

APPLICATION FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY

**Kino to DeMoss-Petrie
138 kilovolt Transmission Line Project**

Application & Exhibits A-I

Prepared for:
Arizona Power Plant and
Transmission Line Siting Committee

Submitted by:
Tucson Electric Power Company

August 10, 2021

Case No. 192



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BEFORE THE
ARIZONA POWER PLANT AND TRANSMISSION LINE SITING COMMITTEE

In the matter of the Application of Tucson Electric Power Company, in conformance with the requirements of A.R.S. § 40-360, *et seq.*, for a Certificate of Environmental Compatibility authorizing the Kino to DeMoss-Petrie 138 kilovolt (kV) Transmission Line Project, which includes the construction of a new 138 kV transmission line originating at the existing Kino Substation (Section 30, Township 14 South, Range 14 East), with an interconnection at the planned Vine Substation (Section 06, Township 14 South, Range 14 East), and terminating at the existing DeMoss-Petrie Substation (Section 35, Township 13 South, Range 13 East), each located within the City of Tucson, Pima County, Arizona.

Docket No. L-00000C-21- -00192

Case No. 192

APPLICATION FOR
CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY

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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
A. INTRODUCTION..... 1
 A.1 PROJECT OVERVIEW 1
 A.2 STUDY AREA DEVELOPMENT 1
 A.3 PROJECT NEED 1
 A.3.1 Aging Existing Electrical Infrastructure 2
 A.3.2 City of Tucson Growth and Development 5
 A.4 PROJECT PURPOSE AND BENEFITS..... 5
 A.5 ENVIRONMENTAL STUDIES AND ROUTE SELECTION PROCESS OVERVIEW 7
 A.6 PUBLIC INVOLVEMENT OVERVIEW 8
 A.6.1 Additional Routing Considerations 8
 A.6.2 Gateway Corridor Overlay Zone 9
 A.6.3 Additional Route for Consideration 9
 A.7 CONCLUSION 10
B. APPLICATION FOR CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY 13
 B.1 Project Information..... 13
EXHIBIT A: LOCATION AND LAND USE MAPS..... A-1
EXHIBIT B: ENVIRONMENTAL REPORT B-1
 B.1 Introduction B-1
 B.2 Environmental Planning Process..... B-2
 B.2.1 Overview B-2
 B.2.2 Alternative Route Identification B-2
 B.3 Environmental Statements B-6
 B.4 References B-7
EXHIBIT C: AREAS OF BIOLOGICAL WEALTH C-1
 C.1 Introduction C-1
 C.2 Biological Wealth C-2
 C.2.1 Special Status Species C-2
 C.2.2 Important Riparian Areas..... C-3
 C.3 Summary Of Potential Effects C-3

C.3.1 Construction.....	C-4
C.3.2 Operation and Maintenance.....	C-4
C.4 Conclusion.....	C-4
C.5 References	C-4
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-3
D.4 Conclusion	D-3
D.5 References	D-4
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-2
E.2.1 Overview	E-2
E.2.2 Visual Impact Assessment.....	E-2
E.2.3 Landscape Setting	E-2
E.2.4 Visual Impact Assessment Results	E-3
E.3 Historic Sites and Structures, and Archaeological Sites.....	E-7
E.3.1 Overview	E-7
E.3.2 Inventory Methods and Results	E-7
E.3.3 Recommendations	E-8
E.4 Historic District Analysis.....	E-8
E.4.1 Overview	E-8
E.4.2 Inventory Methods	E-8
E.5 Conclusion	E-9
E.6 References.....	E-10
EXHIBIT F: RECREATIONAL PURPOSES AND ASPECTS.....	F-1
F.1 Introduction	F-1
F.2 Affected Environment	F-1
F.3 Potential Effects	F-4
F.4 Conclusion	F-5
EXHIBIT G: CONCEPTS OF PROPOSED FACILITIES.....	G-1
EXHIBIT H: EXISTING PLANS	H-1

H.1 Introduction	H-2
H.2 Existing Plan Review	H-2
H.2.1 Land Ownership and Jurisdiction	H-2
H.2.2 Land Use Plans and Development Plans.....	H-3
H.3 Local Government Plans	H-3
H.3.1 Pima County Comprehensive Plan	H-3
H.3.2 Pima County Sonoran Desert Conservation Plan	H-3
H.3.3 Pima County Regional Flood Control District	H-4
H.3.4 Other Pima County Plans in Project Study Area.....	H-4
H.3.5 City of Tucson Plans and Unified Development Code	H-4
H.4 State (including Agencies) Government Plans.....	H-16
H.4.1 Arizona Board of Regents	H-16
H.4.2 Arizona Department of Transportation (ADOT)	H-16
H.4.3 Arizona State Land Department	H-16
H.5 Federal	H-17
H.5.1 Military	H-17
H.5.2 Federal Aviation Administration (FAA).....	H-17
H.5.3 US Army Corps of Engineers	H-17
H.5.4 Tribal	H-17
H.6 Private.....	H-18
H.7 Existing Land Use	H-18
H.8 Proposed Land Uses and Developments	H-20
H.9 Potential Effects.....	H-22
H.10 Conclusion	H-25
H.11 References	H-26
EXHIBIT I: ANTICIPATED NOISE AND INTERFERENCE WITH COMMUNICATION SIGNALS	I-1
I.1 Introduction	I-1
I.2 Audible Noise	I-2
I.3 Corona Noise.....	I-4
I.4 Radio Interference	I-6
I.5 Television Interference	I-6
I.6 Electric and Magnetic Field Effects	I-6

I.7 Conclusion	I-8
I.8 References	I-9
EXHIBIT J: SPECIAL FACTORS.....	J-1
J.1 Introduction	J-1
J.2 Public Involvement Program Summary	J-2
J.2.1 Jurisdictional and Other Stakeholder Briefings and Workshops	J-3
J.2.2 Jurisdictional and Other Stakeholder Summaries	J-11
J.2.3 Community Working Group.....	J-16
J.2.4 News Media	J-21
J.2.5 Newsletters/Postcards/Fact Sheets.....	J-22
J.2.6 Public Open House.....	J-23
J.2.7 Telephone Information Line	J-23
J.2.8 Internet Website.....	J-24
J.2.9 Comment Tracking Database.....	J-24
J.3 Comments Received	J-24
J.4 Social Media.....	J-26
J.5 Undergrounding Transmission Studies.....	J-26

LIST OF FIGURES

Figure 1. Existing Distribution and Transmission System	4
Figure 2. Historic Peak City Load*	5
Figure 3. Alternative Route 5A.....	11
Figure 4. Map of Project Routes	B-5
Figure 5. Key Observation Points for the Visual Simulation	E-6
Figure 6. COT Zoning by Alternative Route.....	H-7
Figure 7. Comment Methods	J-25
Figure 8. Public Comments and Concerns by Topic	J-25

LIST OF TABLES

Table 1. Ten Year Filings.....	13
Table 2. Alternative Route Distances.....	15
Table 3. Estimated Costs by Alternative Route.....	16
Table 4. Land Ownership Percentages*	20
Table 5. Criteria Survey and Public Comment Results	B-3
Table 6. Siting Report Summary Criteria Matrix*	B-6

Table 7. Listed Species and Their Potential for Occurrence in the Biological Study Area	C-2
Table 8. Native Plants Observed in the Study Area	D-2
Table 9. Invasive, Non-native Plant Species Observed in the Project Area	D-3
Table 10. Summary of Route Analysis from Class I Study	E-8
Table 11. Class I Study Combined Alternative Route Analysis Scores	E-8
Table 12. Historic District Analysis Alternative Route Ranking	E-9
Table 13. Historic District Analysis Combined Alternative Route Analysis Scores*	E-10
Table 14. Recreation Facilities Adjacent to Alternative Routes.....	F-2
Table 15. Pima County CIP Project Areas in Project Area	H-4
Table 16. COT Zoning for Alternate Routes (% of acres in the route)	H-6
Table 17. COT Overlay Districts and Planned Area Developments in Project Study Area	H-8
Table 18. Public Art Installations Adjacent to Alternative Routes	H-15
Table 19. Percentage of Residential Use Along Alternative Routes	H-19
Table 20. Proposed Land Uses and Developments in the Final Study Area.....	H-21
Table 21. Typical Noise Levels for Construction Equipment.....	I-2
Table 22. General Construction Noise Assessment Criteria Acceptable Limits	I-3
Table 23. Traffic on Roads in the Project Area.....	I-3
Table 24. Noise Generated by Traffic (dBA) at 50 feet	I-3
Table 25. Construction Noise Level Estimates*	I-4
Table 26. EMF Strength of Various Electrical Sources at Various Distances.....	I-7
Table 27. Stakeholder List and Participation Level	J-3
Table 28. Comments by Alternative Route*	J-26

LIST OF EXHIBITS

	Introduction
A	Location and Land Use Maps
A-3	138 kV Transmission Line – Location
A-4.1	138 kV Transmission Line – Land Use
A-4.2	138 kV Transmission Line – Land Use-COT Zoning
B	Environmental Report
B-1	Siting Study
B-2	Preferred Route Map
C	Areas of Biological Wealth
C-1	Biological Map
C-2	Biological Evaluation (Report)
D	Biological Resources
E	Scenic, Historic, Archaeological
E-1	Visual Impacts Assessment
E-2	Cultural Resources Inventory – Class I (Redacted)
E-3	Historic Preservation Zones Map
E-4	Historic District Analysis
F	Recreation
F-1	Recreation Map
G	Concepts of Proposed Facilities
G-1	Single Circuit 138 kV Tangent Typical Configuration
G-2	Single Circuit 138 kV Deadend Typical Configuration
G-3	UA North Substation Plan View
G-4	UA North Substation Elevation
G-5	Visual Simulations
H	Existing Plans
H-1	Future Land Use Development
H-2	Residential Use Map
H-3	Residential Overlap Map
I	Noise and Interference with Communication
I-1	Federal Communication Commission Towers
I-2	Letters sent to FCC Tower Holders
J	Special Factors
J-1	Master Stakeholder List
J-2	Stakeholder & CWG Meeting 1 Sign-in Sheet
J-3	Stakeholder & CWG Meeting Package
J-4	Stakeholder Meeting 2 Sign-in Sheet

J-5	Preliminary Alternative Links Map
J-6	Stakeholder Meeting 2 Presentation
J-7	Stakeholder Meeting 2 Notes
J-8	Grijalva Letter
J-9	Pima County Board of Supervisors Chair Sharon Bronson Letter
J-10	PCRFCFCD email correspondence
J-11	TDOT email correspondence
J-12	DMAFB email correspondence
J-13	UPRR email correspondence
J-14	University of Arizona Letter
J-15	Southwest Gas email correspondence
J-16	Pima Community College email correspondence
J-17	Mayor and Council Memorandum 3-3-2020
J-18	Mayor and Council Memorandum 11-4-2020
J-19	Ward 3 email correspondence
J-20	CWG Handbook and hand-outs 11-22-2019
J-21	CWG Questions and Responses
J-22	CWG Meeting 2 Sign-in Sheet 12-19-2019
J-23	CWG Meeting 2 Presentation 12-19-2019
J-24	CWG Preliminary Links Comments 1-10-2020
J-25	CWG Meeting 3b Sign-in Sheet 3-11-2020
J-26	CWG Meeting 3 Presentation 3-11-2020
J-27	CWG Meeting 3b Notes 3-11-2020
J-28	CWG Handout 3 Package 3-11-2020
J-29	CWG Meeting 4a Presentation 8-6-2020
J-30	CWG Meeting 4b Presentation 8-20-2020
J-31	CWG Meeting 5 9-30-2020
J-32	CWG Meeting 6 and Open House Meeting 4 Presentation 6-23/24-2020
J-33	CWG Criteria Survey
J-34	Feldman's NA Letter
J-35	TEP response to Grant Road Coalition Central Segments Questions
J-36	Fact Sheets provided to Grant Road Coalition Central Segments
J-37	Iron Horse NA Letter
J-38	JPNA Presentation 2-26-2020
J-39	JPNA Letters
J-40	Pueblo Gardens NA email correspondence
J-41	Rincon Heights NA Letter
J-42	Sam Hughes NA Questions 9-19-2020

J-43	Tucson Historic Preservation Foundation Letter and TEP response
J-44	West University-Feldman's-Pie Allen-Iron Horse Letter to Mayor and Council
J-45	Underground Coalition Letter September 2020
J-46	Underground Coalition Letter October 2020
J-47	Project Newsletter, postcards, and mailers
J-48	Open House Meeting 1 sign-in sheets
J-49	Open House Meeting Posters
J-50	CWG Project Comments
J-51	Public Comments
J-52	Map of Public Comments
J-53	Final Underground Cost Analysis
J-54	Richland Heights NA Letter
J-55	Banner-University Medical Center email correspondence

LIST OF ACRONYMS AND ABBREVIATIONS

3D	3-dimensional
ACC	Arizona Corporation Commission
ADOT	Arizona Department of Transportation
ADWR	Arizona Department of Water Resources
AM	Amplitude modulation
AN	Audible noise
A.R.S.	Arizona Revised Statutes
ASLD	Arizona State Land Department
ASM	Arizona State Museum
AZGFD	Arizona Game and Fish Department
BE	Biological Evaluation
CBD	Central Business District
CEC	Certificate of Environmental Compatibility
CIP	Capital Improvement Project
CLS	Conservation Lands System
COMMITTEE	Arizona Corporation Commission Power Plant and Line Siting Committee
COT	City of Tucson
COT Franchise Agreement	Electric Distribution and Transmission Franchise (July 10, 2008)
CWA	Clean Water Act
CWG	Community Working Group
dBA	A-weighted decibels
DMAFB	Davis-Monthan Air Force Base
DMP	DeMoss-Petrie Substation
DOD	Department of Defense
EMF	Electric and Magnetic Fields
ESA	Endangered Species Act
FAA	Federal Aviation Administration

FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Maps
FM	Frequency Modulation
GCZ	Gateway Corridor Zone
GIS	Geographic Information System
GPLET	Government Property Lease Excise Tax
HCP	Habitat Conservation Plan
HDMS	Heritage Data Management System
HPO	Historic Preservation Officer
I-10	Interstate 10
IPaC	Information for Planning and Consultation
KOP	Key Observation Point
kV	Kilovolt
MBTA	Migratory Bird Treaty Act
mG	Milligauss
MOA	Military Operations Area
MSCP	Multi-Species Conservation Plan
MSRP	Major Streets and Routes Plan
MTR	Military Training Route
MVA	Megavolt Ampere
MW	Megawatts
NA	Neighborhood Association
NEPA	National Environmental Policy Act
NESC	National Electrical Safety Code
NIEHS	National Institute of Environmental Health Sciences
NHPA	National Historic Preservation Act
NPZ	Neighborhood Preservation Zone
NRHP	National Register of Historic Places
OARP	Oracle Area Revitalization Project
OH	Overhead

PAD	Planned Area Development
PDSD	Planning and Development Services
Project	Kino to DeMoss-Petrie 138 kV Transmission Line Project
PCRFC	Pima County Regional Flood Control District
Q&A	Question and answer
ROW	Right-of-way
SDCP	Sonoran Desert Conservation Plan
SWGAS	Southwest Gas
TDAP	Tucson Drainage Area Project
TDOT	Tucson Department of Transportation
TEP	Tucson Electric Power Company
TRSQ	Township Range Section Quarter
TUSD	Tucson Unified School District
UArizona	University of Arizona
UMC	University Medical Center
USDOT	U.S. Department of Transportation
UPRR	Union Pacific Railroad
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
VP	Vice President
WHO	World Health Organization

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A. INTRODUCTION

Pursuant to Arizona Revised Statutes (A.R.S.) Section 40-360 *et seq.*, Tucson Electric Power Company (TEP) submits this application for a Certificate of Environmental Compatibility (CEC) granting authority to construct the Kino to DeMoss-Petrie 138 kilovolt (kV) Transmission Line Project (Project).

A.1 PROJECT OVERVIEW

The Project will consist of building a new, single circuit, 138 kV transmission line totaling 7.2 to 8.1 miles in length, depending on the alternative approved, to connect the existing Kino Substation to the existing DeMoss-Petrie Substation (DMP). The Project will also interconnect to the planned Vine 138 kV Substation. The Project will cross private, City of Tucson (COT), Pima County (Alternative Route 5A only), U.S. Postal Service (USPS), and Arizona Board of Regents owned land, as well as COT road right-of-way (ROW). TEP plans to utilize road ROW where feasible under TEP's Electric Distribution and Transmission Franchise (July 10, 2008) (COT Franchise Agreement) and obtain up to 100-foot ROW where franchise rights are not usable.

This Project is a continuation of TEP's previous project, the Irvington to Kino 138 kV Transmission Line Project (Irvington to Kino) (ACC Decision No. 76843, Case No. 178), and will improve system reliability by providing power to the Kino Substation from more than one direction (i.e., looping). This Project will achieve this for both the existing Kino and planned Vine Substations.

A.2 STUDY AREA DEVELOPMENT

TEP identified a study area for analysis as the Project was being planned. The Project study area defines the area of notification and the area in which environmental and biological studies were conducted for the Project. The Project study area boundaries were determined by identifying the beginning, middle, and end points of the Project. The boundaries for the study area are defined as follows:

- The north boundary is approximately one mile north of the Project end point (DMP Substation).
- The east boundary is approximately one mile east of the middle point (Vine Substation).
- The west boundary is bound by Interstate 10 (I-10) and approximately one mile west of the beginning point of the Project (Kino Substation).
- The southern boundary is bound by I-10, approximately one mile south of the beginning point of the Project (Kino Substation).

See Exhibit A-3 for the Project location and Project study area.

A.3 PROJECT NEED

This Project was identified by assessing the existing and future needs of TEP's system, and offsetting the need to replace existing aging electrical infrastructure in order to help improve reliability and to satisfy the growing energy needs of customers. This Project was identified as a continuation of TEP's previous Irvington to Kino project, which was the beginning of several system improvements designed to provide additional transmission capacity, as well as to provide a 138 kV transmission path through central Tucson and to transmit generation into the central portion of the Tucson metro area. The purpose for connecting the Kino Substation (located on the southeast corner of South Kino Parkway and East 36th Street) to the

Vine and DMP Substations is to connect these two substations to the existing 138 kV transmission system. The effect being that it will loop both the planned Vine and existing Kino Substations into the 138 kV transmission system. The Project will improve reliability and provide a 138 kV transmission path into and through central Tucson. To the extent possible, TEP tries to loop all its 138 kV substations for reliability reasons.

In 2016, an area study was conducted to determine the load center for the forecasted energy demand within and around the University of Arizona (UArizona) campus by analyzing existing infrastructure, and forecast load growth. The area study identified the load center to be within the existing UArizona Campus near 7th Street and Cherry. In order to meet the future load requirements identified by the study, TEP would need to construct a new 138 kV substation and transmission line as close to the load center as possible. After review of potential locations (an iterative parcel search process) that could accommodate a new substation, TEP determined that a site near the existing TEP-owned UA Med 46 kV Substation (located near the intersection of North Vine Avenue and East Lee Street) was sufficiently close to the load center identified in the area study.

TEP's Asset Management Department also identified the need to replace several pieces of equipment within the UA Med Substation. Numerous distribution poles within the Project study area have reached a critical age and may require replacement.

TEP's Transmission Planning department identified the need to connect the Project to the existing DMP Substation as the addition of a planned 230 kV transmission line provides a robust import point for energy delivery to the 138 kV transmission system (see Vail to Tortolita 230 kV Transmission Line Project, ACC Decision No. 75978, amendment to Case No. 173). In previous planning studies, the termination point for this Project was identified as the Tucson 138 kV Substation. With the addition of the 230 kV project, studies showed that moving the connection point of the Project from Tucson Substation to DMP Substation would eliminate an overload on the 138 kV transmission system. Connecting the Project into the DMP Substation would alleviate the overload.

This Project will allow for the continuation of the Irvington to Kino transmission line, creating a 138 kV transmission path through central Tucson and reliably serving the needs identified in the 2016 area study. The Project will also eliminate the need for the replacement of the equipment identified by TEP's Asset Management Department and eliminate overloads seen on the 138 kV transmission system in the planning horizon. The needs identified for the Project are discussed in further detail below.

A.3.1 Aging Existing Electrical Infrastructure

The Project study area is currently served by a 4 kV distribution and 46 kV sub-transmission systems. These older systems were originally designed to serve a less dense community and lower energy demand, with homes and businesses that relied on evaporative coolers, and subdivisions located just 1 to 2 miles away from the nearest substation. As more homes and businesses switched to air conditioning and added multiple appliances, energy demand within the Project study area increased considerably. The majority of TEP's 46/4.16 kV and 46/13.8 kV substations are located within central COT.

At times of peak energy demand, the existing electrical infrastructure within the Project study area can neither continue to serve existing, nor accommodate projected increases in energy demand and still

provide reliable service. The increase in energy demand has resulted in a decrease in available capacity during contingency events on the 46 kV system. The 46 kV transformers at TEP's DeMoss Petrie, Northeast, Tucson, and Irvington Substations have little to no contingency reserves. To reduce loading on the 46 kV system and provide reliable service to customers; shifting load onto 138 kV sourced substations is necessary (Figure 1).

The existing 46 kV system has little to no contingency reserve, potentially causing overload conditions on the 46 kV system that could damage equipment, and cause outages or low voltage for residential and other customers. With the addition of the Project, approximately 60 megavolt amperes (MVA) of energy demand would be removed from the existing 46 kV system and transferred to the 138 kV system.

As energy demand increases, the existing 46 kV system cannot support the growing energy demand, creating inadequate voltage on the system, which may negatively impact residential and commercial electrical equipment (i.e., by causing flickering lights, stalling air conditioners, appliance surges, etc.). The lack of electrical capacity does not provide contingency support, and also makes it difficult to accommodate new business and residential connection requests within the Project study area.

Another reliability factor is that the 46 kV system is operated as a radial system, which provides energy from just one direction, making it more vulnerable to longer outages if one of these "radial" lines is damaged. In contrast, TEP's 138 kV system is designed as a "looped" system, which strengthens reliability for homes and businesses by adding redundancy, allowing TEP to deliver energy from more than one direction.

Additionally, the existing 46 kV system is nearing the end of its useful life, and needs replacement. Some of the distribution system and substation equipment within the Project study area have been in service for up to 71 years and will need to be replaced to continue to provide safe, reliable power. The following equipment within the Project study area has been identified by TEP's Asset Management group as needing replacement within the next 1 to 5 years:

- Distribution poles (age varies from 66 to 71 years old, critical age reached, inspection needed to determine replacement)
- Transformer (UA MED Substation, 51 years old, replacement recommended in 2024)
- Switchgear (UA MED Substation, 44 years old, replacement recommended in 2024)
- 3 - Breakers (UA MED Substation, 43 years old, replacement recommended in 2022)

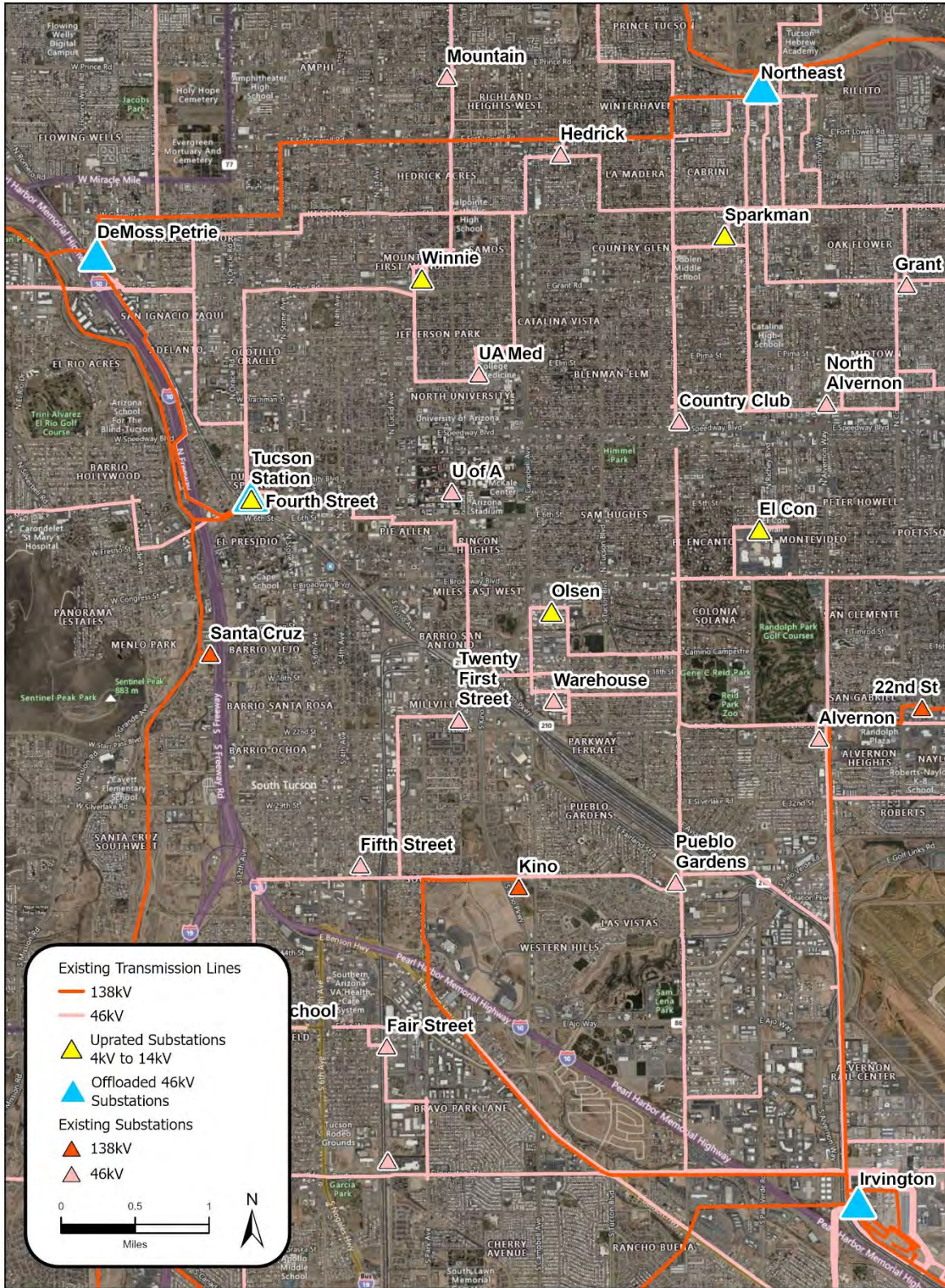


Figure 1. Existing Distribution and Transmission System

A.3.1.1 Increasing Energy Demand Across TEP’s Service Territory

Peak energy demand throughout TEP’s service territory has increased by approximately 9 percent since 2015, as illustrated in Figure 2. The 2,459-megawatt (MW) load served on June 16, 2021, represented an all-time energy demand within the COT for TEP.

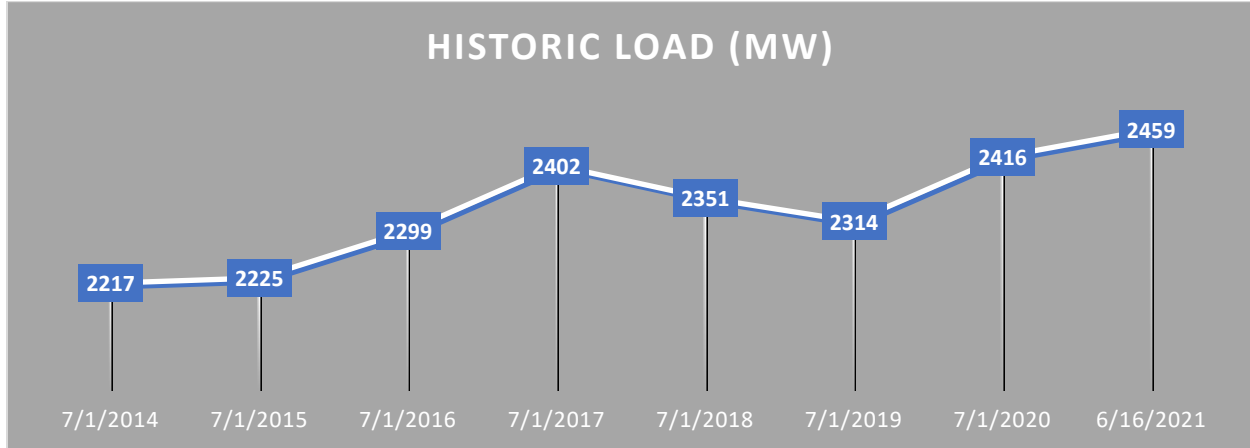


Figure 2. Historic Peak City Load*

**Data through June 2021*

A.3.2 City of Tucson Growth and Development

Like many growing communities, the COT has significant infrastructure and service needs due to the increasing population and urban density within the Project study area. In 2013, the COT developed and adopted “Plan Tucson,” its plan for general growth and sustainability. The cornerstone of the Plan is presented in Chapter 3, which presents goals and policies for COT’s future growth (see Exhibit H for additional information).

The COT encourages infill rather than edge development, thereby reducing the cost of new development, and allowing the additional revenue from new development to be directed into investment in existing infrastructure and services. To plan for future growth, areas that provide opportunities for enhanced development over the next several decades have been identified as building blocks of urban growth as a way to move to a more connected, integrated pattern of land use.

In addition to planning for future growth, COT is encouraging growth within the defined boundaries of the Central Business District (CBD) by offering business owners and developers incentives such as the Government Property Lease Excise Tax, which can provide significant tax abatement opportunities. The boundaries for the CBD are within the Project study area. This planned growth and increase in job and population density encouraged and directed by Plan Tucson will continue to increase the energy demand within the Project study area.

A.4 PROJECT PURPOSE AND BENEFITS

A continuation of the Irvington to Kino project, the Project will create a much needed 138 kV transmission path through the central portion of Tucson, connecting the existing Kino and planned Vine Substations into the existing transmission system. The Project will increase electric capacity, improve electric

reliability, and add needed electric redundancy by looping the Kino and planned Vine Substations into the 138 kV transmission system. The Project will allow for the retirement of portions of the 46 kV and uprate of the 4 kV systems within the Project study area, and help to avoid potential overload conditions on both the 46 kV and 138 kV systems. The Project will help meet customers' current and future energy needs, accommodate increased energy demands, and eliminate the need to replace outdated, aging infrastructure. In summary, the Project will:

- **Improve electric reliability.** New energy infrastructure will strengthen reliability for homes and businesses in the Project study area by replacing the sub-transmission system and upgrading the distribution system, add redundancy and providing bi-directional paths from TEP's 138 kV transmission system to both the Kino and Vine 138 kV Substations.
- **Minimize power outages and inadequate voltage.** With the addition of the Project, approximately 60 megavolt amperes (MVA) of energy demand will be removed from the existing 46 kV system and transferred to the 138 kV system. This will eliminate forecast overload conditions on the 46 kV system that can damage equipment, causing outages or low voltage for residential and other customers.
- **Provide service for growing energy needs.** The 138 kV transmission line and substation will provide increased electrical capacity which will allow TEP to better serve customers throughout the study area, especially during summer months when customers' need for power is highest. Peak energy demands throughout TEP's service territory have increased by about 9 percent since 2015. New infrastructure will help meet customers' current and future energy needs as well as provide the capacity that will allow TEP to support the City's plans of higher density mixed growth along the Campbell corridor as well as encouraging growth within the COT defined boundaries of the CBD. This Project will result in the ability to serve an increase in energy demand from Grant south to Aviation along Campbell, from Euclid east along Speedway to Tucson Blvd, and contingency support for growth in areas northeast of downtown.
- **Provide a 138 kV transmission pathway for delivery of renewable energy.** Improve TEP's ability to deliver renewable energy throughout its service territory. Renewable infrastructure occupies large areas and is often located hundreds of miles from the need. Higher voltage transmission facilities are needed to transfer these renewables throughout the system. Key transmission lines, such as this one, also support the reliable integration of intermittent renewable energy. Improving the connectivity of the transmission system reduces the voltage impacts caused by the sudden loss of renewable generation.
- **Allow for the retirement of portions of the existing, aging 46 kV system.** The Project study area is currently served by TEP's 46 kV system. This Project will allow for the retirement of portions of the 46 kV system serving the area. Up to eight 46 kV substations and associated electrical infrastructure (poles and wires) may be retired within ten years after completion of the Project.
- **Replace the existing, aging 4 kV distribution system serving the area.** Areas served by TEP's Winnie, El Con, Tucson Station, Sparkman, and Olsen Substations are currently served off of the dated 4 kV system (Figure 1). The Project will provide new 14 kV ties to these substations. Replacing the 4 kV system with a new 14 kV distribution system will also allow TEP to more

efficiently integrate the management and control of the distribution system in the area with recent Distribution Modernization efforts.

- **Provide support for the COT's largest employer, the UArizona and the Banner – University Medical Center Tucson campus and emergency room (Banner).** The new line will extend TEP's 138 kV transmission system within the Project study area and will accommodate increased energy demands expected by the UArizona and Banner. The Project will also support sustainability plans of the UArizona to eliminate 100% of its Scope II emissions (indirect emissions resulting from UA's purchase of electricity generated by resources that emit greenhouse gases).
- **Eliminate UA Med Substation.** Portions of the Project study area are currently served by the aging UA Med substation. The serving capability of this substation has reached its capacity and cannot accommodate additional growth in energy demand. Further, equipment within this substation needs replacement. This Project will result in the elimination of the UA Med substation.
- **Provide additional capacity for commercial and residential solar connections.** The current system serving the Project study area is reaching or has reached its capacity for solar connections, both residential and commercial. This Project will provide more transmission and distribution system capacity that will, in turn, allow for more residential and commercial customer-owned solar interconnections within the area.

A.5 ENVIRONMENTAL STUDIES AND ROUTE SELECTION PROCESS OVERVIEW

Utilizing input from stakeholders, a Community Working Group (CWG), and the general public, TEP performed a comprehensive evaluation process to identify potential routes for the Project and narrowed that selection to routes that were environmentally compatible and conformed to additional criteria found to be of importance to TEP and the public. As described in Exhibit B, TEP implemented the selection process in sequential steps. This evaluation process started with the determination of the preliminary study area and continued with an analysis of opportunities and constraints for the placement of the transmission line and related facilities. The intent of this analysis was the identification of opportunities for locating the line, such as paralleling or using existing electric corridors, other linear features such as road ROW, and the avoidance of sensitive areas where locating the Project could have especially high impacts on existing land use, and biological, cultural, and/or visual resources. Next, TEP identified preliminary segments or 'links' that could be combined to establish a route for the Project.

TEP examined in greater detail the overall impact these links would have on the above-mentioned resources. This research included field visits and review of relevant land use planning documents. The methodology used to determine possible route corridors to interconnect the three substations involved two major components: geospatial analysis¹ and a multi-objective decision model² that has been used

¹ Geospatial analysis is the gathering, display, and manipulation of imagery, GPS, satellite photography and historical data, described explicitly in terms of geographic coordinates as they are applied to geographic models.

² A multi-objective decision model is a valuable tool that can apply to many complex decisions. It is most applicable to solving problems that are characterized as a choice among alternatives. It has all the characteristics of a useful decision support tool: It helps us focus on what is important, is logical and consistent, and is easy to use. At its core it is useful for dividing the decision into smaller, more understandable parts; analyzing each part; and integrating the parts to produce a meaningful solution.

successfully on scoping studies conducted for the purpose of siting energy facilities. Both components included coordination with the public, stakeholders, and the CWG.

This approach enabled TEP to consider a broad range of alternative transmission line links at the beginning of the process. The Company's analysis focused on environmental and land use impacts, public and stakeholder comments, existing utility corridors, and construction feasibility as part of the process of identifying alternative transmission line routes. The result of this process was the identification of one preferred route and six alternative routes that meet the factors to be considered by the Arizona Power Plant and Transmission Line Siting Committee (Committee). All routes presented in the application meet the purpose and need of the Project.

A.6 PUBLIC INVOLVEMENT OVERVIEW

Public participation is a vital part of TEP's environmental planning process for siting of transmission lines, therefore comprehensive public involvement and communication activities were conducted as a part of the route selection process discussed above in Section A.5. These activities started in September 2019 with efforts to notify and inform the public, agencies, community leaders, and other affected stakeholders about the need and benefits of the Project. Public involvement activities continued through June 2021, and included two stakeholder group meetings, six CWG meetings, one in-person open house, regular update of an online project website, three virtual open houses, and meetings with the COT, Pima County, UArizona, Banner and various other stakeholders. One additional CWG and public meeting are scheduled after the filing of this application to inform the public of the contents of the application and the process for public input in the hearing process.

TEP used these activities to gather feedback on the proposed links and the Project at large. In early 2020, due to the COVID-19 pandemic, TEP modified the format of its open houses and held them virtually to protect public health and safety, and comply with state and local directives regarding public interactions. The modified format allowed public outreach to continue, a necessary component in ensuring that the Project meets its scheduled in-service date, which is critical to TEP's ability to continue to provide safe, reliable power within the Project study area.

Throughout the evaluation process, the public and stakeholders were given opportunities to provide comments through a variety of methods. Mailers (e.g., newsletters, postcards) were sent to provide background on the project and any updates, announce the public open houses (both in-person and virtual), and solicit feedback on the Project. A telephone information line and a webpage with an online comment form were used to communicate information and receive comments. Social media platforms were also used to communicate with the public. Exhibit J contains additional details of TEP's outreach for the Project.

A.6.1 Additional Routing Considerations

Some stakeholders have objected to the development of overhead transmission lines near their neighborhoods, citing visual impact, and/or concern for the value of their property. They have asked that TEP install the lines underground, at significant additional expense.

TEP has not dismissed the possibility of undergrounding a portion or all of the Project, depending upon the circumstances. TEP has expressed its willingness to support neighbors' and other stakeholders' use of statutory mechanisms to create an improvement district that would allow area residents and other interested stakeholders to pay the additional cost of underground installation. There are many benefits of above ground transmission facilities, versus underground transmission facilities, most notably, cost. Above-ground facilities are generally more cost-effective, therefore TEP does not install them below ground for strictly aesthetic reasons, unless the stakeholders who request it pay the additional cost. This practice has helped keep TEP's rates affordable by avoiding unnecessary costs. TEP has approximately 430 miles of 138 kV transmission lines throughout its service territory, all of them installed above ground.

In order to fully understand the variables, costs, and potential complications involved with undergrounding high voltage transmission lines, TEP procured an independent study for the construction methods and expense of undergrounding of a high voltage transmission line, conducted by Sargent & Lundy, LLC (Exhibit J-53).

Results of the study were shared with the CWG as well as with the public. As the Project planning process evolved, the underground study went through several iterations, each analyzing different aspects of the Project, but each considering the impact undergrounding would have on operational, system loss, performance, maintenance, and reliability concerns when compared to overhead construction. The cost estimates for undergrounding the transmission line varied between \$10 million and \$15 million per mile, compared to a preliminary estimate of \$1 million per mile for overhead transmission line construction. Since completion of those studies, TEP has prepared more detailed overhead cost estimates for each route considered in this application (including construction, land right acquisition, mitigation, removal of aging infrastructure, etc.). New estimates prepared for the various routes presented in the application range from \$2 to \$2.8 million per mile for routes within the Gateway Corridor. Using these new and higher cost estimates for above ground construction depending upon the route selected, TEP estimates the cost of underground installation would be approximately 4.8 to 6.8 times greater per mile than the cost of overhead construction. This range was determined using the \$13.5 million per mile cost of undergrounding. Section J.5 contains additional details of the third-party undergrounding studies conducted for the Project.

A.6.2 Gateway Corridor Overlay Zone

The majority of the Project that connects the existing Kino Substation to the planned Vine Substation is located within a COT designated Gateway Corridor Zone. This overlay zone requires utilities be placed underground if they meet certain criteria as defined in the COT Unified Development Code (UDC). TEP's interpretation of the code is that the Project does not meet the criteria that would require the Project be placed underground within the designated Gateway Corridor Zone.

A.6.3 Additional Route for Consideration

TEP is adding back an alternative route in this Application that was initially removed from further consideration. The alternative route that is being added back is identified as **Alternative Route 5A**, referred to as the "Euclid Route" (Figure 3). Alternative Route 5A was removed between August and

October 2020 as part of TEP's route analysis, and the removal from further consideration was communicated to the public, CWG, and stakeholders at the October 2020 virtual meetings.

As explained in sections A.4 and B.2 of this application as well as in the Siting Study prepared for the Project, all routes went through a comprehensive analysis to determine the associated costs and constraints.³

While Alternative Route 5A can be constructed, it is not TEP's preferred alternative for the reasons stated in footnote 3. In order to provide the Committee with alternatives that make limited use of alternative routes within the Gateway Corridor Zone, TEP has included Alternative Route 5A for consideration.

A.7 CONCLUSION

The CEC requested in this application balances the public interest with the need for reliable, affordable energy, and the desire to minimize impacts on the environment and ecology. The Project is environmentally compatible and will greatly enhance TEP's ability to serve its customers within the COT. As such, TEP respectfully requests that the Committee grant, and the Arizona Corporation Commission (ACC) approve, a CEC for the preferred route presented in this application.

³ Alternative Route 5A was removed from consideration for the following reasons:

- Cost: Alternative Route 5A is as much as 60% greater for overhead construction than the other routes being considered.
- Constructability: Alternative Route 5A is located in a narrower right-of-way than the other routes being considered. The COT requires that the placement of structures allow for a four-foot sidewalk, further reducing available public ROW.
- Potential Conflicts with existing utilities: Placement of structures for Alternative Route 5A is more difficult due to existing utilities.
- Existing Buildings: Alternative Route 5A has more conflicts with existing buildings which may require the purchase of existing buildings to enable the proposed transmission line to remain on the same side of the street or, risk the need for multiple street crossings to avoid the structures.
- Adjacent Residential Use: Alternative Route 5A is adjacent to more residential properties by approximately 10% than the other routes being considered.
- Historical Properties: Alternative Route 5A is directly adjacent to more historical properties and bisects more historic neighborhoods.
- Sensitive receptors: Alternative Route 5A has more sensitive receptors as compared to the other routes being considered

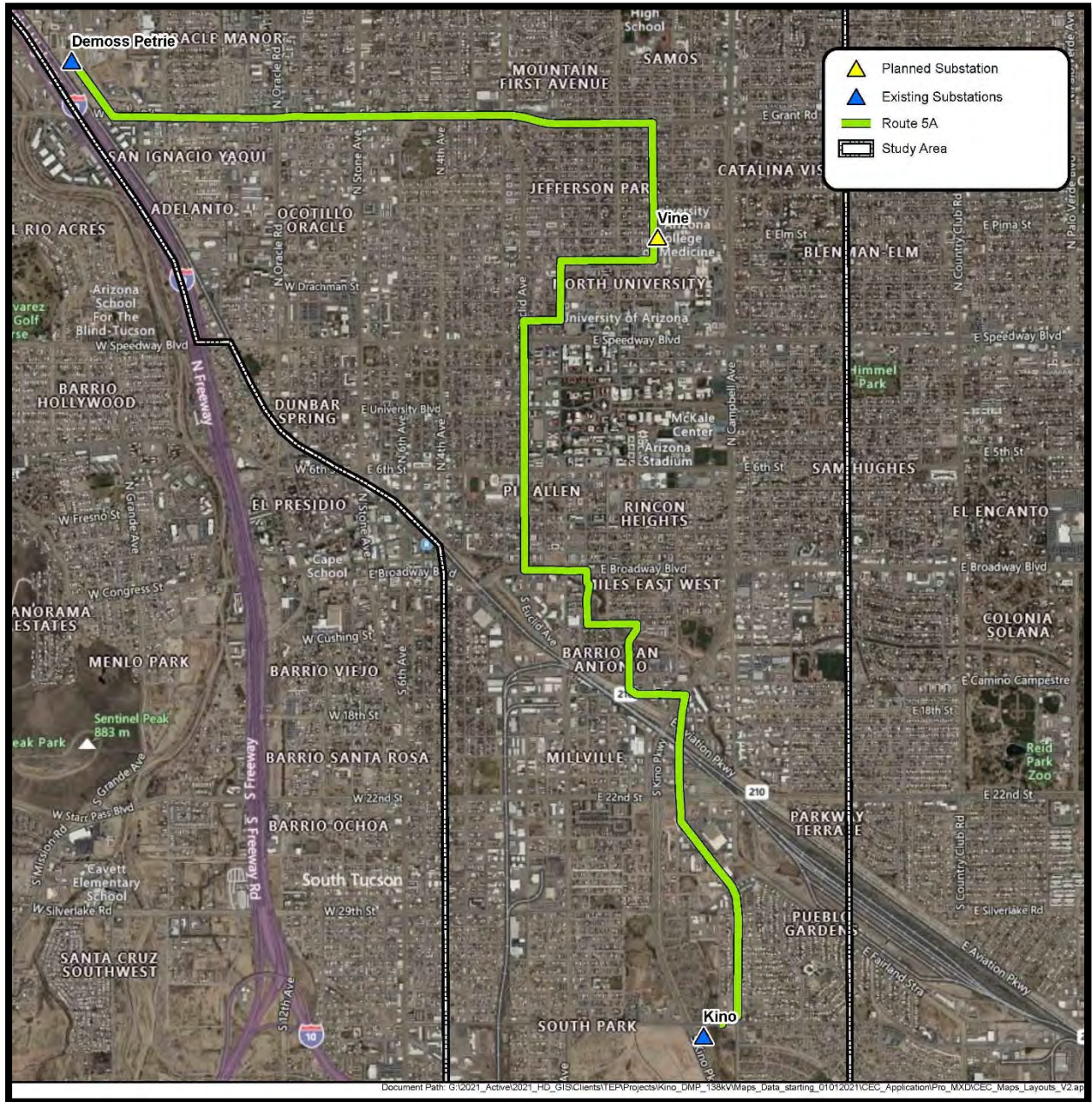


Figure 3. Alternative Route 5A

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B. APPLICATION FOR CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY

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

B.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:

Eric S. Raatz
 Manager, Operations Planning
 Tucson Electric Power Company
 88 East Broadway Blvd, Tucson, AZ 85701
 PO Box 711, Tucson, AZ 85702
 Phone: (520) 745-3196

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 Project was first identified in TEP’s Ten-Year Plan Transmission Projects for Years 2010-2019, filed in January 2010 under Docket No. E-00000D-09-0020 and has been included in each subsequent filing (Table 1). (The project was first identified as the Irvington Substation - Tucson Station #2 138 kV.)

Table 1. Ten Year Filings

Filing Year	Docket Number	Project Name	Point of Origin	Interim Point	Point of Termination
2010-2017	Varies	Varies – See Ten Year Plan	Irv 138 kV Substation	Under Study	Tucson 138 kV Substation
2018	E-00000D-17-0001	Future Kino 138 kV Substation - DeMoss Petrie (DMP) 138 kV Substation	Kino 138 kV Substation	Under Study	DMP 138 kV Substation
2019	E-00000D-19-0007	Future Kino 138 kV Substation - DeMoss Petrie (DMP) 138 kV Substation	Kino 138 kV Substation	Under Study	DMP 138 kV Substation
2020	E-00000D-19-0007	Planned Kino 138 kV Substation - DeMoss Petrie (DMP) 138 kV Substation with loop-in at planned U of A North 138-kV Substation	Kino 138 kV Substation	*Planned U of A North Substation	DMP 138-kV Substation

Filing Year	Docket Number	Project Name	Point of Origin	Interim Point	Point of Termination
2021	E-99999A-21-0009	Planned Kino 138 kV Substation - DeMoss Petrie (DMP) 138 kV Substation with loop-in at planned U of A North 138-kV Substation	Kino 138 kV Substation	*Planned U of A North Substation	DMP 138-kV Substation

*The name of the interim substation in the 2020 and 2021 Ten Year filings was changed from U of A North Substation to Vine Substation in 2021

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

The transmission line structures will be designed to accommodate one circuit of 138 kV transmission. The structures will be tubular, self-weathering steel monopole structures and the conductor will have a non-specular finish to reduce visibility. The structures will typically be 75 to 120 feet above ground, with the taller structures required for site specific clearance issues.

Description of Substation and Switchyards

The Project originates at the existing Kino 138 kV Substation, connects to the planned Vine 138 kV Substation, and terminates at the existing DeMoss-Petrie (DMP) 138 kV Substation.

A future gas insulated substation, the planned Vine Substation, will be located on private land on the east side of North Vine Avenue, just west of the Banner-University Medical Center Tucson staff parking garage. The substation will be located on a 1.6-acre parcel. The Vine Substation is planned to be in service the first half of 2024.

See Exhibits G-1 through G-2 for typical structures; Exhibits G-3.1 and G-3.2 for substation plan and elevation; and Exhibit G-5 for visual simulations of the transmission line. Note: Exhibit G does not contain any simulations for Alternative Route 5A; they are being produced, and will be introduced as an exhibit prior to the hearing.

Project Purpose

The purpose of the Project is to extend TEP’s 138 kV transmission system into the central portion of Tucson by connecting the planned Vine 138 kV Substation to the 138 kV system, providing new inputs into TEP’s distribution system along the northern edge of UArizona, and connecting the existing Kino Substation to the existing DMP Substation, providing a looped electric system and increased transmission capacity. The Project will improve reliability, by serving the planned Vine and existing Kino Substations from two directions.

The Project will transfer loading on existing distribution facilities in the study area to the new 138 kV facilities, providing contingency support to existing distribution and sub-transmission facilities. The Project will eliminate overloads on the 138 kV transmission system, improve reliability, serve future load increases, support distribution modernization initiatives, and allow for the retirement of portions of the existing, aging 46 kV system serving the area. The Project will also assist TEP in meeting its obligation to provide reliable and affordable electric service to customers within its service territory.

- 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 southern point of the Project is the Kino Substation, located at the southeast corner of Kino Parkway and 36th Street. The intermediate point is almost directly north, located on the northeast corner of North Vine Avenue and East Chauncy alignment. The west point of the Project is DMP Substation, located at Grant Road & I-10.

Straight-line Distance

The straight-line distance from the existing Kino Substation to the planned Vine Substation is approximately 3.5 miles.

The straight-line distance from the planned Vine Substation to the existing DMP Substation is approximately 2.7 miles.

Length of Transmission Line Alternative Routes

The distances of the transmission line alternative routes are shown in Table 2:

Table 2. Alternative Route Distances

ALTERNATIVE ROUTE	DISTANCE (MILES)
Preferred Alternative	
1B	7.37
Other Alternatives	
1A	7.16
1D	7.86
2A	7.16
2B	7.37
2D	7.86
5A	8.13

- 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

In areas not covered by COT Franchise Agreement, the applicant plans to acquire up to a 100-foot-wide ROW. TEP is requesting a maximum width 450-foot siting corridor for the approved Route, to allow for routing flexibility.

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 93 feet above grade for the transmission lines. There are several structures that will be required to be taller, to maintain NESC clearance criteria. These few structures may be as tall as 120 feet above grade.

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:*

Estimates for the routes 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 Project cost is anticipated to range between \$15 and \$23 million, depending on which alternative route is selected. Note that the construction and materials costs shown below include (as required) the wreck out of existing transmission and distribution lines, and construction of new transmission lines. In addition to the cost to construct the Project, TEP will spend an additional \$2 to \$4 million dollars to underground existing distribution facilities.

Table 3. Estimated Costs by Alternative Route

ALTERNATIVE ROUTE	TRANSMISSION LINE CONSTRUCTION AND MATERIALS	LAND ACQUISITION	ESTIMATED LAND ACQUISITION RECOVERY*	LENGTH (MILES)	COST/MILE	TOTAL COST
1B**	\$9,643,000	\$5,391,826	0	7.37	\$2,040,003	\$15,034,826
1A	\$9,002,000	\$6,675,918	(\$1,496,909)	7.16	\$1,980,587	\$14,181,009
1D	\$9,501,000	\$7,887,897	(\$1,010,739)	7.86	\$2,083,735	\$16,378,158
2A	\$9,373,000	\$7,052,169	(\$1,496,909)	7.16	\$2,084,952	\$14,928,260
2B	\$10,015,000	\$5,768,077	0	7.37	\$2,141,530	\$15,783,077

ALTERNATIVE ROUTE	TRANSMISSION LINE CONSTRUCTION AND MATERIALS	LAND ACQUISITION	ESTIMATED LAND ACQUISITION RECOVERY*	LENGTH (MILES)	COST/MILE	TOTAL COST
2D	\$9,501,000	\$8,264,147	(\$1,010,739)	7.86	\$2,131,604	\$16,754,408
5A	\$11,553,000	\$11,544,710	(\$81,033)	8.13	\$2,831,079	\$23,016,677

*Estimated Land Acquisition (Recovery) amounts are land acquisition costs that may be recovered from the COT for the Grant Road Widening Project.

**Preferred alternative route

- 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 following Preferred Route and additional routes in the application were selected based on the results of a Siting Study, which was conducted in coordination with stakeholders, the CWG, and the public. Please see Section B.2 for additional discussion and Exhibit B-1 for the Final Kino to DMP 138 kV Transmission Line Project Siting Study.

In addition, Alternative Route 5A has been included in the application for reasons previously discussed.

Description of Preferred Route

TEP’s preferred route is a combination of Alternative Routes 1 and B.

- **Southern Portion: Alternative Route 1 (Preferred), Kino to Vine**
 Originates at the existing Kino Substation located at the southeast corner of South Kino Parkway and East 36th Street. From Kino Substation, Alternative Route 1 proceeds north on South Kino Parkway. At East 24th Street, Alternative Route 1 turns east to South Cherrybell Stravenue. At the intersection of East 24th Street and South Cherrybell Stravenue, Alternative Routes 1 and 2 are identical as they travel north to the planned Vine Substation.
- **Common to Both Alternative Routes 1 & 2**
 From East 24th Street to the Vine Substation, both Alternative Route 1 & 2 follow the same path, continuing north on Cherry Street, crossing Aviation Parkway, and then entering the Kino Parkway corridor, which changes name to Campbell Avenue at Broadway Boulevard. At Elm Street, both Alternative Route 1 & 2 turn west to the Vine Substation, located on Vine Avenue between Chauncey Lane and (approx.) Lee Street.
- **Northern Portion: Alternative Route B (Preferred), Vine to DMP**
 Alternative Route B leaves the planned Vine Substation and travels south on North Vine Avenue to the alley between Elm Street and Lee Street, where it continues west to North

Park Avenue. At North Park Avenue, the route turns north and continues to Grant Road. At Grant Road, the route turns west to DMP Substation.

Additional Alternative Routes:

Southern portion: Kino to Vine, Alternative Route 2

- **Alternative Route 2** travels east on East 36th Street from the Kino Substation to South Campbell Avenue where the route travels north on South Campbell Avenue. The route continues north to Cherrybell Stravenue. At the intersection of East 24th Street and South Cherrybell Stravenue, Alternative Routes 1 and 2 are identical as they travel north to the planned Vine Substation.
- **Common to Both Alternative Routes 1 & 2 (see section above)**
- **Alternative 5** travels east on East 36th Street from the Kino Substation to South Campbell Avenue where the route travels north on South Campbell Avenue. The route continues north to Cherrybell Stravenue. From Cherrybell Stravenue, the route turns west on East 17th Street. The route travels west on East 17th Street and turns north onto South Highland Avenue. The route continues north and turns west on East 14th Street. The route continues west and turns north on South Santa Rita Avenue. The route continues north and turns west on East Manlove Street. The route continues west and turns north on South Freemont Avenue. The route continues north and then turns west onto East Broadway Boulevard. The route turns west onto East Broadway Boulevard and continues west to North Euclid Avenue. The route turns north onto North Euclid Avenue. The route continues north on North Euclid Avenue to East Helen Street where it turns east. From East Helen Street, the route turns north onto North Park Avenue. The route travels north on North Park Avenue to an existing alleyway located between East Adams Street and East Lee Street. At the alleyway, the route turns and travels east to North Vine Avenue. At North Vine Avenue, the route travels approximately 700-feet where it terminates at the planned Vine Substation.

Northern portion (Vine to De Moss Petrie, Alternative Routes A and D)

- **Alternative Route A** leaves the planned Vine Substation and travels north on North Vine Avenue to East Grant Road, where the route turns west and continues to the DMP Substation.
- **Alternative Route D** leaves the planned Vine Substation to the east along East Chauncy Street and continues east on Elm Road. At the intersection of Elm Road and North Campbell Avenue, the route turns north and continues north along North Campbell

Avenue to East Grant Road. At East Grant Road, the route turns west and continues to the existing DMP Substation.

Reasons Alternative Route 1B is Preferred

TEP selected **Alternative Route 1B** because it best balances the comments and concerns of all surrounding neighborhoods.

Alternative Route 1 was selected over Alternative Route 2 because:

- Within 150 feet of the alternative, Alternative Route 1 impacts fewer residences than Alternative Route 2.
- South of where Alternative Routes 1 & 2 merge, the houses do not face Alternative Route 1, but do face Alternative Route 2.
- Kino Parkway is an arterial road, whereas South Campbell is a collector road.
- Alternative Route 1 would not impact the South Campbell Avenue Median Landscape between 36th Street and Silverlake Road.
- Alternative Route 1 is supported by the Pueblo Gardens neighborhood.

Although Alternative Route B, when combined with either Alternative Route 1 or 2 scored lower than Alternative Route A in four criteria (residential use, sensitive receptors, viewshed and cost), Alternative Route B was selected as the preferred over Alternative Routes A and D because:

- It uses the greatest amount of existing TEP utility corridors, which would allow TEP to make significant visual improvements along Campbell Avenue, the alley between Elm and Lee, and on Park Avenue.
- It is TEP's opinion that it has the least impact on the Jefferson Park Neighborhood, only running adjacent/through the neighborhood along Park Avenue, where significant visual improvements can be made. Alternative Route A would require the addition of new structures through Jefferson Park, and Alternative Route D is adjacent to Jefferson Park on three sides.
- Alternative Route B received the most "preferred" comments.
- When paired with either Alternative Routes 1 or 2, Alternative Route D would result in two single circuit transmission lines on Elm and Chauncy, one on the north and one on the south side of Chauncy and Elm and received the most "disliked" comments.

- 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 road ROW would use TEP's COT Franchise Agreement, which allow for TEP facilities to be located within City ROWs. Land ownership percentages are shown in Table 4.

Table 4. Land Ownership Percentages*

ALTERNATIVE ROUTE	ACRES	ABOR**	COT	PRIVATE	ADOT	USPS***	City ROW	Total
Preferred 1B	267.79	4.31%	7.09%	40.78%	1.28%	0.00%	46.54%	100.00%
1A	263.01	4.46%	7.98%	38.45%	1.30%	0.00%	47.81%	100.00%
1D	275.62	4.08%	8.50%	35.63%	1.24%	0.00%	50.55%	100.00%
2A	262.55	4.42%	6.22%	41.63%	1.30%	0.73%	45.70%	100.00%
2B	267.33	4.28%	5.36%	43.90%	1.28%	0.71%	44.47%	100.00%
2D	275.16	4.05%	6.82%	38.66%	1.24%	0.69%	48.54%	100.00%
5A	294.19	2.71%	3.60%	45.80%	0.85%	0.65%	42.10%	100.00%

*Percent ownership based on total length of alternative route and the 300-foot-wide corridor. Property impacts outside of COT ROW are anticipated to be minimal.

**Arizona Board of Regents

***US Postal Service

5. 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 COT. All the alternative routes are compatible with local land use plans and zoning.

The COT must issue a special exception land use permit and approve a development plan before construction can begin on the Vine Substation. In the spring of 2021, TEP filed an application for the land use permit, which the Zoning Examiner determined was “in compliance with the performance criteria of UDC 4.9.11.A.” However, the Zoning Examiner denied the request stating in his decision that, “At the present time, and on this record, the Zoning Examiner cannot determine whether the proposed special exception land use complies with Plan Tucson and the University Area Plan, or whether the proposed special exception would adversely affect the surrounding neighborhoods.” The Zoning Examiner decision was rendered without prejudice, and TEP was encouraged to re-file an application for the special exception land use permit with the approval of the Kino to DMP CEC by the ACC. TEP will re-file the application upon approval of the Kino to DMP CEC.

6. 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 the following exhibits:

- Exhibit A Location and Land Use Maps
- Exhibit B Environmental Report

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
Exhibit H	Existing Plans
Exhibit I	Anticipated Noise and Interference with Communication Signals
Exhibit J	Special Factors (Includes Public Involvement)

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EXHIBIT A

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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-4.1	138 kV Transmission Line and Substation Project – Land Use
A-4.2	138 kV Transmission Line and Substation Project – Land Use/City of Tucson Zoning

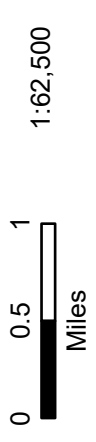
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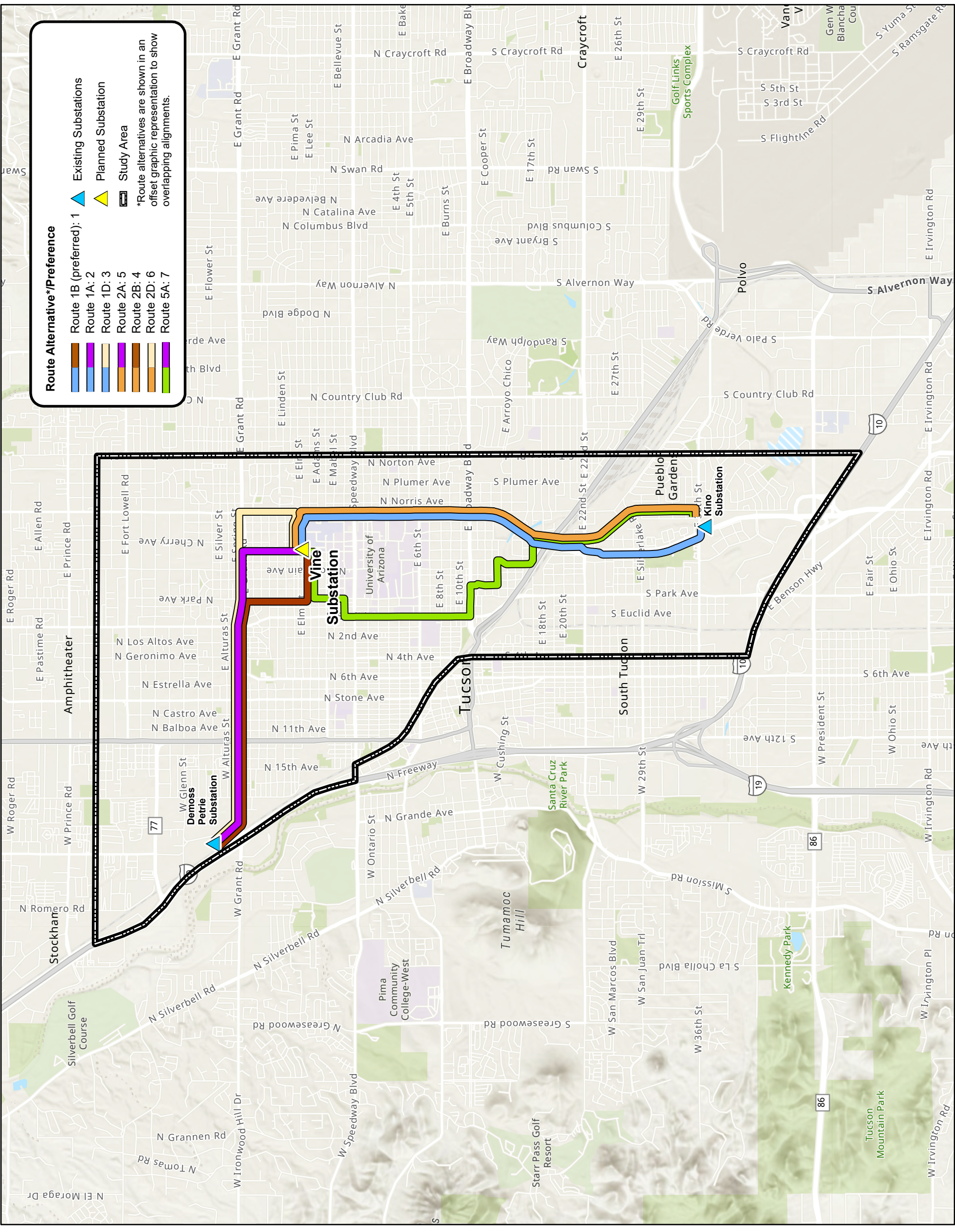
Exhibit A-3

Kino to DeMoss Petrie 138kV Transmission Line Project

Project Location



Sources: ESRI, Tucson Electric Power, Pima County, City of Tucson, and Arizona State Land Department.
 Projection: NAD 1983 UTM Zone 12N
 Basemap: ESRI World Topographic Map
 This map is for planning purposes only. TEP and UNS Energy make no warranty of its accuracy.



Route Alternative*/Preference

- Route 1B (preferred): 1
- Route 1A: 2
- Route 1D: 3
- Route 2A: 5
- Route 2B: 4
- Route 2D: 6
- Route 5A: 7

Existing Substations

Planned Substation

Study Area

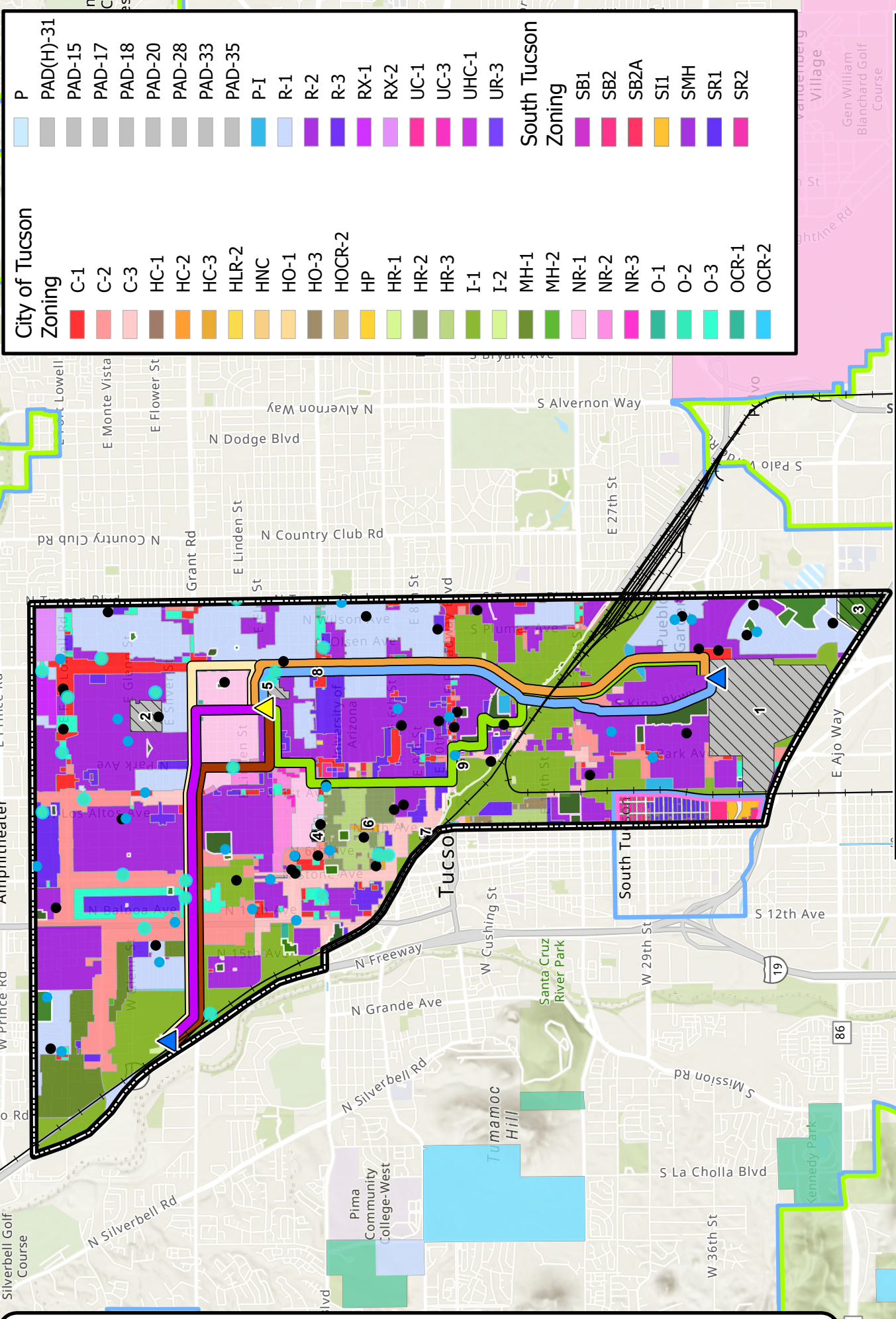
*Route alternatives are shown in an offset graphic representation to show overlapping alignments.

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Route Alternative*/Preference

- Route 1B (preferred): 1
- Route 1A: 2
- Route 1D: 3
- Route 2A: 5
- Route 2B: 4
- Route 2D: 6
- Route 5A: 7

- Existing Substations
- Planned Substation
- Study Area
- Union Pacific Railroad
- Parks
- Pima County
- City of Tucson
- South Tucson
- BLM
- Tribal Lands
- Local/State Parks
- Military
- Other
- Private
- State Trust
- Childcare Facilities
- Health Care Facilities
- Educational Facilities
- Development Plans
- Future Land Use
- Development Plans are shown in an offset graphic representation to show overlap.
- Development Plans



City of Tucson Zoning

- C-1
- C-2
- C-3
- HC-1
- HC-2
- HC-3
- HLR-2
- HNC
- HO-1
- HO-3
- HOCR-2
- HP
- HR-1
- HR-2
- HR-3
- I-1
- I-2
- MH-1
- MH-2
- NR-1
- NR-2
- NR-3
- O-1
- O-2
- O-3
- OCR-1
- OCR-2

South Tucson Zoning

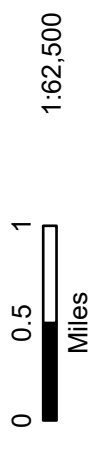
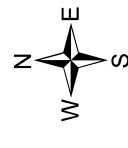
- SB1
- SB2
- SB2A
- SI1
- SMH
- SR1
- SR2



Exhibit A-4.1

Kino to DeMoss Petrie 138kV Transmission Line Project

Land Use



Sources: ESRI, Tucson Electric Power, Pima County, City of Tucson, and Arizona State Land Department.
 Projection: NAD 1983 UTM Zone 12N
 Basemap: ESRI World Topographic Map
 This map is for planning purposes only. TEP and UNS Energy make no warranty of its accuracy.

Map ID	Project Name	Type
1	The Bridges PAD 15	Planned Area Development
2	Salpointe-Glenn St. PAD 17	Planned Area Development
3	Kino Campus PAD 18	Planned Area Development
4	Casa de Los Ninos PAD 20	Planned Area Development
5	Banner - University Medical Center PAD 28	Planned Area Development
6	Trinity PAD (H) 31	Planned Area Development
7	Partners on Fourth PAD 33	Planned Area Development
8	Speedway and Campbell Gateway PAD 34	Planned Area Development
9	Welcome PAD 39	Planned Area Development

Sensitive Receptors in Study Area	
Type	Count
Child Care Facilities	26
Healthcare Facilities	23
Educational Facilities	40
Planned Area Developments (PAD)	8

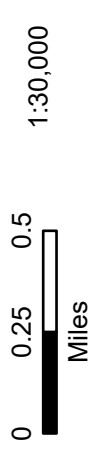
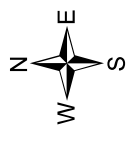
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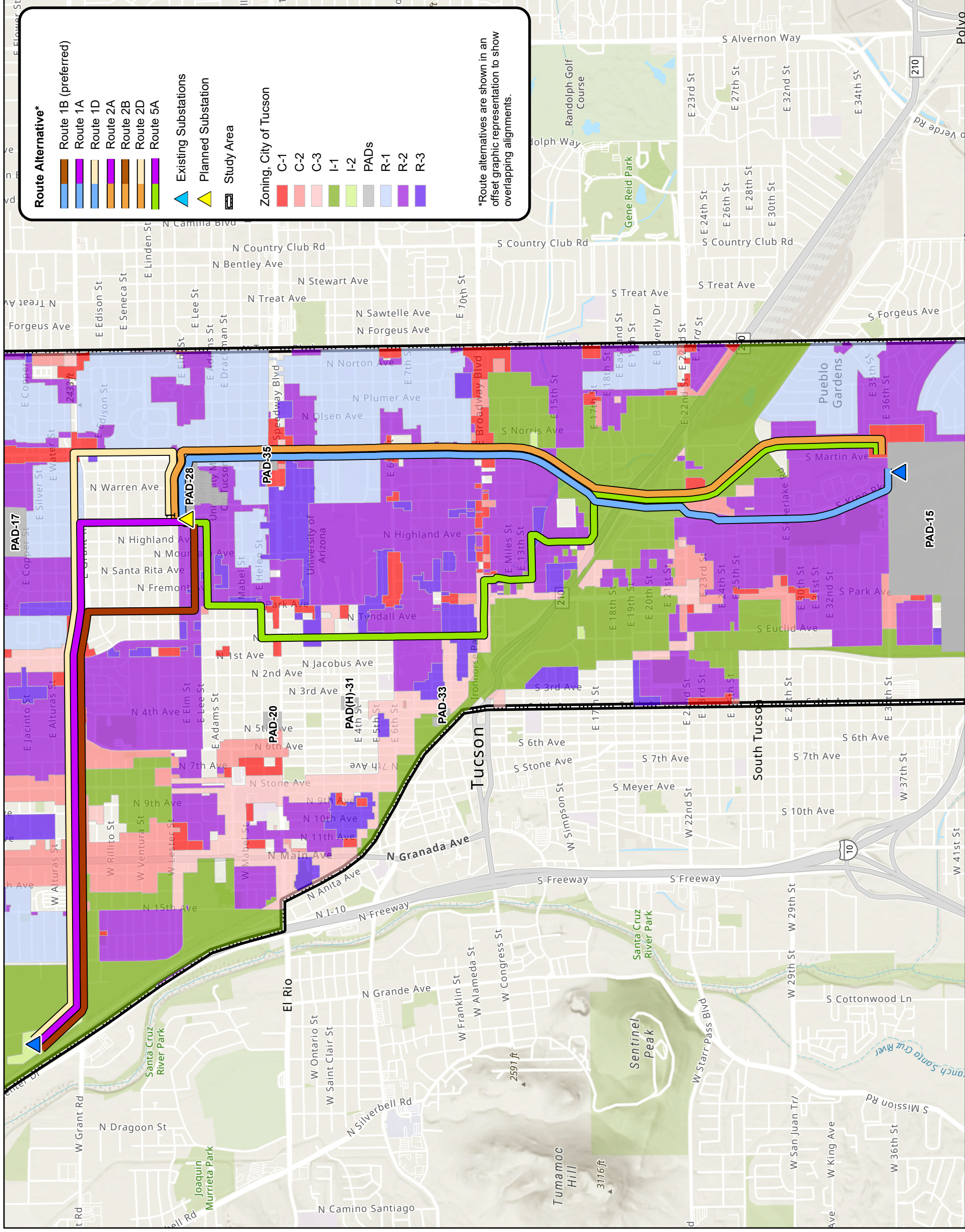
Exhibit A-4.2

Kino to DeMoss Petrie 138kV Transmission Line Project

Land Use - City of Tucson Zoning



Sources: ESRI, Tucson Electric Power, Pima County, City of Tucson, and Arizona State Land Department.
 Projection: NAD 1983 UTM Zone 12N
 Basemap: ESRI World Topographic Map
 This map is for planning purposes only. TEP and UNS Energy make no warranty of its accuracy.



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EXHIBIT B

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EXHIBIT B: ENVIRONMENTAL REPORT

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.2.1 Overview	B-2
B.2.2 Alternative Route Identification	B-2
B.3 Environmental Statements	B-6
B.4 References	B-7

B.1 Introduction

The Project will consist of building a new 138 kV transmission line totaling 7.2 to 8.1 miles in length, depending on the alternative approved, to connect the existing Kino Substation to the existing DMP Substation. The Project will interconnect to the planned Vine 138 kV Substation. The Project will cross private, USPS, COT, Arizona Board of Regents, and Pima County (Alternative Route 5A only) owned land, as well as COT road ROW. Seven preliminary route alternatives have been identified, resulting from line siting studies, analysis, and a public participation process that began in 2019. The proposed alternative routes are identified as Alternative Routes 1A, 1B, 1D, 2A, 2B, 2D, and 5A, and are described in Section B.1-4 of the application. Alternative Route 1B is the preferred route. The new line will be built with a combination of galvanized (36th Street to Grant Road) and self-weathering steel (Grant Road to DMP Substation) monopoles ranging from 75 to 120 feet above ground, with the taller structures required for site specific clearance issues.

Starting in 2020, TEP conducted a study to identify preliminary links and later alternative routes to connect the Kino Substation to the DMP Substation including a required interconnection with the planned Vine Substation (see Siting Study in Exhibit B-1). The Siting Study is the foundation of detailed studies about the Project environment. Project studies address a number of components such as biological resources, the built environment, cultural resources, visual resources, etc.

Study results are reported in exhibits as follows:

- Areas of biological wealth are addressed in Exhibit C
- Biological Resources are addressed in Exhibit D
- Scenic areas, historic sites and structures, and archaeological sites are addressed in Exhibit E
- Recreational purposes and aspects are addressed in Exhibit F
- Concepts of proposed facilities and Visual Simulations/Analysis are included in Exhibit G
- Existing Plans are presented in Exhibit H
- Anticipated noise and interference with communication signals is included in Exhibit I
- Special Factors are addressed in Exhibit J

B.2 Environmental Planning Process

B.2.1 Overview

The preliminary study area was designed to encompass possible routes for the Project. This study area established the basis for environmental studies and analysis used to evaluate the factors to be considered in siting and developing the CEC application. An extensive outreach plan was used to identify criteria that were important to the neighbors, CWG members, local entities, and the public, and to include those stakeholders in the planning process. TEP disseminated information and welcomed feedback in an effort to inform Project development. Public outreach tools included meetings with stakeholders, open house meetings with the public, meetings with neighborhoods, CWG meetings, newsletters, social media advertisements, a project website, emails, and a telephone information line.

B.2.2 Alternative Route Identification

The project planning process utilized a phased approach to achieve planning objectives.

Phase 1 analysis involved the identification of links that could be used to form an OH electric transmission line route. TEP's transmission line design team conducted a preliminary Engineering and Constructability (E/C) Assessment that included a review of aerial photography, TEP's existing facility locations and operations, and a site visit. These preliminary links were provided to the public, stakeholders, and CWG for review and comment in December 2019. During Phase 1, TEP also reached out to stakeholders to obtain data, such as road rights-of-way, other utility locations, future development, future road projects, etc. TEP also worked with the CWG and used public comments to identify criteria of significant concern, the locations of sensitive receptors, etc. A geospatial analysis⁴ was then conducted to evaluate the influence of Residential Use, Sensitive Receptors, and Historic Properties on each link. The methodology of this analysis can be reviewed in section 8 of the Siting Study. Phase 1 concluded with sharing the results of the geospatial analysis with the public, stakeholders, and CWG.

Phase 2 began with data from Phase 1 and the addition of the influence of public, stakeholder, and CWG comments and the constructability values determined by TEP engineering staff. Phase 2 was an interim step, used to gauge stakeholder opinion and to determine if any of the links were un-constructible.

⁴ Geospatial analysis is the gathering, display, and manipulation of imagery, GPS, satellite photography and historical data, described explicitly in terms of geographic coordinates as they are applied to geographic models.

Following outreach activities showing the initial Phase 2 analysis, TEP developed preliminary alternative routes. The preliminary alternative routes were developed using Phase 1 and 2 geospatial analysis results (excluding comment counts), as well as public, stakeholder, and CWG comments received in email, public and via three CWG meetings.

Phase 1 and Phase 2 work yielded six preliminary alternative routes (Routes 1–6) to connect the Kino Substation to the planned Vine Substation, and four preliminary alternative routes (Routes A–D) to connect the planned Vine Substation to the DMP Substation. Following development of these routes, a geospatial analysis was conducted, analyzing the same criteria used in previous analyses: Residential Use, Sensitive Receptors, Historic Properties, and a Composite of all three criteria. In addition, TEP completed an additional analysis where the positive influence of existing roads and TEP facilities was removed and the influence of the Phase 1 criteria and constructability on each route corridor was assessed.

Phase 3 analysis involved the completion of a multi-objective decision model⁵ to narrow the number of potential routes. The process involved review of public, stakeholder, and CWG comments, the geospatial analysis, and the results of independent studies.

The results were used to weight and score alternative routes using the evaluation criteria to be considered in the CEC as well as criteria established for the project, where all criteria were considered of equal importance. TEP also asked members of the CWG to rank the criteria in order of importance. Seven neighborhoods responded: Blenman-Elm, Feldman’s, Jefferson Park, Miles, Pueblo Gardens, Sam Hughes, and West University. Using each neighborhood’s top four concerns, the primary concerns of the CWG (those that responded) were tallied. In addition, public comments were also reviewed and tallied to determine the percentage of total comments that related to the criteria analyzed. These results are shown in Table 5.

Table 5. Criteria Survey and Public Comment Results

Criteria	Tally (Out of 7)	% of Neighborhoods	% Public Comment*
Existing Corridor	4	57	0
Existing & Planned Land Use	2	29	0
Residential Use	5	71	84
Historic Properties/Districts	5	71	41
Sensitive Receptors	4	59	14
Room for Separation	1	14	0
Viewshed	2	29	33
Special Status Species	1	14	0

⁵ A multi-objective decision model is a valuable tool that can apply to many complex decisions. It is most applicable to solving problems that are characterized as a choice among alternatives. It has all the characteristics of a useful decision support tool: It helps us focus on what is important, is logical and consistent, and is easy to use. At its core it useful for:

- Dividing the decision into smaller, more understandable parts
- Analyzing each part
- Integrating the parts to produce a meaningful solution

Criteria	Tally (Out of 7)	% of Neighborhoods	% Public Comment*
Ability to Construct	2	29	0
Cost	2	29	21

*Percentage of comments as of 10/1/2020; a commenter may have submitted more than one comment on the same topic.

Based on this information, additional weight was added to the criteria of most importance to the CWG and the public (see Table 6). Routes that scored the worst were removed from further consideration, thus allowing the project team to focus on the most viable and compatible routes. Stakeholder inputs were integral to phase 3 analysis as were the results of independent studies conducted for the Project. The final alternative routes selected are 1, 2, and 5 connecting the Kino Substation to the Vine Substation, and A, B, and D connecting the Vine Substation to the DeMoss-Petrie Substation (Figure 4). TEP’s preferred alternative route is the combined Alternative Route 1B (Exhibit B-2). Refer to Exhibit B-1: Kino to DeMoss-Petrie 138 Kilovolt Transmission Line Project Final Siting Study for the complete details. Note that in the study, Vine Substation is called UA North Substation.

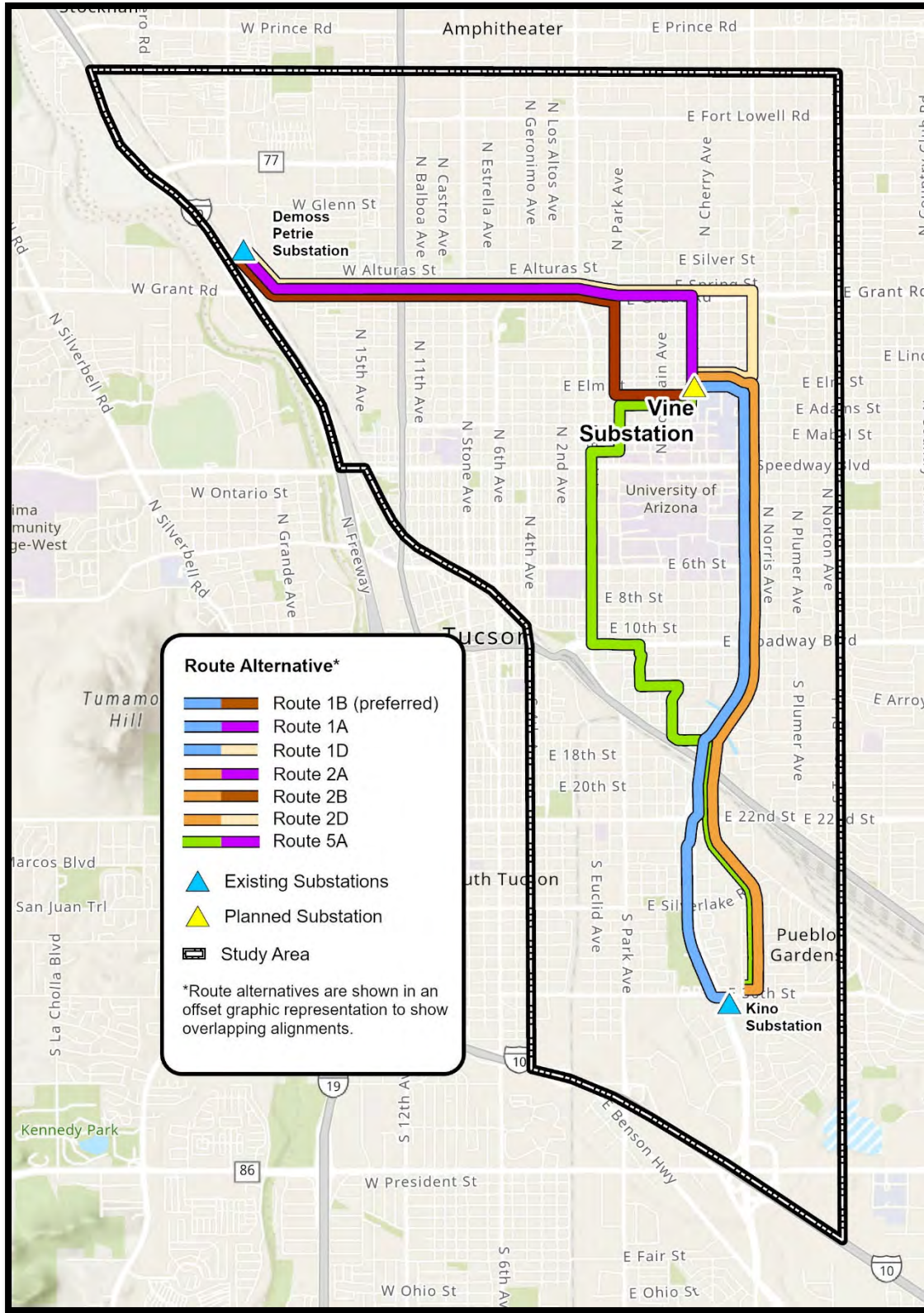


Figure 4. Map of Project Routes

Table 6. Siting Report Summary Criteria Matrix*

Criteria	Alternative Routes						
	1a	1b	1d	2a	2b	2d	5a
1. Ability to Use Existing Road ROW and TEP Corridors (29% CWG/1 point weight assigned)	1	3	1	1	3	1	2
2. Compatible with Existing & Future Land Use Plans (29% CWG/1 point weight assigned)	3	3	3	3	3	3	3
3. Existing and planned residential use adjacent to the corridor (84% of Comments/71% CWG/4-point weight assigned)	0.40	0.40	0.40	0.40	0.40	0.40	0.30
4. Historic property/district impacts (41% of comments/71% CWG/3 point weight assigned)	0.67	0.75	0.83	0.67	0.75	0.83	0.33
5. Adjacent Sensitive Receptors (14% of comments/57% CWG/2 points weight assigned)	1.00	1.00	1.00	0.75	0.75	0.75	0.75
6. Room for separation from conflicting utility and infrastructure uses (14% CWG/1 points weight assigned)	3	3	3	3	2	2	1
7. Viewshed impacts (33% of comments/ CWG 29%/2 points weight assigned)	1.13	1.24	1.13	1.16	1.27	1.15	1.26
8. Cultural resources impacts (1 point weight assigned)	3	3	3	3	3	3	2
9. Biological impacts (1 point weight assigned)	3	3	3	3	3	3	3
10. 100-year floodplain impacts (1 point weight assigned)	3	3	3	3	3	3	3
11. Ability to Construct and Maintain the Transmission Line (1 point weight assigned)	3	3	3	3	3	3	3
12. Cost (1 point weight assigned)	3	3	2.5	3	3	2.5	1.5
Total 0s (less than 1) Greatest effect/impact on criteria	2	2	2	3	3	3	3
Total 1s (Major effect/impact on criteria)	3	2	3	2	1	2	3
Total 2s (Moderate effect/impact on criteria, relative to other alternative routes)	0	0	1	1	1	2	2
Total 3s (No effect/impact or meets criteria)	7	8	6	6	7	5	4
Total Weighted Score	25.20	27.39	24.86	24.97	26.17	23.63	21.14
Criteria of Most Concern Weighted Score (Residential, Historic, Sensitive Receptor, Viewshed)	3.20	3.39	3.36	2.97	3.17	3.13	2.64

*Table revised to include only the alternative routes presented in the CEC.

B.3 Environmental Statements

This project does not involve any federal agency actions, therefore, studies pursuant to Section 102 of the National Environmental Policy Act are not applicable.

B.4 References

Tierra Right of Way. (2020). Biological Evaluation and Alternatives Analysis TEP Kino-DeMoss-Petrie Transmission Line Project Tucson, Pima County, Arizona. August 26, 2020.

