see section 3.0 General Handling Guidelines).

E. Minimization of Project Footprint:

1. Vehicle use should be limited to existing or designated routes to the extent possible
2. Areas of new construction or disturbance should be flagged or marked on the ground prior to construction. All construction workers should strictly limit their activities and vehicles to areas that have been marked. Construction personnel should be trained to recognize markers and understand the equipment movement restrictions involved.

F. Limitation of Habitat Disturbance within the Project Footprint:

1. Blading of new access or work areas should be minimized to the extent possible. Disturbance to shrubs should be avoided if possible. If shrubs cannot be avoided during equipment operation or vehicle use, wherever possible they should be crushed rather excavated or bladed and removed.

2. Project features that might trap or entangle desert tortoises, such as open trenches, pits, open pipes, etc. should be covered or modified to prevent entrapment. This may only be necessary during the tortoise active season and may be unnecessary if an on-site biologist is monitoring activities - see "Suggested Mitigation Measures for Projects Conducted During the Tortoise Activity Period" below.

G. Preventing Attraction of Predators or Enhancement of Predator Populations:

Construction sites should be maintained in a sanitary condition at all times to prevent attracting predators. The project proponent is responsible for controlling and limiting litter, trash, and garbage by placing refuse in predator-proof, sealable receptacles immediately. This practice not

only keeps the site clean but also reduces the likelihood of attracting avian predators such as ravens, along with other potential predators that can harm Sonoran desert tortoises. Additionally, care should be taken to avoid creating artificial perches or other structures that could facilitate predator access. Trash and debris should be removed when construction is complete to ensure that the habitat remains as natural and undisturbed as possible.

9.4 Priority 3: Rectify the Impacts

A. Removal of Hazards:

After completion of the project, trenches, pits, and other features in which tortoises could be entrapped or entangled, should be filled in, covered, or otherwise modified so they are no longer a hazard to desert tortoises.

B. Habitat Restoration:

After project completion, measures should be taken to facilitate restoration. Restoration techniques should be tailored to the characteristics of the site and the nature of project impacts identified in the mitigation plan as developed by project biologists, AZGFD, and other relevant agencies. Techniques may include removal of equipment and debris, recontouring, replacing boulders that were moved during construction; and seeding/planting native vegetation, and transplanting of cacti and yuccas, etc. Only native plant species, preferably from a source on or near the project area, should be used in restoration.

9.5 Priority 4: Reduce or Eliminate the Impacts over Time, and Provide Guidance and Information for Improving Future Mitigation Plans

Monitoring and Reporting Requirements:

The project proponent should submit a monitoring report to AZGFD and any permitting State or Federal agency within 90 days of project completion. For long-term or ongoing projects that may result in continuing impacts to tortoises and habitat, annual monitoring reports should be prepared. Monitoring reports should briefly document the effectiveness of the desert tortoise mitigation measures, actual acreage of desert tortoise habitat disturbed, the number of desert tortoises excavated from burrows, the number of desert tortoises moved from construction sites, and other applicable information on individual desert tortoise encounters. The report should make recommendations for modifying or refining the mitigation program to enhance desert tortoise protection and reduce needless hardship on the project proponents.

The following mitigation measures are designed for specific project types or conditions. Most act to minimize project impacts (priority 2 measures).

For Projects Involving Hazardous Materials:

Oil, fuel, pesticides, and other hazardous material spills should be cleaned up and properly disposed of as soon as they occur in accordance with applicable State and Federal regulations. All hazardous material spills must be reported promptly to the appropriate surface management agencies and hazardous materials management authorities.

For Projects Conducted During the Tortoise Activity Period (typically March 1 to November 1)

1. Construction and operation activities should be monitored by a qualified desert tortoise biologist. The biologist should be present during all activities in which encounters with tortoises may occur. The biologist should watch for tortoises wandering into construction areas, check under vehicles, check at least three times per day any excavations that might trap tortoises, and conduct other activities necessary to ensure the death and injury of tortoises is minimized. This measure may only be warranted in areas of moderate to high tortoise density. Additionally, desert tortoises are drawn to water and damp soil, which can result from using a water truck for dust control. The scent of wet or damp soil mimics the conditions of a natural rainstorm, attracting tortoises and potentially increasing their presence on or near project roads. Therefore, heightened vigilance is essential to prevent harm to tortoises in these situations.

2. Unleashed dogs should be prohibited in project areas.

3. If temporary fencing is necessary to exclude desert tortoises during construction, the fence should include: 1) portable, stand-alone chain-link fence modules or plastic snow fencing, supported by standard metal fence posts; and 2) desert tortoise fencing that complies with section 8.8 Temporarily Confining Desert Tortoises. Note that snow fencing or orange safety fencing, typically made from plastic or PVC, does not withstand desert conditions well and should not be used for periods exceeding 60 days.

For Long-term or Permanent Projects in Which Continued Encounters with Desert Tortoises Are Expected:

Construction of permanent or long-term projects in moderate to high density desert tortoise habitat should be enclosed with desert tortoise barrier fencing to prevent tortoises from wandering onto the project site where they may be subject to collection, death, or injury. Barrier fencing should consist of wire mesh with a maximum mesh size of 1inch (horizontal) by 2-inch (vertical) fastened securely to posts. The wire mesh should extend at least 18 inches above the ground and preferably 12 inches below the surface of the ground. Where burial is not possible, the lower 12 inches should be folded outward, away from the enclosed site, and fastened to the ground so as to prevent tortoise entry. Any gates or gaps in the fence should be constructed and operated to prevent desert tortoise entry (such as installing "tortoise guards" similar to cattle guards, and/or keeping gates closed). Specific measures for tortoise-proofing gates and gaps should be addressed project by project. Fencing is a relatively expensive mitigation measure and may only be appropriate in areas of moderate to high tortoise density

10.0 Specifications For Desert Tortoise Exclusion Fencing

10.1 Fence Construction

The specifications for fencing materials and construction procedures were standardized by the USFWS to effectively confine tortoises or exclude them from potentially harmful situations, particularly in areas near roads and highways. For further details, please consult the "USFWS Desert Tortoise Fencing Specifications 2005," which can be accessed via the following URL:

https://eplanning.blm.gov/public_projects/nepa/41489/93713/113028/AppendixD_Desert-Tortoise-Fence-Specs.pdf.

10.2 Materials

Fences should be constructed with durable materials (i.e., 16 gauge or heavier) suitable to resist desert environments, alkaline and acidic soils, wind, and erosion. Fence material should consist of 1-inch horizontal by 2-inch vertical, galvanized welded wire, 36 inches in width. Other materials include: Hog rings, steel T-posts, and smooth or barbed livestock wire. Hog rings should be used to attach the fence material to existing strand fence. Steel T-posts (5 to 6-foot) are used for new fence construction. Standard smooth livestock wire fencing should be used for new fence construction, on which tortoise-proof fencing would be attached.

10.3 Retrofitting Existing Livestock Fence

Option 1 (see drawing diagram of Appenix A below). Fence material should be buried a minimum of 12 inches below the ground surface, leaving 22-24 inches above ground. A trench should be dug or a cut made with a blade on heavy equipment to allow 12 inches of fence to be buried below the natural level of the ground. The top end of the tortoise fence should be secured to the livestock wire with hog rings at 12 to 18-inch intervals. Distances between T-posts should not exceed 10 feet, unless the tortoise fence is being attached to an existing right-of-way fence that has larger interspaces between posts. The fence must be perpendicular to the ground surface, or slightly angled away from the road, towards the side encountered by tortoises. After the fence has been installed and secured to the top wire and T-posts, excavated soil will be replaced and compacted to minimize soil erosion.

Option 2 (see drawing diagram of Appenix A below). In situations where burying the fence is not practical because of rocky or undigable substrate, the fence material should be bent at a 90° angle to produce a lower section approximately 14 inches wide which will be placed parallel to, and in direct contact with, the ground surface; the remaining 22-inch wide upper section should be placed vertically against the existing fence, perpendicular to the ground and attached to the existing fence with hog rings at 12 to18-inch intervals. The lower section in contact with the ground should be placed within the enclosure in the direction of potential tortoise encounters and level with the ground surface. Soil and cobble (approximately 2 to 4 inches in diameter; can use larger rocks where soil is shallow) should be placed on top of the lower section of fence material on the ground covering it with up to 4 inches of material, leaving a minimum of 18 inches of open space between the cobble surface and the top of the tortoise-proof fence. Care should be taken to ensure that the fence material parallel to the ground surface is adequately covered and is flush with the ground surface.

10.4 New Fence Construction

Options 1 or 2 should be followed except in areas that require special construction and engineering such as wash-out sections (see below). T-posts should be driven approximately 24 inches below the ground surface spaced approximately 10 feet apart. Livestock wire should be stretched between the T-posts, 18 to 24 inches above the ground to match the top edge of the fence material; desert tortoise-proof fencing should be attached to this wire with hog rings placed at 12 to 18-inch intervals. Smooth (barb-less) livestock wire should be used except where grazing occurs.

If fence is constructed within the range of bighorn sheep, two smooth-strand wires are required at the top of the T-post, approximately 4 inches apart, to make the wire(s) more visible to sheep. A 20 to 24-inch gap must exist between the top of the fence material and the lowest smoothstrand wire at the top of the T-post. The lower of the top two smooth-strand wires must be at least 43 inches above the ground surface.

(72-inch T-posts: 24 inches below ground + 18 inches of tortoise fence above ground + 20 to 24-inch gap to lower top wire + 4 inches to upper top wire = 66 to 70 inches).

10.5 Inspection of Desert Tortoise Barriers

The risk level for a desert tortoise encountering a breach in the fence is greatest in the spring, summer, and fall, particularly around the time of precipitation including the period during which precipitation occurs and at least several days afterward. All desert tortoise fences and cattleguards should be inspected on a regular basis sufficient to maintain an effective barrier to tortoise movement. Inspections should be documented in writing and include any observations of entrapped animals; repairs needed including bent T-posts, leaning or non-perpendicular fencing, cuts, breaks, and gaps; cattleguards without escape paths for tortoises or needed maintenance; tortoises and tortoise burrows including carcasses; and recommendations for supplies and equipment needed to complete repairs and maintenance.

All fence and cattleguard inventories should be inspected at least twice per year. However, during the first 2 to 3 years all inspections will be conducted quarterly at a minimum, to identify and document breaches, and problem areas such as wash-outs, vandalism, and cattleguards that fill-in with soil or gravel. GPS coordinates and mileages from existing highway markers should be recorded in order to pinpoint problem locations and build a database of problem locations that may require more frequent checking. Following 2 to 3 years of initial inspection, subsequent inspections should focus on known problem areas which will be inspected more frequently than twice per year. In addition to semi-annual inspections, problem areas prone to wash-outs should be inspected following precipitation that produces potentially fence-damaging water flow. A database of problem areas will be established whereby checking fences in such areas can be done efficiently.

10.6 Repair and Maintenance of Desert Tortoise Barriers

Repairs of fence wash-outs: (1) realign the fence out of the wash if possible to avoid the problem area, or (2) re-construct tortoise-proof fencing using techniques that will ensure that an effective desert tortoise barrier is established that will not require frequent repairs and maintenance.
Gaps and breaks will require either: (a) repairs to the existing fence in place, with similar diameter and composition of original material, (b) replacement of the damaged section to the nearest T-post, with new fence material that original fence standards, (c) burying fence, and/or (d) restoring zero ground clearance by filling in gaps or holes under the fence and replacing cobble over fence constructed under Option 2. Tortoise-proof fencing should be constructed and maintained at cattleguards to ensure that a desert tortoise barrier exists at all times.

All fence damage should be repaired in a timely manner to ensure that tortoises do not travel through damaged sections. Similarly, cattleguards will be cleaned out of deposited material underneath them in a timely manner. In addition to periodic inspections, debris should be removed that accumulates along the fence. All cattleguards that serve as tortoise barriers should be installed and maintained to ensure that any tortoise that falls underneath has a path of escape without crossing the intended barrier.

11.0 Culverts and Passageways for Desert Tortoises

Effective road and highway infrastructure planning is critical to mitigating the impacts of habitat fragmentation on desert tortoises. Implementing culverts and passageways can enhance connectivity between tortoise populations separated by roads, thus improving their genetic diversity and overall population viability. This section outlines recommendations for designing and maintaining culverts and passageways to facilitate tortoise movement and reduce road mortality and closely follows the recommendations outlined in the USFWS's document on passages for connectivity of Mojave desert tortoises by the Desert Tortoise Recovery Office.

11.1 Design Recommendations

Exclusion Fencing and Passageway Spacing

Exclusion Fencing: Desert tortoise exclusion fencing should be considered for roads with an average daily traffic volume over 200 vehicles. These fences help prevent tortoises from accessing roadways, thereby reducing mortality.

Passageway Spacing: To restore connectivity, passages should be spaced approximately 2200 feet (670 m) apart. This spacing is based on multi-year home range estimates and aims to provide at least one road passage for tortoises living near the road.

Placement Considerations

Habitat Potential: Passages should be installed in areas with high habitat potential on both sides of the road. Avoid placing passages in areas where one side is no longer suitable for tortoises.

Wash Associations: Where possible, align passageways with natural washes, as tortoises preferentially use these areas for foraging and movement.

Structural Design

Culvert Specifications: Under-road passages, such as culverts, should have an openness ratio (structure's cross-section/length) of 0.4. Square passages should be at least 5.9 feet (1.8 m) on each side, and circular passages should have a diameter of at least 6.6 feet (2.0 m).

Substrate and Lighting: Culverts should have a natural substrate (e.g., sand, silt, gravel) to encourage use by tortoises. The ability of tortoises to see light at the end of the passageway is crucial; therefore, shorter culverts with a large diameter are preferred.

Noise and Visual Barriers

Sound Attenuation: High traffic volumes can deter tortoises from using passageways. Installing sound-attenuating walls above the entrance can reduce noise and light disturbance from passing vehicles.

Flooding and Debris Management: Design passageways to minimize debris accumulation and maintain a clear, dry path wide enough to encourage use by tortoises.

11.2 Maintenance and Monitoring

Regular Maintenance: Regular inspections and maintenance are required to ensure fencing and passageways remain effective, especially after storm events. Damaged fencing and blocked passages should be promptly repaired.

Effectiveness Monitoring: Monitoring should accompany the installation of passageways to assess their effectiveness in maintaining connectivity. Data on tortoise use, road mortality rates, and habitat conditions should be collected to refine design and placement guidelines.

11.3 Research and Adaptation

Ongoing Research: Additional research is necessary to understand the long-term effects of roads and passageways on desert tortoise genetics, demography, and connectivity. Studies should focus on optimal design criteria and spacing to maximize passageway use.

Adaptive Management: Recommendations should be implemented through adaptive management, adjusting strategies based on monitoring results and new research findings.

12.0 EARTHEN V-DITCHES

12.1 Design Specifications

To ensure the safety of the Sonoran desert tortoise during construction and operation activities, it is crucial to consider specific design specifications for earthen v-ditches. The sides of these ditches should have a maximum slope of 35 degrees to prevent tortoises from becoming trapped. The depth and width of the v-ditch should be appropriate for the expected water flow and soil type, avoiding exceptionally deep trenches that tortoises cannot escape and ensuring the width is sufficient to handle water flow without posing unnecessary hazards to wildlife. Regular escape ramps, installed at intervals of at least every 50 meters, should feature a gentle slope not steeper than 15 degrees, allowing tortoises and other small animals to exit easily. Additionally, vegetation should be maintained along the edges of the v-ditch to provide cover. Regular inspections and maintenance are necessary to keep the v-ditch free of debris and ensure the functionality of escape ramps, with maintenance and checks planned during critical periods for tortoises. Adhering to these design specifications will minimize the impact on Sonoran desert tortoises, enhancing their protection and promoting their conservation in areas affected by construction activities.

13.0 LITERATURE CITED

Arizona Interagency Desert Tortoise Team. 2015. Candidate conservation agreement for the Sonoran desert tortoise (*Gopherus morafkai*) in Arizona.

Aslan, C.E., A. Schaefer and D.E. Swann. 2003. *Gopherus agassizii* (Desert Tortoise). Elevational range. Herpetological Review 34:57.

Averill-Murray, R.C. 2002. Reproduction of *Gopherus agassizii* in the Sonoran Desert, Arizona. Chelonian Conservation and Biology 4:295–301.

Averill-Murray, R.C., and A. Averill-Murray. 2005. Regional-scale estimation of density and habitat use of the Desert Tortoise (*Gopherus agassizii*) in Arizona. Journal of Herpetology 39:65–72.

Averill-Murray, R.C, B. Martin, S. Bailey and E. Wirt. 2002. Activity and behavior of the Sonoran Desert Tortoise in Arizona. Pp. 135–158 in T.R. Van Devender (Ed.), The Sonoran Desert Tortoise: Natural History, Biology, and Conservation. University of Arizona Press and the Arizona-Sonora Desert Museum, Tucson.

Averill-Murray, R.C., T.E. Christoper and B.T. Henen. 2018. Reproductive ecology and life history of female Sonoran Desert Tortoises *Gopherus morafkai*). Herpetological Monographs 32:34–50.

Averill-Murray, R.C., C.H. Fleming and J.D. Riedle. 2020. Reptile home ranges revisited: a case study of space use of Sonoran Desert Tortoises (*Gopherus morafkai*). Herpetological Conservation and Biology 15:253–271.

Babb, R.D., T.C. Brennan, D.D. Kandiyeli, C.M. Akins and T.R. Jones. 2013. *Gopherus morafkai* (Sonoran Desert Tortoise). Herpetological Review 44:623.

Bailey, S.J., C.R. Schwalbe and C.H. Lowe. 1995. Hibernaculum use by a population of Desert Tortoises (*Gopherus agassizii*) in the Sonoran Desert. Journal of Herpetology 29:361–369.

Barrett, S.L. 1990. Home range and habitat of the Desert Tortoise (*Xerobates agassizii*) in the Picacho Mountains of Arizona. Herpetologica 46:202–206.

Boarman, W.I. and K.H. Berry. 1995. Common Ravens in the southwestern U.S. Pp. 73–75 in E.T. LaRoe, G.S. Farris, C.E. Puckett, P.D. Doran, and M.J. Mac (Eds.), Our Living Resources: A Report to the Nation on the Distribution, Abundance, and Health of U.S. Plants, Animals, and Ecosystems. U.S. Department of the Interior National Biological Service, Washington D.C.

Burge, B.L. 1979. A survey of the present distribution of the Desert Tortoise, *Gopherus agassizi*, in Arizona. Proceedings Desert Tortoise Council Symposium 1979:27–74.

Burge, B.L. 1980. A survey of the present distribution of the Desert Tortoise, *Gopherus agassizi*, in Arizona: additional data, 1979. Proceedings Desert Tortoise Council Symposium 1980:36–60.

Campbell, S.P., E.R. Zylstra, C.R. Darst, R.C. Averill-Murray and R.J. Steidl. 2018. A spatially explicit hierarchical model to characterize population viability. Ecological Applications 28:2055–2065.

Curtin, A.J., G.R. Zug and J.R. Spotila. 2009. Longevity and growth strategies of the Desert Tortoise (*Gopherus agassizii*) in two American deserts. Journal of Arid Environments 73:463–471.

Dickinson, V.M., J.L. Jarchow, M.H. Trueblood and J.C. deVos. 2002. Are free-ranging Sonoran Desert Tortoises healthy? Pp. 242–264 in T.R. Van Devender (Ed.), The Sonoran Desert Tortoise: Natural History, Biology, and Conservation. University of Arizona Press and the Arizona-Sonora Desert Museum, Tucson.

Dickinson, V.M., I.M. Schumacher, J.L. Jarchow, T. Duck and C.R. Schwalbe. 2005. Mycoplasmosis in free-ranging Desert Tortoises in Utah and Arizona. Journal of Wildlife Diseases 41:839–842.

Dolby, G.A., T.H. Webster, D. DeNardo, T. Edwards, H. Byrne, K. Kusumi and M.A. Wilson. 2021. Characterizing the Sonoran Desert Tortoise through genomic analyses of hybrids and speciation. Heritage Report I17001, Arizona Game and Fish Department, Phoenix.

Edwards, T., C.R. Schwalbe, D.E. Swann and C.S. Goldberg. 2004. Implications of anthropogenic landscape change on inter-population movements of the Desert Tortoise (*Gopherus agassizii*). Conservation Genetics 5:485–499.

Edwards, T., K.H. Berry, R.D. Inman, T.C. Esque, K.E. Nussear, C.A. Jones and M. Culver. 2015. Testing taxon tenacity of tortoises: evidence for a geographical selection gradient at a secondary contact zone. Ecology and Evolution 5:2095–2114.

Grandmaison, D.D., M.F. Ingraldi and F.R. Peck. 2010. Desert Tortoise microhabitat selection on the Florence Military Reservation, south-central Arizona. Journal of Herpetology 44:581–590.

Gray, K.M. and R.J. Steidl. 2015. A plant invasion affects condition but not density or population structure of a vulnerable reptile. Biological Invasions 17:1979–1988.

Howland, M.J. and J.C. Rorabaugh. 2002. Conservation and protection of the Desert Tortoise in Arizona. Pp. 334–354 in T.R. Van Devender (Ed.), The Sonoran Desert Tortoise: Natural History, Biology, and Conservation. University of Arizona Press and the Arizona-Sonora Desert Museum, Tucson.

Jones, C.A. 2008. *Mycoplasma agassizii* in the Sonoran population of the Desert Tortoise in Arizona. Master's Thesis, University of Arizona, Tucson.

Lovich, J.E., R. Averill-Murray, M. Agha, J.R. Ennen and M. Austin. 2017. Variation in annual clutch phenology of Desert Tortoises (*Gopherus morafkai*) in the Sonoran Desert of Arizona. Herpetologica 73:313–322.

Martin, B.E. 1995. Ecology of the Desert Tortoise (*Gopherus agassizii*) in a desert-grassland community in southern Arizona. Master's Thesis, University of Arizona, Tucson.

McLuckie, A.M., T. Lamb, C.R. Schwalbe and R.D. McCord. 1999. Genetic and morphometric assessment of an unusual tortoise (*Gopherus agassizii*) population in the Black Mountains of Arizona. Journal of Herpetology 33:36–44.

Medica, P.A., C.L Lyons and F.B. Turner. 1986. "Tapping": A technique for capturing tortoises. Herpetological Review 17:15–16.

Riedle, J.D., R.C. Averill-Murray, C.L. Lutz and D.K. Bolen. 2008. Habitat use by Desert Tortoises (*Gopherus agassizii*) on alluvial fans in the Sonoran Desert, south-central Arizona. Copeia 2008:414–420.

Rosen, P.C., M.L. Vaughn, C. Meléndez Torres and A.E. Karl. 2014. Distribution and conservation status of Desert Tortoises in northwestern Mexico. Pp. 10–47 in P.C. Rosen (Ed.), Conservation Status, Ecology, and Distribution of Desert Tortoises in Mexico. Unpublished report to U.S. Fish and Wildlife Service, Arizona Ecological Service Office, Phoenix.

Rubke, C.A. and D.J. Leavitt. 2016. Candidate Conservation Agreement monitoring: radio-telemetry monitoring of Sonoran Desert Tortoises (*Gopherus morafkai*) on the Arizona Army National Guard Buckeye Training Site. Final report. Arizona Game and Fish Department, Phoenix.

Rubke, C.A. and D.J. Leavitt. 2017. INRMP required species monitoring: Sonoran Desert Tortoise (*Gopherus morafkai*) habitat evaluation of the Tank Mountains and radio-telemetry tracking in the Dome Rock Mountains and Trigo Peaks of the U.S. Army Yuma Proving Ground. Final report. Arizona Game and Fish Department, Phoenix.

Rubke, C.A. and R.P. O'Donnell. 2018. Radio-telemetry monitoring of Sonoran Desert Tortoises (*Gopherus morafkai*) on the Arizona Army National Guard Florence Military Reservation. Final report. Arizona Game and Fish Department, Phoenix.

Rubke, C.A. and R.P. O'Donnell. 2020. Sonoran Desert Tortoise population surveys at the Eagletail Mountains long-term monitoring plot 2019. Final Report to Arizona State Office, U.S. Bureau of Land Management. Arizona Game and Fish Department, Phoenix.

Rubke, C.A. and R.P. O'Donnell. 2021. Radio-telemetry monitoring of Sonoran Desert Tortoises (*Gopherus morafkai*) on the Arizona Army National Guard Florence Military Reservation: 2020 report. Arizona Game and Fish Department, Phoenix.

Shields, T. and P. Woodman. 1987. A study of the Desert Tortoise in the Eagletail Mountains, Maricopa County, Arizona. Final Report to Arizona State Office, U.S. Bureau of Land Management, Phoenix.

Sullivan, B.K., R.C. Averill-Murray, K.O. Sullivan, J.R. Sullivan, E.A. Sullivan and J.D. Riedle. 2014. Winter Activity of the Sonoran Desert Tortoise (*Gopherus morafkai*) in Central Arizona. Chelonian Conservation and Biology 13:114–119.

Sullivan, B.K., A.K. Owens, K.O. Sullivan and E.A. Sullivan. 2016. Spatial ecology of Sonoran Desert Tortoises (*Gopherus morafkai*): I. Fidelity in home range, refuge use and foraging behavior. Journal of Herpetology 50:509–519.

U.S. Department of Defense. 2005. DARPA Grand Challenge 2005 after-action report. Defense Advanced Research Projects Agency (DARPA) Unpublished report prepared for the United States Fish and Wildlife Service, Southern Nevada Field Office. December 2005.

USFWS (U.S. Fish and Wildlife Service). 2015. Species status assessment for the Sonoran Desert Tortoise. Version 1.0, September 2015. U.S. Fish and Wildlife Service, Southwest Region, Albuquerque, NM.

USFWS (U.S. Fish and Wildlife Service). 2018. Preparing for any action that may occur within the range of the Mojave Desert Tortoise (*Gopherus agassizii*). USFWS, Region 8, Sacramento, California.

USFWS (U.S. Fish and Wildlife Service). 2020. Translocation of Mojave Desert Tortoises from Project Sites: Plan Development Guidance. USFWS, Las Vegas, Nevada.

USFWS (U.S. Fish and Wildlife Service). 2021. Species status assessment for the Sonoran Desert Tortoise (*Gopherus morafkai*). Version 2.1, September 2021. U.S. Fish and Wildlife Service, Southwest Region, Albuquerque, NM.

USFWS (U.S. Fish and Wildlife Service). 2022. Endangered and threatened wildlife and plants; 12-month finding for the Sonoran Desert Tortoise. Federal Register 87:7077–7079.

Van Devender, T.R. 2002. Natural history of the Sonoran tortoise in Arizona: life in a rock pile. Pp. 3–28 in T.R. Van Devender (Ed.), The Sonoran Desert Tortoise: Natural History, Biology, and Conservation. University of Arizona Press and the Arizona-Sonora Desert Museum, Tucson.

Vaughan, S.L. 1984. Home range and habitat use of the Desert Tortoise (*Gopherus agassizii*) in the Picacho Mountains, Pinal County, Arizona. Master's Thesis, Arizona State University, Tempe.

Wendland, L., H. Balbach, M. Brown, J.D. Berish, R. Littell and M. Clark. 2009. Handbook on Gopher Tortoise (*Gopherus polyphemus*) health evaluation procedures for use by land managers and researchers. US Army Engineer Research and Development Center, Champaign, Illinois, USA.

Wirt, E.B. 1988. Two Desert Tortoise populations in Arizona. Final Report to U.S. Bureau of Land Management, Phoenix, AZ.

Wirt, E.B. and P.A. Holm. 1997. Climatic effects on survival and reproduction of the Desert Tortoise (*Gopherus agassizii*) in the Maricopa Mountains, Arizona. IIPAM Report I92035, Arizona Game and Fish Department, Phoenix.

Woodman, P., S. Boland, P. Frank, G. Goodlett, S. Hart, D. Silverman, T. Shields and P. Wood. 1993. Desert tortoise population surveys at five sites in the Sonoran Desert Arizona. Final Report to Arizona Game and Fish Department and Bureau of Land Management, Arizona State Office, Phoenix.

Woodman, P., P. Frank and D. Silva. 1999. Desert tortoise population surveys at three sites in the Sonoran Desert of Arizona, 1998. Final Report to Arizona Game and Fish Department, Phoenix.

Woodman, P., P. Frank and D. Silva. 2001. Desert tortoise population surveys at three plots in Arizona, fall 2000. Final Report to Arizona Game and Fish Department, Phoenix.

Woodman, A.P., E. Bernstein, P. Frank, D. Kent, L. Pavliscak and J. Smith. 2002. Desert tortoise population survey at five plots in Arizona, Fall, 2001. Final Report to Arizona Game and Fish Department, Phoenix.

Zylstra, E.R. and R.J. Steidl. 2009. Habitat use by Sonoran Desert Tortoises. Journal of Wildlife Management 73:747–754.

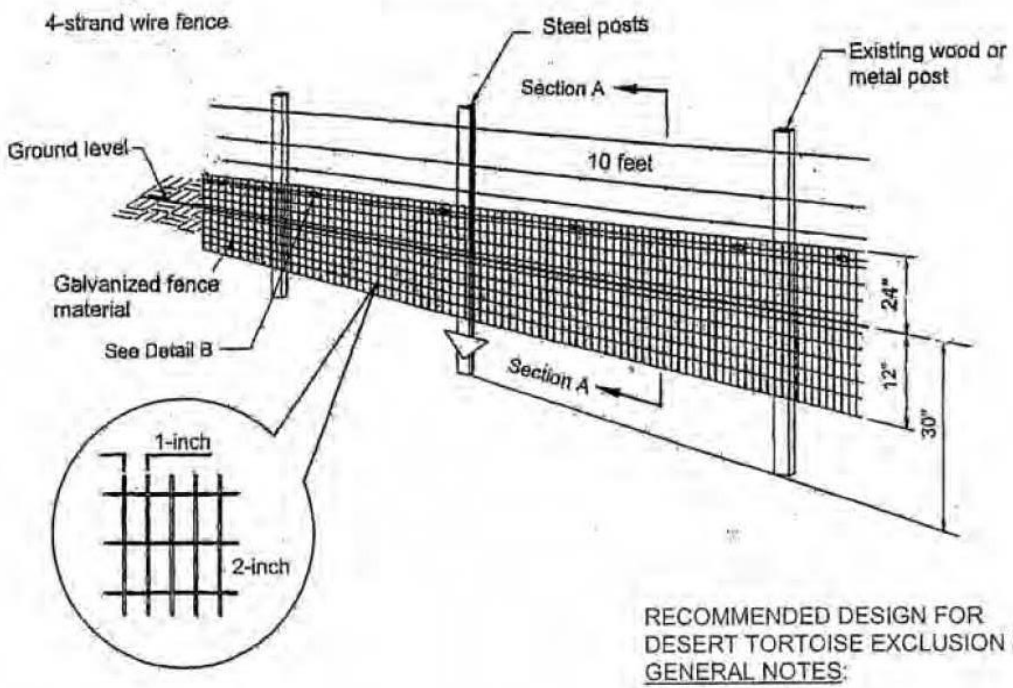
Zylstra, E.R. and R.J. Steidl. 2021. Demography of Sonoran Desert Tortoises in Arizona, 1987–2020. Final Report to Arizona Game and Fish Department, Phoenix.

Zylstra, E.R., R.J. Steidl, C.A. Jones and R.C. Averill-Murray. 2013. Spatial and temporal variation in survival of a rare reptile: a 22-year study of Sonoran Desert Tortoises. Oecologica 173:107–116.

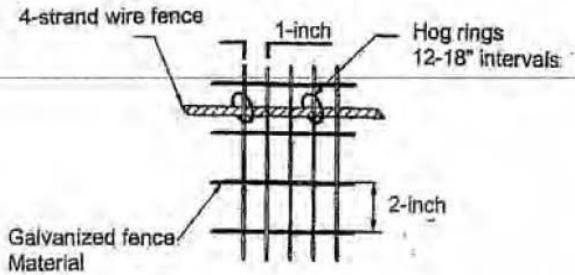
APPENDIX A

Desert Tortoise Exclusion Fencing

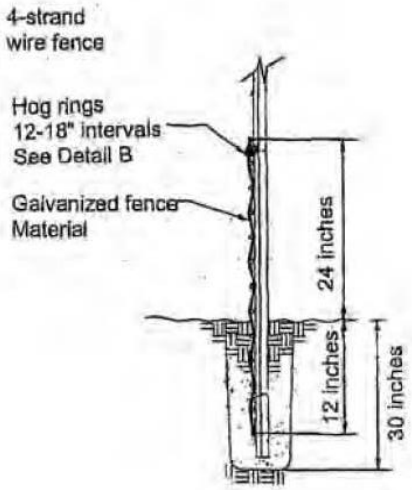
DESERT TORTOISE EXCLUSION FENCE (2005)



DETAIL A



DETAIL B



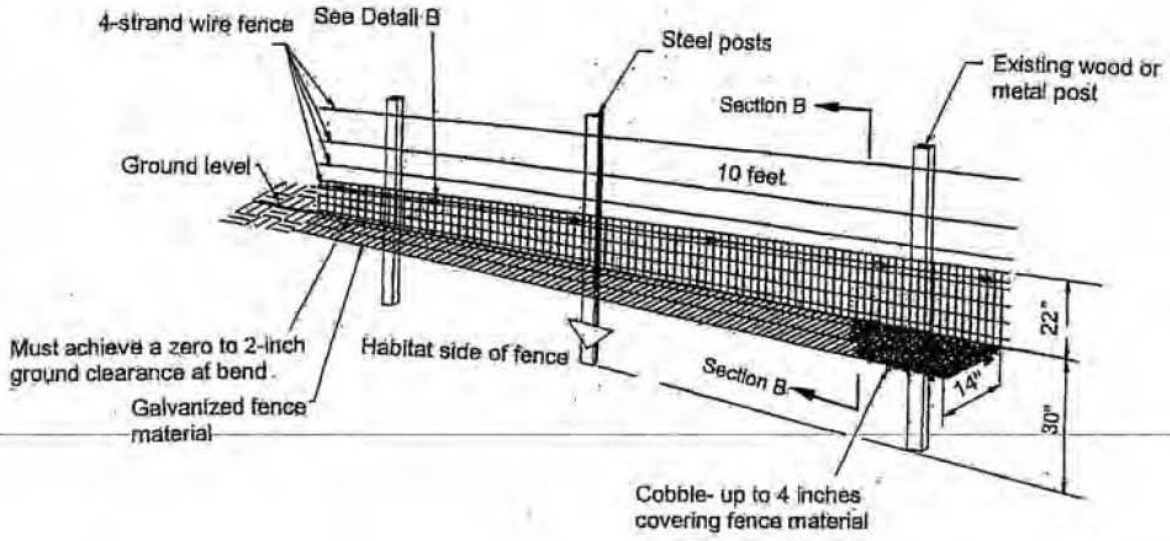
SECTION A

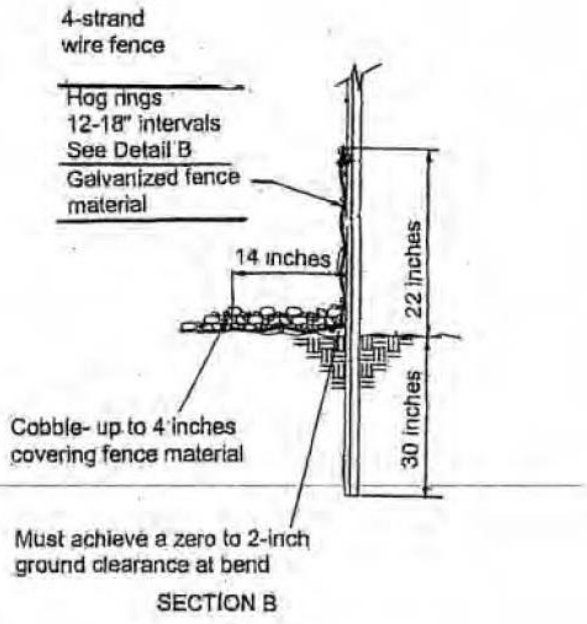
RECOMMENDED DESIGN FOR
DESERT TORTOISE EXCLUSION FENCE
GENERAL NOTES:

1. Ensure that fence posts and materials conform to the standards approved by the U.S. Fish and Wildlife Service.
2. Ensure that the height above ground level is no less than 18 inches and no higher than 24 inches.
3. Ensure that the depth of fence material below ground level is about 12 inches but no less than 6 inches. (See SECTION A above)
4. Install additional steel posts when span between existing fence posts exceed 10 feet.
5. Attach fence material to existing fence or wire using hog rings at 12-inch intervals.
6. Fasten fence material to posts with 3 tie wires with a wire near the top, bottom, and center of the fence material.
7. Backfill trenches with excavated material and compact the material.
8. Attach fence material to all gates. Ensure that clearance at base of gate achieves zero ground clearance.
9. Substitute smooth wire for barbed wire if additional support wires are necessary.
10. The number and placement of support wires may be modified to allow sheep and deer to pass safely.
11. Erosion at the edge of the fence material where the fence crosses washes may occur and requires appropriate and timely monitoring and repair.
12. Tie the fence into existing culverts and cattleguards when determined necessary to allow desert tortoise passage underneath roadways.

FOR BEDROCK OR CALICHE SUBSTRATE

1. Use this fence design (see below) only for that portion of the fence where fence material cannot be placed 6 inches below existing ground level due to presence of bedrock, large rocks or caliche substrate.
2. Ensure that the fence height above ground level is no less than 22 inches.
3. Ensure that there is a zero to 2-inch ground clearance at the bend.
4. Ensure that the bent portion of the fence is lying on the ground and pointed in the direction of desert tortoise habitat.
5. Cover the portion of the fence that is flush with the ground with cobble (rocks placed on top of the fence material to a vertical thickness up to 4 inches).
6. When substrate no longer is composed of bedrock or caliche, install fence using design shown above.





SECTION B

APPENDIX B

Desert Tortoise Field Survey Datasheet

Sonoran Desert Tortoise: Field Survey Datasheet

Date of survey: _____ (day, month, year) Survey biologist(s): _____ (name, email, and phone number)

Site description: _____ (project name and size; general location)

County: _____ Location: _____ (UTM coordinates, lat-long, and/or TRS; map datum)

Area size to be surveyed: _____ Transect #: ____ Transect length: _____

GPS Start-point: _____ (easting, northing, elevation in meters) Start time: _____am/pm

GPS End-point: _____ (easting, northing, elevation in meters) End time: _____am/pm

Start Temp: _____ºC End Temp: _____ºC

Live Tortoises

Detection number	GPS location Easting	GPS location Northing	Time	Tortoise location (*in burrow*: all of tortoise beneath plane of burrow opening, or *not in burrow*)	Approx MCL ≥180 mm? (*Yes, No or Unknown*)	Existing tag # if present
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

Tortoise Sign (burrows, scats, carcasses, etc)

Detection number	GPS location Easting	GPS location Northing	Type of sign (*burrows, scats, carcass, etc*)	Description and comments
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Appendix D. Burrowing Owl Project Clearance Guidance for Landowners

BURROWING OWL PROJECT CLEARANCE GUIDANCE FOR LANDOWNERS

Arizona Burrowing Owl Working Group



Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086

January 2009

Bruce Taubert

BURROWING OWL PROJECT CLEARANCE GUIDANCE FOR LANDOWNERS

Arizona Burrowing Owl Working Group

INTRODUCTION

The western burrowing owl (*Athene cunicularia*) is one of the most interesting birds of prey in Arizona (Figure 1). Its species name, *cunicularia*, means "miner", in reference to this owl's unusual habit of spending time underground. It is also called the "rattlesnake owl", because young burrowing owls make a buzzing sound that sounds like a rattlesnake when disturbed. Burrowing owls can be seen during daylight hours, and use underground burrows for nesting and escape cover. Despite the fact they are active during the day and are adaptable to human presence, the burrowing owl can go unnoticed in an area due to their secretive nature. Their use of burrows also makes them susceptible to impacts from ground disturbing activities.



Figure 1. Adult burrowing owl. *Photo by Bruce Taubert.*

Over the past 50 years, most burrowing owl populations have experienced declines throughout their range in North America. Because of this decline, these owls are protected by various Federal, state, and local laws. The burrowing owl is listed by the USFWS as a National Bird of Conservation Concern, listed as endangered in Canada, and threatened in Mexico. It is also listed as endangered, threatened, or a species of concern in 9 U.S. States. All owls in Arizona are protected federally by the Migratory Bird Treaty Act (MBTA) and Arizona state law (ARS Title 17). Violation of these laws, intentional or benign, may result in prosecution.

Burrowing owls are found in areas of Arizona where urbanization and other human activities are occurring. Arizona is one of the fastest growing states in the U.S., leading to frequent conflicts between burrowing owls and development. Owls can be affected by disturbance and habitat loss, even though there may be no direct impacts to the birds themselves or their burrows. There is often inadequate information about the presence of burrowing owls on a project site until ground disturbance is imminent. By then, it is too late to develop a solution that is helpful to the owls or the developer. These guidelines are intended to provide information and tools than can be applied when there is the potential for a project or action to adversely affect burrowing owls and the resources that support them. Each project and situation is different and should be evaluated for the tools and approach that is most effective in allowing a project to move forward while achieving burrowing owl conservation. These guidelines may not provide the necessary procedures for every project, and we encourage coordination with the agencies and entities listed in the Contact section of this document (Appendix A).

BURROWING OWLS SURVEY PROTOCOL

This guidance was developed by State, Federal, and other burrowing owl experts to help individuals avoid violating the laws protecting burrowing owls. This effort will provide a standardized means for conducting burrowing owl surveys in areas where burrows are likely to be disturbed by projects that may displace them in order to minimize impacts to the owls.

This protocol involves visual surveying for owls and burrows using transects to look for occupancy and/or signs of occupancy. We recommended that only individuals with proper training and certification conduct the survey. This document will be revised as necessary, and updates will be provided to certified surveyors, along with any guidance related to maintaining certification. Updates to this document will also be made available to the public. To facilitate statewide burrowing owl management, we recommend that all survey areas, routes, times, and detections be reported to Arizona Game and Fish Department (AGFD) within 30 days of survey completion. If owls or active burrows are detected, coordination with the appropriate agencies prior to initiating ground-disturbing activity will facilitate compliance with the applicable laws (see Appendix A).

SUITABLE HABITAT

Burrowing owl nesting habitat typically consists of dry, treeless, short-grassland or prairie plains. In the desert environment they nest in areas of short, open scrublands such as mesquite (*Prosopis* spp.), creosote bush (*Larrea tridentate*), rabbit-brush (*Chrysothanmus nauseous*), and four-wing saltbush (*Atriplex canescens*). They tend to be tolerant of human presence, and will nest in human-modified landscapes such as: abandoned lots within rapidly developing urban areas, airports, golf courses, agricultural fields, irrigation canals, storm drains, roadsides, and parking lots (Figure 2). In the western United States, burrowing owls do not dig their own burrows, and therefore depend on the presence of burrowing mammals. Throughout Arizona, burrowing owls are associated with Gunnison's prairie dogs (*Cynomys gunnisonii*), American badgers (*Taxidea taxus*), ground squirrels (*Spermophilus* spp.), rock squirrels (*Spermophilus variegatus*), foxes (*Vulpes* spp.), and coyotes (*Canis latrans*). Therefore, any open grassland, scrubland, or park-like area devoid of dense tree cover and containing burrowing mammals or adequate artificial nest burrows (e.g., erosion channels or storm drain pipes) can represent adequate nesting, wintering or migratory habitat.



Figure 2. Natural burrow on a wash bank. *Photo by Elissa Ostergaard.*

SURVEYOR CREDENTIALS

Burrowing owl surveyors should have burrowing owl survey protocol certification (training provided by AGFD; see Website in Contacts below for next date and location) with appropriate documentation.

Completed burrowing owl survey reports provided to AGFD should include each surveyor's certification. Certification will be awarded on an individual basis based on attendance at the training, and will not need to be renewed unless new information or conditions dictate substantial change to the survey protocol.

SURVEY TIMING

Burrowing owls are most likely to occupy breeding burrows between March and mid-July (Figure 3). While burrowing owl migration habits are not well documented, it is believed that owls in northern Arizona generally migrate south for the winter, whereas a larger proportion (12 to 61%; Conway and Ellis 2004) of owls in southern and western Arizona is thought to be non-migratory (Sheffield 1997).

We recommend that preliminary surveys be conducted at the time of property acquisition or before project design to allow time to properly accommodate or mitigate for owls, if present (Table 1). We recommend avoiding project initiation in March due to the possibility of new owls arriving during construction unless all suitable burrows were permanently closed by a properly permitted individual or group before project-related activities. If owls or occupied burrows are detected within the construction area at any time during project implementation, burrows must be avoided (see below for buffer requirements) until: 1) status of the burrows can be determined and owls removed by properly permitted individuals or groups, or 2) other conservation measures are implemented.



Figure 3. Artificial burrow with signs of occupancy. *Photo by Elissa Ostergaard.*

Surveys should be conducted within first light (typically ½ hour before sunrise) and 3 hours after sunrise, and between 2 hours before sunset until dusk (typically ½ hour after sunset). Do not conduct surveys during or within 24 hours after a heavy rain or when wind speed is greater than 32 km/hr (20 mi/hr).

Table 1. Schedule for burrowing owl surveys.

Fall or Winter Initial Survey	
Results	Action
No burrows detected	None.
Unoccupied burrows found	Implement conservation measures* and conduct a second survey 90 days prior to grading.
Occupied burrows or owls found	Implement conservation measures* and survey 30 days prior to grading.
Spring or Summer Initial Survey	
Results	Action
No burrows detected	None.
Unoccupied burrows found	Implement conservation measures* and conduct a second survey 30 days prior to grading.
Occupied burrows or owls found	See below.

*Potential conservation measures include: 1) collapsing all unoccupied burrows of suitable dimensions by a permitted individual, 2) identifying open space areas to be protected as a buffer around occupied and suitable owl burrows, 3) passive exclusion of owls, or 4) translocation of owls by a permitted individual.

FIELD SURVEY PROTOCOL

We recommend that surveys be conducted in all portions of the project site that fit the description of Suitable Habitat (see above). Surveys are conducted by walking straight-line transects 10 m (33 ft) apart (or arranged so that all ground surfaces can be seen) and looking for evidence of owls: individuals, burrows, and sign of occupancy at burrow entrances (pellets, feces or other "ornamentation", feathers, prey remains, whitewash, etc) (Figure 4). Transects should be located over the entire project area, and oriented so the tops and sides of all topographic features are examined. For example, if the project area includes a wash with a steep bank, one transect should be near the top of the bank, and another near the base of the bank in the wash.



Figure 4. Adult burrowing owl at an artificial burrow entrance. *Photo by Bruce Taubert.*

At the start of each transect and every 100 m (300 ft), scan the entire visible project area for owls using binoculars or a spotting scope. Record the location of all burrows (natural and artificial). Burrows may include holes dug by mammals, birds, or created by erosion, pipes, spaces below concrete or other solid structures, etc. Each burrow (entrance height 8 + cm [3 + in]; width 8 +

cm [3 + in]; burrow depth > 1 m [3 ft]) should be assessed to determine potential use by burrowing owls, unless owls are present.

An "active" burrow has a live owl or owls, or shows sign of recent use (e.g., fresh whitewash, fresh pellets, feathers, or nest ornamentation – Figure 2). A "potentially active" burrow is one with evidence of previous use, but not recent (e.g., old whitewash, old pellets, cobwebs over entrance, and/or debris at burrow entrances). An "inactive" burrow exhibits no evidence of use by burrowing owls but is of suitable size for occupancy.

Record the number and location of all owls seen within or near the project area. Clean and remove all owl sign at potentially active burrows. Visit the site again after 2-8 days and check all potentially active burrows for fresh sign.

SURVEY REPORTING

Record the surveys locations, dates, and the details of all burrow and owl detections (even if outside the construction zone), either on a hard copy map or as UTMs (Universal Transverse Mercator map coordinates compatible with GIS and GPS systems) using the standard form provided. Attach credentials of all surveyors as described above. Send within 30 days to raptors@azgfd.gov (preferred) or by mail:

Raptor Management Coordinator
Arizona Game and Fish Department
Nongame Branch
5000 West Carefree Highway
Phoenix, Arizona 85086

OWL DETECTIONS, CONSERVATION AND MITIGATION

Should preliminary measures fail to prevent burrowing owl occupancy of a project site during implementation, or if active burrows are located in the construction zone during construction activities, the owls should not be disturbed as it may violate federal and state laws. A 35-m (100-ft) radius buffer, excluding all heavy machinery and foot traffic, should be set up around all active burrow entrances during construction and until the appropriate conservation action is determined (B. Fox, pers. comm.). To permanently accommodate owls on site, we recommend that a buffer of 35-m (100-ft) should remain in perpetuity between the burrows and new construction and managed to maintain breeding habitat suitability (Millsap and Bear 2000). On-site conservation areas should be connected to adjacent burrowing owl habitat through the use of habitat connections. Conservation areas should avoid isolation or fragmentation of burrowing owl habitat. Delineating protected areas (fencing, cones, etc.) is encouraged as long as it does not enclose the owls or prevent the owls' ability to see nearby predators.

If after surveys are completed and reports submitted to AGFD, burrowing owls or active or potentially active burrows are located within the project boundaries, the landowner is advised to contact the nearest AGFD office (see Appendix A) for direction. Further mitigation or costs may be avoided if occupied owl areas can be set aside for at least 10 years and if suitable habitat for nesting and foraging will remain after development is finished. If it is determined that the best option is to disturb and then mitigate for the disturbance of the owls, the owner must obtain a permit from U.S. Fish and Wildlife Service. Mitigation may include excluding owls from disturbed burrows prior to construction and/or providing artificial burrows on-site or in a different location and monitoring to determine the success of the actions taken.



Figure 5. Owlets at a natural burrow entrance. *Photo by Bruce Taubert.*

LITERATURE CITED

Arizona Burrowing Owl Working Group. 2007. Burrowing Owl Mitigation Standards and Guidelines. Arizona Game and Fish Department, Phoenix, AZ. Azgfd.gov

Arizona Game and Fish Department. Arizona Revised Statutes, 17-235, Migratory birds, and 17-236, Taking birds; possession of raptors. Last accessed May 4, 2007. http://www.azleg.state.az.us/ArizonaRevisedStatutes.asp?Title=17

Conway, C.J. and L.A. Ellis. 2004. Demography of Burrowing Owls Nesting in Urban and Agricultural Lands in Southern Arizona. Arizona Game and Fish Department, Heritage Grant Technical Report U03006, Phoenix, AZ.

Millsap, B.A. and C. Bear. 2000. Density and reproduction of burrowing owls along an urban development gradient. Journal of Wildlife Management 64:33-41.

Sheffield, S.R. 1997. Current status, distribution and conservation of the Burrowing Owl (*Speotyto cunicularia*) in midwestern and western North America. Pages 399-407 in J.R. Duncan, D.H. Johnson, and T.H. Nicholls [Eds.], Biology and Conservation of Owls of the Northern Hemisphere: Second International Symposium, February 5-9, 1997, Winnepeg, Manitoba, Canada. USDA For. Serv. Gen. Tech. Rep. NC-190.

U.S. Fish and Wildlife Service. Migratory Bird Treaty Act, Migratory Bird Permit Office. Last accessed May 4, 2007. http://www.fws.gov/permits/mbpermits/birdbasics.html

APPENDIX A: CONTACTS

In Tucson and southern AZ:

Arizona Game and Fish Department
Urban Wildlife Program, Tucson Office
555 N. Greasewood Rd.
Tucson, AZ 85745
(520) 628-5376

US Fish and Wildlife Service
Ecological Services Office
201 N. Bonita Ave., Ste. 141
Tucson, AZ 85745
(520) 670-6144

In Phoenix, central and northern AZ:

Arizona Game and Fish Department
Raptor Management Coordinator
5000 W. Carefree Highway
Phoenix, AZ 85086
(623) 236-7500
www.azgfd.gov

US Fish and Wildlife Service
Ecological Services Office
2321 W. Royal Palm Road, Ste. 103
Phoenix, AZ 85021
(602) 242-0210
http://www.fws.gov/southwest/es/arizona/

Burrowing Owl Working Group Members

Marit Alanen, U.S. Fish and Wildlife Service
Troy Corman, Nongame Branch, Arizona Game and Fish Department
Tim Snow, Region V, Arizona Game and Fish Department
James Driscoll, Nongame Branch, Arizona Game and Fish Department
Bob Fox, Wild At Heart (Burrowing Owl Conservation Group)
Sam Fox, Wild At Heart (Burrowing Owl Conservation Group)
David Grandmaison, Research Branch, Arizona Game and Fish Department
Mike Ingraldi, Research Branch, Arizona Game and Fish Department
Shawn Lowery, Research Branch, Arizona Game and Fish Department
Scott Richardson, U.S. Fish and Wildlife Service
Ray Schweinsberg, Research Branch, Arizona Game and Fish Department
Aninna Thornburg, Region V, Arizona Game and Fish Department

APPENDIX B. BURROWING OWL SURVEY REPORT FORM

Surveyor(s): Date of Survey:

Project Location Information
Project Name:
City:
County:
Legal Description (address, ¼ Section, Township, Range):

Weather Conditions During Survey
Precipitation: Y / N (circle one)
Wind Speed (mph):
Temperature: °F / °C (circle)
% Cloud Cover:

Survey Data
Area Surveyed: acres / ha / km^2 / m^2 (circle one)
Adult burrowing owls detected:
Juvenile burrowing owls detected:
Total # burrowing owls detected:
Total # Active burrows:
Total # Potentially Active burrows:

Habitat Description within Project Area (check if applicable)
- Open, treeless area
- Creosote flats
- Wash corridor
- Suitable burrows
- Fossorial mammals present – list species:
- Sonoran desert scrub
- Agriculture
- Urban development

Attach map of surveyed area with locations of survey transects. Identify locations of owls and suitable burrows. List owl detections and active or potentially active burrow locations in the following table (please include coordinates and datum) Attach additional pages if necessary:

Observation Type (Owl or Burrow)	Coordinates

Observation Type (Owl or Burrow)	Coordinates

Return completed forms (regardless of whether burrowing owls are detected) along with the surveyor's certification to:

Raptor Management Coordinator
Arizona Game and Fish Department
Nongame Branch
5000 West Carefree Highway
Phoenix, AZ 85086
(623) 236-7500
raptors@azgfd.gov

This page intentionally left blank

EXHIBIT D

This page intentionally left blank

EXHIBIT D: BIOLOGICAL RESOURCES

As stated in R14-3-219 of the Rules of Practice and Procedure Before Power Plant and Transmission Line Siting Committee, Exhibits to Application, Exhibit D:

"List the fish, wildlife, plant life and associated forms of life in the vicinity of the proposed site or route and describe the effects, if any, the proposed facilities will have thereon."

D.1 Introduction D-1
D.2 Existing Conditions D-2
D.2.1.1 Vegetation D-2
D.2.1.2 Invasive, Non-Native Plant Species D-2
D.2.1.3 General Wildlife in the Study Area D-3
D.3 Effects of the Proposed Project D-4
D.3.1.1 EPMS D-5
D.4 Conclusion D-5
D.5 References D-5

D.1 Introduction

This exhibit includes a description of biological resources within the study area as shown in Exhibit A-3. Further information is included in the BRR in Exhibit C-2. The Project is located in a largely rural area within unincorporated Pima County, the COT, and the Town of Sahuarita. Land within the Study Area is owned or managed by the ASLD and numerous private landowners. Public and private roadways surround and intersect the Study Area. Land use is mixed and includes residential, solar power generation, electric transmission lines, agricultural and rangeland, institutional, aggregate production, as well as a large amount of vacant and undeveloped land.

Approximate elevations within the Study Area range from 2,650 to 3,105 ft AMSL, sloping from the bajada of the Santa Rita Mountains in the southeast to the Santa Cruz River Valley to the west and northwest. Drainage and deposits from the mountain range formed the bajada, and soils in the Study Area are predominantly alluvium, consisting of gravelly sandy loam. Native plant communities characterize the majority of the Study Area.

Annual precipitation recorded near Tucson International Airport is 11.44 inches. Nearly half of the annual rainfall occurs during the summer monsoon season (July to September); the remainder is spread over the balance of the year, with approximately one quarter of the total occurring during the winter rainy season

(December to February). High summer temperatures are consistently over 100 degrees Fahrenheit (°F), with winter highs approximately 65 °F (WRCC, 2026).

D.2 Existing Conditions

A discussion of vegetation and wildlife resources potentially occurring within the Study Area and potential impacts to them from the Project are outlined below and in greater detail in the BRR (Exhibit C-2) (Natural Leaders, 2026).

D.2.1.1 Vegetation

Two biotic communities dominate the Study Area, Upland Sonoran Desertscrub and Semidesert Grassland. Upland Sonoran Desertscrub experiences more precipitation than other desertscrub habitats and therefore has a rich biodiversity in spite of being a desert environment. It is dominated by tree and shrub species such as palo verde, ironwood, catclaw acacia, mesquite, jojoba, and creosote bush, as well as giant saguaro, cholla, and prickly pear. Bajadas and riparian areas are important habitats within the community, as they provide critically important habitat for a variety of species (AZGFD, 2026b). Semidesert Grasslands are a perennial grass-scrub dominated community located between desertscrub at lower elevations. Typical vegetation includes black grama, slender grama, bush muhly, three-awn species, and other native grasses (AZGFD, 2026a).

The plant species observed during site visits in September and October 2025, were consistent with both communities (Table 9) (Brown D. E., 1994).

Table 9. Native Plants Observed

Common Name	Species Name
Creosote	*Larrea tridentata*
Velvet mesquite	*Prosopis velutina*
Triangle leaf bursage	*Ambrosia deltoidei*
Wolfberry	*Lycium* sp.
Desert hackberry	*Celtis pallida*
Burroweed	*Isocoma tenuisecta*
Prickly pear cactus	*Opuntia* spp.
Barrel cactus	*Ferocactus wislizeni*
Saguaro	*Carnegia gigantea*
Grama spp.	*Bouteloua* spp.

D.2.1.2 Invasive, Non-Native Plant Species

Invasive, non-native plant species occur throughout the Study Area, primarily along roadways and other areas with disturbed soils. Table 10 lists the species most frequently observed during site visits. The Arizona Wildlands Invasive Plant Working Group (“AZ-WIPWG”) has categorized each of these species as

having the potential to cause an elevated risk of ecological harm (AZ-WIPWG, 2005). The AZ-WIPWG is a collection of over 20 federal and state agencies, academic institutions, and private conservation, professional, and commercial interests in Arizona, who formed the group to address the need to identify and distinguish non-native plants that can invade an area and cause adverse ecological impacts. These members include the Arizona Department of Agriculture ("AZDA"), the AZGFD, ASLD, the USACE, the USFWS and others. The AZDA has also categorized buffelgrass as a Class C Noxious Weed.

Table 10. Non-Native, Invasive Plants Observed

Common Name	Species Name
Bermudagrass	*Cynodon dactylon*
Buffelgrass	*Cenchris ciliaris*
Fountain grass	*Pennisetum setaceum*
Russian thistle	*Salsola tragus*

D.2.1.3 General Wildlife in the Study Area

Roads intersect the Study Area and generally bound it on all four sides, though in some cases the road consists of a rough two-track dirt path. Development is scattered within the Study Area, with more development on the north and west sides, and decreasing in density to the south and east. Wildlife persists throughout the Study Area and reflects the diversity of upland Sonoran Desertscrub and Semidesert Grasslands. The undeveloped desert open space at the center of the Study Area and numerous washes promote wildlife connectivity to the larger region. Table 11 lists native and non-native wildlife species, or evidence of their presence, observed during site visits.

Table 11. Wildlife and/or Sign Observed

Common Name	Species Name
BIRDS	
Black-tailed gnatcatcher	*Polioptila melanura*
Cactus wren	*Campylorhynchus brunneicapillus*
Chihuahuan raven	*Corvus cryptoleucus*
Costa's hummingbird	*Colypte costae*
Cooper's hawk	*Accipiter cooperi*
Crested caracara	*Caracara plancus*
Curve-billed thrasher	*Toxostoma curvirostre*
Domestic chicken	*Gallus gallus domesticus*
Eurasian collared dove	*Streptopelia decaocto*
European starling	*Sturnus vulgaris*

Common Name	Species Name
Flicker sp.	*Colaptes* sp.
Gila woodpecker	*Melanerpes uropygialis*
House sparrow	*Passer domesticus*
Mourning dove	*Zenaida macroura*
Phainopepla	*Phainopepla nitens*
Red-tailed hawk	*Buteo jamaicensis*
Turkey vulture	*Cathartes aura*
Verdin	*Auriparus flaviceps*
MAMMALS	
Bobcat	*Lynx rufus*
Cow	*Bos taurus*
Coyote	*Canis latrans*
Javelina	*Pecari tajacu*
REPTILES and AMPHIBIANS	
Arizona striped whiptail	*Aspidoscelis arizonae*
INVERTEBRATES	
American snout butterfly	*Libytheana carinenta*
Hackberry emperor	*Asterocampa celtis*
Harvester ant	*Acromyrmex versicolor*
Skimmer sp.	*Libellula* sp.

D.3 Effects of the Proposed Project

Biological resources across the Study Area are largely uniform, and both route alternatives cross the same habitats. The northern portion of Route 1 includes new construction for approximately 2 miles parallel to the existing TEP/WAPA 230-115 kV line. This construction will occur in undisturbed land and has the potential to impact biological resources. The remainder of the route will be co-located onto existing double-circuit capable structures, and impacts to biological resources due to ground disturbance should be minimal.

The southern portion of Route 3 includes a section where existing structures would be replaced. Though this work would occur in an existing power line corridor, there is the potential to impact biological resources through the removal of existing structures and installation of new double-circuit capable structures.

D.3.1.1 EPMS

Impacts to biological resources related to either route alternative can be avoided or minimized by consistent application of EPMs below and as outlined for sensitive species in Chapter C – Areas of Biological Wealth, Section C.1.2.5.

- Minimize vegetation clearing and ground disturbance.
- Provide construction period monitors in areas where pre-construction surveys indicate a presence of sensitive species.
- Follow TEP established raptor protection protocols, as well as guidelines published by the Edison Electric Institute and the Avian Power Line Interaction Committee (Suggested Practices for Avian Protection on Power Lines: State of the Art in 2024, and Reducing Bird Collisions with Power Lines: State of the Art in 2012).
- Inspect and wash all construction equipment before entering or leaving the site to prevent the spread of invasive, non-native species.
- Follow standard Best Management Practices (BMPs) to prevent contamination of downstream waters from stormwater exiting the site.
- Implement a stormwater pollution prevention plan (SWPPP) as required.
- Implement a spill prevention, control, and countermeasures plan (SPCCP) as required.
- Implement worker environmental awareness training to inform site personnel on the appearance of protected species and their legal protections.
- Clear the construction site of project or construction-related trash each day.
- Restore disturbed areas to pre-construction or native condition following completion of project activities, by planting seeds or native vegetation.
- If native plants listed under the ANPL are proposed for removal, a Notice of Intent to Clear Land should be submitted to the AZDA prior to commencing ground disturbance.

These EPMs, along with TEP's standard practices, would avoid or minimize potential impacts on biological resources. The Project will comply with all federal, state, and local regulatory requirements.

D.4 Conclusion

Neither route alternative would have a permanent adverse effect on biological resources, with the implementation of standard practices and environmental protection measures outlined above.

D.5 References

AZGFD. (2026a). Semidesert Grasslands. Retrieved from AZGFD Arizona Wildlife Conservation Strategy: https://awcs.azgfd.com/habitats/semidesert-grasslands

AZGFD. (2026b). Upland Sonoran Desertscrub. Retrieved from AZGFD Arizona Wildlife Conservation Strategy: https://awcs.azgfd.com/habitats/upland-sonoran-desertscrub

AZ-WIPWG. (2005). Plants that Threaten Wildlands in Arizona. Retrieved from Arizona Wildlands Invasive Plant Working Group: chrome-

extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.swvma.org/wp-content/uploads/Invasive-Non-Native-Plants-that-Threaten-Wildlands-in-Arizona.pdf

Brown, D. E. (1994). Biotic Communities Southwestern United States and Northwestern Mexico. Salt Lake City: University of Utah Press.

Natural Leaders. (2026). Biological Resources Report, Santa Rita Connection Project, Tucson Electric Power. Tucson: Natural Leaders, LLC.

WRCC. (2026). Tucson Intl AP, Arizona (028820) Period of Record Monthly Climate Summary 1946 to 2016. Retrieved from Western Region Climate Center: http://wrcc.dri.edu/summary/climsmaz.html

EXHIBIT E

This page intentionally left blank

EXHIBIT E: SCENIC AREAS, HISTORIC SITES AND STRUCTURES, AND ARCHAEOLOGICAL SITES

As stated in Arizona Administrative Code R14-3-219:

Describe any existing scenic areas, historic sites and structures or archaeological sites in the vicinity of the proposed facilities and state the effects, if any, the proposed facilities will have thereon.

E.1 Introduction E-1
E.2 Scenic Areas and Visual Resources E-1
E.3 Historic Sites and Structures, and Archaeological Sites E-2
E.3.1 Overview E-2
E.3.2 Inventory Methods and Results E-2
E.4 Historic District Analysis E-4
E.5 Conclusion E-4
E.6 References E-5

E.1 Introduction

Exhibit E includes summaries of studies conducted for existing visual (scenic) resources, historic sites and structures, cultural resources, and archaeological resources, and evaluates the potential impacts the route alternatives may have on each resource.

E.2 Scenic Areas and Visual Resources

The route alternatives were evaluated for level of contrast and the potential visual impact from each of 12 Key Observation Points ("KOPs"). Identification of potential visual impacts involved a review of the preliminary transmission line design and review of local planning documents, aerial photos, geographic information system ("GIS") data maps, site visits, three dimensional ("3D") modeling, georeferenced photos from KOPs, and use of Google Earth Pro. KOPs were selected to represent views from areas of importance to viewers, such as neighborhoods, and commonly traveled roadways. See Exhibit E-1 Visual Impact Assessment for details.

The resultant level of contrast and the potential visual impact for each route from each KOP were rated, and the values averaged to obtain a score for each route alternative. Low impacts were given a value of 1, and high impacts a value of 3. The lower the resultant average score, the less the impact on visual resources.

Route 1 follows corridors with existing infrastructure, and in many locations would be co-located onto existing, or approved, double-circuit capable structures. This minimizes impacts along much of the alignment. The northern section of this route consists of a new line constructed parallel to the existing TEP/WAPA 230-115 kV line. The existing TEP/WAPA 230-115 kV structures are substantially larger and taller than the proposed new line. There would be a low visual impact of the new line adjacent to the TEP/WAPA 230-115 kV line. The overall visual impact rating of Route 1 is 1.0.

Route 3 also follows corridors with existing infrastructure. For much of the route, the line would be co-located onto existing double-circuit capable structures. A portion of the southern half of the route would require installation of new double-circuit capable structures to hold both the existing circuit and the proposed new circuit. This eliminates the construction of a second set of structures parallel to the existing line and reduces the potential visual impact. These structures, however, would be darker, larger, and taller than the existing single-circuit structures, slightly increasing the visual impact. The overall visual impact rating of Route 3 is 1.3.

E.3 Historic Sites and Structures, and Archaeological Sites

E.3.1 Overview

A Class I records review was conducted by Chronicle Heritage, to determine the extent of existing archaeological survey work within the study area and along the proposed alternative routes, and whether any sites were found to intersect with each alternative's corridor, Exhibit E-2 (Husslein and Littlefield 2026).

E.3.2 Inventory Methods and Results

The Class I study included a search of the Arizona State Museum's ("ASM") Archaeological Records Office ("ARO"), the National Register Information System database, and the online AZSITE database. The Class I study covered approximately 30,500 acres, encompassing the Study Area and both alternatives. Over a hundred (106) previous projects intersected the Study Area, covering 12,102 acres of it (<39%). Of these, only 3,012 acres (<10%) were surveyed in the past 10 years. These projects identified 168 sites intersecting with the Study Area.

Of these 168 previously identified sites, 20 date to the historic period, 130 date to the prehistoric period, three are multicomponent sites consisting of both prehistoric and historic resources, and 15 sites have an unknown affiliation. No National Register of Historic Places ("NRHP")-listed properties or districts are present within the Study Area. One COT archaeological Sensitivity Zone intersects with the Study Area.

Once the two route alternatives, and their associated corridor widths, were identified, the subsets of previous projects and cultural resources intersecting each alternative route were identified. Both routes intersect multiple NRHP-eligible sites, and the incomplete survey coverage means that additional sites are likely to be found during a Class III survey for the project.

The Summary of the Route Analysis is shown in Table 12, and the sites intersecting with each route alternative and their NRHP eligibility status, are provided in Table 13 (Route 1) and Table 14 (Route 3).

Table 12. Summary of Route Analysis from Class I Study

Route Alternative	Length (Miles)	% Surveyed	# Sites in Corridor	Eligible Sites in Corridor	In Sensitivity Zone	Recommend Class III Survey
Route 1	17.4	66%	18	7	No	Yes
Route 3	13.3	53%	21	8	Yes, Zanardelli	Yes

Table 13. Sites and Site Buffers Intersecting Route 1

Site	Eligibility
AZ BB:13:558(ASM)	Eligible (SHPO-2000-1218)
AZ BB:13:559(ASM)	Recommended eligible by recorder
AZ BB:13:560(ASM)	Ineligible (SHPO-Unknown)
AZ BB:13:561(ASM)	Eligible, Criterion D (SHPO-2000-1218)
AZ BB:13:562(ASM)	Ineligible (SHPO-2008-0510)
AZ BB:13:563(ASM)	Ineligible (SHPO-Unknown)
AZ BB:13:564(ASM)	Recommended eligible by recorder
AZ BB:13:643(ASM)	Eligible Criterion D (SHPO-2000-1218)
AZ BB:13:758(ASM)	Ineligible (SHPO-2008-0510)
AZ BB:13:759(ASM)	Ineligible (SHPO-2008-0510)
AZ CC:13:80(ASM)	Determined ineligible individually (SHPO-2017-0005)
AZ EE:1:161(ASM)	Eligible (SHPO-2008-0131)
AZ EE:1:329(ASM)	Recommended not eligible by recorder
AZ EE:1:392(ASM)	Eligible Criterion D (SHPO-2011-0898)
AZ EE:1:442(ASM)	Ineligible (SHPO-2011-0898)
AZ EE:1:463(ASM)	Eligible, Criterion D (SHPO-2011-1338)
AZ EE:1:464(ASM)/ Santa Rita Road	Recommended not eligible by recorder
AZ EE:1:99(ASM)	Eligible, Criterion D (SHPO-2018-0515)
AZ BB:13:1013(ASM)	Unknown
AZ BB:13:565(ASM)	Eligible, Criterion D (SHPO-2000-1218)
AZ BB:13:573(ASM)	Recommended eligible by recorder
AZ EE:1:244(ASM)	Not Evaluated by recorder
AZ EE:1:331(ASM)	Recommended not eligible by recorder
AZ EE:1:334(ASM)	Recommended eligible by recorder

Table 14. Sites and Site Buffers Intersecting Route 3

Site	Eligibility
AZ BB:13:289(ASM)	Not Evaluated by Recorder
AZ BB:13:315(ASM)	Eligible, Criteria unknown (SHPO-Unknown)
AZ BB:13:317(ASM)	Ineligible (SHPO-2017-0005)
AZ BB:13:318(ASM)	Not Evaluated by recorder
AZ BB:13:549(ASM)	Recommended eligible by recorder
AZ BB:13:802(ASM)	Recommended not eligible by recorder
AZ BB:13:803(ASM)	Recommended not eligible by recorder
AZ BB:13:869(ASM)	Recommended not eligible by recorder
AZ BB:13:968(ASM)	Unknown
AZ BB:13:989(ASM)	Ineligible (SHPO-2019-2493)
AZ BB:13:990(ASM)	Ineligible (SHPO-2019-2493)
AZ CC:13:80(ASM)	Determined ineligible individually (SHPO-2017-0005)
AZ EE:1:127(ASM)	Not Evaluated by recorder
AZ EE:1:195(ASM)	Eligible Individually, Criterion D (SHPO-2012-0598)
AZ EE:1:199(ASM)	Not Evaluated by recorder
AZ EE:1:200(ASM)	Recommended eligible by recorder
AZ EE:1:288(ASM)	Eligible Criterion D (SHPO-2021-0312)
AZ EE:1:380(ASM)	Recommended not eligible by recorder
AZ EE:1:409(ASM)/ Sahuarita Road	Recommended not eligible by recorder
AZ EE:1:459(ASM)	Ineligible (SHPO-2012-0598)
AZ EE:1:99(ASM)	Eligible, Criterion D (SHPO-2018-0515)
AZ BB:13:548(ASM)	Recommended eligible by recorder
AZ BB:13:870(ASM)	Recommended not eligible by recorder
AZ EE:1:137(ASM)	Not Evaluated by recorder
AZ EE:1:336(ASM)	Recommended eligible by recorder
AZ EE:1:479(ASM)	Recommended not eligible
AZ BB:13:993(ASM)	Ineligible (SHPO-2019-2493)

E.4 Historic District Analysis

No historic districts are present within or adjacent to any of the routes.

E.5 Conclusion

Both routes run through relatively high site-density areas of the bajada between the COT and Green Valley. Survey coverage of both routes is incomplete, and many prior surveys are now more than ten years old, therefore Chronicle Heritage recommends conducting a Class III archaeological survey of the selected ROW. This survey will likely identify additional sites, in approximately proportional frequencies to the portion of the alternative route already surveyed.

Based on the Class I information, Route 1 intersects fewer sites, fewer NRHP-eligible sites, and fewer sites that may require mitigation than Route 3. The majority of Route 1 would not involve new ground disturbance, and those sections would be unlikely to affect any cultural resources. The northern section, which includes 2 miles of new construction, should be surveyed prior to design, and monitored during construction if sites are identified.

Route 3 intersects an approximately 0.8-mile section of AZ BB:13:315(ASM), which is largely coterminous with the COT Zanardelli Cultural Sensitivity Zone. A large portion of Route 3 would be co-located onto existing double-circuit capable structures and that portion would not involve new ground disturbance. The sections where new double-circuit capable structures would be installed, or would replace existing single-circuit structures, should be surveyed prior to design and monitored during construction if sites are identified.

Both routes have approximately the same potential for impacts to cultural resources. For both alternatives, it is recommended that TEP design the line to avoid ground disturbing activities, or pole placement, within NRHP-eligible or unevaluated sites. If avoidance is not possible, in consultation with the State Historic Preservation Office ("SHPO"), mitigation activities may be required such as flagging and monitoring during construction, or data recovery activities to mitigate the effects of line construction.

E.6 References

Husslein, Sophie and Alysun Littlefield, 2026. Class I Literature Review in Support of the Proposed Santa Rita Connection Project in and near Tucson, Pima County, Arizona. Technical Report No. 25-489, Chronicle Heritage, Phoenix, AZ

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit E-1

This page intentionally left blank

SANTA RITA CONNECTION PROJECT

VISUAL IMPACT ASSESSMENT



March 26, 2026

Jeremy Palmer

Landscape Design/Rendering

Kingman, Arizona

1.0 Overview

Tucson Electric Power Company (TEP) is applying to the Arizona Corporation Commission for a Certificate of Environmental Compatibility to construct a new 138 kV transmission line which would increase energy capacity, enhance system reliability, and modernize infrastructure for customers in Sahuarita, Green Valley, and surrounding areas in Pima County south of Tucson. The project would consist of a new 138 kV transmission line between TEP's existing Sonoran Substation and the planned Santa Rita Substation (Project). This report evaluates the visual impacts of two 138 kV route alternatives: Route1 and Route 3.

1.1 Study Area

Located southeast of Tucson International Airport, the Study Area is within unincorporated Pima County, the City of Tucson and the Town of Sahuarita. It is generally bounded to the west by Country Club Road, to the north by Old Vail Connection Road, to the east by Wilmot Road, and to the south by Santa Rita Road.

A Visual Impact Assessment was conducted by Jeremy Palmer, Sole Proprietor (Palmer) to assess the proposed route alternatives for visual impacts. The Visual Impact Assessment combines objective and subjective evaluations of the existing landscape characteristics and potential changes to the landscape because of the Project and assesses the level of viewer sensitivity to different segments of the project's route alternatives. The Project study area does not contain designated national, state, or local scenic areas.

2.0 Visual Impact Assessment

The visual impact assessment determined the potential impacts of the proposed Project on viewsheds. Viewsheds associated with the Project are measured by the frequency of casual observer and the classification of the viewer's experience (i.e., traveler, recreationist, resident). The route alternatives were then scored based on the relative level of impact to existing versus future landscape, types of viewers, and degree of impact to visual resources.

Identification of potential visual impacts involved a review of the preliminary transmission line design and review of local planning documents, aerial photos, geographic information system (GIS) data maps, site visits, 3D modeling, georeferenced photos from each Key Observation Point (KOP), and use of Google Earth Pro. KOPs were selected to represent views from areas of importance to viewers, such as neighborhoods, and commonly traveled roadways (Figure 1).

The components of the visual impact assessment included identification of the types of viewers and their sensitivity to the Project in each segment of the proposed route(s). Impacts were characterized and quantified as low, medium, or high. The visual impact assessment considered the effects of new structures introduced into the existing setting on associated sensitive viewers, which considered the influence of existing facilities (i.e., existing utilities and other development).

2.1 Landscape Setting

The landscape setting for the Study Area is comprised of a mix of rural residential developed land and open space. The Study Area is located on land that is within unincorporated Pima County, the City of Tucson, and the Town of Sahuarita. The Study Area delineated by TEP encompasses the evaluated route

alternatives, and is comprised of rural settings, including residential, solar generation, high-voltage utility corridors, and open space.

2.2 Observer Type

For each type of land use within the Study Area, the casual observer's expectations of the character of the landscape changes.

- Residential observers located within a home or private yard typically take in a viewshed with long and frequent views of the surrounding landscape; therefore, their respective sensitivity is typically higher.
- Recreational observers within open spaces are expected to have a high sensitivity to their surroundings.
- Commercial observers are anticipated to have a medium sensitivity, due to shorter exposure to a viewshed and less familiarity.
- Commuters typically experience low sensitivity as they are in transit on a daily basis. These developments are associated with viewers who are focused on work-related activities and may not be as sensitive to changes in the landscape.

The casual observer's sensitivity to changes in the landscape is directly related to the character of the existing landscape compared to the character of the proposed change. Viewer sensitivity to changes will be lower when the proposed structures are similar in character (e.g., line, scale, form, color) to structures within the existing landscape.

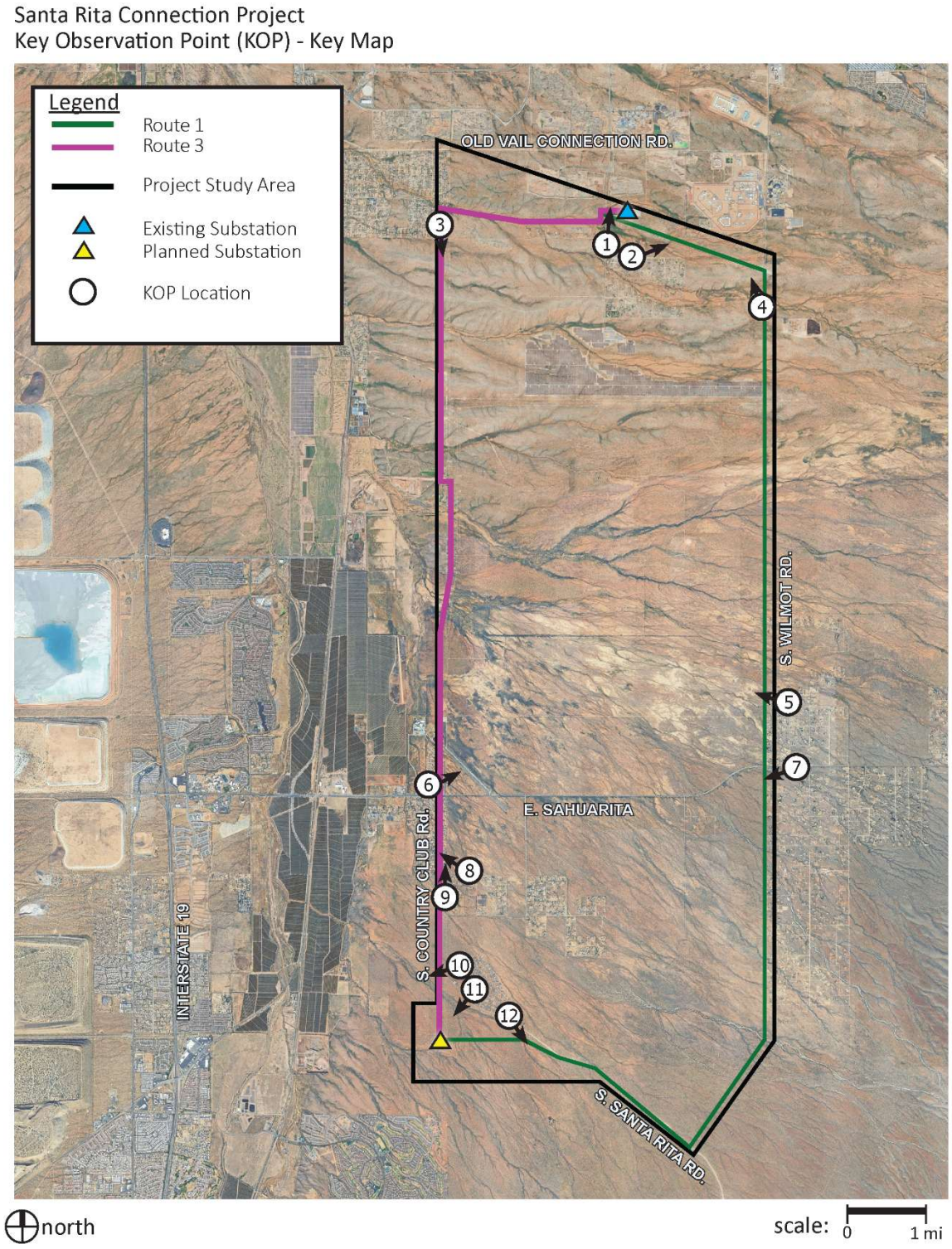


Figure 1. Key Observation Points for the Visual Simulation

3.0 Visual Impact Assessment Results

3.1 Contrast Rating

Visual contrasts are defined as the change to the visual environment resulting from modifications to the landscape. The degree of visual change resulting from a modification is directly related to the amount of contrast between the proposed structures and existing environment.

Visual contrasts were first rated by the degree to which proposed transmission routes and structures would conflict with the existing environment (Table 1). Visual contrasts were rated as follows:

- Low Contrast: the Project is adjacent or parallel to similar features and/or is within a more industrial setting, and casual observer's sensitivity to changes to the landscape resulting from the Project is low.
- Moderate Contrast: the Project is adjacent or parallel to similar features and casual observer's sensitivity to changes to the landscape resulting from the Project is moderate or high.
- High Contrast: the Project introduces new visual forms that contrast with the existing landscape, the setting is residential or recreational, and casual observer's sensitivity is high.

Visual contrast would be low for the proposed 138 kV transmission line when it is adjacent to or parallel with similar developed settings or features, such as existing power lines, or industrial and commercial settings, because visual contrast is minimal. A transmission line introduced to a park or recreation setting has a greater visual impact because it differs in form and line from the existing open space or recreational facilities. Moderate visual contrast is anticipated when a new transmission line is located in a residential setting. The new structures would be similar to the existing structures, but viewer sensitivity is high.

Visual contrasts resulting from the Project can be reduced by locating the proposed route 1) within an industrial setting that is similar in form and line, or 2) within a corridor that has existing overhead electric lines, or (3) some distance from the casual observer where it will be obscured or blend into the landscape.

3.2 Visual Impact

The routes were additionally rated for their Visual Impact to a casual observer, from each KOP (Table 1). A value is assigned to each segment of the route as follows:

- High Visual Impact (Rank= 3): A value assigned to segments in which the installation of proposed TEP structures would negatively affect the casual observer's viewshed.
- Moderate Visual Impact (Rank= 2): A value assigned to segments in which the installation of proposed TEP structures would moderately affect the casual observer's viewshed.
- Low Visual Impact (Rank=1): A value assigned to segments in which the installation of proposed TEP structures would have minimal effect on the casual observer's viewshed.

Table 1. Visual Impact Assessment Matrix

KOP	Route	Contrast Rating	Visual Impact	Notes
1	1	Low	Low	New line parallel to existing line. Larger lines, forms, and different colors. Minimal impact for residents that front this corridor.
1	3	Low	Low	New line parallel to existing line. Larger lines, forms, and different colors. Minimal impact for residents that front this corridor.
2	1	Low	Low	New line parallel to existing line. Structures are visible and partially obstructed by vegetation reducing the impact for viewers. Existing infrastructure with larger lines, forms, different colors
3	3	Low	Low	Routed adjacent to a residential area. Numerous similar lines, forms, colors from existing structures. Consolidation of existing utilities from single circuits to double circuits.
4	1	Low	Low	Existing infrastructure with larger lines, forms, different colors. New line parallel to existing line.
5	1	Low	Low	Existing infrastructure with similar lines, forms, colors. Installation of line onto existing double circuit structures.
6	3	Low	Low	Existing infrastructure with similar lines, forms, colors. Consolidation of existing lines from single circuit to double.
7	1	Low	Low	Existing infrastructure with similar lines, forms, colors. Installation of line onto existing double circuit structures
8	3	Low	Mod	Residential Viewer. Existing infrastructure with similar lines, forms, colors. New structures are taller, darker, and protrude further into the horizon, increasing impact. Consolidation of existing lines from single circuit to double.
9	3	Low	Mod	Residential Viewer. Existing infrastructure with similar lines, forms, colors. New structures are taller and protrude further into the horizon, increasing impact. Consolidation of existing lines from single circuit to double.
10	3	Low	Mod	Existing infrastructure with similar lines, forms, colors. New structures are taller and protrude further into the horizon, increasing impact. Consolidation of existing lines from single circuit to double.
11	1	Low	Low	Existing infrastructure with similar lines, forms, colors. Installation of line onto existing double circuit structures. Many of the new structures are obscured by vegetation.

KOP	Route	Contrast Rating	Visual Impact	Notes
11	3	Low	Mod	Existing infrastructure with similar lines, forms, colors. New structures are taller and protrude further into the horizon, increasing impact. Consolidation of existing lines from single circuit to double.
12	1	Low	Low	Installation of line onto existing double circuit structures. KOP view is from the end of a paved road that is not often traveled.

3.3 Results

The contrast rating and visual impact are assigned weights from 1 to 3 to quantify the results (Table 2).

Table 2. Numerical Rating of Route Alternatives by KOP

KOP	Route 1		Route 3	
	Contrast Rating	Visual Impact	Contrast Rating	Visual Impact
1	1	1	1	1
2	1	1		
3			1	1
4	1	1		
5	1	1		
6			1	1
7	1	1		
8			1	2
9			1	2
10			1	2
11	1	1	1	2
12	1	1		
AVERAGE	**1**	**1**	**1**	**1.6**
OVERALL AVG	**1**		**1.3**	

Finally, the route's score is averaged across the matrix to develop a final ranking for the purpose of preparing a recommendation. The recommendations are based solely on impacts to visual resources and do not take into account other important factors, e.g. engineering, costs, etc. (Table 3).

Table 3. Alternative Route Visual Impact Recommendation

Route	Average Score	Ranking	Recommendation
Route 1	1.0	1	X
Route 3	1.3	2	

4.0 Visual Impact Assessment/Narrative

The following provides a narrative assessment of the views from each of the KOPs.

KOP 1 – Route 1 & Route 3

Swan Road dead-ends just over 1 mile to the South of this view. It is likely that the casual viewer is a resident that lives in the rural area nearby. Multiple existing circuits and distribution lines are visible. The addition of a new transmission line in this area does not contrast with existing forms, lines, or colors, nor does it increase visual impacts to the casual viewer. In some cases, the new routes will utilize existing structures, or consolidate existing lines onto new structures, which would mitigate any concerns.

KOP 2 – Route 1

This view is along east Whispering Sage Road, a rural residential street. The existing development and structures have a similar form and character on the landscape. While the new 138 kV structures would be visible in some places, vegetation obscures them in other locations, which minimizes impacts to the viewer.

KOP 3 – Route 3

This view is looking south from the east end of Black Brush Road, which is a rural residential street. The existing development and structures have a similar form and character on the landscape. The new structures would allow for the consolidation of a single circuit into a double circuit line, resulting in virtually no impact to the casual viewer.

KOP 4 – Route 1

This view is to the north along Wilmot Road. The casual viewers on Wilmot Road are a mix of commercial, light industrial, commuter, or residential. The existing development and structures have a similar form and character on the landscape. The new 138 kV line will be co-located onto existing structures, which minimizes impacts to the viewer.

KOP 5 – Route 1

This KOP represents a view to the west along East Noyes Street, a rural residential street. The existing development and structures have a similar form and character on the landscape. The new 138 kV line will be co-located onto existing structures, which minimizes impacts to the viewer.

KOP 6 – Route 3

This KOP represents a view to the northeast from East Italian Fox Place, a low-density residential street. The existing structures have a similar form and character in the landscape. The new 138 kV line will be co-located onto existing structures, which minimizes impacts to the viewer.

KOP 7 – Route 1

This KOP represents a view to the west-southwest along Sahuarita Road, is a rural residential arterial street. The existing development and structures have a similar form and character on the landscape. The new 138 kV line will be co-located onto existing structures, which minimizes impacts to the viewer.

KOP 8 – Route 3

This KOP represents the view to the northeast for the casual residential traveler east along East El Toro Road. The existing structures have a similar form and character on the landscape. While this alignment will allow for the consolidation of the existing circuit with the proposed new circuit onto double-circuit structures, the new 138 kV structures are larger, darker, and more prominent, which would increase the impact for a viewer.

KOP 9 – Route 3

This KOP represents the view north for the casual residential traveler along South Country Club Road. The existing structures have a similar form and character on the landscape. While this alignment will allow for the consolidation of the existing circuit with the proposed new circuit onto double circuit structures, the new 138 kV structures are larger, darker, and more prominent, which would increase the impact for a viewer.

KOP 10 – Route 3

This KOP looks to the west-southwest on South Golden Valley Drive, a rural residential street within the Sahuarita Highlands Neighborhood. The existing structures have a similar form and character on the landscape. While this alignment will allow for the consolidation of the existing circuit with the proposed new circuit onto double circuit structures, the new 138 kV structures are larger, darker, and more prominent, which would increase the impact for a viewer.

KOP 11 – Route 1

This KOP represents a view to the southwest at the exit of the Sahuarita Highlands Neighborhood on east Broadwater Way. The existing structures have a similar form and character on the landscape to the west and to the south. The 138kV structures are obscured by distance and vegetation which minimizes impacts to the viewer, and the new line will be co-located onto these existing structures, minimizing impacts to the viewer.

KOP 11 – Route 3

This KOP represents a view to the southwest at the exit of the Sahuarita Highlands Neighborhood on east Broadwater Way. The existing structures have a similar form and character on the landscape. While this alignment will allow for the consolidation of the existing circuit with the proposed new circuit onto double circuit structures, the new 138 kV structures are larger, darker, and more prominent, which would increase the impact for a viewer.

KOP 12 – Route 1

This KOP represents a view to the southeast for the casual traveler and some residents along Santa Rita Road. The existing structures have a similar form and character on the landscape. The new 138 kV line will

be co-located onto existing structures, which minimizes impacts to the viewer. Additionally, this stretch of Santa Rita Road is not traveled often, and the structures are obscured somewhat by distance and vegetation, which minimizes impacts.

5.0 Summary

Following evaluation of the route alternatives, landscape settings, designated scenic resources, and viewer types, the resultant level of contrast and the potential visual impact was rated, and the values averaged to obtain a score for each route alternative.

Route 1 follows corridors with existing infrastructure, and in many locations would be co-located onto an existing double-circuit capable structure. This minimizes impacts along much of the alignment. The northern section of this route consists of a new line constructed parallel to an existing 230 kV line. The existing 230 kV structures are substantially larger and taller than the new line. There is a low visual impact of the new line adjacent to the 230 kV line. The overall visual impact rating of Route 1 is 1.0.

Route 3 also follows corridors with existing infrastructures and for much of the route will be co-located onto existing double-circuit capable structures. A portion of the southern half of the route requires installation of new double-circuit structures to support both the existing circuit and the proposed new circuit. This eliminates the construction of a second set of structures parallel to the existing line, and reduces the potential visual impact. These structures, however, are larger, taller, and darker than the existing single-circuit structures, slightly increasing the visual impact. The overall visual impact rating of Route 3 is 1.3.

Route 1 is recommended due to its overall lower visual impact.

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit E-2

This page intentionally left blank

CHRONICLE™ HERITAGE

Class I Literature Review in Support of the Proposed Cisne to Hartt Substation CEC Project in and near Tucson, Pima County, Arizona

Sophie Husslein, B.A., RPA
Alysun Littlefield, B.A.
April 9, 2026

Class I Literature Review in Support of the Proposed Cisne to Hartt Substation CEC Project in and near Tucson, Pima County, Arizona

Prepared by:
Sophie Husslein, B.A., RPA
Alysun Littlefield, B.A.

Prepared for:
DockIt Consulting, PLLC
4848 Oak Pointe Way
Sarasota, Florida 34233

Technical Report No.: 25-489

Chronicle Heritage
2025 North 3rd Street, Suite 157
Phoenix, Arizona 85004
(602) 261-7253

April 9, 2026

Abstract

Report Title: Class I Literature Review in Support of the Proposed Cisne to Hartt Substation CEC Project in and near Tucson, Pima County, Arizona

Project Name: Santa Rita Class I

Project Location: Generally east of U.S. Route 89, south of East Nogales Old Vail Connection Road, and bounded on the eastern edge by South Wilmot Road in and near to the City of Tucson, Pima County, and unincorporated Pima County, Arizona

Project Locator UTM: 510092 mE, 3539951 mN (Zone 12, NAD83)

Project Sponsor: Dockit Consulting, LLC on behalf of Tucson Electric Power (TEP)

Sponsor Project Number(s): TEPLS-25002

Lead Agency: Arizona State Land Department (ASLD)

Other Involved Agencies: Arizona State Museum (ASM), Arizona Corporation Commission (ACC), State Historic Preservation Office (SHPO), City of Tucson (COT), Pima County, and, if the final Project area intersects Bureau of Land Management (BLM) land, the BLM Tucson Field Office (TFO)

Applicable Regulations: The Arizona Antiquities Act (AAA) regulations (A.R.S. § 41-841, et seq.); the Arizona State Historic Preservation Act (SHPA; A.R.S. § 41-861 through 41-864); and the state law protecting human remains and mortuary objects on private land (A.R. S. § 41-865). The portions of the Project within the COT and unincorporated Pima county are subject to COT Resolution No. 12443 and Pima County Board of Supervisors (BOS) Policy C3.17, respectively, and Pima County Historic Zone Ordinance 18.63 (Historic Landmark).

If the selected route for the Project intersects the small area of BLM land in the northeastern corner of the literature review area, the regulations implementing Section 106 of the National Historic Preservation Act as set forth in 36 Code of Federal Regulations (CFR) 800 (as revised in 2004) and Native American Graves Protection and Repatriation Act (NAGRPA) would apply.

Funding Source: Private

ASLD ROW Application Number: Pending

Description of the Project: Dockit Consulting, LLC (Dockit) is providing support for TEP's proposed Cisne to Hartt Substations CEC Project in Tucson and unincorporated Pima County, Arizona (Undertaking; Project). Potential ground-disturbing activities for the proposed project include vegetation removal, grading and structure construction for substations, pole installation, and access road construction.

Chronicle Heritage was contracted by Dockit to conduct a Class I literature review of the file search area to determine if it has been previously surveyed and if cultural resources are present to assist in planning a route for the line that minimizes its effects on cultural resources. Given the distribution of land ownership within the file search area, the final alignment corridor (Project area) is expected to intersect BLM, State Trust, Pima County, City of Tucson (COT), Pima County Right-of-Way (ROW), COT ROW, Sahuarita ROW, Tucson airport land, and private land, making it subject to compliance with AAA regulations (A.R.S. § 41-841, et seq.), the Arizona SHPA (A.R.S. § 41-861 through 41-864), the state law protecting human remains encounters on private land (A.R. S. § 41-865), COT Resolution No. 12443, Pima County BOS Policy C3.17, and Pima County Historic Zone Ordinance 18.63 (Historic Landmark). Should the final Project corridor intersect the small area of

BLM land in the northeastern corner of the file search area, it would also be subject to the regulations implementing Section 106 of the National Historic Preservation Act as set forth in 36 CFR 800 (as revised in 2004), and NAGRPA.

In this report, the Project area will refer to the final transmission line corridor used by Dockit Consulting for the Undertaking and the file search area is the entire area subject to the current Class I record search to assist in planning a route for the transmission line.

File Search Area: The file search area (Search area) consists of a single, irregularly shaped parcel of approximately 30,500 acres (ac) and is 19,025 meters (m) (11.8 miles [mi]) north–south × 7,300 m (4.5 mi) east–west at its furthest extents. The Search area consists of mostly undeveloped land with a few acres of housing developments throughout. The Search area is partially within the COT and partially in unincorporated Pima County between Tucson and Sahuarita, just east of U.S. Route 89. The topography is a relatively flat valley sloping to the northwest toward the Santa Cruz River and crossed by multiple southeast–northwest oriented drainages.

Legal Description: The Search area is within portions of Sections 32, Township (T) 15 South (S), Range (R) 14 East (E); Sections 1–5, 8–17, 20–29, and 32–36, T16S, R14E; Sections 7, 18, 19, 30, 31, T16S, R15E; Sections 1–5, 8–17, 20–29, and 32–36, T17S, R14E; Sections 6, 7, 18, 19, 30, and 31, T17S, R15E; Sections 1 and 2, T18S, R14E; U.S. Geological Survey (USGS) 7.5-minute quadrangles: Tucson SW, Arizona (1984); Tucson SE, Arizona (1982); Sahuarita, Arizona (1982); Corona De Tucson, Arizona (1981).

Land Jurisdiction: BLM, Arizona State Trust Land administered by the ASLD, Pima County, Pima County Right-of-Way (ROW), City of Tucson (COT), COT ROW, Town of Sahuarita ROW, Tucson airport land, and private land. Not all jurisdictions may intersect the final route.

Acreage by Land Jurisdiction Within the Search Area

Jurisdiction	Acreage	Percentage
ASLD	22,476.1	73.6
Private	5,994	19.6
City of Tucson	1,099	3.6
Tucson Airport Land	577.1	1.89
Pima County ROW	218.2	0.69
COT ROW	104.7	0.35
Pima County	22.8	0.07
Sahuarita ROW	15.3	0.05
BLM	10.6	0.04
Total	**30,517.7**	**100**

Total Acres: 30,517.7

Consultant Firm/Organization: Chronicle Heritage

Project Number: 25-PC-07003

Comments: Dockit is providing support for TEP's proposed Cisne to Hartt Substations CEC project in Tucson and unincorporated Pima County, Arizona (Undertaking; Project). Potential ground-disturbing activities for the proposed Project include vegetation removal, grading and structure construction for substations, pole installation, and access road construction.

As the Project is the planning stage, Chronicle Heritage was contracted by Dockit to conduct a Class I literature review of an extensive survey of the area where the line might be sited (Search area) to determine if it has been previously surveyed and if cultural resources are present.

Approximately 18,415.6 ac of the Search area have not been surveyed, and 9,090.3 ac of the Search area require resurvey due to the age of the previous survey. The Search area contains 168 previously recorded sites. Sixty-three sites have been previously recommended or determined eligible for inclusion in the NRHP, 53 sites have been recommended unevaluated, and 52 sites have been recommended or determined not eligible. There are 155 sites that have been recorded more than 10 years ago and will require rerecording to assess their current condition and determine appropriate mitigation measures for the proposed Project.

As little of the area reviewed for this Project has been previously surveyed, and many of the site locations and extents are inconsistent across different sources, Chronicle Heritage recommends a full pedestrian survey of a corridor the width of the expected ROW or easement once the route for the line is selected. Given the distribution of land ownership within the review area, the final alignment corridor is expected to intersect BLM, Arizona State Trust Land, Pima County, City of Tucson (COT), Pima County Right-of-Way (ROW), COT ROW, Sahuarita ROW, Tucson airport land, and private land making it subject to compliance with the AAA regulations (A.R.S. § 41-841, et seq.), Arizona SHPA (A.R.S. § 41-861 through 41-864), the state law protecting human remains encounters on private land (A.R. S. § 41-865), COT Resolution No. 12443, Pima County BOS Policy C3.17, and Pima County Historic Zone Ordinance 18.63 (Historic Landmark). Should the final Project corridor intersect the small area of BLM land in the northeastern corner of the review area, it would also be subject to the regulations implementing Section 106 of the National Historic Preservation Act as set forth in 36 CFR 800 (as revised in 2004) and NAGRPA.

This page intentionally left blank.

Contents

1 INTRODUCTION 1
2 PROJECT SETTING 14
3 PREVIOUS RESEARCH 16
4 RECOMMENDATIONS 49
5 REFERENCES 51

Figures

Figure 1-1. Overview of Search area and land jurisdiction. 3
Figure 1-2. Search area detail map (map 1 of 10). 4
Figure 1-3. Search area detail map (map 2 of 10). 5
Figure 1-4. Search area detail map (map 3 of 10). 6
Figure 1-5. Search area detail map (map 4 of 10). 7
Figure 1-6. Search area detail map (map 5 of 10). 8
Figure 1-7. Search area detail map (map 6 of 10). 9
Figure 1-8. Search area detail map (map 7 of 10). 10
Figure 1-9. Search area detail map (map 8 of 10). 11
Figure 1-10. Search area detail map (map 9 of 10). 12
Figure 1-11. Search area detail map (map 10 of 10). 13
Figure 3-1. Previous projects that intersect the Search area (1 of 6). 33
Figure 3-2. Previous projects that intersect the Search area (2 of 6). 34
Figure 3-3. Previous projects that intersect the Search area (3 of 6). 35
Figure 3-4. Previous projects that intersect the Search area (4 of 6). 36
Figure 3-5. Previous projects that intersect the Search area (5 of 6). 37
Figure 3-6. Previous projects that intersect the Search area (6 of 6). 38
Figure 3-7. Previously recorded cultural resources that intersect the Search area (1 of 6). 39
Figure 3-8. Previously recorded cultural resources that intersect the Search area (2 of 6). 40
Figure 3-9. Previously recorded cultural resources that intersect the Search area (3 of 6). 41
Figure 3-10. Previously recorded cultural resources that intersect the Search area (4 of 6). 42
Figure 3-11. Previously recorded cultural resources that intersect the Search area (5 of 6). 43
Figure 3-12. Previously recorded cultural resources that intersect the Search area (6 of 6). 44
Figure 3-13. GLO plats within the Search area (1873, 1896, and 1931). 48

Tables

Table 1-1. Acreage by Land Jurisdiction within the Search area 2
Table 2-1. Soils Within the Search Area 14
Table 3-1. Previous Projects Intersecting the Search area 17
Table 3-2. Previous Resources Intersecting the Search area 22
Table 3-3. Historic GLO Properties within the Search area and Search Radius 45
Table 3-4. Historic USGS Map Properties within the Search area and 1-mile Search Radius 45

This page intentionally left blank.

1 Introduction

DockIt Consulting, LLC (DockIt) contracted Chronicle Heritage to conduct a site file search and literature review of 30,517.7 acres (ac) of Arizona State Trust Land administered by the Arizona State Land Department (ASLD), Pima County, Pima County Right-of-Way (ROW), City of Tucson (COT), COT ROW, Sahuarita ROW, Tucson airport land, and private land for the proposed development of a TEP transmission line and associated substations in the COT and unincorporated Pima County, Arizona (Project) (Table 1-1; Figure 1-1 through Figure 1-11). The ASLD is the lead agency for the Project; other involved agencies are the Arizona State Museum (ASM), Arizona Corporation Commission (ACC), Arizona State Historic Preservation Office (SHPO), COT, Pima County, and, if the Project area intersects BLM land, the BLM, Tucson Field Office (TFO).

Given the distribution of land ownership within the review area, the Project is subject to compliance with the Arizona Antiquities Act (AAA) regulations (A.R.S. § 41-841, et seq.), the Arizona State Historic Preservation Act (SHPA; A.R.S. § 41-861 through 41-864), the state law protecting human remains encounters on private land (A.R. S. § 41-865), COT Resolution No. 12443, Pima County Board of Supervisors (BOS) Policy C3.17, and Pima County Historic Zone Ordinance 18.63 (Historic Landmark). If the selected route for the project intersects the small area of BLM land in the northeast corner of the literature review area, the regulations implementing Section 106 of the National Historic Preservation Act as set forth in 36 CFR 800 (as revised in 2004) and Native American Graves Protection and Repatriation Act (NAGRPA) would apply.