Tucson Electric Power. (2021). Kino to DeMoss-Petrie 138 Kilovolt Transmission Line Project Final Siting Study. May 20, 2021.

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Application for a Certificate of Environmental Compatibility

**Kino to DeMoss-Petrie
138 Kilovolt Transmission Line Project**

Exhibit B-1

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Tucson Electric Power

Kino to DeMoss-Petrie 138 Kilovolt Transmission Line Project

Final Siting Study

Tucson Electric Power Company
May 2021

Table of Contents

Acronyms Used in Report.....	iv
1.0 Introduction	1
2.0 Objective and Methodology.....	2
3.0 Approach.....	3
4.0 Step 1: Study Area.....	3
5.0 Step 2: Criteria	6
6.0 Step 3: Links Development & Preliminary Engineering and Constructability Assessment.....	7
7.0 Step 4: Data Collection	10
8.0 Step 5a: Phase 1 Geospatial Analysis	11
8.1 Phase 1 Geospatial Analysis Methodology	11
8.2 Phase 1 Geospatial Analysis Results	19
9.0 Step 5b: Phase 1 Public, Stakeholder, and CWG Outreach.....	25
10.0 Step 6a: Phase 2 Geospatial Analysis	28
10.1 Phase 2 Geospatial Analysis Results	35
11.0 Step 6b: Develop Preliminary Alternative Route Corridors	38
12.0 Step 6c: Preliminary Alternative Route Corridor Analysis	40
13.0 Step 7: Phase 3 Alternative Route Corridor Narrowing.....	40
13.1 Phase 3 Results.....	42
13.2 Summary and Conclusion.....	48

List of Figures

Figure 1. Preliminary Study Area.....	5
Figure 2a. Preliminary links under consideration following preliminary E/C Assessment in December 2019.	8
Figure 2b. Preliminary Links under Consideration following additional outreach and E/C Assessment in June 2020.	9
Figure 3.a. Phase 1 links with a default value of “3.”	12
Figure 3.b. Links with intersecting Residential Use areas.....	12
Figure 3.c. The Residential Use layer converted to a raster surface layer. Lighter green areas indicate where the surface has a value of 2 because it is Residential Use. Areas in darker green have a value of “3” because they are not Residential Use and reflect the default value of “3.” Red areas have a value of “0” (excluded areas).....	13
Figure 3.d. Weighted Sum Analysis. Note the links have changed color, and thus received a lower ranking where they intersect with residential areas.....	13
Figure 3.e. Links with Sensitive Receptor buffers.....	14

Figure 3.f. The Sensitive Receptor layer converted to a raster surface layer. Orange areas indicate where the surface has a value of 1 because it is within the 300-foot buffer of a Sensitive Receptor. Areas in dark green have a value of 3 because they are not within the buffer of a Sensitive Receptor. Red areas have a value of 0 (excluded areas)..... 15

Figure 3.g. Weighted Sum Analysis. Note the links have changed color, and thus received a lower ranking where they intersect with Sensitive Receptors. 15

Figure 3.h. Links with Historic Properties buffers..... 16

Figure 3.i. The Historic Properties layer converted to a raster surface layer. Orange areas indicate surfaces within the 300-foot buffer of Historic Properties. Areas in dark green have a value of 3 because they are not within the buffer of a Historic Property. Red areas have a value of 0 (excluded areas). 17

Figure 3.j. Weighted Sum Analysis. Note the links have changed color, and thus received a lower ranking where they intersect with Historic Properties..... 17

Figure 3.k. Composite raster surface..... 18

Figure 3.l. Composite raster surface, Grant Road area..... 18

Figure 4. Phase 1 Residential Use Analysis. 20

Figure 5. Phase 1 Sensitive Receptor Analysis..... 22

Figure 6. Phase 1 Historic Properties Analysis..... 23

Figure 7. Phase 1 Composite Analysis. 24

Figure 8. Public, stakeholder, and CWG comment tally. 27

Figure 9. Phase 2 public, stakeholder, and CWG comment analysis. 29

Figure 10. Phase 2 E/C Assessment Scores..... 31

Figure 11. Phase 2 links removed..... 32

Figure 12. Phase 2 links added. 33

Figure 13. Phase 2 Composite Analysis. 36

Figure 14. Combined Phase 1/Phase 2 composite analysis..... 37

Figure 15. Preliminary route corridor overview. 39

Figure 16. Preliminary Alternative Routes used in Phase 3 Analysis. 41

Figure 17. Remaining Preliminary Routes, Following Phase 3 Analysis. 52

List of Tables

Table 1. Data Collected and Ranks Assigned 10

Table 2. Stakeholder Input 25

Table 3. Segments Removed and Added During the E/C Assessment 34

Table 4. Criteria Survey and Public Comment Results..... 42

Table 5. Kino to DMP 138kV Transmission Line Project Siting Report Summary Criteria Matrix. 50

Appendices

Appendix A. Phase 1 Geospatial Analysis Variable ValuesA.52
Appendix B. Engineering and Constructability Assessment Values B.1
Appendix C. Preliminary Route Maps..... C.1
Appendix D. Summary Link Analysis Maps.....D.1
Appendix E. Table of Route Values..... E.1
Appendix F. Route Analysis Maps F.1
Appendix G. Revised Route Analysis Maps.....G.1
Appendix H. Phase 3 Analysis—Supporting Documentation.....H.1

Acronyms Used in Report

ACC	Arizona Corporation Commission
ADOT	Arizona Department of Transportation
CEC	Certificate of Environmental Compatibility
CWG	Community Working Group
DMP	DeMoss-Petrie
E/C	Engineering and Constructability
GIS	Geographic Information System
kV	Kilovolt
ROWs	Rights-of-way
TEP	Tucson Electric Power
UPRR	Union Pacific Railroad

1.0 Introduction

Tucson Electric Power (TEP) is developing plans for a new transmission line that will strengthen electric reliability for customers in central Tucson and help satisfy growing energy needs in our community. The Kino to DeMoss-Petrie (DMP) 138-Kilovolt (kV) Transmission Line (the Project) will connect the existing Kino Substation to the existing DMP Substation and interconnect with the planned UA North Substation.

TEP uses qualitative public/stakeholder and Community Working Group (CWG) input, as well as the quantitative results of additional analysis identified later in this Siting Study, to identify up to three alternative transmission line route corridors in its application to the Arizona Corporation Commission (ACC), which must approve the route corridor before the transmission line can be built. This Siting Study includes the results of the Phase 1 and Phase 2 geospatial analysis. The final Siting Study will include the Phase 3 geospatial analysis and multi-objective decision model, which is the weighted scoring of factors considered in the analysis (see Section 2 below). Phase 3 will be conducted following the current outreach efforts on or around September 13, 2020.

Project benefits include:

- **Improved electric reliability.** New energy infrastructure will strengthen reliability for homes and businesses in the study area by adding redundancy, allowing TEP to deliver energy from more than one direction.
- **Fewer, shorter power outages for residential and other customers.** A looped configuration in this area of the system will improve reliability and increase the capacity available to serve homes and other customers throughout the study area—even during summer months, when the demand for power is highest.
- **Prevention of outages and inadequate voltage.** By increasing electric capacity, TEP can avoid overload conditions that can damage equipment, causing outages or low voltage for customers. Some lower-voltage feeder lines in the study area have reached or are approaching their capacity limitations.
- **Replacement of aging infrastructure.** A large transformer, electric switchgear, and other substation equipment currently providing service to some area customers is nearing the end of its useful life and must be replaced within the next five years. New infrastructure with greater capacity would, instead, allow for the retirement of aging equipment.
- **Service for evolving energy needs.** Our community's peak energy demands have increased by about 9 percent since mid-2015. New infrastructure would help TEP to satisfy customers' current and future energy needs.

- **Support for the University of Arizona and University Medical Center Tucson—Banner.**
The new line will tie into TEP’s 138kV transmission system to accommodate increased energy demands.

2.0 Objective and Methodology

The final objective of this study is to identify up to three alternative route corridors to connect the Kino and DMP Substations. These substations represent the fixed end points for the Project. The Project also requires an interconnection with the planned UA North Substation. In Phase 3, TEP will use public/stakeholder and CWG input qualitatively to determine the factors with the most concern, such as Residential Use and Historic Properties. These factors will then be weighted as more important than factors of less importance, such as cost or constructability. Currently, the scores of all factors used in the Phase 1 and Phase 2 analyses are equally weighted.

The methodology used to determine possible route corridors to interconnect the three substations involves two major components: geospatial analysis and a multi-objective decision model that has been used successfully on scoping studies conducted for the purpose of siting energy facilities¹. Both components include coordination with the public, stakeholders, and the CWG. TEP’s design philosophy, which is also considered, includes these guidelines:

- Design routes that will utilize existing road rights-of-way (ROWs) and utility corridors in an effort to minimize disturbance to surrounding areas.
- Move underground or retire existing distribution facilities where the proposed line is in the same alignment as existing infrastructure.
- Work with neighbors and other stakeholders to identify concerns and develop alternatives that are in the best interest of the community.

In order to determine the most suitable transmission line links, TEP used Geographic Information System (GIS) technology to conduct a spatial analysis, which incorporated multiple influence factors grouped into common perspectives of society, environment, and engineering capabilities. Following Phase 1, the results of the analysis and public, stakeholder, and CWG input, were used to identify 10 preliminary alternative route corridors.

Phase 3 consists of additional GIS spatial analysis and the completion of the multi-objective decision model, following Phase 2 outreach, to select up to three corridors that possess the fewest constraints for use in the ACC Certificate of Environmental Compatibility (CEC) application.

¹ Horst, T.J. 1982 *A Monte Carlo Methodology for Analyzing Environmental Uncertainties in Siting Energy Facilities*. IMACS. World Congress on System Simulation and Scientific Computation, Montreal, Canada.

The criteria that will be used in the decision model are consistent with the relevant regulatory framework and decision process, which for this study is the ACC CEC.

3.0 Approach

The approach to achieve the study objective involves several steps.

- Step 1: Define the study area.
- Step 2: Define the criteria considered during selection of the alternative links and routes.
- Step 3: Identify preliminary links & conduct preliminary engineering and constructability assessment.
- Step 4: Collect and rank the data used to support the study.
- Step 5: Phase 1 Analysis
- Step 5a: Conduct geospatial analysis of the links.
- Step 5b: Conduct public, stakeholder, and CWG scoping.
- Step 6: Phase 2 Analysis
- Step 6a: Phase 2 geospatial analysis.
- Step 6b: Develop preliminary alternative route corridors.
- Step 6c: Analyze preliminary alternative route corridors (in coordination with the public, stakeholders and CWG).
- Step 7: Phase 3 Analysis: Select up to three alternative route corridors for use in the ACC CEC application.

**Grey text represents completed steps.*

4.0 Step 1: Study Area

The first step was to define the study area. TEP took into consideration the following factors in the development of the Preliminary Study Area:

- The fixed end points of the Project at the existing Kino and DMP Substations.
- The interconnection at the planned UA North Substation.
- A desire for the most direct routes in order to reduce the overall cost of the Project.

- TEP's design principle to first use established infrastructure corridors that meet the Project objectives.

In the Project area, there are a variety of existing infrastructure corridors in which a transmission line could be co-located. These existing infrastructure corridors include Pima County and City of Tucson arterial streets, as well as existing TEP 46kV and 138kV transmission line corridors.

Utilizing these factors, TEP developed the Preliminary Study Area shown in Figure 1, which was presented to the stakeholders and CWG members at the October 2019 CWG meeting and to the public at the October 2019 public open house meeting shortly thereafter.

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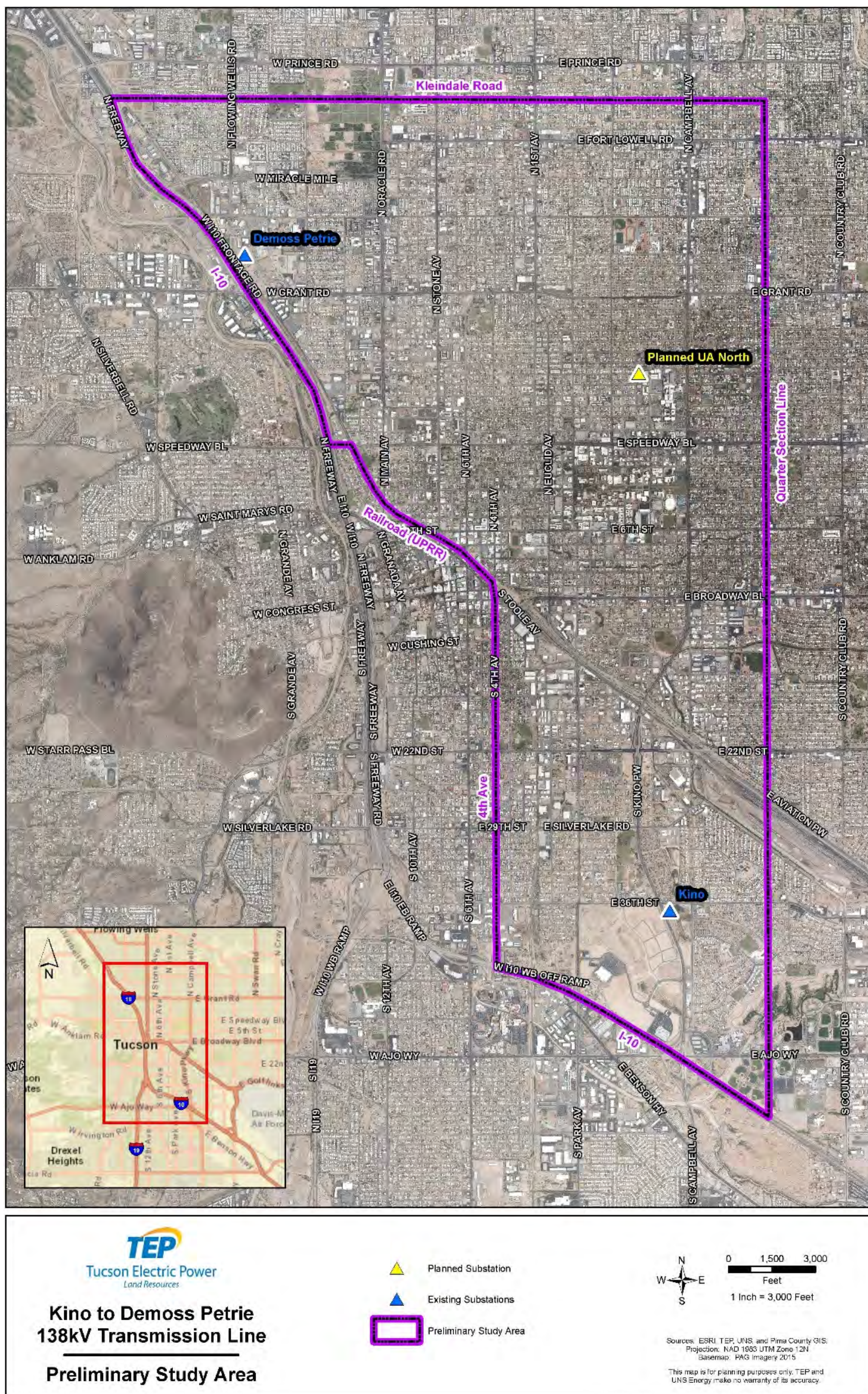


Figure 1. Preliminary Study Area.

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5.0 Step 2: Criteria

The second step was to define the criteria to consider during the analysis. TEP identified 12 criteria to be used during the evaluation process. The 12 criteria are aligned to the ACC CEC decision factors (Arizona Revised Statute § 40-360.06) and TEP's design philosophy and standards and include the following:

1. **Presence/ absence of an existing corridor and ability to use.**
2. Existing and planned land use that is compatible with use as a transmission line corridor.
3. **Residential use adjacent to the corridor, as measured by distance to existing residences and planned future development,**
4. **Listed historic properties and districts adjacent to the corridor, as measured by distance to existing listed historic properties.**
5. **Presence/absence of Sensitive Receptors as measured by distance to existing Sensitive Receptors and distance from corridor.**
6. **Room for separation from existing utilities in the corridor as measured by existing and planned utilities and ranked by degree of mitigation required.**
7. Viewshed associated with the corridor as measured by number of people viewing and type of viewing experience (i.e., commuter, recreationist, resident).
8. Known or potentially eligible cultural resources in the corridor as measured by documentation through previous survey effort and ranked by degree of mitigation required.
9. Special status species and/or habitat as measured by the presence/ absence of potentially suitable habitat.
10. 100-Year floodplain as measured by location and engineering design.
11. **Ability to construct and maintain the transmission line.**
12. Cost of construction.

Note: **Bolded** criteria, as well as input received, were used in the Phase 1 and Phase 2 analysis; remaining criteria will be used in the multi-objective decision model.

Given the Project's urban setting, several criteria that would normally be evaluated were not included in the analysis because it was determined at an early stage that these factors were not present or could be avoided completely. These factors included presence of access roads, terrain, threatened and endangered species, and designated critical habitat.

6.0 Step 3: Links Development & Preliminary Engineering and Constructability Assessment

During the Phase 1 analysis, Step 3 consisted of the development of links using all major streets and existing TEP distribution and transmission line routes within the study area. A total of 239 links were identified, after which TEP's transmission line design team conducted a preliminary Engineering and Constructability (E/C) Assessment that included a review of aerial photography, TEP's existing facility locations and operations, and a site visit. Following this preliminary E/C Assessment, the number of links was reduced to 121. These preliminary links were provided to the public, stakeholders, and CWG for review and comment in December 2019 (see Figure 2a below).

Following the December outreach, additional discussions with the Union Pacific Railroad (UPRR) and University of Arizona, additional E/C Assessment, and splitting links at additional intersecting points, the total number of links increased from 121 to 164 (see Appendix A and Figure 2.b).

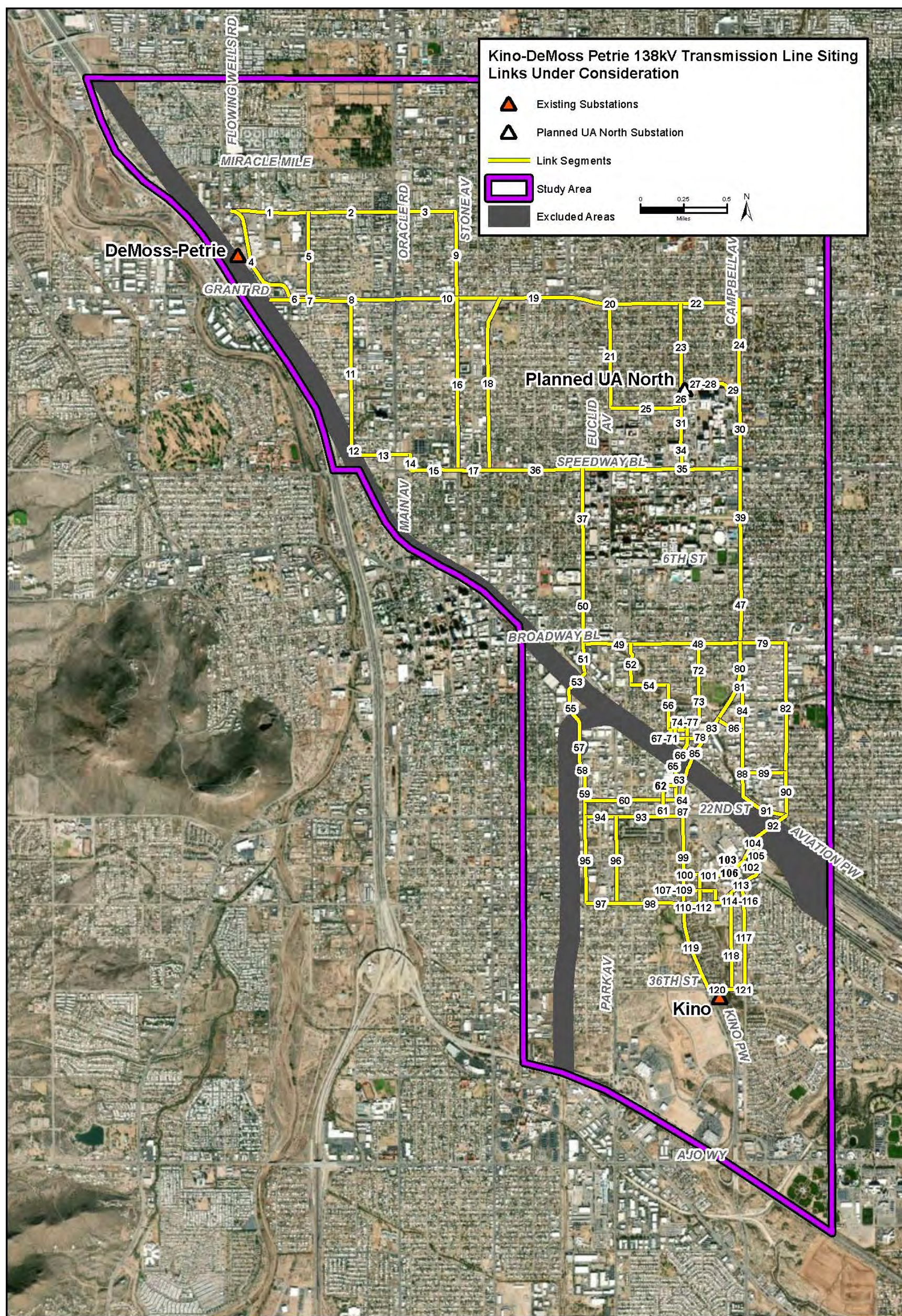


Figure 2a. Preliminary links under consideration following preliminary E/C Assessment in December 2019.

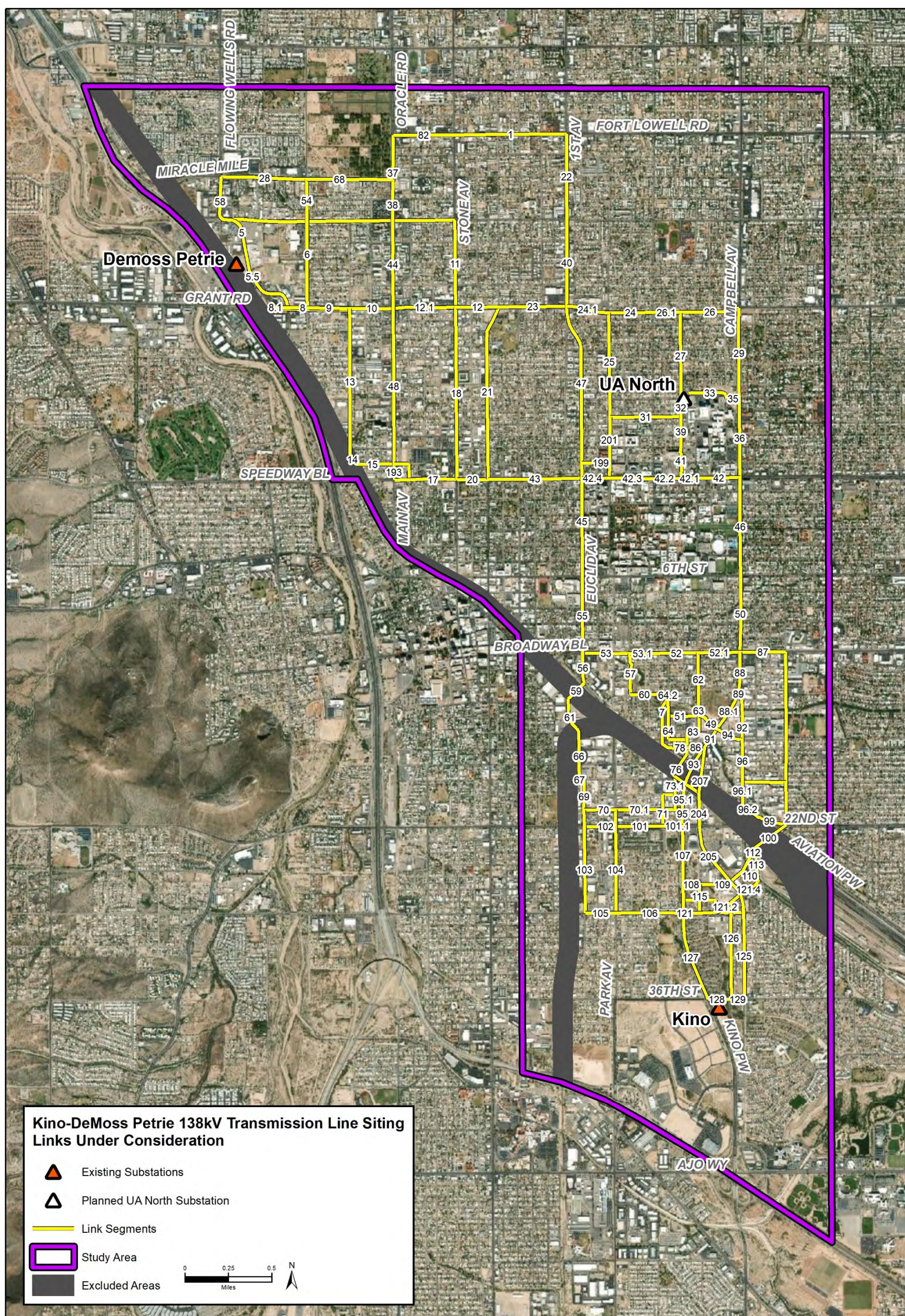


Figure 2b. Preliminary Links under Consideration following additional outreach and E/C Assessment in June 2020.

7.0 Step 4: Data Collection

Step 4 included the collection and ranking of data in support of analyzing the 12 criteria listed in Step 2. TEP collected GIS layers from its own data repository as well as from Pima County, the City of Tucson, the U.S. Geological Survey, FEMA.gov, Southwest Gas, Pima County Wastewater Management, the Arizona Department of Transportation (ADOT), and Kinder Morgan. The data was then ranked from 1 to 3 based on the TEP team’s perceived importance of that resource in the analysis, where 1 has the most importance in the analysis and 3 has the least importance. The ranks were later shared at the February 2020 stakeholder/CWG meetings and in the April 2020 Online Project Update, and *no comments were received that indicated that the importance of a particular resource had been undervalued*. Table 1 shows the data collected and the ranks assigned.

Table 1. Data Collected and Ranks Assigned

Data	Rank	Comment	Source
Residential Use	2	Review of aerial imagery and building footprints for identification of residential areas.	<i>Pima County GIS</i>
Sensitive Receptors	1	Schools, hospitals, churches, daycare and adult care facilities, etc., grouped together ^a . Given a 300-foot buffer from the parcel boundary.	<i>Pima County GIS</i>
Historic Properties	1	As listed in the National Registry of Historic Places. Given a 300-foot buffer from the parcel boundary.	<i>City of Tucson GIS, City of Tucson Historic Preservation Officer</i>
Transportation corridors	3		<i>Pima County GIS</i>
Existing TEP transmission line corridors	3		<i>TEP GIS</i>
Water, wastewater, gas utility lines	n/a ^b		<i>City of Tucson GIS, Southwest Gas, Kinder Morgan</i>
Arizona Department of Transportation (ADOT) rights-of-way	0	Excluded per ADOT standards.	<i>ADOT</i>
Union Pacific Railroad (UPRR) rights-of-way	0	Excluded per UPRR standards.	<i>TEP GIS, Pima County GIS</i>

^a Pima Community College and University of Arizona were not included as they are institutions of higher learning.

^b See Constructability Analysis in Appendix A (Table A.1).

8.0 Step 5a: Phase 1 Geospatial Analysis

Step 5a was the completion of geospatial analyses of the 164 preliminary links developed in Step 3. The TEP team utilized geospatial analysis to evaluate the influence of Residential Use, Sensitive Receptors, and Historic Properties on each link.

8.1 Phase 1 Geospatial Analysis Methodology

The geospatial analysis relied on a strategy referred to as a “Weighted Sum Analysis.” This method assigns values to the variables that are then combined to create a raster surface. The analysis utilized the three variables listed above: Residential Use, Sensitive Receptors, and Historic Properties. The three variables were then combined with roads and existing transmission lines to create a Composite. The values for the variables are as follows:

- Excluded Areas (ADOT and UPRR ROWs): 0
- Residential Use: 2
- Sensitive Receptors: 1
- Historic Properties: 1
- Areas not designated as one of these variables, such as transmission line corridors and existing road ROWs, were given a default value of 3 (as labeled on the following figures).

8.1.1 Residential Use Analysis

The first step was to prepare a layer that depicted residential use in the study area. This layer was prepared by digitizing these areas from aerial imagery and using Bing building footprint data acquired from Pima County GIS. This data was given an influence value of “2” (on a scale of 0—3, with 3 being good). It was then converted to a raster surface layer so that the data could be analyzed using the Weighted Sum Analysis. The analysis summed the value of the links and the surface layer value(s), giving the links an updated value. Links intersecting with residential areas received a lower score than links that did not. Figures 3a–d highlight the Phase 1 Residential Use geospatial process.

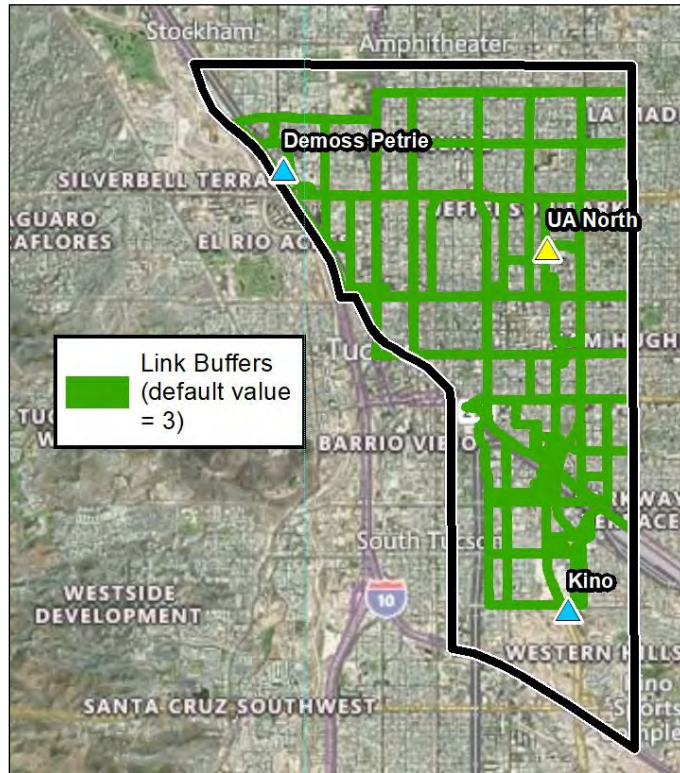


Figure 3.a. Phase 1 links with a default value of “3.”

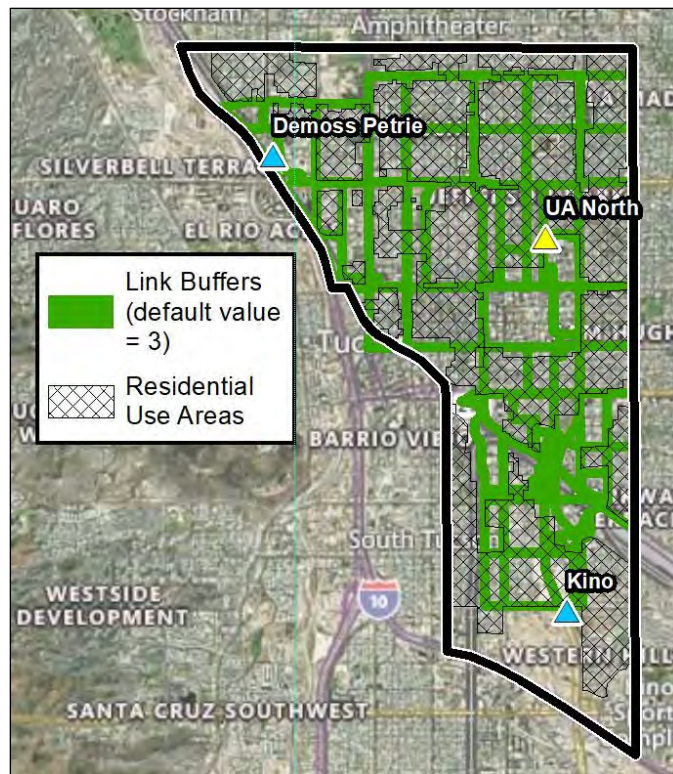


Figure 3.b. Links with intersecting Residential Use areas.

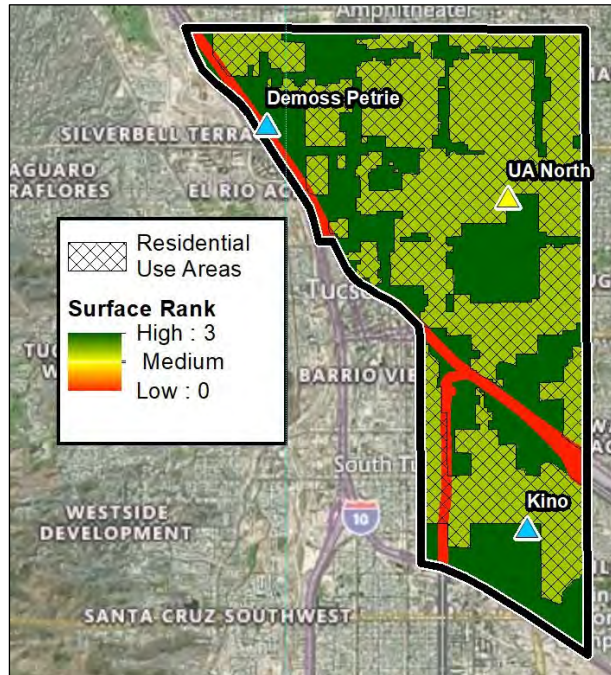


Figure 3.c. The Residential Use layer converted to a raster surface layer. Lighter green areas indicate where the surface has a value of 2 because it is Residential Use. Areas in darker green have a value of “3” because they are not Residential Use and reflect the default value of “3.” Red areas have a value of “0” (excluded areas).

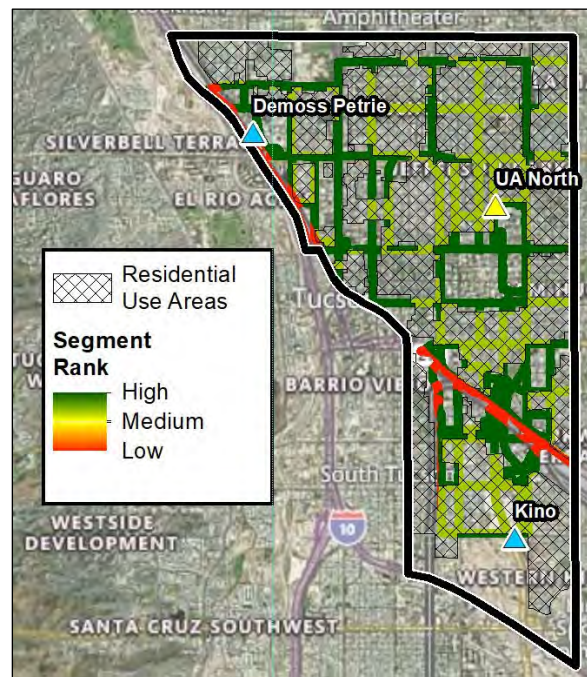


Figure 3.d. Weighted Sum Analysis. Note the links have changed color, and thus received a lower ranking where they intersect with residential areas.

8.1.2 Sensitive Receptor Analysis

The first step was to prepare a layer that depicted Sensitive Receptors in the study area. This layer was prepared by using point data acquired from Pima County GIS. The layer includes the locations of schools, hospitals, skilled nursing facilities, daycare centers, and rehabilitation facilities. Each point was given a 300-foot buffer from the parcel boundary. The data was given an influence value of 1 (on a scale of 0–3, with 3 being good). It was then converted to a raster surface layer so that the data could be analyzed using the Weighted Sum Analysis. The analysis summed the value of the links and the surface value, giving the links an updated value. Links intersecting with Sensitive Receptor buffers received a lower score than links that did not. Figures 3e–g highlight the Phase 1 Sensitive Receptor geospatial process.

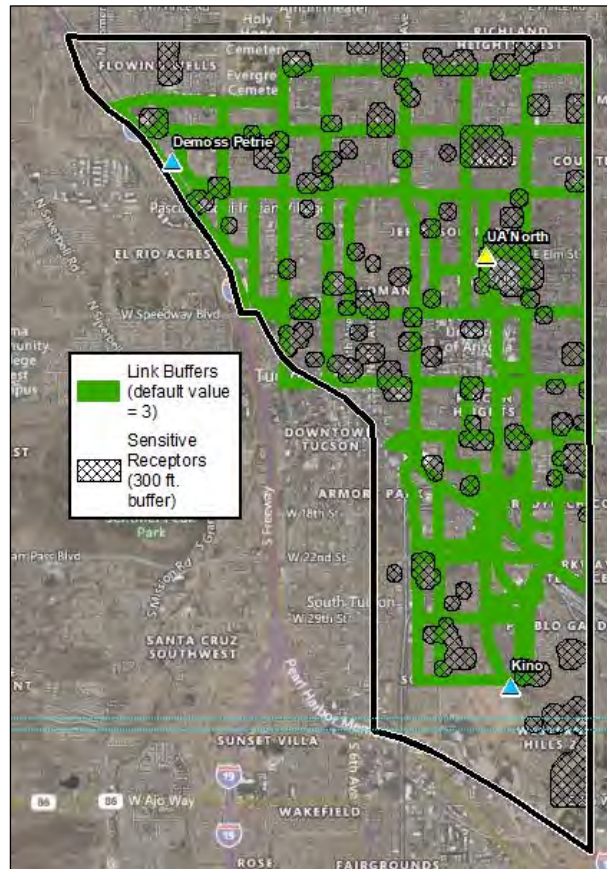


Figure 3.e. Links with Sensitive Receptor buffers.

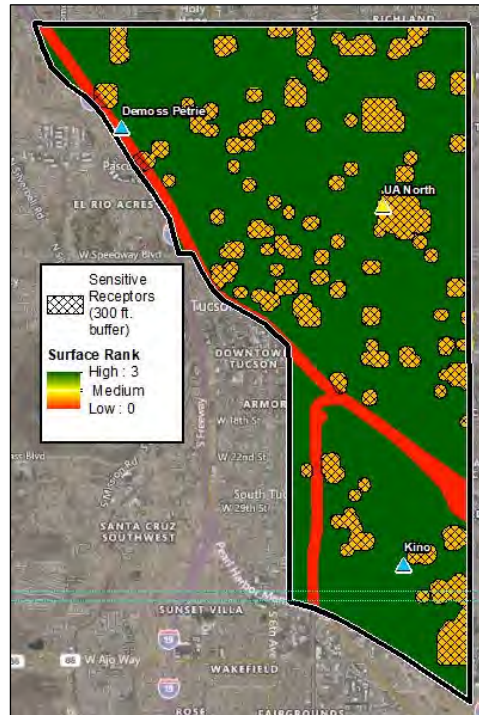


Figure 3.f. The Sensitive Receptor layer converted to a raster surface layer. Orange areas indicate where the surface has a value of 1 because it is within the 300-foot buffer of a Sensitive Receptor. Areas in dark green have a value of 3 because they are not within the buffer of a Sensitive Receptor. Red areas have a value of 0 (excluded areas).

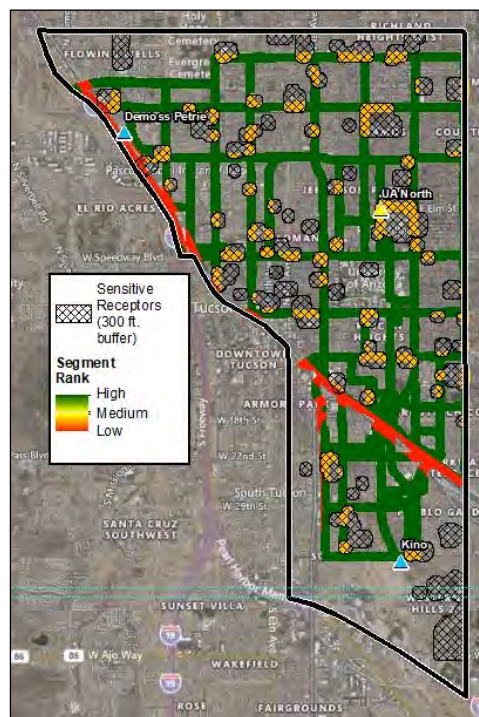


Figure 3.g. Weighted Sum Analysis. Note the links have changed color, and thus received a lower ranking where they intersect with Sensitive Receptors.

8.1.3 Historic Properties Analysis

The Historic Properties analysis was applied similarly to the Sensitive Receptors analysis. Historic Properties (building footprint data was acquired from City of Tucson GIS) were given 300-foot buffers from the parcel boundary. This data was given an influence value of 1 (on a scale of 0–3, with 3 being good). It was then converted to a raster surface layer so that the data could be analyzed using the Weighted Sum Analysis. The analysis summed the value of the links and the surface value, giving the links an updated value. Links intersecting with the Historic Properties buffers received a lower score than links that did not. Figures 3h–j highlight the Phase 1 historic property geospatial process.

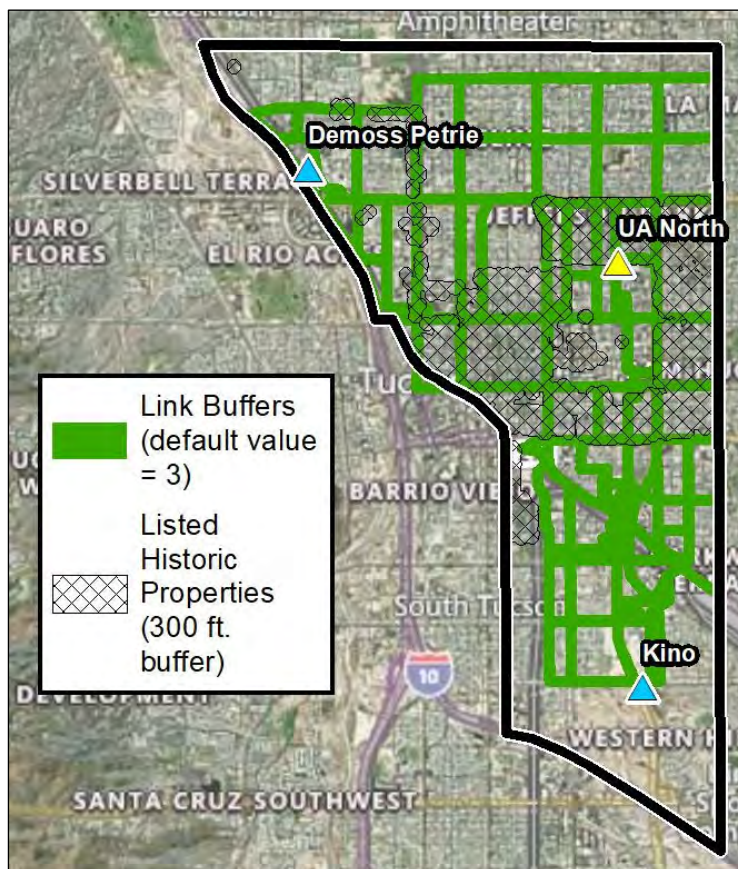


Figure 3.h. Links with Historic Properties buffers.

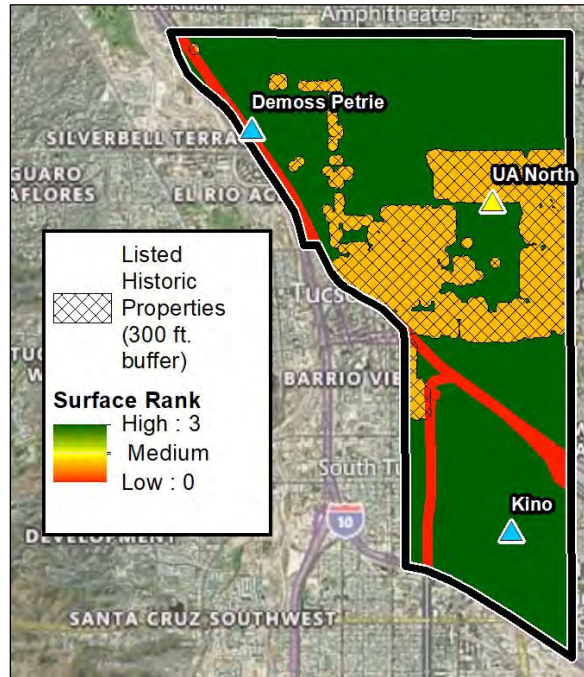


Figure 3.i. The Historic Properties layer converted to a raster surface layer. Orange areas indicate surfaces within the 300-foot buffer of Historic Properties. Areas in dark green have a value of 3 because they are not within the buffer of a Historic Property. Red areas have a value of 0 (excluded areas).

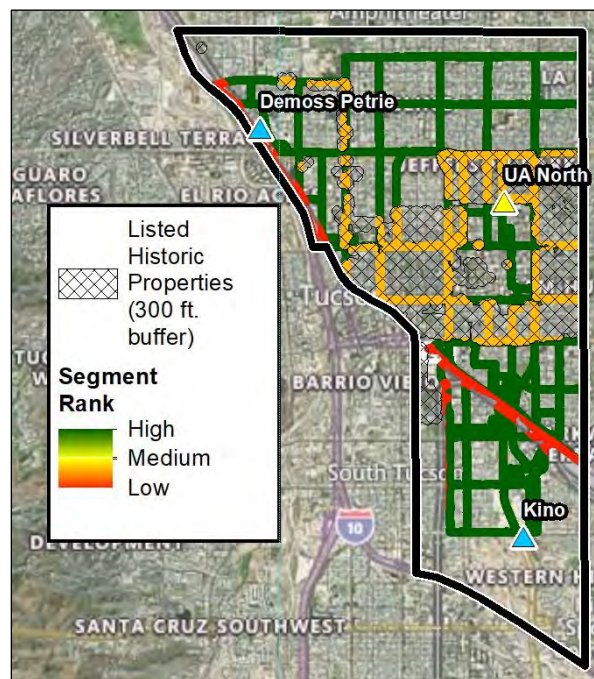


Figure 3.j. Weighted Sum Analysis. Note the links have changed color, and thus received a lower ranking where they intersect with Historic Properties.

The final step for the Phase 1 Analysis was to create a Composite raster surface that combined the values from the 3 variables (Residential Use, Sensitive Receptors, and Historic Properties) into a single raster surface layer (Figure 3.k). The Composite analysis included two additional variables: existing transmission lines and existing road ROWs. The Composite depicts particular locations where rankings change based on the specific combinations of variables. For example, the residential areas north of Grant Road are shown in a pale green, except where they interact with a Historic Property and/or Sensitive Receptor buffer and change to orange (Figure 3.l).

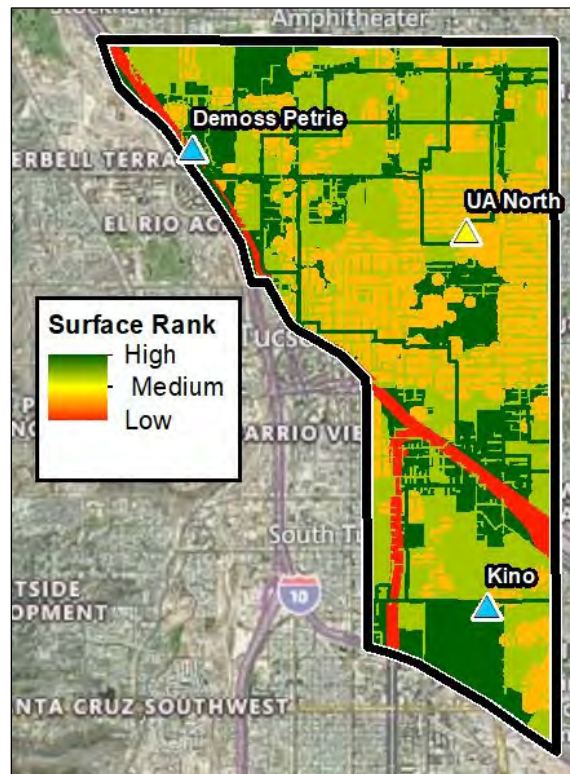


Figure 3.k. Composite raster surface.



Figure 3.l. Composite raster surface, Grant Road area.

8.2 Phase 1 Geospatial Analysis Results

The results of the geospatial analysis used average pixel range to score each link in order to compare them against each other. The range of numbers shown for each variable are derived from the following:

- The surface value of the entire study area is “3.”
- Where each variable occurs, the study area surface value is replaced with the variable value:
 - Historic Property = “1”
 - Sensitive Receptor = “1”
 - Residential Use = “2”
 - Excluded Area = “0”
- Each link is also assigned a value of “3”
- In the composite score, additional positive influences, such as existing utility corridors, are added to the surface score.

For example, Residential Use score ranged from “4” to “6”. Six is the default score where residential use is not present (Study Area Surface Value “3” + Link Value “3” = “6”).

Typically, the score would be “5” where Residential Use is present (Study Area Surface Value [in this case Residential] “2” + the Link Value “3” = “5”). Scores lower than “5” indicate that some portion of the link is within an excluded area. See Appendix A (Table A.1) for a table of the values assigned to each link.

8.2.1 Residential Use

The average pixel range across the link was 4–6, where the higher number indicates less influence or less potential impact on Residential Use. Figure 4 depicts the influence of Residential Use on the links.

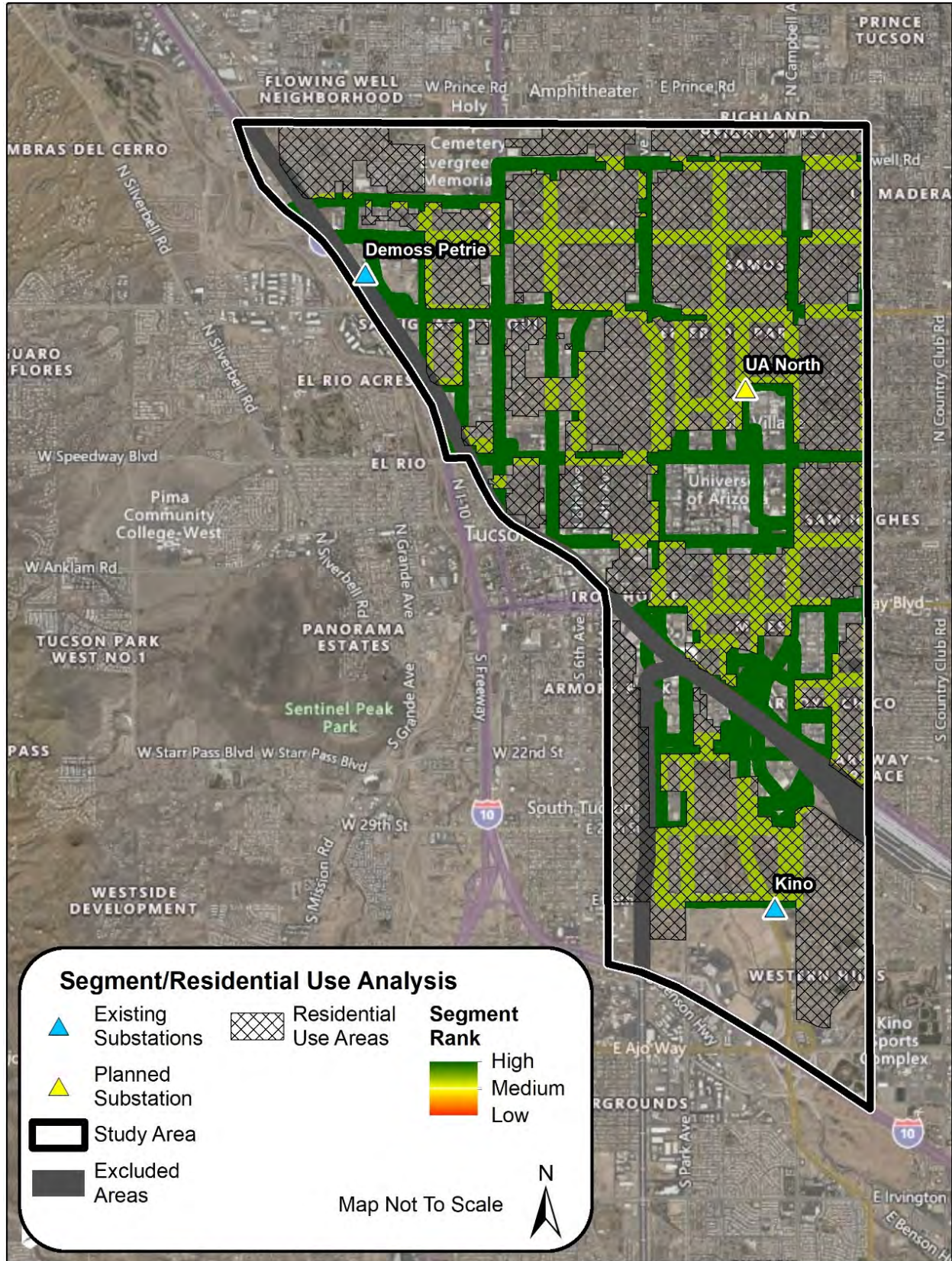


Figure 4. Phase 1 Residential Use Analysis.

8.2.2 Sensitive Receptors

The average pixel range was 4–6, where the higher number indicates less influence or less potential impact on Sensitive Receptors. Figure 5 depicts the influence of Sensitive Receptors on the links. See Appendix A (Table A.1) for a table of the values assigned to each link.

8.2.3 Historic Properties

The average pixel range was 3.5–6, where the higher number indicates less influence or less potential impact on Sensitive Receptors. Figure 6 depicts the influence of Historic Properties on the links. See Appendix A (Table A.1) for a table of the values assigned to each link.

8.2.4 Composite of Residential Use, Sensitive Receptors, and Historic Properties

The average pixel range was 4–5.5, where the higher number indicates less influence or less potential impact from these variables. Figure 7 depicts the influence of the combined variables (Composite) on the links. See Appendix A (Table A.1) for a table of the values assigned to each link.

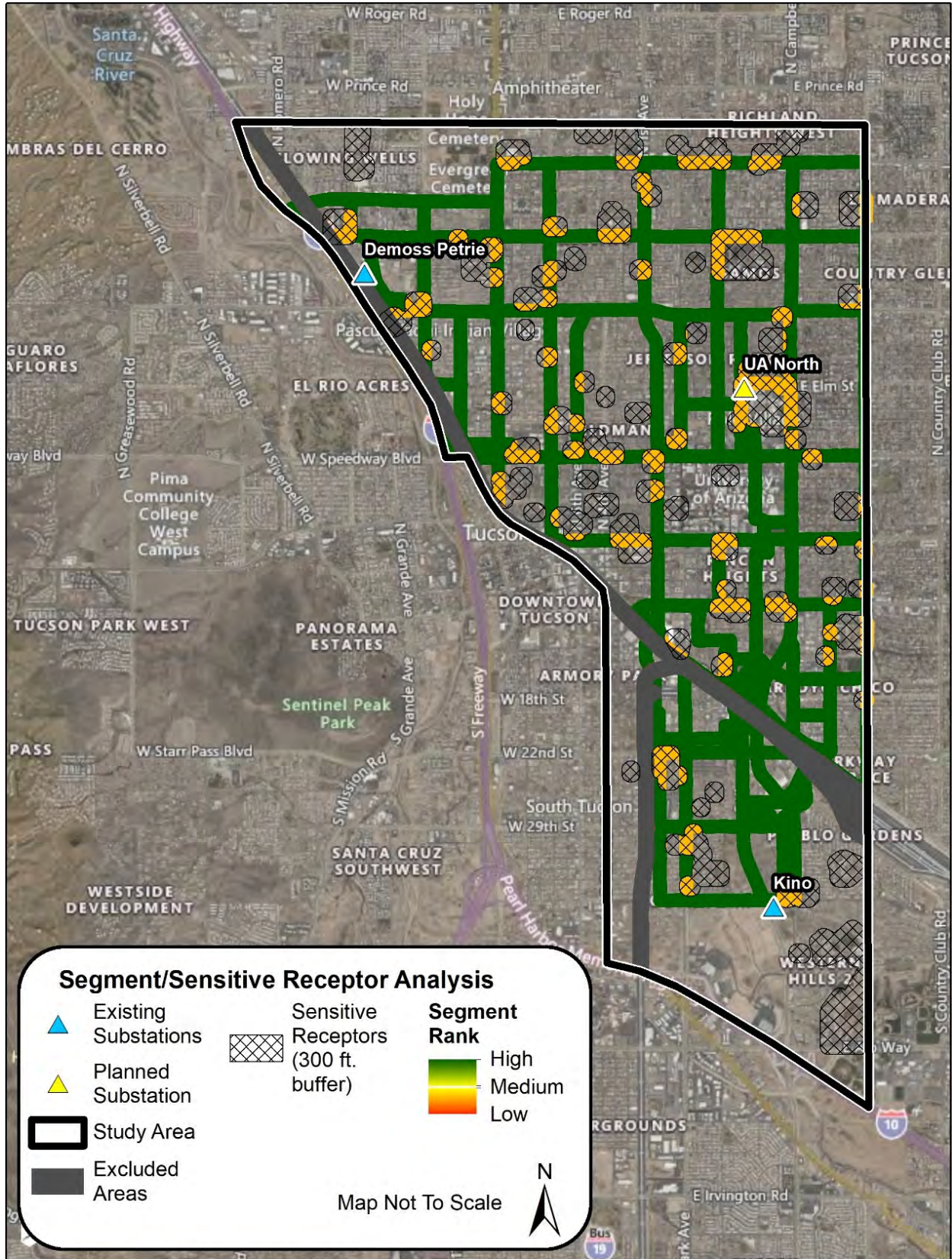


Figure 5. Phase 1 Sensitive Receptor Analysis.

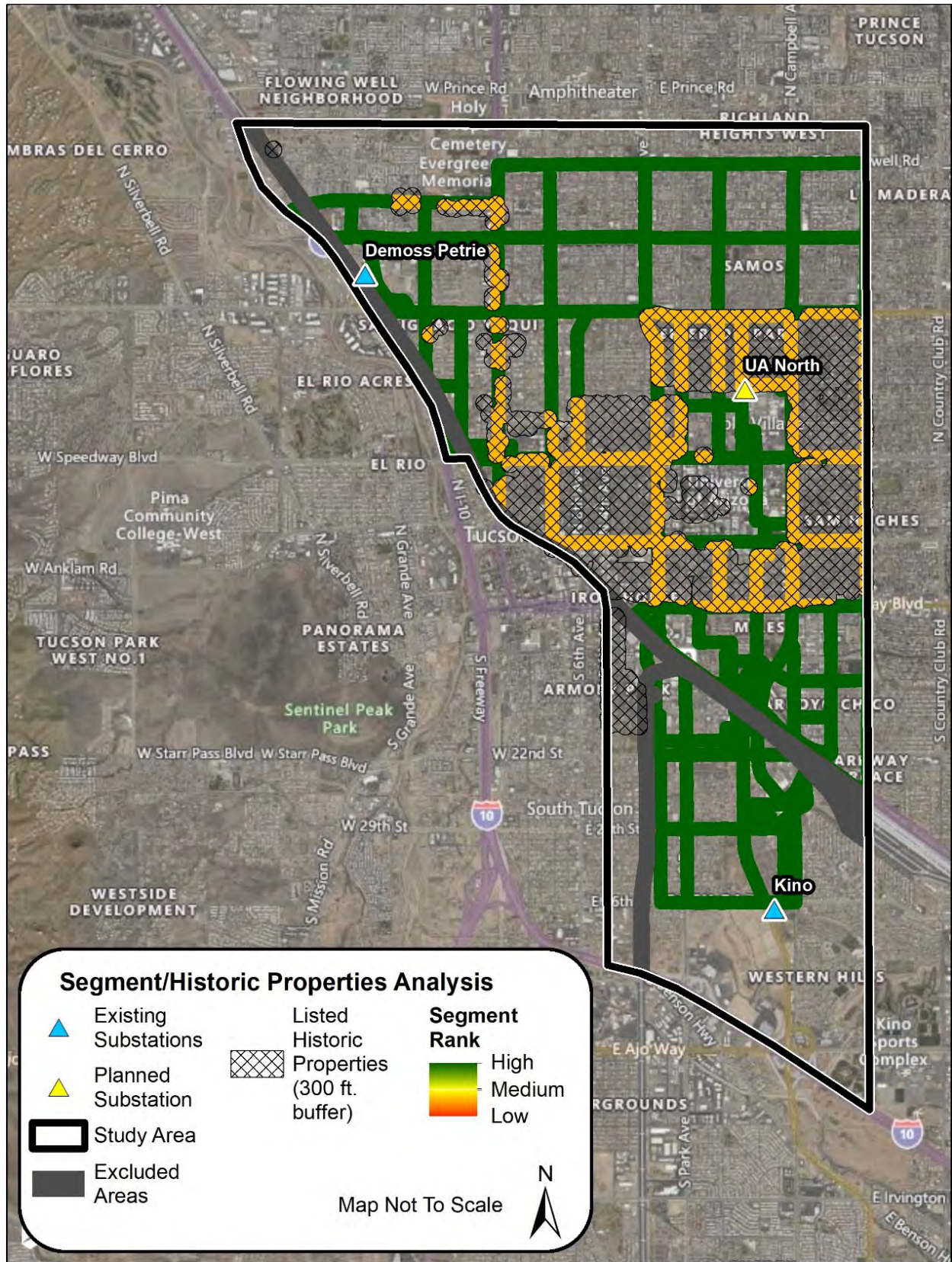


Figure 6. Phase 1 Historic Properties Analysis.

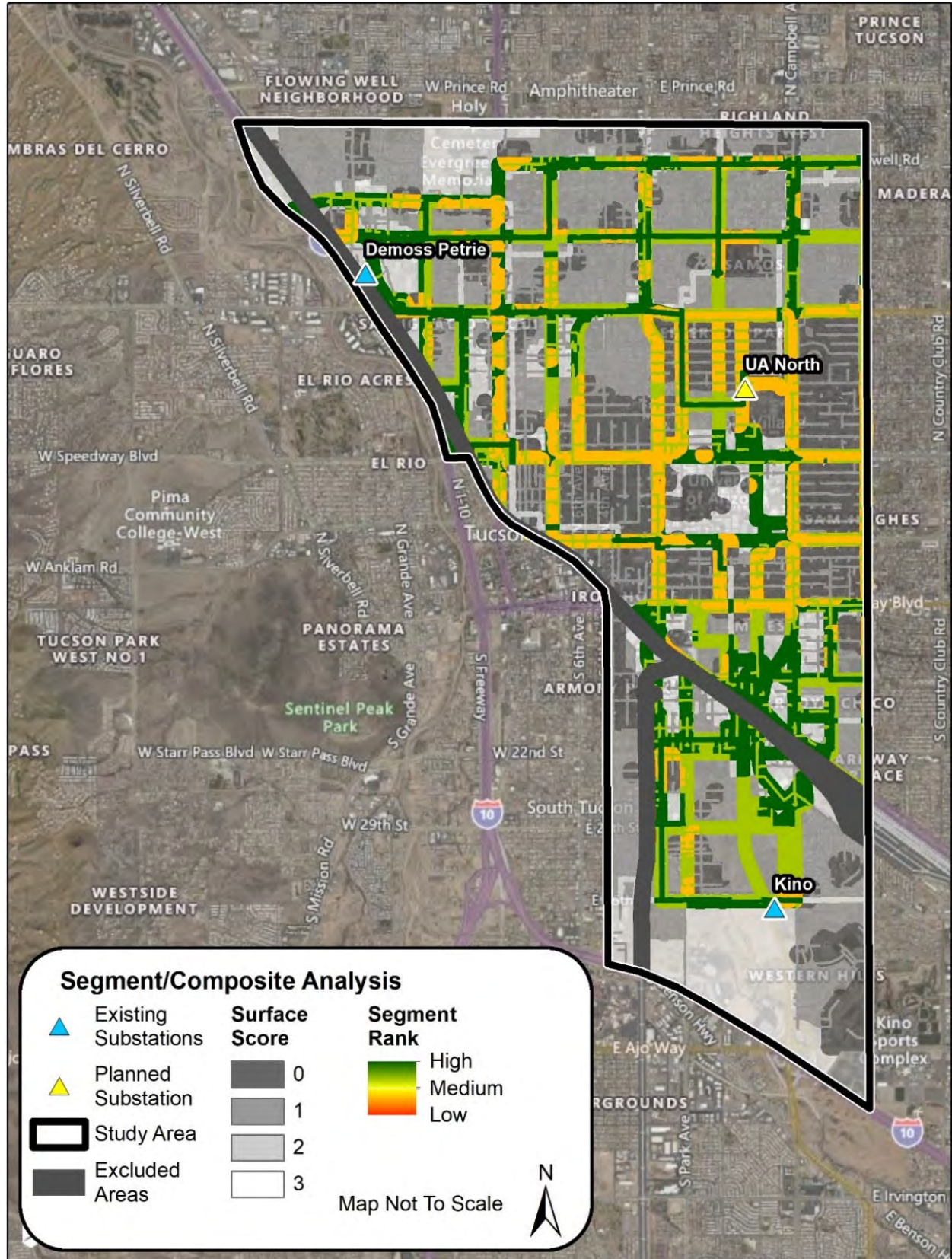


Figure 7. Phase 1 Composite Analysis.

9.0 Step 5b: Phase 1 Public, Stakeholder, and CWG Outreach

As shown in Table 2, TEP received input and data from stakeholders. CWG comments were received following CWG Meetings 1, 2, and 3. Public comments were received throughout the process, which included one round of Public Open House meetings at two separate locations, an online Project Update in April 2020, and an upcoming Virtual Public Open House Meeting in August 2020. Each outreach was preceded by a newsletter and/or postcard mailing.

These comments are located on TEP’s Project webpage (<https://www.tep.com/kino-to-demoss-petrie/>).

Table 2. Stakeholder Input

Stakeholder	Input	Response
ADOT	–	TEP excluded ADOT ROWs from the study.
UPRR	UPRR indicated that any parallel facilities should be at least 300 feet from the centerline of the railroad and crossings should be at 0° angle.	TEP excluded a 300-foot buffer on either side of the centerline of the railroad from the analysis. TEP will obtain required permits for UPRR crossings.
	Transmission line across UPRR railyard could have significant impacts on UPRR operations. Look for link that skirts yard or avoids altogether.	Added links 204, 205, 206.
City of Tucson	Sun Link Streetcar cannot be taken out of service for any length of time for construction or operation. Routes should avoid streetcar.	Sam Hughes suggestion to underground along Park and close for pedestrian use does not appear viable.
	Possible streetcar addition on Campbell Avenue/Kino Parkway between River Road and 36th Street. City of Tucson will not know for sure until after CEC application is filed.	Assume that any plans on Campbell Avenue/Kino Parkway could be designed around given ROW width and time until City of Tucson plans would be carried out.
University of Arizona	University of Arizona suggested an additional alternative to Speedway Boulevard between Euclid Avenue and Campbell Avenue be added.	Added links 198, 199, 201.

All input received from the public, stakeholders, and the CWG was considered in the Phase 2 analysis process (see Step 6a) to help inform TEP in making decisions as to which links to utilize in the development of the preliminary alternative route corridors. TEP received over 390 comments related to the location of facilities. Where a commenter specifically mentioned a link as preferable or not preferable, these comments were counted as a single response per commenter and tallied. Figure 8 shows the tally of both preferable and not preferable comments received on each link as of June 16, 2020. A negative number indicates that more not preferable comments were received than preferable comments for that particular link.

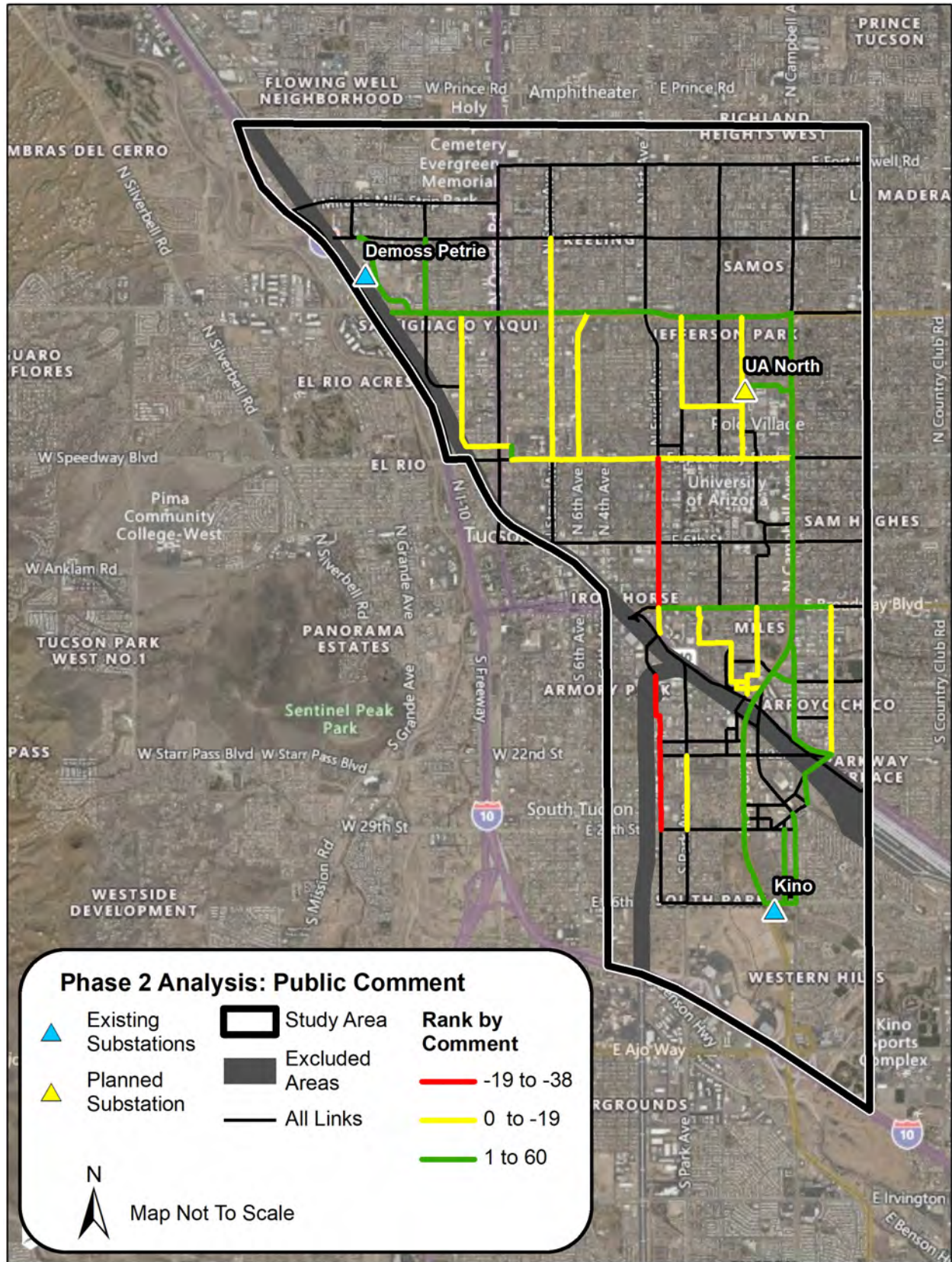


Figure 8. Public, stakeholder, and CWG comment tally.

10.0 Step 6a: Phase 2 Geospatial Analysis

For Phase 2 of the Geospatial Analysis, data from Phase 1 was used as a starting point, which added the influence of public, stakeholder, and CWG comments on the links and constructability values determined by TEP Engineering staff in the E/C Assessment. Figure 9 shows the comments on each link converted to raster surface values. The values assigned to the link comments in Phase 2 were:

- 1 to 60 = **3**
- 0 to -12 = **2**
- -13 to -38 = **1**

Links not receiving public comment during Phase 1 received a default value of **3**.

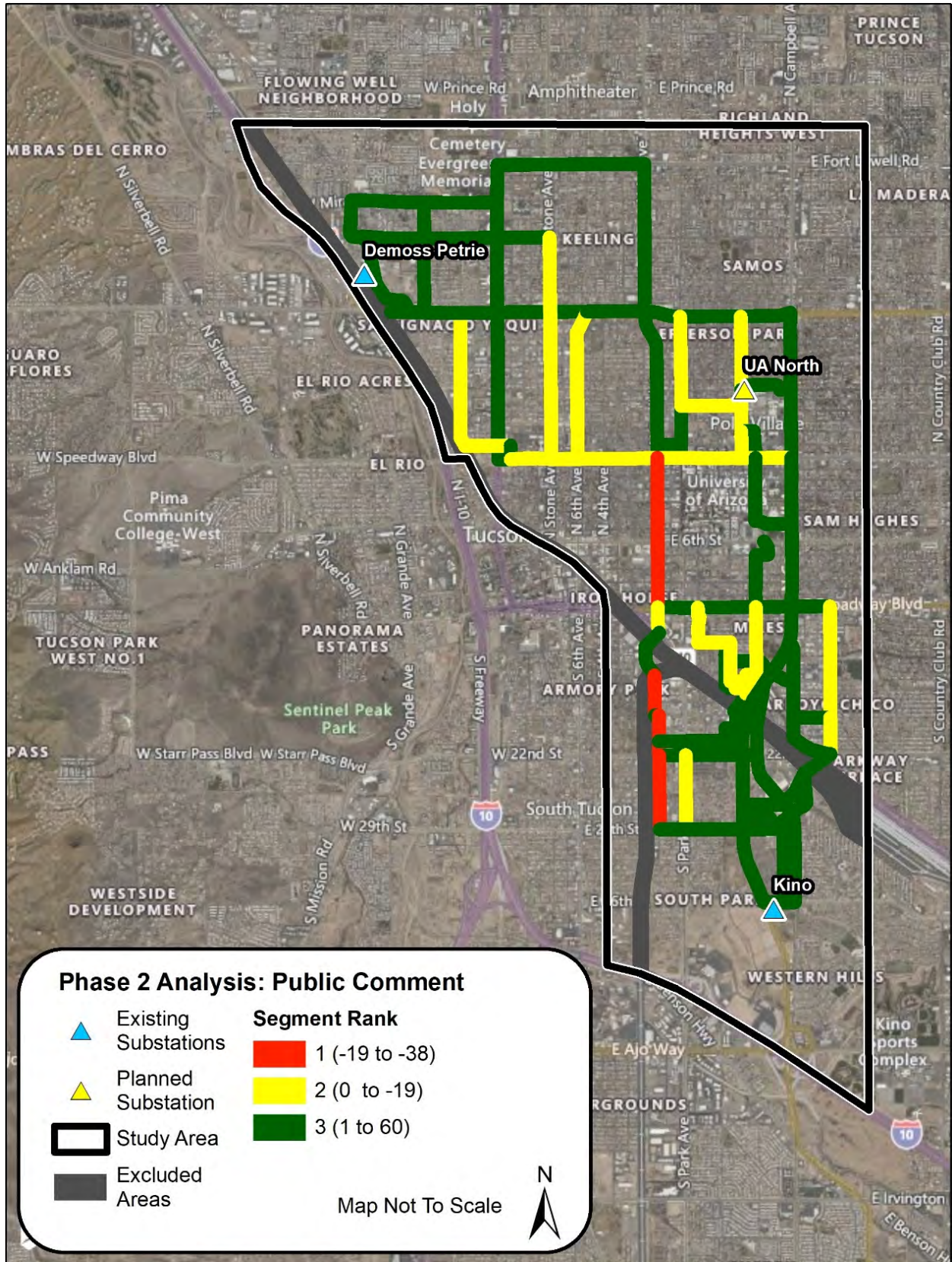


Figure 9. Phase 2 public, stakeholder, and CWG comment analysis.

The 164 links that were remaining at the end of the Phase 1 analysis were then re-evaluated in a comprehensive E/C Assessment during Phase 2. The links were evaluated and scored based on the following factors:

- TEP overhead/underground line conflicts/constraints.
- TEP underground required/sufficient room for new TEP underground facilities.
- TEP outage requirements.
- Communications attachments located on existing structures that would require relocation.
- Other electric utility conflicts.
- Sidewalk conflicts.
- Storm drain conflicts.
- Easements required.
- Roadway improvement conflicts.
- Gas line conflicts.
- Pima County Waste Water conflicts.
- Tucson Water line conflicts.
- Other conflicts.

The E/C Assessment values can be viewed in Figure 10 and Appendix B (Table B.1).

Following Phase 2 analysis, eight additional links were eliminated (Figure 11). Six links were also added based on stakeholder input and due to additional splitting of existing links (Figure 12). Table 3 lists the links that were removed from and added to the analysis as a result of the E/C Assessment and the reasons why they were removed or added. The E/C Assessment will be revised following Phase 2 analysis and used in ranking the alternative routes used in the CEC application.

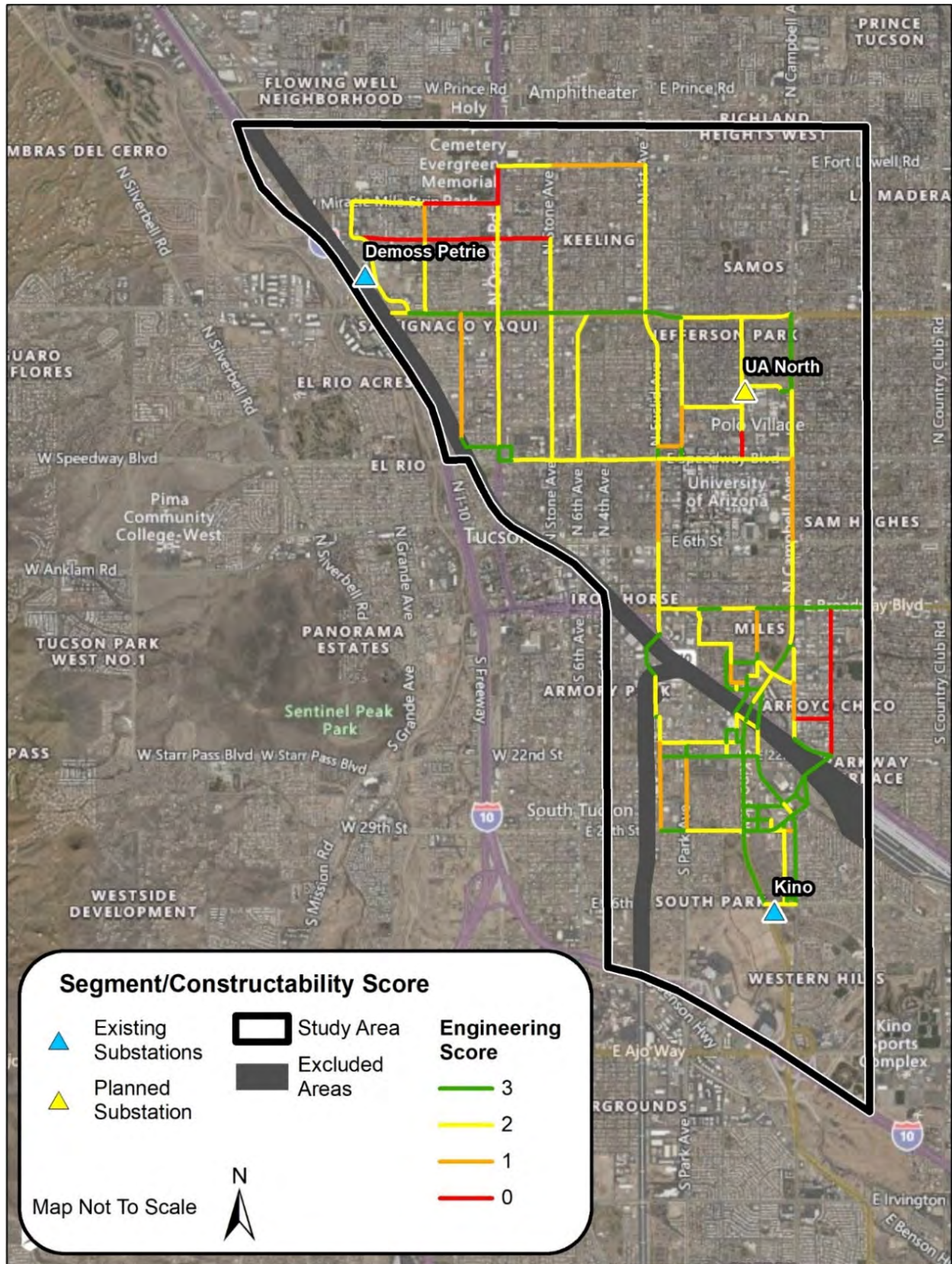


Figure 10. Phase 2 E/C Assessment Scores.

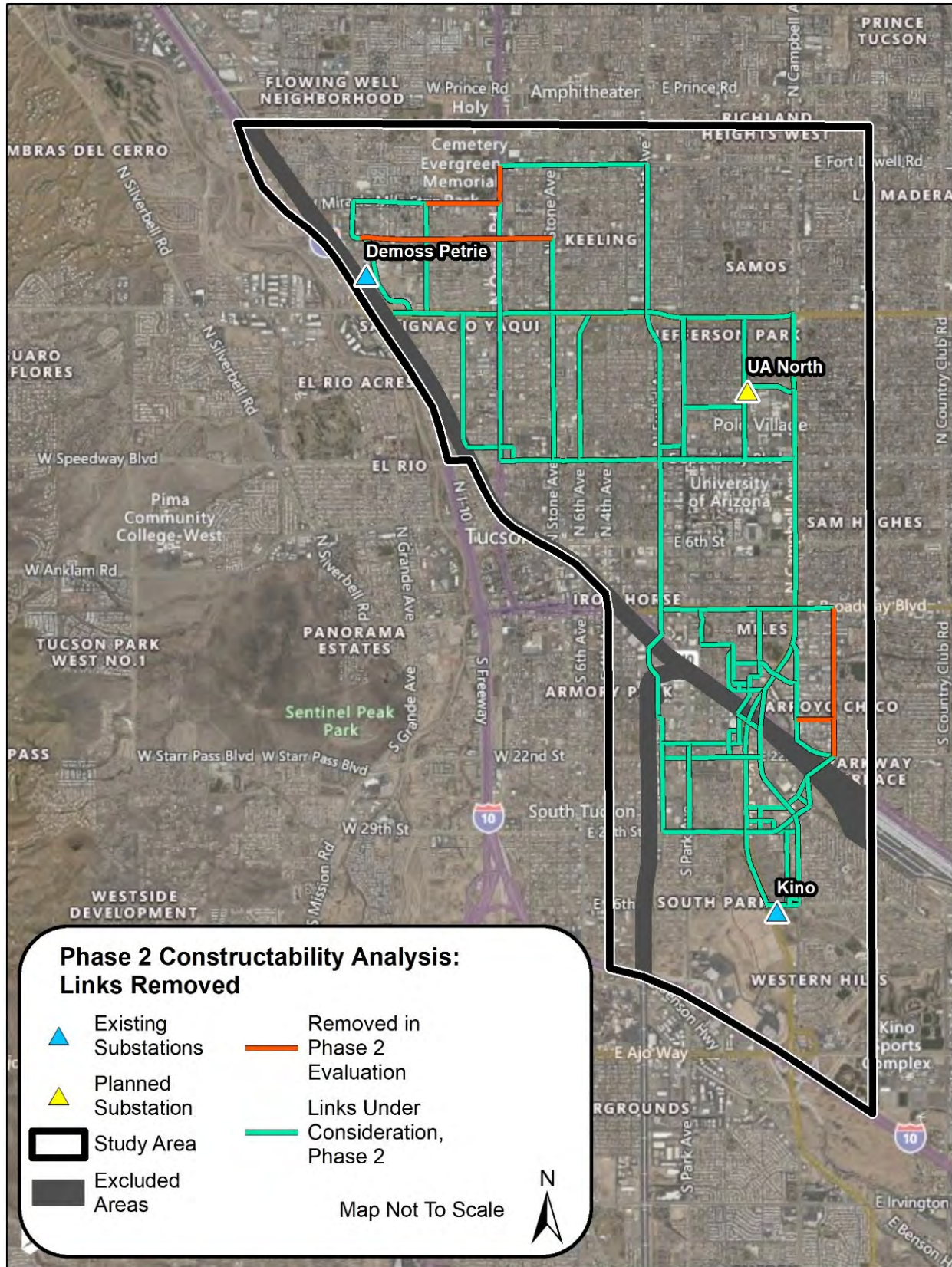


Figure 11. Phase 2 links removed.

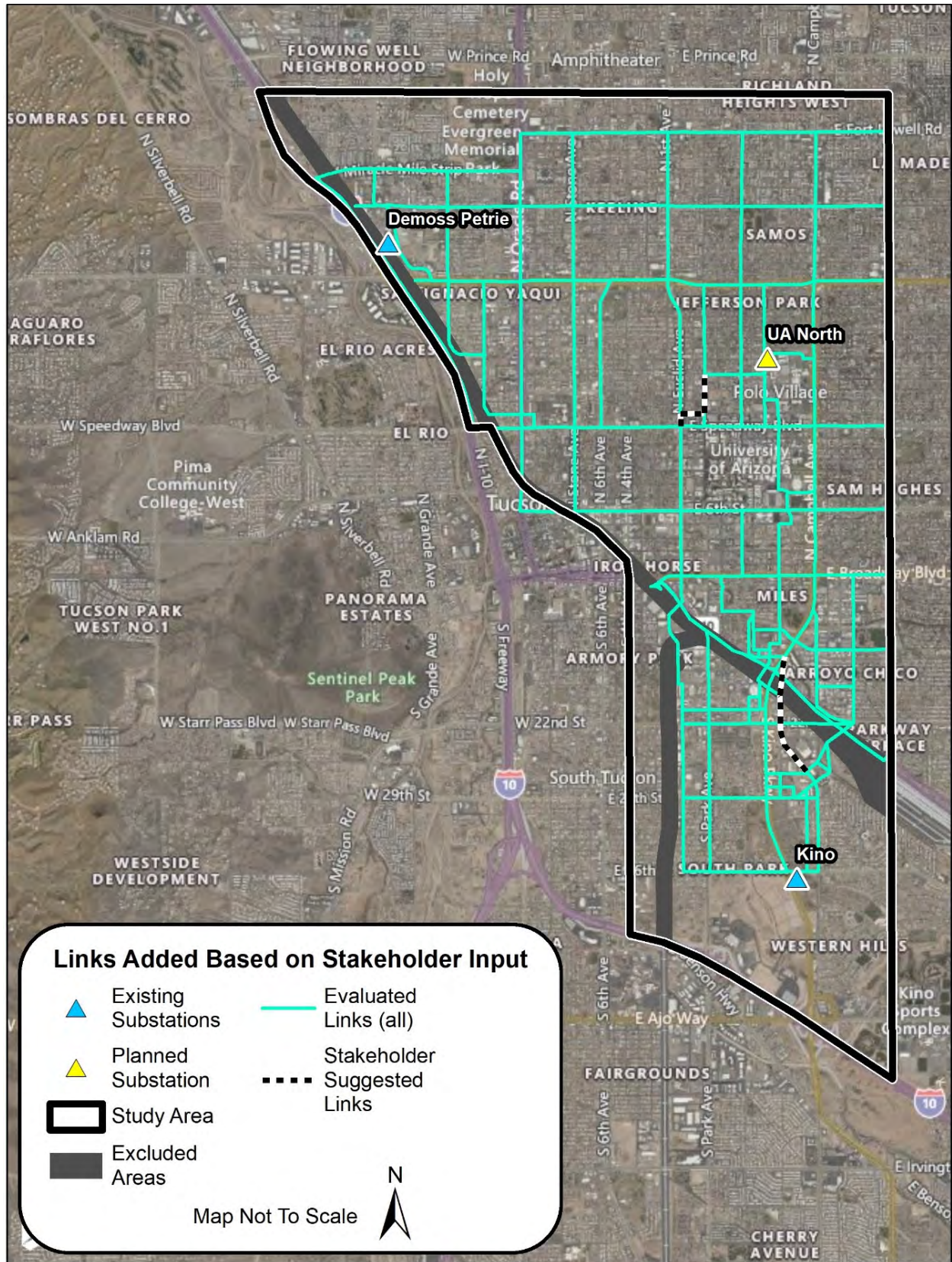


Figure 12. Phase 2 links added.

Table 3. Segments Removed and Added During the E/C Assessment

Segment No.	Road	Segment	Removed (R) or Added (A)	Primary Reasons for Removal/Addition
2	Glenn	Fairview– Flowing Wells	R	Distribution Circuit is currently underbuilt on the existing 138kV line. There is not enough room to underground the existing overhead distribution line and build a double-circuit 138kV line in same ROW due to other utilities.
3	Glenn	Oracle–Fairview	R	Distribution Circuit is currently underbuilt on the existing 138kV line. There is not enough room to underground the existing overhead distribution line and build a double-circuit 138kV line in same ROW due to other utilities.
4	Glenn	Stone–Oracle	R	Distribution Circuit is currently underbuilt on the existing 138kV line. There is not enough room to underground the existing overhead distribution line and build a double-circuit 138kV line in same ROW due to other utilities.
37	Oracle	Ft. Lowell– Miracle Mile	R	Not enough room due to existing utilities on the east side and limited available ROW on the west side.
68	Miracle Mile	Oracle–Fairview	R	Not enough room due to existing utilities on the south side and a storm drain on the north.
90	Plumer	19th–Broadway	R	Due to the number and locations of utilities along this corridor, it is not feasible to fit an additional transmission line.
97	19th Street	Plumer–Campbell	R	Due to the number and locations of utilities along this corridor, it is not feasible to fit an additional transmission line.
98	Plumer	19th–22nd	R	Due to the number and locations of utilities along this corridor, it is not feasible to fit an additional transmission line.
198	Euclid	Speedway–Helen	A	Added as an alternative to Speedway Blvd. in this area.
199	Helen	Euclid–Park	A	Added as an alternative to Speedway Blvd. in this area.
201	Park	Helen–Alley	A	Added as an alternative to Speedway Blvd. in this area.
204	Warehouse/ Cherry	Kino–2nd	A	Added as an alternative to crossing the UPRR railyard.
205	Cherrybell	Willets–22nd	A	Added as an alternative to crossing the UPRR railyard.
206	cross-country	Warehouse–Kino	A	Added as an alternative to crossing the UPRR railyard.