This Class I report has been prepared for DockIt to determine if the file search area (Search area) has been previously surveyed and if cultural resources are present in advance of proposed development, and provides a detailed description of the entire file search area (Search area), a summary of previous research conducted within 1 mi of the Search area, and recommendations for the routing of the line and further cultural work.

In this report, the Project area will refer to the final transmission line corridor used by Dockit Consulting for the Undertaking and the file search area is the entire area subject to the current Class I record search to assist in planning a route for the transmission line.

The Search area consists of a single irregularly shaped parcel totaling 30,517.7 acres (ac) and is approximately 19,025 meters (m) (11.8 miles) north-south by 7,300 m (4.5 miles) east-west at its furthest extents. The Search area consists of mostly undeveloped land with few acres of housing developments throughout. The Search area is partially within the City of Tucson and partially in unincorporated Pima County between Tucson and Sahuarita, just east of U.S. Route 89. The topography is a relatively flat valley sloping to the northwest towards the Santa Cruz River and crossed by multiple southeast to northwest oriented drainages.

The Search area is within portions of Sections 32, Township (T) 15 South (S), Range (R) 14 East (E); Sections 1-5, 8-17, 20-29, 32-36, T16S, R14E; Sections 7, 18, 19, 30, 31, T16S, R15E; Sections 1-5, 8-17, 20-29, 32-36, T17S, R14E; Sections 6, 7, 18, 19, 30, 31, T17S, R15E; Sections 1, 2, T18S R14E; U.S. Geological Survey (USGS) 7.5-minute quadrangles: Tucson SW, AZ (1984); Tucson SE, AZ (1982); Sahuarita, AZ (1982); Corona De Tucson, AZ (1981). The Search area is located at 1983 North American Datum (NAD 83), Universal Transverse Mercator (UTM) Zone 12, 510092 mE, 3539951 mN.

Table 1-1. Acreage by Land Jurisdiction within the Search area

Jurisdiction	Acreage	Percentage
ASLD	22,476.1	73.6
Private	5,994	19.6
City of Tucson	1,099	3.6
Tucson Airport Land	577.1	1.89
Pima County ROW	218.2	0.69
COT ROW	104.7	0.35
Pima County	22.8	0.07
Sahuarita ROW	15.3	0.05
BLM	10.6	0.04
Total	**30,517.7**	**100**

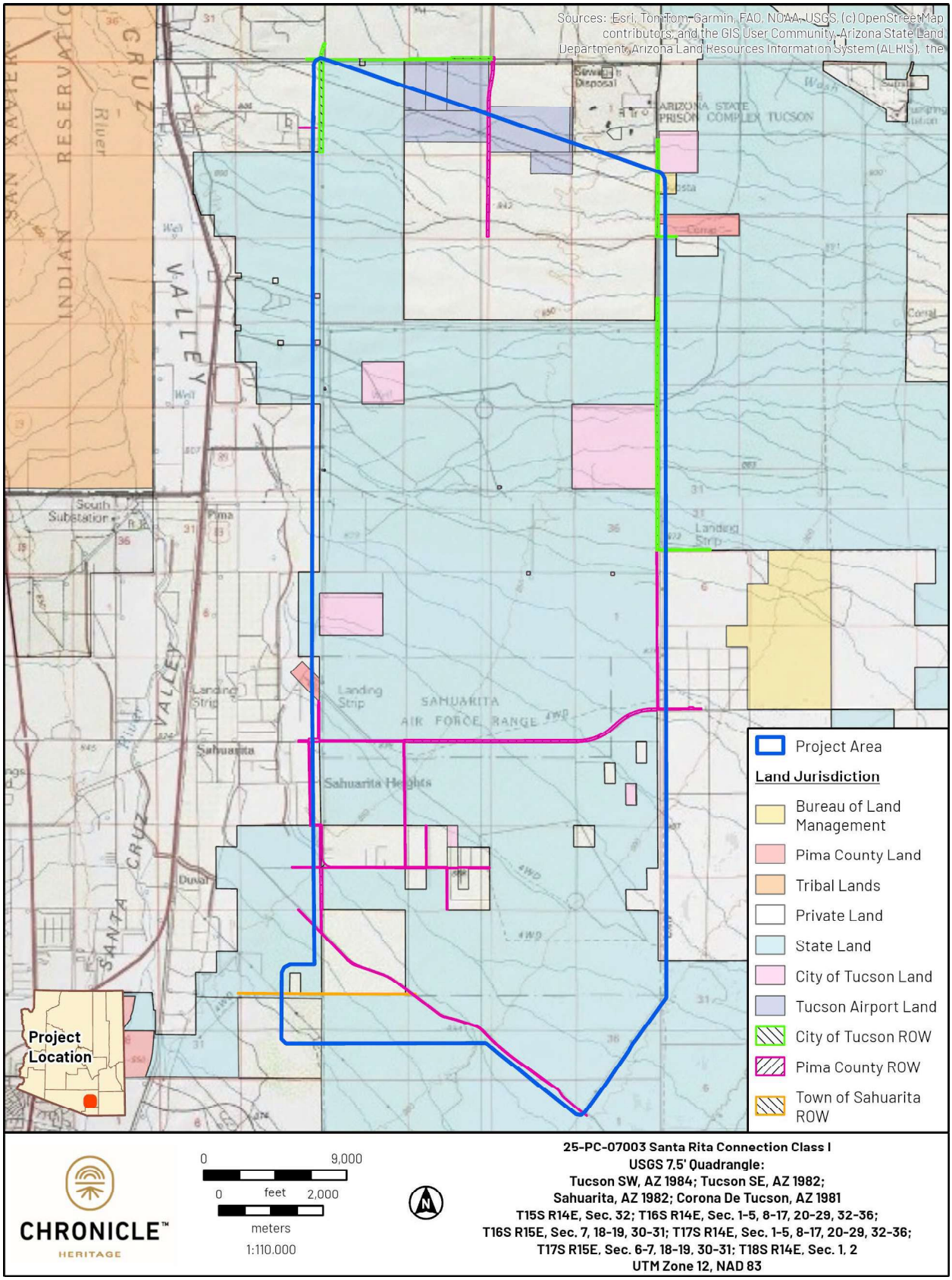


Figure 1-1. Overview of Search area and land jurisdiction.

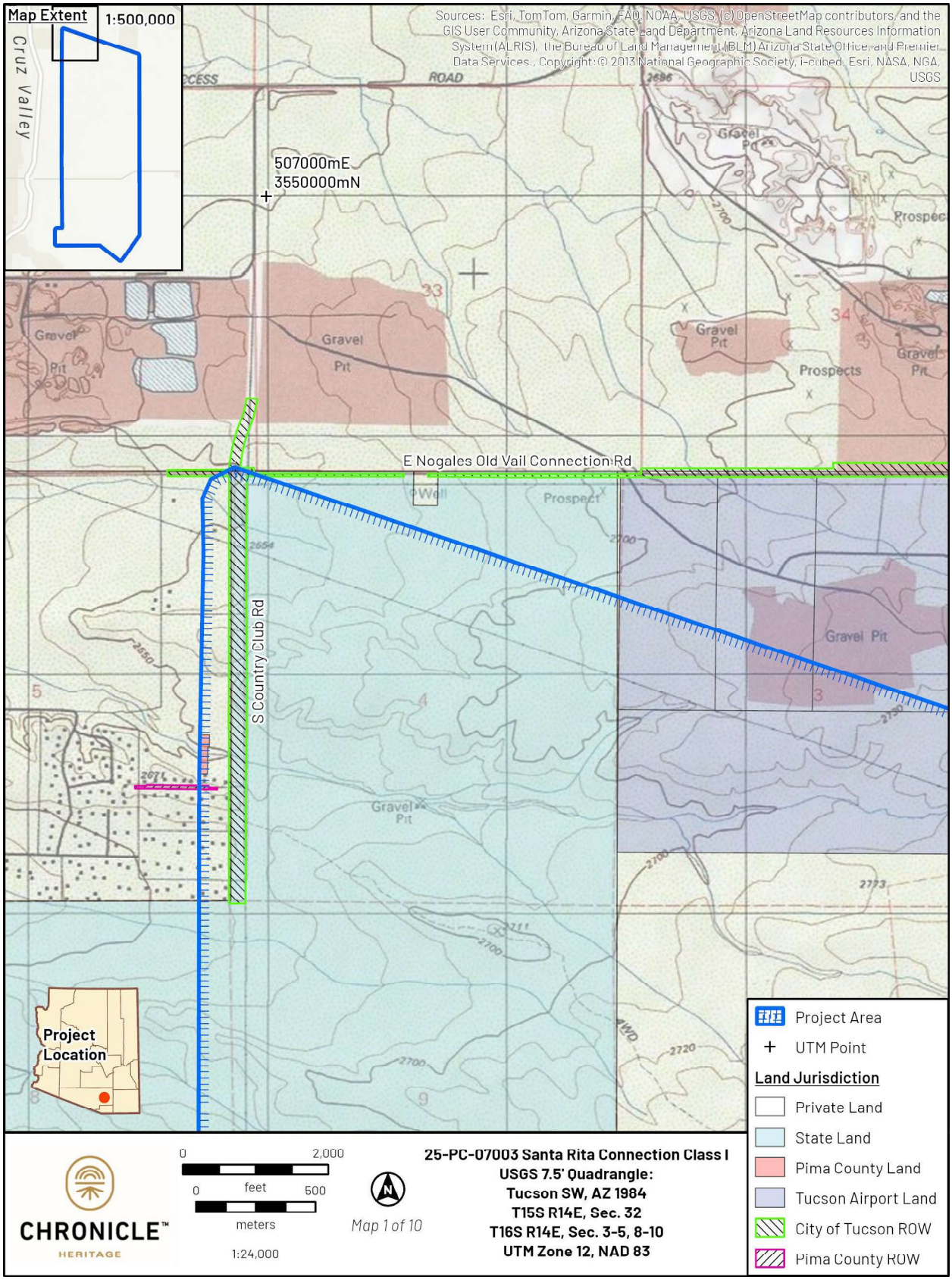


Figure 1-2. Search area detail map (map 1 of 10).

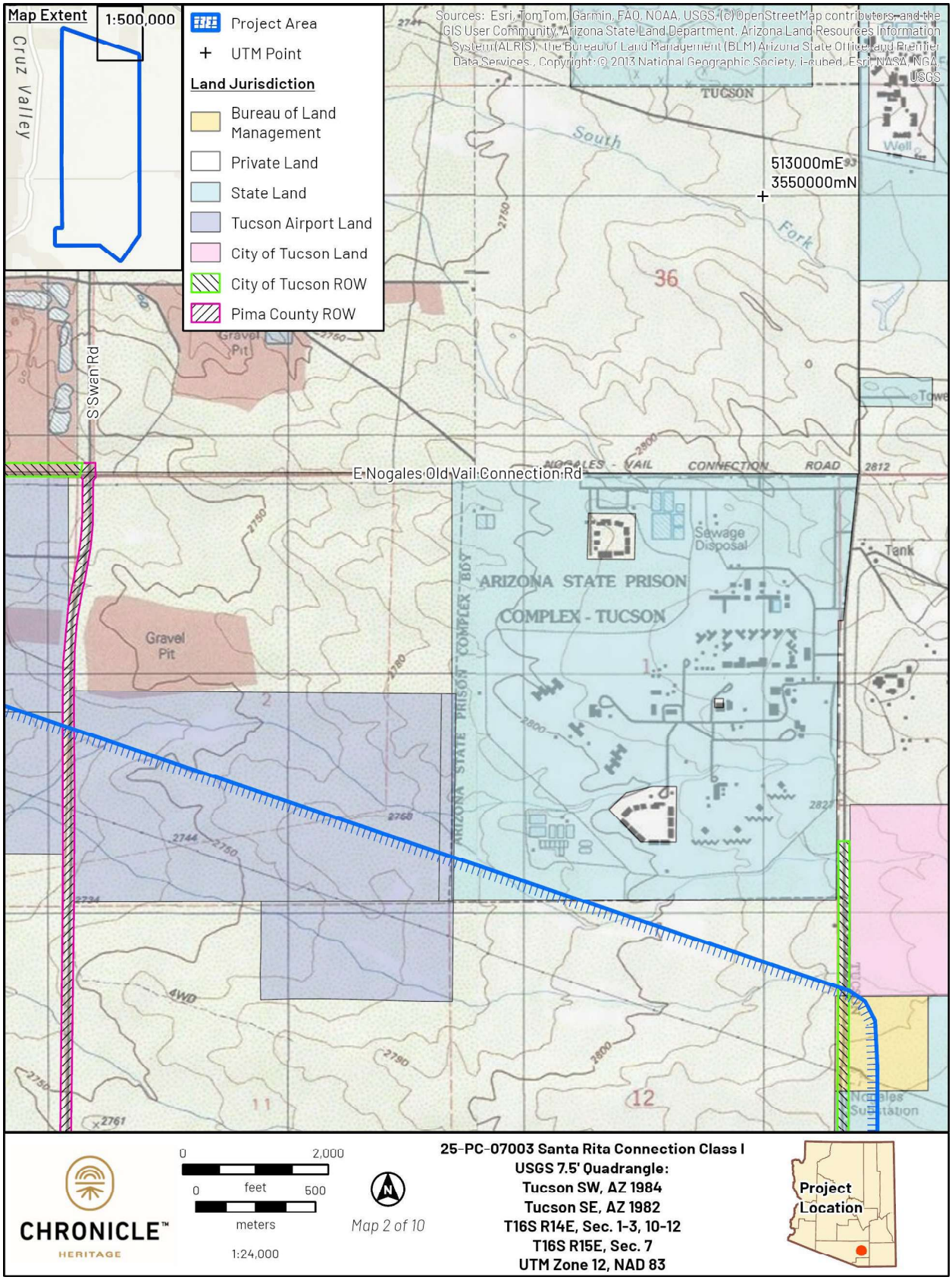


Figure 1-3. Search area detail map (map 2 of 10).

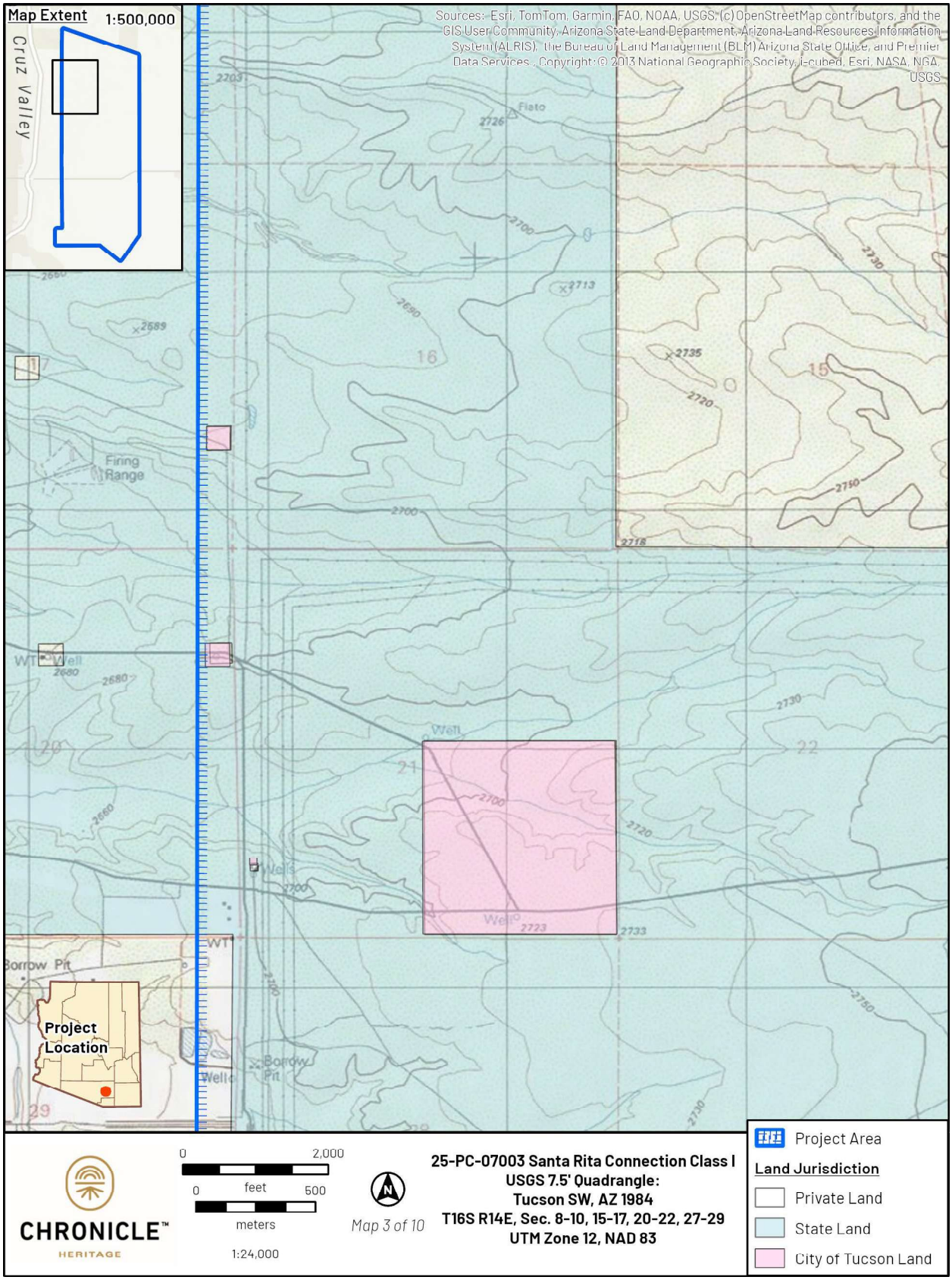


Figure 1-4. Search area detail map (map 3 of 10).

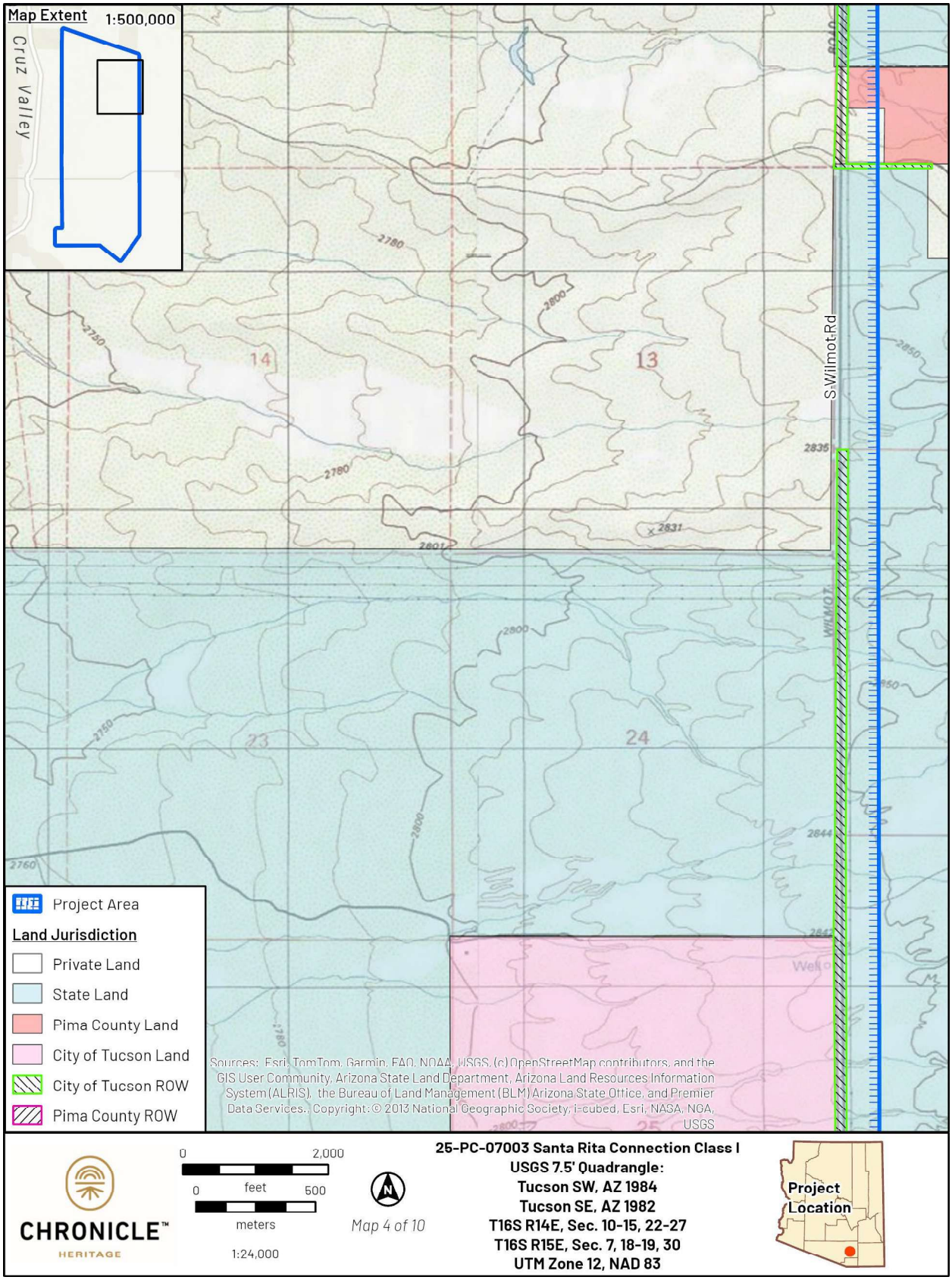


Figure 1-5. Search area detail map (map 4 of 10).

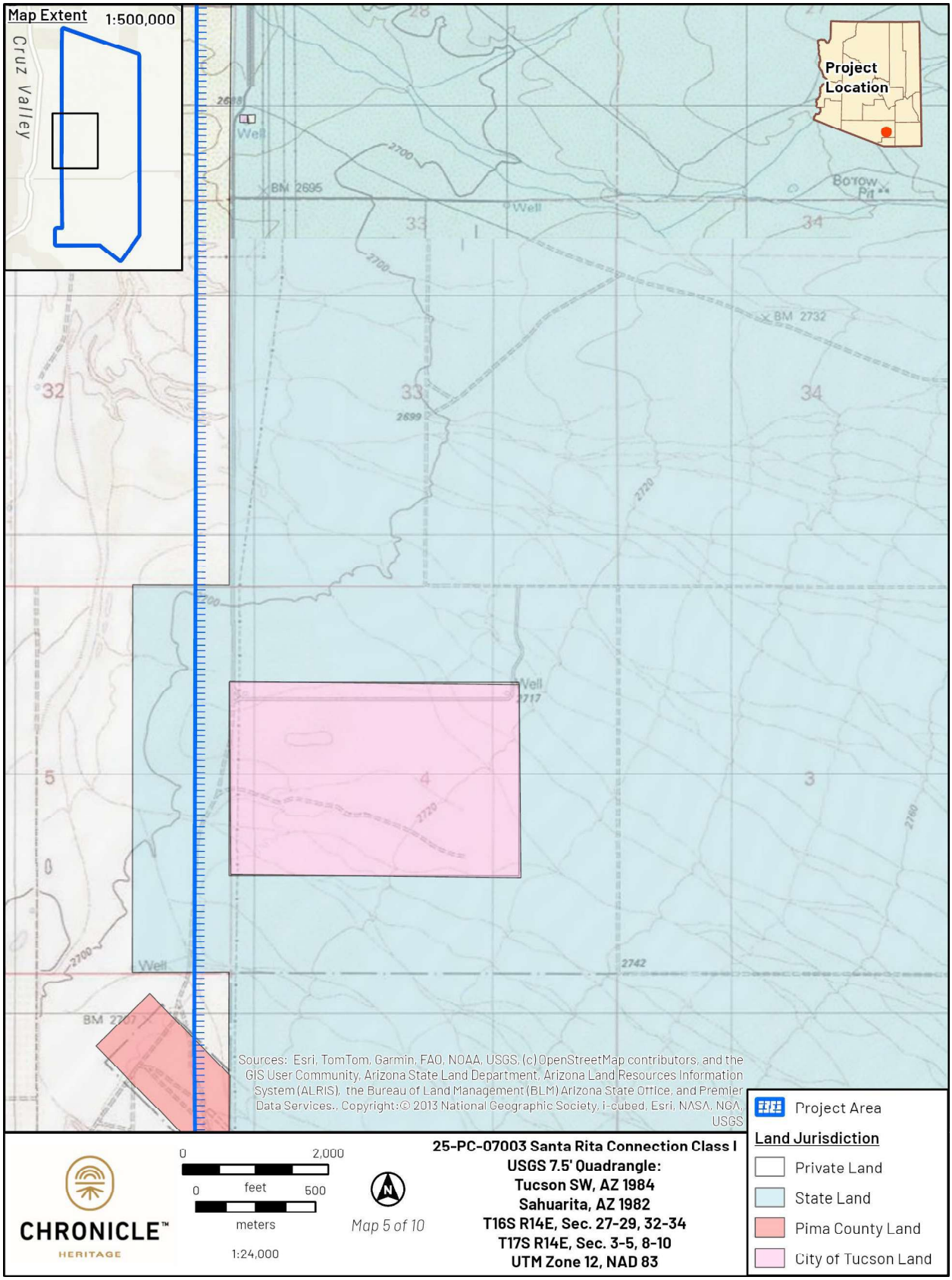


Figure 1-6. Search area detail map (map 5 of 10).

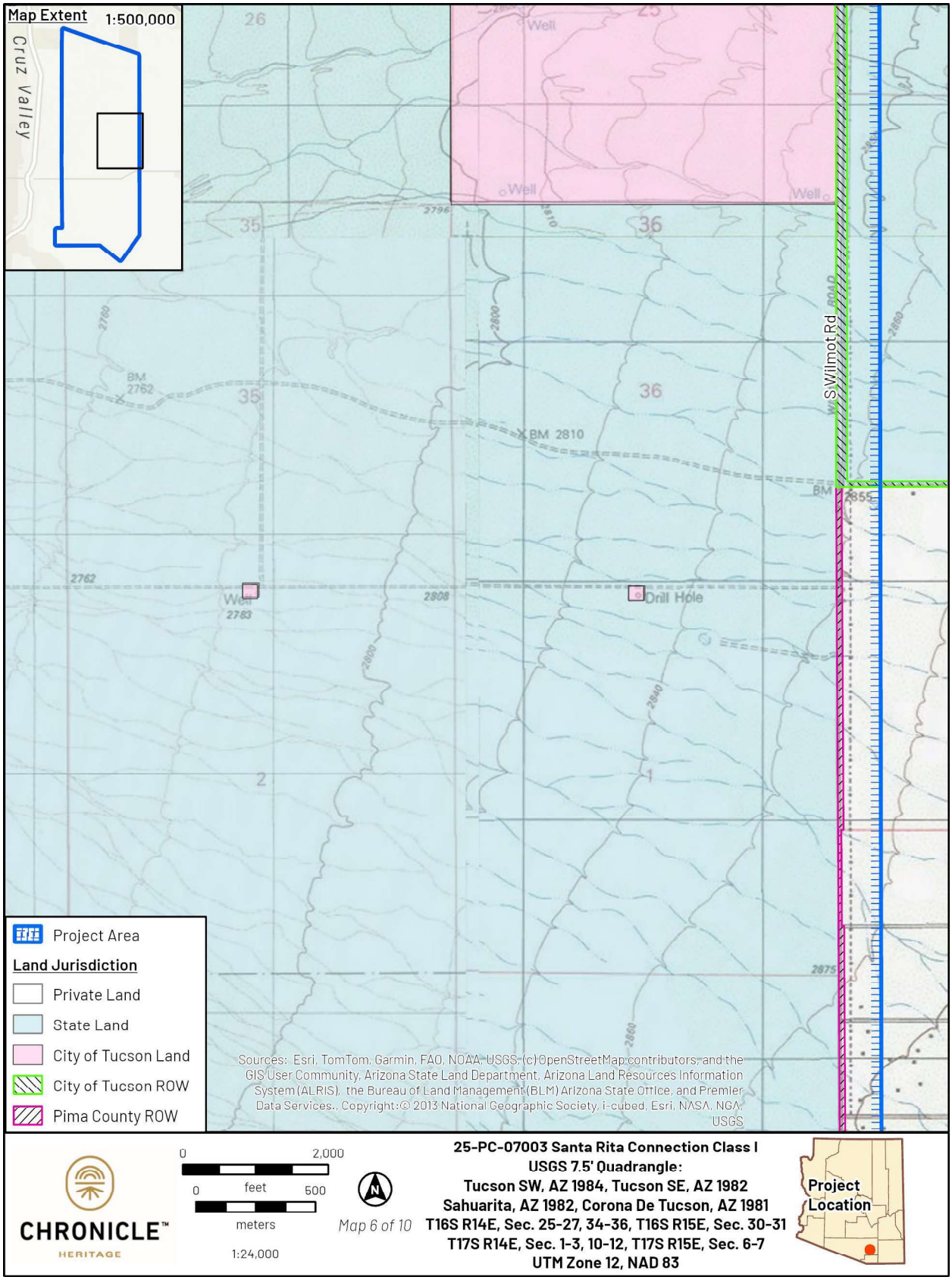


Figure 1-7. Search area detail map (map 6 of 10).

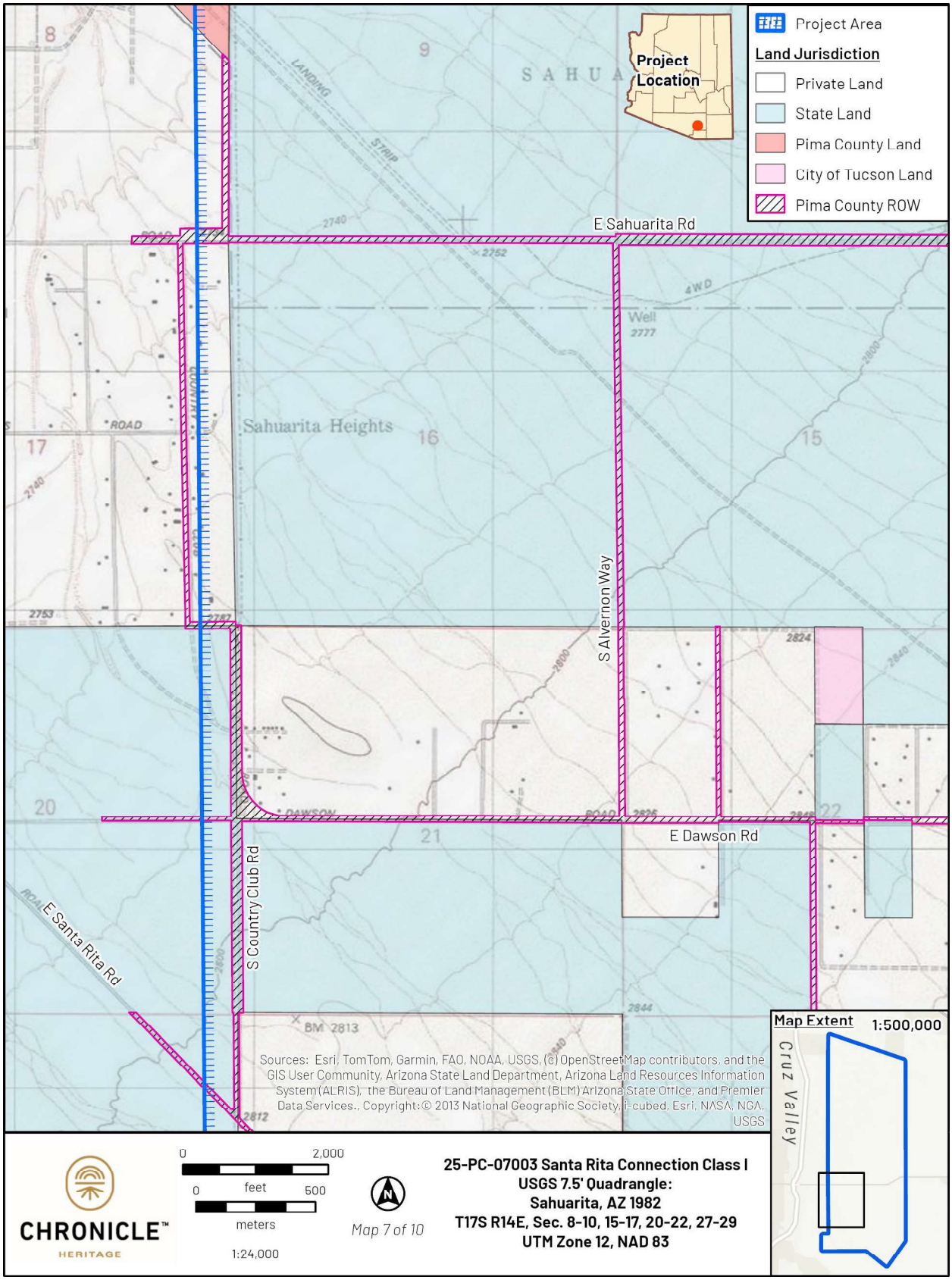


Figure 1-8. Search area detail map (map 7 of 10).

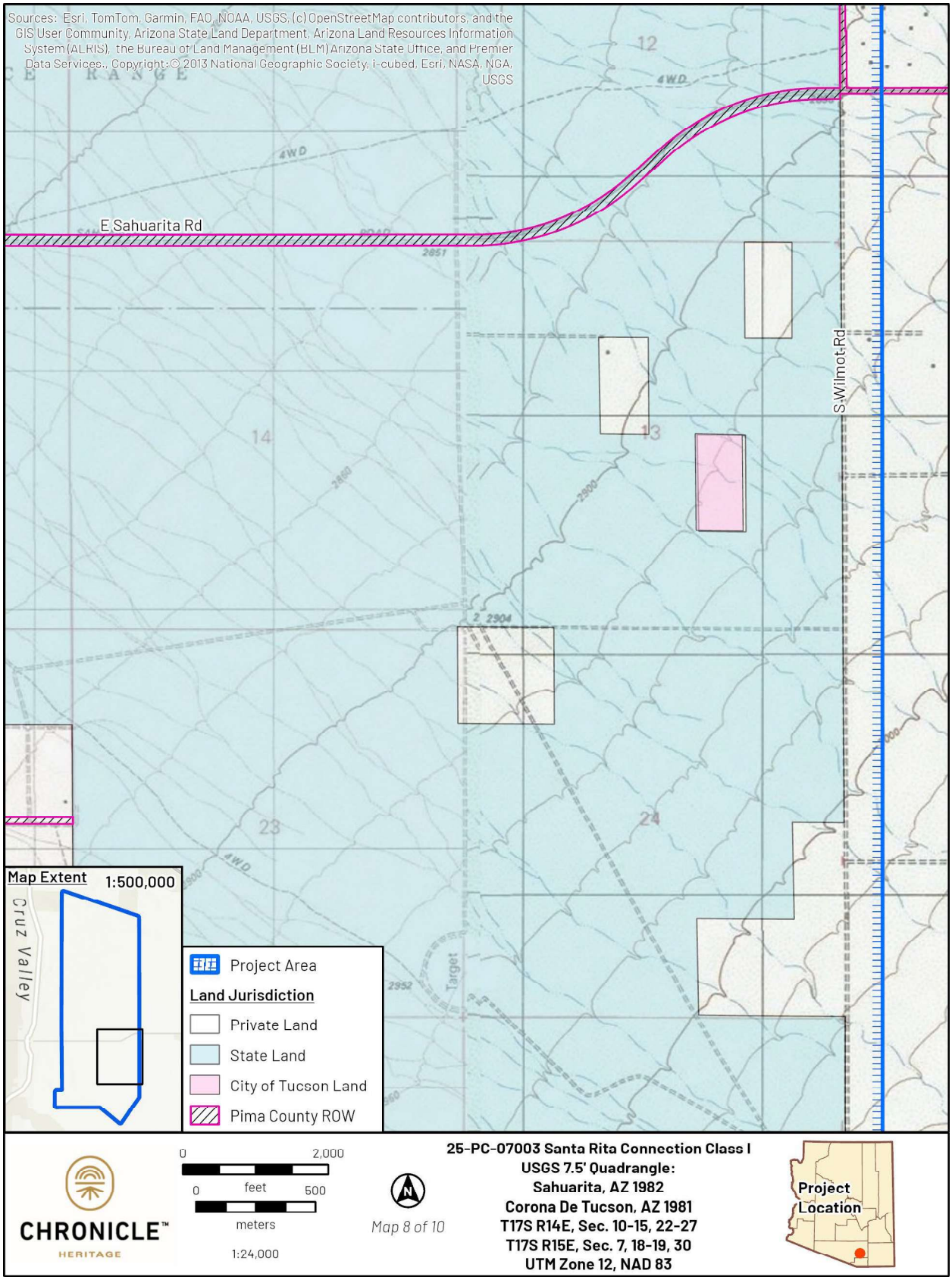


Figure 1-9. Search area detail map (map 8 of 10).

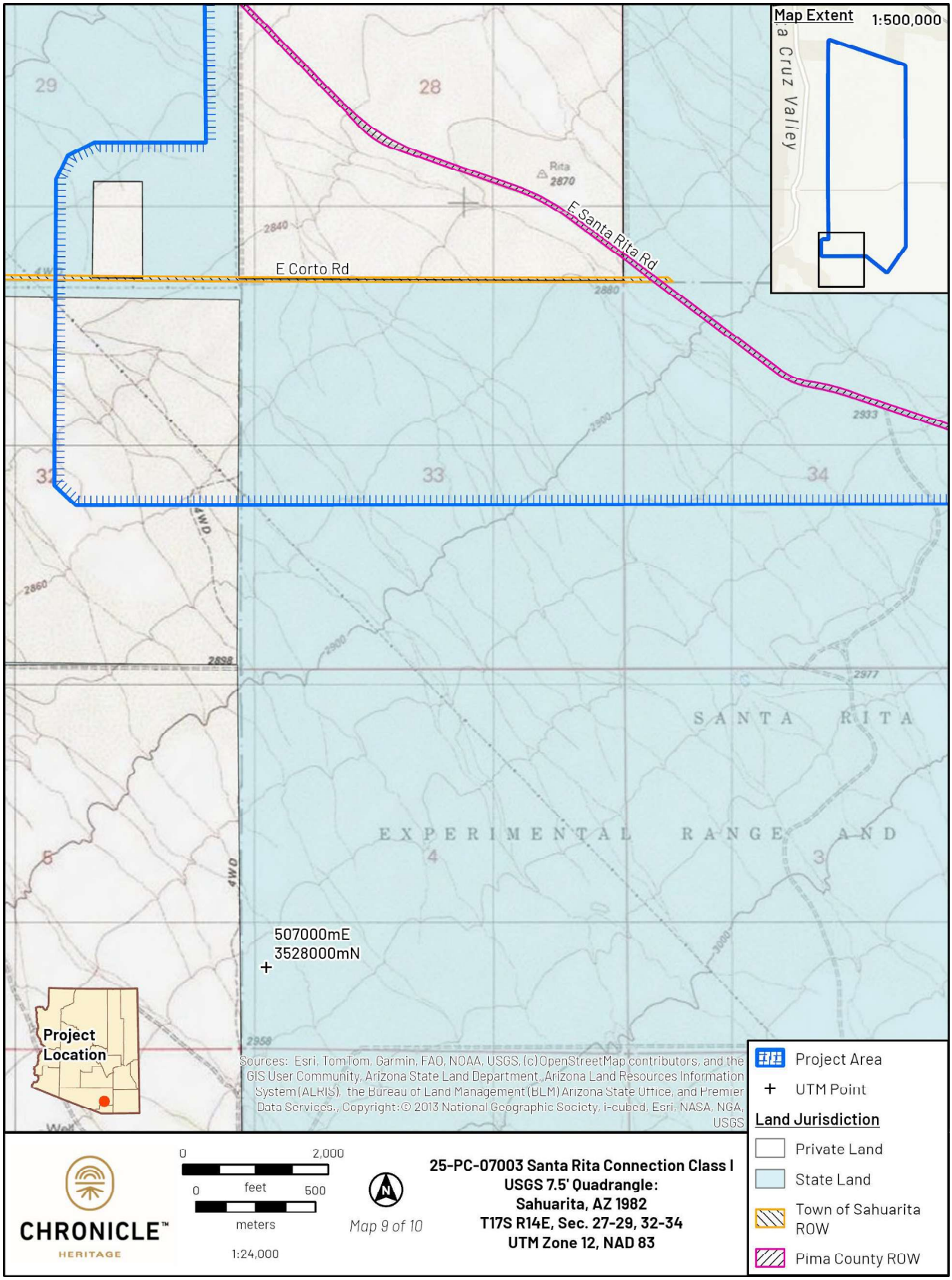


Figure 1-10. Search area detail map (map 9 of 10).

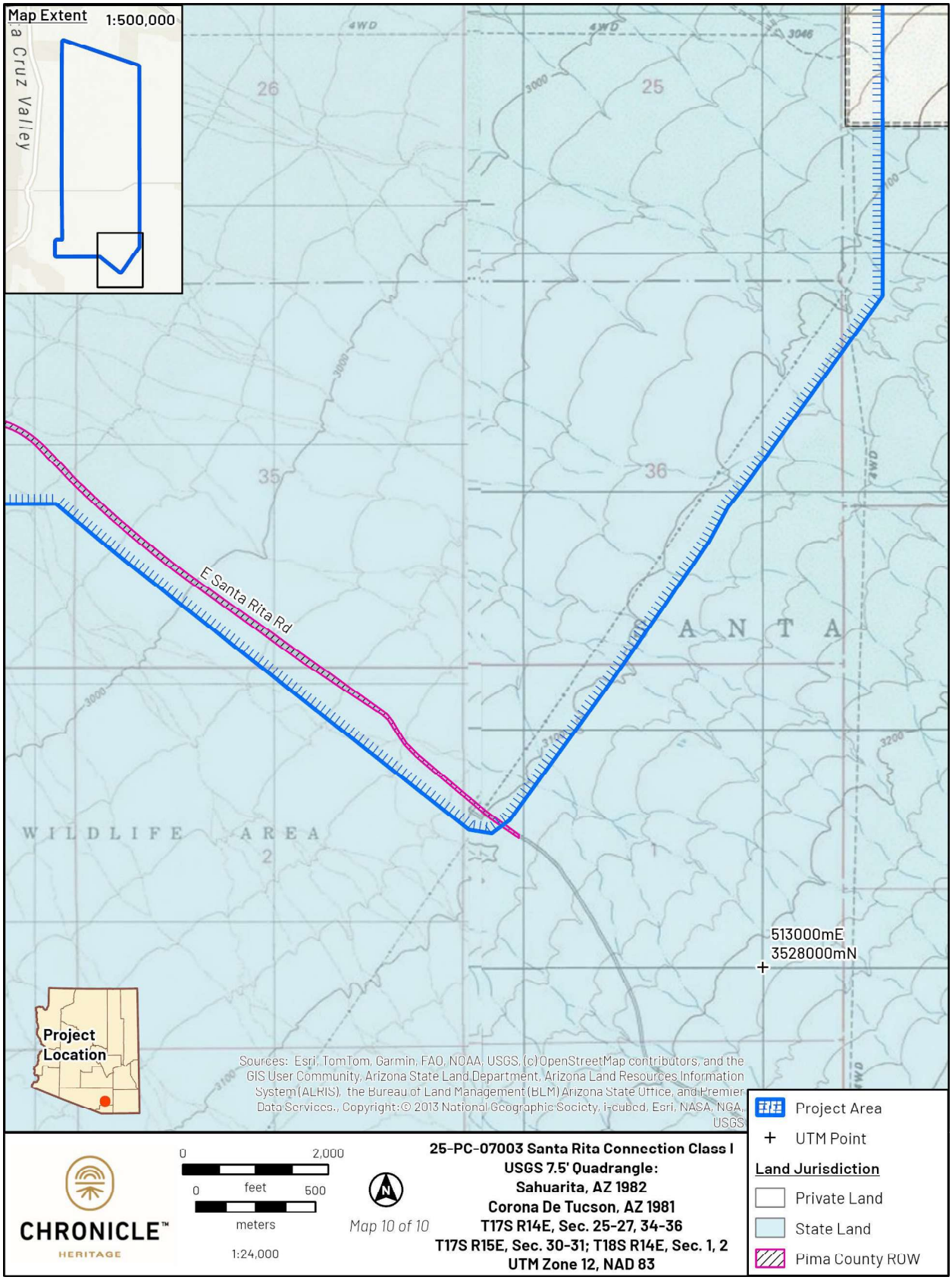


Figure 1-11. Search area detail map (map 10 of 10).

2 Project Setting

The Search area is within the Santa Cruz River Valley on a gently northwest sloping landform that is 2,650–3,150 ft above mean sea level (amsl). The Search area is approximately 3.5 mi west of Sycamore Canyon and 6.5 mi northwest of the Santa Rita mountains. The Santa Cruz River is 2 mi east of the Search area, and the Search area is crossed by multiple southeast–northwest unnamed drainages.

Vegetation within the Search area comprises the Sonoran Desertscrub, Arizona Upland Subdivision (Brown 1994). This biotic community is characterized by scrubland, low woodland trees, and shrubland species, which include ironwood (*Olneya tesota*), blue paloverde (*Cercidium floridum*), foothill paloverde (*Cercidium microphyllum*), various mesquite (*Prosopis* sp.), creosote bush (*Larrea tridentata*), triangle bursage (*Ambrosia deltoidea*), and catclaw acacia (*Acacia greggii*). Cacti and perennial succulent species constitute a significant presence and include various pricklypear (*Opuntia* sp.), various cholla (*Cylindropunita* sp.), saguaro (*Carnegiea gigantea*), and various barrel cacti (*Ferocactus* sp.) (Brown 1994). The Arizona Upland/Eastern Sonoran Basins ecoregion is at 1,500–3,000 ft amsl between the higher relief mountain ranges in the surrounding region. The ecoregion includes gently sloping basins and valleys with mostly ephemeral and intermittent streams. This highland ecoregion receives more rainfall, approximately 7–20 inches annually, than the drier western Sonoran Desert mountains (Griffith et al. 2014).

Geology within the Search area is primarily undivided Quaternary surficial deposits (0–2 million years ago [Ma]) of unconsolidated to strongly consolidated alluvial and eolian deposits, including poorly sorted alluvial fan deposits along large drainages. The northwestern corner of the Search area contains Early Pleistocene to latest Pliocene surficial deposits (0.75–3 Ma) of coarse relict alluvial fan deposits that form flat, isolated surfaces that are deeply incised by streams. The deposits have undergone erosion and are moderately to strongly consolidated with coarser-grained sediment than younger deposits in the area (Arizona Geological Survey 2024). Soils within the Search area are summarized Table 2-1 (Soil Survey Staff 2025).

The Search area is mostly undeveloped with isolated areas of previous development, mostly along the edges of the parcel. The area surrounding the Search area is heavily developed with Interstate 10 and COT 4 mi to the north, the town of Sahuarita 2 mi to the west, and the census designated place Corona De Tucson 4 mi to the east. Housing developments and roads associated with the surrounding cities and towns abut the Search area on all sides and partially extend into the Search area. The Search area contains four clusters of housing developments, a solar farm, a former landing strip, more than 10 improved roads—including Sahuarita Road oriented east–west through the middle of the parcel, Wilmot Road oriented north–south along the eastern edge of the parcel, Santa Rita Road oriented northwest–southeast in the southwestern corner of the parcel, and numerous residential access streets—as well as more than 20 unimproved roads, oriented in all directions, primarily through streets or residential access roads.

Table 2-1. Soils Within the Search Area

Soil Type	Parent Material	Landform	Percentage of Search Area
Anthony fine sandy loam (0–3% slopes)	Mixed alluvium	Flood plains	0.3
Arizo-Riverwash complex (0–3% slopes)	Mixed alluvium	Flood plains	1.1

Soil Type	Parent Material	Landform	Percentage of Search Area
Bucklebar-Sahuarita complex (0–3% slopes)	Mixed alluvium	Fan terraces	4.3
Cave soils and urban land (0–8% slopes)	Mixed alluvium	Fan terraces	2.5
Glendale silt loam (0–3% slopes)	Mixed alluvium	Stream terraces	1.2
Hantz loam (0–1% slopes)	Mixed alluvium	Flood plains, alluvial fans, swales	7.8
Hayhook sandy loam (1–5% slopes)	Alluvium derived from granite	Fan remnants	0.7
Hayhook-Sahuarita complex (1–5% slopes)	Alluvium derived from granite	Fan terraces	0.2
Pinaleno-Stagecoach complex (5–16% slopes)	Mixed alluvium	Fan terraces	0.2
Pinaleno vary cobbly sandy loam (1–8% slopes)	Mixed alluvium	Fan terraces	0.0
Riveroad and Comoro soils (0–2% slopes)	Moderately fine textured alluvium	Fan terraces	0.2
Sahuarita soils, mohave soils, and urban land (1–5% slopes)	Mixed alluvium	Fan terraces	29.8
Stagecoach-Sahuarita association (1–8% slopes)	Mixed alluvium	Fan terraces	2.0
Tubac gravelly loam (1–8% slopes)	Mixed alluvium	Fan terraces	8.9
Tubac sandy loam (0–2% slopes)	Mixed alluvium	Basin floors, fan terraces	6.8
Yaqui fine sandy loam (1–3% slopes)	Mixed alluvium	Alluvial fans	26.5
Anthony soils (1–3% slopes)	Mixed stratified alluvium	Alluvial fans, flood plains	2.8
Anthony soils, very gravelly variants (1–5% slopes)	Recent gravelly alluvium derived from granite and/or recent gravelly alluvium derived from limestone	Alluvial fans	0.5
Comoro soils (0–5% slopes)	Mixed recent alluvium	Flood plains	0.3
Pima clay loam, sandy clay loam subsoil variant (1–8% slopes)	Recent mixed alluvium over older alluvium	Flood plains, terraces	0.6
Sonoita gravelly sandy loam (1–8% slopes)	Old alluvium derived from igneous rock and/or old alluvium derived from granite	Terraces, alluvial fans	1.0
Anthony soils (0–3% slopes)	Mixed stream alluvium	Alluvial fans, flood plains	0.3
Cave-Rillito complex (0–8% slopes)	Mixed calcareous alluvium	Terraces	0.3
Comoro loam (0–1% slopes)	Recent alluvium	Flood plains, alluvial fans	0.0

Soil Type	Parent Material	Landform	Percentage of Search Area
Cowan-Valencia complex (0–5% slopes)	Alluvium and/or eolian deposits	Ridges	0.1
Grabe loam (0–1% slopes)	Recent alluvium	Alluvial fans, flood plains	0.0
Grabe soils (0–3% slopes)	Recent alluvium	Alluvial fans, flood plains	0.0
Laveen loam (0–1% slopes)	Old mixed calcareous alluvium	Alluvial fans	0.0
Laveen loam (1–3% slopes)	Old mixed calcareous alluvium	Alluvial fans	0.0
Laveen complex (0–5% slopes)	Old mixed calcareous alluvium	Alluvial fans, terraces	0.0
Laveen-Rillito complex (0–3% slopes)	Mixed calcareous alluvium	Terraces	0.2
Mohave clay loam (0–1% slopes)	Old alluvium	Alluvial fans, terraces	0.0
Pima silty clay loam (0–1% slopes)	Recent alluvium	Flood plains	0.0
Sonoita sandy loam (1–3% slopes)	Mixed alluvium	Plains	0.8
Sonoita-Tubac complex (1–3% slopes)	Mixed alluvium	Alluvial fans	0.5
Tubac sandy loam (1–3% slopes)	Old alluvium	Terraces	0.3

3 Previous Research

Chronicle Heritage reviewed records from AZSITE, the National Register Information System database, and ASM's Archaeological Records Office (ARO) to determine if any previous projects and previously recorded cultural resources are within a 1-mi radius of the Search area (Figure 3-1 through Figure 3-6). GLO maps and historic USGS topographic maps were also reviewed to evaluate the possible presence of historic Euro-American infrastructure in and near the Search area.

161 projects have been conducted within a 1-mi radius of the Search area, of which 106 previous projects extend into the current Search area (Table 3-1). These projects surveyed 12,102.1 ac, or 39 percent, of the Search area. 24 of these previous projects were conducted within the past 10 years and account for 3,011.8 ac, or less than 10 percent, of the Search area. Because of improvements in survey methods and the moving 50-year window for eligibility for inclusion in the Arizona Register of Historic Places (ARHP) and National Register of Historic Places (NRHP), jurisdictions within Arizona vary in how long they consider an archaeological survey to remain valid. In keeping with Arizona SHPO Guidance Point No. 5 (Arizona SHPO 2004) and the requirements of ASM, Chronicle Heritage considers surveys conducted in the past 10 years to be accurate and up-to-date. Surveys older than this are not considered valid.

Table 3-1. Previous Projects Intersecting the Search area

Project Reference No.	Project Name	Reference
11-42-8G.BLM	Unknown	Unknown
12-108.BLM	Unknown	Unknown
1980-164.ASM	TRICO Survey	(Nickerson 1980)
1982-207.ASM	Tucson-Apache 115 kV Transmission Line	(Hammack 1983)
1982-211.ASM	Right-of-way Through Sahuarita Gunnery Range	(Saul 1982)
1983-127.ASM	State Land Survey	(Lange 1983)
1984-158.ASM	Southern Tucson Basin Survey	(Doelle et al. 1985)
1985-16.ASM	State Land Survey	(Rozen 1985a)
1985-17.ASM	State Land Survey	(Rozen 1985b)
1985-227.ASM	Corona de Tucson	(Huckell et al. 1988)
1985-84.ASM	Miller Paving	(Madsen 1985)
1986-44.ASM	Territorial Fund	(Rozen 1985b)
1987-264.ASM	Investigations into Prehistoric Settlement and Subsistence on the Santa Rita Experimental Range	(Buttery 1987)
1988-215.ASM	Santa Cruz 115kV Transmission Line Upgrade	(Bruder and Rogge 1988)
1988-240.ASM	Preliminary Survey for the Roadway Alignment Alternatives within the Sahuarita Corridor Study	(Stephen 1989)
1992-109.ASM	ASLD PARA ARCH SURVEY	(Alexander and Kenny 1992)
1992-247.ASM	PIMA COUNTY LANDFILL SURVEY	(Slaughter and Roberts 1992)
1993-271.ASM	LANDFILL, SOUTHERN TUCSON BASIN	(Roberts and Slaughter 1993)
1994-170.ASM	TUCSON AIRPORT AUTHORITY SURVEY}WESTERN SANTA RITA	(Knoblock 1994)
1994-246.ASM	OLD NOGALES HIGHWAY SURVEY	(Freeman 1994)
1994-416.ASM	SWAN ROAD SURVEY	(Roberts et al. 1994)
1994-485.ASM*	Corona de Tucson Assessment	(Heuett 1994)
1995-82.ASM	GREEN VALLEY T.E.P. LINES	(Stephen et al. 1995)
1997-257.ASM	Pantano to Bicknell/Vail to Bicknell	(Fahrni 2005a)
1998-481.ASM	Nogales Tap Expansion Project	(Barger 1998)
1998-486.ASM	Sahuarita Substation Survey	(Myer 1998)
1999-1.ASM	UA Soils Department Santa Rita Soils Contest	(Lange 1999)
1999-159.ASM	Archaeological Survey South of Tucson International Airport	(Dutt 1999)
1999-183.ASM	TRICO Sahuarita Substation	(Myer and Euler 1999)
1999-217.ASM	Sahuarita Substation and Access Road	(Myer 1999)
1999-23.ASM	Archaeology Survey of the Public Safety Academy Land Acquisition Project	(Ruble 1999)

Project Reference No.	Project Name	Reference
1999-284.ASM	Tucson Prison Expansion II	(Dosh 1999)
1999-285.ASM	Tucson Prison Expansion I	(Dosh 1999)
1999-297.ASM	Wilmot Road Utilities Survey	(Stull 1999)
2000-332.ASM	Comsoft Lane Survey Project	(Slawson 2000)
2000-485.ASM	Sahuarita Corridor Survey	(Hesse 2000) (Hesse 2000)
2000-49.ASM	Old Nogales Highway Colonia WWM Sewerline Cultural Resources Assessment	(Jones 2000a)
2001-598.ASM	Section 28 Survey	(Heilen and Stephen 2001)
2003-197.ASM	TRICO Corona de Tucson Tie Line Survey	(Hesse et al. 2002)
2003-340.ASM*	Zanardelli Data Recovery	Unknown 2003
2003-1464.ASM	Dawson Road Survey	(Hesse and Peterson 2003)
2004-1908.ASM	Sahuarita Survey	(Doak 2005a)
2004-75.ASM	Sahuarita Highlands	(Moses 2004)
2005-293.ASM	Santa Rita Road Survey	(Doak 2005b)
2005-446.ASM	Tucson-Apache 115-kV Transmission Line Project	(Goldstein 2008)
2005-639.ASM	Section 28 Survey	(Doak and Thurtle 2004)
2005-736.ASM	Trico KEI ASLD Survey	(Fahrni 2005b)
2007-437.ASM	ASLD Right-of-Way Application 16-111475- East Comsoft Road	(Barr 2007)
2007-889.ASM*	AT&T NexGen/Core Project	Unknown 2007
2008-193.ASM	Qual Creek Class III Two Half Section	(Buckles 2006)
2008-446.ASM	Rosemont Copper Project - 2008 (Mine, Access Roads, and Waterline)	(Ezzo et al. 2009)
2008-537.ASM	Wilmont Road to Harrison Road Tie Line TRICO	(Barr 2008)
2008-702.ASM	Circuit 76 Rebuild	(Tucker 2009)
2009-242.ASM	South Loop Survey	(Doak 2009a)
2009-388.ASM	Pantano-Bicknell Pole Replacement Monitoring	(Peterson 2009)
2009-486.ASM	Sahuarita Survey	(Doak 2009b)
2009-578.ASM	SWTC PPC Pantano and Sahuarita	(Barr 2009)
2009-775.ASM	11 Mile ROW	(Luchetta and Moses 2008)
2009-830.ASM	Rosemont 138kV Transmission Line Survey	(Sheehan et al. 2011)
2009-864.ASM	Sahuarita-La Villita to Eastern Town Limit Survey / Monitoring	(Whitney and Nials 2012)
2010-368.ASM	Rosemont Transmission Line Additional Survey	(Swanson et al. 2011)
11-42-8G.BLM	Unknown	(BLM 2011)
2011-17.ASM	Rita Ranch Road and South Country Club Road	(Chenault 2011)
2011-429.ASM	84 Acres near Sahuarita	(Chamorro and King 2012)

Project Reference No.	Project Name	Reference
2011-536.ASM	TEP ASLD	(Hooper 2011)
2012-166.ASM	Trico Wilmot Tie Line Arch and Bio Surveys	(Rawson 2012)
2012-542.ASM	TEP Power Line Access Road: 3.7 Acres	(King 2012)
12-108.BLM	Unknown	(BLM 2012)
2012-73.ASM	Proposed Fiber Optic Corridor-Cultural Resource Survey	(Knoblock 2001)
2013-207.ASM	Santa Cruz Well Field Upgrades Survey	(Douglas 2013)
2013-412.ASM	Nogales Substation Survey	(Diehl 2013)
2013-64.ASM	S. Wilmot Road Archaeological Survey	(Daughtrey 2013)
2014-117.ASM	Wilmot Road north of Sahuarita	(Vaughn and Bruden 2015)
2014-181.ASM	Rosemont Transmission Line III and IV	(Rayle 2013)
2014-405.ASM	SWTC Bicknell to Vail	(Jerla and King 2014)
2016-397.ASM	Old Nogales Interceptor	(Stone 2017)
2017-379.ASM	Old Vail-Swan roads-area parcels 303-09-001P & 303-09-001Q, cultural resources survey	(Macwilliams and Dart 2006)
2017-406.ASM	Wilmot Solar Energy Center	(Rawson 2017)
2017-470.ASM	Green Valley 640 Acre Class III	(Klebacha 2018)
2017-487.ASM*	Unknown	Unknown 2017
2018-162.ASM*	Unknown	Unknown 2018
2018-406.ASM	TEP South Loop to Green Valley	(Stone and Brown 2018)
2018-440.ASM*	Unknown	Unknown 2018
2018-441.ASM	CEMEX Pima Plant Expansion Materials Source	(Eldridge and Hesse 2019)
2020-0003. ASM	Quail Springs Data Recovery	(Caseldine et al. 2022)
2020-63.ASM	TEP 2020 Anchor Replacements	(Talbot and Copperstone 2020)
2020-197.ASM	Wilmot and Sahuarita	(Copperstone 2020)
2020-399.ASM	Trico 2021 Environmental Services – Task 15	(Peterson 2021a)
2020-401.ASM	Trico 2021 Environmental Services – Task 17	(Peterson 2021b)
2021-61.ASM	Fairfax Access Road	(Montoya 2021)
2021-470.ASM	Wilmot Lift Station	(Ryder 2022)
2022-139.ASM	Tucson Water Well PM-004A Project	(West 2022)
2023-114.ASM	Wilmot II Gen-Tie Line	(Peterson and Hesse 2025)
2023-330.ASM	TEP City of Tucson Wellsite #4	(Ryder 2024)
23-0095.PW	TEP Vail to Tortolita 230kV TLine	(Munson 2023)
2024-370.ASM	South Country Club Road Pole Replacement Class III	(Jones 2024a)
2024-390.ASM*	Unknown	Unknown 2024
2024-407.ASM	Fort 46kV Transmission Line Class III	(Jones 2024b)
2024-600.ASM	Hartt Substation Expansion Area Class III (Area 2)	(Jones 2025a)

Project Reference No.	Project Name	Reference
2024-601.ASM	Hartt Substation Lease Area Class III (Area)	(Jones 2025b)
2024.622.ASM	Trevorton-Washington Class III	(Bustoz 2025)
2024-540.ASM	2025 345 kV Anchor Replacements CR Support Services	(Butero 2025)
2025-51.ASM*	Unknown	Unknown 2025
2025-133.ASM	Wilmot Solar II ASLD Access Road Easement	(Hesse 2025)
7.2811.SHPO	Hieroglyphic Mountains Survey	Unknown
10.1326.SHPO	Archaeological Survey of a 1489-Foot-Long 20-Foot-Wide Powerline Corridor East of Sahuarita, Pima County, Arizona: The Trico-Sahuarita Survey	Unknown
10.1155.SHPO	Sahuarita District Park Proposed Access Road	Unknown
SHPO-2008-0131	Vail to Valencia 115kV Upgrade Project	Unknown

Note: Projects that are shaded were conducted within the past 10 years

* Indicates projects known to intersect the current Search area based on legal description, though not yet submitted to the ARO

There were 265 previously recorded cultural resources identified within the 1-mi search radius. Of those, 168 resources intersect the Search area (Table 3-2). Of these sites, 20 date to the historic period, 130 date to the prehistoric period, three are multicomponent sites consisting of both prehistoric and historic resources, and 15 sites have an unknown affiliation (Figure 3-7 through Figure 3-12).

Within the Search area, there are 18 historic-period sites, including artifact scatters, historic-era structures, wells and irrigation canals, roads, roasting pits, and a military air strip. One site has been recommended eligible for listing in the NRHP, AZ BB:13:605(ASM), a prehistoric roasting pit and historic artifact scatter, but has not been evaluated by Arizona SHPO. Three sites have been determined eligible for listing in the NRHP under Criterion D; these are a multicomponent site consisting of a roasting pit and artifact scatter (AZ BB:13:612(ASM)), a roasting pit and historic road (AZ BB:13:613(ASM)), and a roasting pit, road trail, and artifact scatter (AZ BB:13:614(ASM)). One historic-era well, AZ EE:1:338(ASM), was not evaluated by recorders, and one historic artifact scatter, AZ BB:13:414(ASM), was determined not evaluated by SHPO.

Prehistoric sites within the Search area include roasting pits, rock features, thermal features, hearth features, room blocks, fire-affected rocks, and lithic and artifact scatters. Of these sites, 34 have been recommended eligible for listing in the NRHP but have not been evaluated by SHPO, 29 have been determined eligible for listing in the NRHP under Criterion D, 47 sites have not been evaluated by the recorder, five sites have been determined not evaluated by SHPO, and 15 site evaluations are unknown. Of the sites that have been determined eligible, 18 are roasting pit and artifact scatters, 16 of which date to the Hohokam Ceramic Period (AZ BB:13:566(ASM), AZ BB:13:570(ASM), AZ BB:13:442(ASM), AZ BB:13:604(ASM), AZ BB:13:606(ASM)/608(ASM), AZ BB:13:610(ASM), AZ BB:13:598(ASM), AZ BB:13:599(ASM)/600(ASM), AZ BB:13:603(ASM), AZ BB:13:611(ASM), AZ BB:13:557(ASM), and AZ BB:13:561(ASM)), one dates to between the Hohokam and Archaic periods (AZ BB:13:558(ASM)), and one is chronologically unknown (AZ BB:13:643(ASM)). Two sites are roasting pits without associated artifact scatters, one of which is from the Hohokam Ceramic Period (AZ BB:13:569(ASM)), and the other dates to between the Hohokam and Archaic periods (AZ BB:13:439(ASM)). Two sites are hearth features and artifact scatters dating to unknown time periods (AZ EE:1:99(ASM) and AZ EE:1:161(ASM)). Four sites are rock features dating to unknown time periods (AZ EE:1:288(ASM), AZ BB:13:416(ASM), AZ

BB:13:413(ASM), and AZ BB:13:315(ASM)). The remaining three sites are artifact scatters, two of which are from the Hohokam Ceramic Period (AZ EE:1:341(ASM) and AZ EE:1:463(ASM)), and the remaining site affiliation is unknown (AZ EE:1:195(ASM)). Of the sites determined unevaluated by SHPO, four sites are rock features (AZ BB:13:411(ASM), AZ BB:13:408(ASM), AZ BB:13:410(ASM), and AZ EE:1:100(ASM)), and one is a hearth feature (AZ EE:1:447(ASM)).

Multicomponent sites within the Search area include a rock feature, roasting pit, well, and artifact scatters. One site (AZ BB:13:612(ASM)) has been previously determined eligible for inclusion in the NRHP by SHPO. The remaining two multicomponent sites have not been evaluated by SHPO: AZ EE:1:332(ASM) was recommended not eligible by the recorder, and AZ EE:1:338(ASM) was not evaluated by the recorder.

The remaining 97 sites outside of the Search area include seven Euro-American sites consisting of historic-era wells, irrigation canals, historic-era structures, road trails, and artifact scatters. Only one of these sites, AZ BB:13:653(ASM), the Old Nogales Highway, has been determined eligible for listing in the NRHP under Criteria A and D. The 90 prehistoric sites outside of the Search area consist of pit houses, none of which are considered eligible for listing in the NRHP; rock features, three of which are considered eligible for listing in the NRHP under Criterion D (AZ EE:1:357(ASM), AZ EE:1:242(ASM), and AZ EE:1:240(ASM)); roasting pits, one of which is considered eligible for listing in the NRHP under Criterion D (AZ EE:1:441(ASM)); and artifact scatters, six of which are considered eligible for listing in the NRHP under Criterion D (AZ BB:13:302(ASM), AZ EE:1:449(ASM), AZ EE:1:460(ASM), AZ EE:1:175(ASM), AZ EE:1:461(ASM), and AZ EE:1:131(ASM)). There are also two recorded mortuary features: one from the Hohokam Ceramic Period (AZ BB:13:1(ASM)) and an additional cremation from the Hohokam Ceramic Period (AZ EE:1:155(ASM)).

Table 3-2. Previous Resources Intersecting the Search area

Site No./Name	Affiliation	Site Type	Eligibility Status	Associated Reference
AZ BB:13:58(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Lithic scatter	Not Evaluated by recorder	(Stein 1969)
AZ BB:13:281(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Artifact scatter	Not Evaluated by recorder	(Doelle et al. 1985)
AZ BB:13:282(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Artifact scatter	Not Evaluated by recorder	(Doelle et al. 1985)
AZ BB:13:283(ASM)	Hohokam, Middle/Classic (A.D. 1000–1450)	Roasting pit & artifact scatter	Not Evaluated by recorder	(Doelle et al. 1985)
AZ BB:13:284(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Artifact scatter	Not Evaluated by recorder	(Doelle et al. 1985)
AZ BB:13:285(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Artifact scatter	Not Evaluated by recorder	(Doelle et al. 1985)
AZ BB:13:286(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Roasting pit & Lithic scatter	Not Evaluated by recorder	(Doelle et al. 1985)
AZ BB:13:287(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Artifact scatter	Not Evaluated by recorder	(Doelle et al. 1985)
AZ BB:13:288(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Roasting pit & Lithic scatter	Not Evaluated by recorder	(Doelle et al. 1985)
AZ BB:13:289(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Roasting pit & artifact scatter	Not Evaluated by recorder	(Doelle et al. 1985)
AZ BB:13:290(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Artifact scatter	Not Evaluated by recorder	(Doelle et al. 1985)
AZ BB:13:291(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Artifact scatter	Not Evaluated by recorder	(Doelle et al. 1985)
AZ BB:13:292(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Roasting pit	Not Evaluated by recorder	(Doelle et al. 1985)
AZ BB:13:293(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Artifact scatter	Not Evaluated by recorder	(Doelle et al. 1985)
AZ BB:13:294(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Roasting pit	Not Evaluated by recorder	(Doelle et al. 1985)
AZ BB:13:295(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Artifact scatter	Not Evaluated by recorder	(Doelle et al. 1985)
AZ BB:13:296(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Artifact scatter	Not Evaluated by recorder	(Doelle et al. 1985)
AZ BB:13:297(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Rock feature & lithic scatter	Not Evaluated by recorder	(Doelle et al. 1985)
AZ BB:13:298(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Artifact scatter	Not Evaluated by recorder	(Doelle et al. 1985)

Site No./Name	Affiliation	Site Type	Eligibility Status	Associated Reference
AZ BB:13:299(ASM)	Hohokam, Middle Ceramic (A.D. 1000–1450)	Artifact scatter	Not Evaluated by recorder	(Doelle et al. 1985)
AZ BB:13:300(ASM)	Hohokam, Archaic (8,000 B.C.–A.D. 1500)	Artifact scatter	Ineligible (SHPO-2017-0005)	(Doelle et al. 1985)
AZ BB:13:313(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Artifact scatter	Not Evaluated by recorder	(Doelle et al. 1985)
AZ BB:13:315(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Rock feature	Eligible, Criteria unknown (SHPO-Unknown)	(Ryder 2023)
AZ BB:13:316(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Hearth feature & artifact scatter	Not Evaluated by recorder	(Madsen and Gillespie 2006)
AZ BB:13:317(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Roasting pit & Lithic scatter	Ineligible (SHPO-2017-0005)	(Field 1985)
AZ BB:13:318(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Roasting pit, rock feature, & artifact scatter	Not Evaluated by recorder	(Roth 1985)
AZ BB:13:408(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Rock feature	Not evaluated (SHPO-2007-1718)	(Roberts 1992a)
AZ BB:13:409(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Rock feature	Eligible, Criteria unknown (SHPO-Unknown)	(Roberts 1992b)
AZ BB:13:410(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Rock feature & artifact scatter	Not Evaluated (SHPO-2007-1718)	(Roberts 1992c)
AZ BB:13:411(ASM)	Hohokam, Middle Ceramic/Classic (A.D. 1000–1450)	Rock feature, Artifact scatter	Not Evaluated (SHPO-2007-1718)	(Roberts 1992d)
AZ BB:13:412(ASM)	Hohokam, Middle Ceramic (A.D. 1000–1300)	Artifact scatter	Ineligible (SHPO-Unknown)	(Roberts 1992e)
AZ BB:13:413(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Rock feature	Eligible, Criteria unknown (SHPO-Unknown)	(Roberts 1992f)
AZ BB:13:414(ASM)	Euro-American; Late historic (A.D. 1900–1950)	Artifact scatter	Not Evaluated (SHPO-2007-1718)	(Roberts 1992g)
AZ BB:13:415(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Rock feature	Eligible, Criteria unknown (SHPO-Unknown)	(Roberts 1992h)

Site No./Name	Affiliation	Site Type	Eligibility Status	Associated Reference
AZ BB:13:416(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Rock feature	Eligible, Criteria unknown (SHPO-Unknown)	(Roberts 1992i)
AZ BB:13:417(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Rock feature, Artifact scatter	Eligible, Criteria unknown (SHPO-Unknown)	(Roberts 1992j)
AZ BB:13:428(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Rock feature	Not Evaluated by recorder	(Roberts and Slaughter 1993)
AZ BB:13:429(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Rock feature & lithic scatter	Not Evaluated by recorder	(Roberts and Slaughter 1993)
AZ BB:13:430(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Roasting pit	Not Evaluated by recorder	(Roberts and Slaughter 1993)
AZ BB:13:431(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Roasting pit	Not Evaluated by recorder	(Roberts and Slaughter 1993)
AZ BB:13:432(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Rock feature	Not Evaluated by recorder	(Roberts and Slaughter 1993)
AZ BB:13:433(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Rock feature & lithic scatter	Not Evaluated by recorder	(Roberts and Slaughter 1993)
AZ BB:13:434(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Roasting pit	Not Evaluated by recorder	(Roberts and Slaughter 1993)
AZ BB:13:435(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Roasting pit	Not Evaluated by recorder	(Roberts and Slaughter 1993)
AZ BB:13:436(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Roasting Pit	Not Evaluated by recorder	(Roberts and Slaughter 1993)
AZ BB:13:437(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Roasting pit	Not Evaluated by recorder	(Roberts and Slaughter 1993)
AZ BB:13:438(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Lithic scatter	Not Evaluated by recorder	(Roberts and Slaughter 1993)
AZ BB:13:439(ASM)	Archaic, Late Archaic (1,500 B.C.–A.D. 200); Hohokam, Ceramic (A.D. 200–1500)	Roasting pit	Eligible, Criterion D (SHPO-2011-0009)	(Roberts and Slaughter 1993)
AZ BB:13:440(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Roasting pit	Not Evaluated by recorder	(Roberts and Slaughter 1993)
AZ BB:13:441(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Roasting pit	Not Evaluated by recorder	(Roberts and Slaughter 1993)
AZ BB:13:442(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Roasting pit & artifact scatter	Eligible Criterion D (SHPO-2000-1218)	(Roberts and Slaughter 1993)

Site No./Name	Affiliation	Site Type	Eligibility Status	Associated Reference
AZ BB:13:443(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Lithic scatter	Not Evaluated by recorder	(Roberts and Slaughter 1993)
AZ BB:13:463(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Rock feature	Considered eligible by recorder	(Roberts et al. 1994)
AZ BB:13:464(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Rock feature	Recommended eligible by recorder	(Roberts et al. 1994)
AZ BB:13:465(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Roasting pit	Recommended eligible by recorder	(Roberts et al. 1994)
AZ BB:13:466(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Room Block	Recommended eligible by recorder	(Roberts et al. 1994)
AZ BB:13:467(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Rock feature	Recommended eligible by recorder	(Roberts et al. 1994)
AZ BB:13:548(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Lithic scatter	Recommended eligible by recorder	(Jerla and King 2014)
AZ BB:13:549(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Thermal feature	Recommended eligible by recorder	(Jerla and King 2014)
AZ BB:13:557(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Roasting pit & artifact scatter	Eligible (SHPO-2008-1137)	(Hesse et al. 2009)
AZ BB:13:558(ASM)	Hohokam, Archaic (4800 B.C.–A.D. 1950)	Roasting pit & artifact scatter	Eligible (SHPO-2000-1218)	(Bruder et al. 1990)
AZ BB:13:559(ASM)	Hohokam, Middle Ceramic (A.D. 1000–1300)	Roasting pit	Recommended eligible by recorder	(Bruder et al. 1990)
AZ BB:13:560(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Roasting pit & artifact scatter	Ineligible (SHPO-Unknown)	(Goldstein 2008)
AZ BB:13:561(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Roasting pit & artifact scatter	Eligible, Criterion D (SHPO-2000-1218)	(Bruder et al. 1990)
AZ BB:13:562(ASM)	Hohokam, Early Ceramic (A.D. 200–1000)	Roasting pit & artifact scatter	Ineligible (SHPO-2008-0510)	(Goldstein 2008)
AZ BB:13:563(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Roasting pit & artifact scatter	Ineligible (SHPO-Unknown)	(Bruder et al. 1990)

Site No./Name	Affiliation	Site Type	Eligibility Status	Associated Reference
AZ BB:13:564(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Roasting pit & artifact scatter	Recommended eligible by recorder	(Bruder et al. 1990)
AZ BB:13:565(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Roasting pit & artifact scatter	Eligible, Criterion D (SHPO-2000-1218)	(Bruder et al. 1990)
AZ BB:13:566(ASM)	Hohokam, Middle Ceramic (A.D. 1000–1300)	Roasting pit & artifact scatter	Eligible Individually, Criterion D (SHPO-2001-723)	(Bruder et al. 1990)
AZ BB:13:567(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Artifact scatter	Recommended eligible by recorder	(Bruder et al. 1990)
AZ BB:13:568(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Roasting pit & artifact scatter	Eligible, Criterion D (SHPO-2000-1218)	(Bruder et al. 1990)
AZ BB:13:569(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Roasting pit	Recommended eligible by recorder	(Bruder et al. 1990)
AZ BB:13:570(ASM)	Hohokam, Early Ceramic (A.D. 200–1000)	Roasting pit & artifact scatter	Eligible Individually, Criterion D (SHPO-2000-1218)	(Seymour 1992)
AZ BB:13:571(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Roasting pit & artifact scatter	Recommended eligible by recorder	(Bruder et al. 1990)
AZ BB:13:572(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Roasting pit & Lithic scatter	Recommended eligible by recorder	(Bruder et al. 1990)
AZ BB:13:573(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Roasting pit & artifact scatter	Recommended eligible by recorder	(Bruder et al. 1990)
AZ BB:13:574(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Roasting pit	Recommended eligible by recorder	(Bruder et al. 1990)
AZ BB:13:598(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Roasting pit & artifact scatter	Eligible Criterion D (SHPO-2000-1218)	(Dosh 1999)
AZ BB:13:599(ASM)/ 600(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Roasting pit & artifact scatter	Eligible, Criterion D (SHPO-2000-1218)	(Dosh 1999)
AZ BB:13:601(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Roasting pit	Recommended eligible by recorder	(Dosh 1999)
AZ BB:13:602(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Roasting pit	Recommended eligible by recorder	(Dosh 1999)

Site No./Name	Affiliation	Site Type	Eligibility Status	Associated Reference
AZ BB:13:603(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Rock feature & artifact scatter	Eligible, Criterion D (SHPO-2000-1218)	(Dosh 1999)
AZ BB:13:604(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Roasting pit & artifact scatter	Eligible Criterion D (SHPO-2000-1218)	(Dosh 1999)
AZ BB:13:605(ASM)	Euro-American (A.D. 1500–1950); Hohokam, Ceramic (A.D. 200–1500)	Roasting pit & artifact scatter	Recommended eligible by recorder	(Dosh 1999)
AZ BB:13:606(ASM)/ 608(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Roasting pit & artifact scatter	Eligible Criterion D (SHPO-2000-1218)	(Dosh 1999)
AZ BB:13:607(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Roasting pit	Recommended eligible by recorder	(Dosh 1999)
AZ BB:13:609(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Roasting pit & artifact scatter	Recommended eligible by recorder	(Dosh 1999)
AZ BB:13:610(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Roasting pit & artifact scatter	Eligible Criterion D (SHPO-2000-1218)	(Dosh 1999)
AZ BB:13:611(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Rock feature & artifact scatter	Eligible, Criterion D (SHPO-2000-1218)	(Dosh 1999)
AZ BB:13:612(ASM)	Multicomponent; Hohokam Ceramic (A.D. 200–1500) and Euro-American (A.D. 1500–1950)	Roasting pit & artifact scatter	Eligible Criterion D (SHPO-2000-1218)	(Dosh 1999)
AZ BB:13:613(ASM)	Euro-American; Middle historic (A.D. 1800–1900)	Roasting pit; Historic road	Eligible, Criterion D (SHPO-2000-1218)	(Dosh 1999)
AZ BB:13:614(ASM)	Euro-American; Middle historic (A.D. 1800–1900)	Road trail, roasting pit & artifact scatter	Eligible (SHPO-2000-1218)	(Dosh 1999)
AZ BB:13:643(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Roasting pit & artifact scatter	Eligible Criterion D (SHPO-2000-1218)	(Jones 2000b)
AZ BB:13:758(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Roasting pit	Ineligible (SHPO-2008-0510)	(Goldstein 2008)
AZ BB:13:759(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Roasting pit	Ineligible (SHPO-2008-0510)	(Goldstein 2008)
AZ BB:13:764(ASM)	historic (Unknown)	Road	Unknown	(Old Pueblo Archaeology Center 2017)

Site No./Name	Affiliation	Site Type	Eligibility Status	Associated Reference
AZ BB:13:802(ASM)	Euro-American (A.D. 1500–1950)	Concrete foundation & artifact scatter	Recommended not eligible by recorder	(Doak 2009a)
AZ BB:13:803(ASM)	Euro-American (A.D. 1500–1950)	Road trail	Recommended not eligible by recorder	(Jerla and King 2014)
AZ BB:13:805(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Rock feature	Recommended eligible by recorder	(Barr 2009)
AZ BB:13:806(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Rock feature & artifact scatter	Recommended eligible by recorder	(Barr 2009)
AZ BB:13:807(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Rock feature & artifact scatter	Recommended eligible by recorder	(Jerla and King 2014)
AZ BB:13:869(ASM)	Euro-American (A.D. 1500–1950)	Road trail	Recommended not eligible by recorder	(Jerla and King 2014)
AZ BB:13:870(ASM)	Euro-American (A.D. 1500–1950)	Road trail	Recommended not eligible by recorder	(Jerla and King 2014)
AZ BB:13:968(ASM)	Unknown	Unknown	Unknown	(WestLand Resources, Inc. 2016)
AZ BB:13:969(ASM)	Unknown	Unknown	Unknown	(SWCA Environmental Consultants 2017)
AZ BB:13:970(ASM)	Unknown	Unknown	Unknown	(SWCA Environmental Consultants 2017)
AZ BB:13:971(ASM)	Unknown	Unknown	Unknown	(SWCA Environmental Consultants 2017)
AZ BB:13:981(ASM)	Unknown	Unknown	Unknown	(Tierra Right of Way Services, Ltd 2018)
AZ BB:13:985(ASM)	Unknown	Unknown	Unknown	(Tierra Right of Way Services, Ltd 2018)
AZ BB:13:989(ASM)	Euro-American (A.D. 1500–1950)	Historic structure foundation feature, Well, Fence, and other feature relating to the Arizona Hog Company	Ineligible (SHPO-2019-2493)	(Eldridge and Hesse 2019)

Site No./Name	Affiliation	Site Type	Eligibility Status	Associated Reference
AZ BB:13:990(ASM)	Euro-American (A.D. 1500–1950)	Historic powerline, artifact scatter	Ineligible (SHPO-2019-2493)	(Eldridge and Hesse 2019)
AZ BB:13:993(ASM)	Euro-American (A.D. 1500–1950)	Historic well and irrigation canal	Ineligible (SHPO-2019-2493)	(Eldridge and Hesse 2019)
AZ BB:13:1013(ASM)	Unknown	Unknown	Unknown	(WestLand Resources, Inc. 2025)
AZ BB:13:1014(ASM)	Unknown	Unknown	Unknown	(AZTEC Engineering Group 2024)
AZ BB:13:1015(ASM)	Unknown	Unknown	Unknown	(AZTEC Engineering Group 2024)
AZ BB:13:1017(ASM)	Unknown	Unknown	Unknown	(Terracon Consultants 2024)
AZ CC:13:80	Euro American (ca. 1950–present)	Historic Powerline	Determined ineligible individually (SHPO-2017-0005)	(Goldstein 2008)
AZ EE:1:100(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Rock feature & artifact scatter	Not Evaluated (SHPO-2021-0312)	(Knoblock 2001)
AZ EE:1:127(ASM)	Archaic, Hohokam (1,200 B.C.–A.D. 1500)	Roasting pit & artifact scatter	Not Evaluated by recorder	(Doelle et al. 1985)
AZ EE:1:130(ASM)	Hohokam (A.D. 200–A.D. 1500)	Artifact scatter	Not Evaluated by recorder	(Doelle et al. 1985)
AZ EE:1:134(ASM)	Hohokam (A.D. 200–A.D. 1500)	Hearth feature & artifact scatter	Not Evaluated by recorder	(Doelle et al. 1985)
AZ EE:1:135(ASM)	Hohokam (A.D. 200–A.D. 1500)	Roasting pit & artifact scatter	Not Evaluated by recorder	(Doelle et al. 1985)
AZ EE:1:136(ASM)	Hohokam (A.D. 200–A.D. 1500)	Artifact scatter	Not Evaluated by recorder	(Doelle et al. 1985)
AZ EE:1:137(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Artifact scatter	Not Evaluated by recorder	(Doelle et al. 1985)
AZ EE:1:161(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Hearth feature & artifact scatter	Eligible (SHPO-2008-0131)	(Heuett 1994)
AZ EE:1:186(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Artifact scatter	Not Evaluated by recorder	(Ezzo et al. 2009)
AZ EE:1:195(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Artifact scatter	Eligible Individually, Criterion D (SHPO-2012-0598)	(Chamorro and King 2012)

Site No./Name	Affiliation	Site Type	Eligibility Status	Associated Reference
AZ EE:1:199(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Rock feature	Not Evaluated by recorder	(Stephen 1995)
AZ EE:1:200(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Fire-cracked rock	Recommended eligible by recorder	(Tucker 1997)
AZ EE:1:244(ASM)	Unknown Ceramic (A.D. 200–1500)	Artifact scatter	Not Evaluated by recorder	(Buttery 1987)
AZ EE:1:288(ASM)	Unknown historic (A.D. 1500–Present)	Rock feature	Eligible Criterion D (SHPO-2021-0312)	(Effland 1985)
AZ EE:1:303(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Rock feature	Recommended eligible by recorder	(Hesse 2000)
AZ EE:1:304(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Rock feature	Ineligible (SHPO-2001-723)	(Hesse 2000)
AZ EE:1:305(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Rock feature	Ineligible (SHPO-2001-723)	(Hesse 2000)
AZ EE:1:306(ASM)	Hohokam, Sedentary (A.D. 950–1100)	Rock feature	Recommended eligible by recorder	(Hesse 2000)
AZ EE:1:329(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Rock feature & artifact scatter	Recommended not eligible by recorder	(Hayes and Fratt 2011)
AZ EE:1:331(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Rock feature	Recommended not eligible by recorder	(Doak and Thurtle 2004)
AZ EE:1:332(ASM)	Multicomponent; Hohokam, Ceramic (A.D. 200–1500) and historic (A.D. 1500–1950)	Rock feature	Recommended not eligible by recorder	(Doak and Thurtle 2004)
AZ EE:1:333(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Fire-cracked rock, Lithic scatter	Recommended eligible by recorder	(Doak and Thurtle 2004)
AZ EE:1:334(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Rock feature & artifact scatter	Recommended eligible by recorder	(Doak and Thurtle 2004)
AZ EE:1:335(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Artifact scatter	Recommended eligible by recorder	(Doak and Thurtle 2004)
AZ EE:1:336(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Rock feature & lithic scatter	Recommended eligible by recorder	(Doak and Thurtle 2004)

Site No./Name	Affiliation	Site Type	Eligibility Status	Associated Reference
AZ EE:1:337(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Lithic scatter	Recommended not eligible by recorder	(Doak and Thurtle 2004)
AZ EE:1:338(ASM)	Multicomponent; Unknown prehistoric (12,000 B.C.–A.D. 1500) and historic (A.D. 1500–1950)	Well; Artifact scatter	Not Evaluated by recorder	(Doak and Thurtle 2004)
AZ EE:1:339(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Rock feature	Recommended not eligible by recorder	(Doak and Thurtle 2004)
AZ EE:1:340(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Rock feature	Recommended not eligible by recorder	(Doak and Thurtle 2004)
AZ EE:1:341(ASM)	Hohokam, Classic (A.D. 1100–1450)	Artifact scatter	Eligible (SHPO-2004-2258)	(Doak and Thurtle 2004)
AZ EE:1:342(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Rock feature	Not Evaluated by recorder	(Doak and Thurtle 2004)
AZ EE:1:351(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Rock feature & lithic scatter	Ineligible (SHPO-2002-2450)	(Hesse et al. 2002)
AZ EE:1:352(ASM)	Unknown prehistoric (12,000 B.C.–A.D. 1500)	Rock feature	Ineligible (SHPO-2002-2450)	(Hesse et al. 2002)
AZ EE:1:353(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Rock feature & artifact scatter	Ineligible (SHPO-2002-2450)	(Hesse et al. 2002)
AZ EE:1:380(ASM)	Euro-American (A.D. 1500–1950)	Trash scatter	Recommended not eligible by recorder	(Doak 2005a)
AZ EE:1:392(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Rock feature & artifact scatter	Eligible Criterion D (SHPO-2011-0898)	(Madsen and Gillespie 2006)
AZ EE:1:409(ASM)	Euro-American (A.D. 1500–1950)	Road trail	Recommended not eligible by recorder	(Luchetta and Shaw 2007)
AZ EE:1:442(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Artifact scatter	Ineligible (SHPO-2011-0898)	(Sheehan et al. 2011)
AZ EE:1:447(ASM)	Hohokam, Colonial/Sedentary (A.D. 750–1100)	Hearth feature	Not evaluated (SHPO-2011-0898)	(Swanson et al. 2011)
AZ EE:1:448(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Rock feature	Ineligible (SHPO-2018-0515)	(Swanson et al. 2011)
AZ EE:1:459(ASM)	Euro-American (A.D. 1900–1950)	Artifact scatter	Ineligible (SHPO-2012-0598)	(Chamorro and King 2012)
AZ EE:1:463(ASM)	Hohokam, Ceramic (A.D. 200–1500)	Artifact scatter	Eligible, Criterion D (SHPO-2011-1338)	(Rawson 2012)

Site No./Name	Affiliation	Site Type	Eligibility Status	Associated Reference
AZ EE:1:464(ASM)	Euro-American (A.D. 1500–1950)	Road trail	Recommended not eligible by recorder	(Sheehan et al. 2011)
AZ EE:1:465(ASM)	Euro-American (A.D. 1500–1950)	Transmission line	Recommended not eligible by recorder	(Sheehan et al. 2011)
AZ EE:1:479(ASM)	Euro-American, Late historic (A.D. 1943–1962)	Military air strip	Recommended not eligible	(Stone and Brown 2018)
AZ EE:1:480(ASM)	Unknown	Unknown	Unknown	(Klebacha 2018)
AZ EE:1:485(ASM)	Unknown	Unknown	Unknown	(WestLand Resources, Inc. 2024)
AZ EE:1:487(ASM)	Unknown	Unknown	Unknown	(AZTEC Engineering Group 2024)
AZ EE:1:488(ASM)	Unknown	Unknown	Unknown	(AZTEC Engineering Group 2024)
AZ EE:1:99(ASM)	Archaic	Hearth feature & artifact scatter	Eligible, Criterion D (SHPO-2018-0515)	(Chamorro and King 2012)
Pima CO-146	Unknown	Unknown	Unknown	Unknown

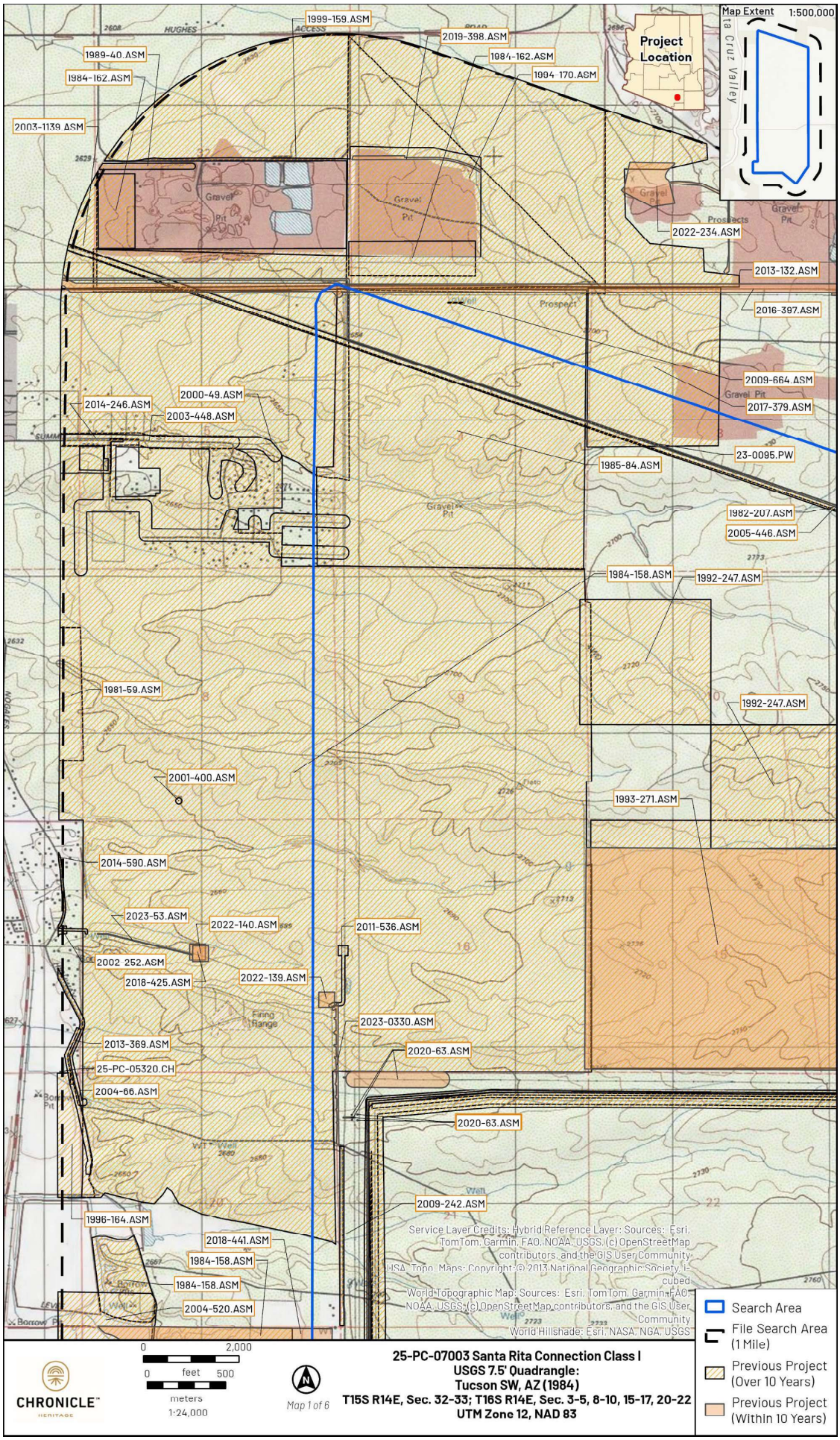


Figure 3-1. Previous projects that intersect the Search area (1 of 6).

305

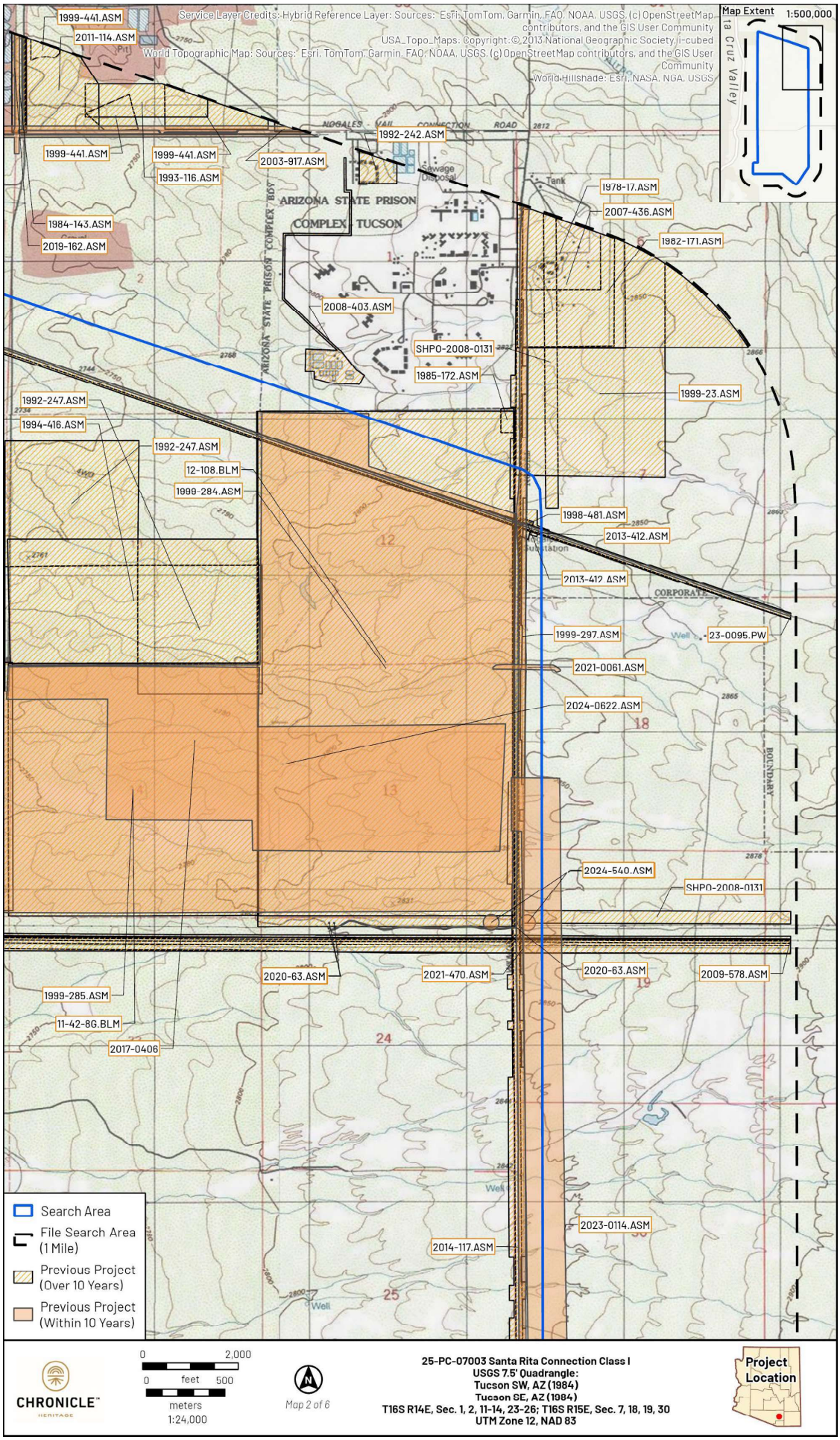


Figure 3-2. Previous projects that intersect the Search area (2 of 6).

306

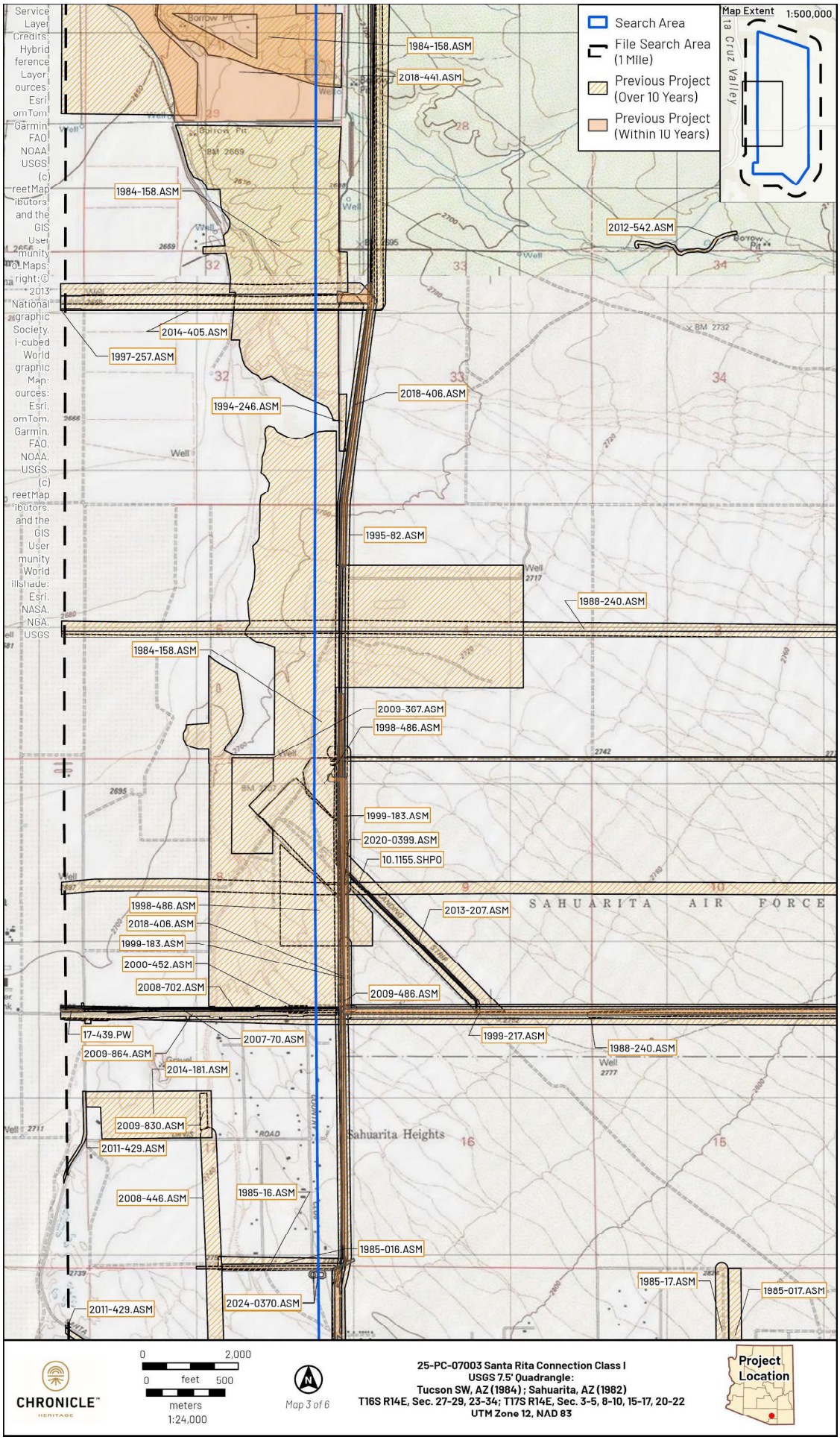


Figure 3-3. Previous projects that intersect the Search area (3 of 6).

307

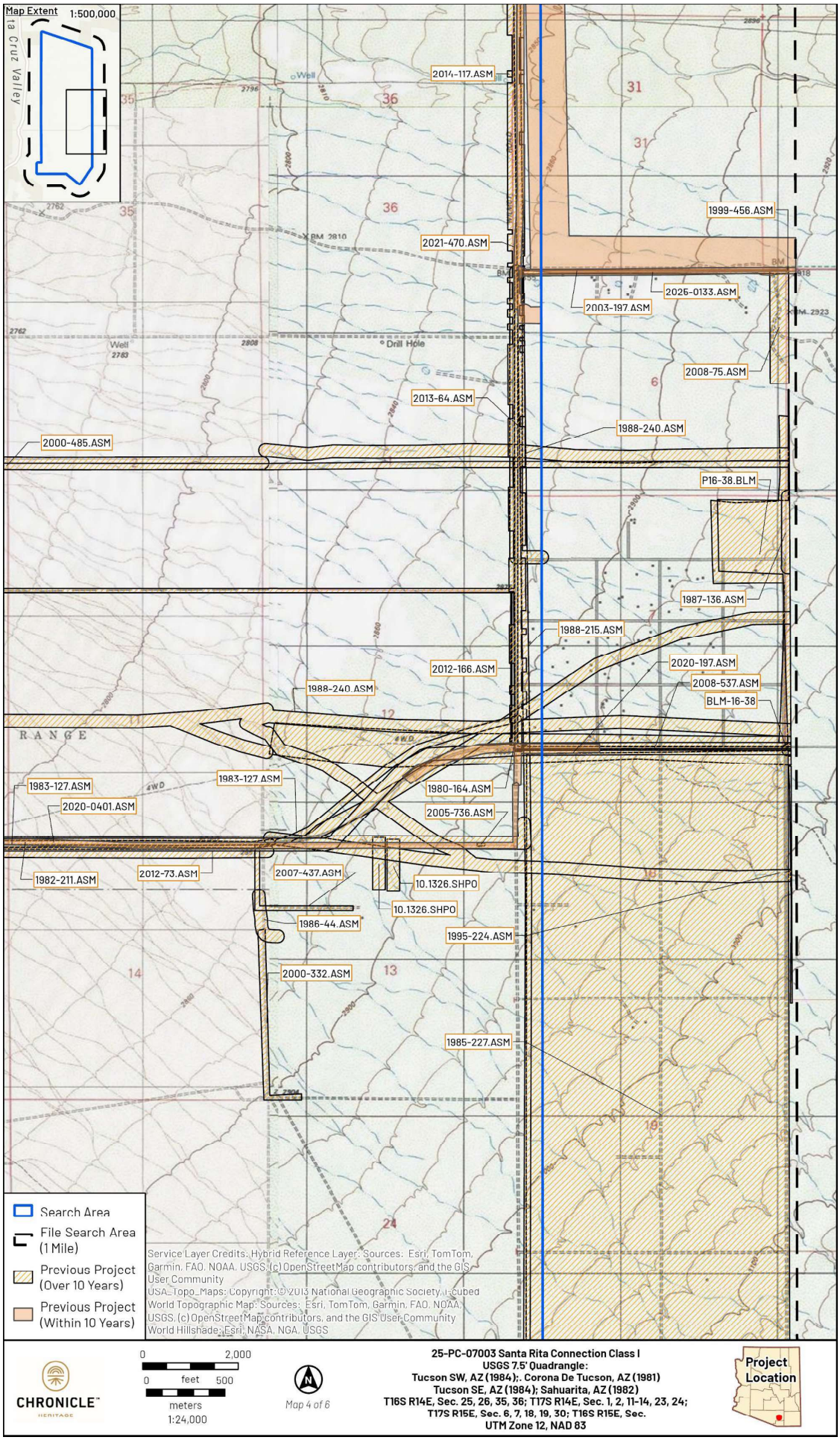


Figure 3-4. Previous projects that intersect the Search area (4 of 6).