10.1 Phase 2 Geospatial Analysis Results

In order to better visualize the results of the Phase 2 analysis, two additional composite views were developed. The first included raster data sets of the E/C Assessment data and the links ranked by public comment (Figure 13). The second combined the Phase 1 Composite (Residential Use, Sensitive Receptors, and Historic Properties) and the Phase 2 Composite (Comments, E/C Assessment) (Figure 14).

The Phase 2 Composite Analysis (see Figure 13) highlights the interaction of the constructability assessment and the public, stakeholder, and CWG comments received. Links that were ranked “3” because of favorable or no public comment may have had their rank reduced because of constructability constraints.

When comparing the Phase 1 Composite Analysis (see Figure 7) with the Phase 2 Composite Analysis, it is evident that constructability and input from the public, stakeholders, and CWG impacted some of the links. For example:

- Euclid Avenue between Broadway Boulevard and Speedway Boulevard changed from yellow-orange to orange and red.
- Campbell Avenue between Broadway Boulevard and Speedway Boulevard changed from yellow-orange to yellow and green.
- Broadway Boulevard between Campbell Avenue and Euclid Avenue changed from yellow-orange to green.
- Vine Avenue between Speedway Boulevard and Helen Street changed from green to red.

The Phase 1/Phase 2 Composite Analysis (see Figure 14) combined the composite rasters from Phases 1 and 2. It reflects the influence of public comments and constructability on the Phase 1 variables. Initial visual analysis shows, for example, that while Speedway Boulevard and Grant Road retained their ranking from Phase 1, other streets including Euclid Avenue, Plumer Avenue, and stretches of Miracle Mile became less favorable, and portions of Campbell Avenue/Kino Parkway became more favorable.

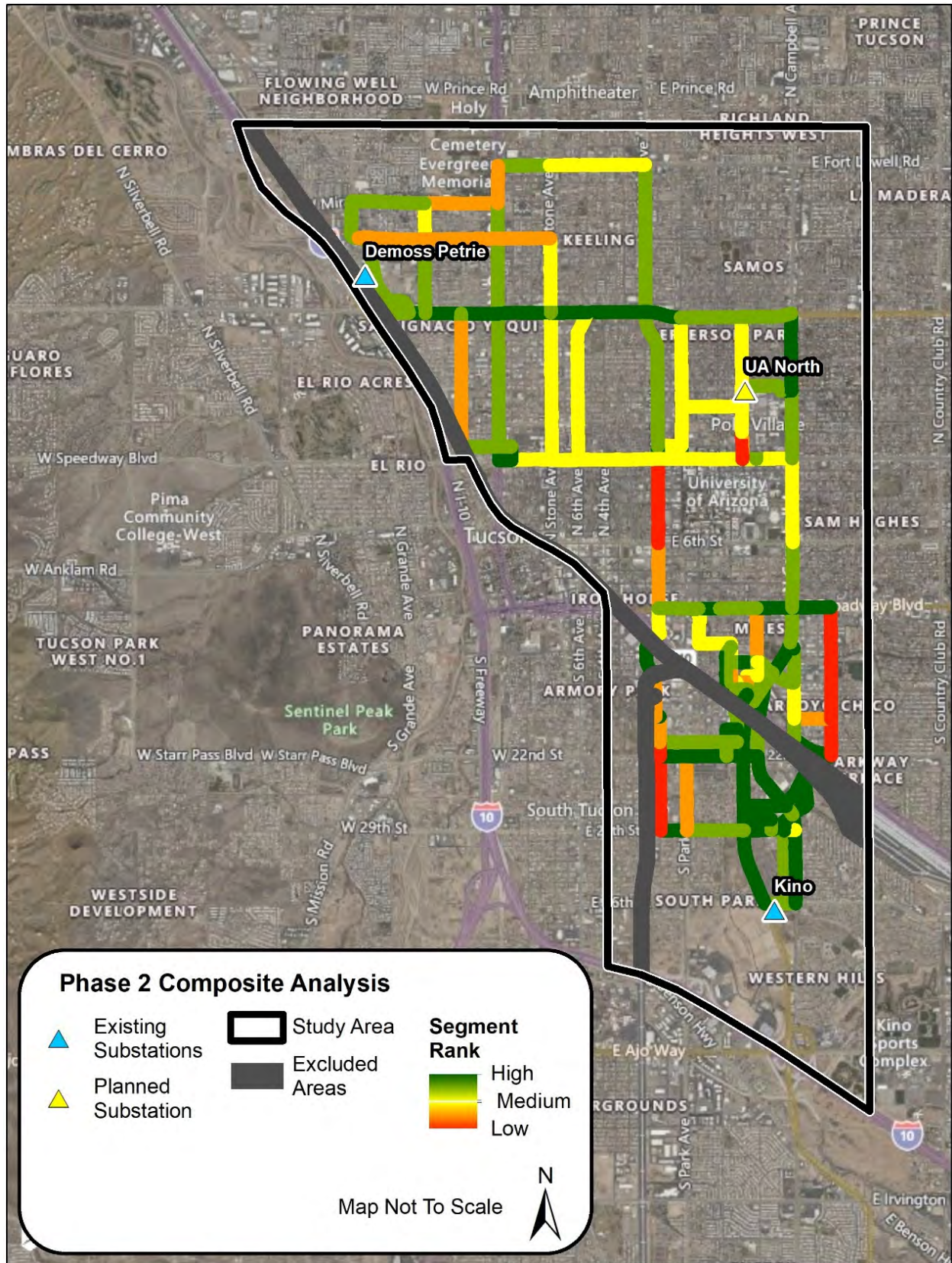


Figure 13. Phase 2 Composite Analysis.

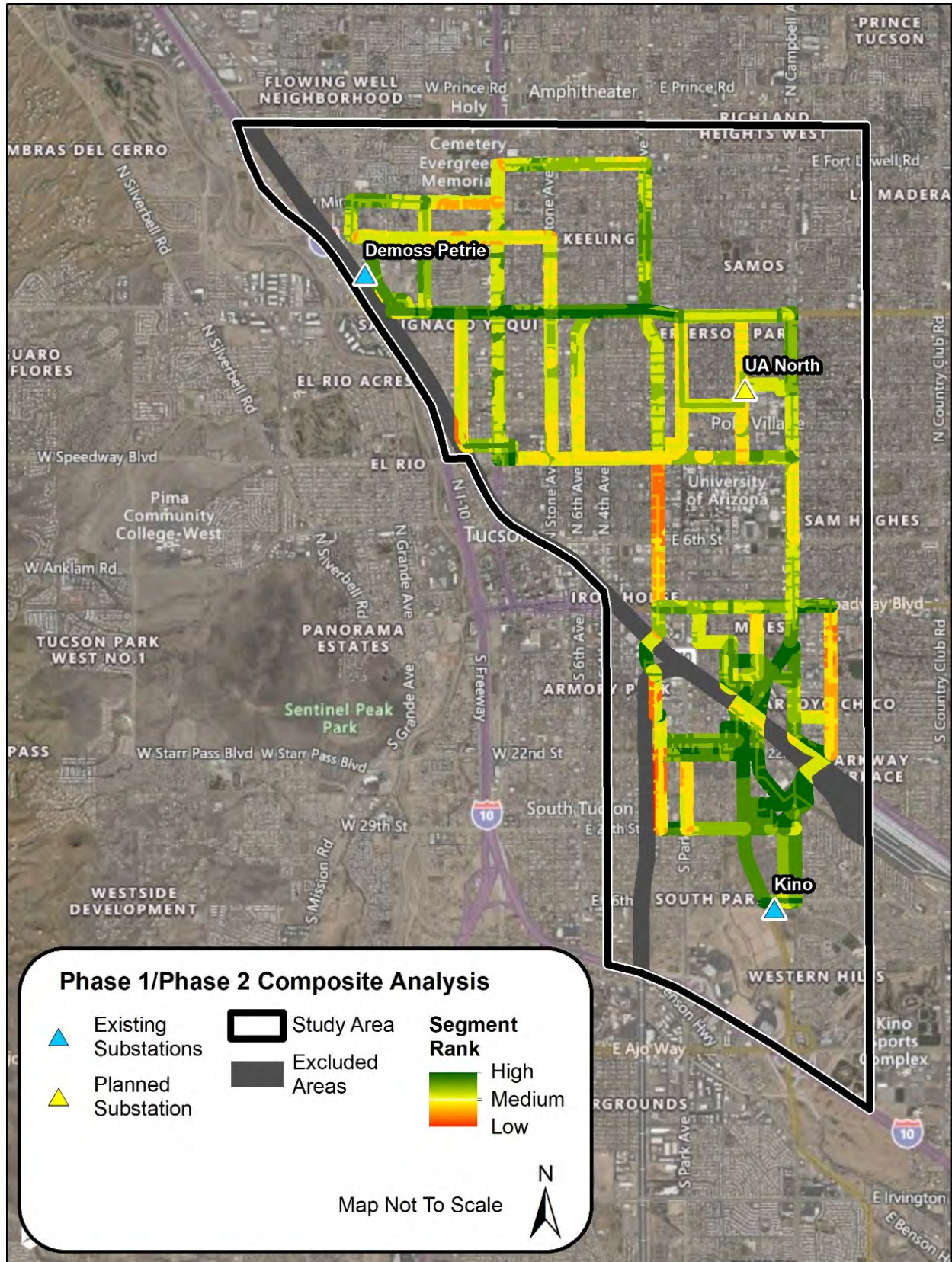


Figure 14. Combined Phase 1/Phase 2 composite analysis.

11.0 Step 6b: Develop Preliminary Alternative Route Corridors

The results of the Phase 1 and Phase 2 analyses, which highlight the influence of the variables on the preliminary links, guided the development of six preliminary alternative route corridors (Routes 1–6) that could connect the Kino Substation to the planned UA North Substation, and four preliminary alternative route corridors (Routes A–D) that could connect the planned UA North Substation to the DMP Substation (Figure 15; see Appendix C for individual route corridor maps). Note that one numbered route corridor and one lettered route corridor must be combined to create a single Kino to DMP 138kV Transmission Line route corridor. Where a numbered route corridor and a lettered route corridor overlap, the two cannot be combined, as this would not serve the Project’s purpose and need for system redundancy. These route combinations are not feasible:

- Route 1 cannot be combined with Route D.
- Route 2 cannot be combined with Route D.
- Route 3 cannot be combined with Route B.
- Route 4 cannot be combined with Route C.
- Route 5 cannot be combined with Route B.
- Route 6 cannot be combined with Route C.
- Route B cannot be combined with Routes 3 or 5.
- Route C cannot be combined with Routes 4 or 6.
- Route D cannot be combined with Routes 1 or 2.

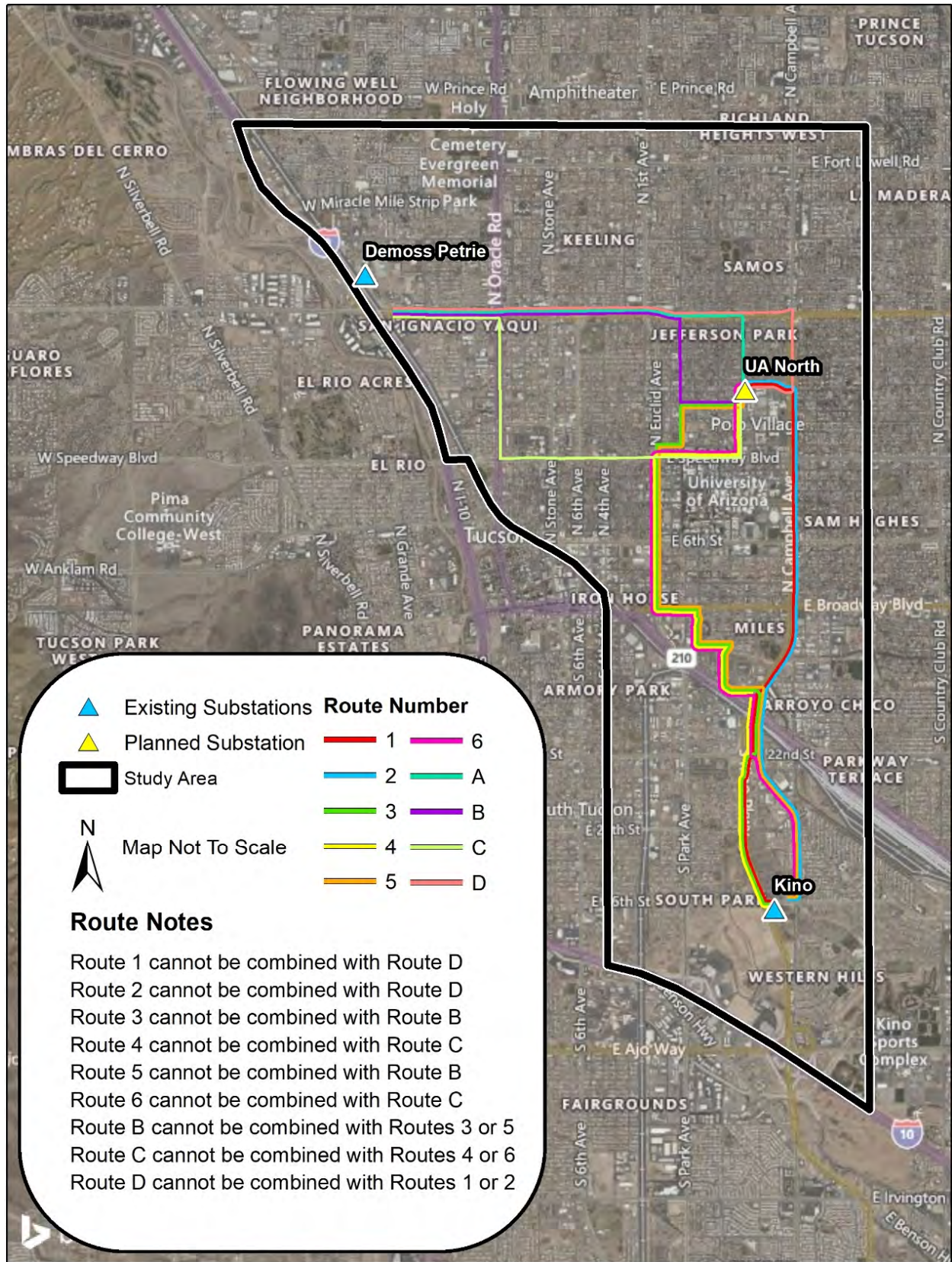


Figure 15. Preliminary route corridor overview.

12.0 Step 6c: Preliminary Alternative Route Corridor Analysis

Appendix D includes a summary analysis of the Phase 1 and Phase 2 link analyses with the preliminary alternative transmission line route corridors overlaid. This allows visual comparison of the influence of the variables used in each stage of the analysis.

Once the preliminary alternative route corridors were developed, the route corridors were analyzed under the same criteria as the links in Phase 1—Residential Use, Sensitive Receptors, Historic Properties, and a Composite of all three criteria (see Appendix E for a table of the results). The Route Corridor Analysis maps can be viewed in Appendix F. In addition, TEP completed an additional analysis where the positive influence of existing roads and TEP facilities was removed and the influence of the Phase 1 criteria and constructability on each route corridor was assessed; these maps can be viewed in Appendix G.

13.0 Step 7: Phase 3 Alternative Route Corridor Narrowing

Phase 3 analysis involved the completion of a multi-objective decision model for the twelve preliminary routes. Between the Phase 2 and Phase 3 analyses, it was discovered that Route C could not be constructed due to a planned UA development on Vine Road. As a result, Route C was removed, and a new Route E was developed that could link the UA North Substation to the DMP Substation.

In addition, TEP added Route Combinations 1d and 2d to the analysis. Previously, TEP had concluded these routes could not be combined, as a double-circuit line would not meet the Project's purpose and need for redundancy and reliability. TEP received many comments as to why these routes could not be combined. TEP took another look at the portion of the route along Elm Street/Ring Road/Chauncy Lane between Campbell Avenue and the UA North Substation and determined that, with easement acquisition on private land, a single-circuit line could be placed on both the north and south sides of these roads in order to combine Routes 1 and 2 with Route D. Therefore, for the purposes of the Phase 3 analysis, the 12 routes analyzed were 1a, 1b, 1d, 1e, 2a, 2b, 2d, 2e, 3a, 3d, 5a, and 5d (Figure 16).

Review of public, stakeholder, and CWG comments; geospatial analysis; and the results of independent studies were used to weight and score the 12 evaluation criteria with the goal of determining the applicable ranking for each alternative. Details of how criteria were classified into three general rating categories is described below.

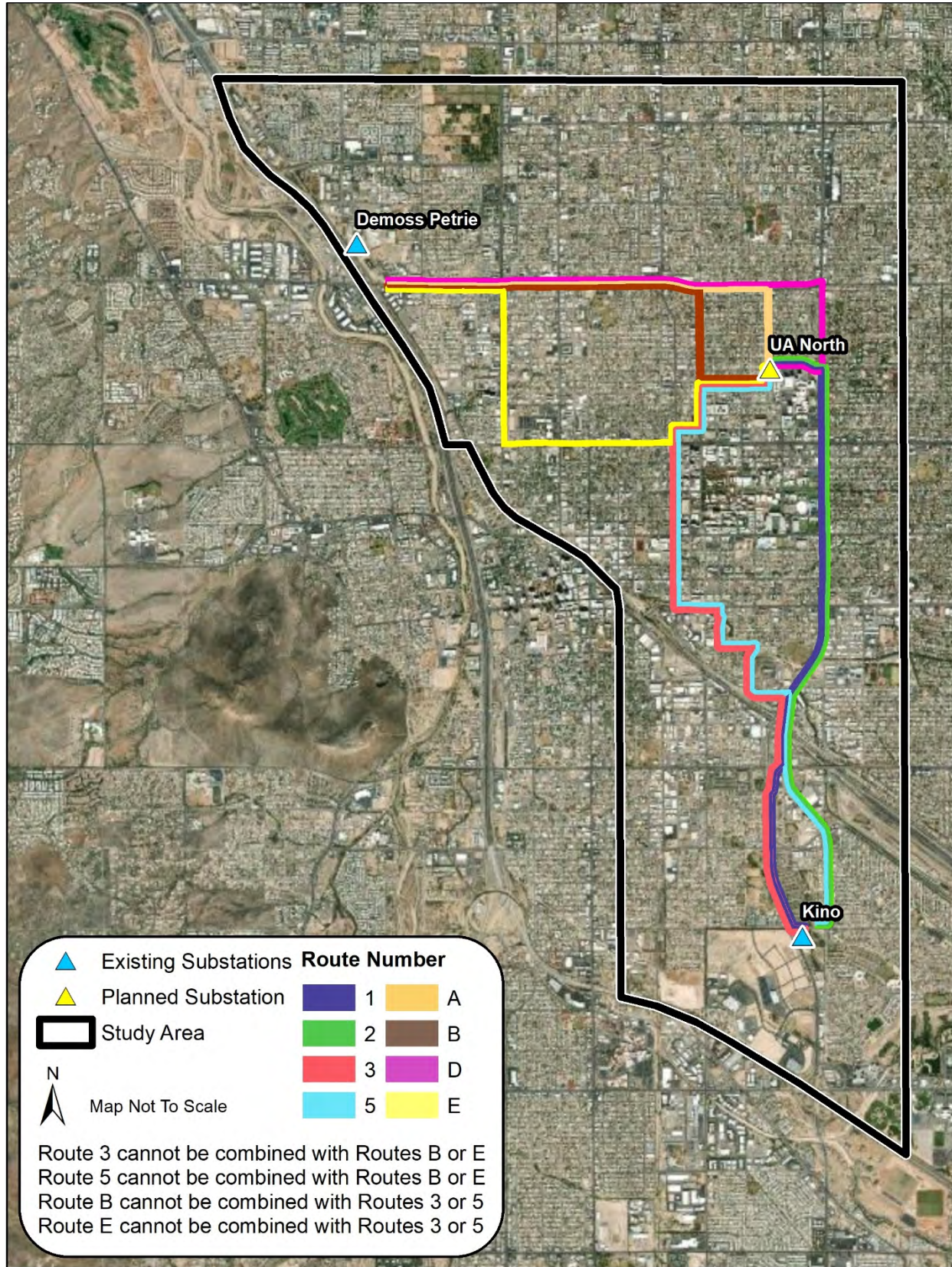


Figure 16. Preliminary Alternative Routes used in Phase 3 Analysis.

The ratings for the criteria of most concern (Residential Use, Historic Properties/Districts, Sensitive Receptors, and Viewshed) were weighted and their scores adjusted. Alternatives with higher total numeric scores are considered to have fewer constraints to construction, while alternatives with lower scores are considered to have more constraints.

Of note, TEP asked members of the CWG to rank the criteria in order of importance. Seven neighborhoods responded: Blenman-Elm, Feldman’s, Jefferson Park, Miles, Pueblo Gardens, Sam Hughes, and West University. Using each neighborhood’s top four concerns, the primary concerns of the CWG (those that responded) were tallied. In addition, public comments was also reviewed and tallied to determine the percentage of total comments that related to the criteria analyzed. These results are shown in Table 4.

Table 4. Criteria Survey and Public Comment Results

Criteria	Tally (Out of 7)	% of Neighborhoods	% Public Comment ^a
Existing Corridor	4	57	0
Existing & Planned Land Use	2	29	0
Residential Use	5	71	84
Historic Properties/Districts	5	71	41
Sensitive Receptors	4	59	14
Room for Separation	1	14	0
Viewshed	2	29	33
Special Status Species	1	14	0
Ability to Construct	2	29	0
Cost	2	29	21

^a Percentage of comments as of 10/1/2020; a commenter may have submitted more than one comment on the same topic.

13.1 Phase 3 Results

A discussion of the rating of the alternatives within each of the 12 criteria categories is provided in the following paragraphs. Table , at the end of this report, summarizes the results of the criteria ratings or "scores" (i.e., 3, 2, or 1) applied to each of the project alternatives and provides a total numeric score for each alternative. Figures referenced in this section of the report are located in Appendix H.

13.1.1 Criterion 1—Presence/Absence of Existing Corridor and Ability to Use the Corridor.

Using Criterion 1, each alternative was scored based on the percentage of the preliminary alternative route that was in an existing road ROWs. In addition, the percentage of the proposed transmission line that could co-locate on an existing TEP power line or replace an existing TEP power line was determined. For this project, all instances are the replacement of existing 46kV

sub-transmission lines with the proposed new 138kV transmission line (see Appendix H, Figure H.1).

The percentages of each route in existing road ROWs ranged from 93.01 to 96.61%. The percentage of each route involving 46kV sub-transmission line replacement ranged from 6.78 to 21.42%. These two percentages were added together to form a percentage total that was then assigned a comparison score.

A score of 3 was given to alternatives with a percentage total higher than 116. A score of 2 was given to alternatives with a percentage total of 105–116. A score of 1 was given to those alternatives with a percentage total less than 105.

Alternatives 1b and 2b scored a 3. Alternatives 1e, 2e, 3a, 3d, and 5a scored a 2, and Alternatives 1a, 1d, 2a, 2d, and 5d scored a 1 (see Appendix H, Table H.1 for additional details).

13.1.2 Criterion 2—Existing and Planned Land Use is Compatible with its Use as a Transmission Line Corridor

Using Criterion 2, each alternative was scored based on the presence/absence of compatible land uses and whether the transmission line had the potential to negatively impact existing or planned land use designations such as a large land acquisition, reduction in business parking areas, etc. Land use designations obtained from the City of Tucson and Pima County were used to inform the analysis and ranking.

A score of 3 was given to those alternatives that were compatible with and would not negatively impact the local land use plans and would not require additional coordination, approvals, or mitigation. A score of 2 was given to those alternatives that were compatible with and/or would have a moderate impact on the local land use plans and would require additional coordination or approvals. A score of 1 was given to those alternatives that were not compatible with and/or would have a significant impact on the local land use plans or are compatible with mitigation, but mitigation would be approaching cost-prohibitive.

All alternatives are compatible with local land use plans and would not negatively impact land use designations, and all were given a score of 3 (see Appendix H, Table H.1 for additional details).

13.1.3 Criterion 3—Existing and Future Residential Land Use

Using Criterion 3, each alternative was scored based on the percentage of existing residential land use within 152 m (500 feet) of each alternative corridor (see Appendix H, Figure H.2). Aerial photographs and site visits were used to interpret the locations of residential use. Future residential land use was determined through a review of Pima County and City of Tucson development plans.

The percentage of existing and future residential use ranged from 43.32 to 58.85%. A score of 3 was given to alternatives with 0% adjacent residential use. A score of 2.5 was given to alternatives between 1 and 25%, a score of 2 was given to alternatives between 26 and 50%, a score of 1.5 was given to alternatives between 51 and 75%, and a score of 1 was given to those alternatives between 76 and 100%.

Alternatives 1a, 1b, 1d, 1e, 2a, 2b, 2d, and 2e scored a 2. Alternatives 3a, 3d, 5a, and 5d scored a 1.5.

Residential use was weighted 5x greater based on public comment (84%) and the CWG survey (71%). Alternatives 1a, 1b, 1d, 1e, 2a, 2b, 2d, and 2e scored a 0.40. Alternatives 3a, 3d, 5a, and 5d scored a 0.30 (see Appendix H, Table H.1 for additional details).

13.1.4 Criterion 4—Historic Property and District Impacts

TEP contracted a Historic District Analysis (also termed a Build Environment Study) to determine the potential impacts of each alternative on historic properties and districts. The study can be reviewed at (<https://www.tep.com/wp-content/uploads/Kino-DMP-Historic-District-Analysis.pdf>). The study considered several factors in the analysis, including:

- *Bisecting vs. Bordering Historic Districts*: Bisecting has a more negative impact than bordering.
- *Street Designation*: Residential streets would be the most impacted, followed by Gateway Routes, collector streets, and arterial streets.
- *Existing Power Poles*: Number of existing power poles as well as their height and spacing were evaluated.
- *Historic Light Fixtures*: Power poles would dwarf historic light fixtures; therefore, routes with no or fewer historic light fixtures would have a less negative impact.
- *Historic Contributing Properties within 800 Feet*: Number of historic contributing properties.
- *Access to Historic Contributing Properties*: Number of properties located directly on the routes that use the street the route is located on for direct access to their properties.
- *Architectural Impact*: Professional historic architect's observation that takes all measurable criteria into account along with the architect's viewpoint of the historic district integrity, scale of project, size of historic district, and architect's impression of each routes impact.

Total scores of the above categories ranged from 505 to 733, where the higher the score, the greater the impact. A score of 3 was given to alternatives with 0% negative impact. A score of 2.5 was given to alternatives that scored 492. A score of 2.25 was given to alternatives that scored

505. A score of 2 was given to alternatives that scored 530, and a score of 1 was given to those alternatives with a score of 695–728. There is a large break between those alternatives with a score of 2 and those that scored a 1.

Alternatives 1d and 2d scored a 2.5, Alternatives 1b and 2b scored a 2.25, Alternatives 1a and 2a scored a 2, and Alternatives 1e, 2e, 3a, 3d, 5a, and 5d scored a 1.

Historic property and district impacts were weighted 3x greater based on public comment (41%) and the CWG survey (71%). Alternatives 1d and 2d scored a 0.83, Alternatives 1b and 2b scored a 0.75, Alternatives 1a and 2a scored a 0.67, and Alternatives 1e, 2e, 3a, 3d, 5a, and 5d scored a 0.33 (see Appendix H, Table H.1 for additional details).

13.1.5 Criterion 5—Presence/Absence of Sensitive Receptors

Using Criterion 5, each alternative was scored based on a review of known locations of Sensitive Receptors (schools, hospitals, nursing homes, daycare facilities, etc.) and their proximity to the proposed alternatives (see Appendix H, Figure H.3). Locations were field-verified and, when in doubt, contacted directly by phone to confirm. The parcel boundary was used as the receptor point. Note that some parcels had more than one Sensitive Receptor on the parcel (a school and a day care for example), which was counted as 1 receptor for the purpose of the study.

If no Sensitive Receptors were located in the buffer, a score of 3 was given. If there were 1–5 Sensitive Receptors, a score of 2.5 was given. If there were 6–10 Sensitive Receptors, a score of 2 was given. If there were 11–15 Sensitive Receptors, a score of 1.5 was given. If there were 16–20 Sensitive Receptors, a score of 1 was given.

Alternatives 1a, 1b, and 1d, received a score of 2. Alternatives 2a, 2b, 2d, 3a, 3d, and 5a received a score of 1.5. Alternatives 1e, 2e, and 5d received a score of 1.

Sensitive receptors were weighted 2x greater based on public comment (14%) and the CWG survey (71%). Alternatives 1a, 1b, and 1d, received a score of 1. Alternatives 2a, 2b, 2d, 3a, 3d, and 5a received a score of .75. Alternatives 1e, 2e, and 5d received a score of 0.5 (see Appendix H, Table H.1 for additional details).

13.1.6 Criterion 6—Room for Separation from Potentially Conflicting Uses in the Corridor

Using Criterion 6, each alternative was scored based on the room for separation from existing utilities and other facilities, such as sidewalks and storm drains, as well as whether there would be outage requirements or any other conflicts in the corridor, as measured by the degree of difficulty to manage the conflicting use and the degree of mitigation required (see Appendix B for constructability analysis). In addition, a significant constraint adjustment was added to those segments of each route that had considerable, “layered” constraints, where the more “layers,”

the higher the adjustment made. Adjustments ranged from 2.3–8.4 points, which were subtracted from the constructability score (see Appendix H, Tables H.2. and H.3) for details of the significant constraint adjustment.

Adjusted scores ranged from 19.95–31.77. A score of 3 was given to alternatives with the least potentially conflicting uses and constraints. A score of 2 was given to alternatives with a greater number of conflicting uses and constraints, but the conflicting uses could be mitigated. A score of 1 was given to those alternatives with the most conflicting uses and significant constraints that would cause construction schedule impacts and for which cost to mitigate would be prohibitive.

Alternatives 1a, 1b, 1d, and 2a were given a score of 3; Alternatives 2b and 2d were given a score of 2; and Alternatives 1e, 2e, 3a, 3d, 5a, and 5d were given a score of 1 (see Appendix H, Table H.1 for additional details).

13.1.7 Criterion 7—Viewshed

TEP contracted a visual impacts assessment to determine the potential impacts of each alternative on viewshed. The study can be reviewed at (<https://www.tep.com/wp-content/uploads/Visual-Impacts-Assessment.pdf>).

The assessment considered:

- Existing vs. future landscape
- Gateway streets
- Types of viewers
- Degree of impact

The level of impacts were categorized as high, moderate-high, moderate, moderate-low, and low. The visual resources expert then scored each route on a scale of 1–3, with 1 being the highest impact and 3 being no impact.

Alternative scores ranged from 2.2–2.53. Viewshed was weighted 2x greater based on public comment (33%) and the CWG survey (29%). All alternative weighted scores were in the 1 range between 1.13–1.26 (see Appendix H, Table H.1 for additional details).

13.1.8 Criterion 8—Known or Potentially Eligible Cultural Resources

TEP contracted a cultural resources specialist to conduct a cultural resources literature and records review, in which locations of recorded cultural resources were overlaid on maps of the study area and the alternatives. The specialist then determined which routes were within cultural sensitivity zones or cultural resource sites, and those routes were scored lower due to the potential for subsurface deposits and because cultural resources monitoring would be required

during ground-disturbing activities. The study can be reviewed at (<https://www.tep.com/wp-content/uploads/Kino-DMP-Cultural-Resources-Class-I-Analysis.pdf>).

A score of 3 was given to Alternatives 1a, 1b, 1d, 2a, 2b, and 2d, as no impacts to known or potentially eligible cultural resources are anticipated. A score of 2 was given to Alternatives 1e, 2e, 3a, 3d, 5a, and 5d because known cultural resources are located in the corridor and/or the corridor is in a cultural sensitivity zone and would require monitoring during construction due to potential subsurface deposits. A score of 1 was not given to any alternatives, as anticipated potential impacts can be mitigated and are not expected to be cost prohibitive (see Appendix H, Table H.1 for additional details).

13.1.9 Criterion 9—Special Status Species and Biological Resources

TEP contracted a biologist to conduct a Biological Evaluation to identify each alternative’s potential to impact the overall biotic community, general wildlife/vegetation, special status species, water resources, wildlife linkages, and riparian habitat in the area.

TEP’s consultant performed background “desktop” research, including a review of the U.S. Fish and Wildlife Service (USFWS) Information, Planning, and Conservation System (IPAC) and the Arizona Game and Fish Department (AZGFD) Heritage Data Management System (HDMS), to obtain information on sensitive biological resources that may be present in the study area. After compiling a list of special status species potentially occurring in the study area, a reconnaissance site visit of the study area was conducted. Site reconnaissance consisted of driving all the alternative corridors and stopping frequently to note plant species present, inspect areas with potentially suitable habitat for special status species, and to photographically document the study area. The assessed corridor width during the site visit included the entire ROW of the roads and utility corridors associated with the alternatives. Following the site visit, special status species were assessed for their potential to occur in the study area. The study can be reviewed at (https://www.tep.com/wp-content/uploads/Kino2DMP_Biological-Evaluation_08262020.pdf).

The biologist’s impact scores ranged from 28–30. Given the minimal spread between the alternatives, all routes were scored a 3 because impacts to any biological resources are anticipated to be negligible (see Appendix H, Table H.1 for additional details).

Criterion 10—100-Year Floodplains as Measured by Location and Engineering Design

Criterion 10 addresses the presence/ absence of Federal Emergency Management Agency (FEMA) 100-year floodplains (see Appendix H, Figure H.4). FEMA 100-year floodplain data was obtained for Pima County, Arizona. All 100-year floodplains can be spanned; therefore, a score of 3 was given to all alternatives (see Appendix H, Table H.1 for additional details).

Criterion 11—Ability to Construct and Maintain the Transmission Line

Criterion 11 addresses TEP’s ability to construct and maintain the transmission line from existing access roads. A score of 3 was given to all alternatives because they can be accessed easily from existing roads (see Appendix H, Table H.1 for additional details).

Criterion 12—Cost of Construction

A high-level cost estimate was completed for each alternative. In addition, 10%, 20%, or 30% of the cost of construction was added to those routes with special considerations:

- **Routes 1d and 2d**—10% increase for areas along Grant Road between Campbell Avenue and Park Avenue and along Elm Street/Ring Road/Chauncy Lane for easement acquisition.
- **Routes 3a and 5a**—20% for additional turning structures needed to cross back and forth along Euclid Avenue.
- **Route 1e and 2e**—20% for removal of the existing 46kV sub-transmission line and to bury existing distribution and service connections.
- **Routes 3d and 5d**—30% increase for areas along Grant Road between Campbell Avenue and Park Avenue and along Elm Street/Ring Road/Chauncy Lane for easement acquisition, and 20% additional for turning structures needed to cross back and forth along Euclid Avenue.

The alternatives that cost less than \$7 million were scored a 3, alternatives that cost between \$7–8 million scored a 2.5, alternatives that cost \$8–9 million scored a 2, alternatives that cost \$9–10 million scored a 1.5, and the alternatives that cost greater than \$10 million scored a 1 (see Appendix H, Table H.1 for additional details).

13.2 Summary and Conclusion

The results summarized in Table 5 and more fully described in this report have shown, based on the criteria used in the assessment, that Alternatives 1e, 2e, 3a, 3d, 5a, and 5d scored significantly lower; therefore, they have been removed from further consideration.

The remaining six alternatives still under consideration are 1a, 1b, 1d, 2a, 2b, and 2d. The alternatives with the highest Total Weighted Scores were, from highest to lowest: 1b, 2b, 1a, 2a, 1d, and 2d (Figure 17). Using only the four criteria of most importance (Residential Use, Historic Properties/Districts, Sensitive Receptors, and Viewshed), the alternatives with the highest scores were, from highest to lowest: 1b, 1d, 1a, 2b, 2d, and 2a.

The results summarized in Table and more fully described in this report have shown, based on the criteria used in the assessment that Alternatives 1e, 2e, 3a, 3d, 5a, and 5d scored significantly lower, therefore they have been removed from further consideration. The remaining six alternatives are still under consideration. Of the remaining alternatives, 1b, 1a, and 2b have the highest scores (in that order) using the Total Weighted Score (Figure 17). Using only the 4 criteria of most importance (residential use, historic properties/districts, Sensitive Receptors, and viewshed), the highest scoring alternatives are 1b, 1d, and 1a (in that order).

Based on this analysis, the results of the Visual Simulations, continued review of stakeholder and public comments, and in keeping with TEP's design philosophy, TEP has selected Route 1b as the Preferred Alternative route to carry forward in the CEC application. The remaining five alternatives will also be included in the application for the Line Siting Committee's consideration. The basis for this decision is supported by this siting study and will be further justified in TEP's application for a CEC and in testimony before the Line Siting Committee.

Table 5. Kino to DMP 138kV Transmission Line Project Siting Report Summary Criteria Matrix

Criteria	Preliminary Alternative Routes											
	1a	1b	1d	1e	2a	2b	2d	2e	3a	3d	5a	5d
1. Ability to Use Existing Road ROW and TEP Corridors (29% CWG/1 point weight assigned)	1	3	1	2	1	3	1	2	2	2	2	1
2. Compatible with Existing & Future Land Use Plans (29% CWG/1 point weight assigned)	3	3	3	3	3	3	3	3	3	3	3	3
3. Existing and planned residential use adjacent to the corridor (84% of Comments/71% CWG/4-point weight assigned)	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.30	0.30	0.30	0.30
4. Historic property/district impacts (41% of comments/71% CWG/3 point weight assigned)	0.67	0.75	0.83	0.33	0.67	0.75	0.83	0.33	0.33	0.33	0.33	0.33
5. Adjacent Sensitive Receptors (14% of comments/57% CWG/2 points weight assigned)	1.00	1.00	1.00	0.50	0.75	0.75	0.75	0.50	0.75	0.75	0.75	0.50
6. Room for separation from conflicting utility and infrastructure uses (14% CWG/1 points weight assigned)	3	3	3	1	3	2	2	1	1	1	1	1
7. Viewshed impacts (33% of comments/ CWG 29%/2 points weight assigned)	1.13	1.24	1.13	1.10	1.16	1.27	1.15	1.13	1.25	1.25	1.26	1.25
8. Cultural resources impacts (1 point weight assigned)	3	3	3	2	3	3	3	2	2	2	2	2
9. Biological impacts (1 point weight assigned)	3	3	3	3	3	3	3	3	3	3	3	3

Criteria	Preliminary Alternative Routes											
	1a	1b	1d	1e	2a	2b	2d	2e	3a	3d	5a	5d
10. 100-year floodplain impacts (1 point weight assigned)	3	3	3	3	3	3	3	3	3	3	3	3
11. Ability to Construct and Maintain the Transmission Line (1 point weight assigned)	3	3	3	3	3	3	3	3	3	3	3	3
12. Cost (1 point weight assigned)	3	3	2.5	1.5	3	3	2.5	1.5	1.5	1	1.5	1
Total 0s (less than 1) Greatest effect/impact on criteria	2	2	2	3	3	3	3	3	3	3	3	3
Total 1s (Major effect/impact on criteria)	3	2	3	3	2	1	2	3	3	3	3	4
Total 2s (Moderate effect/impact on criteria, relative to other alternatives)	0	0	1	2	1	1	2	2	2	2	2	1
Total 3s (No effect/impact or meets criteria)	7	8	6	4	6	7	5	4	4	4	4	4
Total Weighted Score	25.20	27.39	24.86	20.83	24.97	26.17	23.63	20.86	21.13	20.63	21.14	19.38
Criteria of Most Concern Weighted Score (Residential, Historic, Sensitive Receptor, Viewshed)	3.20	3.39	3.36	2.33	2.97	3.17	3.13	2.36	2.63	2.63	2.64	2.38

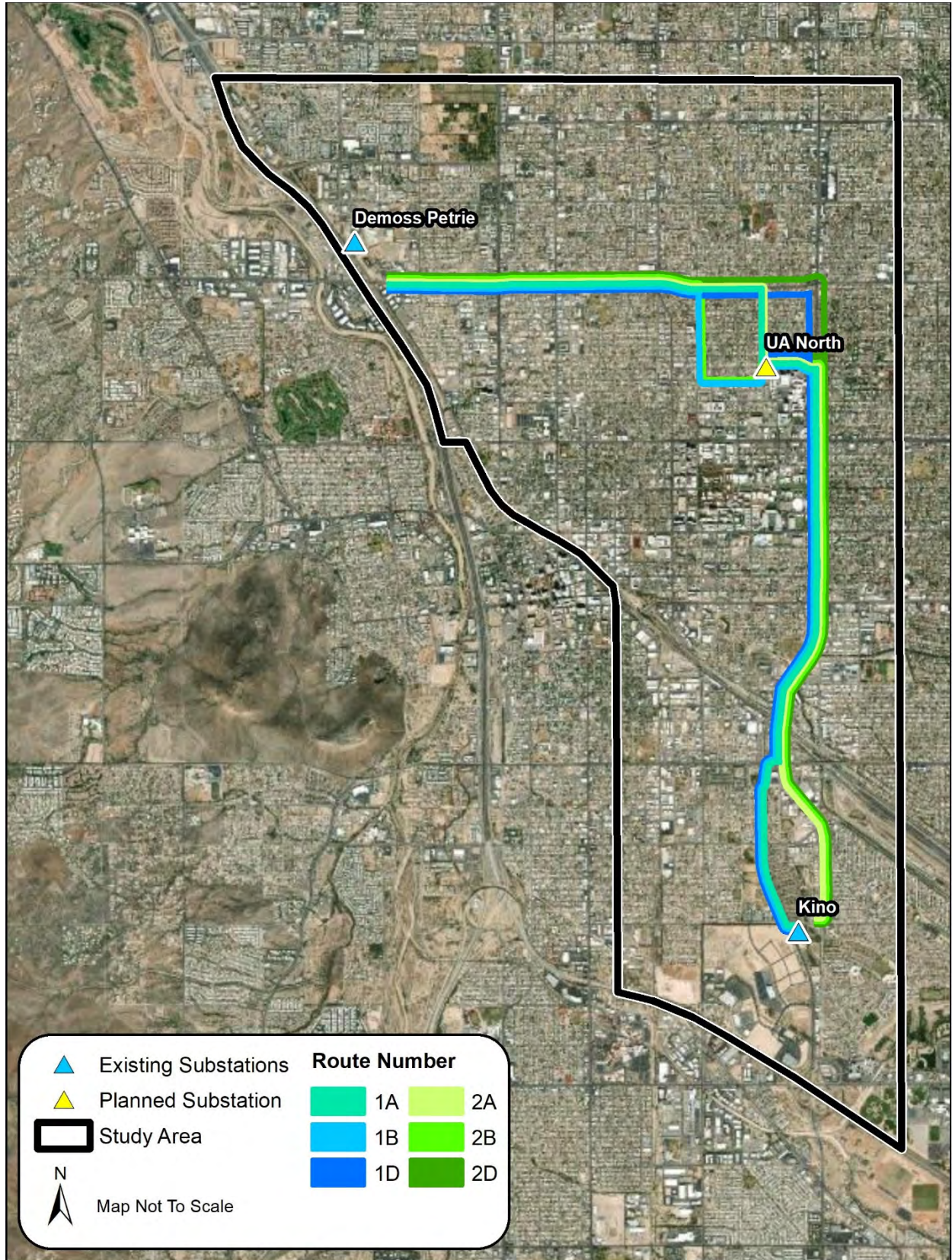


Figure 17. Remaining Preliminary Routes, Following Phase 3 Analysis.

Appendix A. Phase 1 Geospatial Analysis Variable Values

Table A.1. Phase 1 Geospatial Analysis Variable Values

Map ID (New)	Map ID (Original)	Street	Segment	Status	Phase 1 Composite Average Score	Historic Properties Average Score	Residential Use Average Score	Sensitive Receptor Average Score	Customer Score (as of 7/1/2020)	Constructability Score	Phase 2 Composite Score	Phases 1 and 2 Composite Score Sum	Phase 1 and 2 Composite Score Average
1.0	n/a	Fort Lowell	6th Ave–Stone	added back; Under Consideration	5	6	5.5	5		1	1	6	3
2.0	n/a	Glenn	Fairview–Flowing Wells	Eliminated	5	6	5.5	5		0	0	5	2.5
3.0	2	Glenn	Oracle–Fairview	Eliminated	5	5	5.5	5		0	0	5	2.5
4.0	3	Glenn	Stone–Oracle	Eliminated	5	5	5.5	5		0	0	5	2.5
5.0	4	Flowing Wells	Glenn–DMP	Under Consideration	5	6	6	5		2	2	7	3.5
5.5	4	Flowing Wells	DMP–Grant	Under Consideration	4.5	4.5	4.5	4.333333333	3	2	5	9.5	4.75
6.0	5	Fairview	Glenn–Grant	Under Consideration	5	6	5.5	5	3	2	5	10	5
7.0	n/a	Highland/17th	Manlove–Curtis	added back; Under Consideration	4.5	4.5	4.666666667	4.333333333		3	3	7.5	3.75
8.0	6	Grant	Fairview–Flowing Wells	Under Consideration	5	6	5.5	5		3	3	8	4
8.1	6	Grant	Flowing Wells–DMP Parcel	Under Consideration	4.5	4.5	4.5	4.333333333	3	2	5	9.5	4.75
9.0	7	Grant	15th–Fairview	Under Consideration	5	5	5.5	5	3	3	6	11	5.5
10.0	8	Grant	Oracle–15th	Under Consideration	5	5	5.5	6	3	3	6	11	5.5
11.0	9	Stone	Glenn–Grant	Under Consideration	5	6	5.5	5	2	2	4	9	4.5
12.0	10	Grant	6th Ave–Stone	Under Consideration	5	6	5.5	5		3	3	8	4
12.1	10	Grant	Stone–Oracle	Under Consideration	5	5	5.5	5	3	3	6	11	5.5
13.0	11	15th	Alto–Grant	Under Consideration	4.666666667	4.5	4.666666667	4.5	2	1	3	7.666666667	3.833333333
14.0	12	cross-country	Helen–Alto	Under Consideration	4.666666667	4.5	4.666666667	4.5	2	3	5	9.666666667	4.833333333
15.0	13	Helen	15th–Main	Under Consideration	4.5	4.333333333	4.666666667	4.5	2	3	5	9.5	4.75
15.1	n/a				5	5	5.5	5			0	5	2.5
16.0	14	11th	Speedway–Helen	Under Consideration	5	5	5.5	5		3	3	8	4
17.0	n/a				5	5	5.5	5		2	2	7	3.5
18.0	16	Stone	Speedway–Grant	Under Consideration	5	5	5.5	5		2	2	7	3.5
20.0	17	Speedway	6th Ave–Stone	Under Consideration	5	5	5.5	5		2	2	7	3.5
21	18	6th	Speedway–Grant	Under Consideration	5	5	5.5	5			0	5	2.5
22.0	n/a	1st	Fort Lowell–Glenn	added back; Under Consideration	5	6	5.5	5		2	2	7	3.5
23.0	19	Grant	1st–6th Ave	Under Consideration	5	5	5.5	6	3	3	6	11	5.5
24.0	20	Grant	Park–Mountain	Under Consideration	5	5	5.5	6	3	2	5	10	5

Map ID (New)	Map ID (Original)	Street	Segment	Status	Phase 1 Composite Average Score	Historic Properties Average Score	Residential Use Average Score	Sensitive Receptor Average Score	Customer Score (as of 7/1/2020)	Constructability Score	Phase 2 Composite Score	Phases 1 and 2 Composite Score Sum	Phase 1 and 2 Composite Score Average
24.1	20	Grant	Euclid-Park	Under Consideration	5	5	5.5	6		3	3	8	4
25.0	21	Park	Alley-Grant	Under Consideration	5	5	5.5	5	2	2	4	9	4.5
26.0	22	Grant	Campbell-Vine	Under Consideration	5	5	5.5	5	3	2	5	10	5
26.1	22	Grant	Vine-Mountain	Under Consideration	4.5	5	5	6		2	2	6.5	3.25
27.0	23	Vine	Elm-Grant	Under Consideration	5	5	5.5	5	2	2	4	9	4.5
28.0	n/a	Miracle Mile	Fairview-Flowing Wells	added back; Under Consideration	5	5	5.5	6		2	2	7	3.5
29.0	24	Campbell	Grant-Elm	Under Consideration	5	5	5.5	5	3	3	6	11	5.5
30	n/a	Miracle Mile	Flowing Wells-Casa Grande Highway	Eliminated	4.666666667	4.5	4.666666667	4.5			0	4.666666667	2.333333333
31.0	25	alley btw. Lee & Adams	Vine-Park	Under Consideration	5	5	5.5	5	2	2	4	9	4.5
32.0	26	Vine	Alley-Elm	Under Consideration	5	5	5.5	5	2	2	4	9	4.5
33.0	27	Ring	Warren-Substation	Under Consideration	5	5	5.5	4	3	2	5	10	5
34.0	28	Elm	Substation-Vine	Under Consideration	5	5	5.5	4	3	3	6	11	5.5
35.0	29	Elm	Campbell-Ring Road	Under Consideration	4.5	5	5.5	5	3	3	6	10.5	5.25
36.0	30	Campbell	Elm-Speedway	Under Consideration	5	5	5.5	5	3	2	5	10	5
37.0	n/a	Oracle	Fort Lowell-Miracle Mile	added back; Under Consideration	5	5	5.5	5		0	0	5	2.5
38.0	n/a	Oracle	Miracle Mile-Glenn	added back; Under Consideration	5	5	5.5	5		2	2	7	3.5
39.0	26	Vine	Mabel-Alley	Under Consideration	5	6	5.5	5		2	2	7	3.5
40.0	n/a	1st	Glenn-Grant	added back; Under Consideration	5	5	5.5	5		2	2	7	3.5
41.0	34	Vine	Speedway-Helen	Eliminated	5	6	5.5	5	2	0	2	7	3.5
42.0	35	Speedway	Campbell-Cherry	Under Consideration	5	5	6	5	2	2	4	9	4.5
42.1	35	Speedway	Cherry-Vine	Under Consideration	5.5	6	6	6		2	2	7.5	3.75
42.2	35	Speedway	Vine-Mountain	Under Consideration	5	5	6	6		2	2	7	3.5
42.3	35	Speedway	Mountain-Park	Under Consideration	5	5	6	6		2	2	7	3.5
42.4	35	Speedway	Park-Euclid	Under Consideration	5	5	5.5	5		2	2	7	3.5
43.0	36	Speedway	Euclid-6th Ave	Under Consideration	4.5	5	5.5	5	2	2	4	8.5	4.25

Map ID (New)	Map ID (Original)	Street	Segment	Status	Phase 1 Composite Average Score	Historic Properties Average Score	Residential Use Average Score	Sensitive Receptor Average Score	Customer Score (as of 7/1/2020)	Constructability Score	Phase 2 Composite Score	Phases 1 and 2 Composite Score Sum	Phase 1 and 2 Composite Score Average
44.0	n/a	Oracle	Glenn-Grant	added back; Under Consideration	5	5	5.5	5		2	2	7	3.5
45.0	37	Euclid	Speedway-6th St	Under Consideration	5	5	5.5	5	1	1	2	7	3.5
46.0	39	Campbell	Speedway-6th St	Under Consideration	5	5	5.5	5	3	1	4	9	4.5
47.0	n/a	Euclid	Grant-Helen	Under Consideration	5	5	5.5	5		2	2	7	3.5
48.0	n/a	Oracle	Grant-Helen	added back; Under Consideration	5	5	5.5	5		2	2	7	3.5
49.0	n/a	15th	Kino Pkwy-Cherry	added back; Under Consideration	5.5	6	5.5	6		2	2	7.5	3.75
50.0	47	Campbell	6th St-Broadway	Under Consideration	5	5	5.5	5	3	2	5	10	5
51.0	n/a	15th	Cherry-Existing 46kV	added back; Under Consideration	5	6	5.5	5		3	3	8	4
52.0	48	Broadway	Cherry-Mountain	Under Consideration	5	5	5	5	3	2	5	10	5
52.1	48	Broadway	Kino Pkwy-Cherry	Under Consideration	5	5	5.5	5		3	3	8	4
53.0	49	Broadway	Euclid-Fremont	Under Consideration	5	5	5.5	6	3	2	5	10	5
53.1	49	Broadway	Fremont-Mountain	Under Consideration	4.5	5	5	5		3	3	7.5	3.75
54.0	n/a	Fairview	Miracle Mile-Glenn	added back; Under Consideration	5	5	5.5	6		1	1	6	3
55.0	50	Euclid	6th St-Broadway	Under Consideration	5	5	5.5	5	1	2	3	8	4
56.0	51	Euclid	Broadway-cross-country	Under Consideration	4.5	4.333333333	4.666666667	4.333333333	2	2	4	8.5	4.25
57.0	52	Fremont	Manlove-Broadway	Under Consideration	5	5	5.5	6	2	2	4	9	4.5
58.0	n/a	Flowing Wells	Miracle Mile-Glenn	added back; Under Consideration	5	6	5.5	5		2	2	7	3.5
59.0	53	cross-country	Toole-Euclid	Under Consideration	4.333333333	4.5	4.5	4.333333333		3	3	7.333333333	3.666666667
60.0	54	cross-country	46kV-Fremont	Under Consideration	5.5	6	5.5	6	2	2	4	9.5	4.75
61.0	55	Toole	cross-country-16th	Under Consideration	4.666666667	4.5	4.5	4.5		3	3	7.666666667	3.833333333
62.0	72	Cherry	cross-country-Broadway	Under Consideration	5	5	5.5	5	2	1	3	8	4
63.0	73	cross-country	15th-Cherry	Under Consideration	5.5	6	5.5	6	2	3	5	10.5	5.25

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64.0	56	46kV line	alley btw. 16th & 17th–15th	Under Consideration	5	6	5.5	5	2	1	3	8	4
64.1	56	46kV line	15th–Highland	Under Consideration	5	6	5.5	5		2	2	7	3.5
64.2	n/a	46kV line	Highland–Manlove	Under Consideration	5.5	6	5.5	6		2	2	7.5	3.75
65.0	74	Cherry	16th–15th	Under Consideration	5.5	6	5.5	6	2	2	4	9.5	4.75
66.0	57	Euclid	16th–19th St	Under Consideration	4.666666667	4.5	4.5	4.5	1	2	3	7.666666667	3.833333333
67.0	58	19th	Euclid–Euclid	Under Consideration	4.666666667	4.5	4.5	4.5		3	3	7.666666667	3.833333333
68.0	n/a	Miracle Mile	Oracle–Fairview	added back; Under Consideration	5	5	5.5	6		0	0	5	2.5
69.0	59	Euclid	19th–21st	Under Consideration	4.666666667	4.5	4.5	4.333333333	1	2	3	7.666666667	3.833333333
69.1	59	Euclid	21st–22nd	Under Consideration	4.5	4.5	4.666666667	4.333333333		1	1	5.5	2.75
70.0	60	21st	Euclid–Park	Under Consideration	4.5	4.5	4.666666667	4.333333333		2	2	6.5	3.25
70.1	60	21st	Park–Highland	Under Consideration	5.5	6	5.5	6		2	2	7.5	3.75
70.2	60	21st	Highland–Curtis	Under Consideration	5.5	6	5.5	6		2	2	7.5	3.75
71.0	61	Highland	22nd–21st	Under Consideration	5.5	6	5.5	6		2	2	7.5	3.75
71.1	61	Highland	21st–20th	Under Consideration	5.5	6	5.5	6		2	2	7.5	3.75
72.0	62	20th	Highland–Curtis	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
73.0	63	Curtis	20th–21st	Under Consideration	5.5	6	6	6		3	3	8.5	4.25
73.1	63	Curtis	Warehouse–20th	Under Consideration	4.666666667	4.5	4.5	4.5		2	2	6.666666667	3.333333333
74.0	64	cross-country	Curtis–Kino	Under Consideration	5.5	6	6	6		3	3	8.5	4.25
75.0	65	Warehouse	cross-country–Curtis	Under Consideration	4.666666667	4.5	4.5	4.5		2	2	6.666666667	3.333333333
76.0	66	cross-country	Warehouse Ave–Vine St	Under Consideration	4.666666667	4.5	4.5	4.5		3	3	7.666666667	3.833333333
77.0	67	Vine	cross-country–17th	Under Consideration	4.666666667	4.5	4.5	4.5	2	3	5	9.666666667	4.833333333
78.0	68	17th	Curtis–Vine	Under Consideration	4.666666667	4.5	4.666666667	4.5	2	3	5	9.666666667	4.833333333
79.0	69	Curtis	alley btw. 16th & 17th & 46kV line	Under Consideration	4.666666667	4.5	4.666666667	4.5	2	2	4	8.666666667	4.333333333
80.0	70	alley btw. 16th & 17th	Curtis–46kV line	Under Consideration	5	6	5.5	5	2	1	3	8	4
81.0	71	alley btw. 16th & 17th	Curtis–Vine	Under Consideration	5.5	6	5.5	6	2	1	3	8.5	4.25
82.0	n/a	Fort Lowell	Stone–Oracle	added back; Under Consideration	5	6	5.5	5		2	2	7	3.5

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83.0	75	16th	Vine-Cherry	Under Consideration	5.5	6	6	6	2	2	4	9.5	4.75
84.0	76	Vine	Alley and 16th	Under Consideration	5.5	6	6	6	2	3	5	10.5	5.25
85.0	77	Vine	17th-alley btw. 16th & 17th	Under Consideration	5.5	6	6	6	2	3	5	10.5	5.25
86.0	78	17th	Vine-Kino	Under Consideration	5.5	6	6	6	2	3	5	10.5	5.25
87.0	79	Broadway	Plumer-Kino Pkwy	Under Consideration	5	5	5.5	5	3	3	6	11	5.5
88.0	80	Kino	Broadway-cross-country	Under Consideration	5	5	5.5	5		2	2	7	3.5
88.1	80	Kino	cross-country-Winsett	Under Consideration	5.5	6	5.5	6	3	3	6	11.5	5.75
89.0	81	cross-country	14th-Kino	Under Consideration	5.5	6	5.5	6	3	3	6	11.5	5.75
90.0	82	Plumer	19th-Broadway	Eliminated	5	5	5.5	5	2	0	2	7	3.5
91.0	83	Kino	15th-18th	Under Consideration	4.666666667	4.5	4.5	4.5	3	2	5	9.666666667	4.833333333
92.0	84	Campbell	Winsett-14th St	Under Consideration	5.5	6	5.5	6	3	2	5	10.5	5.25
93.0	85	Kino	Aviation-18th	Under Consideration	4.666666667	4.5	4.5	4.5	3	3	6	10.666666667	5.333333333
94.0	86	Winsett	Campbell-Kino Pkwy	Under Consideration	5.5	6	5.5	6	3	2	5	10.5	5.25
95.0	87	Kino	22nd-21st	Under Consideration	5.5	6	6	6		3	3	8.5	4.25
95.1	87	Kino	Warehouse-21st	Under Consideration	4.666666667	4.5	4.5	4.5	3	3	6	10.666666667	5.333333333
95.2	87	Kino	Barraza Aviation Parkway-Warehouse	Under Consideration	4.666666667	4.5	4.5	4.5		3	3	7.666666667	3.833333333
96.0	88	Campbell	Winsett-19th	Under Consideration	5.5	6	5.5	6		1	1	6.5	3.25
96.1	88	Campbell	19th-Norris	Under Consideration	4.666666667	4.5	4.666666667	4.5	3	2	5	9.666666667	4.833333333
96.2	88	Norris	Campbell-cross-country	Under Consideration	4.666666667	4.5	4.5	4.5	0	3	3	7.666666667	3.833333333
97.0	89	19th	Plumer-Campbell	Eliminated	5.5	6	5.5	6	0	0	0	5.5	2.75
98.0	90	Plumer	22nd-19th	Eliminated	5.5	6	5.5	6	2	0	2	7.5	3.75
99.0	91	cross-country	Plumer-Norris	Under Consideration	4.666666667	4.5	4.666666667	4.5	3	3	6	10.666666667	5.333333333
100.0	92	cross-country	rail yard-Plumer	Under Consideration	4.666666667	4.5	4.666666667	4.5	3	3	6	10.666666667	5.333333333
101.0	93	22nd	Highland-Park	Under Consideration	5	6	5.5	5		3	3	8	4

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101.1	93	22nd	Kino Pkwy–Highland	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
102.0	94	22nd	Park–Euclid	Under Consideration	4.5	4.5	4.666666667	4.333333333		3	3	7.5	3.75
103.0	95	Euclid	22nd St–Silverlake	Under Consideration	4.5	4.5	4.666666667	4.333333333	1	1	2	6.5	3.25
104.0	96	Park	22nd St–Silverlake	Under Consideration	5	6	5.5	5	2	1	3	8	4
104.5	n/a	Park	22nd–21st	Under Consideration	5	6	5.5	5		3	3	8	4
105.0	97	Silverlake	Park Euclid	Under Consideration	4.5	4.5	4.666666667	4.333333333		3	3	7.5	3.75
106.0	98	Silverlake	Kino Pkwy–Park	Under Consideration	5	6	5.5	5		2	2	7	3.5
107.0	99	Kino	22nd–27th	Under Consideration	5.5	6	5.5	6	3	3	6	11.5	5.75
107.1	99	Kino	27th–28th	Under Consideration	5	6	5	6		3	3	8	4
107.2	99	Kino	28th–Silverlake	Under Consideration	5	6	5	6		3	3	8	4
108.0	100	27th	Cherry and Kino	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
109.0	101	cross-country	Cherry–Cherrybell	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
110.0	102	Fairland	Willits–Silverlake	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
111.0	103	Willits	Cherrybell–Fairland	Under Consideration	5.5	6	6	6		3	3	8.5	4.25
112.0	104	cross-country	Fairland–rail yard	Under Consideration	4.666666667	4.5	4.5	4.5		3	3	7.666666667	3.833333333
113.0	105	cross-country	Silverlake–rail yard	Under Consideration	4.666666667	4.5	4.666666667	4.5	3	3	6	10.666666667	5.333333333
114.0	106	Cherrybell	Silverlake–cross-country	Under Consideration	5.5	6	5.5	6		2	2	7.5	3.75
114.1	106	Cherrybell	cross-country–Willits	Under Consideration	5.5	6	6	6		2	2	7.5	3.75
115.0	107	Cherry	28th–27th	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
116.0	108	cross-country	connects 28th across Kino	Under Consideration	5	6	5	6	3	3	6	11	5.5
117.0	109	28th	Cherry–Kino connector link	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
118.0	110	28th	Warren–Cherry	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
119.0	111	Cherry	Silverlake–28th	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
120.0	112	Warren	Silverlake–28th	Under Consideration	5.5	6	5.5	6		2	2	7.5	3.75
121.0	113	Silverlake	Kino Pkwy–Cherry	Under Consideration	5	6	5	6		3	3	8	4

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121.1	113	Silverlake	Cherry-Warren	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
121.2	113	Silverlake	Warrin-Martin	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
121.3	113	Silverlake	Martin-Cherrybell	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
121.4	113	Silverlake	Cherrybell-Fairland	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
122.0	114	cross-country	Martin-parking lot-Silverlake	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
123.0	115	cross-country	Martin-Silverlake	Under Consideration	5.5	6	5.5	6		2	2	7.5	3.75
124.0	116	Barleycorn	Martin-Cherrybell	Under Consideration	5.5	6	5.5	6		1	1	6.5	3.25
125.0	117	Campbell	36th-Barleycorn	Under Consideration	5	6	5.5	5	3	3	6	11	5.5
125.1	117	Campbell	Barleycorn-Silverlake	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
126.0	118	Martin	Barleycorn-36th	Under Consideration	5	6	5.5	5	3	2	5	10	5
127.0	119	Kino	Silverlake-36th	Under Consideration	5.5	6	5.5	6	3	3	6	11.5	5.75
128.0	120	36th	Martin-Kino Pkwy	Under Consideration	5	6	5.5	5	3	2	5	10	5
129.0	121	36th	Campbell - Martin	Under Consideration	5	6	5.5	5	3	2	5	10	5
129.1	n/a	cross-country	36th St-Campbell	Under Consideration	5	6	5.5	4		3	3	8	4
130	n/a	Glenn	1st Ave-Stone	Eliminated	5	6	5.5	5			0	5	2.5
131	n/a	Tucson	22nd St-Barraza Aviation Parkway	Eliminated	4	4.5	4	4.5			0	4	2
132	n/a	Aviation	22nd St-Country Club	Eliminated	4.666666667	4.5	4.666666667	4.5			0	4.666666667	2.333333333
133	n/a	Tucson	6th St-Broadway	Eliminated	5	5	5.5	5			0	5	2.5
134	n/a	Aviation PW EB on Ramp	Broadway-Kino Pkwy	Eliminated	4.5	4.5	4.666666667	4.333333333			0	4.5	2.25
135	n/a	Fort Lowell	Campbell-Mountain	Eliminated	5	6	5.5	5			0	5	2.5
136	n/a	Glenn	Campbell-Mountain	Eliminated	5	6	5.5	5			0	5	2.5

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137	n/a	Mountain	Elm-Speedway	Eliminated	5	5	5.5	6			0	5	2.5
138	n/a	Tucson	Elm-Speedway	Eliminated	4.5	4	5.5	6			0	4.5	2.25
139	n/a	Broadway	Euclid-Railroad	Eliminated	4.5	4.333333333	4.666666667	4.5			0	4.5	2.25
140	n/a	Glenn	Flowing Wells-Railroad	Eliminated	4.5	4.5	4.5	4.333333333			0	4.5	2.25
141	n/a	Campbell	Fort Lowell-Glenn	Eliminated	5	6	5.5	5			0	5	2.5
142	n/a	Mountain	Fort Lowell-Glenn	Eliminated	5	6	5.5	5			0	5	2.5
143	n/a	Tucson	Broadway-Winsett	Eliminated	5	6	5.5	5			0	5	2.5
145	n/a	Campbell	Glenn-Grant	Eliminated	5	5	5.5	5			0	5	2.5
146	n/a	Mountain	Glenn-Grant	Eliminated	5	5	5	5			0	5	2.5
147	n/a	Tucson	Glenn-Grant	Eliminated	5	5	5.5	5			0	5	2.5
148	n/a	Fairview	Grant-15th Ave	Eliminated	4.5	4.333333333	4.666666667	4.333333333			0	4.5	2.25
149	n/a	Tucson	Fort Lowell-Glenn	Eliminated	5	6	5.5	5			0	5	2.5
150	n/a	Mountain	Grant-Elm	Eliminated	4.5	5	5	6			0	4.5	2.25
151	n/a	Tucson	Grant-Elm	Eliminated	5	5	5.5	5			0	5	2.5
152	n/a	I-10 Frontage	Grant-Speedway	Eliminated	4.666666667	4.5	4.5	4.5			0	4.666666667	2.333333333
153	n/a	Aviation PW EB on Ramp	Kino Pkwy-22nd St	Eliminated	4.666666667	4.5	4.5	4.5			0	4.666666667	2.333333333
154	n/a	36th	Kino Pkwy-Park	Eliminated	5	6	5.5	5			0	5	2.5
155	n/a	Speedway	Main-Frontage Rd	Eliminated	4.5	4.333333333	4.666666667	4.333333333			0	4.5	2.25
156	n/a	Park	Aviation-21st	Eliminated	4.5	4.5	4.666666667	4.333333333			0	4.5	2.25
157	n/a	I-10 Frontage	Miracle Mile-Grant	Eliminated	4.666666667	4.5	4.5	4.5			0	4.666666667	2.333333333
158	n/a	Fort Lowell	Mountain-1st Ave	Eliminated	5	6	5.5	5			0	5	2.5
159	n/a	Glenn	Mountain-1st Ave	Eliminated	5	6	5.5	5			0	5	2.5
160	n/a	22nd	Norton-Cherry	Eliminated	4.666666667	4.5	4.666666667	4.5			0	4.666666667	2.333333333
160.1	n/a	22nd	Kino Pkwy-Cherry	Under Consideration	5.5	6	6	6		3	3	8.5	4.25
161	n/a	36th	Park-Euclid	Eliminated	5	6	5.5	5			0	5	2.5

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162	n/a	Euclid	Silverlake-36th St	Eliminated	4.5	4.5	4.666666667	4.333333333			0	4.5	2.25
163	n/a	Park	Silverlake-36th St	Eliminated	5	6	5.5	5			0	5	2.5
164	n/a	Tucson	Speedway-6th St	Eliminated	4.5	4	5.5	5			0	4.5	2.25
165	n/a	6th	Tucson Blvd-Campbell	Eliminated	5	5	5.5	5			0	5	2.5
166	n/a	Fort Lowell	Tucson Blvd-Campbell	Eliminated	5	6	5.5	5			0	5	2.5
167	n/a	Glenn	Tucson Blvd-Campbell	Eliminated	5.5	6	5.5	6			0	5.5	2.75
168	n/a	Grant	Tucson Blvd-Campbell	Eliminated	5	5	5.5	5			0	5	2.5
169	n/a	Speedway	Tucson Blvd-Campbell	Eliminated	5	5	5.5	5			0	5	2.5
170	n/a	Tucson	18th-22nd St	Eliminated	5	6	5	5			0	5	2.5
172	n/a	Main	Speedway-6th St	Eliminated	4.5	4.333333333	4.666666667	4.333333333			0	4.5	2.25
173	n/a	6th St	Stone-Main	Eliminated	4	3.5	4.5	4.5			0	4	2
176	n/a	6th St	6th Ave-Stone	Eliminated	4	3.5	4.5	4.333333333			0	4	2
178.0	32	Mabel	Cherry-Vine	Eliminated	5	6	5.5	5			0	5	2.5
179.0	33	Cherry	Speedway-Adams	Eliminated	5	6	6	5			0	5	2.5
181.0	38	Cherry	Enke-Speedway	Eliminated	5	5	6	6			0	5	2.5
182.0	41	Enke	National Championship-Cherry	Eliminated	6	6	6	6			0	6	3
183.0	40	Enke	Campbell-National Champion	Eliminated	5	5	5.5	6			0	5	2.5
184	n/a	National Championship	6th-Enke	Eliminated	5.5	6	6	6			0	5.5	2.75
185.0	43	cross-country	Warren-6th	Eliminated	5	5	5.5	6			0	5	2.5
186.0	44	Warren	7th-cross-country	Eliminated	5	5	5.5	6			0	5	2.5
187.0	45	7th	Cherry-Warren	Eliminated	5	5	5.5	6			0	5	2.5
188.0	46	Cherry	Broadway-7th	Eliminated	5	5	5.5	5			0	5	2.5

Map ID (New)	Map ID (Original)	Street	Segment	Status	Phase 1 Composite Average Score	Historic Properties Average Score	Residential Use Average Score	Sensitive Receptor Average Score	Customer Score (as of 7/1/2020)	Constructability Score	Phase 2 Composite Score	Phases 1 and 2 Composite Score Sum	Phase 1 and 2 Composite Score Average
189	n/a	Stone	Fort Lowell–Glenn	Eliminated	5	6	5.5	5			0	5	2.5
190	n/a	Stone	Speedway–6th St	Eliminated	4.5	4.333333333	4.666666667	4.333333333			0	4.5	2.25
191	n/a	6th St	Euclid–6th Ave	Eliminated	5	5	5.5	5			0	5	2.5
192	n/a	6th St	Mountain–Euclid	Eliminated	5	5	5.5	5			0	5	2.5
193	n/a	Main	Helen–Speedway	Under Consideration	5	5	5.5	5		3	3	8	4
194	n/a	Mountain	6th St–Broadway	Eliminated	5	5	5.5	5			0	5	2.5
195	n/a	Winsett	Tucson Blvd–Campbell	Eliminated	5.5	6	5.5	6			0	5.5	2.75
196	n/a	6th St	Campbell–Mountain	Eliminated	5	5	5.5	5			0	5	2.5
198.0	n/a	Euclid	Speedway–Helen	Under Consideration	4.5	4	5.5	5		3	3	7.5	3.75
199.0	n/a	Helen	Euclid–Park	Under Consideration	5	5	5.5	5		1	1	6	3
200.0	n/a	Park	Speedway–Helen	Under Consideration	5	5	6	5		3	3	8	4
201.0	n/a	Park	Helen–Alley	Under Consideration	5	5	5.5	5		1	1	6	3
202.0	n/a	Speedway	11th–Main	Under Consideration	5	5	5.5	5		3	3	8	4
203.0	n/a	Warehouse	Kino–Curtis	Under Consideration	4.666666667	4.5	4.5	4.5		2	2	6.666666667	3.333333333
204.0	n/a	Warehouse/Cherry	Kino–22nd	Under Consideration	4.666666667	4.5	4.5	4.5		2	2	6.666666667	3.333333333
205.0	n/a	Cherrybell	Willets–22nd	Under Consideration	5.5	6	5.5	6		3	3	8.5	4.25
206.0	n/a	cross-country	Warehouse–Kino		4.666666667	4.5	4.5	4.5		3	3	7.666666667	3.833333333
207	n/a	cross-country	Warehouse–Kino	Under Consideration	5	5	5.5	5			0	5	2.5

Appendix B. Engineering and Constructability Assessment Values

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Table B.1. E/C Assessment Results

Map ID (New)	Street	Segment	Status	Notes	Score													Total	
					TEP Engineering Conflicts/Constraints/Opportunities	TEP Distribution Underground Required	TEP Outage Requirements	Communications Attachment Relocation	Other Electric Utility Conflict	Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Line Conflict	Tucson Water Line Conflict	Other Conflict		
1	Fort Lowell	1st Ave–Stone	Added back; Under Consideration	Links along the existing 138kV line along Ft. Lowell had been removed because construction and future maintenance would require that the existing and future circuits would both have to be taken out of service, however further review determined that with careful coordination of outages it could be accomplished.	2	1	1	1	3	1	3	1	3	2	2	2	2	3	25
2	Glenn	Fairview–Flowing Wells	Under Consideration		0	0	1	3	2	1	3	1	3	2	2	2	2	3	0
3	Glenn	Oracle–Fairview	Under Consideration		0	0	1	1	3	1	3	1	3	3	3	2	2	3	0
4	Glenn	Stone–Oracle	Under Consideration		0	0	1	1	3	1	3	1	3	2	2	2	2	3	0
5	Flowing Wells	Glenn–DMP	Under Consideration		1	1	2	3	2	3	3	2	3	2	2	1	2	3	28
5.5	Flowing Wells	DMP–Grant	Under Consideration		1	1	1	1	3	3	2	3	3	2	2	1	2	3	26
6	Fairview	Glenn–Grant	Under Consideration		2	2	2	2	3	2	3	2	3	2	2	2	2	3	30
7	Highland/17th	Manlove–Curtis	Added back; Under Consideration		3	3	3	3	3	2	3	2	3	2	2	1	2	3	33
8	Grant	Fairview–Flowing Wells	Under Consideration		2	3	3	1	3	2	3	2	3	3	3	3	2	3	33
8.1	Grant	Flowing Wells–DMP Parcel	Under Consideration		2	3	2	1	3	2	3	2	3	3	3	2	2	3	30
9	Grant	15th–Fairview	Under Consideration		2	3	3	1	3	2	3	2	3	3	3	3	3	3	34
10	Grant	Oracle–15th	Under Consideration		3	3	3	3	3	2	3	2	3	2	3	3	3	3	35
11	Stone	Glenn–Grant	Under Consideration		2	2	2	2	3	2	3	1	3	2	2	1	2	3	29
12	Grant	6th Ave–Stone	Under Consideration		2	2	3	3	3	3	3	3	2	2	3	3	3	3	35
12.1	Grant	Stone–Oracle	Under Consideration		2	2	3	3	3	3	3	3	2	2	3	3	3	3	35

Map ID (New)	Street	Segment	Status	Notes	Score												Other Conflict	Total
					TEP Engineering Conflicts/Constraints/Opportunities	TEP Distribution Underground Required	TEP Outage Requirements	Communications Attachment Relocation	Other Electric Utility Conflict	Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Line Conflict	Tucson Water Line Conflict		
13	15th	Alto-Grant	Under Consideration		2	1	2	1	3	1	3	1	3	1	3	1	1	23
14	cross-country	Helen-Alto	Under Consideration		2	3	3	3	3	3	3	3	3	3	3	3	1	34
15	Helen	11th-15th	Under Consideration		2	3	3	2	3	2	3	3	2	3	3	3	3	34
16	11th	Speedway-Helen	Under Consideration		2	3	3	1	3	3	3	3	3	3	3	3	3	36
17	Speedway	Stone-Helen	Under Consideration	U of A prefers north side of Speedway	3	3	3	3	3	3	1	3	3	2	3	2	2	32
18	Stone	Speedway-Grant	Under Consideration		3	3	3	3	3	3	1	3	3	2	3	2	1	31
20	Speedway	6th Ave-Stone	Under Consideration	U of A prefers north side of Speedway	1	3	3	3	3	3	1	3	3	2	3	3	3	32
21	6th	Speedway-Grant	Under Consideration		2	2	2	2	3	3	3	3	3	2	3	2	2	32
22	1st	Fort Lowell-Glenn	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is required to connect with other links.	2	2	2	1	3	2	1	3	2	2	3	2	2	27
23	Grant	1st-6th Ave	Under Consideration		2	2	3	3	3	3	3	3	2	2	3	3	3	35
24	Grant	Park-Mountain	Under Consideration		2	2	2	1	3	3	1	3	3	3	3	3	3	0
24.1	Grant	Euclid-Park	Under Consideration		2	2	3	3	3	2	2	3	2	3	3	3	3	33
25	Park	Alley-Grant	Under Consideration		2	2	2	1	3	2	2	3	2	2	3	2	3	29
26	Grant	Campbell-Vine	Under Consideration		1	2	2	1	3	2	1	3	3	3	2	3	3	0
26.1	Grant	Vine-Mountain	Under Consideration		1	2	2	1	3	2	1	3	3	3	2	3	3	0
27	Vine	Elm-Grant	Under Consideration		2	3	2	2	3	2	2	3	1	3	2	3	3	30

Map ID (New)	Street	Segment	Status	Notes	Score												Other Conflict	Total
					TEP Engineering Conflicts/Constraints/Opportunities	TEP Distribution Underground Required	TEP Outage Requirements	Communications Attachment Relocation	Other Electric Utility Conflict	Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Line Conflict	Tucson Water Line Conflict		
28	Miracle Mile	Fairview–Flowing Wells	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is now viable. NOTE ADOT comment: "District would have to evaluate any plan for running a parallel transmission line."	2	2	2	1	3	2	3	2	2	2	3	2	28	
29	Campbell	Grant–Elm	Under Consideration	East side is preferred by Banner. Plans to redevelop in this area.	3	3	3	3	3	2	3	3	3	2	2	3	36	
31	alley btw. Lee & Adams	Vine–Park	Under Consideration		1	1	1	1	3	3	3	2	3	3	1	27		
32	Vine	Alley–Elm	Under Consideration		1	3	2	1	3	1	3	3	1	2	2	26		
33	Ring	Warren–Substation	Under Consideration		1	1	2	1	3	3	2	3	3	2	1	26		
34	Elm	Substation–Vine	Under Consideration		3	3	3	3	3	3	3	3	3	3	3	39		
35	Elm	Campbell–Ring Road	Under Consideration		3	3	3	3	3	3	3	3	3	2	3	38		
36	Campbell	Elm–Speedway	Under Consideration		2	2	2	1	3	2	3	2	3	3	2	30		
37	Oracle	Fort Lowell–Miracle Mile	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is now viable. NOTE ADOT comment: "District would have to evaluate any plan for running a parallel transmission line."	3	3	3	3	3	2	0	1	3	1	2	0		
38	Oracle	Miracle Mile–Glenn	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is now viable. NOTE ADOT comment: "District would have to evaluate any plan for running a parallel transmission line."	1	3	3	3	3	1	2	1	3	2	2	28		
39	Vine	Mabel–Alley	Under Consideration		1	3	3	1	3	1	3	1	3	2	2	27		
40	1st	Glenn–Grant	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is viable.	2	2	2	2	3	2	3	2	3	2	3	31		
41	Vine	Speedway–Helen	Under Consideration		0	3	3	3	3	1	3	1	3	3	3	0		
42	Speedway	Campbell–Cherry	Under Consideration		1	3	3	3	3	1	3	1	3	3	1	30		

Map ID (New)	Street	Segment	Status	Notes	Score												Total		
					TEP Engineering Conflicts/Constraints/Opportunities	TEP Distribution Underground Required	TEP Outage Requirements	Communications Attachment Relocation	Other Electric Utility Conflict	Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Line Conflict	Tucson Water Line Conflict		Other Conflict	
42.1	Speedway	Cherry-Vine	Under Consideration		1	3	3	3	3	3	1	3	1	3	3	3	2	3	32
42.2	Speedway	Vine-Mountain	Under Consideration		1	3	3	3	3	3	1	3	1	3	3	3	2	1	30
42.3	Speedway	Mountain-Park	Under Consideration		1	3	3	3	3	3	1	3	1	3	2	3	3	1	30
42.4	Speedway	Park-Euclid	Under Consideration		1	3	3	3	3	3	1	3	1	3	2	3	3	1	30
43	Speedway	Euclid-6th Ave	Under Consideration		1	3	3	3	3	3	1	3	1	3	2	3	2	1	29
44	Oracle	Glenn-Grant	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is viable.	2	3	3	3	3	3	1	3	1	3	2	1	2	1	28
45	Euclid	Speedway-6th St	Under Consideration		1	1	1	1	1	3	1	3	1	3	3	1	2	1	22
46	Campbell	Speedway-6th St	Under Consideration		2	2	2	1	1	3	2	2	2	2	2	2	2	1	24
47	Euclid	Grant-Helen	Under Consideration	This link may work if we obtain private easements and only need a single circuit.	3	3	3	3	3	3	1	2	1	3	1	3	2	2	30
48	Oracle	Grant-Helen	Added back; Under Consideration	This link was originally removed because it would require private easement and the links would jump back and forth from one side of the road to the other. Further review determined that it should be added back in to allow for more flexibility in siting.	1	3	3	3	3	3	1	2	1	3	2	1	2	1	26
49	15th	Kino Pkwy-Cherry	Added back; Under Consideration		3	3	3	3	3	2	1	1	3	3	2	3	3	1	29
50	Campbell	6th St-Broadway	Under Consideration		2	2	1	3	2	2	2	2	2	2	2	2	2	2	26
51	15th	Cherry-Exist. 46kV	Added back; Under Consideration		3	3	3	3	3	3	2	3	2	3	2	2	3	2	34
52	Broadway	Cherry-Mountain	Under Consideration		2	3	3	3	3	3	2	2	2	1	3	3	2	3	32
52.1	Broadway	Kino Pkwy-Cherry	Under Consideration		3	3	3	3	3	3	2	2	2	1	3	3	3	3	34

Map ID (New)	Street	Segment	Status	Notes	Score													Total	
					TEP Engineering Conflicts/Constraints/Opportunities	TEP Distribution Underground Required	TEP Outage Requirements	Communications Attachment Relocation	Other Electric Utility Conflict	Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Line Conflict	Tucson Water Line Conflict	Other Conflict		
53	Broadway	Euclid-Fremont	Under Consideration		2	3	3	3	3	2	2	2	2	1	2	2	2	2	29
53.1	Broadway	Fremont-Mountain	Under Consideration		3	3	3	3	3	2	2	2	3	1	3	3	3	3	34
54	Fairview	Miracle Mile-Glenn	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is viable.	1	1	2	1	3	1	3	3	1	3	1	1	1	3	22
55	Euclid	6th St-Broadway	Under Consideration		1	2	2	2	3	1	3	3	1	3	2	3	2	1	26
56	Euclid	Broadway-cross-country	Under Consideration		2	3	3	3	3	2	3	3	2	3	2	1	2	2	31
57	Fremont	Manlove-Broadway	Under Consideration		2	2	2	1	3	3	2	3	2	3	3	2	2	3	30
58	Flowing Wells	Miracle Mile-Glenn	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is viable.	2	2	2	1	2	3	3	3	2	3	2	1	2	3	29
59	cross-country	Toole-Euclid	Under Consideration		3	3	3	3	3	3	3	3	3	2	3	3	3	2	36
60	cross-country	46kV-Fremont	Under Consideration		2	2	2	1	3	3	1	2	3	3	3	2	2	3	29
61	Toole	cross-country-16th	Under Consideration		3	3	3	3	3	3	3	3	3	3	3	3	2	2	37
62	Cherry	cross-country-Broadway	Under Consideration		2	2	2	1	3	1	3	3	2	3	2	2	2	1	25
63	cross-country	15th-Cherry	Under Consideration		2	3	3	3	3	3	2	2	3	3	3	2	2	3	34
64	46kV line	alley btw. 16th & 17th-15th	Under Consideration		1	1	2	1	3	3	1	2	3	3	2	2	2	1	24
64.1	46kV line	15th-Highland	Under Consideration		1	1	2	1	3	3	1	2	3	3	2	3	3	3	28
64.2	46kV line	Highland-Manlove	Under Consideration		1	1	2	1	3	3	1	2	3	3	2	3	3	3	28
65	Cherry	16th-15th	Under Consideration		2	2	2	1	3	2	3	2	3	3	2	3	3	3	31

Map ID (New)	Street	Segment	Status	Notes	Score												Other Conflict	Total
					TEP Engineering Conflicts/Constraints/Opportunities	TEP Distribution Underground Required	TEP Outage Requirements	Communications Attachment Relocation	Other Electric Utility Conflict	Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Line Conflict	Tucson Water Line Conflict		
66	Euclid	16th–19th St	Under Consideration		2	2	2	1	3	2	3	2	3	2	2	2	2	28
67	19th	Euclid–Euclid	Under Consideration		2	3	3	3	3	2	3	2	3	2	3	3	2	34
68	Miracle Mile	Oracle–Fairview	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is now viable. NOTE ADOT comment: "District would have to evaluate any plan for running a parallel transmission line."	3	3	3	3	3	1	0	1	3	0	0	2	1	0
69	Euclid	19th–21st	Under Consideration		2	2	2	1	3	2	3	2	3	2	2	2	2	28
69.1	Euclid	21st–22nd	Under Consideration		1	2	2	1	3	2	3	2	3	1	1	1	2	24
70	21st	Euclid–Park	Under Consideration		1	2	2	2	3	2	3	2	3	3	3	2	2	30
70.1	21st	Park–Highland	Under Consideration		1	2	2	2	3	2	3	2	3	2	2	2	2	27
70.2	21st	Highland–Curtis	Under Consideration		2	2	2	2	3	2	3	2	3	2	2	2	3	30
71	Highland	22nd–21st	Under Consideration		2	2	2	3	3	2	3	2	3	2	2	2	2	30
71.1	Highland	21st–20th	Under Consideration		2	3	3	3	3	2	3	2	3	2	3	3	2	34
72	20th	Highland–Curtis	Under Consideration		3	3	3	3	3	2	3	2	3	3	3	2	2	35
73	Curtis	20th–21st	Under Consideration		2	3	3	3	3	3	3	2	3	3	3	3	2	36
73.1	Curtis	Warehouse–20th	Under Consideration		2	2	2	1	3	2	3	2	3	2	2	2	2	28
74	cross-country	Curtis–Kino	Under Consideration		2	2	2	3	3	3	3	2	3	3	3	3	2	33
75	Warehouse	cross-country–Curtis	Under Consideration		2	2	2	1	3	3	3	2	3	2	2	1	2	29
76	cross-country	Warehouse Ave–Vine St	Under Consideration		3	3	3	3	3	3	3	2	3	3	3	2	2	36

Map ID (New)	Street	Segment	Status	Notes	Score												Other Conflict	Total
					TEP Engineering Conflicts/Constraints/Opportunities	TEP Distribution Underground Required	TEP Outage Requirements	Communications Attachment Relocation	Other Electric Utility Conflict	Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Line Conflict	Tucson Water Line Conflict		
77	Vine	cross-country-17th	Under Consideration		3	3	3	3	3	3	2	3	2	3	3	3	2	36
78	17th	Curtis-Vine	Under Consideration		3	3	3	3	3	3	3	3	3	3	2	2	3	37
79	Curtis	alley btw. 16th & 17th & 46kV line	Under Consideration		2	2	2	3	3	3	2	3	2	3	1	3	2	31
80	alley btw. 16th & 17th	Curtis-46kV line	Under Consideration		1	1	1	1	3	3	1	3	3	3	1	2	1	23
81	alley btw. 16th & 17th	Curtis-Vine	Under Consideration		1	1	1	1	3	3	1	3	3	3	1	2	1	23
82	Fort Lowell	Stone-Oracle	Added back; Under Consideration	Links along the existing 138kV line along Ft. Lowell had been removed because construction and future maintenance would require that the existing and future circuits would both have to be taken out of service; however, further review determined that, with careful coordination of outages, it could be accomplished.	2	2	2	2	3	2	2	3	2	2	2	2	3	29
83	16th	Vine-Cherry	Under Consideration		2	2	2	2	3	2	2	3	2	3	2	3	3	31
84	Vine	Alley and 16th	Under Consideration		2	3	3	3	3	3	1	3	2	3	3	3	1	33
85	Vine	17th-alley btw. 16th & 17th	Under Consideration		2	3	3	3	3	3	1	3	2	3	3	3	1	33
86	17th	Vine-Kino	Under Consideration		2	3	3	3	3	3	2	3	2	3	3	2	2	34
87	Broadway	Plummer-Kino Pkwy	Under Consideration	Broadway (in this area) eliminated due to recent City of Tucson PI project. TEP just rebuilt the 46kV and distribution here, and there will also be a 5-year hiatus on pavement cuts. The line could not be installed without pavement cuts, as newly built 46kV and distribution would have to be undergrounded.	2	3	3	3	3	3	2	3	2	3	3	3	3	36
88	Kino	Broadway-cross-country	Under Consideration		2	2	2	2	3	2	2	3	3	2	2	2	2	29
88.1	Kino	cross-country-Winsett	Under Consideration		3	3	3	3	3	3	2	3	3	2	3	3	2	36

Map ID (New)	Street	Segment	Status	Notes	Score													Total	
					TEP Engineering Conflicts/Constraints/Opportunities	TEP Distribution Underground Required	TEP Outage Requirements	Communications Attachment Relocation	Other Electric Utility Conflict	Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Line Conflict	Tucson Water Line Conflict	Other Conflict		
89	Cross-country	14th-Kino	Under Consideration		3	3	3	3	3	3	3	2	2	3	3	3	3	3	37
90	Plumer	19th-Broadway	Under Consideration	Plumer, culvert PI project; n/a identified	1	0	2	1	3	3	1	3	1	3	1	1	1	1	0
91	Kino	15th-18th	Under Consideration		2	3	3	3	3	3	3	2	2	3	2	2	2	2	32
92	Campbell	Winsett-14th St	Under Consideration	Dam present, 408 permitting required (Pima County)	2	2	2	2	3	3	1	3	1	3	2	2	2	2	27
93	Kino	Aviation-18th	Under Consideration		2	3	3	3	3	3	3	3	2	3	3	2	2	1	33
94	Winsett	Campbell-Kino Pkwy	Under Consideration		2	2	2	1	3	2	3	3	2	3	2	2	2	2	28
95	Kino	22nd-21st	Under Consideration		3	3	3	3	3	3	3	3	1	3	3	3	3	1	35
95.1	Kino	Warehouse-21st	Under Consideration		3	3	3	3	3	3	3	3	1	3	3	3	3	1	35
95.2	Kino	Barraza Aviation Parkway-Warehouse	Under Consideration		3	3	3	3	3	3	3	3	1	3	3	3	3	1	35
96	Campbell	Winsett-19th	Under Consideration		1	1	3	3	3	3	1	3	1	3	2	1	2	1	25
96.1	Campbell	19th-Norris	Under Consideration		2	2	2	1	3	3	1	3	1	3	2	1	2	3	26
96.2	Norris	Campbell-cross-country	Under Consideration		3	3	3	3	3	3	2	3	2	3	2	2	3	2	34
97	19th	Plumer-Campbell	Under Consideration		1	0	2	1	3	3	1	3	1	3	1	1	1	2	0
98	Plumer	22nd-19th	Under Consideration		1	0	2	1	3	3	1	3	1	3	1	1	1	3	0
99	cross-country	Plumer-Norris	Under Consideration		3	3	3	3	3	3	3	2	2	3	2	2	3	3	35
100	cross-country	rail yard-Plumer	Under Consideration		3	3	3	3	3	3	3	3	1	3	3	2	2	1	33
101	22nd	Highland-Park	Under Consideration		2	2	2	2	3	3	3	3	3	3	3	3	3	3	35

Map ID (New)	Street	Segment	Status	Notes	Score													Other Conflict	Total
					TEP Engineering Conflicts/Constraints/Opportunities	TEP Distribution Underground Required	TEP Outage Requirements	Communications Attachment Relocation	Other Electric Utility Conflict	Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Line Conflict	Tucson Water Line Conflict			
101.1	22nd	Kino Pkwy–Highland	Under Consideration		2	3	3	3	3	3	3	2	3	3	3	3	3	2	36
102	22nd	Park–Euclid	Under Consideration		2	2	2	2	3	3	3	3	3	3	3	3	3	3	35
103	Euclid	22nd St–Silverlake	Under Consideration		1	1	2	1	3	3	2	2	3	2	2	2	1	1	25
104	Park	22nd St–Silverlake	Under Consideration		1	1	2	2	3	3	1	1	3	1	1	1	1	1	19
104.5	Park	22nd–21st	Under Consideration		2	2	2	3	3	3	2	2	3	3	3	3	3	3	34
105	Silverlake	Park Euclid	Under Consideration		3	3	3	3	3	3	3	3	3	3	2	3	3	3	38
106	Silverlake	Kino Pkwy–Park	Under Consideration	Waste Water prefers to avoid impacts to Quincie Douglas and other developments in this area	2	3	3	3	3	3	3	1	3	2	2	3	2	2	31
107	Kino	22nd–27th	Under Consideration	Pima County opposed the visual impact to Kino (gateway to City of Tucson)	3	3	3	3	3	3	3	3	3	3	3	3	3	2	38
107.1	Kino	27th–28th	Under Consideration	Pima County opposed the visual impact to Kino (gateway to City of Tucson)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	39
107.2	Kino	28th–Silverlake	Under Consideration	Pima County opposed the visual impact to Kino (gateway to City of Tucson)	3	3	3	3	3	3	3	3	3	2	3	2	3	3	37
108	27th	Cherry and Kino	Under Consideration		3	3	3	3	3	3	3	3	3	3	2	3	3	3	38
109	cross-country	Cherry–Cherrybell	Under Consideration		3	3	3	3	3	3	1	3	3	3	3	3	3	3	37
110	Fairland	Willits–Silverlake	Under Consideration		2	3	3	3	3	3	3	3	3	3	3	2	2	2	36
111	Willits	Cherrybell–Fairland	Under Consideration		2	3	3	3	3	3	3	3	3	2	3	2	2	2	35
112	cross-country	Fairland–rail yard	Under Consideration		3	3	3	3	3	3	1	3	3	3	3	3	3	3	37
113	cross-country	Silverlake–rail yard	Under Consideration		3	3	3	3	3	3	1	3	3	3	3	3	3	3	37
114	Cherrybell	Silverlake–cross-country	Under Consideration		2	2	2	2	3	2	3	3	3	2	3	1	2	2	31
114.1	Cherrybell	Cross-country to Willits			2	2	2	2	3	2	3	3	3	2	3	1	2	2	31

Map ID (New)	Street	Segment	Status	Notes	Score												Other Conflict	Total	
					TEP Engineering Conflicts/Constraints/Opportunities	TEP Distribution Underground Required	TEP Outage Requirements	Communications Attachment Relocation	Other Electric Utility Conflict	Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Line Conflict	Tucson Water Line Conflict			
115	Cherry	28th-27th connects 28th across Kino	Under Consideration		2	3	3	3	3	3	3	3	3	3	2	3	2	2	35
116	cross-country	Cherry-Kino connector link	Under Consideration		3	3	3	3	3	3	3	3	3	3	3	3	3	3	39
117	28th	Warren-Cherry	Under Consideration		3	3	3	3	3	3	3	3	3	3	2	1	2	2	34
118	28th	Silverlake-28th	Under Consideration		3	3	3	3	3	3	3	3	3	3	2	3	2	2	36
119	Cherry	Silverlake-28th	Under Consideration		3	3	3	3	3	3	3	3	3	3	2	1	3	2	35
120	Warren	Kino Pkwy-Cherry	Under Consideration		2	2	2	1	3	3	3	3	3	3	3	2	2	2	31
121	Silverlake	Cherry-Warren	Under Consideration		3	3	3	3	3	3	3	3	3	3	1	3	3	3	37
121.1	Silverlake	Warrin-Martin	Under Consideration		3	3	3	3	3	3	3	3	3	3	2	3	2	3	37
121.2	Silverlake	Martin-Cherrybell	Under Consideration		3	3	3	3	3	3	3	3	3	3	3	3	3	2	38
121.3	Silverlake	Cherrybell-Fairland	Under Consideration		3	3	3	3	3	3	3	3	3	3	3	3	3	3	39
121.4	Silverlake	Martin-parking lot-Silverlake	Under Consideration		3	3	3	3	3	3	3	3	3	3	3	3	1	2	36
122	cross-country	Martin-Silverlake	Under Consideration		3	3	3	3	3	3	3	3	3	3	3	3	3	1	35
123	cross-country	Barleycorn-Silverlake	Under Consideration		2	2	2	1	3	3	3	3	3	3	1	3	1	2	27
124	Barleycorn	Cherrybell	Under Consideration		1	1	1	1	3	1	3	3	3	3	1	1	1	1	19
125	Campbell	36th-Barleycorn	Under Consideration		2	2	2	3	3	3	3	3	3	3	3	3	3	3	36
125.1	Campbell	Barleycorn-Silverlake	Under Consideration		2	2	2	3	3	3	3	3	3	3	3	2	2	3	34
126	Martin	Barleycorn-36th	Under Consideration		2	2	2	3	3	3	3	3	3	3	3	3	1	1	30
127	Kino	Silverlake-36th St	Under Consideration		3	3	3	3	3	3	3	3	3	3	3	3	2	2	36

Map ID (New)	Street	Segment	Status	Notes	Score													Total	
					TEP Engineering Conflicts/Constraints/Opportunities	TEP Distribution Underground Required	TEP Outage Requirements	Communications Attachment Relocation	Other Electric Utility Conflict	Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Line Conflict	Tucson Water Line Conflict	Other Conflict		
128	36th	Martin–Kino Pkwy	Under Consideration		1	3	2	3	3	3	3	3	3	3	3	1	2	1	31
129	36th	Campbell–Martin	Under Consideration		1	3	3	2	3	3	2	3	3	3	3	1	2	1	29
129.1	Cross-country	36th–Campbell	Under Consideration		3	3	3	3	3	3	3	3	3	3	3	3	3	3	37
193	Main	Helen–Speedway	Under Consideration		2	3	3	3	3	3	3	2	3	3	3	3	3	2	35
198	Euclid	Speedway–Helen	Under Consideration	Originally removed because of limited right-of-way further north on Euclid Avenue. Added back based on stakeholder (U of A) comment to add links on Helen and Park to alley (46kV).	3	3	3	3	3	3	3	2	3	3	2	3	3	3	36
199	Helen	Euclid–Park	Under Consideration	Link added based on stakeholder comment (U of A).	1	1	2	1	3	1	2	1	3	1	1	2	1	2	22
200	Park	Speedway–Helen	Under Consideration	We would have to switch back and forth on east and west side of road to avoid buildings. We would have to obtain private easement. Not sure about other utilities.	2	3	3	3	3	3	3	2	3	3	2	3	3	2	34
201	Park	Helen–Alley	Under Consideration	Link added based on stakeholder comment (U of A).	1	1	2	1	3	1	2	1	3	2	1	1	1	2	22
202	Speedway	11th–Main	Under Consideration		2	3	3	3	3	3	3	3	3	3	3	3	2	3	37
203	Warehouse	Kino–Curtis	Under Consideration		2	2	2	2	3	2	2	1	3	2	2	2	1	1	26
204	Warehouse/Cherry	Kino–22nd	Under Consideration		1	2	2	2	3	2	2	2	3	1	3	3	3	1	26
205	Cherrybell	Willets–22nd	Under Consideration		2	2	2	2	3	2	2	2	3	3	3	3	1	3	33

Note: If a link has a score of zero, it will fall off of the considered links. Pima County Waste Water Conflicts are weighted heavier in some areas due to the separation they require to install next to their utility. If communications attachments need to be relocated, this was weighted heavier due to the amount of coordination and underground trenching required to relocate them. If several customers are served off of a distribution line that would need to be rebuilt underground, this was weighted heavier due to the amount of services that would also need to be fed underground. **Maximum score is 39.**

Key: 0 = Not able to mitigate conflict; 1 = Multiple conflicts but able to mitigate/difficulty of conflict to mitigate; 2 = Single conflict but able to mitigate; 3 = No conflict.