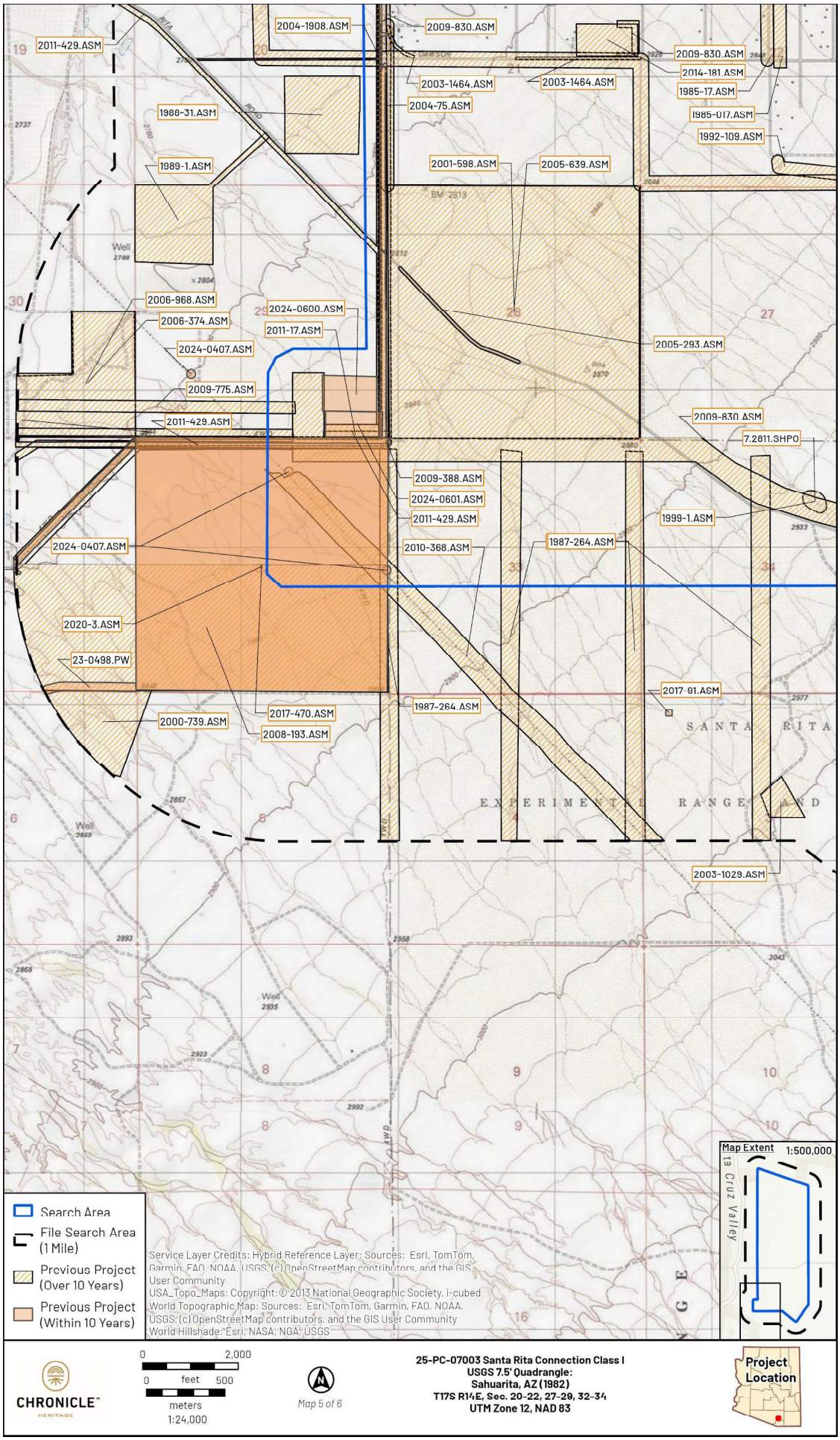


Figure 3-5. Previous projects that intersect the Search area (5 of 6).

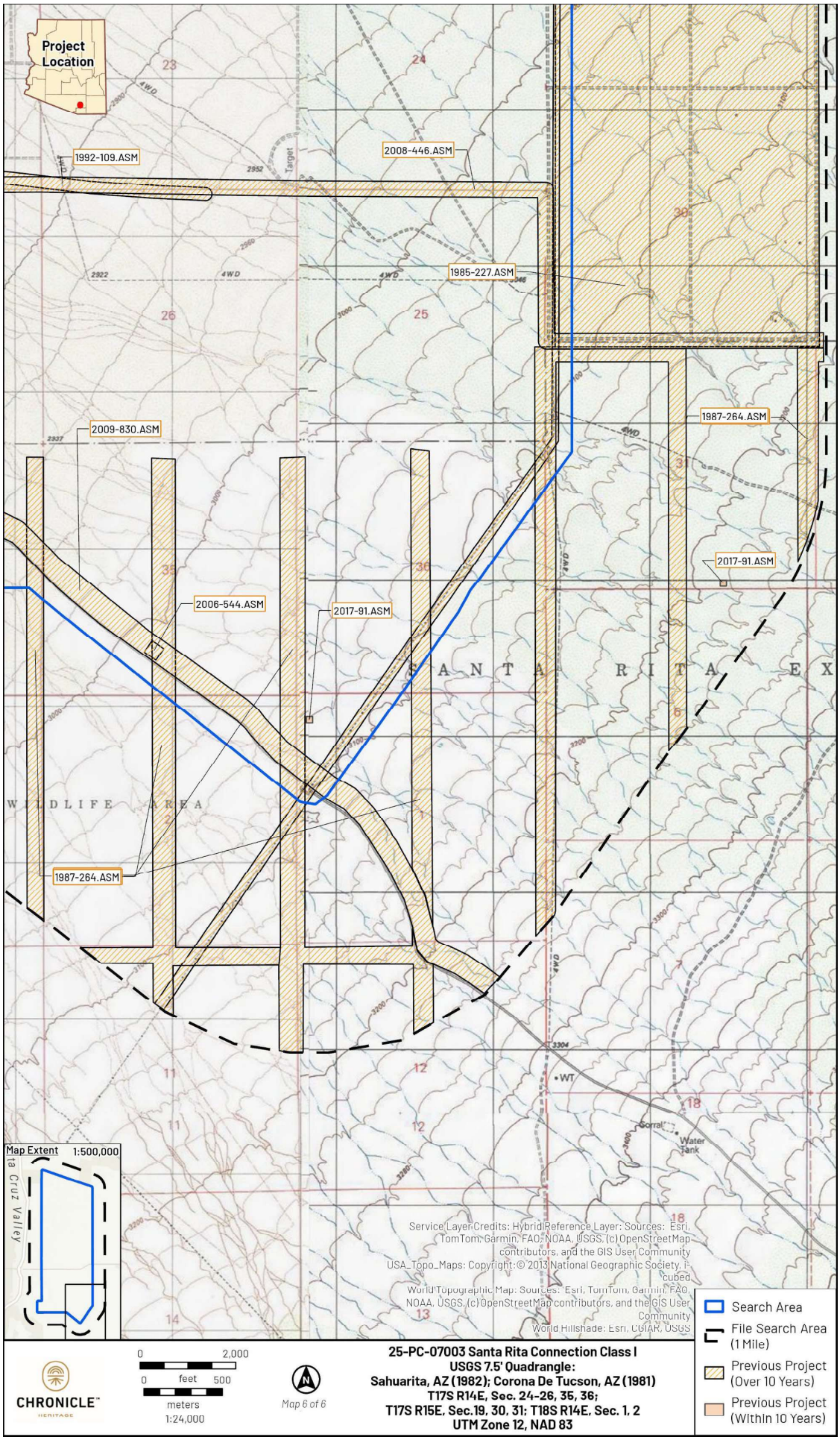


Figure 3-6. Previous projects that intersect the Search area (6 of 6).

310

(REDACTED)

Figure 3-7. Previously recorded cultural resources that intersect the Search area (1 of 6).

(REDACTED)

Figure 3-8. Previously recorded cultural resources that intersect the Search area (2 of 6).

312

(REDACTED)

Figure 3-9. Previously recorded cultural resources that intersect the Search area (3 of 6).

(REDACTED)

Figure 3-10. Previously recorded cultural resources that intersect the Search area (4 of 6).

314

(REDACTED)

Figure 3-11. Previously recorded cultural resources that intersect the Search area (5 of 6).

(REDACTED)

Figure 3-12. Previously recorded cultural resources that intersect the Search area (6 of 6).

GLO plats, on file with the BLM, were reviewed (BLM GLO 2025). Six GLO plats cover the Search area (Table 3-3): Plat No. 2118 (T15S, R14E, filed January 25, 1873), Plat No. 2169 (T16S, R14E, filed January 25, 1873), Plat No. 2170 (T16S, R15E, filed November 28, 1896), Plat No. 2231 (T17S, R14E, filed November 24, 1947), Plat No. 2235 (T17S, R15E, December 14, 1931), Plat No. 2282 (T18S R14E, filed June 11, 1873). None of the Plats show resources within the Search area, but within the 1-mi search radius are developed and undeveloped roads and fences, which are described in Table 3-3 (Figure 3-13).

Chronicle Heritage reviewed the following historic USGS topographic maps (USGS 2024): USGS 1:125000 Patagonia, Arizona, 1904, 1905, 1916, 1920; USGS 1:62500 Helvetia, Arizona, 1926; USGS 1:125000 Nogales, Arizona, 1956, 1958, 1959; USGS 1:62500 Sahuarita, Arizona, 1958; USGS 1:250000 Tucson, Arizona, 1904, 1905, 1916, 1932, 1947, 1958, 1959, 1962, 1967, 1968, 1973; USGS 1:62500 Tucson, Arizona, 1948, 1958, 1957; USGS 1:24000 Tucson, Arizona, 1968, 1970. Resources intersecting the Search area include fences, undeveloped and developed roads, buildings, ranches, observation towers, water tanks, ranges, a gravel pit, a transmission line, and a landing strip, which are described in Table 3-4.

The National Register Information System database indicates that no NRHP-listed properties intersect the Search area or are within the search radius. Historical aerials from 1958 and 1967 show a landing strip that corresponds to the landing strip depicted within the USGS maps (Nationwide Environmental Title Research Online [NETROnline] 2025).

Table 3-3. Historic GLO Properties within the Search area and Search Radius

Property Description	Intersects Search Area	Map Year
5 roads	No	1896
7 undeveloped roads	No	1896
1 undeveloped road	No	1896, 1947
1 fence	No	1931
1 fence	No	1931, 1947
3 undeveloped road	No	1931
1 undeveloped roads	No	1931, 1947

Table 3-4. Historic USGS Map Properties within the Search area and 1-mile Search Radius

Property Description	Intersects Search Area	Map Year
2 fences	Yes	1904
1 well	No	1904, 1905, 1920
2 roads	Yes	1904, 1905, 1916, 1932, 1947
2 undeveloped roads	Yes	1904, 1905, 1916, 1932, 1947, 1948
1 building	Yes	1904, 1905, 1916, 1932, 1947, 1948
1 undeveloped road	Yes	1904, 1905, 1916, 1932, 1947
1 road	No	1904, 1905, 1916, 1932, 1947
Garcia Ranch	No	1904, 1905, 1916, 1932, 1947
1 undeveloped road	No	1904, 1905, 1916, 1932, 1947
1 building	No	1904, 1905, 1916, 1932, 1947

Property Description	Intersects Search Area	Map Year
2 undeveloped roads	No	1904, 1905, 1916, 1926, 1958
2 buildings	No	1904, 1905, 1916, 1920, 1926, 1958
2 roads	Yes	1904, 1905, 1916, 1920, 1926, 1956, 1958, 1959
3 undeveloped roads	Yes	1904, 1905, 1916, 1920, 1926, 1956, 1958, 1959
1 undeveloped road	No	1904, 1905, 1916, 1920, 1926, 1956, 1958, 1959
2 undeveloped roads	No	1904, 1905, 1916, 1932, 1947, 1948, 1958, 1963
2 developed roads	Yes	1904, 1905, 1916, 1932, 1947, 1948, 1958, 1959, 1962, 1963, 1964, 1967, 1968, 1970, 1973
2 fences	No	1905, 1916, 1932, 1947
1 building	No	1916, 1932, 1947
1 undeveloped road	No	1916, 1958
7 buildings	No	1916, 1958
4 fences	No	1916, 1958
1 undeveloped road	Yes	1926, 1958
1 fence	Yes	1926, 1956, 1958, 1959
1 fence	No	1926, 1956, 1958, 1959
1 undeveloped road	Yes	1948
Water tank	No	1948
Petty Ranch	No	1948, 1958, 1959, 1963, 1964, 1967, 1973
Franco Ranch	No	1948, 1958, 1959, 1963, 1964, 1967, 1973
4 fences	Yes	1956, 1958, 1959
1 landing strip	Yes	1956, 1958, 1959
Rita Building	Yes	1956, 1958, 1959
Sahuarita Bombing and Gunnery Range	Yes	1956, 1958, 1959, 1962, 1963, 1964, 1967, 1968, 1970, 1973
6 buildings	No	1958
3 observation towers	Yes	1958
10 undeveloped roads	Yes	1958
Water tank	No	1958, 1963
2 roads	No	1958, 1959, 1962, 1963, 1964
2 undeveloped roads	Yes	1958, 1963, 1968, 1970
2 undeveloped roads	No	1958, 1963, 1968, 1970
9 buildings	No	1958, 1963, 1968, 1970
4 wells	No	1958, 1963, 1968, 1970
2 fences	Yes	1958, 1959, 1962, 1964,1967, 1968, 1970, 1973
1 transmission	Yes	1958, 1959, 1962, 1963, 1964, 1967, 1968, 1970, 1973
5 developed roads	Yes	1968, 1970
1 well	Yes	1968, 1970

Property Description	Intersects Search Area	Map Year
12 undeveloped roads	No	1968, 1970
1 gravel pit	No	1968, 1970
8 buildings	No	1968, 1970
Rifle range	No	1968, 1970
Animal Research Center	No	1968, 1970
2 windmills	No	1968, 1970

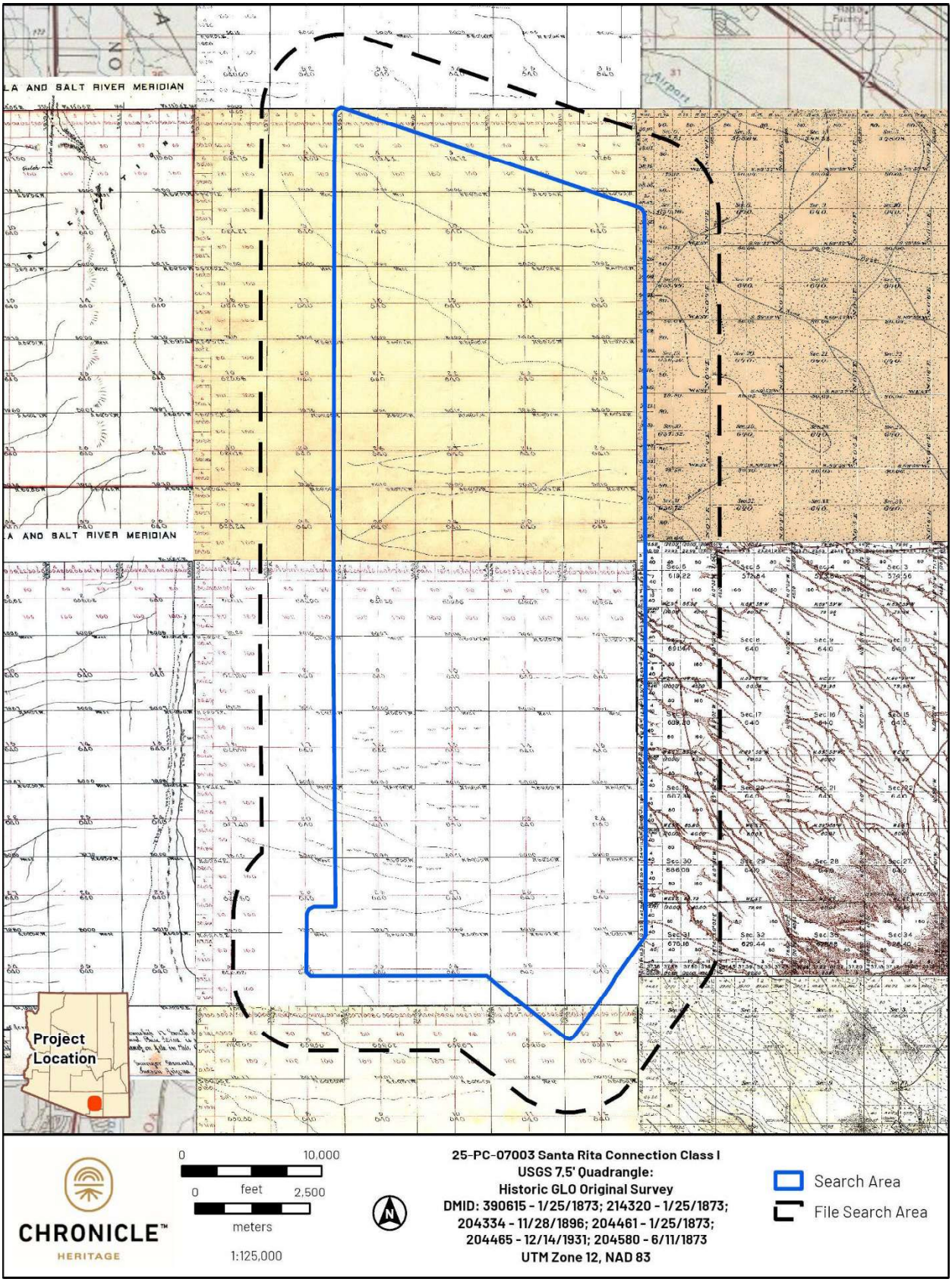


Figure 3-13. GLO plats within the Search area (1873, 1896, and 1931).

4 Recommendations

Dockit is providing support for TEP's proposed Cisne to Hartt Substations CEC project in COT and unincorporated Pima County, Arizona. Potential ground-disturbing activities for the proposed Project include vegetation removal, grading and structure construction for substations, pole installation, and access road construction. Chronicle Heritage was contracted by Dockit to conduct a Class I literature review of the Search area to determine if it has been previously surveyed, and if cultural resources are present, to assist in planning a route for the line that minimizes its effects on cultural resources.

Approximately 18,415.6 ac of the Search area have not been surveyed, and 9,090.3 ac of the Search area require resurvey due to the age of the previous survey. Prior survey coverage is concentrated in the northern one-fourth of the area reviewed and along township and range boundaries where existing road and other linear infrastructure are present.

The Search area contains 168 previously recorded sites. Sixty-three sites have been previously recommended or determined eligible for inclusion in the NRHP, 53 sites have been recommended unevaluated, and 52 sites have been recommended or determined not eligible. There were 155 sites that were recorded more than 10 years ago and require rerecording to assess their current condition and to determine appropriate mitigation measures for the current Project. Based on the distribution of sites in previously surveyed portions of the Search area, the entire area is expected to have a moderate to high density of sites. Small prehistoric sites are expected to occur throughout the Search area, and larger prehistoric sites are more likely to be located near the western side of the area or along major washes.

As little of the area reviewed for this Project has been previously surveyed, and many of the sites are inconsistently documented across different sources, Chronicle Heritage recommends a full pedestrian survey of a corridor the width of the expected ROW or easement, once selected.

Given the distribution of land ownership within the review area, the final alignment corridor is expected to intersect Arizona State Trust Land, Pima County, Pima County Right-of-Way (ROW), City of Tucson (COT), COT ROW, Town of Sahuarita ROW, Tucson airport land, and private land, making it subject to compliance with the AAA regulations, the Arizona SHPA, the state law protecting human remains and mortuary objects on private land (A.R. S. § 41-865), COT Resolution No. 12443, Pima County BOS Policy C3.17, and Pima County Historic Zone Ordinance 18.63 (Historic Landmark). Should the final Project corridor intersect the small area of BLM land in the northeastern corner of the Search area, it would also be subject to the regulations implementing Section 106 of the National Historic Preservation Act as set forth in 36 CFR 800 (as revised in 2004) and NAGRPA.

This page intentionally left blank.

5 References

Alexander, Walter, and Brian Kenny
1992 *ASLD Para Arch Survey*. Project No. 23-96134. Arizona State Land Department, Phoenix, Arizona.

Arizona Geological Survey
2024 Geologic Map of Arizona. *University of Arizona, Arizona Geological Survey*. Electronic document, https://geomapaz.azgs.arizona.edu/, accessed March 21, 2024.

Arizona State Historic Preservation Office [SHPO]
2004 *SHPO Position on Relying on Old Archaeological Survey Data*. SHPO Guidance Point No. 5. Arizona State Parks and Trails, Phoenix.

AZTEC Engineering Group
2024 *Sonoran Corridor Tier 2 EIS*. AZTEC Project No. AZENS2256. AZTEC Engineering Group, Inc., Phoenix, Arizona. Project on file at ARO.

Barger, Mary E.
1998 *Cultural Resources Inventory for the Nogales Tap Expansion Project, Pima County, Arizona*. ASM Survey #1998-471. Western Area Power Administration, Lakewood, Colorado.

Barr, David M.
2007 *An archaeological survey of a proposed road right-of-way across state lands for Krishna Villa Maintenance Group, Sahuarita, Pima County, Arizona*. Cultural Resources Report No. 07-322. SWCA Environmental Consultants, Tucson, Arizona.

2008 *An archaeological survey of a 4-mile-long corridor for the proposed Wilmot to Harrison Road tie line, unincorporated Pima County, Arizona (Trico work order 14577; ASLD Lease No. 14-107637)*. Cultural Resources Report No. 08-405. SWCA Environmental Consultants, Tucson, Arizona.

2009 *Archaeological Survey of Approximately 15 Miles of the SWTC Pantano to Sahuarita Transmission Line (Poles 96-196), Pima County, Arizona*. SWCA Cultural Resources Report 09-331. SWCA Environmental Consultants, Inc., Tucson, Arizona.

Brown, David E. (editor)
1994 *Biotic Communities: Southwestern United States and Northwestern Mexico*. University of Utah Press, Salt Lake City.

Bruder, J. Simon, Everett J. Basset, Patrick M. O'Brien, James E. Ayres, and A.E. Rogge
1990 *Cultural Resources Technical Report for the MCI Fiber Optic Cable Project: Rialto, California to Phoenix, Arizona and Tucson, Arizona to El Paso, Texas: Arizona, New Mexico and Texas Segments*. Dames & Moore, Inc., Phoenix, Arizona.

Bruder, Simon J., and A. E. Rogge
1988 *Cultural Resources Technical Report for the Santa Cruz 115kV Transmission Line Study, Phoenix, Arizona*. Project No. 85-5; 89-13. Dames & Moore, Inc., Los Angeles, California.

Buckles, Avi
2006 *A Class III Cultural Resources Survey of 644 Acres of State Trust Land Pima County, Arizona*. Cultural Resources Report No. 2006-65. WestLand Resources, Inc., Tucson, Arizona.

Bureau of Land Management [BLM]
2011 *Unknown Bureau of Land Management Project*. Project No. 11-42-8G.BLM.

2012 *Unknown Bureau of Land Management Project*. Project No. 12-108.BLM.

Bureau of Land Management General Land Office [BLM GLO]
2025 The Official Federal Land Records Site. *General Land Office Records*. Electronic document, https://glorecords.blm.gov/default.aspx, accessed December 16, 2025.

Bustoz, David
2025 *A Class III Cultural Resources Survey of the Trevorton-Washington Project Parcel South of the City of Tucson, Pima County, Arizona*. Cultural Resources Report No. PHX-2024-028. Terracon, Tempe, Arizona.

Butero, Lauren
2025 *A Cultural Resources Inventory of 17 Tucson Electric Power 345 kV Transmission Structure Anchor Locations on Arizona State Land Department-Managed Land in Pima, Cochise, and Greenlee Counties, Arizona*. Cultural Resources Report No. 2024-540. Westland Engineering and Environmental Services, Tucson, Arizona.

Buttery, Cynthia Ellen
1987 Investigations Into Prehistoric Settlement and Subsistence on the Santa Rita Experimental Range, Southern Arizona. Texas Tech University, Lubbock, Texas.

Caseldine, Christopher, Angela C. Huster, and Eric S. Cox
2022 *Results of a Phased Archaeological Data Recovery Project within Sites AZ EE:1:99(ASM) and AZ EE:1:175(ASM) in Sahuarita, Arizona*. Technical Report No. 21-257. PaleoWest , LLC, Phoenix, Arizona.

Chamorro, Sebastian, and Anna M. King
2012 *A Revised Cultural Resources Inventory of Approximately 84 Acres near Sahuarita, Pima County, Arizona*. Cultural Resources Report no. 2011-43. WestLand Resources, Inc., Tucson, Arizona.

Chenault, Mark L.
2011 *A Cultural Resources Inventory of Approximately 3.3 Acres Near Santa Rita Road and South Country Club Road, East of Sahuarita, Pima County, Arizona*. Cultural Resources Report 2011-3. WestLand Resources, Inc., Tucson, Arizona.

Copperstone, Chance
2020 *Cultural Resources Class III Survey for the Sahuarita and Wilmot Roads Intersection Improvements Project, Pima County, Arizona*. Tierra Report No. 2020-048. Tierra Right of Way Services, Ltd, Tucson, Arizona.

Daughtrey, Cannon
2013 *An Archaeological Survey of Approximately 1.2 Linear Miles for the Proposed Installation of a Cable Conduit Along S. Wilmot Rd., Pima County, Arizona*. POWER Engineers Inc., Tucson, Arizona.

Diehl, Allison Cohen
2013 *Cultural resources survey of two 1/2 acre parcels adjacent to the Nogales Substation, Pima County, Arizona*. Report no. 13-102L. Desert Archaeology, Inc., Tucson, Arizona.

Doak, David P.
2005a *A Class III Cultural Resource Survey of 1.1-Mile-Long, 42-Foot-Wide Utility Line Right-of-Way Along County Club Road Near Sahuarita, Pima County, Arizona*. Report no. 2005-2. Tierra Right of Way Services, Ltd., Tucson, Arizona.

2005b *Survey of a 0.7 mile stretch of Santa Rita Road*. Letter Report. Tierra Right of Way Services, Ltd., Tucson, Arizona.

2009a *A Class III Cultural Resource Survey of a 3,700-foot-long Utility lone Right-of-Way in Pima County, Arizona: The TEP South Loop Survey*. ASM Accession No. 2009-242. Tierra Right of Way Services, Ltd., Tucson, Arizona.

2009b *A class III cultural resource survey of a 700-foot-long fiber-optic corridor east of Sahuarita, Pima County, Arizona*. ASM Accession No. 2009-486. Tierra Right of Way Services, Ltd., Tucson, Arizona.

Doak, David P., and Mary Charlotte Thurtle
2004 *An assessment of the National Register of Historic Place eligibility of 13 archaeological sites and testing plan for AZ EE:1:337(ASM) and AZ EE:1:340(ASM) near Sahuarita, Pima County, Arizona*. Archaeological Report No. 2003-81. Tierra Right of Way Services, Ltd., Tucson, Arizona.

Doelle, William H., Allen Dart, and Henry D. Wallace
1985 *The Southern Tucson Basin Survey: Intensive Survey Along the Santa Cruz River*. Technical Report 85-3. Institute for American Research, Tucson, Arizona.

Dosh, Deborah S.
1999 *A Cultural Resources Assessment of the Proposed State Prison Expansion Area, Township 16 South, Range 14 East, Section 14, on Arizona State Trust Land, Pima County, Arizona*. Technical Report No. 129. Kinlani Archaeology, Ltd., Flagstaff, Arizona.

Douglas, Craig
2013 *Cultural Resources Survey of 5.38 Acres for the Santa Cruz Well Field Upgrades, Pima County, Arizona*. Technical Report no. 13-15. Northland Research, Inc., Tempe, Arizona.

Dutt, Andrew
1999 *An Archaeological Survey South of Tucson International Airport, Pima County, Arizona*. Technical Report No. 99-140. Desert Archaeology, Inc., Tucson, Arizona.

Effland, Richard W.
1985 *A Cultural Resource Survey for An AT&T Fiber Optic Communication Cable Between Apache Junction and Tucson: State Land Portion*. Archaeological Consulting Services, Ltd., Tempe, Arizona.

Eldridge, Teodoro, and Jerome Hesse
2019 *Cultural Resources Survey for the Pima Mine Plant Expansion Project, Pima County, Arizona (January 2019 – Revised November 2019).* Report No. 19-21. SWCA Environmental Consultants, Inc., Tucson, Arizona.

Ezzo, Joseph A., Eric S. Peterson, Stephanie M. Whittlesey, Dennis Gilpin, and Suzanne Griset
2009 *Archaeological survey for the proposed Rosemont Copper Mine, Pima County, Arizona: Final Report*. SWCA Cultural Resources Report No. 09-35. SWCA Environmental Consultants, Tucson, Arizona.

Fahrni, Grant
2005a *The Trico Nelson ASLD Survey: A cultural resources survey of a 3.183-foot-long corridor in support of the proposed installation of new electrical facilities along Mary Lynn Road, Pinal County, Arizona*. SWCA Project No. 10073-012. SWCA Environmental Consultants, Inc., Tucson, Arizona.

2005b *The Trico KEI ASLD Survey: A cultural resources survey of a 141-foot-long corridor in support of the proposed installation of new electrical facilities near south Wilmot Road, Pima County, Arizona*. SWCA Project No. 10074-012. SWCA Environmental Consultants, Inc., Tucson, Arizona.

Field, John
1985 Arizona State Museum Archaeological Survey Site AZ BB:13:317(ASM). Arizona State Museum.

Freeman, Andrea
1994 *Archaeological Survey of a Pre-existing Gas Pipeline along Old Nogales Highway*. Desert Archaeology Letter Report No. 94-132. Desert Archaeology, Inc., Tucson, Arizona.

Goldstein, Beau J.
2008 *Class III Cultural Resources Survey Report Tucson-Apache 115-kV Transmission Line Project Pima and Cochise Counties, Arizona*. Transcon Environmental, Inc., Mesa, Arizona.

Griffith, Glenn E., James M. Omernik, Colleen B. Johnson, and Dale S. Turner
2014 *Ecoregions of Arizona*. Open File Report No. 2014-1141. U.S. Geological Survey, Western Geographic Science Center, Reston, Virginia.

Hammack, Nancy S.
1983 *Cultural Resource Assessment, Tucson-Apache 115KV Transmission Line*. Report No. 1982-207. Complete Archaeological Service Associates, Cortez, Colorado.

Hayes, John, and Lee Fratt
2011 *A Cultural Resources Assessment Survey of the Tucson Metro Build Segment of the Proposed 360 Network Fiber Optic Line Project Between Mesa, Arizona and El Paso, Texas*. AEC Technical Report No. 2000-30A. Tierra Archaeological and Environmental Consultants, Tucson, Arizona.

Heilen, Jennifer, and David V. M. Stephen
2001 *Cultural Resources Survey of the Section 28 Property in Pima County, Arizona*. Project No. 00-05. Pima Community College Centre for Archaeological Field Training, Tucson, Arizona.

Hesse, India S., Jerome S. Hesse, and David K. Sayre
2002 *A Cultural Resource Survey of the Proposed TRICO Corona de Tucson Tie Line, Pima County, Arizona*. SWCA Cultural Resource Report No. 02-51. SWCA Environmental Consultants, Tucson, Arizona.

Hesse, Jerome S.
2000 *The Sahuarita Corridor Survey: A Class III Cultural Resource Survey of the Proposed State Route 982, Pima County, Arizona*. Project No. 3974-M-2388; SWCA Cultural Resource Report No. 00-188. SWCA Environmental Consultants, Inc., Tucson, Arizona.

2025 *Cultural Resources Survey in Support of Improvements to Andrada Road, East of Wilmot Road, in Tucson, Pima County, Arizona*. SWCA Environmental Consultants, Inc., Tucson, Arizona.

Hesse, Jerome S., Jennifer Levstik, and David M.R. Barr
2009 *Historic Properties Inventory for the EPNG line 1007 Make-Piggable Project Between EPNG Mileposts 89 and 99 in Metropolitan Tucson, Pima County, Arizona*. Cultural Resources Report No. 08-547. SWCA, Inc., Environmental Consultants, Tucson.

Hesse, Jerome S., and Eric S. Peterson
2003 *A cultural resource survey for the Qwest Dawson Road utility trench, Pima County, Arizona*. SWCA Cultural Resource Report No. 03-338. SWCA Environmental Consultants, Inc., Tucson, Arizona.

Heuett, Mary Lou
1994 *Corona de Tucson Assessment*. Project No. J95-078. Cultural & Environmental Systems, Inc., Tucson, Arizona.

Hooper, John M.
2011 *A Cultural Resources Inventory of 21 Acres of Arizona State Trust Land for Pole Replacement in a Tucson Electric Power Company Transmission Corridor in the Eastern and Southern Tucson Basin, Pima County, Arizona*. Report no. 2011-52. WestLand Resources, Inc., Tucson, Arizona.

Huckell, Bruce B., Martyn D. Tagg, and Lisa W. Huckell
1988 *The Corona de Tucson Project: Prehistoric Use of a Bajada Environment*. ASM Project No. F-84-01. Arizona State Museum, Tucson, Arizona.

Jerla, Christine A., and Anna King
2014 *A Cultural Resources Inventory of 783.3 Acres for the SWTC Bicknell to Vail Transmission Line Upgrade, Pima County, Arizona*. WestLand Resources, Inc., Tucson, Arizona.

Jones, Jeffrey T.
2000a *Old Nogales Highway Colonia WWM Sewerline Cultural Resources Assessment*. Agency Project No. 2000-49.ASM. Old Pueblo Archaeology Center, Tucson, Arizona.

2000b *Archaeological Investigations on the Wilmot Prison Expansion Property in Sections 12, 13, and 14, T16S, R14E, G&SRB&M, Pima County, Arizona*. Technical Report No. 2000-001. Old Pueblo Archaeology Center, Tucson, Arizona.

Jones, Tracey
2024a *A Cultural Resources Inventory of 0.9 Acres of State Trust Lands in Support of the South Country Club Road Pole Replacement Project, Pima County, Arizona*. Cultural Resources Report No. 2024-242. WestLand Resources, Inc., Tucson, Arizona.

2024b *A Cultural Resources Inventory of Five Proposed Pole Replacements Along the Fort 46kV Transmission Line on State Trust Land Managed by the Arizona State Land Department, Pima County, Arizona*. Cultural Resources Report No. 2024-269. WestLand Resources, Inc., Tucson, Arizona.

2025a *A Cultural Resources Inventory of State Trust Land Managed by the Arizona State Land Department for the Proposed 138kV Hartt Substation Lease Expansion Area*. Cultural Resources Report No. 2025-015. WestLand Resources, Inc., Tucson, Arizona.

2025b *A Cultural Resources Inventory of 15.0 Acres State Trust Land Managed by the Arizona State Land Department for the Proposed Hartt Substation Lease Lease Area, Pima County, Arizona*. Cultural Resources Report No. 2025-016. WestLand Resources, Inc., Tucson, Arizona.

King, Anna Martin
2012 *A Cultural Resources Inventory of 3.70 Acres of TEP Right-Of-Way and Arizona State Trust Land for a Power Line Access Road and Pole Replacement, Near Sahuarita, Pima County, Arizona*. Report No. 2012-42. WestLand Resources, Inc., Tucson, Arizona.

Klebacha, Caroline
2018 *Class III Cultural Resources Survey of 640 Acres of State Trust Land in Green Valley, Pima County, Arizona*. Technical Report No. 17-382. PaleoWest Archaeology, Phoenix, Arizona.

Knoblock, Keith B.
1994 *A Class III Archaeological Survey of the Western Santa Rita Lower Bajada, Pima County, Arizona*. Statistical Research Technical Report 94-4. Statistical Research, Inc., Tucson, Arizona.

2001 *A Cultural Resource Survey for a Proposed Fiber Optic Corridor Spanning Southeastern Arizona in Pima, Santa Cruz, and Cochise Counties*. Lone Mountain Report No. 421/423. Lone Mountain Archaeological Services, Inc., Tucson, Arizona.

Lange, Richard C.
1983 *Letter Report to the Arizona State Land Department, filed in the ASM State Land Survey Files*. Project No. SLS-035. Arizona State Museum, Tucson, Arizona.

1999 *UA Soils Dept. - Santa Rita Soils Content*. Arizona State Museum, Tucson, Arizona.

Luchetta, Sarah, and James Moses
2008 *A Class I Cultural Resources Survey of Approximately 11 Miles of Proposed Right of Way (CWC CAP Water Delivery System), Located Near Sahaurita, Pima County, Arizona*. Antigua Archaeology, LLC., Oracle, Arizona.

Luchetta, Sarah, and Chester Shaw
2007 *A Class III Cultural Resources Survey of Approximately 2.3 Miles along Sahuarita Road Between La Villita Road and County Club Road in Sahuarita and Unincorporated Pima County, Arizona*. HEG Project 06-190. Harris Environmental Group, Inc., Tucson, Arizona.

Macwilliams, Arthur C., and Allen Dart
2006 *Cultural Resources Survey of a Proposed ADOT Material Source in Parcels 303-09-001P and 303-09-001O. Section 3, T16S. R14E. South of Old Vail Connection Road, near Tucson in Pima County, Arizona*. Letter Report No. 20052006.002. Old Pueblo Archaeology Center, Tucson, Arizona.

Madsen, John H.
1985 *Miller Paving*. Project # 04-91391. Arizona State Museum, Tucson, Arizona.

Madsen, John H., and Gillespie
2006 Arizona State Museum Archaeological Survey Site AZ EE:1:392(ASM). Arizona State Museum, Tucson.

Montoya, Daniel
2021 *An Archaeological Linear Survey for the Fairfax Companies, LLC. Wilmot Recycling and Landfull Facility Access Road in the City of Tucson, Pima County, Arizona*. Report No. PCCAC-2101. Pima Community College Archaeology Centre, Tucson, Arizona.

Moses, James
2004 *A Cultural Resources Assessment Survey of a 3,330-Foot-Long Right of Way along South Country Club Road Southeast of Sahuarita, Pima County, Arizona*. Tierra Archaeological Report No. 2004-9. Tierra Right of Way Services, Ltd., Tucson, Arizona.

Munson, John
2023 *Paleontological Resource Survey Report for the Vail to Tortolita 230 kV Transmission Line Project, Pima and Pinal Counties, Arizona*. Technical Report 23–174. Chronicle Heritage, Phoenix, Arizona.

Myer, Laurel
1998 *Sahuarita Substation Survey*. Project No. 2551-2352. SWCA Environmental Consultants, Inc., Tucson, Arizona.

1999 *Sahuarita Substation and Access Rd*. Project No. 2768-2352-7. SWCA Environmental Consultants, Inc., Tucson, Arizona.

Myer, Laurel, and Thomas Euler
1999 *TRICO Sahuarita Substation*. Report No. 2941-2352. SWCA Environmental Consultants, Inc., Tucson, Arizona.

Nationwide Environmental Title Research Online [NETROnline]
2025 Historic Aerials: Viewer. *Historic Aerials*. Electronic document, https://www.historicaerials.com/viewer, accessed October 30, 2025.

Nickerson, Terrill
1980 *TRICO Survey*. ASM Project No. P-80-01. Arizona State Museum, Tucson, Arizona.

Old Pueblo Archaeology Center
2017 *195.94-Acre Cultural Resources*. Survey on file at the ARO. Old Pueblo Archaeology Center, Tucson, Arizona.

Peterson, Eric S.
2009 *Archaeological Monitoring at Structure 209 along the Pantano-Bicknell Transmission Line in Pima County, Arizona*. Letter Report dated June 10, 2009. SWCA Project 15536. SWCA Environmental Consultants, Inc., Tucson, Arizona.

2021a *Cultural Resources Survey of a 1.0-Mile-Long Corridor for the Proposed Trico Circuits 75 and 76 Upgrade Proejct, Pima County, Arizona (Trico 2021-2024 Work Plan, Project No. 300.143)*. SWCA Cultural Resource Report No. 21-88. SWCA Environmental Consultants, Inc., Tucson, Arizona.

2021b *Cultural Resources Survey of a 4.0-Mile-Long Corridor for the Proposed Trico Upgrade Project along Sahuarita Road, Pima County, Arizona (Trico 2021-2024 Work Plan, Project No. 300.146)*. SWCA Cultural Resource Report No. 21-152. SWCA Environmental Consultants, Inc., Tucson, Arizona.

Peterson, Eric S., and Jerome S. Hesse
2025 *Cultural Resources Survey for the Wilmot Energy Center II Generation-Tie Transmission Line in Pima County, Arizona*. SWCA Cultural Resource Report No. 23-457. SWCA Environmental Consultants, Inc., Tucson, Arizona.

Rawson, Paul M.
2012 *Cultural Resources Survey of a 3,200-Foot-Long Corridor for the Proposed Wilmot Tie Line, Pima County, Arizona*. Report 12-122. SWCA Environmental Consultants, Phoenix, Arizona.

2017 *Cultural Resources Inventory for the Nextera Energy Resources Wilmot solar Energy Center, Pima County, Arizona*. SWCA Cultural Resources Report No. 17-532. SWCA Environmental Consultants, Tucson, Arizona.

Rayle, Christopher E.
2013 *A cultural resource survey of additional areas for the Rosemont project utility corridor, Pima County, Arizona*. Environmental Planning Group, LLC, Phoenix, Arizona.

Roberts, H.
1992a Arizona State Museum Archaeological Survey Site AZ BB:13:408(ASM). Arizona State Museum.

1992b Arizona State Museum Archaeological Survey Site AZ BB:13:409(ASM). Arizona State Museum.

1992c Arizona State Museum Archaeological Survey Site AZ BB:13:410(ASM). Arizona State Museum.

1992d Arizona State Museum Archaeological Survey Site AZ BB:13:411(ASM). Arizona State Museum.

1992e Arizona State Museum Archaeological Survey Site AZ BB:13:412(ASM). Arizona State Museum.

1992f Arizona State Museum Archaeological Survey Site AZ BB:13:413(ASM). Arizona State Museum.

1992g Arizona State Museum Archaeological Survey Site AZ BB:13:414(ASM). Arizona State Museum.

1992h Arizona State Museum Archaeological Survey Site AZ BB:13:415(ASM). Arizona State Museum.

1992i Arizona State Museum Archaeological Survey Site AZ BB:13:416(ASM). Arizona State Museum.

1992j Arizona State Museum Archaeological Survey Site AZ BB:13:417(ASM). Arizona State Museum.

Roberts, Heidi, Susan Bierer, and David Doak
1994 *Archaeological Evaluation of 320 Acres South of Tucson, Pima County, Arizona*. SWCA Environmental Consultants, Inc., Phoenix, Arizona.

Roberts, Heidi, and Mark C. Slaughter
1993 *An Archaeological Survey of 640 Acres for a Proposed Landfill Site in the Southern Tucson Basin, Pima County, Arizona*. SWCA Archaeological Report 93-83. SWCA Environmental Consultants, Inc., Tucson, Arizona.

Roth, Barbara
1985 Arizona State Museum Archaeological Survey Site AZ BB:13:318(ASM). Arizona State Museum.

Rozen, Kenneth C.
1985a *Letter Report to Arizona State Land Deptarment. Archaeology Department, Arizona State Museum, Tucson.* Arizona State Museum Cultural Resource Management Division, Tucson.

1985b *An Archaeological Survey of a Pima County Transportation and Flood Control District for a Drainage Constrution Clearance Project in Pima County, Arizona*. Report No. SLS-71. Arizona State Museum, Tucson.

Ruble, Ellen
1999 *Archeological Survey of the Public Safety Academy Land Acquisition Project, Tucson, Arizona*. Project Report Number 99-122. Desert Archaeology, Inc., Tucson, Arizona.

Ryder, Jason R.
2022 *Cultural Resource Inventory for the Wilmot Park and Hook M Ranch Development Lift Station and Force Main in Pima County, Arizona*. Report No. 2022-187. WestLand Engineering & Environmental Services, Tucson, Arizona.

2023 *A Cultural Resources Inventory for the City of Tucson Well #5 Overhead Distribution Line Extension in Pima County, Tucson, Arizona*. Cultural Resources Report No. 2023-041. WestLand Engineering & Environmental Services, Tucson, Arizona.

2024 *A Cultural Resources Inventory for the City of Tucson Well #4 Overhead Distribution Line Extension in Pima County, Tucson, Arizona*. Cultural Resources Report No. 2023-330. WestLand Engineering & Environmental Services, Tucson, Arizona.

Saul, Marilyn
1982 *Archaeological Survey of Right-of-Way through Sahuarita Gunnery Range*. Arizona State Museum Cultural Resource Management Section, Tucson, Arizona.

Seymour, Gregory R.
1992 *A Class III Archaeological Resource Inventory of a 27 Mile Road Right-of-way and 40 Acres South of Vicksburg in La Paz and Yuma Counties, Arizona*. SWCA Archaeological Report 92-01. SWCA, Inc., Tucson, Arizona.

Sheehan, Michael S., Steve Swanson, and Steven Shelley
2011 *A Cultural Resource Survey for the Rosemont Project Utility Corridor Pima County, Arizona*. Paper no. 2010-001. Environment Planning Group, LLC, Phoenix, Arizona.

Slaughter, Mark C., and Heidi Roberts
1992 *An Archaeological Sample Survey of Three Parcels for a Proposed Landfill in the Southern Tucson Basin*. SWCA Archaeological Report 92-41. SWCA Environmental Consultants, Inc., Tucson, Arizona.

Slawson, Laurie
2000 *A Cultural Resources Inventory for Proposed Improvements to Comsoft Land and a Private Road on State Land in Pima County, Arizona*. Aztlan Technical Report No. 2000-50. Aztlan Archaeology, Inc., Tucson, Arizona.

Soil Survey Staff
2025 Web Soil Survey. *Natural Resources Conservation Service, U.S. Department of Agriculture*. Electronic document, https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx, accessed November 2, 2025.

Stein, Walter T.
1969 Arizona State Museum Archaeological Survey Site AZ BB:13:58(ASM). Arizona State Museum.

Stephen, D., A. Lenhart, and C. Howard
1995 *Green Valley T.E.P. Lines*. Report No. 94507b. Professional Archaeological Services & Technologies, Tucson, Arizona.

Stephen, David V.M.
1989 *Preliminary Archaeological Survey for the Roadway Alignment Alternatives within the Sahuarita Corridor Survey*. Professional Archaeological Services Team, Tucson, Arizona.

1995 *Letter Report for Green Valley T.E.P. 138kV Lines*. Professional Archaeological Services & Technologies, Tucson, Arizona.

Stone, Bradford W.
2017 *A Cultural Resources Inventory for the old Nogales Interceptor/Aerospace Corridor/Park Avenue Sewer Project, Pima County, Arizona*. Cultural Resources Report 2016-50. WestLand Engineering and Environmental Services, Inc., Tucson, Arizona.

Stone, Bradford W., and Stephanie Brown
2018 *Cultural Resources Inventory of 8.2 Miles of Electrical Transmission Line Right-of-way for the Tucson Electric Power South Loop to Green Valley Line near Sahuarita, Pima County, Arizona*. Cultural Resources Report 2018-95. WestLand Engineering and Environmental Services, Inc., Tucson, Arizona.

Stull, Brian P.
1999 *A Cultural Resource Assessment of a Utilities Easement Along Wilmot Road in Southeast Tucson, Pima County, Arizona*. Report No. 99-14. Kinlani Archaeology, Ltd., Flagstaff, Arizona.

Swanson, Steve, Dustin Sunderman, Benjamin Snow, and Cara Lonardo
2011 *A cultural resources survey of the 46kv alternative and additional areas for the Rosemont Project 138kv Line Pima County, Arizona*. EPG Cultural Resources Technical Paper No. 2010-0017. Environmental Planning Group, LLC, Phoenix.

SWCA Environmental Consultants
2017 *Wilmot Solar Energy Center*. SWCA Project No. 45118. SWCA Environmental Consultants, Inc., Tucson, Arizona.

Talbot, Alison, and Chance Copperstone
2020 *A Class III Cultural Resources Survey for the 2020 TEP Anchor Replacement Project, Tucson, Arizona*. Report No. 2020-015. Tierra Right of Way Services, Ltd, Tucson, Arizona.

Terracon Consultants
2024 *Trevorton-Washington Project*. Terracon Project No. 63247143. Terracon Consultants, Inc., Tempe, Arizona. On file at ARO.

Tierra Right of Way Services, Ltd
2018 *Sonoran Substation Class III Survey*. Tierra Project No. 18TE0-056. Tierra Right of Way Services, Ltd., Tucson, Arizona.

Tucker, David B.
1997 *A Class III Archaeological Survey of Two Transmission Lines for Arizona Electric Power Cooperative, Inc.: Pantano to Bicknell and Vail to Bicknell Substations, Pima County, Arizona*. Project No. 52-71960. SWCA Environmental Consultants, Inc., Phoenix, Arizona.

2009 *An archaeological survey for the TRICO circuit 76 rebuild project, Pima County, Arizona: TRICO work order No. 40543*. Cultural Resources Report No. 08-483. SWCA Environmental Consultants, Inc., Tucson, Arizona.

U.S. Geological Survey [USGS]
2025 Historical Topographic Maps. *topoView*. Electronic document, https://ngmdb.usgs.gov/maps/topoview/viewer, accessed June 3, 2025.

Vaughn, Catherine S., and Simon J. Bruden
2015 *A Cultural Resource Survey Along South Wilmont Road Approximately 2.7 Miles South of Interstate 10 to East Sahuartia Road East of the City of Tucson in Unincorportated Pima County, Arizona*. Cultural Resources Survey Report 13-468. EcoPlan Associates, Inc., Mesa, Arizona.

West, Heather
2022 *Cultural Resources Survey for the Tucson Water Well PM-004A Project, Tucson, Pima County, Arizona*. Cultural Resources Report No. 22-163. SWCA Inc., Environmental Consultants, Tucson.

WestLand Resources, Inc.
2016 *Diamond Ventures – Verano Revised Offsite Sewer Survey*. WRI Project No. 498.35. WestLand Resources, Inc., Tucson, Arizona. Project on file at ARO.

2024 *Hartt Substation Class III (South Parcel) / Hartt Substation Lease Area (Area 1) Class III Project*. WRI Project No. 12945-1. WestLand Resources, Inc., Tucson, Arizona.

2025 *345kV Anchor Replacements CR Support Services*. WRI Project No. 12671. WestLand Resources, Inc., Tucson, Arizona. Project on file at ARO.

Whitney, Gregory J., and Fred L. Nials
2012 *Results of Non-Site Archaeological Monitoring of Segments 2A and 2B for the Sahuarita Road-La Villita to Eastern Town Limits Project in the Town of Sahuarita, Pima County, Arizona*. Report 2 of 2; Report no. 12-112. Desert Archaeology, Inc., Tucson, Arizona.

CHRONICLE™
HERITAGE

For General Inquiries:
T: (866) 563-2536
T: (602) 254-6280
info@chronicleheritage.com

EXHIBIT F

This page intentionally left blank

EXHIBIT F: RECREATIONAL PURPOSES AND ASPECTS

As stated in Arizona Administrative Code R14-3-219 of the Rules of Practice and Procedure Before Power Plant and Transmission Line Siting Committee, Exhibits to Application, Exhibit F:

State the extent, if any, the proposed site or route will be available to the public for recreational purposes, consistent with safety considerations and regulations and attach any plans the applicant may have concerning the development of the recreational aspects of the proposed site or route.

F.1 Introduction F-1
F.2 Affected Environment F-1
F.3 Potential Effects F-1
F.4 Conclusion F-2

F.1 Introduction

The following analysis describes recreational settings and features, and potential impacts to them from the Project, within the Study Area. The entire Study Area is within unincorporated Pima County, the COT, and the Town of Sahuarita, Arizona.

F.2 Affected Environment

There are no formal recreational opportunities within the Study Area. The former Sahuarita District Park, which was adjacent to and outside the Study Area, has been absorbed into the school facilities for Walden Grove High School and is now considered Walden Grove Athletic Fields. Facilities include softball fields, a track, and a football stadium. The existing transmission lines along Route 3 are 500 feet from the nearest facility (Exhibit F-1).

F.3 Potential Effects

Construction

Construction activities would have no impact on recreational area users, as neither route intersects or crosses recreational facilities or areas. Construction of the Project will not impact the use of or access to any existing recreation opportunities or activities.

Short-term impacts during the construction phases of the Project could involve potential interruption of access along Sahuarita Park Road; however, that route is not the main access to the high school and the athletic fields. Access to the eastern portion of Sahuarita Park Road is restricted by a locked gate.

Potential indirect impacts from construction to the natural, historic, cultural, or visual character of parks and recreation areas are discussed in Exhibits B, C, D, E, and G.

Currently, TEP does not have any plans to make the ROW available to the public for recreational purposes. Installation of a multi-use path and landscaping within the ROW adjacent to existing roads could be discussed with the jurisdictions; however, this is not proposed as part of this project at this time. TEP would not be opposed to compatible recreational development within the ROW, but further details and agreements with Pima County, the COT, the Town of Sahuarita, and other landowners would be needed prior to pursuing this type of development.

Operation and Maintenance

Operation and maintenance activities are short-term, temporary in duration, and occur infrequently. No areas should require closures for maintenance as these activities would occur within the ROW adjacent to the roadway. Recreation opportunities and activities can continue as before construction.

F.4 Conclusion

The route alternatives for the Project are informed by TEP's design principle to first use established infrastructure corridors that meet the Project objectives. This approach locates routes within public road ROW to the greatest extent practical and maintains public use consistent with existing use. This strategic approach minimizes impacts on recreational facilities and parks and maintains public use and recreation along existing ROWs.

Although recreation facilities are located in proximity to Route 3, the Project will not preclude recreational uses or public enjoyment because the Project will add additional structures to an existing transmission line and will not result in closure of any recreational facilities.

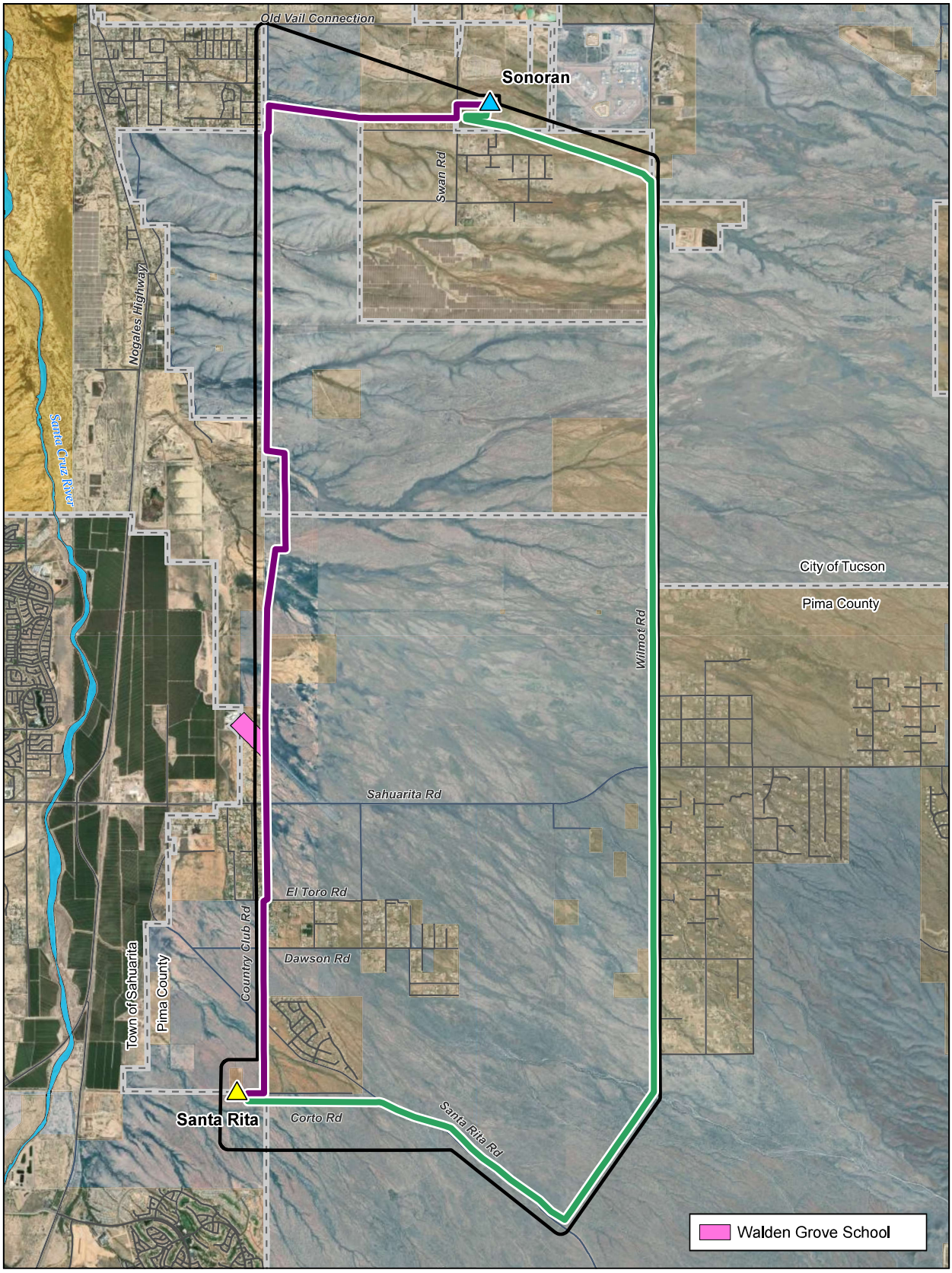
Following construction, all existing recreation facilities will remain available under either route alternative. Where the Project crosses existing roads, permanent access to and along these features for recreation use will not be affected.

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit F-1

This page intentionally left blank



Tucson Electric Power

Exhibit F-1

Recreation

Santa Rita Connection Project

In-Service 138kV Substation

Planned 138kV Substation

Study Area

0 1 2

Miles

Surface Management

Arizona State Land

Tohono O'odham Nation, San Xavier District

Proposed Route Alternatives

Route 1

Route 3

This map is for planning purposes only. TEP and UNS Energy make no warranty of its accuracy.

Sources: Esri, UNS, TEP, BLM, and Pima County GIS.
Projection: NAD 1983 UTM Zone 12N
Basemap: Esri World Imagery

This page intentionally left blank

EXHIBIT G

This page intentionally left blank

EXHIBIT G: CONCEPTS OF PROPOSED FACILITIES

AAC R14-3-219:

Attach any artist's or architect's conception of the proposed plant or transmission line structures and switchyards, which applicant believes may be informative to the Committee.

EXHIBIT	CONTENTS
G-1.1	Double Circuit Tangent w/o Distribution
G-1.2	Double Circuit Deadend w/o Distribution
G-2	Visual Simulations

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit G-1

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit G-1.1

This page intentionally left blank

TEP

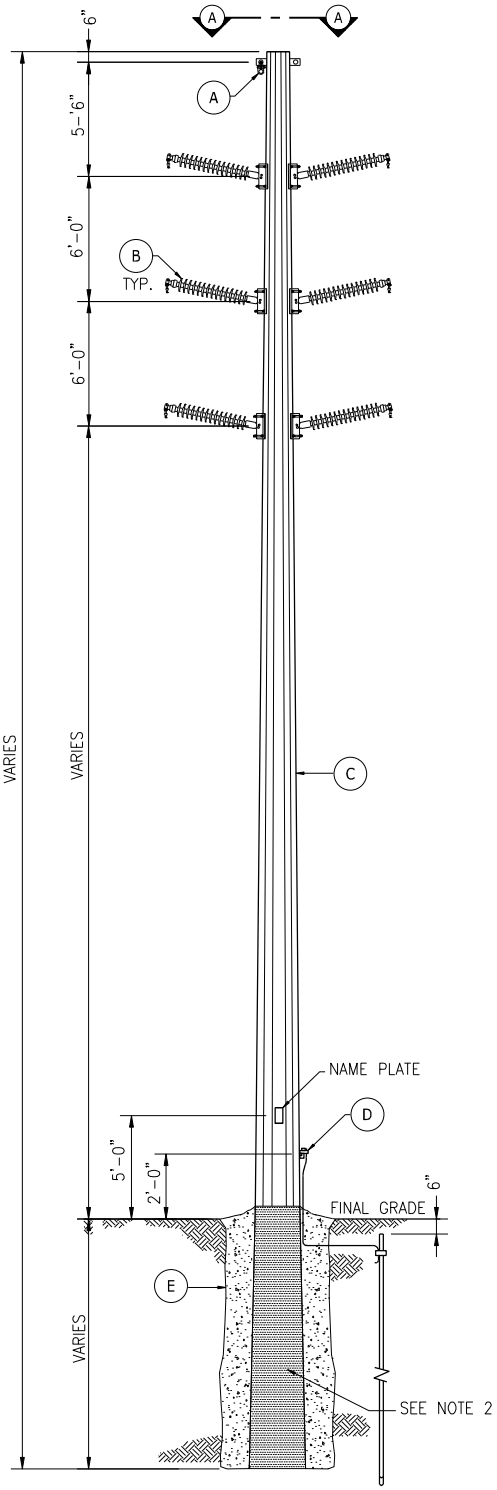
UniSourceEnergy Services

FRAMING, DOUBLE CIRCUIT W/OUT DISTRIBUTION

TANGENT (0-3 DEGREES), 46/69/138kV
TRANSMISSION STANDARD

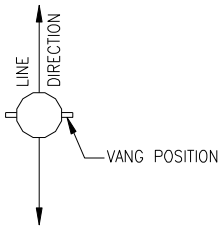
INITIATED	EFFECTIVE DATE
KV	08/25/20

TL0310.005-R01



ELEVATION

TANGENT 0-3°, DOUBLE CIRCUIT 46/69/138kV W/OUT DIST.



VIEW A-A

GENERAL NOTES:

1. CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S/INSTALLER'S PERSONNEL (OR THAT OF IT'S SUBCONTRACTOR(S) PERFORMING THE WORK).
2. EMBEDDED PORTION OF POLE PLUS 1'-6" COATED W/ CORROCOTE II CLASSIC PNT 219A & 219B OR MEYERCLAD PNT 218A & 218B, 40 MILS THICK.

REFERENCE DRAWINGS

ITEM.	DESCRIPTION	QTY.	ASSEMBLY DRAWINGS
A	OPGW/STATIC SUSP.ASSEMBLY	1	TL0504.009 (96-OPGW) TL0506.001 (3/8" EHS)
B	POST INSULATOR ASSEMBLY	6	TL0502.003 TL0502.004
C	STEEL POLE	1	SEE CTE
D	GROUNDING ASSEMBLY	1	TL0500.001
E	FOUNDATION DETAIL	1	TL0700.005

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit G-1.2

This page intentionally left blank

TEP

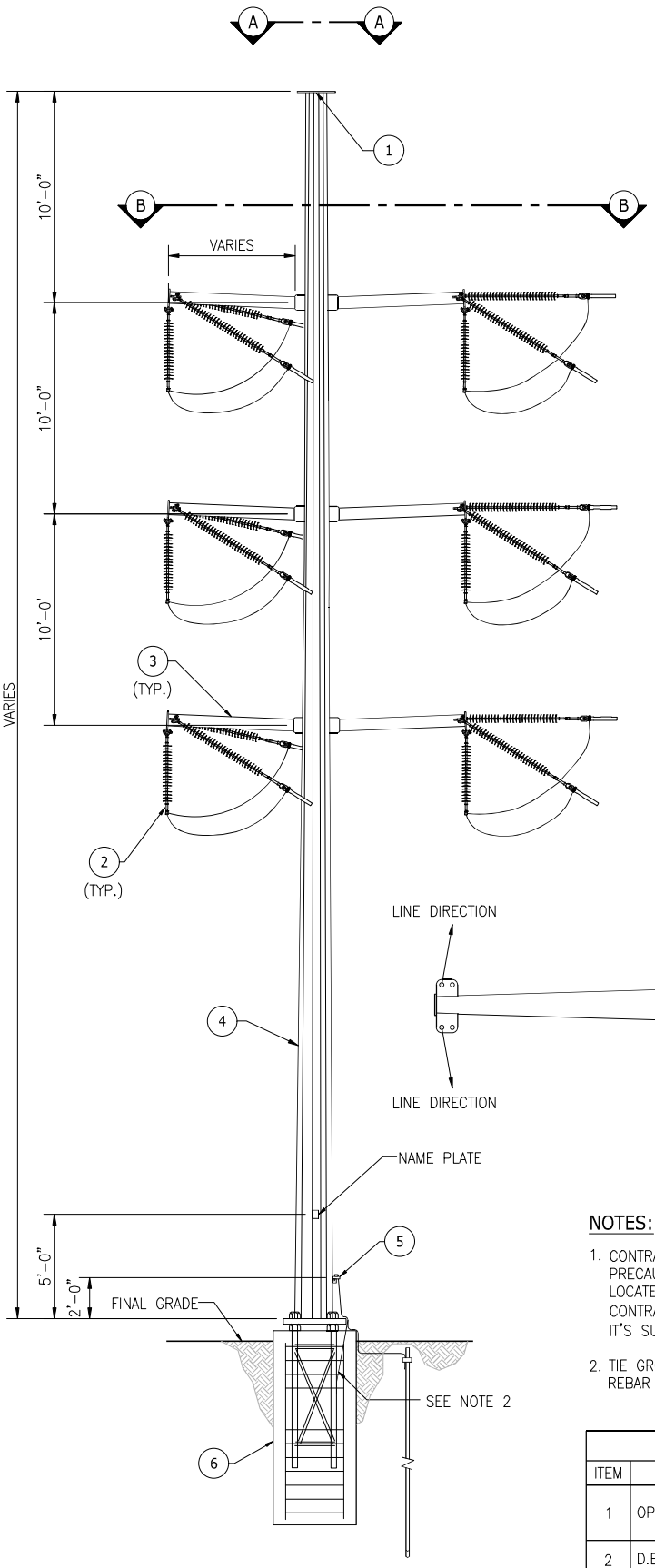
UniSourceEnergy Services

FRAMING, DOUBLE CIRCUIT

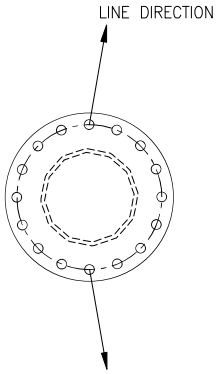
DEADEND OR DOUBLE DEADEND ON ARMS, 46/69/138kV TRANSMISSION STANDARD

INITIATED	KV
EFFECTIVE DATE	6/16/21

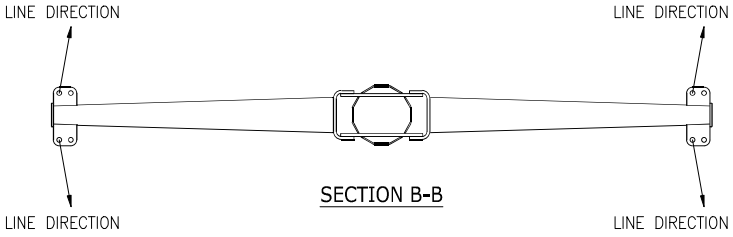
TL0325.001-R01



DE OR DDE ON ARMS, DOUBLE CIRCUIT 46/69/138kV W/OUT DIST.



SECTION A-A



SECTION B-B

NOTES:

1. CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S/INSTALLER'S PERSONNEL (OR THAT OF IT'S SUBCONTRACTOR(S) PERFORMING THE WORK).
2. TIE GROUNDING ASSEMBLY TO REINFORCING REBAR CAGE OF FOUNDATION.

REFERENCE DRAWINGS			
ITEM	DESCRIPTION	QTY.	ASSEMBLY DRAWINGS
1	OPGW/STATIC DDE ASSEMBLY	1	TL0504.004 (96 OPGW) TL0504.006 (3/8" EHS)
2	D.E. INSULATOR ASSEMBLY	6	TL0501.005 TL0501.006
3	TUBULAR DAVIT ARM	6	SEE CTE
4	STEEL POLE	1	SEE CTE
5	GROUND ASSEMBLY	1	TL0500.001
6	FOUNDATION	1	TL0700.003 TL0700.004

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit G-2

This page intentionally left blank

Tucson Electric Power

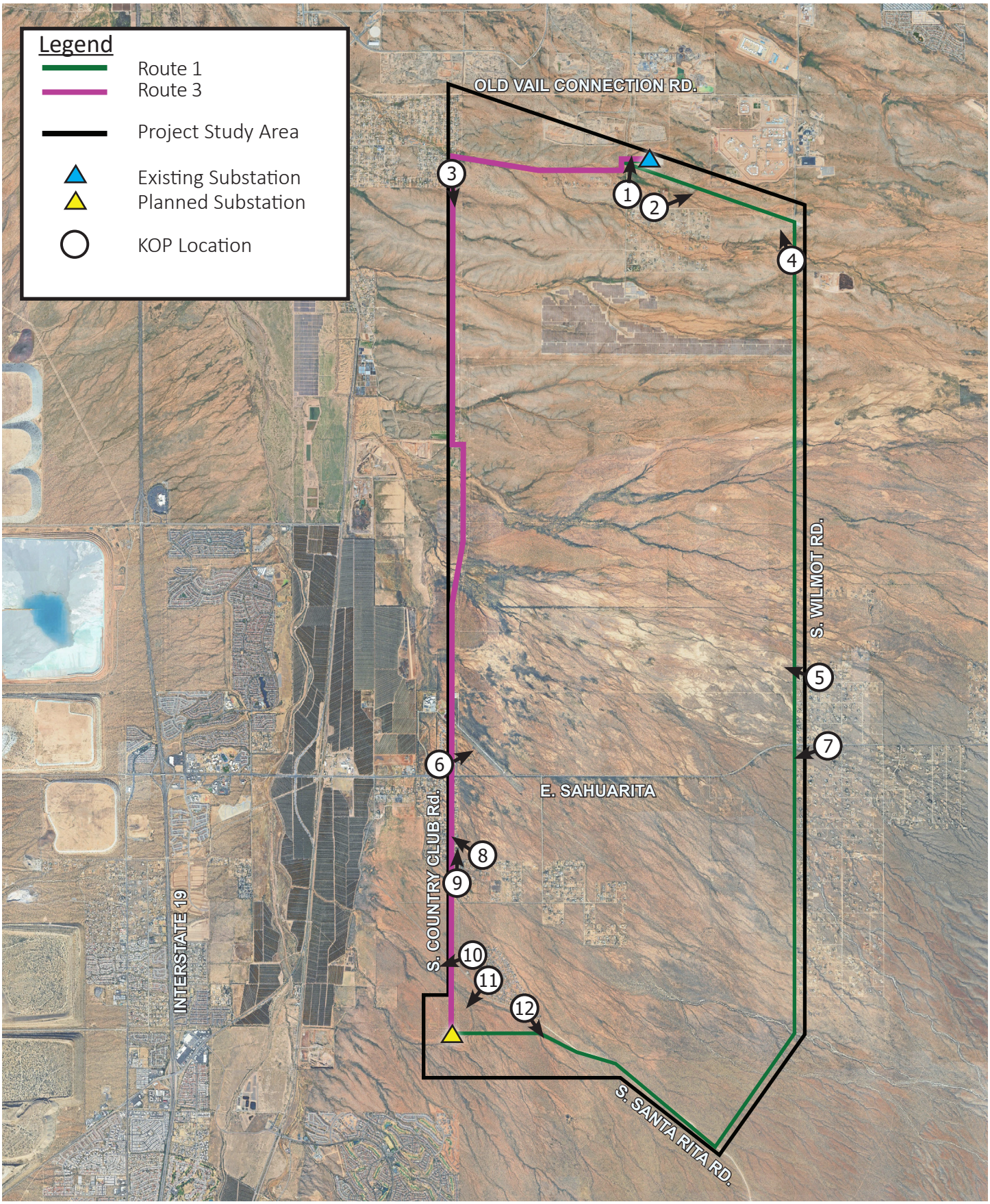
Santa Rita Connection

Visual Simulation Package

Prepared By:
Jeremy Palmer | Sole Proprietor

April 7th, 2026

Santa Rita Connection Project
Key Observation Point (KOP) - Key Map



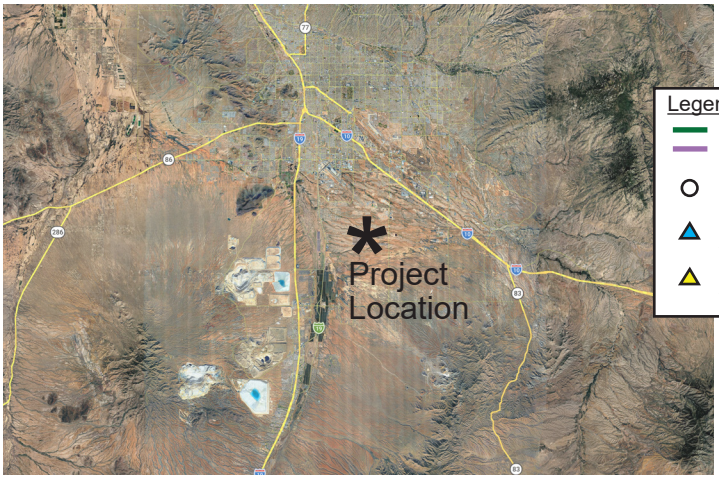
north

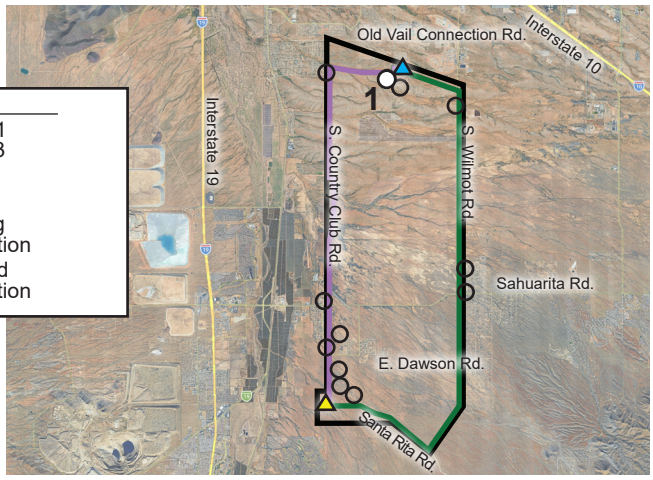
scale: 0

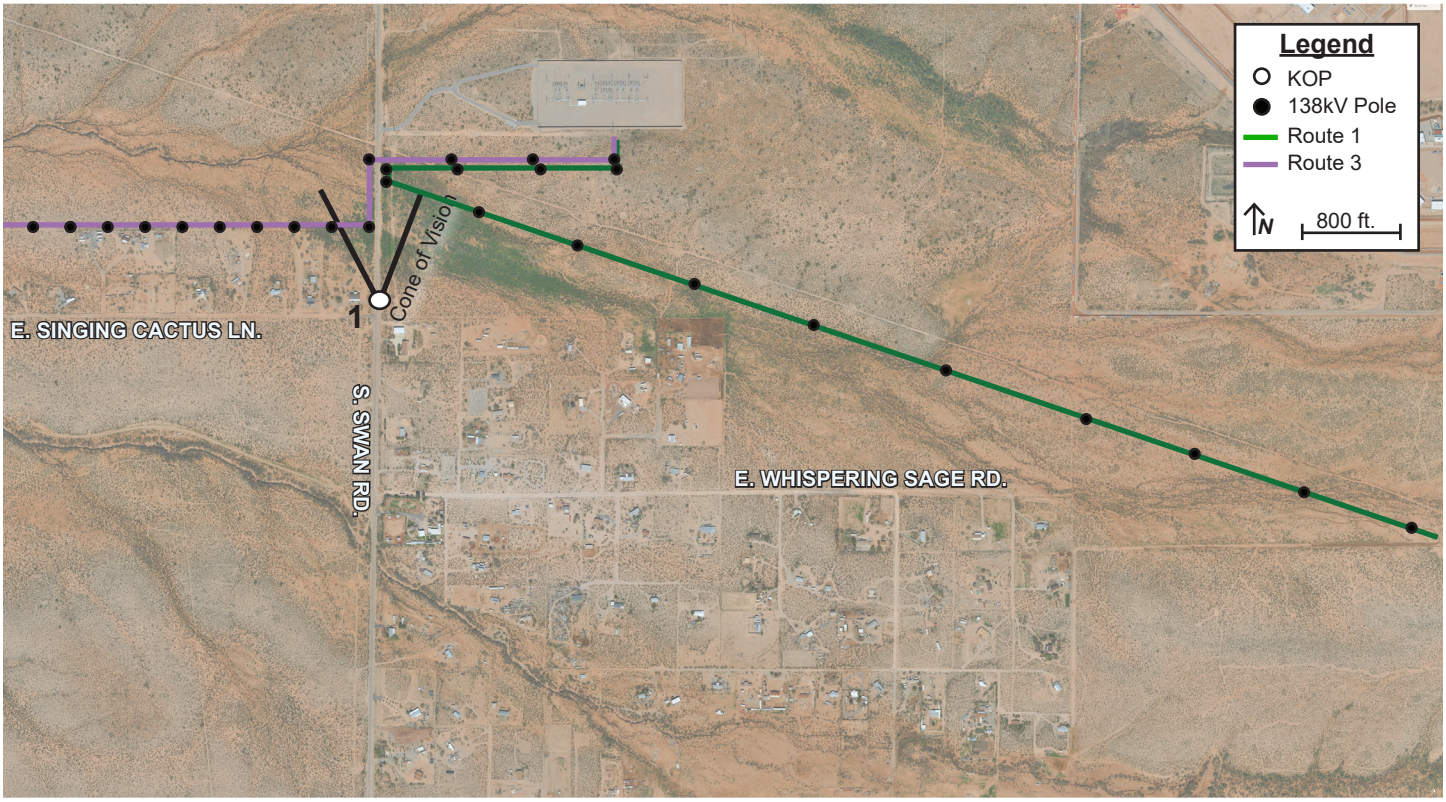
Tucson Electric Power

Santa Rita Connection Project

Key Observation Point (KOP) # 1







Notes:

Camera Information

- Type: Canon EOS RP
- Sensor: CMOS (Full-Frame) 35.9mm x 24mm
- Lens: Canon RF 24-105mm f/4-7.1 IS STM
- Focal Length: 50mm | F-Stop: f/6.3 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: residents
- Location: 10785 S. Swan Rd.
- Latitude: 32° 3'35.01"N; Longitude:110°53'34.77"W
- View Point Elevation at Eye Level: 2,737 ft.
- Looking: north
- Structures Visible: poles/lines
- Image File Name: IMG_6002.JPG

Simulation Notes

- Photo Taken: March 14th, 2026 at 11:39 am
- The image is based on a single photo and represent approximately 39.5 degree horizontal field of view.
- This view is approximately 521 feet south of the nearest pole represented in the simulation.
- The simulation is based on the best information available and is preliminary. Final alignment and structure locations are subject to change based on final engineering and other factors.

Key Observation Point (KOP) #1



Simulated Baseline Condition



Simulated Condition

Route 1
364

Key Observation Point (KOP) #1



Simulated Baseline Condition

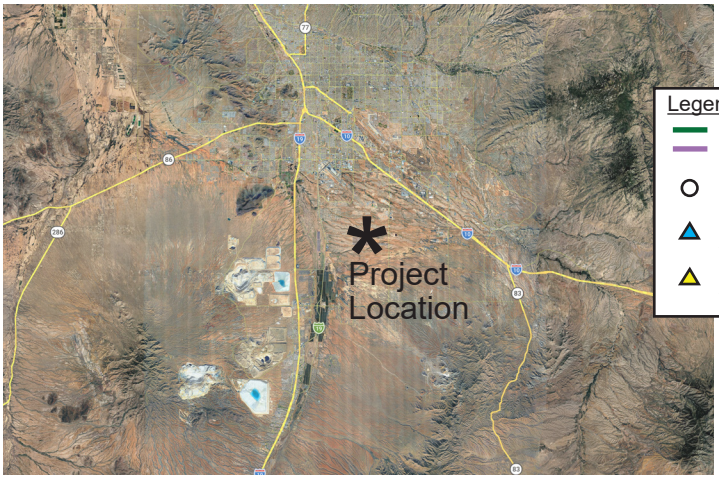


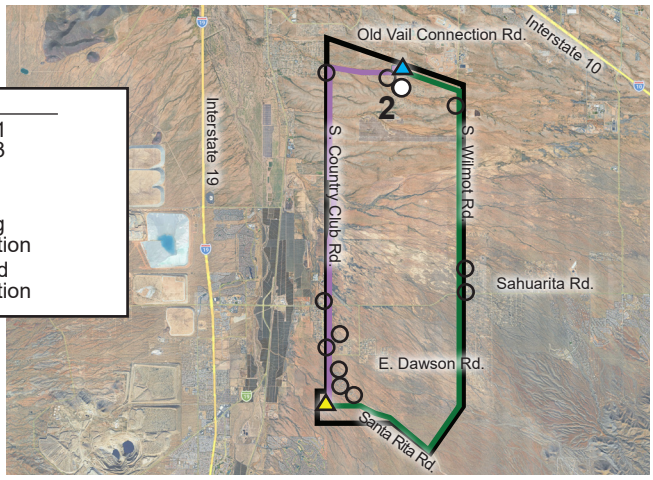
Simulated Condition

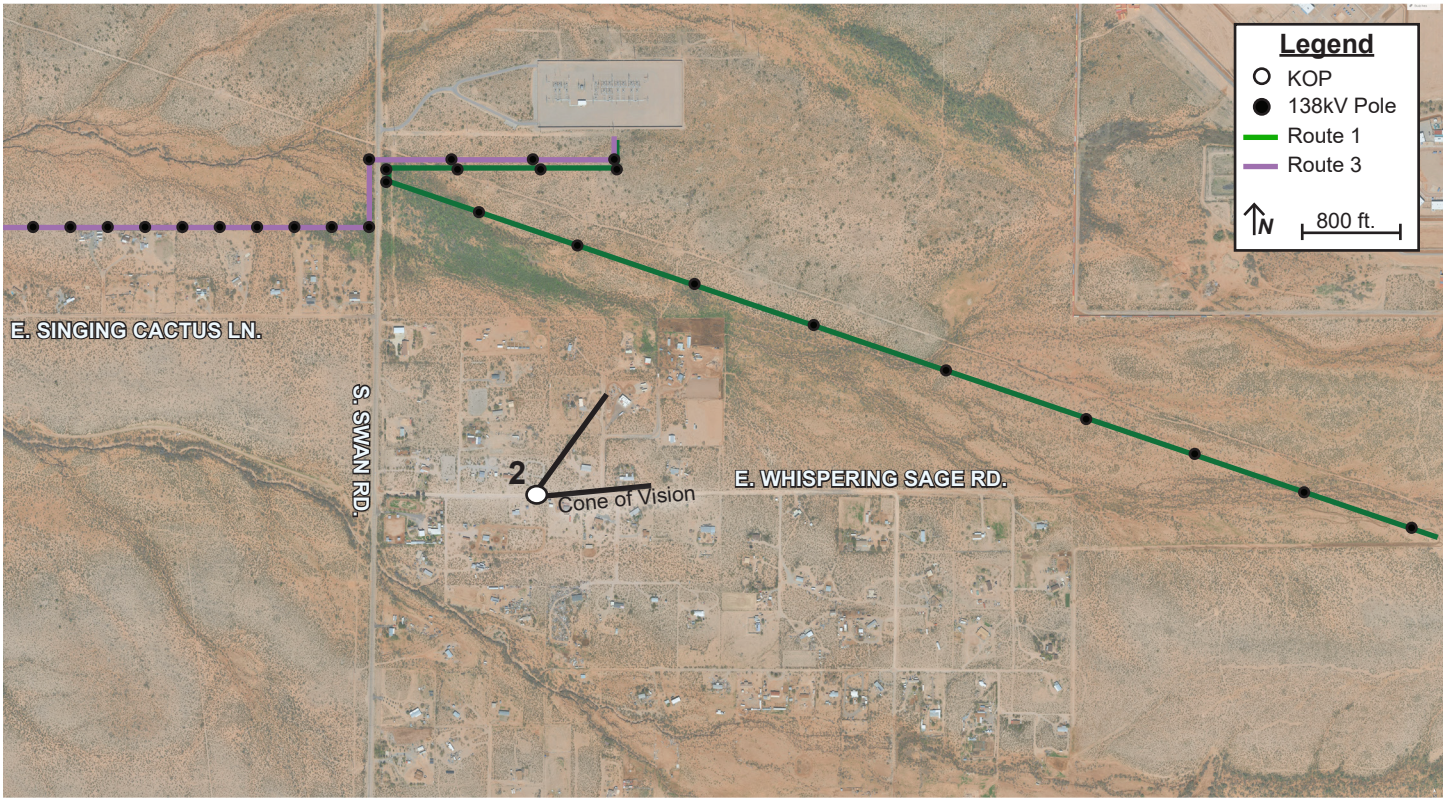
Tucson Electric Power

Santa Rita Connection Project

Key Observation Point (KOP) # 2







Notes:

Camera Information

- Type: Pentax K-30
- Sensor: APS-C 23.7mm x 15.7mm
- Lens: Pentax DA L 18-55mm
- Focal Length: 27mm | F-Stop: f/11 | ISO:100
- Dimensions in pixel: 4928 x 3264

KOP

- Representative View for: residents
- Location: 4850 E. Whispering Sage Rd.
- Latitude: 32° 3’21.03”N; Longitude:110°53’20.82”W
- View Point Elevation at Eye Level: 2,767 ft.
- Looking: northeast
- Structures Visible: poles/lines
- Image File Name: IMG9735.JPG

Simulation Notes

- Photo Taken: July 6th, 2018 at 9:41 am
- The image is based on a single photo and represent approximately 73.7 degree horizontal field of view.
- This view is approximately 2,153 feet southwest of the nearest pole represented in the simulation.
- The simulation is based on the best information available and is preliminary. Final alignment and structure locations are subject to change based on final engineering and other factors.

Key Observation Point (KOP) #2



Simulated Baseline Condition

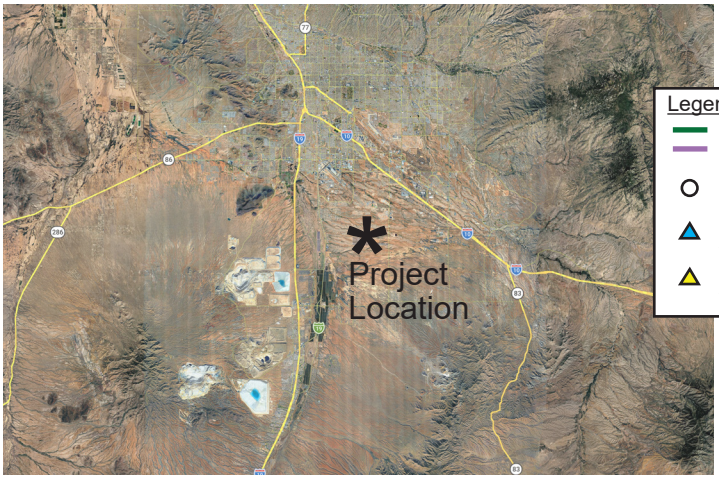


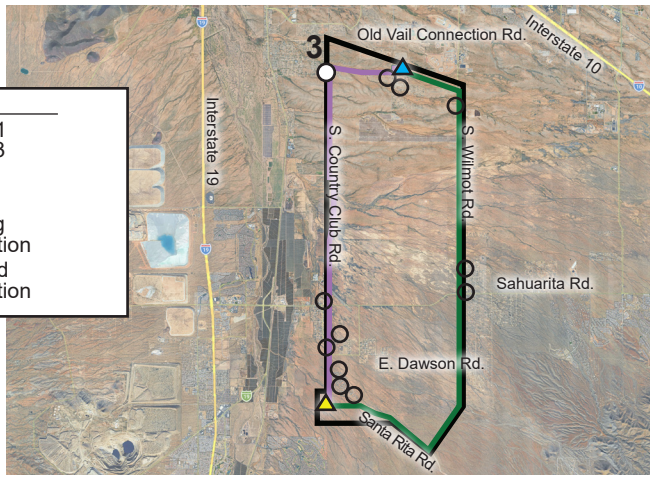
Simulated Condition

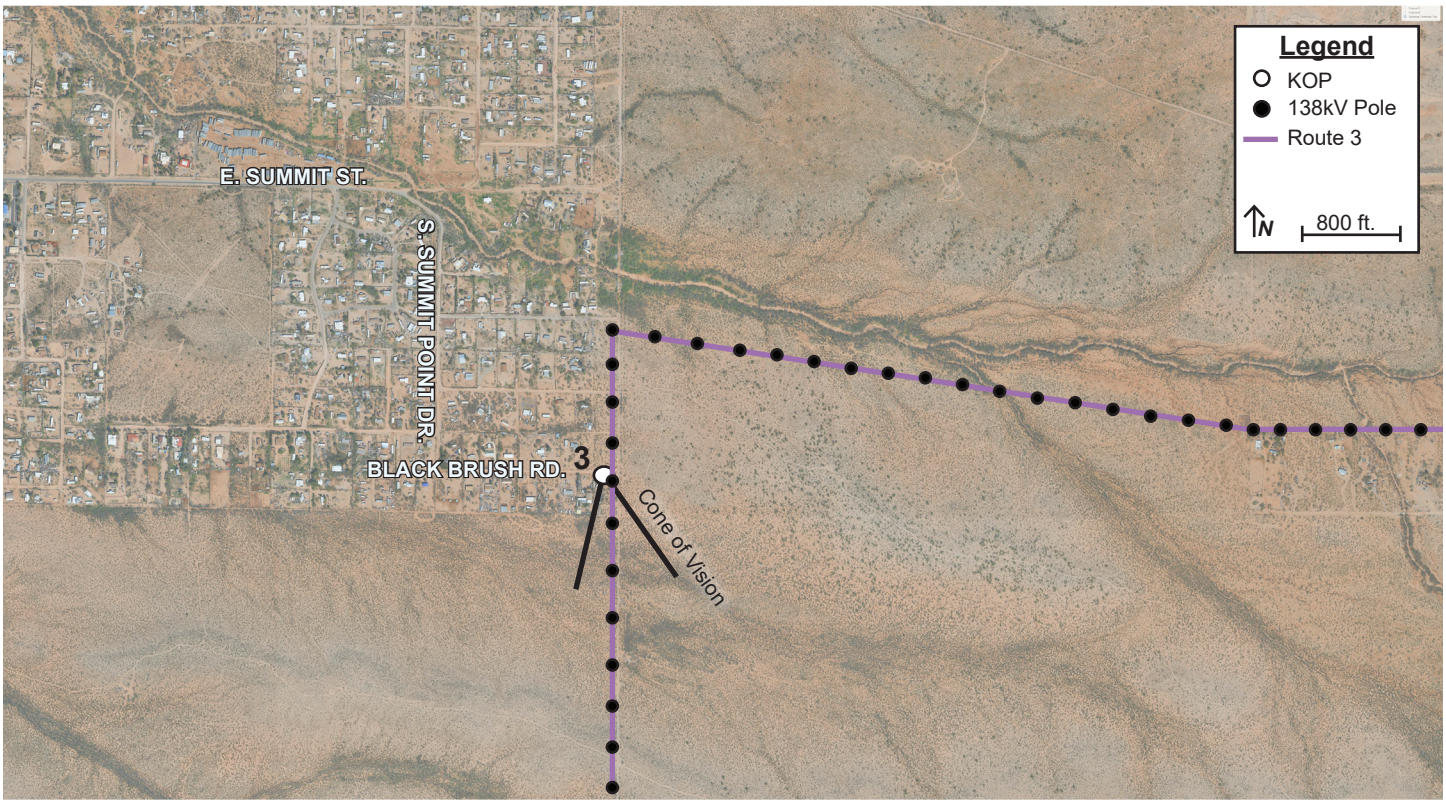
Tucson Electric Power

Santa Rita Connection Project

Key Observation Point (KOP) # 3







Notes:

Camera Information

- Type: Canon EOS RP
- Sensor: CMOS (Full-Frame) 35.9mm x 24mm
- Lens: Canon RF 24-105mm f/4-7.1 IS STM
- Focal Length: 24mm | F-Stop: f/9 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: residential
- Location: 3010 Black Brush Rd.
- Latitude: 32° 3’37.53”N; Longitude: 110°55’37.47”W
- View Point Elevation at Eye Level: 2,666 ft.
- Looking: south
- Poles Visible: structures
- Image File Name: IMG_6095.JPG

Simulation Notes

- Photo Taken: March 14th, 2026 at 12:19pm
- The image is based on a single photo and represent approximately 39.5 degree horizontal field of view.
- This view is approximately 444 feet north of the nearest pole represented in the simulation.
- The simulation is based on the best information available and is preliminary. Final alignment and structure locations are subject to change based on final engineering and other factors.

Key Observation Point (KOP) #3



Current Condition



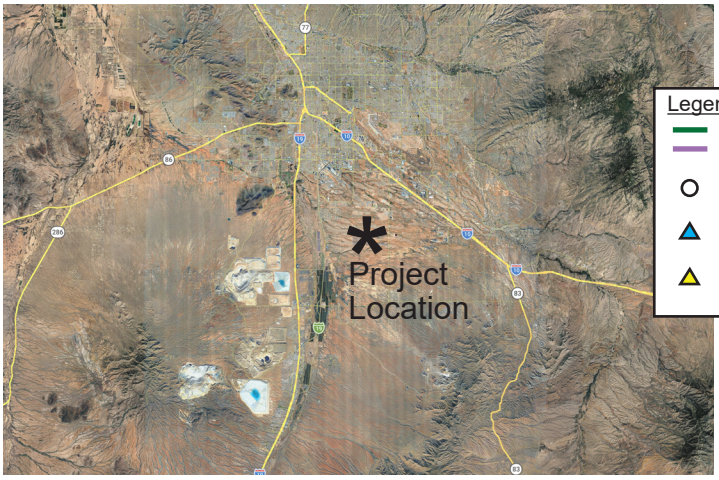
Simulated Condition

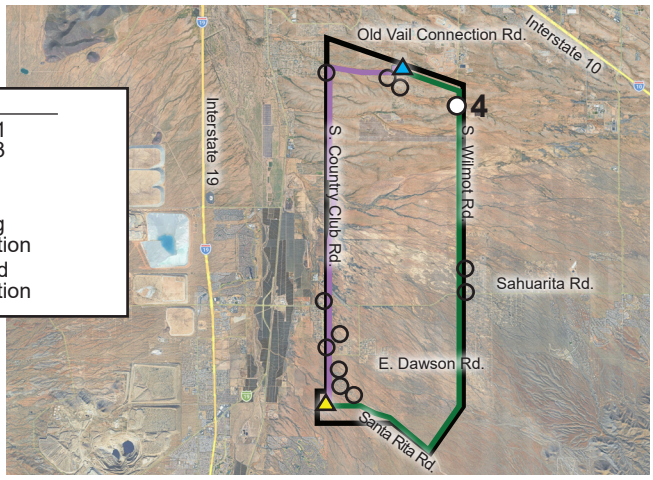
Route 3
369

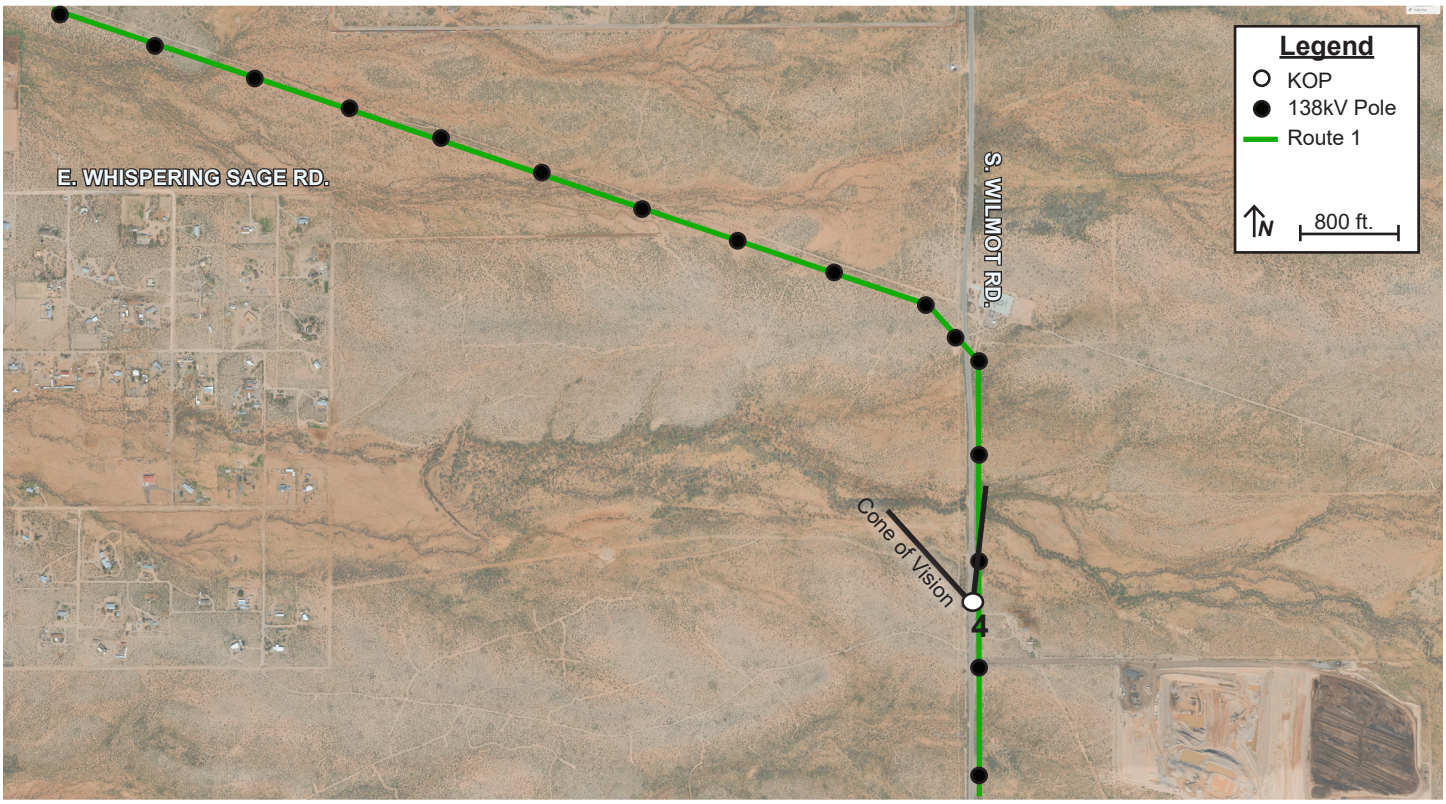
Tucson Electric Power

Santa Rita Connection Project

Key Observation Point (KOP) # 4







Notes:

Camera Information

- Type: Canon EOS RP
- Sensor: CMOS (Full-Frame) 35.9mm x 24mm
- Lens: Canon RF 24-105mm f/4-7.1 IS STM
- Focal Length: 50mm | F-Stop: f/10 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: residential, commercial traffic
- Location: 11460 S. Wilmot Rd.
- Latitude: 32° 2'46.48"N; Longitude:110°51'31.31"W
- View Point Elevation at Eye Level: 2,839 ft.
- Looking: northwest
- Poles Visible: Alternative 1 structures
- Image File Name: IMG_5782.JPG

Simulation Notes

- Photo Taken: October 4th, 2025 at 2:40 pm
- The image is based on a single photo and represent approximately 39.5 degree horizontal field of view.
- This view is appoximately 375 feet south of the nearest pole represented in the simulation.
- The simulation is based on the best information available and is preliminary. Final alignment and structure locations are subject to change based on final engineering and other factors.

Key Observation Point (KOP) #4



Simulated Baseline Condition

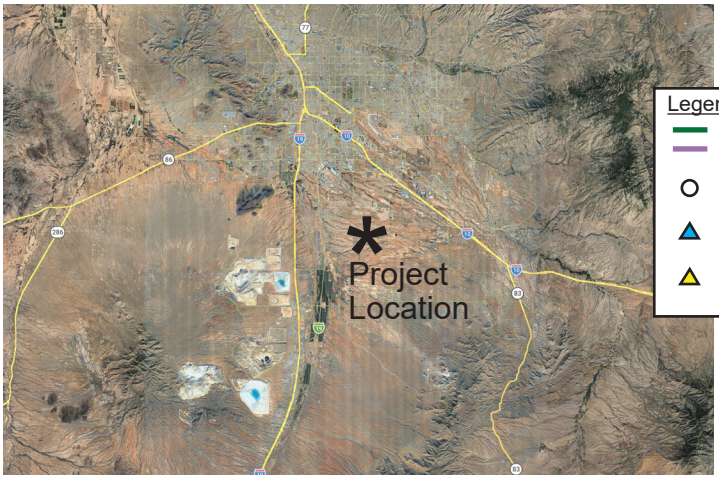


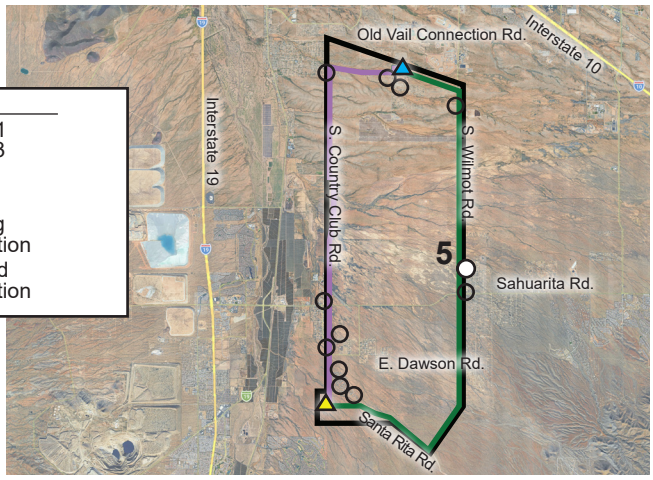
Simulated Condition

Tucson Electric Power

Santa Rita Connection Project

Key Observation Point (KOP) # 5







Notes:

Camera Information

- Type: Canon EOS RP
- Sensor: CMOS (Full-Frame) 35.9mm x 24mm
- Lens: Canon RF 24-105mm f/4-7.1 IS STM
- Focal Length: 50mm | F-Stop: f/9 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: residential traffic
- Location: E. 6420 Noyes Rd.
- Latitude: 31°58'26.28"N; Longitude:110°51'15.09"W
- View Point Elevation at Eye Level: 2,891 ft.
- Looking: northwest
- Poles Visible: Alternative 1 structures
- Image File Name: IMG_5744.JPG

Simulation Notes

- Photo Taken: October 4th, 2025 at 2:26 pm
- The image is based on a single photo and represent approximately 39.5 degree horizontal field of view.
- This view is appoximately 1,344 feet northeast of the nearest pole represented in the simulation.
- The simulation is based on the best information available and is preliminary. Final alignment and structure locations are subject to change based on final engineering and other factors.