Table B.2a. E/C Conflicts and Constraints

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints				Other Electric Utility Conflict
						TEP Overhead/Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications on Existing Structure Requiring Relocation	
1	Fort Lowell	1st Ave–Stone	Added back; Under Consideration	Links along the existing 138kV line along Ft. Lowell had been removed because construction and future maintenance would require that the existing and future circuits would both have to be taken out of service, however further review determined that with careful coordination of outages it could be accomplished.	North and South ^a	Requires the rebuild of 138kV line. Distribution underbuilt would need to be relocated underground. Some easements may be required (see sidewalk conflicts and easement notes).	Distribution Circuit is currently underbuilt on the 138kV line. It would need to be removed from the 138kV structures and rebuilt underground. Due to the number of utilities in the road, it would be difficult to add an additional underground line. The distribution line also serves a number of customers that would need to have underground services installed.	Yes, extended outage on 138kV line and outages on distribution as well as cutover outages to customers being served off of distribution.	Yes, there are 4 communications structures on the 138kV that would need to be relocated.	none
2	Glenn	Fairview–Flowing Wells	Under Consideration		North and South ^a	Requires the rebuild of 138kV line. 46kV line would need to be relocated. Distribution overhead line that would need to be relocated. Distribution underground line on north side of the road.	46kV Circuit is currently located on the 138kV structure and would need to be relocated. Distribution Circuit is currently underbuilt on the 138kV line. It would need to be removed from the 138kV structures and rebuilt underground. (There is not enough room to underground the existing overhead line in same right-of-way)	Yes, extended outage on 138kV line and 46kV line. Outages on distribution as well as cutover outages to customers being served off of distribution.	none	Yes, other utility high voltage line crossing.
3	Glenn	Oracle–Fairview	Under Consideration		North and South ^a	Requires the rebuild of 138kV line. Distribution underbuilt would need to be relocated underground. Distribution underground line on north side of the road.	Distribution Circuit is currently underbuilt on the 138kV line and would need to be underground or relocated. (There is not enough room to underground the existing overhead line in same right-of-way)	Yes, outage required on the 138kV and Distribution Circuit as well as outages on the customers being served off the distribution.	Yes, there are 2 communications structures on the existing 46kV line that would need to be relocated.	none
4	Glenn	Stone–Oracle	Under Consideration		North and South ^a	Requires the rebuild of 138kV line. Distribution underbuilt would need to be relocated underground. Distribution underground line on north side of the road.	Distribution Circuit is currently underbuilt on the 138kV line and would need to be underground or relocated. (There is not enough room to underground the existing overhead line in same right-of-way)	Yes, outage required on the 138kV and Distribution Circuit as well as outages on the customers being served off the distribution.	Yes, there are 2 communications structures on the existing 46kV line that would need to be relocated.	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints				
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
5	Flowing Wells	Glenn–DMP	Under Consideration		East and West (based on conflicts and constraints)	Requires the rebuild of the 138kV line. Requires the relocation of a 46kV line on west side of the road. Distribution underground line on west side of the road.	Possibly, may need to rebuild the 46kV circuit underground. Limited room in right-of-way to add the underground line.	Yes, outage required on the 46kV.	none	Yes, other utility high-voltage line crossing.
5.5	Flowing Wells	DMP–Grant	Under Consideration		East and West (based on conflicts and constraints)	46kV Line on West side of the road that may need to be rebuilt based on other utility conflicts on east side of the road. Double Circuit Distribution overhead on west side of the road that may need to be rebuilt. Two circuits of distribution underground line on west side of the road.	Possibly, based on other utility conflicts on the east side of the road. Limited room to underground distribution if needed.	Yes, 46kV outage and possible distribution outages.	Yes, there are 3 communication attachers on the existing lines that may need to be relocated.	none
6	Fairview	Glenn–Grant	Under Consideration		Either side	46kV on east side of the road. Distribution on the west side of the road.	Possibly, based on other utility conflicts on the east side of the road	Yes, on the 46kV circuit and possible if the distribution needs to be underground	Possible, 1 current attacher	none
7	Highland/17th	Manlove–Curtis	Added back; Under Consideration		Either side	none	none	none	none	none
8	Grant	Fairview–Flowing Wells	Under Consideration		South side	46kV Line on the south side of the road that will need to be rebuilt. Possible conflict with 46kV and double circuit distribution line on the north side of the road that will need to be crossed to go to DMP substation.	none	No, existing 46kV line is currently deenergized	Yes, 3 current attachers	none
8.1	Grant	Flowing Wells–DMP Parcel	Under Consideration		South side	46kV Line on the south side of the road that will need to be rebuilt. Possible conflict with 46kV and double circuit distribution line on the north side of the road that will need to be crossed to go to DMP substation.	none	Yes, outage needed on 46kV line on north side of the road to cross to DMP substation due to a shared structure.	Yes, 3 current attachers	none
9	Grant	15th–Fairview	Under Consideration		South side	46kV Line on the south side of the road that will need to be rebuilt.	none	No, existing 46kV line is currently deenergized	Yes, 2 current attachers	none
10	Grant	Oracle–15th	Under Consideration		Either side	none	none	none	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints				
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
11	Stone	Glenn–Grant	Under Consideration		Either side	Distribution on west side of the road. Distribution service line on east side of the road. 46kV crossing at Kelso St.	Yes, if line is constructed on west side of the road. Possible if line is constructed on east side of the road based on 138kV clearance.	Yes, for either side of the road	There is a communication line running on the east side of the road.	none
12	Grant	6th Ave–Stone	Under Consideration		North (required due to recent road improvements/ paving)	46kV/distribution line on south side of the road.	Cannot do underground distribution in this area due to recent roadway improvements/ five-year hiatus on pavement.	none	none	none
12.1	Grant	Stone–Oracle	Under Consideration		North (required due to recent road improvements/ paving)	46kV/distribution line on south side of the road.	Cannot do underground distribution in this area due to recent roadway improvements/ five-year hiatus on pavement.	none	none	none
13	15th	Alto–Grant	Under Consideration		West side	46kV line that will need to be rebuilt. Distribution underbuilt that will need to be relocated underground.	Yes, distribution line that will need to be relocated underground/ underground services to customers served on the line	Yes, outage on the distribution for relocation and customers served on the line	Yes, 3 current attachers	none
14	cross- country	Helen–Alto	Under Consideration		n/a	46kV line that will need to be rebuilt.	none	None, the 46kV line is currently deenergized	none	none
15	Helen	11th–15th	Under Consideration		North side	46kV line on the north side of the road that will need to be rebuilt. Distribution line on the south side of the road.	none	None, the 46kV line is currently deenergized	Existing communication line running underneath the current 46kV line. Clearances must be maintained.	none
16	11th	Speedway– Helen	Under Consideration		West side	46kV with distribution underbuild on east side. 46kV single circuit on west side that will need to be rebuilt. 46kV crossing at Speedway and 11th.	none	None, the 46kV line is currently deenergized	Yes, 1 current attacher	none
17	Speedway	Stone–Helen	Under Consideration	U of A prefers north side of Speedway	North and South ^a	46kV crossing at Helen. Limited room for TEP overhead facilities.	none	none	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints				
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
18	Stone	Speedway– Grant	Under Consideration		East and West (requires the line to jump from one side of the road to the other based on conflicts and constraints, mainly building conflicts)	none	none	none	none	none
20	Speedway	6th Ave–Stone	Under Consideration	U of A prefers north side of Speedway	North and South ^a	Limited room for TEP overhead facilities along link. Possible 46kV crossing.	none	none	none	none
21	6th	Speedway– Grant	Under Consideration		East and West ^a	Distribution on portions of the road that will need to be mitigated.	Possible if distribution overhead cannot be avoided with new construction.	Possible on distribution line	Yes, 2 current attachers	none
22	1st	Fort Lowell– Glenn	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is required to connect with other links.	East and West ^a	Distribution Line on west side of the road.	Possible if structures need to be set on the west side of the road.	Possible if structures need to be set on the west side of the road.	Yes, 2 current attachers	none
23	Grant	1st–6th Ave	Under Consideration		North (required due to recent road improvements/ paving)	46kV distribution line on south side of the road.	Cannot do underground distribution in this area due to recent roadway improvements/ five-year hiatus on pavement.	none	none	none
24	Grant	Park–Mountain	Under Consideration		South, not feasible due to Grant Road widening project.	46kV Crossing at Park. Possible opportunity to relocate to alley just south of Grant Rd. but there is a distribution line currently located there and limited space (would require easements, limited room for TEP overhead facilities).	Yes, distribution line to the south and services to customers on this line.	Yes, distribution line to the south	Yes, 4 attachers	none
24.1	Grant	Euclid–Park	Under Consideration		North (required due to recent road improvements/ paving)	46kV/distribution line on south side of the road. 46kV crossing at Park.	Cannot do underground distribution in this area due to recent roadway improvements/ five-year hiatus on pavement.	none	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints				
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
25	Park	Alley–Grant	Under Consideration		East and West ^a	46kV/distribution line on east side of the road.	Yes, underbuilt distribution will need to be relocated underground.	Yes, to rebuild the 46kV line and underground the distribution	Yes, 3 current attachers	none
26	Grant	Campbell–Vine	Under Consideration		South, not feasible due to Grant Road widening project.	Possible opportunity to relocate to alley just south of Grant Rd. but there is a distribution line currently located there and limited space (would require easements, limited room for TEP overhead facilities).	Yes, distribution line to the south in alley and services to customers on this line.	Yes, distribution line to the south	Yes, 4 attachers	none
26.1	Grant	Vine–Mountain	Under Consideration		South, not feasible due to Grant Road widening project.	Possible opportunity to relocate to alley just south of Grant Rd. but there is a distribution line currently located there and limited space (would require easements, limited room for TEP overhead facilities).	Yes, distribution line to the south in alley and services to customers on this line.	Yes, distribution line to the south	Yes, 4 attachers	none
27	Vine	Elm–Grant	Under Consideration		East and West ^a	46kV line on the east side of the road that would need to be rebuilt.	none	Yes, on 46kV line	There is a communication line running on the west side of the road.	none
28	Miracle Mile	Fairview– Flowing Wells	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is now viable. NOTE ADOT comment: "District would have to evaluate any plan for running a parallel transmission line." East side is preferred by Banner. Plans to redevelop in this area.	North and South ^a	Distribution line on the north side of the road. Distribution service line on south side of the road.	Need to underground distribution line.	Yes, on distribution line	Communication line on south side of the road, 3 attachers on the north side of the road	none
29	Campbell	Grant–Elm	Under Consideration		Either side	none	none	none	none	none
31	alley btw. Lee & Adams	Vine–Park	Under Consideration		n/a	46kV line that will need to be rebuilt or relocated. If the line cannot be relocated there is not enough room for a double circuit in the alley. Distribution line that will need to be relocated underground. Limited room for overhead facilities.	Yes, distribution line that will need to be relocated underground/underground services to customers served on the line. Limited space to underground the line and fit the transmission structure.	Yes, 46kV line and the distribution line and customers served on the distribution line.	Yes, multiple attachers that will need to be relocated	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints				
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
32	Vine	Alley-Elm	Under Consideration		East and West ^a	46kV crossing at alley, 46kV overhead line on east side of the road that would need to be rebuilt. Two distribution circuits of underground located on the east side of the road. One circuit of 46kV underground on the west side of the road.	none	Yes, 46kV line.	Communication line running on west side of the road that would need to be relocated, 3 attachers.	none
33	Ring	Warren-Substation	Under Consideration		North and South ^a	Underground Distribution along portions of north and south side of the road. Overhead distribution starts just before ring road curves that would need to be underground.	Yes, underground distribution. Limited room to underground.	Yes, to underground distribution line	Yes, 4 attachers	none
34	Elm	Substation-Vine	Under Consideration		n/a	none	none	none	none	none
35	Elm	Campbell-Ring Road	Under Consideration		North	none	none	none	none	none
36	Campbell	Elm-Speedway	Under Consideration		East and West ^a	Distribution overhead on east side of the road. Distribution underground on portions of the east and west side of the road.	May need to underground distribution on the east side of the road, see other conflicts.	Yes, to underground distribution line	Yes, 2 current attachers	none
37	Oracle	Fort Lowell-Miracle Mile	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is now viable. NOTE ADOT comment: "District would have to evaluate any plan for running a parallel transmission line."	Due to the existing utilities on the East side and the limited right-of-way on the West side the link is no longer viable.	none	none	none	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints				
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
38	Oracle	Miracle Mile– Glenn	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is now viable. NOTE ADOT comment: "District would have to evaluate any plan for running a parallel transmission line."	West due to utilities on the East	46kV crossing at Glenn. Limited room for overhead facilities on the west side.	none	none	none	none
39	Vine	Mabel–Alley	Under Consideration		East and West ^a	46kV crossing at alley, two distribution circuits of underground located on the east side of the road.	none	none	Communication line running on west side of the road that would need to be relocated, 2 attachers.	none
40	1st	Glenn–Grant	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is viable.	East and West ^a	Distribution Line on west side of the road.	Possible if structures need to be set on the west side of the road.	Possible if structures need to be set on the west side of the road.	Yes, 2 current attachers.	none
41	Vine	Speedway– Helen	Under Consideration		Due to the existing utilities and clearance conflicts, this link is no longer viable.	Limited room for TEP overhead facilities along link. Underground distribution on east side of the road limits placement of transmission structure to mitigate clearance concerns to the building conflict.	none	none	none	none
42	Speedway	Campbell– Cherry	Under Consideration		North and South ^a	Limited room for TEP overhead facilities along link.	none	none	none	none
42.1	Speedway	Cherry–Vine	Under Consideration		North and South ^a	Limited room for TEP overhead facilities along link.	none	none	none	none
42.2	Speedway	Vine–Mountain	Under Consideration		North and South ^a	Limited room for TEP overhead facilities along link.	none	none	none	none
42.3	Speedway	Mountain–Park	Under Consideration		North and South ^a	Limited room for TEP overhead facilities along link.	none	none	none	none
42.4	Speedway	Park–Euclid	Under Consideration		North and South ^a	Limited room for TEP overhead facilities along link. Possible.	none	none	none	none
43	Speedway	Euclid–6th Ave	Under Consideration		North and South ^a	Limited room for TEP overhead facilities along link.	none	none	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints				
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
44	Oracle	Glenn–Grant	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is viable.	East and West ^a	46kV crossing at Glenn	none	none	none	none
45	Euclid	Speedway–6th St	Under Consideration		East and West ^a	Overhead distribution line on west side of the road that would need to be underground. Limited right-of-way to fit overhead transmission poles.	Yes, distribution will need to be relocated underground. Limited right-of-way to rebuild underground.	Yes, distribution line and customers telecommunications service.	Yes, 2 current attachers	none
46	Campbell	Speedway–6th St	Under Consideration		West side of the road, but may need to jump to East side to mitigate conflicts	Overhead distribution line on the east side of the road. Distribution underground in areas along the east side of the road.	Distribution line may need to be underground in areas to mitigate conflicts.	Yes, possibly on the overhead distribution line.	Yes, 4 attachers	none
47	Euclid	Grant–Helen	Under Consideration	This link may work if we obtain private easements and only need a single circuit.	East and West ^a	none	none	none	none	none
48	Oracle	Grant–Helen	Added back; Under Consideration	This link was originally removed because it would require private easement and the links would jump back and forth from one side of the road to the other. Further review determined that it should be added back in to allow for more flexibility in siting.	East and West ^a	Limited room for TEP overhead facilities along link. Possible 46kV crossing.	none	none	none	none
49	15th	Kino Pkwy– Cherry	Added back; Under Consideration		North and South ^a	none	none	none	none	none
50	Campbell	6th St– Broadway	Under Consideration		West side of the road, but may need to jump to East side to mitigate conflicts	Underground distribution at Campbell and 6th on east side. Overhead distribution on east side.	Distribution line may need to be underground in areas to mitigate conflicts.	Yes, possibly on the overhead distribution line.	Yes, 3 attachers	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints				
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
51	15th	Cherry–Exist. 46kV	Added back; Under Consideration		North	none	none	none	none	none
52	Broadway	Cherry– Mountain	Under Consideration		North and South ^a	46kV crossing at Highland	none	none	none	none
52.1	Broadway	Kino Pkwy– Cherry	Under Consideration		North and South ^a	none	none	none	none	none
53	Broadway	Euclid–Fremont	Under Consideration		North	Underground distribution north side near apartment building	none	none	none	none
53.1	Broadway	Fremont– Mountain	Under Consideration		North and South ^a	none	none	none	none	none
54	Fairview	Miracle Mile– Glenn	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is viable.	Either side	46kV line on the east side of the road. Distribution overhead line on west side of the road. Distribution underground on west side of the road near Glenn.	Need to underground either the 46kV line or the distribution line. Limited right-of-way to construct underground lines.	Yes, to underground either the 46kV or the 13.8kV line.	Yes, 2 attachers	none
55	Euclid	6th St– Broadway	Under Consideration		East and West ^a	46kV overhead line at 6th and Euclid. Distribution underground line on west side of the road at 5th and Euclid. 46kV crossing. Distribution overhead line on west side of the road. Limited right-of-way for transmission structure along this link.	Underground distribution line in areas to mitigate conflicts.	Yes, underground distribution and customers it serves	Yes, 1 current attacher	none
56	Euclid	Broadway– cross-country	Under Consideration		East	Distribution overhead on the west side of the road	none	none	none	none
57	Fremont	Manlove– Broadway	Under Consideration		East and West ^a	Single circuit distribution part of the way. Double circuit distribution along north segment of the link	Possible underground needed in areas for the distribution.	Yes, for distribution underground	Yes, 2 attachers	none
58	Flowing Wells	Miracle Mile– Glenn	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is viable.	Either side	Overhead Distribution line on east side of the road.	Possible underground of distribution line.	Yes, on distribution line	Yes, 4 attachers	Yes, other utility high voltage line crossing.
59	cross- country	Toole–Euclid	Under Consideration		n/a	none	none	none	none	none
60	cross- country	46kV–Fremont	Under Consideration		n/a	Distribution line (Santa Rita to Fremont) needs to be underground.	Yes, distribution line	Yes, distribution line	Yes, 3 attachers	none
61	Toole	cross-country– 16th	Under Consideration		Either side	none	none	none	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints					
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict	
62	Cherry	cross-country– Broadway	Under Consideration		East and West ^a	Overhead distribution line along portions of the east and west of the link, needs to be undergrounded to mitigate conflicts	Yes underground distribution line and services to customers.	Yes, outage on distribution line and customer services	Yes, 2 attachers	none	
63	cross- country	15th–Cherry	Under Consideration		n/a	Distribution overhead line. Cannot underground under drainage feature need to look at co locating in the corridor	none	none	none	none	
64	46kV line	alley btw. 16th & 17th–15th	Under Consideration		n/a	46kV line that will need to be rebuilt/relocated. Not enough room for a double circuit 138kV/46kV line. If line cannot be relocated this link is no longer viable. Distribution underbuilt line that will need to be relocated or rebuilt underground.	Yes, distribution line needs to be relocated underground, most likely along Highland Ave.	Yes, outage on 46kV and the distribution line	Yes, 3 attachers	none	
64.1	46kV line	15th–Highland	Under Consideration		n/a	46kV line that will need to be rebuilt. Distribution underbuilt line that will need to be relocated or rebuilt underground.	Yes, distribution line needs to be relocated underground, most likely along Highland Ave.	Yes, outage on 46kV and the distribution line	Yes, 3 attachers	none	
64.2	46kV line	Highland– Manlove	Under Consideration		n/a	46kV line that will need to be rebuilt. Distribution underbuilt line that will need to be relocated or rebuilt underground.	Yes, distribution line needs to be relocated underground, most likely along Highland Ave.	Yes, outage on 46kV and the distribution line	Yes, 3 attachers	none	
65	Cherry	16th–15th	Under Consideration		Either side	Distribution overhead line on east side of the road.	Distribution would need to be underground if east side of the road is preferred.	Yes, on distribution line	Yes, 2 attachers	none	
66	Euclid	16th–19th St	Under Consideration		East and West side depending on conflicts and constraints	Distribution overhead line on east side of the road.	Possible due to other conflicts on east side.	Possible on distribution line	Yes, 2 attachers	none	
67	19th	Euclid–Euclid	Under Consideration		North	Distribution overhead line on south side.	none	none	none	none	

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						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict	
68	Miracle Mile	Oracle–Fairview	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is now viable. NOTE ADOT comment: "District would have to evaluate any plan for running a parallel transmission line."	Due to the existing utilities on the South and the storm drain in the North, this link is not viable for construction.	none	none	none	none	none	none
69	Euclid	19th–21st	Under Consideration		West side	Distribution on west side of the road that will need to be underground	Yes, distribution lines	Yes, distribution line	Yes, 2 attachers	none	none
69.1	Euclid	21st–22nd	Under Consideration		East and West side depending on conflicts and constraints	46kV line on east side that will need to be rebuilt. Distribution line on the west side that might need to be underground due to conflicts on the east side of the road.	Yes, distribution line	Yes, 46kV outage and distribution lien outage	Yes, 2 attachers	none	none
70	21st	Euclid–Park	Under Consideration		North and South ^a	46kV overhead line on the north side of the road. Distribution underbuilt line on the north side of the road. Limited right-of-way for transmission construction.	Possible due to other conflicts on south side	Yes, 46kV outage and distribution lien outage	Yes, 1 current attacher	none	none
70.1	21st	Park–Highland	Under Consideration		North and South ^a	46kV overhead line on the north side of the road. Distribution underbuilt line on the north side of the road. Distribution underground line on north side of the road. Limited right-of-way for transmission construction.	Possible due to other conflicts on south side	Yes, 46kV outage and distribution lien outage	Yes, 1 current attacher	none	none
70.2	21st	Highland–Curtis	Under Consideration		North and South ^a	Distribution overhead line on the north side of the road.	Possible due to other conflicts on south side	Possible on distribution line and services on the line	Yes, 1 current attacher	none	none
71	Highland	22nd–21st	Under Consideration		East and West ^a	Distribution overhead on west side of the road.	Possible due to other conflicts on east side	Possible on distribution line and services on the line	none	none	none
71.1	Highland	21st–20th	Under Consideration		East side	Distribution overhead on west side of the road. A couple of distribution service poles on east side of the road.	none	none	none	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints				
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
72	20th	Highland–Curtis	Under Consideration		South side	none	none	none	none	none
73	Curtis	20th–21st	Under Consideration		East side	Distribution overhead on the west side of the road.	none	none	none	none
73.1	Curtis	Warehouse– 20th	Under Consideration		East side	Distribution line on the east side of the road that will need to be rebuilt underground.	Yes, overhead distribution placed underground	Yes, on overhead distribution and services to customers	Yes, 2 attachers	none
74	cross- country	Curtis–Kino	Under Consideration		n/a	Distribution overhead line that cannot be underground going east due to Kino bridge. Overhead conflict would need to be mitigate. Line can be underground headed west.	Possible underground headed west	Possible outage on distribution line headed west	none	none
75	Warehouse	cross-country– Curtis	Under Consideration		North	Distribution overhead line that will need to be rebuilt underground.	Yes, distribution overhead line	Yes, distribution overhead line and customers on the line	Yes, 4 attachers	none
76	cross- country	Warehouse Ave–Vine St	Under Consideration		n/a	none	none	none	none	none
77	Vine	cross-country– 17th	Under Consideration		West side of the road to avoid building structure on the East side	none	none	none	none	none
78	17th	Curtis–Vine	Under Consideration		South, see PCWW note	none	none	none	none	none
79	Curtis	alley btw. 16th & 17th & 46kV line	Under Consideration		West side of the road, see gas line comment	Distribution service line that will need to be underground.	Yes, underground service line	Yes, to underground service	none	none
80	alley btw. 16th & 17th	Curtis–46kV line	Under Consideration		n/a	46kV overhead line that would need to be rebuilt/relocated to another street. Not sufficient room for double circuit 46kV and 138kV line. If 46kV line cannot be relocated, this link would no longer be viable. Distribution overhead line that would need to be relocated underground and services to customers refed.	Yes, distribution underground probable moved to 17th or 16th Ave.	Yes, on 46kV line and distribution line as well as service to customers	Yes, 4 attachers	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints				
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
81	alley btw. 16th & 17th	Curtis-Vine	Under Consideration		n/a	46kV overhead line that would need to be rebuilt/relocated to another street. Not sufficient room for double circuit 46kV and 138kV line. If 46kV line cannot be relocated this link would no longer be viable. Distribution overhead line that would need to be relocated underground and services to customers refed.	Yes, distribution underground probably moved to 17th or 16th Ave.	Yes, on 46kV line and distribution line as well as service to customers	Yes, 4 attachers	none
82	Fort Lowell	Stone-Oracle	Added back; Under Consideration	Links along the existing 138kV line along Ft. Lowell had been removed because construction and future maintenance would require that the existing and future circuits would both have to be taken out of service; however, further review determined that, with careful coordination of outages, it could be accomplished.	North	Double circuit distribution line on south side of the road. Appears to be room in right-of-way for TEP overhead facilities. Some easements may be required (see sidewalk conflicts and easement notes).	None, if we remain on the north side.	None, if we remain on the north side	None, if we remain on the north side.	none
83	16th	Vine-Cherry	Under Consideration		Either side	Distribution overhead line on north side of the road.	Possible if underground distribution	Possible if underground distribution	Yes, 2 attachers	none
84	Vine	Alley and 16th	Under Consideration		Either side	46kV crossing at alley. Limited room for transmission structure.	none	none	none	none
85	Vine	17th-alley btw. 16th & 17th	Under Consideration		Either side	46kV crossing at alley. Limited room for transmission structure.	none	none	none	none
86	17th	Vine-Kino	Under Consideration		Either side	46kV crossing at Cherry Ave.	none	none	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints				
						TEP Overhead/Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
87	Broadway	Plummer-Kino Pkwy	Under Consideration	Broadway (in this area) eliminated due to recent City of Tucson PI project. TEP just rebuilt the 46kV and distribution here, and there will also be a 5-year hiatus on pavement cuts. The line could not be installed without pavement cuts, as newly built 46kV and distribution would have to be undergrounded.	North side only (distribution on South side and cannot underground due to road way improvement project and 5-year hiatus on pavement)	Distribution on south side	none	none	none	none
88	Kino	Broadway-cross-country	Under Consideration		West side preferred, but may need to move to the East side for portions to mitigate conflicts.	Double circuit distribution line on east side for portion of the link. 46kV line on east side for portion of the link.	Possible to mitigate conflicts.	Possible if lines need to be underground/rebuilt.	Yes, 3 attachers	none
88.1	Kino	cross-country-Winsett	Under Consideration		Either side	none	none	none	none	none
89	cross-country	14th-Kino	Under Consideration		n/a	none	none	none	none	none
90	Plumer	19th-Broadway	Under Consideration	Plumer, culvert PI project; n/a identified	Due to the amount of utilities along this corridor it is not feasible to fit an additional transmission line	46kV overhead west side of the road move to the east at Winsett. Double circuit distribution overhead on the west side of the road. Distribution underground circuit on west side of the road. Limited right-of-way for transmission overhead facilities.	No room in right-of-way to underground 2 circuits of overhead distribution.	Yes, on 46kV line and 2 circuits of distribution as well as services to customers.	Yes, 3 attachers	none
91	Kino	15th-18th	Under Consideration		Either side depending no connecting links	46kV crossing,	none	none	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints					
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict	
92	Campbell	Winsett–14th St	Under Consideration	Dam present, 408 permitting required (Pima County)	West side preferred but may need to move to the East side for portions to mitigate conflicts.	46kV overhead line. Distribution underbuilt line.	Possible underground of distribution line.	46kV outage if needs rebuilt double circuit. Distribution outage and customers served off the line.	Yes, 1 current attacher	none	
93	Kino	Aviation–18th	Under Consideration		Either side depending no connecting links	46kV line at 18th that might be in the way of crossing structure.	none	none	none	none	
94	Winsett	Campbell–Kino Pkwy	Under Consideration		North and South depending on conflicts and constraints	Overhead distribution on south side of the road for a portion.	Yes, underground distribution line and services to customers	Yes, on distribution line	Yes, 2 attachers	none	
95	Kino	22nd–21st	Under Consideration		East or West depending on connecting links	none	none	none	none	none	
95.1	Kino	Warehouse– 21st	Under Consideration		East or West depending on connecting links	none	none	none	none	none	
95.2	Kino	Barraza Aviation Parkway– Warehouse	Under Consideration		East or West depending on connecting links	none	none	none	none	none	
96	Campbell	Winsett–19th	Under Consideration		West side see underground distribution note	46kV line on east side of the road . Double circuit distribution underbuilt line on east side of the road. 46kV crossing at 18th St. Distribution underground on east side of the road near 19th.	No room to underground 2 circuits of distribution in right-of- way, so need to try and locate on west side.	none	none	none	
96.1	Campbell	19th–Norris	Under Consideration		East or West depending on connecting links	Distribution overhead on ease side of the road Limited right-of-way.	Yes, if distribution on east side needs undergrounding.	Yes, on distribution line	Yes, 2 attachers	none	
96.2	Norris	Campbell– cross-country	Under Consideration		North/East	none	none	none	none	none	

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints					
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict	
97	19th	Plumer– Campbell	Under Consideration		Due to the amount of utilities along this corridor, it is not feasible to fit an additional transmission line.	46kV overhead line on the south side of the road that would need to be rebuilt. Overhead underbuilt distribution line that would need to be relocated underground. Underground distribution line on south side of the road. Limited room in right-of-way for a transmission line.	No room in right-of-way to underground another circuit of overhead distribution.	Yes, on 46kV and distribution line	Yes, 3 attachers	none	
98	Plumer	22nd–19th	Under Consideration		Due to the amount of utilities along this corridor, it is not feasible to fit an additional transmission line.	46kV overhead line on east side of the road. Double circuit distribution line on the west side of the road. Limited room in right-of-way for transmission line.	No room in right-of-way to underground 2 circuits of overhead distribution.	Yes, on 46kV line and 2 circuits of distribution as well as services to customers.	Yes, 3 attachers	none	
99	cross-country	Plumer–Norris	Under Consideration		n/a	none	none	none	none	none	
100	cross-country	rail yard– Plumer	Under Consideration		n/a	none	none	none	none	none	
101	22nd	Highland–Park	Under Consideration		Either side	Distribution overhead on south side of the road	Yes, if on south side.	Yes, if underground distribution line	Yes, 1 current attacher	none	
101.1	22nd	Kino Pkwy– Highland	Under Consideration		Either side	Distribution overhead starts at Highland on south side of the road	none	none	none	none	
102	22nd	Park–Euclid	Under Consideration		Either side	Distribution overhead on south side of the road	Yes, if on south side.	Yes, if underground distribution line	Yes, 1 current attacher	none	
103	Euclid	22nd St– Silverlake	Under Consideration		East and West side depending on conflicts and constraints	46kV on east side of the road. Distribution underbuilt that will need to be relocated.	Yes, distribution line moved to underground.	Yes, on 46kV line and distribution line as well as service to customers.	Yes, 5 current attachers	None	
104	Park	22nd St– Silverlake	Under Consideration		East side due to sewer and storm drain and lack of room to underground distribution.	Overhead distribution on the west side of the road. 4-span distribution service line that will need to be underground on east side. Limited right-of-way for transmission line.	Need to underground the 4-span service line, limited room to underground circuit of distribution.	Yes, on distribution service line	Yes, 1 current attacher	None	

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104.5	Park	22nd–21st	Under Consideration		Either side depending no connecting links	Distribution on east side of the road.	Possible depending on side of road	Possible, depending on side of road	none	None
105	Silverlake	Park Euclid	Under Consideration		North	none	none	none	none	None
106	Silverlake	Kino Pkwy–Park	Under Consideration	Waste Water prefers to avoid impacts to Quincie Douglas and other developments in this area	North and South side of the road to mitigate residential other conflicts	Underground distribution along a portion of the link on the north side.	none	none	none	None
107	Kino	22nd–27th	Under Consideration	Pima County opposed the visual impact to Kino (gateway to City of Tucson)	Either side	none	none	none	none	None
107.1	Kino	27th–28th	Under Consideration	Pima County opposed the visual impact to Kino (gateway to City of Tucson)	Either side	none	none	none	none	None
107.2	Kino	28th–Silverlake	Under Consideration	Pima County opposed the visual impact to Kino (gateway to City of Tucson)	Either side	none	none	none	none	None
108	27th	Cherry and Kino	Under Consideration		Either side	none	none	none	none	None
109	cross-country	Cherry–Cherrybell	Under Consideration		n/a	none	none	none	none	None
110	Fairland	Willits–Silverlake	Under Consideration		East side to avoid other conflicts	Distribution overhead on west side of road	none	none	none	None
111	Willits	Cherrybell–Fairland	Under Consideration		South side	Distribution overhead on north side of road	none	none	none	None
112	cross-country	Fairland–rail yard	Under Consideration		n/a	None	None	None	None	None
113	cross-country	Silverlake–rail yard	Under Consideration		n/a	None	None	None	None	None
114	Cherrybell	Silverlake–cross-country	Under Consideration		East side	Overhead distribution on east side of the road	Yes, overhead distribution placed underground	Yes, on distribution line	Yes, 1 current attacher	None
114.1	Cherrybell	Cross-country to Willits			East side	Overhead distribution on east side of the road	Yes, overhead distribution placed underground	Yes, on distribution line	Yes, 1 current attacher	none
115	Cherry	28th–27th	Under Consideration		East side	Distribution on west side	none	none	none	None

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116	cross-country	connects 28th across Kino	Under Consideration		n/a	none	none	none	none	None
117	28th	Cherry–Kino connector link	Under Consideration		North due to sewer lines	none	none	none	none	None
118	28th	Warren–Cherry	Under Consideration		North due to other conflicts	none	none	none	none	None
119	Cherry	Silverlake–28th	Under Consideration		East side due to gas and sewer lines	none	none	none	none	None
120	Warren	Silverlake–28th	Under Consideration		East side	Distribution line on east side	Yes, distribution line	Yes, distribution line	Yes, 2 attachers	None
121	Silverlake	Kino Pkwy–Cherry	Under Consideration		North and South side to mitigate conflicts	none	none	none	none	None
121.1	Silverlake	Cherry–Warren	Under Consideration		North and South side to mitigate conflicts	none	none	none	none	None
121.2	Silverlake	Warrin–Martin	Under Consideration		North side	none	none	none	none	None
121.3	Silverlake	Martin–Cherrybell	Under Consideration		North side	none	none	none	none	None
121.4	Silverlake	Cherrybell–Fairland	Under Consideration		Either side	none	none	none	none	None
122	cross-country	Martin–parking lot–Silverlake	Under Consideration		n/a	none	none	none	none	None
123	cross-country	Martin–Silverlake	Under Consideration		n/a	Distribution overhead line along link. Limited room for overhead transmission line	Limited room to underground distribution would need easement for both overhead and underground	Yes, if underground distribution line	Yes, 2 attachers	None
124	Barleycorn	Martin–Cherrybell	Under Consideration		North and South side to mitigate conflicts	Distribution line on south side of the road	Yes, to mitigate conflicts. Limited room to underground distribution and distribution services	Yes, distribution and distribution services	Yes, 2 attachers	None
125	Campbell	36th–Barleycorn	Under Consideration		Middle area	Installing new distribution along east side of Campbell but outside of middle area	Possible if in conflict	Possible if in conflict	none	None

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						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict
125.1	Campbell	Barleycorn– Silverlake	Under Consideration		Middle area	Installing new distribution along east side of Campbell but outside of middle area	Possible if in conflict	Possible if in conflict	none	None
126	Martin	Barleycorn– 36th	Under Consideration		West side	Distribution on west side only near 31st Street, limited right-of-way especially with water on west side of the road, may need easements along drainage area.	Possible if in conflict	Possible if in conflict		None
127	Kino	Silverlake–36th St	Under Consideration		Either side	Distribution underground on east side near 36th St. 46kV crossing at 36th.	none	none	none	None
128	36th	Martin–Kino Pkwy	Under Consideration		South side	46kV overhead and distribution underbuilt on north side of the road. 138kV line on south side of the road	none	Possible on 138kV line	none	None
129	36th	Campbell– Martin	Under Consideration		South side	46kV overhead and distribution underbuilt on north side of the road.	none	none	Communication line on south side of the road	None
1291	cross- country	36th–Campbell	Under Consideration		n/a	none	none	none	none	none
193	Main	Helen– Speedway	Under Consideration		East	46kV crossing at Helen.	none	none	none	none
198	Euclid	Speedway– Helen	Under Consideration	Originally removed because of limited right-of-way further north on Euclid Avenue. Added back based on stakeholder (U of A) comment to add links on Helen and Park to alley (46kV).	East and West ^a	none	none	none	none	none
199	Helen	Euclid–Park	Under Consideration	Link added based on stakeholder comment (U of A).	North and South ^a	Distribution line on the south side of the road. Limited right-of-way for overhead transmission line.	Yes, underground distribution line. Limited room to underground line.	Yes, outage to underground the line and underground services to customers.	Yes, 2 current attachers	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints					
						TEP Overhead/ Underground Line Conflicts/Constraints	TEP Underground Required/Sufficient Room For New TEP Underground Facilities	TEP Outage Requirements	Communications Attachments on Existing Structure Requiring Relocation	Other Electric Utility Conflict	
200	Park	Speedway– Helen	Under Consideration	We would have to switch back and forth on east and west side of road to avoid buildings. We would have to obtain private easement. Not sure about other utilities.	East and West ^a	Distribution underground on the east side of the road	none	none	none	none	
201	Park	Helen–Alley	Under Consideration	Link added based on stakeholder comment (U of A).	East and West ^a	Distribution overhead on east side of the road	Yes, underground distribution. Limited room to underground.	Yes, outage to underground the line and underground services to customers.	Yes, 4 attachers	none	
202	Speedway	11th–Main	Under Consideration		North side	46kV crossing at 11th	none	none	none	none	
203	Warehouse	Kino–Curtis	Under Consideration		South side	Distribution service lines that will need to be relocated.	Yes, distribution service lines	Yes, on distribution service lines and customers that it serves	Yes, 1 current attacher	none	
204	Warehouse /Cherry	Kino–22nd	Under Consideration		North and South side/East and West side depending on conflicts and constraint.	Overhead distribution line on south side of the road along warehouse. Overhead distribution along east and west side of the road along Cherry Ave.	Yes, on distribution lines	Yes, on distribution line	Communication line on north side of the road	none	
205	Cherrybell	Willetts–22nd	Under Consideration		East	Overhead distribution line along west side near 22nd St, overhead distribution along east side 24th Street south	Yes, overhead distribution placed underground	Yes, on distribution line	Yes, 1 current attacher	none	

Table B.2b. E/C Conflicts and Constraints (continued)

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
1	Fort Lowell	1st Ave-- Stone	Added back; Under Consideration	Links along the existing 138kV line along Ft. Lowell had been removed because construction and future maintenance would require that the existing and future circuits would both have to be taken out of service, however further review determined that with careful coordination of outages it could be accomplished.	North and South ^a	Yes (Los Altos Ave. - Estrella Ave.)	none	Possibly (Los Altos Ave. - Estrella Av.)	None	Gas lines on south side of the road.	Possible conflict. Sanitary sewer line on north and south side of road but within traffic lanes. Limits the room for undergrounding the distribution.	Possible conflict. Water line near Stone Avenue on south side of road. Water line in roadway on south side limits room for undergrounding distribution.	none
2	Glenn	Fairview-- Flowing Wells	Under Consideration		North and South ^a	There are not currently sidewalks along this stretch of road. If required there is not enough room between curb and property line (easement will be required).	none	Possibly if sidewalk 4-foot maintenance is required.	none	Possible Conflict. Gas line on north side of the road.	Possible conflict. Sanitary sewer line in middle and on south side of road but within traffic lanes.	Possible conflict. Water line on north side of road between Fairview and Burrito Avenue then water lines move to south side of road.	none
3	Glenn	Oracle-- Fairview	Under Consideration		North and South ^a	There are not currently 4-foot sidewalks along this segment and in some portions there will not be enough room for pole and 4-foot sidewalk. Additional easements will be required.	none	Possibly if sidewalk 4-foot maintenance is required.	none			Possible Conflict. Water line on south side of the road between Oracle and 14th Ave. Water line on north side of the road between 14th Ave. and Fairview.	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
4	Glenn	Stone–Oracle	Under Consideration		North and South ^a	There are not currently 4-foot sidewalks along this segment and in some portions there will not be enough room for pole and 4-foot sidewalk. Additional easements will be required.	none	Possibly if sidewalk 4-foot maintenance is required.	none	Possible Conflict. Gas on north side of the road (stone to Balboa) south side of the road (Balboa to Oracle).	none	Possible Conflict. Water line on south side of the road.	none
5	Flowing Wells	Glenn–DMP	Under Consideration		East and West (based on conflicts and constraints)	none	none	Possible for 46kV line relocation.	None	Gas line on east side of the road.	Sewer line on east side of the road.	Water line on east side of the road.	none
5.5	Flowing Wells	DMP–Grant	Under Consideration		East and West (based on conflicts and constraints)	none	none	Possible for structure location outside of conflicts with other utilities.	none	Possible conflict - Gas line on east side of the road.	Possible Conflict. Sewer line on the east side of the road.	Possible Conflict. Water line on east side of the road.	none
6	Fairview	Glenn–Grant	Under Consideration		Either side	Possible, no sidewalks installed at this time but if we need provisions for future 4-0" would require easements	none	Possible, see sidewalk note.	none	Possible Conflict- Gas line on east side of the road	Sewer on east side of the road.	Possible Conflict. Water line on the west side of the road in places	none
7	Highland/17th	Manlove–Curtis	Added back; Under Consideration		Either side	Possible depending on other utility conflicts.	none	Possible, see sidewalk note.	none	Gas line on east side of the road	Possible conflict, sewer on the west side of the road when 17th curves.	Possible Conflict. water line on west side of the road starting at 16th south.	none
8	Grant	Fairview–Flowing Wells	Under Consideration		South side	Possible depending on other utility conflicts on south side of the road	none	Possible, see sidewalk note.	none	none	none	Conflict only at Grand & Flowing Wells. Water line cuts from center of the road to south side of road.	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
8.1	Grant	Flowing Wells--DMP Parcel	Under Consideration		South side	Possible depending on other utility conflicts on south side of the road	none	Yes, see sidewalk note and the Grant Rd. underpass improvements note.	Grant Rd. underpass improvements may need to be on private easement to the south to avoid underpass construction.	none	none	Water line on the south side of the road.	none
9	Grant	15th--Fairview	Under Consideration		South side	Possible depending on other utility conflicts on south side of the road.	none	Possible see sidewalk note.	none	none	none	none	none
10	Grant	Oracle--15th	Under Consideration		Either side	Possible near 15th and Grant on north side and all along the south side of the road.	Yes, conflict on south side of the road.	Possible see sidewalk note.	none	Possible, near 15th there is a gas line on south side of the road.	none	none	none
11	Stone	Glenn--Grant	Under Consideration		Either side	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk note.	none	Gas on portions of the west and portions of the east side of the road.	Yes, sewer line on west side of the road.	Water on west side of the road.	none
12	Grant	6th Ave--Stone	Under Consideration		North (required due to recent road improvements/paving)	none	none	none	Cannot do underground distribution in this area due to recent roadway improvements /five-year hiatus on pavement.	Gas on north side along portions of the road. Coordinate pole placement.	none	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
12.1	Grant	Stone–Oracle	Under Consideration		North (required due to recent road improvements/paving)	none	none	none	Cannot do underground distribution in this area due to recent roadway improvements /five-year hiatus on pavement.	Gas on north side along portions of the road. Coordinate pole placement.	none	None	none
13	15th	Alto–Grant	Under Consideration		West side	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk note and other conflicts note.	none	Gas line on east and west side of the road. Also limiting room for distribution underground needed.	none	Water on east side of the road and jumps to west side in a few locations. Conflicting with distribution underground needed.	Properties built to edge of road limited space may require additional easements to mitigate.
14	cross-country	Helen–Alto	Under Consideration		n/a	none	none	Yes, for cross-country pole locations.	none	none	none	Water on east side of the road	Structures cross over building in the existing alignment.
15	Helen	11th–15th	Under Consideration		North side	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk note.	none	Gas line along portions of the north and south side of the road.	none	none	none
16	11th	Speedway–Helen	Under Consideration		West side	none	none	none	none	none	none	none	none
17	Speedway	Stone–Helen	Under Consideration	U of A prefers north side of Speedway	North and South ^a	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	Gas on north side of the road	none	Water on north side of the road	Pima Community College building close to road that will require clearance considerations.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
18	Stone	Speedway–Grant	Under Consideration		East and West (requires the line to jump from one side of the road to the other based on conflicts and constraints, mainly building conflicts)	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, for sidewalks and building conflicts.	none	Gas on east side of the road	none	Water on east side of the road	Building conflicts that need to be mitigated by moving to different sides of the road.
20	Speedway	6th Ave–Stone	Under Consideration	U of A prefers north side of Speedway	North and South ^a	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	Gas on north side of the road	none	none	none
21	6th	Speedway–Grant	Under Consideration		East and West ^a	none	none	none	none	Gas line on east and west side of the road	none	Water on east side of the road	none
22	1st	Fort Lowell–Glenn	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is required to connect with other links.	East and West ^a	Yes, limited right-of-way and room for 4-foot sidewalks.	Storm Drain system on east side at Fort Lowell	Yes, see sidewalk conflict	none	Gas on east side of the road in areas and Gas on west side of the road in areas.	none	Water on the East Side at Fort Lowell	Building conflicts that need to be mitigated by moving to different sides of the road.
23	Grant	1st–6th Ave	Under Consideration		North (required due to recent road improvements/paving)	none	none	none	Cannot do underground distribution in this area due to recent roadway improvements /five-year hiatus on pavement.	Gas on north side along portions of the road. Coordinate pole placement.	none	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints								
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict	
24	Grant	Park-Mountain	Under Consideration		South, not feasible due to Grant Road widening project.	none	none	Yes, distribution alley to the south	Grant Road Widening Project. The road has not been widened in this area yet. Poles would need to be relocated later when project continues.	none	none	none	none	none
24.1	Grant	Euclid-Park	Under Consideration		North (required due to recent road improvements/paving)	Possible, on north side of the road between curb and right-of-way	none	Yes, possible for side walk.	Cannot do underground distribution in this area due to recent roadway improvements /five-year hiatus on pavement.	none	none	Water line on north side of the road	none	none
25	Park	Alley-Grant	Under Consideration		East and West ^a	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	Gas line on east side of the road	none	Water line along portions of west and east side of the road.	none	none
26	Grant	Campbell-Vine	Under Consideration		South, not feasible due to Grant Road widening project.	none	Yes	Grant Road Widening Project. The road has not been widened in this area yet. Poles would need to be relocated later when project continues.	none	none	none	Possible conflict on south side at corner of Grant and Campbell.	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints								
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict	
26.1	Grant	Vine–Mountain	Under Consideration		South, not feasible due to Grant Road widening project.	none	none	Yes	Grant Road Widening Project. The road has not been widened in this area yet. Poles would need to be relocated later when project continues.	none	none	none	none	none
27	Vine	Elm–Grant	Under Consideration		East and West ^a	Possible—no sidewalks installed at this time but if we need provisions for future 4-foot would require easements.	none	Yes, see sidewalk note.	none	Gas line on east side of the road	none	Water line on west side of the road	none	none
28	Miracle Mile	Fairview–Flowing Wells	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is now viable. NOTE ADOT comment: "District would have to evaluate any plan for running a parallel transmission line."	North and South ^a	Yes, portions of the link have limited right-of-way for structures and 4-foot sidewalk.	none	Yes, see sidewalk note.	none	Gas line on south side of the road	Sewer line on south side of the road near Miracle Mile and Fairview.	none	Building conflicts that need to be mitigated by moving to different sides of the road.	none
29	Campbell	Grant–Elm	Under Consideration	West side is preferred by Banner. Plans to redevelop in this area.	Either side	none	Storm Drain system on east side	none	none	none	Sewer on East side	Water on east and west side	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
31	alley btw. Lee & Adams	Vine-Park	Under Consideration		n/a	none	none	Possible due to limited space in the alley.	none	Gas in alley way	none	none	Building and tree clearances and limited space in alley to maintain trash truck/ drivability.
32	Vine	Alley-Elm	Under Consideration		East and West ^a	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk note.	none	Gas on west and east side of the road	none	Water on west side of the road	Residential wall structures limit pole placement.
33	Ring	Warren-Substation	Under Consideration		North and South ^a	none	Yes on north side of the road	Yes, limited right-of-way on north side in areas may need easement from hospital on south side.	none	none	Sewer line on north side of the road	Water line on north side of the road	Fiber line underground on the north side of the road. Limited room for overhead lines.
34	Elm	Substation-Vine	Under Consideration		n/a	none	none	none	none	none	none	none	none
35	Elm	Campbell-Ring Road	Under Consideration		North	none	none	none	none	none	none	Water on south side of the road	none
36	Campbell	Elm-Speedway	Under Consideration		East and West ^a	Yes, possibly along portions of the link were the right-of-way narrows.	none	Possibly, see sidewalk and other conflicts.	none	Gas line on west side of the road	none	none	Possible conflict with emergency helicopter flight path at hospital. May need to use shorter poles or locate on a certain side of the road.
37	Oracle	Fort Lowell-Miracle Mile	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is now viable. NOTE ADOT comment: "District would have to evaluate any plan for running a parallel transmission line."	Due to the existing utilities on the East side and the limited right-of-way on the West side the link is no longer viable.	Yes, limited right-of-way and room for 4-foot sidewalks.	Yes east side of the road	Yes	none	Gas along portions of the east side	Sewer on east side of the road	Water on east side of the road	Limited right-of-way on west side. Large trees at cemetery.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
38	Oracle	Miracle Mile–Glenn	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is now viable. NOTE ADOT comment: "District would have to evaluate any plan for running a parallel transmission line."	West due to utilities on the East	Yes, limited right-of-way and room for 4-foot sidewalks.	Yes east side of the road	Yes, see sidewalk note.	none	Gas along portions of the east side	Sewer on east side of the road	Water on east side of the road	Large trees on west side of the road
39	Vine	Mabel–Alley	Under Consideration		East and West ^a	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk note and other conflict notes about residential property walls.	none	Gas on east side of the road	none	Water on west side of the road	Residential wall structures limit pole placement.
40	1st	Glenn–Grant	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is viable.	East and West ^a	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	Gas, line along portions of the east side of the road	none	Water on the west side of the road	none
41	Vine	Speedway–Helen	Under Consideration		Due to the existing utilities and clearance conflicts, this link is no longer viable.	No, sidewalks currently but limited right-of-way for room for 4-foot sidewalk and transmission poles.	none	Yes, needed for sidewalk and to set structures to mitigate buildings.	none	none	none	none	Large trees on west side of the road that would need to be removed for electrical clearances. Building on east side of the road that will need to mitigate clearances.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
42	Speedway	Campbell–Cherry	Under Consideration		North and South ^a	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	none	none	Water on north side of the road	Business built close to the road will be difficult to maintain electrical clearances to.
42.1	Speedway	Cherry–Vine	Under Consideration		North and South ^a	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	none	none	Water on north side of the road	none
42.2	Speedway	Vine–Mountain	Under Consideration		North and South ^a	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	none	none	Water on north side of the road	University buildings built near the road will be hard to mitigate for pole placement and maintain electrical clearances.
42.3	Speedway	Mountain–Park	Under Consideration		North and South ^a	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	Gas on north side of the road	none	none	University buildings built near the road will be hard to mitigate for pole placement and maintain electrical clearances.
42.4	Speedway	Park–Euclid	Under Consideration		North and South ^a	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	Gas on north side of the road	none	none	New tall student housing building next to the road on the south side. Other businesses close to the road.
43	Speedway	Euclid–6th Ave	Under Consideration		North and South ^a	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	Gas on north side of the road	none	Water on north side of the road	Building conflicts that need to be mitigated by moving to different sides of the road.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
44	Oracle	Glenn–Grant	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is viable.	East and West ^a	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict and building conflicts.	none	Gas on west side of the road	Sewer on east side of the road	Water on east side of the road	Building conflicts that need to be mitigated by moving to different sides of the road.
45	Euclid	Speedway–6th St	Under Consideration		East and West ^a	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict and building conflicts.	none	none	Sewer on east side of the road. Due to limited right-of-way may be hard to obtain PCWW's minimum offset to their line.	Water on west side of the road near University Blvd.	Multiple building conflicts near the road will involve possible special structure framing, easements, and moving to different side of the road.
46	Campbell	Speedway–6th St	Under Consideration		West side of the road, but may need to jump to East side to mitigate conflicts	Yes, limited right-of-way and room for 4-foot sidewalks.	Storm Drain in the road limits room to underground distribution.	Yes, see sidewalk and other conflicts notes. May need easements along the west side to avoid conflicts in the limited right-of-way.	Possible, street car improvement project	Gas line on east side of the road Limits room to underground distribution if needed.	Sewer on east side of the road in areas and on the east side in the road. Limited room to underground distribution line if needed.	Water on east side in road. Limits room for distribution underground if needed.	Field light structures near 6th Street that will need clearance considerations. Several trees in right-of-way that will need clearance considerations. Multiple residential wall structures that limit placement of poles along right-of-way.
47	Euclid	Grant–Helen	Under Consideration	This link may work if we obtain private easements and only need a single circuit.	East and West ^a	Yes, limited right-of-way and room for 4-foot sidewalks.	Yes, east side of the road between Linden and Lester.	Yes, see sidewalk conflict and building conflicts.	none	Gas Line on West and East side of the road between Helen and Adams.	none	Water on west side of the road near curve but in the middle of the road for the remainder of the link.	Residential wall structures limit pole placement.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
48	Oracle	Grant–Helen	Added back; Under Consideration	This link was originally removed because it would require private easement and the links would jump back and forth from one side of the road to the other. Further review determined that it should be added back in to allow for more flexibility in siting.	East and West ^a	Yes, limited right-of-way and room for 4-foot sidewalks.	Storm drain on east side of the road.	Yes, to mitigate sidewalk, building and other utility conflicts.	none	Gas on west side of the road	Sewer line on east side of the road	Water line on portions of the east and west side of the road.	Building conflicts that need to be mitigated by moving to different sides of the road.
49	15th	Kino Pkwy–Cherry	Added back; Under Consideration		North and South ^a	Limited right-of-way on north side	Storm drain at Kino and bank protected drainage on north side and middle of the link.	Yes, see sidewalk and other conflicts note.	none	Gas line on south side of the road	none	none	Wall structure on north side limited the placement of the transmission structures. Road also curves and will require turning structures to mitigate angle.
50	Campbell	6th St–Broadway	Under Consideration		West side of the road, but may need to jump to East side to mitigate conflicts	Yes in a few areas near 6th Ave.	Storm drain in the road on east side, limits distribution underground if needed.	Yes, see sidewalk and other conflicts notes. May need easements along the west side to avoid conflicts in the limited right-of-way.	Possible, street car improvement project	Gas line on east side of the road and just a small stretch on west side near Broadway.	Sewer line on east side of the road	Water line in the road on the east side. Limits distribution underground.	Possible structure conflicts at 6th Ave.
51	15th	Cherry–Exist. 46kV	Added back; Under Consideration		North	Bike path along route and gas line on north side may require easement to north to mitigate conflict.	none	Possible, see sidewalk note and other conflict note.	none	Gas line on north side	Sewer line on south side of the road	none	Wall structure on north side that limits the placement of structures near Cherry Ave.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
52	Broadway	Cherry–Mountain	Under Consideration		North and South ^a	Possible conflict depending on other conflicts and limited space for 4-foot sidewalk.	Storm drain on north side of the road.	Possible conflict depending on other conflicts.	Broadway road widening project	none	none	Water line on south side of the road	none
52.1	Broadway	Kino Pkwy–Cherry	Under Consideration		North and South ^a	Possible conflict depending on other conflicts and limited space for 4-foot sidewalk.	Storm drain on north side of the road	Possible conflict depending on other conflicts.	Broadway road widening project	none	none	none	none
53	Broadway	Euclid–Fremont	Under Consideration		North	Possible conflict depending on other conflicts.	Storm drain at corner of Euclid and Broadway. Storm drain south side of the road.	Possible depending on other conflicts.	Broadway road widening project	Gas line on south side of the road	Sewer South side of the road	Water line south side of road	New building on north side of the road need to maintain clearances.
53.1	Broadway	Fremont–Mountain	Under Consideration		North and South ^a	Possible conflict depending on other conflicts and limited space for 4-foot sidewalk.	Storm drain on north side of the road	Possible conflict depending on other conflicts.	Broadway road widening project	none	none	none	none
54	Fairview	Miracle Mile–Glenn	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is viable.	Either side	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	Gas line on west side of the road. Limits right-of-way to construct overhead and underground lines.	Sewer on east side of the road. Limits right-of-way to construct overhead and underground lines.	2 water lines running down the middle of the road that limit the space for undergrounding either the 46kV or the distribution line.	none
55	Euclid	6th St–Broadway	Under Consideration		East and West ^a	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	Gas on east side of the road	none	Water on west side of the road	Building structures along route that will limit structure placement and need to maintain clearances too. Limited right-of-way.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
56	Euclid	Broadway–cross-country	Under Consideration		East	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict	none	Gas on east side of the road	Sewer line on east side of the road	Water line on west side of the road	Building structure limit structure placement on the west side.
57	Fremont	Manlove–Broadway	Under Consideration		East and West ^a	none	Drainage area along portion of the segment that might require special structures.	Yes, along drainage area.	none	none	Sewer in middle of the road, but with limited right-of-way, it would be difficult to fit the distribution underground.	Water line on west side of the road	none
58	Flowing Wells	Miracle Mile–Glenn	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is viable.	Either side	none	none	none	none	Gas line on west side of the road	Sewer on east side of the road	Water line on west side of the road	none
59	cross-country	Toole–Euclid	Under Consideration		n/a	none	none	Yes, for pole placement for crossing.	Possible Downtown Links/Aviation Pkwy improvements	none	none	none	Long span for Aviation Pkwy crossing.
60	cross-country	46kV–Fremont	Under Consideration		n/a	none	Poles would be in a drainage retention area. Special permitting may be required and special foundations for the drainage area.	Yes, along cross-country pole locations.	none	none	2 Sewer lines between Santa Rita and Fremont that will limit undergrounding distribution line.	Water line on south side that will limit room for undergrounding distribution line.	none
61	Toole	cross-country–16th	Under Consideration		Either side	none	none	none	none	none	none	Water line on east and west side of the link.	Link curves and will require multiple angle structures.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
62	Cherry	cross-country-Broadway	Under Consideration		East and West ^a	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	Gas line on east side	Sewer line on east side for portions of the link	Water line on west side of the road	Wall structure on east side of the road, needs possible easement or coordinate pole placement.
63	cross-country	15th-Cherry	Under Consideration		n/a	none	Drainage structure, need to avoid.	Yes, for cross-country pole locations.	none	none	Sewer lines on the north and south side of drainage feature, should be able to mitigate conflict.	Water line along cross-country segment	none
64	46kV line	alley btw. 16th & 17th-15th	Under Consideration		n/a	none	Poles are in drainage retention area. Special permitting may be required and special foundations for the drainage area will be required.	Yes, for cross-country area.	none	Highland Ave. has a Gas line on east side of the road that will impact distribution underground.	Highland Ave. has sewer on the west side of the road when 17th curves that limits undergrounding distribution line.	Highland has a water line on west side of the road starting at 16th south.	Limited space in alley for double circuit line.
64.1	46kV line	15th-Highland	Under Consideration		n/a	none	Poles are in drainage retention area. Special permitting may be required and special foundations for the drainage area will be required.	Yes, for cross-country area.	none	Highland Ave. has a gas line on east side of the road that will impact distribution underground.	none	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
64.2	46kV line	Highland–Manlove	Under Consideration		n/a	none	Poles are in drainage retention area. Special permitting may be required and special foundations for the drainage area will be required.	Yes, for cross-country area.	none	Highland Ave. has a gas line on east side of the road that will impact distribution underground.	none	none	none
65	Cherry	16th–15th	Under Consideration		Either side	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	Gas line on east side	none	none	Wall structure on west side limits placement of transmission structures.
66	Euclid	16th–19th St	Under Consideration		East and West side depending on conflicts and constraints	No sidewalks currently but limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	Gas line on east side	2 Sewer lines on east side of the road	Water on west side of the road	Buildings and property fences close to the road limit placement of transmission structures.
67	19th	Euclid–Euclid	Under Consideration		North	No sidewalks currently but limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict.	none	Gas line on north side	none	none	Railroad track on north side may need clearance to.
68	Miracle Mile	Oracle–Fairview	Added back; Under Consideration	This link was originally removed because the links along Ft. Lowell were removed. Since Link 1 has been added back to the study, this link is now viable. NOTE ADOT comment: "District would have to evaluate any plan for running a parallel transmission line."	Due to the existing utilities on the South and the storm drain in the North, this link is not viable for construction.	Yes, limited right-of-way and room for 4-foot sidewalks.	Yes, north side of the road	Yes	none	Gas on south side of the road	Sewer on south side of the road. Conflict.	Water on north side of the road	Large trees on north side of the road near the cemetery, buildings constructed near the road on south side.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
69	Euclid	19th–21st	Under Consideration		West side	No sidewalks currently but limited right-of-way and room for 4-foot sidewalks.	none	Yes, if sidewalk is needed.	none	Gas on east side of the road	2 Sewer lines on east side of the road	Water on west side of the road	No curb/street parking requires transmission pole protection bollards.
69.1	Euclid	21st–22nd	Under Consideration		East and West side depending on conflicts and constraints	No sidewalks currently but limited right-of-way and room for 4-foot sidewalks.	none	Yes, if sidewalk is needed.	none	Gas on east side of the road	2 Sewer lines on east side of the road	Water on east side of the road	No curb/street parking requires transmission pole protection bollards.
70	21st	Euclid–Park	Under Consideration		North and South ^a	No sidewalks currently but limited right-of-way and room for 4-foot sidewalks.	none	Yes, if sidewalk is needed.	none	none	none	Water line on south side of the road	No curb/street parking requires transmission pole protection bollards.
70.1	21st	Park–Highland	Under Consideration		North and South ^a	No sidewalks currently but limited right-of-way and room for 4-foot sidewalks.	none	Yes, if sidewalk is needed and possible for limited right-of-way.	none	Gas line on north side	Sewer in middle of the road, but with limited right-of-way, it would be difficult to fit the distribution underground.	Water line on south side of the road	No curb/street parking requires transmission pole protection bollards.
70.2	21st	Highland–Curtis	Under Consideration		North and South ^a	No sidewalks currently but limited right-of-way and room for 4-foot sidewalks.	none	Yes, if sidewalk is needed.	none	Gas line on south side of the road	Sewer in middle of the road, but with limited right-of-way, it would be difficult to fit the distribution underground.	Water on south side of the road	none
71	Highland	22nd–21st	Under Consideration		East and West ^a	No sidewalks currently but limited right-of-way and room for 4-foot sidewalks.	none	Yes, if sidewalk is needed.	none	Gas line on east side of the road	Sewer line in middle of the road that limits right-of-way for undergrounding distribution.	Water line in middle of the road, but with limited right-of-way, it would be difficult to underground the distribution.	Building structure on west side of the road limits structure placement and no curb/street parking requires bollard protection for structures.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
71.1	Highland	21st–20th	Under Consideration		East side	No sidewalks currently but limited right-of-way and room for 4-foot sidewalks.	none	Yes, if sidewalk is needed.	none	Gas line on west side of the road	none	none	Building structures on east side of the road and no curbs/street parking which would require transmission bollard protection.
72	20th	Highland–Curtis	Under Consideration		South side	No sidewalks currently but limited right-of-way and room for 4-foot sidewalks.	none	Yes, if sidewalk is needed.	none	none	none	Water line on south side of the road	Building structure on the south side limits transmission pole placement.
73	Curtis	20th–21st	Under Consideration		East side	none	none	Yes, possible easement on the east side for pole placement along the route.	none	none	none	none	Kino bridge structure and side slopes will require additional engineering and clearances. No curb and street parking may require transmission pole bollard protection.
73.1	Curtis	Warehouse –20th	Under Consideration		East side	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk and other conflicts.	none	Gas line on east side	Sewer line in middle of the road that limits right-of-way for undergrounding distribution.	Water line in middle of the road that limits right-of-way for undergrounding distribution.	Building structure on the west side limits transmission pole placement.
74	cross-country	Curtis–Kino	Under Consideration		n/a	none	none	Possible for pole placements around Kino bridge.	none	none	Sewer line along link	none	Kino bridge structure and side slopes will require additional engineering and clearances.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
75	Warehouse	cross-country-Curtis	Under Consideration		North	none	none	none	none	Gas line on north side	Sewer line in middle of the road that limits right-of-way for undergrounding distribution.	Water line in middle of the road, but with limited right-of-way, it would be difficult to underground the distribution.	Limited right-of-way and building structures near road that will need to maintain clearances too. Street parking need to add bollards for transmission structure protection.
76	cross-country	Warehouse Ave-Vine St	Under Consideration		n/a	none	none	Yes, easement from property owner for crossing Aviation Pkwy on south side.	Possible, Downtown Links/Aviation Pkwy	none	none	none	Long span for Aviation Pkwy crossing.
77	Vine	cross-country-17th	Under Consideration		West side of the road to avoid building structure on the East side	No sidewalks currently but limited right-of-way and room for 4-foot sidewalks.	none	Possible, see sidewalk notes.	none	none	none	none	Building on east side that limits structure placements.
78	17th	Curtis-Vine	Under Consideration		South, see PCWW note	none	none	none	none	none	Sewer line on north side of the road and in middle of the road.	Water line on south side of the road.	none
79	Curtis	alley btw. 16th & 17th & 46kV line	Under Consideration		West side of the road, see gas line comment	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict and other conflict notes.	none	12-inch steel gas line on east side of the road.	none	none	Residential fencing structures limit the placement of transmission lines.
80	alley btw. 16th & 17th	Curtis-46kV line	Under Consideration		n/a	none	none	Yes, easement required through alley and see other conflicts notes and TEP overhead notes.	none	Gas line in alley	Sewer and water lines on 16th and 17th that limit the distribution underground and relocation of the 46kV line.	Sewer and water lines on 16th and 17th that limit the distribution underground and relocation of the 46kV line.	Building conflicts that need to be mitigated.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
81	alley btw. 16th & 17th	Curtis-Vine	Under Consideration		n/a	none	none	Yes, easement required through alley and see other conflicts notes and TEP overhead notes.	none	Gas line in alley	Sewer and water lines on 16th and 17th that limit the distribution underground and relocation of the 46kV line.	Sewer and water lines on 16th and 17th that limit the distribution underground and relocation of the 46kV line.	Residence owning the parcels have placed equipment and pallets under the existing line. Need clearance mitigation and easement.
82	Fort Lowell	Stone-Oracle	Added back; Under Consideration	Links along the existing 138kV line along Ft. Lowell had been removed because construction and future maintenance would require that the existing and future circuits would both have to be taken out of service; however, further review determined that with careful coordination of outages it could be accomplished.	North	Yes, limited right-of-way and room for 4-foot sidewalks.	Storm Drain at Oracle and Fort Lowell	Yes, see sidewalk note and limited right-of-way on north side near Castro Ave.	none	Gas lines on south side of the road	Possible conflict Sanitary sewer line on south side of road but within traffic lanes. Limits the room for undergrounding the distribution.	Water on north side of the road	none
83	16th	Vine-Cherry	Under Consideration		Either side	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk notes	none	Gas line on south side of the road	none	Water line on south side of the road	none
84	Vine	Alley and 16th	Under Consideration		Either side	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, easement required through alley and see other conflicts notes and TEP overhead notes.	none	none	none	none	Building conflicts near road that will need to maintain electrical clearances too.
85	Vine	17th-alley btw. 16th & 17th	Under Consideration		Either side	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, easement required through alley and see other conflicts notes and TEP overhead notes.	none	none	none	none	Building conflicts near road that will need to maintain electrical clearances too.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
86	17th	Vine-Kino	Under Consideration		Either side	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk conflict and other conflict notes.	none	none	none	Water line on south side of the road	Residential street parking and no curbs. Would need bollards to protect transmission structure.
87	Broadway	Plummer-Kino Pkwy	Under Consideration	Broadway (in this area) eliminated due to recent City of Tucson PI project. TEP just rebuilt the 46kV and distribution here, and there will also be a 5-year hiatus on pavement cuts. The line could not be installed without pavement cuts, as newly built 46kV and distribution would have to be undergrounded.	North side only (distribution on South side and cannot underground due to road way improvement project and 5-year hiatus on pavement)	Possible in order to maintain 4-foot sidewalks.	none	Possible in order to maintain 4-foot sidewalks.	Broadway road widening project	none	none	none	none
88	Kino	Broadway-cross-country	Under Consideration		West side preferred, but may need to move to the East side for portions to mitigate conflicts.	none	Storm drain on east side of the road.	Possible as road starts to curve.	none	Gas line on west side of the road	Sewer on east side of the road	Water line on east side of the road	Curved road will require angle structures.
88.1	Kino	cross-country-Winsett	Under Consideration		Either side	none	Drainage channel that will need to be spanned	Possible along curved portion of the road.	none	none	Sewer on east side near Winsett	none	Curved road will require angle structures, trees along route that will require clearance mitigation.
89	cross-country	14th-Kino	Under Consideration		n/a	none	Storm Drain along Kino	Possible if not in road right-of-way	none	none	none	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
90	Plumer	19th–Broadway	Under Consideration	Plumer, culvert PI project; n/a identified	Due to the amount of utilities along this corridor it is not feasible to fit an additional transmission line	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk notes and other conflicts notes.	none	Gas on portion of the east and west side of the road	Sewer on east side of the road and in the middle of the road	Water on east and west side of the road	Building and wall structures limit transmission pole placement. Palm trees along right-of-way that would need to be removed or clearances maintained.
91	Kino	15th–18th	Under Consideration		Either side depending no connecting links	none	Drainage channel that will need to be spanned	Possible depending on bridge ramp and pole placement.	none	Gas line on the east side for a portion of the link	Sewer on east side for a portion and west side for a portion of the link.	Water on east side for a portion of the link	Bridge ramp begins, limits pole placement and taller structures.
92	Campbell	Winsett–14th St	Under Consideration	Dam present, 408 permitting required (Pima County)	West side preferred but may need to move to the East side for portions to mitigate conflicts.	No sidewalks currently but limited right-of-way and room for 4-foot sidewalks.	Storm drain on east side near 14th St.	Possibly for area near storm drain and sidewalks.	none	Gas line on east side	Sewer in middle of the road, but with limited right-of-way, it would be difficult to fit the distribution underground.	Water line in middle of the road, but with limited right-of-way, it would be difficult to underground the distribution.	Buildings next to the road on west side that will need to be mitigated with clearances.
93	Kino	Aviation–18th	Under Consideration		Either side depending no connecting links	none	none	Yes, might need to place structure in private easement to make bridge crossing.	none	none	Sewer on east side near 18th that limits crossing structure placement.	Water on east side near 18th that limits crossing structure placement.	Bridge over Aviation, need taller structures. Difficult to construct over the bridge.
94	Winsett	Campbell–Kino Pkwy	Under Consideration		North and South depending on conflicts and constraints	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk notes.	none	Gas line on south side of the road	Sewer on north side of the road	Water on south side of the road	Curved road requiring angle structures.
95	Kino	22nd–21st	Under Consideration		East or West depending on connecting links	none	none	Yes, for structure placement.	none	none	none	none	Bridge structure over 22nd requires taller poles possibly and easements to place structures along link.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints								
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict	
95.1	Kino	Warehouse –21st	Under Consideration		East or West depending on connecting links	none	none	Yes, for structure placement.	none	none	none	none	none	Bridge structure over 22nd requires taller poles and possibly easements to place structures along link. Comm tower on east side, need to maintain clearances.
95.2	Kino	Barraza Aviation Parkway– Warehouse	Under Consideration		East or West depending on connecting links	none	none	Yes, for structure placement.	none	none	none	none	none	Aviation bridge crossing. Buildings on south end of the link that make structure placement difficult. Will require easements.
96	Campbell	Winsett– 19th	Under Consideration		West side see underground distribution note	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk note and other conflicts note.	none	Gas line on west side of the road	2 Sewer lines in middle of the road that limit right-of-way for underground distribution.	Water line in middle of the road, but with limited right-of-way, it would be difficult to underground the distribution.	Limited right-of-way and building structure close to the road may require additional easements.	
96.1	Campbell	19th–Norris	Under Consideration		East or West depending on connecting links	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk note and other conflicts note.	none	Gas line on west side of the road	Sewer on east side for a portion and in middle of the road that limits right-of-way for undergrounding distribution.	Water line in middle of the road, but with limited right-of-way, it would be difficult to underground the distribution.	none	
96.2	Norris	Campbell– cross-country	Under Consideration		North/East	No sidewalks	none	Yes, possible easement on the east side for pole placement along the route.	none	Gas line conflict	Sewer line south side	none	none	No curb/street parking requires transmission pole protection bollards.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
97	19th	Plumer–Campbell	Under Consideration		Due to the amount of utilities along this corridor, it is not feasible to fit an additional transmission line	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk notes and other conflicts notes.	none	Gas line on south side	2 Sewer lines on north side of the road	Water line on south side	Buildings near road that would need clearances maintained.
98	Plumer	22nd–19th	Under Consideration		Due to the amount of utilities along this corridor, it is not feasible to fit an additional transmission line	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk notes and other conflicts notes.	none	Gas line on south side	Sewer line on east side	Water line on east and west side	none
99	cross-country	Plumer–Norris	Under Consideration		n/a	none	Drainage way, must avoid.	Yes, for cross-country area.	none	Gas line cross-country	Sewer line cross-country	none	none
100	cross-country	rail yard–Plumer	Under Consideration		n/a	none	none	Yes, for cross-country area and pole placement at plumber.	none	none	Sewer conflict at plumber	Water conflict at plumber	Long span over rail yard. 22nd bridge structure limits structure placement and must maintain clearances.
101	22nd	Highland–Park	Under Consideration		Either side	none	none	none	none	none	none	none	none
101.1	22nd	Kino Pkwy–Highland	Under Consideration		Either side	none	none	Possible near Kino/bridge	none	none	none	none	Kino bridge over 22nd
102	22nd	Park–Euclid	Under Consideration		Either side	none	none	none	none	none	none	none	none
103	Euclid	22nd St–Silverlake	Under Consideration		East and West side depending on conflicts and constraints	none	Storm drain on west side of the road that will limit room for pole placement and underground	Possible to avoid building structure and other conflicts.	none	Gas line along portions of the east and west side.	Sewer in middle of the road, but with limited right-of-way, it would be difficult to fit the distribution underground.	Water in middle of the road but will limit the right-of-way to underground distribution.	Building structure on the east and west side of the road that will need to mitigate clearances to.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
104	Park	22nd St–Silverlake	Under Consideration		East side due to sewer and storm drain and lack of room to underground distribution.	Yes, limited right-of-way and room for 4-foot sidewalks.	Drainage wash difficult to underground distribution line. Storm drain on west side of the road.	Yes, for sidewalks and building conflicts	none	Gas line on east and west side of the road.	Sewer line on west side	Water line on east side and water line in middle of the road.	Building structures and residential fences near the road that will need to be mitigated.
104.5	Park	22nd–21st	Under Consideration		Either side depending no connecting links.	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk note.	none	None	none	none	none
105	Silverlake	Park Euclid	Under Consideration		North	none	none	none	none	Gas line on south side	none	none	none
106	Silverlake	Kino Pkwy–Park	Under Consideration	Waste Water prefers to avoid impacts to Quincie Douglas and other developments in this area	North and South side of the road to mitigate residential other conflicts.	Limited area for sidewalks along portions of the link.	Storm drain at Kino	Yes, possible easements from the park are and drainage area as well as for sidewalks.	none	Gas line along portion of the north and south side of the road.	none	Water line along south side of the road and along portions of the north side.	Large trees along link at park may need trimming or relocating.
107	Kino	22nd–27th	Under Consideration	Pima County opposed the visual impact to Kino (gateway to City of Tucson)	Either side	none	none	none	none	none	none	none	22nd bridge ramp.
107.1	Kino	27th–28th	Under Consideration	Pima County opposed the visual impact to Kino (gateway to City of Tucson)	Either side	none	none	none	none	none	none	none	none
107.2	Kino	28th–Silverlake	Under Consideration	Pima County opposed the visual impact to Kino (gateway to City of Tucson)	Either side	none	Storm drain at intersection of Silverlake and Kino	none	none	none	none	Water line on east side at Silverlake.	none
108	27th	Cherry and Kino	Under Consideration		Either side	none	Storm drain culvert at Kino that will need to mitigate pole placement.	none	none	Gas on north side	none	none	none
109	cross-country	Cherry–Cherrybell	Under Consideration		n/a	none	none	Yes, for cross-country	none	none	none	none	none

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
110	Fairland	Willits–Silverlake	Under Consideration		East side to avoid other conflicts	none	none	none	none	none	Sewer line on west side	none	Street parking and no curb may require bollard protection for transmission poles.
111	Willits	Cherrybell–Fairland	Under Consideration		South side	none	none	none	none	Gas line on north side	none	Water line on south side	Street parking and no curb may require bollard protection for transmission poles.
112	cross-country	Fairland–rail yard	Under Consideration		n/a	none	none	Yes, for cross-country	none	none	none	none	none
113	cross-country	Silverlake–rail yard	Under Consideration		n/a	none	none	Yes, for cross-country	none	none	none	none	none
114	Cherrybell	Silverlake–cross-country	Under Consideration		East side	none	none	none	none	Gas line on east side of the road	none	2 Water lines on west side of the road	Street parking and no curb may require bollard protection for transmission poles.
114.1	Cherrybell	Cross-country to Willits			East side	none	none	none	none	Gas line on east side of the road	none	2 Water lines on west side of the road	Street parking and no curb may require bollard protection for transmission poles.
115	Cherry	28th–27th	Under Consideration		East side	none	none	none	none	Gas on west side	none	Water on west side	Street parking and no curb may require bollard protection for transmission poles.
116	cross-country	connects 28th across Kino	Under Consideration		n/a	none	Storm drain culvert at Kino that will need to mitigate pole placement.	none	none	none	none	none	none
117	28th	Cherry–Kino connector link	Under Consideration		North due to sewer lines	none	none	none	none	Gas line on north side	2 Sewer lines on the south side of the road	Water line on south side	Street parking and no curb may require bollard protection for transmission poles

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
118	28th	Warren-Cherry	Under Consideration		North due to other conflicts	none	none	none	none	Gas line on south side	none	Water line on south side	Street parking and no curb may require bollard protection for transmission poles
119	Cherry	Silverlake-28th	Under Consideration		East side due to gas and sewer lines	none	none	none	none	Gas line on west side	2 Sewer lines on west side of the road	none	Street parking and no curb may require bollard protection for transmission poles
120	Warren	Silverlake-28th	Under Consideration		East side	none	none	none	none	none	Sewer on west side of the road	Water on west side at 28th	Street parking and no curb may require bollard protection for transmission poles
121	Silverlake	Kino Pkwy-Cherry	Under Consideration		North and South side to mitigate conflicts	No sidewalks in areas	none	none	none	Gas on north side of the road and a portion of the south side of the road.	none	none	none
121.1	Silverlake	Cherry-Warren	Under Consideration		North and South side to mitigate conflicts	No sidewalks in areas	none	none	none	Gas on the north side of the road	none	Water on south side of the road	none
121.2	Silverlake	Warrin-Martin	Under Consideration		North side	No sidewalks in areas	none	none	none	none	none	none	Curve road require angle structures.
121.3	Silverlake	Martin-Cherrybell	Under Consideration		North side	No sidewalks in areas	none	none	none	none	none	none	none
121.4	Silverlake	Cherrybell-Fairland	Under Consideration		Either side	No sidewalks in areas	none	none	none	none	none	Water line on north and south side of the road	Curved road requiring angle structures.
122	cross-country	Martin-parking lot-Silverlake	Under Consideration		n/a	none	none	Yes, for cross-country portion.	none	none	none	none	Tree clearance to mitigate and building clearance to mitigate.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
123	cross-country	Martin-Silverlake	Under Consideration		n/a	none	none	Yes, for cross-country portion both for distribution underground and transmission overhead.	none	Gas line along link	none	Water line along link	Access for transmission structures may be limited.
124	Barleycorn	Martin-Cherrybell	Under Consideration		North and South side to mitigate conflicts	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, for sidewalks and for other utility conflicts.	none	Gas line on north side	Sewer in middle of the road, but with limited right-of-way, it would be difficult to fit the distribution underground.	Water in middle of the road but will limit the right-of-way to underground distribution.	Wall structure limits placement of poles.
125	Campbell	36th-Barleycorn	Under Consideration		Middle area	none	none	Need to follow up and see if we are in middle area.	none	none	none	none	none
125.1	Campbell	Barleycorn-Silverlake	Under Consideration		Middle area	none	none	Need to follow up and see if we are in middle area.	none	none	Sewer line along link coordinate pole placement.	Water line along link coordinate pole placement.	none
126	Martin	Barleycorn-36th	Under Consideration		West side	none	none	Yes, see TEP overhead notes and other conflicts notes.	none	none	none	Water line on west side of the road	Wall structure near 31st limits right-of-way may need easements.
127	Kino	Silverlake-36th St	Under Consideration		Either side	none	Storm drain on east side but outside of road right-of-way. Need to clarify that structure foundations will not interfere.	none	none	none	none	Water line on east side of the road	Road curves and will require angle structures.
128	36th	Martin-Kino Pkwy	Under Consideration		South side	none	none	none	none	none	2 Sewer lines on south side and sewer easement	Water line on north side of the road	Must be on TEP property to make this link work.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Conflicts/Constraints							
						Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict
129	36th	Campbell–Martin	Under Consideration		South side	none	none	Yes, possible easement to the south due to sewer line easement. Or possible easement to the north on private parcel to cross 46kV line.	none	none	2 Sewer lines on south side and sewer easement	Water line on north side of the road	No room in right-of-way without an easement.
1291	cross-country	36th–Campbell	Under Consideration		n/a	none	none	Yes, for cross-country portion	none	none	none	none	none
193	Main	Helen–Speedway	Under Consideration		East	Possible due to limited right-of-way	none	Possible due to limited right-of-way.	none	none	none	none	Building on west side of the road prevent the allowance of overhead transmission structure.
198	Euclid	Speedway–Helen	Under Consideration	Originally removed because of limited right-of-way further north on Euclid Avenue. Added back based on stakeholder (U of A) comment to add links on Helen and Park to alley (46kV).	East and West ^a	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk note and other conflicts note.	none	Gas line on east side of the road	none	none	none
199	Helen	Euclid–Park	Under Consideration	Link added based on stakeholder comment (U of A).	North and South ^a	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk note and other conflicts note.	none	Gas line on north side of the road with limited right-of-way would be difficult to place structure on north side.	Sewer in middle of the road, but with limited right-of-way, it would be difficult to fit the distribution underground.	Water on south side of the road	Residential wall structures limit pole placement.