Key Observation Point (KOP) #5



Current Condition

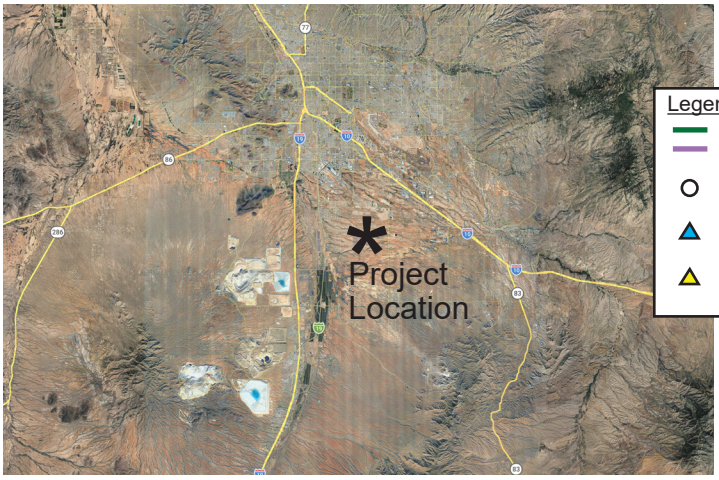


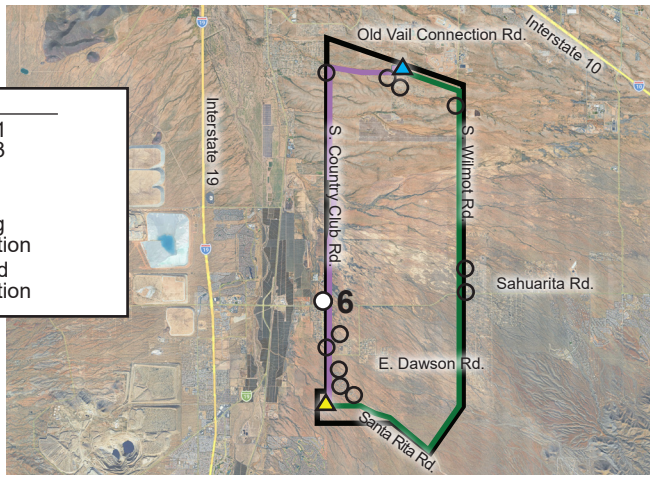
Simulated Condition

Tucson Electric Power

Santa Rita Connection Project

Key Observation Point (KOP) # 6







Notes:

Camera Information

- Type: Canon EOS RP
- Sensor: CMOS (Full-Frame) 35.9mm x 24mm
- Lens: Canon RF 24-105mm f/4-7.1 IS STM
- Focal Length: 24mm | F-Stop: f/9 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: residential traffic
- Location: 3007 E. Italian Fox Pl.
- Latitude: 31°57'35.06"N; Longitude:110°55'43.67"W
- View Point Elevation at Eye Level: 2,731 ft.
- Looking: northeast
- Poles Visible: structures
- Image File Name: IMG_5386.JPG

Simulation Notes

- Photo Taken: October 4th, 2025 at 12:16 pm
- The image is based on a single photo and represent approximately 73.7 degree horizontal field of view.
- This view is appoximately 630 feet southwest of the nearest pole represented in the simulation.
- The simulation is based on the best information available and is preliminary. Final alignment and structure locations are subject to change based on final engineering and other factors.

Key Observation Point (KOP) #6



Current Condition

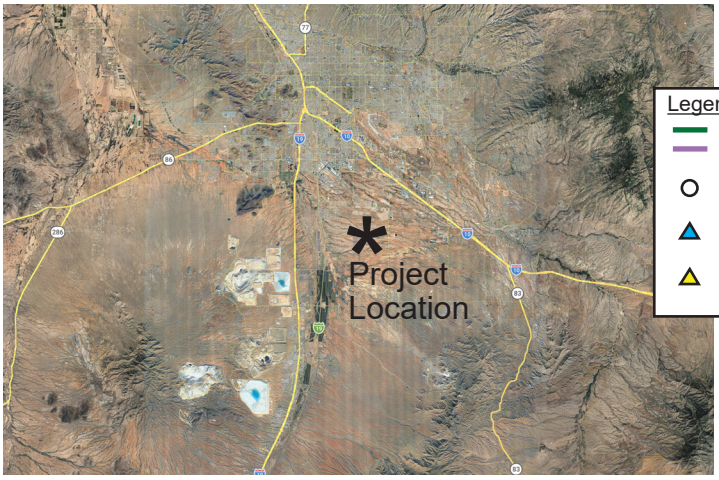


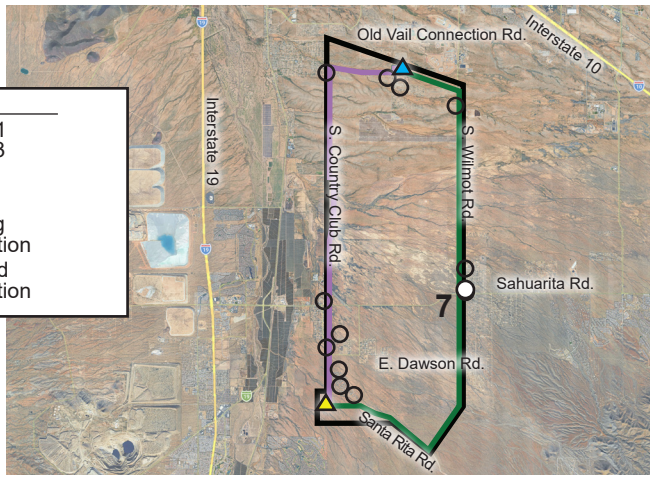
Simulated Condition

Tucson Electric Power

Santa Rita Connection Project

Key Observation Point (KOP) # 7







Notes:

Camera Information

- Type: Canon EOS RP
- Sensor: CMOS (Full-Frame) 35.9mm x 24mm
- Lens: Canon RF 24-105mm f/4-7.1 IS STM
- Focal Length: 50mm | F-Stop: f/9 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: residential traffic
- Location: 6698 Sahuarita Rd.
- Latitude: 31°57'47.62"N; Longitude:110°51'13.09"W
- View Point Elevation at Eye Level: 2,923 ft.
- Looking: west
- Poles Visible: structures
- Image File Name: IMG_5637.JPG

Simulation Notes

- Photo Taken: October 4th, 2025 at 2:04 pm
- The image is based on a single photo and represent approximately 39.5 degree horizontal field of view.
- This view is appoximately 1,516 feet east of the nearest pole represented in the simulation.
- The simulation is based on the best information available and is preliminary. Final alignment and structure locations are subject to change based on final engineering and other factors.

Key Observation Point (KOP) #7



Current Condition



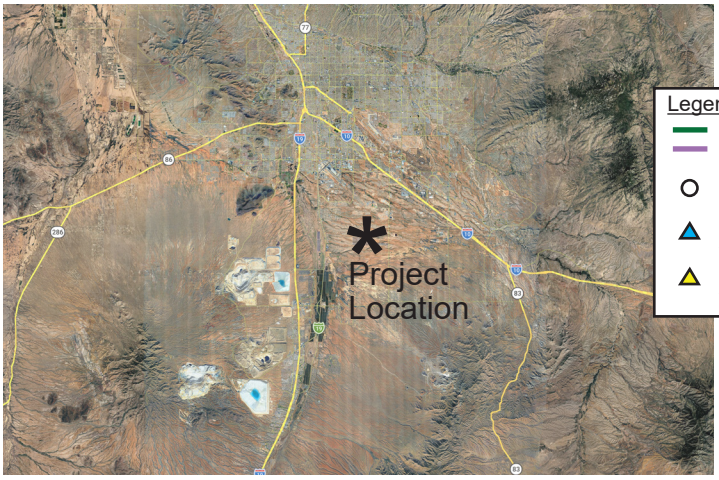
Simulated Condition

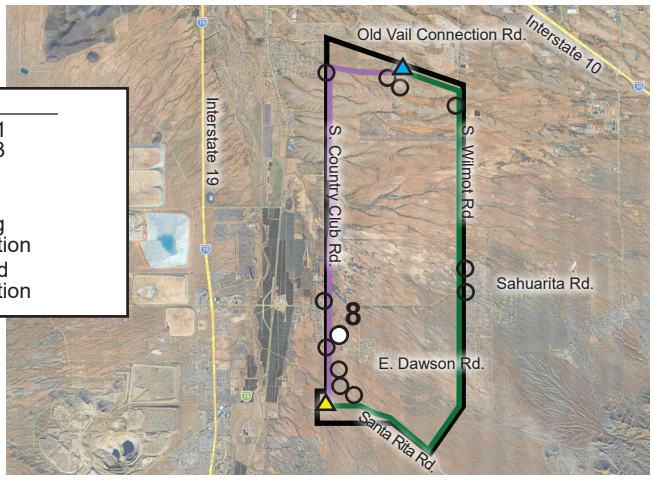
Route 1
377

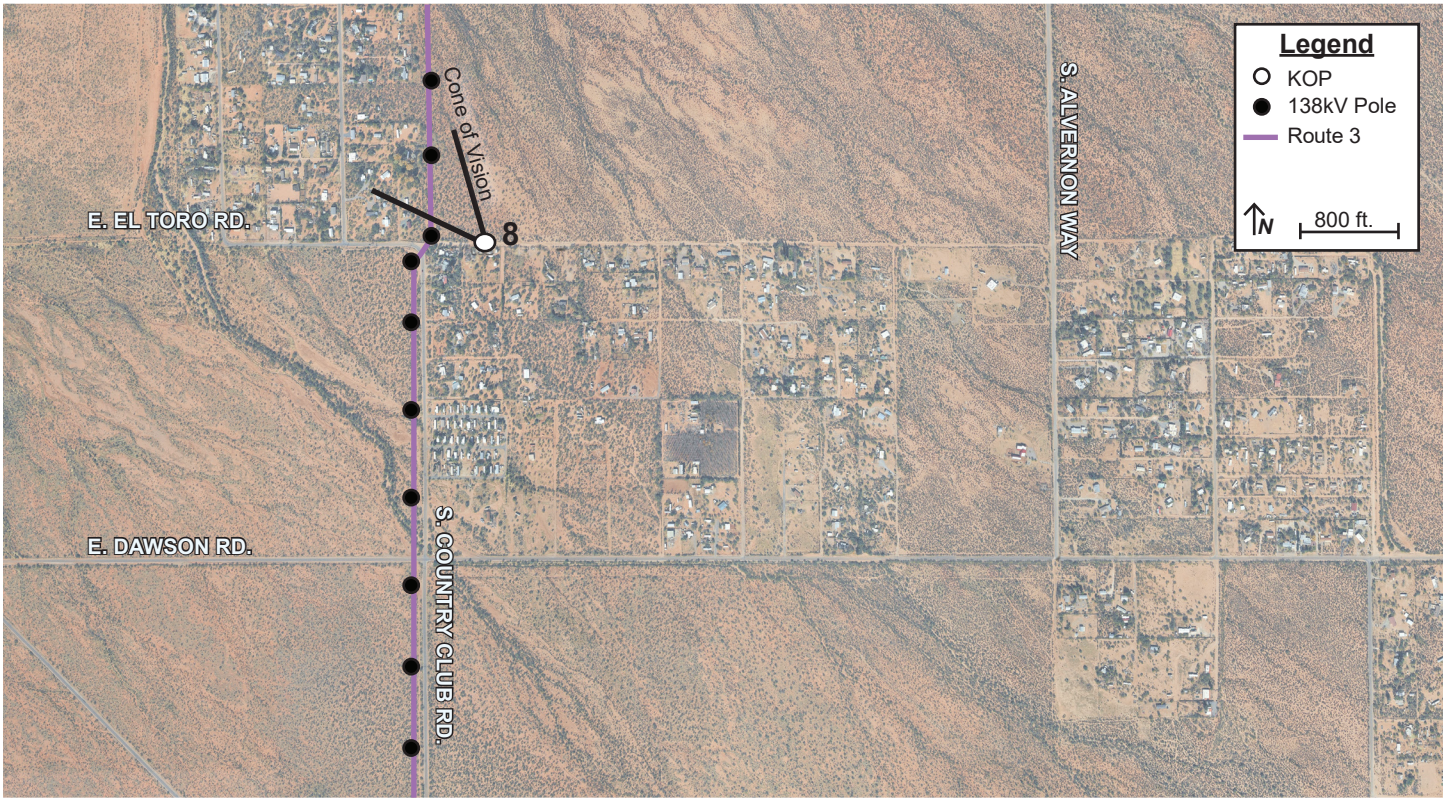
Tucson Electric Power

Santa Rita Connection Project

Key Observation Point (KOP) # 8







Notes:

Camera Information

- Type: Canon EOS RP
- Sensor: CMOS (Full-Frame) 35.9mm x 24mm
- Lens: Canon RF 24-105mm f/4-7.1 IS STM
- Focal Length: 24mm | F-Stop: f/10 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: residential traffic
- Location: 3130 E. El Toro Rd.
- Latitude: 31°56'34.76"N; Longitude: 110°55'33.54"W
- View Point Elevation at Eye Level: 2,782 ft.
- Looking: northwest
- Poles Visible: structures
- Image File Name: IMG_6104.JPG

Simulation Notes

- Photo Taken: March 14th, 2026 at 1:16 pm
- The image is based on a single photo and represent approximately 73.7 degree horizontal field of view.
- This view is appoximately 309 feet east of the nearest pole represented in the simulation.
- The simulation is based on the best information available and is preliminary. Final alignment and structure locations are subject to change based on final engineering and other factors.

Key Observation Point (KOP) #8



Current Condition

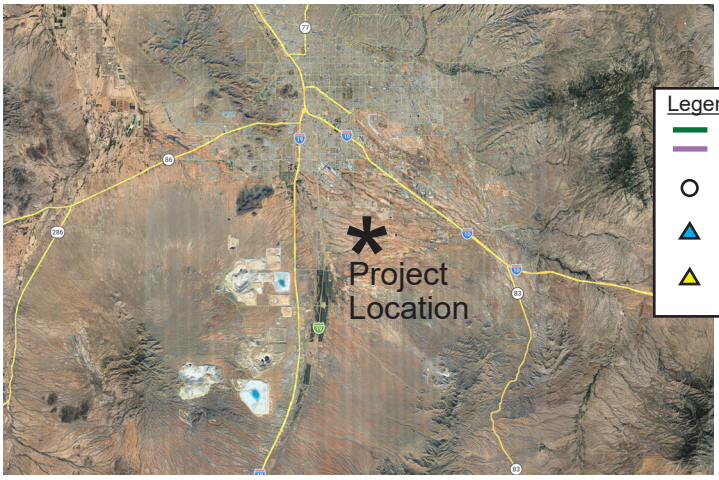


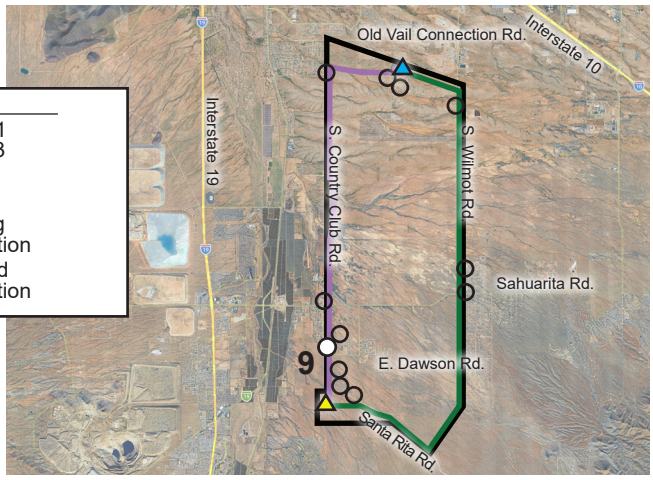
Simulated Condition

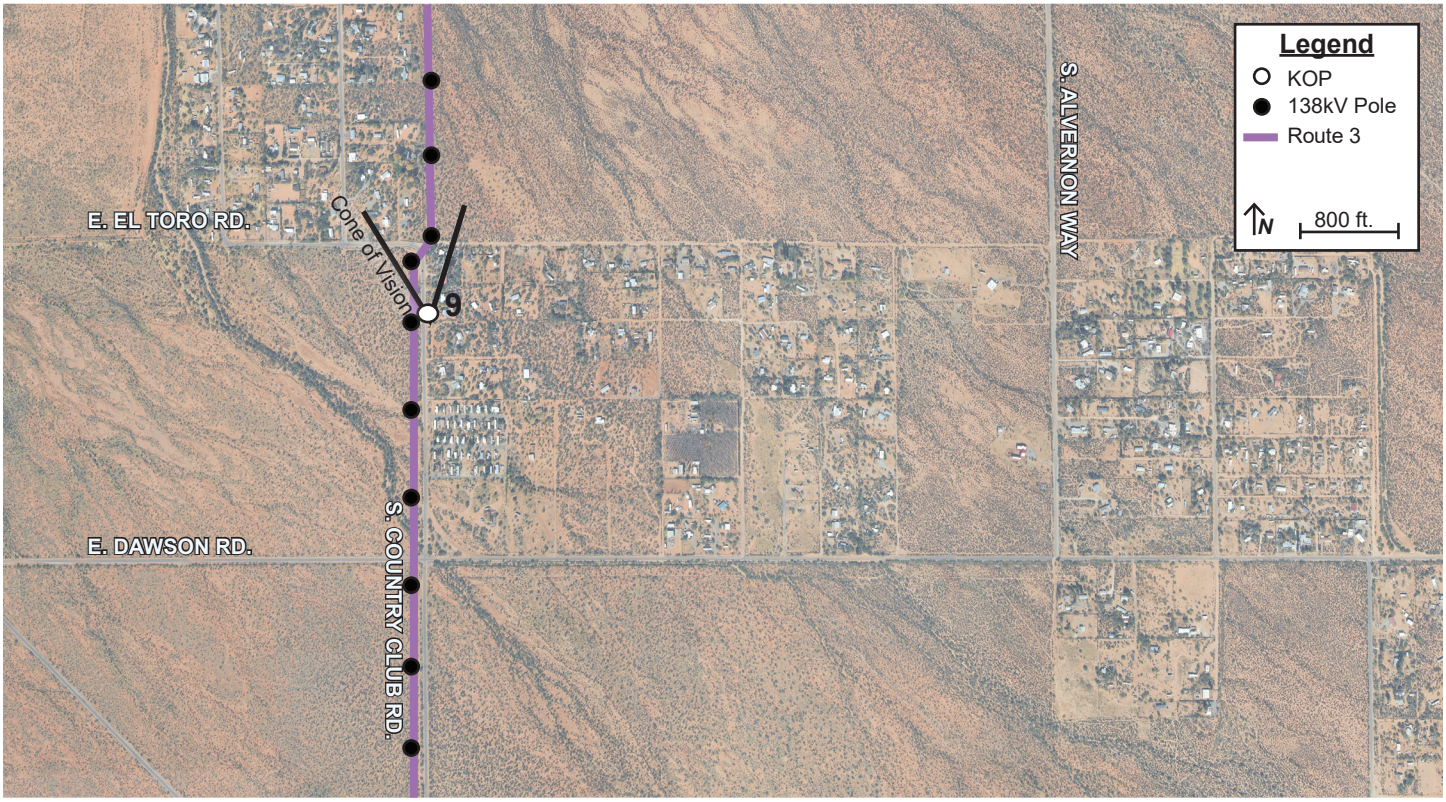
Tucson Electric Power

Santa Rita Connection Project

Key Observation Point (KOP) # 9







Notes:

Camera Information

- Type: Canon EOS RP
- Sensor: CMOS (Full-Frame) 35.9mm x 24mm
- Lens: Canon RF 24-105mm f/4-7.1 IS STM
- Focal Length: 24mm | F-Stop: f/10 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: residential traffic
- Location: 16995 S Country Club Rd.
- Latitude:31°56'28.42"N; Longitude:110°55'38.30"W
- View Point Elevation at Eye Level: 2,789 ft.
- Looking: northwest
- Poles Visible: structures
- Image File Name: IMG_6141.JPG

Simulation Notes

- Photo Taken: March 14th, 2026 at 1:24 pm
- The image is based on a single photo and represent approximately 73.7 degree horizontal field of view.
- This view is appoximately 207 feet south of the nearest pole represented in the simulation.
- The simulation is based on the best information available and is preliminary. Final alignment and structure locations are subject to change based on final engineering and other factors.

Key Observation Point (KOP) #9



Current Condition

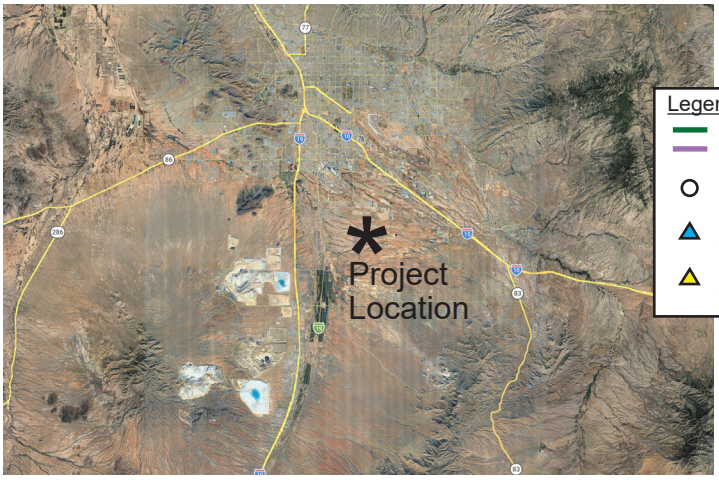


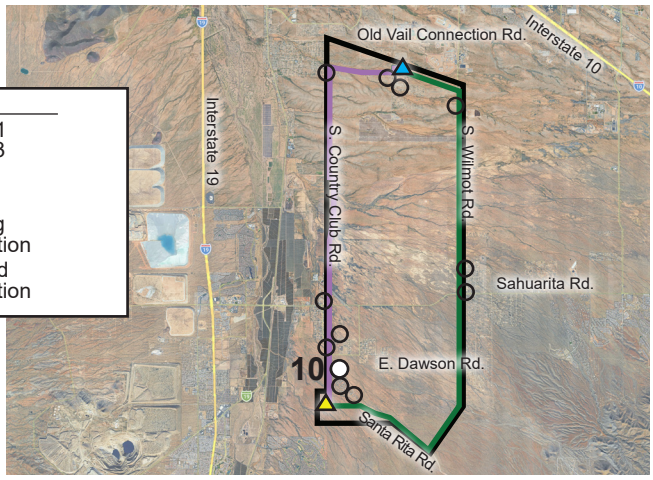
Simulated Condition

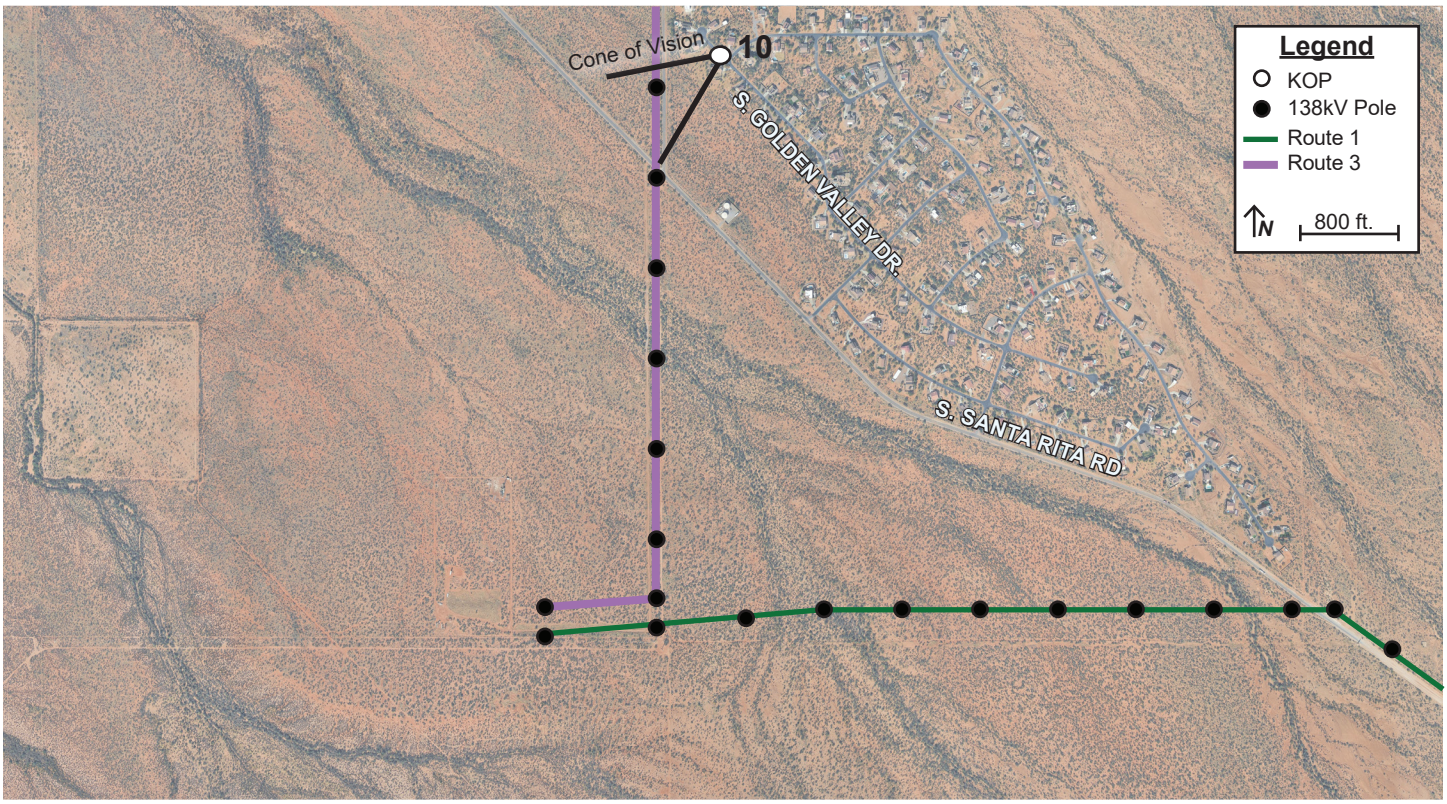
Tucson Electric Power

Santa Rita Connection Project

Key Observation Point (KOP) # 10







Notes:

Camera Information

- Type: Canon EOS RP
- Sensor: CMOS (Full-Frame) 35.9mm x 24mm
- Lens: Canon RF 24-105mm f/4-7.1 IS STM
- Focal Length: 35mm | F-Stop: f/10 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: residential traffic
- Location: 17768 S Golden Valley Dr
- Latitude:31°55'38.15"N; Longitude:110°55'32.93"W
- View Point Elevation at Eye Level: 2,812 ft.
- Looking: southwest
- Poles Visible: structures
- Image File Name: IMG_6221.JPG

Simulation Notes

- Photo Taken: March 14th, 2026 at 1:41 pm
- The image is based on a single photo and represent approximately 54 degree horizontal field of view.
- This view is appoximately 611 feet northeast of the nearest pole represented in the simulation.
- The simulation is based on the best information available and is preliminary. Final alignment and structure locations are subject to change based on final engineering and other factors.

Key Observation Point (KOP) #10



Current Condition

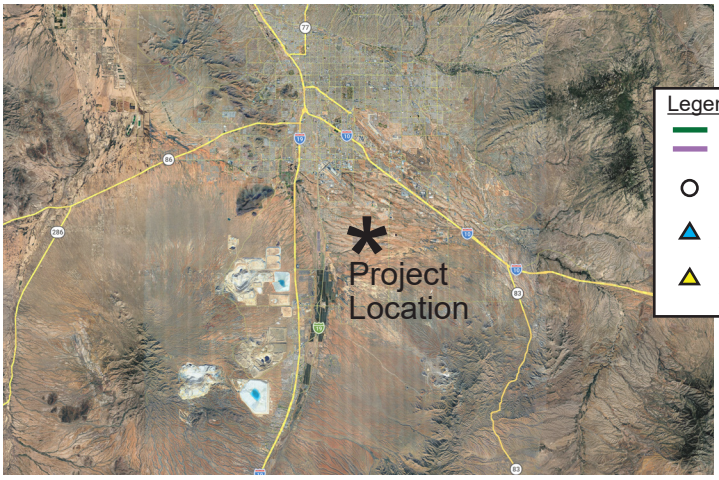


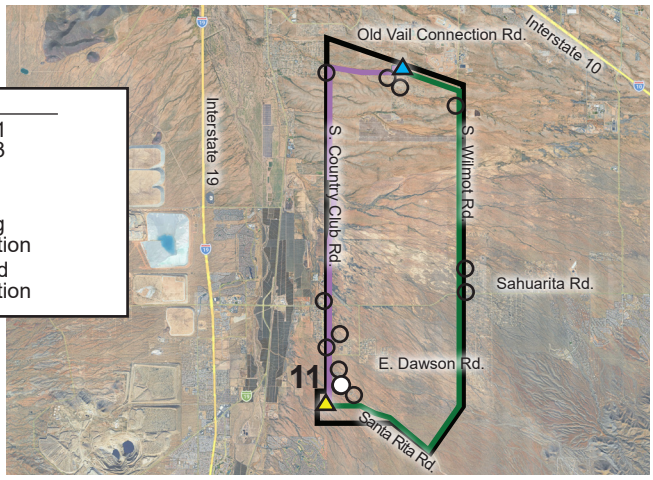
Simulated Condition

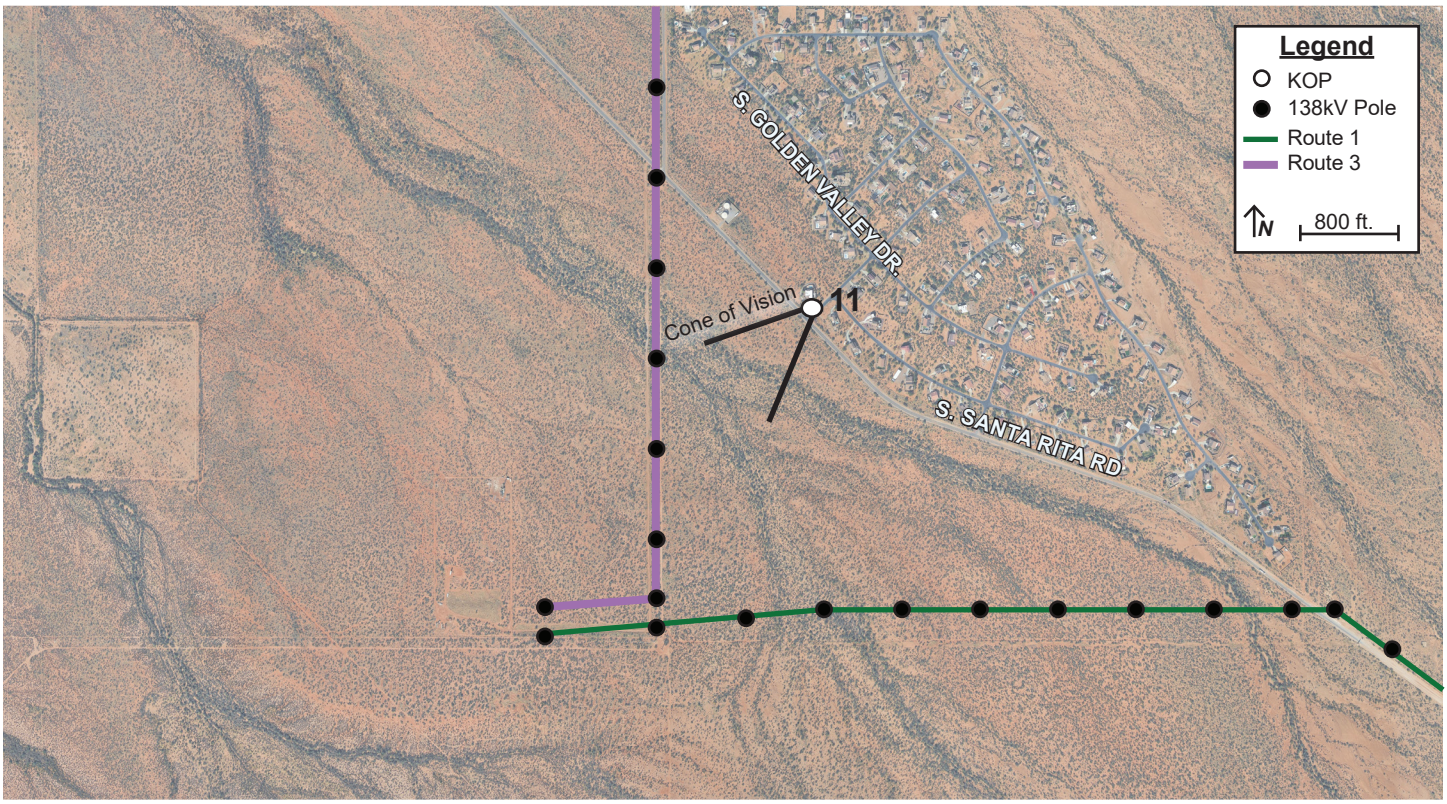
Tucson Electric Power

Santa Rita Connection Project

Key Observation Point (KOP) # 11







Notes:

Camera Information

- Type: Canon EOS RP
- Sensor: CMOS (Full-Frame) 35.9mm x 24mm
- Lens: Canon RF 24-105mm f/4-7.1 IS STM
- Focal Length: 50mm | F-Stop: f/10 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: residential traffic
- Location: E. Broadwater Dr. (entry to neighborhood)
- Latitude:31°55'15.74"N; Longitude:110°55'23.95"W
- View Point Elevation at Eye Level: 2,832 ft.
- Looking: southwest
- Poles Visible: structures
- Image File Name: IMG_6201.JPG

Simulation Notes

- Photo Taken: March 14th, 2026 at 1:37 pm
- The image is based on a single photo and represent approximately 39.5 degree horizontal field of view.
- This view is appoximately 2,030 feet northeast of the nearest pole represented in the simulation.
- The simulation is based on the best information available and is preliminary. Final alignment and structure locations are subject to change based on final engineering and other factors.

Key Observation Point (KOP) #11



Current Condition



Simulated Condition

Key Observation Point (KOP) #11



Current Condition

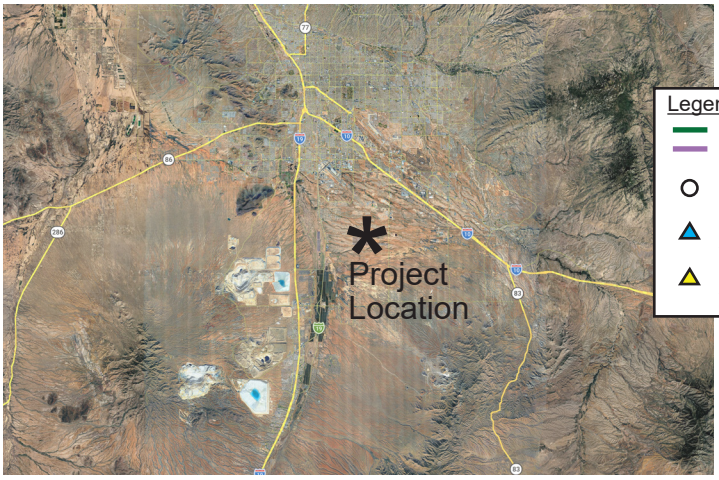


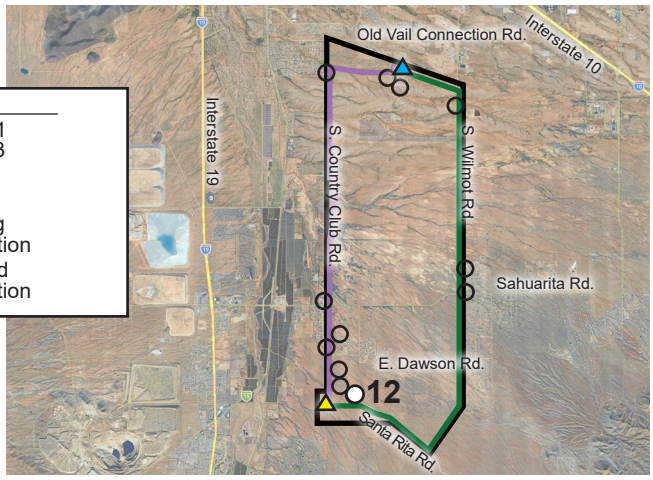
Simulated Condition

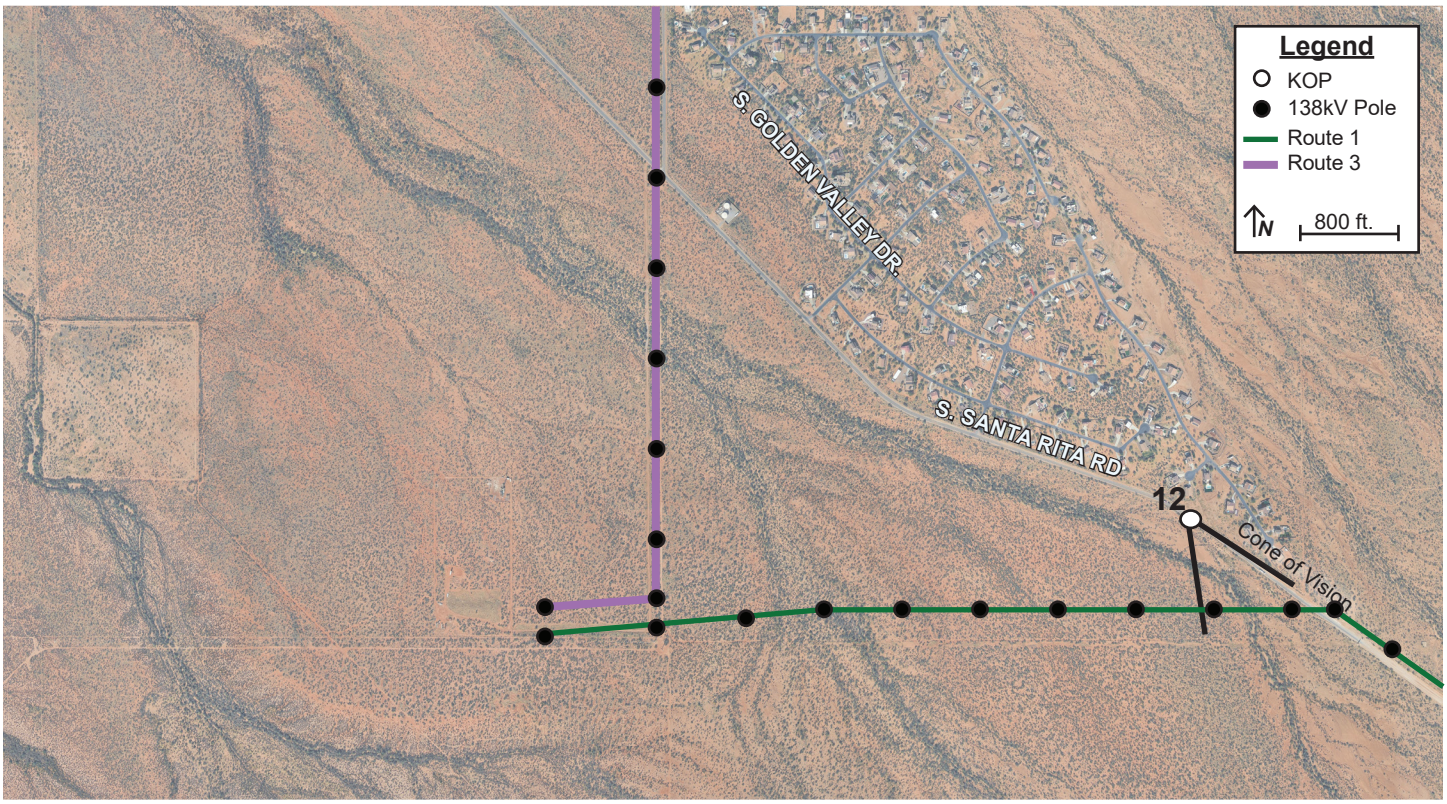
Tucson Electric Power

Santa Rita Connection Project

Key Observation Point (KOP) # 12







Notes:

Camera Information

- Type: Canon EOS RP
- Sensor: CMOS (Full-Frame) 35.9mm x 24mm
- Lens: Canon RF 24-105mm f/4-7.1 IS STM
- Focal Length: 50mm | F-Stop: f/10 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: residential and recreational traffic
- Location: S. Santa Rita Rd.
- Latitude:31°55'1.06"N; Longitude:110°54'51.13"W
- View Point Elevation at Eye Level: 2,865 ft.
- Looking: southeast
- Poles Visible:structures
- Image File Name: IMG_6180.JPG

Simulation Notes

- Photo Taken: March 14th, 2026 at 1:34 pm
- The image is based on a single photo and represent approximately 39.5 degree horizontal field of view.
- This view is appoximately 1,436 feet northwest of the nearest pole represented in the simulation.
- The simulation is based on the best information available and is preliminary. Final alignment and structure locations are subject to change based on final engineering and other factors.

Key Observation Point (KOP) #12



Current Condition



Simulated Condition

Route 1
388

EXHIBIT H

This page intentionally left blank

EXHIBIT H: EXISTING PLANS

As stated in Arizona Administrative Code R14-3-219 of the Rules of Practice and Procedure Before Power Plant and Transmission Line Siting Committee, Exhibits to Application, Exhibit H:

To the extent applicant is able to determine, state the existing plans of the state, local government, and private entities for other developments at or in the vicinity of the proposed site or route.

H.1 Introduction H-2
H.2 Land Ownership and Jurisdiction H-2
H.3 Local Government Plans and Land Use Ordinances H-2
H.3.1 Pima County Comprehensive Plan H-2
H.3.1.1 S-36 Sahuarita Southeast Conceptual Land Use Plan H-3
H.3.2 Pima County Zoning H-3
H.3.2.1 Pima County Buffer Overlay Zone H-3
H.3.3 Pima County Major Streets and Scenic Routes H-3
H.3.4 Pima County Sonoran Desert Conservation Plan H-4
H.3.5 City of Tucson Plans H-4
H.3.5.1 Major Streets and Routes Plan, 1982 ..... H-4
H.3.6 City of Tucson Zoning Code H-5
H.3.6.1 City of Tucson Airport Environs Overlay Zones H-5
H.3.7 Town of Sahuarita General Plan H-5
H.3.8 Town of Sahuarita Zoning H-5
H.4 State (including Agencies) Government Plans H-6
H.4.1 Santa Rita Experimental Range H-6
H.4.2 Arizona State Land H-6
H.5 Federal H-6
H.5.1 Military H-6
H.5.2 Federal Aviation Administration (“FAA”) H-6
H.5.3 US Army Corps of Engineers (“USACE”) H-7
H.5.3.1 Sahuarita Air Force Range H-7

H.5.3.2 Jurisdictional Washes H-7
H.6 Tribal H-7
H.7 Existing Land Use H-7
H.8 Proposed Land Uses and Developments H-8
H.9 Potential Effects H-8
H.10 Conclusion H-9
H.11 References H-9

H.1 Introduction

An analysis was conducted of the anticipated impacts of the Project on local government general and specific plans and zoning ordinances, and any known development plans in the Study Area. Existing land use for the Project is mapped in Exhibit H-1. The Study Area is within unincorporated Pima County, the COT, and the Town of Sahuarita, Arizona.

H.2 Land Ownership and Jurisdiction

The following review describes the impacts on local government general and specific plans and zoning ordinances within the Study Area.

Land use jurisdiction refers to the limits of administrative authority maintained by Federal, State, tribal, regional, or local government agencies responsible for land use planning and policies. The proposed route corridors include land under the jurisdiction of Pima County, the COT, and the Town of Sahuarita with existing land use plans and policies.

During Project outreach, TEP consulted with local agencies, government representatives, and stakeholders within the Study Area to identify and understand existing plans. Outreach and public participation activities are detailed in Exhibit J.

H.3 Local Government Plans and Land Use Ordinances

Local agency jurisdictions that will be traversed by the Project have adopted land use general and specific plans and zoning regulations that guide the type and intensity of land use. An inventory of applicable land use plans was conducted to determine which land use plans may intersect with the Project. Local jurisdictions with land use policies in the proposed route corridors include Pima County, the COT, and the Town of Sahuarita.

H.3.1 Pima County Comprehensive Plan

The Pima County Comprehensive Plan (2009, as amended 2015) was updated via the Pima Prospers: Pima County Comprehensive Plan Initiative (“Plan”) (Pima County, 2025d). The Plan assigns special designations (including parks, open space, and scenic road designations) and lays out policies for land uses within those unincorporated areas of Pima County. For incorporated areas, land use planning as specified in the municipality’s general plan is applicable. There are no conflicts between the Project and the Plan.

H.3.1.1 S-36 Sahuarita Southeast Conceptual Land Use Plan

Within the study area lies a large block of undeveloped state trust lands and adjacent private lands. Pima County has identified this area as being proposed for urban scale development by the Town of Sahuarita if it is annexed into the Town of Sahuarita (Pima County, nd). Pima County does not expect this development to occur within the lifespan of the Plan. Pima County notes that any development on the state land portion of this area prior to annexation by the Town of Sahuarita would be brought forward as a specific plan for the entire block of land.

The Project will not have an impact on the Sahuarita Southeast Conceptual Land Use Plan.

H.3.2 Pima County Zoning

The Pima County Zoning and Development Code establishes regulations to guide land use and development within Pima County, with the primary purpose of protecting public health, safety, and general welfare. It serves as a tool for implementing the goals and objectives of the Plan by outlining zoning classifications, permitted land uses, development standards, and procedures for land use changes. Per Section 18.07.040 regarding Land use exceptions, utility infrastructure used to distribute power is a permitted use in all zones.

Two Pima County Zoning Districts are located along the proposed corridors, Rural Homestead ("RH") (both routes) and SP-Specific Plan Zone (Route 1 only). Electric transmission facilities are a permitted use within all zones; therefore, the Project would comply with Pima County Zoning. For a detailed view of the zoning that is contained within the Study Area, please refer to Exhibit H-2.

H.3.2.1 Pima County Buffer Overlay Zone

A Pima County Buffer Overlay Zone is defined as portion of land greater than 25 acres located within one mile of a public preserve. The Santa Rita Experimental Range ("SRER") is a public reserve within the Study Area. The Buffer Overlay Zone requires that all new or relocated utility lines be placed underground, unless the line is greater than 115 kV. Both routes travel through the Buffer Overlay Zone and are exempt from the regulations of this subsection because the proposed voltage is greater than 115 kV (PC Zoning, 18.67.050.H.1).

The Project is exempt from the Pima County Buffer Overlay Zone regulations.

H.3.3 Pima County Major Streets and Scenic Routes

The Pima County Major Streets Plan is a map and an ordinance that establishes adequate future street widths along major streets for unincorporated Pima County (Pima County, 2026). Future ROW widths vary from 80 feet wide for a typical collector street up to 200 feet wide for a high-volume arterial street. Within the project area, portions of Wilmot Road are mapped as medium volume arterial with a ROW width of 150 feet.

The Pima County Scenic Routes Plan is a map and ordinance that establishes setbacks and other development regulations to preserve and enhance visual resources along designated roadways. The intent of the scenic route designation is to protect property values and the character of neighborhoods; protect and enhance the unique character of a community, including vegetation, architecture and geology;

protect and enhance the economic value of tourism; and protect natural resources. In the project area, two roads are mapped as Pima County Scenic Routes: Sahuarita Road is classified as Scenic, Major Route, and Santa Rita Road is Scenic, Not Major Route. Per the Pima County Zoning and Development Code, all new utility lines along scenic routes shall be underground unless the line is a 46 KV or greater transmission line (PC Zoning, 18.77.040.E. 5. a); the Project proposes a 138 kV transmission line.

The Project is exempt from the Pima County Scenic Road regulations.

H.3.4 Pima County Sonoran Desert Conservation Plan

The Pima County SDCP is the County's plan for balancing conservation and protection of cultural and natural resource heritage with economic development (Pima County, 2001) and was accepted by the County in 2012 as an update to the Comprehensive Plan. The SDCP provides for a Conservation Lands System ("CLS"), identifying lands necessary to achieve SDCP biological goals, while delineating areas suitable for development. The CLS designates different areas within the Study Area as "Important Riparian Areas", "Biological Core Management Areas", and "Multiple Use Management Areas," as illustrated in Exhibit C-1 (Pima County 2025). Each of these designations has its own set of associated land use policies and conservation guidelines. As part of the SDCP, the associated Pima County Multi-Species Conservation Plan ("MSCP") provides further guidance related to species protected under the ESA and their habitats.

Policies of the CLS are applicable when private developments apply for a rezoning or request other discretionary changes in land use. TEP does not require a rezoning as part of the Project and does not need any discretionary land use changes. As a result, the Project complies with the SDCP.

H.3.5 City of Tucson Plans

Plan Tucson is the COT's General Plan, adopted in November 2013 and updated in 2025. Plan Tucson provides guidance for the future growth and development of the COT (COT, 2025). Its scope is limited to the corporate limits of the COT. Plan Tucson does not include specific guidance for transmission line construction. Plan Tucson's guidance for utility construction includes "improv[ing] the appearance of above-ground utilities and structures" and "[c]oordinat[ing] with utility companies and other public service providers for the planning of infrastructure, facilities, and services, making sure infrastructure and facility construction is sensitive in design and location to environmental and historic resources."

The Project is in compliance with the Plan Tucson.

The COT has several adopted plans to implement Plan Tucson. The Major Streets and Routes Plan ("MSRP") is the only plan applicable within the project area.

H.3.5.1 Major Streets and Routes Plan, 1982

The MSRP is a set of policies that guide "balancing the need to minimize disruption to existing land uses while safely and efficiently providing the necessary capacity to our streets." The MSRP also documents scenic and gateway routes (COT, 1982; as amended 2016). There are no COT scenic or gateway routes within the project area.

H.3.6 City of Tucson Zoning Code

The purpose of the COT's Unified Development Code ("UDC") is to protect and promote the general health, safety, and welfare of all present and future residents of the COT. More specifically, the UDC serves as a tool to implement the goals and policies described in the COT's General Plan, Plan Tucson 2025 ("Plan Tucson"). The provisions of UDC guide growth and development of the community and encourage the most efficient use of land through sensitive design. Outside of Scenic and Gateway Corridor Zones, the UDC does not directly regulate the location of transmission lines.

Both routes are located in the RH zone. For a detailed view of the zoning that is contained within the Study Area, please refer to Exhibit H-2.

The Project is in compliance with the COT UDC.

H.3.6.1 City of Tucson Airport Environs Overlay Zones

The purpose of the airport overlay zone is to regulate height and land near civilian airports to ensure safe aircraft use, avoid the concentration of population in potential accident areas, and reduce the harmful effect of noise exposure.

The Airport Environs Land Use Overlay Zone CUZ-4 extends from the airport into the Study Area approximately 700 feet and overlies a portion of Route 1. The only restriction within this relates to development of noise-sensitive land uses. The Project is not noise-sensitive; therefore, the Project is in compliance with COT Airport Environs Overlay Zones.

H.3.7 Town of Sahuarita General Plan

The Town of Sahuarita General Plan Council Approved Draft ("General Plan") was approved on February 23, 2026, (Town of Sahuarita, 2026). The General Plan addresses planned development within the current municipal boundary, as well as plans for the Sahuarita Municipal Planning Area, which lies within a potential future annexation. These plans generally align with those proposed in the Pima County S-36 planning area, shown in Exhibit A-4. As this area is not currently under the jurisdiction of the Town of Sahuarita, and the annexation of this area by the Town of Sahuarita is only a future possibility that is not yet officially planned, this Project is in compliance with the Pima County S-36 planning area.

H.3.8 Town of Sahuarita Zoning

Both routes are located in the RH zone within the Town of Sahuarita. RH zoning is intended to preserve rural character and low-density development. Per the Town of Sahuarita code Section 18.07.040 regarding land use exceptions, the location, erection, alteration, or maintenance of facilities necessary to distribute public facilities shall not be prohibited. For a detailed view of the zoning that is contained within the Study Area, please refer to Exhibit H-2.

The Project is in compliance with the Town of Sahuarita Zoning Code.

H.4 State (including Agencies) Government Plans

H.4.1 Santa Rita Experimental Range

The SRER is the longest continuously active rangeland research facility, and among the five oldest biological field stations, in the United States (UofA, 2026). The 52,000-acre range was established in 1902 by the US Forest Service. In 1987 University of Arizona College of Agriculture took over the administration of the site. The SRER is located south of the Corto Road alignment and is crossed by an existing 138 kV transmission line owned by UNSE and an approved 138 kV transmission line corridor (Case 164, Decision Nos. 73232, 76886, 78598, and 78961), both of which are proposed for co-location of the Project's line under Route 1. These corridors have been previously approved by the Commission and land rights obtained. TEP proposes to design Route 1, if selected, to lie completely within the previously approved corridors and obtained land rights.

The Project is not anticipated to detrimentally impact the SRER.

H.4.2 Arizona State Land

ASLD has ownership of a large percentage of the project area. ROWs granted to UNSE or TEP by ASLD for existing transmission lines encompasses much of both routes. In designing and planning the selected route, TEP will coordinate with ASLD to ensure that existing land rights accommodate the Project, or new land rights are appropriately obtained.

The Project will be in compliance with ASLD requirements.

H.5 Federal

H.5.1 Military

The Project is in the vicinity of Department of Defense ("DOD") Lands, Military Training Routes ("MTR"). MTRs are routes used by military aircraft to maintain proficiency in tactical flying. These routes are usually established below 10,000 ft AMSL for operations at speeds in excess of 250 knots. MTR VR-259 crosses over the very southern portion of the study area and overlies Route 1 for approximately 1.6 miles (DMAFB, 2006). Federal Aviation Administration (FAA) policies (discussed below) that generally relate to MTR are military airspace designations that define military airspace use as separate from civilian airspace. By coordinating with all pilots moving through those areas, the military may advise caution or give notice of military training activities.

Neither route alternative would impact Military Training Routes.

H.5.2 Federal Aviation Administration ("FAA")

FAA jurisdiction within the northern portion of the study area extends out from the Tucson International Airport and may require obstruction evaluation based on height for new poles, as well as notice of construction (14 CFR 77.9). Three test poles located at the northern limits of Route 1 were submitted to the Obstruction Evaluation / Airport Airspace Analysis Pre-Screening Tool, and all locations required filing notice with the FAA. TEP will comply with all notification requirements during design and construction of the proposed Project.

H.5.3 US Army Corps of Engineers ("USACE")

H.5.3.1 Sahuarita Air Force Range

The Sahuarita Air Force Range ("SAFR") Formerly Used Defense Site ("FUDS") is located across the majority of the Study Area (USACE, 2021). The property was formerly owned by the Department of Defense and transferred to the USACE for environmental remediation. From 1958 to 1978, 27,000 acres were used as a training range, including a runway and bombing targets. The USACE has evaluated and inspected the sites and has identified munition debris. A remedial investigation is planned by the USACE to determine the nature and extent of munition hazards. Until the investigation is complete, it can be possible to encounter partial or entire munitions and unexploded ordinance in or near the FUDS boundaries.

Route 3 is located in close proximity to areas identified as A to G Gunnery / Bomb Targets 1 and 4, and crosses over a portion of OQ Range / Air to Ground Gunnery. The Project will not adversely impact the FUDS, but care should be taken when performing construction or maintenance in these areas to avoid unexploded ordinance.

H.5.3.2 Jurisdictional Washes

Based on the 2023 U.S. Supreme Court case Sackett v. the Environmental Protection Agency ("EPA"), which significantly narrowed the scope of the Clean Water Act, and restricted federal authority over waters of the United States, none of the many washes that cross the Study Area are currently considered jurisdictional.

H.6 Tribal

There are no tribally initiated plans in the Project Area.

H.7 Existing Land Use

TEP conducted a land use inventory and an assessment of potential impacts that may occur because of the Project construction and operation. The study area is a mix of undeveloped land, rural land, and residential land. This land use was analyzed as part of the Project Siting Study (Exhibit B-1).

The land use categories are described below and include the locations of identified sensitive receptors.

Residential: Residential land uses (which differ from residential zoning designations discussed previously) primarily include low to medium intensity rural residential areas throughout the Study Area with a density between 0.3 residences per acre to 1.2 residences per acre. Exhibit H-1 depicts the locations of all residential use (as determined through inspection of aerial imagery from 2024). The percentages of residential use along and adjacent to the route alternatives are shown in Table 15. As can be seen, residential use comprises a low portion of both routes, and ranges from 21 to 27%.

Table 15. Percentage of Residential Use Along Alternative Routes

Route Alternatives	Percent Residential Use Adjacent
Route 1	21%
Route 3	27%

Commercial: There are no commercial businesses within the study area.

Industry/Light Industry: There are no industrial land uses in the Study Area.

Utilities: Solar generation sites, substations, transmission and distribution lines, as well as telephone and cable lines are present in the study area.

Southwest Gas and Tucson Water have active service lines in the Study Area.

There are active cell towers in the Study Area, referenced in Exhibit I.

Public/Quasi-public:

Walden Grove High School is located within 500 feet of Route 3.

Transportation: Two arterial streets cross the Study Area, Wilmot Road and Sahuarita Road.

Vacant/Undeveloped Land: Vacant land occupies 91% of land within the Study Area.

Municipal Parks: There are no formal recreational opportunities within the Study Area. See Exhibit F.

H.8 Proposed Land Uses and Developments

Proposed developments and other plans in the Study Area, such as Planned Area Developments, were identified by engaging with all three jurisdictions and via online searching. Proposed "future" land uses (Exhibit A-4) within the study area may eventually be quite different from existing land uses (Exhibit H-1), as the study area is largely vacant. Future development on privately owned lands under county or municipality planning jurisdiction will require approval by the respective jurisdiction's planning and development departments.

TEP held conversations with the Tucson Airport Authority ("TAA") concerning future development near the Wilmot Energy Center to ensure the Project would not impact future plans. Input from the TAA indicated that solar development is planned to the north of the TEP/WAPA 230-115 kV transmission line, and TAA requested that both routes exit the Sonoran Substation to the south, and Route 1 be routed on the south side of the TEP/WAPA 230-115 kV corridor. Correspondence and meeting notes for this coordination are in Exhibit J.

H.9 Potential Effects

The potential land use impacts associated with the Project are influenced by the types of land uses that exist in the areas surrounding the Project. As previously mentioned, between 21 and 27% of both routes are located adjacent to existing rural residential land use. Both routes minimize additional disruption by

proposing to co-locate the Project on existing transmission lines. Since the land use impacts from the existing transmission lines have already been accommodated and adjusted for in these areas, both routes do not alter the current land use patterns.

With respect to the remainder of the largely vacant and undeveloped land crossed by both routes, future land uses in these areas will be dictated by the market and availability of the land for the future proposed use. The co-location of the routes on existing transmission lines and within expansive utility corridors further nullifies potential impacts.

H.10 Conclusion

Both routes are consistent with local, state, and federal land use plans. The majority of both route alternatives would be co-located on existing transmission lines and within existing utility corridors. Land use impacts from either route alternative are anticipated to be negligible to minor. The Project supports and complies with the current and future land use plans of Pima County, the COT, and the Town of Sahuarita.

H.11 References

COT. (1982; as amended 2016). Major Streets and Routes Plan, Resolution No. 12045. Tucson: City of Tucson.

COT. (2013). Plan Tucson: City of Tucson General & Sustainability Plan 2013. Tucson, AZ: City of Tucson.

DMAFB. (2006). Military Training Routes - Pima County. Retrieved from Davis Monthan Air Force Base: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.dm.af.mil/Portals/99/Documents/Community%20Liaison%20Documents/Military_Training_Route_Pima.pdf?ver=2016-06-15-181113-333

Pima County. (2001). The Sonoran Desert Conservation Plan. Retrieved from Pima County Conservation Lands and Resources: https://www.pima.gov/787/The-Sonoran-Desert-Conservation-Plan

Pima County. (2005). Chapter 16.30 Watercourse and Riparian Habitat Protection and Mitigation Requirements. Tucson: Pima County.

Pima County. (2011). Regulated Riparian Habitat Mitigation Standards and Implementation Guidelines. Tucson Arizona: Pima County Regional Flood Control District.

Pima County. (2025a). Pima County Code of Ordinances. Retrieved from Pima County: https://codelibrary.amlegal.com/codes/pimacounty/latest/pimacounty_az/0-0-0-22681

Pima County. (2025b). Pima Prospers 2025. Retrieved from Pima County: https://www.pima.gov/3368/Pima-Prospers-2025

Pima County. (2025c). Regulated Riparian Habitat. Retrieved from Pima County: https://www.pima.gov/1464/Regulated-Riparian-Habitat

Pima County. (2025d). Riparian Land Acquisition and Management. Retrieved from Pima County: https://www.pima.gov/1750/Riparian-Land-Acquisition-Management

Pima County. (2026a). Major Street and Scenic Routes. Retrieved from Pima County Department of Transportation: https://www.pima.gov/879/Major-Streets-Scenic-Routes

Pima County. (2026b). S-36 Sahuarita Southeast Conceptual Land Use Plan. Retrieved from https://content.civicplus.com/api/assets/az-pimacounty/c24295ff-25fd-410e-b4d8-d72840308d6e?cache=1800

Town of Sahuarita. (2026). Town of Sahuarita General Plan. Sahuarita, AZ.

UofA. (2026). Santa Rita Experimental Range. Retrieved from The University of Arizona: https://santarita.arizona.edu/

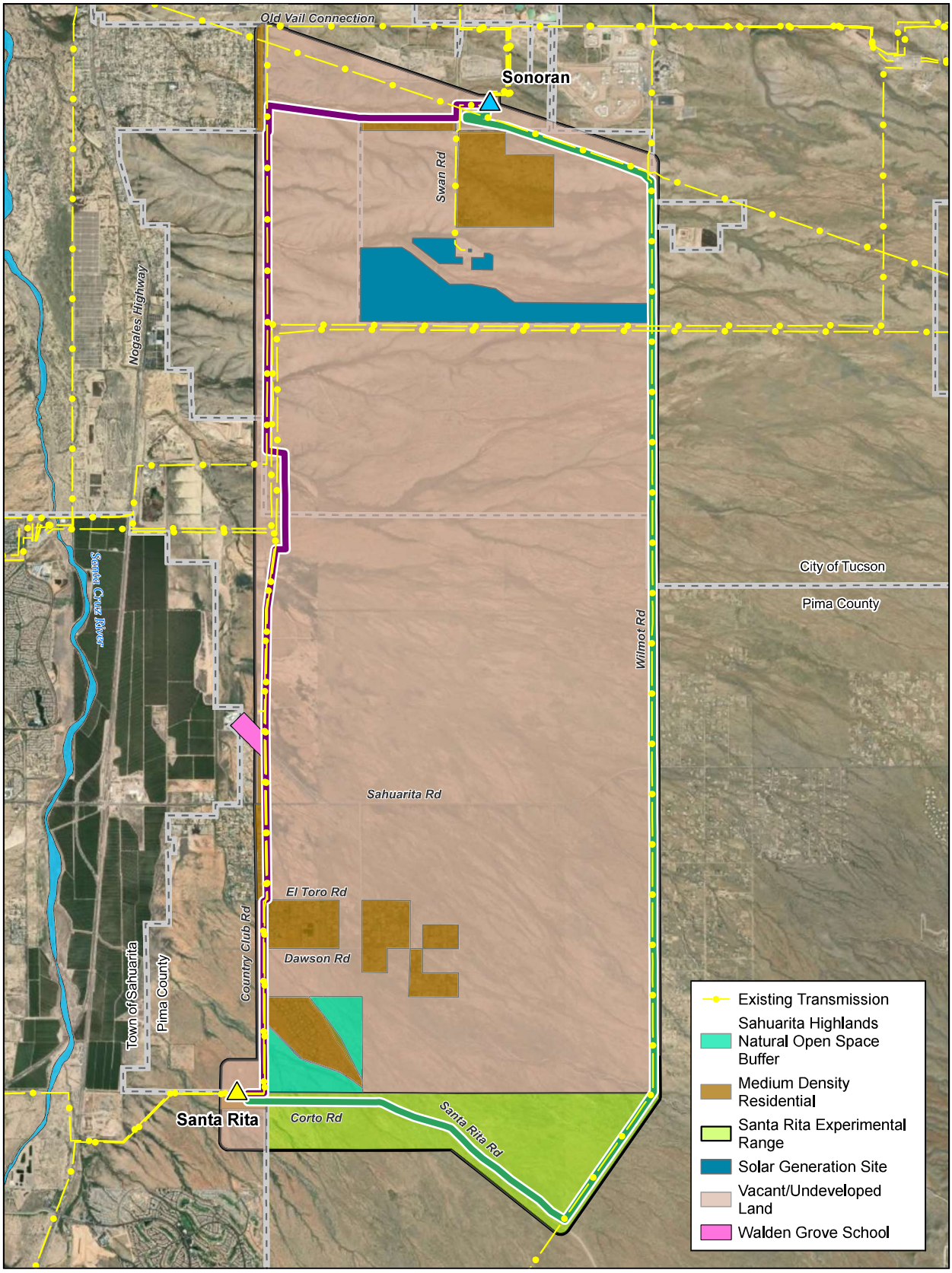
USACE. (2021). Sahuarita Air Force Range. Los Angeles, CA: USACE.

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit H-1

This page intentionally left blank



TEP
Tucson Electric Power

Exhibit H-1

Existing Land Use

Santa Rita Connection Project

In-Service 138kV Substation

Planned 138kV Substation

Study Area

Proposed Route Alternatives

Route 1

Route 3

0 1 2

Miles

This map is for planning purposes only. TEP and UNS Energy make no warranty of its accuracy.

Sources: Esri, UNS, TEP, BLM, and Pima County GIS.
Projection: NAD 1983 UTM Zone 12N
Basemap: Esri World Imagery

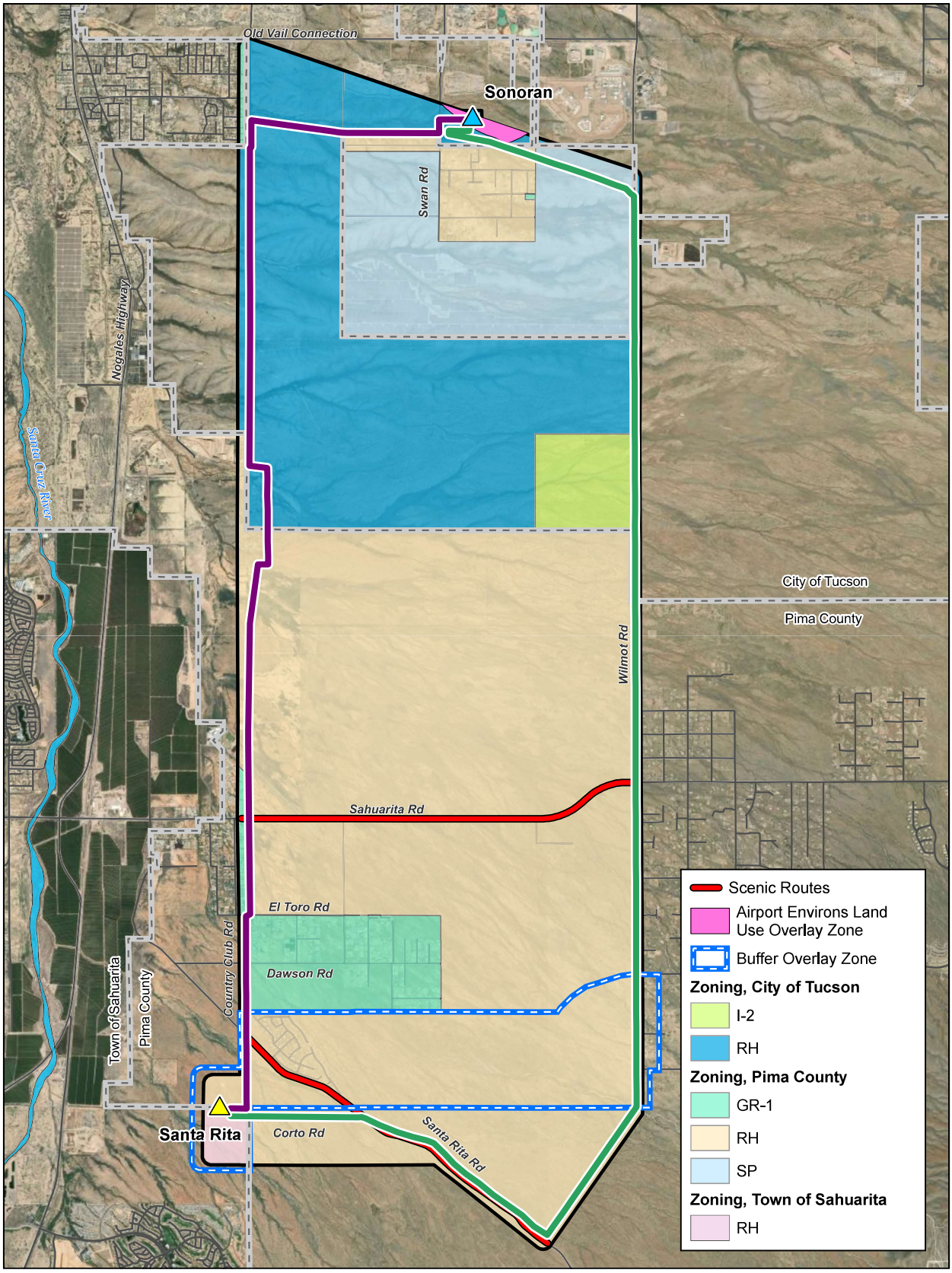
This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit H-2

This page intentionally left blank



TEP
Tucson Electric Power

Exhibit H-2

Zoning

Santa Rita Connection Project

In-Service 138kV Substation

Planned 138kV Substation

Study Area

Proposed Route Alternatives

Route 1

Route 3

0 1 2

Miles

This map is for planning purposes only. TEP and UNS Energy make no warranty of its accuracy.

Sources: Esri, UNS, TEP, BLM, and Pima County GIS.
Projection: NAD 1983 UTM Zone 12N
Basemap: Esri World Imagery

This page intentionally left blank

EXHIBIT I

This page intentionally left blank

EXHIBIT I: ANTICIPATED NOISE AND INTERFERENCE WITH COMMUNICATION SIGNALS

As stated in R14-3-219 of the Rules of Practice and Procedure Before Power Plant and Transmission Line Siting Committee Exhibits to Application, Exhibit I:

"*Describe the anticipated noise emission levels and any interference with communication signals which will emanate from the proposed facilities.*"

I.1 Introduction I-1
I.2 Audible Noise I-1
I.2.1 Affected Environment I-1
I.2.2 Potential Effects I-2
I.2.2.1 Construction I-2
I.2.2.2 Operation and Maintenance I-4
I.3 Corona Noise I-4
I.4 Radio Interference I-5
I.5 Television Interference I-5
I.6 Electric and Magnetic Field ("EMF") Effects I-5
I.6.1.1 Existing EMFs Along the Route Alternatives I-5
I.6.1.2 Electric and Magnetic Fields Background I-6
I.7 Conclusion I-7
I.8 References I-8

I.1 Introduction

The following describes the anticipated noise impacts and interference with communication signals within the Study Area. The entire Study Area is within unincorporated Pima County, and the COT, Arizona. The Project will generate both audible noise during the construction and maintenance phases, and minor corona noise during operation.

I.2 Audible Noise

I.2.1 Affected Environment

Baseline ambient noise levels in the project area were estimated using the relationship between population density and noise levels. Populations for the majority of the area immediately adjacent to the

proposed route alternatives are rural, with a population density of 25 to 100 people per square mile. Typical day/night ambient noise levels for these population densities are less than 50 A-weighted decibels ("dBA"). Sources of noise along the alternative routes primarily relate to transportation sources and include local access traffic. Noises originating from outside the study area include aircraft from Tucson International Airport, and the Union Pacific Railroad, neither of which are located within the Study Area, but could generate noise heard by residents. Existing land use also contributes to noise levels. Most areas directly adjacent to the proposed route alternatives are rural, with a population density ranging from 25 to 100 people per square mile. Day and night ambient noise levels for these areas typically fall below 50 dBA (Stewart, 1999).

Transportation sources, such as local access traffic, account for most noise along the alternative routes generating noise levels up to 66 dBA at a distance of 50 feet (PAG, 2021; WSDOT 2020).

Although the Tucson International Airport is adjacent to the Study Area, noise contours indicate that the northeast portion of the Study Area is exposed to DNL of 60 to 62.5 dBA (L&B, 2017). Reports note that approximately 13% of communities are "annoyed" by sounds in the DNL of 65 dBA (DMAFB, 2014). The number of residents in the Study Area that are negatively impacted by noise from the airport is therefore minimal. The Union Pacific Railroad is as close as a mile to the Study Area. Noise levels from a train horn are approximately 65 dBA at 140 feet from the tracks, therefore, at a mile away, the noise impacts to the residents in the Study Area are negligible (FRA, 2026).

There are few sensitive noise receptors located near the route alternatives. Two schools and two churches are within a mile of Route 3. There are no sensitive receptors within a mile of Route 1.

I.2.2 Potential Effects

I.2.2.1 Construction

Transmission line construction, operation, and maintenance produce some audible noise. Construction crews would generate noise while assembling and erecting structures, pulling and splicing wires, and transporting materials and personnel with construction equipment and vehicles. Table 16 displays uncontrolled noise levels for typical construction equipment. Maximum noise levels range from 80 to 85 dBA at 50 feet from the equipment. Generally, noise levels decrease by six dBA each time you double the distance from the noise source.

Table 16. Typical Noise Levels for Construction Equipment

Equipment	Typical Maximum Levels (dBA at 50 feet)
Front loader	80
Backhoe, excavator	80
Tractor, dozer	85
Grader, scraper	85
Dump truck	84
Pick-up truck	55
Concrete mixer truck	85

Equipment	Typical Maximum Levels (dBA at 50 feet)
Crane (movable)	85
Pump	77
Generator	82
Compressor (air)	80
Pneumatic tools	85
Compactor (ground)	80
Auger drill rig	85
Source: FHWA 2017	

The Project's construction noise impacts were assessed using acceptable noise limits for nearby residents established by the U.S. Department of Transportation ("USDOT"). Although these criteria are not standardized, they serve as reasonable guidelines for evaluating construction noise impacts (USDOT 2012). The standards specify acceptable noise levels as the one-hour equivalent noise level ("Leq"), the eight-hour Leq, and the weighted day night average ("Ldn") noise level.

Table 17. General Construction Noise Assessment Criteria Acceptable Limits

Land use	One-hour L_{eq} (dBA)		8-hour L_{eq} (dBA)		Weighted L_{dn} (dBA)
	Day	Night	Day	Night	30-day average*,**
Residential	90	80	80	70	75
Commercial	100	100	85	85	80
Industrial	100	100	90	90	85
* Note: In urban areas with very high ambient noise levels (L_{dn}>65 dBA), L_{dn} from construction should not exceed existing ambient plus-10 decibels.					
** Note: 24 hour L_{eq}, not L_{dn}					
Source: USDOT 2012					

Using typical usage factors, TEP conservatively estimated the average construction noise level to be 83 dBA at 50 feet from the centerline of the transmission line. Therefore, construction noise levels from zero to approximately 75 feet from the transmission line would slightly exceed the USDOT eight-hour Leq standards for construction in residential areas. Noise levels from the transmission line construction are expected to decrease according to typical point source distance attenuation (Table 18). As a result, at approximately 75 feet and beyond, noise should remain within suitable limits.

Typically, construction activities required to erect one transmission line structure with a concrete foundation, can be completed in three days. They spend one to two consecutive days drilling the foundation and pouring concrete, then return on another day to set the pole. A typical direct embedded pole can be erected in less than a day. This schedule keeps the duration of noise impacts within 100 feet of noise receptors brief, resulting in temporary direct impacts. To reduce noise impacts whenever a

receptor is within approximately 100 feet of active transmission construction, crews will park any idling equipment as far from the receptor as reasonable and turn off equipment, when possible.

Construction activities beyond 100 feet will cause minor and short-term noise impacts. Noise levels for construction at these distances remain below the USDOT acceptable limits. Crews will conduct most work during the daytime period, following local guidelines. TEP does not plan to schedule nighttime work, but if it becomes necessary, TEP will notify affected residents in advance.

Residents closest to the construction site would be able to hear this noise, but it would not be considered a major impact since crews work during daytime hours when people tolerate noise better, and the disruption would last only a few days at each location.

Table 18. Construction Noise Level Estimates*

Distance from centerline (feet)	Estimated Construction Noise Levels Leq (dBA)	Estimated Ldn (dBA)
50	83	78
100	77	72
150	74	69
200	71	67
300	68	64
400	65	61
800	59	57

**Note: A background nighttime noise level of 45 dBA is assumed.*

I.2.2.2 Operation and Maintenance

Transmission line operation and maintenance activities are expected to have minimal long-term impacts on audible noise. Inspection crews will occasionally drive trucks along the line, and workers may replace poles if necessary.

I.3 Corona Noise

Noise emanating from a transmission line is caused by corona. Corona is the electrical ionization of the air that occurs near the surface of the energized conductor and suspension hardware due to electric field strength. Certain electromagnetic effects are inherently associated with overhead transmission of electrical power at high voltage. These effects are produced by the electric and magnetic fields ("EMF") of the transmission line with one of the primary effects being corona discharge. Corona effects are manifested as audible noise ("AN"), radio interference, and television interference. These particular effects will be minimized by line location, line design, and construction practices.

Corona may result in AN being produced by the proposed transmission line. The amount of corona produced by a transmission line is a function of the voltage of the line, the diameter of the conductors, the locations of the conductors in relation to each other, the elevation of the line above sea level, the condition of the conductors and hardware, and the local weather conditions. Corona typically becomes a design concern for transmission lines at 345 kV and above and is less noticeable from lines that are operated at lower voltages, such as the proposed 138 kV transmission line. Audible corona noise for lines less than 230 kV is typically very low or not noticeable. Audible corona noise levels for a 230 kV

transmission line in rainy weather is approximately 25 dBA at the edge of the ROW (CPUC, 2002). In comparison, a vacuum cleaner typically produces 60 to 80 dBA.

The proposed 138 kV transmission should not produce any audible corona noise due its lower voltage. To ensure all steps are taken to lower audible noise, the transmission line proposed for the Project will be designed to reduce corona generation.

I.4 Radio Interference

Corona-generated radio interference is most likely to affect the amplitude modulation ("AM") radio broadcast band (535 to 1,605 kilohertz); frequency modulation ("FM") radio is rarely affected. Only AM receivers located very near to transmission lines that are tuned to a weak station have the potential to be affected by radio interference. An example is the humming noise on an AM radio that happens when the radio is near a power line and diminishes as the radio moves away from the line. FM radio is rarely affected by transmission lines. FM radio receivers usually do not pick up interference from transmission lines, because corona-generated radio frequency noise currents decrease in magnitude with increasing frequency and are quite small in the FM broadcast band (88 to 108 megahertz). In addition, the excellent interference rejection properties inherent in FM radio systems make them virtually immune to amplitude-type disturbances.

Residential areas located in the vicinity of the Project's alternative routes are in close proximity to other existing power lines; therefore, additional radio interference as a result of the Project's implementation is not expected.

TEP has identified two active communication towers previously licensed by the FCC within the project's Notification Area (1 mile outside the Study Area). One tower is 2,000 feet from Route 1, and the other is 4,700 feet from Route 3 (Exhibit I-1). TEP has notified the tower owners of the Project via a letter (Exhibit I-2). No radio interference is anticipated from the Project. Potential impacts will be further assessed following design and any impacts mitigated as needed.

I.5 Television Interference

Corona produced interference with television reception only applies to over-the-air signals from local stations, and does not affect cable or satellite stations. A transmission line's corona effects may cause impacts during periods of bad weather, but these concerns typically arise only with transmission lines rated at 230 kV or higher (CPUC, 2002). Since the voltage will be 138 kV, TEP does not expect television interference.

I.6 Electric and Magnetic Field ("EMF") Effects

I.6.1.1 Existing EMFs Along the Route Alternatives

There are existing, or planned, electrical facilities within each alternative route corridor, as shown on Exhibit H-1 and outlined in Table 19.

Table 19. Existing Electric Facilities Along Routes

Route Alternative	Electrical Facilities Present	Notes
Route 1	138 kV, 230 kV	Line will parallel the 230 kV, or be co-located with the 138 kV
Route 3	138 kV, 46 kV	Line will co-locate on the 46 kV and the 138 kV

I.6.1.2 Electric and Magnetic Fields Background

EMFs are present everywhere; they occur naturally in every atom of matter. The Earth's surface has a natural electric field which is created by electric charges in the upper atmosphere. The Earth also has a strong magnetic field, which is evidenced by the use of compasses for navigation. The magnetic field is created by electric currents in the magma of the Earth's core.

EMFs are also produced by power lines. These fields induce voltages and currents on nearby conductive objects. Electric fields are produced whenever a conductor is connected to a source of electrical voltage. An example of this is the plugging of a lamp into a wall outlet in a home. When the lamp is plugged in, a voltage is induced in the cord to the lamp, which causes an electric field to be created around the cord. Magnetic fields are produced whenever an electrical current flows in a conductor. In the lamp example, if the lamp is turned on (allowing electricity to flow to the lamp), a magnetic field is created around the lamp cord in addition to the electric field. These fields exist around overhead and underground power lines, house wiring, computers, power tools, appliances, and anything that carries or uses electricity, and EMF strength is typically measured in milligauss ("mG").

Table 20 displays the magnetic field strength from various electrical sources. It is general practice to consider both electric and magnetic fields together in assessing the effect at the outer edge of a transmission line's right-of-way.

Table 20. EMF Strength of Various Electrical Sources at Various Distances

EMF Source [1]	Distance	Strength	Distance	Strength	Distance	Strength
Microwave Oven	0.5 feet	200 mG	1.0 feet	4 mG	4.0 feet	2 mG
Vacuum Cleaner	0.5 feet	300 mG	1.0 feet	60 mG	4.0 feet	1 mG
Hair Dryer	0.5 feet	300 mG	1.0 feet	1 mG	4.0 feet	0 mG
Electric Shaver	0.5 feet	100 mG	1.0 feet	20 mG	4.0 feet	0 mG
138-kV Transmission Line, vertical [2]	0 feet	16.4 mG	50 feet	6.9 mG	500 feet	<0.14 mG

[1] Appliance magnetic field strengths are median values in milliGauss (mG) for typical 60 Hz electrical current (source: USNIEHS 1999, DOE 1995

[2] Irvington – East Loop Transmission Line EMF Analysis Rev. 0, November 26, 2019, prepared by Power Engineers. Location 2 from study was used as this represents a configuration and current on the line similar to that expected for the Project

Although researchers and scientists have heavily studied this issue since the 1970s, they have not confirmed that any adverse health effects have been caused by exposure to low-level EMFs.

- After a recent review of scientific literature about the issue, the World Health Organization ("WHO") called for continued research but concluded that, "…current evidence does not confirm the existence of any health consequences from exposure to low level electromagnetic fields."
- In 1997, a National Research Council committee studying the issue concluded, "…the current body of evidence does not show that exposure to these fields presents a human-health hazard. Specifically, no conclusive and consistent evidence shows that exposures to residential EMF produce cancer, adverse neurobehavioral effects, or reproductive and developmental effects."
- Similarly, in 1999, the National Institute of Environmental Health Sciences reported to the U.S. Congress that, "No consistent pattern of biological effects from exposure to EMF had emerged from laboratory studies with animals or with cells."
- According to the National Cancer Institute: "No consistent evidence for an association between any source of non-ionizing EMF and cancer has been found, despite numerous epidemiologic studies and comprehensive reviews of scientific literature."
- In 2007 the WHO completed an additional study on the health risks of extremely low frequency field. Their conclusion for the impacts of high voltage lines are that though they produce clouds of electrically charged ions, "it seems unlikely that corona ions will have more than a small effect, if any, on long-term health risks, even in the individuals who are most exposed. (WHO, 2007)"

This research has been performed through epidemiological, animal, biological and clinical studies.

The EMFs associated with power lines and electrical devices are much weaker than those associated with other sources such as microwaves or radio waves. These EMFs, at the low end of the electromagnetic spectrum, are described as "non-ionizing" because they are not known to damage DNA or cells directly (WHO, 2021).

Past studies on 138 kV transmission lines have yielded results where maximum calculated magnetic fields were less than or equivalent to the median magnetic field produced by a food processor from 6 inches away, 30 mG. From these studies, at the edge of ROW, calculated magnetic fields were found to be weaker than the median magnetic field while standing 6 inches away from a conventional video display terminal for a personal computer (Power Engineers 2019). It is anticipated that the EMFs from this Project will be less than or equal to those for 138 kV transmission lines with similar properties.

I.7 Conclusion

The proposed 138 kV transmission line, regardless of route alternative, would generate audible noise during construction, corona noise during operation, and emit low frequency EMFs. The corona emitted during operation would not impact communication facilities such as towers or radio or television broadcasts. The level of EMF produced by the proposed project is not anticipated to have any adverse health impacts, based upon current scientific studies. The noise produced during construction would be temporary in any given location, and similar for either route alternative. There are sensitive receptors within a mile of Route 3, but the closest one is over 1,500 feet away and unlikely to be adversely impacted by construction noise.

I.8 References

American Cancer Society: www.cancer.org/cancer/cancer-causes/radiation-exposure/extremely-low frequencyradiation.html.

Aspen Environmental Group: Transmission Line Noise Fact Sheet. https://energizeeastside2.blob.core.windows.net/media/Default/Library/JanuaryOpenHouses/TransmissionLineNoise_factsheet_handout.pdf

CPUC. (2002, September). Jefferson-Martin Chapter 16 - Corona and Induced Current Effects. Retrieved from PG&E Jefferson-Martin 230 kV Transmission Project - Application A-02-09-043: https://ia.cpuc.ca.gov/environment/info/aspen/jefferson_martin/pdf/016.pdf#:~:text=Corona%2Dgenerated%20electrical%20noise%20decreases%20with,AM%20radio%20and%20not%20the

DMAFB. (2014). Aircraft Noise Analysis. Tucson, Arizona: Davis-Monthan Air Force Base.

Environmental Protection Agency: www3.epa.gov/radtown/electricmagnetic-fields.html.

Federal Highway Administration (FHWA). 2017. Construction Noise Handbook. http://www.fhwa.dot.

FRA. (2026). High Speed Ground Transportation Noise and Vibration Impact Spreadsheet Model. Retrieved from Federal Railroad Administration: https://railroads.dot.gov/elibrary/high-speed-ground-transportation-noise-and-vibration-impact-spreadsheet-model

IEEE/ANSI Standard C2-2007. National Electrical Safety Code.

L&B. (2017). Tucson International Airport Public Airport Disclosure Map. Arizona: Landrum and Brown.

National Academy of Sciences, 1977. Guidelines for Preparing Environmental Impact Statements on Noise. Washington D.C.

National Academy of Sciences, 1996. Possible Health Effects of Exposure to Residential Electric and Magnetic Fields. National Research Council.

National Cancer Institute: https://www.cancer.gov/.

NIEHS. (2021). Electric & Magnetic Fields. Retrieved from National Institute of Environmental Health Sciences: www.niehs.nih.gov/health/topics/agents/emf/.

PAG. (2021, July). Transportation Management System. Retrieved from Pima Association of Governments: https://pag.public.ms2soft.com/tcds/tsearch.asp?loc=Pag&mod=TCDS.

POWER. (2019). Irvington to East Loop 138 kV transmission line EMF study . Phoenix: Power Engineers.

Stewart, C. (1999). Can population density be used to determine ambient noise levels? Aberdeen Proving Ground, MD: Oak Ridge Insititute of Science and Education; US Army Environmental Noise Program.

U.S. National Institutes of Health, National Institute of Environmental Health Sciences: www.niehs.nih.gov/health/topics/agents/emf/.

WHO. (2007). Extremely Low Frequency Fields - Environmental Health Criteria 238. Spain: World Health Organization.

WHO. (2021). Electromagnetic Fields. Retrieved from World Health Organization: www.who.int/peh-emf/en/.

WSDOT. (2020, August). Ch 7 Construction Noise Impact Assessment. Retrieved from WSDOT Biological Assessment Preparation Manual & Templates: https://wsdot.wa.gov/sites/default/files/2018/01/18/Env-FW-BA_ManualCH07.pdf

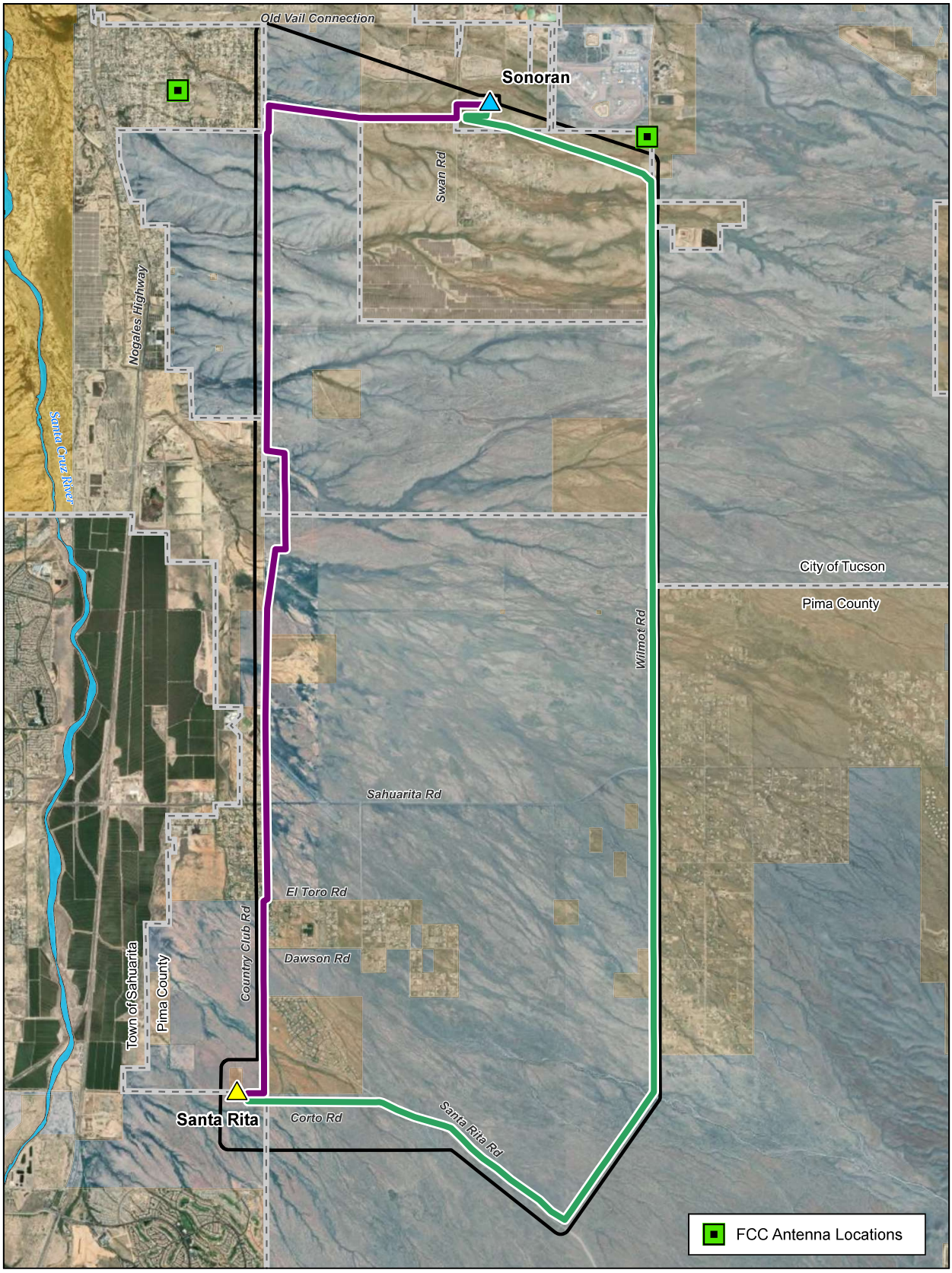
This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit I-1

This page intentionally left blank



TEP Tucson Electric Power

Exhibit I-1

FCC Antennas

Santa Rita Connection Project

- In-Service 138kV Substation
- Planned 138kV Substation
- Study Area

0 1 2

Miles

Surface Management

- Arizona State Land
- Tohono O'odham Nation San Xavier District

Proposed Route Alternatives

- Route 1
- Route 3

This map is for planning purposes only. TEP and UNS Energy make no warranty of its accuracy.

Sources: Esri, UNS, TEP, BLM, and Pima County GIS.
Projection: NAD 1983 UTM Zone 12N
Basemap: Esri World Imagery

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit I-2

This page intentionally left blank

Tucson Electric Power
P.O. Box 711, Mail Stop CB200
Tucson, AZ 85702

Telephone: 520-633-8693

March 24, 2026

Jerri L. Janjua
Alltel Communications of the Southwest Limited
1120 Sanctuary Pkwy #150 GASAREG
Alpharetta, GA 30009-7630

Subject: Proposed Santa Rita Connection Project

Dear Jerri Janjua,

Tucson Electric Power (TEP) is preparing plans for new transmission facilities that will improve electric reliability south of Tucson. The Santa Rita Connection Project will connect TEP's existing 138 kilovolt (kV) transmission Sonoran Substation to the planned Santa Rita Substation (see attached map).

You have been identified through the Federal Communications Commission website as owning an antenna structure in the vicinity of the project. As part of TEP's line siting application with the Arizona Corporation Commission, we are soliciting comments from parties that may be affected. We invite you to share feedback by sending comments to SantaRitaConnection@tep.com, or calling 1-520-770-7520 and leaving a voicemail. For more information about the project, please visit https://www.tep.com/santa-rita-connection/.

Respectfully,

Christopher Ortiz y Pino
Project Manager, Siting, Outreach and Engagement
Tucson Electric Power

Enclosure: Map of proposed route

Tucson Electric Power
P.O. Box 711, Mail Stop CB200
Tucson, AZ 85702

Telephone: 520-633-8693

March 24, 2026

Mark S. Ray
Alternative Energy Solutions, Inc.
P.O. Box 448
Alma, CO 80420

Subject: Proposed Santa Rita Connection Project

Dear Mark S. Ray,

Tucson Electric Power (TEP) is preparing plans for new transmission facilities that will improve electric reliability south of Tucson. The Santa Rita Connection Project will connect TEP's existing 138 kilovolt (kV) transmission Sonoran Substation to the planned Santa Rita Substation (see attached map).

You have been identified through the Federal Communications Commission website as owning an antenna structure in the vicinity of the project. As part of TEP's line siting application with the Arizona Corporation Commission, we are soliciting comments from parties that may be affected. We invite you to share feedback by sending comments to SantaRitaConnection@tep.com, or calling 1-520-770-7520 and leaving a voicemail. For more information about the project, please visit https://www.tep.com/santa-rita-connection/.

Respectfully,

Christopher Ortiz y Pino
Project Manager, Siting, Outreach and Engagement
Tucson Electric Power

Enclosure: Map of proposed route

EXHIBIT J

This page intentionally left blank

EXHIBIT J: SPECIAL FACTORS

Describe any special factors not previously covered herein, which applicant believes to be relevant to an informed decision on its application.

J.1 Introduction J-1
J.2 Public Involvement Program Summary J-1
J.3 Meetings and Briefings J-4
J.3.1 Open Houses J-4
J.3.2 Agency Briefings J-5
J.3.3 Elected Official Outreach J-5
J.3.4 Individual Agency Meetings J-5
J.3.5 Tribal Outreach J-6
J.3.6 State Historic Preservation Office J-7
J.4 External Communication J-7
J.4.1 Postcard Mailers J-7
J.4.2 Email Updates J-8
J.4.3 Public Notices J-8
J.4.4 Social Media Advertisements J-9
J.4.5 Street Signage J-9
J.4.6 Webpage J-9
J.4.7 Media Coverage J-10
J.4.8 Ways to Comment J-10
J.5 References J-12

J.1 Introduction

The following summary describes special factors not covered in the other exhibits of the CEC application, namely public outreach and engagement.

J.2 Public Involvement Program Summary

Public participation and engagement are an important part of TEP's environmental planning and line siting process. The Company developed and implemented a comprehensive Public Engagement Plan to ensure timely communication with the public. The Public Engagement Plan is included in Exhibit J-1. The plan

encouraged input throughout the Project's development and afforded the public opportunities to influence the Project outcome.

Project stakeholders included residents, property owners, businesses, agencies, public officials, tribal communities, and other community partners. The Stakeholder Lists* are included in Exhibit J-2.

The engagement efforts included (Figure 7):

- Meetings and Briefings (14)
    - Public Open Houses (2)
    - Agency Briefings (3)
    - Elected Official Briefings (1)
    - Individual Agency Meetings (5)
    - Tribal Briefings (3)
- External Communication
    - Postcard Mailers**
    - Email Updates
    - Newspaper Public Notices**
    - Social Media Advertisements**
    - Street Signage
    - Webpage**
- Ways to Comment
    - Online Comment Form**
    - Paper Comment Form
    - Project Email
    - Project Phone Line
    - Mail

**Residents and property owners not included for privacy purposes*

***Bilingual*



Figure 7. Outreach and Engagement Infographic

J.3 Meetings and Briefings

J.3.1 Open Houses

Two open house meetings were held at the Desert Diamond Casino – Sahuarita from 6-8 p.m. The meetings were held in an open house format with stations representing different aspects of the siting process and the Project. All public open house events were noticed to the public via a mailed postcard, email update, street signage, newspaper public notice, and social media advertisements. All outreach materials are documented in Exhibit J-7. Each meeting drew approximately 13 to 55 members of the public respectively, for a total of 68 participants (Table 21).

One bilingual team member was also available to engage with the public and answer questions in Spanish. There were two predominately Spanish-speakers who attended the first open house; those individuals spoke to the Spanish-speaking team member.

Open House No. 1 – November 13, 2025

The purpose of the first public open house was to inform the community of the need for and benefits of the Project, the project study area and scope, identified opportunities and constraints within the study area, share preliminary segments, and encourage public engagement and comments. Approximately 13 individuals attended, and 8 individuals signed in. See Exhibits J-8.1 through 8.3 for the display boards, table maps, and table signs from the first open house.

Open House No. 2 – March 4, 2026

The purpose of the second public open house was to introduce route alternatives, present the results of the compatibility analysis, share visual simulations of the transmission line, discuss design elements, and encourage public engagement and comment. Approximately 55 individuals attended, and 34 individuals signed in. See Exhibits J-8.4 through 8.6 for the display boards, table maps, and table signs from the second open house.

Table 21. Open House Overview

Open House #	Date	Location	Format	# Attended*	Exhibit #
1	Nov. 13, 2025	Desert Diamond Casino – Sahuarita	In-person	8	J-8.1 through 8.3
2	Mar. 4, 2026	Desert Diamond Casino – Sahuarita	In-person	34	J-8.4 through 8.6

**Not all attendees signed in*

J.3.2 Agency Briefings

Three (3) virtual agency briefings were held to gather input from federal, state, and local public officials; other utilities; and community partners. Each meeting drew 16 to 20 agency representatives, some of whom attended multiple meetings, for a total of 54 participants (Table 22). A summary of the attendance, presentation, and the Q & A session for each briefing is included in Exhibit J-3.

Table 22. Agency Briefing Overview

Agency Briefing #	Date	Format	# Attended	Presentation Ex. #	Summary Ex. #
1	Nov. 12, 2025	Virtual	20	J-3.1	J-3.2
2	Jan. 28, 2026	Virtual	18	J-3.3	J-3.4
3	Mar. 3, 2026	Virtual	16	J-3.5	J-3.6

J.3.3 Elected Official Outreach

Elected officials with jurisdiction within the project study area were also emailed regular project updates along with materials recently distributed to the public and offered individual briefings. Elected officials include those who hold a position representing the public in federal, state, or local government.

The project team provided the Sahuarita Town Council with a project briefing at a regularly scheduled and noticed meeting on January 26, 2026. Email correspondence with elected officials and a detailed summary of the briefing is included in Exhibit J-4.

J.3.4 Individual Agency Meetings

Agencies that were invited to attend the three (3) briefings outlined in Section J.3.2 also participated in separate, one-on-one meetings with the project team to discuss more technical aspects that related specifically to their organizations. The project team held five (5) individual agency meetings. A list of those meetings is provided below, with a detailed summary of each included in Exhibit J-5.

- State
  - Arizona State Land Department, Real Estate Division
    - February 9, 2026
- Local
  - Town of Sahuarita, Community Development and Planning & Zoning Division
    - January 12, 2026
  - Tucson Water, Operational Reliability & Condition Assessment Division
    - March 25, 2026
- Independent Nonprofit
  - Tucson Airport Authority, Business and Commercial Development Division
    - February 9, 2026
- Private Organization
  - Robson Communities – Quail Creek, Development & Planning Division
    - March 31, 2026

J.3.5 Tribal Outreach

Using the Arizona Government to Government Consultation Toolkit (AZ SHPO, 2025), TEP identified the following tribal communities, that have expressed an ancestral affiliation to the land within the project study area, to engage with through informal consultation:

- Ak Chin Indian Community
- Gila River Indian Community
- Hopi Tribe
- Mescalero Apache Tribe
- Pascua Yaqui Tribe
- Pueblo of Zuni
- Salt River Pima-Maricopa Indian Community
- Tohono O'odham Nation
- Tonto Apache Tribe
- White Mountain Apache Tribe
- Yavapai-Apache Nation

TEP informed and engaged tribal representatives from each of these tribal communities throughout the Project's development. Outreach included mailed letters and follow-up emails to provide Project updates, offers for in-person briefings, and field visits.

Additionally, TEP presented to the Four Southern Tribes Cultural Resources Working Group – consisting of the Ak-Chin Indian Community, Gila River Indian Community, Salt River Pima-Maricopa Indian Community, and Tohono O'odham Nation – at their in-person meeting on March 20, 2026.

Table 23 provides a summary of the outreach efforts and materials shared with tribal representatives for the Project. Meeting summaries and notifications shared with the Tribal communities are located in Exhibit J-6.

Table 23. Tribal Outreach Overview

Outreach Method	Date	Summary
Letter	November 19, 2025	Project introduction and purpose; Required Approvals; Briefing invitation; Study Area map
Email	December 8, 2025	Follow-up to November 19 Letter
Letter	February 19, 2026	Project updates and status; Required Approvals; Cultural Report available; Briefing invitation; Study Area map; Route Alternatives map
Email	March 11, 2026	Follow-up to February 19 Letter; CEC Routes map

J.3.6 State Historic Preservation Office

The SHPO was invited to and participated in all three (3) of the Project Agency Briefings. As part of the briefings, SHPO provided several comments and recommendations, including:

- Agency Briefing 1 – November 12, 2025
  - A request to see cultural resource reports when ready
  - Encourage TEP to reach out to Native American tribes early
- Agency Briefing 2 – January 28, 2026
  - Communicate with Tohono O'odham as their reservation is close by
  - A request to see cultural resource reports when ready
- Agency Briefing 3 – March 3, 2026
  - A request to see cultural resource reports when ready

J.4 External Communication

The following communication methods were used to inform all stakeholders of Project developments (see Figure 7 for an overview).

J.4.1 Postcard Mailers

Three (3) bilingual postcards, each mailed to more than 2,500 recipients, provided a project update and encouraged the public to attend upcoming open houses (Table 24). Mailing addresses were compiled as described below to reach residents, businesses, property owners and other stakeholders within a notification area extending one (1) mile beyond the project study area.

The mailing list was developed: 1) using publicly available data from the Pima County Assessor's Office to capture mailing addresses for residents, businesses and property owners within the notification area, 2) incorporating team-identified Project stakeholders, and 3) a manual inspection to remove duplicate addresses to ensure data quality and minimize returns.

A copy of each of the mailers is available in Exhibit J-7.

Table 24. Postcard Mailer Overview

Postcard #	Date Mailed	# Mailed	Included Updates
1	October 31, 2025	2,545	Project introduction and purpose Open House on November 13, 2025
2	February 9, 2026	2,921	Suitability Assessment Refined Segments
3	February 18, 2026	2,921	Route Alternatives Open House on March 4, 2026

J.4.2 Email Updates

Portions of the notification area are located outside of TEP's service territory. For the areas within service territory, an email list of current residents, businesses and other customers located within the notification area was compiled for electronic distribution of project information.

Three (3) emails were sent to customers within the notification area with an email on file with TEP or who had requested to be included on the project email list. Each of the emails were sent to nearly 2,000 recipients (Table 25). Both the paper and online comment forms included an option for participants to opt-in to the project email distribution list and receive updates. The mass email service provider allows recipients who no longer wish to receive project-related emails to opt out of future updates. This is the reason why each email update was sent to slightly fewer recipients than the one before.

The distributed emails and corresponding engagement reports are included in Exhibit J-7.

Table 25. Email Updates Overview

Email #	Date Sent	# Emailed	Included Updates
1	October 28, 2025	1,896	Project introduction and purpose; Study Area map; Planning and Siting Process; Required Approvals and Timeline; Ways to Comment Open House on November 13, 2025
2	February 2, 2026	1,854	Project purpose; Siting Status Update; Suitability Assessment video; Refined Segments map; Required Approvals and Timeline; Ways to Comment
3	February 18, 2026	1,850	Project status; Route Alternatives map; Required Approvals and Timeline; Ways to Comment Open House on March 4, 2026

J.4.3 Public Notices

Two (2) rounds of bilingual public notices were published in local newspapers in print as well as digital versions online. The first notice was placed in the Arizona Daily Star and the Green Valley News. The second notice was placed in the Arizona Daily Star, Green Valley News, and the Arizona Bilingual (Table 26). The public notices ran in the newspapers approximately 2 weeks prior to each open house. These newspapers reach more than 40,000 daily readers and 150,000 monthly readers. The public notices are available in Exhibit J-7.