Map ID (New)	Street	Segment	Status	Notes	Side of Road	Sidewalk Conflict	Storm Drain	Easements Required	Roadway Improvements Conflict	Conflicts/Constraints				
										Gas Line Conflict	Pima County Waste Water Conflicts	Tucson Water Line Conflict	Other Conflict	
200	Park	Speedway–Helen	Under Consideration	We would have to switch back and forth on east and west side of road to avoid buildings. We would have to obtain private easement. Not sure about other utilities.	East and West ^a	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk note.	none	Gas line on east side of the road	none	none	Residential wall structures limit pole placement.	
201	Park	Helen–Alley	Under Consideration	Link added based on stakeholder comment (U of A).	East and West ^a	Yes, limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk note and other conflicts note.	none	Gas line on east side of the road	Sewer in middle of the road, but with limited right-of-way, it would be difficult to fit the distribution underground.	Water line in middle of the road, but with limited right-of-way, it would be difficult to underground the distribution.	Large trees along road that will need clearance mitigation.	
202	Speedway	11th–Main	Under Consideration		North side	none	none	none	none	none	none	Water on the north side of the road	none	
203	Warehouse	Kino–Curtis	Under Consideration		South side	No sidewalks currently but limited right-of-way and room for 4-foot sidewalks.	none	Yes, due to limited right-of-way and Aviation bridge crossing.	none	Gas line on north side	Sewer on north side of the road	Water on north side of the road	Aviation bridge crossing building on north side of the road limits transmission structure placement.	
204	Warehouse /Cherry	Kino–22nd	Under Consideration		North and South side/East and West side depending on conflicts and constraint.	No sidewalks currently but limited right-of-way and room for 4-foot sidewalks.	none	Yes, see sidewalk notes and limited space near aviation bridge for crossing structures.	none	Gas line on south side of Warehouse Rd. Gas line along portions of east side and west side of Cherry Ave.	none	none	Aviation bridge crossing building on north side of the road limits transmission structure placement.	
205	Cherrybell	Willets–22nd	Under Consideration		East	none	none	none	none	None	none	2 Water line on west side of the road. Water line on east side of the road near 22 nd .	none	

^a May require the line to jump from one side of the road to the other based on conflicts and constraints.

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Appendix C. Preliminary Route Maps



Figure C.1. Route 1.



Figure C.2. Route 2.

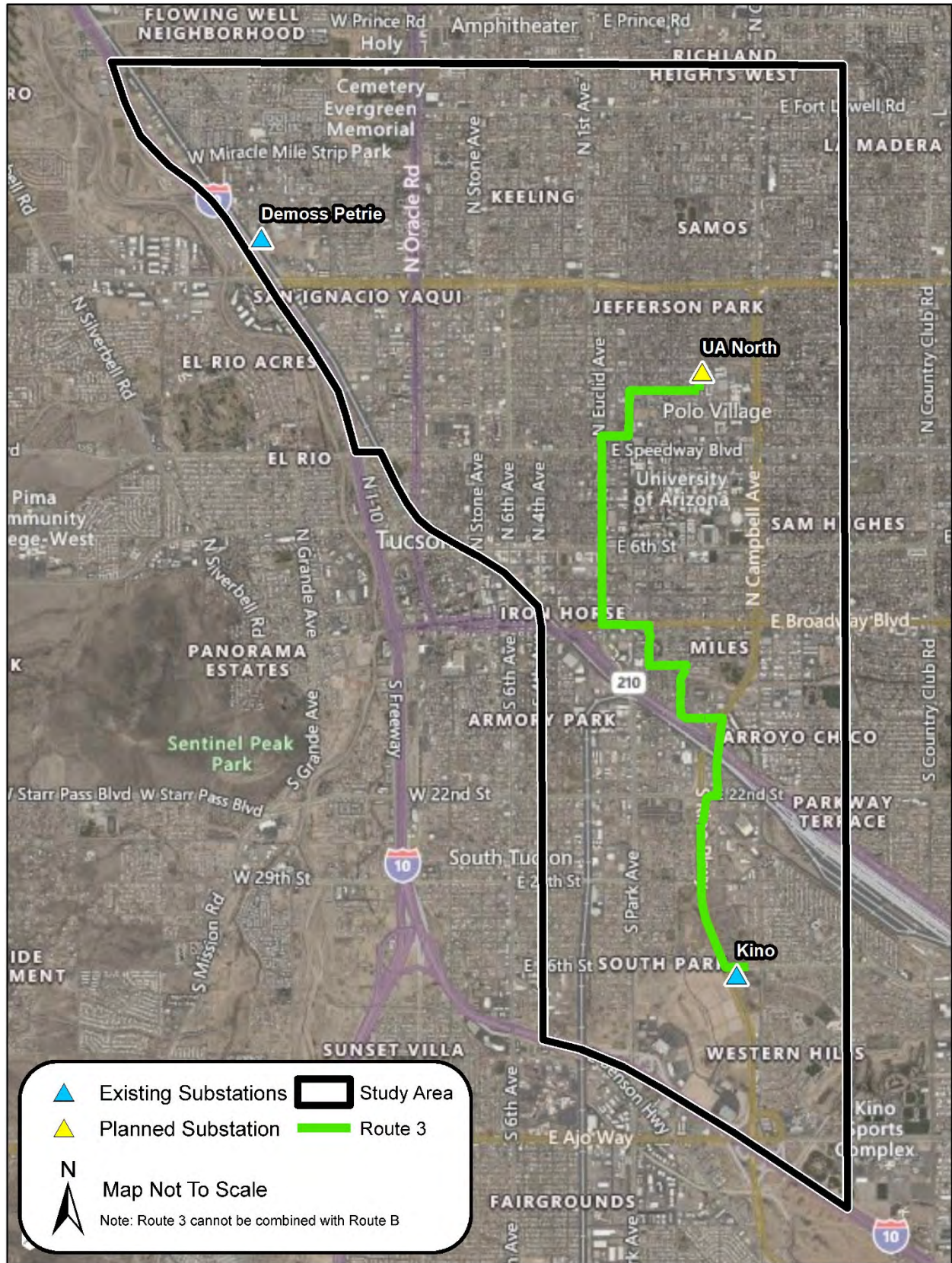


Figure C.3. Route 3.

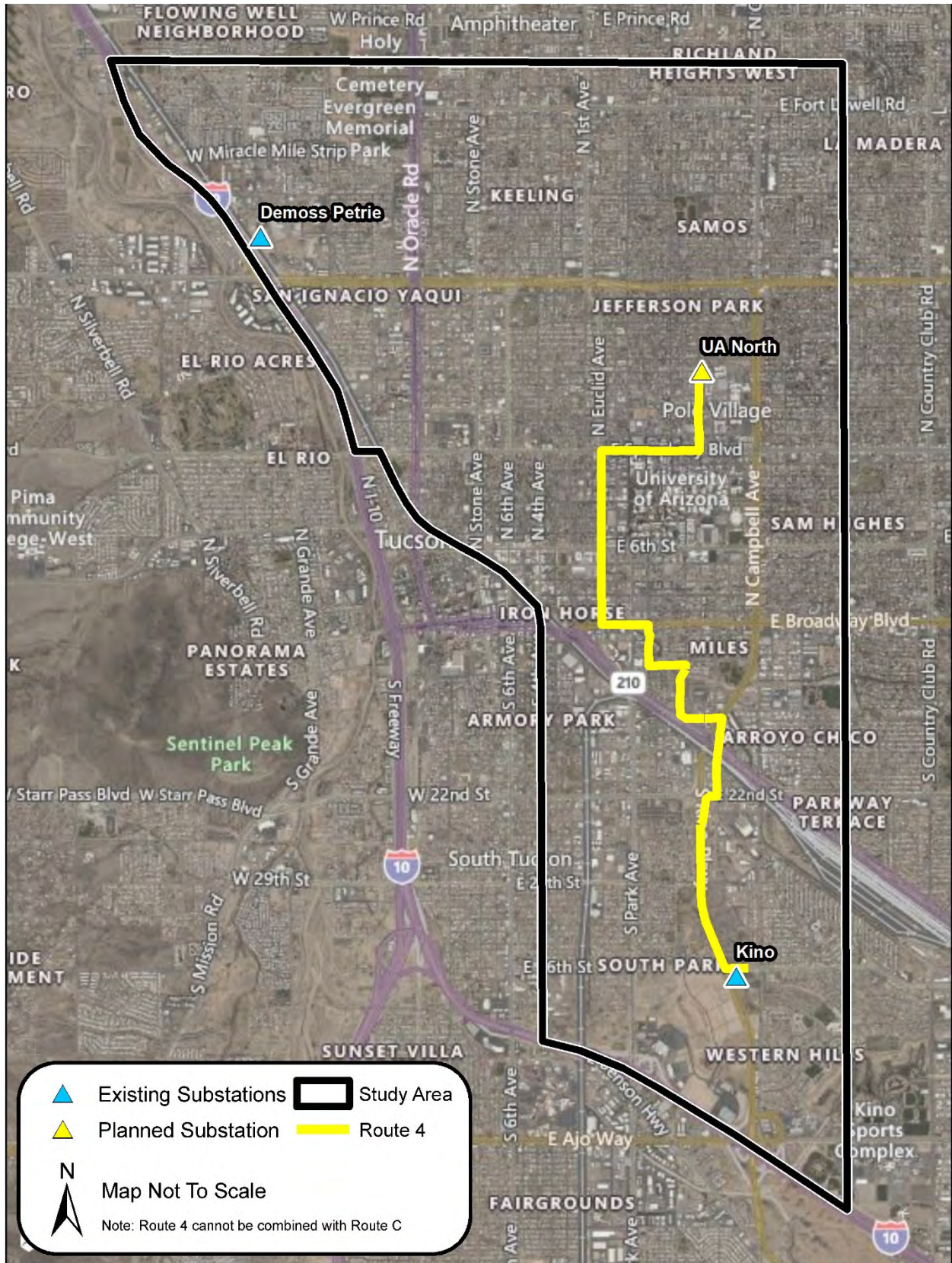


Figure C.4. Route 4.

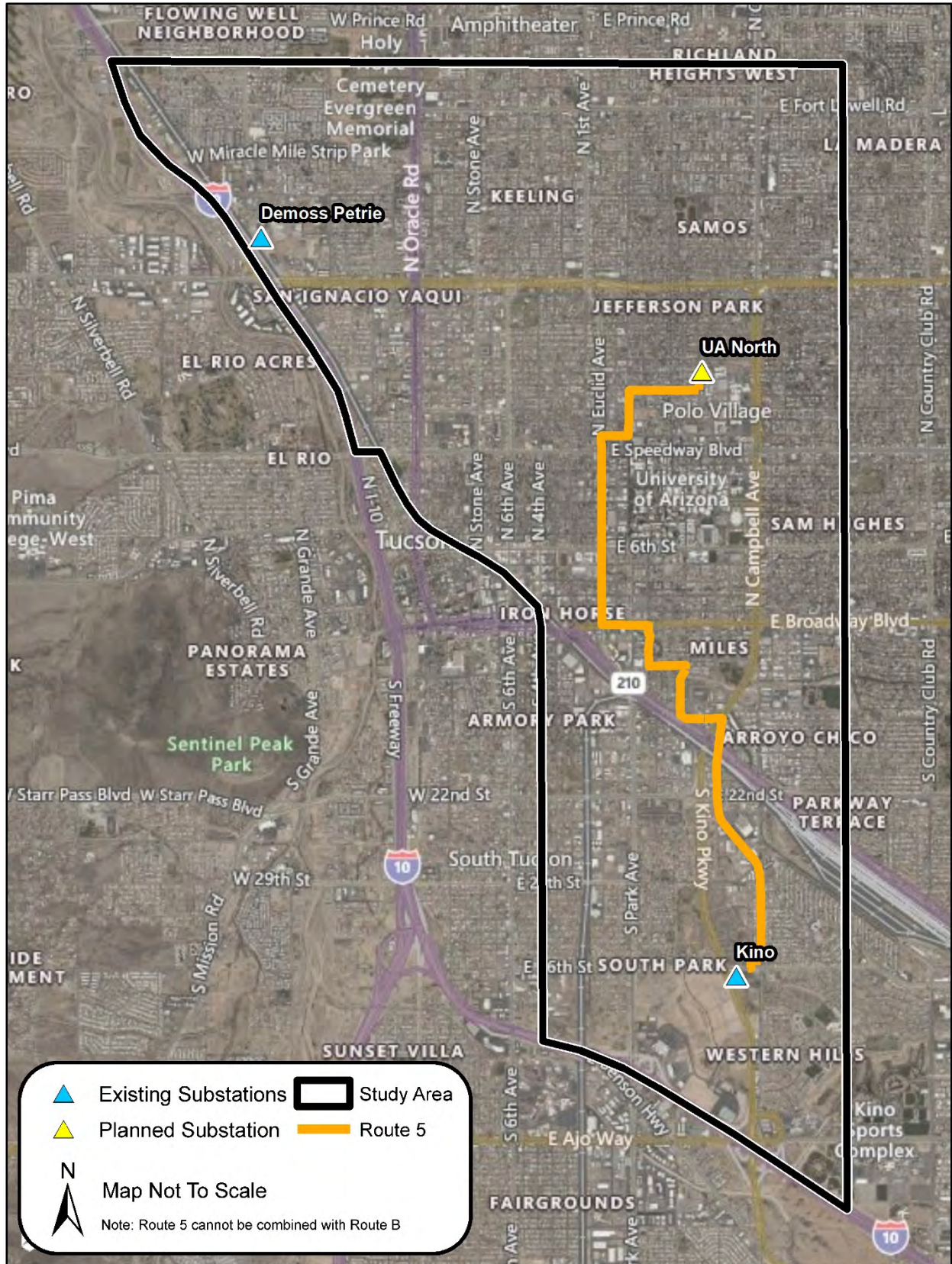


Figure C.5. Route 5.

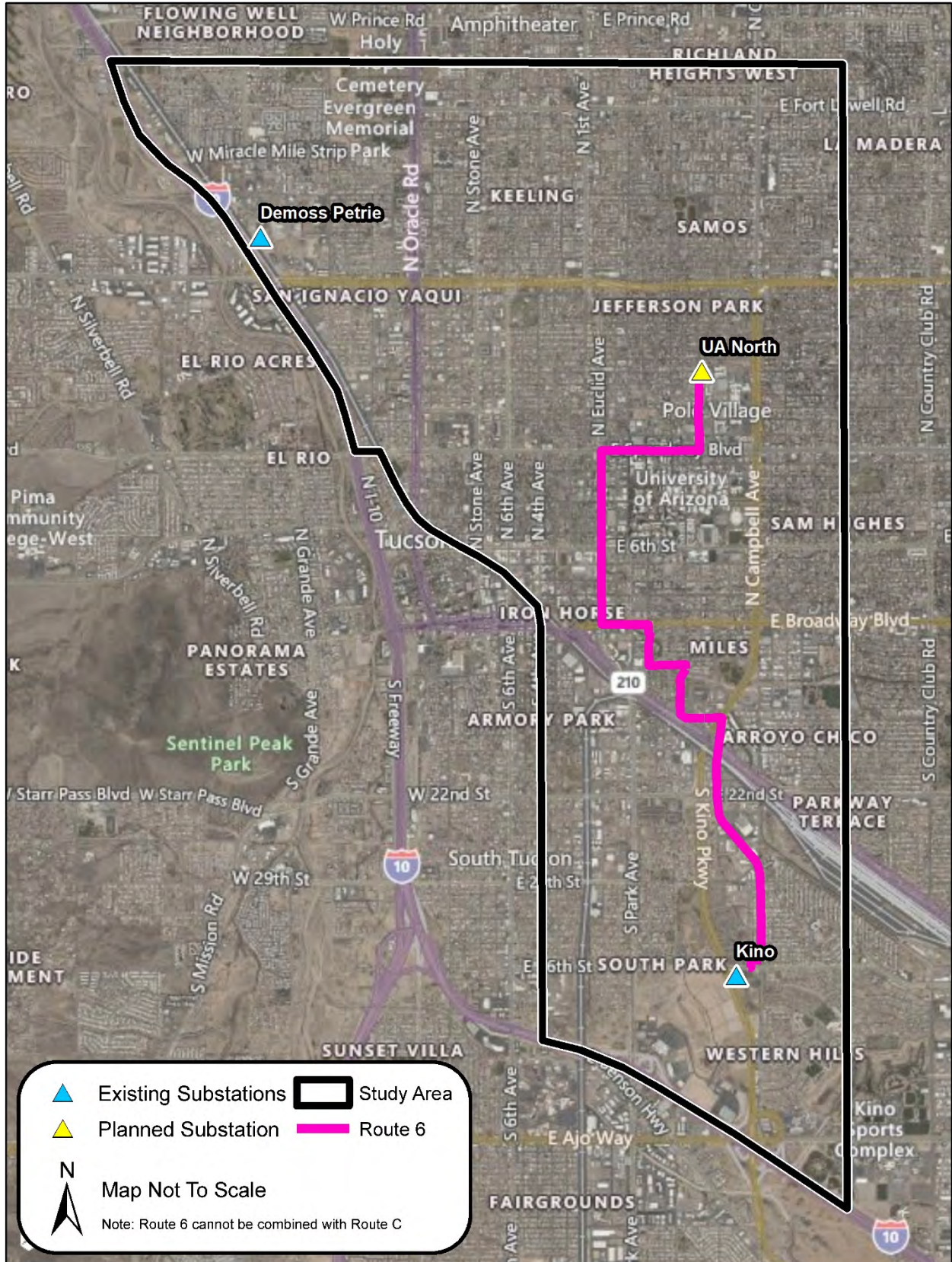


Figure C.6. Route 6.

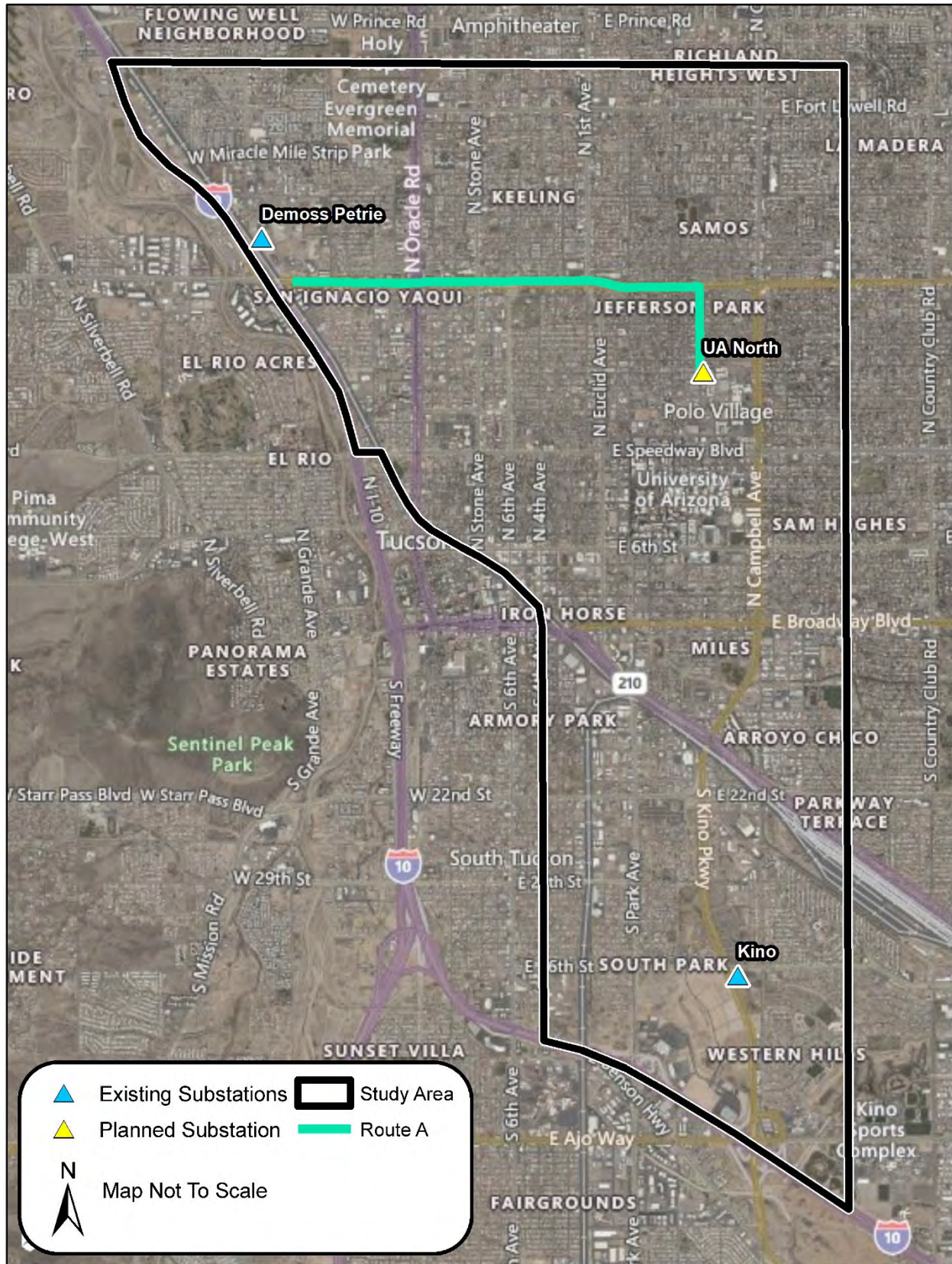


Figure C.7. Route A.

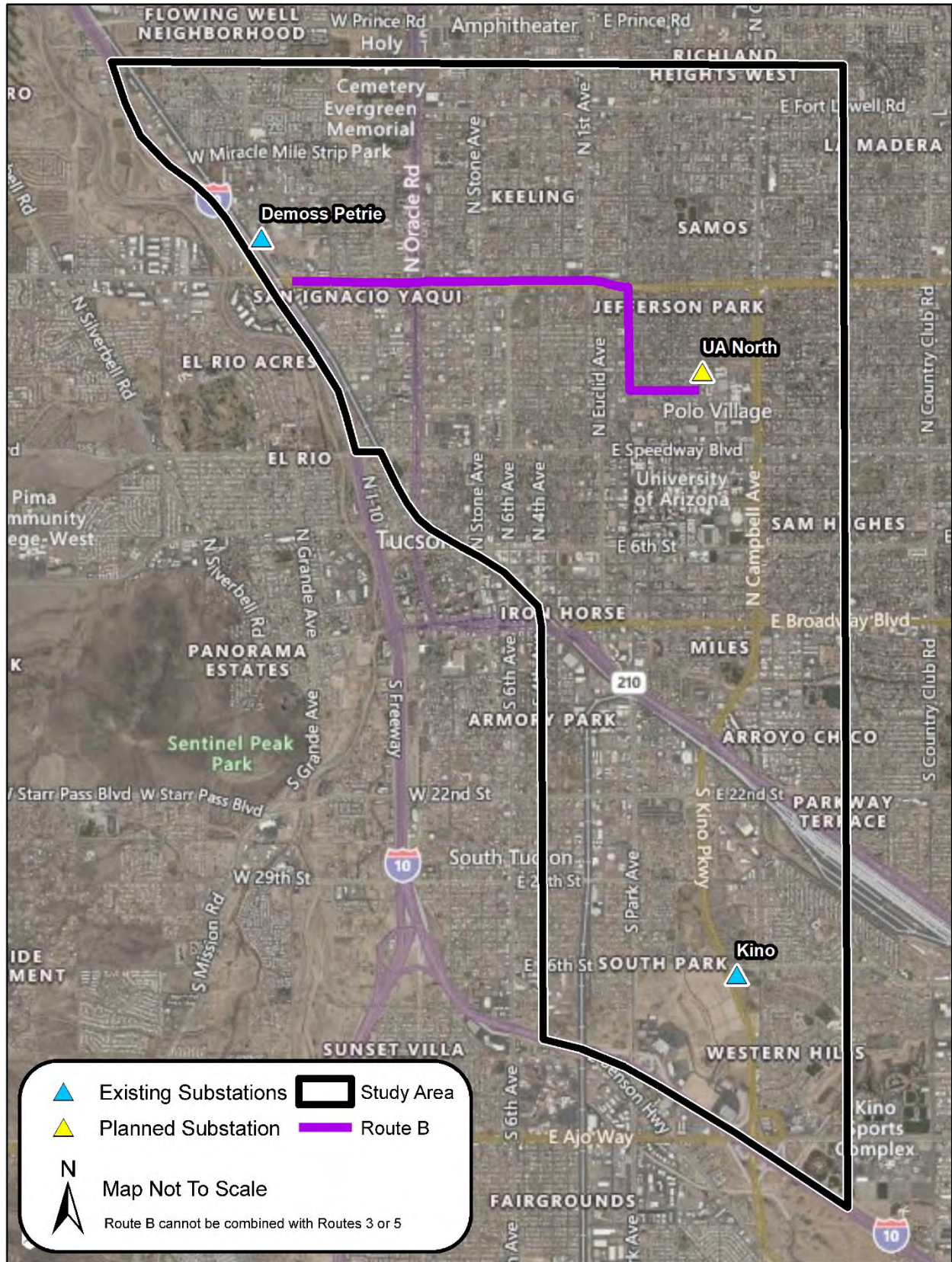


Figure C.8. Route B.

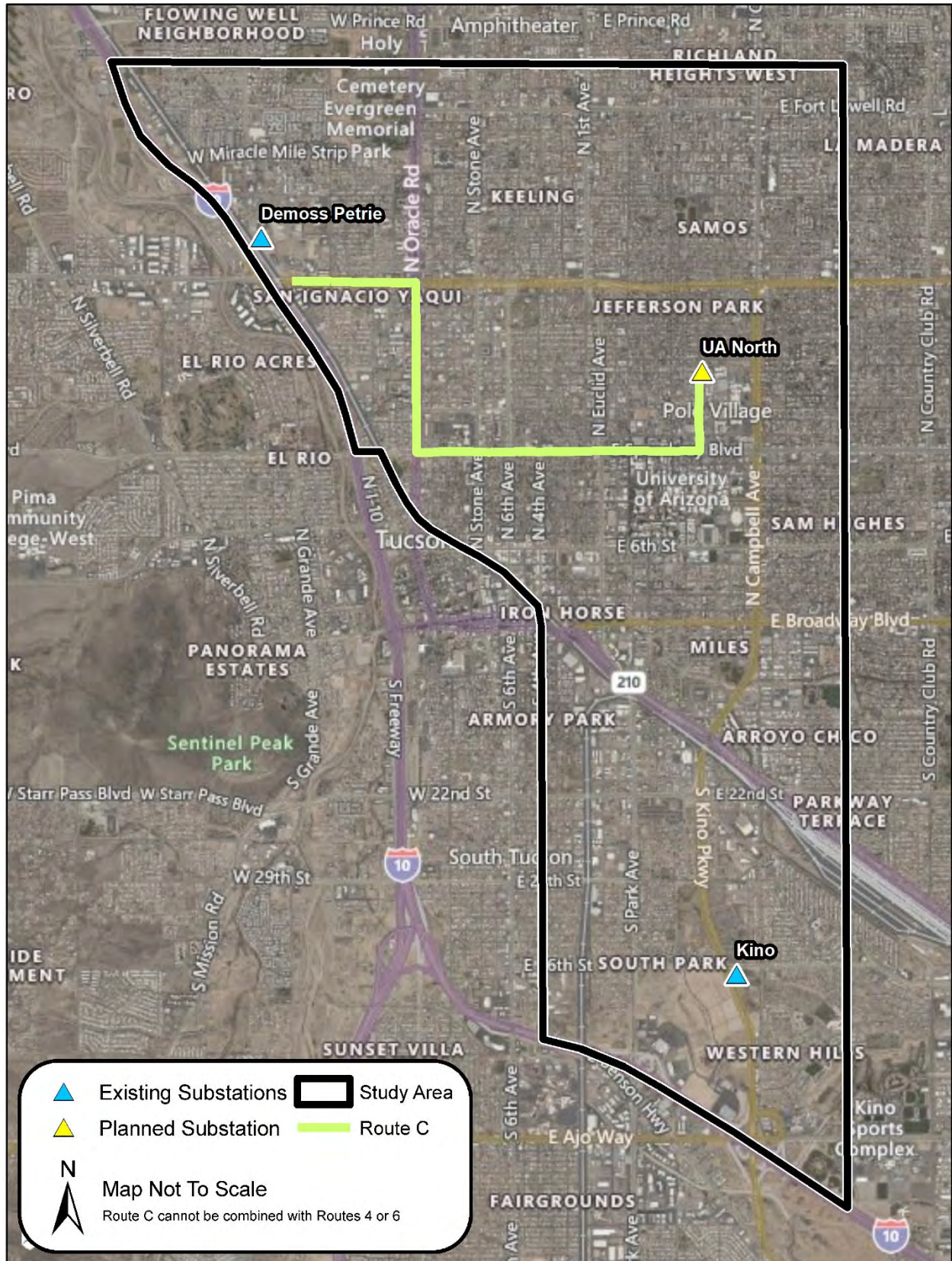


Figure C.9. Route C.

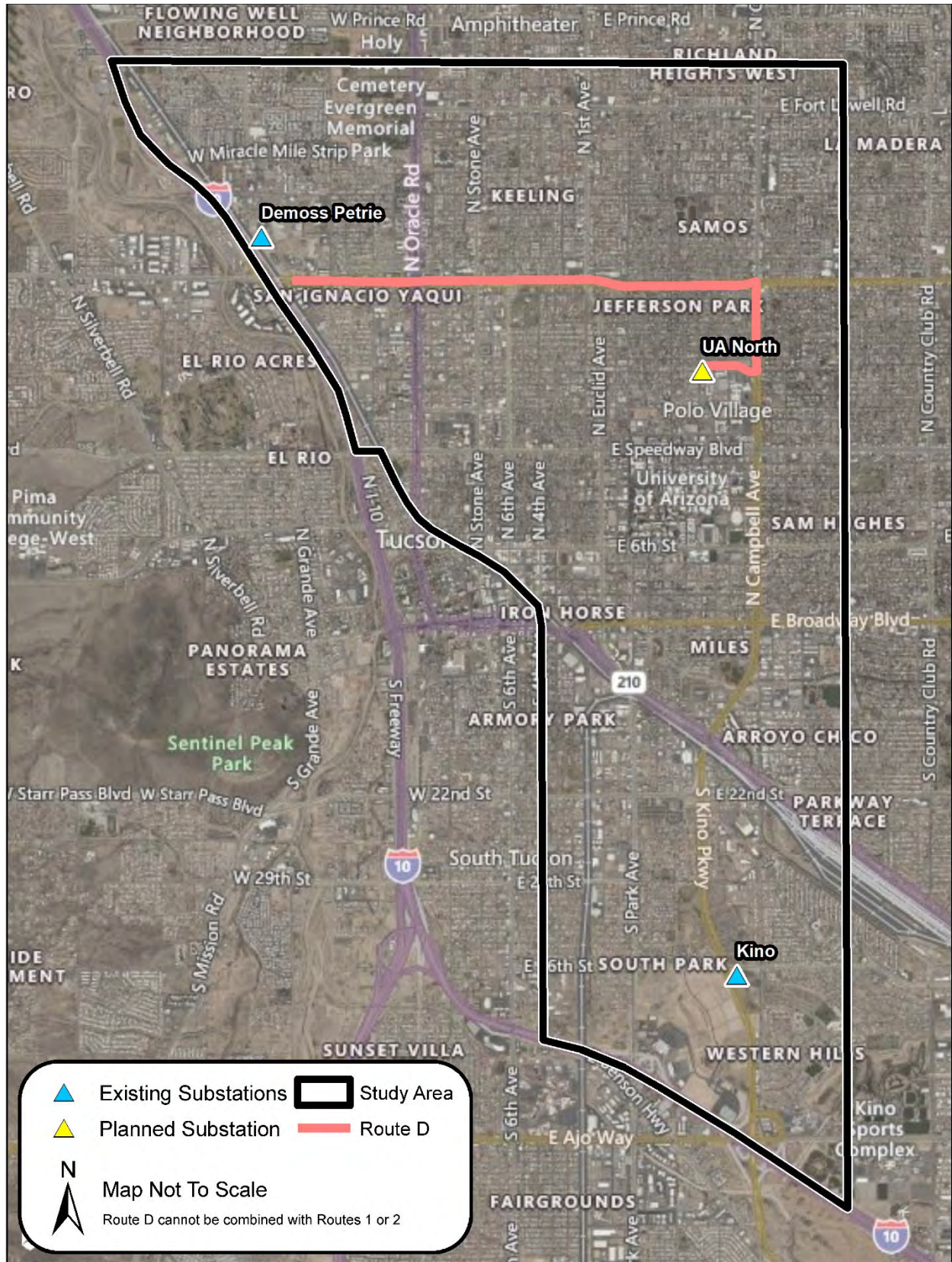
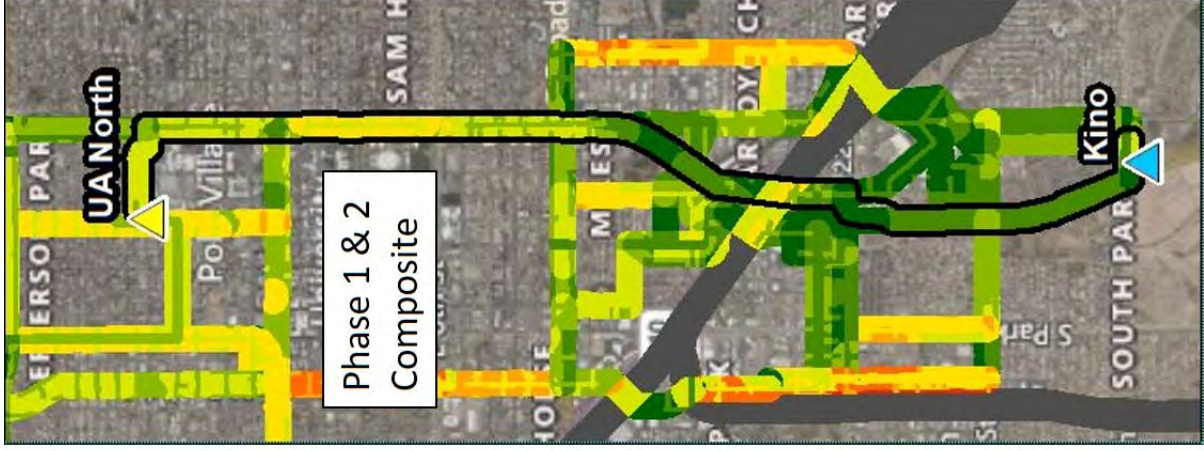
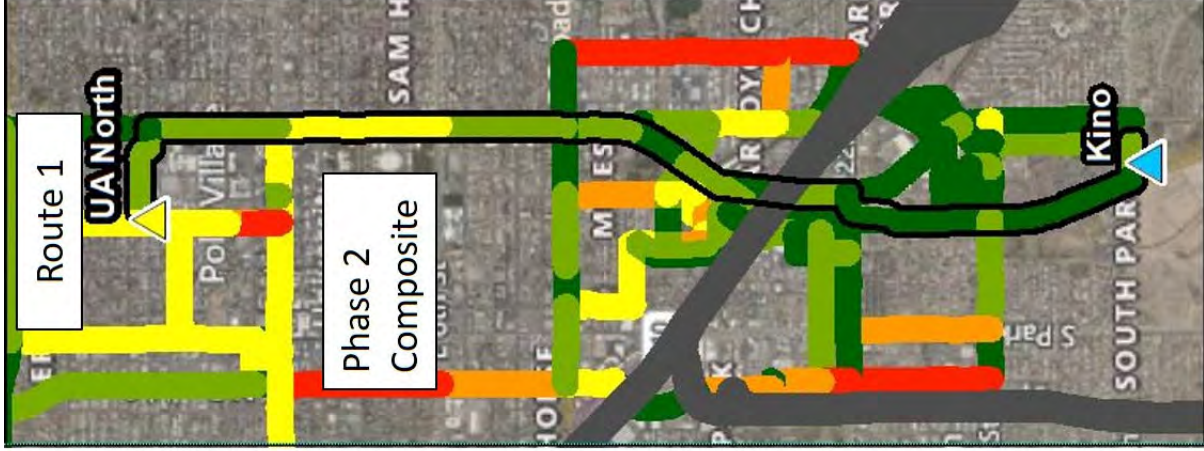
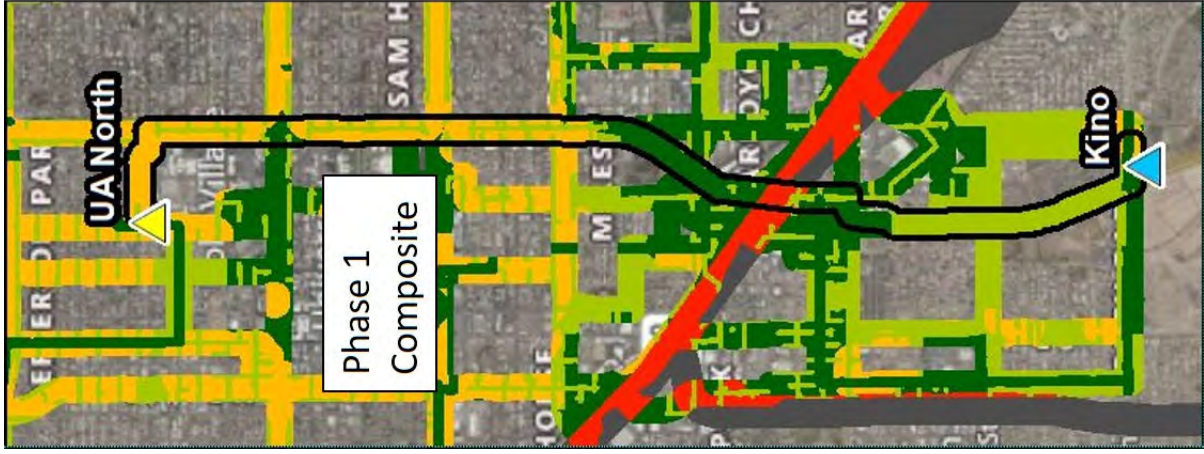
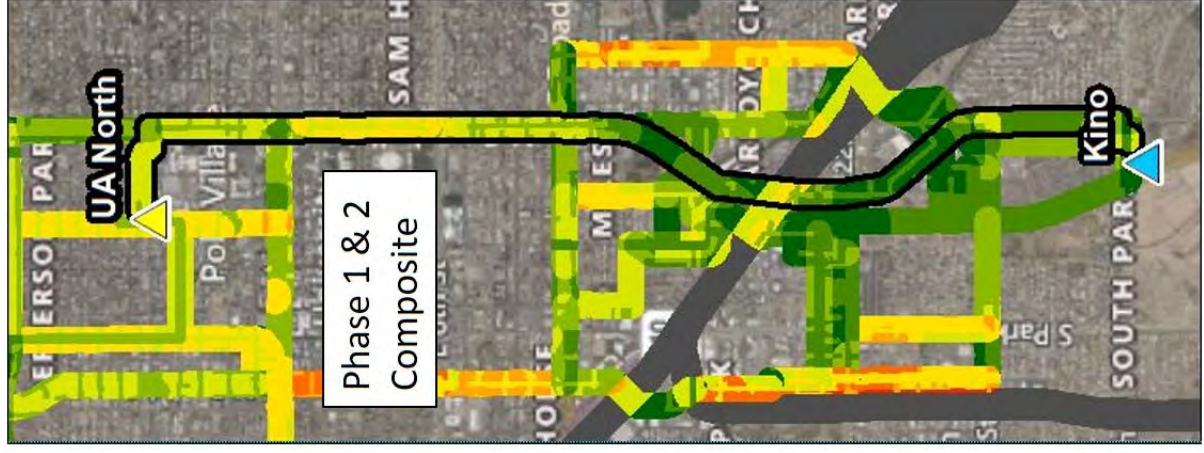
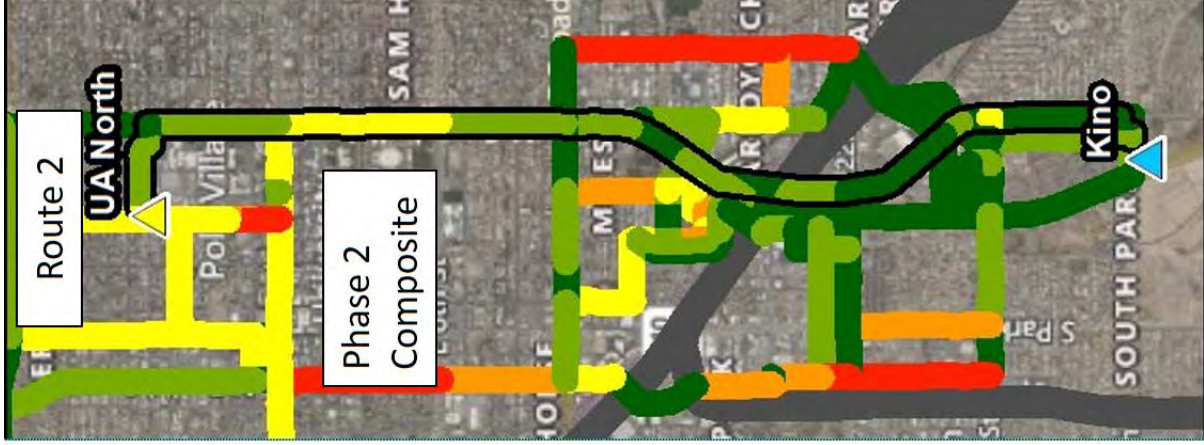
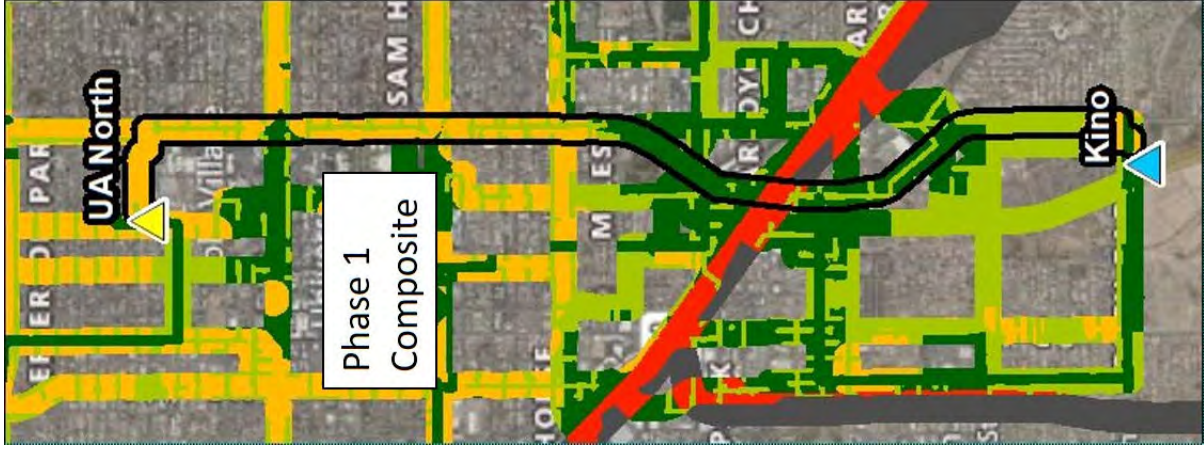
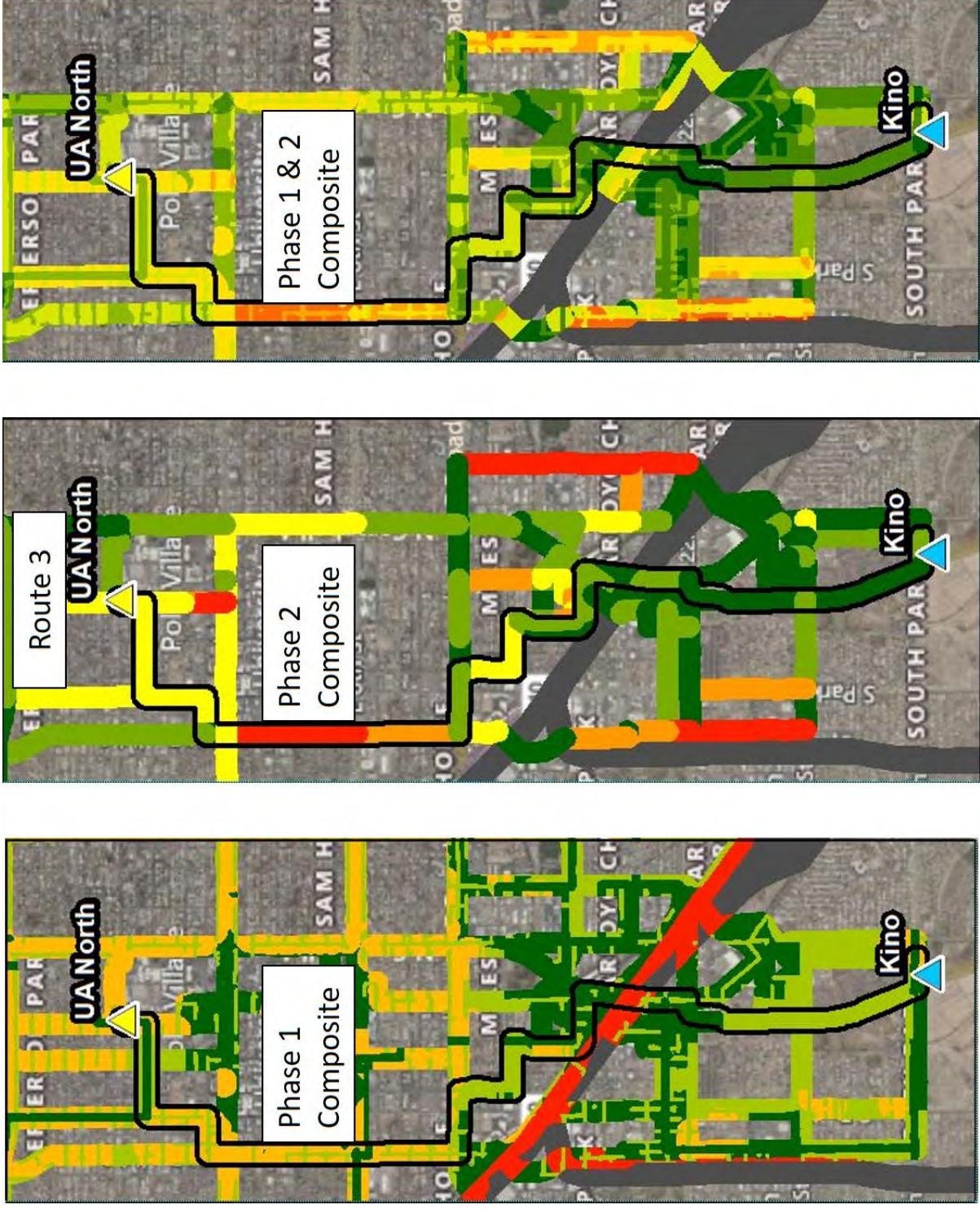


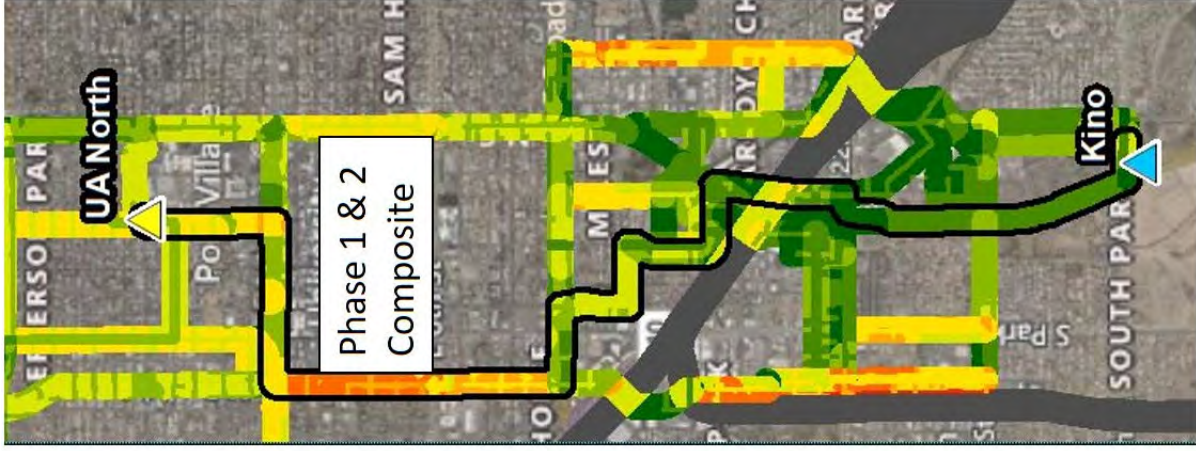
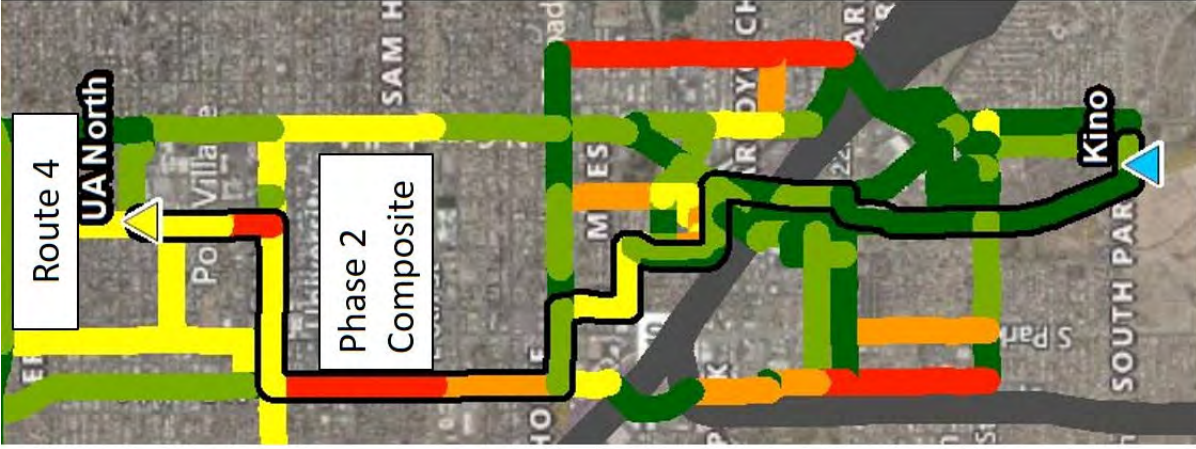
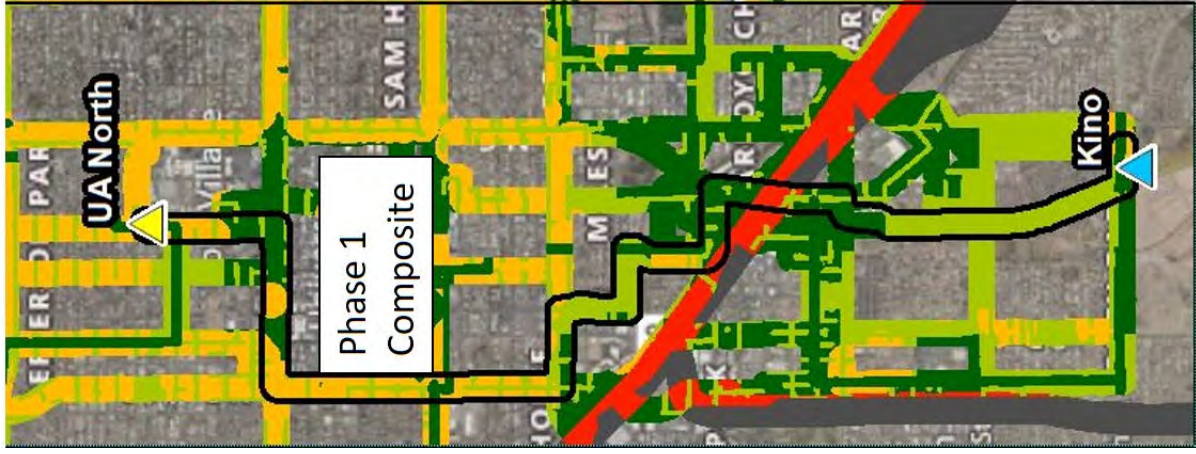
Figure C.10. Route D.

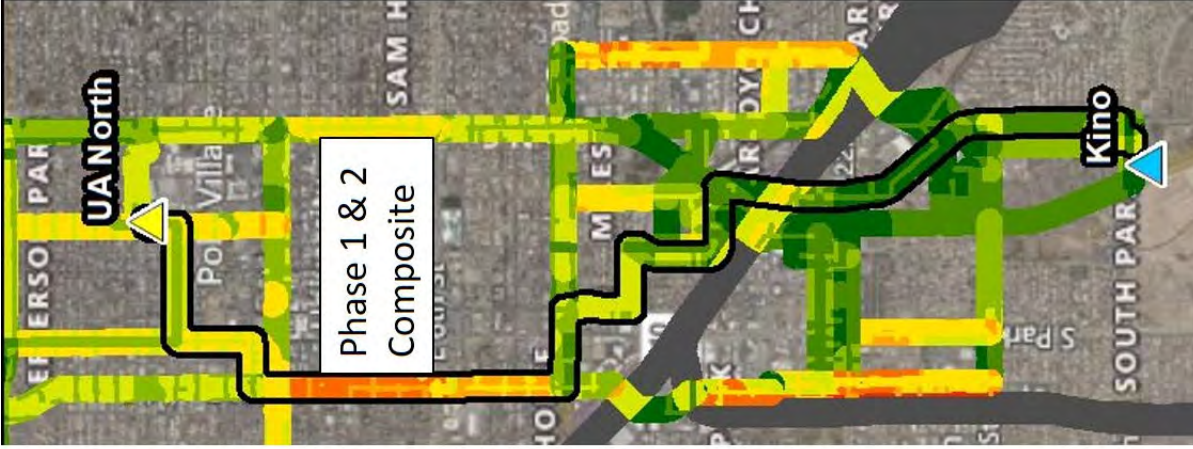
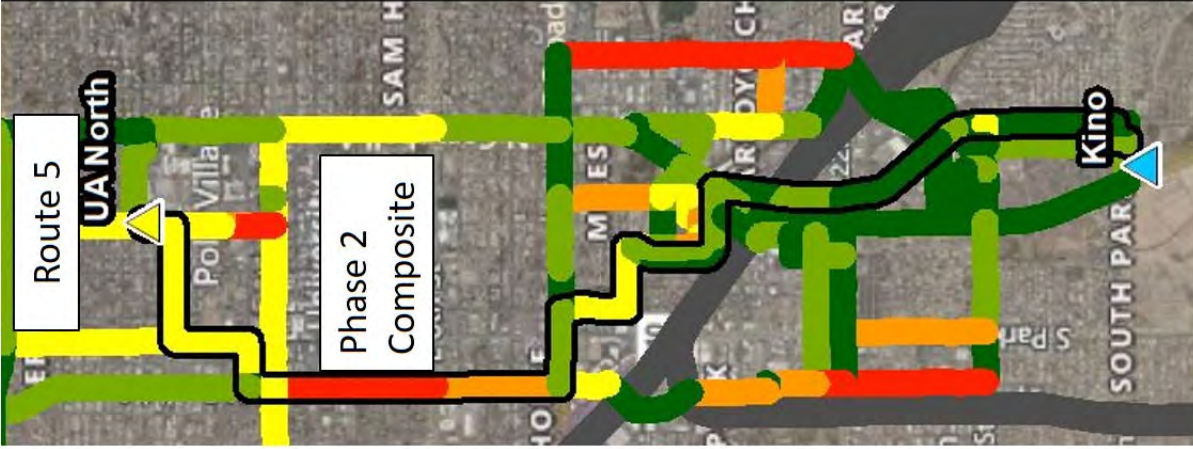
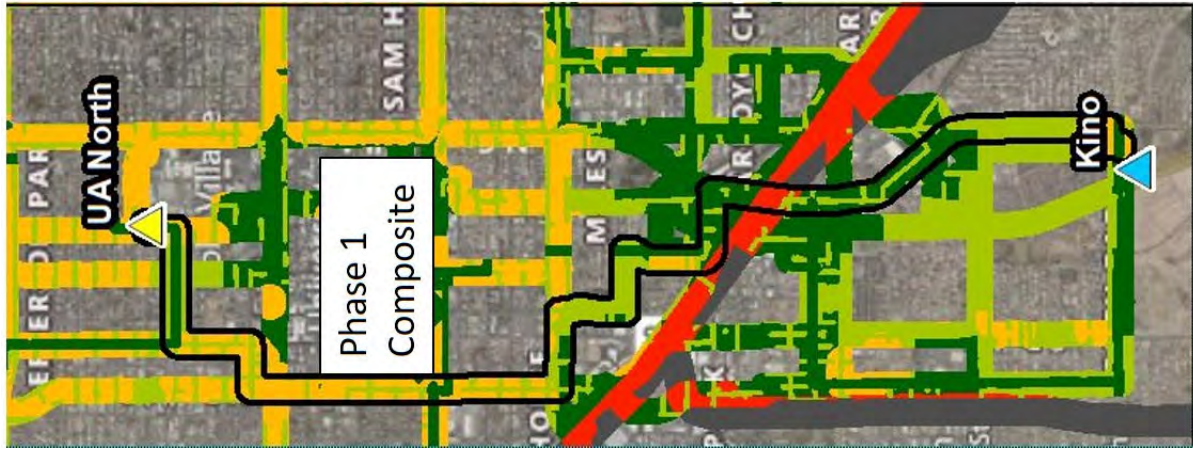
Appendix D. Summary Link Analysis Maps

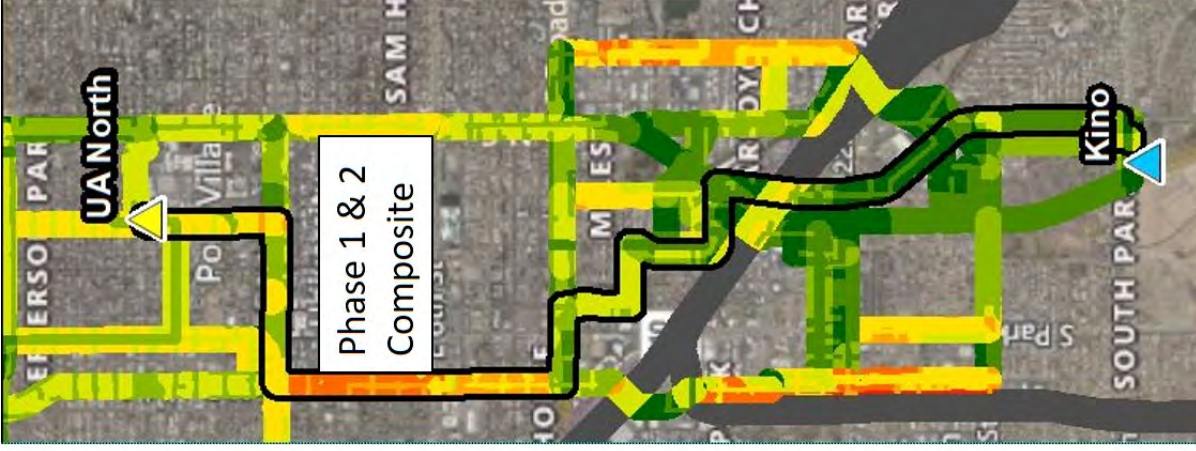
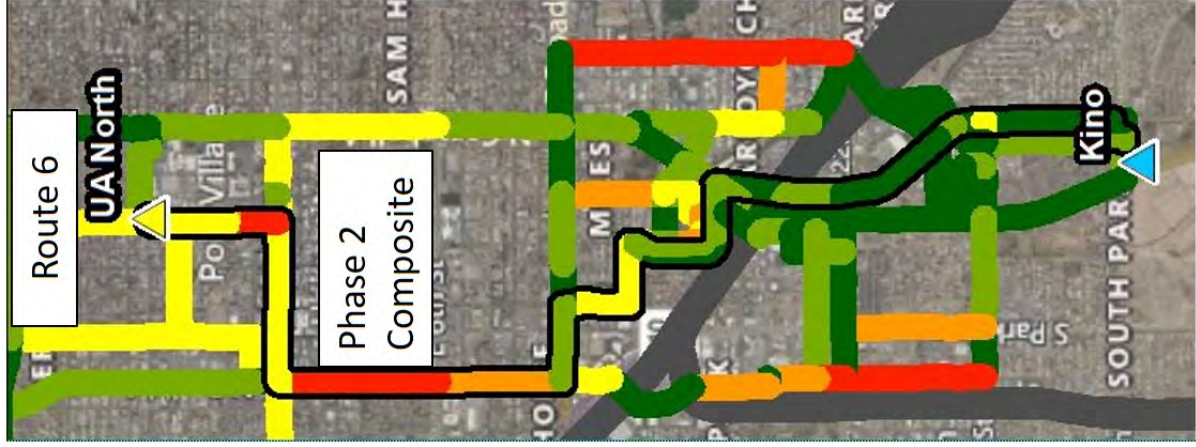
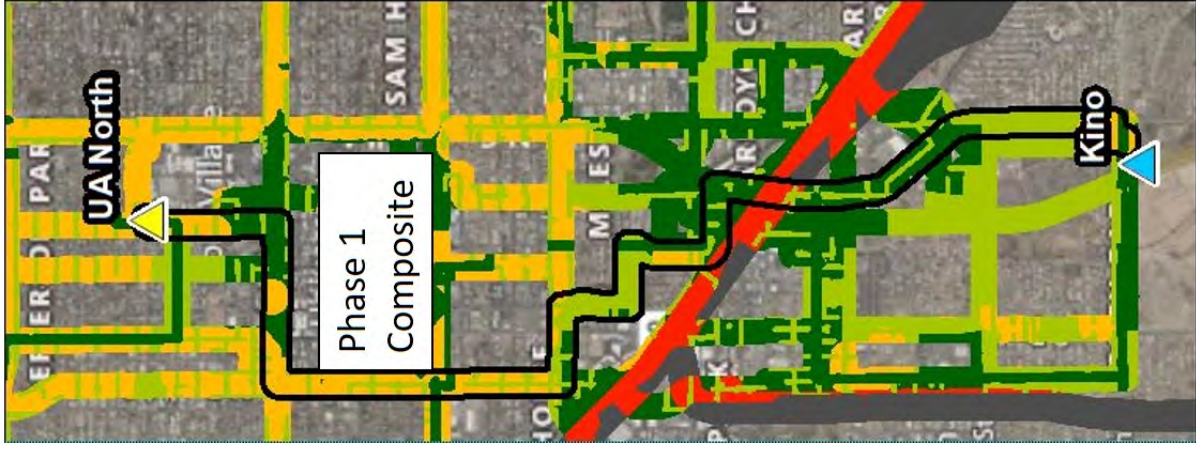


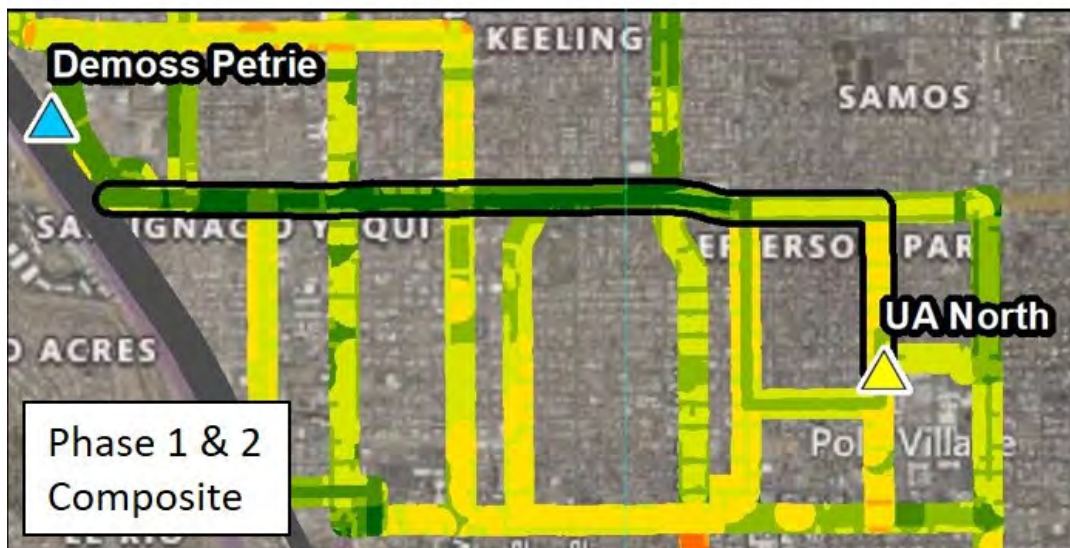
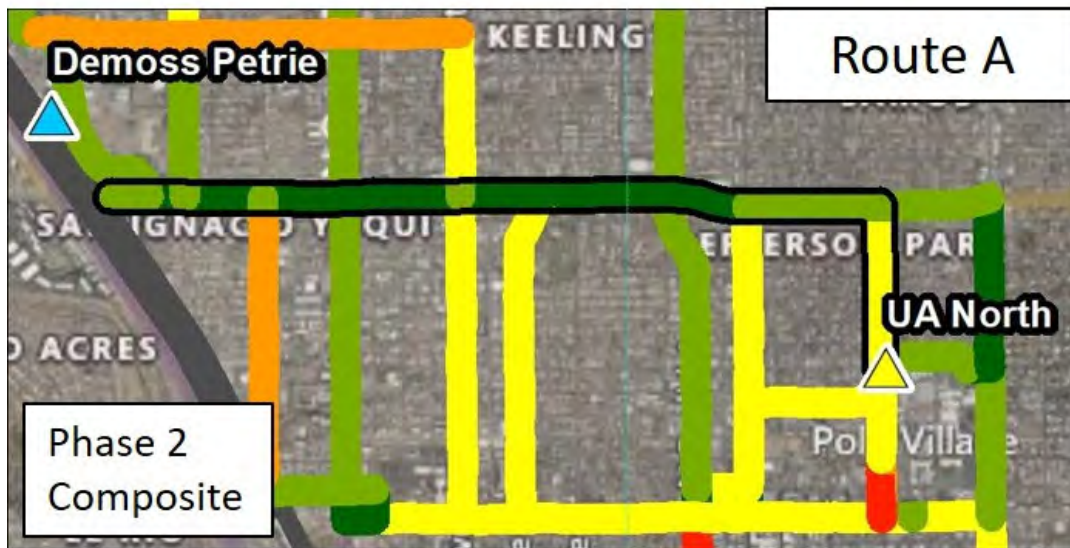
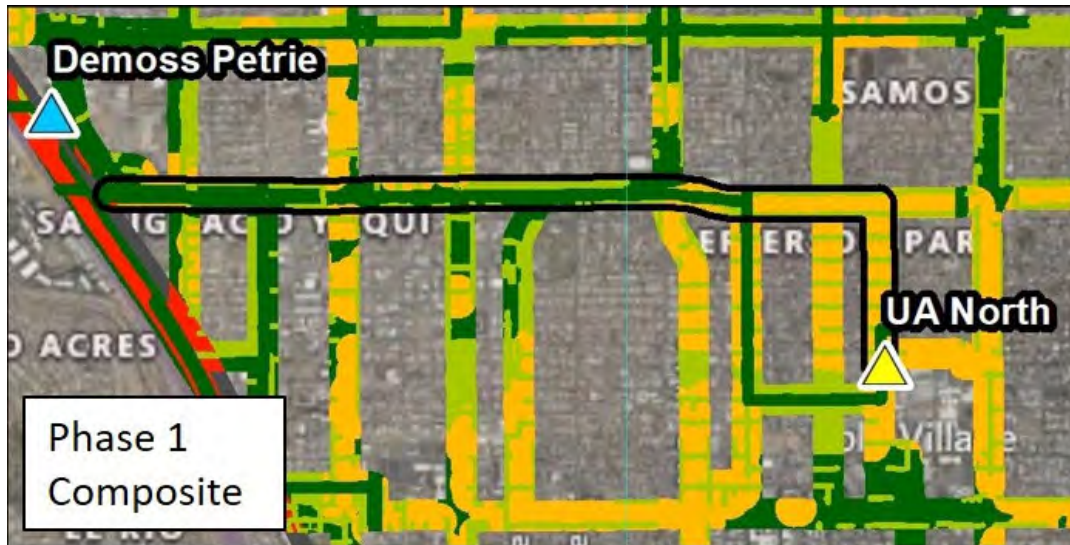


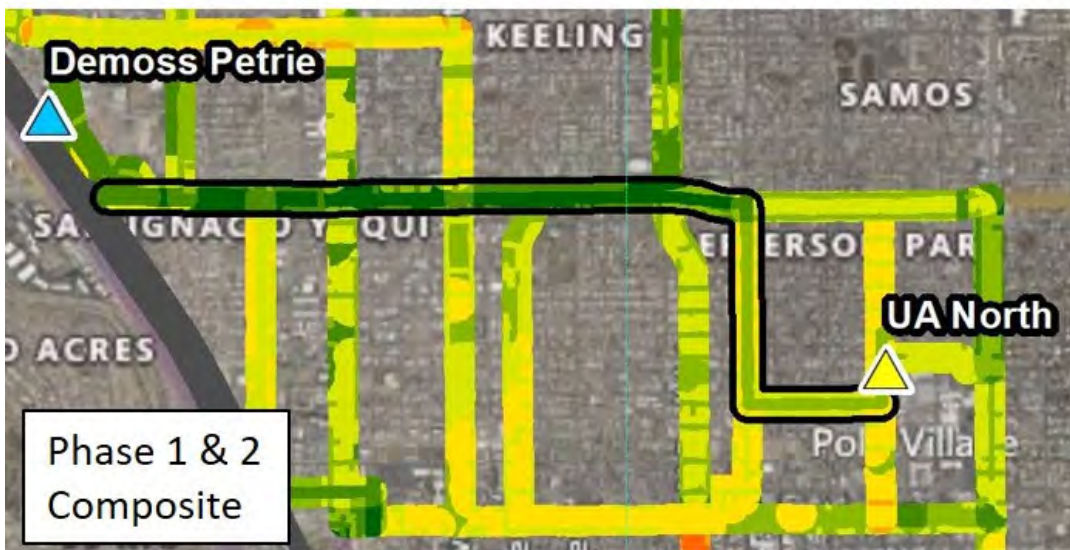
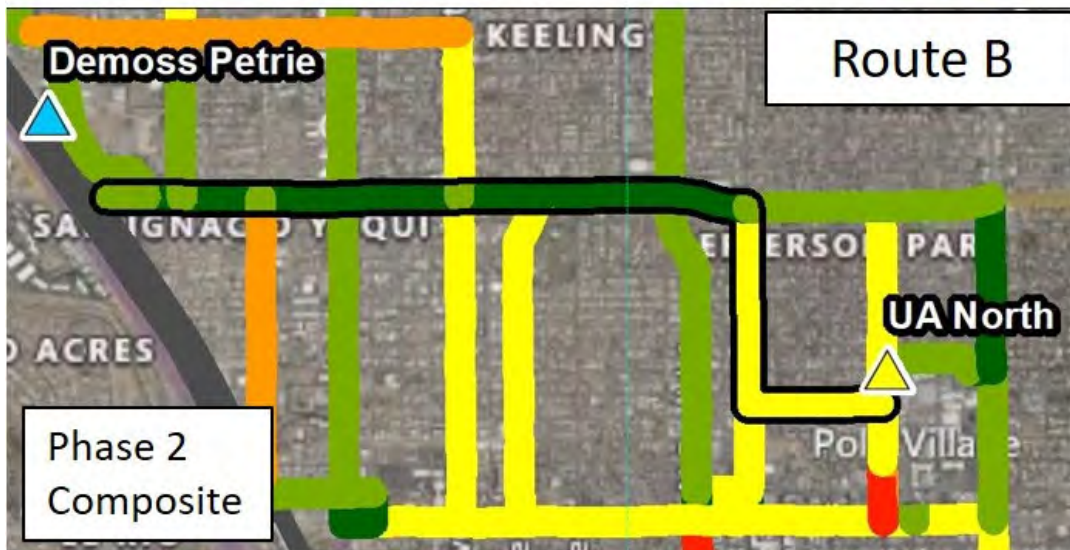
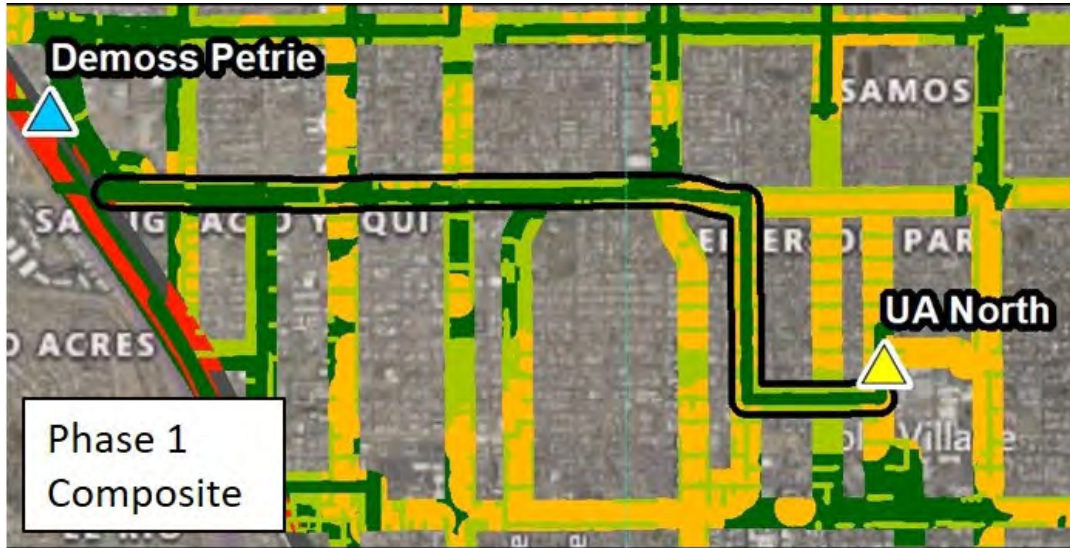


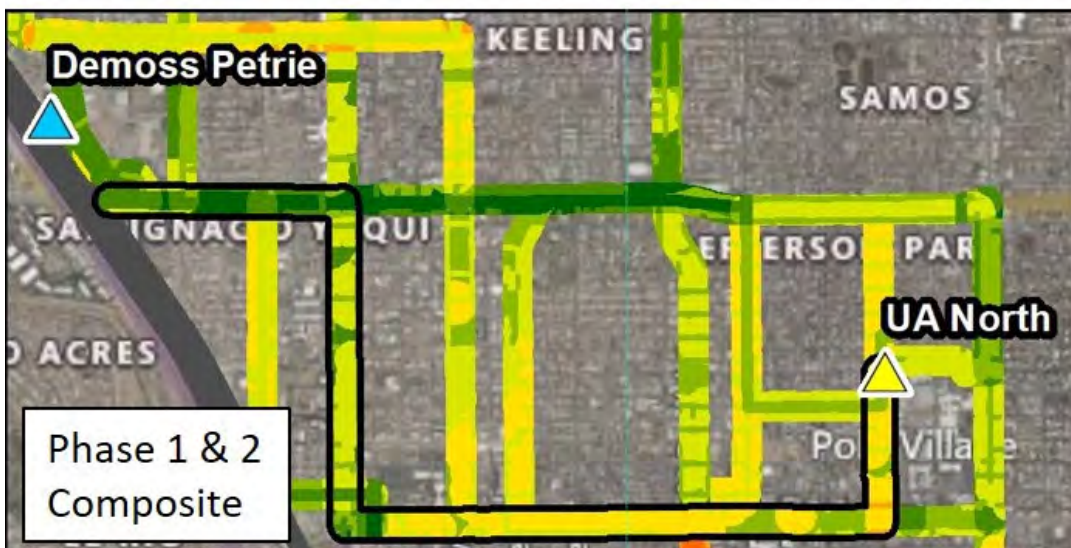


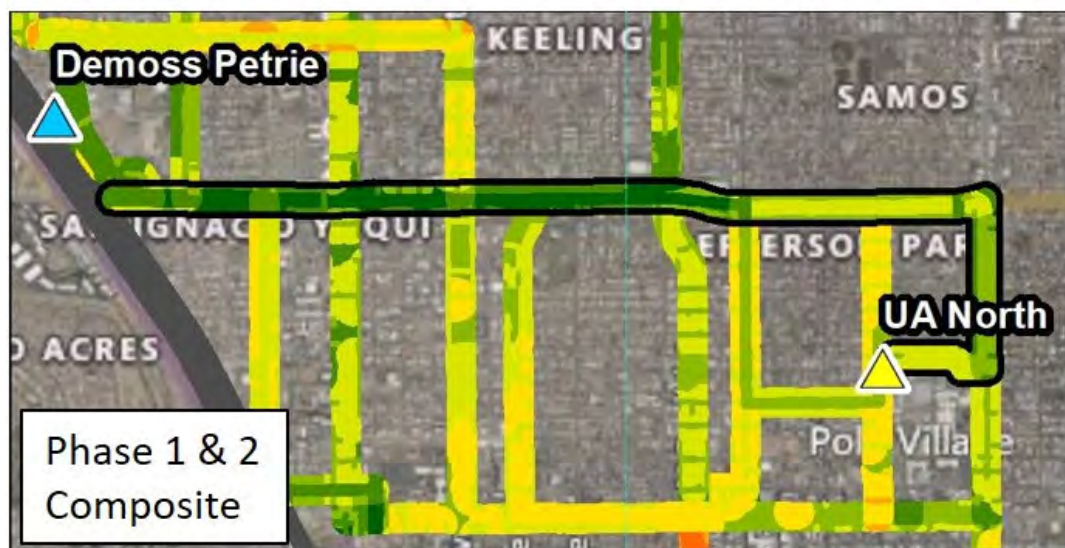
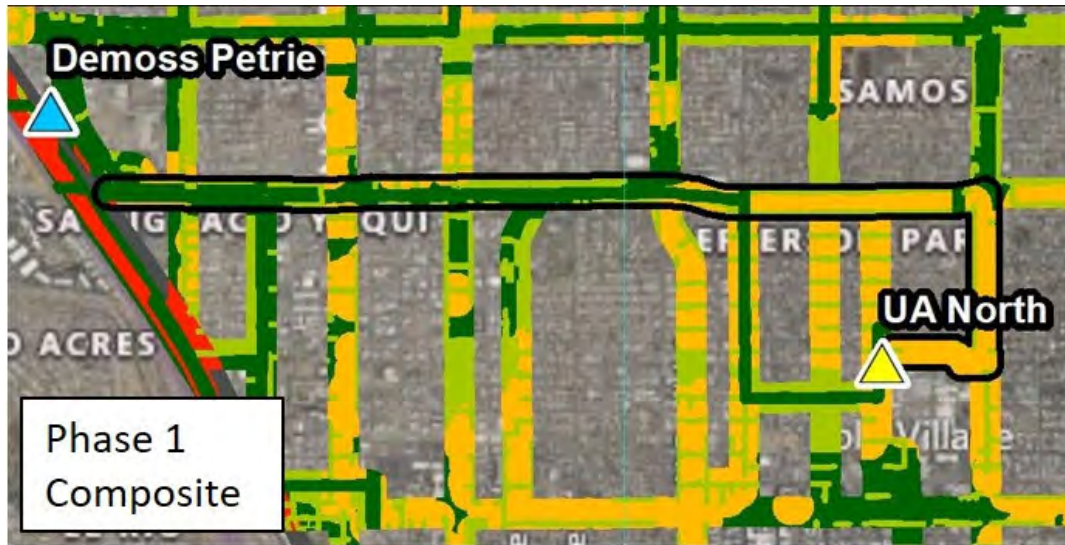












Appendix E. Table of Route Values

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Table E.1. Route Resource Scores

Route	Length (miles)	% Historic Properties	Historic Properties Rank	% Sensitive Receptors	Sensitive Receptors Rank	% Residential Use	Residential Use Rank	Resource Rank Total	Average Combined Resource Score	Average Constructability Score	Sum of Average Constructability and Resource Scores	Total Average Resource Score
1	4.01	36.9	2	22.49	3	47.1	2	7	2.333333333	2.25	4.583333333	2.291667
2	4	37.5	2	27.2	2	39.8	2	6	2	2.35	4.35	2.175
3	5	31.7	2	17.7	3	58.6	1	6	2	2.34	4.34	2.17
4	5.01	26.4	2	17	3	46.6	2	7	2.333333333	2.29	4.623333333	2.311667
5	4.93	32.1	2	21.5	3	52.7	1	6	2	2.3	4.3	2.15
6	4.95	26.8	2	20.8	3	40.7	2	7	2.333333333	2.24	4.573333333	2.286667
A	2.87	40.3	2	17.4	3	44.5	2	7	2.333333333	2.63	4.963333333	2.481667
B	2.97	28.6	2	14.1	3	48	2	7	2.333333333	2.7	5.033333333	2.516667
C	3.82	54.6	1	33.8	2	20.6	3	6	2	2.18	4.18	2.09
D	3.56	49.9	2	26.1	2	47.8	2	6	2	2.64	4.64	2.32

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Appendix F. Route Analysis Maps

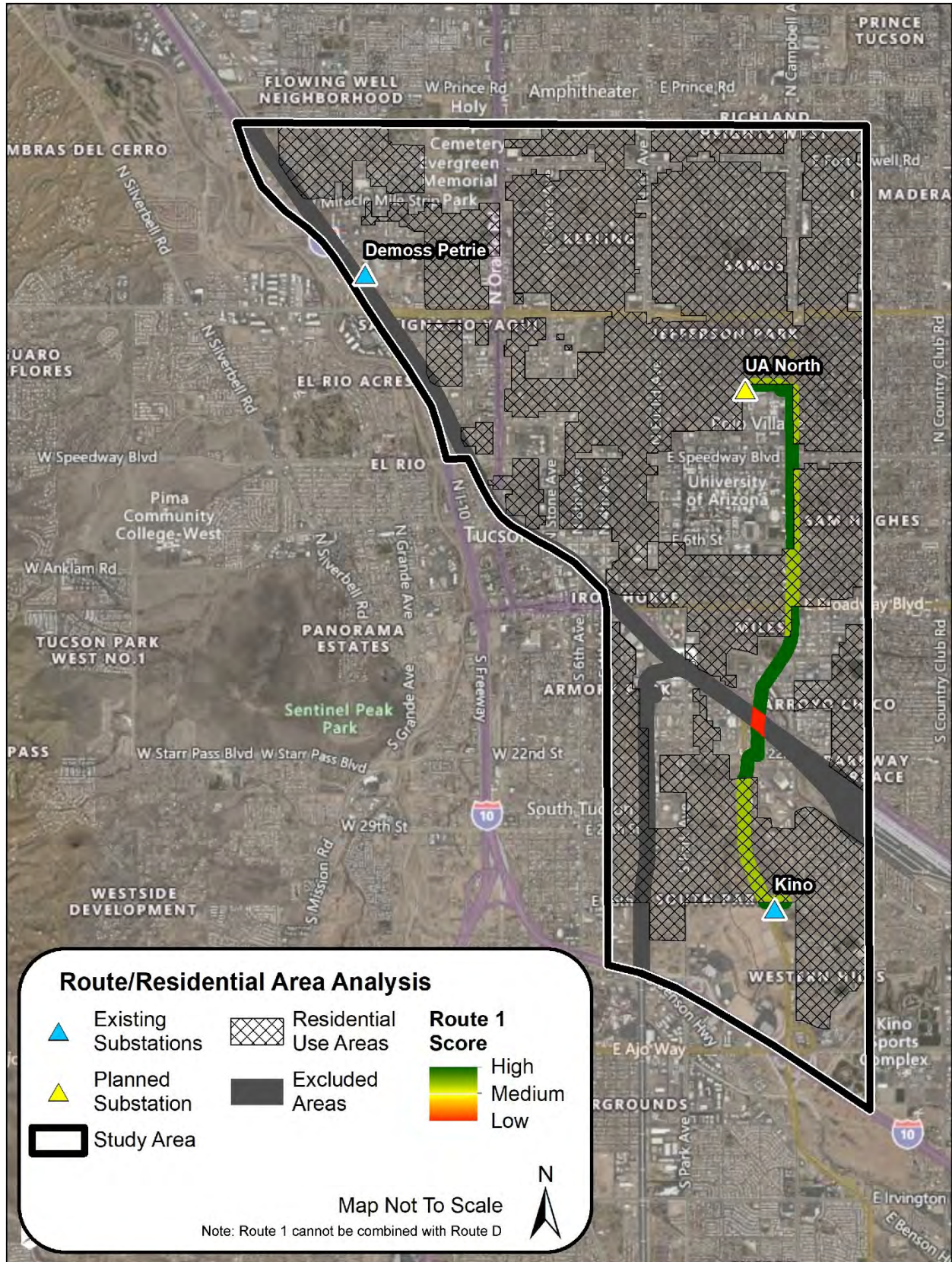


Figure F.1. Residential Use—Route 1.