Table 26. Public Notice Overview

Newspaper	1st Publication Date	2nd Publication Date
Arizona Daily Star	November 2, 2025	February 22, 2026
Green Valley News	November 2, 2025	February 22, 2026
Arizona Bilingual	N/A	March 2026 Issue

J.4.4 Social Media Advertisements

Geotargeted Facebook and Instagram ads were used to notify residents and other stakeholders of upcoming open house meetings. The ads were directed to reach platform users within the notification area and ran for 1 week prior to each open house, during the dates identified in Figure 8. The social media advertisements and reports of engagement results are in Exhibits J-7.

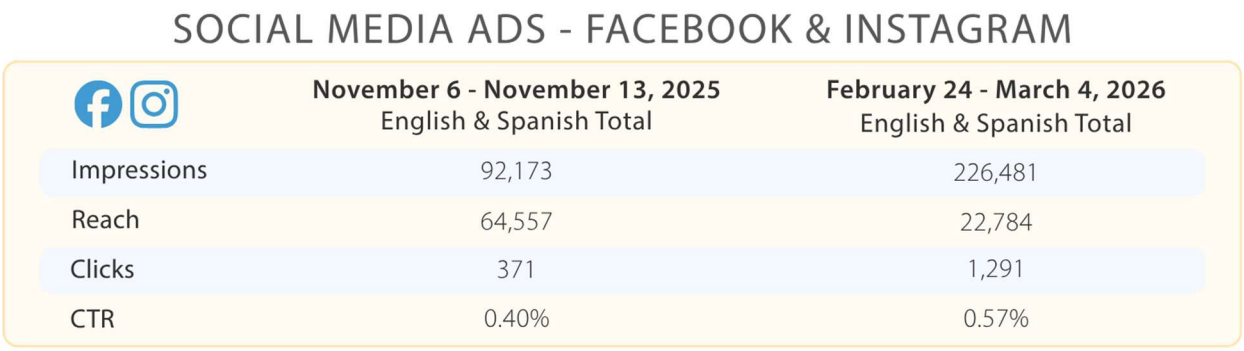


Figure 8. Social Media Analytics

J.4.5 Street Signage

Two (2) sets of temporary signs were placed at important intersections within the project notification area notifying the public of the November 2025 and March 2026 open house meetings. For the first open house, six (6) 24x36" double-sided bilingual signs were posted. For the second open house, seven (7) 36x48" signs were posted that included a Quick Response ("QR") code to the Project Webpage for ease of access to view the details in Spanish. The signs, representative photos of sign placement, and map of sign locations are included in Exhibit J-7.

J.4.6 Webpage

English and Spanish webpages were established at the inception of the Project and were continually updated throughout the Project's development. The webpages included information about the Project need and benefits, Project status and updates, all outreach materials, an interactive map, details about upcoming open houses, and required approvals and timing. Both webpages contained the Online Comment Form which was available for members of the public to submit feedback at any time. Outreach materials including the project mailers, public notices in local newspapers, and street signage included a QR code that directed visitors to the English webpage, which contains a link to the Spanish webpage. See Table 27 for a summary of webpage visits.

Screenshots of the webpages and the interactive map are in Exhibit J-7. The webpages, www.tep.com/santa-rita-connection and www.tep.com/santa-rita-connection-spanish, will remain live until the Project is in-service.

Table 27. Webpage Overview

Language	# Total Views*	# Individual Users*
English	2,563	1,664
Spanish	116	68

**As of March 24, 2026*

J.4.7 Media Coverage

The Project received media coverage through the following outlets:

- Green Valley News
- AZPM News
- KOLD News 13

Articles are included in Exhibit J-9.

J.4.8 Ways to Comment

Comments were accepted in both English and Spanish. The public was encouraged to provide feedback on the Project through the following options:

- Filling out an online comment form
- Filling out a paper comment form
- Sending email comments to SantaRitaConnection@tep.com
- Calling 520-770-7520 and leaving a voicemail message
- Mailing a letter with comments to:
  Santa Rita Connection Project
  P.O. Box 711
  Mail Stop CB200
  Tucson, AZ 85701-0711

As of March 24, 2026, the public provided a total of 46 comments and questions, via the methods shown in Figure 9. There were no letters or forms sent to the project mailbox. The most common topics mentioned in comments included route location, proximity to residences, and utilizing existing infrastructure. All topics and the number of times each were referenced are detailed in Figure 10.

All comments have personal information redacted and are provided in Exhibit J-10.

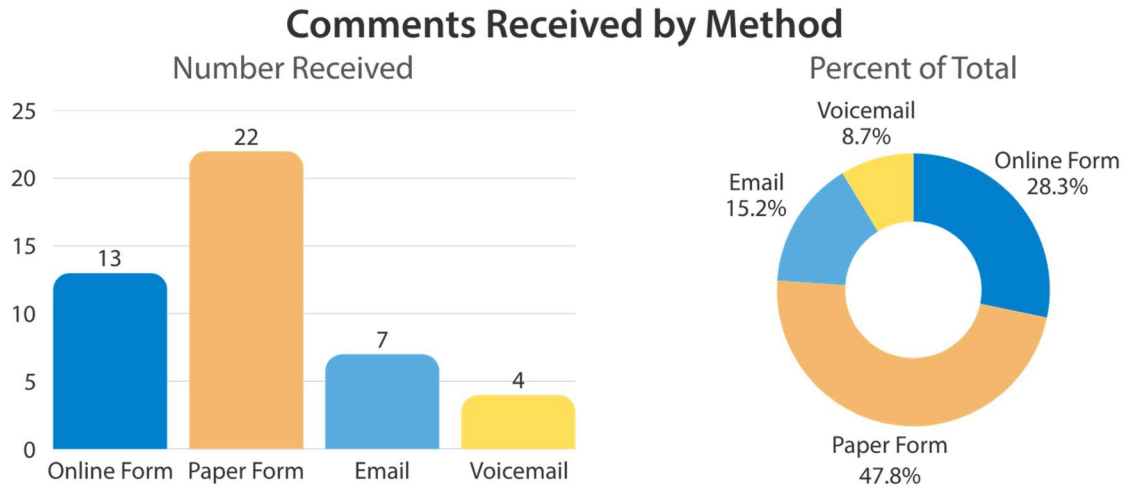


Figure 9. Public Comment Methods

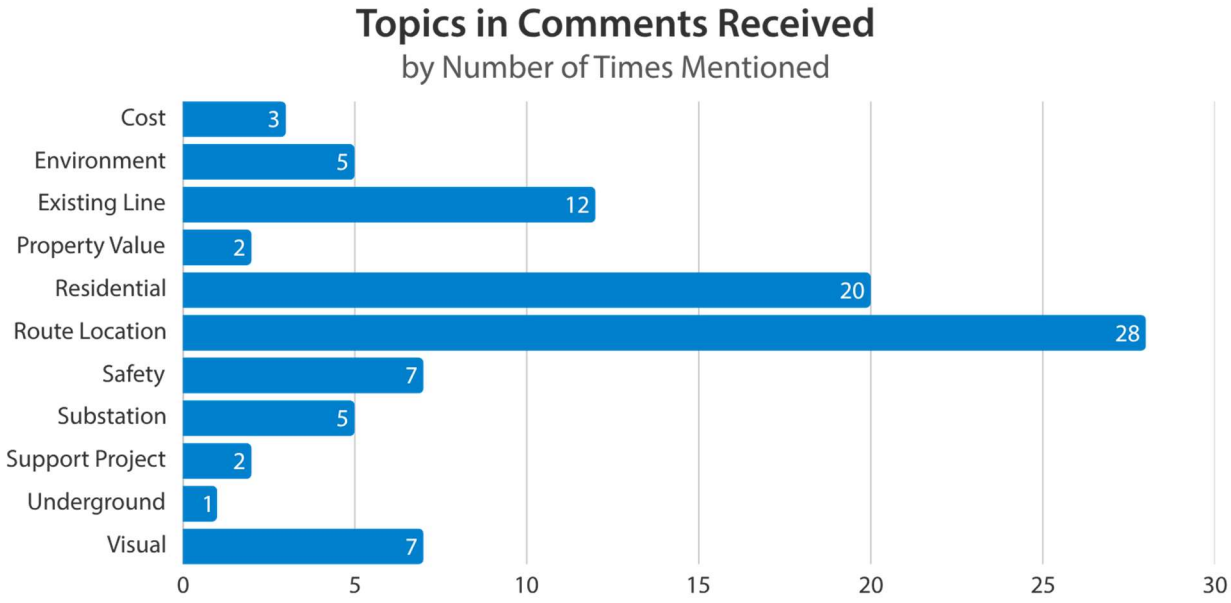


Figure 10. Public Comment Topics

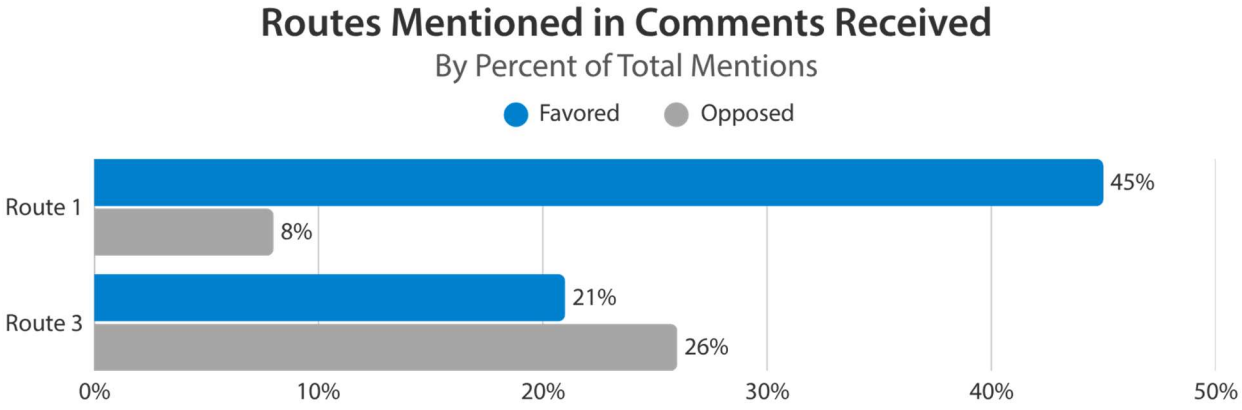


Figure 11. Public Comment – Routes

J.5 References

AZ SHPO. (2025). Government to Government Consultation. Retrieved from Cultural and Historic Preservation, Arizona State Historic Preservation Office: https://sites.google.com/view/az-consultation-toolkit/consultation-map

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-1

Public Engagement Plan

This page intentionally left blank

Tucson Electric Power

Santa Rita Connection Project

Public Engagement Plan

Prepared For :
Tucson Electric Power

Prepared By :
DockIt Consulting, LLC

Revised
March 30, 2026



Santa Rita Connection Project
Public Engagement Plan - Table of Contents

Tucson Electric Power

1

Introduction 01
Figure 1. Project Study and Notification Area Map 02
1.1 Outreach Guiding Principles 03

2

Outreach Purpose 03
2.1 Goal 1 - Facilitate Public Understanding of the Project 04
2.2 Goal 2 - Provide Opportunities for Comments and Input 04
2.3 Goal 3 - Maintain Accountability, Credibility, and Accessibility 04

3

Outreach Stages 04
Figure 2. Project Phases and Outreach Stages 05
Figure 3. Outreach Stages and Methods 06
3.1 Outreach Stage 1 - Project Introduction, Opportunities and Constraints, and Preliminary Segments ... 06
3.2 Outreach Stage 2 - Suitability Assessment and Refined Segments 06
3.3 Outreach Stage 3 - Compatibility Analysis and Route Alternatives 07
3.4 Outreach Stage 4 - Preferred Route and Hearing Notification 07
3.5 Anticipated Outreach Events Timeline 08
Figure 4. Anticipated Schedule of Events 08

4

Outreach Initiatives 08
4.1 Elected Official Briefings 08
4.2 Agency Briefings and Individual Meetings 09
4.3 Tribal Outreach 09
4.4 Public Open Houses 09
4.5 Bilingual Communications 10

5

Outreach Methods and Materials 10
5.1 Webpages 11
5.2 Postcard Mailings 11
5.3 Email Blasts 11
5.4 Newspaper Publications 12
5.5 Street Signage 12
5.6 Social Media Advertisements 12

6

Comment Opportunities and Collection 12
6.1 Online Comment Form 13
6.2 Paper Comment Form 13
6.3 Email 13
6.4 Voicemail 14
6.5 Mail 14

7

Conclusion 14

1 Introduction

Tucson Electric Power (TEP) initiated the Santa Rita Connection Project (SRCP) to identify and evaluate possible routes for an overhead 138 kV transmission line between Tucson and Sahuarita. The Project will upgrade the local energy grid, strengthen electric service reliability, support regional development, and provide greater capacity for growing energy needs. The transmission line will extend from the existing Sonoran Substation on Swan Road, approximately 5 miles south of I-10, to the proposed Santa Rita Substation on Corto Road south of Santa Rita Road. The Santa Rita Substation will support service reliability for homes, businesses, and other customers in the area.

The study area for this Project, which includes the area to be served by the new transmission line and substation, is shown in Figure 1 below. Interconnection will be made from the existing Sonoran Substation. The exact route of the transmission line will be determined with input from the public.

TEP has a strong record when it comes to service reliability and is dedicated to ensuring that it maintains this high service standard for the area south of Tucson, and all TEP customers, with the completion of this Project. During the siting process, TEP recognizes the importance of identifying the most compatible routing option that minimizes environmental and social impacts while continuing to meet customers' expectations for reliable electrical service.

The Project, a crucial step in electric infrastructure improvement, will be presented in an application for a Certificate of Environmental Compatibility (CEC) from the Arizona Corporation Commission (ACC). This Public Engagement Plan (PEP) has been prepared to ensure robust outreach and engagement in compliance with CEC requirements, ACC expectations, and TEP's guidelines to obtain meaningful public participation.

Additionally, this plan fulfills the levels of "inform", "consult", and "involve" on the International Association for Public Participation (IAP2) Spectrum of Public Participation. IAP2 defines the public participation goals as:

- Inform: "To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions."
- Consult: "To obtain public feedback on analysis, alternatives and/or decisions."
- Involve: "To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered."

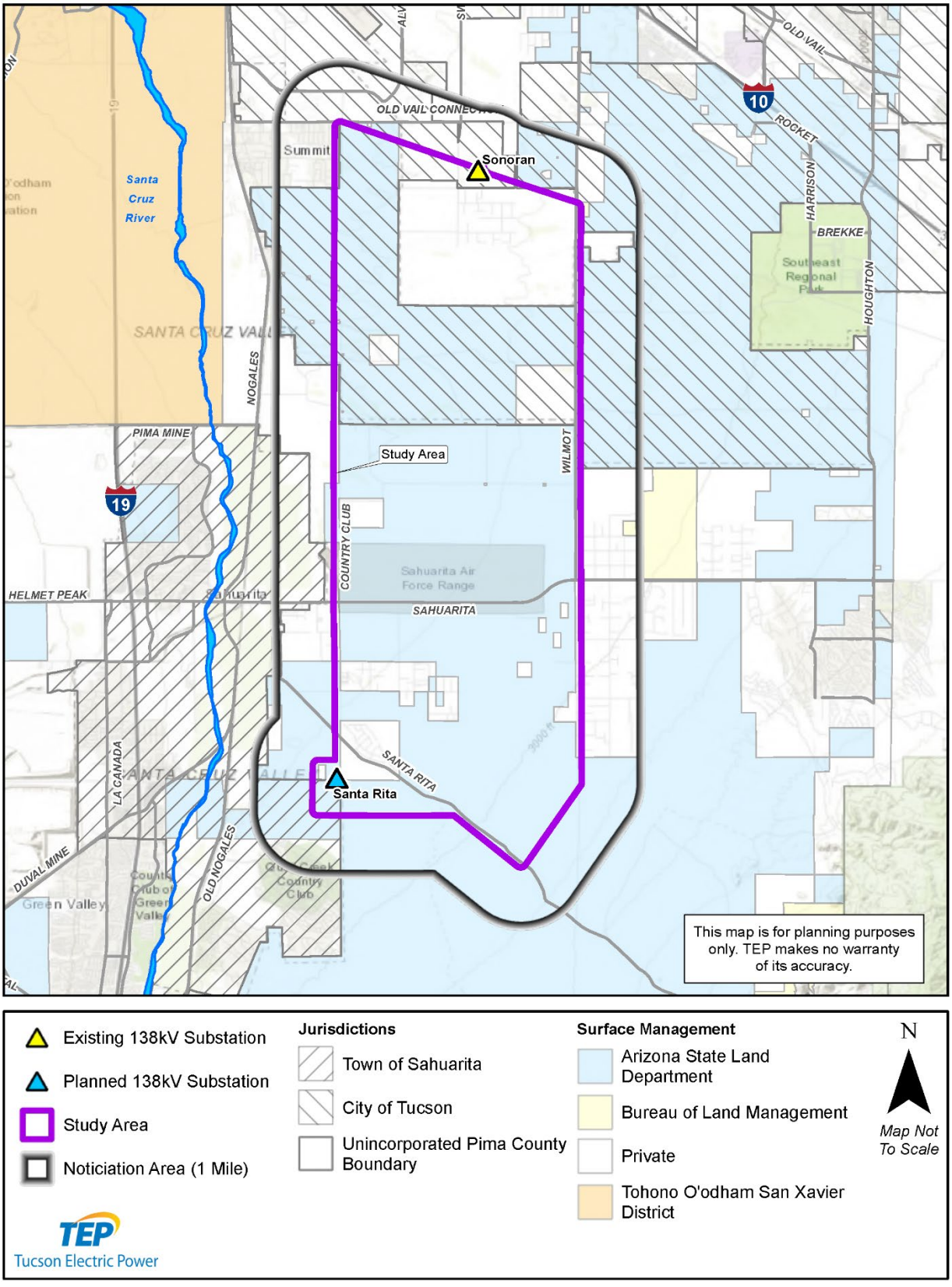


Figure 1. Project Study and Notification Area Map

1.1 Outreach Guiding Principles

For the SRCP, a strategic, responsive, dynamic, and equitable process of outreach and communication is paramount to ensuring that all interested parties have access to Project information, can submit comments and feedback about the Project, and hear how their input has been considered. This PEP has been developed to ensure an effective public outreach process is maintained based on the following guiding principles:

- Providing continuous public access to Project information as available and relevant, such as public notifications, webpages in both English and Spanish, maps and public open house displays, among others.
- Providing comprehensive agency outreach by informing and involving key organizations, government officials, and community leaders throughout the Project and welcoming their comments and input.
- Providing various opportunities for public comments and questions such as public open houses, comment forms at public open houses, online comment forms and Project contacts via email and phone.
- Linking PEP activities to Project milestones, technical activities and decision-making.
- Documenting and maintaining a record of all public comments.
- Providing accommodations to receive information and provide input from those with communication disabilities, mobility impairment, limited English proficiency and populations that are traditionally underserved. This would include public meeting venues that are easily accessible from public transportation. Other accommodations can be made if requested with sufficient advance notice to TEP by calling 520-770-7520.
- Evaluating and adjusting the PEP periodically to ensure information is being disseminated through efficient and effective methods.
- Ensuring that all parties (including officials, agencies, tribes, customers, residents, the public and TEP staff) are treated with respect in an appropriate, productive and safe manner in all communications including at meetings and open houses.

2 Outreach Purpose

The purpose of the SRCP PEP is to outline and facilitate a comprehensive public involvement program intended to inform the community about the Project's purpose and need, process, timeline, requirements, and specifications. This PEP also describes how TEP will actively seek input and comments from the public for consideration and guidance in developing the siting evaluation criteria, route alternatives, and identifying which route or routes for the proposed transmission line to include in the CEC application.

An outreach program that informs and educates the public throughout each phase of the Project can greatly reduce the probability of Project delays by addressing feedback and concerns raised by the community and using them to inform the route selection process Through public involvement in the planning stages, the Project team learns about potential challenges, obstacles, opportunities, and alternatives to be considered that may not be uncovered in desktop studies or reliance on subject matter experts.

The following goals and objectives were developed to capture meaningful and applicable input from the public that will be reflected or incorporated where possible in the CEC application.

2.1 Goal 1 – Facilitate Public Understanding of the Project

Objectives

- Provide information at multiple meetings and points of contact with elected and public officials, agencies, TEP customers, and the public.
- Develop and evaluate effective materials that will relay the Project description, purpose and need, process, timeline, requirements, and specifications in plain language for general audience comprehension, available in both English and Spanish.
- Disseminate informational materials through a variety of different methods and utilizing existing, successful TEP channels.

2.2 Goal 2 – Provide Opportunities for Comments and Input

Objectives

- Develop a list of current elected officials, agency contacts, and tribal members with their information for consistent notification regarding Project status, updates and meeting invitations.
- Develop and regularly refresh a list of current landowners within the notification area with their mailing addresses for consistent notification regarding Project status, updates and meeting invitations.
- Develop a list of current TEP customers within the notification area with their email addresses for consistent notification regarding Project status, updates and meeting invitations.
- Actively gather all input at meetings and open houses by providing comment forms; posting an online comment form on both the English and Spanish Project webpages; and maintain a record of all comments and TEP's responses to demonstrate how public input was considered in the final decision.

2.3 Goal 3 – Maintain Accountability, Credibility, and Accessibility

Objectives

- Exhibit respect, inclusivity, and transparency in Project planning, decision-making, and communications with all parties.
- Proactively distribute current Project information and provide timely responses.
- Provide a dedicated public telephone line, email address, and mailing address for public questions and comments.
- Create an online comment form available on both the English and Spanish Project webpages.
- Regularly update Project webpages with Project developments and digital copies of all distributed outreach materials.
- Ensure every community member has equitable access to information and chances to contribute.

3 Outreach Stages

The PEP includes a minimum of four rounds of public outreach: [1] Project Introduction, Opportunities and Constraints, and Preliminary Segments; [2] Suitability Assessment and Refined Segments; [3] Compatibility Analysis and Route Alternatives; and [4] Preferred Route and ACC Hearing. These stages are outlined in relation to the Project's overall phases in Figure 2 below.

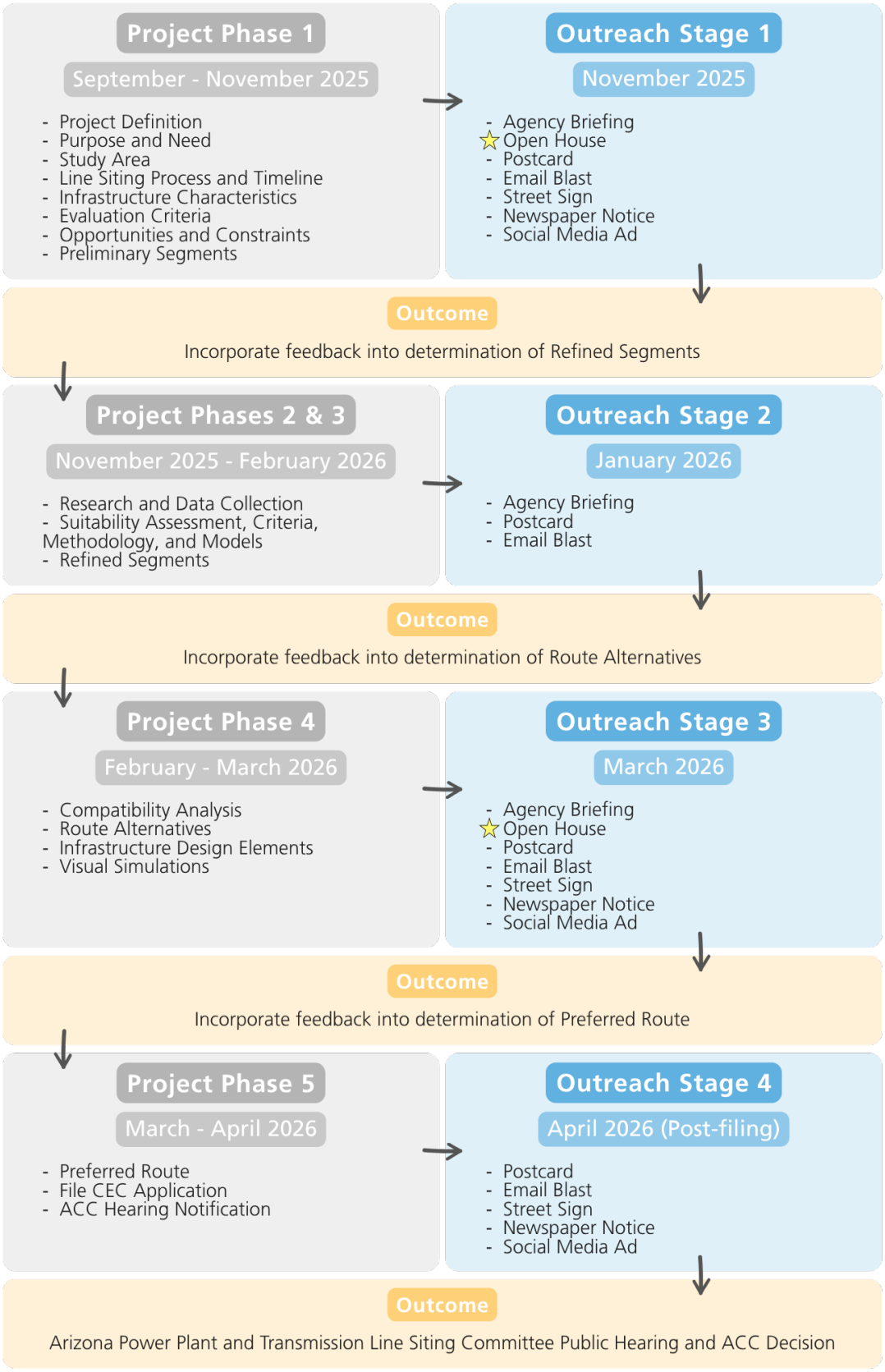


Figure 2. Project Phases and Outreach Stages

	Outreach 1	Outreach 2	Outreach 3	Outreach 4
Agency Briefing	✓	✓	✓	
Open House	✓		✓	
Postcard	✓	✓	✓	✓
Email Blast	✓	✓	✓	✓
Street Sign	✓		✓	✓
Newspaper Notice	✓		✓	✓
Social Media Ad	✓		✓	✓

Figure 3. Outreach Stages and Methods

Each outreach stage will also offer individual briefings for elected officials and tribal communities. All comments, questions, concerns, issues and preferences from the following groups will be instrumental in identifying evaluation criteria, refined segments, route alternatives, and the preferred route.

- Elected officials
- Agency representatives
  - Including public officials; federal, state, county, city, and town staff; other utility providers, K-12 schools, airport administrators
- TEP customers
- Landowners, businesses, and residents
- Other interested community members and groups

3.1 Outreach Stage 1 – Project Introduction, Opportunities and Constraints, and Preliminary Segments

The first outreach stage coincides with the first Project phase, "Pre-Analysis". This stage refers to the introduction of the Project, opportunities and constraints within the study area, sharing identified preliminary segments, as well as seeking comments and input about potential issues, impacts, and community preferences. This information will be shared with elected officials, agencies, tribal communities, TEP customers, landowners, businesses, and the public. During this stage, outreach guidelines (i.e., schedule, structure and expectations) will be established to create productive exchanges for all involved parties.

This stage will consist of Agency Briefing 1, Open House 1, a mailed postcard, an email sent to TEP customers, posted street signs, printed newspaper notices, and ads placed on social media platforms. Following the first outreach activities, the Project team will review and consider all feedback to further develop the evaluation criteria to be applied throughout the siting process, which may be revised based on information obtained during subsequent outreach stages. At the completion of Outreach 1, TEP will have a better understanding of public opinion.

3.2 Outreach Stage 2 – Suitability Assessment and Refined Segments

The second outreach stage coincides with the second and third Project phases, "Data Collection" and "Suitability Assessment". During this stage, the Project team will incorporate feedback received from Outreach Stage 1 into the evaluation criteria, integrate the data into the Suitability Assessment to

understand the viability of each preliminary segment, and determine which segments to carry forward and which to eliminate from consideration. As a result, TEP will share the assessment and introduce the Refined Segments.

This stage will consist of Agency Briefing 2, a mailed postcard, an email sent to TEP customers, and webpage updates displaying the recent Project developments. The postcard and email will direct community members to the Project webpage to view the Refined Segments, provide ways to contact the Project team, and submit comments.

3.3 Outreach Stage 3 – Compatibility Analysis and Route Alternatives

The third outreach stage coincides with the fourth Project phase, "Compatibility Analysis." During this stage, the Project team will review input received in Outreach Stage 2, apply the feedback into the analysis, and apply practicability factors to evaluate the possible pathways the Refined Segments may follow to reach the planned substation. As a result, TEP will present Route Alternatives and draft the infrastructure design to create photo simulations depicting the proposed transmission line. This information will be shared with elected officials, agencies, tribal communities, TEP customers, landowners, businesses, and the public.

This stage will consist of Agency Briefing 3, Open House 2, a mailed postcard, an email sent to TEP customers, posted street signs, printed newspaper notices, ads placed on social media platforms, and webpage updates displaying the recent Project developments. The information shared in Outreach 2 will also be displayed at Open House 2 to ensure all members of the public are able to view details related to each phase of the Project. TEP will encourage comments and input from the community to incorporate into identifying a Preferred Route in the following Project phase.

3.4 Outreach Stage 4 – Preferred Route and Hearing Notification

The fourth outreach stage coincides with the fifth Project phase, "Concept Evaluation." During this stage, the Project team will incorporate all comments and feedback received in Outreach Stages 1, 2, and 3 to determine which of the Route Alternatives shared in Outreach 3 will be chosen as the Preferred Route to present to the ACC. TEP will then submit its application for a CEC, the Arizona Power Plant and Transmission Line Siting Committee will host a public hearing, and the Committee will ultimately make a recommendation on the application to the Commission.

This stage will consist of a mailed postcard, an email sent to TEP customers, posted street signs, printed newspaper notices, ads placed on social media platforms, and webpage updates displaying the recent Project developments. As Outreach Stage 4 will primarily occur after the application has been completed and filed, all materials will provide notification and display the details for the public hearing. Materials will also direct community members to the Project webpage where they will be able to view the Preferred and Alternative Routes, view a copy of the CEC application, provide ways to contact the Project team, and submit comments post-filing. These comments and outreach materials will still be included in the Project record and filed with the ACC as an addendum to the application.

3.5 Anticipated Outreach Events Timeline



Figure 4. Anticipated Schedule of Events

Figure 2 details all manners in which outreach will be conducted throughout the duration of the Project outside of the scheduled events shown in Figure 4 above.

4 Outreach Initiatives

The SRCP PEP has been designed to encourage public input and comments; provide opportunities for meaningful communication between the TEP Project team and the surrounding community; and provide effective mechanisms to disseminate information and gather feedback.

The approach to public outreach will adapt throughout the Project to ensure that public interests are being served; elected and public officials are being informed; and public comments and questions are relayed to the Project team, addressed, and recorded.

At the onset, TEP will distribute Project information and express encouragement of public engagement to a broad audience that will include:

- Elected officials
- Agency representatives
  - Including public officials; federal, state, county, city, and town staff; other utility providers, K-12 schools, airport administrators
- TEP customers
- Landowners, businesses, residents, and the general public
- Other interested community members and groups

4.1 Elected Official Briefings

Providing proactive, informative, and timely updates to elected officials is vital to preserving the integrity of public outreach and government relations principles. Briefings for elected officials will be offered and conducted by the TEP Government Relations Department on an individualized basis via virtual meeting, in person, phone, or other appropriate methods. The briefings are intended to provide credible, reliable information early during each phase of the Project. Attendance and input from each briefing will be documented and submitted as part of the CEC application.

A list of contacts with jurisdiction or oversight in the Project study area will be populated at the start of the Project and updated regularly, as necessary. A representative of TEP's Government Relations Department will relay Project status updates; provide copies of materials distributed to the public; and offer individual, one-on-one, briefings to each officeholder to share Project details more in depth and address any questions or comments officials or their constituents may have.

4.2 Agency Briefings and Individual Meetings

TEP will conduct specific outreach to applicable agencies and public officials to ensure transparency, open communication, alignment, and regulatory coordination throughout all phases of the Project. The Project team will schedule an agency briefing during each of the outreach stages to provide early updates on Project information, status, recent developments, and welcome input from all parties on potential limitations or opportunities for collaboration.

A list of contacts representing organizations established within or associated to the Project study area will be populated at the start of the Project and continuously updated. Invitations for each briefing will be sent to all agency representatives and staff on the contact list. During the briefings, TEP will share a presentation displaying Project information and status updates, the next steps or upcoming Open House details, and address any questions or comments attendees may have.

Individual meetings will be organized if requested by an agency or determined necessary by the Project team. These meetings will allow the Project team and agency staff to discuss technical details, review land right possibilities or permitting requirements, and provide clarity or responses to questions either party may have. Attendance and input from each agency briefing and individual meeting will be documented and submitted as part of the CEC application.

4.3 Tribal Outreach

Tribal outreach efforts will include a multifaceted approach to ensure respectful, effective, and inclusive communication with Tribal Nations to invite engagement and relay TEP's recognition of all feedback from Tribal leaders and members. The SRCP PEP Tribal outreach methods are designed to honor Tribal sovereignty, accommodate communication preferences, and promote transparency throughout all phases of the Project.

A list of Tribes with expressed ancestral affiliation in the area will be populated at the start of the Project to include contact information for pertinent leaders or members, and updated regularly, as necessary. During every outreach stage, individual letters will be mailed to each Tribe providing a Project overview; recent developments and updates; current maps of the Project status; invitations to upcoming open houses; and offers for one-on-one briefings and field visits with the Project team. In an effort to maintain an ongoing dialogue, shortly after mailing the letters, a representative of TEP's Government Relations Department will send follow-up emails to each Tribe and include attachments for the letter and supporting materials sent via mail.

Briefings for Tribal members will be offered and conducted by the TEP Government Relations Department on an individualized basis via virtual meeting, in person, phone, or other appropriate methods. Documentation of all outreach to Tribal communities, as well as attendance and input from each briefing, will be submitted as part of the CEC application.

4.4 Public Open Houses

TEP will host two in-person open houses during Outreach Stages 1 and 3 to relay Project information and updates at a proximate location on an informal basis, allowing for active engagement and open communication between members of the community and the Project team. Each open house will feature detailed Project specifics on display boards; large, printed maps on tables; and a GIS station for attendees to view interactive Project maps and visual aids. The open houses will allow the public to speak directly with the Project team, TEP staff and representatives, as a variety of applicable subject matter experts will be present to provide clarity and address any questions attendees may have.

Aside from additional materials depicting information related to the current Project phase, the following aspects of the Project will consistently be displayed at both open houses to maintain consistency in the information provided to the public:

- Purpose and Need
- Transmission Line Characteristics
- Siting Criteria
- Siting Process and Timeline
- Printed and Interactive Maps

The specific timing and information to be shared at each open house is shown in Figure 2.

Project team members will select a venue in close proximity to or within the Project study area boundary to minimize resident travel and facilitate convenient access and community attendance. The open houses will be scheduled in the early evening to accommodate those with schedule conflicts during daytime hours, ensuring as many interested parties as possible are able to participate. Notification containing the date, time, and location will be distributed for each open house approximately two weeks in advance via mailed postcards, email blasts, street signage, newspaper publications, and social media advertisements. A variety of complimentary, light refreshments will be available to the public throughout the duration of the open houses.

During the open houses, TEP will seek feedback from members of the public and encourage those present to provide formal submission of their comments by completing either a hard copy or electronic form, both of which will be available on location at the open houses. Attendance and comments received during each open house will be documented and submitted as part of the CEC application as public input is valuable throughout every phase of the Project and will be applied at the culmination of the line siting process.

4.5 Bilingual Communications

As the Project area lies within a multicultural region, TEP will maintain its precedent to include both English and Spanish verbiage on the majority of the informational materials distributed to the public.

The Project webpage, interactive map, online comment form, mailed postcards, newspaper publications, and social media advertisements will be produced in both English and Spanish, and care will be taken to ensure that translations are accurate and culturally appropriate. Additionally, at least one Spanish-speaking member of the Project team will be present at each open house and any comments or questions submitted to the Project in Spanish will be responded to accordingly.

5 Outreach Methods and Materials

With the goal to reach as much of the community and members of the public as possible, TEP will abide by their standard procedure to notify and communicate Project information to all parties through a variety of formats and platforms. Initial materials will be created at the beginning of the Project and updated following each Project phase to reflect the current status, recent developments, and upcoming events.

Over the course of the outreach period, the engagement tools that will be created and implemented by the Project team include two webpages, an interactive map, postcards, email blasts, newspaper publications, street signage, and social media advertisements. The content included across all materials will be clear and concise to be effective sources of information for all audiences.

The specific timing and the information to be shared through each method is shown in Figure 2.

5.1 Webpages

The Project webpage is an integral part of effective outreach and will be the primary hub of information, designed for user-friendliness, reliability, and accessibility. It will provide a comprehensive overview of the Project, including the description; benefits; process; timeline; current and past versions of Project maps; copies of all distributed materials, once available; the ways in which the public may comment on the Project or contact the team; and house the interactive map and online comment form.

The webpage will be available in both English and Spanish prior to the first stage of outreach, and all aspects therein will be consistently maintained to ensure the public is kept informed of the latest developments.

Project webpage (English): www.tep.com/santa-rita-connection

Project webpage (Spanish): www.tep.com/santa-rita-connection-spanish

Interactive map: www.tep.com/maps/santa-rita-connection

5.2 Postcard Mailings

Early in the Outreach Stage 1, the Project team will compile a mailing list using credible resources, such as the Pima County Assessor, to capture all physical and/or mailing addresses within a one-mile buffer extending beyond the Project study area boundary, identified as the notification area. The mailing list will be updated as needed to effectively and accurately inform landowners, businesses, and members of the community.

During every stage of outreach, a bilingual postcard will be mailed providing current information about the Project, including an overview of recent developments; open house or CEC hearing details; the options available for comment submission or to contact the Project team; and the Project webpage URL to view new materials, as well as a QR code for direct webpage access. The postcards will be mailed with updates at the conclusion of each Project phase, and when providing notice for open houses or the hearing, delivery to mailboxes will be approximately 2 weeks prior to each event to ensure timely and successful external engagement.

5.3 Email Blasts

As the majority of the Project study area lies within TEP's service territory, a staff member on the Project team will compile a list of all customer email addresses within the notification area. To broaden engagement methods, the Project team will assemble an email in conjunction with each postcard mailing that will expand upon the mailer's brief overview. The email blasts will provide current information about the Project; descriptions and visual aids pertaining to recent developments; open house and CEC hearing details; the options available for comment submission or to contact the Project team; and a link to the Project webpage where recipients can view updated maps and further details.

TEP will use a third-party Email Service Provider to schedule the bulk email blast to be sent as close as possible to the expected postcard delivery date to synchronize and evenly distribute the communication of new Project information. Both the online and paper comment forms will include a checkbox the commentor may select if they would like to be added to the email distribution list, and each email sent will include a link for recipients to "opt-out" of further Project emails, effectively removing themselves from the list.

5.4 Newspaper Publications

In compliance with TEP's emphasis on inclusive and expansive community outreach, the Project team will create and place bilingual advertisements that will be published in local newspapers of general circulation throughout the Project notification area. Project advertisements will be featured in several publications, including the Arizona Daily Star, Green Valley News, and Arizona Bilingual News. Selecting multiple media organizations will increase the likelihood of widespread visibility, ensuring comprehensive coverage and outreach across different demographics.

The Project team will coordinate with each local newspaper to schedule and submit advertisements relaying a brief overview of the Project; status updates; the dates, times, and locations for the open houses and CEC hearing; contact information to reach the Project team; and the Project webpage URL to view new materials, as well as a QR code for direct webpage access. Placement in each newspaper will be published approximately 2 weeks prior to all scheduled events open to the public, allowing time for proper circulation and notification to the community.

5.5 Street Signage

Prior to each public open house and the CEC hearing, TEP will have temporary signs installed in strategic locations throughout the Project area. Because the area is largely vacant or undeveloped, locations should be close to residential areas and at major intersections to maximize the opportunities for community members to see them. The signs will be produced in large sizes (either 24"x36" or 36"x48") and be mounted on sturdy frames in an effort to increase visibility from the roadway and reduce the risk of displacement, respectively.

5.6 Social Media Advertisements

Social media advertising campaigns will be developed and queued to run for one week leading up to each open house and the CEC hearing to increase awareness and attendance across diverse audiences. Geotargeted Facebook and Instagram ads will be placed on each platform in both English and Spanish, containing the date, time, and location for each event, as well as links to the Project website for more information. The targeted location for all ads will encompass the Project notification area, identified as a one-mile buffer extending beyond the Project study area.

At the conclusion of each advertisement's duration, TEP will have a comprehensive set of analytics, including impressions (total views), reach (individual users), clicks, and click-through rates (CTR) which will provide insight into engagement and the effectiveness of the advertisements.

6 Comment Opportunities and Collection

The SRCP PEP requires consistent application of procedures for acquiring, documenting and responding to all comment submissions, as well as relaying the public's feedback to Project team members for collective understanding and informed decision-making.

Comments will be collected through a variety of means, allowing the Project team to capture valuable input, address concerns, provide clarity, and foster a collaborative relationship with the community. The Project team will utilize an online comment form, paper comment form, voicemail, email, and mail, with the intent to provide the public with greater opportunities to influence Project outcomes. A comprehensive record of all public input will be created by the Project team and include, at a minimum, the following details:

- Comment date
- Name and contact information (if available)
- Method in which the comment was submitted
- Direct quotation of comments and questions
- Topic(s) mentioned within comment verbiage
- Response sent or provided by the Project team

Organized and thorough record-keeping of comments and corresponding responses will be an integral component of the CEC application, serving as a testament to the Project's commitment to public involvement and engagement.

6.1 Online Comment Form

The Project team will create an online form for comments to be submitted by all visitors to the Project webpage, where it will remain throughout all phases of the Project. Available in both English and Spanish and free to be completed by individuals multiple times, the online form will include the following fields:

- First and Last Name
- Email address
- Phone number
- Comment (no limit to character count)
- Checkbox for commentor to be added to Project email distribution list

Upon submission, the form will automatically be sent to the Project email address for ease of response by a member of the Project team and further expanding lines of communication. All comments will be replied to in a timely manner with personalized, tailored responses.

Project comment form: www.tep.com/santa-rita-connection/#comment

6.2 Paper Comment Form

The Project team will create a hard-copy version of the online form for comments to be submitted during each public open house. The paper form will include the following fields:

- First and Last Name
- Email address
- Phone number
- Comment
- Checkbox for commentor to be added to Project email distribution list

As the open house format offers open discussion between the public and the Project team with questions answered and feedback received in person, TEP staff and representatives attending each open house will encourage all members of the community present to formally document their input by completing a comment form.

6.3 Email

TEP will establish a dedicated Project email address to facilitate direct communication between the public and the Project team, as well as serving as a verifiable record and an accessible channel for the submission of questions, comments, and feedback. A member of the Project team will reply to all emails in a timely manner with personalized, tailored responses.

Project email address: SantaRitaConnection@tep.com

6.4 Voicemail

TEP will establish a dedicated Project phone number to facilitate direct communication and serve as an option for members of the public that would prefer open dialogue with the Project team. Callers will automatically be directed to the SRCP voicemail and encouraged to leave a message or inquiry, and if requested or warranted, a team member will call back in a timely manner.

Project phone number: (520) 770-7520

6.5 Mail

TEP will establish a dedicated Project mailbox and address for any community members that may choose to take paper comment forms with them following an open house or any parties that prefer to submit remarks to the Project team via mail. If requested and contact information is included, a team member will reach out to provide a response in a timely manner.

Project mailing address: TEP Santa Rita Connection Project
P.O. Box 711
Mail Stop CB200
Tucson, AZ 85701-0711

7 Conclusion

At the conclusion of the SRCP line siting process and period for outreach, the Project team will have actively and thoroughly sought engagement and comments from a broad range of individuals and organizations who have ties to the area, interest in the Project, or those who may be potentially impacted. Through print and digital informational materials consistently shared in a variety of forms, meetings and open houses, and detailed record-keeping of public comments, the Project team will have comprehensive information to apply when considering the most viable route of the transmission line.

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-2

Stakeholder Lists

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-2.1

Agency List

This page intentionally left blank

Agency List

Organization/Department	Title	First Name	Last Name
Federal			
Bureau of Land Management	Tucson Office Field Manager	Colleen	Dingman
	Tucson Office Assistant Field Manager	Michael	Dixon
U.S. Army Corps of Engineers	Los Angeles District Public Affairs Specialist	Robert	DeDeaux
Western Area Power Administration	Desert Southwest Region Transmission Asset Planning Project Coordinator	Angela	Murphy
	Transmission Asset/Reliability-Centered Maintenance Administration Coordinator	Jacqueline	Brusoe
Arizona			
Department of Corrections, Rehabilitation & Reentry	Chief Legislative Liaison	Brianna	Williams
	Facilities Management Assistant Director	Scott	Mundell
Department of Transportation	Office of International Affairs Director	Mark	Sanders
	Southcentral District Administrator	Jeremy	Moore
	Southcentral District Permits Supervisor	Michelle	Garza
Game and Fish Department	Public Affairs Community Liaison	Mark	Frieberg
Historic Preservation Office	Cultural Resources Compliance Manager	Mary-Ellen	Walsh
	Archaeological Compliance Specialist	Caroline	Klebacha
Land Department	Real Estate Division Assistant Director	Ruben	Ojeda
	Real Estate Division Assistant Director	Karen	Dada
	Real Estate Division Rights of Way Section Manager	Amber	Troidl
Pima Natural Resource Conservation District			
University of Arizona	Real Estate Administration Director	Bruce	Vaughan
	Real Estate Administration Assistant Director	Connie	Yazzie
	Arizona Experiment Station Director	Brett	Blum
Pima County			
Community Action Agency Board	Committee Coordinator	Manira	Cervantes
Conservation Lands & Resources	Cultural Resources and Heritage Preservation Manager	Ian	Milliken
	Program Manager	Jenny	Neeley
	Range and Conservation Lands Division Manager	Karen	Simms
	Natural Resource Parks and Trails Division Manager	Julie	Parizek
	Canoa Ranch Conservation Park Manager	Matthew	Roberts
Facilities Management	Energy Program Manager	Eric	Wilson
Land Planning & Regulation	Chief Zoning Inspector	Thomas	Drzazgowski
Regional Flood Control District	Committee Coordinator	Eric	Shepp
City of Tucson			
Environmental & General Services Department	Energy Manager	Michael	Catanzaro
Housing and Community Development	Director	Ann	Chanecka
Office of the City Manager	Assistant City Manager	Kristina	Swallow
Office of the Mayor	Communications and Policy Advisor	Victor	Mercado
Parks and Recreation	Director	Lara	Hamwey
Planning & Development Services	Director	Koren	Manning
	Entitlements Section Manager	John	Beall
	Principal Planner	Maria	Gayosso
	Lead Planner	Gabriel	Sleighter
	Lead Planner	Jay	Olivas
	Historic Preservation Officer	Desiree	Aranda
	Historic Preservation Officer	Jonathan	Knighton-Wisor
Real Estate Division	Real Estate Administrator	John	Cahill
Strategic Communication Division	Public Information Officer	Erica	Frazelle
Transportation & Mobility	Director	Samuel	Credio
	Deputy Director	Jennifer	Toothaker

Agency List			
Organization/Department	**Title**	**First Name**	**Last Name**
Tucson Public Safety Academy	Fire Department Training Deputy Chief	Mike	Carsten
	Police Department SALETC & Advanced Training Lieutenant	John	Malovich
Tucson Water	Director	John	Kmiec
	Engineering Manager	Kathryn	Gerber
	Civil Engineer	Dean	Trammel
Town of Sahuarita			
Town Council	All Town Council Members		
Public Works Department	Deputy Director/Utilities Division Manager	Daniel	Logan
Community Development	Director	Anna	Casadei
	Deputy Director	Nathan	Barrett
Planning & Zoning Division	Manager	Orlanthia	Henderson
	Senior Planner	Dylan	Parry
Other			
Arizona Electric Power Cooperative	Land Services Manager	Teresa	Murphy
Robson Communities	Senior Forward Planner	Craig	Helsing
	Forward Planner	Christian	Passalacqua
Sahuarita Unified School District	District Office Director of Community Outreach	Amber	Woods
	Walden Grove High School Principal	Elizabeth	De La Ossa
	Walden Grove High School Assistant Principal	Kreston	Elchert
Southwest Gas	Tucson Southwest Gas Franchise Group		
Sunnyside Unified School District	Public Relations Executive Director	Marisela	Felix
	Summit View Elementary School Office Manager	Lillian	Morales
Trico Electric Cooperative	Land Services & Environmental Manager	Wesley	Crane
	Engineering Program Manager	Amada	Urbalejo De La Fuente
	Distribution Engineering Manager	Robert	Quihuis
	Senior Distribution Engineer	Benito	Hernandez
	Distribution Engineer	Brandon	Mishler
Tucson Airport Authority	Vice President/Chief Revenue Officer	John	Voorhees
	Director of Properties and Concessions	Emin	Aydin
	Deputy Chief of CERCLA/NEPA Legal	Becca	Cammack
	Manager of Planning	Scott	Robidoux
	Property Administrator	Michael	Hollar

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-2.2

Elected Officials List

This page intentionally left blank

Elected Officials List

Organization	Title	First Name	Last Name
United States			
Senate	Senator for Arizona	Mark	Kelly
	Senator for Arizona	Ruben	Gallego
House of Representatives	Congresswoman, Arizona District 7	Adelita	Grijalva
Arizona			
Senate	State Senator, District 21	Rosanna	Gabaldon
House of Representatives	State Representative, District 21	Consuelo	Hernandez
	State Representative, District 21	Stephanie	Stahl Hamilton
Office of the Governor	Deputy Director, Southern Arizona Office	Nathalia	Untiveros
Pima County			
Board of Supervisors	Board Chair, District 3 Supervisor	Jen	Allen
	Vice Chair, District 2 Supervisor	Matt	Heinz
	District 4 Supervisor	Steve	Christy
Administration	County Administrator	Jan	Lesher
Town of Sahuarita			
Town Council	Mayor	Tom	Murphy
	Vice Mayor	Kara	Egbert
	Member	Steven	Gillespie
	Member	Kim	Lisk
	Member	Ed	Lytle
	Member	Deborah	Morales
	Member	Diane	Priolo

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-2.3

Tribal Outreach List

This page intentionally left blank

Tribal Outreach List

Tribe	Position	First Name	Last Name
Ak Chin Indian Community	Chairman	Gabriel	Lopez
	Director, Cultural Resources Program	Elaine	Peters
Gila River Indian Community	Governor	Stephen Roe	Lewis
	Tribal Historic Preservation Officer	Reylynne	Williams
Hopi Tribe	Chairman	Timothy	Nuvangyaoma
	Tribal Historic Preservation Officer	Stewart	Koyiyumptewa
Mescalero Apache Tribe	President	Thora	Walsh Padilla
	Tribal Historic Preservation Officer	Holly	Houghten
Pascua Yaqui Tribe	Chairman	Julian	Hernandez
	Tribal Historic Preservation Officer	Karl	Hoerig
Pueblo of Zuni	Governor	Arden	Kucate
	Tribal Historic Preservation Officer	Kurt	Dongoske
Salt River Pima-Maricopa Indian Community	Tribal Historic Preservation Officer	Shane	Anton
Tohono O'odham Nation	Director, Natural Resources	Richard	Saunders
Tonto Apache Tribe	Chairman	Calvin	Johnson
	Cultural & NAGPRA Representative	Jeri	De Cola
White Mountain Apache Tribe	Chairman	Kasey	Velasquez
	Tribal Historic Preservation Officer	Mark	Altaha
Yavapai-Apache Nation	Chairman	Buddy	Rocha, Jr.
	Preservation & Technology Dept. Coordinator	Marley	Juan

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-3

Agency Briefing Presentations and Summaries

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-3.1

Agency Briefing 1 Presentation (Nov. 2025)

This page intentionally left blank

SANTA RITA CONNECTION

AGENCY BRIEFING

Chris Ortiz y Pino – Project Manager - Siting, Outreach, & Engagement

November 2025

1



Agencies

Please type into the chat:
- Name
- Organization
- Title/Role

- Federal Agencies
- State Agencies
- Pima County
- City of Tucson
- Town of Sahuarita
- Tucson Airport Authority
- Telecommunication & Utility Companies
- Sunnyside Unified School District
- Sahuarita Unified School District

© Tucson Electric Power. All rights reserved.

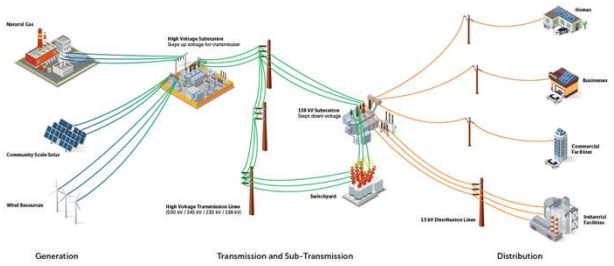
2

Agenda

1. How Power Gets to you
2. Project Description, Purpose, and Need
3. Overview of Planning and Siting Process
4. Opportunities, Constraints, & preliminary Segments
5. Required Approvals & Timeline

3

How Power Gets to You



© Tucson Electric Power. All rights reserved.

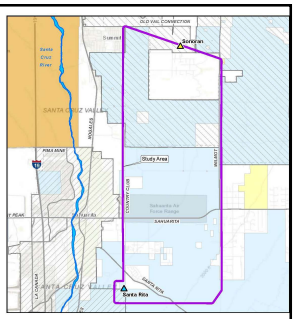
4

Santa Rita Connection

A new transmission line from the existing Sonoran Substation to the planned Santa Rita Substation.

Purpose and Need

- To accommodate future load growth in the area south of Tucson
- Enhance the regional grid providing redundancy and stability
- Provide greater capacity to help meet the current and future energy needs of the community



© Tucson Electric Power. All rights reserved.

5

Example Pole Structure

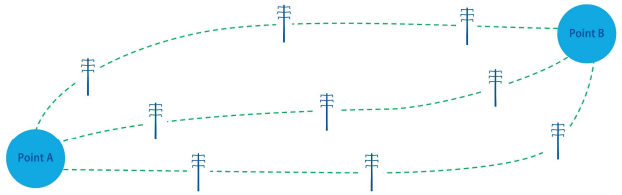
- Tubular
- Weathering Steel
- Monopoles



© Tucson Electric Power. All rights reserved.

6

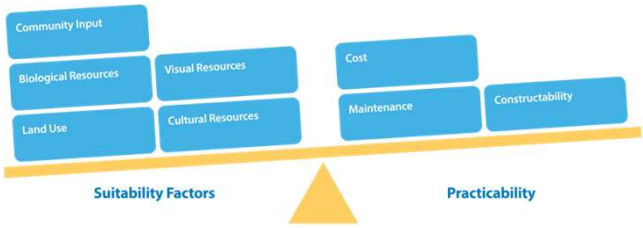
What is Siting?



© Tucson Electric Power. All rights reserved. 7

7

Project Route Development & Evaluation



© Tucson Electric Power. All rights reserved. 8

8

Planning & Siting Process Flowchart

Phase 1: Pre-Analysis
- Conduct Field Visits
- Develop Study Area
- Identify Opportunities and Constraints
- Conduct Public and Stakeholder Outreach
- Develop Preliminary Segments

Phase 2: Data Inventory
- Conduct Research and Collect Data

Phase 3: Suitability Assessment
- Develop Suitability Models
- Conduct Suitability Assessment
- Field Review
- Public and Stakeholder Outreach
- Refine Segments

Phase 4: Compatibility Analysis
- Conduct Compatibility Analysis
- Develop Route Alternatives
- Field Review

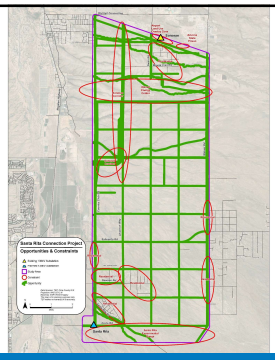
Phase 5: Concept Evaluation
- Public and Stakeholder Outreach
- Identify Preferred Route
- Submit CEC Application
- Public Notification and Hearing

© Tucson Electric Power. All rights reserved. 9

9

Opportunities & Constraints

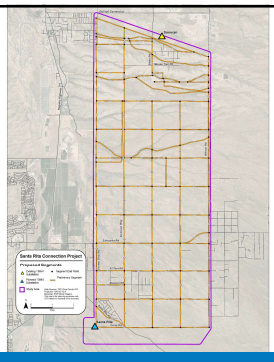
- Opportunities are linear features like roadways, washes, and existing utility corridors within the study area.
- Constraints represent areas that may be less compatible with a transmission line making it more challenging to construct and maintain.



© Tucson Electric Power. All rights reserved. 10

10

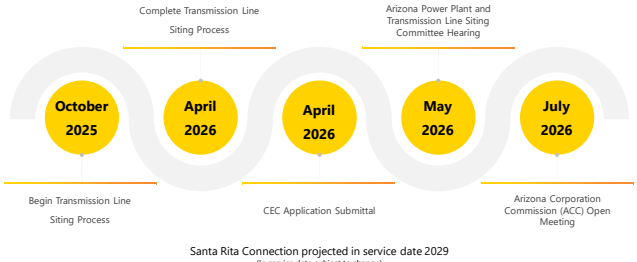
Preliminary Segments



© Tucson Electric Power. All rights reserved. 11

11

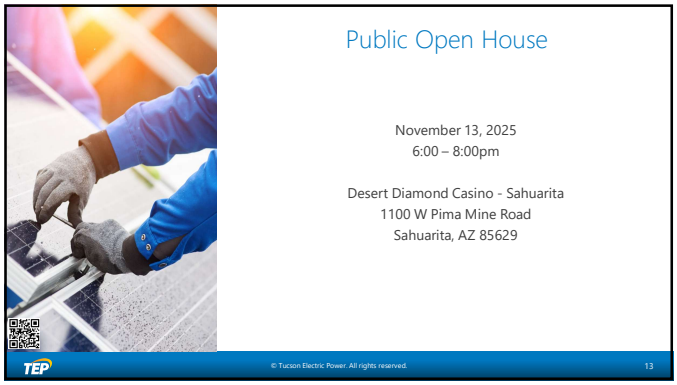
Project Schedule



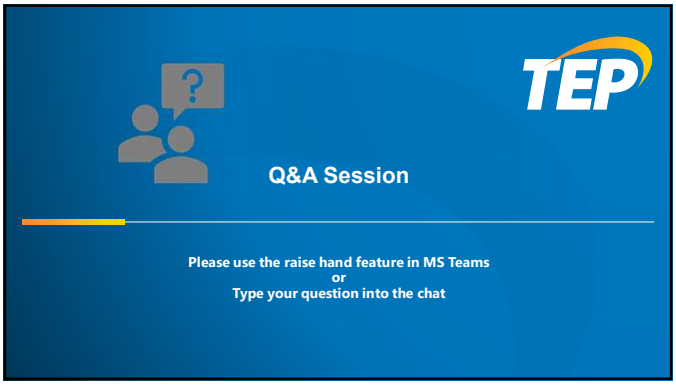
Santa Rita Connection projected in service date 2029
(In service date subject to change)

© Tucson Electric Power. All rights reserved. 12

12


Public Open House
November 13, 2025
6:00 – 8:00pm
Desert Diamond Casino - Sahuarita
1100 W Pima Mine Road
Sahuarita, AZ 85629
© Tucson Electric Power. All rights reserved.
13

13


Q&A Session
Please use the raise hand feature in MS Teams
or
Type your question into the chat

14

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-3.2

Agency Briefing 1 Summary (Nov. 2025)

This page intentionally left blank

Agency Briefing 1

November 12, 2025

Agencies in Project Study Area

Meeting via Microsoft Teams – 10:00am

Attendees

Agency Representatives

Name	Organization	Department/Position
Jacqueline Brusoe	Western Area Power Administration	Transmission Asset/Reliability-Centered Maintenance, Administration Coordinator
Angela Murphy	Western Area Power Administration	Desert Southwest Region Transmission Asset Planning, Project Coordinator
Michelle Garza	Arizona State Department of Transportation	Southcentral District Permits Supervisor
Mark Sanders	Arizona State Department of Transportation	Office of International Affairs Director
Caroline Klebacha	Arizona State Historic Preservation Office	Archaeological Compliance Specialist
Karen Dada	Arizona State Land Department	Real Estate Division, Assistant Director
Amber Troidl	Arizona State Land Department	Real Estate Division, Rights of Way Section Manager
Bruce Vaughan	University of Arizona	Real Estate Administration Director
Ian Milliken	Pima County	Conservation Lands & Resources, Cultural Resources & Heritage Preservation Manager
John Beall	City of Tucson	Planning & Development Services Department, Entitlements Section Manager
Maria Gayosso	City of Tucson	Planning & Development Services Department, Principal Planner
Jonathan Knighton-Wisor	City of Tucson	Planning & Development Services Department, Historic Preservation Officer
Gabriel Sleighter	City of Tucson	Planning & Development Services Department, Lead Planner
Orlanthia Henderson	Town of Sahuarita	Planning & Zoning Division, Manager
Daniel Logan	Town of Sahuarita	Public Works Department Deputy Director/Utilities Division Manager
Kreston Elchert	Sahuarita Unified School District	Walden Grove High School, Assistant Principal
Benito Hernandez	Trico Electric Cooperative	Senior Distribution Engineer

Robert Quihuis	Trico Electric Cooperative	Distribution Engineering Manager
Emin Aydin	Tucson Airport Authority	Director of Properties & Concessions
Scott Robidoux	Tucson Airport Authority	Manager of Planning

TEP

Name	Position
Clark Bryner	Line Siting Manager
Christopher Ortiz Y Pino	Line Siting Project Manager
Joe Barrios	Corporate Communications Manager
Ariel Van Pelt	Environmental Land Use Planner
Shriraam Ravindran	Civil/Transmission Engineer
Joshua Kitterman	Transmission Planning Engineer
CeCe Aguda	Consultant Project Manager
Michelle Adams	Consultant Project Coordinator

Summary

Chris Ortiz y Pino began the meeting and shared a PowerPoint presentation detailing the project overview, the purpose and need of the proposed project, TEP's line siting process, opportunities and constraints within the study area, a review of preliminary segments, required approvals, and timeline for the project.

The proposed overhead transmission line will extend 9-10 miles south from the existing Sonoran Substation to the planned Santa Rita Substation. The project will provide increased reliability, enhance the regional grid and establish greater capacity to accommodate current and future load growth. The Santa Rita Substation would allow for the retirement of an existing 46kV substation. Applications and required approvals for the project include a Certificate of Environmental Compatibility through the Arizona Corporation Commission.

The next step in the project schedule is the Public Open House being held on November 13, 2025. All residents and customers within a one mile buffer of the project study area were sent invitations to attend and to comment. The project website contains all relevant information as well as the ways comments may be submitted.

At the conclusion of the presentation, the remainder of the meeting was open for attendees to provide any questions or comments and discuss the project with TEP representatives.

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-3.3

Agency Briefing 2 Presentation (Jan. 2026)

This page intentionally left blank

SANTA RITA CONNECTION

AGENCY BRIEFING

Chris Ortiz y Pino – Project Manager - Siting, Outreach, & Engagement

January 2026

1



Agencies

Please type into the chat:
- Name
- Organization
- Title/Role

- Federal Agencies
- State Agencies
- Pima County
- City of Tucson
- Town of Sahuarita
- Tucson Airport Authority
- Telecommunication & Utility Companies
- Sunnyside Unified School District
- Sahuarita Unified School District

© Tucson Electric Power. All rights reserved.

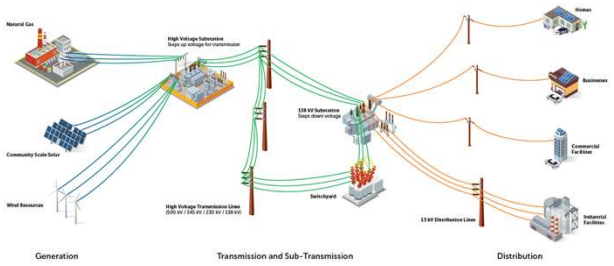
2

Agenda

1. How Power Gets to you
2. Project Description, Purpose, and Need
3. Overview of Planning and Siting Process
4. Suitability Assessment – Refined Segments
5. Required Approvals & Timeline

3

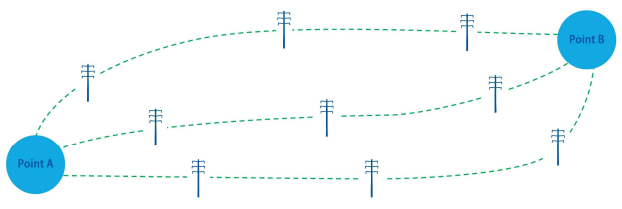
How Power Gets to You



© Tucson Electric Power. All rights reserved.

4

What is Siting?



© Tucson Electric Power. All rights reserved.

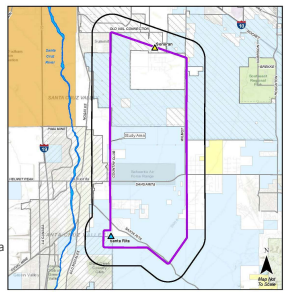
5

Santa Rita Connection

A new transmission line from the existing Sonoran Substation to the planned Santa Rita Substation.

Purpose and Need

- To accommodate future load growth in the area south of Tucson
- Enhance the regional grid providing redundancy and stability
- Allow for the retirement of older 46-kV substation and removal of temporary substation at La Villita Rd and Sahuarita Rd



© Tucson Electric Power. All rights reserved.

6

Example Pole Structure

- Tubular
- Weathering Steel
- Monopoles



© Tucson Electric Power. All rights reserved.
7

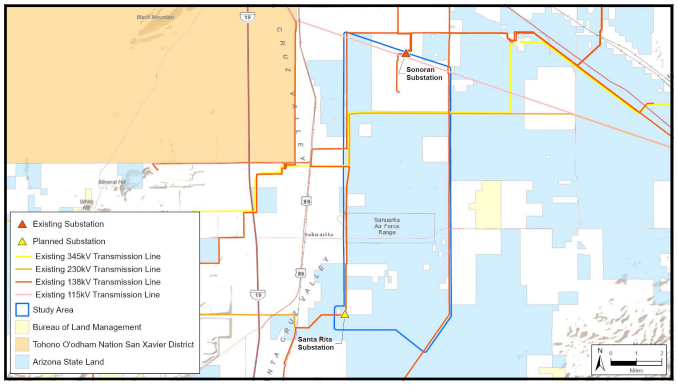
7

Planning & Siting Process Flowchart

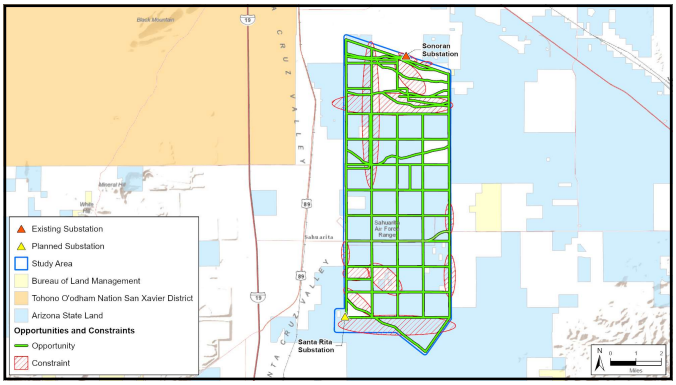
Phase 1: Pre-Analysis	Phase 2: Data Inventory	Phase 3: Suitability Assessment ★	Phase 4: Compatibility Analysis	Phase 5: Concept Evaluation
• Conduct Field Visits • Develop Study Area • Identify Opportunities and Constraints • Conduct Public and Stakeholder Outreach • Develop Preliminary Segments	• Conduct Research and Collect Data	• Develop Suitability Models • Conduct Suitability Assessment • Field Review • Refine Segments • Public and Stakeholder Outreach	• Conduct Compatibility Analysis • Develop Route Alternatives • Field Review	• Public and Stakeholder Outreach • Identify Preferred Route • Submit CEC Application • Public Notification and Hearing

© Tucson Electric Power. All rights reserved.
8

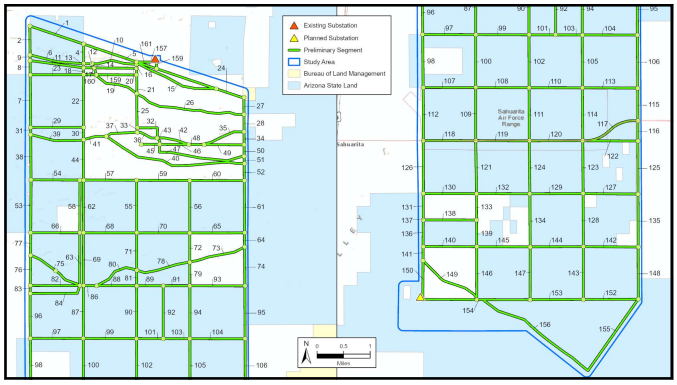
8



9

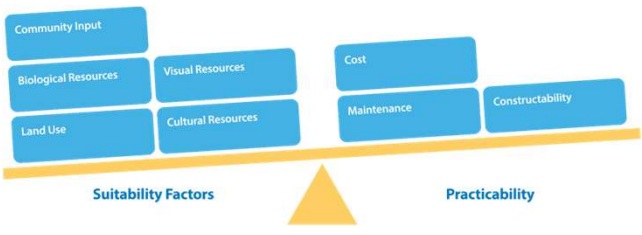


10



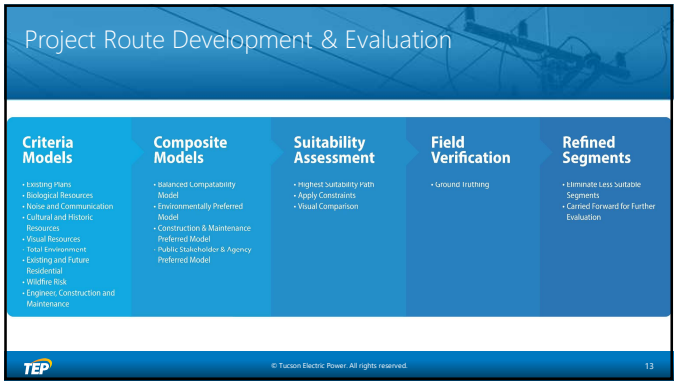
11

Project Route Development & Evaluation

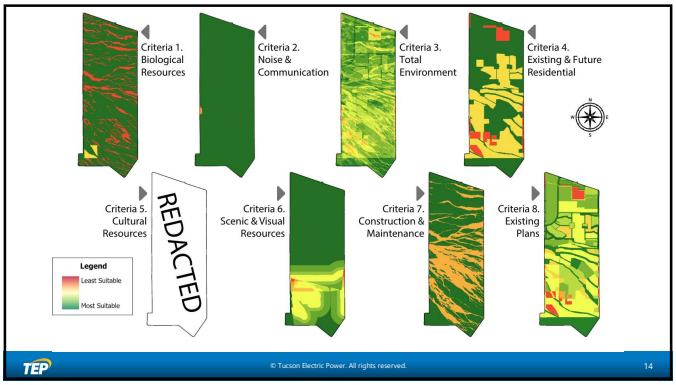


© Tucson Electric Power. All rights reserved.
12

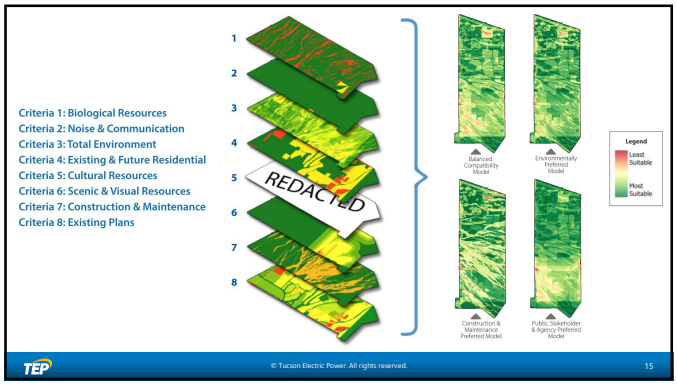
12



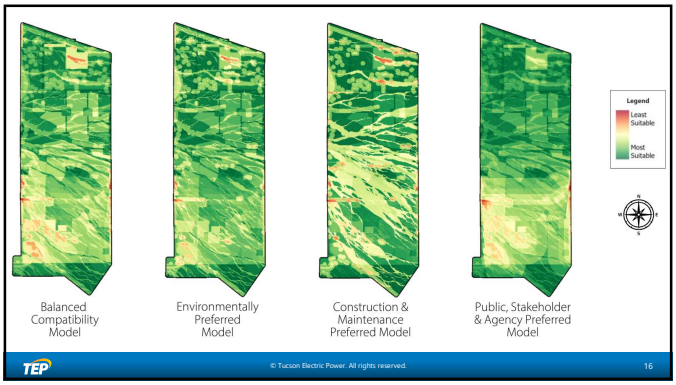
13



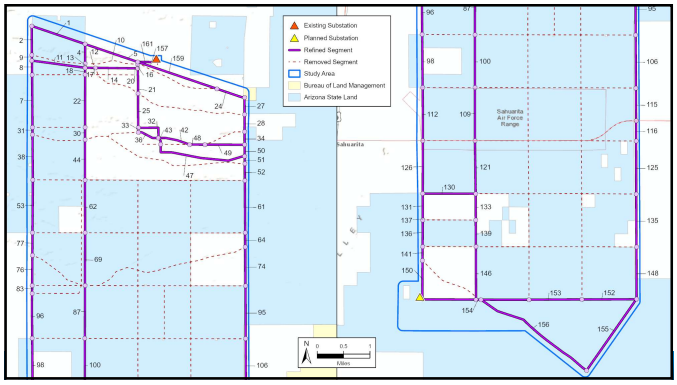
14



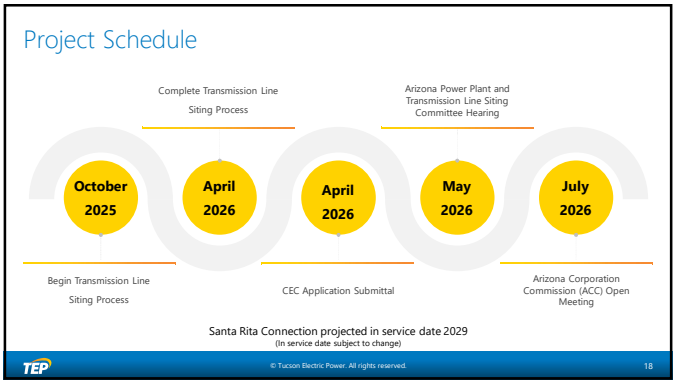
15



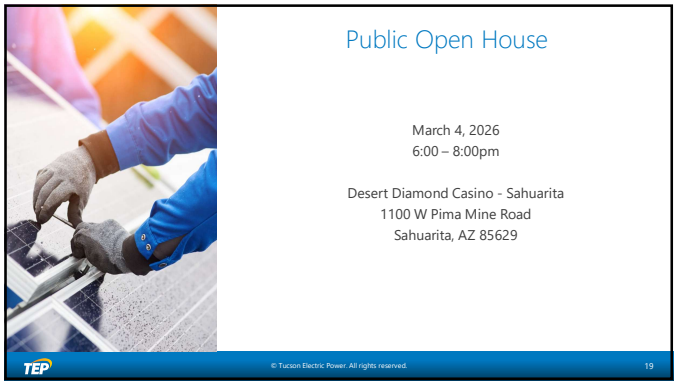
16



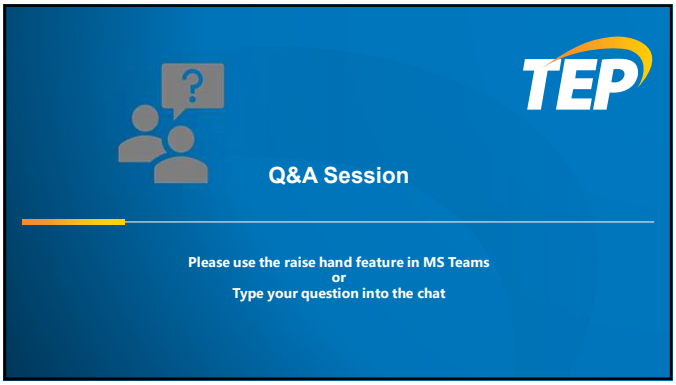
17



18


Public Open House
March 4, 2026
6:00 – 8:00pm
Desert Diamond Casino - Sahuarita
1100 W Pima Mine Road
Sahuarita, AZ 85629
TEP
© Tucson Electric Power. All rights reserved.
19

19


TEP
Q&A Session
Please use the raise hand feature in MS Teams
or
Type your question into the chat

20

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-3.4

Agency Briefing 2 Summary (Jan. 2026)

This page intentionally left blank

Agency Briefing 2

January 28, 2026

Agencies in Project Study Area

Meeting via Microsoft Teams – 10:00am

Attendees

Agency Representatives

Name	Organization	Department/Position
Colleen Dingman	Bureau of Land Management	Tucson Office, Field Manager
Michael Dixon	Bureau of Land Management	Tucson Office, Assistant Field Manager
Jacqueline Brusoe	Western Area Power Administration	Transmission Asset/Reliability-Centered Maintenance, Administration Coordinator
Scott Mundell	Arizona Department of Corrections, Rehabilitation & Reentry	Facilities Management, Assistant Director
Mark Sanders	Arizona Department of Transportation	Office of International Affairs, Director
Caroline Klebacha	Arizona State Historic Preservation Office	Archaeological Compliance Specialist
Amber Troidl	Arizona State Land Department	Real Estate Division, Rights of Way Section Manager
Julie Parizek	Pima County	Conservation Lands & Resources, Natural Resource Parks and Trails Division Manager
Matthew Roberts	Pima County	Conservation Lands & Resources, Canoa Ranch Conservation Park Manager
Eric Wilson	Pima County	Facilities Management, Energy Program Manager
Eric Shepp	Pima County	Regional Flood Control District, Committee Coordinator
Jay Olivas	City of Tucson	Planning & Development Services Department, Lead Planner
Anna Casadei	Town of Sahuarita	Community Development, Director
Nathan Barrett	Town of Sahuarita	Community Development, Deputy Director
Dylan Parry	Town of Sahuarita	Planning & Zoning Division, Senior Planner
Teresa Murphy	Arizona Electric Power Cooperative	Land Services, Manager
Benito Hernandez	Trico Electric Cooperative	Senior Distribution Engineer
Scott Robidoux	Tucson Airport Authority	Manager of Planning

TEP

Name	Position
Clark Bryner	Line Siting Manager
Christopher Ortiz Y Pino	Line Siting Project Manager
Joe Barrios	Corporate Communications Manager
Ariel Van Pelt	Environmental Land Use Planner
Sabrina Kyles	Right of Way Agent
Shriraam Ravindran	Civil/Transmission Engineer
Joshua Kitterman	Transmission Planning Engineer
CeCe Aguda	Consultant Project Manager
Michelle Adams	Consultant Project Coordinator

Summary

Chris Ortiz y Pino began the meeting and shared a PowerPoint presentation detailing the project overview, the purpose and need of the proposed project, TEP's planning and line siting process, the recently completed suitability assessment with resulting refined segments, required approvals, and timeline for the project.

The next step in the project schedule is to develop route alternatives through the compatibility analysis. The results will be presented at the upcoming Public Open House at the Desert Diamond Casino – Sahuarita on March 4, 2026.

At the conclusion of the presentation, the remainder of the meeting was open for attendees to provide any questions or comments and discuss the project with TEP representatives.

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-3.5

Agency Briefing 3 Presentation (Mar. 2026)

This page intentionally left blank

SANTA RITA CONNECTION

AGENCY BRIEFING

Chris Ortiz y Pino – Project Manager - Siting, Outreach, & Engagement

March 2026

1



Agencies

Please type into the chat:
- Name
- Organization
- Title/Role

- Federal Agencies
- State Agencies
- Pima County
- City of Tucson
- Town of Sahuarita
- Tucson Airport Authority
- Telecommunication & Utility Companies
- Sunnyside Unified School District
- Sahuarita Unified School District

© Tucson Electric Power. All rights reserved.

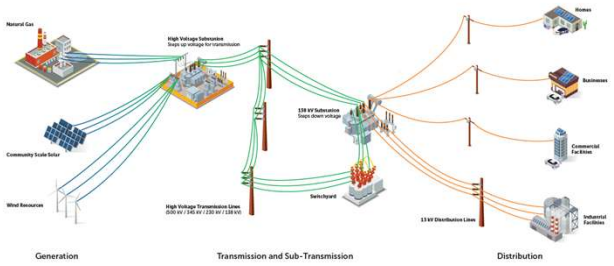
2

Agenda

1. How Power Gets to you
2. Project Description, Purpose, and Need
3. Planning and Siting Process
4. Compatibility Analysis – Alternative Route Selection
5. Required Approvals & Timeline

3

How Power Gets to You



© Tucson Electric Power. All rights reserved.

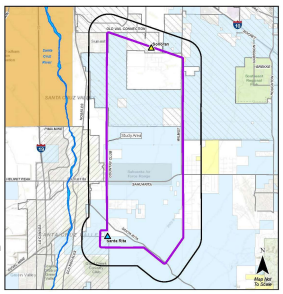
4

Santa Rita Connection

A new transmission line from the existing Sonoran Substation to the planned Santa Rita Substation.

Purpose and Need

- To accommodate future load growth in the area south of Tucson
- Enhance the regional grid providing redundancy and stability
- Allow for the retirement of older 46-kV substation and removal of temporary substation at La Villita Rd and Sahuarita Rd



© Tucson Electric Power. All rights reserved.

5

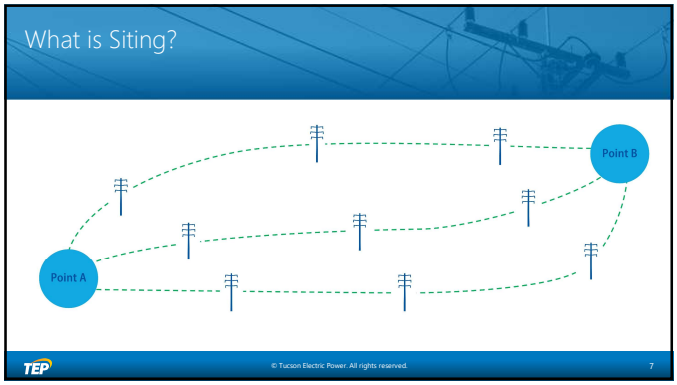
Example Pole Structure

- Tubular
- Weathering Steel
- Monopoles

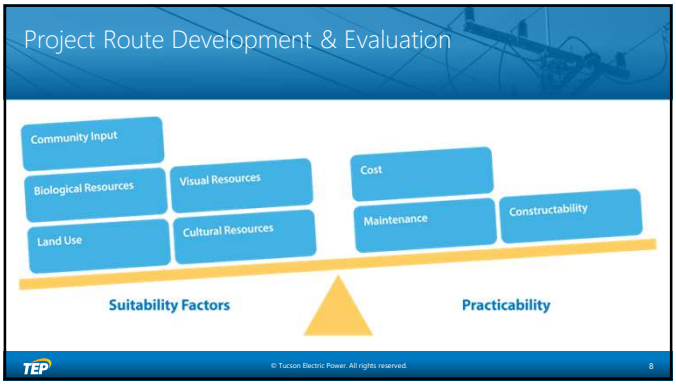


© Tucson Electric Power. All rights reserved.

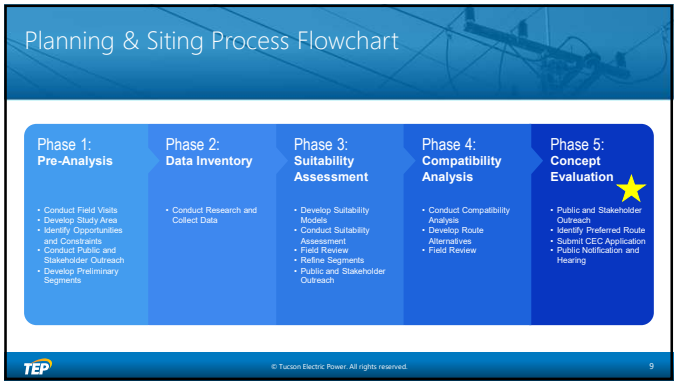
6


What is Siting?
Point A
Point B
TEP
© Tucson Electric Power. All rights reserved.
7

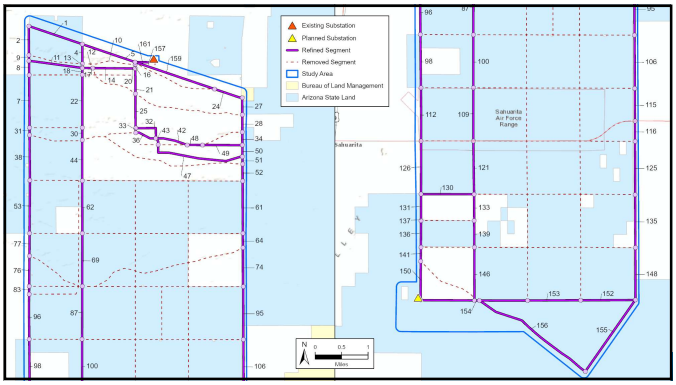
7


Project Route Development & Evaluation
Community Input
Biological Resources
Land Use
Visual Resources
Cultural Resources
Cost
Maintenance
Constructability
Suitability Factors
Practicability
TEP
© Tucson Electric Power. All rights reserved.
8

8


Planning & Siting Process Flowchart
Phase 1: Pre-Analysis
• Conduct Field Visits
• Develop Study Area
• Identify Opportunities and Constraints
• Conduct Public and Stakeholder Outreach
• Develop Preliminary Segments
Phase 2: Data Inventory
• Conduct Research and Collect Data
Phase 3: Suitability Assessment
• Develop Suitability Models
• Conduct Suitability Assessment
• Field Review
• Refine Segments
• Public and Stakeholder Outreach
Phase 4: Compatibility Analysis
• Conduct Compatibility Analysis
• Develop Route Alternatives
• Field Review
Phase 5: Concept Evaluation
• Public and Stakeholder Outreach
• Identify Preferred Route
• Submit CEC Application
• Public Notification and Hearing
TEP
© Tucson Electric Power. All rights reserved.
9

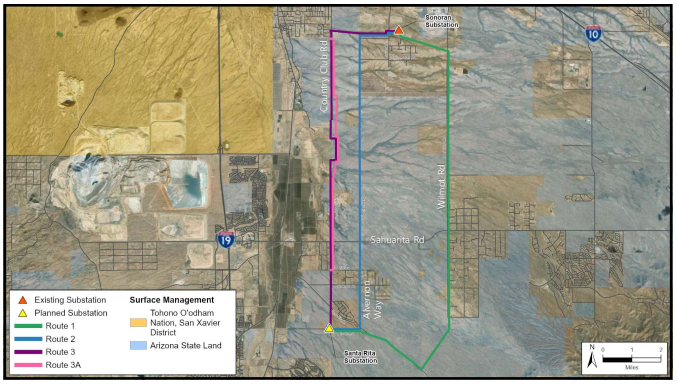
9


Existing Substation
Planned Substation
Refined Segment
Removed Segment
Study Area
Bureau of Land Management
Arizona State Land
Sahuarita
Sahuarita Air Force Range

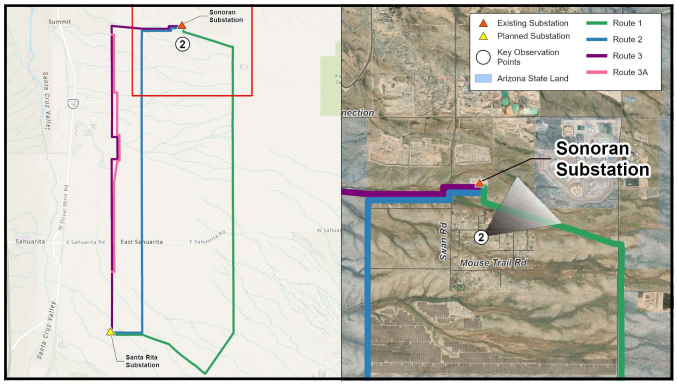
10


Siting Evaluation Criteria
Public Input
• Proximity to Residential Areas
• Impacts on mountain views from residential areas
• Recreational areas and open space
• Collocation with existing utility corridors
Public input
Wildlife & plants
Existing & planned land use
Overall environment
Noise emission levels & interference with communication signals
Historic & cultural sites
Scenic vistas
Current or potential recreation areas
Engineering & construction feasibility
Project costs & potential impact on customer rates
TEP
© Tucson Electric Power. All rights reserved.
11

11


Bonoran Substation
Country Club Rd
Wilmot Rd
Sahuarita Rd
Alternate Way
Santa Rita Substation
Existing Substation
Planned Substation
Route 1
Route 2
Route 3
Route 3A
Surface Management
Tohono O'odham Nation, San Xavier District
Arizona State Land

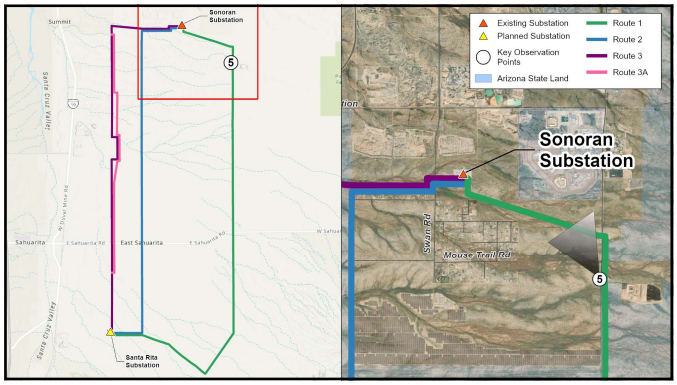
12



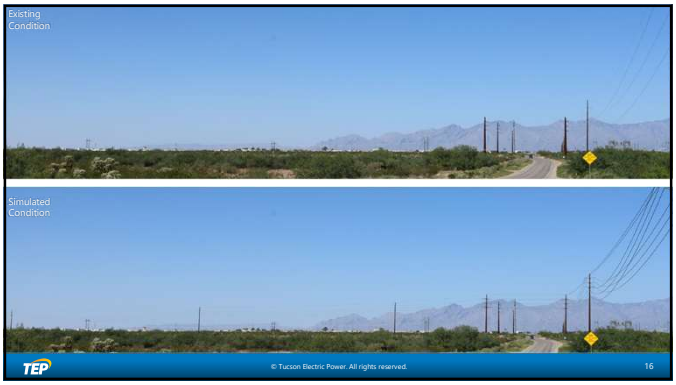
13



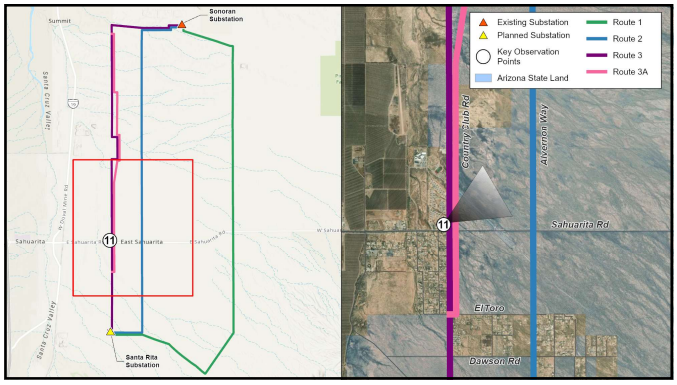
14



15



16



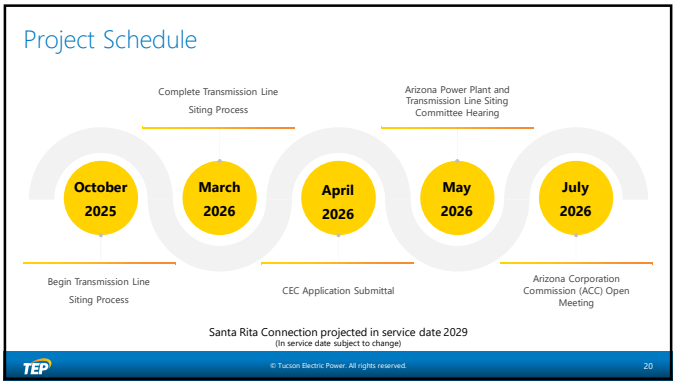
17



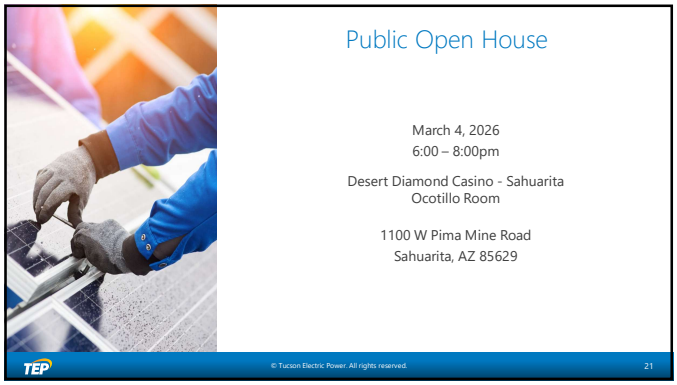
18


Existing Condition
Simulated Condition
TEP
© Tucson Electric Power. All rights reserved.
19

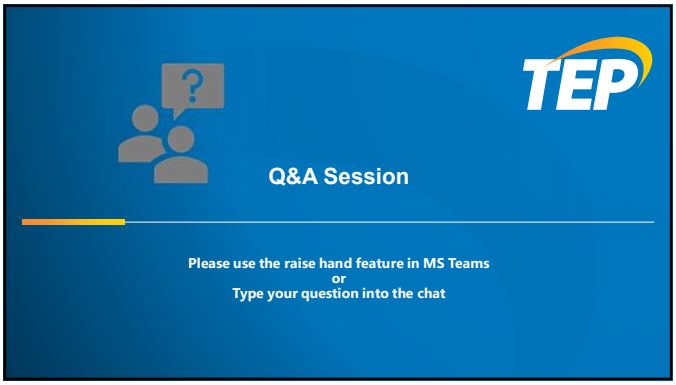
19


Project Schedule
Complete Transmission Line Siting Process
Arizona Power Plant and Transmission Line Siting Committee Hearing
October 2025
March 2026
April 2026
May 2026
July 2026
Begin Transmission Line Siting Process
CEC Application Submittal
Arizona Corporation Commission (ACC) Open Meeting
Santa Rita Connection projected in service date 2029
(In service date subject to change)
TEP
© Tucson Electric Power. All rights reserved.
20

20


Public Open House
March 4, 2026
6:00 – 8:00pm
Desert Diamond Casino - Sahuarita
Ocotillo Room
1100 W Pima Mine Road
Sahuarita, AZ 85629
TEP
© Tucson Electric Power. All rights reserved.
21

21


TEP
Q&A Session
Please use the raise hand feature in MS Teams
or
Type your question into the chat

22

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-3.6

Agency Briefing 3 Summary (Mar. 2026)

This page intentionally left blank

Agency Briefing 3

March 3, 2026

Agencies in Project Study Area

Meeting via Microsoft Teams – 10:00am

Attendees

Agency Representatives

Name	Organization	Department/Position
Scott Mundell	Arizona Department of Corrections, Rehabilitation & Reentry	Facilities Management, Assistant Director
Jeremy Moore	Arizona Department of Transportation	Southcentral District Administrator
Caroline Klebacha	Arizona State Historic Preservation Office	Archaeological Compliance Specialist
Amber Troidl	Arizona State Land Department	Real Estate Division, Rights of Way Section Manager
Bruce Vaughan	University of Arizona	Real Estate Administration Director
Brett Blum	University of Arizona	Arizona Experiment Station Director
Jenny Neeley	Pima County	Conservation Lands & Resources, Program Manager
Eric Wilson	Pima County	Facilities Management, Energy Program Manager
Jennifer Toothaker	City of Tucson	Transportation & Mobility, Deputy Director
Orlanthia Henderson	Town of Sahuarita	Planning & Zoning Division, Manager
Robert Quihuis	Trico Electric Cooperative	Distribution Engineering Manager
Benito Hernandez	Trico Electric Cooperative	Senior Distribution Engineer
Brandon Mishler	Trico Electric Cooperative	Distribution Engineer
John Voorhees	Tucson Airport Authority	Vice President/Chief Revenue Officer
Emin Aydin	Tucson Airport Authority	Director of Properties and Concessions
Scott Robidoux	Tucson Airport Authority	Manager of Planning

TEP

Name	Position
Christopher Ortiz Y Pino	Line Siting Project Manager
Joe Barrios	Corporate Communications Manager
Ariel Van Pelt	Environmental Land Use Planner
Michael Riesgo	Lead Associate Engineer
Joshua Kitterman	Transmission Planning Engineer
CeCe Aguda	Consultant Project Manager
Michelle Adams	Consultant Project Coordinator

Summary

Chris Ortiz y Pino began the meeting and shared a PowerPoint presentation detailing the project overview, the purpose and need of the proposed project, TEP's planning and line siting process, the recently completed compatibility analysis with resulting route alternatives, visual simulations, required approvals, and timeline for the project.

The next step in the project schedule is the Public Open House being held on March 4, 2026, at the at the Desert Diamond Casino – Sahuarita. Following the completion of this round of outreach, feedback from stakeholders and the public will contribute to the identification of the Preferred Route, which will be included in the CEC Application and presented to the Arizona Power Plant and Transmission Line Siting Committee at a Public Hearing in May 2026.

At the conclusion of the presentation, the remainder of the meeting was open for attendees to provide any questions or comments and discuss the project with TEP representatives.

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-4

Elected Official Outreach

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-4.1

Correspondence with Elected Officials (Oct. 2025)

This page intentionally left blank

Outlook

TEP Santa Rita Connection Project 10.27.25

1 attachment (677 KB)
SRCP Postcard.pdf;

From:
Sent: Monday, October 27, 2025 4:23 PM
To: [redacted]
Subject: TEP Santa Rita Connection Project 10.27.25

Dear [redacted],

Tucson Electric Power (TEP) is preparing plans for new transmission facilities that will increase energy capacity and enhance system reliability for customers in Sahuarita, Green Valley, and the surrounding area.
The transmission line will extend approximately 9-10 miles from the existing Sonoran Substations to the future Santa Rita Substation. The Santa Rita Substation will support service reliability for distribution customers in the area.
Please find attached postcard that will be sent shortly to residents near the project area regarding this project.

TEP will be conducting the **first round of open house meetings on November 13th** to inform the public about the project and gather valuable input on the transmission line siting process.
You are, of course, invited to attend as well.

Public Open House

Thursday, November 13 | 6-8 p.m.
Desert Diamond Casino – Sahuarita
1100 W Pima Mine Road
Sahuarita, AZ 85629

We appreciate your engagement in this important energy project. To learn more and for updates about this project, please visit
https://www.tep.com/santa-rita-connection/

Should you have any questions or comments or desire a briefing on the project, please feel free to contact me directly at
teresa.bravo@tep.com.

Best regards,

Teresa Bravo, MBA

Sr. Government Relations Rep., Local Affairs & Tribal Liaison

88 E. Broadway Blvd.,Mail Stop HQE504, Tucson, AZ 85701

Email: teresa.bravo@uns.com Mobile: (520) 633-1112

UNS Energy Corporation



Santa Rita Connection Project

Tucson Electric Power (TEP) is preparing plans for new transmission facilities that will increase energy capacity and enhance system reliability for areas south of Tucson.

The Santa Rita Connection Project will interconnect TEP's existing 138 kilovolt (kV) transmission system to the proposed Santa Rita Substation, located east of I-19, between Sahuarita and Green Valley. This upgrade to TEP's local energy grid will strengthen the reliability of service to customers, support regional development, and provide greater capacity to support growing energy needs in the area.

We invite you to come to our in-person open house on November 13, 2025.
See the opposite side of this postcard for details.

Please submit your comments and questions by:

- Filling out an online comment form on the project webpage: www.tep.com/santa-rita-connection/
- Sending email comments to SantaRitaConnection@tep.com
- Calling 1-520-770-7520 and leaving a voicemail message
- Mailing a letter with comments to:

  TEP Santa Rita Connection Project
  P.O. Box 711
  Mail Stop CB200
  Tucson, AZ 85701-0711

Tucson Electric Power (TEP) está preparando planes para nuevas instalaciones de transmisión que aumentarán la capacidad energética y mejorarán la confiabilidad del sistema para las áreas al sur de Tucson.

El Proyecto de Conexión de Santa Rita interconectará el sistema de transmisión existente de 138 kilovoltios (kV) de TEP con la subestación propuesta de Santa Rita, ubicada al este de la I-19, entre Sahuarita y Green Valley. Esta mejora de la red eléctrica local de TEP reforzará la confiabilidad del servicio a los clientes, apoyará el desarrollo regional y proporcionará una mayor capacidad para satisfacer las crecientes necesidades energéticas de la zona.

We Value Your Input

Valoramos su opinión

You can help shape our future energy grid.
Visit our website or join us at our
open house to learn how.

Visite nuestro sitio web para saber cómo hacerlo.

Public Open House

Reunión abierta pública

Thursday, November 13 | 6-8 p.m.
Open house begins at 6 p.m.
Light refreshments will be provided.

Jueves 13 de noviembre | De 6 a 8 p.m.
La reunión abierta comienza a las 6 p.m.
Se proporcionarán refrigerios livianos.

Desert Diamond Casino - Sahuarita
1100 W Pima Mine Road
Sahuarita, AZ 85629

Santa Rita Connection Project
P.O. Box 711
Mail Stop CB200
Tucson, AZ 85701-0711

Learn more:
www.tep.com/santa-rita-connection/

Tucson Electric Power

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-4.2

Correspondence with Elected Officials (Feb. 2026)

This page intentionally left blank

Outlook

TEP Santa Rita Connection Project Update

1 attachment (173 KB)
SRCP Postcard 3 - Feb26 (w Spanish).pdf;

From: Bravo, Teresa
Sent: Wednesday, February 11, 2026 2:30 PM
To: [redacted]
Subject: RE: TEP Santa Rita Connection Project Update

Correction: The project open house is scheduled for Wednesday, March 4th.

From: Bravo, Teresa
Sent: Wednesday, February 11, 2026 1:32 PM
To: [redacted]
Subject: TEP Santa Rita Connection Project Update

Dear [redacted],

Tucson Electric Power (TEP) is preparing plans for the Santa Rita Connection Project, a new 138kV transmission line that will increase energy capacity and enhance system reliability for customers in Sahuarita, Green Valley, and the surrounding area.

The transmission line will extend from the existing Sonoran Substation at Swan Rd south of Old Vail Connection Road to the future Santa Rita Substation on Corto Road south of Santa Rita Road. The Santa Rita Substation will support service reliability for distribution customers in the area.

TEP will be conducting the **final round of open house meetings on March 3rd** to share the results of the transmission line siting study. We will be presenting alternative routes that could be used to connect the Sonoran and Santa Rita substations. Input received from this round of outreach will inform TEP's preferred alternative route to be requested as part of the application for a Certificate of Environmental Compatibility. Please find the attached postcard that will be sent shortly to residents near the project area regarding this project.

You are, of course, invited to attend as well.

Public Open House
~~Thursday, March 3~~
Wednesday, March 4 | 6-8 p.m.
Desert Diamond Casino – Sahuarita
1100 W Pima Mine Road
Sahuarita, AZ 85629

We appreciate your engagement in this important energy project. To learn more and for updates about this project, please visit https://www.tep.com/santa-rita-connection/

Should you have any questions or comments or desire a briefing on the project, please feel free to contact me directly at teresa.bravo@uns.com.

Best regards,

Teresa Bravo, MBA
Sr. Government Relations Rep., Local Affairs & Tribal Liaison
88 E. Broadway Blvd.,Mail Stop HQE504, Tucson, AZ 85701
Email: teresa.bravo@uns.com Mobile: (520) 633-1112
UNS Energy Corporation



Santa Rita Connection Project

Your input is needed!

Join us for an open house on March 4, 2026

See the opposite side of this postcard for details.

Tucson Electric Power (TEP) will share the results of a transmission line siting study for the Santa Rita Connection Project. We will be presenting alternative routes that could be used to connect the Sonoran and Santa Rita substations.

Your input *will* help determine TEP's decision for the preferred route. Visit our webpage to learn more about the project or contact a team member at 1-520-770-7520.

Please submit your comments and questions by:

- Filling out an online comment form on the project webpage: www.tep.com/santa-rita-connection/
- Sending email comments to: SantaRitaConnection@tep.com
- Calling 1-520-770-7520 and leaving a voicemail
- Mailing a letter with comments to:
  TEP Santa Rita Connection Project
  P.O. Box 711
  Mail Stop CB200
  Tucson, AZ 85701-0711

¡Su opinión es necesaria!