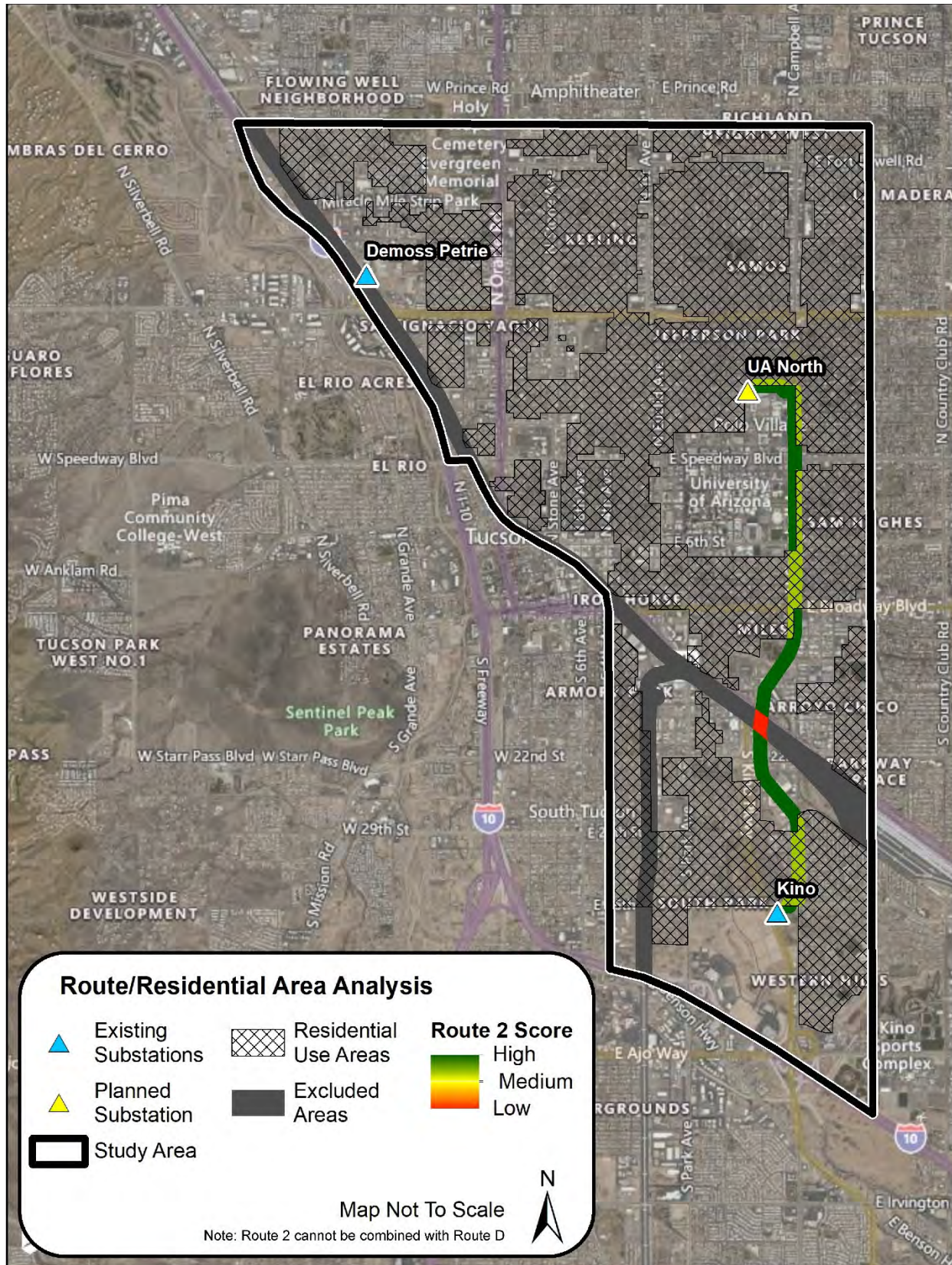


Figure F.2. Residential Use—Route 2.

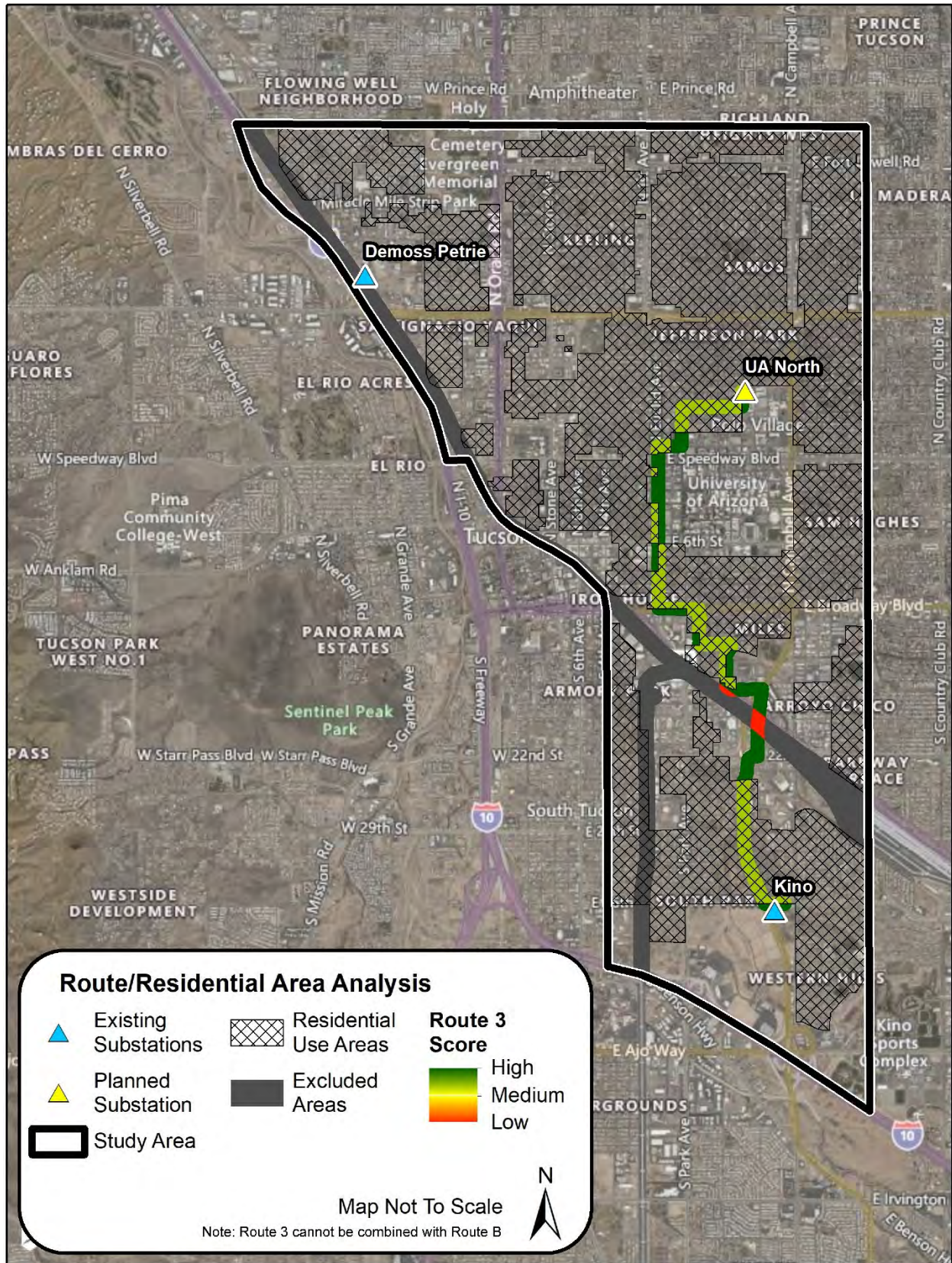


Figure F.3. Residential Use—Route 3.

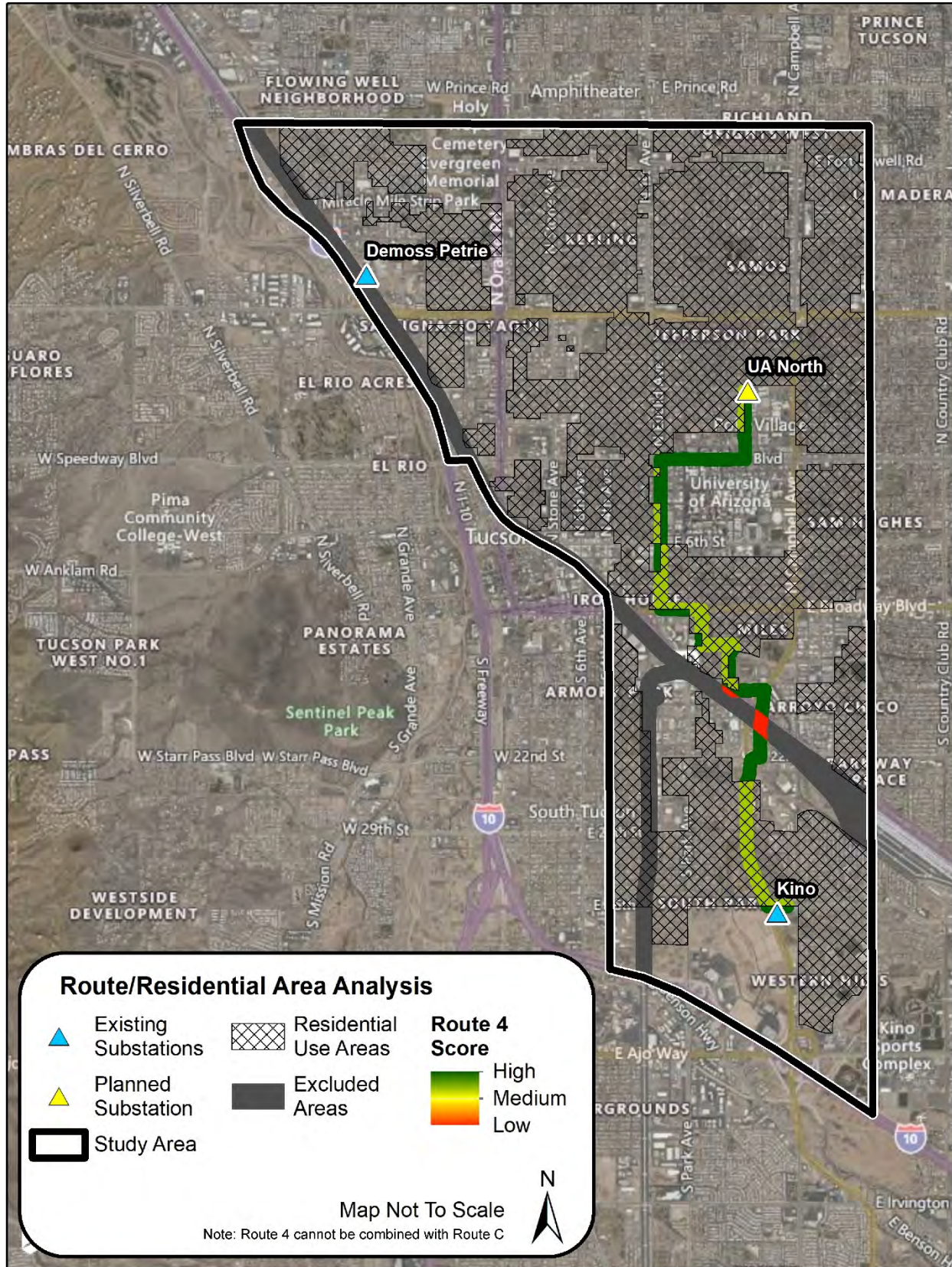


Figure F.4. Residential Use—Route 4.

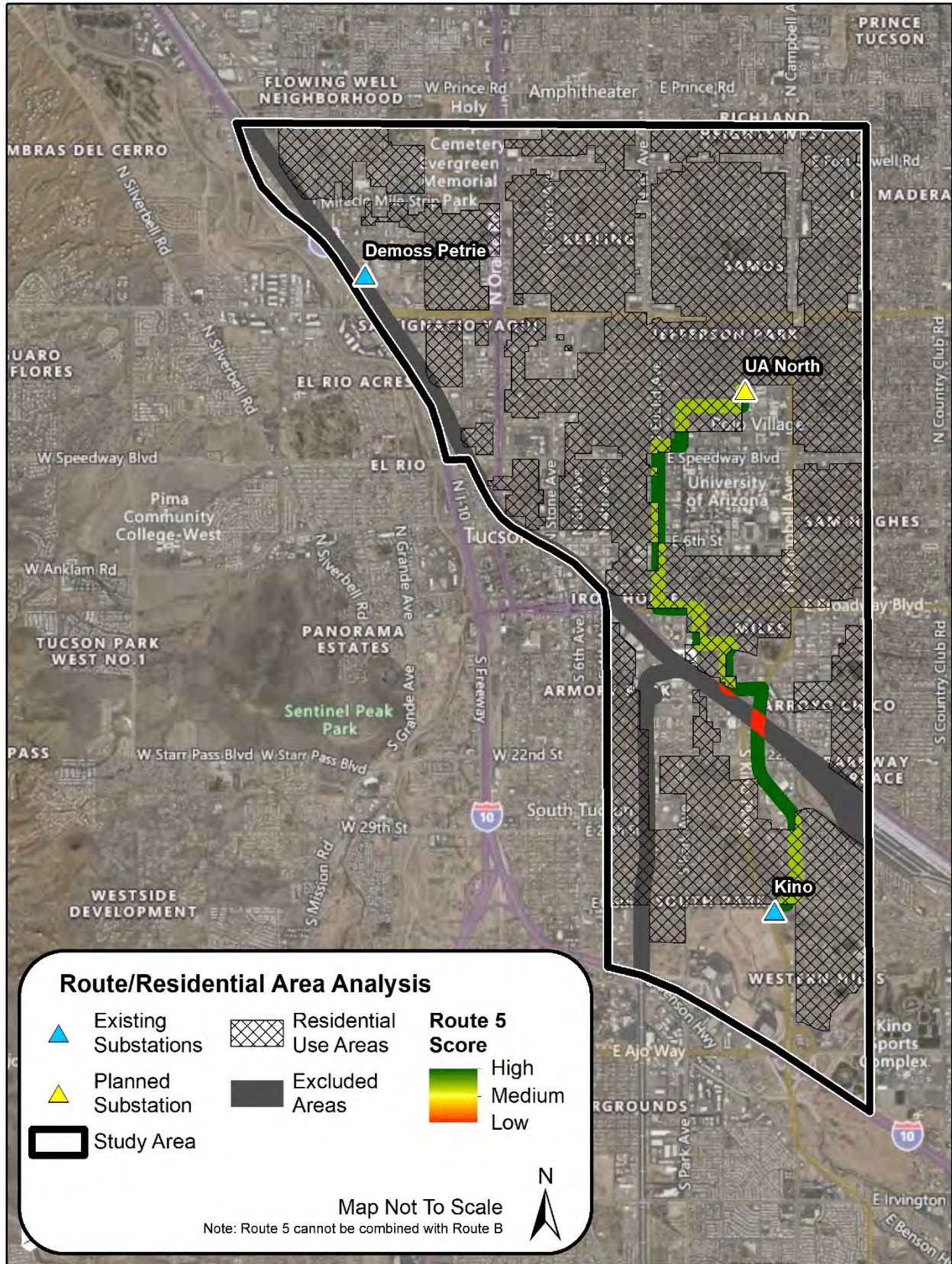


Figure F.5. Residential Use—Route 5.

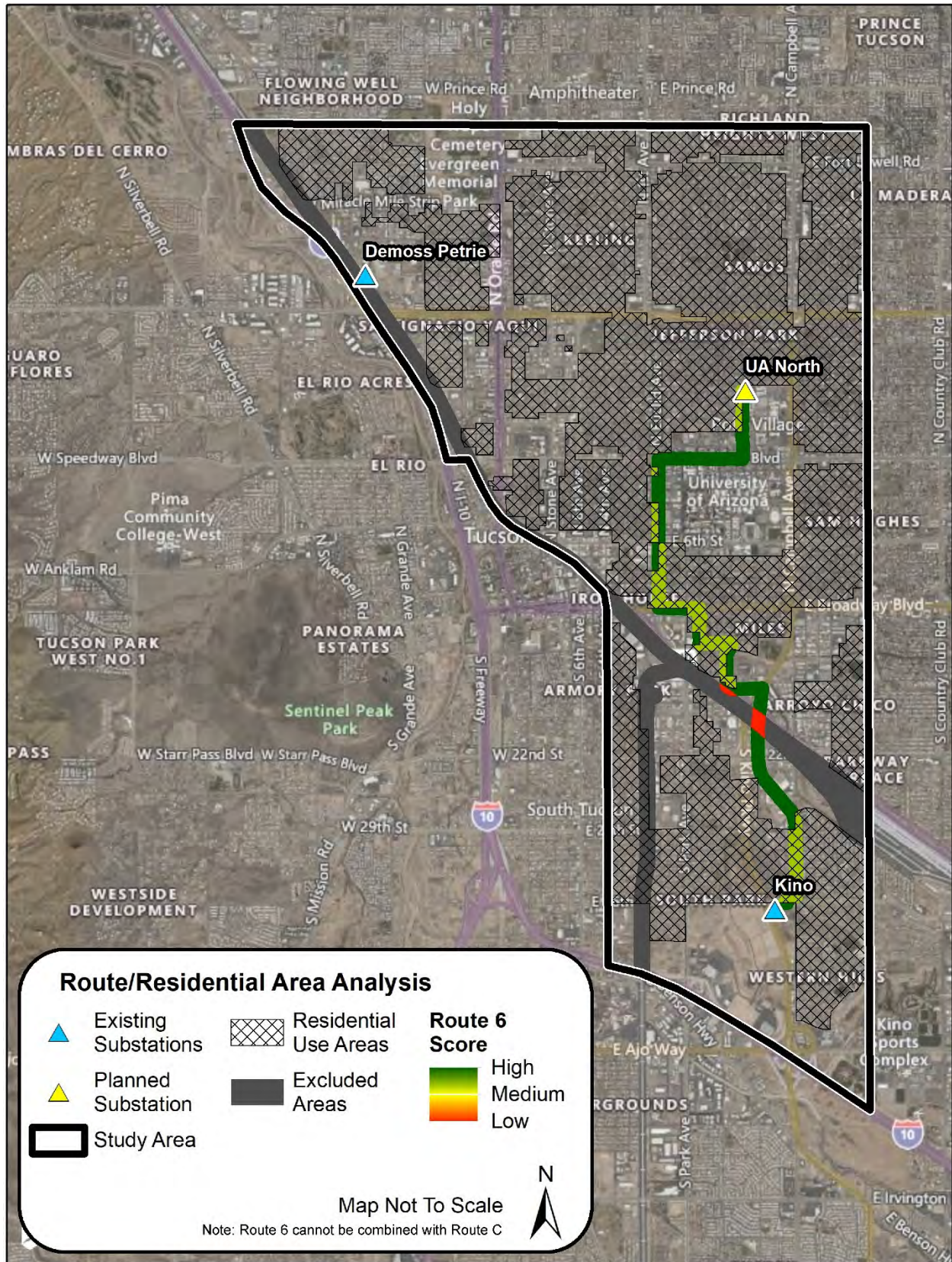


Figure F.6. Residential Use—Route 6.

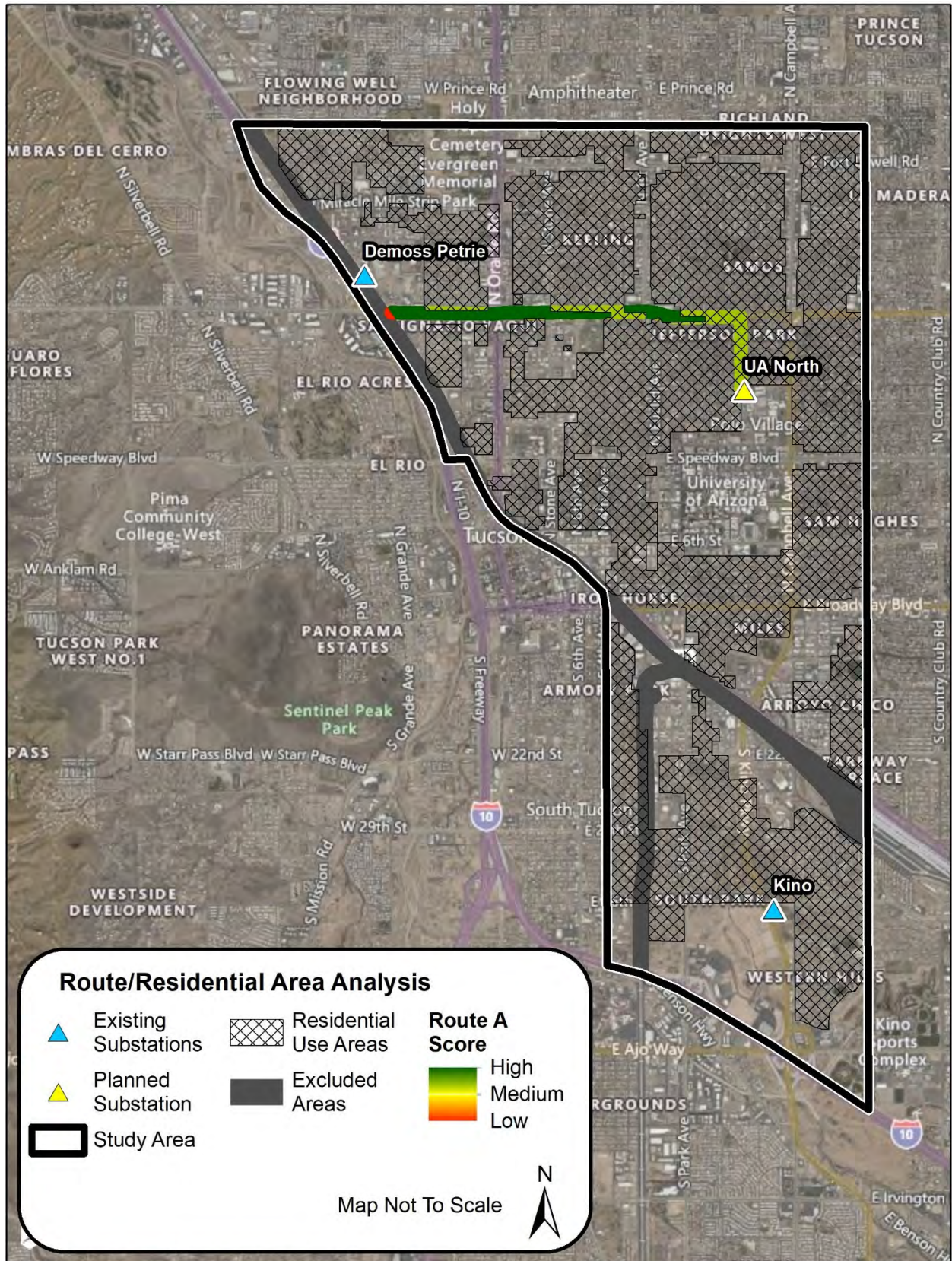


Figure F.7. Residential Use—Route A.

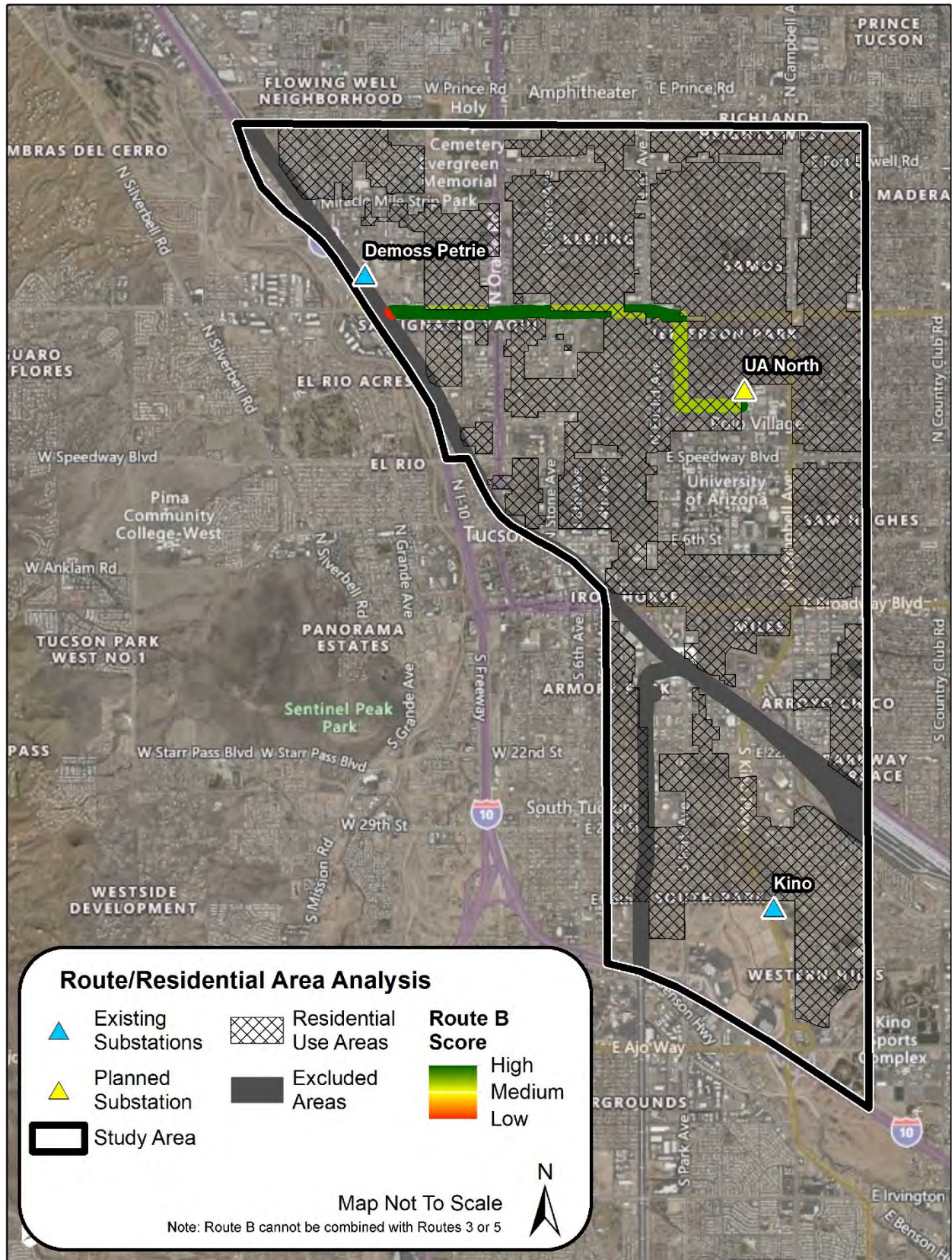


Figure F.8. Residential Use—Route B.

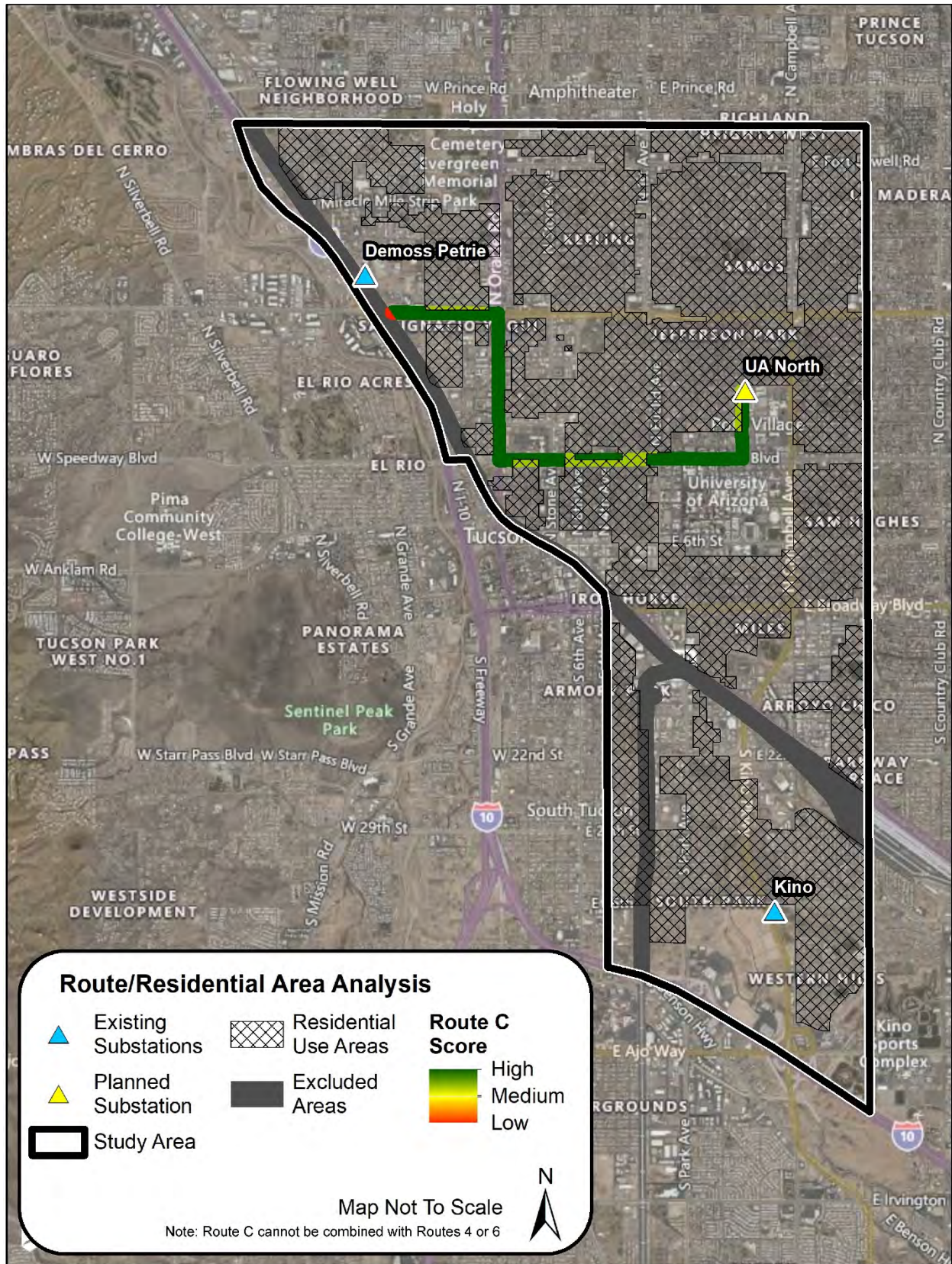


Figure F.9. Residential Use—Route C.

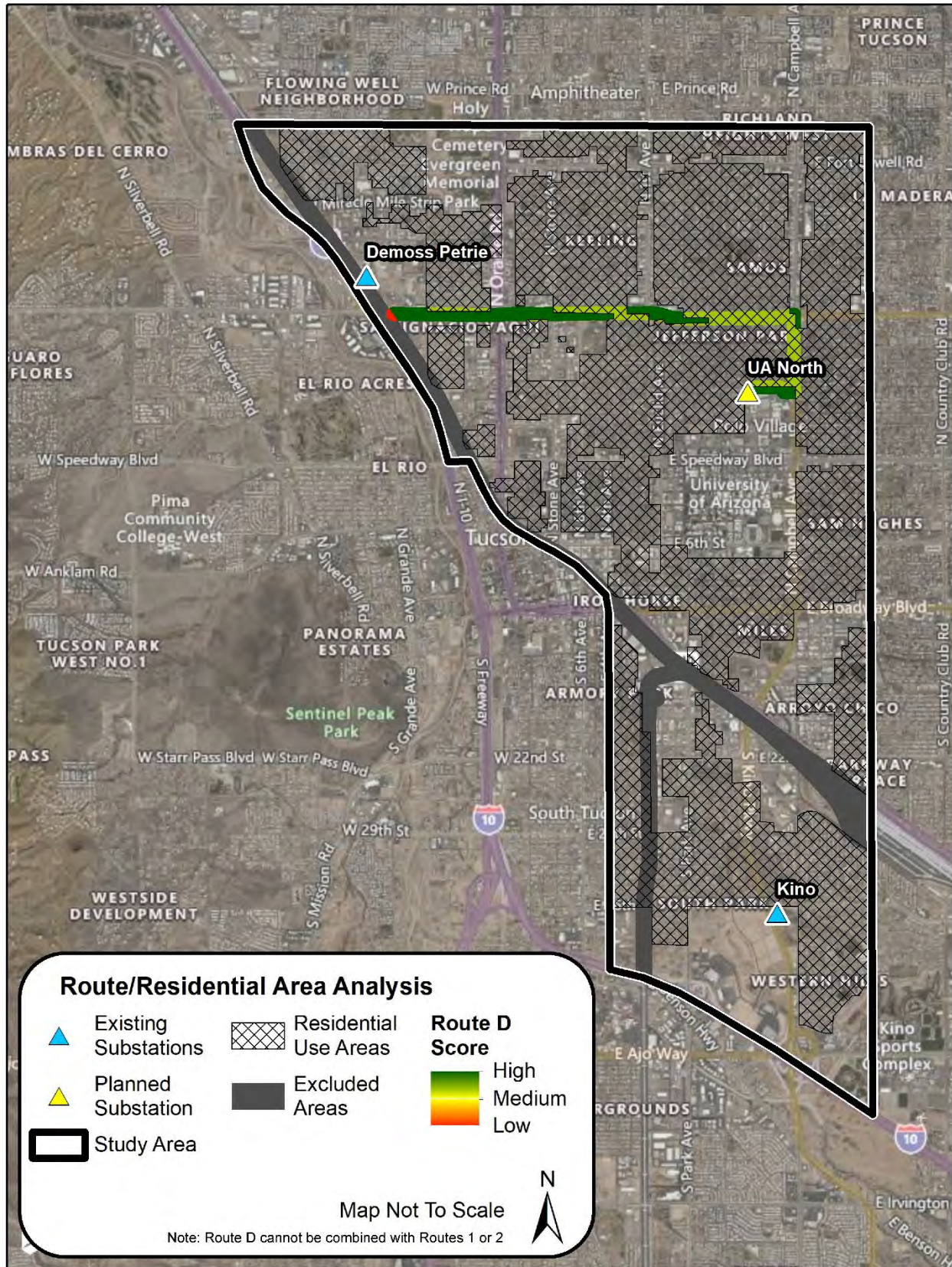


Figure F.10. Residential Use—Route D.

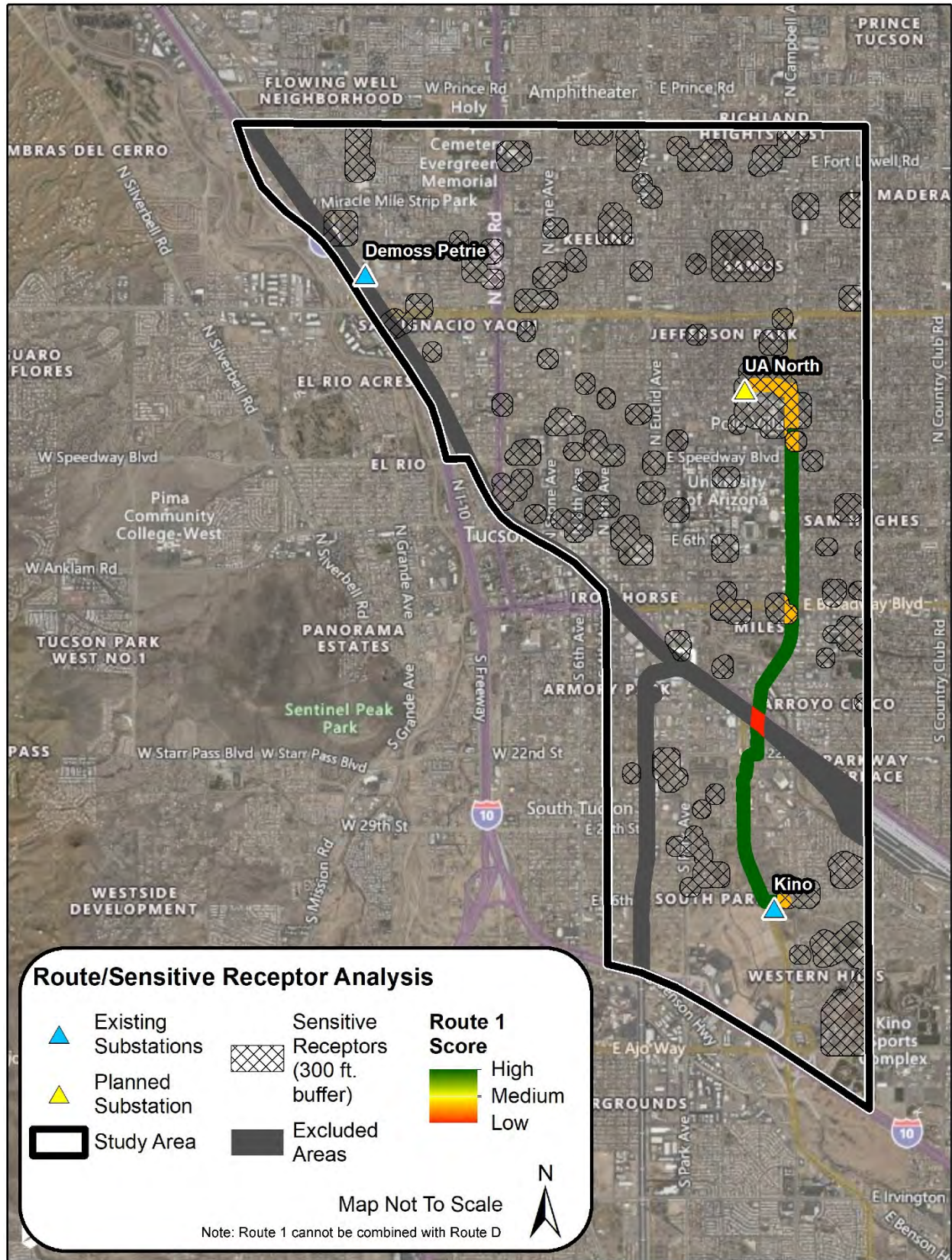


Figure F.11. Sensitive Receptors—Route 1.

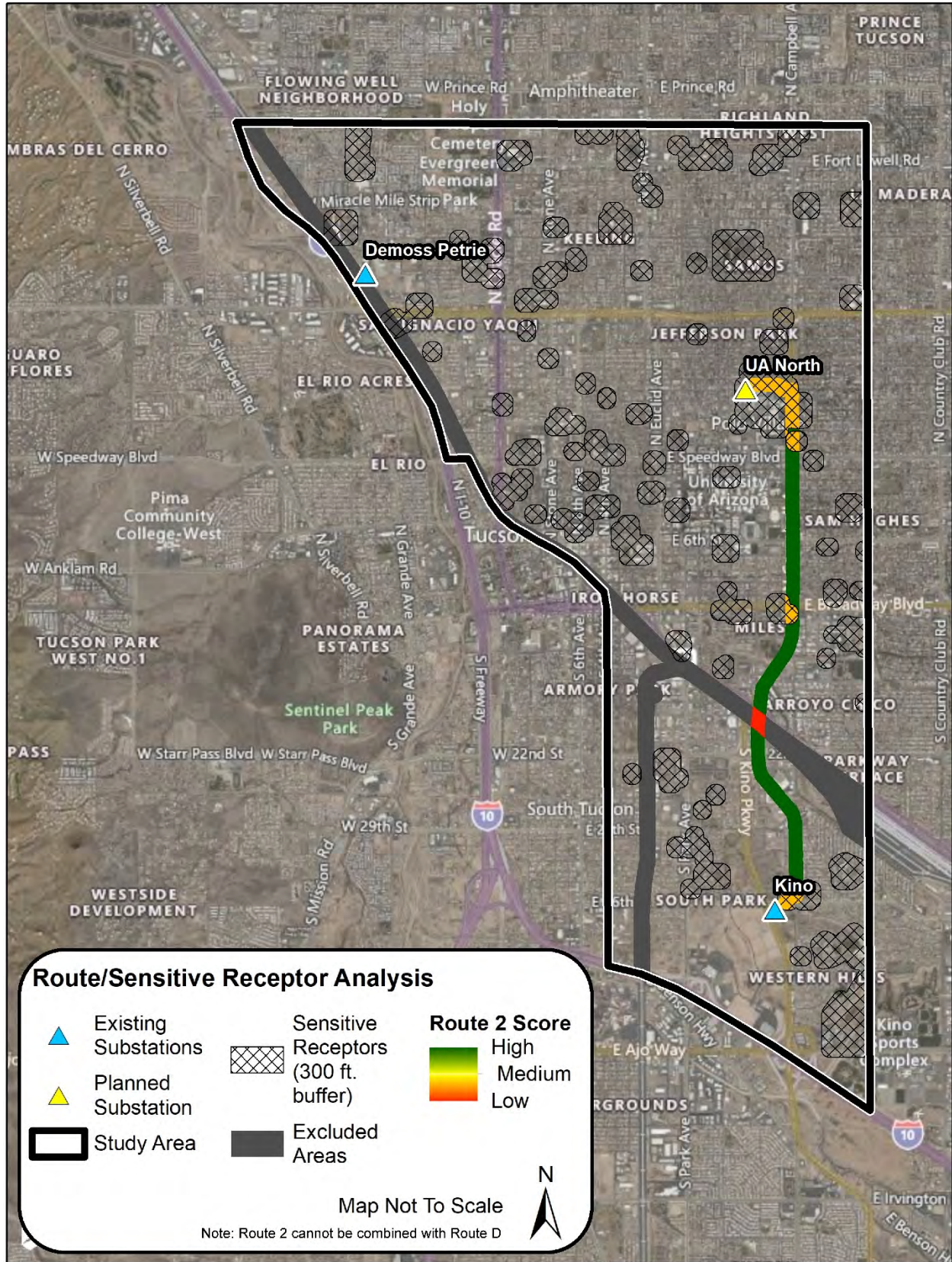


Figure F.12. Sensitive Receptors—Route 2.

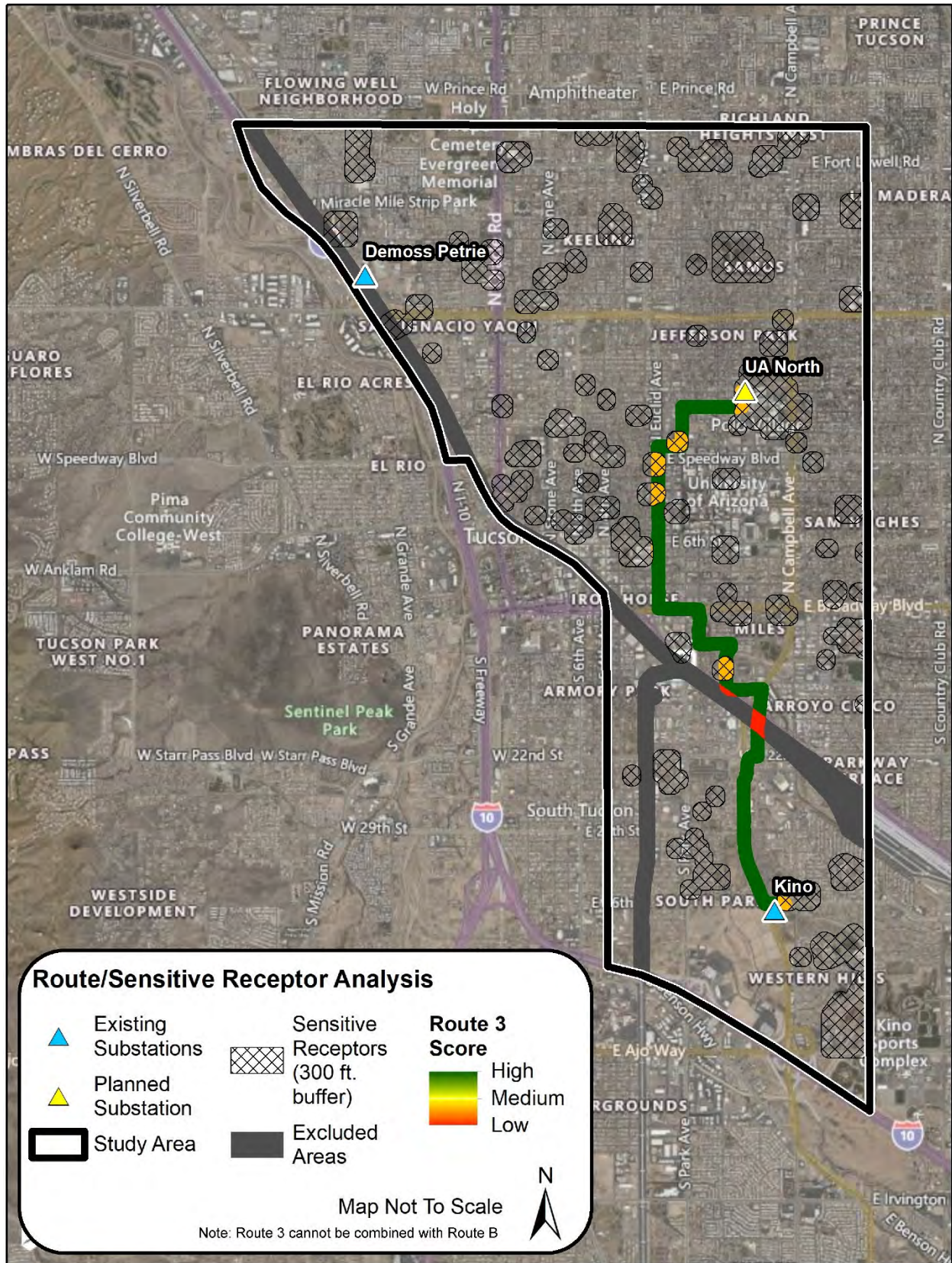


Figure F.13. Sensitive Receptors—Route 3.

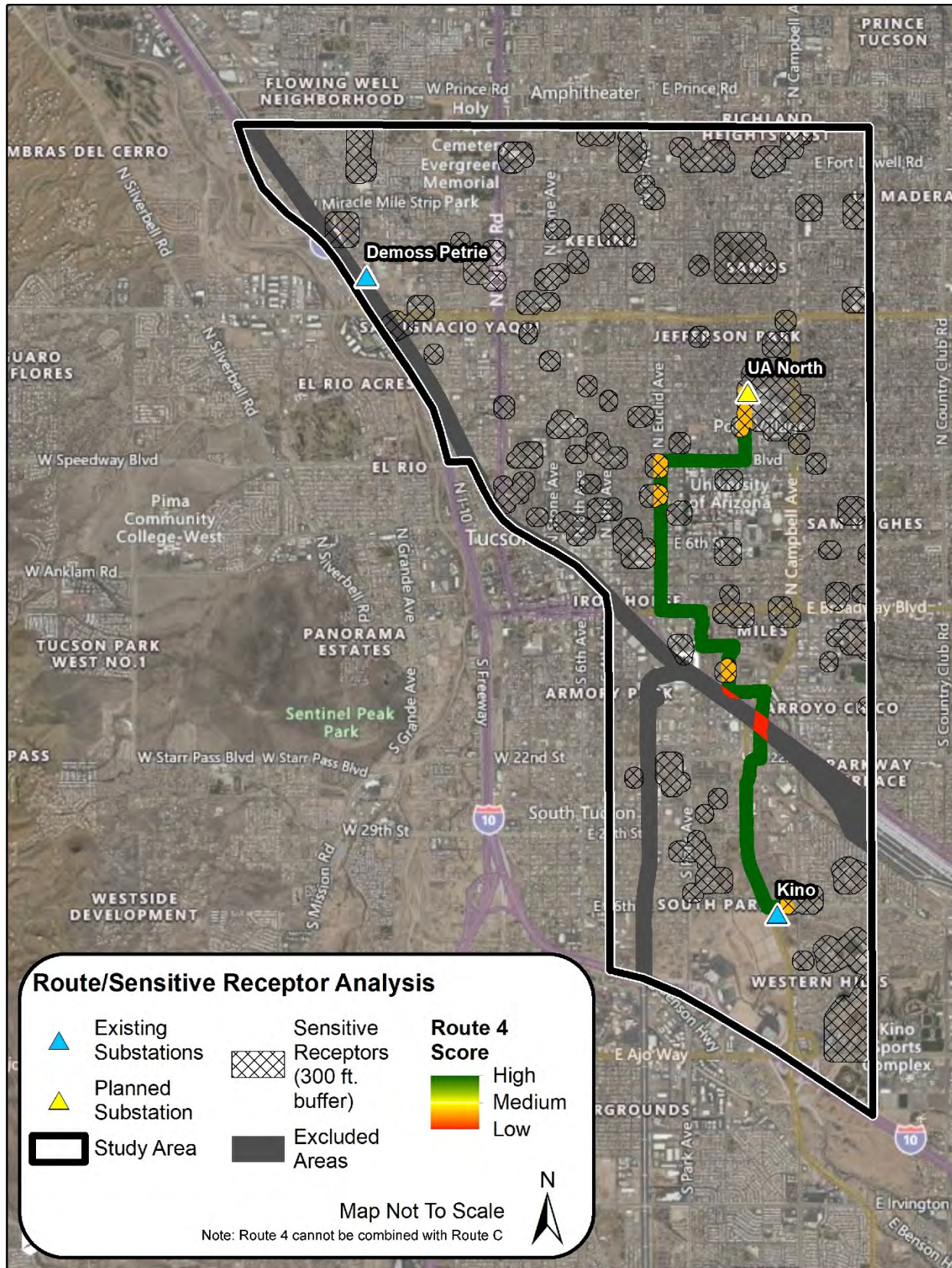


Figure F.14. Sensitive Receptors—Route 4.

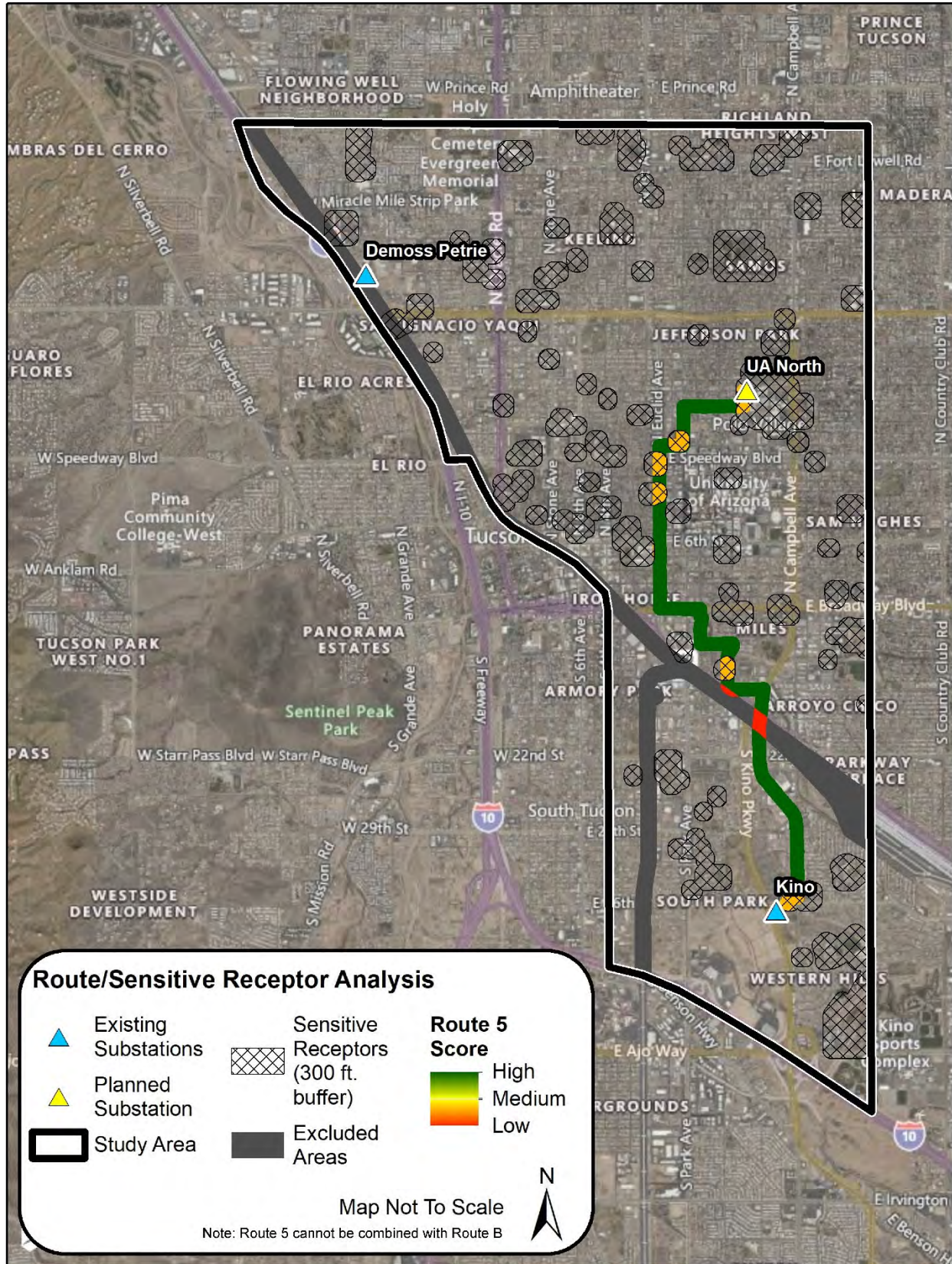


Figure F.15. Sensitive Receptors—Route 5.

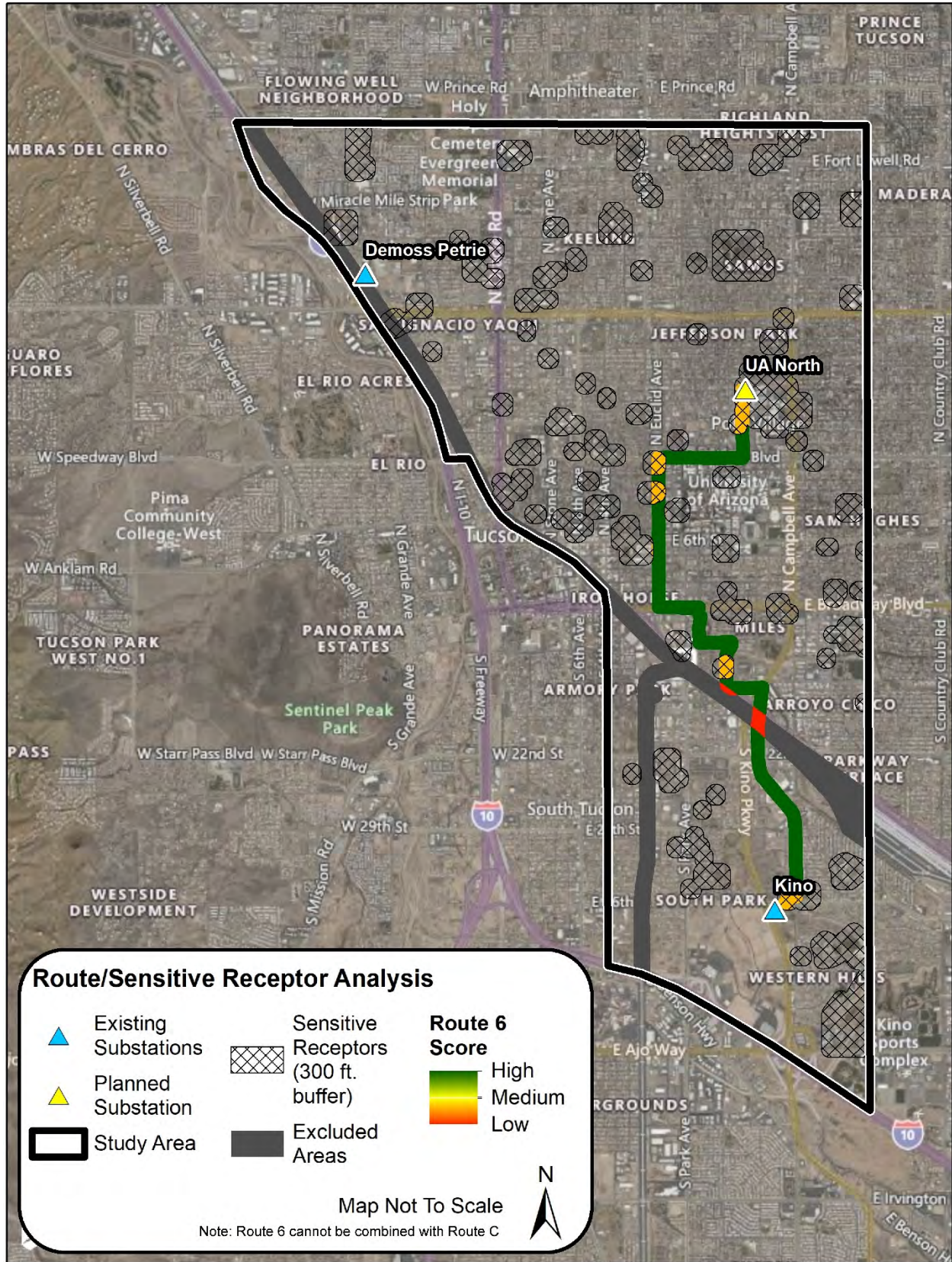


Figure F.16. Sensitive Receptors—Route 6.

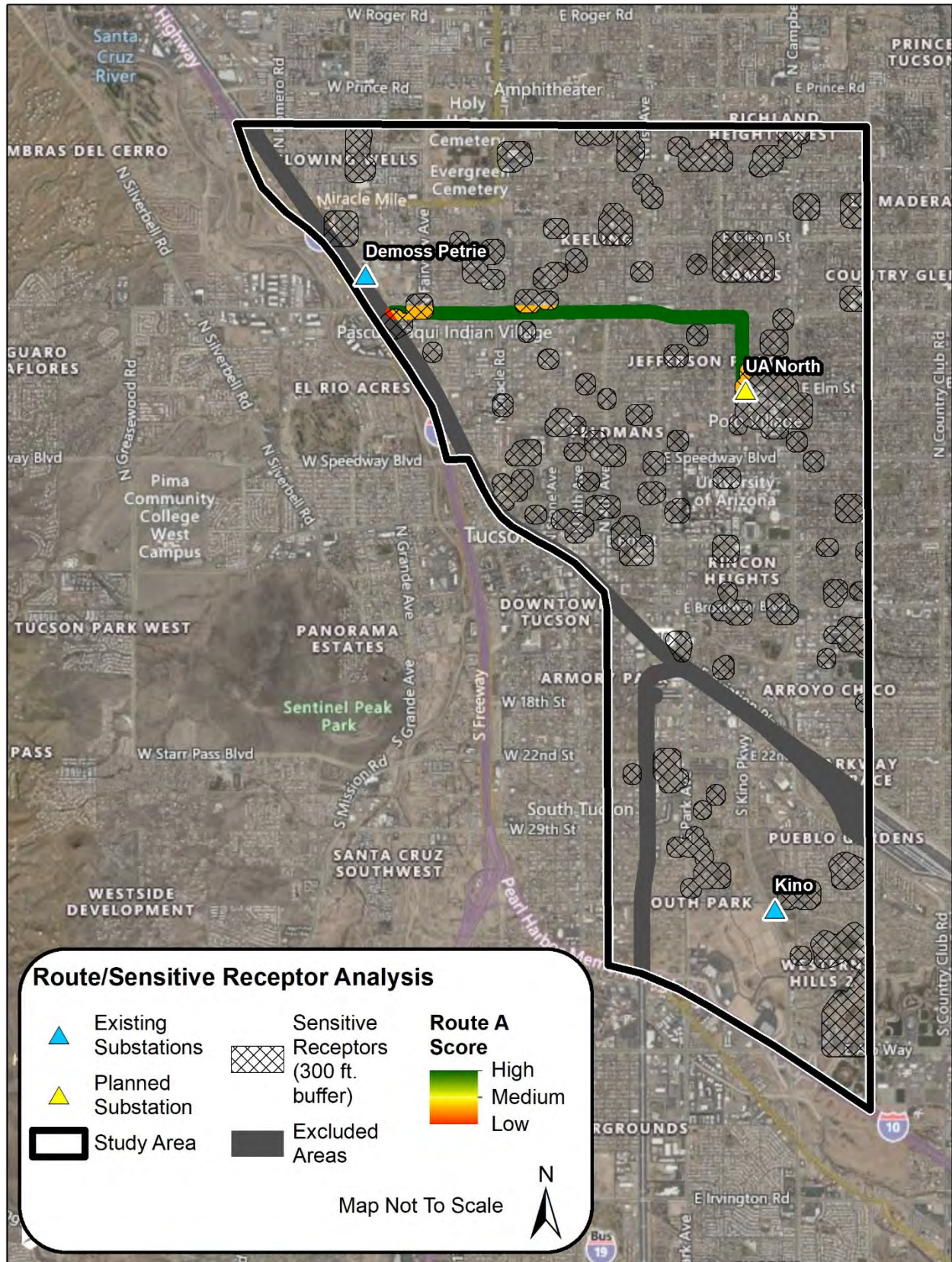


Figure F.17. Sensitive Receptors—Route A.

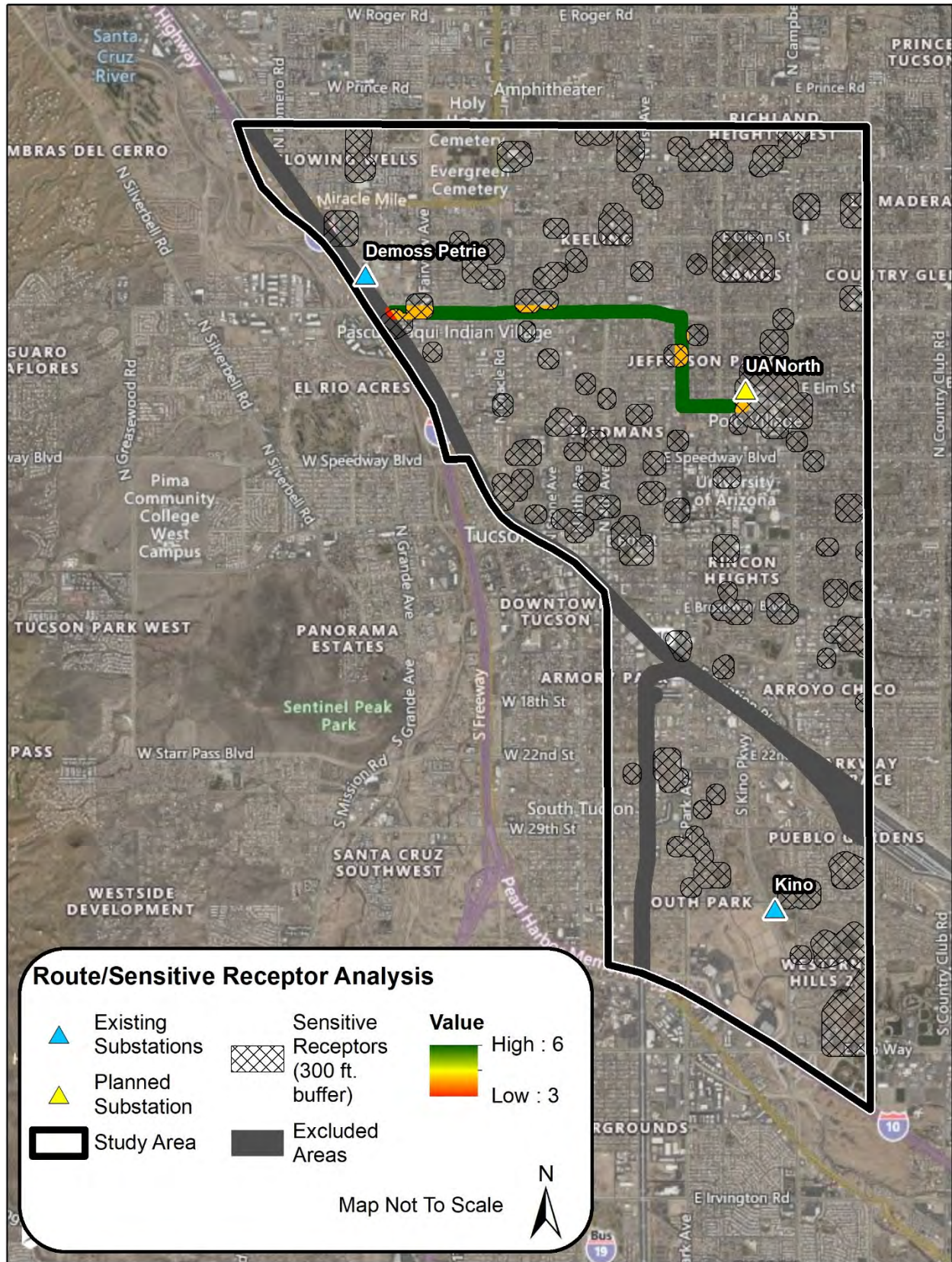


Figure F.18. Sensitive Receptors—Route B.

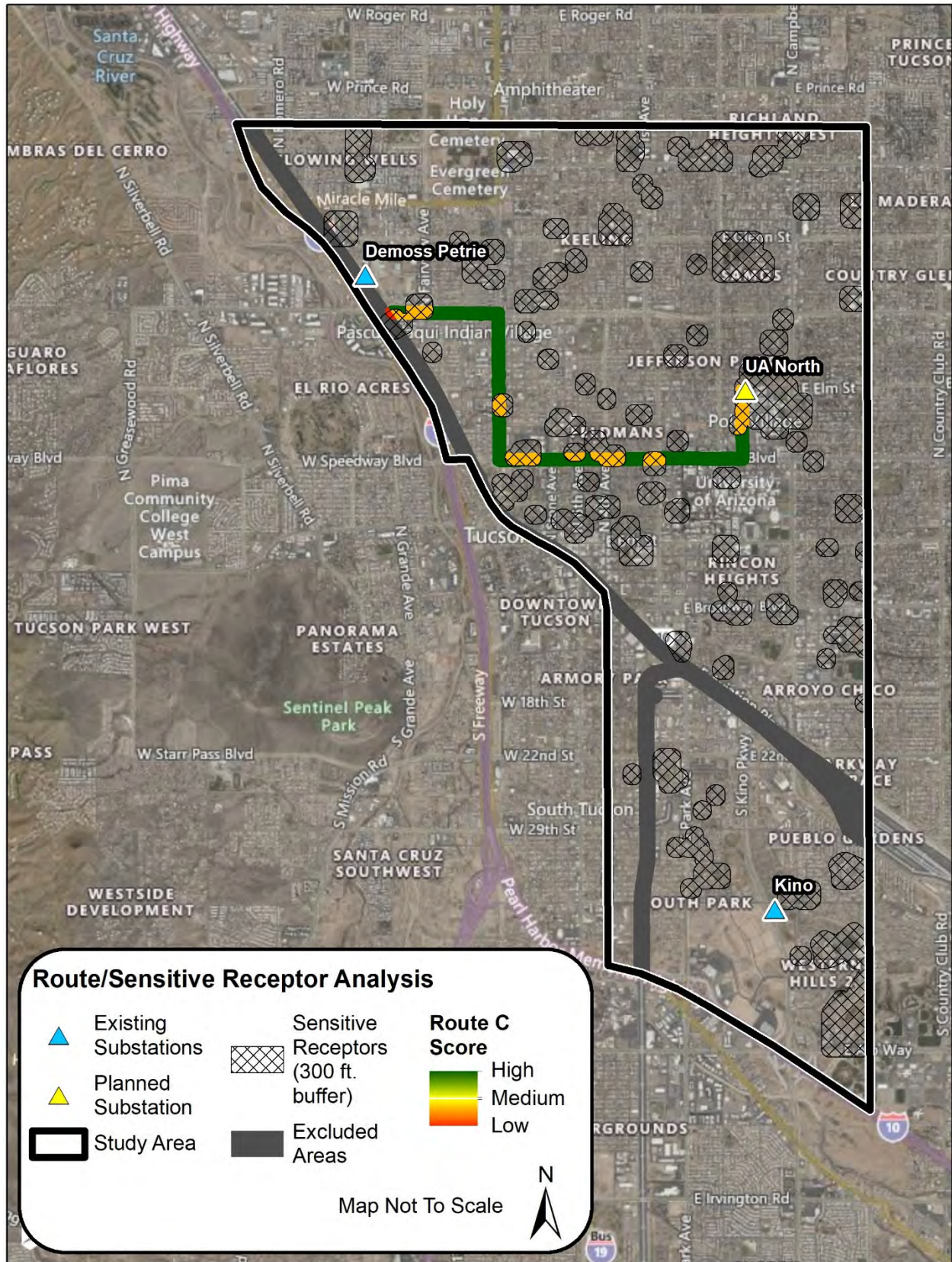


Figure F.19. Sensitive Receptors—Route C.

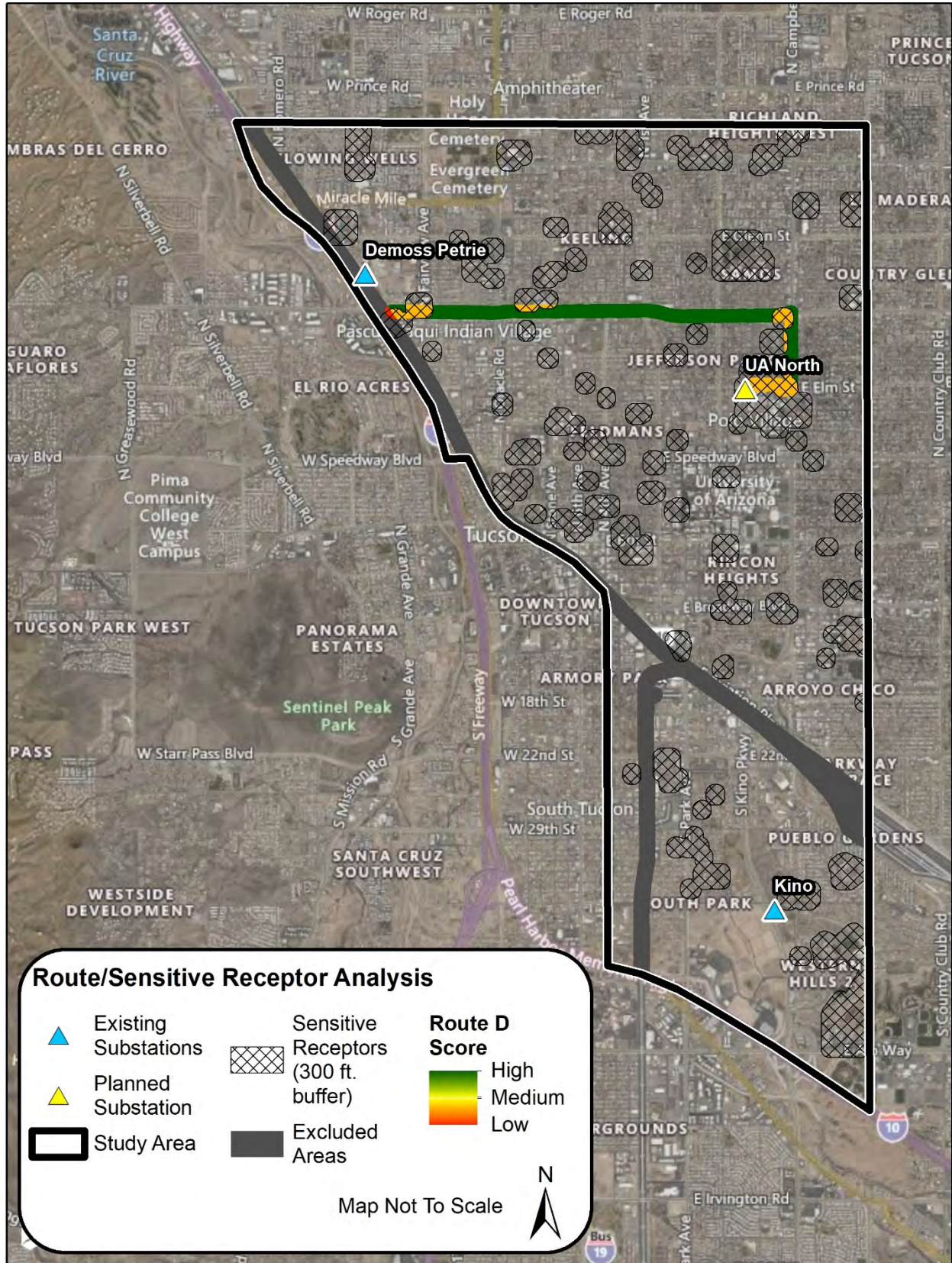


Figure F.20. Sensitive Receptors—Route D.

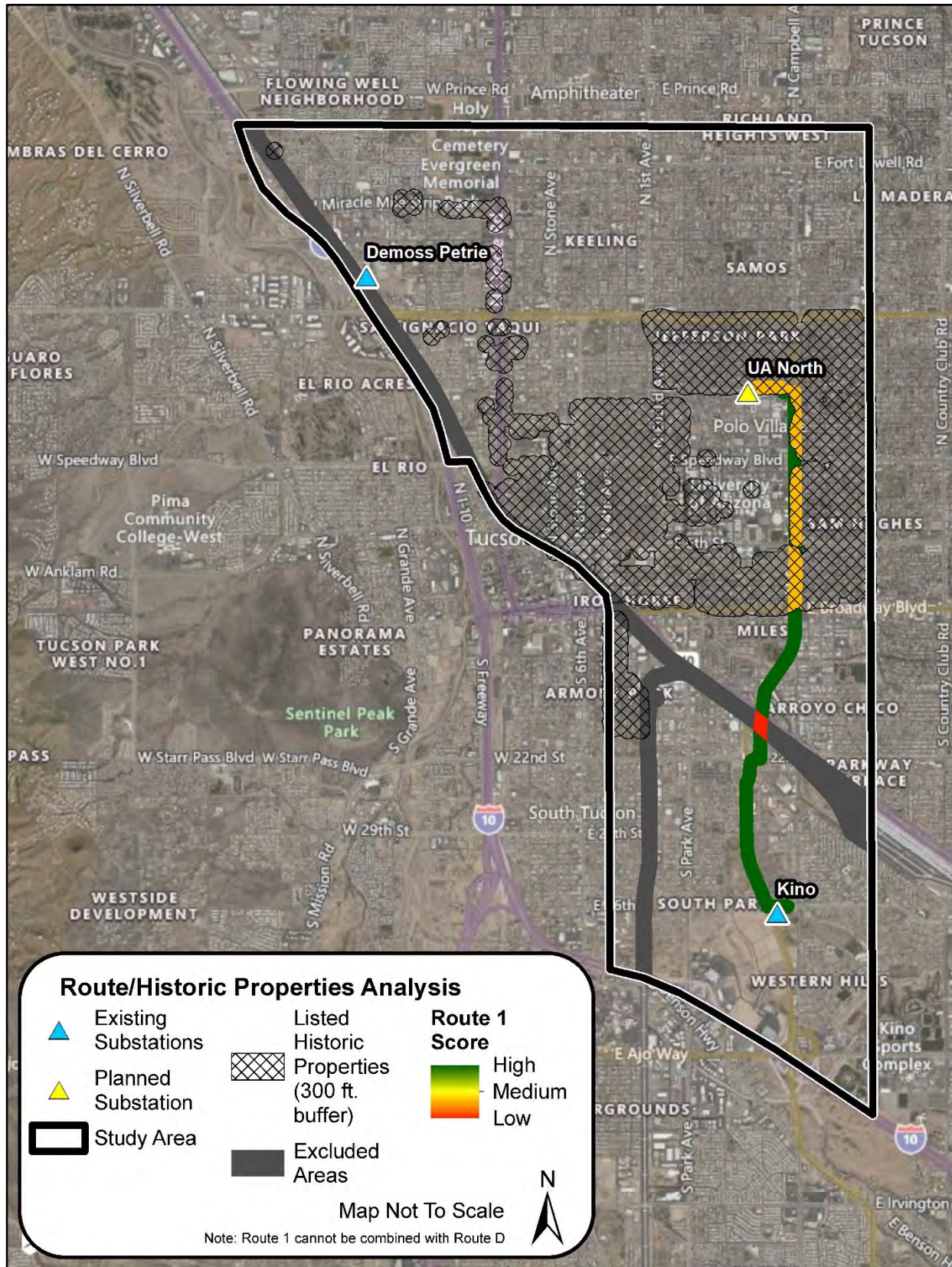


Figure F.21. Historic Properties—Route 1.

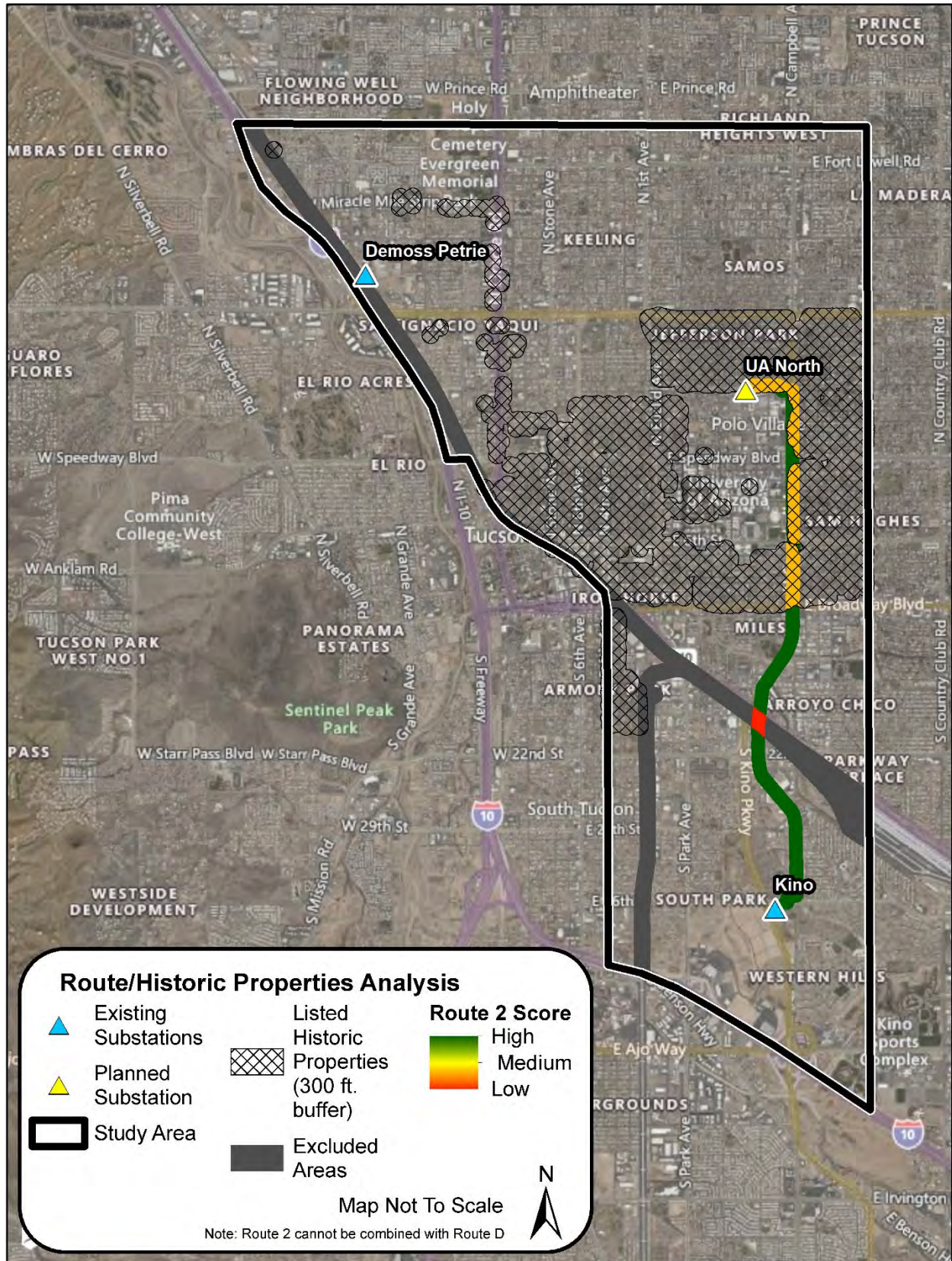


Figure F.22. Historic Properties—Route 2.

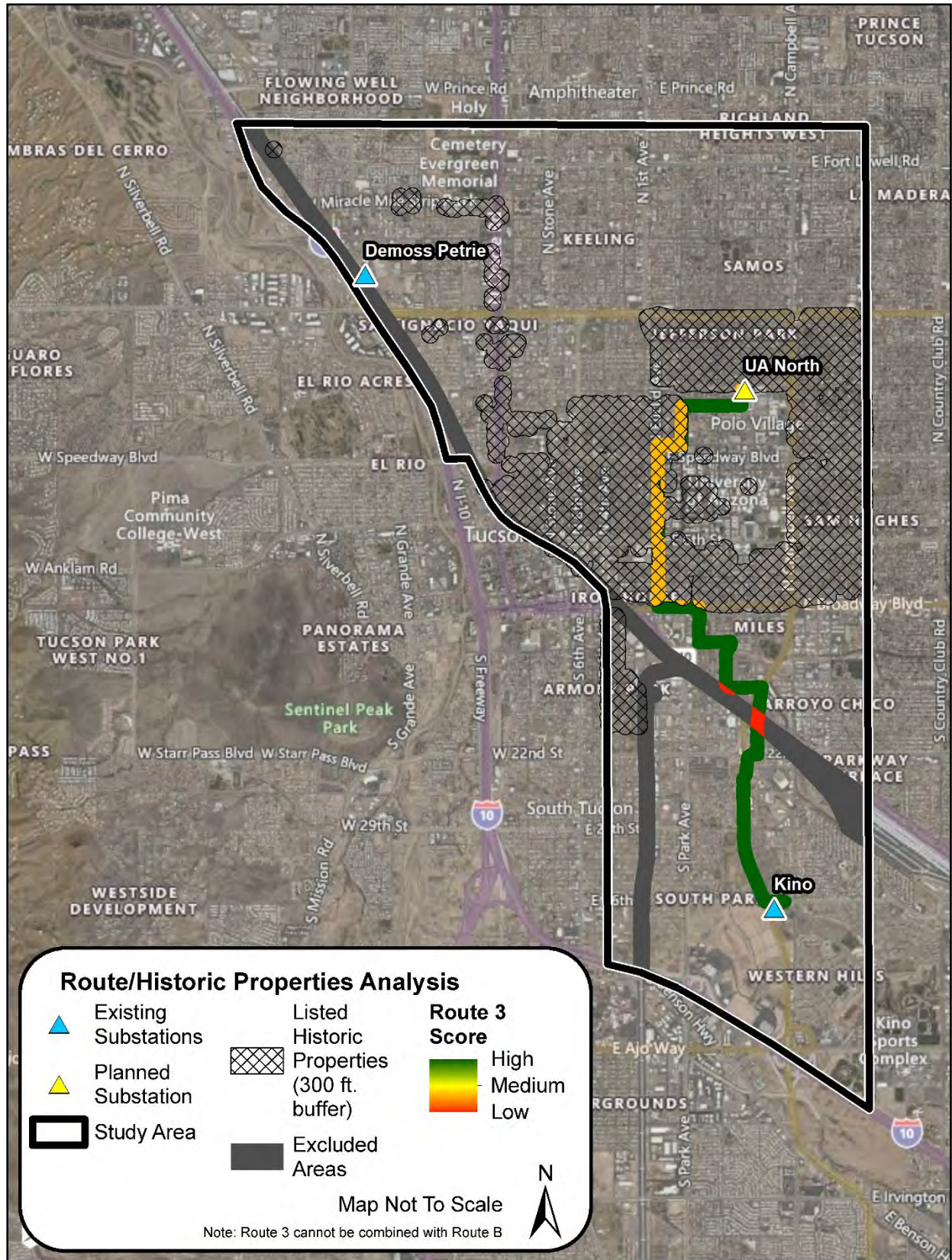


Figure F.23. Historic Properties—Route 3.

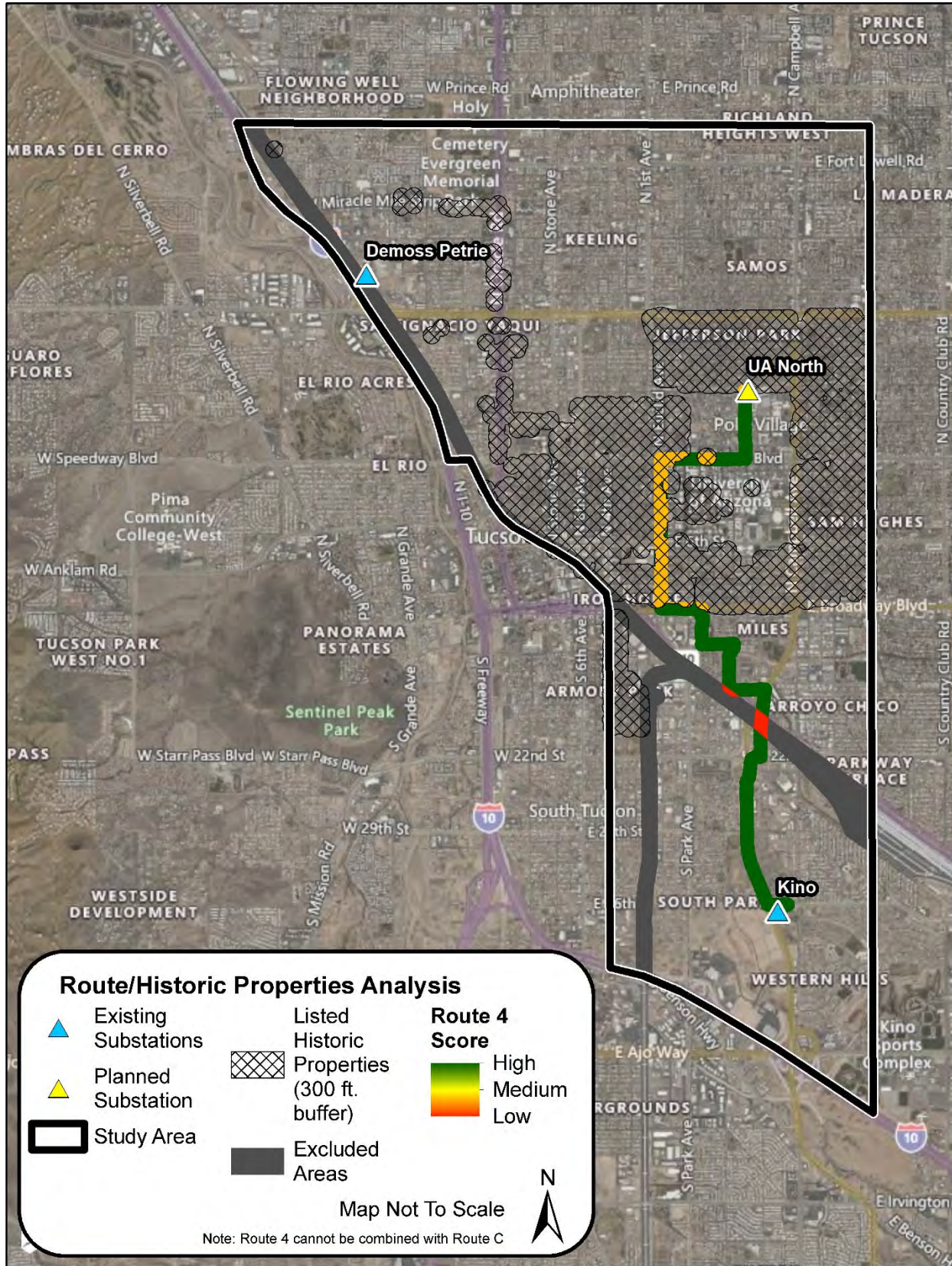


Figure F.24. Historic Properties—Route 4.

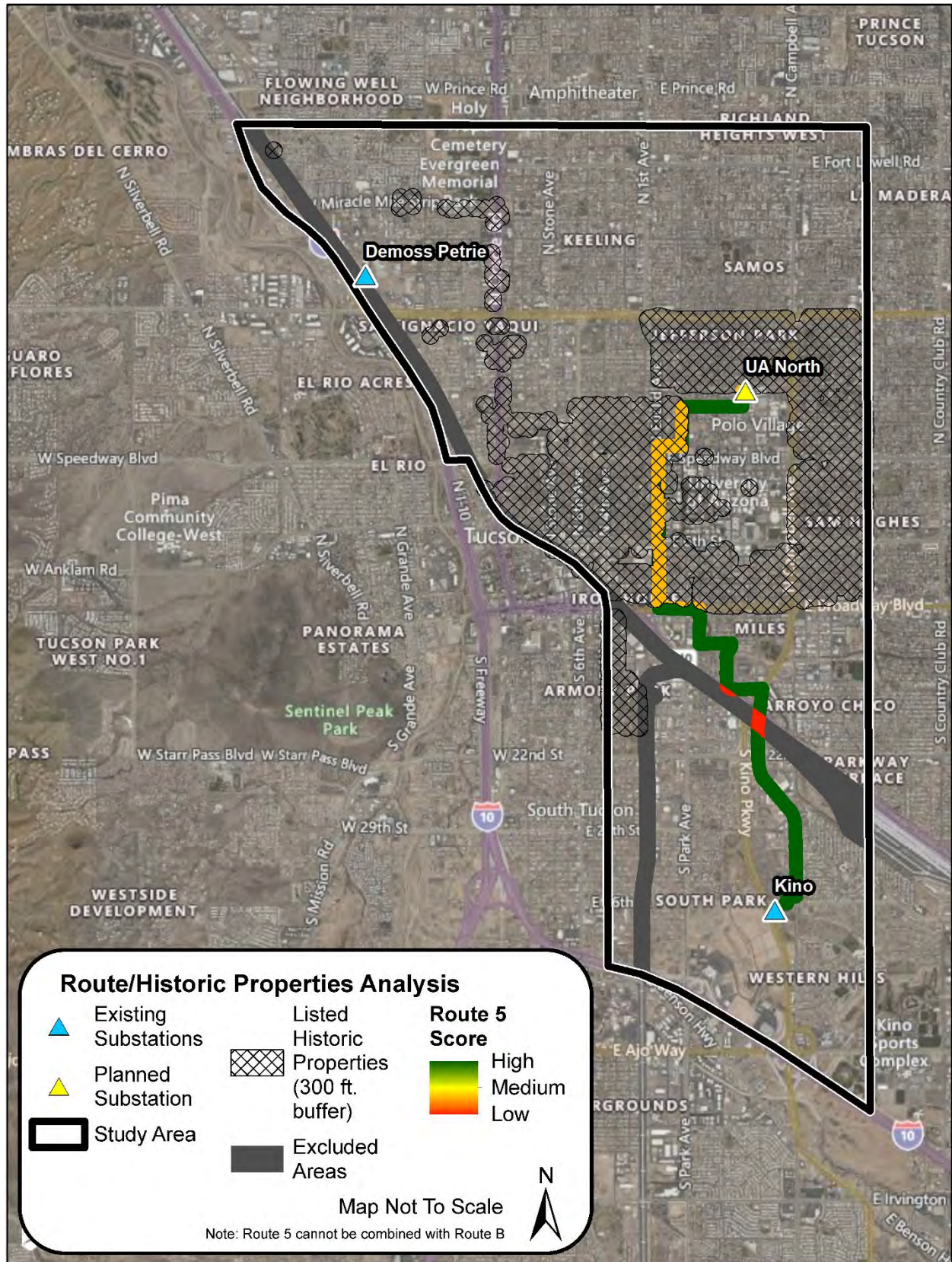


Figure F.25. Historic Properties—Route 5.

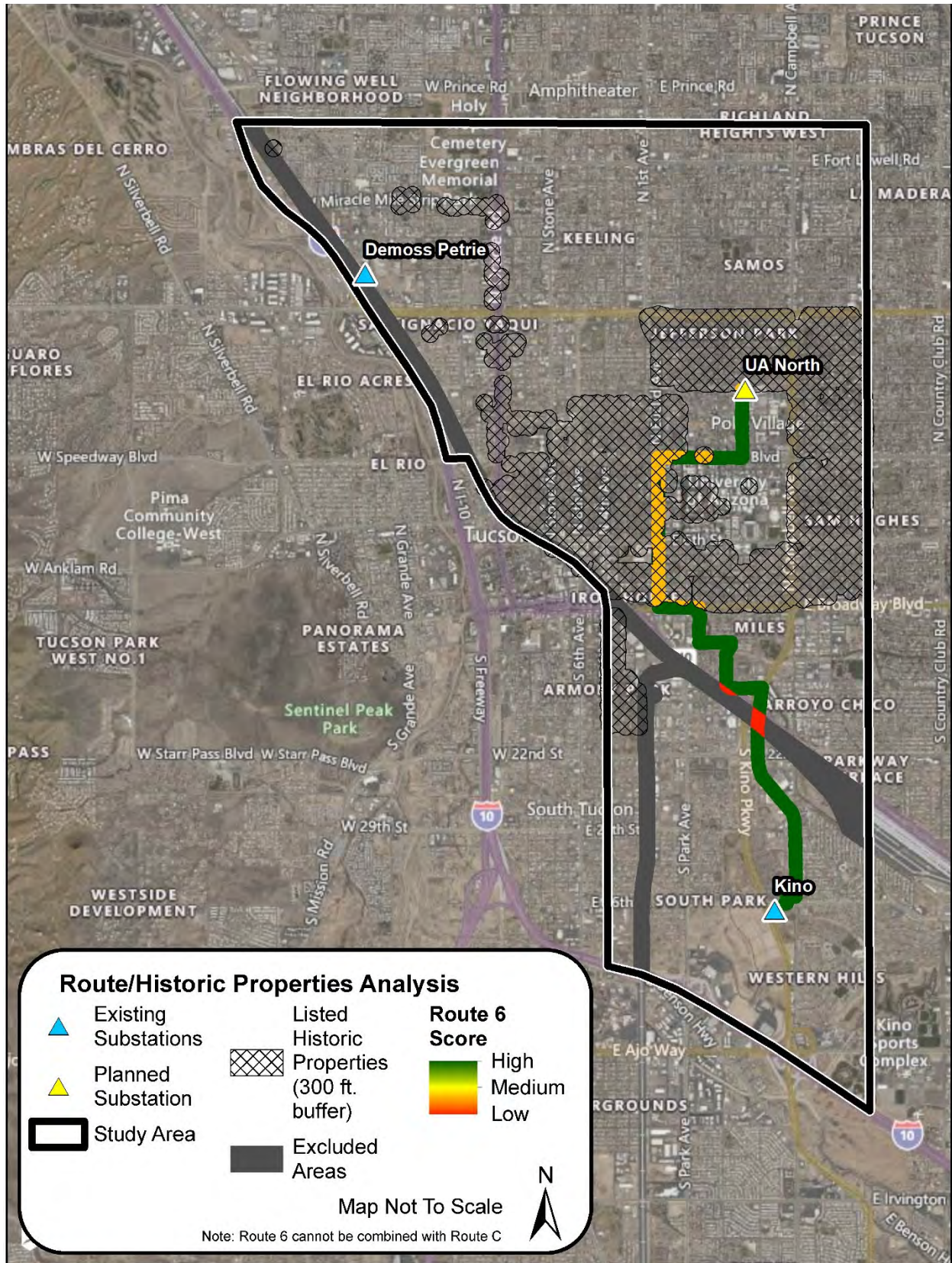


Figure F.26. Historic Properties—Route 6.

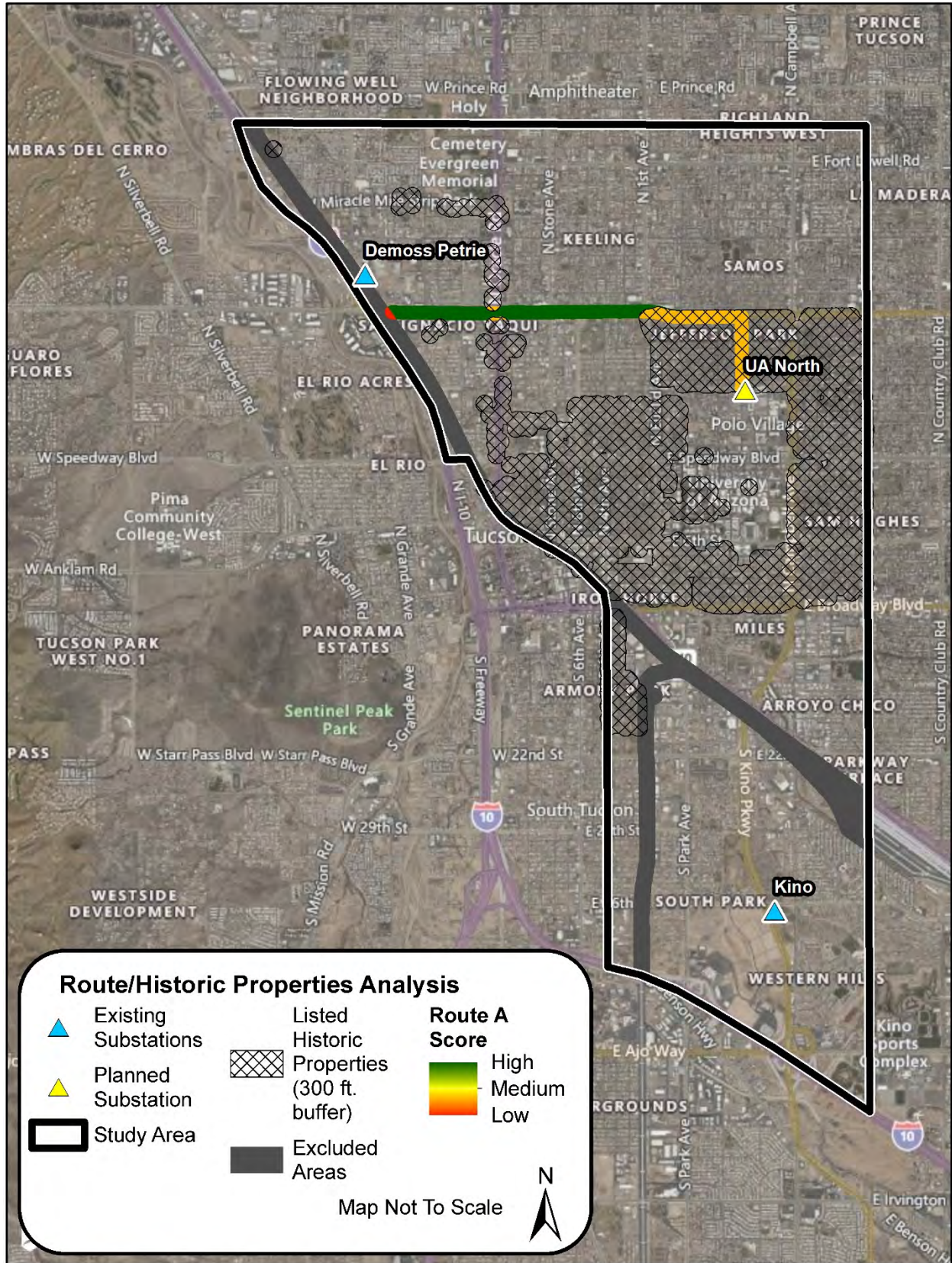


Figure F.27. Historic Properties—Route A.

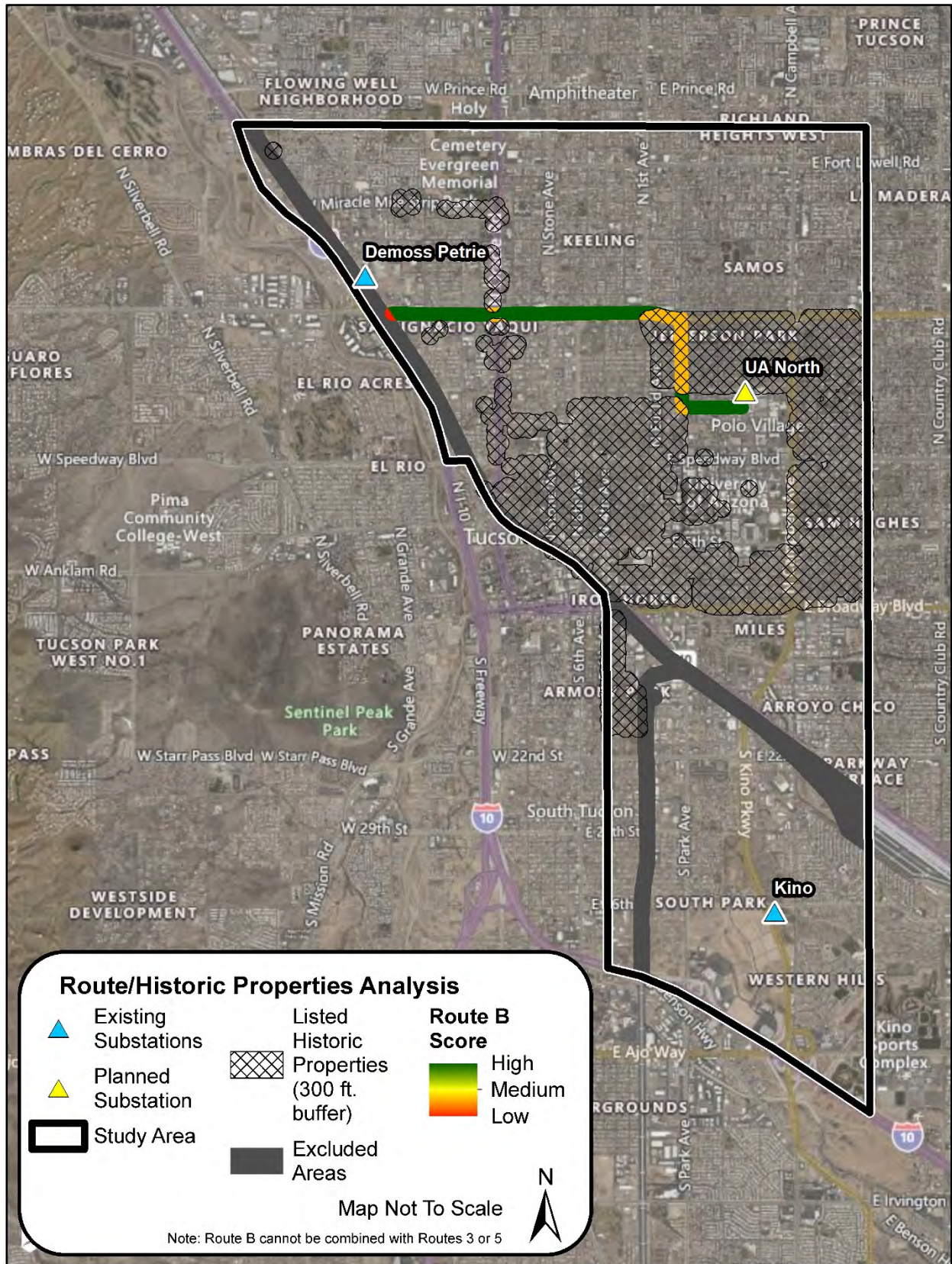


Figure F.28. Historic Properties—Route B.

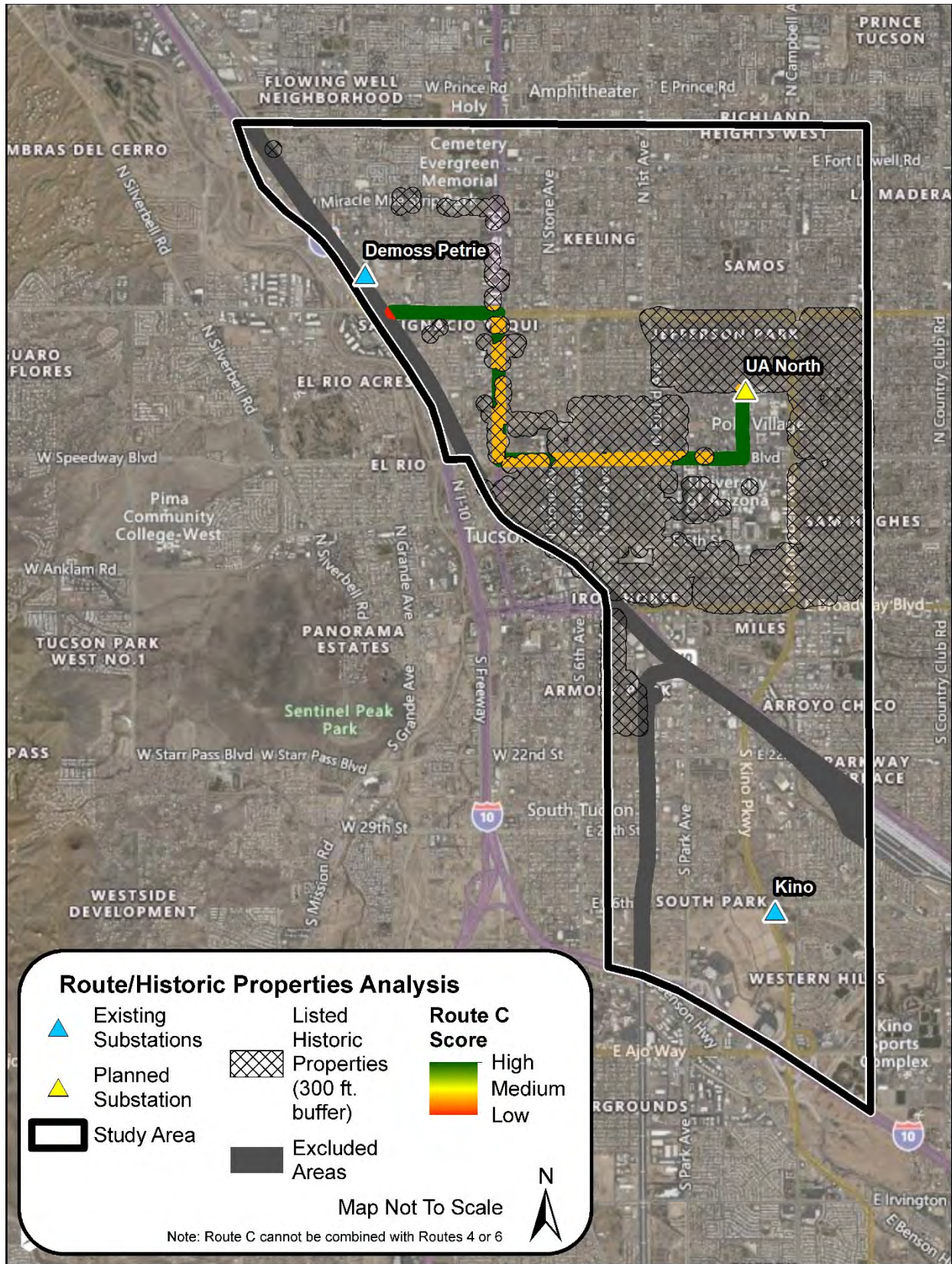


Figure F.29. Historic Properties—Route C.

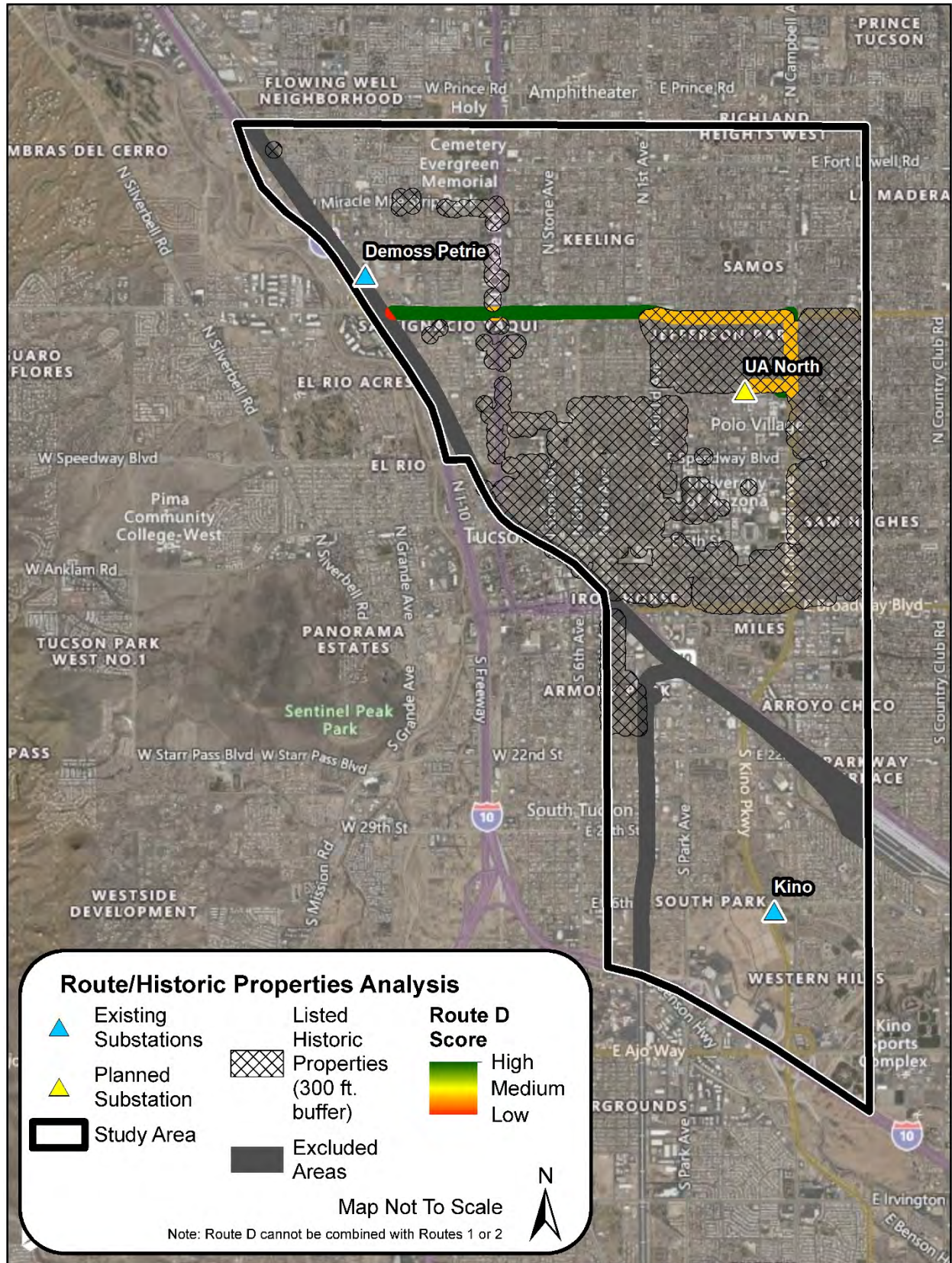


Figure F.30. Historic Properties—Route D.

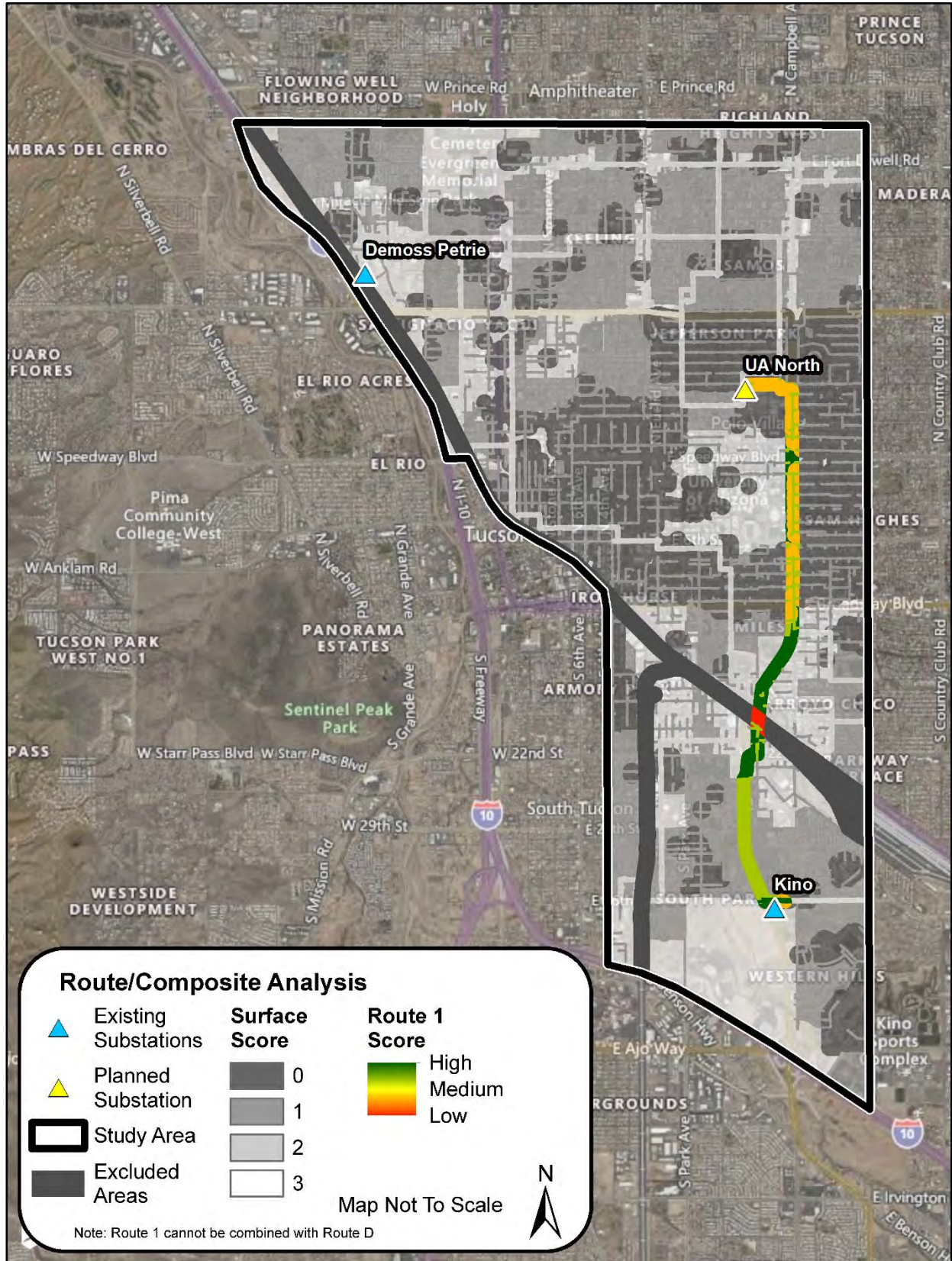


Figure F.31. Composite—Route 1.

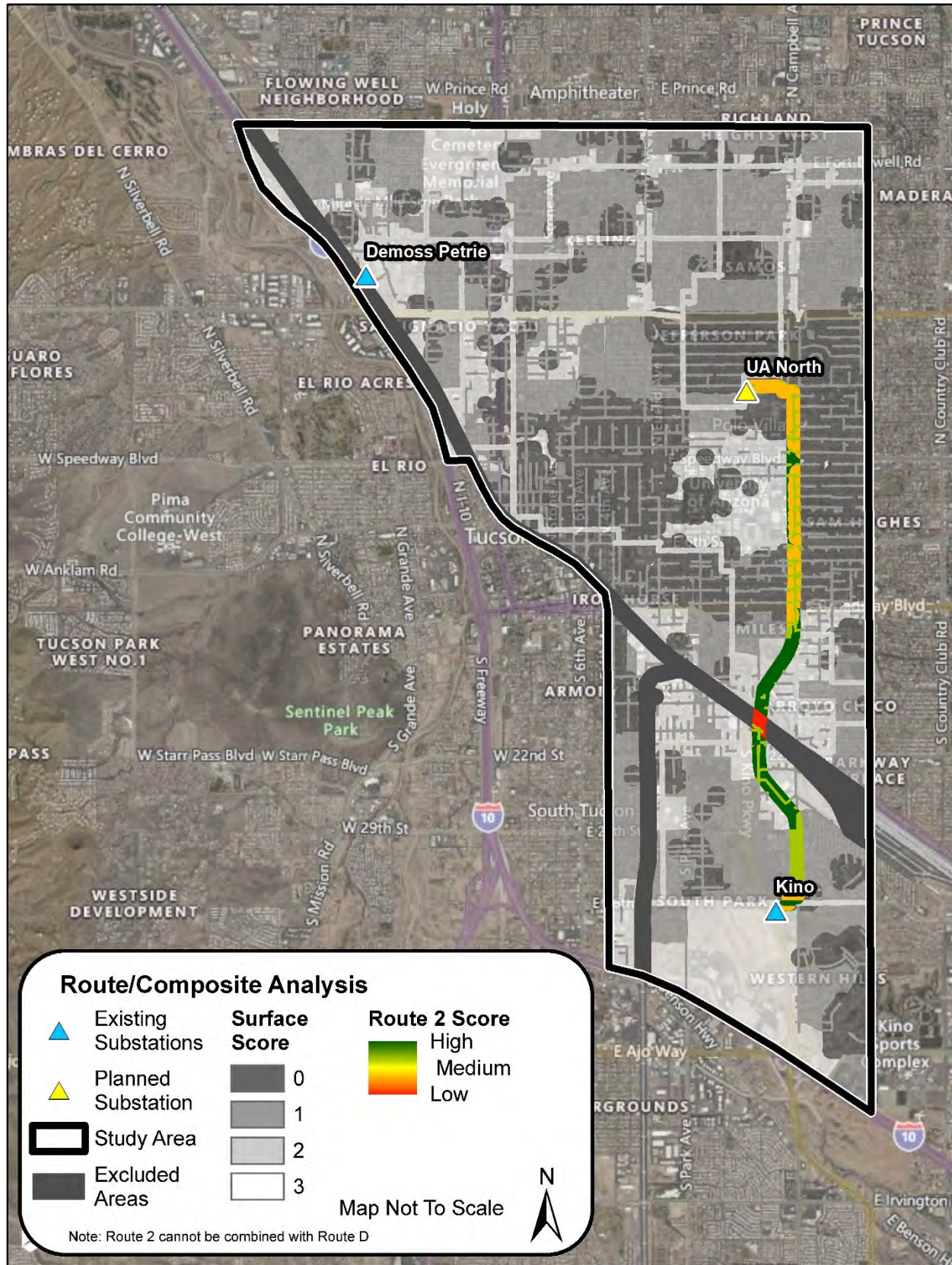


Figure F.32. Composite—Route 2.

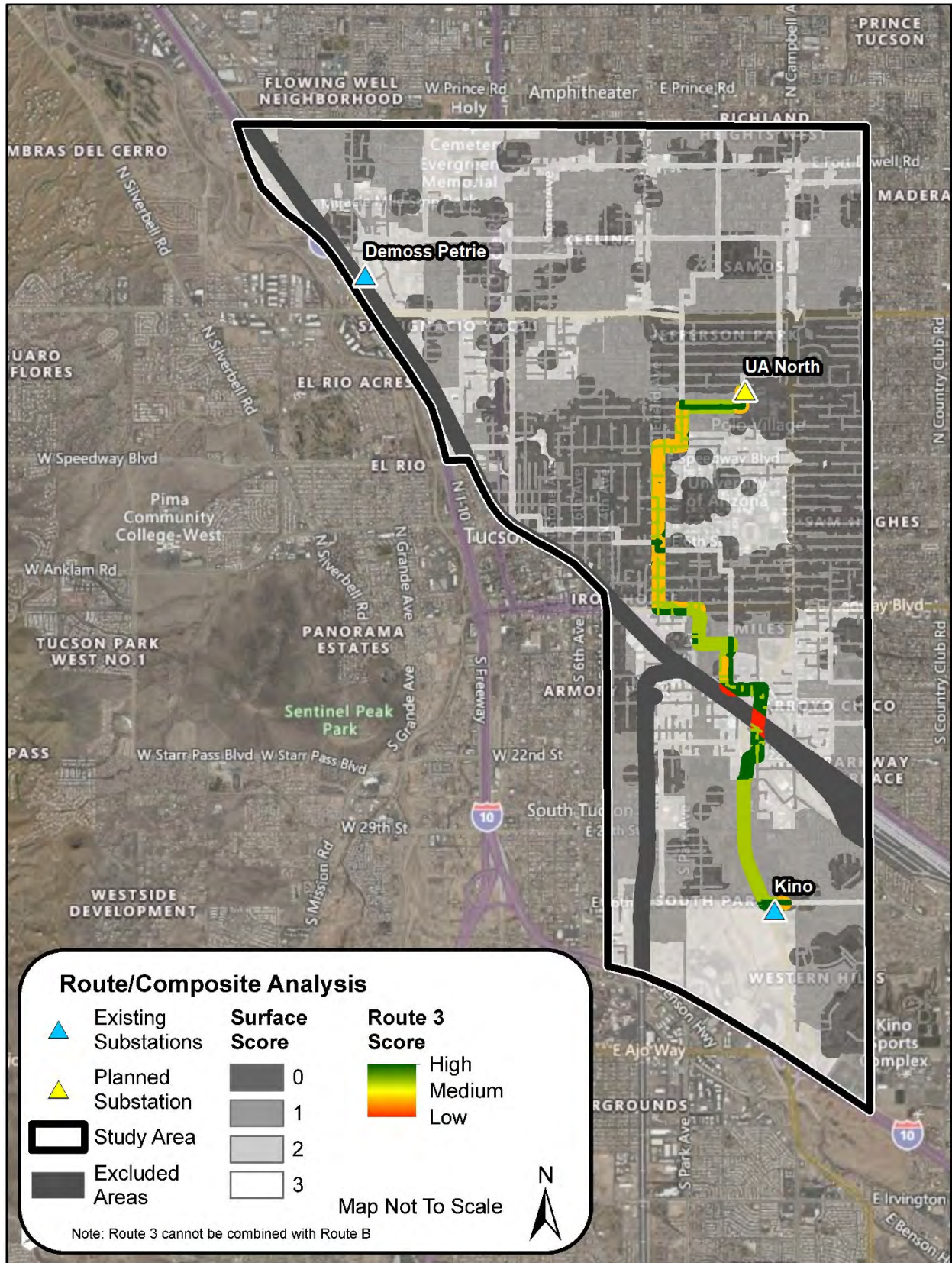


Figure F.33. Composite—Route 3.

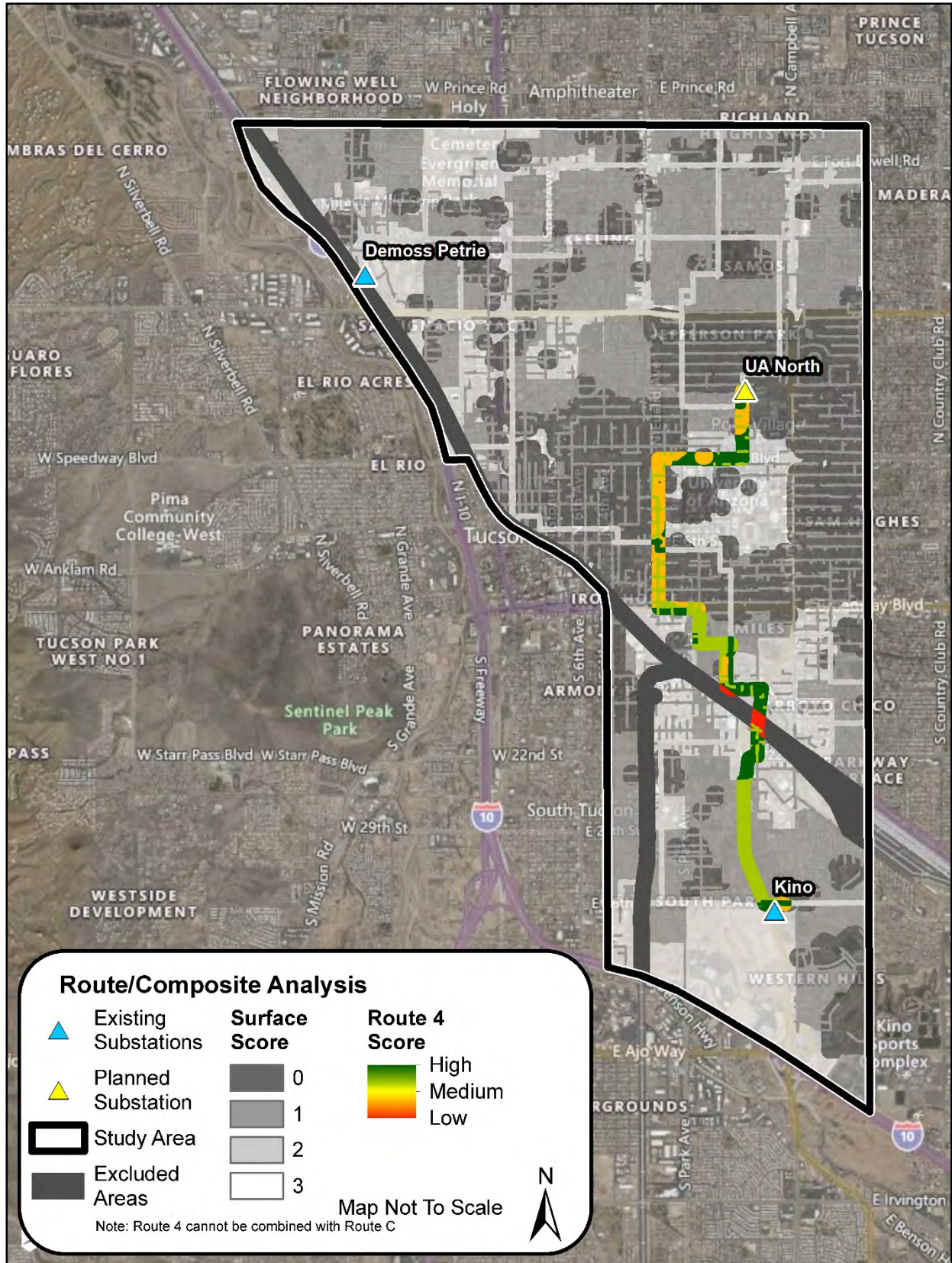


Figure F.34. Composite—Route 4.

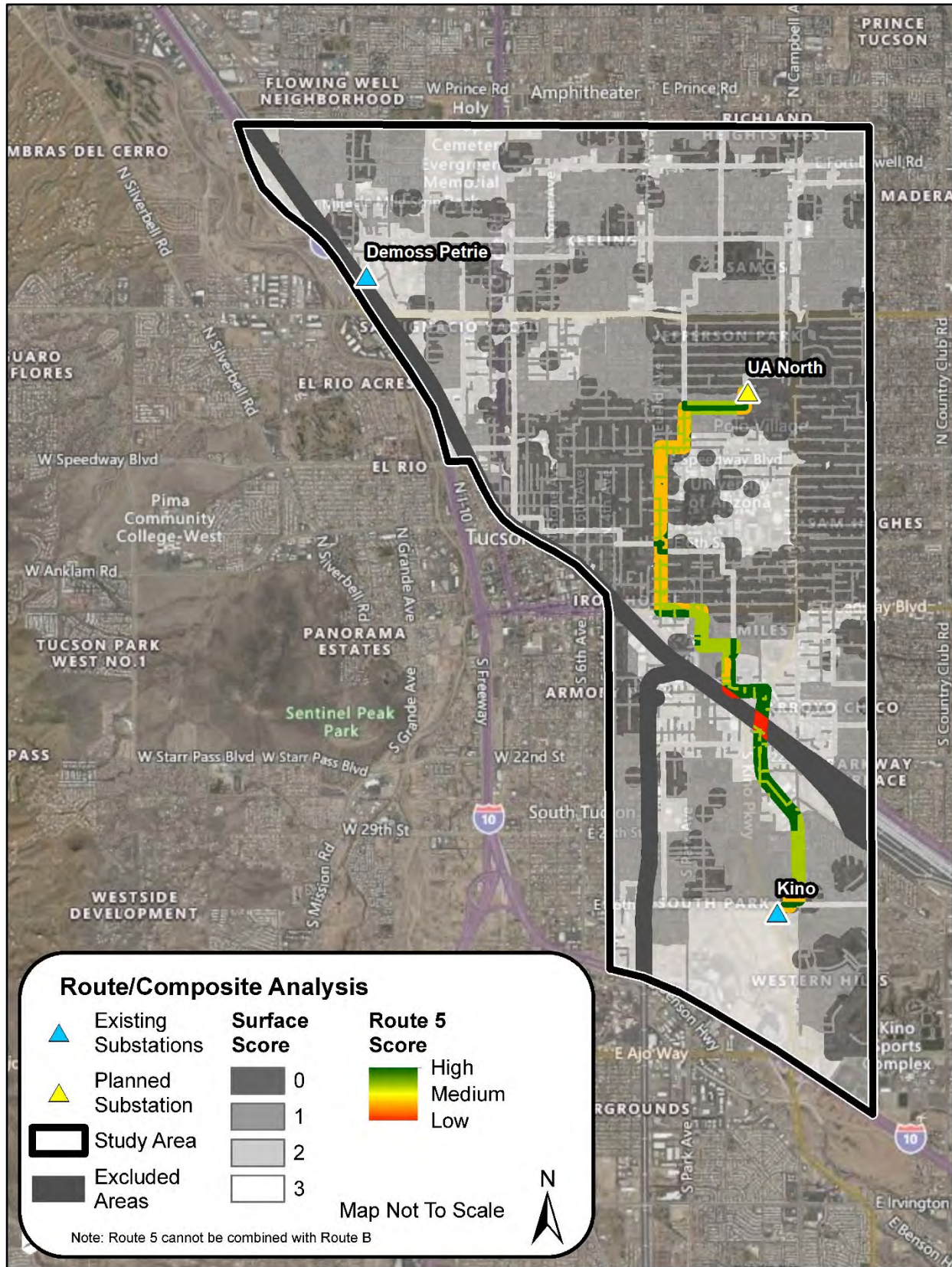


Figure F.35. Composite—Route 5.

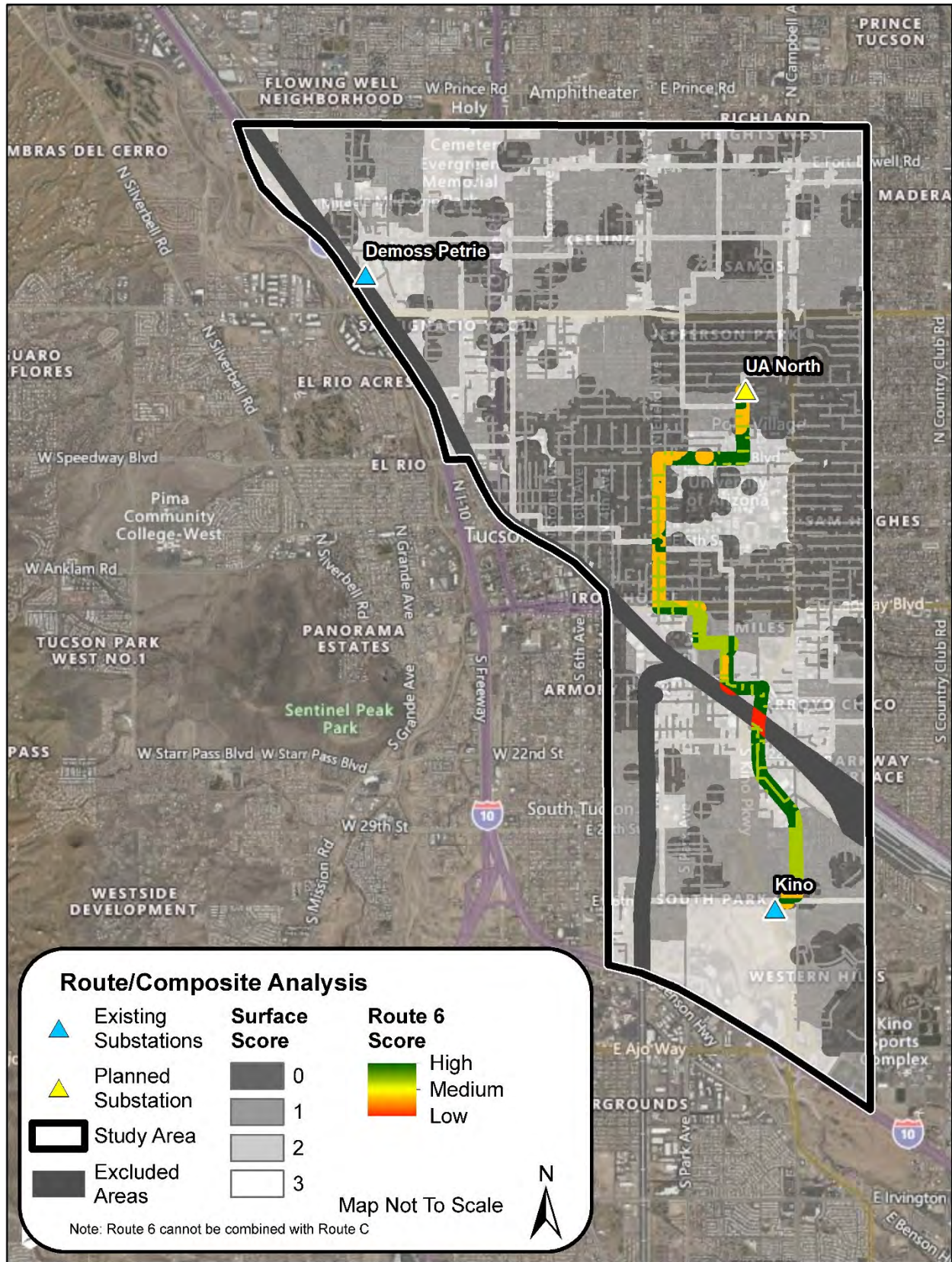


Figure F.36. Composite—Route 6.

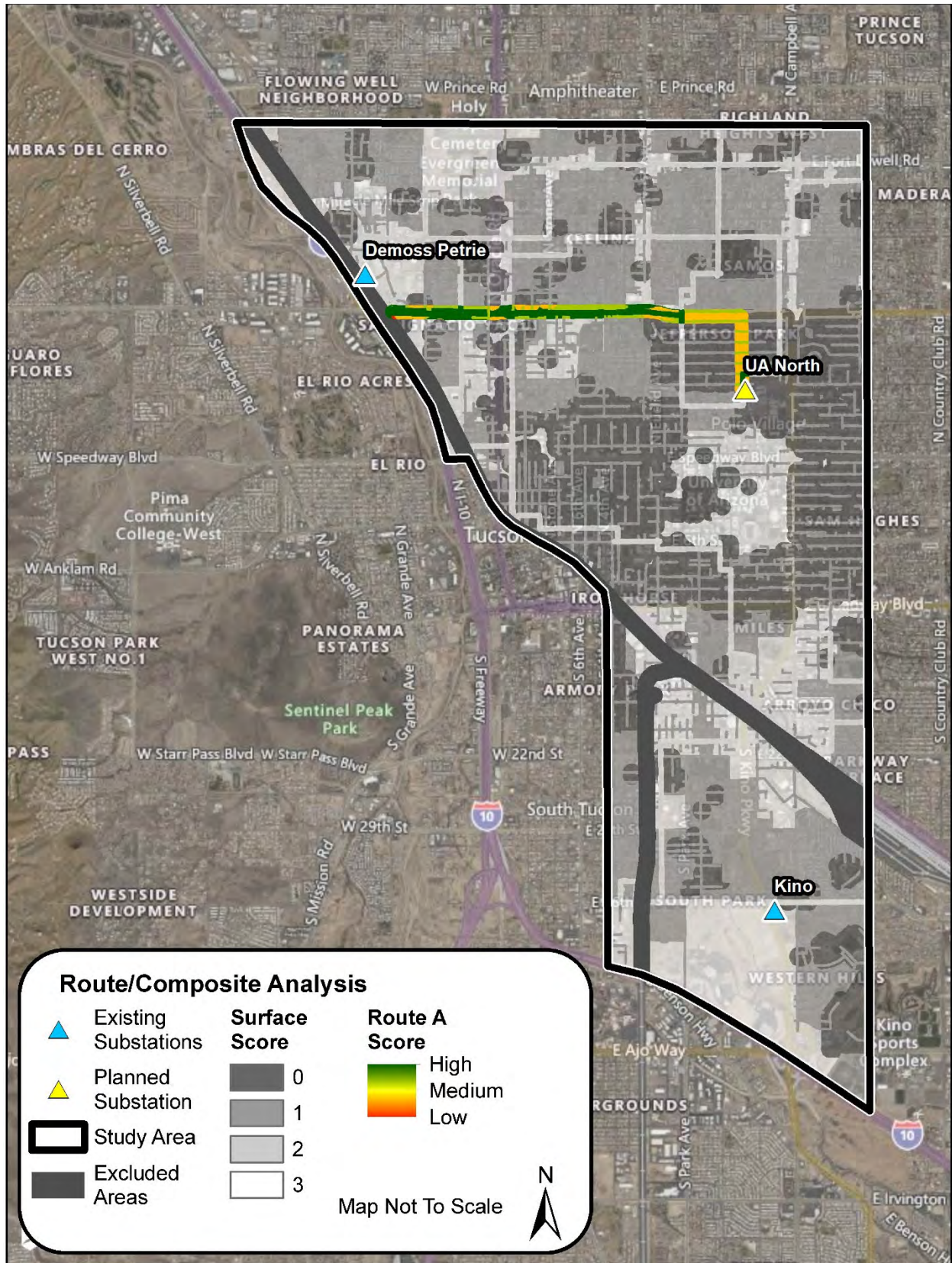


Figure F.37. Composite—Route A.

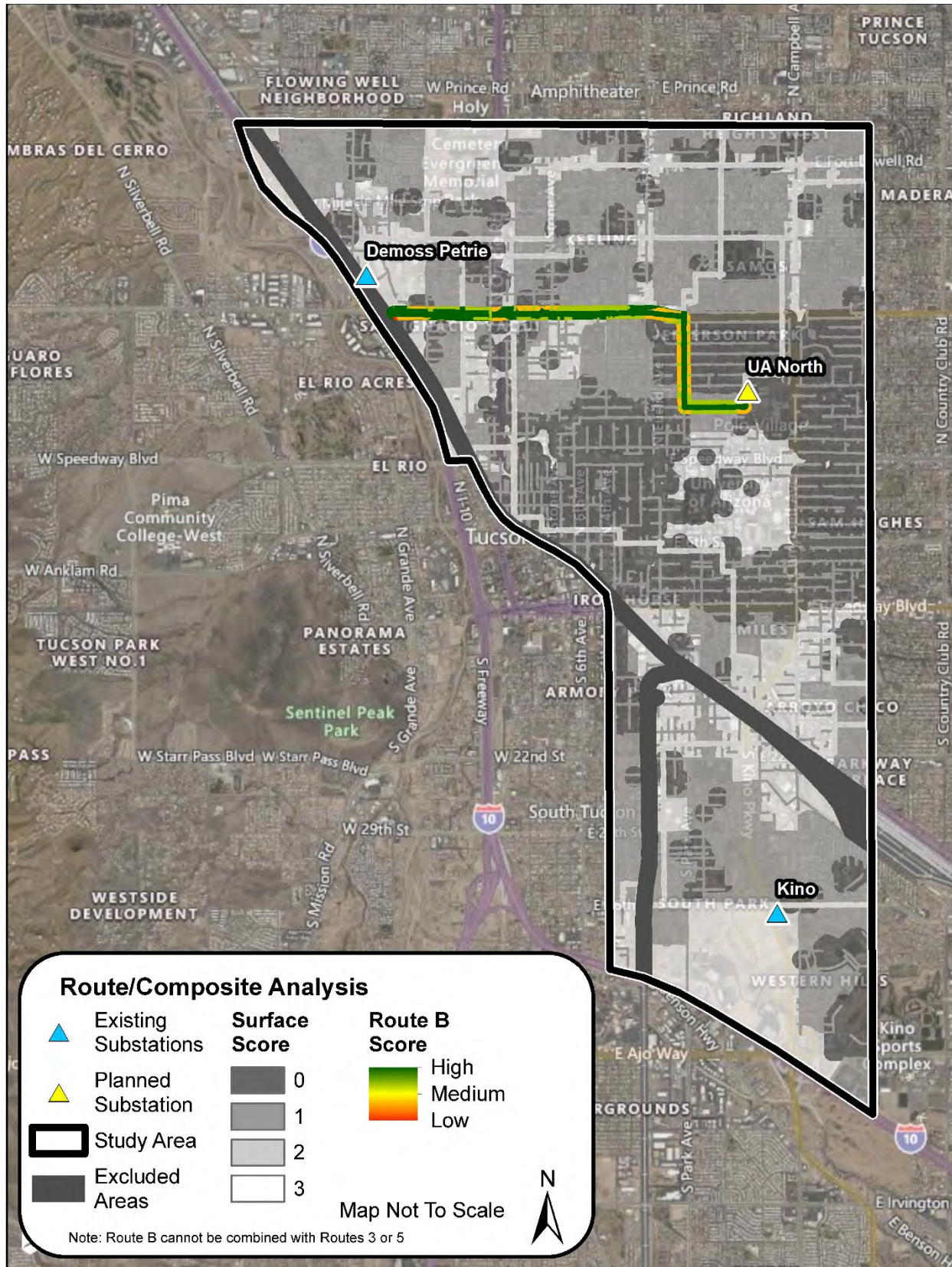


Figure F.38. Composite—Route B.

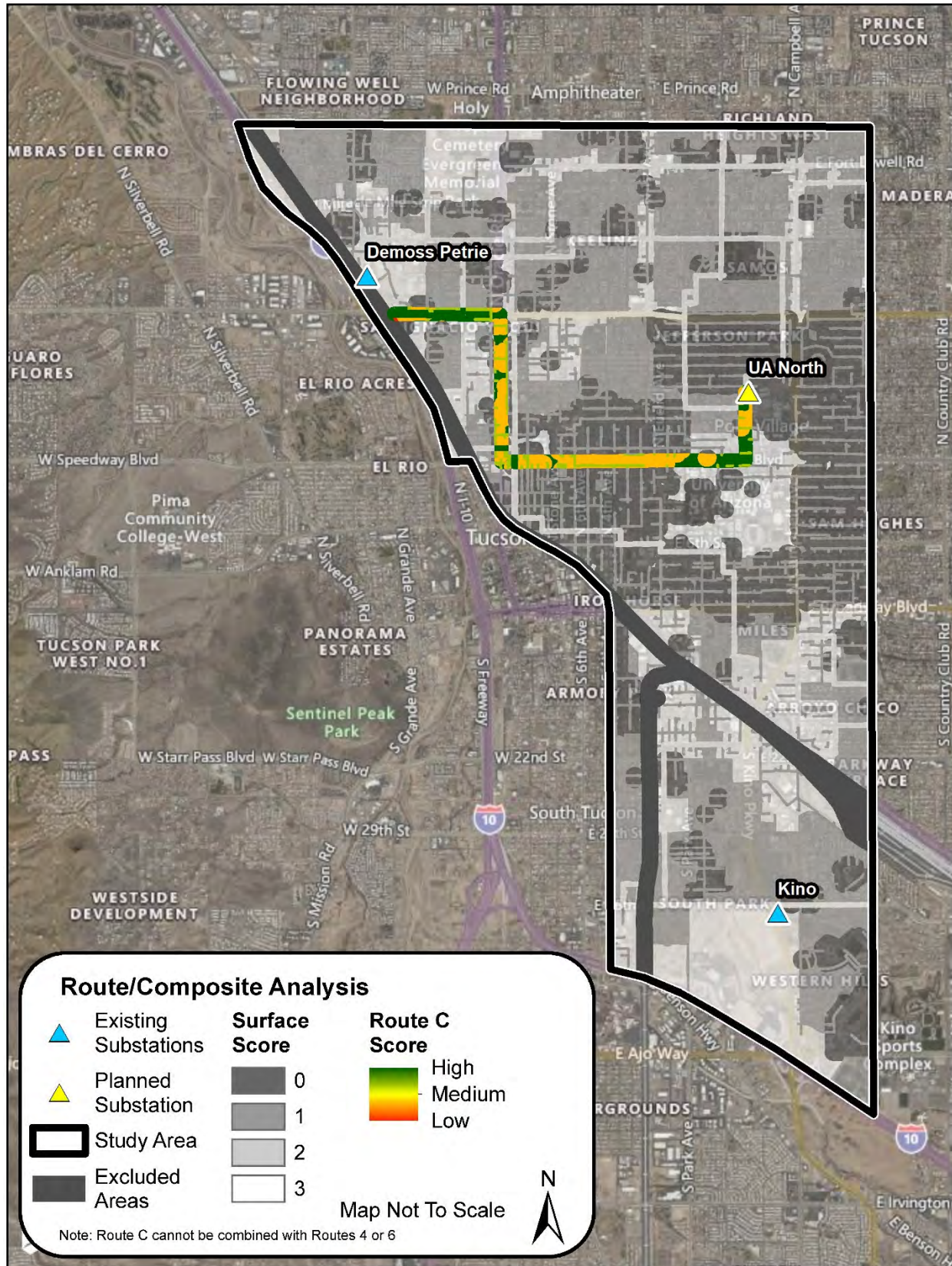


Figure F.39. Composite—Route C.

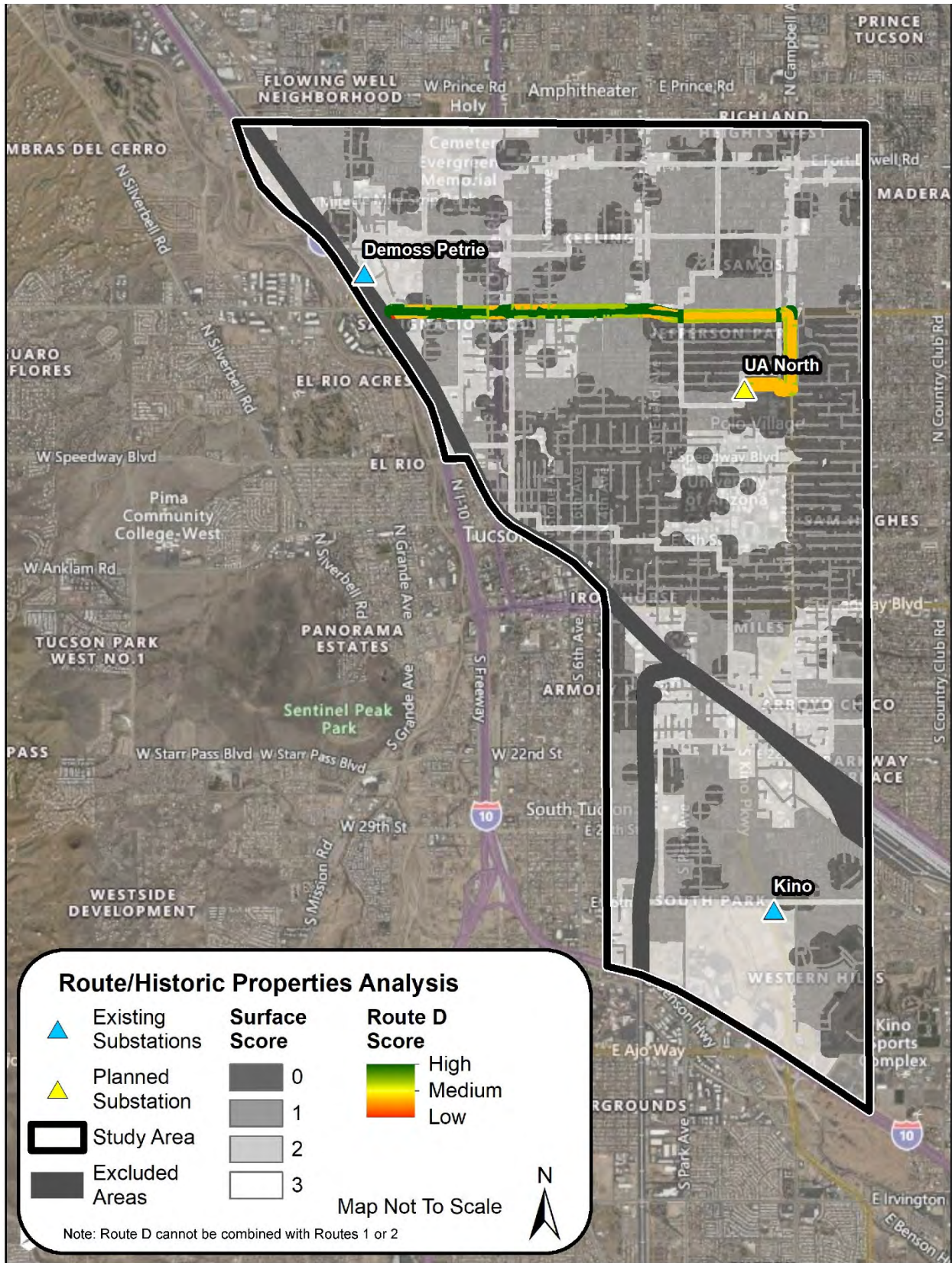


Figure F.40. Composite—Route D.

Appendix G. Revised Route Analysis Maps

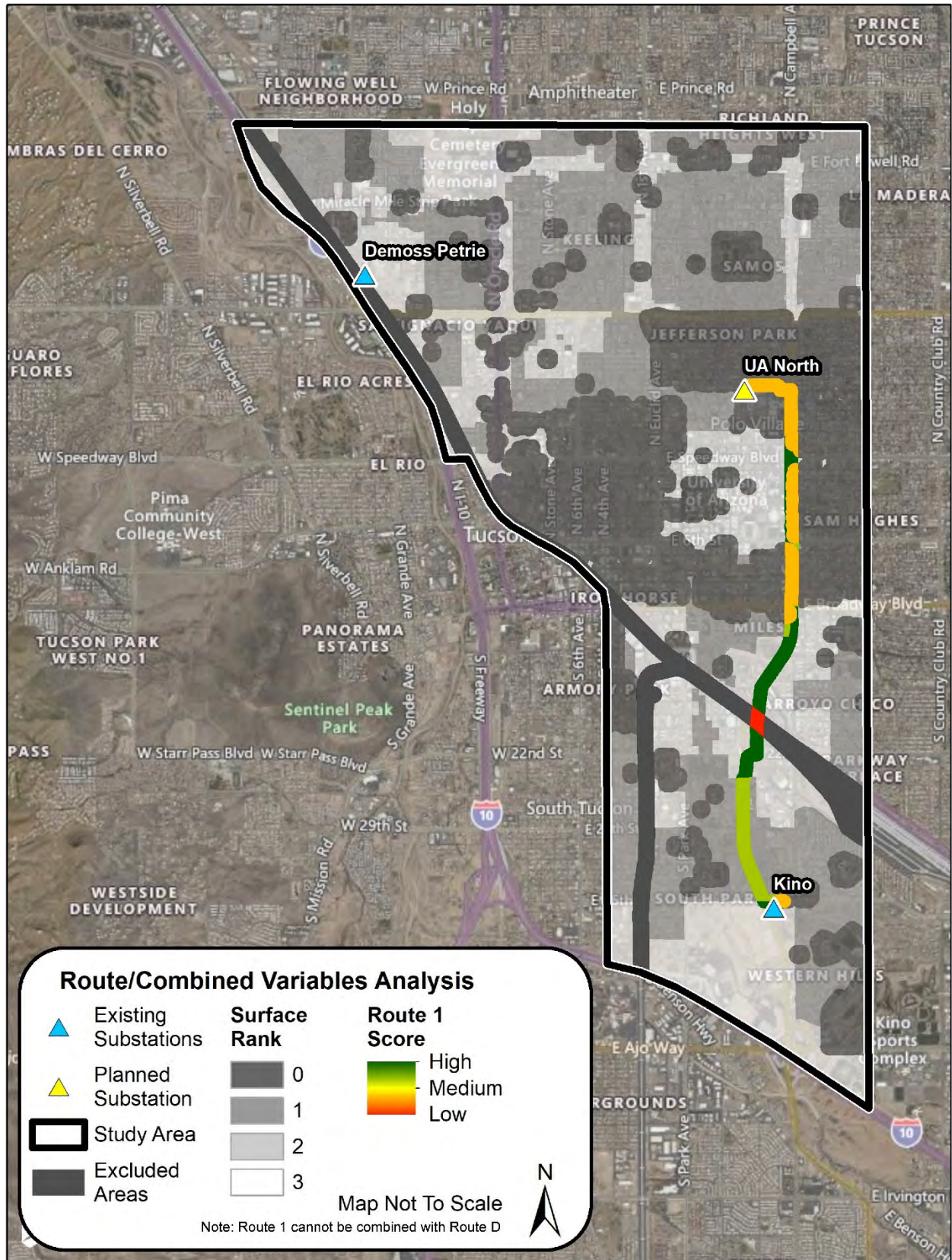


Figure G.1. Route 1.

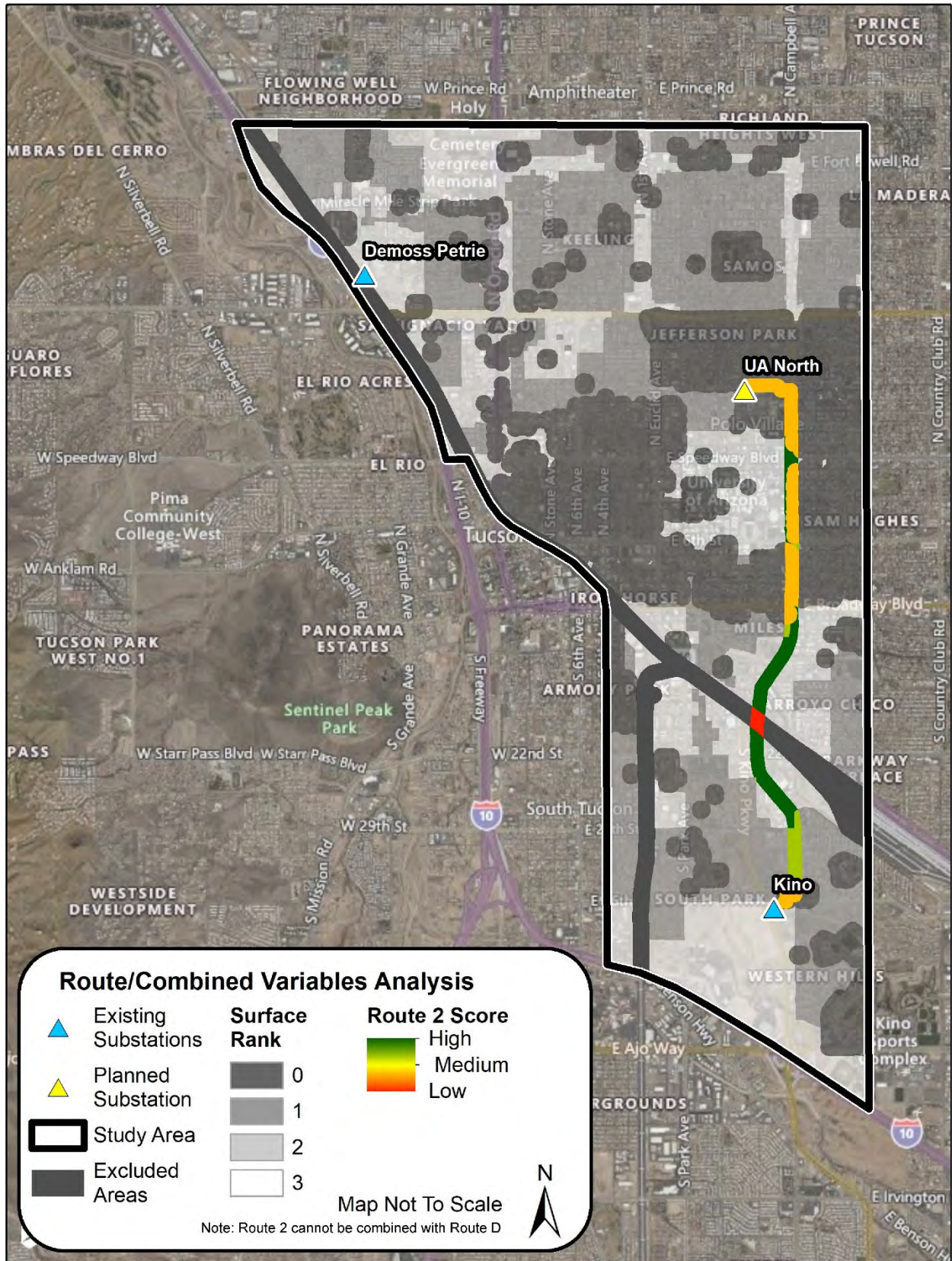


Figure G.2. Route 2.

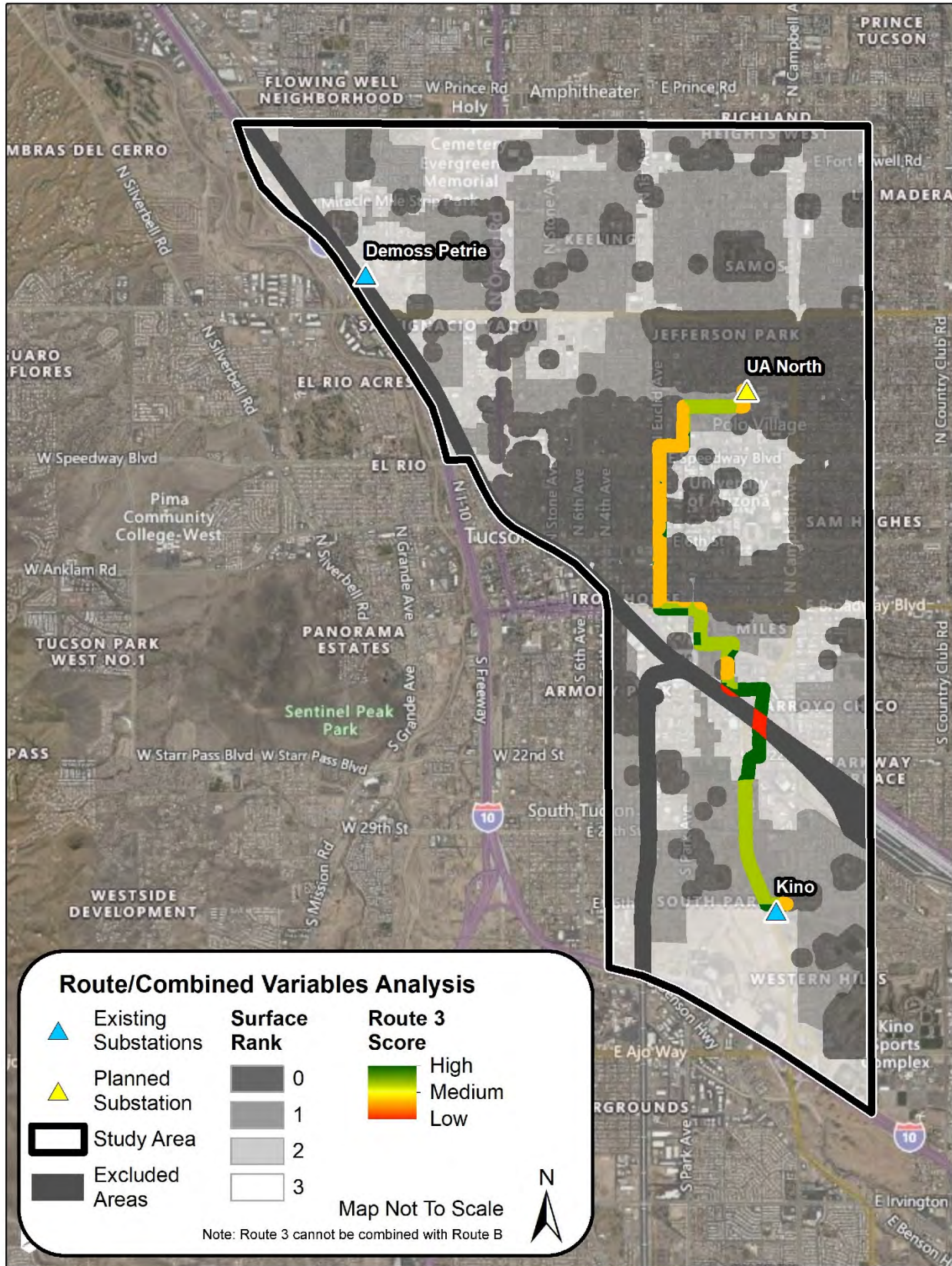


Figure G.3. Route 3.

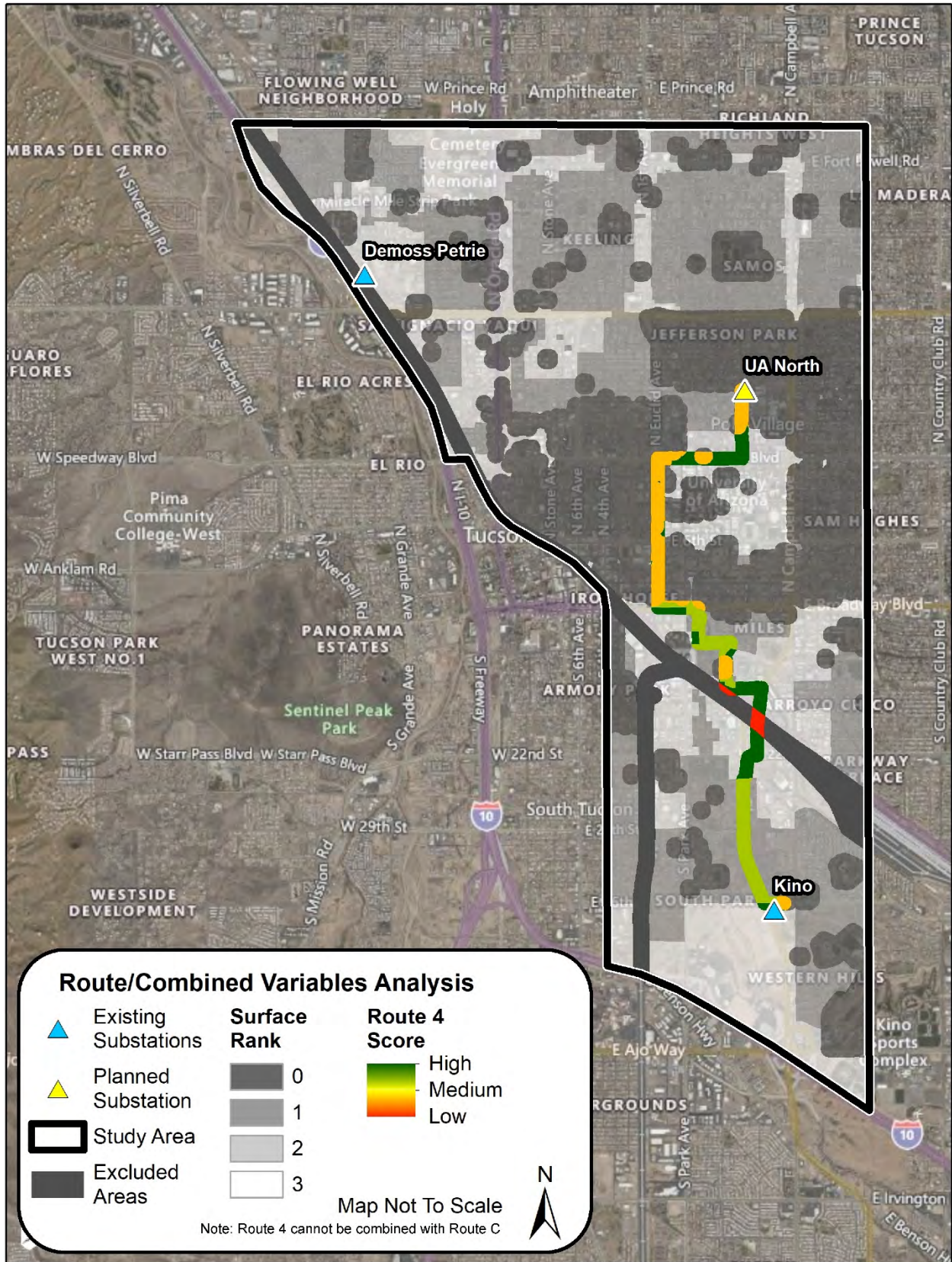


Figure G.4. Route 4.

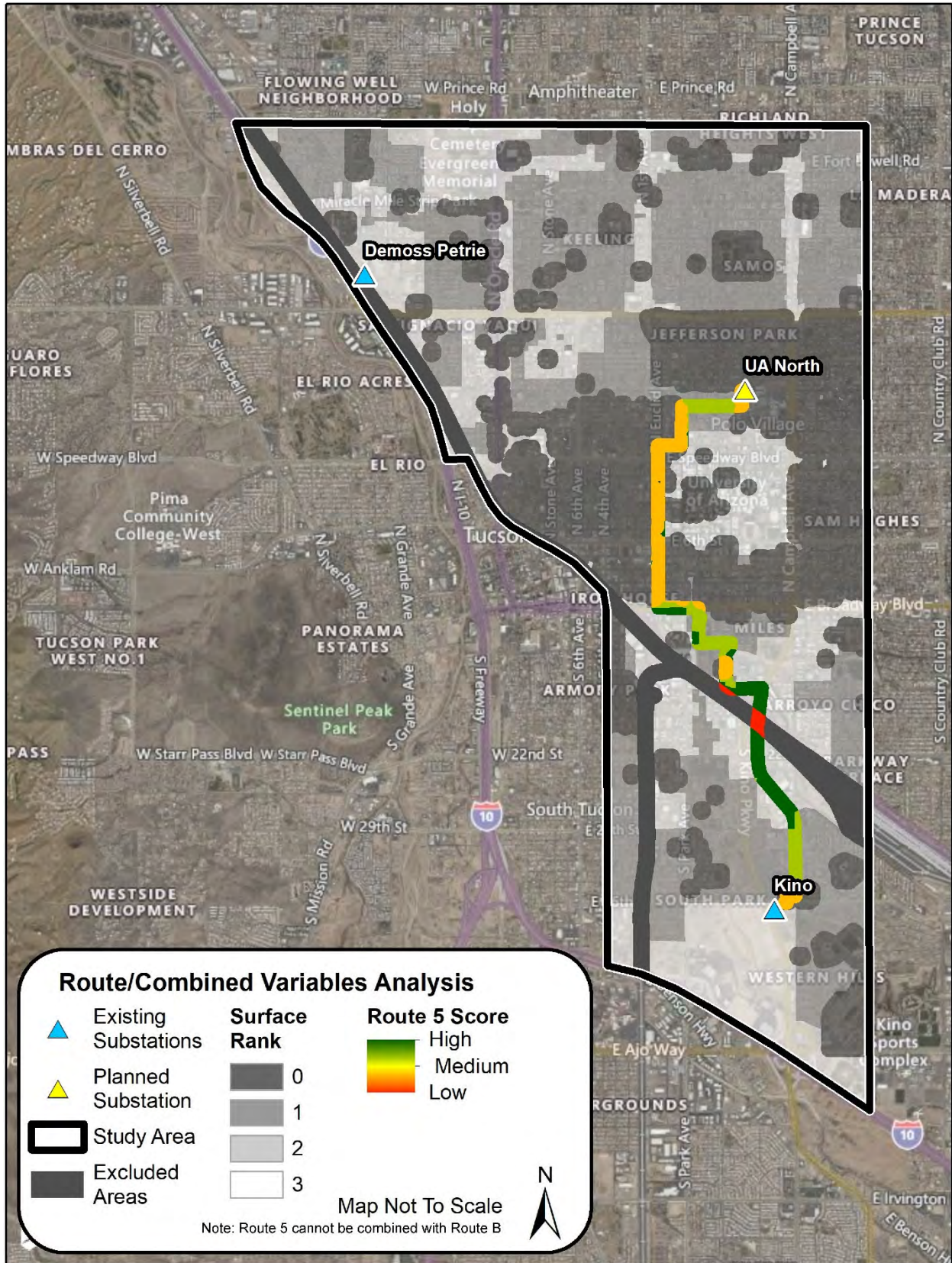


Figure G.5. Route 5.

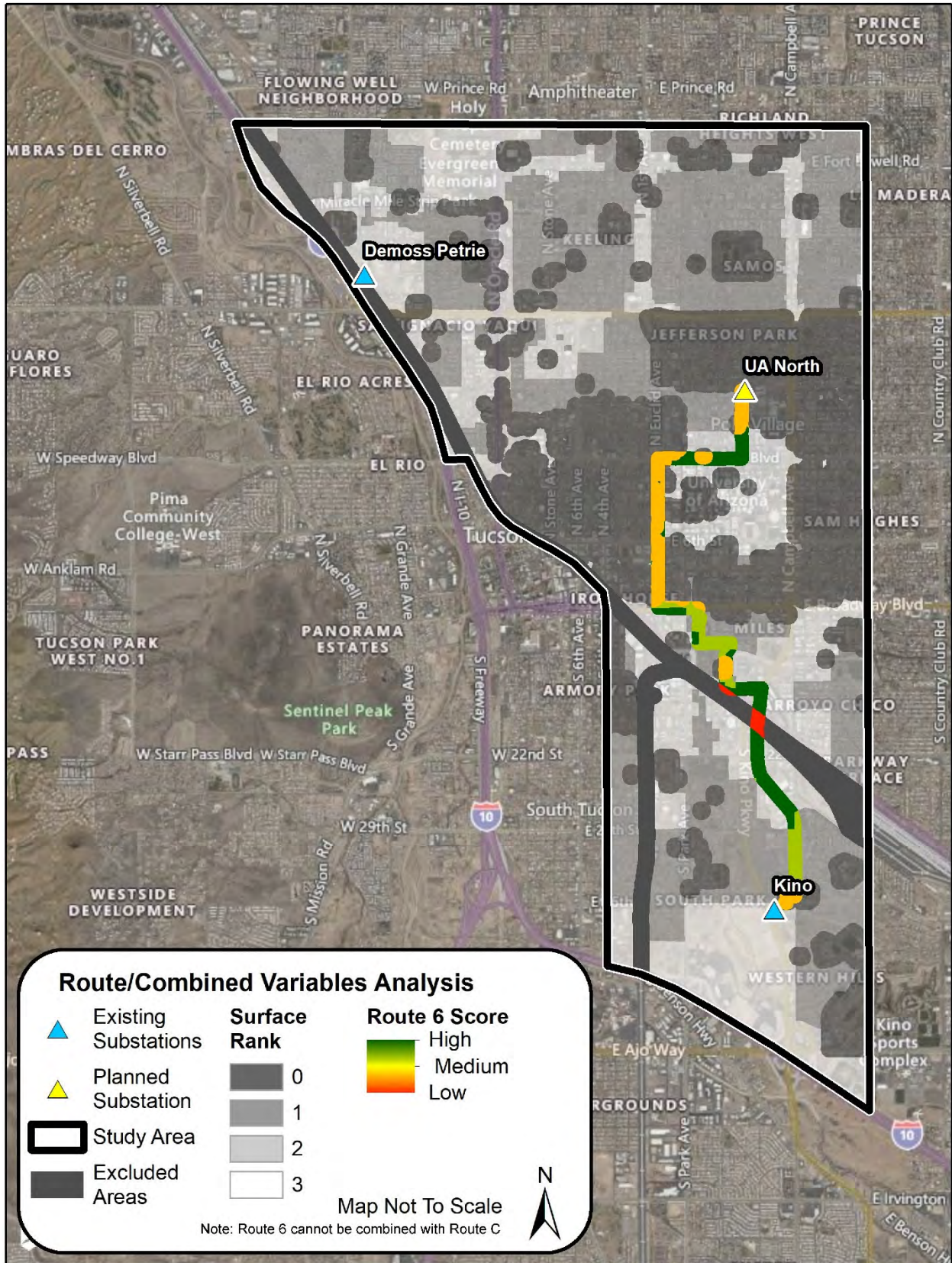


Figure G.6. Route 6.

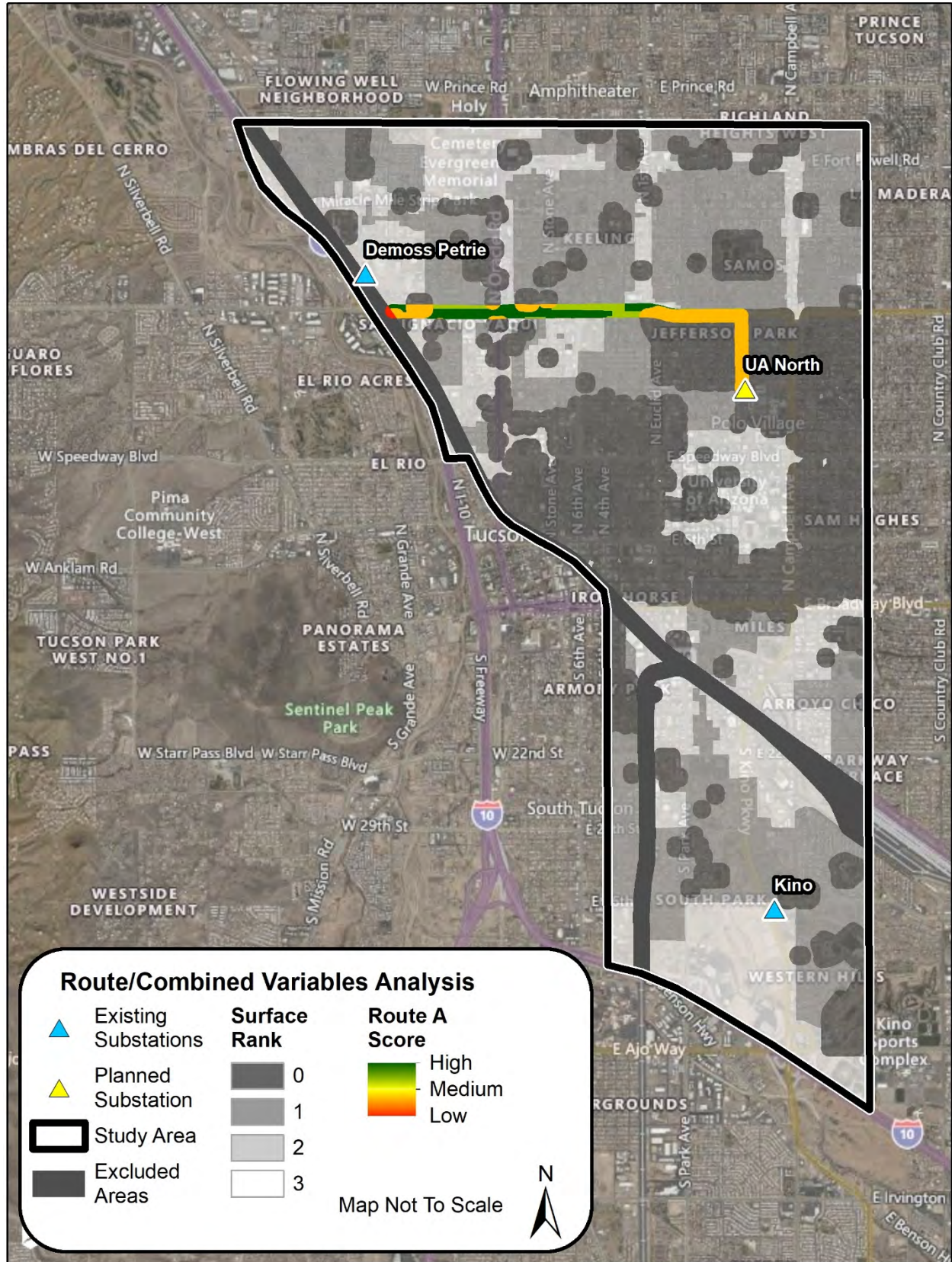


Figure G.7. Route A.

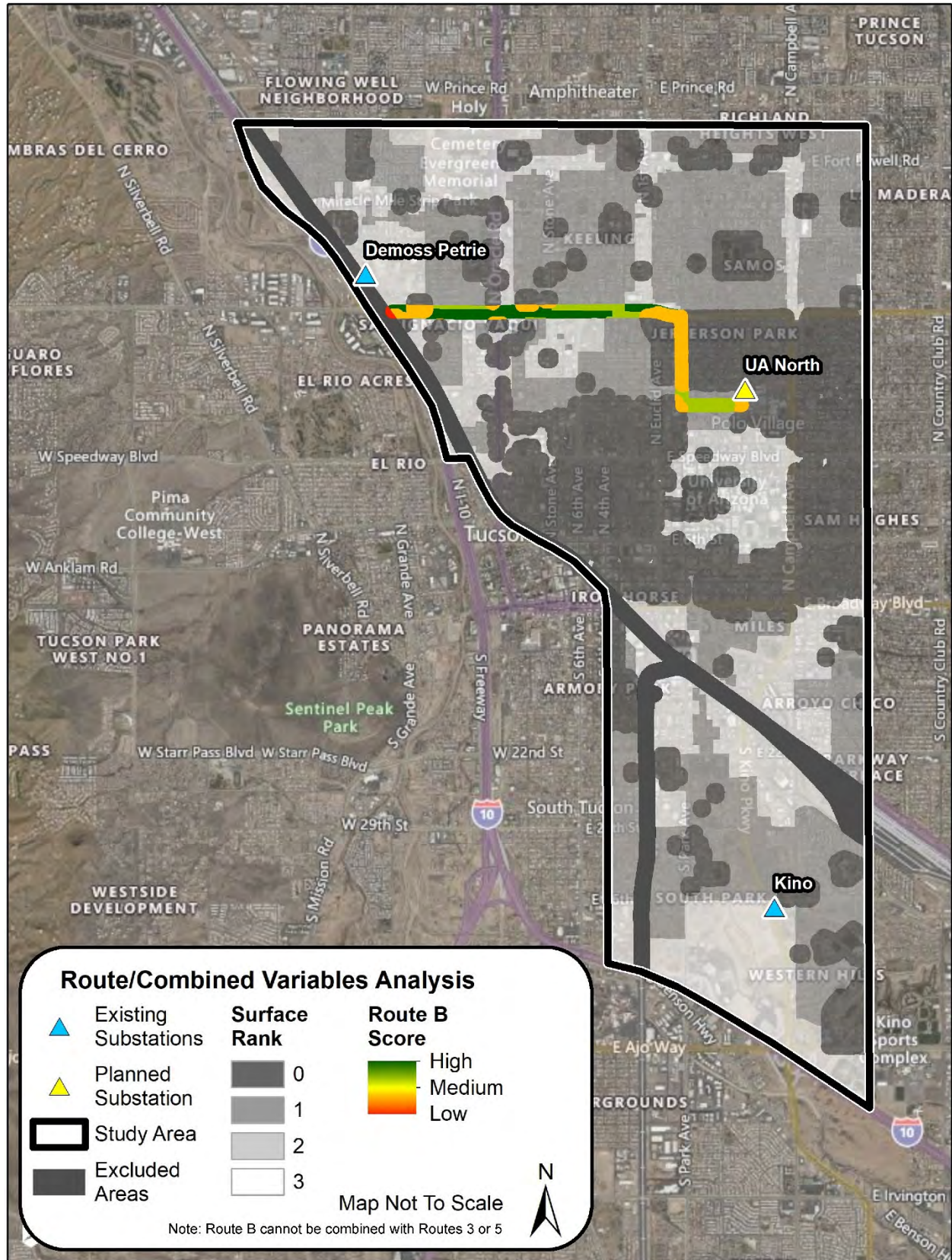


Figure G.8. Route B.