Acompáñenos en una reunión abierta pública el 4 de marzo de 2026

TEP compartirá los resultados de un estudio de emplazamiento de líneas de transmisión para el Proyecto de Conexión de Santa Rita. Presentaremos rutas alternativas que podrían utilizarse para conectar las subestaciones Sonoran y Santa Rita.

Su opinión ayudará a determinar la decisión de TEP para la ruta preferida. Visite nuestra página web para conocer más sobre el proyecto o póngase en contacto con un miembro del equipo al 1-520-770-7520.

New Transmission Line Resources Planned for Your Area

We Value Your Input

You can help shape our future energy grid. Visit our website to learn how.

Valoramos su opinión

Visite nuestro sitio web para saber cómo hacerlo.

Public Open House

Reunión abierta pública

Wednesday, March 4 | 6-8 p.m.
Light refreshments will be provided

Miercoles 4 de marzo | De 6 a 8 p.m.
Se proporcionarán refrigerios livianos

Desert Diamond Casino - Sahuarita
1100 W Pima Mine Road
Sahuarita, AZ 85629

Santa Rita Connection Project
P.O. Box 711
Mail Stop CB200
Tucson, AZ 85701-0711

Learn more:
www.tep.com/santa-rita-connection/

Tucson Electric Power

February 2026

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-4.3

Sahuarita Town Council Meeting Summary

This page intentionally left blank

Sahuarita Town Council Meeting

January 26, 2026

Town of Sahuarita Council Members and Staff

Meeting at Sahuarita Town Hall – 375 W. Sahuarita Center Way, Sahuarita, AZ 85629 – 6:00pm

Attendees *

Town of Sahuarita

Name	Department/Position
Tom Murphy	Mayor
Kara Egbert	Vice Mayor
Steven Gillespie	Council Member
Kimberly Lisk (virtually)	Council Member
Edgar Lytle	Council Member
Deborah Morales	Council Member
Diane Priolo	Council Member
Shane Dille	Town Manager
Jon Paladini	Town Attorney
Lisa Cole	Town Clerk
Anna Casadei	Community Development, Director

TEP

Name	Department/Position
Christopher Ortiz Y Pino	Line Siting Project Manager
Teresa Bravo	Government Relations Representative

** Full attendance of all individuals present was not taken.*

Summary

Mayor Tom Murphy called for item 10.c on the agenda and Anna Casadei introduced the discussion item and introduced the representatives from TEP, Teresa Bravo and Chris Ortiz Y Pino. Chris shared a PowerPoint presentation outlining an overview of how electrical power is transmitted and distributed, the project purpose and need, and the proposed 138kV transmission line connecting the Sonoran Substation to the planned Santa Rita Substation.

At the conclusion of the presentation, Chris welcomed the Council provide any questions or comments.

Sahuarita

Town Council Staff Report

DATE: January 26, 2026

TITLE: Tucson Electric Power Santa Rita Connection Project

SUBJECT: Presentation and discussion regarding the proposed Santa Rita Connection Project.

FROM: Anna Casadei, Community Development Director

EXECUTIVE SUMMARY:

Tucson Electric Power (TEP) staff will give a presentation on the proposed Santa Rita Connection Project.

STAFF RECOMMENDATION:

None. Presentation only.

SUGGESTED MOTION:

None. Presentation only.

STRATEGIC PLAN:

☐ Economic Expansion & Placemaking

☒ Outreach & Communication

☐ Infrastructure & Facilities

☐ Highly Performing Organization

☐ Community Well-being

☐ Other

OTHER/GOALS: N/A

FISCAL IMPACT: N/A.

BACKGROUND/ANALYSIS:

TEP is proposing a new 138kV transmission line, that will extend approximately 9-10 miles from the existing Sonoran Substation (located near S Swan Rd and E Old Vail Connection Road) to the proposed Santa Rita Substation (to be located near S Country Club Rd and E Corto Rd). The proposed Santa Rita Substation will support service reliability for distribution customers in the area. It will serve homes and businesses as far north as Sahuarita Road.

TEP has not yet identified a route for the proposed transmission line and is in the process of identifying possible routes. The final route is subject to approval by the Arizona Power Plant and Transmission Line Siting Committee and the Arizona Corporation Commission. The project is expected to be before the ACC in July of 2026.

TEP states that the project will provide benefits to the area in terms of increased capacity and system reliability while also allowing for the retirement of an older 46-kV substation.

The project is currently in the public participation phase. Public input will influence the route that is ultimately selected.

ATTACHMENTS:

1. TEP Presentation (to be provided upon availability)

SANTA RITA CONNECTION

Sahuarita Town Council

Chris Ortiz y Pino – Project Manager - Siting, Outreach, & Engagement

January 2026

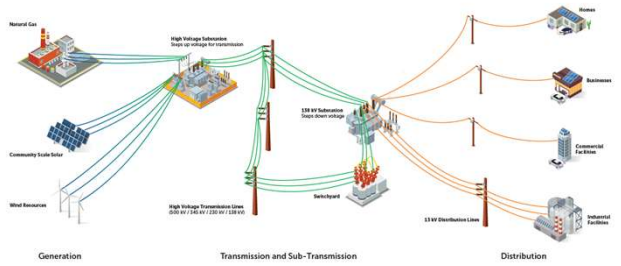
1

Agenda

1. How Power Gets to you
2. Project Description, Purpose, and Need
3. Overview of Planning and Siting Process
4. Required Approvals & Timeline

2

How Power Gets to You



© Tucson Electric Power. All rights reserved. 3

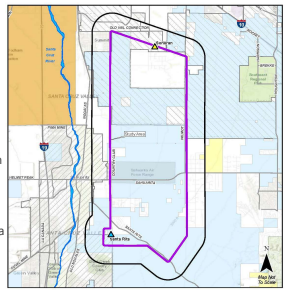
3

Santa Rita Connection

A new transmission line from the existing Sonoran Substation to the planned Santa Rita Substation.

Purpose and Need

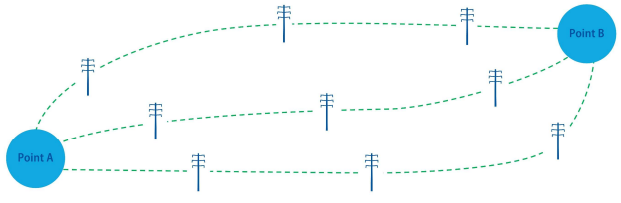
- Accommodate future load growth in the area south of Tucson
- Enhance the regional grid providing redundancy and stability
- Allow for the retirement of older 46-kV substation and removal of temporary substation at La Villita Rd and Sahuarita Rd



© Tucson Electric Power. All rights reserved. 4

4

What is Siting?



© Tucson Electric Power. All rights reserved. 5

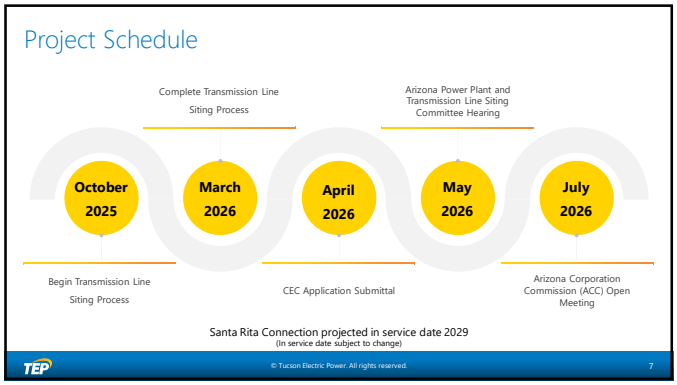
5

Planning & Siting Process Flowchart

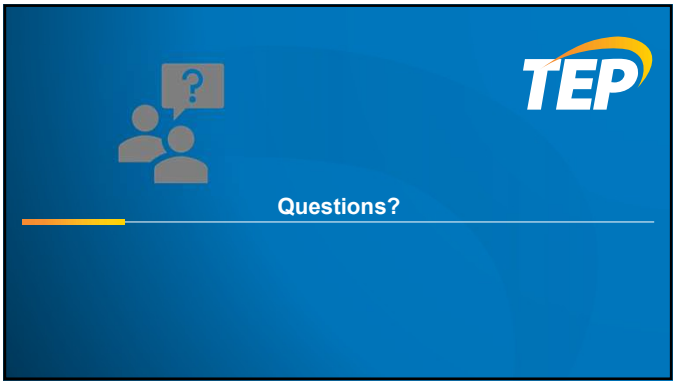
Phase 1: Pre-Analysis	Phase 2: Data Inventory	Phase 3: Suitability Assessment	Phase 4: Compatibility Analysis	Phase 5: Concept Evaluation
• Conduct Field Visits • Develop Study Area • Identify Opportunities and Constraints • Conduct Public and Stakeholder Outreach • Develop Preliminary Segments	• Conduct Research and Collect Data	• Develop Suitability Models • Conduct Suitability Assessment • Field Review • Public and Stakeholder Outreach • Refine Segments	• Conduct Compatibility Analysis • Develop Route Alternatives • Field Review	• Public and Stakeholder Outreach • Identify Preferred Route • Submit CEC Application • Public Notification and Hearing

© Tucson Electric Power. All rights reserved. 6

6


Project Schedule
Complete Transmission Line Siting Process
Arizona Power Plant and Transmission Line Siting Committee Hearing
October 2025
March 2026
April 2026
May 2026
July 2026
Begin Transmission Line Siting Process
CEC Application Submittal
Arizona Corporation Commission (ACC) Open Meeting
Santa Rita Connection projected in service date 2029
(In service date subject to change)
© Tucson Electric Power. All rights reserved.
7

7


Questions?

8

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-5

Individual Agency Outreach

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-5.1

Correspondence with Individual Agencies

This page intentionally left blank

Outlook

FW: [EXTERNAL E-Mail] RE: Outage planning for 2029

From Ortiz Y Pino, Christopher <Christopher.OrtizYPino@tep.com>
Date Thu 2/12/2026 10:45 AM
To CeCe Aguda <caguda@dockitconsulting.com>; Michelle Adams <michelle@dockitconsulting.com>

AEPCO seems able to accommodate with sufficient time, notice and coordination for future outages. Country Club, Alt 3 remains.

Thanks,
~Chris

Chris Ortiz y Pino
Siting, Outreach and Engagement Project Manager
Tucson Electric Power/UNS Electric Inc.
520-633-8693

POWERING SUSTAINABILITY

From: Danny Regnier <[redacted]@azgt.coop>
Sent: Thursday, February 12, 2026 6:56 AM
To: Ortiz Y Pino, Christopher <Christopher.OrtizYPino@tep.com>; Stewart, Mindy <MSTEWART@TEP.COM>
Cc: Robert Bray <[redacted]@azgt.coop>; Robert Cubley <[redacted]@azgt.coop>; Eric Jensen <[redacted]@azgt.coop>
Subject: [EXTERNAL E-Mail] RE: Outage planning for 2029

CAUTION: This email originated from outside of UNS. **DO NOT** click on links or open attachments unless you recognize the sender and the content is expected. Do not hesitate to report the email as a phish if you are unsure about its safety.

Chris, taking our Vail/Bicknell line out is probably our most challenging segment to take out of service. As long as we have our WALC/Valencia, our WALC/Marana and our APS/Adonis ties in place it shouldn't be an issue. Timeframe would be winter spring which sounds in line with your timeframe. Since this project is a couple years out I wouldn't be able to commit to it just yet but I see no reason why it wouldn't be possible as long as our system is whole in the Tucson area. The Pantano/Sahuarita segment is a much easier line to take out of service. I've included a few others in on this in case they know of any upcoming projects that might affect your requested outages. I'll keep this email in my que and give you updates as I get them.

Danny Regnier, Senior System Operator

[redacted]@azgt.coop

[redacted] | [redacted]

1000 S. Hwy 80 | Benson, AZ 85602

Notice: This message and any attachments are for the sole and confidential use of the intended recipients and may contain proprietary and/or confidential information which may be privileged or otherwise protected from disclosure.

From: Ortiz Y Pino, Christopher <Christopher.OrtizYPino@tep.com>
Sent: Wednesday, February 11, 2026 10:16 AM
To: Stewart, Mindy <MSTEWART@TEP.COM>; Danny Regnier <[redacted]@azgt.coop>
Subject: RE: Outage planning for 2029

Thank you, Mindy, for the introduction.

Hi Danny,

I have a bit of a complicated alternative route being proposed as part of a Line Siting effort. I would appreciate an opportunity to meet with you virtually or over the phone to discuss that challenges being presented and coordination efforts with AEPCO.

TEP is proposing a new 138kV line along the Country Club Alignment south of Old Vail Connection in Tucson. We are assessing both a double circuit option (3a) and a parallel line option (3b). Both options will require AEPCO outages on the Pantano -Sahuarita 230kV and the Vail – Bicknell 345kV line to raise the structures allowing for the 138kV line to pass below. The in-service date for the project is May of 2029. Construction is anticipated during the winter months of 2028-2029.

The ask is, Can AEPCO take outages on these lines? If this alternative was ultimately selected, although out of my wheelhouse, I would imagine, construction to raise structures would be staggered to take one line out of service at a time.

I have included a rudimentary mapset of the challenging areas that will require coordination as well as a KMZ I created. Both are high level for planning purposes not based on precise data.

Thank you for your attention to this matter and I am available by phone or Teams to discuss.

~Chris

Chris Ortiz y Pino
Siting, Outreach and Engagement Project Manager
Tucson Electric Power/UNS Electric Inc.
520-633-8693

From: Stewart, Mindy <MSTEWART@TEP.COM>
Sent: Tuesday, February 10, 2026 12:42 PM
To: Danny Regnier <[redacted]@azgt.coop>; Ortiz Y Pino, Christopher <Christopher.OrtizYPino@tep.com>
Cc: Stewart, Mindy <MSTEWART@TEP.COM>
Subject: Outage planning for 2029

Hi,

TEP has started some line siting work for a possible new substation and 138 kV lines in the Green Valley area.
This work is scheduled to have an In-Service Date in 2029.

Our Transmission Siting Engineer on this project is Chris Ortiz Y Pino.
Christopher.OrtizYPino@tep.com
Work phone 520-918-8245

I am hoping you can help Chris with AEPCO outage information or give us the person to contact.

Thanks for your help,

Mindy Stewart
Outage Coordinator
Cell: 520-734-0969
Email: mstewart@tep.com

Tucson Electric Power

EXTERNAL EMAIL: Do not open attachments/click links if source is unknown. Please report all suspected phishing attempts utilizing the KnowBe4 Report button

Outlook

Fw: EXTERNAL: Fw: Gasline near Sahuarita

2 attachments (2 MB)
2024 SAZ Contacts and HP Standby.pdf; MAp Request 16s14E 20.pdf;

From: [redacted]@swgas.com>
Sent: Friday, March 13, 2026 7:05 PM
To: CeCe Aguda <caguda@dockitconsulting.com>
Subject: RE: EXTERNAL: Fw: Gasline near Sahuarita

Celia "CeCe" Aguda,

Pursuant to your request dated 03/13/2026, please find attached a map of Southwest Gas facilities near the subject area. The map is a representation of our facilities in the area and is to be used as reference only. It is not to be considered a construction document. Prior to beginning any work that requires digging in this area, please contact Blue Stake to have the gas lines located and marked.

This information is provided pursuant to ARS 40-360.30(E). All warranties, expressed or implied, are hereby disclaimed.

Southwest Gas Corporation Confidential and Proprietary Information.

For Reference Only – not valid for line locating purposes. No representation or warranty is made for the adequacy, accuracy or completeness of the information or depictions shown. **This information is protected from further disclosure under the federal Freedom of Information Act and the Protected Energy Infrastructure Information Act of 2002, and Arizona Revised Statutes § 41-4272.**

This document may not be copied, distributed, or shared to any other person or entity in any manner or form without prior written consent of Southwest Gas Corporation.

Please contact us with any questions.

Regards,

SOUTHWEST GAS
Delivering SAFETY SERVICE RELIABILITY
Electronic Mapping, Engineering
PO Box 26500 | 36O-580 | Tucson, AZ 85726-6500
[redacted]
www.swgas.com | www.swgasliving.com

From: [redacted]@swgas.com>
Sent: Friday, March 13, 2026 1:50 PM
To: [redacted]@swgas.com>
Subject: FW: EXTERNAL: Fw: Gasline near Sahuarita
Importance: High

Hello Mapping Team,

Could you please provide Celia with the maps of our facilities in the area?

Thanks,

Angie

From: CeCe Aguda <caguda@dockitconsulting.com>
Sent: Friday, March 13, 2026 7:28 AM

To: [redacted]@swgas.com>; [redacted]p@swgas.com>
Subject: EXTERNAL: Fw: Gasline near Sahuarita
Importance: High

[WARNING] This message originated outside of Southwest Gas. **DO NOT CLICK** links or attachments unless you recognize the sender and know the content is safe.

Good morning
Checking in on this again. Can you please provide us these locations so we can get them into our review maps to ensure avoidance or appropriate coordination as needed?
Thank you!
CeCe

Celia "CeCe" Aguda, PE
DockIt Consulting, LLC
[redacted]

From: CeCe Aguda
Sent: Friday, March 6, 2026 10:04 AM
To: [redacted]@swgas.com>; [redacted]@swgas.com>
Subject: Gasline near Sahuarita

Good morning,

We are siting a 138 kV electric transmission line in Pima County for Tucson Electric Power, south of the airport, north of Green Valley and east of Sahuarita. During our initial due diligence phase, we had no mapped gas lines in our study area. When we made a field visit Tuesday afternoon we spotted yellow natural gas line markers (see attached). I have shown their locations in the image below. There were usually 2 markers at each point, offset as if there are parallel lines. Can you please provide us with a map of where the lines are in our study area (see attached map)? We want to make sure we are including them in our siting process.
Thank you!
CeCe



Celia "CeCe" Aguda, PE
DockIt Consulting, LLC
[redacted]

Outlook

RE: TEP - Santa Rita Connection Project - Agency Briefing

1 attachment (10 MB)
Preliminary Study Area and Notification Area - Rev3a.jpg;

From: Ortiz Y Pino, Christopher <Christopher.OrtizYPino@tep.com>
Sent: Thursday, December 11, 2025 4:27:32 PM
To: Orlanthia Henderson <[redacted]@sahuaritaaz.gov>
Cc: Santa Rita Connection <SantaRitaConnection@tep.com>
Subject: RE: TEP - Santa Rita Connection Project - Agency Briefing

Hi Orlanthia,

Apologies for the delayed response. We sent out notifications regarding the Public Open House through various methods:

- *Mailed 2,545 postcards within the notification area which was a 1-mile buffer of the Project Study Area. Addresses were queried using Pima County Assessor data.
- *Sent 1,840 Project Status emails to TEP customers within the Project Study area.
- *Newspaper ads were run in the Green Valley News and the Arizona Daily Star.
- *Posted six (6) 24”x36” dual language roadside signs.
- *Social media ads on Instagram and Facebook with a reach radius to encompass the entire Notification Area (analytics on reach is still pending)

Specific to Quail Creek, all of the residences that were within the Notification Area were included in the mailing. I don’t have an exact number at this time. The attached map describes the study area with the 1-mile notification area, as you can see on the map there was a significant overlap of the Quail Creek subdivision. I believe this postcard mailing was also sent to Pamela Gulsvig who is the contact we have for the Quail Creek Country Club Property Owners Association. Additionally, residents of the Quail Creek subdivision are TEP customers, so all residents that provided email to their TEP customer accounts were sent a status update email.

Please reach out with any additional questions or concerns.

Thanks,

~Chris

Chris Ortiz y Pino

Siting, Outreach and Engagement Project Manager

Tucson Electric Power/UNS Electric Inc.

520-633-8693

From: Orlanthia Henderson <[redacted]@sahuaritaaz.gov >
Sent: Monday, December 8, 2025 1:04 PM
To: Ortiz Y Pino, Christopher <Christopher.OrtizYPino@tep.com >
Subject: [EXTERNAL E-Mail] RE: [EXTERNAL] RE: TEP - Santa Rita Connection Project - Agency Briefing

You don't often get email from [redacted]@sahuaritaaz.gov. Learn why this is important

CAUTION : This email originated from outside of UNS. **DO NOT** click on links or open attachments unless you recognize the sender and the content is expected. Do not hesitate to report the email as a phish if you are unsure about its safety.

Good afternoon Chris,

I have a few follow up questions on the meeting. How was public notice distributed along the proposed route? Was it within 1-mile of the transmission line route? And you mentioned notice being given to residents of Quail Creek, was that through their HOA contact?

Thank you,

Orlanthia Henderson

Planning & Zoning Manager

Community Development Department

[redacted]

[redacted]@sahuaritaaz.gov | SahuaritaAZ.gov

Sahuarita

Tell us about your experience.

www.Sahuaritaaz.gov/PBcomments

Any information provided by the Town related to zoning or land use within this correspondence is offered as a courtesy and without any guarantee of accuracy. The Town disclaims all liability for reliance on such information.

Outlook

RE: [EXTERNAL E-Mail] Santa Rita Substation Permitting

From: Ortiz Y Pino, Christopher <christopher.ortizypino@tep.com>
Sent: Monday, March 9, 2026 7:41:00 PM
To: Anna Casadei <[redacted]@sahuaritaaz.gov>
Cc: Santa Rita Connection <SantaRitaConnection@tep.com>
Subject: RE: [EXTERNAL E-Mail] Santa Rita Substation Permitting

Hi Anna,

Thank you for joining us at our Open House. We got several great comments and will be letting people know via the project webpage of the preferred routes that will be carried into the Application for a CEC. To answer your question, No, TEP has not yet started the Power Substation Permit process for the Santa Rita Substation.

Please let me know if you have any additional questions.

Thanks,

~Chris

Chris Ortiz y Pino

Siting, Outreach and Engagement Project Manager

Tucson Electric Power/UNS Electric Inc.

520-633-8693

POWERING SUSTAINABILITY

From: Anna Casadei <[redacted]@sahuaritaaz.gov >
Sent: Monday, March 9, 2026 12:12 PM
To: Ortiz Y Pino, Christopher <christopher.ortizypino@tep.com >
Subject: [EXTERNAL E-Mail] Santa Rita Substation Permitting

CAUTION : This email originated from outside of UNS. **DO NOT** click on links or open attachments unless you recognize the sender and the content is expected. Do not hesitate to report the email as a phish if you are unsure about its safety.

Good morning, Chris. I was happy to see that you had a good turnout for the community open house last week. A question that I mean to ask you was whether you 've started the permitting process with Pima County for the Santa Rita Substation yet.

Anna Casadei, AICP

Director

Community Development

[redacted]

[redacted]@sahuaritaaz.gov | SahuaritaAZ.gov

Sahuarita

Any information provided by the Town related to zoning or land use within this correspondence is offered as a courtesy and without any guarantee of accuracy. The Town disclaims all liability for reliance on such information.

Outlook

RE: Tucson water facilities near Sahuarita

From Victor Ruedas <[redacted]@tucsonaz.gov>
Date Wed 2026-03-25 2:45 PM
To Jesus Suarez <[redacted]@tucsonaz.gov>; CeCe Aguda <caguda@dockitconsulting.com>; Kathryn Gerber <[redacted]@tucsonaz.gov>; Dean Trammel <[redacted]@tucsonaz.gov>
Cc TWSecurity <[redacted]@tucsonaz.gov>; Jose Pico <[redacted]@tucsonaz.gov>; John Van Winkle <[redacted]@tucsonaz.gov>; Victor Ruedas <[redacted]@tucsonaz.gov>

Hello All,
After further review of the facilities in the area and discussion with TEP. It seems they are just upgrading some existing transmission lines in the area and adding some others. We currently have no cathodic protection on this segment of pipeline in the area, so I see no need for any corrosion study currently. If there are any further questions, please feel free to reach out to me.

Regards,

Victor Ruedas
Corrosion Control Supervisor
Operational Reliability & Condition Assessment
[redacted]
[redacted]@tucsonaz.gov

TUCSON WATER
A proud part of the City of Tucson

From: Jesus Suarez <[redacted]@tucsonaz.gov>
Sent: Thursday, March 19, 2026 11:20 AM
To: CeCe Aguda <caguda@dockitconsulting.com>; Kathryn Gerber <[redacted]@tucsonaz.gov>; Dean Trammel <[redacted]@tucsonaz.gov>
Cc: TWSecurity <[redacted]@tucsonaz.gov>; Jose Pico <[redacted]@tucsonaz.gov>; Victor Ruedas <[redacted]@tucsonaz.gov>; John Van Winkle <[redacted]@tucsonaz.gov>
Subject: RE: Tucson water facilities near Sahuarita

Hello CeCe,

Thanks for reaching out. Our corrosion team is currently reviewing the details of the proposed TEP project and their potential "corrosion" conflict with our transmission pipelines in the area and will circle back as soon as time allows.

Jesus Suarez
Water Administrator
Operational Reliability & Condition Assessment
[redacted]
[redacted]
https://www.tucsonaz.gov/Departments/Water

CITY OF TUCSON | TUCSON WATER

From: CeCe Aguda <caguda@dockitconsulting.com>
Sent: Friday, March 6, 2026 11:47 AM
To: Kathryn Gerber <[redacted]@tucsonaz.gov>; Dean Trammel <[redacted]@tucsonaz.gov>
Cc: TWSecurity <[redacted]@tucsonaz.gov>; Jose Pico <[redacted]@tucsonaz.gov>; Victor Ruedas <[redacted]@tucsonaz.gov>; Jesus Suarez <[redacted]@tucsonaz.gov>; John Van Winkle <[redacted]@tucsonaz.gov>
Subject: Re: Tucson water facilities near Sahuarita

Some people who received this message don't often get email from caguda@dockitconsulting.com. Learn why this is important
Thank you so much! I was making sure we didn't need to get a crossing agreement or some such consent. Let me know if a corrosion study is required. There might need to be one done for the gas lines in the area. (Waiting to hear on that one.)

Celia "CeCe" Aguda, PE

DockIt Consulting, LLC

[redacted]

From: Kathryn Gerber <[redacted]@tucsonaz.gov>
Sent: Friday, March 6, 2026 1:26 PM
To: CeCe Aguda <caguda@dockitconsulting.com>; Dean Trammel <[redacted]@tucsonaz.gov>
Cc: TWSecurity <[redacted]@tucsonaz.gov>; Jose Pico <[redacted]@tucsonaz.gov>; Victor Ruedas <[redacted]@tucsonaz.gov>; Jesus Suarez <[redacted]@tucsonaz.gov>; John Van Winkle <[redacted]@tucsonaz.gov>
Subject: RE: Tucson water facilities near Sahuarita

Thanks Cece,
It goes without saying that 148 KV transmission lines will be above ground. And all pile-driving or foundation digging will follow regulation for distance from blue staked water. Be sure to measure from outside of pipe, this is a 30" diameter pipe so center to outside is over a foot an has a real effect on offsets.
With those assumptions, my only concern is stray current. These are Concrete Cylinder pipes, so it is less of a concern, but not negligible. I have cc'd some of our corrosion control folks. They may have questions for you or answers to your questions.
I've also cc'd our Chief Engineer in case he has questions or concerns that I wouldn't have thought of.
Kindly,

Kathryn Gerber, PE
Engineering Manager | System Planning
[redacted]
[redacted]

CITY OF TUCSON | TUCSON WATER

From: CeCe Aguda <caguda@dockitconsulting.com>
Sent: Friday, March 6, 2026 10:38 AM
To: Kathryn Gerber <[redacted]@tucsonaz.gov>; Dean Trammel <[redacted]@tucsonaz.gov>
Cc: TWSecurity <[redacted]@tucsonaz.gov>
Subject: Re: Tucson water facilities near Sahuarita

Thank you!
Do we need to do any coordination with you for any new lines that cross your water lines?

Celia "CeCe" Aguda, PE
DockIt Consulting, LLC
[redacted]

Outlook

RE: Tucson water facilities near Sahuarita

From Kathryn Gerber <[redacted]@tucsonaz.gov>
Date Fri 2026-03-06 2:11 PM
To CeCe Aguda <caguda@dockitconsulting.com>; Dean Trammel <[redacted]@tucsonaz.gov>
Cc TWSecurity <[redacted]@tucsonaz.gov>

Hi Cece,
Apologies for the premature send. The different colors refer to different pressure zones. But you didn't show any work near the green (potable distribution network) mains, so I didn't get into it.

-Kat
[redacted]@tucsonaz.gov

From: Kathryn Gerber
Sent: Friday, March 6, 2026 12:06 PM
To: 'CeCe Aguda' <caguda@dockitconsulting.com>; Dean Trammel <[redacted]@tucsonaz.gov>
Cc: TWSecurity <[redacted]@tucsonaz.gov>
Subject: RE: Tucson water facilities near Sahuarita

Different pressure zones.

-Kat
[redacted]@tucsonaz.gov

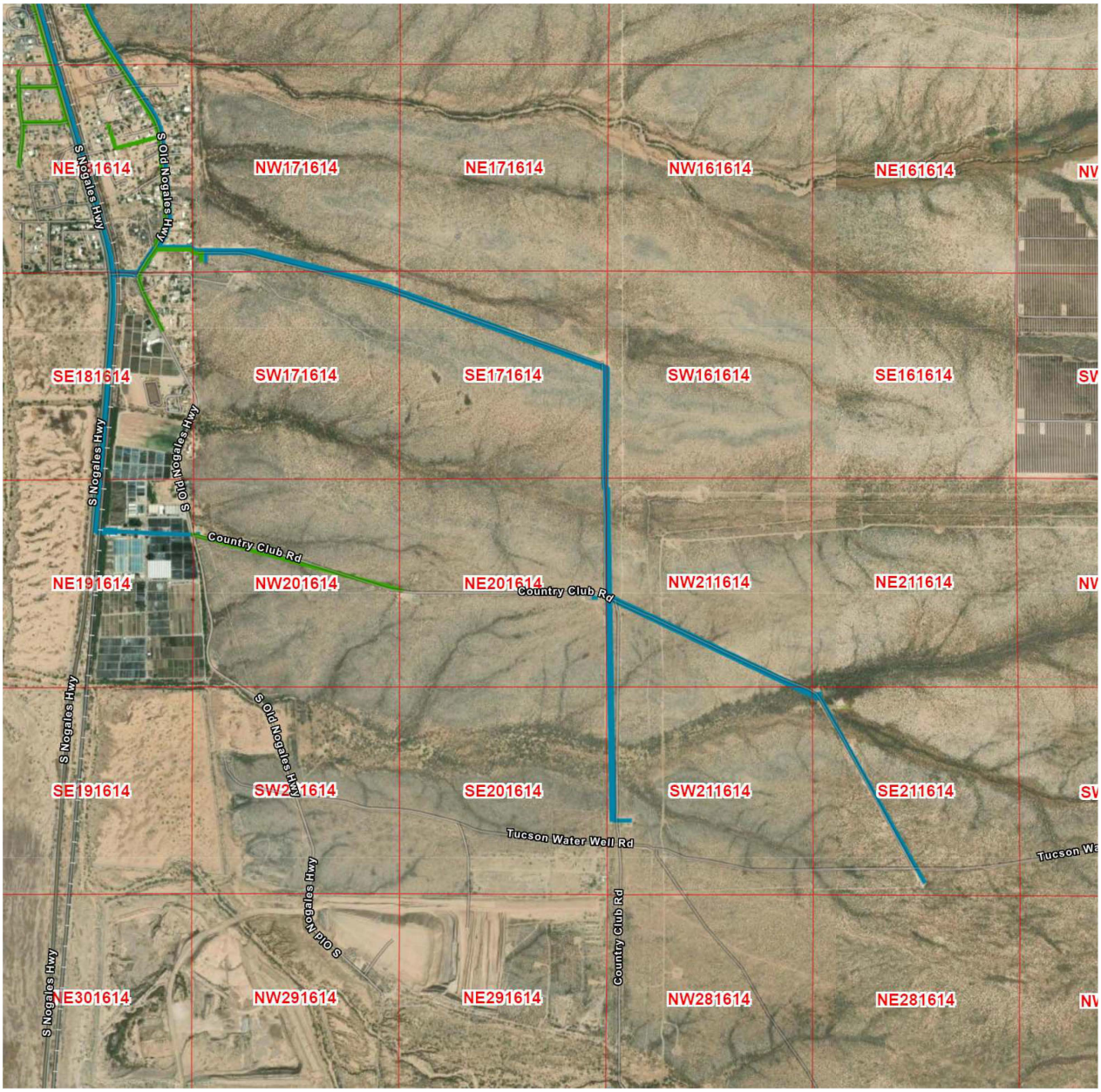
From: CeCe Aguda <caguda@dockitconsulting.com>
Sent: Friday, March 6, 2026 11:48 AM
To: Kathryn Gerber <[redacted]@tucsonaz.gov>; Dean Trammel <[redacted]@tucsonaz.gov>
Cc: TWSecurity <[redacted]@tucsonaz.gov>
Subject: Re: Tucson water facilities near Sahuarita

Kathryn
We are going to add these lines to our internal maps for design purposes - can you tell me the difference between the blue and green lines? Is it different diameters or pipe materials?
Thank you,
CeCe

Celia "CeCe" Aguda, PE
DockIt Consulting, LLC
[redacted]

From: Kathryn Gerber <[redacted]@tucsonaz.gov>
Sent: Friday, March 6, 2026 12:32 PM
To: CeCe Aguda <caguda@dockitconsulting.com>; Dean Trammel <[redacted]@tucsonaz.gov>
Cc: TWSecurity <[redacted]@tucsonaz.gov>
Subject: RE: Tucson water facilities near Sahuarita

Hi CeCe,
We have wells in that area. The dirt roads you can see in your aerial image are on top of well water-transmission mains. We don't have other mains along your electric-transmission line, nor do we have distribution system network mains. We do have wells at SE17114 where the TM bends, NE201614 at the junction and SE201614 at the end of the line.
I'm copying TW Security so they are aware of your work as well.
Hopefully this helps.



-Kat

[redacted]@tucsonaz.gov

From: CeCe Aguda <caguda@dockitconsulting.com>
Sent: Friday, March 6, 2026 8:13 AM
To: Kathryn Gerber <[redacted]@tucsonaz.gov>; Dean Trammel <[redacted]@tucsonaz.gov>
Subject: Tucson water facilities near Sahuarita
Importance: High

Some people who received this message don't often get email from caguda@dockitconsulting.com. Learn why this is important

Good morning,

We are siting a 138 kV electric transmission line in Pima County for Tucson Electric Power, south of the airport, north of Green Valley and east of Sahuarita. During our initial due diligence phase, we had no mapped water lines in our study area. When we made a field visit Tuesday afternoon we spotted blue water line markers and other facilities (see photos attached). I have shown their locations in the image below. Can you please provide us with a map of where the lines are in our study area (see attached map)? We want to make sure we are including them in our siting process.
Thank you!
CeCe



Celia “CeCe” Aguda, PE
DockIt Consulting, LLC
[redacted]
www.dockitconsulting.com
SBA 8(a), DBE, SBE, Woman Owned Small Business

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-5.2

Town of Sahuarita Meeting Summary

This page intentionally left blank

Town of Sahuarita Meeting

January 12, 2026

Town of Sahuarita Staff

Meeting via Microsoft Teams – 10:00am

Attendees

Town of Sahuarita

Name	Department/Position
Anna Casadei	Community Development, Director
Nathan Barrett	Community Development, Deputy Director
Orlanthia Henderson	Planning & Zoning Division, Manager

TEP

Name	Department/Position
Christopher Ortiz Y Pino	Line Siting Project Manager
Teresa Bravo	Government Relations Representative
CeCe Aguda	Consultant Project Manager
Michelle Adams	Consultant Project Coordinator

Summary

Chris Ortiz y Pino began the meeting and all attendees provided introductions. Chris welcomed questions and comments throughout the meeting as the following were shared and discussed: maps of the project study area, opportunities and constraints, and preliminary segments; a brief overview of the project purpose and need, as well as the in-progress Suitability Assessment; subsequent project phases and timeline; and existing and future infrastructure in the area.

Chris provided details regarding outreach and specifics directly related to communities in Sahuarita and relayed how the project will benefit the Town and support growth by providing enhanced distribution reliability to current and future residents. At the conclusion of the meeting, Chris invited all attendees to the upcoming Agency Briefing on January 28th.

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-5.3

Tucson Airport Authority Meeting Summary

This page intentionally left blank

Tucson Airport Authority Meeting

February 9, 2026

Tucson Airport Authority Staff

Meeting via Microsoft Teams – 11:00am

Attendees

Tucson Airport Authority

Name	Department/Position
John Voorhees	Vice President/Chief Revenue Officer
Scott Robidoux	Manager of Planning
Michael Hollar	Property Administrator
Max Meshel	

TEP

Name	Department/Position
Christopher Ortiz Y Pino	Line Siting Project Manager
Todd Lichtas	Transmission Planning Supervisor

Summary

Chris Ortiz y Pino began the meeting and the discussion primarily focused on land rights TEP would likely seek to acquire from Tucson Airport Authority (TAA). Additional rights of way would be required for the proposed alignment of Alternative Route 1, which would exit the Sonoran Substation and head east towards Wilmot Road. TAA expressed a preference for an adjacent land right, south of the existing WAPA 115kV transmission line right of way.

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-5.4

Arizona State Land Department Meeting Summary

This page intentionally left blank

Arizona State Land Department Meeting

February 9, 2026

Arizona State Land Department Staff

Meeting via Microsoft Teams – 2:30pm

Attendees

Arizona State Land Department

Name	Department/Position
Amber Troidl	Real Estate Division, Rights of Way Section Manager

TEP

Name	Department/Position
Christopher Ortiz Y Pino	Line Siting Project Manager
Laura Marshall	Right of Way Supervisor
Sabrina Kyles	Right of Way Agent
CeCe Aguda	Consultant Project Manager
Michelle Adams	Consultant Project Coordinator

Summary

Chris Ortiz y Pino began the meeting and shared a maps of the project study area and existing infrastructure; provided a brief overview of the project status, future project phases and timeline; and discussed the state land within the study area as it relates to TEP's current and potential land right opportunities.

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-5.5

Tucson Water Meeting Summary

This page intentionally left blank

Tucson Water Meeting

March 25, 2026

Tucson Water Staff

Meeting via Phone – 11:00am

Attendees

Tucson Water

Name	Department/Position
Victor Ruedas	Corrosion Control Supervisor

TEP

Name	Department/Position
Christopher Ortiz Y Pino	Line Siting Project Manager

Summary

Chris Ortiz y Pino initiated a phone call with Victor Ruedas to discuss the proposed project and how the Alternative Route, if chosen, would be constructed in close proximity to existing Tucson Water facilities. Chris relayed that the Alternative Route alignment is within a heavily utilized high voltage transmission corridor, and where possible, this project's new 138kV line would be strung as a second circuit on existing 138kV infrastructure. Victor Ruedas stated that he was not concerned about the project, however, he will follow up with his team and let Chris know if any further actions may be required by Tucson Water.

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-5.6

Robson Communities – Quail Creek Meeting Summary

This page intentionally left blank

Robson Communities – Quail Creek Meeting

March 31, 2026

Robson Communities Staff

Meeting via Microsoft Teams – 10:00am

Attendees

Robson Communities

Name	Department/Position
Craig Helsing	Senior Forward Planner
Christian Passalacqua	Forward Planner

TEP

Name	Department/Position
Christopher Ortiz Y Pino	Line Siting Project Manager
CeCe Aguda	Consultant Project Manager
Michelle Adams	Consultant Project Coordinator

Summary

Upon referral by Anna Casadei, the Director of Community Development for the Town of Sahuarita, representatives from Robson Communities, the developers of the Quail Creek subdivision, requested a meeting with TEP to discuss the project and its proximity to their property.

Chris Ortiz Y Pino shared project maps of proposed routes, as well as information regarding existing infrastructure and approved corridors around Quail Creek. Chris welcomed questions and comments throughout the meeting, relayed how the project will benefit both current and future phases of Quail Creek development, and encouraged collaboration as the project progresses.

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-6

Tribal Outreach

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-6.1

Correspondence to All Tribes (Nov. 2025)

This page intentionally left blank

Tucson Electric Power

November 19, 2025

[redacted]

Subject: Tucson Electric Power's- Proposed Santa Rita Connection Project

Dear [redacted],

On behalf of Tucson Electric Power (TEP), I am contacting you to provide an overview of our proposed transmission line siting project in Pima County, Arizona. The project is called the Santa Rita Connection Project. Please see the attachments for project area maps.

The project will interconnect TEP's existing 138 kilovolt (kV) transmission system to the proposed Santa Rita Substation, located east of Interstate 19, between Sahuarita and Green Valley. This upgrade will strengthen the reliability of service to customers, support regional development, and provide greater capacity to support growing energy needs in the area. TEP provides safe, reliable energy to more than 450,000 customers in Pima County and the Tucson metropolitan area.

Our project study area includes lands that are ancestrally affiliated with eleven tribal communities as identified on the Arizona State Historic Preservation Office (SHPO) consultation map. As the representative for one of these tribes, we are reaching out to provide you with project information and to begin a transparent and mutually productive discussion on our proposed project.

The Arizona Corporation Commission requires that new transmission lines secure a Certificate of Environmental Compatibility (CEC) before construction can begin. The proposed Santa Rita Connection Project is in the early stage of project planning known as "line siting," during which cultural, biological, and many other factors are analyzed to determine the most environmentally compatible alignment for the transmission line. Tribal communities are important partners in this process.

In the spirit of TEP's values to communicate transparently, and earn and preserve trust, we are committed to working with local tribal communities throughout the siting process. We respect tribal sovereignty and are committed to supporting cultural reviews and protecting their sensitivity.

Request for Tribal Engagement

Meaningful engagement with tribal communities is important to TEP. As part of our transmission line siting process, we would like to provide detailed project information early in the process so that we can consider project changes in response to your input. As such, TEP would like to formally invite the [redacted] Tribal Council or appropriate leadership to meet with us for an informational meeting and presentation of the Santa Rita Connection Project. TEP is also available to attend and provide more information about the project at one of your tribe's regularly scheduled meetings.

If you have any questions or recommendations for potential meeting times, please contact me directly at (520) 633-1112 or Teresa.Bravo@tep.com, or Chris Oritz y Pino, the Siting, Outreach and Engagement Project Manager for the project at christopher.ortizypino@tep.com, to schedule a meeting.

Thank you for your time and consideration. We look forward to meeting and working with you and your tribe throughout the development of the Santa Rita Connection Project.

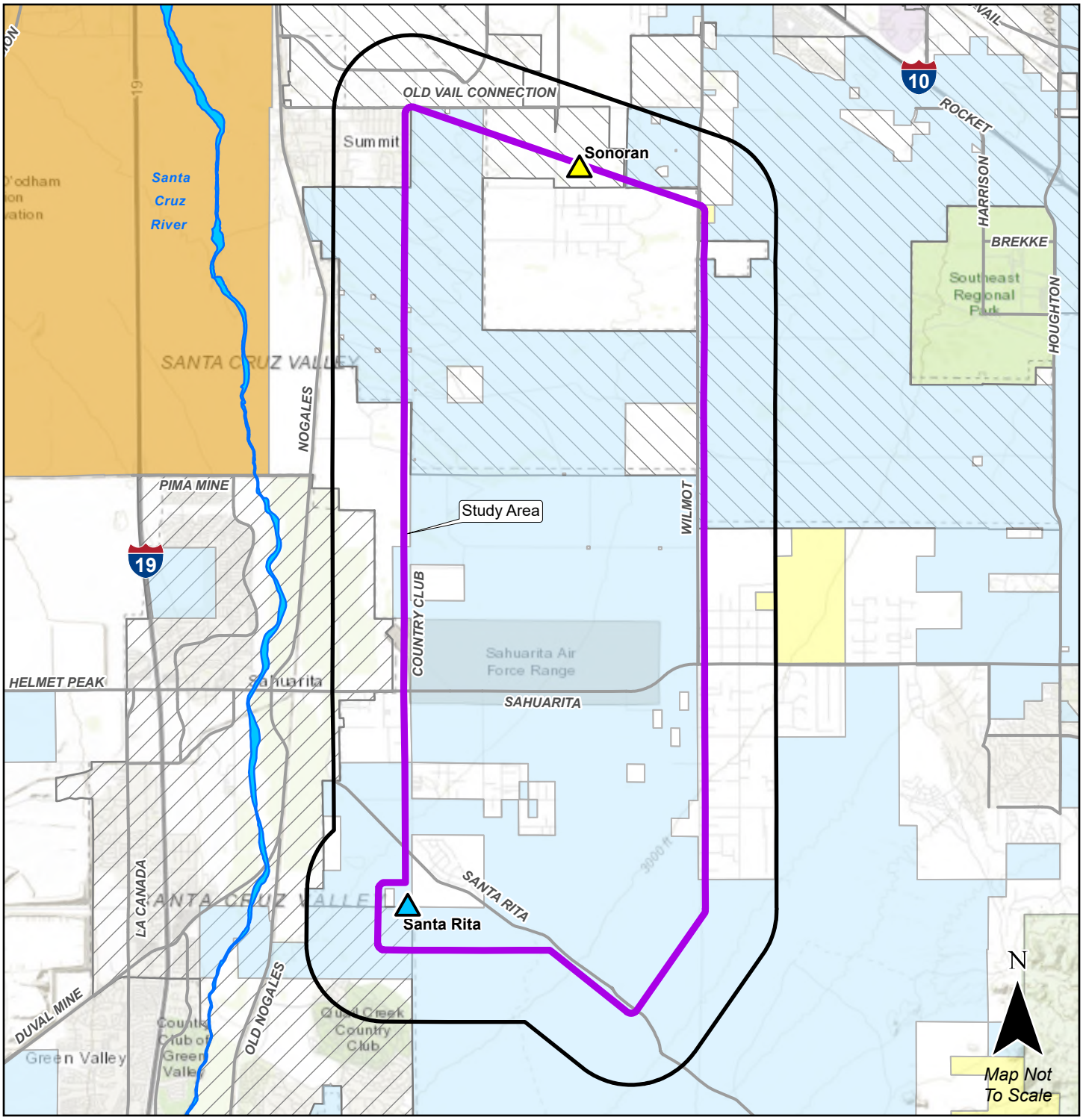
Sincerely,



Teresa Bravo
Sr. Government Relations Rep., Local Affairs & Tribal Liaison
UNS Energy Corporation

Attachment: Santa Rita Connection Project Study Area Map

cc: Chris Ortiz y Pino, TEP, Project Manager
CeCe Aguda, DockIt Consulting, LLC



Santa Rita Connection Project

- Existing 138kV Substation
- Planned 138kV Substation
- Revised Study Area
- Revised Notification Area

Surface Management

- Arizona State Land Department
- Bureau of Land Management
- Private (no color)
- Tohono O'odham San Xavier District

Jurisdictions

- Town of Sahuarita
- City of Tucson
- Unincorporated Pima County Boundary

This map is for planning purposes only. TEP makes no warranty of its accuracy.

Outlook

TEP Santa Rita Connection Project

2 attachments (914 KB)
Santa Rita Connection Project-[redacted].pdf; SRCP_revised_study_area_20251112.pdf;

From:
Sent: Monday, December 8, 2025 5:50 PM
To: [redacted]
Subject: TEP Santa Rita Connection Project

Dear [redacted],

I am respectfully contacting you today, as the attached letter was mailed to the [redacted] on November 19th, to confirm receipt as well as open email communication.
Our team would like to set up a meeting with your staff and/or leadership to discuss additional engagement opportunities for the Santa Rita Connection Project.

Respectfully,

-Teresa

Teresa Bravo, MBA

Sr. Government Relations Rep., Local Affairs & Tribal Liaison

88 E. Broadway Blvd.,Mail Stop HQE504, Tucson, AZ 85701

Email: teresa.bravo@uns.com Mobile: (520) 633-1112

UNS Energy Corporation

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-6.2

Correspondence to All Tribes (Feb. 2026)

This page intentionally left blank

Tucson Electric Power

February 19, 2026

[redacted]

Subject: February 2026 Update – Tucson Electric Power's Proposed Santa Rita Connection Project

Dear [redacted],

On behalf of Tucson Electric Power (TEP), I am contacting you to provide updates regarding our proposed Santa Rita Connection Project in Pima County, Arizona. This proposed transmission line will interconnect TEP's existing 138 kilovolt (kV) transmission system to the proposed Santa Rita Substation, located east of Interstate 19, between Sahuarita and Green Valley. Please see the attachments for project area maps.

The project study area includes lands that are ancestrally affiliated with eleven tribal communities as identified on the Arizona State Historic Preservation Office (SHPO) consultation map. As the representative for one of these tribes, we are reaching out to provide you with project information and to continue a transparent and mutually productive discussion about our proposed project.

Update

Arizona law requires new transmission line projects to secure a Certificate of Environmental Compatibility (CEC) from the Arizona Corporation Commission before construction can begin. TEP has recently completed detailed analyses of the project study area, during which cultural, biological, and many other factors were examined to determine the most environmentally compatible alignment(s) for the transmission line.

These analyses have resulted in the identification of several Alternative Routes that could be used to connect the existing Sonoran Substation and proposed Santa Rita Substation. As part of this process, a Class I Cultural Resource Report was prepared, and is available to share with you, upon request. All additional information and materials that have been distributed to the public thus far are available on the project webpage at tep.com/santa-rita-connection, including dates for the upcoming open house meeting.

In the spirit of TEP's values to communicate transparently, and earn and preserve trust, we are committed to working with local tribal communities throughout the siting process. We respect tribal sovereignty and are committed to supporting cultural reviews and protecting their sensitivity.

Request for Tribal Engagement

Meaningful engagement with tribal communities is important to TEP. As part of our transmission line siting process, we would like to provide detailed project information early in each phase of the process so that we can consider project changes in response to your input. As such, TEP would like to formally invite the [redacted] tribal Council or appropriate leadership to meet with us for an informational meeting and presentation of the Santa Rita Connection Project. TEP is also available to attend and provide more information about the project at one of your tribe's regularly scheduled meetings.

If you have any questions or recommendations for potential meeting times, please contact me directly at (520) 633-1112 or teresa.bravo@tep.com to schedule a meeting.

Thank you for your time and consideration. We look forward to meeting and working with you and your tribe throughout the development of the Santa Rita Connection Project.

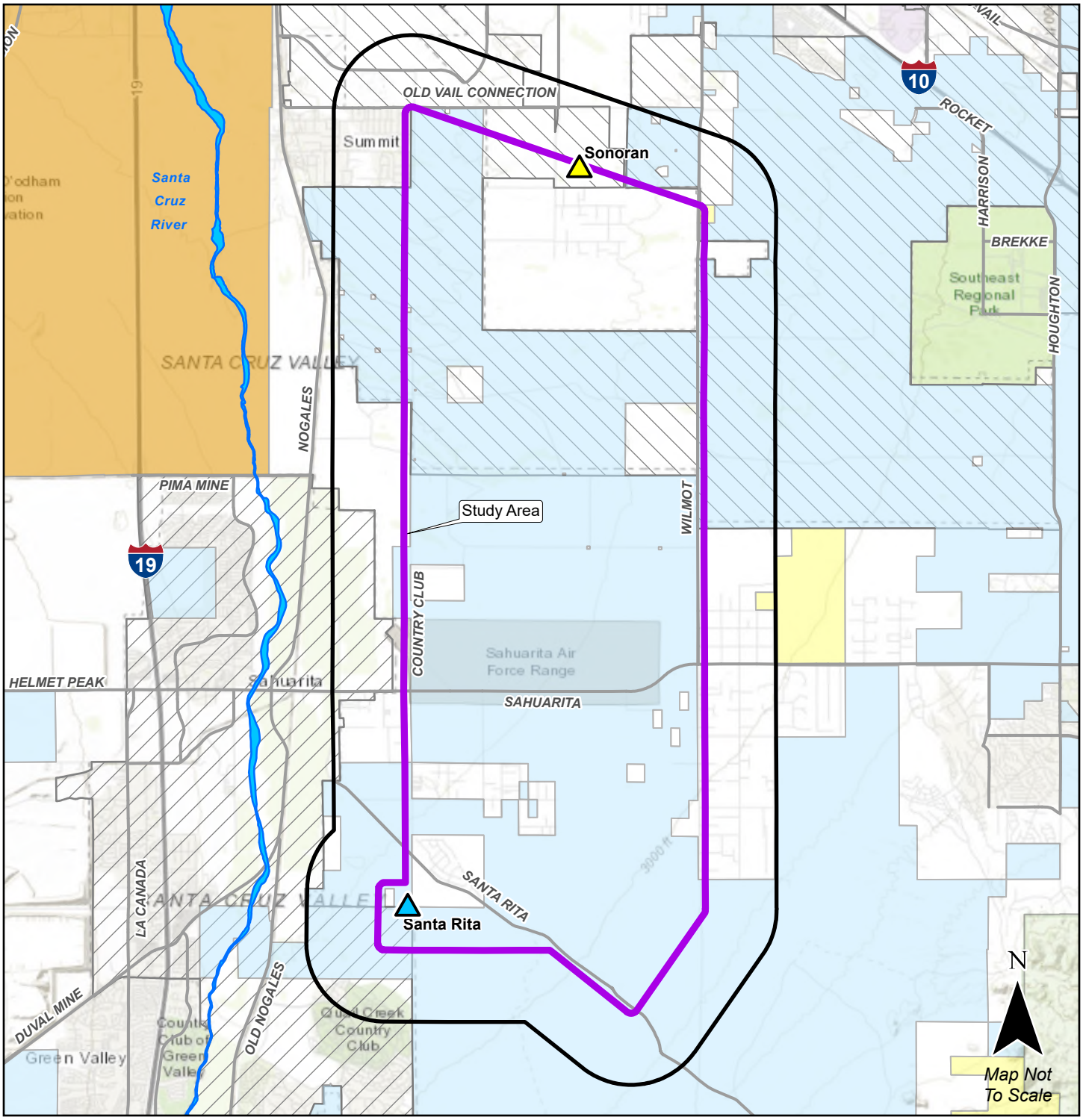
Sincerely,



Teresa Bravo
Sr. Government Relations Rep., Local Affairs & Tribal Liaison
Tucson Electric Power

Attachments: Santa Rita Connection Project Study Area Map
Santa Rita Connection Project Alternative Routes Map

cc: Chris Ortiz y Pino, TEP, Project Manager
CeCe Aguda, DockIt Consulting, LLC



Santa Rita Connection Project

- Existing 138kV Substation
- Planned 138kV Substation
- Revised Study Area
- Revised Notification Area

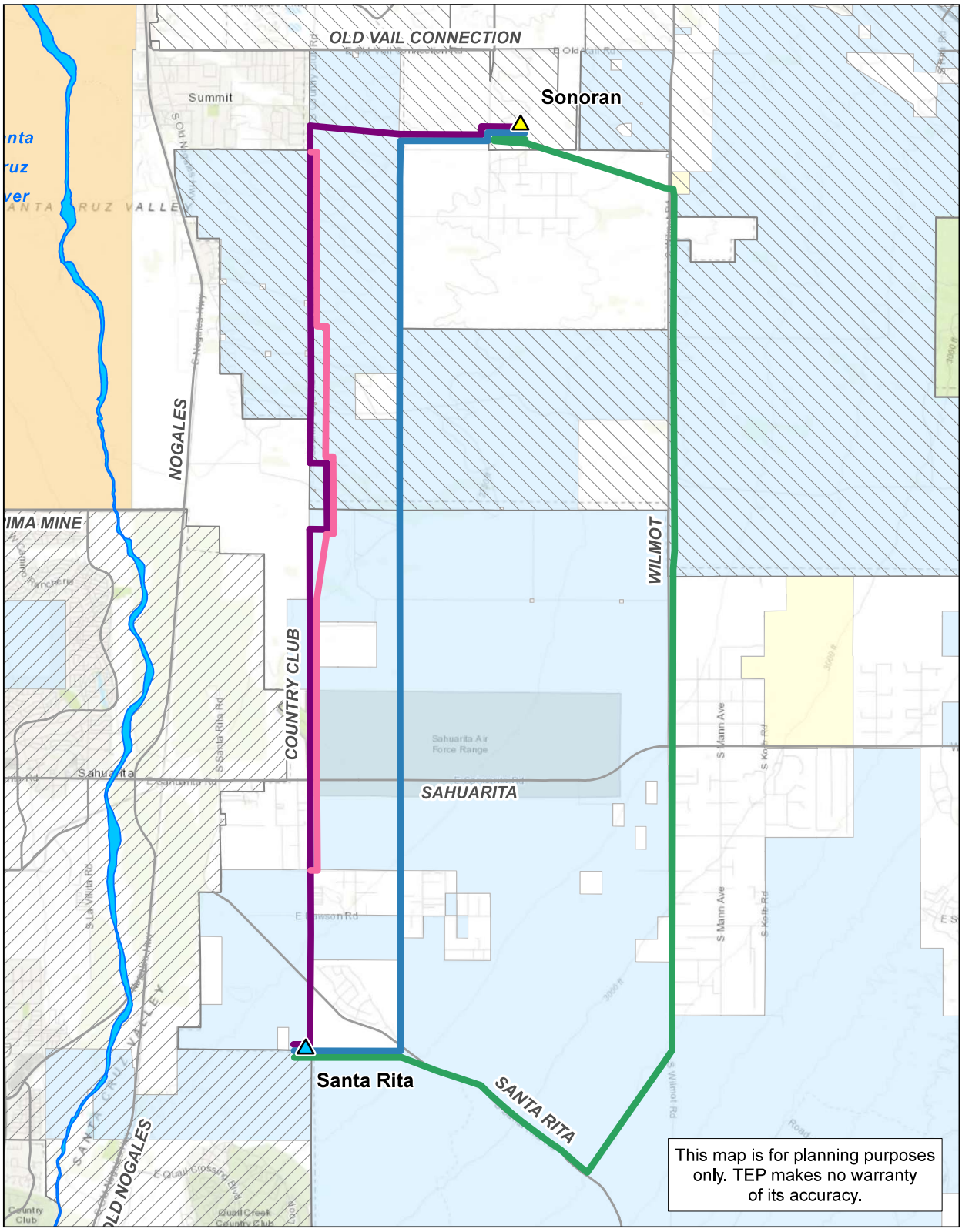
Surface Management

- Arizona State Land Department
- Bureau of Land Management
- Private (no color)
- Tohono O'odham San Xavier District

Jurisdictions

- Town of Sahuarita
- City of Tucson
- Unincorporated Pima County Boundary

This map is for planning purposes only. TEP makes no warranty of its accuracy.



Existing 138kV Substation

Planned 138kV Substation

Route Alternatives

- Route 1
- Route 2
- Route 3
- Route 3A

Jurisdictions

- Town of Sahuarita
- City of Tucson
- Unincorporated Pima County Boundary

Surface Management

- Arizona State Land Department
- Bureau of Land Management
- Private
- Tohono O'odham San Xavier District

N

Map Not To Scale

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-6.3

Correspondence to All Tribes (Mar. 2026)

This page intentionally left blank

Outlook

TEP Santa Rita Connection Project Update

From Bravo, Teresa <Teresa.Bravo@tep.com>
Date Wed 3/11/2026 1:12 PM
To [redacted]

2 attachments (925 KB)
Sant Rita Connection Project [redacted] Letter 2 - Feb1926.pdf; SRCP_Selected Routes_map_3.10.26.pdf;

Dear [redacted],

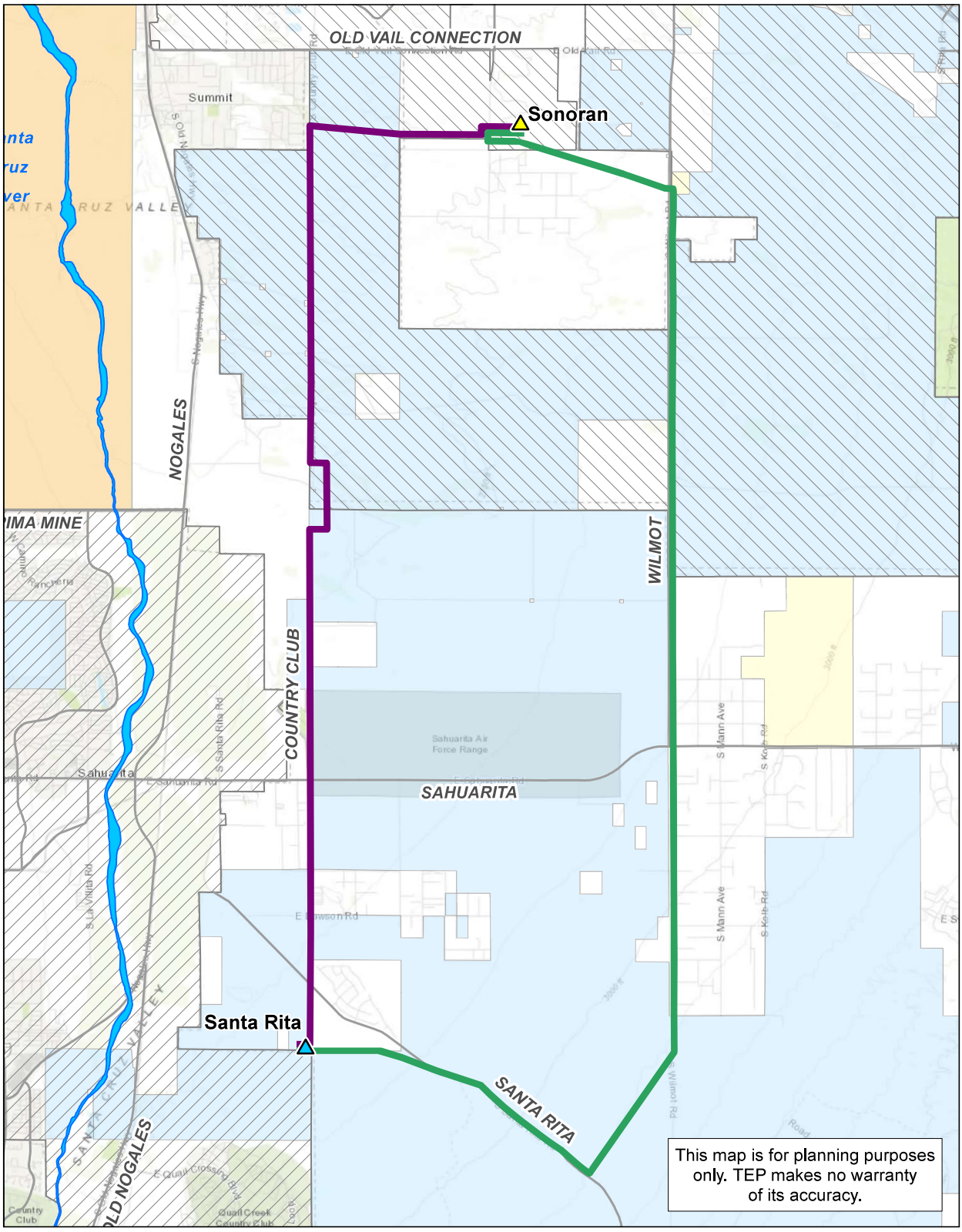
I am respectfully contacting you today, as the attached letter was mailed to the [redacted] on February 19th, to confirm receipt as well as open email communication.

We would like to set up a meeting with your staff and/or leadership to discuss selected route alternatives that will carrier forward into the application for a Certificate of Environmental Compatibility for the Santa Rita Connection Project.

Respectfully,

-Teresa

Teresa Bravo, MBA
Sr. Government Relations Rep., Local Affairs & Tribal Liaison
Government Relations & Public Affairs
88 East Broadway Boulevard- Mail Stop HQE504
Tucson, AZ 85701
Email: teresa.bravo@uns.com
Mobile: (520) 633-1112
UNS Energy Corporation



Existing 138kV Substation
Planned 138kV Substation
Route Alternative 1
Route Alternative 3

Jurisdictions

Town of Sahuarita
City of Tucson
Unincorporated Pima County Boundary

Surface Management

Arizona State Land Department
Bureau of Land Management
Private
Tohono O'odham San Xavier District

N

Map Not To Scale

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-6.4

Correspondence with Individual Tribes

This page intentionally left blank

Outlook

Re: [EXTERNAL E-Mail] Re: TEP Santa Rita Connection Project Update

From: Karl Hoerig <[redacted]@pascuayaqui-nsn.gov>
Sent: Thursday, March 12, 2026 1:58 PM
To: Bravo, Teresa <Teresa.Bravo@tep.com>; Julian Hernandez <[redacted]@pascuayaqui-nsn.gov>
Subject: [EXTERNAL E-Mail] Re: TEP Santa Rita Connection Project Update

CAUTION: This email originated from outside of UNS. **DO NOT** click on links or open attachments unless you recognize the sender and the content is expected. Do not hesitate to report the email as a phish if you are unsure about its safety.

Dear Teresa,

Thank you to TEP for requesting consultation with the Pascua Yaqui Tribe regarding the proposed installation of the Santa Rita Connection transmission lines in the vicinity of Sahuarita, Pima County, Arizona. Can you please provide me with a copy of the Class I cultural resources study so that I may have better information about potential effects to heritage resources?

With best regards,
Karl

Karl A. Hoerig, Ph.D.
Tribal Historic Preservation Officer
Pascua Yaqui Tribe
[redacted]
[redacted]@pascuayaqui-nsn.gov

From: Bravo, Teresa <Teresa.Bravo@tep.com>
Sent: Wednesday, March 11, 2026 10:36 AM
To: Julian Hernandez <[redacted]@pascuayaqui-nsn.gov>
Cc: Karl Hoerig <[redacted]@pascuayaqui-nsn.gov>
Subject: TEP Santa Rita Connection Project Update

CAUTION - Beware External Email - Think Before You Act.

WARNING - This email originated from outside of the organization! Do not click links, open attachments or reply, unless you recognize the sender's email address and know the content is safe!

Dear Chairman Hernandez,

I am respectfully contacting you today, as the attached letter was mailed to Pascua Yaqui Tribe on February 19th, to confirm receipt as well as open email communication.

We would like to set up a meeting with your staff and/or leadership to discuss selected route alternatives that will carrier forward into the application for a Certificate of Environmental Compatibility for the Santa Rita Connection Project.

Respectfully,

-Teresa

Teresa Bravo, MBA
Sr. Government Relations Rep., Local Affairs & Tribal Liaison
Government Relations & Public Affairs
88 East Broadway Boulevard- Mail Stop HQE504
Tucson, AZ 85701
Email: teresa.bravo@uns.com
Mobile: (520) 633-1112
UNS Energy Corporation

Outlook

Re: [EXTERNAL E-Mail] Re: TEP Santa Rita Connection Project Update

From: Kurt Dongoske <[redacted]@gmail.com>
Sent: Wednesday, March 11, 2026 11:00 AM
To: Bravo, Teresa <Teresa.Bravo@tep.com>
Subject: [EXTERNAL E-Mail] Re: TEP Santa Rita Connection Project Update

CAUTION: This email originated from outside of UNS. **DO NOT** click on links or open attachments unless you recognize the sender and the content is expected. Do not hesitate to report the email as a phish if you are unsure about its safety.

Good morning, Ms. Bravo - Thank you for your email. I would strongly recommend that you contact the Zuni Tribal Council to schedule a meeting with them to consider and provide a response from the Zuni Tribe. Please call [redacted] and ask for the Governor's office. Head Councilman Anthony Sanchez or Councilwoman Birdena Sanchez are responsible for scheduling the meetings for the Zuni Tribal Council and they would be the folks to engage.

Thank you for your interest in the Pueblo of Zuni.

Warm regards,

Kurt Dongoske, RPA #10233
Tribal Historic Preservation Officer/Principal Investigator
Zuni Cultural Resource Enterprise
Pueblo of Zuni

From: Bravo, Teresa <Teresa.Bravo@tep.com>
Sent: Wednesday, March 11, 2026 10:29 AM
To: [redacted]@gmail.com <[redacted]@gmail.com>
Cc: [redacted]@gmail.com <[redacted]@gmail.com>
Subject: TEP Santa Rita Connection Project Update

Dear Kurt Dongoske,

I am respectfully contacting you today, as the attached letter was mailed to the Pueblo of Zuni on February 19th, to confirm receipt as well as open email communication.

We would like to set up a meeting with your staff and/or leadership to discuss selected route alternatives that will carrier forward into the application for a Certificate of Environmental Compatibility for the Santa Rita Connection Project.

Respectfully,

-Teresa

Teresa Bravo, MBA
Sr. Government Relations Rep., Local Affairs & Tribal Liaison
Government Relations & Public Affairs
88 East Broadway Boulevard- Mail Stop HQE504
Tucson, AZ 85701
Email: teresa.bravo@uns.com
Mobile: (520) 633-1112
UNS Energy Corporation

Outlook

Re: [EXTERNAL E-Mail] RE: TEP Santa Rita Connection Project Update

From: Karla Reimer <[redacted]@yan-tribe.org>
Sent: Thursday, March 12, 2026 11:16 AM
To: Bravo, Teresa <Teresa.Bravo@tep.com>
Subject: RE: [EXTERNAL E-Mail] RE: TEP Santa Rita Connection Project Update

CAUTION: This email originated from outside of UNS. **DO NOT** click on links or open attachments unless you recognize the sender and the content is expected. Do not hesitate to report the email as a phish if you are unsure about its safety.

Good Morning Teresa,
Please let me know some times that will work for you. I guess I need to know how much time is needed for the meeting. Usually Monday's and Tuesdays are good for the Chairman. There are Council Work Session and Meetings on Wednesday and Thursdays. On Friday we work from 8 to 12. Let me know what times are good for you.

Have a good day.

Karla Reimer
Office Manager/Council Secretary
Yavapai-Apache Nation
[redacted]
[redacted] (PH)
[redacted] (Fax)
[redacted] (Cell)
Email: [redacted]@yan-tribe.org

From: Bravo, Teresa <Teresa.Bravo@tep.com>
Sent: Thursday, March 12, 2026 11:10 AM
To: Buddy Rocha Jr. <[redacted]@yan-tribe.org>
Cc: TribalCouncil <[redacted]@yan-tribe.org>; Karla Reimer <[redacted]@yan-tribe.org>
Subject: Re: [EXTERNAL E-Mail] RE: TEP Santa Rita Connection Project Update

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.

Thank you, Chairman Rocha. I will wait for response with dates and times.

Best,

-Teresa

Teresa Bravo, MBA
Sr. Government Relations Rep., Local Affairs & Tribal Liaison
Government Relations & Public Affairs
88 East Broadway Boulevard- Mail Stop HQE504
Tucson, AZ 85701
Email: teresa.bravo@uns.com
Mobile: (520) 633-1112
UNS Energy Corporation

From: Buddy Rocha Jr. <[redacted]@yan-tribe.org>
Sent: Wednesday, March 11, 2026 1:19 PM
To: Bravo, Teresa <Teresa.Bravo@tep.com>
Cc: TribalCouncil <[redacted]@yan-tribe.org>; Karla Reimer <[redacted]@yan-tribe.org>
Subject: [EXTERNAL E-Mail] RE: TEP Santa Rita Connection Project Update

CAUTION: This email originated from outside of UNS. **DO NOT** click on links or open attachments unless you recognize the sender and the content is expected. Do not hesitate to report the email as a phish if you are unsure about its safety.

Good Afternoon Teresa,

This email confirms that we've received your message, and after review, we will respond with a potential meeting date and time.

Respectfully,

Buddy Rocha Jr.
Chairman
Yavapai–Apache Nation

[redacted]
[redacted]r@yan-tribe.org
www.yavapai-apache.org
[redacted]

From: Bravo, Teresa <Teresa.Bravo@tep.com>
Sent: Wednesday, March 11, 2026 10:38 AM
To: Buddy Rocha Jr. <[redacted]r@yan-tribe.org>
Subject: TEP Santa Rita Connection Project Update

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.

Dear Chairman Rocha Jr.,

I am respectfully contacting you today, as the attached letter was mailed to Yavapai-Apache Nation on February 19th, to confirm receipt as well as open email communication.

We would like to set up a meeting with your staff and/or leadership to discuss selected route alternatives that will carrier forward into the application for a Certificate of Environmental Compatibility for the Santa Rita Connection Project.

Respectfully,

-Teresa

Teresa Bravo, MBA

Sr. Government Relations Rep., Local Affairs & Tribal Liaison

Government Relations & Public Affairs

88 East Broadway Boulevard- Mail Stop HQE504

Tucson, AZ 85701

Email: teresa.bravo@uns.com

Mobile: (520) 633-1112

UNS Energy Corporation

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-6.5

Yavapai-Apache Nation Briefing Summary

This page intentionally left blank

Yavapai-Apache Nation Briefing

January 9, 2026

Yavapai-Apache Nation Tribal Council

Meeting via Microsoft Teams – 10:00am

Attendees

Yavapai-Apache Nation

Name	Department/Position
Buddy Rocha, Jr.	Chairman
Charlie Baca, IV	Vice Chairman

TEP

Name	Department/Position
Clark Bryner	Line Siting Manager
Christopher Ortiz Y Pino	Line Siting Project Manager
Teresa Bravo	Government Relations Representative
CeCe Aguda	Consultant Project Manager
Michelle Adams	Consultant Project Coordinator

Summary

Teresa Bravo began the meeting and all attendees provided introductions. Chris Ortiz y Pino shared a PowerPoint presentation detailing the project overview, the purpose and need of the proposed project, TEP's line siting process, opportunities and constraints within the study area, a review of preliminary segments, required approvals, and timeline for the project.

The proposed overhead transmission line will extend 9-10 miles south from the existing Sonoran Substation to the planned Santa Rita Substation. The project will provide increased reliability, enhance the regional grid and establish greater capacity to accommodate current and future load growth. The Santa Rita Substation would allow for the retirement of an existing 46kV substation. Applications and required approvals for the project include a Certificate of Environmental Compatibility through the Arizona Corporation Commission.

The next step in the project schedule is to run the preliminary segments through the suitability assessment, which will result in refined segments being established. Shortly after, TEP's line siting team will conduct a field visit to ensure that the data and models used to produce the refined segments resulted in constructable pathways for the proposed transmission line. Additional outreach will be distributed to the public and the tribes to share the results once the current phase is completed.

At the conclusion of the presentation, the remainder of the meeting was open for attendees to provide any questions or comments related to the project. Additionally, the group discussed the possibilities for future collaboration between the Tribe and TEP.

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-6.6

Pascua Yaqui Tribe Briefing Summary

This page intentionally left blank

Pascua Yaqui Tribe Briefing

January 9, 2026

Pascua Yaqui Tribe THPO

Meeting via Microsoft Teams – 11:00am

Attendees

Pascua Yaqui Tribe

Name	Department/Position
Karl Hoerig	Tribal Cultural Preservation Officer

TEP

Name	Department/Position
Clark Bryner	Line Siting Manager
Christopher Ortiz Y Pino	Line Siting Project Manager
Teresa Bravo	Government Relations Representative
CeCe Aguda	Consultant Project Manager
Michelle Adams	Consultant Project Coordinator

Summary

Teresa Bravo began the meeting and all attendees provided introductions. Chris Ortiz y Pino shared a PowerPoint presentation detailing the project overview, the purpose and need of the proposed project, TEP's line siting process, opportunities and constraints within the study area, a review of preliminary segments, required approvals, and timeline for the project.

The proposed overhead transmission line will extend 9-10 miles south from the existing Sonoran Substation to the planned Santa Rita Substation. The project will provide increased reliability, enhance the regional grid and establish greater capacity to accommodate current and future load growth. The Santa Rita Substation would allow for the retirement of an existing 46kV substation. Applications and required approvals for the project include a Certificate of Environmental Compatibility through the Arizona Corporation Commission.

The next step in the project schedule is to run the preliminary segments through the suitability assessment, which will result in refined segments being established. Shortly after, TEP's line siting team will conduct a field visit to ensure that the data and models used to produce the refined segments resulted in constructable pathways for the proposed transmission line. Additional outreach will be distributed to the public and the tribes to share the results once the current phase is completed.

At the conclusion of the presentation, the remainder of the meeting was open for any questions or comments related to the project. Upon Karl Hoerig's request and the Tribe's primary concern being archeological sites and ancestral places, Chris stated that he would send a copy of the Class 1 cultural report once it has been finalized.

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-6.7

Four Southern Tribes Cultural Resources Working Group Summary

This page intentionally left blank

Four Southern Tribes Cultural Resources Working Group

March 20, 2026

Four Southern Tribes Cultural Resources Representatives

Meeting at Elements Event Center – 16000 Maricopa Road, Maricopa, Arizona 85139 – 9:00am

Attendees

Four Southern Tribes

Tribe
Ak-Chin Indian Community
Gila River Indian Community
Salt River Pima-Maricopa Indian Community
Tohono O'odham Nation

TEP

Name	Department/Position
Christopher Ortiz Y Pino	Line Siting Project Manager
Teresa Bravo	Government Relations Representative
Avi Buckles	WestLand Resources, Director of Cultural Resources

Summary

Avi Buckles introduced Chris Ortiz Y Pino and Teresa Bravo to the Working Group. Teresa shared an overview of TEP/UNSE's recently approved transmission projects, as well as projects in the line siting process. Of those currently in the siting process, Chris and Teresa discussed the Santa Rita Connection Project and others that are relevant to the tribal communities.

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-7

External Communication

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-7.1

Postcard Mailer 1 (Nov. 2025)

This page intentionally left blank

Santa Rita Connection Project

Tucson Electric Power (TEP) is preparing plans for new transmission facilities that will increase energy capacity and enhance system reliability for areas south of Tucson.

The Santa Rita Connection Project will interconnect TEP's existing 138 kilovolt (kV) transmission system to the proposed Santa Rita Substation, located east of I-19, between Sahuarita and Green Valley. This upgrade to TEP's local energy grid will strengthen the reliability of service to customers, support regional development, and provide greater capacity to support growing energy needs in the area.

We invite you to come to our in-person open house on November 13, 2025.
See the opposite side of this postcard for details.

Please submit your comments and questions by:

- Filling out an online comment form on the project webpage: www.tep.com/santa-rita-connection/
- Sending email comments to SantaRitaConnection@tep.com
- Calling 1-520-770-7520 and leaving a voicemail message
- Mailing a letter with comments to:

  TEP Santa Rita Connection Project
  P.O. Box 711
  Mail Stop CB200
  Tucson, AZ 85701-0711

Tucson Electric Power (TEP) está preparando planes para nuevas instalaciones de transmisión que aumentarán la capacidad energética y mejorarán la confiabilidad del sistema para las áreas al sur de Tucson.

El Proyecto de Conexión de Santa Rita interconectará el sistema de transmisión existente de 138 kilovoltios (kV) de TEP con la subestación propuesta de Santa Rita, ubicada al este de la I-19, entre Sahuarita y Green Valley. Esta mejora de la red eléctrica local de TEP reforzará la confiabilidad del servicio a los clientes, apoyará el desarrollo regional y proporcionará una mayor capacidad para satisfacer las crecientes necesidades energéticas de la zona.

We Value Your Input
Valoramos su opinión

You can help shape our future energy grid.
Visit our website or join us at our
open house to learn how.

Visite nuestro sitio web para saber cómo hacerlo.

Public Open House
Reunión abierta pública

Thursday, November 13 | 6-8 p.m.
Open house begins at 6 p.m.
Light refreshments will be provided.

Jueves 13 de noviembre | De 6 a 8 p.m.
La reunión abierta comienza a las 6 p.m.
Se proporcionarán refrigerios livianos.

Desert Diamond Casino - Sahuarita
1100 W Pima Mine Road
Sahuarita, AZ 85629

Santa Rita Connection Project
P.O. Box 711
Mail Stop CB200
Tucson, AZ 85701-0711

Learn more:
www.tep.com/santa-rita-connection/

Tucson Electric Power

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-7.2

Postcard Mailer 2 (Jan. 2026)

This page intentionally left blank

Santa Rita Connection Project

Tucson Electric Power recently completed a comprehensive study that will inform its plans for new transmission facilities.

Incorporating your feedback, the study considered proximity to homes, environmental resources, land uses, and mountain views, to identify the least impactful potential route segments for the Project. Transmission line routes have not yet been determined, and your continued involvement will directly inform the ultimate location.

To discuss the Project with a team member, please contact us at 1-520-770-7520 or email at santaritaconnection@tep.com.

To view the results of the study and to provide comments, please visit tep.com/santa-rita-connection.

Tucson Electric Power finalizó recientemente un estudio integral que servirá de base para sus planes de nuevas instalaciones de transmisión.

Mediante la incorporación de los comentarios de usted, el estudio consideró la proximidad a los hogares, los recursos ambientales, los usos del suelo y las vistas a las montañas para identificar los tramos de ruta potenciales con menor impacto para el proyecto. Las rutas de las líneas de transmisión aún no se han determinado, y la participación continua de usted contribuirá directamente a definir la ubicación final.

Para hablar con un miembro del equipo sobre el proyecto, póngase en contacto con nosotros al 1-520-770-7520 o por correo electrónico a santaritaconnection@tep.com.

Para ver los resultados del estudio y proporcionar comentarios, visite tep.com/santa-rita-connection.

New Transmission Line Resources Coming In Your Area

We Value Your Input

You can help shape our future energy grid.
Visit our website to learn how.

Valoramos su opinión

Visite nuestro sitio web para saber cómo hacerlo.

Please submit your comments and questions by:

- Filling out an online comment form on the project webpage: www.tep.com/santa-rita-connection/
- Sending email comments to SantaRitaConnection@tep.com
- Calling 1-520-770-7520 and leaving a voicemail
- Mailing a letter with comments to:
  TEP Santa Rita Connection Project
  P.O. Box 711
  Mail Stop CB200
  Tucson, AZ 85701-0711

Santa Rita Connection Project
P.O. Box 711
Mail Stop CB200
Tucson, AZ 85701-0711

Learn more:
www.tep.com/santa-rita-connection/

Tucson Electric Power

January 2026

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-7.3

Postcard Mailer 3 (Feb. 2026)

This page intentionally left blank

Santa Rita Connection Project

Your input is needed!

Join us for an open house on March 4, 2026

See the opposite side of this postcard for details.

Tucson Electric Power (TEP) will share the results of a transmission line siting study for the Santa Rita Connection Project. We will be presenting alternative routes that could be used to connect the Sonoran and Santa Rita substations.

Your input *will* help determine TEP's decision for the preferred route. Visit our webpage to learn more about the project or contact a team member at 1-520-770-7520.

Please submit your comments and questions by:

- Filling out an online comment form on the project webpage: www.tep.com/santa-rita-connection/
- Sending email comments to: SantaRitaConnection@tep.com
- Calling 1-520-770-7520 and leaving a voicemail
- Mailing a letter with comments to:
  TEP Santa Rita Connection Project
  P.O. Box 711
  Mail Stop CB200
  Tucson, AZ 85701-0711

¡Su opinión es necesaria!

Acompáñenos en una reunión abierta pública el 4 de marzo de 2026

TEP compartirá los resultados de un estudio de emplazamiento de líneas de transmisión para el Proyecto de Conexión de Santa Rita. Presentaremos rutas alternativas que podrían utilizarse para conectar las subestaciones Sonoran y Santa Rita.

Su opinión ayudará a determinar la decisión de TEP para la ruta preferida. Visite nuestra página web para conocer más sobre el proyecto o póngase en contacto con un miembro del equipo al 1-520-770-7520.

New Transmission Line Resources Planned for Your Area

We Value Your Input

You can help shape our future energy grid. Visit our website to learn how.

Valoramos su opinión

Visite nuestro sitio web para saber cómo hacerlo.

Public Open House

Reunión abierta pública

Wednesday, March 4 | 6-8 p.m.
Light refreshments will be provided

Miercoles 4 de marzo | De 6 a 8 p.m.
Se proporcionarán refrigerios livianos

Desert Diamond Casino - Sahuarita
1100 W Pima Mine Road
Sahuarita, AZ 85629

Santa Rita Connection Project
P.O. Box 711
Mail Stop CB200
Tucson, AZ 85701-0711

Learn more:
www.tep.com/santa-rita-connection/

Tucson Electric Power

February 2026

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-7.4

Email Update 1 (Nov. 2025)

This page intentionally left blank

Tucson Electric Power

Santa Rita Connection Project

Tucson Electric Power is preparing plans for new transmission facilities that will increase energy capacity and enhance system reliability to customers in Sahuarita, Green Valley, and the surrounding area.

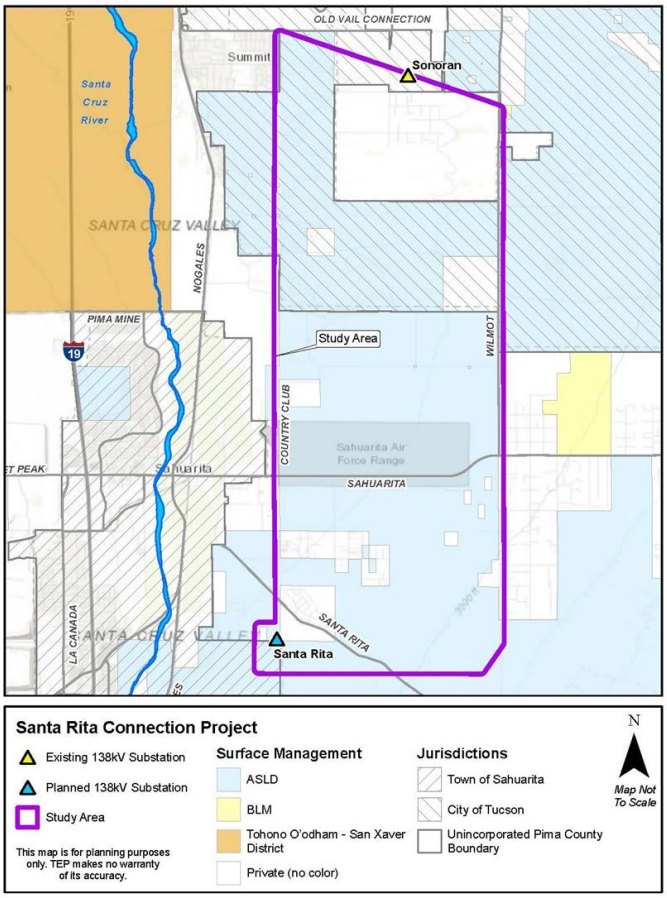
TEP's Santa Rita Connection Project will interconnect TEP's existing 138 kilovolt (kV) transmission system to the proposed Santa Rita Substation, located east of Interstate-19, between Sahuarita and Green Valley. This upgrade will strengthen the reliability of service to customers, support regional development, and provide greater capacity to support growing energy needs in the area.

TEP has not yet identified a route for the proposed transmission line and is seeking public input to inform a comprehensive planning and siting process to identify possible routes. The final route is subject to approval by the Arizona Power Plant and Transmission Line Siting Committee and the Arizona Corporation Commission.

TEP invites the public to attend a public open house to learn about the project, ask questions, and submit comments.

PUBLIC OPEN HOUSE
Thursday, November 13, 2025
6:00 pm - 8:00pm
Desert diamond Casino -Sahuarita
1100 W Pima Mine Road
Sahuarita, AZ, 85629

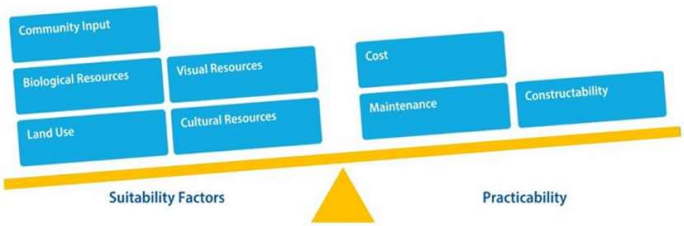
Project Study Area



Planning and Siting Process

Identifying a suitable location for new transmission facilities involves several phases, each informed by public input. TEP considers factors that are important to the community and the environment, and balances them with constructability, maintenance, and cost to find the most suitable route for a transmission line that satisfies the need for the project. Area residents, property owners and other interested parties can provide local insight to help identify opportunities and constraints, areas to avoid, and route evaluation criteria.

TEP welcomes your comments about the local values we should consider throughout the route selection process.



Required Approvals and Timeline

Under state law, TEP must secure a Certificate of Environmental Compatibility (CEC) to build the transmission line. TEP plans to file a CEC application in the spring of 2026 with the Arizona Power Plant and Transmission Line Siting Committee, which reviews CEC applications in a public process that allows neighbors and others to provide comments. The Arizona Corporation Commission (ACC) must review and approve the CEC before TEP can begin construction.



Public Participation

TEP encourages residents, property owners and other stakeholders to participate in the line siting process by:

- Attending public open houses
- Filling out an online comment form on our project webpage
- Sending email comments to SantaRitaConnection@tep.com
- Calling **1-520-770-7520** and leaving a voicemail message
- Mailing a letter with comments to:
  - TEP Santa Rita Connection Project
    P.O. Box 711
    Mail Stop CB200
    Tucson, AZ 85701-0711

Tucson Electric Power

You are receiving this email because you are a customer with an active service agreement within the notification area for the Santa Rita Connection Project

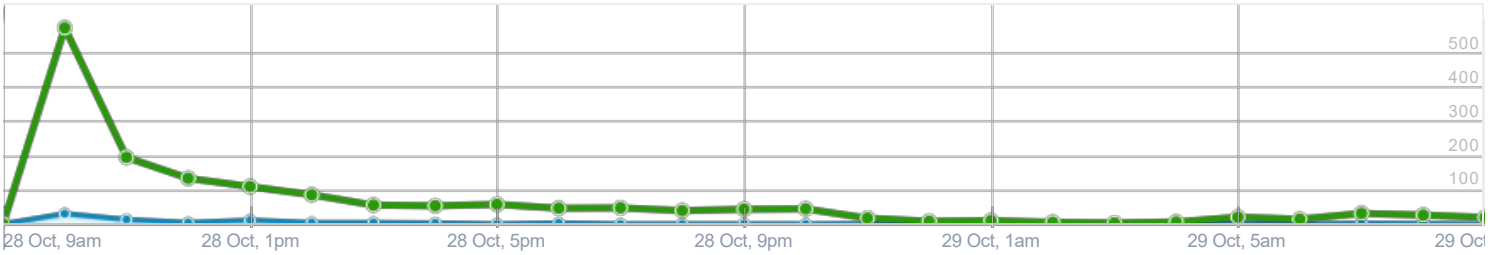
Preferences | Unsubscribe

Santa Rita Connection

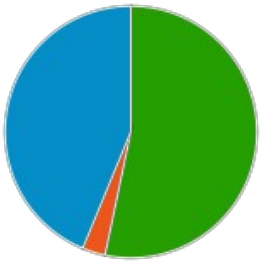
Sent Oct 28, 2025 at 10:00AM

Sent to 1,896 unique subscribers in Santa Rita Connection

Opens and Link Clicks for first day



Campaign Overview



1,010 Unique opens
2,202 total opens to date
56 Bounced
2.95% couldn't be delivered
830 Unopened
Open rates are only estimates

54.89% of all recipients opened so far

3.86% clicked a link (71 people)

0.38% unsubscribed (7 people)

1 person marked it as spam (0.05%)

0 shares across Facebook & email

Links Clicked

71 people clicked Giving you a **7.03%** click rate.	**105** total clicks Made by 71 people
1.48 clicks per person Average of all those who clicked.	**939** didn't click That's 92.97% of all those who opened.

Link (URL)	Unique	Total
https://www.tep.com/santa-rita-connection/	71	105

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-7.5

Email Update 2 (Jan. 2026)

This page intentionally left blank

Tucson Electric Power

Santa Rita Connection Project

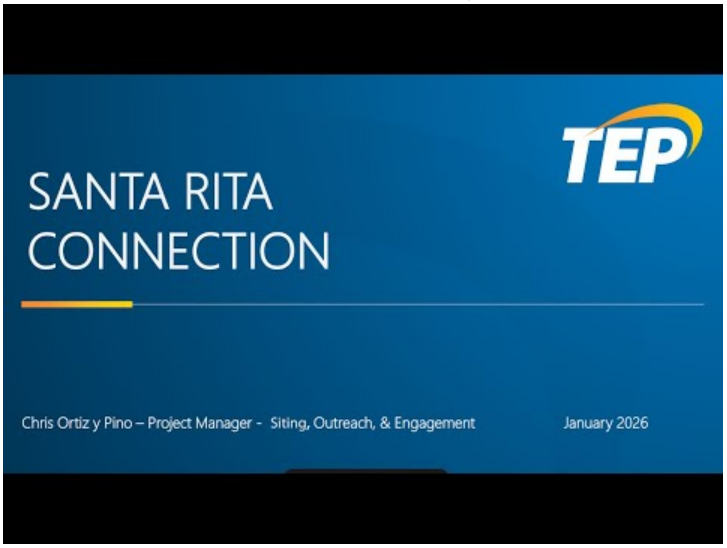
Tucson Electric Power is preparing plans for new transmission facilities that will increase energy capacity and enhance system reliability to customers in Sahuarita, Green Valley, and the surrounding area.

TEP's Santa Rita Connection Project will interconnect TEP's existing 138 kilovolt (kV) transmission system to the proposed Santa Rita Substation, located east of Interstate-19, between Sahuarita and Green Valley. This upgrade will strengthen the reliability of service to customers, support regional development, and provide greater capacity to support growing energy needs in the area.

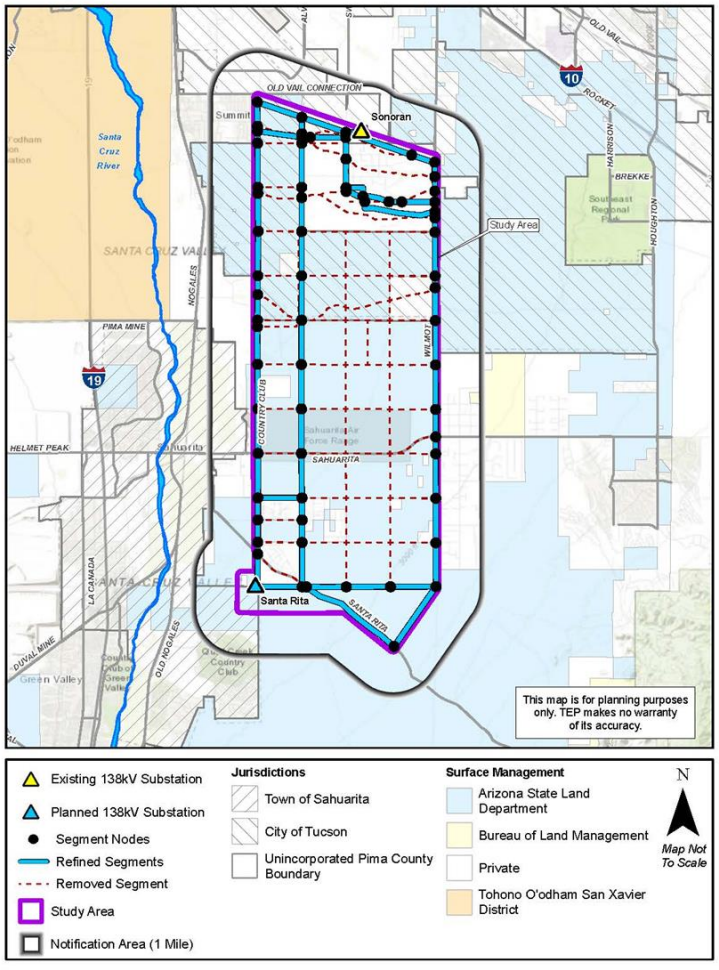
Siting Status Update

TEP recently completed a Suitability Assessment of all Preliminary Segments presented to the public in November. GIS Suitability models were used to identify segments most suitable for a transmission line. TEP representatives then visited segments in the study area to verify results of the data analysis. As a result, 84 preliminary segments were removed from consideration, and 76 segments were carried forward for further review. These Refined Segments, shown on the interactive map on our project webpage, will be analyzed in the next phase of the process.

To view a video presentation about our Suitability Assessment, click the image below!



Refined Segments



Required Approvals and Timeline

Under state law, TEP must secure a Certificate of Environmental Compatibility (CEC) to build the transmission line. TEP plans to file a CEC application in the spring of 2026 with the Arizona Power Plant and Transmission Line Siting Committee, which reviews CEC applications in a public process that allows neighbors and others to provide comments. The Arizona Corporation Commission (ACC) must review and approve the CEC before TEP can begin construction.



Public Participation

TEP encourages residents, property owners and other stakeholders to participate in the line siting process by:

- Attending public open houses
- Filling out an online comment form on our project webpage
- Sending email comments to SantaRitaConnection@tep.com
- Calling **1-520-770-7520** and leaving a voicemail message
- Mailing a letter with comments to:
  - TEP Santa Rita Connection Project
    P.O. Box 711
    Mail Stop CB200
    Tucson, AZ 85701-0711

Tucson Electric Power

You are receiving this email because you are a customer with an active service agreement within the notification area for the Santa Rita Connection Project, or you have requested to be on the project email list.

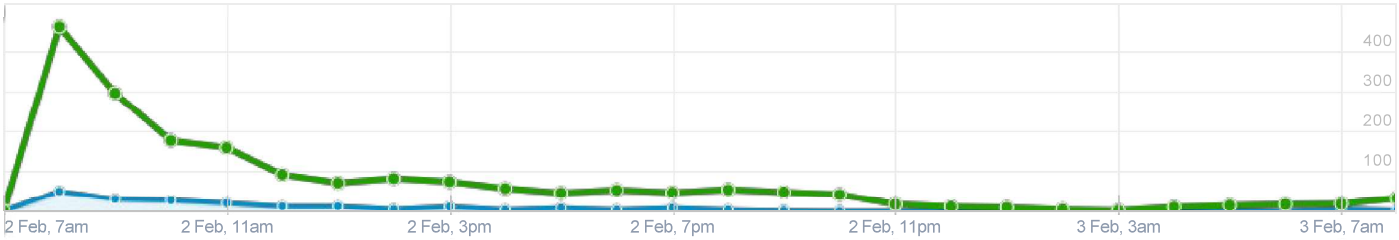
Preferences | Unsubscribe

Santa Rita Connection_January Suitability

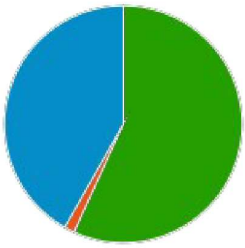
Sent Feb 02, 2026 at 8:31AM

Sent to 1,854 unique subscribers in Santa Rita Connection

Opens and Link Clicks for first day



Campaign Overview



1,053 Unique opens
2,438 total opens to date
26 Bounced
1.4% couldn't be delivered
775 Unopened
Open rates are only estimates

57.6% of all recipients opened so far

7.88% clicked a link (144 people)

0.16% unsubscribed (3 people)

0 people marked it as spam (0%)

0 shares across Facebook & email

Links Clicked

144 people clicked Giving you a **13.68%** click rate.	**224** total clicks Made by 144 people
1.56 clicks per person Average of all those who clicked.	**909** didn't click That's 86.32% of all those who opened.

Link (URL)	Unique	Total
https://www.tep.com/maps/santa-rita-connection/	127	171
https://www.tep.com/santa-rita-connection/	17	27
https://youtu.be/6c4lHGJnKf4	12	14
https://www.tep.com/santa-rita-connection/#process	11	12

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-7.6

Email Update 3 (Feb. 2026)

This page intentionally left blank

Tucson Electric Power

Santa Rita Connection Project Update

Tucson Electric Power (TEP) is continuing work on the Santa Rita Connection Project and invites the community to participate in an upcoming public open house.

TEP will be sharing the results of its Transmission Line Siting Study and presenting **alternative transmission line routes** for public review and input. Community feedback is an important part of this process and will help inform TEP's identification of a preferred route.

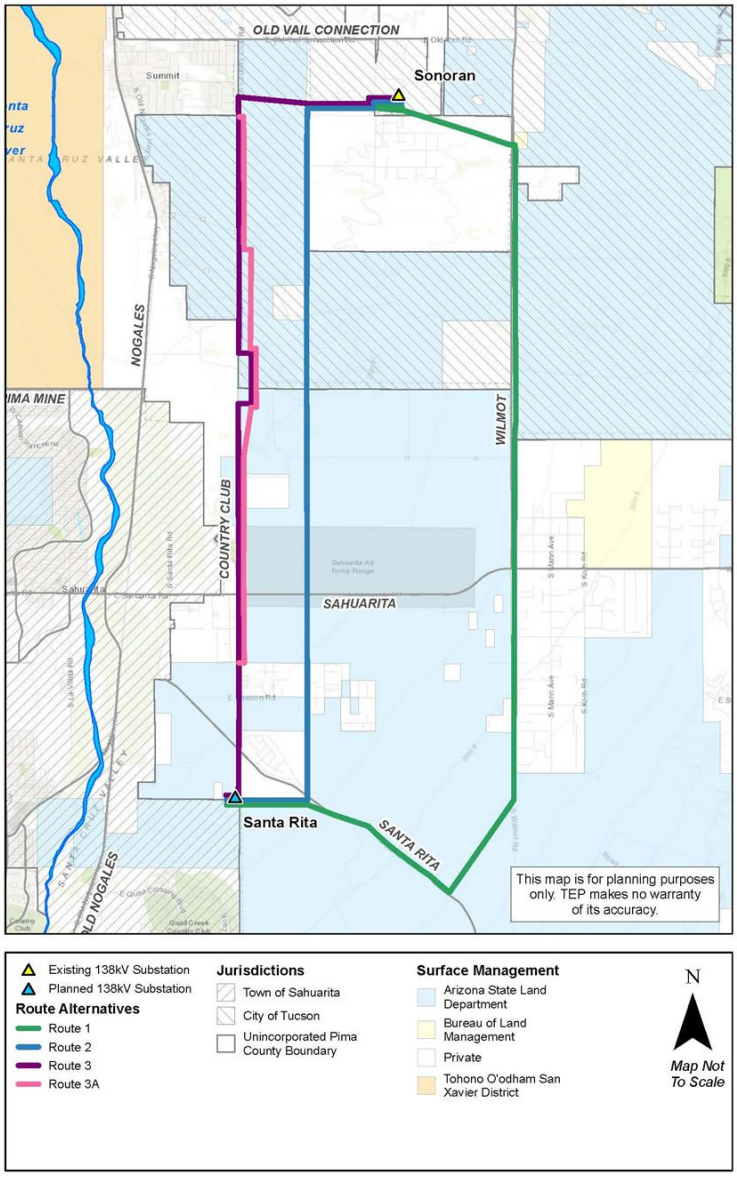
Public Open House Details

Date: Wednesday, March 4
Time: 6:00 – 8:00 p.m.
Location: Desert Diamond Casino – Ocotillo Room
City: Sahuarita

At the open house, community members will have the opportunity to:

- Learn about the Santa Rita Connection Project and the siting study process
- Review maps and information for the alternative transmission line routes
- Ask questions of the project team
- Share feedback on what they believe should be TEP's preferred route

Route Alternatives



Required Approvals and Timeline

Under state law, TEP must secure a Certificate of Environmental Compatibility (CEC) to build the transmission line. TEP plans to file a CEC application in the spring of 2026 with the Arizona Power Plant and Transmission Line Siting Committee, which reviews CEC applications in a public process that allows neighbors and others to provide comments. The Arizona Corporation

Commission (ACC) must review and approve the CEC before TEP can begin construction.



Public Participation

TEP encourages residents, property owners and other stakeholders to participate in the line siting process by:

- Attending public open houses
- Filling out an online comment form on our project webpage
- Sending email comments to SantaRitaConnection@tep.com
- Calling **1-520-770-7520** and leaving a voicemail message
- Mailing a letter with comments to:
  - TEP Santa Rita Connection Project
    P.O. Box 711
    Mail Stop CB200
    Tucson, AZ 85701-0711

Tucson Electric Power

You are receiving this email because you are a customer with an active service agreement within the notification area for the Santa Rita Connection Project, or you have requested to be on the project email list.

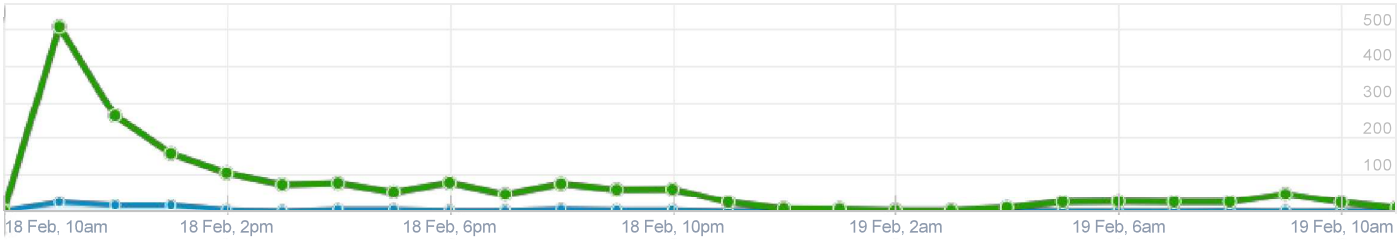
Preferences | Unsubscribe

Santa Rita Connection_March Open House #2

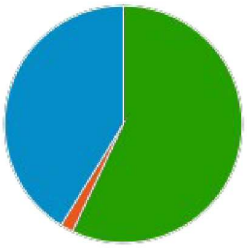
Sent Feb 18, 2026 at 11:25AM

Sent to 1,850 unique subscribers in Santa Rita Connection

Opens and Link Clicks for first day



Campaign Overview



1,055 Unique opens
2,116 total opens to date
32 Bounced
1.73% couldn't be delivered
763 Unopened
Open rates are only estimates

58.03% of all recipients opened so far

4.07% clicked a link (74 people)

0.06% unsubscribed (1 person)

0 people marked it as spam (0%)

0 shares across Facebook & email

Links Clicked

74 people clicked Giving you a **7.01%** click rate.	**98** total clicks Made by 74 people
1.32 clicks per person Average of all those who clicked.	**981** didn't click That's 92.99% of all those who opened.

Link (URL)	Unique	Total
https://www.tep.com/maps/santa-rita-connection/	71	95
https://www.tep.com/santa-rita-connection/	3	3

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-7.7

Public Notices 1 (Nov. 2025)

This page intentionally left blank

Job Details

Order Number: CTUC0099366
External Number: 11799569
Classification: Announcements
Package: Notices
Total payment: $202.88
Payment Type: Mastercard

Account Details

Chris Ortiz Y Pino
88 E Broadway Blvd
Tucson, AZ 85701
[redacted]
caguda@dockitconsulting.com
Credit Card - Mastercard XXXXXXXXXXXX7906

Schedule for ad number CTUC00993660

Sun Nov 2, 2025
Arizona Daily Star *All Zones*

TEP

Tucson Electric Power

Santa Rita Connection Project

Public Notice
Santa Rita Connection Project

Tucson Electric Power (TEP) is preparing plans for new transmission facilities that will increase energy capacity and enhance system reliability to customers in Sahuarita, Green Valley, and the surrounding area. TEP's Santa Rita Connection Project will interconnect TEP's existing 138 kilovolt (kV) transmission system to the proposed Santa Rita Substation, located east of Interstate 19, between Sahuarita and Green Valley. This upgrade will strengthen the reliability of service to customers, support regional development, and provide greater capacity to support growing energy needs in the area. TEP invites the public to attend an open house to learn about the project, ask questions, and submit comments.

Public Open House
Reunión abierta pública
Thursday, November 13 | 6 to 8 p.m.
Jueves 13 de Noviembre | De 6 a 8 p.m.
Desert Diamond Casino –

De 6 a 8 p.m.
Desert Diamond Casino – Sahuarita
1100 W Pima Mine Road
Sahuarita, AZ 85629
Tucson Electric Power (TEP) está preparando planes para nuevas instalaciones de transmisión que aumentarán la capacidad energética y mejorarán la fiabilidad del sistema para los clientes de Sahuarita, Green Valley y sus alrededores. TEP invita al público a asistir a la reunión abierta para conocer el proyecto y hacer preguntas y comentarios al respecto.
Project website: tep.com/santa-rita-connection/

Schedule for ad number CTUC00993661

Start date: Sun Nov 2, 2025
Website: Marketplace Tucson Online
Duration: 7 days

SANTA RITA CONNECTION PROJECT
Public Notice
Santa Rita Connection Project
Tucson Electric Power (TEP) is preparing plans for new transmission facilities that will increase energy capacity and enhance system reliability to customers in Sahuarita, Green Valley, and the surrounding area.
TEP's Santa Rita Connection Project will interconnect TEP's existing 138 kilovolt (kV) transmission system to the proposed Santa Rita Substation, located east of Interstate 19, between Sahuarita and Green Valley. This upgrade will strengthen the reliability of service to customers, support regional development, and provide greater capacity to support growing energy needs in the area.
TEP invites the public to attend an open house to learn about the project, ask questions, and submit comments.
Public Open House
Reunión abierta pública
Thursday, November 13 | 6 to 8 p.m.
Jueves 13 de Noviembre | De 6 a 8 p.m.
Desert Diamond Casino - Sahuarita
1100 W Pima Mine Road
Sahuarita, AZ 85629
Tucson Electric Power (TEP) está preparando planes para nuevas instalaciones de transmisión que aumentarán la capacidad energética y mejorarán la fiabilidad del sistema para los clientes de Sahuarita, Green Valley y sus alrededores.
TEP invita al público a asistir a la reunión abierta para conocer el proyecto y hacer preguntas y comentarios al respecto.
Project website: tep.com/santa-rita-connection/

TEP Tucson Electric Power



Green Valley News sun

See Proof on Next Page

AFFIDAVIT OF PUBLICATION

State of Florida, County of Orange, ss:

Ankit Sachdeva, being first duly sworn, deposes and says: That (s)he is a duly authorized signatory of Column Software, PBC, duly authorized agent of Green Valley News, a newspaper printed and published in the City of Green Valley, County of Pima, State of Arizona, and that this affidavit is Page 1 of 2 with the full text of the sworn-to notice set forth on the pages that follow, and the hereto attached:

PUBLICATION DATES:
Nov. 2, 2025

NOTICE ID: SwaJU8f1vdheLCH4zE3S
PUBLISHER ID: GVN000918
NOTICE NAME: Santa Rita Project

Request of: CeCe Aguda

I declare under penalty of perjury that the foregoing is true and correct.

Ankit Sachdeva

(Signed)_____

JESSICA GORDON-THOMPSON
Notary Public - State of Florida
Commission # HH301656
Expires on August 17, 2026

VERIFICATION

State of Florida
County of Orange

Subscribed in my presence and sworn to before me on this: 11/03/2025

_____
Notary Public
Notarized remotely online using communication technology via Proof.

Public Notice
Santa Rita Connection Project

Tucson Electric Power (TEP) is preparing plans for new transmission facilities that will increase energy capacity and enhance system reliability to customers in Sahuarita, Green Valley, and the surrounding area.

TEP's Santa Rita Connection Project will interconnect TEP's existing 138 kilovolt (kV) transmission system to the proposed Santa Rita Substation, located east of Interstate 19, between Sahuarita and Green Valley. This upgrade will strengthen the reliability of service to customers, support regional development, and provide greater capacity to support growing energy needs in the area.

TEP invites the public to attend an open house to learn about the project, ask questions, and submit comments.

Public Open House
Reunión abierta pública
Thursday, November 13 I 6 to 8 p.m.
Jueves 13 de Noviembre I De 6 a 8 p.m.
Desert Diamond Casino – Sahuarita
1100 W Pima Mine Road
Sahuarita, AZ 85629

Tucson Electric Power (TEP) está preparando planes para nuevas instalaciones de transmisión que aumentarán la capacidad energética y mejorarán la fiabilidad del sistema para los clientes de Sahuarita, Green Valley y sus alrededores.

TEP invita al público a asistir a la reunión abierta para conocer el proyecto y hacer preguntas y comentarios al respecto.

Project website: tep.com/santa-rita-connection/



TEP
Tucson Electric Power

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-7.8

Public Notices 2 (Feb. 2026)

This page intentionally left blank

Job Details

Order Number:
CTUC0103105
Classification:
Announcements
Package:
Notices
Base amount:
$243.27
Service fee:
$9.71
Cash/Check/ACH
Discount:
-$0.00
Total payment:
$252.98
As an incentive for customers, we provide a discount off the total order cost equal to the 3.99% service fee if you pay with Cash/Check/ACH. Pay by Cash/Check/ACH and save! In no event are service fees refundable.
Payment Type:
mastercard

Account Details

Christopher Ortiz y Pino
88 E Broadway Blvd
Tucson, AZ 85701
520-633-8693
michelle@dockitconsulting.com
Tucson Electric Power
Credit Card - mastercard
**********7906

Schedule for ad number CTUC01031050

Sun Feb 22, 2026
Arizona Daily Star
All Zones

TEP
Tucson Electric Power

Public Notice

Santa Rita Connection Project

Your input is needed! Join us for an open house on March 4, 2026

Tucson Electric Power (TEP) is preparing plans for new transmission facilities that will increase energy capacity and enhance system reliability to customers in Sahuarita, Green Valley, and the surrounding area.

TEP will share the results of a transmission line siting study for the Santa Rita Connection Project. We will be presenting alternative routes that could be used to connect the Sonoran and Santa Rita substations.

Your input will help determine TEP's decision for the preferred route. Visit our webpage to learn more about the project or contact a team member at 520-770-7520.

Public Open House
Reunión abierta pública
Wednesday, March 4
Miercoles 4 de marzo
6 to 8 p.m. | *De 6 a 8 p.m.*
Desert Diamond Casino - Sahuarita
1100 W Pima Mine Road
Sahuarita, AZ 85629

¡Su opinión es necesaria! Acompáñenos en una reunión abierta pública el 4 de marzo de 2026

Tucson Electric Power (TEP) está preparando planes para nuevas instalaciones de transmisión que aumentarán la capacidad energética y mejorarán la fiabilidad del sistema para los clientes de Sahuarita, Green Valley y sus alrededores.

Valley y sus alrededores.

TEP compartirá los resultados de un estudio de emplazamiento de líneas de transmisión para el Proyecto de Conexión de Santa Rita. Presentaremos rutas alternativas que podrían utilizarse para conectar las subestaciones Sonoran y Santa Rita.

Su opinión ayudará a determinar la decisión de TEP para la ruta preferida. Visite nuestra página web para conocer más sobre el proyecto o póngase en contacto con un miembro del equipo al 1-520-770-7520.

Project webpage: tep.com/santa-rita-connection/

Schedule for ad number CTUC01031051

Start date:
Sun Feb 22, 2026
Website:
Marketplace Tucson Online
Duration:
7 days

TUCSON ELECTRIC POWER - SANTA RITA CONNECTION PROJECT
Public Notice
Santa Rita Connection Project
Your input is needed!
Join us for an open house on March 4, 2026
Tucson Electric Power (TEP) is preparing plans for new transmission facilities that will increase energy capacity and enhance system reliability to customers in Sahuarita, Green Valley, and the surrounding area.
TEP will share the results of a transmission line siting study for the Santa Rita Connection Project. We will be presenting alternative routes that could be used to connect the Sonoran and Santa Rita substations.
Your input will help determine TEP's decision for the preferred route. Visit our webpage to learn more about the project or contact a team member at 520-770-7520.
Public Open House | Reunión abierta pública
Wednesday, March 4 | Miercoles 4 de marzo
6 to 8 p.m. | De 6 a 8 p.m.
Desert Diamond Casino - Sahuarita
1100 W Pima Mine Road Sahuarita, AZ 85629
¡Su opinión es necesaria!
Acompáñenos en una reunión abierta pública el 4 de marzo de 2026
Tucson Electric Power (TEP) está preparando planes para nuevas instalaciones de transmisión que aumentarán la capacidad energética y mejorarán la fiabilidad del sistema para los clientes de Sahuarita, Green Valley y sus alrededores.
TEP compartirá los resultados de un estudio de emplazamiento de líneas de transmisión para el Proyecto de Conexión de Santa Rita. Presentaremos rutas alternativas que podrían utilizarse para conectar las subestaciones Sonoran y Santa Rita.
Su opinión ayudará a determinar la decisión de TEP para la ruta preferida. Visite nuestra página web para conocer más sobre el proyecto o póngase en contacto con un miembro del equipo al 1-520-770-7520.
Project webpage: tep.com/santa-rita-connection/

TEP Tucson Electric Power



Green Valley News sun

See Proof on Next Page

AFFIDAVIT OF PUBLICATION

State of Florida, County of Orange, ss:

Anjana Bhadoriya, being first duly sworn, deposes and says: That (s)he is a duly authorized signatory of Column Software, PBC, duly authorized agent of Green Valley News, a newspaper printed and published in the City of Green Valley, County of Pima, State of Arizona, and that this affidavit is Page 1 of 3 with the full text of the sworn-to notice set forth on the pages that follow, and the hereto attached:

PUBLICATION DATES:
Feb. 22, 2026

NOTICE ID: QJsghxFd9UTmH1zEZ0x9
PUBLISHER ID: GVN000988
NOTICE NAME: TEP Santa Rita Connection Project

Request of: Michelle Adams

I declare under penalty of perjury that the foregoing is true and correct.

Anjana Bhadoriya

(Signed)_____

VERIFICATION

State of Florida
County of Orange

JESSICA GORDON-THOMPSON
Notary Public - State of Florida
Commission # HH301656
Expires on August 17, 2026

Subscribed in my presence and sworn to before me on this: 02/24/2026

_____
Notary Public
Notarized remotely online using communication technology via Proof.

Tucson Electric Power - Santa Rita Connection Project
Public Notice
Santa Rita Connection Project

Your input is needed!
Join us for an open house on March 4, 2026

Tucson Electric Power (TEP) is preparing plans for new transmission facilities that will increase energy capacity and enhance system reliability to customers in Sahuarita, Green Valley, and the surrounding area.

TEP will share the results of a transmission line siting study for the Santa Rita Connection Project. We will be presenting alternative routes that could be used to connect the Sonoran and Santa Rita substations.

Your input *will* help determine TEP's decision for the preferred route. Visit our webpage to learn more about the project or contact a team member at 1-520-770-7520.

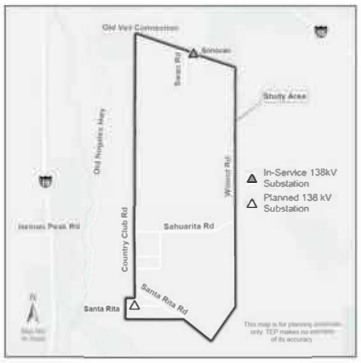
Public Open House
Reunión abierta pública
Wednesday, March 4 | 6 to 8 p.m.
Miercoles 4 de marzo | De 6 a 8 p.m.
Desert Diamond Casino – Sahuarita
1100 W Pima Mine Road Sahuarita, AZ 85629

¡Su opinión es necesaria! Acompáñenos en una reunión abierta pública el 4 de marzo de 2026

Tucson Electric Power (TEP) está preparando planes para nuevas instalaciones de transmisión que aumentarán la capacidad energética y mejorarán la fiabilidad del sistema para los clientes de Sahuarita, Green Valley y sus alrededores.

TEP compartirá los resultados de un estudio de emplazamiento de líneas de transmisión para el Proyecto de Conexión de Santa Rita. Presentaremos rutas alternativas que podrían utilizarse para conectar las subestaciones Sonoran y Santa Rita.

Su opinión ayudará a determinar la decisión de TEP para la ruta preferida. Visite nuestra página web para conocer más sobre el proyecto o póngase en contacto con un miembro del equipo al 1-520-770-7520.



Project webpage: tep.com/santa-rita-connection/

TEP Tucson Electric Power

Date: February 22, 2026
GVN000988

Tucson Electric Power

Public Notice
Santa Rita Connection Project

Public Open House
Reunión abierta pública
Wednesday, March 4 | 6 to 8 p.m.
Miercoles 4 de marzo | De 6 a 8 p.m.
Desert Diamond Casino – Sahuarita
1100 W Pima Mine Road Sahuarita, AZ 85629

Project Webpage:
tep.com/santa-rita-connection

Your input is needed!

Join us for an open house on March 4, 2026

Tucson Electric Power (TEP) will share the results of a transmission line siting study for the Santa Rita Connection Project. We will be presenting alternative routes that could be used to connect the Sonoran and Santa Rita substations.

Your input *will* help determine TEP's decision for the preferred route. Visit our webpage to learn more about the project or contact a team member at 1-520-770-7520.

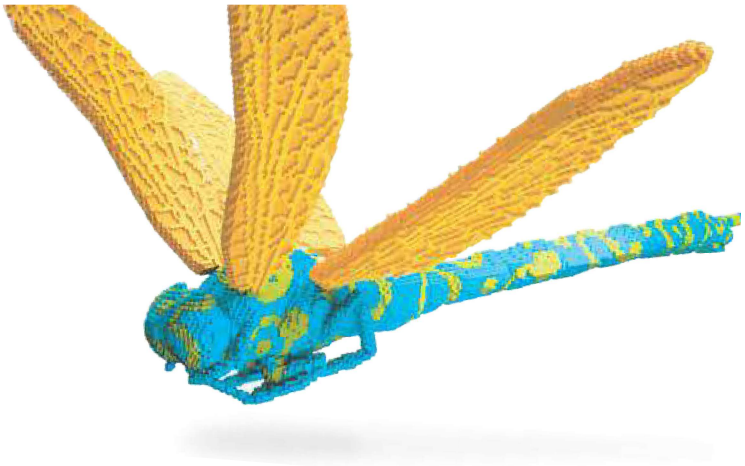
¡Su opinión es necesaria!

Acompáñenos en una reunión abierta pública el 4 de marzo de 2026

Tucson Electric Power (TEP) compartirá los resultados de un estudio de emplazamiento de líneas de transmisión para el Proyecto de Conexión de Santa Rita. Presentaremos rutas alternativas que podrían utilizarse para conectar las subestaciones Sonoran y Santa Rita.

Su opinión ayudará a determinar la decisión de TEP para la ruta preferida. Visite nuestra página web para conocer más sobre el proyecto o póngase en contacto con un miembro del equipo al 1-520-770-7520.





Sean Kenney's
NATURE POP!
Made with LEGO® bricks

January 30 through
May 12 only at
REID PARK ZOO
produced by imagine



TEP Tucson Electric Power

Public Notice
Santa Rita Connection Project

Public Open House
Reunión abierta pública
Wednesday, March 4 | 6 to 8 p.m.
Miercoles 4 de marzo | De 6 a 8 p.m.
Desert Diamond Casino – Sahuarita
1100 W Pima Mine Road Sahuarita, AZ 85629

Project Webpage:
tep.com/santa-rita-connection

Your input is needed!

Join us for an open house on March 4, 2026

Tucson Electric Power (TEP) will share the results of a transmission line siting study for the Santa Rita Connection Project. We will be presenting alternative routes that could be used to connect the Sonoran and Santa Rita substations.

Your input *will* help determine TEP's decision for the preferred route. Visit our webpage to learn more about the project or contact a team member at 1-520-770-7520.

¡Su opinión es necesaria!

Acompáñenos en una reunión abierta pública el 4 de marzo de 2026

Tucson Electric Power (TEP) compartirá los resultados de un estudio de emplazamiento de líneas de transmisión para el Proyecto de Conexión de Santa Rita. Presentaremos rutas alternativas que podrían utilizarse para conectar las subestaciones Sonoran y Santa Rita.

Su opinión ayudará a determinar la decisión de TEP para la ruta preferida. Visite nuestra página web para conocer más sobre el proyecto o póngase en contacto con un miembro del equipo al 1-520-770-7520.



Time for a school break.
Let's PLAY!
children's PLAY CAMP
immersive, full-day summer experience
for ages 5-6 and 7-8
Weekly camps, 9am-3pm, June 1-July 31
Harness the power of play to grow a lifelong love of learning!
Full-day adventures blend hands-on, minds-on exploration.
• Develop creativity, curiosity, and essential skills while discovering the wonders of science, technology, engineering, and art
• Abundant free play throughout the Museum
• Member and sibling discounts available
children's museum tucson 40 years
children's PLAY CAMP spring break 2026
ChildrensMuseumTucson.org/camps
Don't miss your chance to register for Spring Break Camp! Full-day camps March 16-20.

Application for a Certificate of Environmental Compatibility

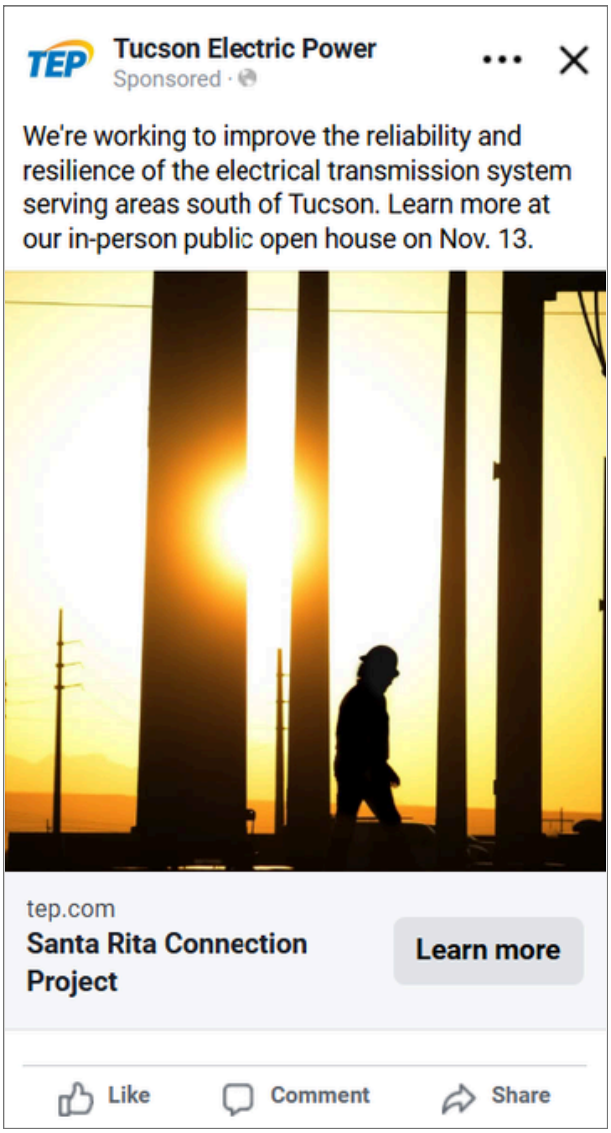
Santa Rita Connection Project

Exhibit J-7.9

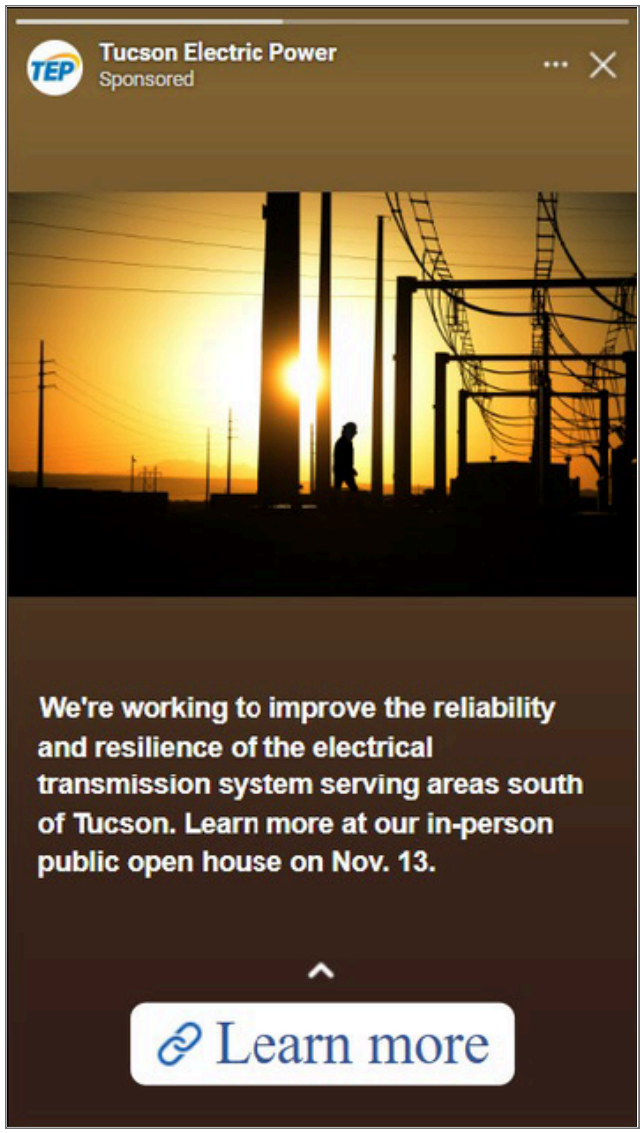
Social Media Advertisements 1 (Nov. 2025)

This page intentionally left blank

Facebook



Instagram



Analytics	English Ads	Spanish Ads	Total
Impressions (Views)	71,207	20,966	92,173
Reach (Unique Users)	61,665	16,432	64,557
Clicks	261	110	371

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-7.10

Social Media Advertisements 2 (Feb. 2026)

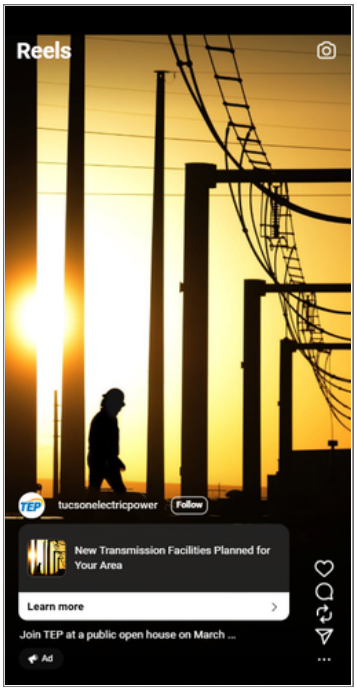
This page intentionally left blank

English

Facebook



Instagram



Spanish

Facebook



Instagram



Analytics	Impressions (Views)	Reach (Unique Users)	Clicks
Total	226,481	22,784	1,291

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-7.11

Street Signage 1 (Nov. 2025)

This page intentionally left blank

Santa Rita Connection Project

TEP

Proposed Electric Transmission Line

PUBLIC OPEN HOUSE

November **13**

6 – 8 pm

Desert Diamond Casino – Sahuarita

1100 W Pima Mine Road

Sahuarita, AZ 85629

Visit project webpage for more information:

tep.com/santa-rita-connection

Proyecto de Conexión de Santa Rita

TEP

Línea de Transmisión Eléctrica Propuesta

REUNIÓN ABIERTA PÚBLICA

Noviembre 13

6 – 8 pm

Desert Diamond Casino – Sahuarita

1100 W Pima Mine Road

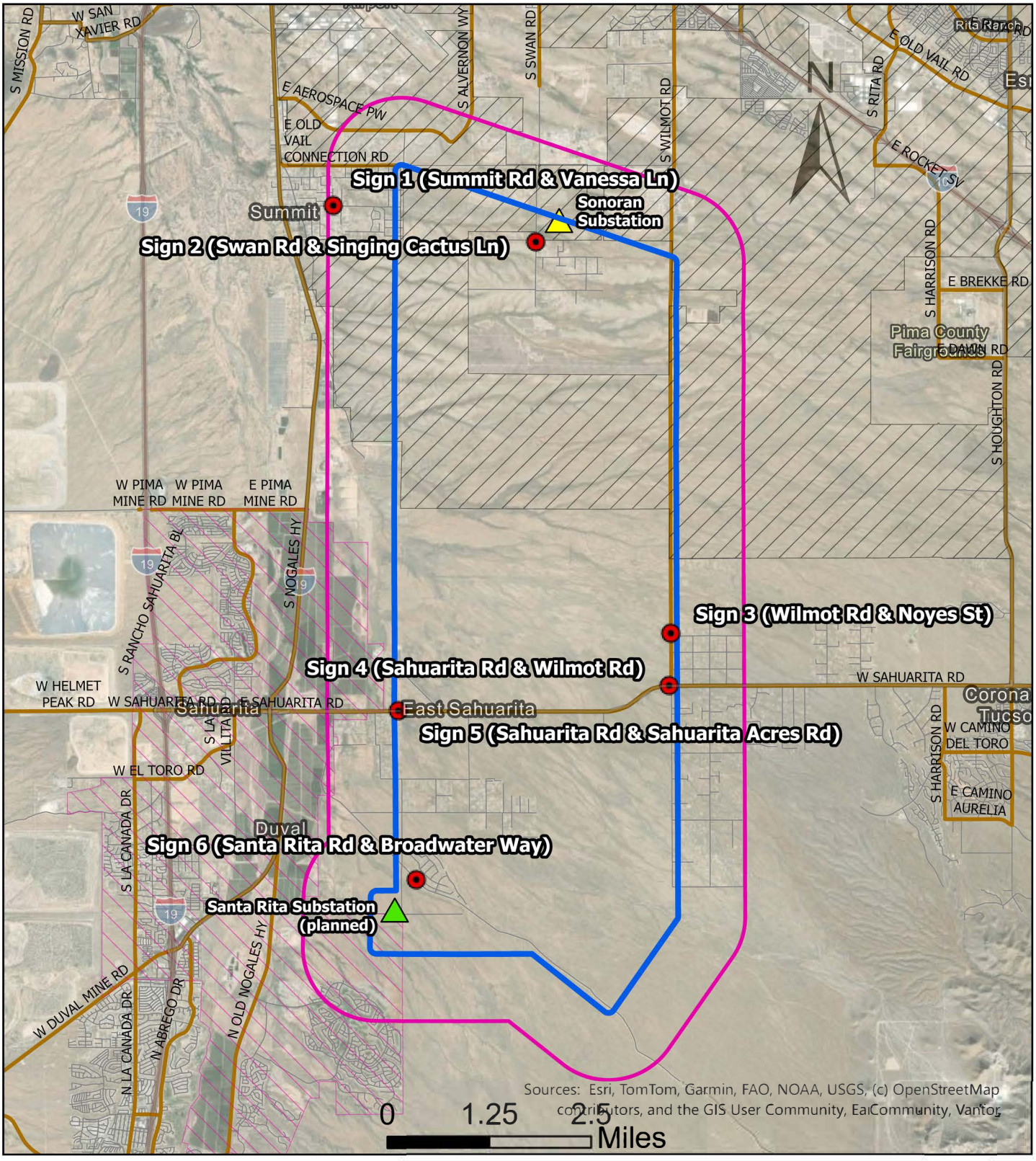
Sahuarita, AZ 85629

Visite la página web del proyecto para mas información:

tep.com/santa-rita-connection


SPEED LIMIT
Santa Rita Connection Project
TEP
Proposed Electric Transmission Line
PUBLIC OPEN HOUSE
November
13
6 – 8 pm
Desert Diamond Casino – Sahuarita
1100 W Pima Mine Road
Sahuarita, AZ 85629
Visit project webpage for more information:
tep.com/santa-rita-connection


Proyecto de Conexión de Santa Rita TEP
Línea de Transmisión Eléctrica Propuesta
REUNIÓN ABIERTA PÚBLICA
Noviembre
13
6 – 8 pm
Desert Diamond Casino – Sahuarita
1100 W Pima Mine Road
Sahuarita, AZ 85629
Visite la página web del proyecto para mas información:
tep.com/santa-rita-connection
STOP



Legend

- Road Sign
- Notification Area
- Study Area
- Existing Substation
- Planned Substation
- Tucson
- Sahuarita

Santa Rita Connection Project
Road Signs 1 Location Map

TEP
Tucson Electric Power

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-7.12

Street Signage 2 (Feb. 2026)

This page intentionally left blank

TEP

Tucson Electric Power

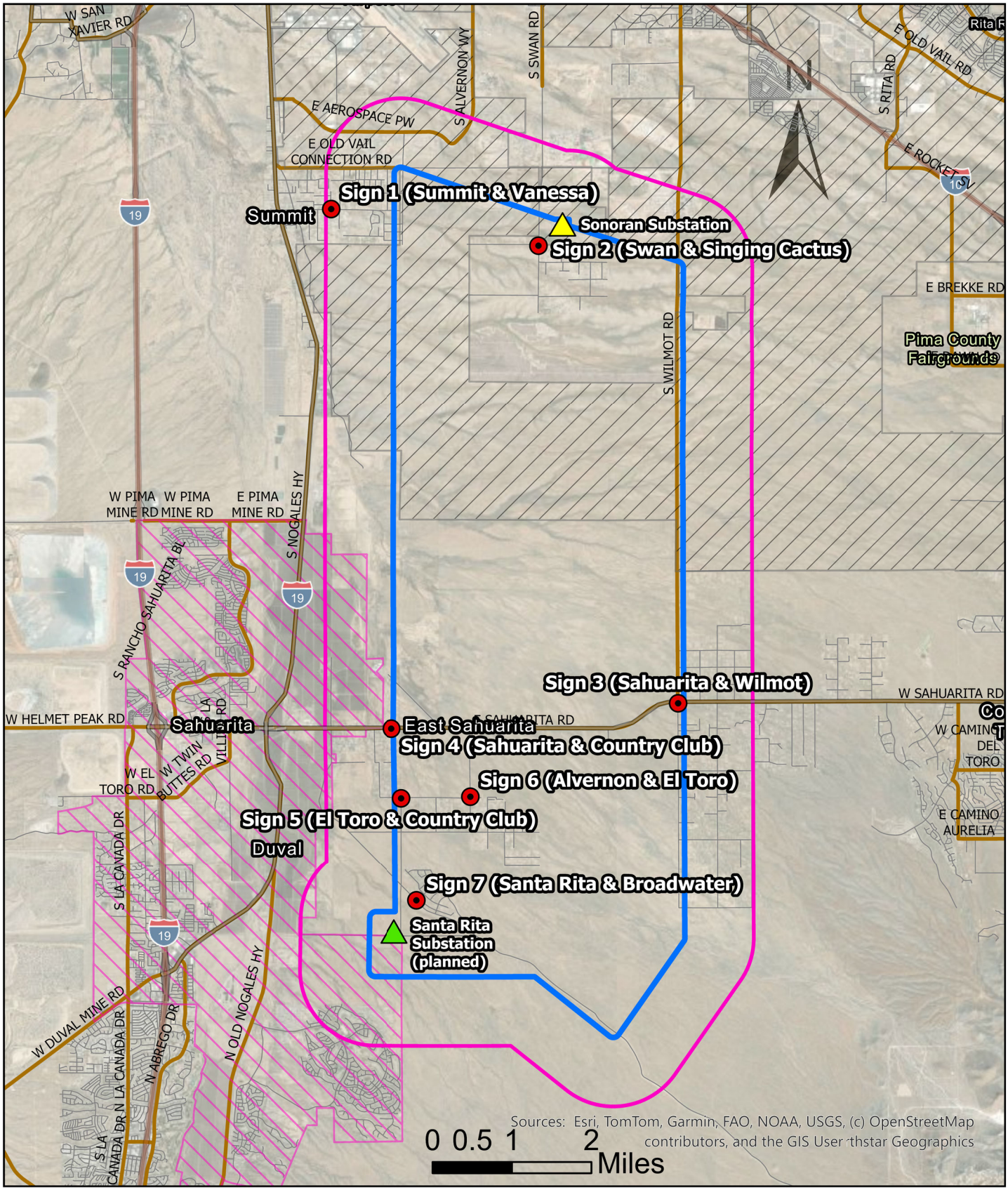
SANTA RITA CONNECTION PROJECT OPEN HOUSE

MARCH 4, 2026
DESERT DIAMOND CASINO - SAHUARITA
6:00 - 8:00 PM

Visit Project Webpage for Details

tep.com/santa-rita-connection/


E Sahuarita Rd
16100 S
STOP
Sahuarita Acres Rd
TEP
Tucson Electric Power
SANTA RITA CONNECTION PROJECT OPEN HOUSE
MARCH 4, 2026
DESERT DIAMOND CASINO - SAHUARITA
6:00 - 8:00 PM
Visit Project Webpage for Details
tep.com/santa-rita-connection/



Legend

Road Sign
- Road Sign
- Notification Area
- Study Area

- Existing Substation
- Planned Substation
- Tucson
- Sahuarita

Santa Rita Connection Project
Road Signs 2 Location Map

Tucson Electric Power

This page intentionally left blank

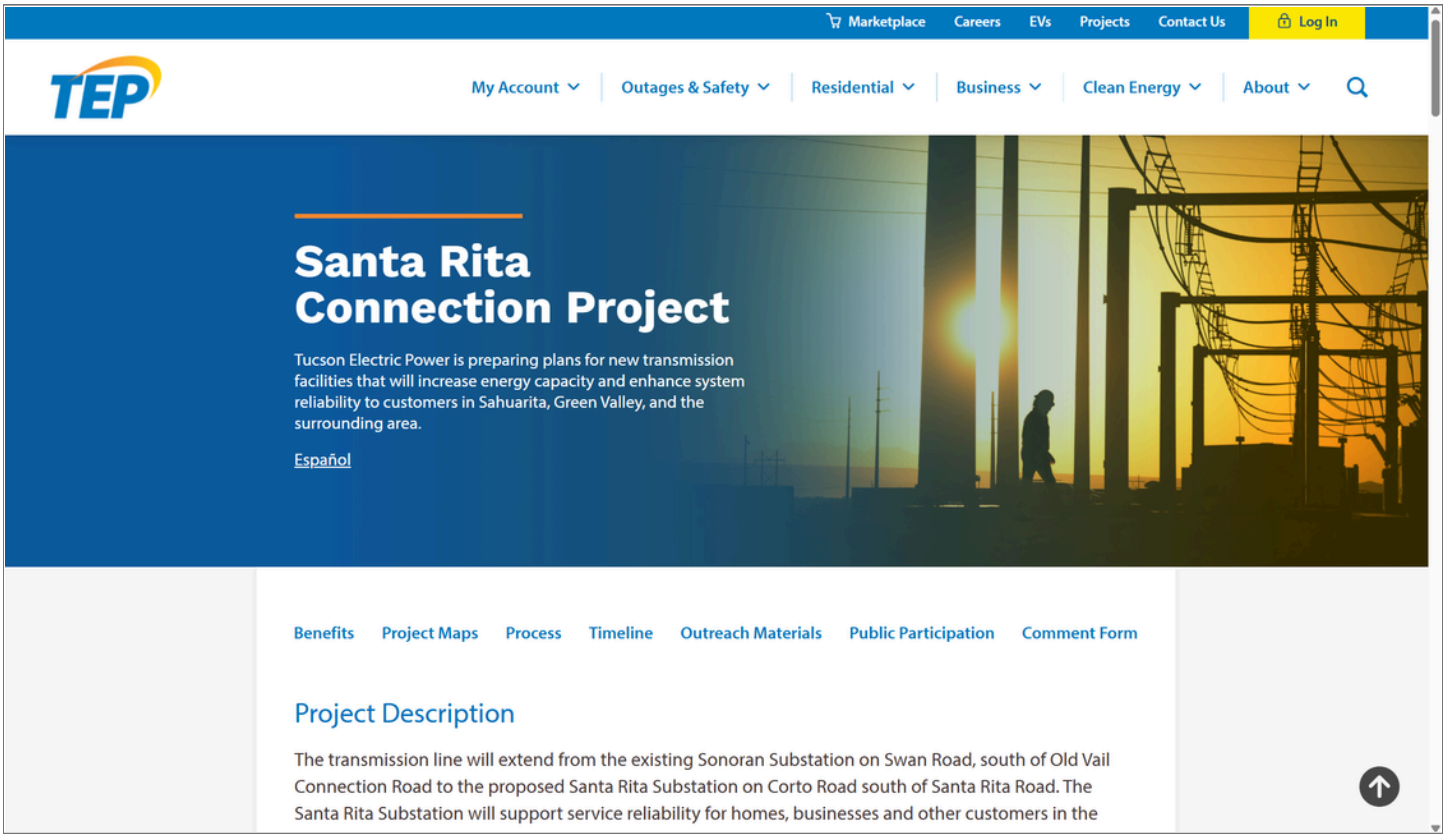
Application for a Certificate of Environmental Compatibility

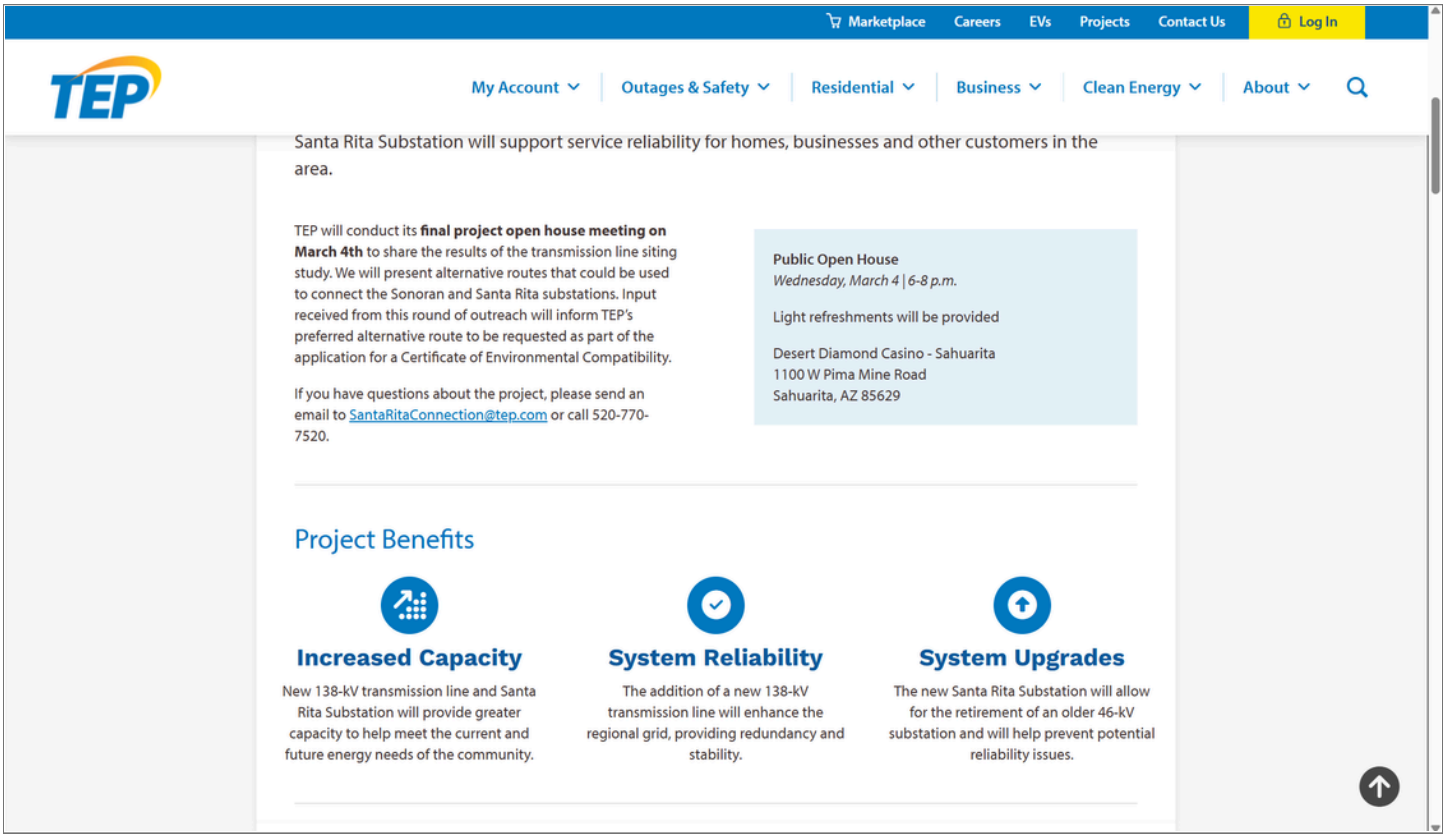
Santa Rita Connection Project

Exhibit J-7.13

Webpage – English

This page intentionally left blank


Marketplace
Careers
EVs
Projects
Contact Us
Log In
TEP
My Account
Outages & Safety
Residential
Business
Clean Energy
About
Santa Rita Connection Project
Tucson Electric Power is preparing plans for new transmission facilities that will increase energy capacity and enhance system reliability to customers in Sahuarita, Green Valley, and the surrounding area.
Español
Benefits
Project Maps
Process
Timeline
Outreach Materials
Public Participation
Comment Form
Project Description
The transmission line will extend from the existing Sonoran Substation on Swan Road, south of Old Vail Connection Road to the proposed Santa Rita Substation on Corto Road south of Santa Rita Road. The Santa Rita Substation will support service reliability for homes, businesses and other customers in the


Marketplace
Careers
EVs
Projects
Contact Us
Log In
TEP
My Account
Outages & Safety
Residential
Business
Clean Energy
About
Santa Rita Substation will support service reliability for homes, businesses and other customers in the area.
TEP will conduct its final project open house meeting on March 4th to share the results of the transmission line siting study. We will present alternative routes that could be used to connect the Sonoran and Santa Rita substations. Input received from this round of outreach will inform TEP's preferred alternative route to be requested as part of the application for a Certificate of Environmental Compatibility.
If you have questions about the project, please send an email to SantaRitaConnection@tep.com or call 520-770-7520.
Public Open House
Wednesday, March 4 | 6-8 p.m.
Light refreshments will be provided
Desert Diamond Casino - Sahuarita
1100 W Pima Mine Road
Sahuarita, AZ 85629
Project Benefits
Increased Capacity
New 138-kV transmission line and Santa Rita Substation will provide greater capacity to help meet the current and future energy needs of the community.
System Reliability
The addition of a new 138-kV transmission line will enhance the regional grid, providing redundancy and stability.
System Upgrades
The new Santa Rita Substation will allow for the retirement of an older 46-kV substation and will help prevent potential reliability issues.

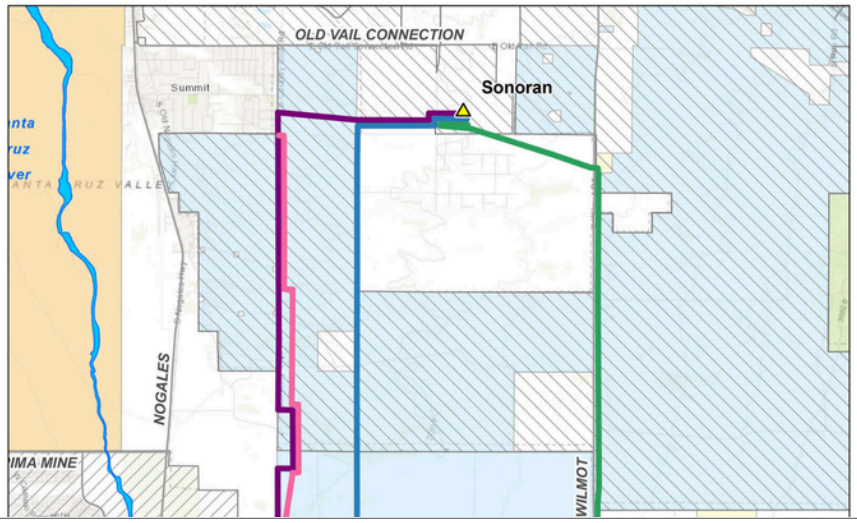
Marketplace Careers EVs Projects Contact Us Log In

TEP

My Account Outages & Safety Residential Business Clean Energy About

Project Maps

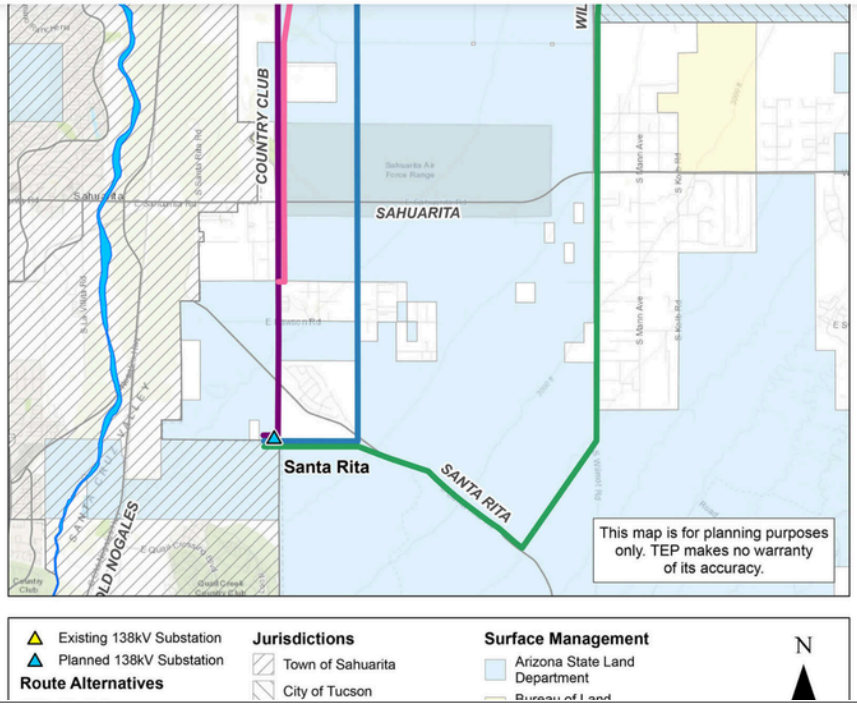
View Interactive Map



Marketplace Careers EVs Projects Contact Us Log In

TEP

My Account Outages & Safety Residential Business Clean Energy About

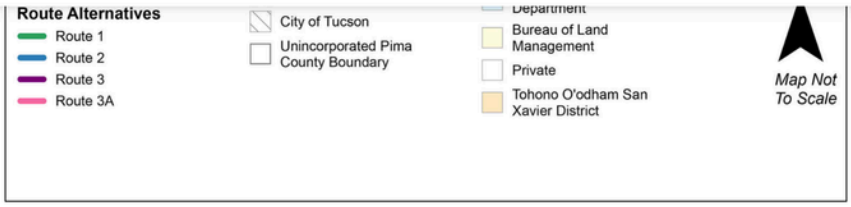


Existing 138kV Substation
Planned 138kV Substation
Route Alternatives

Jurisdictions
Town of Sahuarita
City of Tucson

Surface Management
Arizona State Land Department

N



Archived Maps

- Planning Area
- Planning Study Map

Planning and Siting Process

TEP's Planning and Siting process is designed to be transparent and instill trust from the public that we are doing our due diligence, that we listen to feedback and that we incorporate that feedback honestly to build the most environmentally compatible project we can.

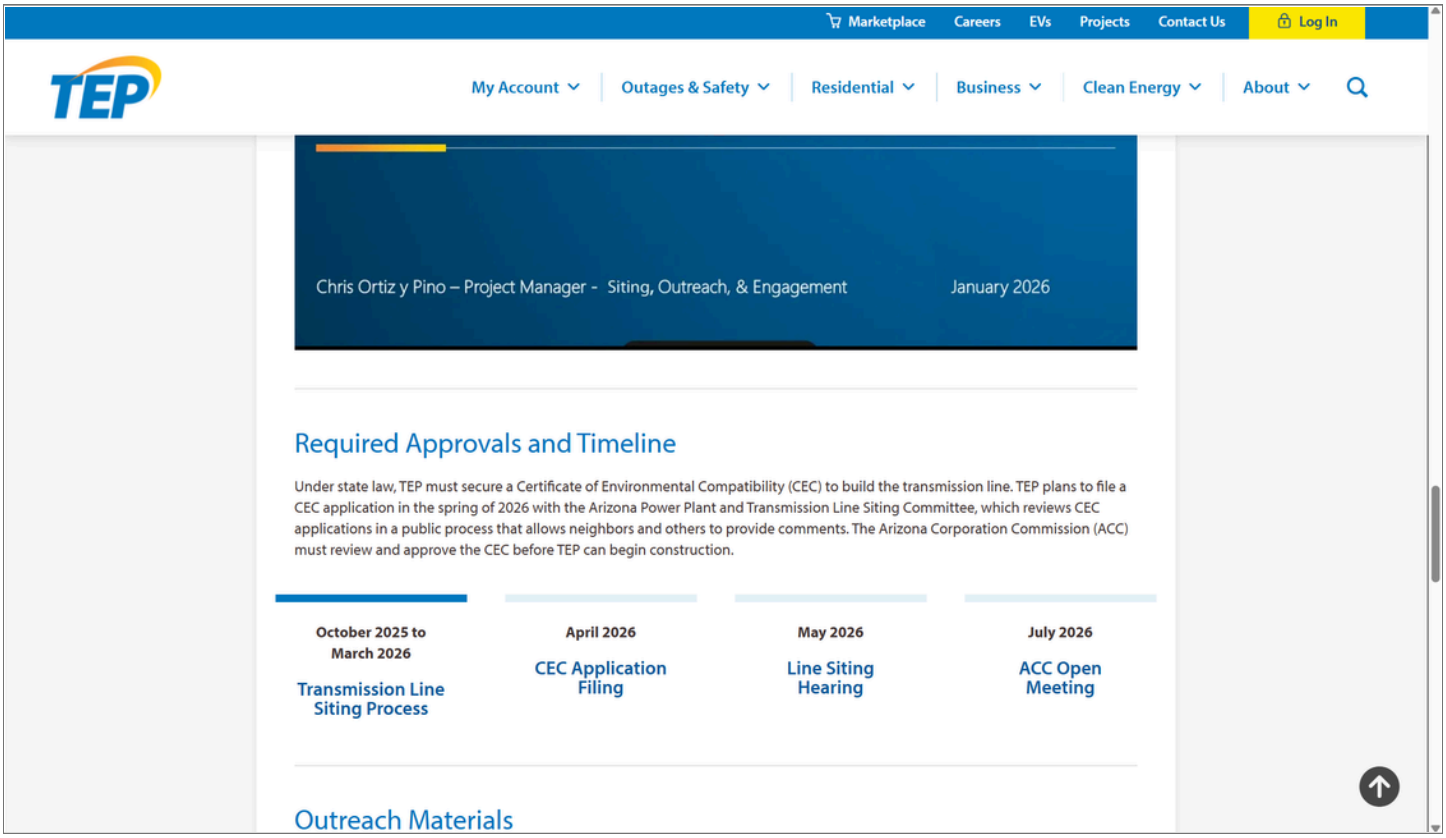
This comprehensive process involves five phases. Where at each phase we either seek public and stakeholder input, or we are incorporating the input received into our analysis. Every step in the process is about learning from the community, refining our understanding of the project and finding the best solutions to the challenges presented.

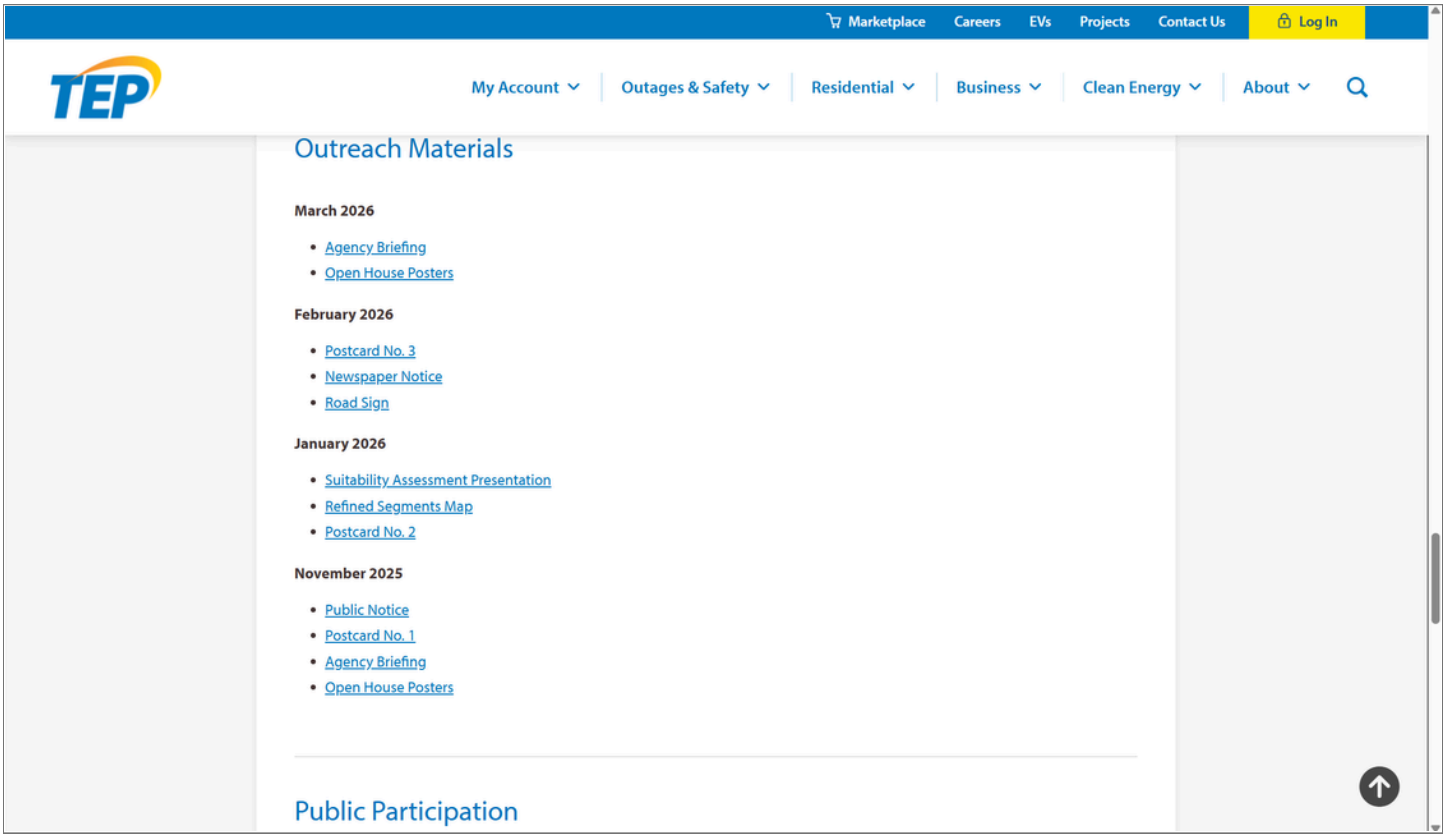
Marketplace Careers EVs Projects Contact Us Log In
TEP
My Account Outages & Safety Residential Business Clean Energy About

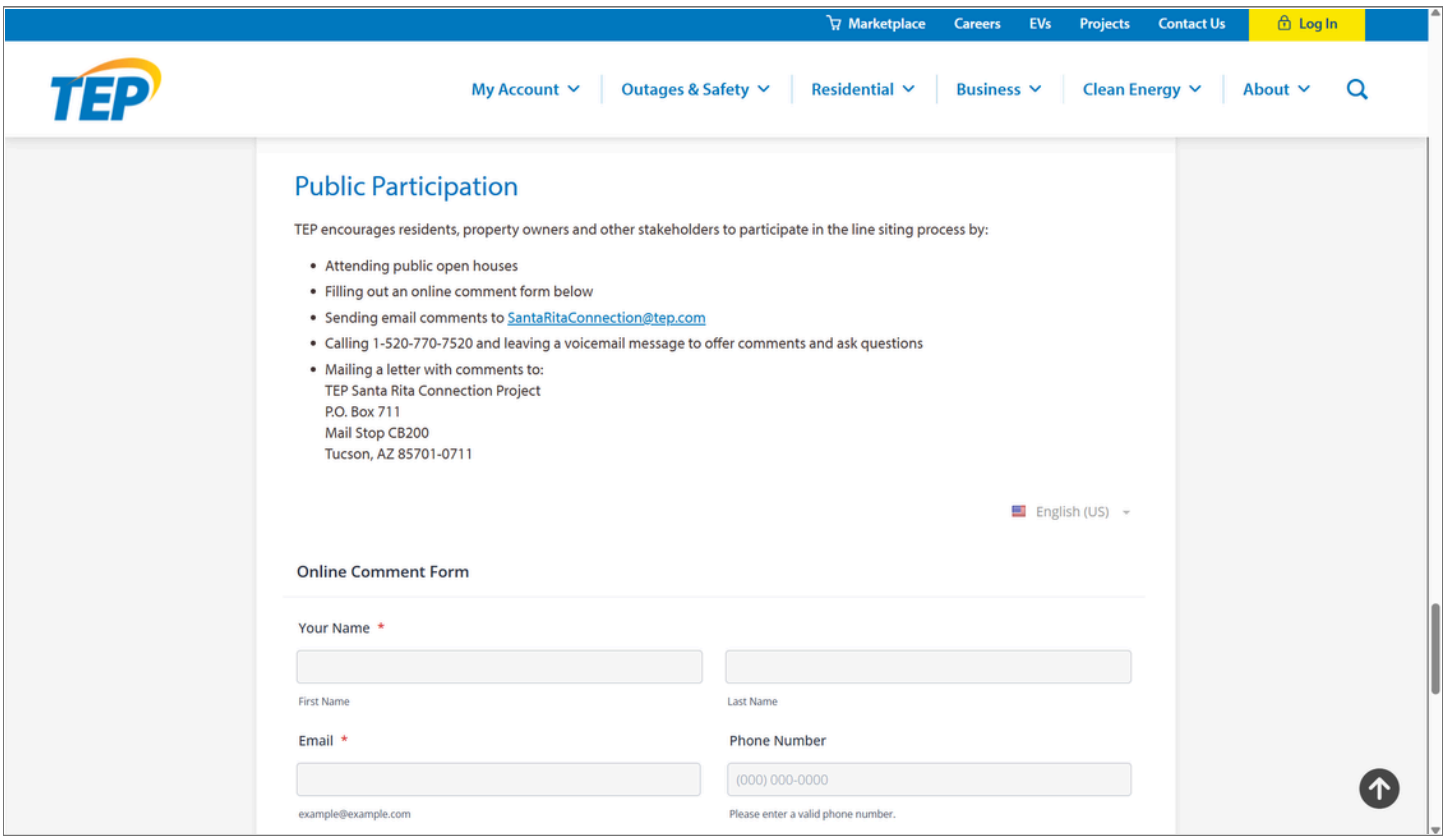


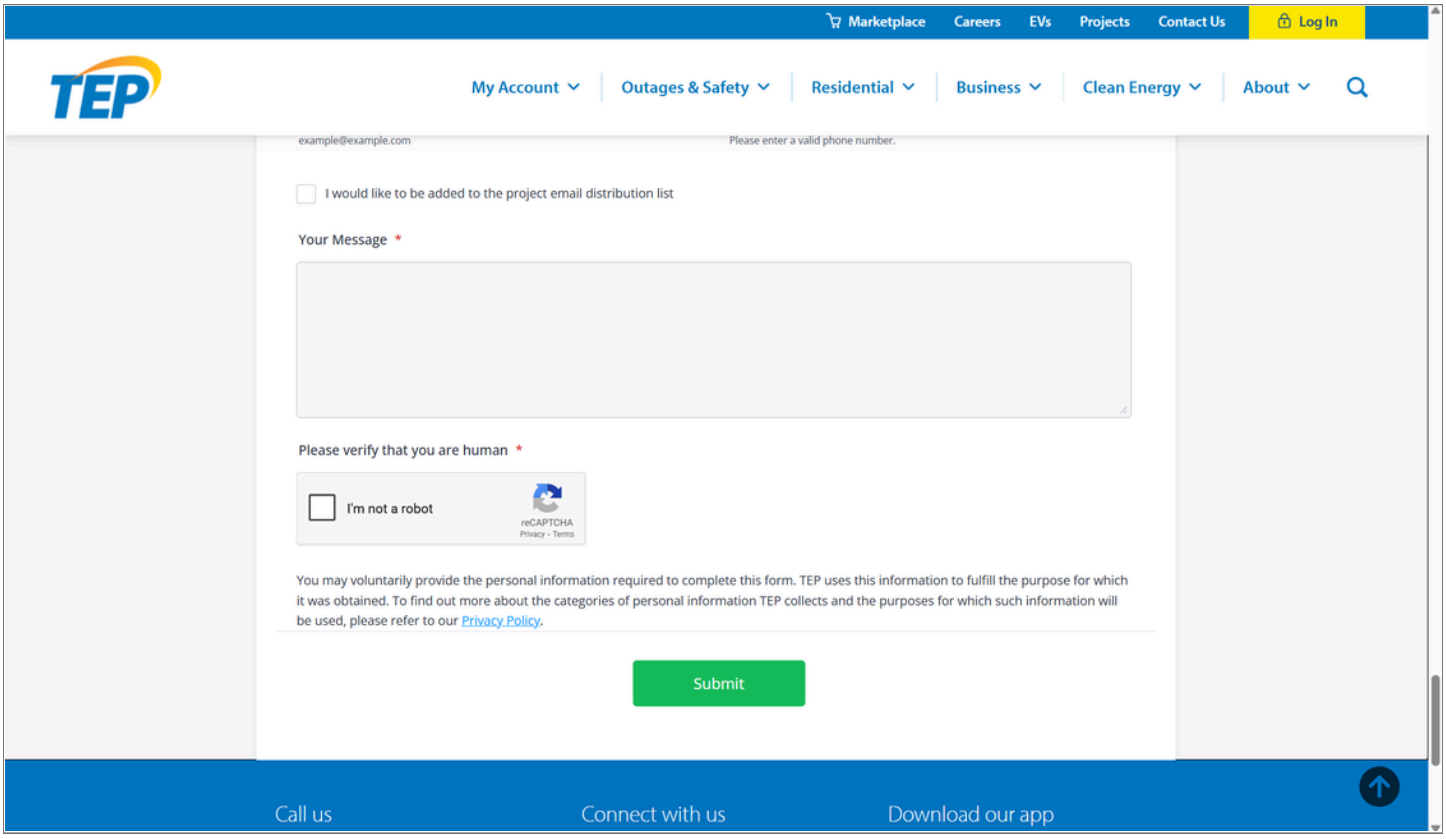
To learn more about the results of the suitability Assessment conducted as part of phase 3 of the Planning and Siting Process, please watch this short video:




Marketplace
Careers
EVs
Projects
Contact Us
Log In
TEP
My Account
Outages & Safety
Residential
Business
Clean Energy
About
Chris Ortiz y Pino – Project Manager - Siting, Outreach, & Engagement
January 2026
Required Approvals and Timeline
Under state law, TEP must secure a Certificate of Environmental Compatibility (CEC) to build the transmission line. TEP plans to file a CEC application in the spring of 2026 with the Arizona Power Plant and Transmission Line Siting Committee, which reviews CEC applications in a public process that allows neighbors and others to provide comments. The Arizona Corporation Commission (ACC) must review and approve the CEC before TEP can begin construction.
October 2025 to March 2026
Transmission Line Siting Process
April 2026
CEC Application Filing
May 2026
Line Siting Hearing
July 2026
ACC Open Meeting
Outreach Materials


Marketplace
Careers
EVs
Projects
Contact Us
Log In
TEP
My Account
Outages & Safety
Residential
Business
Clean Energy
About
Outreach Materials
March 2026
Agency Briefing
Open House Posters
February 2026
Postcard No. 3
Newspaper Notice
Road Sign
January 2026
Suitability Assessment Presentation
Refined Segments Map
Postcard No. 2
November 2025
Public Notice
Postcard No. 1
Agency Briefing
Open House Posters
Public Participation


Marketplace
Careers
EVs
Projects
Contact Us
Log In
TEP
My Account
Outages & Safety
Residential
Business
Clean Energy
About
Public Participation
TEP encourages residents, property owners and other stakeholders to participate in the line siting process by:
Attending public open houses
Filling out an online comment form below
Sending email comments to SantaRitaConnection@tep.com
Calling 1-520-770-7520 and leaving a voicemail message to offer comments and ask questions
Mailing a letter with comments to:
TEP Santa Rita Connection Project
P.O. Box 711
Mail Stop CB200
Tucson, AZ 85701-0711
English (US)
Online Comment Form
Your Name *
First Name
Last Name
Email *
Phone Number
(000) 000-0000
example@example.com
Please enter a valid phone number.


Marketplace
Careers
EVs
Projects
Contact Us
Log In
TEP
My Account
Outages & Safety
Residential
Business
Clean Energy
About
example@example.com
Please enter a valid phone number.
I would like to be added to the project email distribution list
Your Message *
Please verify that you are human *
I'm not a robot
reCAPTCHA
Privacy - Terms
You may voluntarily provide the personal information required to complete this form. TEP uses this information to fulfill the purpose for which it was obtained. To find out more about the categories of personal information TEP collects and the purposes for which such information will be used, please refer to our Privacy Policy.
Submit
Call us
Connect with us
Download our app

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-7.14

Webpage – Spanish

This page intentionally left blank


Marketplace
Careers
EVs
Projects
Contact Us
Log In
TEP
My Account
Outages & Safety
Residential
Business
Clean Energy
About
Proyecto de Conexión Santa Rita
Tucson Electric Power (TEP) está preparando planes para nuevas instalaciones de transmisión que aumentarán la capacidad energética y mejorarán la fiabilidad del sistema para los clientes de Sahuarita, Green Valley y sus alrededores.
Inglés
Beneficios
Mapas
Proceso
Cronograma
Materiales
Participación pública
Formulario de comentarios
Descripción del proyecto
La línea de transmisión se extenderá desde la subestación Sonoran existente en Swan Road, al sur de Old Vail Connection Road, hasta la subestación Santa Rita propuesta en Corto Road al sur de Santa Rita Road. La subestación Santa Rita respaldará la confiabilidad del servicio para los hogares, negocios y otros

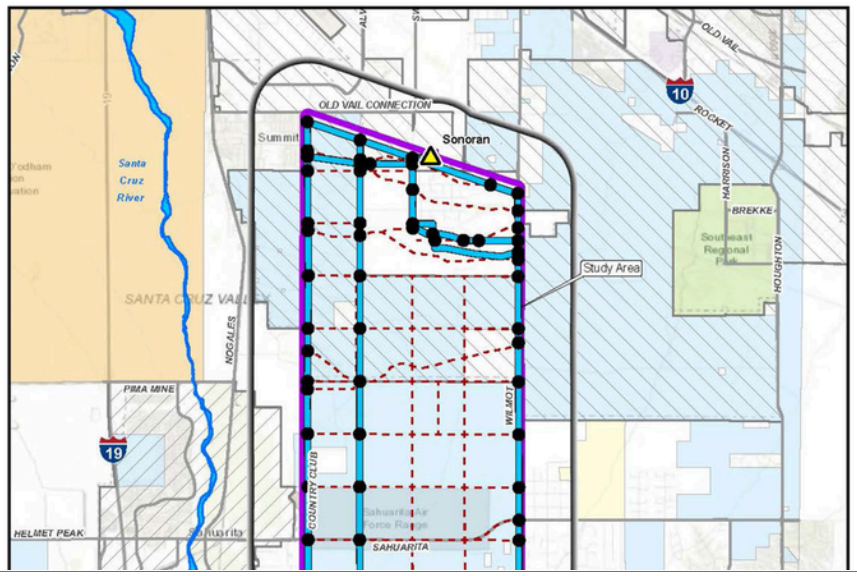

Marketplace
Careers
EVs
Projects
Contact Us
Log In
TEP
My Account
Outages & Safety
Residential
Business
Clean Energy
About
La subestación Santa Rita respaldará la confiabilidad del servicio para los hogares, negocios y otros clientes en el área.
TEP llevará a cabo su reunión abierta al público del proyecto el 4 de marzo para compartir los resultados del estudio de ubicación de la línea de transmisión. Presentaremos rutas alternativas que podrían utilizarse para conectar las subestaciones Sonoran y Santa Rita. Los comentarios recibidos en esta ronda de alcance comunitario informarán la ruta alternativa preferida de TEP que se requerirá como parte de la solicitud de un Certificado de Compatibilidad Ambiental.
Reunión abierta pública
Miercoles 4 de marzo | De 6 a 8 p.m.
Se proporcionarán refrigerios livianos
Desert Diamond Casino - Sahuarita
1100 W Pima Mine Road
Sahuarita, AZ 85629
Beneficios del proyecto
Mayor capacidad
La nueva línea de transmisión de 138 kV y la Subestación de Santa Rita proporcionarán una mayor capacidad para ayudar a satisfacer las necesidades energéticas actuales y futuras de la comunidad.
Fiabilidad del sistema
La incorporación de una nueva línea de transmisión de 138 kV mejorará la red regional, proporcionando redundancia y estabilidad.
Mejoras del sistema
La nueva Subestación de Santa Rita permitirá retirar una subestación antigua de 46 kV y ayudará a prevenir posibles problemas de fiabilidad.

Marketplace Careers EVs Projects Contact Us Log In

TEP

My Account Outages & Safety Residential Business Clean Energy About

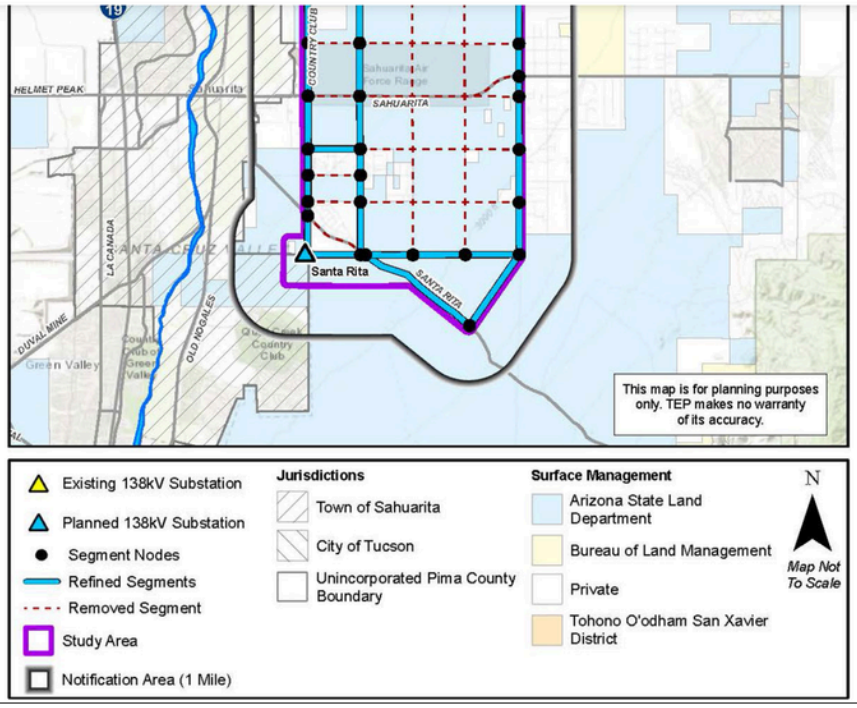
Mapas del Proyecto



Marketplace Careers EVs Projects Contact Us Log In

TEP

My Account Outages & Safety Residential Business Clean Energy About



Notification Area (1 Mile)

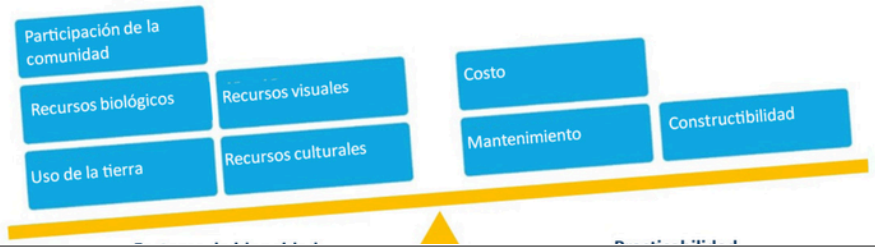
Archivo de mapas

- Mapa del área de estudio

Proceso de planificación y ubicación

El proceso de planificación y ubicación de TEP está diseñado para ser transparente e infundir confianza al público en que estamos haciendo nuestra diligencia debida, que escuchamos los comentarios y que los incorporamos con transparencia para desarrollar el proyecto más compatible con el medio ambiente.

Este proceso integral implica cinco fases. En cada fase, buscamos aportes del público y de las partes interesadas o incorporamos la información recibida en nuestro análisis. Cada paso del proceso consiste en aprender de la comunidad, perfeccionar nuestra comprensión del proyecto y encontrar las mejores soluciones a los desafíos presentados.



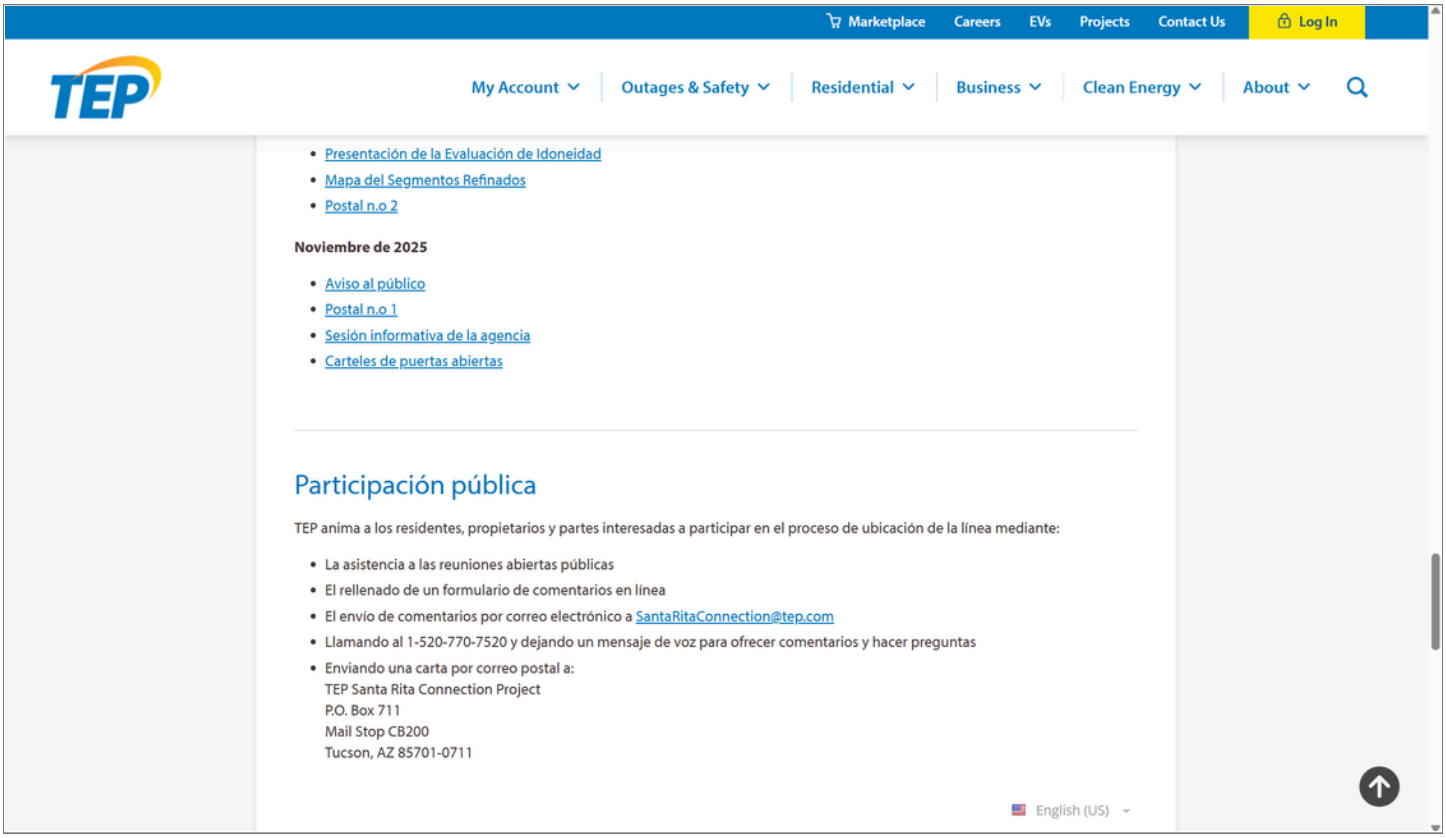
Marketplace Careers EVs Projects Contact Us Log In
TEP
My Account Outages & Safety Residential Business Clean Energy About

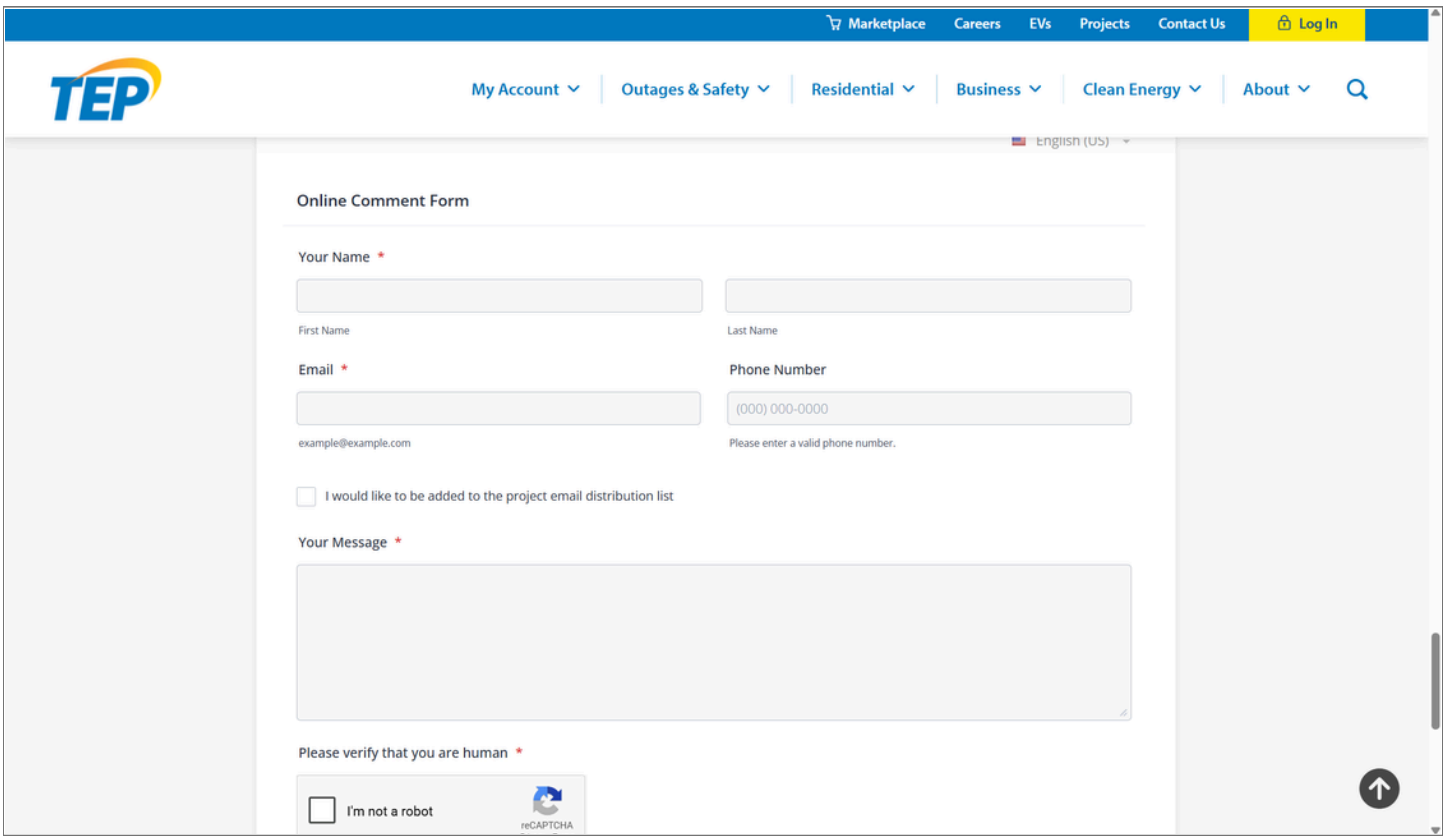


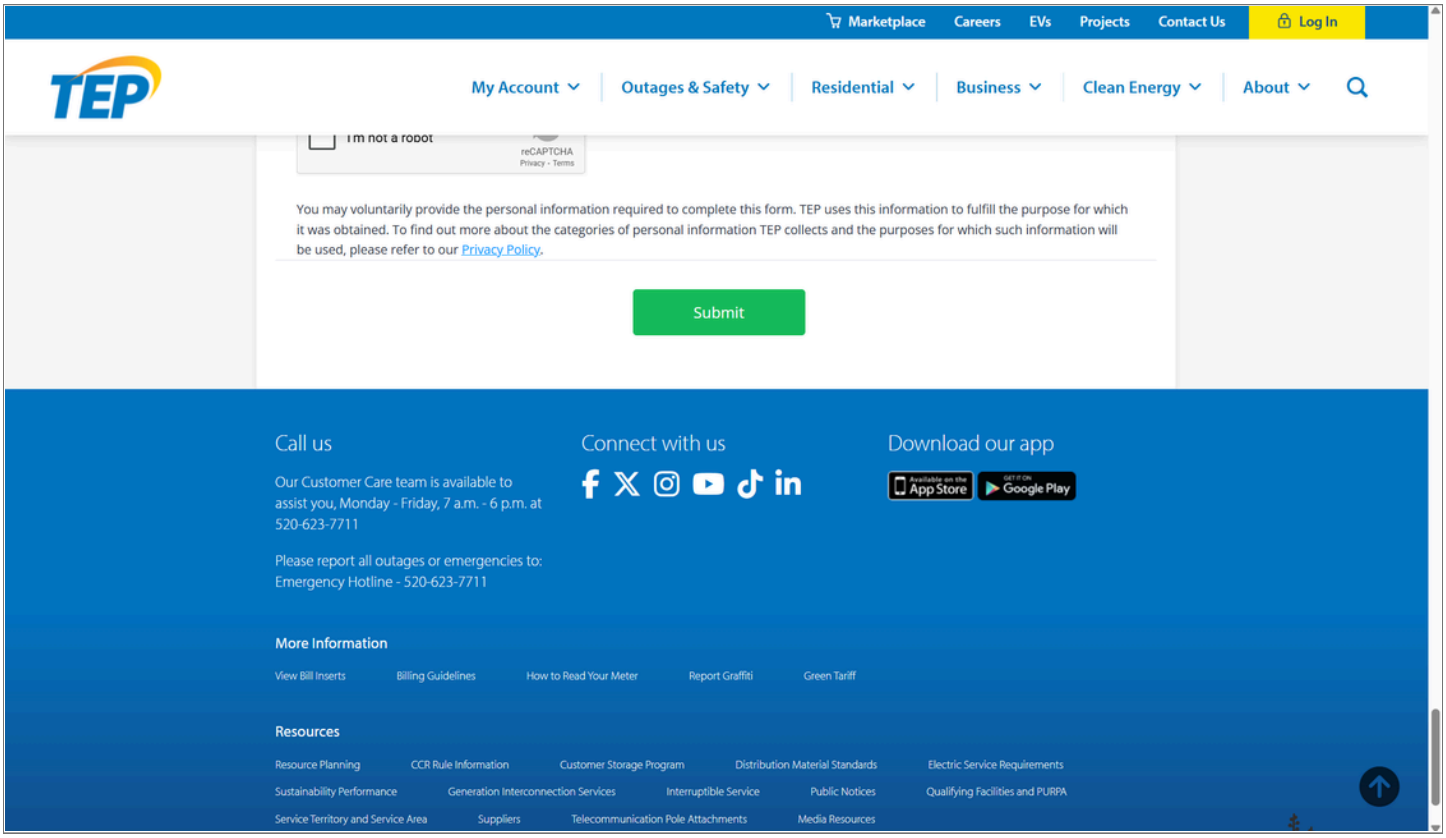
Para obtener más información sobre los resultados de la Evaluación de idoneidad realizada como parte de la fase 3 del proceso de planificación y ubicación, vea este breve video:




Marketplace
Careers
EVs
Projects
Contact Us
Log In
TEP
My Account
Outages & Safety
Residential
Business
Clean Energy
About
Aprobaciones requeridas y cronograma
Conforme a la ley estatal, TEP debe obtener un Certificado de Compatibilidad Ambiental (Certificate of Environmental Compatibility, CEC) para construir la línea de transmisión. TEP planea presentar una solicitud de CEC en la primavera de 2026 ante El Comité de Emplazamiento de Plantas de Energía y Líneas de Transmisión de Arizona, que revisa las solicitudes de CEC en un proceso público que permite a los vecinos y a otras partes interesadas proporcionar comentarios. La Comisión de Corporaciones de Arizona (Arizona Corporation Commission, ACC) debe revisar y aprobar la solicitud de CEC antes de que TEP pueda comenzar la construcción.
De octubre de 2024 a marzo de 2026
Comentario público
Abril de 2026
Presentación de la solicitud del CEC
Mayo de 2026
Audiencia de ubicación de la línea
Julio de 2026
Reunión abierta de ACC
Materiales de difusión
Febrero de 2026
Postal n.o 3
Aviso en el periódico
Enero de 2026
Presentación de la Evaluación de Idoneidad


Marketplace
Careers
EVs
Projects
Contact Us
Log In
TEP
My Account
Outages & Safety
Residential
Business
Clean Energy
About
Presentación de la Evaluación de Idoneidad
Mapa del Segmentos Refinados
Postal n.o 2
Noviembre de 2025
Aviso al público
Postal n.o 1
Sesión informativa de la agencia
Carteles de puertas abiertas
Participación pública
TEP anima a los residentes, propietarios y partes interesadas a participar en el proceso de ubicación de la línea mediante:
La asistencia a las reuniones abiertas públicas
El rellenado de un formulario de comentarios en línea
El envío de comentarios por correo electrónico a SantaRitaConnection@tep.com
Llamando al 1-520-770-7520 y dejando un mensaje de voz para ofrecer comentarios y hacer preguntas
Enviando una carta por correo postal a:
TEP Santa Rita Connection Project
P.O. Box 711
Mail Stop CB200
Tucson, AZ 85701-0711
English (US)


Marketplace
Careers
EVs
Projects
Contact Us
Log In
TEP
My Account
Outages & Safety
Residential
Business
Clean Energy
About
English (US)
Online Comment Form
Your Name *
First Name
Last Name
Email *
Phone Number
(000) 000-0000
example@example.com
Please enter a valid phone number.
I would like to be added to the project email distribution list
Your Message *
Please verify that you are human *
I'm not a robot
reCAPTCHA


Marketplace
Careers
EVs
Projects
Contact Us
Log In
TEP
My Account
Outages & Safety
Residential
Business
Clean Energy
About
I'm not a robot
reCAPTCHA
Privacy - Terms
You may voluntarily provide the personal information required to complete this form. TEP uses this information to fulfill the purpose for which it was obtained. To find out more about the categories of personal information TEP collects and the purposes for which such information will be used, please refer to our Privacy Policy.
Submit
Call us
Our Customer Care team is available to assist you, Monday - Friday, 7 a.m. - 6 p.m. at 520-623-7711
Please report all outages or emergencies to: Emergency Hotline - 520-623-7711
Connect with us
Download our app
App Store
Google Play
More Information
View Bill Inserts
Billing Guidelines
How to Read Your Meter
Report Graffiti
Green Tariff
Resources
Resource Planning
CCR Rule Information
Customer Storage Program
Distribution Material Standards
Electric Service Requirements
Sustainability Performance
Generation Interconnection Services
Interruptible Service
Public Notices
Qualifying Facilities and PURPA
Service Territory and Service Area
Suppliers
Telecommunication Pole Attachments
Media Resources

This page intentionally left blank

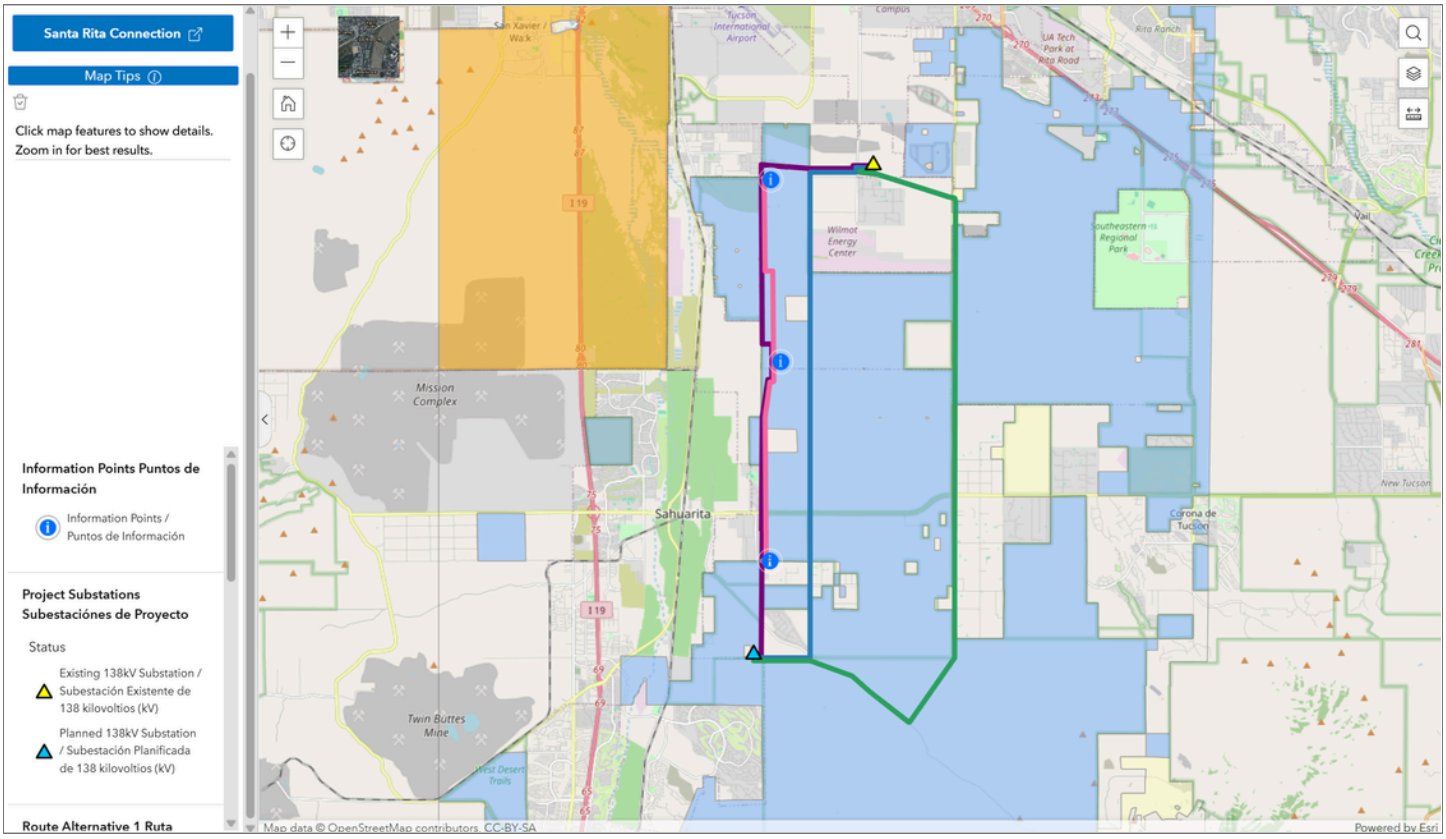
Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-7.15

Webpage – Interactive Map

This page intentionally left blank


Santa Rita Connection
Map Tips
Click map features to show details.
Zoom in for best results.
Information Points Puntos de Información
Information Points / Puntos de Información
Project Substations Subestaciónes de Proyecto
Status
Existing 138kV Substation / Subestación Existente de 138 kilovoltios (kV)
Planned 138kV Substation / Subestación Planificada de 138 kilovoltios (kV)
Route Alternative 1 Ruta
Mission Complex
Sahuarita
Twin Buttes Mine
Wilmot Energy Center
Southeastern Regional Park
Corona de Tucson
Map data © OpenStreetMap contributors, CC-BY-SA
Powered by Esri

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-8

Open House Materials

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-8.1

Open House 1 Boards (Nov. 2025)

This page intentionally left blank

Santa Rita Connection Project

TEP

Welcome

Please Sign In

Bienvenidos

(Hablamos Español)

Por Favor Regístrese

6:00 - 8:00 pm

For more information - Para más información:

Purpose and Need

Need

Anticipated future load growth in the area south of Tucson

Enhance the regional grid by providing additional redundancy and stability

Purpose

Create additional pathway to accommodate anticipated future load growth

Provide greater capacity to help meet the current and future energy needs of the community

Provide additional redundancy for increased reliability in the area south of Tucson



Opportunities and Constraints

Opportunities

Existing roads

Existing utility corridors

Major washes

Section lines

Constraints

Existing structures

Zoning ordinance restrictions

Protected and conservation lands

Cultural or historic sites

Biologically sensitive areas

Residential areas

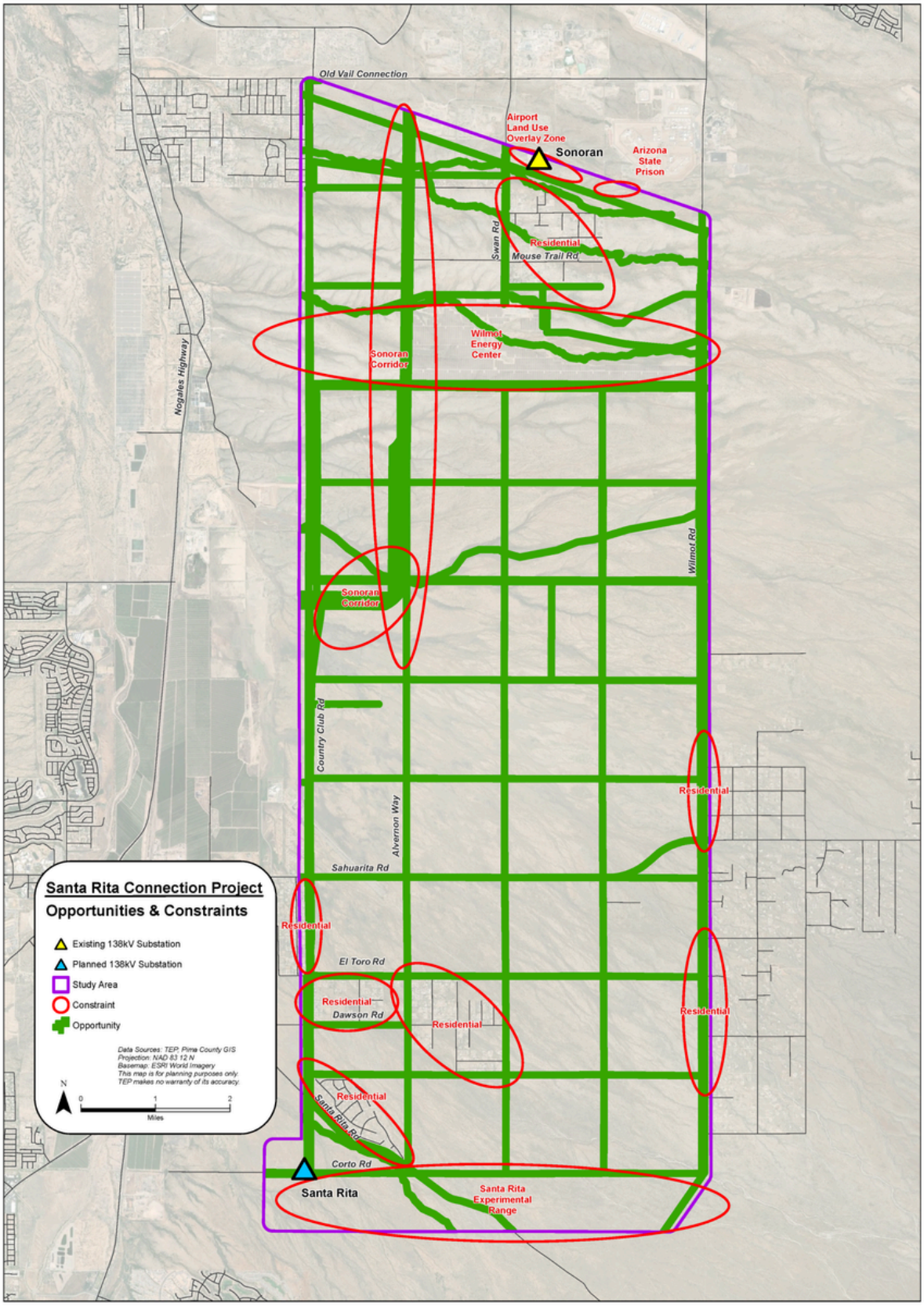








Santa Rita Connection Project



Santa Rita Connection Project

Interactive Map Station



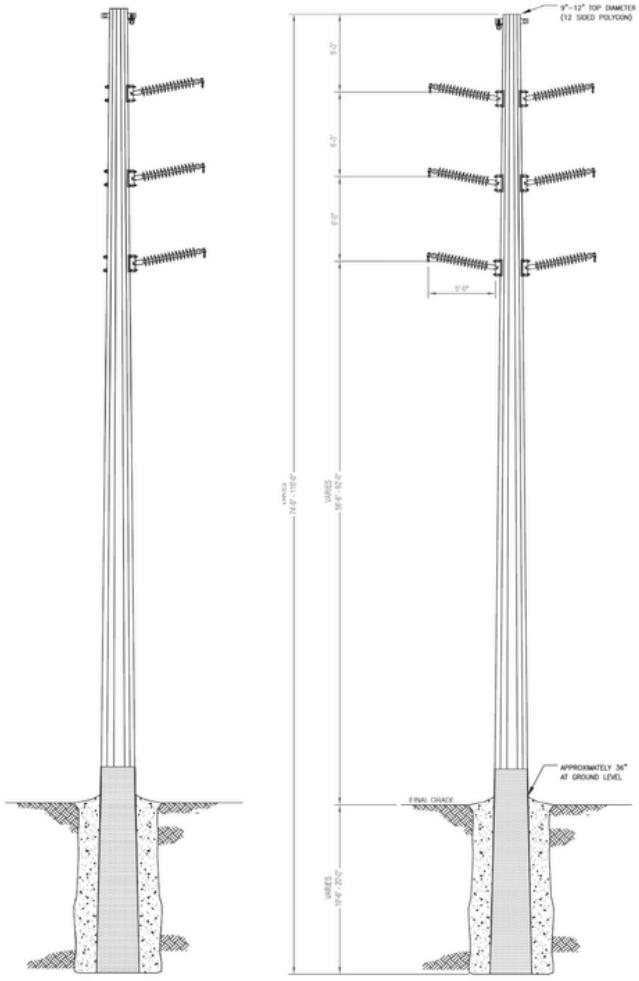
Review the study area and how it relates to your location of interest

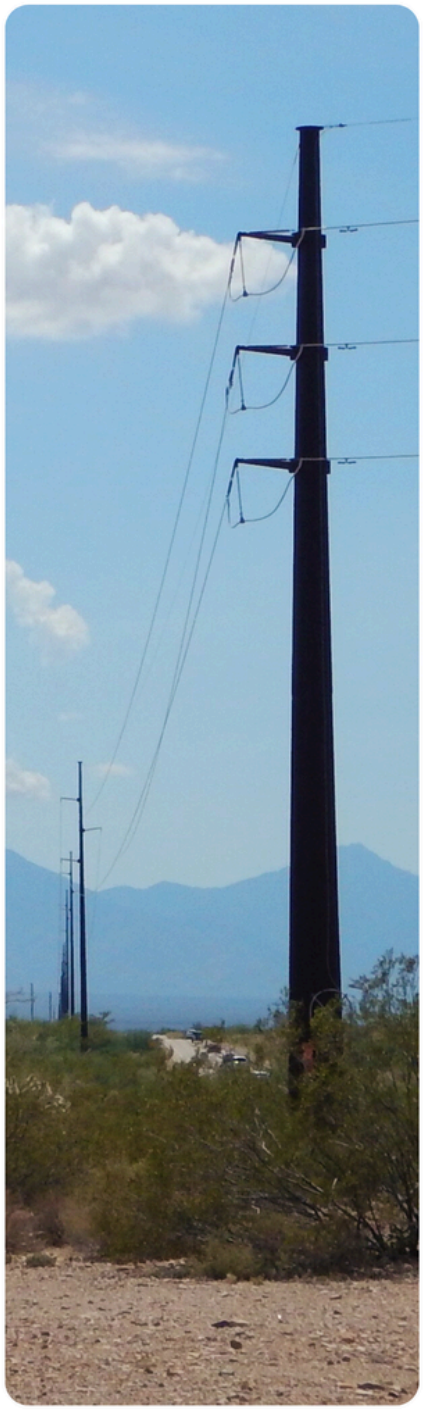
Provide feedback by filling out a comment form

Transmission Line Characteristics

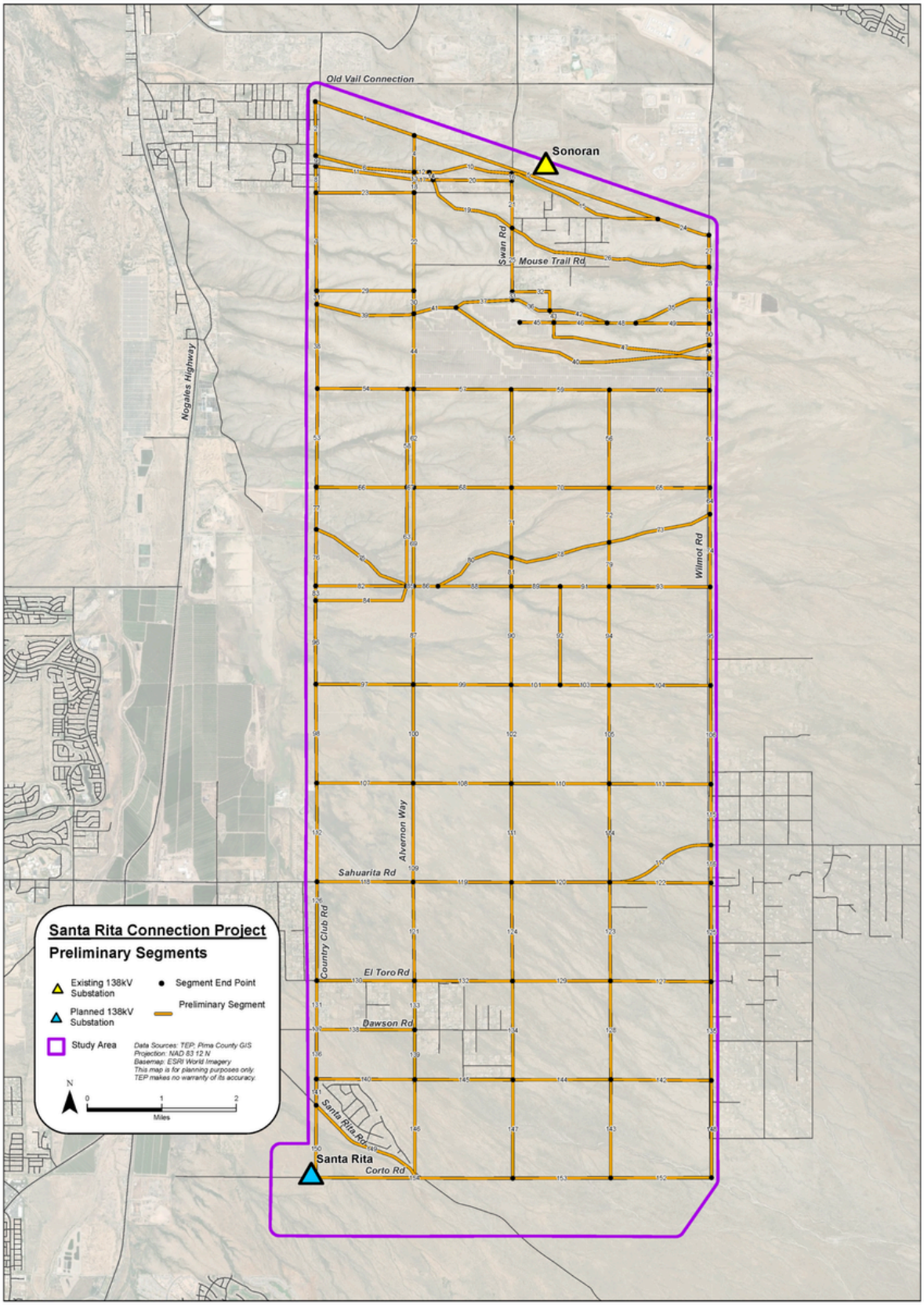
Single or Double-Circuit 138 Kilovolt

Structure Type	tubular, weathering steel monopoles
Typical Structure Height	75 - 85 feet
Typical Span Length	600 - 1,000 feet



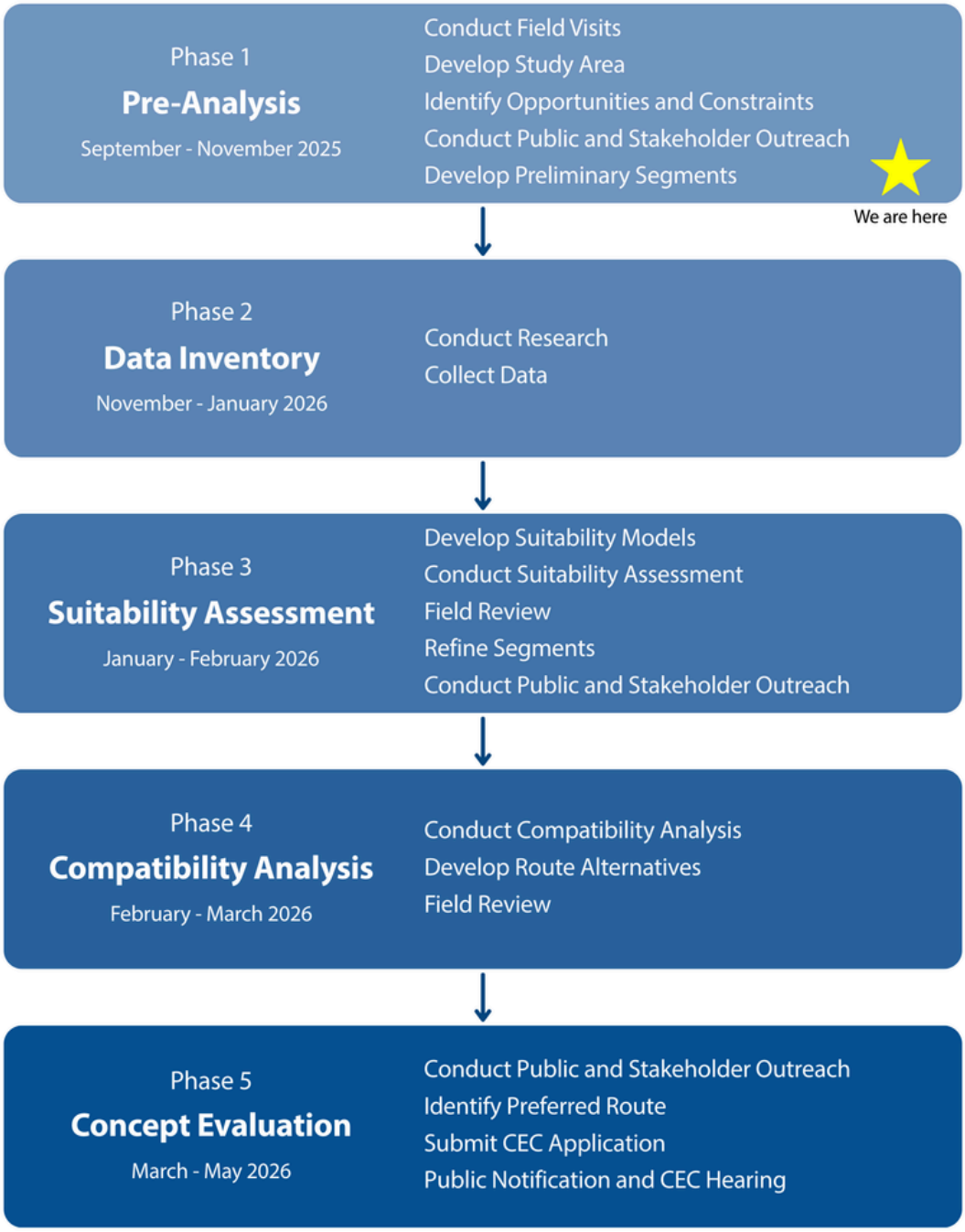


Santa Rita Connection Project



Santa Rita Connection Project

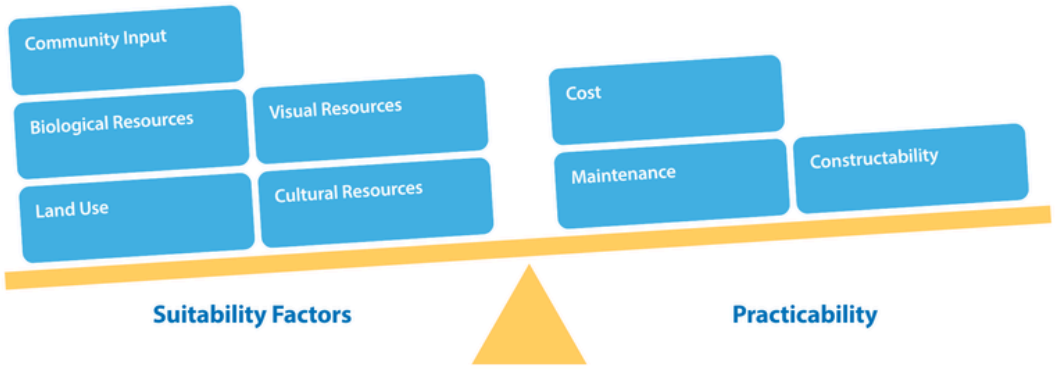
Siting Process and Timeline



Siting Criteria

TEP will be applying for a Certificate of Environmental Compatibility from the Arizona Corporation Commission. Several criteria are required under the Arizona Revised Statutes to be evaluated when analyzing segments and selecting a preferred route. TEP also considers additional factors identified through public engagement and feedback.

- Public input
- Wildlife & plants
- Existing & planned land use
- Overall environment
- Noise emission levels & interference with communication signals
- Historic & cultural sites
- Scenic vistas
- Current or potential recreation areas
- Engineering & construction feasibility
- Project costs & potential impact on customer rates



This page intentionally left blank

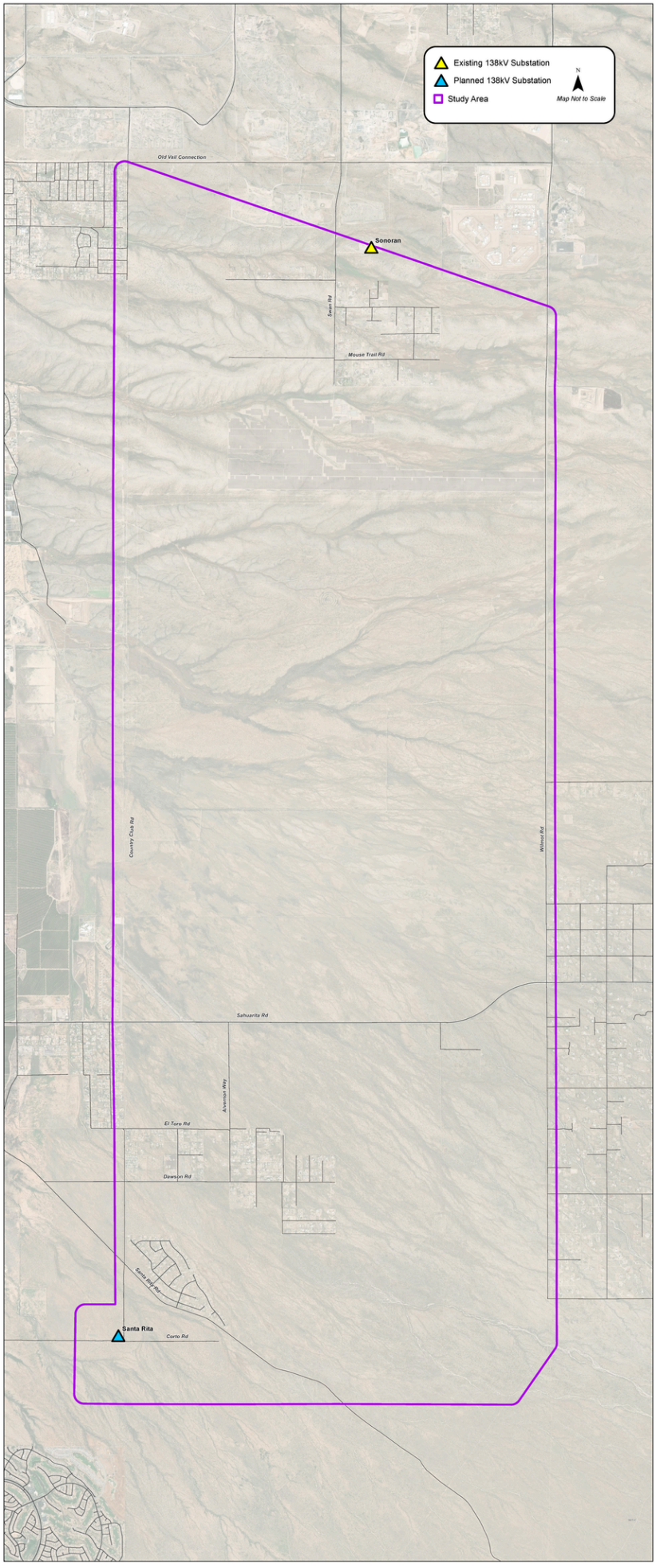
Application for a Certificate of Environmental Compatibility

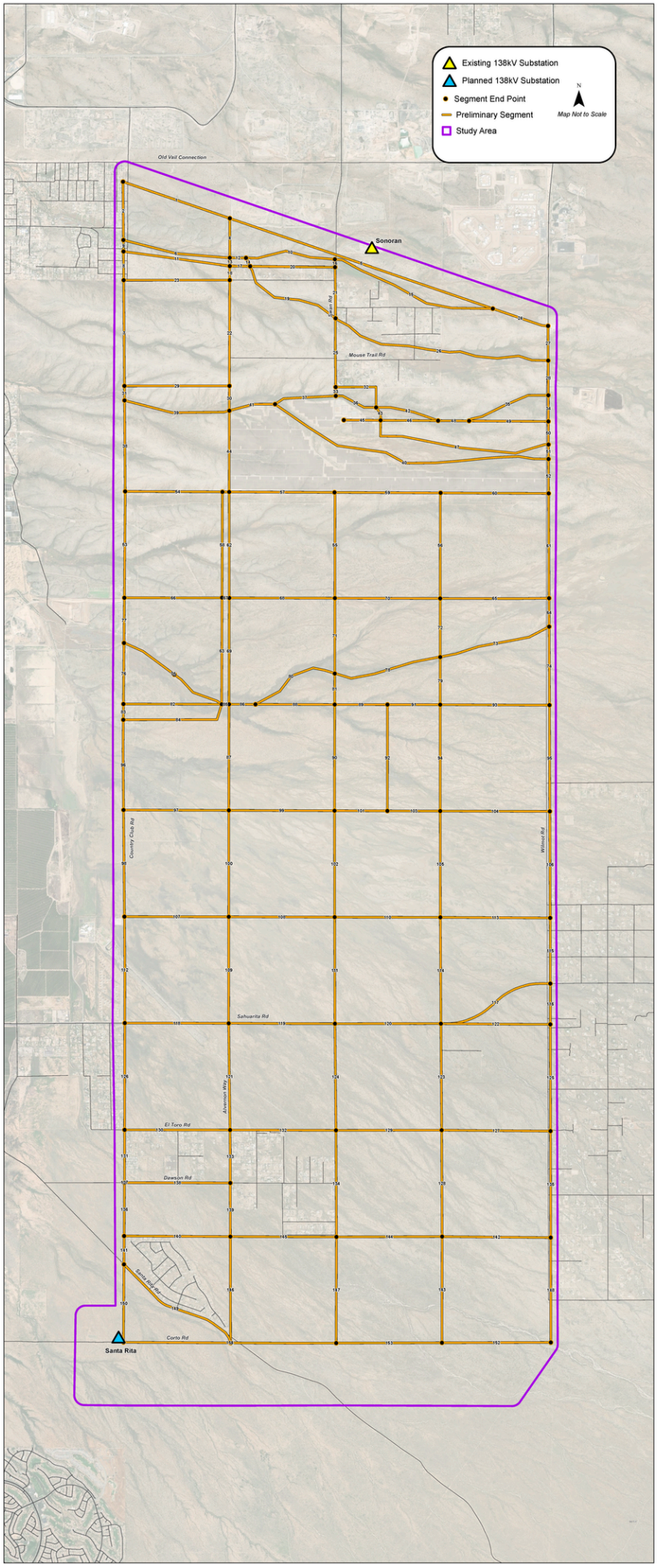
Santa Rita Connection Project

Exhibit J-8.2

Open House 1 Table Maps (Nov. 2025)

This page intentionally left blank


Existing 138kV Substation
Planned 138kV Substation
Study Area
N
Map Not to Scale
Old Vail Connection
Sonoran
Swan Rd
Mouse Trail Rd
Country Club Rd
Wilmot Rd
Sahuarita Rd
Houghton Rd
El Toro Rd
Dawson Rd
Santa Rita Rd
Santa Rita
Corto Rd


Existing 138kV Substation
Planned 138kV Substation
Segment End Point
Preliminary Segment
Study Area
N
Map Not to Scale
Old Vail Connection
Sonoran
Mouse Trail Rd
Country Club Rd
Wilmot Rd
Sahuarita Rd
Abrigo Rd
El Toro Rd
Dawson Rd
Santa Rita Rd
Corto Rd
Santa Rita

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-8.3

Open House 1 Table Signs (Nov. 2025)

This page intentionally left blank

Santa Rita Connection Project

This event will be photographed.

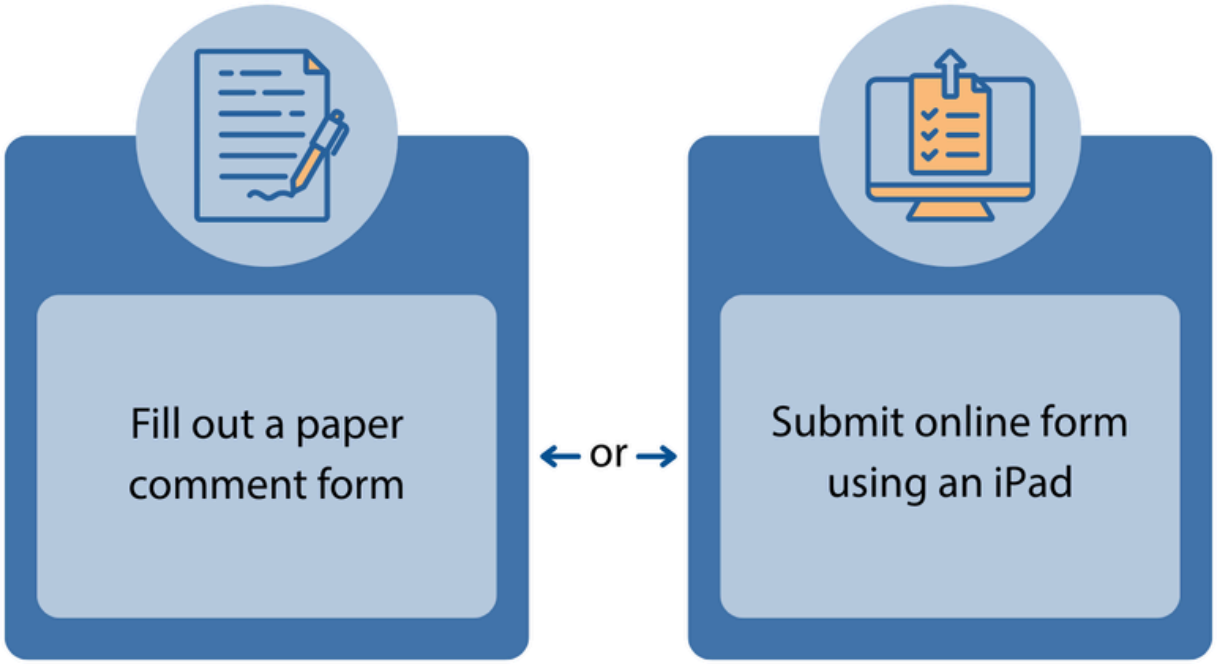
Images may be included in project communications and application materials.

If you do not want your photo taken, please inform a project team member.



Santa Rita Connection Project

Public Input



Please provide any comments, questions, or concerns

Proximity to residences or neighborhoods

Scenic impact to vistas or views from residences or recreation sites

Public health, welfare, or safety

You may also scan the QR code with a mobile device to view the project webpage and provide your feedback at any time

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-8.4

Open House 2 Boards (Mar. 2026)

This page intentionally left blank

Santa Rita Connection Project

TEP

Welcome

Please Sign In

Bienvenidos

(Hablamos Español)

Por Favor Regístrese

6:00 - 8:00 pm

For more information - Para más información:

Purpose and Need

Need

Anticipated future load growth in the area south of Tucson

Enhance the regional grid by providing additional redundancy and stability

Purpose

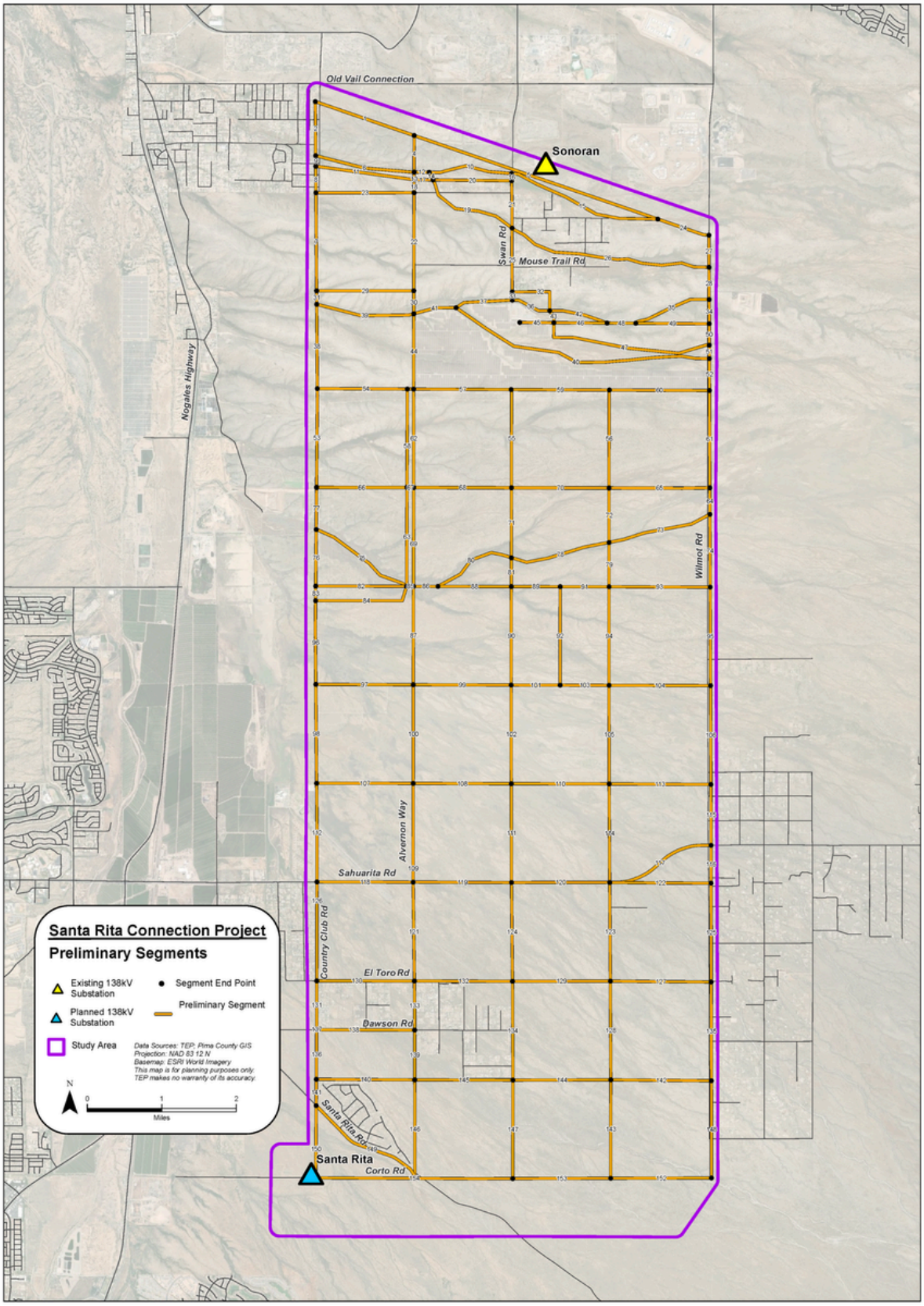
Create additional pathway to accommodate anticipated future load growth

Provide greater capacity to help meet the current and future energy needs of the community

Provide additional redundancy for increased reliability in the area south of Tucson



Santa Rita Connection Project



Suitability Assessment

Criteria Datasets

- Biological Resources
- Noise & Communication
- Total Environment
- Existing & Future Residential
- Cultural Resources
- Scenic & Visual Resources
- Construction & Maintenance
- Existing Plans

Composite Models

- Balanced Compatibility
- Environmentally Preferred
- Construction & Maintenance Preferred
- Public, Stakeholder and Agency Preferred

Suitability Assessment

- Identify highest suitable path
- Apply constraints
- Conduct visual comparison

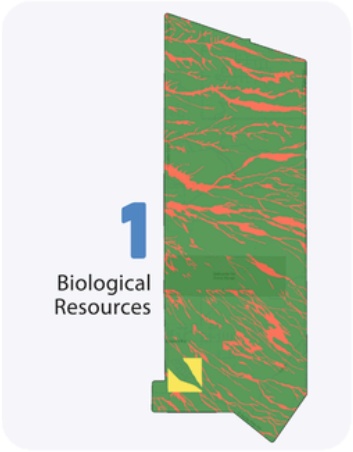
Field Verification

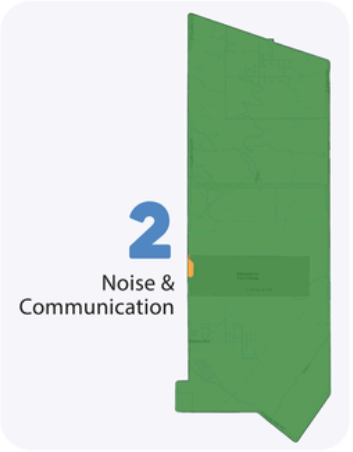
- Ground truthing

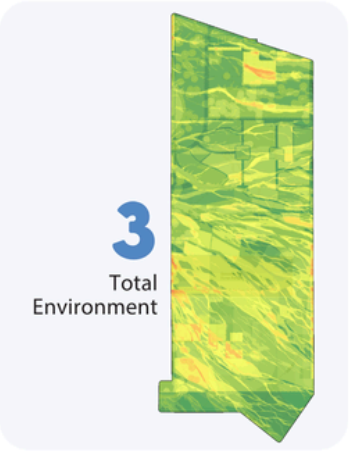
Refined Segments

- Less suitable segments eliminated
- Refined segments carried forward for further evaluation

Suitability Criteria

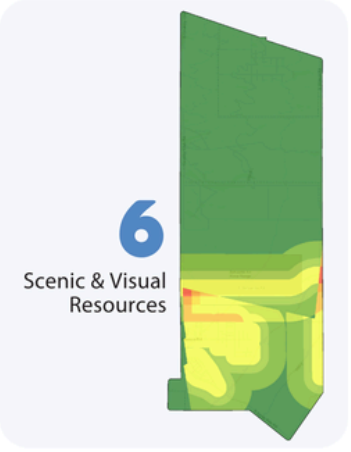






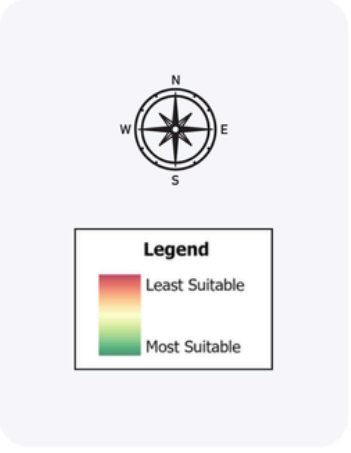






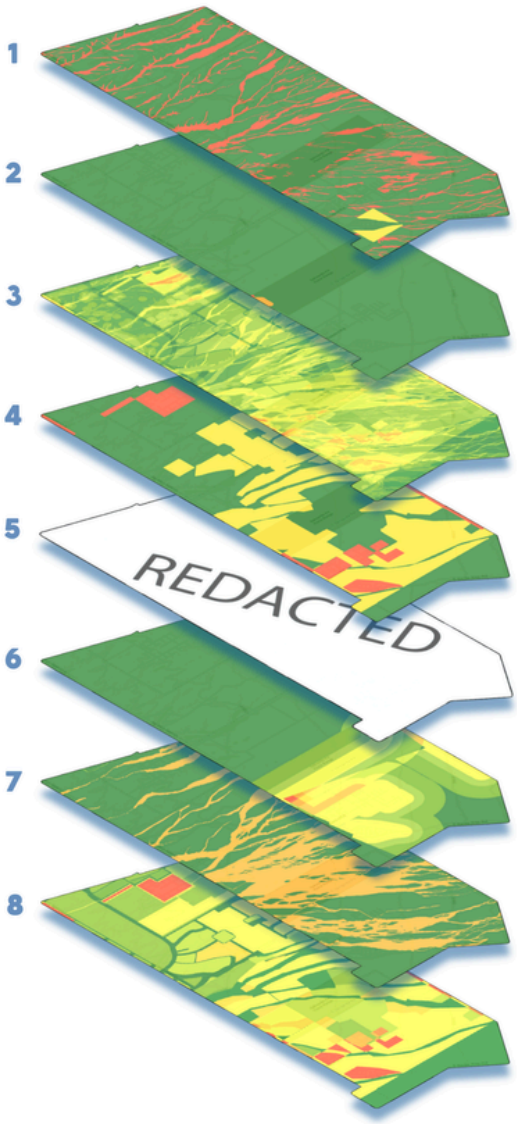






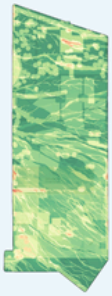
Composite Suitability Methodology

Criteria 1: Biological Resources
Criteria 2: Noise & Communication
Criteria 3: Total Environment
Criteria 4: Existing & Future Residential
Criteria 5: Cultural Resources
Criteria 6: Scenic & Visual Resources
Criteria 7: Construction & Maintenance
Criteria 8: Existing Plans

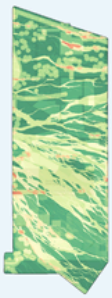




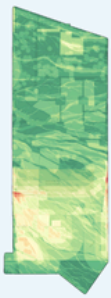
Balanced Compatibility Model



Environmentally Preferred Model

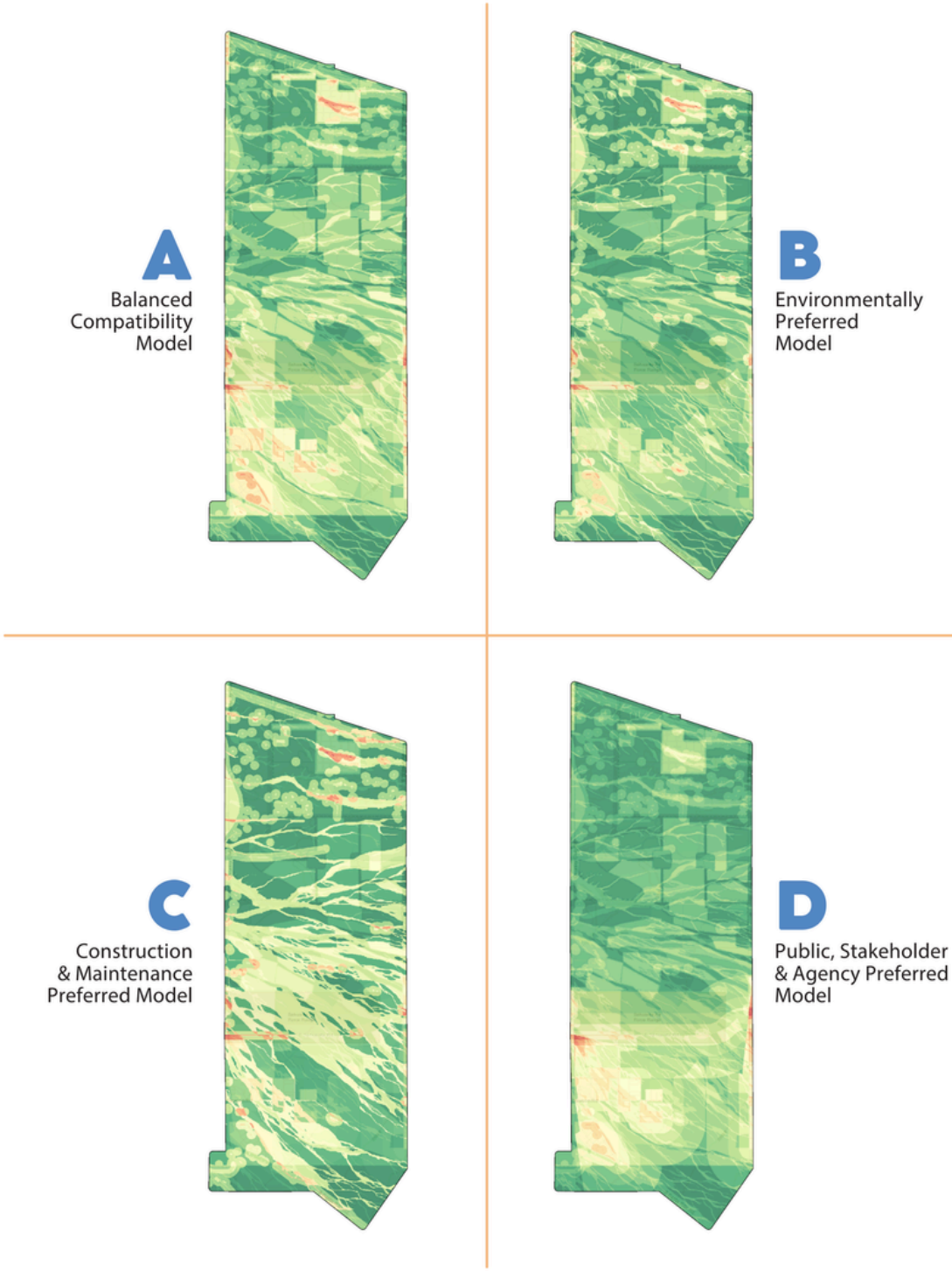


Construction & Maintenance Preferred Model

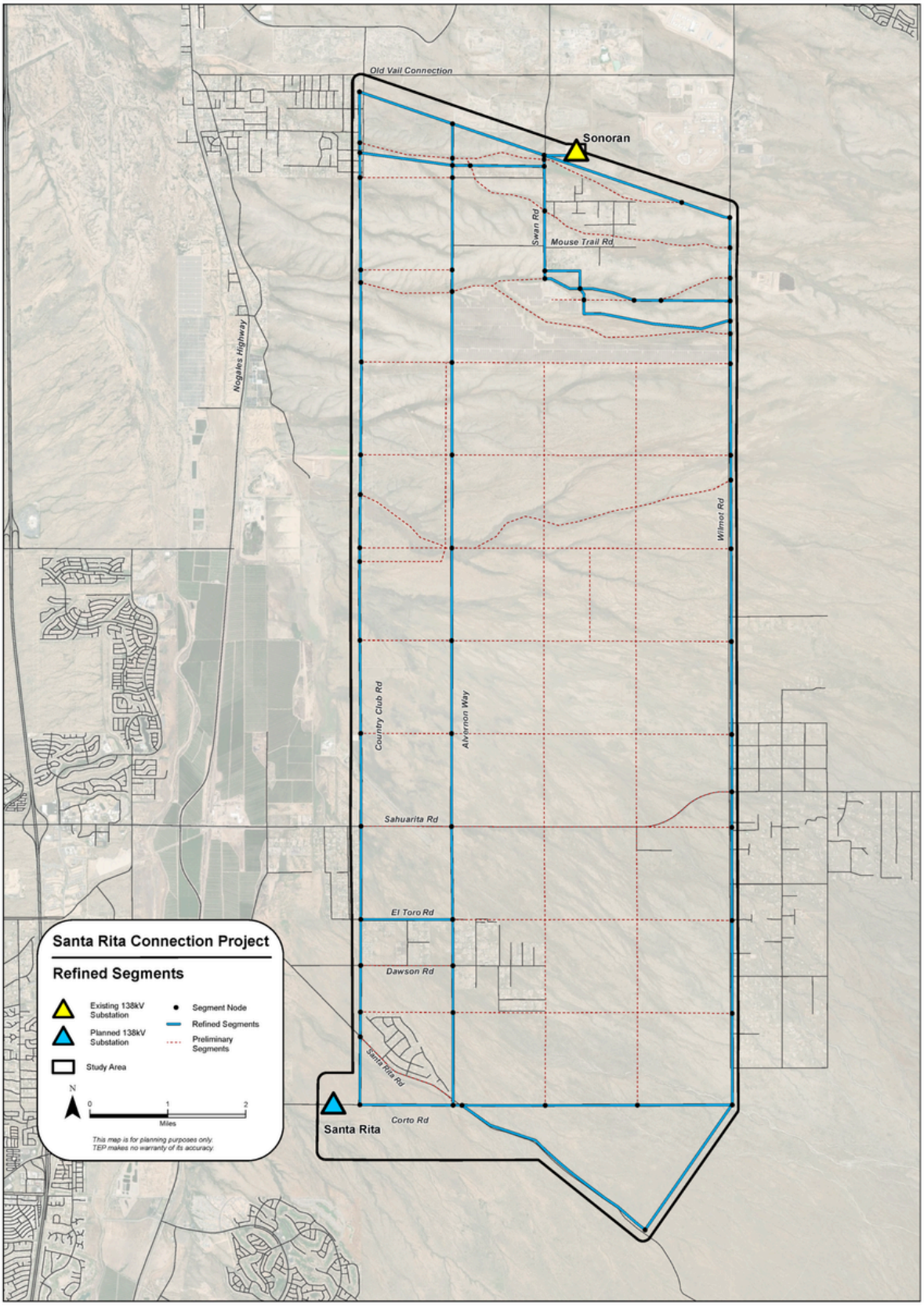


Public, Stakeholder & Agency Preferred Model

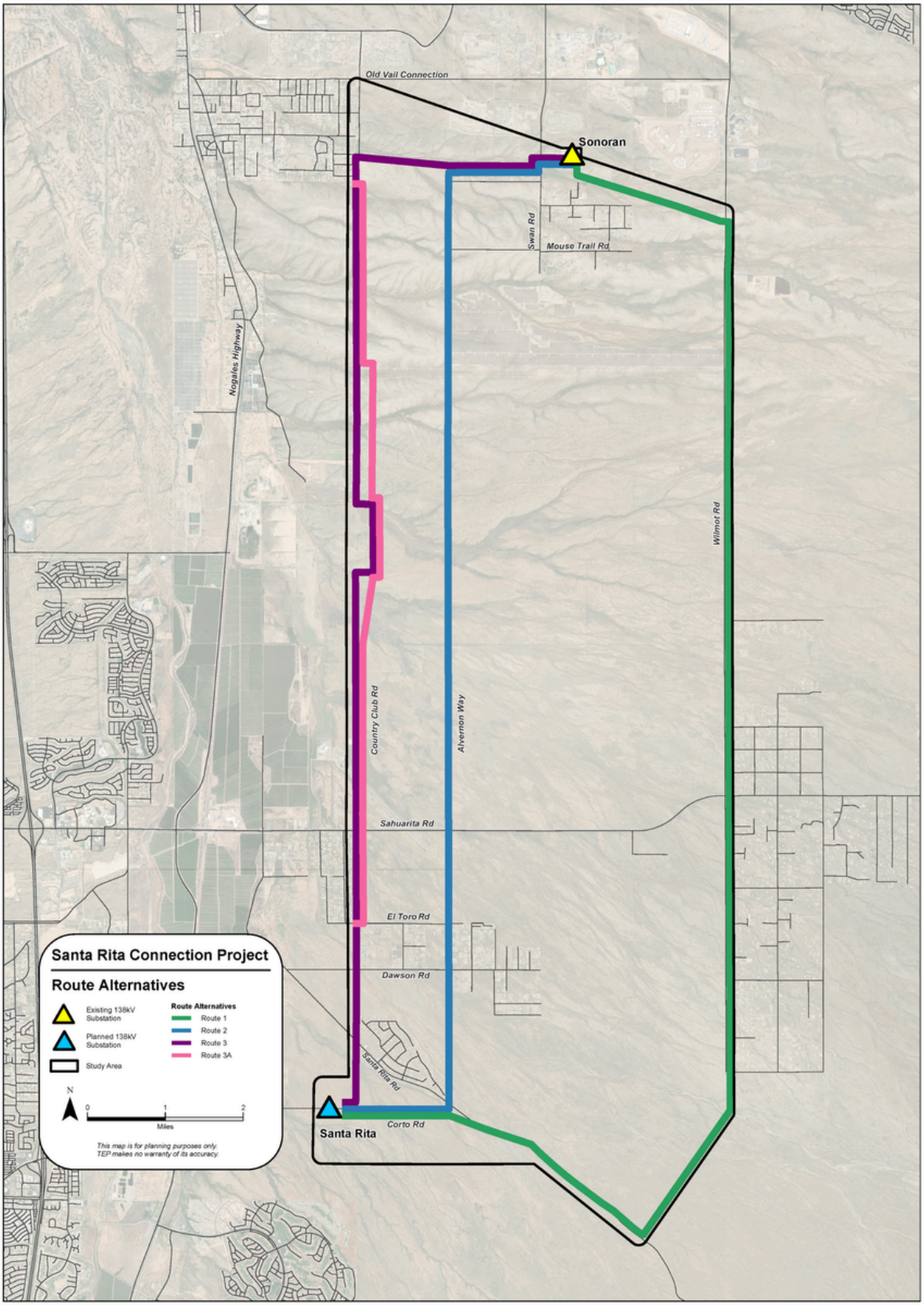
Composite Suitability Models



Santa Rita Connection Project



Santa Rita Connection Project



Santa Rita Connection Project

Interactive Map Station



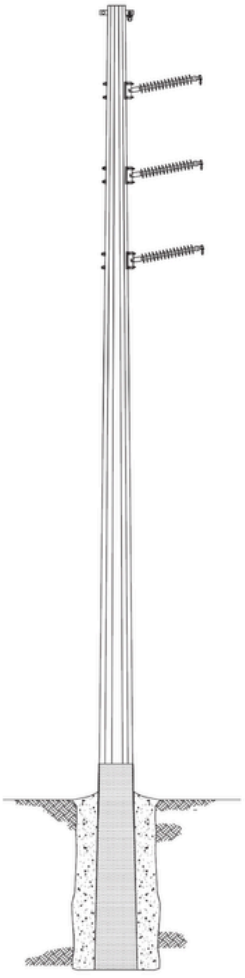
Review the study area and how it relates to your location of interest

Provide feedback by filling out a comment form

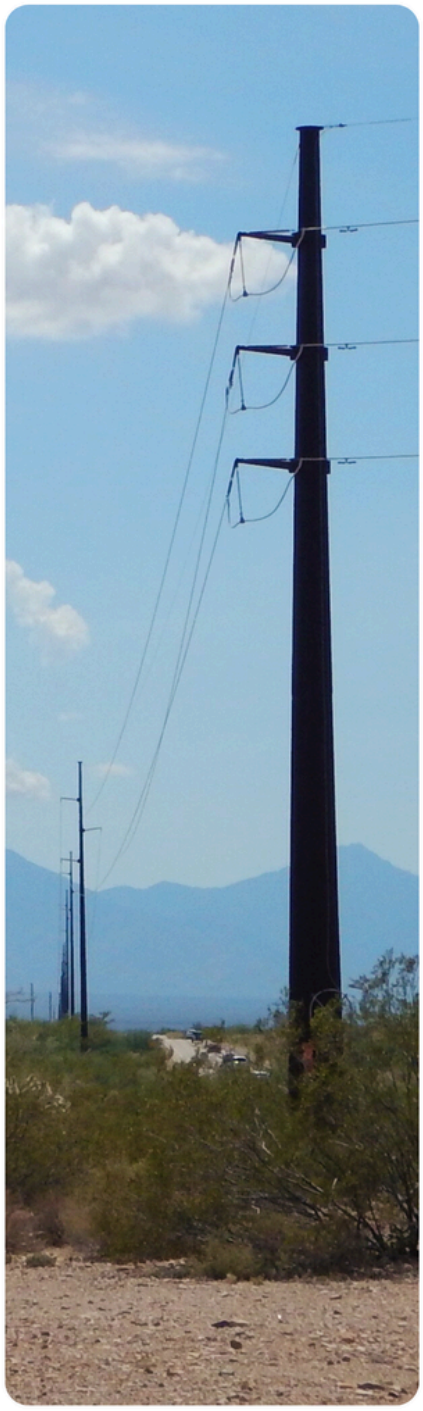
Transmission Line Characteristics

Single or Double-Circuit 138 Kilovolt

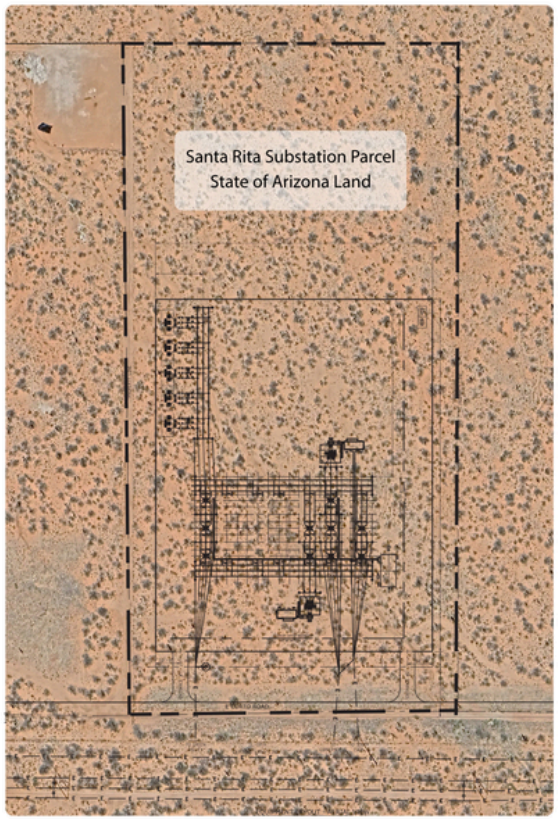
Structure Type	tubular, weathering steel monopoles
Typical Structure Height	75 - 85 feet
Typical Span Length	600 - 1,000 feet







Santa Rita Substation Characteristics

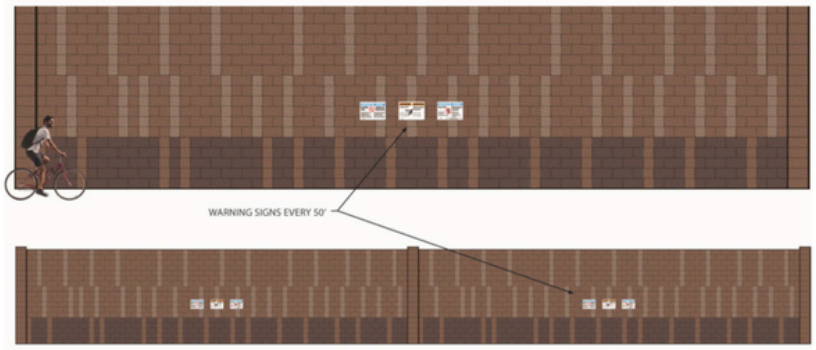




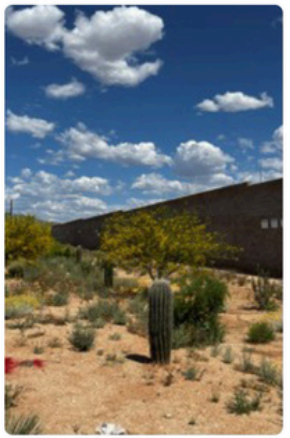
Kino Substation - Kino Pkwy & 36th St, Tucson



Patriot Substation - Escalante Rd & S Kolb Rd, Tucson



Conceptual Wall Design

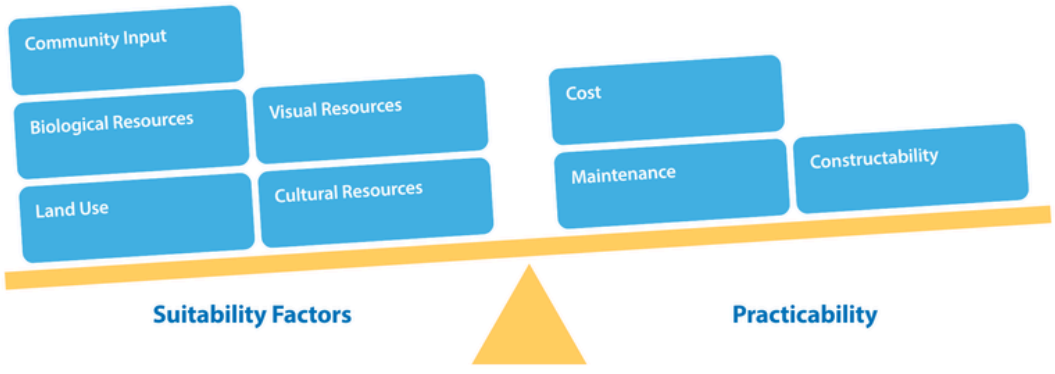


Santa Rita Connection Project

Siting Criteria

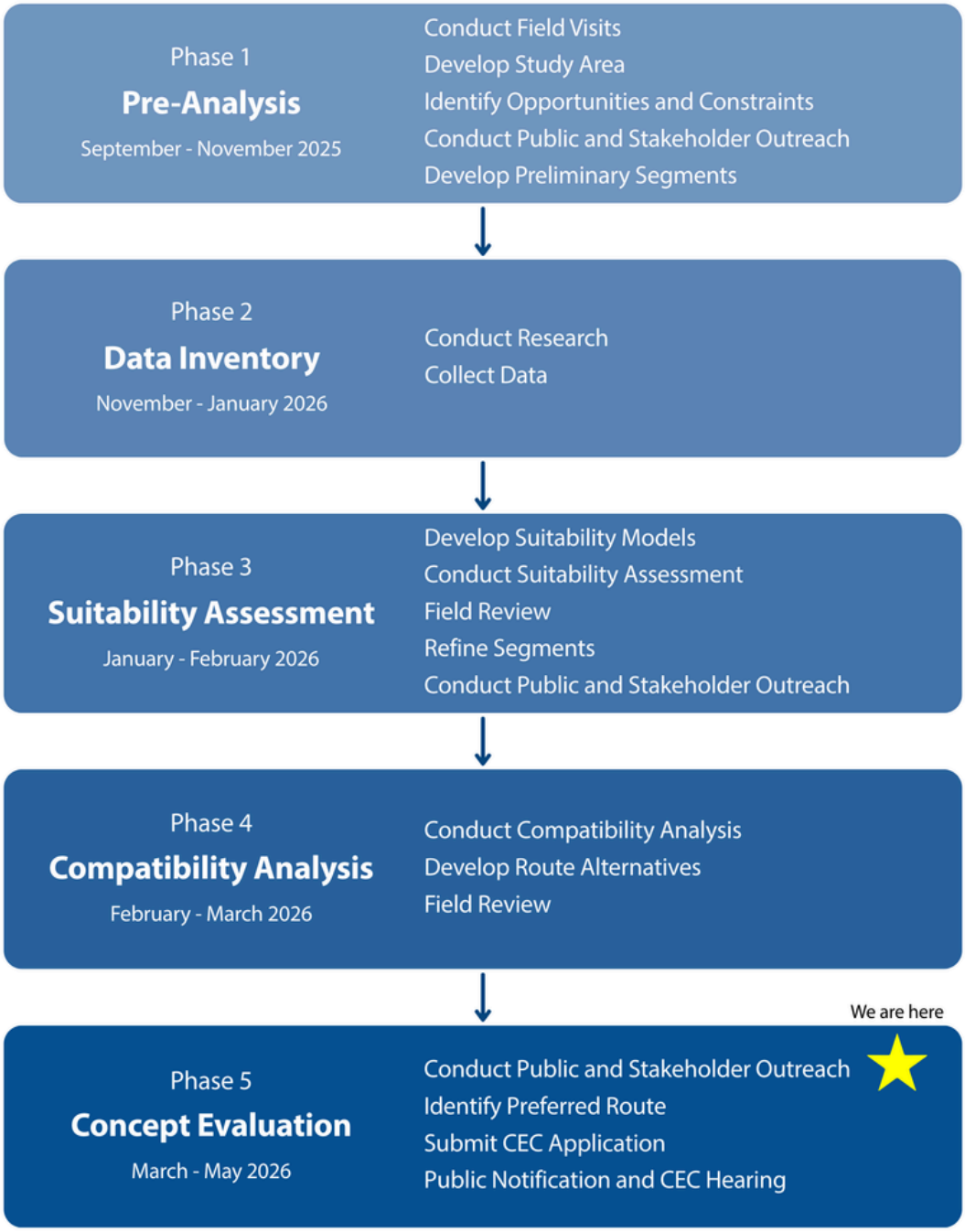
TEP will be applying for a Certificate of Environmental Compatibility from the Arizona Corporation Commission. Several criteria are required under the Arizona Revised Statutes to be evaluated when analyzing segments and selecting a preferred route. TEP also considers additional factors identified through public engagement and feedback.

- Public input
- Wildlife & plants
- Existing & planned land use
- Overall environment
- Noise emission levels & interference with communication signals
- Historic & cultural sites
- Scenic vistas
- Current or potential recreation areas
- Engineering & construction feasibility
- Project costs & potential impact on customer rates



Santa Rita Connection Project

Siting Process and Timeline



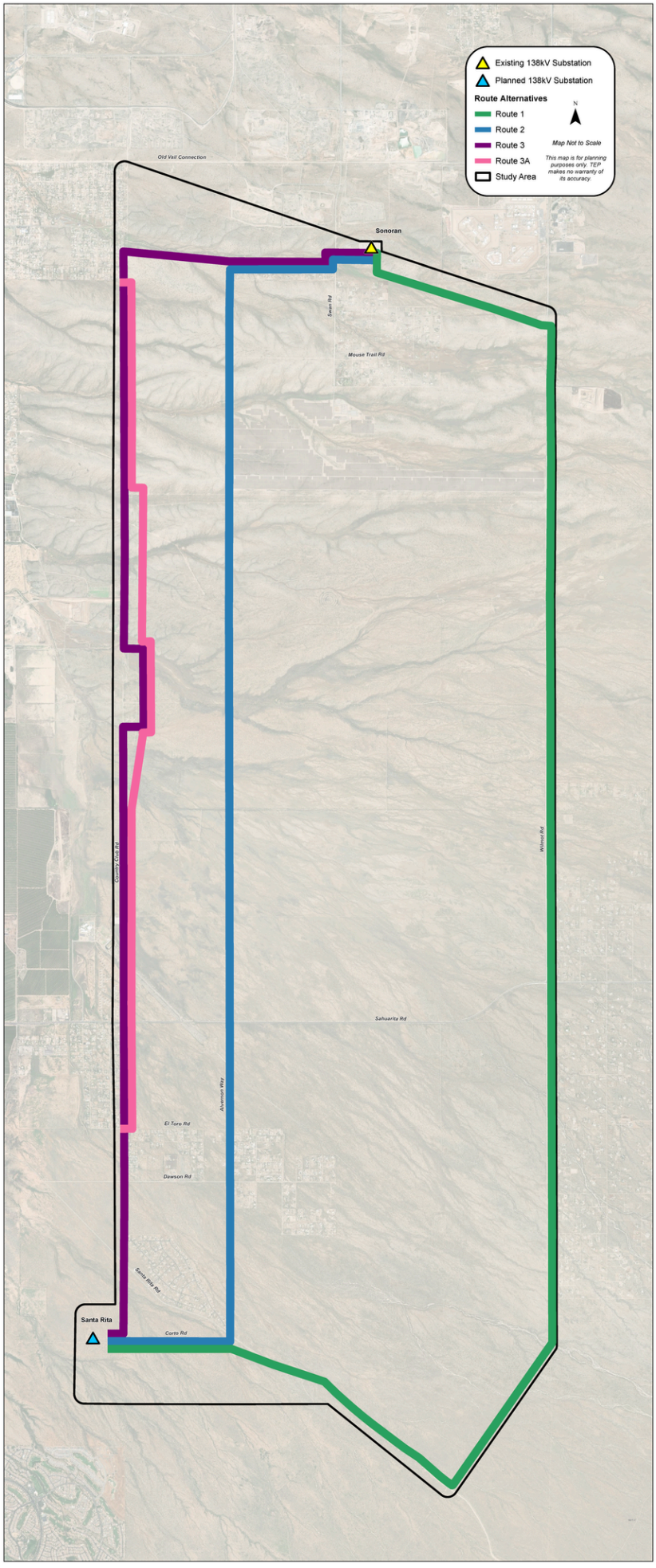
Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-8.5

Open House 2 Table Map (Mar. 2026)

This page intentionally left blank


Existing 138kV Substation
Planned 138kV Substation
Route Alternatives
Route 1
Route 2
Route 3
Route 3A
Study Area
N
Map Not to Scale
This map is for planning purposes only. TEP makes no warranty of its accuracy.
Old Vail Connection
Sonoran
Swan Rd
Mouse Trail Rd
Wilmot Rd
Sahuarita Rd
Alvernon Way
El Toro Rd
Dawson Rd
Santa Rita Rd
Corto Rd
Santa Rita
County Club Rd

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-8.6

Open House 2 Table Signs (Mar. 2026)

This page intentionally left blank

Santa Rita Connection Project

This event will be photographed.

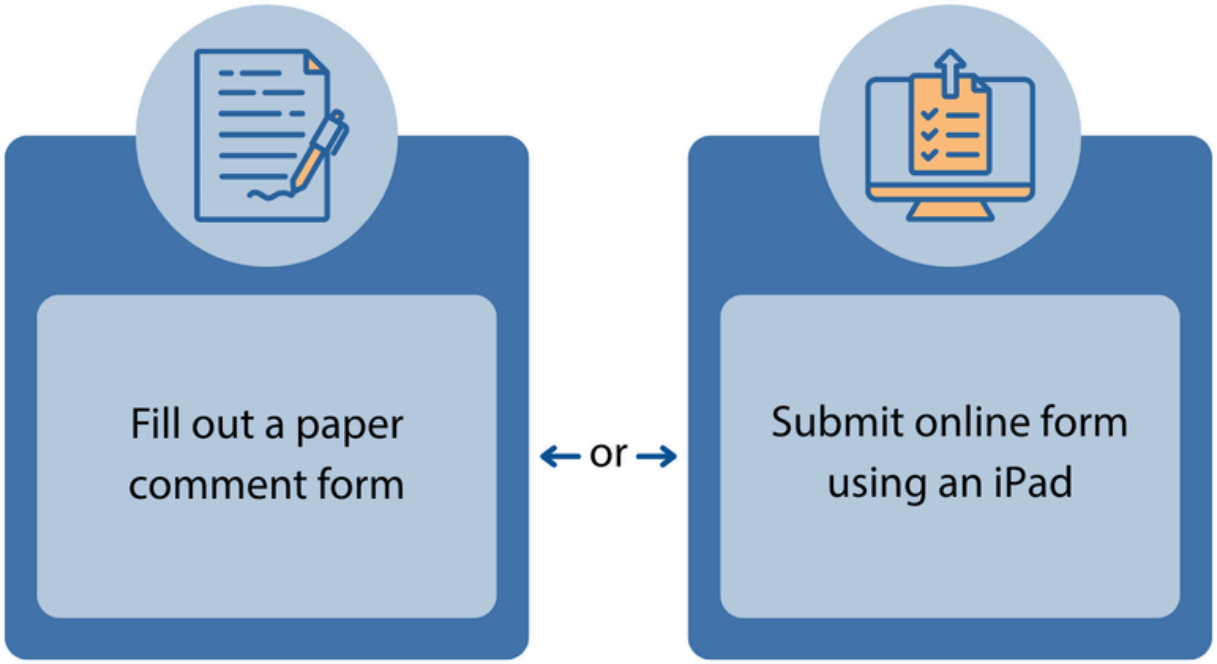
Images may be included in project communications and application materials.

If you do not want your photo taken, please inform a project team member.



Santa Rita Connection Project

Public Input



Please provide any comments, questions, or concerns

Proximity to residences or neighborhoods

Scenic impact to vistas or views from residences or recreation sites

Public health, welfare, or safety

You may also scan the QR code with a mobile device to view the project webpage and provide your feedback at any time

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-9

Media Coverage

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-9.1

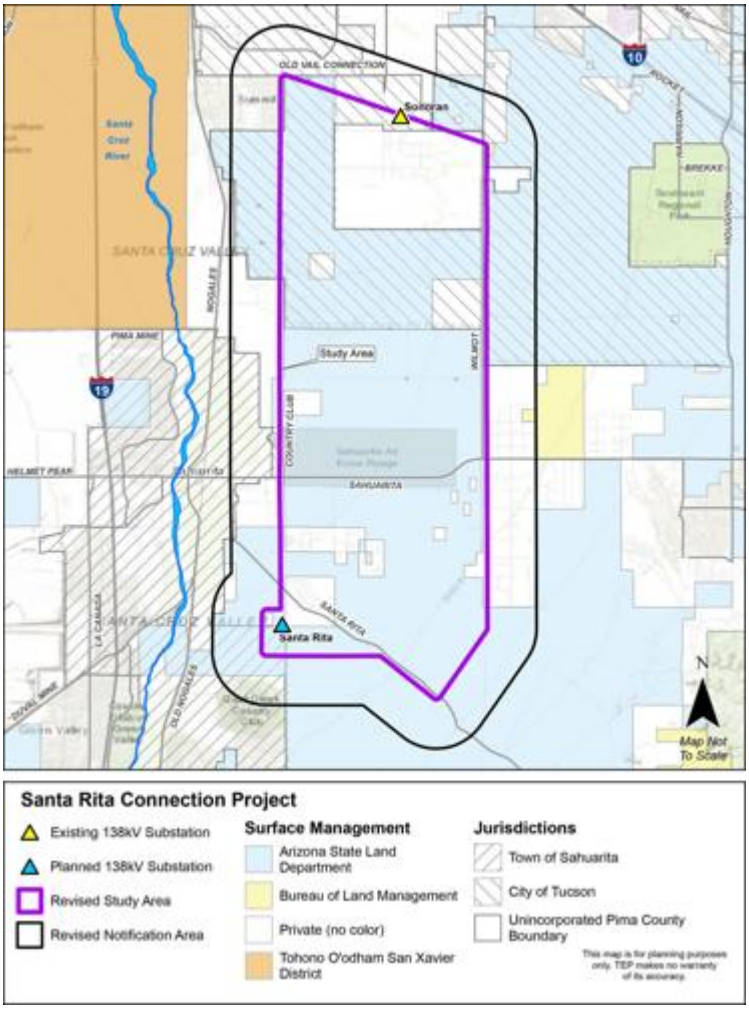
Green Valley News

This page intentionally left blank

FEATURED

TEP seeking input on new Sahuarita transmission line, substation

By Jorge Encinas jorge.encinas@gvnews.com
Jan 24, 2026



TEP's map for the proposed Santa Rita Connection project to retire a 46-kV transmission line and upgrade to a 138-kV line and new substation serving Sahuarita, Green Valley and the surrounding area.

TEP

https://www.gvnews.com/news/local/tep-seeking-input-on-new-sahuarita-transmission-line-substation/article_f26e7415-2ea8-4b23-996e-eea31a97a4c3.html

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-9.2

AZPM News

This page intentionally left blank

INFRASTRUCTURE JANUARY 28, 2026 / MODIFIED FEB 2, 2026 3:55 P.M.

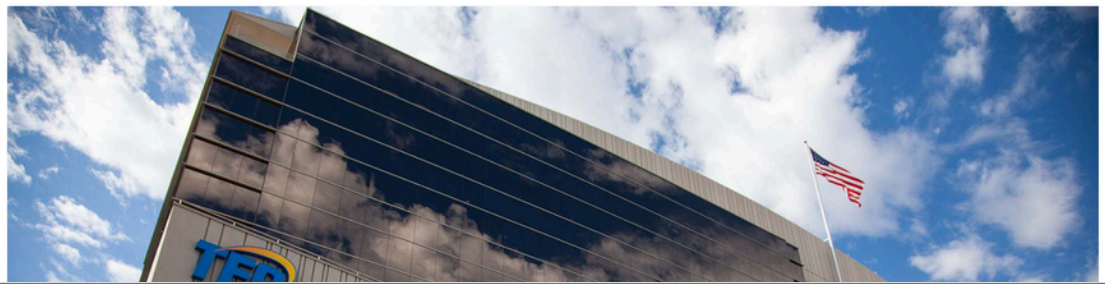
TEP proposes substation, transmission line for Sahuarita

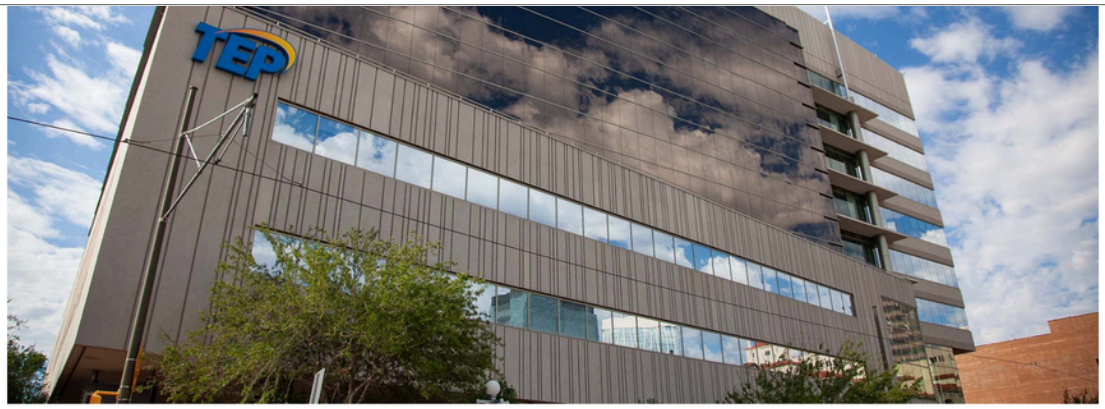
Tucson Electric Power seeks public input on a proposed transmission line that would expand regional power distribution.



by Noor Haghighi

Post Share





The Tucson Electric Power headquarters in downtown Tucson.
Dora Sam / AZPM News

Listen
TEP Sahuarita Substation
-0:43

This article has been updated to reflect the correct Tucson substation location and the correct capacity levels of circuits.

Tucson Electric Power is planning for a new transmission line that would connect a proposed Sahuarita substation to Tucson's Sonoran Substation.

TEP Project Manager Chris Ortiz y Pino presented the Santa Rita Connection Project to the Sahuarita Town Council this week. He said a new transmission line would enhance the capacity for current power loads

Sahuarita Town Council this week. He said a new transmission line would enhance the capacity for current power loads.

"In 2019, our distribution planning engineers identified that three of the circuits at that time were at 75% capacity which, more or less, means it's time for us to start planning new facilities," Ortiz y Pino said.

Today, he said, there are five circuits operating at or over capacity at the Sonoran Substation, which is set to be expanded and upgraded by the end of this year.

Ortiz y Pino said TEP began the siting process for the new transmission line in October 2025 and is seeking public input in time to apply for the Certificate of Environmental Compatibility in April.

"It's — at every step — looking to engage the public, get their feedback, incorporate that into the project until we find an outcome that's preferred," he said.

In recent months, Pima County advocates have criticized TEP for its involvement in the controversial Project Blue data center, approved by the Arizona Corporation Commission in December. The agreement between the data center developers and TEP states that by 2028, the company will be providing about 286 megawatts of power to Project Blue. That's the power it would take to cool 57,000 homes.

Sahuarita council member Diane Priolo asked Ortiz y Pino how the proposed substation might affect the potential for future data centers. He responded that the aim of this project is to expand the current power distribution load. Ortiz y Pino's presentation slides,

might affect the potential for future data centers. He responded that the aim of this project is to expand the current power distribution load. Ortiz y Pino's presentation slides, however, state that the purpose for the Santa Rita Connection does include accommodations for future load growth south of Tucson.

After two consecutive years of rate reductions, TEP expects 14% hikes for consumers in 2026 — another issue that has concerned Pima County residents. Arizona Attorney General Kris Mayes plans to argue against the rate increases this March.

The corporation commission is set to vote on plans for the transmission line this July at an open meeting. The Santa Rita Connection project is expected to be in service in 2029.

MORE:

INFRASTRUCTURE

YOU MAY ALSO LIKE:

Who pays for Tucson's data center boom?

TEP says city takeover of electric grid could cost taxpayers $4 billion

'I came to Tucson for a more affordable life': TEP customers speak at second public meeting over rate case

By posting comments, you agree to our Comment Policy

What do you think?

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

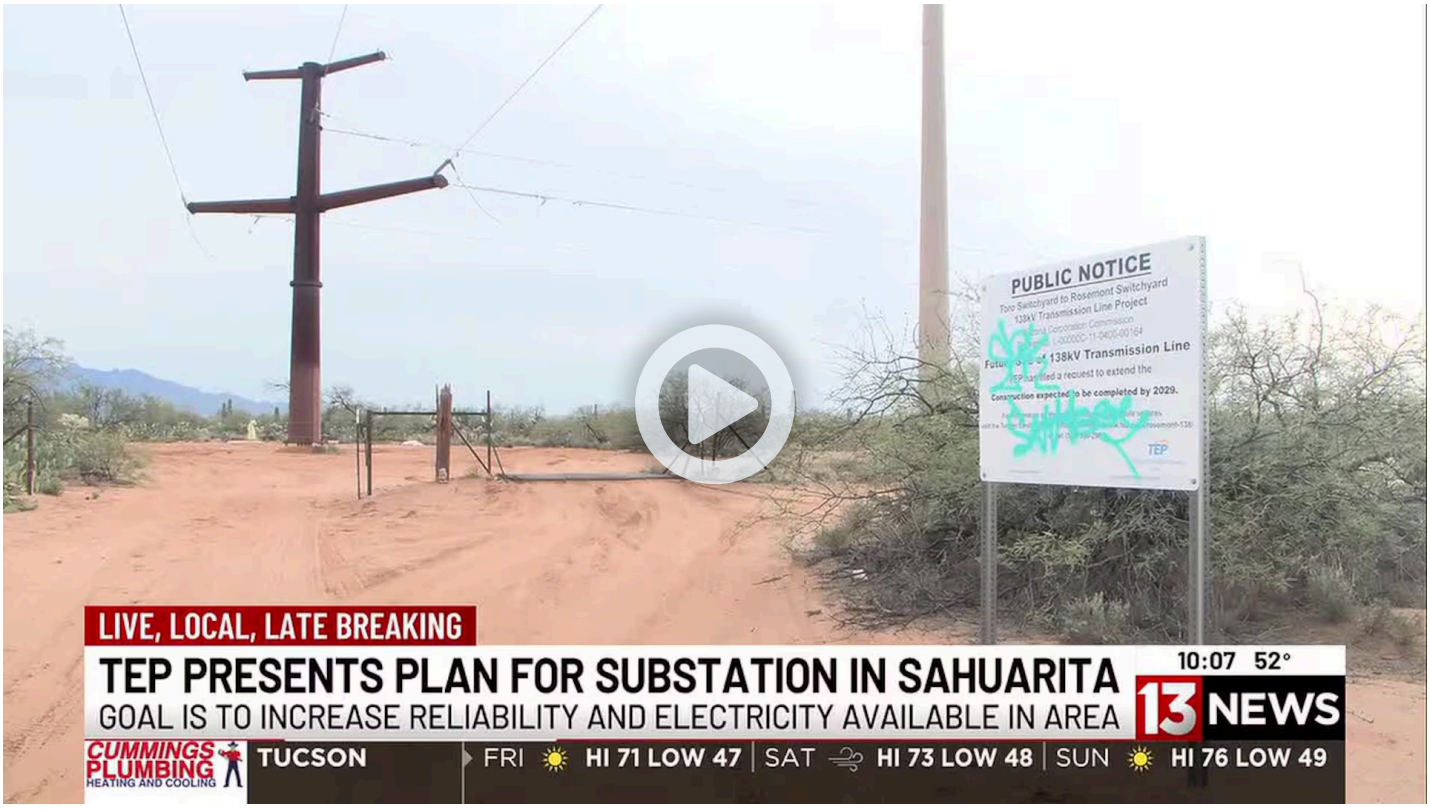
Exhibit J-9.3

KOLD News 13

This page intentionally left blank

TEP wants to build substation in Sahuarita to improve reliability

Updated: Jan. 30, 2026 at 12:00 AM EST



TEP said it wants to build a new substation in Sahuarita to help improve reliability.

https://www.kold.com/video/2026/01/30/tep-wants-build-substation-sahuarita-improve-reliability/

This page intentionally left blank

Application for a Certificate of Environmental Compatibility

Santa Rita Connection Project

Exhibit J-10

Public Comments Received (redacted)

This page intentionally left blank

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 10/28/2025

Comment Method: Email

Topics: Existing Line, Route Location

Route(s) Preferred: 3/3A

Route(s) Opposed:

Comment

Why not run it alongside country club road next to the line that's already there.

Response

Thank you for sharing your comment. We have noted these for consideration in future analysis as part of the next phases of our planning and siting process. In addition, we will include these in our project record that will be submitted to the Arizona Corporation Commission.

TEP's Planning and Siting process for Transmission Lines looks at existing utility corridors such as along Country Club Rd as opportunities to site new facilities. I look forward to discussing the project with you and hope to see you at our upcoming Public Open House on Thursday November 13th at the Desert Diamond Casino in Sahuarita.

I hope you will continue to stay engaged in the project and continue to provide your thoughts and comments. For the latest updates on the project, I invite you to visit the project webpage at https://www.tep.com/santa-rita-connection/

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 10/28/2025

Comment Method: Email

Topics:

Route(s) Preferred:

Route(s) Opposed:

Comment

Thank you for the notification.

Response

We’re glad you received the project email and look forward to working with you and your community as the project progresses.

For your information, all comments will be included in the project record that will be submitted to the Arizona Corporation Commission.

I hope you will continue to stay engaged in the project and continue to provide your thoughts and comments. For the latest updates on the project, I invite you to visit the project webpage at https://www.tep.com/santa-rita-connection/

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 11/1/2025

Comment Method: Online Comment Form

Topics: Visual, Residential, Substation

Route(s) Preferred: 3/3A

Route(s) Opposed:

Comment

Hello. I live in the Sahuarita Highlands neighborhood near the planned substation. We have a lot of very high end homes in our neighborhood, and that's partially because of our great mountain views. Please run the new lines WEST of our neighborhood so as not to impede our views. I will also try to attend you public input hearings, but not sure I'll be available on Nov 13. Thank you

Response

Thank you for sharing your comments and concerns. We have noted these for consideration in future analysis as part of the next phases of our planning and siting process. In addition, we will include these in our project record that will be submitted to the Arizona Corporation Commission.

I do hope to see you at the Public Open House. If you are unavailable, please don’t hesitate to submit additional comments or questions as they arise. I will do my best to respond in a timely manner.

I hope you will continue to stay engaged in the project and continue to provide your thoughts and comments. For the latest updates on the project, I invite you to visit the project webpage at https://www.tep.com/santa-rita-connection/

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 11/7/2025 **Comment Method:** Email

Topics: Route Location, Residential

Route(s) Preferred: **Route(s) Opposed:** 2, 3/3A

Comment

We live at [redacted] in Tucson and we already have the huge TEP power poles right behind our home.

Will this new transmission line also be close to my home?

Response

TEP is in the very early stages of our siting process. No decisions have been made as to where the transmission line will be. If you go onto our project webpage link below, you will see that we have identified a study area at this point and will be presenting a range of opportunities and constraints at our upcoming public open house on Thursday November 13, from 6-8PM at the Desert Diamond Casino in Sahuarita.

I hope you will continue to stay engaged in the project and continue to provide your thoughts and comments. For the latest updates on the project, I invite you to visit the project webpage at https://www.tep.com/santa-rita-connection/

We will include these in our project record that will be submitted to the Arizona Corporation Commission.

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 11/13/2025

Comment Method: Paper Comment Form

Topics:

Route(s) Preferred:

Route(s) Opposed:

Comment

Thank you for the information – very clear explanations

Response

Provided at Open House

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 11/13/2025

Comment Method: Online Comment Form

Topics: Existing Line, Route Location

Route(s) Preferred: 1

Route(s) Opposed:

Comment

Best route would be to go east to Wilmot, down Wilmot to where it intersects with the approved Rosemont mine lines to the final destination.

Response

Thank you for sharing your comments. We have noted these for consideration in future analysis as part of the next phases of our planning and siting process. In addition, we will include these in our project record that will be submitted to the Arizona Corporation Commission.

It was a pleasure speaking with you [redacted] yesterday evening.

I hope you will continue to stay engaged in the project and continue to provide your thoughts and comments. For the latest updates on the project, I invite you to visit the project webpage at https://www.tep.com/santa-rita-connection/

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 11/13/2025

Comment Method: Paper Comment Form

Topics: Route Location, Residential

Route(s) Preferred: 1

Route(s) Opposed:

Comment

I (we) felt that the line may be best installed to the east of the planned area where there appears to be less obstructions such as building sites that consist primarily of homes.

Response

Provided at Open House

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 1/27/2026

Comment Method: Email

Topics: Substation

Route(s) Preferred:

Route(s) Opposed:

Comment

Greetings: Please provide the exact longitude/latitude coordinates for the proposed Santa Rita Substation. Https://www.tep.com/santa-rita-connection/#map

Is the Substation to be located on private property, state Trust Land or Pima County property?

If on private property, who owns the property?

If on State Trust Land, please provide the ROW or easement information allowing TEP access.

If on County property, please provide the ROW or easement information allowing TEP access.

Response

Thank you for sharing your questions. We have noted these and will include these in our project record that will be submitted to the Arizona Corporation Commission.

The location of the Santa Rita Substation is in Pima County on Arizona State Land. The lat/long coordinates are latitude 31°54'56", longitude -110°55'50.5". TEP has acquired a lease agreement with the Arizona State Land Department for the construction of a power substation. You may obtain the information that is publicly available through the ASLD public records request process.

I hope you will continue to stay engaged in the project and continue to provide your thoughts and comments. For the latest updates on the project, I invite you to visit the project webpage at https://www.tep.com/santa-rita-connection/

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 2/2/2026

Comment Method: Online Comment Form

Topics: Route Location, Residential

Route(s) Preferred:

Route(s) Opposed:

Comment

You are going to ruin our beautiful community by doing this. There's got to be a way you can do this with our going around our neighborhood.

Response

Thank you for sharing your comments and concerns. We have noted these for consideration in future analysis as part of the next phases of our planning and siting process. In addition, we will include these in our project record that will be submitted to the Arizona Corporation Commission.

I understand your concern regarding this project. I want to clarify that TEP has not identified a preferred route yet for this project. We are still working through our analyses to determine a set of alternatives. This outreach and the information presented in the short video is meant to inform you of our most recent updates to the project. I would like to invite you to give me a call directly at 520-633-8693 to discuss further as I am not sure where exactly you live in relation to the refined segments that we are discussing.

I hope you will continue to stay engaged in the project and continue to provide your thoughts and comments. For the latest updates on the project, I invite you to visit the project webpage at https://www.tep.com/santa-rita-connection/

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 2/2/2026

Comment Method: Online Comment Form

Topics: Visual, Existing Line, Route Location

Route(s) Preferred: 3/3A

Route(s) Opposed:

Comment

I live in Sahuarita Highlands and would greatly appreciate a route option that minimizes the need for additional construction and view obstructions. It seems that upgrading the existing infrastructure along S Country Club road would be the best option.

Response

Thank you for sharing your comments and concerns. We have noted these for consideration in future analysis as part of the next phases of our planning and siting process. In addition, we will include these in our project record that will be submitted to the Arizona Corporation Commission.

Thank you for your suggestion. Indeed, upgrading the existing transmission line along Country Club to a double circuit line is an option being contemplated. I want to clarify that TEP has not identified a preferred route yet for this project. We are still working through our analyses to determine a set of alternatives. This outreach and the information presented in the short video is meant to inform you of our most recent updates to the project. I would also like to invite you to give me a call directly at 520-633-8693 to discuss the project further.

I hope you will continue to stay engaged in the project and continue to provide your thoughts and comments. For the latest updates on the project, I invite you to visit the project webpage at https://www.tep.com/santa-rita-connection/

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 2/2/2026

Comment Method: Online Comment Form

Topics: Safety, Route Location, Residential

Route(s) Preferred:

Route(s) Opposed: 3/3A

Comment

Your preferred site goes directly in front of my 1 1/2 acre which I have lived since 1986. And through the middle of my sisters property along S. County Club Rd! Which has been owned by the [redacted] family since 1972! We already have electric lines directly behind my property. We are raising kids and my grandchildren here. I am very very concerned with health issues as well as poles going thru the middle of [redacted] property. These homes and families have been here for years and years. We are all concerned about the invasion of the Electric lines interrupting our property our health and the health of our growing children! The generations that have cherished what our father, grandfather and great grandfather have passed down to us. I would like all information pertaining to this as well as list of all families that will be disrupted living off SCountry club rd!

Response

Thank you for sharing your comments and concerns. We have noted these for consideration in future analysis as part of the next phases of our planning and siting process. In addition, we will include these in our project record that will be submitted to the Arizona Corporation Commission.

I understand your concern regarding this project. I want to clarify that TEP has not identified a preferred route yet for this project. We are still working through our analyses to determine a set of alternatives. This outreach and the information presented in the short video is meant to inform you of our most recent updates to the project. I would like to invite you to give me a call directly at 520-633-8693 to discuss further as I am not sure where exactly you live in relation to the refined segments that we are discussing. I also want to confirm that you are on our email list for future correspondences.

I hope you will continue to stay engaged in the project and continue to provide your thoughts and comments. For the latest updates on the project, I invite you to visit the project webpage at https://www.tep.com/santa-rita-connection/

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 2/2/2026

Comment Method: Email

Topics:

Route(s) Preferred:

Route(s) Opposed:

Comment

New Email address:

Response

Thank you for letting us know. Your new email address has been updated in our system. Please let me know if you have any questions regarding the project.

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 2/2/2026

Comment Method: Email

Topics: Route Location, Residential

Route(s) Preferred:

Route(s) Opposed: 3/3A

Comment

I will definitely give you a call. What time is meeting on March 4 th at desert diamond casino? My family is located at [redacted] as well as [redacted]. The map shows with purple line going directly thru the middle of [redacted]. Which we have owned since 1972.

Response

I look forward to speaking with you! I am available to talk 8am-5pm Monday through Friday. To clarify the purple line that you are talking about is the Study Area Boundary. We are studying and analyzing options within the bounds of the purple lines. We are not analyzing any possible routes over your home, or even on Country Club Road.

The meeting on March 4th will be from 6-8pm at the Desert Diamond Casino – Sahuarita.

Again, I look forward to hearing from you!

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 2/13/2026

Comment Method: Online Comment Form

Topics: Route Location, Residential

Route(s) Preferred:

Route(s) Opposed: 2, 3/3A

Comment

My address is [redacted] what would be close to our home? We already have huge TEP poles that were just installed right behind our home .

Response

Thank you for sharing your comments and concerns. We have noted these for consideration in future analysis as part of the next phases of our planning and siting process. In addition, we will include these in our project record that will be submitted to the Arizona Corporation Commission.

We will be presenting the 3 Route Alternatives to the public at an upcoming Open House meeting on March 4 at the Desert Diamond Casino – Sahuarita. There are two alternatives that would add a circuit (3 wires) to the existing line that was installed last summer near your home. Neither alternative would add more poles as part of this project.

If you are interested in speaking with me to understand what we are proposing, please do not hesitate to call me. You can contact me directly at 520-633-8693 with any questions.

I hope you will continue to stay engaged in the project and continue to provide your thoughts and comments. For the latest updates on the project, I invite you to visit the project webpage at https://www.tep.com/santa-rita-connection/

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 2/16/2026

Comment Method: Online Comment Form

Topics: Visual

Route(s) Preferred:

Route(s) Opposed:

Comment

We don't like the idea of the new proposal for the transmission lines for a main reason--we do not want to see it! They would take away from the beautiful views that we currently have. And I am sure that is a reason why everyone else has turned it away.

Response

Thank you for sharing your comments and concerns. We have noted these for consideration in future analysis as part of the next phases of our planning and siting process. In addition, we will include these in our project record that will be submitted to the Arizona Corporation Commission.

I'd like to invite you to attend an upcoming Public Open House on Wednesday March 4th at the Desert Diamond Casino - Sahuarita, to learn more about the project, our process, and the alternatives we are going to present. Your feedback will help us identify a preferred route. If you have any questions in the meantime, please do not hesitate to reach out, via email or by phone, you can contact me directly at 520-633-8693.

I hope you will continue to stay engaged in the project and continue to provide your thoughts and comments. For the latest updates on the project, I invite you to visit the project webpage at https://www.tep.com/santa-rita-connection/

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 2/16/2026

Comment Method: Online Comment Form

Topics: Route Location, Residential, Substation

Route(s) Preferred:

Route(s) Opposed:

Comment

Dear Sirs;
I understand the need for additional power/transmission in this area. However, being a resident of Quail Creek I request that you strive to place the new transmission line and substation as far to the north as possible away from the Quail Creek community. There are very few or no residents in the area closer to Sahaurita Road. Thank you for your consideration in this matter.

Response

Thank you for sharing your comments and concerns. We have noted these for consideration in future analysis as part of the next phases of our planning and siting process. In addition, we will include these in our project record that will be submitted to the Arizona Corporation Commission.

I invite you to take a look at our interactive map on our project webpage. Here you will see the Alternative Routes we are proposing and will be discussing at our upcoming public open house on March 4th. The Santa Rita substation, which is the terminus of the transmission line is approximately 1 mile north of the northern most homes in the Quail Creek area.

I hope you will continue to stay engaged in the project and continue to provide your thoughts and comments. For the latest updates on the project, I invite you to visit the project webpage at https://www.tep.com/santa-rita-connection/

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 2/17/2026

Comment Method: Voicemail

Topics:

Route(s) Preferred:

Route(s) Opposed:

Comment

I have questions about the name on the addressee here my name is [redacted] but there are some other additions to the address I need to know thank you I prefer a phone call thank you

Response

The address label has [redacted] name, and then initials are unknown to her. [redacted] – maybe something to do with how the deed is recorded? I explained how we got [redacted] address from the Assessor, and that's just how they have recorded it.

After [redacted] question about the address, [redacted] asked about the project, I explained that there are 3 route alternatives that we will be presenting at an open house in March. The closest one to [redacted] home is Route 3 along Country Club. [redacted] was not too concerned about it but thanked me for keeping [redacted] in the loop. I urged [redacted] to come on March 4 and [redacted] said [redacted] might.

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 2/18/2026

Comment Method: Voicemail

Topics: Route Location, Residential

Route(s) Preferred:

Route(s) Opposed:

Comment

Hello My name is . I'm calling on the Santa Rita Connection project. I'd like somebody to give me a call back. I'd like to see where the project is going. Is it going next to my house or not. So again, my name is . My number here at work is . I am here at work from 7 to 11. Thank you. Bye.

Response

I spoke with and apologized for the delay in returning phone call. let me know where lives and I was able to tell which alternative route would be closest to home. I reminded that there would be an upcoming open house on March 4th where could learn more about the project. said that was planning on attending as had received a postcard and had seen the notification signs in neighborhood.

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 2/18/2026

Comment Method: Online Comment Form

Topics:

Route(s) Preferred: 3/3A

Route(s) Opposed:

Comment

I vote for route 3 and 3a

Response

Thank you for sharing your comments. We have noted these for consideration in future analysis as part of the next phases of our planning and siting process. In addition, we will include these in our project record that will be submitted to the Arizona Corporation Commission.

I hope to see you at our next public open house on March 4th and have an opportunity to discuss the project and your preferences for Route 3 and 3A.

I hope you will continue to stay engaged in the project and continue to provide your thoughts and comments. For the latest updates on the project, I invite you to visit the project webpage at https://www.tep.com/santa-rita-connection/

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 2/24/2026

Comment Method: Email

Topics: Property Value, Safety, Route Location, Residential, Environment

Route(s) Preferred: 2, 3/3A

Route(s) Opposed: 1

Comment

I am writing as the property owner of [redacted] to formally submit my concerns regarding the proposed Santa Rita Connection transmission line. Specifically, I am writing to express my strong opposition to Route 1, which is currently slated to bisect my property.

While I understand the need for grid reliability, Route 1 represents the most disruptive option of the three proposed paths for the following reasons:

1. Disproportionate Impact on Homeowners. Unlike the other two proposed routes, Route 1 impacts the highest number of individual residents and family homesteads. Placing high-voltage infrastructure in such close proximity to homes creates significant social disruption and places a heavy burden on private citizens compared to routes that utilize uninhabited land. Route 2 and 3 utilize more uninhabited corridors.

2. Permanent Economic Encumbrance and Marketability. The proposed route imposes a significant permanent encumbrance on my property title, creating what is known as an "easement cloud." This legal burden does not simply affect the land beneath the wires; it creates a "stigma effect" that diminishes the marketability of the entire parcel. By bisecting the property, the easement effectively "sterilizes" a substantial portion of my acreage, legally prohibiting the construction of future structures—such as home additions, barns, or secondary dwellings—thereby stripping the land of its highest and best use. Prospective buyers are often unwilling or unable to secure financing for properties with such invasive high-voltage encumbrances, leading to a profound diminution of value and a loss of equity that far outweighs any proposed one-time compensation. I request that a formal impact study on residential resale values specifically for properties encumbered by this route be required.

3. Irreparable Loss of Natural Infrastructure and Privacy: The proposed route appears to require the clear-cutting of significant old-growth mesquite trees on my property. These trees are not merely aesthetic; they function as essential natural infrastructure. Their removal will result in:

•Loss of Visual and Acoustic Buffering: The existing trees provide a critical sound and sight barrier between my home and the road. Removing this "living screen" to replace it with industrial steel towers will fundamentally alter the character of the property and its surrounding environment.

•Degradation of Drainage and Soil Stability: The mature root systems currently on-site are vital for managing stormwater runoff and preventing soil erosion. Clearing this vegetation creates a high risk of localized flooding and siltation, which may negatively impact both my property and the surrounding watershed.

•Permanent Ecological Scarring: Unlike smaller vegetation, the removal of mature, decades-old trees is an irreparable impact. Even with "re-greening" efforts, the loss of the specific ecosystem and the privacy it affords cannot be mitigated or replaced within a human lifetime.

4. Safety Concerns. The proposed placement of the line directly over my property introduces several critical safety hazards.

•Interference with Technology: as a property that relies on satellite internet, I am concerned about electromagnetic interference. High-voltage lines can cause signal degradation. This represents not just a nuisance, but a direct threat to the operational accuracy and safety of modern equipment.

•Proximity to Existing Structures: the route is dangerously close to my home. This proximity increases the risk of "nuisance shocks." Furthermore, it places my family and property in the direct "fall zone" in the event of extreme weather or equipment failure, which is an unacceptable safety risk for a residential setting.

The selection of a transmission route should prioritize the protection of private property rights and residential stability. Route 1 fails this standard by targeting the greatest number of homeowners. I ask that you select one of the alternative routes to utilize more favorable terrain with significantly less impact on private citizens and residential communities.

Public Comments - Redacted

Choosing a route that prioritizes protecting private homesteads is the more equitable and sustainable solution.

Response

Thank you for sharing your comments and concerns. We have noted these for consideration in future analysis as part of the next phases of our planning and siting process. In addition, we will include these in our project record that will be submitted to the Arizona Corporation Commission.

I would like to take this opportunity to let you know that Alternative 1 along Wilmot Rd and your property, represents a Double Circuit option. This means, the 138-kV transmission line that exists there today, will have a new circuit hung on it. Instead of 3 wires that you can see today, you would see 6 wires in the future if this route were selected.

I do hope to see you at our upcoming Public Open House on Wednesday March 4th from 6-8PM at the Desert Diamond Casino in Sahuarita. I am also happy to speak with you sooner over the phone if you would like. My direct work number is 520-633-8693.

I hope you will continue to stay engaged in the project and continue to provide your thoughts and comments. For the latest updates on the project, I invite you to visit the project webpage at https://www.tep.com/santa-rita-connection/

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 2/26/2026

Comment Method: Voicemail

Topics:

Route(s) Preferred:

Route(s) Opposed:

Comment

we got this post card in the mail saying to call this number, I called it for what?

Response

I called the back and left a voicemail letting know we received message. If would like to call me back, can reach me directly at my work cell number, and I would be happy to answer any questions may have about the Santa Rita Connection Project.

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 2/26/2026

Comment Method: Voicemail

Topics:

Route(s) Preferred:

Route(s) Opposed:

Comment

Hello, is this for the proposed mine they're gonna build over there to Santa Rita mountains?

Response

The first question the [redacted] asked was if this was for the CopperWorld Mine. I explained that it was not for the mine. [redacted] then went on to ask if it's not for the mine, it sure looks like it's the same line, how is it different? I explained that Route Alternative 1 would be a double circuit option that would take advantage of the planned CopperWorld 138kV line and share the structures as a double circuit all the way back to the substation. [redacted] proceeded to tell me that [redacted] appreciated the call back, but that in [redacted] things like this will happen no matter what the public wants and so why try. I let [redacted] know that I understood [redacted] sentiment, but that we really do try to incorporate public feedback to improve the project and that at this stage in the project, [redacted] input could have a direct impact on which route alternative TEP would choose as a preferred alternative. [redacted] again thanked me for the call back and said goodbye.

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 3/1/2026

Comment Method: Online Comment Form

Topics: Visual, Underground, Safety, Route Location, Residential, Environment

Route(s) Preferred:

Route(s) Opposed: 2, 3/3A

Comment

Im a resident on Singing Cactus Lane. TEP has already gone done the the back (north), of our properties with new poles. Im concerned about the health risks of these towers. It has been told to me that its not the lines that are hazardous, its process to transfer power back to TEP.
Also, the wildlife. We currently have badgers towards Granite, Redtail Hawks, Black Hawks, and several other raptors, bobcats, coyotes, foxes and many rabbits.
I use to be able to take pictures of the Monsoons, sunsets, Catalinas and Rincons without large ugly power poles in the way, not anymore. It's a shame that underground power is not an option.
Also, are these areas going to be maintained? We currently cant get the city or county representatives to clean up anything, the area down Old Nogales is dump site and it has spread up Swan (south). We also have zero response out here for PCSD, TPD. No patrolling. I hope the facility doesn't become more of an eye sore as well.
People have moved out here, to get away from the city, enjoy the desert and wildlife and its being destroyed. No place to ride horses or go for walks.
The people out here in Swan Ranches are living the simple life. They don't have a lot of money, so moving isn't an option. Most of these people have been out here for 20yrs happily.
Im very disappointed about this entire project and don't want it, as well as other neighbors. Enough is enough.

Response

Thank you for sharing your comments and concerns. We have noted these for consideration in future analysis as part of the next phases of our planning and siting process. In addition, we will include these in our project record that will be submitted to the Arizona Corporation Commission.

I would like to explain that the alternative routes being presented will not add additional power poles behind your home. The route alternatives 2, 3, and 3A will add a 2nd circuit to the existing power poles. If one of these routes were to be selected, the visual difference would be seeing 6 wires where there are only 3 today. No new poles are being proposed behind your home.

I am not sure I understand your concern about the hazards associated with the transfer of power back to TEP. I am available to talk more about this either on the phone or at our upcoming Open House on Wednesday. With respect to the wildlife, while temporary disturbances to wildlife may be noticeable during the construction of the line, its often only temporary and wildlife will return to areas they previously traversed when they realize there is no more construction happening. The facilities that were installed behind your home last summer are specifically designed to protect large raptor species following Avian Power Line Interaction Committee (APLIC) Guidelines.

The entrances to the TEP easement behind your home have been gated and locked at Swan Rd to prevent unwanted traffic in this area to prevent the wildcat dumping you describe.

I hope you will continue to stay engaged in the project and continue to provide your thoughts and comments. For the latest updates on the project, I invite you to visit the project webpage at https://www.tep.com/santa-rita-connection/

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 3/1/2026

Comment Method: Online Comment Form

Topics: Route Location, Residential

Route(s) Preferred: 2

Route(s) Opposed:

Comment

In my opinion, it is best to use the shortest route possible, Route 2, in order to impact the smallest area and the least amount of residents that will be closest to the transmission lines.

Response

Thank you for sharing your comments. We have noted these for consideration in future analysis as part of the next phases of our planning and siting process. In addition, we will include these in our project record that will be submitted to the Arizona Corporation Commission.

I hope you will continue to stay engaged in the project and continue to provide your thoughts and comments. For the latest updates on the project, I invite you to visit the project webpage at https://www.tep.com/santa-rita-connection/

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 3/1/2026

Comment Method: Online Comment Form

Topics: Safety, Route Location, Residential

Route(s) Preferred:

Route(s) Opposed: 1

Comment

Would the added transmission lines be harmful to humans? This would add more EMFs to the existing lines that are common to the lines on Wilmot Rd. if this route is chosen that run so close to residence in that area. Also the risk of the power poles falling in those areas.

Response

Thank you for sharing your comments and concerns. We have noted these for consideration in future analysis as part of the next phases of our planning and siting process. In addition, we will include these in our project record that will be submitted to the Arizona Corporation Commission.

While Electric and Magnetic Fields (EMFs) are a common concern in the placement of new transmission facilities, according to a large body of research, there are no confirmed health risks caused by exposure to low-level EMFs. I invite you to do your own research on this matter. This webpage https://www.tep.com/electric-and-magnetic-fields/ contains helpful information and at the bottom of the page, several links to independent and reputable resources to further your understanding.

With respect to the risk of falling power poles near homes along Wilmot Rd., that would be an exceptionally low probability risk. Transmission line poles are made from weathering steel and are engineered specifically to withstand the weight of the lines against significant storms and vehicle collisions. These poles are different from wood poles that will deteriorate and rot over time making them susceptible to falling. The typical life span of a steel monopole transmission structure is up to 80 years and are visually inspected annually.

I hope you will continue to stay engaged in the project and continue to provide your thoughts and comments. For the latest updates on the project, I invite you to visit the project webpage at https://www.tep.com/santa-rita-connection/

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 3/4/2026

Comment Method: Online Comment Form

Topics:

Route(s) Preferred: 3/3A

Route(s) Opposed:

Comment

I vote for route 3 or 3A. It's too bad we have to have our land ripped up for more electricity and data centers which means more housing and more of everything. If it must be, then my vote is for Route 3 or 3A.

Response

Thank you for sharing your comments and concerns. We have noted these for consideration in future analysis as part of the next phases of our planning and siting process. In addition, we will include these in our project record that will be submitted to the Arizona Corporation Commission.

I hope you will continue to stay engaged in the project and continue to provide your thoughts and comments. For the latest updates on the project, I invite you to visit the project webpage at https://www.tep.com/santa-rita-connection/

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 3/4/2026

Comment Method: Paper Comment Form

Topics: Visual, Existing Line, Route Location, Environment

Route(s) Preferred: 1

Route(s) Opposed:

Comment

We would like route #1 because we see more growth potential going east of wilmot. It also already has existing polls. Vegatation would be left alone and current views would remain the same.

Response

Provided at Open House

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 3/4/2026

Comment Method: Paper Comment Form

Topics: Substation

Route(s) Preferred:

Route(s) Opposed:

Comment

I'm very upset the Substation Location. There should have been a vote from residence!! Please Find Another location!
Search old Maps – Indian Burial Ground off/around Country Club.
Thank you For Listening.

Response

Provided at Open House

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 3/4/2026

Comment Method: Paper Comment Form

Topics: Cost, Existing Line, Route Location, Residential

Route(s) Preferred: 1

Route(s) Opposed: 2, 3/3A

Comment

Based on the information presented the green route is the best choice. The infrastructure is paid for almost to wilmont and the infrastructure exists on wilmont. This will reduce the cost to customers. Also, this appears to avoid disrupting private homes more than the other routes

Response

Provided at Open House

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 3/4/2026

Comment Method: Paper Comment Form

Topics: Visual, Property Value, Existing Line, Route Location

Route(s) Preferred: 1, 3/3A

Route(s) Opposed: 2

Comment

Representing Sahuarita Highlands HOA .
1)Prefer option 3/3A (purple) by far. Please clean up/use existing lines rather than adding more. This is least obtrusive to our mountain views & protects home values.
2)I understand there are lines running option 1 (green) up to the mine anyways, so this option is our second choice. My understanding is that the lines/poles would be bigger if this option is chosen, thus more obtrusive to mtn. views.
3)Please DO NOT use option 3 (blue). These lines would be visible from ALL homes in the neighborhood & would be intrusive of our mountain views, thus likely affecting property values.

Thank you for considering our opinions & thoughts.

Response

Provided at Open House

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 3/4/2026

Comment Method: Paper Comment Form

Topics: Cost

Route(s) Preferred: 1

Route(s) Opposed:

Comment

After reviewing your presentations, I would opt for the Wilmot Line. It just makes sense and controls the costs.

Response

Provided at Open House

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 3/4/2026

Comment Method: Paper Comment Form

Topics: Safety, Route Location, Environment

Route(s) Preferred:

Route(s) Opposed: 1

Comment

Our concern is regarding the strength of the transmission lines if the project is chosen to be on Wilmot. How will increased power affect our health since power lines are already in existence? Our concern is also for the wild and domestic animals. The current lines are in our yard!

Response

Provided at Open House

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 3/4/2026

Comment Method: Paper Comment Form

Topics:

Route(s) Preferred: 1

Route(s) Opposed:

Comment

My choice is Route #1

Response

Provided at Open House

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 3/4/2026

Comment Method: Paper Comment Form

Topics: Support Project

Route(s) Preferred:

Route(s) Opposed:

Comment

Much needed for this area!

Response

Provided at Open House

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 3/4/2026

Comment Method: Paper Comment Form

Topics: Visual, Existing Line, Route Location, Environment

Route(s) Preferred: 1

Route(s) Opposed:

Comment

I like route #1 Bcuz I see more growth potecial for Tucson, and it has existing Poles. Vegetation would be left alone, and Existing view will remain the same.

Response

Provided at Open House

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 3/4/2026

Comment Method: Paper Comment Form

Topics: Safety, Route Location, Residential

Route(s) Preferred:

Route(s) Opposed: 3/3A

Comment

Rte Opt 3 – if selected would require me to sell my home of more than 10 years due medical sensitivity to high power discharge from lines.

Response

Provided at Open House

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 3/4/2026

Comment Method: Paper Comment Form

Topics: Route Location, Residential

Route(s) Preferred: 1

Route(s) Opposed:

Comment

We see there are three choices. We have owned our house since 1986. There are many people that live in Sahuarita Heights. We vote to have the new power lines to go down Wilmot. We have enough power lines that exist in our neighborhood already. We see them moving and hear them buzzing. Hopefully it all isn't killing us.

Response

Provided at Open House

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 3/4/2026

Comment Method: Paper Comment Form

Topics: Existing Line

Route(s) Preferred: 1

Route(s) Opposed:

Comment

Green Route 1 existing is my choice.

Response

Provided at Open House

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 3/4/2026

Comment Method: Paper Comment Form

Topics:

Route(s) Preferred: 1

Route(s) Opposed:

Comment

My choice is Route #1

Response

Provided at Open House

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 3/4/2026

Comment Method: Paper Comment Form

Topics: Cost, Existing Line, Route Location

Route(s) Preferred: 1

Route(s) Opposed:

Comment

Based on the information presented part of the new Green Line (wilmot) is already paid for and the infrastructure exists for the line on Wilmot. My input is to use the existing infrastructure which should lower cost to Consumers

Response

Provided at Open House

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 3/4/2026

Comment Method: Paper Comment Form

Topics: Existing Line, Route Location, Substation

Route(s) Preferred: 3/3A

Route(s) Opposed:

Comment

As a resident of the Sahuarita Highlands neighborhood, I would prefer option #3 to avoid new tower installations a simply use the existing towers. I'm also curious how route #2 would play out alongside the I-19 to I-10 "Sonoran Corridor" bypass proposed route which has a similar path identified. I would also like to request that the substation minimize any lighting at night to retain the current dark sky conditions.

Response

Provided at Open House

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 3/4/2026

Comment Method: Paper Comment Form

Topics: Route Location, Residential

Route(s) Preferred: 1

Route(s) Opposed: 2, 3/3A

Comment

My preference for the power line is route #1 following Wilmot Rd. I live in Sahuarita Highlands and back up to Santa Rita Rd. It would be the least obtrusive to where I live

Response

Provided at Open House

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 3/4/2026

Comment Method: Paper Comment Form

Topics: Existing Line, Safety, Route Location, Residential

Route(s) Preferred: 1

Route(s) Opposed: 3/3A

Comment

This meeting said there are 3 different choices. 1. Line down country club. 2. Line down Alvernon 3. Line down Wilmot. I grew up in the area since 1972 on Country Club Rd. When you look at how many Homes + Families down each road. There are a lot less Families living down Wilmot! There is already a existing line I was told down Wilmot so use that existing area down Wilmot.

Also my concern there is already lines down country club as well as more lines to the East of Country club only seperated by 5 acres or less. So I have lines in front of our properties as well as Directly behind my property. Properies Tara Green 16541 S. Country Club (My sister) I am right behind her in the back against State Land where I hear the Giant Electric Line humming. My Father Died of cancer as well as my brother. Living out in Sahuarita on Country Club since 1972

So our choice is Wilmot.

There are less homes Families. And I am worried about Cancer with being surrounded by these lines.

THIS IS THE First Thing I have Heard about this. Is this meeting!

Response

Provided at Open House

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 3/4/2026

Comment Method: Paper Comment Form

Topics: Support Project

Route(s) Preferred: 1

Route(s) Opposed:

Comment

My preference would be the Wilmot Route. I agree the electrical infrastructure needs to be improved, and I would prefer you choose Option 1, the Wilmot option.

Response

Provided at Open House

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 3/4/2026

Comment Method: Paper Comment Form

Topics: Existing Line, Route Location, Residential

Route(s) Preferred: 1

Route(s) Opposed: 3/3A

Comment

Prefer Rt. #1 for the construction of the line. Has existing line at this time. Rt. #3 + #4 are closer to homes.

Response

Provided at Open House

Santa Rita Connection Project

Generated: 3/28/2026

Public Comments - Redacted

Comment Date: 3/4/2026

Comment Method: Paper Comment Form

Topics: Route Location, Residential

Route(s) Preferred: 1

Route(s) Opposed:

Comment

Alot of people living Sahuarita Heights have been concerned about the expansion of the transmission system/lines. seems to me it would make the most sense to place the power lines down wilmot which is majority desert and public road. Away from majority of prexisting homes. The Wilmot option would be least likely to interupt/disrupt the daily lives of citizens outside their homes.

Response

Provided at Open House

This page intentionally left blank