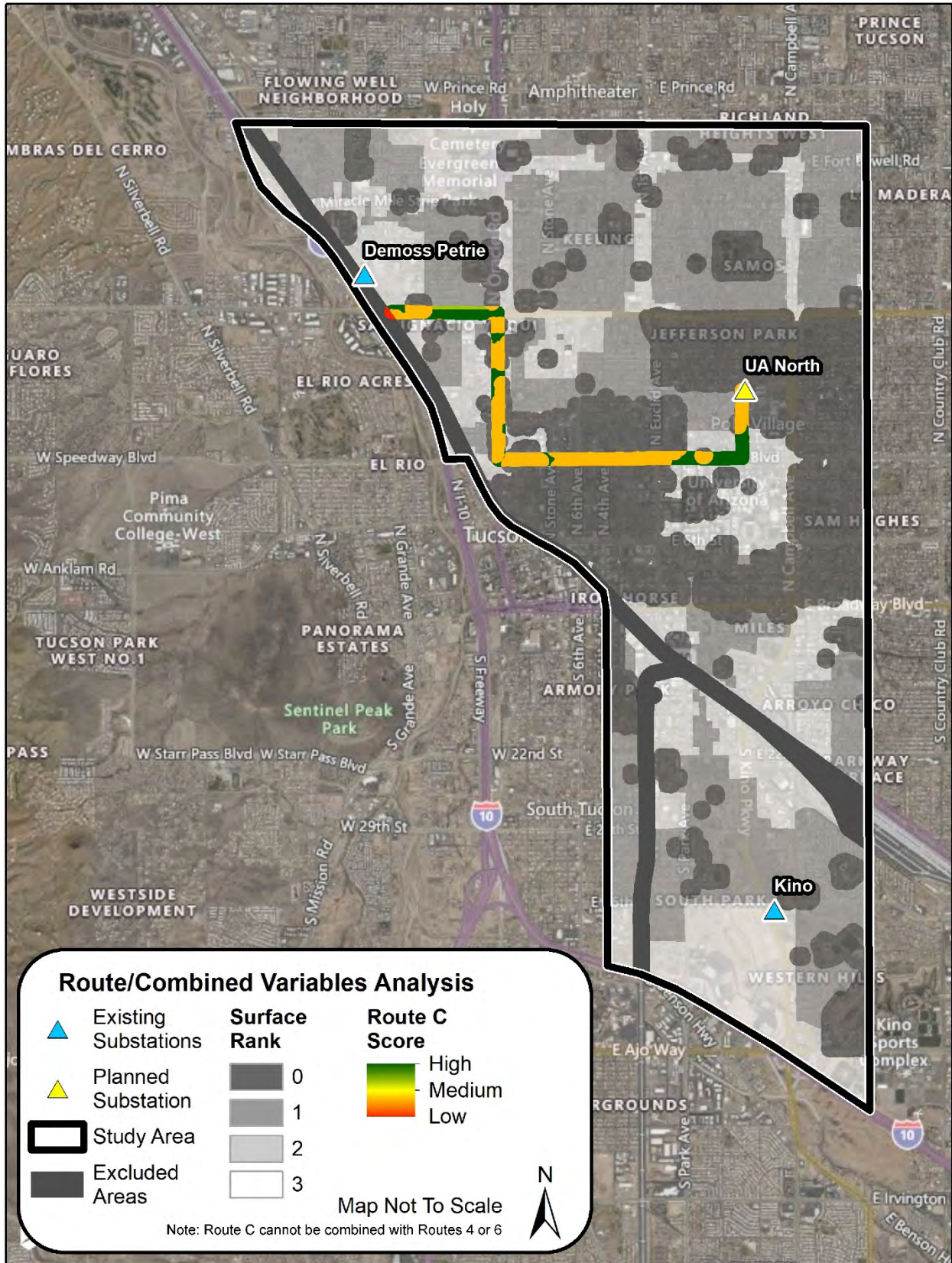


Figure G.9. Route C.

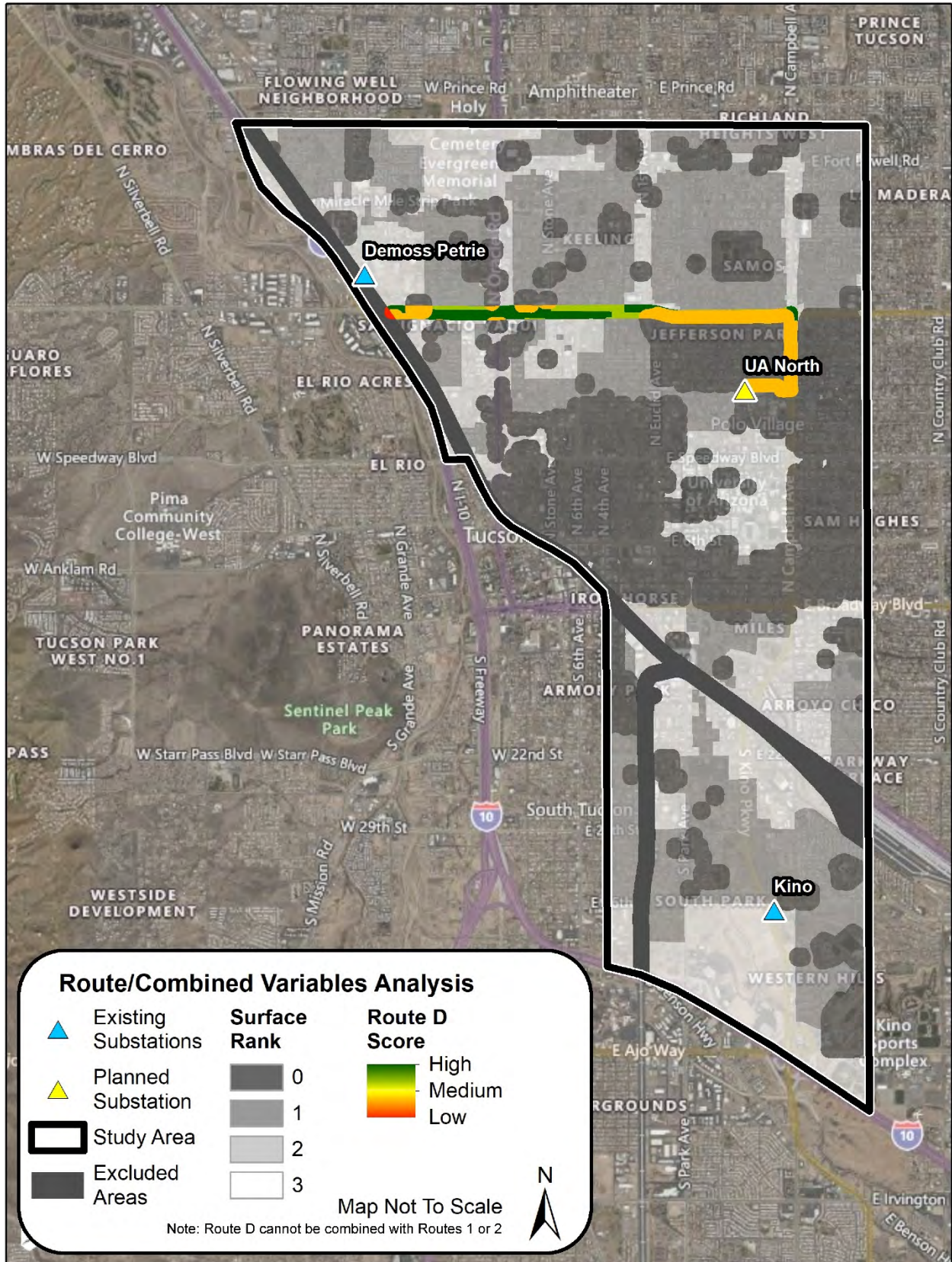


Figure G.10. Route D.

Appendix H. Phase 3 Analysis—Supporting Documentation

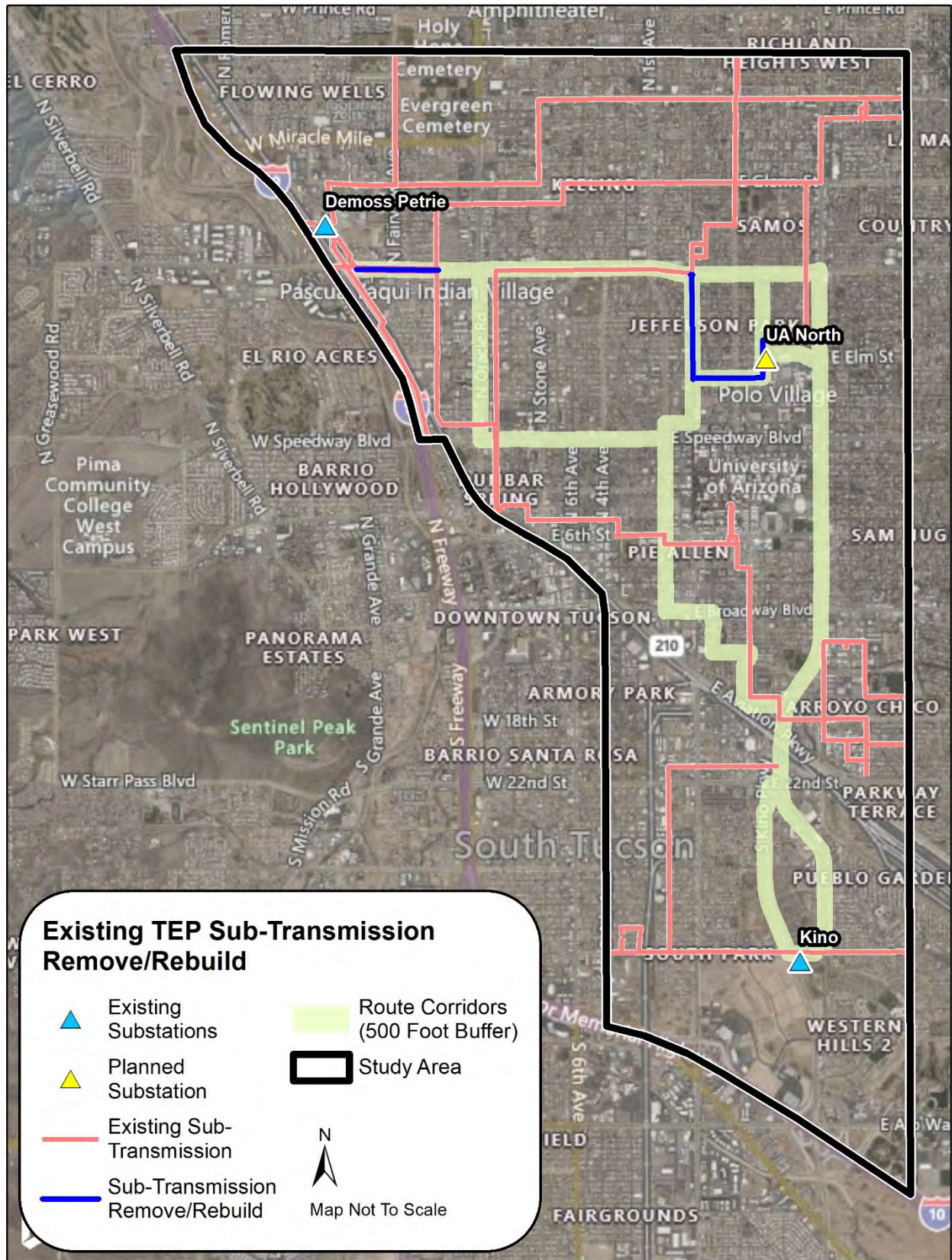


Figure H.1. Criteria 1 Map.

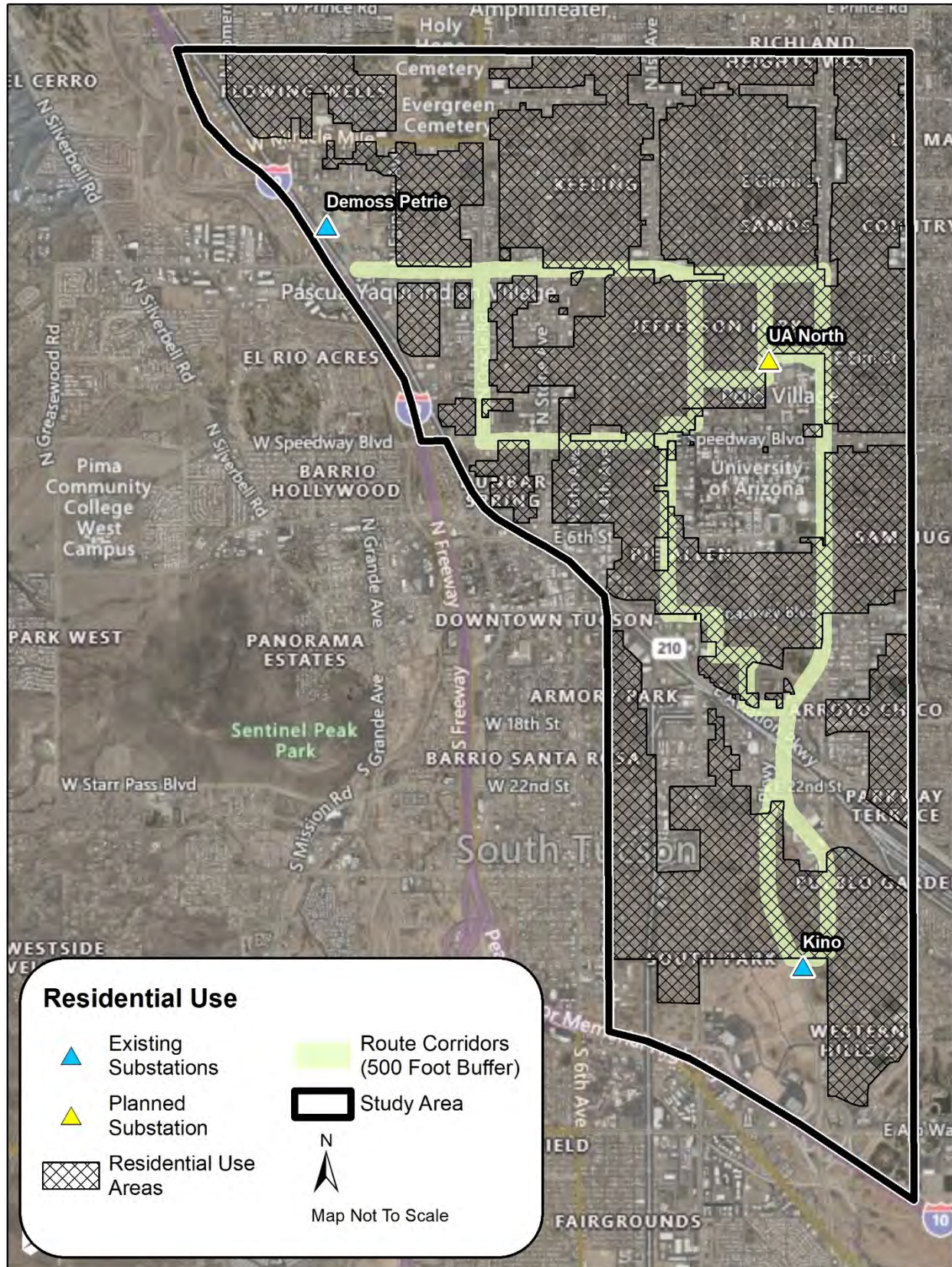


Figure H.2. Criteria 3 Map.

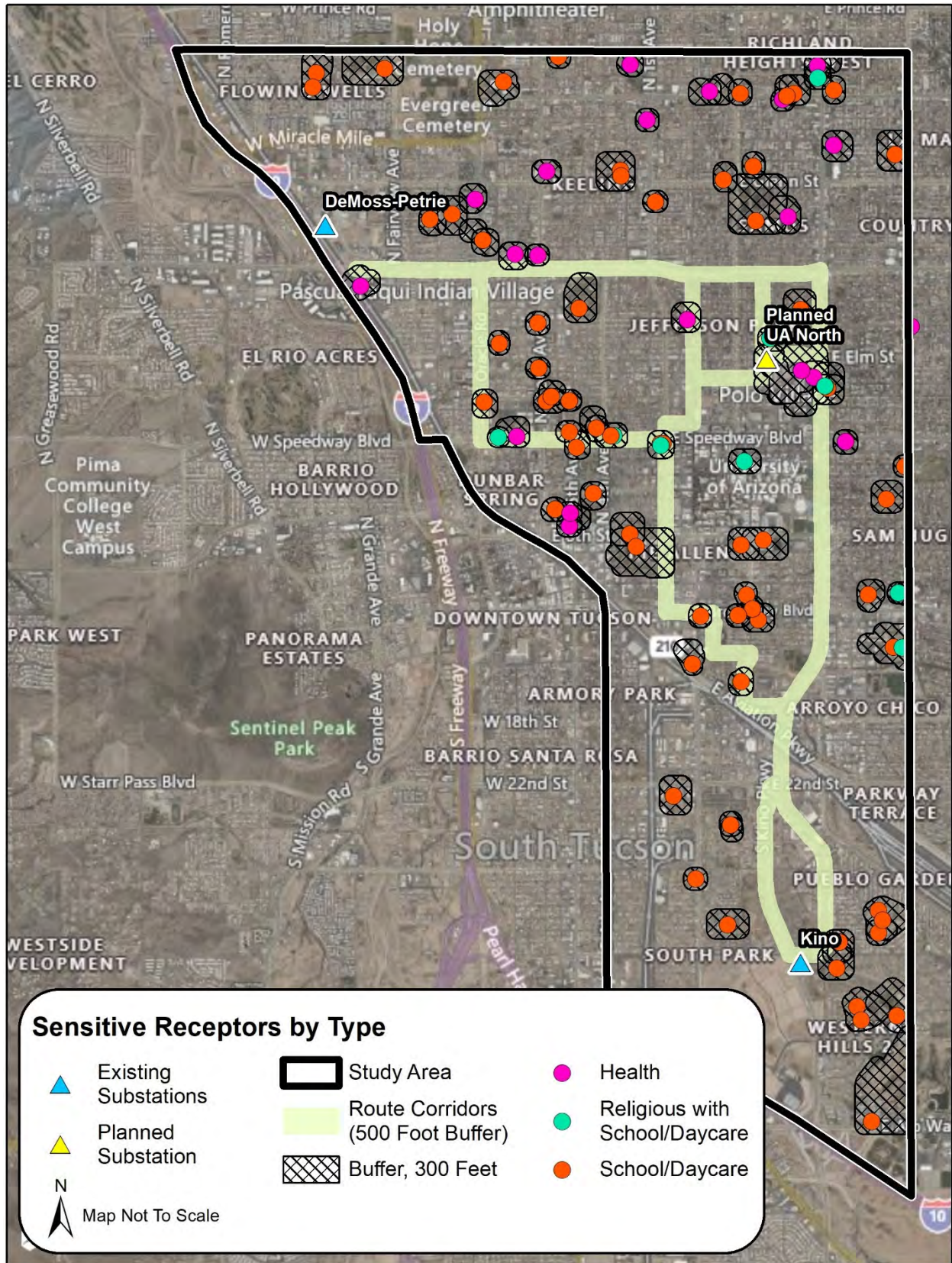


Figure H.3. Criteria 5 Map

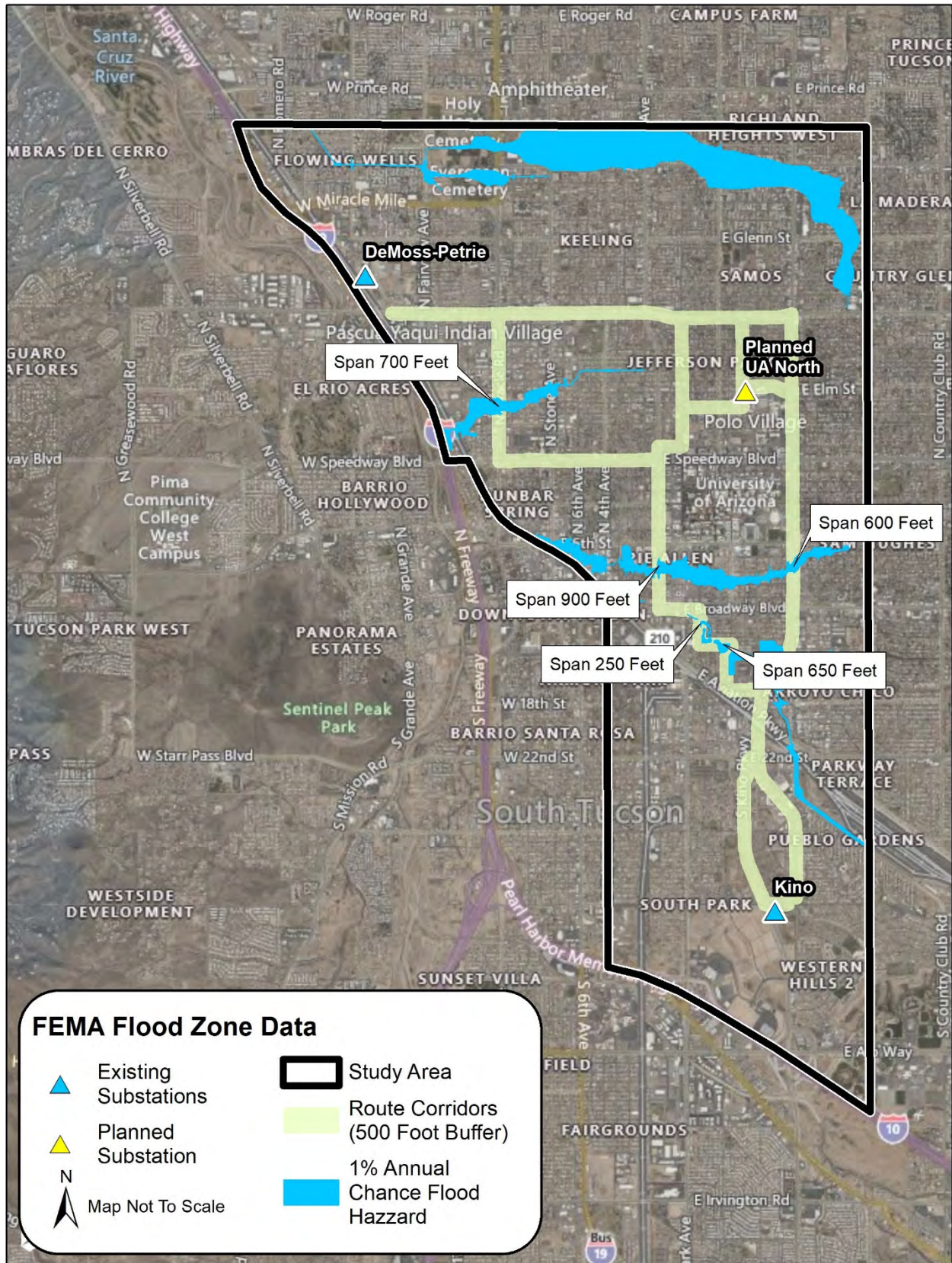


Figure H.4. Criteria 10 Map.

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Table H.1. Kino to DMP 138kV Transmission Line Project—Preliminary Alternative Route Phase 3 Comparison Matrix

Criteria for Comparison	1a	1b	1d	1e	2a	2b	2d	2e	3a	3d	5a	5d
1 Ability to Use Existing Road ROW and TEP Corridors (29% CWG/1 point weight assigned)												
Percentage in existing road right-of-way	96.13	96.19	96.33	96.61	94.62	94.7	94.89	95.28	93.01	93.58	91.57	92.26
Percentage to be co-located or removed/rebuilt existing TEP sub-transmission or transmission line	8.8	21.39	6.78	12.79	8.81	21.42	6.79	12.8	14.36	11.86	14.5	11.96
Total (higher the percent the better)	104.93	117.58	103.11	109.4	103.43	116.12	101.68	108.08	107.37	105.44	106.07	104.22
Comparison Score (1–3)	1	3	1	2	1	3	1	2	2	2	2	1
2 Compatible with Existing & Future Land Use Plans (29% CWG/1 point weight assigned)												
Zoning, land ownership allow for transmission line	3	3	3	3	3	3	3	3	3	3	3	3
Comparison Score	3	3	3	3	3	3	3	3	3	3	3	3
3 Residential Use (84% of Comments/71% CWG/4 point weight assigned)												
Percent existing and planned residential use within the 500-foot corridor buffer	47.72	49.25	49.49	45.15	43.32	44.95	45.31	41.27	58.43	58.84	54.64	55.37
Comparison Score (0 = 3; 1–25% = 2.5; 26–50% = 2; 51–75% = 1.5; 76–100% = 1)	2	2	2	2	2	2	2	2	1.5	1.5	1.5	1.5
Weighted Comparison Score	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.30	0.30	0.30	0.30
4 Historic Properties (41% of comments/71% CWG/3 point weight assigned)												
Bisecting vs. bordering Historic Districts	77	68	76	100	77	68	76	100	97	96	97	96
Street designation	44	41	35	53	44	41	35	53	61	52	61	52
Historic Districts with 1 vs. 2 sides of the route	43	35	26	45	43	35	26	45	45	28	45	28
Existing power poles located on route	60	61	50	71	60	61	50	71	68	58	68	58
Historic light fixtures within 800-foot route buffer	5	5	5	13	5	5	5	13	10	10	10	10
Historic contributing properties in 800-foot route buffer	111	112	121	158	111	112	121	158	169	179	169	179
Access of historic contributing properties along route	48	39	42	108	48	39	42	108	95	89	95	89
Architectural Impact Rank	142	144	137	180	142	144	137	180	188	183	188	183
Total (higher the score the worse)	530	505	492	728	530	505	492	728	733	695	733	695
Comparison Score (1–3)	2	2.25	2.5	1	2	2.25	2.5	1	1	1	1	1
Weighted Comparison Score	0.67	0.75	0.83	0.33	0.67	0.75	0.83	0.33	0.33	0.33	0.33	0.33
5 Sensitive Receptors (14% of comments/57% CWG/2 points weight assigned)												
Number of sensitive receptor points within the 500-foot corridor buffer	9	10	10	16	12	13	13	19	13	15	15	17
Comparison Score (0 = 3; 1–5 = 2.5; 6–10 = 2; 11–15 = 1.5; 16–20 = 1)	2	2	2	1	1.5	1.5	1.5	1	1.5	1.5	1.5	1
Weighted Comparison Score	1	1	1	0.5	0.75	0.75	0.75	0.5	0.75	0.75	0.75	0.5
6 Room for Separation from Conflicting Utility and Infrastructure Uses (14% CWG/1 points weight assigned)												
Room for Separation (score from Constructability Assessment)	34.33	34.33	34.33	32.93	31.91	31.91	31.91	31.44	31.82	31.82	30.36	30.36

Criteria for Comparison	1a	1b	1d	1e	2a	2b	2d	2e	3a	3d	5a	5d
Significant Constraints Adjustment	2.56	5.31	3.00	9.60	2.75	5.41	3.20	9.55	9.90	10.44	10.41	10.38
Adjusted Score	31.77	29.02	31.33	23.33	29.16	26.50	28.71	21.89	21.92	21.38	19.95	19.98
Comparison Score (1-3)	3	3	3	1	3	2	2	1	1	1	1	1
7 Viewshed (33% of comments/ CWG 29%/2 points weight assigned)												
Impact Score from Visual Assessment (max 3)	2.26	2.48	2.25	2.2	2.31	2.53	2.3	2.25	2.5	2.49	2.51	2.5
Comparison Score (1-3)	1.13	1.24	1.13	1.10	1.16	1.27	1.15	1.13	1.25	1.25	1.26	1.25
8 Cultural Resources (1 point weight assigned)												
Impact to cultural resources (from the Class I Report)	3	3	3	2	3	3	3	2	2	2	2	2
Comparison Score (1-3)	3	3	3	2	3	3	3	2	2	2	2	2
9 Special Status Species (1 point weight assigned)												
Impact to special status species (from Biological Evaluation) Out of Max Score of 30.	30	30	30	30	29	29	29	29	28.46	28.46	28	28
Comparison Score (1-3)	3	3	3	3	3	3	3	3	3	3	3	3
10 100-Year Floodplain (1 point weight assigned)												
Impact to floodplain (from FEMA map review)	3	3	3	3	3	3	3	3	3	3	3	3
Comparison Score (1-3)	3	3	3	3	3	3	3	3	3	3	3	3
11 Ability to Construct and Maintain the Transmission Line (1 point weight assigned)												
Access to construct	3	3	3	3	3	3	3	3	3	3	3	3
Comparison Score (1-3)	3	3	3	3	3	3	3	3	3	3	3	3
12 Cost of Construction (1 point weight assigned)												
Cost of Construction (1M/mile)	\$6,889,813	\$6,993,942	\$7,256,760	\$7,851,294	\$6,880,210	\$6,984,338	\$7,247,157	\$7,841,690	\$7,877,668	\$8,573,737	\$7,799,152	\$8,495,222
Special consideration (10%) for Route D (Grant between Campbell & Park and Elm), Euclid (turning structures) and 20% for Routes 3, 5, & E for alley (transformers and underground distribution services, removal of 46kV)	\$6,889,813	\$6,993,942	\$7,982,436	\$9,421,553	\$6,880,210	\$6,984,338	\$7,971,873	\$9,410,028	\$9,453,202	\$11,145,858	\$9,358,982	\$11,043,789
Comparison Score (below \$7M = 3; \$7-8M = 2.5; \$8-9M = 2; \$9-10M = 1.5; greater than \$10M = 1)	3	3	2.5	1.5	3	3	2.5	1.5	1.5	1	1.5	1
Total Scores												
Total Comparison Score (No Weight) Max 36	27	30	27	22	27	28	26	22	22	21	22	20
Total Comparison Score (Weighted) Max 36	25.20	27.39	24.86	20.83	24.97	26.17	23.63	20.86	21.13	20.63	21.14	19.38
Criteria of Most Concern Weighted Score (Residential, Historic, Sensitive, Viewshed)	3.20	3.39	3.36	2.33	2.97	3.17	3.13	2.36	2.63	2.63	2.64	2.38

Table H.2. Summary of Significant Constructability Constraints

Link No.	Street	Segment	Significant Constraints							Total Stacked Constraints	Summary of Significant Constraints	
			1	2	3	4	5	6	7			
20	Speedway	6th Ave–Stone	Limited room for TEP overhead facilities along link. Possible 46kV crossing.	Yes, limited right of way and room for 4'-0" sidewalks.	Gas on north side of the road						3	The right of way along this link is very limited and may not allow for 4'-0" sidewalks even with the purchase of easement due to the location of the building structures to the road. The limited space compounded with the potential gas conflicts makes it difficult to fit 138kV structures along this link without significant mitigation.
23	Grant	1st–6th Ave	46kV/distribution line on south side of the road.	Gas on north side along portions of the road. Coordinate pole placement							2	There is limited right of way behind back of curb along this link. Compounded with other underground utility conflicts it will be difficult to construct without significant mitigation and we are limited to the north side of the road due to the road widening project and other facilities on the south side.
24	Park-Mountain	Grant	Grant Road Widening Project. The road has not been widened in this area yet. Poles would need to be relocated later when project continues.								1	Constructability issues and schedule delays are a large factor along this link, due to the extent of coordination and demolition needed to building along this segment ahead of the Roadway Improvement Project.
25	Helen	Euclid–Park	Distribution line on the south side of the road. Limited right of way for overhead transmission line	Yes outage to underground the line and underground services to customers.	Yes, limited right of way and room for 4'-0" sidewalks.	Gas line on north side of the road with limited right of way would be difficult to place structure on north side	Sewer in middle of the road but with limited right of way it would be difficult to fit the distribution underground.	Water on south side of the road	Residential wall structures limit pole placement.	7	The right of way along this link is very limited and may not allow for 4'-0" sidewalks even with the purchase of easement due to the location of the building structures to the road. The limited space compounded with the potential gas and water conflicts makes it difficult to fit 138kV structures along this link without significant mitigation. Additionally, TEP's own overhead distribution would need to be underground along this segment in addition to the relocation of the overhead telecommunication attachments. This also compounded with the limited space in right of way makes it difficult to construct an underground distribution alignment along this link.	
26	Grant	Campbell–Vine	Grant Road Widening Project. The road has not been widened in this area yet. Poles would need to be relocated later when project continues.								1	Constructability issues and schedule delays are a large factor along this link, due to the extent of coordination and demolition needed to building along this segment ahead of the Roadway Improvement Project.

Link No.	Street	Segment	Significant Constraints							Total Stacked Constraints	Summary of Significant Constraints	
			1	2	3	4	5	6	7			
26.1	Grant	Vine–Mountain	Grant Road Widening Project. The road has not been widened in this area yet. Poles would need to be relocated later when project continues.								1	Constructability issues and schedule delays are a large factor along this link, due to the extent of coordination and demolition needed to building along this segment ahead of the Roadway Improvement Project.
27	Vine	Elm–Grant	46kV line on the east side of the road that would need to be rebuilt.		Gas line on east side of the road						3	The right of way along this link is very limited and may not allow for 4'-0" sidewalks even with the purchase of easement due to the location of the building structures to the road. The limited space compounded with the potential gas conflict makes it difficult to fit 138kV structures along this link without significant mitigation.
31	Park	Helen–Alley	Distribution overhead on east side of the road	Yes outage to underground the line and underground services to customers.	Yes (4) attackers	Yes, limited right of way and room for 4'-0" sidewalks.	Gas line on east side of the road	Sewer in middle of the road but with limited right of way it would be difficult to fit the distribution underground.	Water line in middle of the road but with limited right of way it would be difficult to underground the distribution.		7	There is limited room in the alley for location of 138kV structures especially with the need to underground the existing distribution and customer service taps. This compounded with the potential conflict with the existing gas line in the alley as well as the relocation of the existing telecommunication wires makes construction along this link difficult without significant mitigation. Additionally, extensive construction coordination would need to occur to limit outages to customers along this link while services are reconfigured and access to the alley is coordinated for residence and other services such as trash pickup.
32	Vine	Alley–Elm	46kV crossing at alley, 46kV overhead line on east side of the road that would need to be rebuilt. Two (2) distribution circuits of underground located on the east side of the road. One (1) circuit of 46kV underground on the west side of the road	Communication line running on west side of the road that would need to be relocated. (3) attackers.	Yes, limited right of way and room for 4'-0" sidewalks.	Gas on west and east side of the road	Residential wall structures limit pole placement.				5	The right of way along this link is very limited and may not allow for 4'-0" sidewalks even with the purchase of easement due to the location of the building structures to the road. The limited space compounded with the potential gas conflict makes it difficult to fit 138kV structures along this link without significant mitigation.
33	Ring	Warren–Substation	Underground Distribution along portions of north and south side of the road. Overhead distribution starts just before ring road curves that would need to be underground	Yes, limited right of way on north side in areas may need easement from hospital on south side.							2	There is a significant amount of conflicts along this link but there is room to locate poles outside of right of way and secure an easement for pole placement.

Link No.	Street	Segment	Significant Constraints							Total Stacked Constraints	Summary of Significant Constraints
			1	2	3	4	5	6	7		
43	alley bet. Lee & Adams	Vine-Park	46kV line that will need to be rebuilt or relocated. If the line cannot be relocated there is not enough room for a double circuit in the alley. Distribution line that will need to be relocated underground. Limited room for overhead facilities.	Yes distribution line that will need to be relocated/ underground services to customers served on the line. Limited space to underground the line and fit the transmission structure	Yes, 46kV line and the distribution line and customers served on the distribution line.	Yes, multiple attachers that will need to be relocated	Gas in alley	Building and tree clearances and limited space in alley to maintain trash truck/ drivability.		6	The right of way along this link is very limited and may not allow for 4'-0" sidewalks even with the purchase of easement due to the location of the building structures to the road. The limited space compounded with the potential gas and water conflicts makes it difficult to fit 138kV structures along this link without significant mitigation.
45	Euclid	Speedway-6th St	Overhead distribution line on west side of the road that would need to be underground. Limited right of way to fit overhead transmission poles	Yes (2) current attachers	Yes, limited right of way and room for 4'-0" sidewalks.	Sewer on east side of the road. Due to limited right of way may be hard to obtain Pima County Wastewater's minimum offset to their line.	Water on west side of the road near University Blvd.	Multiple building conflicts near the road will involve possible special structure framing, easements, and moving to different side of the road		6	The right of way along this link is very limited and would not allow for 4'-0" sidewalks even with the purchase of easement due to the location of the building structures to the road. The limited space compounded with the potential sewer, gas and water conflicts makes it difficult to fit 138kV structures along this link without significant mitigation. Especially, conflicts with the sewer that require a great distance of separation in an already limiting right of way. Additionally, TEP's own overhead distribution might also need to be underground along this segment in addition to the relocation of the overhead telecommunication attachers. This also compounded with the limited space in right of way makes it difficult to construct an underground distribution alignment along this link.
48	Oracle	Grant-Helen	Limited room for TEP overhead facilities along link. Possible 46kV crossing.	Yes, limited right of way and room for 4'-0" sidewalks.	Building conflicts that need to be mitigated by moving to different sides of the road.					3	There is limited room behind curb in the right of way along this link as well as building infrastructure near edge of right of way that makes placement of 138kV structures difficult along the route and would require the line to jump from one side of the road to the other to mitigate overhead conflicts. This compounded with the other underground utility conflicts would make it difficult to place structures without significant mitigation.

Link No.	Street	Segment	Significant Constraints							Total Stacked Constraints	Summary of Significant Constraints	
			1	2	3	4	5	6	7			
55	Euclid	6th St– Broadway	46kV overhead line at 6th and Euclid. Distribution underground line on west side of the road at 5th and Euclid. 46kV crossing. Distribution overhead line on west side of the road. Limited right of way for transmission structure along this link	Underground distribution line in areas to mitigate conflicts	Yes, limited right of way and room for 4'-0" sidewalks.	Gas on east side of the road	Water on west side of the road	Building structures along route that will limit structure placement and need to maintain clearances too. Limited right of way.	Water on south side of the road	Residential wall structures limit pole placement.	6	The right of way along this link is very limited and may not allow for 4'-0" sidewalks even with the purchase of easement due to the location of the building structures to the road. The limited space compounded with the potential gas and water conflicts makes it difficult to fit 138kV structures along this link without significant mitigation. Additionally, TEP's own overhead distribution might also need to be underground along this segment. This also compounded with the limited space in right of way makes it difficult to construct an underground distribution alignment along this link.
199	Park	Alley–Grant	Distribution line on the south side of the road. Limited right of way for overhead transmission line	Yes outage to underground the line and underground services to customers.	Yes, limited right of way and room for 4'-0" sidewalks.	Gas line on north side of the road with limited right of way would be difficult to place structure on north side	Sewer in middle of the road but with limited right of way it would be difficult to fit the distribution underground.	Water on south side of the road	Residential wall structures limit pole placement.	7	The right of way along this link is very limited and would be difficult to allow for 4'-0" sidewalks even with the purchase of easement due to the location of the building structures to the road. The limited space compounded with the potential gas and water conflicts makes it difficult to fit 138kV structures along this link without significant mitigation. Additionally, TEP's own overhead distribution might also need to be underground along this segment in addition to the relocation of the overhead telecommunication attachments. This also compounded with the limited space in right of way makes it difficult to construct an underground distribution alignment along this link.	

Link No.	Street	Segment	Significant Constraints							Total Stacked Constraints	Summary of Significant Constraints
			1	2	3	4	5	6	7		
201	Speedway	Euclid-6th Ave	Distribution overhead on east side of the road	Yes outage to underground the line and underground services to customers.	Yes (4) attachers	Yes, limited right of way and room for 4'-0" sidewalks.	Gas line on east side of the road	Sewer in middle of the road but with limited right of way it would be difficult to fit the distribution underground.	Water line in middle of the road but with limited right of way it would be difficult to underground the distribution.	7	The right of way along this link is very limited and would be difficult to allow for 4'-0" sidewalks even with the purchase of easement due to the location of the building structures to the road. The limited space compounded with the potential gas and water conflicts makes it difficult to fit 138kV structures along this link without significant mitigation. Additionally, TEP's own overhead distribution might also need to be to be underground along this segment in addition to the relocation of the overhead telecommunication attachers. This also compounded with the limited space in right of way makes it difficult to construct an underground distribution alignment along this link.
205	Cherrybell	Willets-22nd	2 Water lines on west side of the road. Water line on east side of the road near 22nd							1	Link may require the relocation of a water line to mitigate conflicts.

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Table H.3. Significant Constraint Link Adjustments

Link No.	Segment	Street	Route	Link Adjustment	Route Adjustment
8	Fairview–Flowing Wells	Grant	1A	0	
8.1	Flowing Wells–DMP Parcel	Grant	1A	0	
9	15th–Fairview	Grant	1A	0	
10	Oracle–15th	Grant	1A	0	
12	6th Ave–Stone	Grant	1A	0	
12.1	Stone–Oracle	Grant	1A	0	
23	1st–6th Ave	Grant	1A	0.15	
24	Park–Mountain	Grant	1A	0.08	
24.1	Euclid–Park	Grant	1A	0	
26.1	Vine–Mountain	Grant	1A	0.08	
27	Elm–Grant	Vine	1A	0.23	
33	Warren–Substation	Ring	1A	0.15	
35	Campbell–Ring Road	Elm	1A	0	
36	Elm–Speedway	Campbell	1A	0	
46	Speedway–6th St	Campbell	1A	0	
50	6th St–Broadway	Campbell	1A	0	
88	Broadway–cross-country	Kino	1A	0	
88.1	cross-country–Winsett	Kino	1A	0	
91	15th–18th	Kino	1A	0	
107	22nd–27th	Kino	1A	0	
107.1	27th–28th	Kino	1A	0	
107.2	28th–Silverlake	Kino	1A	0	
127	Silverlake–36th St	Kino	1A	0	
128	Martin–Kino Pkwy	36th	1A	0	
204	Kino–22nd	Warehouse/ Cherry	1A	0	
206	Warehouse–Kino	cross-country	1A	0	
	Kino–22nd	Kino Off Ramp	1A	0	
Route 1a Total				0.69	2.55555556
8	Fairview–Flowing Wells	Grant	1B	0	
8.1	Flowing Wells–DMP Parcel	Grant	1B	0	
9	15th–Fairview	Grant	1B	0	
10	Oracle–15th	Grant	1B	0	
12	6th Ave–Stone	Grant	1B	0	
12.1	Stone–Oracle	Grant	1B	0	

Link No.	Segment	Street	Route	Link Adjustment	Route Adjustment
23	1st–6th Ave	Grant	1B	0.15	
24.1	Euclid–Park	Grant	1B	0	
25	Alley–Grant	Park	1B	0.54	
31	Vine–Park	alley btw. Lee & Adams	1B	0.54	
33	Warren–Substation	Ring	1B	0.15	
35	Campbell–Ring Road	Elm	1B	0	
36	Elm–Speedway	Campbell	1B	0	
46	Speedway–6th St	Campbell	1B	0	
50	6th St–Broadway	Campbell	1B	0	
88	Broadway–cross-country	Kino	1B	0	
88.1	cross-country–Winsett	Kino	1B	0	
91	15th–18th	Kino	1B	0	
107	22nd–27th	Kino	1B	0	
107.1	27th–28th	Kino	1B	0	
107.2	28th–Silverlake	Kino	1B	0	
127	Silverlake–36th St	Kino	1B	0	
128	Martin–Kino Pkwy	36th	1B	0	
204	Kino–22nd	Warehouse/Cherry	1B	0	
206	Warehouse–Kino	cross-country	1B	0	
	Kino–22nd	Kino Off Ramp	1B	0	
<i>Route 1b Total</i>				1.38	5.307692308
8	Fairview–Flowing Wells	Grant	1D	0	
8.1	Flowing Wells–DMP Parcel	Grant	1D	0	
9	15th–Fairview	Grant	1D	0	
10	Oracle–15th	Grant	1D	0	
12	6th Ave–Stone	Grant	1D	0	
12.1	Stone–Oracle	Grant	1D	0	
23	1st–6th Ave	Grant	1D	0.15	
24	Park–Mountain	Grant	1D	0.08	
24.1	Euclid–Park	Grant	1D	0	
26	Campbell–Vine	Grant	1D	0.38	
26.1	Vine–Mountain	Grant	1D	0.08	
29	Grant–Elm	Campbell	1D	0	
33	Warren–Substation	Ring	1D	0.15	
35	Campbell–Ring Road	Elm	1D	0	
36	Elm–Speedway	Campbell	1D	0	

Link No.	Segment	Street	Route	Link Adjustment	Route Adjustment
46	Speedway–6th St	Campbell	1D	0	
50	6th St–Broadway	Campbell	1D	0	
88	Broadway–cross-country	Kino	1D	0	
88.1	cross-country–Winsett	Kino	1D	0	
91	15th–18th	Kino	1D	0	
107	22nd–27th	Kino	1D	0	
107.1	27th–28th	Kino	1D	0	
107.2	28th–Silverlake	Kino	1D	0	
127	Silverlake–36th St	Kino	1D	0	
128	Martin–Kino Pkwy	36th	1D	0	
204	Kino–22nd	Warehouse/Cherry	1D	0	
206	Warehouse–Kino	cross-country	1D	0	
	Kino–22nd	Kino Off Ramp	1D	0	
<i>Route 1d Total</i>				0.84	3
8	Fairview–Flowing Wells	Grant	1E	0	
8.1	Flowing Wells–DMP Parcel	Grant	1E	0	
9	15th–Fairview	Grant	1E	0	
10	Oracle–15th	Grant	1E	0	
17	Stone–Main	Speedway	1E	0	
20	6th Ave–Stone	Speedway	1E	0.23	
31	Vine–Park	alley btw. Lee & Adams	1E	0.54	
32	Alley–Elm	Vine	1E	0.38	
33	Warren–Substation	Ring	1E	0.15	
34	Substation–Vine	Elm	1E	0	
35	Campbell–Ring Road	Elm	1E	0	
36	Elm–Speedway	Campbell	1E	0	
43	Euclid–6th Ave	Speedway	1E	0.46	
46	Speedway–6th St	Campbell	1E	0	
48	Grant–Helen	Oracle	1E	0.23	
50	6th St–Broadway	Campbell	1E	0	
88	Broadway–cross-country	Kino	1E	0	
88.1	cross-country–Winsett	Kino	1E	0	
91	15th–18th	Kino	1E	0	
107	22nd–27th	Kino	1E	0	
107.1	27th–28th	Kino	1E	0	
107.2	28th–Silverlake	Kino	1E	0	

Link No.	Segment	Street	Route	Link Adjustment	Route Adjustment
127	Silverlake–36th St	Kino	1E	0	
128	Martin–Kino Pkwy	36th	1E	0	
193	Helen–Speedway	Main	1E	0	
198	Speedway–Helen	Euclid	1E	0	
199	Euclid–Park	Helen	1E	0.54	
201	Helen–Alley	Park	1E	0.54	
202	11th–Main	Speedway	1E	0	
204	Kino–22nd	Warehouse/Cherry	1E	0	
206	Warehouse–Kino	cross-country	1E	0	
	Kino–22nd	Kino Off Ramp	1E	0	
<i>Route 1e Total</i>				3.07	9.59375
8	Fairview–Flowing Wells	Grant	2A	0	
8.1	Flowing Wells–DMP Parcel	Grant	2A	0	
9	15th–Fairview	Grant	2A	0	
10	Oracle–15th	Grant	2A	0	
12	6th Ave–Stone	Grant	2A	0	
12.1	Stone–Oracle	Grant	2A	0	
23	1st–6th Ave	Grant	2A	0.15	
24	Park–Mountain	Grant	2A	0.08	
24.1	Euclid–Park	Grant	2A	0	
26.1	Vine–Mountain	Grant	2A	0.08	
27	Elm–Grant	Vine	2A	0.23	
33	Warren–Substation	Ring	2A	0.15	
35	Campbell–Ring Road	Elm	2A	0	
36	Elm–Speedway	Campbell	2A	0	
46	Speedway–6th St	Campbell	2A	0	
50	6th St–Broadway	Campbell	2A	0	
88	Broadway–cross-country	Kino	2A	0	
88.1	cross-country–Winsett	Kino	2A	0	
91	15th–18th	Kino	2A	0	
114	Silverlake–cross-country	Cherrybell	2A	0	
114.1	cross-country–Willets	Cherrybell	2A	0	
125	36th–Barleycorn	Campbell	2A	0	
125.1	Barleycorn–Silverlake	Campbell	2A	0	
129	Campbell–Martin	36th	2A	0	
129.1	36th–Campbell	cross country	2A	0	
204	Kino–22nd	Warehouse/Cherry	2A	0	

Link No.	Segment	Street	Route	Link Adjustment	Route Adjustment
205	Willets–22nd	Cherrybell	2A	0.08	
206	Warehouse–Kino	cross-country	2A	0	
<i>Route 2a Total</i>				0.77	2.75
8	Fairview–Flowing Wells	Grant	2B	0	
8.1	Flowing Wells–DMP Parcel	Grant	2B	0	
9	15th–Fairview	Grant	2B	0	
10	Oracle–15th	Grant	2B	0	
12	6th Ave–Stone	Grant	2B	0	
12.1	Stone–Oracle	Grant	2B	0	
23	1st–6th Ave	Grant	2B	0.15	
24.1	Euclid–Park	Grant	2B	0	
25	Alley–Grant	Park	2B	0.54	
31	Vine–Park	alley btw. Lee & Adams	2B	0.54	
33	Warren–Substation	Ring	2B	0.15	
35	Campbell–Ring Road	Elm	2B	0	
36	Elm–Speedway	Campbell	2B	0	
46	Speedway–6th St	Campbell	2B	0	
50	6th St–Broadway	Campbell	2B	0	
88	Broadway–cross-country	Kino	2B	0	
88.1	cross-country–Winsett	Kino	2B	0	
91	15th–18th	Kino	2B	0	
114	Silverlake–cross-country	Cherrybell	2B	0	
114.1	cross-country–Willets	Cherrybell	2B	0	
125	36th–Barleycorn	Campbell	2B	0	
125.1	Barleycorn–Silverlake	Campbell	2B	0	
129	Campbell–Martin	36th	2B	0	
129.1	36th–Campbell	cross country	2B	0	
204	Kino–22nd	Warehouse/Cherry	2B	0	
205	Willets–22nd	Cherrybell	2B	0.08	
206	Warehouse–Kino	cross-country	2B	0	
<i>Route 2b Total</i>				1.46	5.407407407
8	Fairview–Flowing Wells	Grant	2D	0	
8.1	Flowing Wells–DMP Parcel	Grant	2D	0	
9	15th–Fairview	Grant	2D	0	
10	Oracle–15th	Grant	2D	0	
12	6th Ave–Stone	Grant	2D	0	

Link No.	Segment	Street	Route	Link Adjustment	Route Adjustment
12.1	Stone–Oracle	Grant	2D	0	
23	1st–6th Ave	Grant	2D	0.15	
24	Park–Mountain	Grant	2D	0.08	
24.1	Euclid–Park	Grant	2D	0	
26	Campbell–Vine	Grant	2D	0.38	
26.1	Vine–Mountain	Grant	2D	0.08	
29	Grant–Elm	Campbell	2D	0	
33	Warren–Substation	Ring	2D	0.15	
35	Campbell–Ring Road	Elm	2D	0	
36	Elm–Speedway	Campbell	2D	0	
46	Speedway–6th St	Campbell	2D	0	
50	6th St–Broadway	Campbell	2D	0	
88	Broadway–cross-country	Kino	2D	0	
88.1	cross-country–Winsett	Kino	2D	0	
91	15th–18th	Kino	2D	0	
114	Silverlake–cross-country	Cherrybell	2D	0	
114.1	cross-country–Willets	Cherrybell	2D	0	
125	36th–Barleycorn	Campbell	2D	0	
125.1	Barleycorn–Silverlake	Campbell	2D	0	
129	Campbell–Martin	36th	2D	0	
129.1	36th–Campbell	cross country	2D	0	
204	Kino–22nd	Warehouse/Cherry	2D	0	
205	Willets–22nd	Cherrybell	2D	0.08	
206	Warehouse–Kino	cross-country	2D	0	
<i>Route 2d Total</i>				0.92	3.172413793
8	Fairview–Flowing Wells	Grant	2E	0	
8.1	Flowing Wells–DMP Parcel	Grant	2E	0	
9	15th–Fairview	Grant	2E	0	
10	Oracle–15th	Grant	2E	0	
17	Stone–Main	Speedway	2E	0	
20	6th Ave–Stone	Speedway	2E	0.23	
31	Vine–Park	alley btw. Lee & Adams	2E	0.54	
32	Alley–Elm	Vine	2E	0.38	
33	Warren–Substation	Ring	2E	0.15	
34	Substation–Vine	Elm	2E	0	
35	Campbell–Ring Road	Elm	2E	0	

Link No.	Segment	Street	Route	Link Adjustment	Route Adjustment
36	Elm–Speedway	Campbell	2E	0	
43	Euclid–6th Ave	Speedway	2E	0.46	
46	Speedway–6th St	Campbell	2E	0	
48	Grant–Helen	Oracle	2E	0.23	
50	6th St–Broadway	Campbell	2E	0	
88	Broadway–cross-country	Kino	2E	0	
88.1	cross-country–Winsett	Kino	2E	0	
91	15th–18th	Kino	2E	0	
114	Silverlake–cross-country	Cherrybell	2E	0	
114.1	cross-country–Willets	Cherrybell	2E	0	
125	36th–Barleycorn	Campbell	2E	0	
125.1	Barleycorn–Silverlake	Campbell	2E	0	
129	Campbell–Martin	36th	2E	0	
129.1	36th–Campbell	cross country	2E	0	
193	Helen–Speedway	Main	2E	0	
198	Speedway–Helen	Euclid	2E	0	
199	Euclid–Park	Helen	2E	0.54	
201	Helen–Alley	Park	2E	0.54	
202	11th–Main	Speedway	2E	0	
204	Kino–22nd	Warehouse/Cherry	2E	0	
205	Willets–22nd	Cherrybell	2E	0.08	
206	Warehouse–Kino	cross-country	2E	0	
<i>Route 2e Total</i>				3.15	9.545454545
7	Manlove–Curtis	Highland/17th	3A	0	
8	Fairview–Flowing Wells	Grant	3A	0	
8.1	Flowing Wells–DMP Parcel	Grant	3A	0	
9	15th–Fairview	Grant	3A	0	
10	Oracle–15th	Grant	3A	0	
12	6th Ave–Stone	Grant	3A	0	
12.1	Stone–Oracle	Grant	3A	0	
23	1st–6th Ave	Grant	3A	0.15	
24	Park–Mountain	Grant	3A	0.08	
24.1	Euclid–Park	Grant	3A	0	
26.1	Vine–Mountain	Grant	3A	0.08	
27	Elm–Grant	Vine	3A	0.23	
31	Vine–Park	alley btw. Lee & Adams	3A	0.54	

Link No.	Segment	Street	Route	Link Adjustment	Route Adjustment
32	Alley–Elm	Vine	3A	0.38	
34	Substation–Vine	Elm	3A	0	
45	Speedway–6th St	Euclid	3A	0.38	
53	Euclid–Freemont	Broadway	3A	0	
55	6th St–Broadway	Euclid	3A	0.46	
57	Manlove–Broadway	Freemont	3A	0	
60	46kV–Freemont	cross country	3A	0	
64.2	Highland–Manlove	46kV line	3A	0	
78	Curtis–Vine	17th	3A	0	
86	Vine–Kino	17th	3A	0	
107	22nd–27th	Kino	3A	0	
107.1	27th–28th	Kino	3A	0	
107.2	28th–Silverlake	Kino	3A	0	
127	Silverlake–36th St	Kino	3A	0	
128	Martin–Kino Pkwy	36th	3A	0	
160.1	Kino Pkwy–Cherry	22nd	3A	0	
198	Speedway–Helen	Euclid	3A	0	
199	Euclid–Park	Helen	3A	0.54	
201	Helen–Alley	Park	3A	0.54	
204	Kino–22nd	Warehouse/Cherry	3A	0	
206	Warehouse–Kino	cross-country	3A	0	
<i>Route 3a Total</i>				3.38	9.941176471
7	Manlove–Curtis	Highland/17th	3D	0	
8	Fairview–Flowing Wells	Grant	3D	0	
8.1	Flowing Wells–DMP Parcel	Grant	3D	0	
9	15th–Fairview	Grant	3D	0	
10	Oracle–15th	Grant	3D	0	
12	6th Ave–Stone	Grant	3D	0	
12.1	Stone–Oracle	Grant	3D	0	
23	1st–6th Ave	Grant	3D	0.15	
24	Park–Mountain	Grant	3D	0.08	
24.1	Euclid–Park	Grant	3D	0	
26	Campbell–Vine	Grant	3D	0.38	
26.1	Vine–Mountain	Grant	3D	0.08	
29	Grant–Elm	Campbell	3D	0	
31	Vine–Park	alley btw. Lee & Adams	3D	0.54	

Link No.	Segment	Street	Route	Link Adjustment	Route Adjustment
32	Alley–Elm	Vine	3D	0.38	
33	Warren–Substation	Ring	3D	0.15	
34	Substation–Vine	Elm	3D	0	
35	Campbell–Ring Road	Elm	3D	0	
45	Speedway–6th St	Euclid	3D	0.46	
53	Euclid–Freemont	Broadway	3D	0	
55	6th St–Broadway	Euclid	3D	0.46	
57	Manlove–Broadway	Freemont	3D	0	
60	46kV–Freemont	cross country	3D	0	
64.2	Highland–Manlove	46kV line	3D	0	
78	Curtis–Vine	17th	3D	0	
86	Vine–Kino	17th	3D	0	
107	22nd–27th	Kino	3D	0	
107.1	27th–28th	Kino	3D	0	
107.2	28th–Silverlake	Kino	3D	0	
127	Silverlake–36th St	Kino	3D	0	
128	Martin–Kino Pkwy	36th	3D	0	
160.1	Kino Pkwy–Cherry	22nd	3D	0	
198	Speedway–Helen	Euclid	3D	0	
199	Euclid–Park	Helen	3D	0.54	
201	Helen–Alley	Park	3D	0.54	
204	Kino–22nd	Warehouse/Cherry	3D	0	
206	Warehouse–Kino	cross-country	3D	0	
<i>Route 3d Total</i>				3.76	10.44444444
7	Manlove–Curtis	Highland/17th	5A	0	
8	Fairview–Flowing Wells	Grant	5A	0	
8.1	Flowing Wells–DMP Parcel	Grant	5A	0	
9	15th–Fairview	Grant	5A	0	
10	Oracle–15th	Grant	5A	0	
12	6th Ave–Stone	Grant	5A	0	
12.1	Stone–Oracle	Grant	5A	0	
23	1st–6th Ave	Grant	5A	0.15	
24	Park–Mountain	Grant	5A	0.08	
24.1	Euclid–Park	Grant	5A	0	
26.1	Vine–Mountain	Grant	5A	0.08	
27	Elm–Grant	Vine	5A	0.23	

Link No.	Segment	Street	Route	Link Adjustment	Route Adjustment
31	Vine–Park	alley btw. Lee & Adams	5A	0.54	
32	Alley–Elm	Vine	5A	0.38	
34	Substation–Vine	Elm	5A	0	
45	Speedway–6th St	Euclid	5A	0.46	
53	Euclid–Freemont	Broadway	5A	0	
55	6th St–Broadway	Euclid	5A	0.46	
57	Manlove–Broadway	Freemont	5A	0	
60	46kV–Freemont	cross country	5A	0	
64.2	Highland–Manlove	46kV line	5A	0	
78	Curtis–Vine	17th	5A	0	
86	Vine–Kino	17th	5A	0	
114	Silverlake–cross-country	Cherrybell	5A	0	
114.1	cross-country–Willetts	Cherrybell	5A	0	
125	36th–Barleycorn	Campbell	5A	0	
125.1	Barleycorn–Silverlake	Campbell	5A	0	
129.1	36th–Campbell	cross country	5A	0	
198	Speedway–Helen	Euclid	5A	0	
199	Euclid–Park	Helen	5A	0.54	
201	Helen–Alley	Park	5A	0.54	
204	Kino–22nd	Warehouse/Cherry	5A	0	
205	Willetts–22nd	Cherrybell	5A	0.08	
206	Warehouse–Kino	cross-country	5A	0	
<i>Route 5a Total</i>				3.54	10.41176471
7	Manlove–Curtis	Highland/17th	5D	0	
8	Fairview–Flowing Wells	Grant	5D	0	
8.1	Flowing Wells–DMP Parcel	Grant	5D	0	
9	15th–Fairview	Grant	5D	0	
10	Oracle–15th	Grant	5D	0	
12	6th Ave–Stone	Grant	5D	0	
12.1	Stone–Oracle	Grant	5D	0	
23	1st–6th Ave	Grant	5D	0.15	
24	Park–Mountain	Grant	5D	0.08	
24.1	Euclid–Park	Grant	5D	0	
26	Campbell–Vine	Grant	5D	0.38	
26.1	Vine–Mountain	Grant	5D	0.08	
29	Grant–Elm	Campbell	5D	0	

Link No.	Segment	Street	Route	Link Adjustment	Route Adjustment
31	Vine–Park	alley btw. Lee & Adams	5D	0.54	
32	Alley–Elm	Vine	5D	0.38	
33	Warren–Substation	Ring	5D	0.15	
34	Substation–Vine	Elm	5D	0	
35	Campbell–Ring Road	Elm	5D	0	
45	Speedway–6th St	Euclid	5D	0.46	
53	Euclid–Freemont	Broadway	5D	0	
55	6th St–Broadway	Euclid	5D	0.46	
57	Manlove–Broadway	Freemont	5D	0	
60	46kV–Freemont	cross country	5D	0	
64.2	Highland–Manlove	46kV line	5D	0	
78	Curtis–Vine	17th	5D	0	
86	Vine–Kino	17th	5D	0	
114	Silverlake–cross-country	Cherrybell	5D	0	
114.1	cross-country–Willets	Cherrybell	5D	0	
125	36th–Barleycorn	Campbell	5D	0	
125.1	Barleycorn–Silverlake	Campbell	5D	0	
129.1	36th–Campbell	cross country	5D	0	
198	Speedway–Helen	Euclid	5D	0	
199	Euclid–Park	Helen	5D	0.54	
201	Helen–Alley	Park	5D	0.54	
204	Kino–22nd	Warehouse/Cherry	5D	0	
205	Willets–22nd	Cherrybell	5D	0.08	
206	Warehouse–Kino	cross-country	5D	0	
<i>Route 5d Total</i>				3.84	10.37837838

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**Application for a Certificate of Environmental
Compatibility**

**Kino to DeMoss-Petrie
138 Kilovolt Transmission Line Project**

Exhibit B-2

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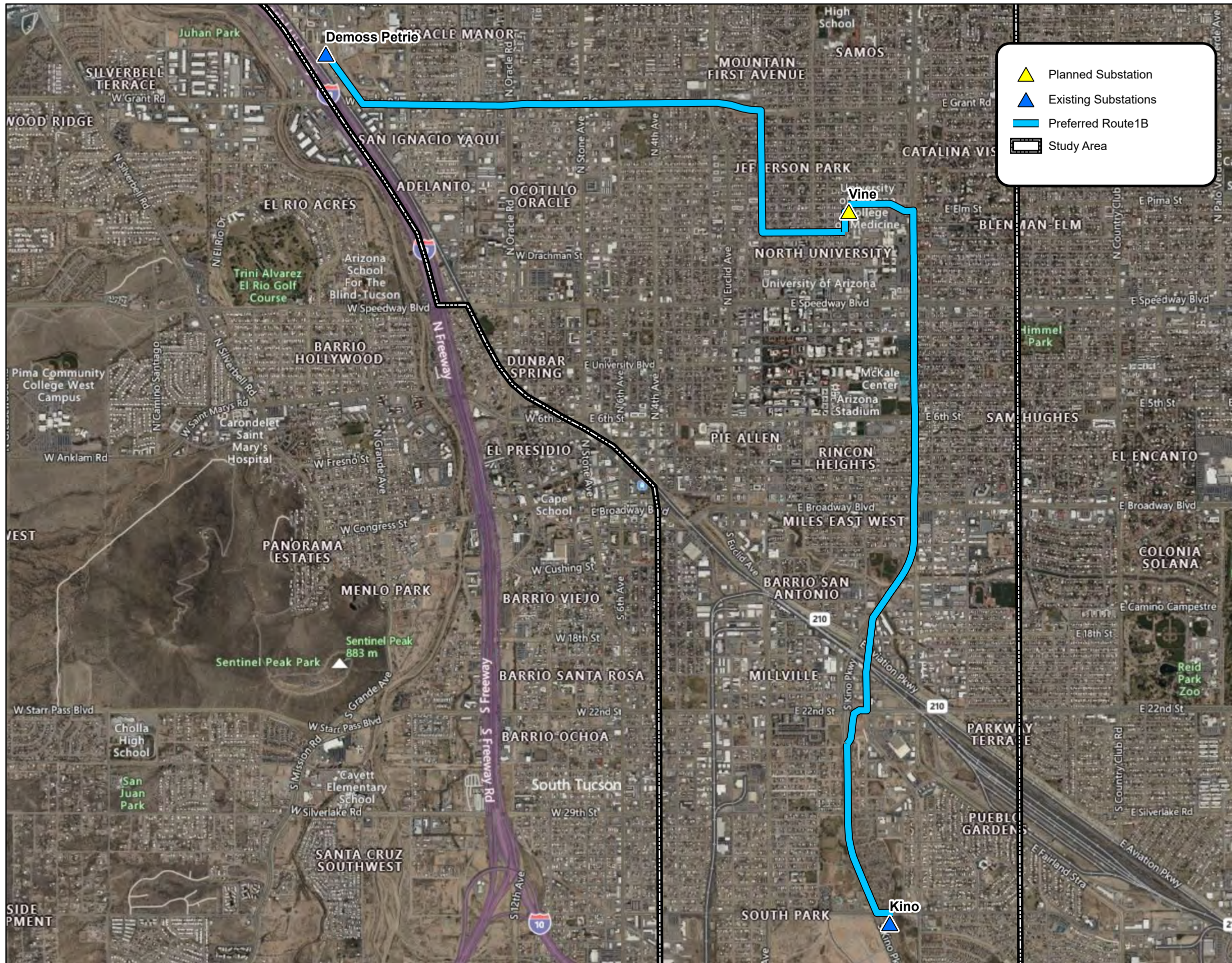
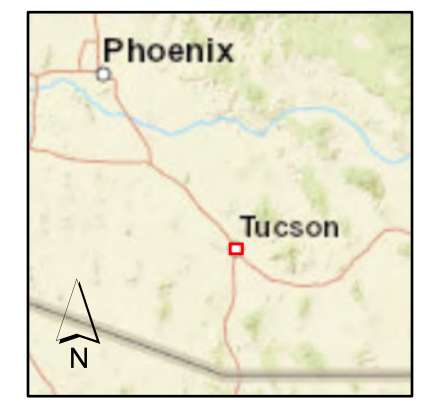
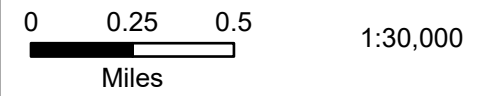


Exhibit B-2

**Kino to DeMoss Petrie
 138kV Transmission
 Line Project**

**Preferred Route
 1B**



Sources: ESRI, Tucson Electric Power, Pima County, City of Tucson, and Arizona State Land Department.
 Projection: NAD 1983 UTM Zone 12N
 Basemap: ESRI World Topographic Map

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

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EXHIBIT C

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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 Introduction	C-1
C.2 Biological Wealth	C-2
C.2.1 Special Status Species	C-2
C.2.2 Important Riparian Areas.....	C-3
C.3 Summary Of Potential Effects.....	C-3
C.3.1 Construction.....	C-4
C.3.2 Operation and Maintenance.....	C-4
C.4 Conclusion.....	C-4
C.5 References	C-4

C.1 Introduction

The Project will consist of building a new 138 kV transmission line totaling 7.2 to 8.1 miles in length, depending on the alternative approved, to connect the existing Kino Substation to the existing DMP Substation. The Project will interconnect to the planned Vine 138 kV Substation. The Project will cross private, USPS, COT, Arizona Board of Regents, and Pima County (Alternative Route 5A only) owned land, as well as COT road ROW. Seven preliminary route alternatives have been identified, resulting from line siting studies, analysis, and a public participation process that began in 2019. The proposed alternative routes are identified as Alternative Routes 1A, 1B, 1D, 2A, 2B, 2D, and 5A, and are described in Section B.1-4 of the application. Alternative Route 1B is the preferred route. The new line will be built with a combination of galvanized (36th Street to Grant Road) and self-weathering steel (Grant Road to DMP Substation) monopoles ranging from 75 to 120 feet above ground, with the taller structures required for site specific clearance issues.

The following analysis describes impacts to areas of biological wealth within the Biological Study Area, which is one mile on either side of the route centerlines analyzed for the Project (two miles wide in total for each route).

C.2 Biological Wealth

Exhibit C-1 maps the alternative routes in relation to major washes and riparian habitat. The Biological Evaluation (BE) in Exhibit C-2 (Tierra , 2020), and this section provide a general description of the existing environment with respect to vegetation, wildlife, and the potential for special status species to occur in the study area. There are no areas of biological wealth, or designated critical habitat present in the study area. The information analyzed includes a list of special status species obtained from the U.S. Fish and Wildlife Service (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 BE analyzed the entire Biological Study Area.

C.2.1 Special Status Species

Desktop research identified 16 special status species known to occur within 3 miles of the Project study area. A detailed screening analysis of each species' life history, habitat requirements, known range and distribution, and known locality information determined that 15 of the 16 species could be removed from further consideration as the Biological Study Area is either outside their range, or suitable habitat is not present within the Biological Study Area. The one species that has the potential to occur in the Biological Study Area or vicinity of the Project study area is the lesser long-nosed bat (see Table 7). No proposed or designated critical habitats are located in the Biological Study Area.

Table 7. Listed Species and Their Potential for Occurrence in the Biological Study Area

Scientific Name	Common Name	Status*	Potential to Occur
AMPHIBIANS			
<i>Lithobates yavapaiensis</i>	lowland leopard frog	1A**	
BIRDS			
<i>Athene cunicularia hypugaea</i>	western burrowing owl	1B**	
<i>Coccyzus americanus</i>	yellow-billed cuckoo	T, 1A**	
<i>Falco peregrinus anatum</i>	American peregrine falcon	1A**	
<i>Sterna antillarum browni</i>	California least tern	E	
<i>Strix occidentalis lucida</i>	Mexican spotted owl	T, 1A**	
MAMMALS			
<i>Leptonycteris curasoae yerbabuena</i>	lesser long-nosed bat	1A**	X
<i>Myotis occultus</i>	Arizona myotis	1B	
<i>Panthera onca</i>	jaguar	E	
<i>Tadarida brasiliensis</i>	Brazilian free-tailed bat	1B**	
REPTILES			
<i>Aspidoscelis stictogramma</i>	giant spotted whiptail	1B**	
<i>Heloderma suspectum</i>	Gila monster	1A**	

Scientific Name	Common Name	Status*	Potential to Occur
<i>Heloderma suspectum suspectum</i>	reticulate Gila monster	1A**	
<i>Kinosternon sonoriense longifemorale</i>	Sonoyta mud turtle	E	
<i>Thamnophis eques megalops</i>	northern Mexican gartersnake	T	
PLANTS			
<i>Coryphantha scheeri</i> var. <i>robustispina</i>	Pima pineapple cactus	E	

Note: From (Tierra , 2020), Table 4.1

*Key: E = Endangered (U.S. Fish and Wildlife Service); T = Threatened (U.S. Fish and Wildlife Service); 1A, B = Species of Greatest Conservation Need Tier (Arizona Game and Fish Department).

**Documented within 4.8 km (3.0 miles) of the study area (Arizona Game and Fish Department Heritage Data Management System).

The western burrowing owl is not protected under the Endangered Species Act (ESA), but it is listed by the USFWS as a National Bird of Conservation Concern. It is also listed as endangered, threatened, or as a species of concern in nine states. All owls in Arizona are protected federally by the Migratory Bird Treaty Act (MBTA) and by Arizona state law (ARS Title 17). It is anticipated that construction of the Project would not impact the western burrowing owl, but it is recommended that a western burrowing owl survey be conducted prior to construction of the Project.

No potential lesser long-nosed bat roost sites were observed in the Biological Study Area at the time of Tierra’s survey; however, a cluster of saguaros was observed in the landscaped median of South Campbell Avenue at 33rd Street (South Campbell Avenue Median Landscape) that could be potentially used by this species as forage. These saguaros can easily be avoided by the proposed transmission line; therefore, it is extremely unlikely that construction of the transmission line in the Alternative Route 2 corridor would result in indirect impacts to lesser long-nosed bat through removal of potential forage species. Transmission line construction in the remaining corridors would have no impact on lesser long-nosed bat because forage species are not present along these corridors.

C.2.2 Important Riparian Areas

There are no perennial or intermittent waterways within the study area, however, several ephemeral drainages are present that would be crossed by the alternative routes. Arroyo Chico is the major drainage in the study area, and is crossed by Alternative Routes 1 and 2 along North Campbell Avenue, and Alternative Route 5 between South Highland Avenue and South Fremont Avenue. While most of the riparian habitat would be spanned by the proposed transmission line, some trimming of riparian vegetation may be required for line safety and equipment access.

C.3 Summary Of Potential Effects

The potential for the Project’s activities to affect any of the special status species was evaluated in the BE. Though there is the potential for one special status species to occur in the study area, there were no individuals observed, and no forage species present in the project area, there the project would have “No Effect” on species listed under the ESA.

C.3.1 Construction

Construction of the proposed transmission line would have no effect on species listed under the ESA, is not likely to have impacts on water resources, would have no impacts on riparian habitat, and would not likely have any long-term impacts on urban wildlife movement or create barriers to wildlife. Construction activities may impact native plants through trimming or removal to gain equipment access. TEP will implement appropriate pre-construction surveys to reduce potential impacts to wildlife.

C.3.2 Operation and Maintenance

Potential impacts from operation and maintenance activities would be similar in nature to those previously described above for construction activities. However, the scope of impacts would be lower in magnitude than those for construction as there would be less equipment and fewer people working. Under normal circumstances, operation and maintenance impacts would be temporary, and would occur once or twice per year over the life of the Project.

C.4 Conclusion

The Project would have no effect on areas of biological wealth, designated critical habitat, washes, or riparian habitat as these are not present in the study area. The Project would have no impact on species listed under the ESA. Minimal, temporary, disturbance is anticipated to native vegetation due to plant trimming and removal to allow for equipment access during construction.

C.5 References

Tierra. (2020). *Biological Evaluation and Alternatives Analysis TEP Kino-DeMoss-Petrie Transmission Line Project*. Tucson, AZ: Tierra Right of Way Services.

Application for a Certificate of Environmental Compatibility

**Kino to DeMoss-Petrie
138 Kilovolt Transmission Line Project**

Exhibit C-1

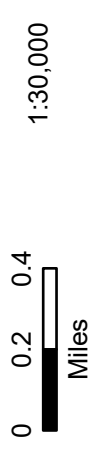
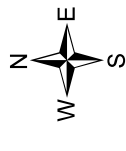
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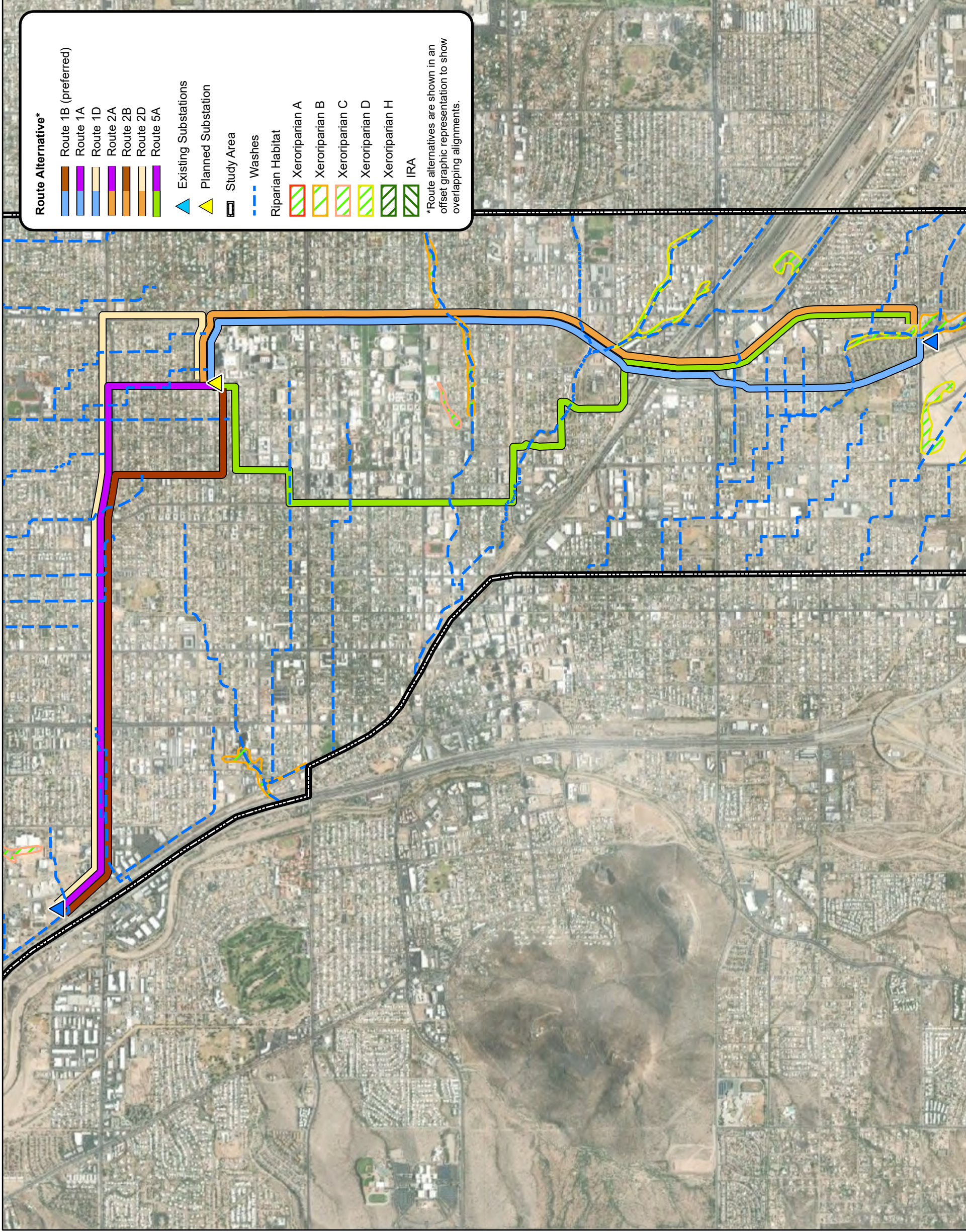
Exhibit C-1

Kino to DeMoss Petrie 138kV Transmission Line Project

Biological



Sources: ESRI, Tucson Electric Power, Pima County, City of Tucson, and Arizona State Land Department.
 Projection: NAD 1983 UTM Zone 12N
 Basemap: ESRI World Topographic Map
 This map is for planning purposes only. TEP and UNS Energy make no warranty of its accuracy.



Route Alternative*

- Route 1B (preferred)
- Route 1A
- Route 1D
- Route 2A
- Route 2B
- Route 2D
- Route 5A

Existing Substations

Planned Substation

Study Area

Washes

Riparian Habitat

Xeroriparian A

Xeroriparian B

Xeroriparian C

Xeroriparian D

Xeroriparian H

IRA

*Route alternatives are shown in an offset graphic representation to show overlapping alignments.

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**Application for a Certificate of Environmental
Compatibility**

**Kino to DeMoss-Petrie
138 Kilovolt Transmission Line Project**

Exhibit C-2

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**Biological Evaluation and Alternatives Analysis
TEP Kino–DeMoss-Petrie Transmission Line Project
Tucson, Pima County, Arizona**

Prepared by:

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August 26, 2020

Revised: September 23, 2020

TABLE OF CONTENTS

Abstract	iv
1.0 Introduction	1
1.1 Study Area.....	1
1.2 Alternatives.....	1
1.2.1 Alternatives 1–6 (Kino Substation–UA North Substation).....	1
1.2.2 Alternatives A–E (UA North Substation–DMP Substation)	4
1.2.3 Functional Combinations of Alternatives	5
2.0 Methods	5
3.0 Description of Existing Conditions.....	6
3.1 General Overview.....	6
3.2 Biotic Community.....	6
3.3 Vegetation in the Study Area	7
3.3.1 Native Plants.....	7
3.3.2 Riparian Vegetation.....	7
3.3.3 Invasive and Non-native Plant Species.....	7
3.4 General Wildlife in the Study Area	8
3.4.1 Wildlife Linkages.....	8
3.5 Water Resources in the Study Area.....	8
3.5.1 Waters of the U.S. including Wetlands	8
3.5.2 Floodplains.....	9
4.0 Findings.....	10
4.1 Special Status Species	10
4.2 Special Status Species Assessment	12
4.2.1 Lesser Long-nosed Bat (<i>Leptonycteris curasoae yerbabuena</i>).....	12
Distribution and Habitat	12
Results and Recommendations.....	12
5.0 Conclusions	12
5.1 Native Plants Weighted Score Modifiers	13
5.2 Special Status Species	14
5.3 Water Resources	15
5.4 Wildlife Linkages.....	15
5.5 Riparian Habitat.....	15
5.6 Native Plants	16
6.0 References.....	17

LIST OF FIGURES

Figure 1. Project location, Alternatives A–E.....	2
Figure 2. Project location, Alternatives 1–6.....	3

LIST OF TABLES

Table 1.1. Study Area TRS Locations ^a	1
Table 1.2. Functional Alternative Route Combinations.....	5
Table 3.1. Native Vegetation in the Study Area	7
Table 3.2. AZWIPWG-listed Weed Species Locations.....	8
Table 3.3. Drainages Crossings in the Study Area	9

Table 3.4. Floodplains in the Study Area	9
Table 4.1. Listed Species and Their Potential for Occurrence in the Study Area	11
Table 5.1. Alternative Corridor Impact Score Summary.....	14
Table 5.2. Functional Alternative Route Combination Scores.....	14
Table 5.3. Summary of Special Status Species Impact Scores	15
Table 5.3. Summary of Water Resources Impact Scores	15
Table 5.4. Summary of Wildlife Linkages Impact Scores	15
Table 5.5. Summary of Riparian Habitat Impact Scores.....	15
Table 5.6. Summary of Native Plants Impact Scores	16

APPENDICES

Appendix A. Alternative Detail and Resource Maps.....	A.1
Appendix B. Representative Study Area Photographs.....	B.1
Appendix C. FWS Official Species List.....	C.1
Appendix D. AZGFD HDMS Environmental Online Review Tool Report.....	D.1
Appendix E. Special status species Excluded from Further Consideration.....	E.1

ABSTRACT

PROJECT TITLE: Biological Evaluation and Alternatives Analysis: TEP Kino–DeMoss-Petrie Transmission Line Project in Tucson, Pima County, Arizona

LAND STATUS: Private

PROJECT DESCRIPTION: A Biological Evaluation was performed to identify and record any Federal or State-listed species or their habitats within the study area.

FIELDWORK DATE: August 18, 2020

ACRES SURVEYED: Approximately 77 ha (190 acres)

CONCLUSIONS: Tucson Electric Power (TEP) identified eight potential alternative corridors within the study area. Each of the corridors was assigned a score based on their individual potential to impact five general biological resource areas, including special status species, water resources, wildlife linkages, riparian habitat, and native plants.

Table A.1 below presents the combined impact scores for each alternative corridor and resource area evaluated in this report. A higher impact score indicates that the specific alternative would have correspondingly lower impacts on resources than an alternative with a lower score. Our evaluation found that Alternative 1 would result in the least amount of impacts to resources for the southern portion of the proposed transmission line between the Kino Substation and the planned UA North Substation. Alternatives A, B, D, and E would result in the least amount of impacts for the northern portion of the proposed line from the DeMoss-Petrie (DMP) Substation to UA North. The combined alternative corridor scores for the functional combinations of northern and southern routes are summarized in Table A.2.

Table A.1. Alternative Corridor Impact Score Summary

Resource Affected	<i>Alt. 1</i>	<i>Alt. 2</i>	<i>Alt. 3</i>	<i>Alt. 5</i>	<i>Alt. A</i>	<i>Alt. B</i>	<i>Alt. D</i>	<i>Alt. E</i>
Special Status Species	3	2	3	2	3	3	3	3
Water Resources	3	3	3	3	3	3	3	3
Wildlife Linkages	3	3	3	3	3	3	3	3
Riparian Habitat	3	3	3	3	3	3	3	3
Native Plants	3	2	1.46	1	3	3	3	3
Total	15	14	13.46	13	15	15	15	15

Table A.2. Functional Alternative Route Combination Scores

Alternative Combination	Score
1, A	30
1, B	30
1, D	30
1, E	30
2, A	29
2, B	29
2, D	29
2, E	29
3, A	28.46
3, D	28.46
5, A	28
5, D	28

1.0 INTRODUCTION

At the request of Tucson Electric Power Company (TEP), Tierra Right of Way Services, Ltd. (Tierra), performed an alternative corridor analysis and reconnaissance site visit for TEP’s proposed Kino to DeMoss-Petrie (DMP) 138kV transmission line project in Tucson, Arizona. The purpose of this analysis is to provide information regarding the biological resources present in the vicinity of the alternative transmission line corridors, collectively referred to as the “study area”, and the potential impacts to those resources that may occur during construction and operation of the new transmission line. This Biological Evaluation (BE) includes descriptions of wildlife, native plants, suitable habitat for special status species and migratory birds, and water resources present in the study area that will assist TEP in their selection of alternative corridors for the new transmission line. The BE identifies potential impacts to these resources and can be used in support of TEP’s application for a Certificate of Environmental Compliance (CEC) from the Arizona Corporation Commission (ACC) allowing the proposed transmission line’s construction.

1.1 Study Area

The study area, which encompasses all 11 of TEP’s Kino–DMP transmission line alternative corridors, is in western and south-central Tucson and is roughly bounded by Grant Road, Interstate 10 (I-10), Campbell Avenue, and 36th Street (Figures 1 and 2). Specific Township, Range, and Section (TRS) locations (Gila and Salt River Baseline and Meridian [G&SRB&M]) of the study area, as indicated on the Tucson East and Tucson, Arizona, 7.5-minute U.S. Geological Survey (USGS) topographic quadrangle maps, are presented in Table 1.1.

Table 1.1. Study Area TRS Locations^a

Township, Range	Sections
Township 14 South, Range 13 East	1, 2, and 12
Township 14 South, Range 14 East	6, 7, 18–20, and 30

^a Gila and Salt River Baseline and Meridian.

1.2 Alternatives

TEP has identified six alternatives (Alternatives 1–6) to connect the Kino Substation to the proposed University of Arizona North (UA North) substation, and five alternatives (Alternatives A–E) to connect the proposed UA North Substation to the DMP Substation. The DMP Substation is located just north of Grant Road on the east side of Interstate 10 (I-10), the Kino Substation is located on the south side of 36th Street east of Kino Parkway, and the proposed UA North Substation would be located in the northwestern portion of the Banner University of Arizona Medical Center (UMC) campus at Elm Street and Vine Avenue (see Figures 1 and 2 and corridor detail maps in Appendix A).

1.2.1 Alternatives 1–6 (Kino Substation–UA North Substation)

Alternative 1 is approximately 6.46 km (4.01 miles) long and extends west from the Kino Substation along 36th Street to Kino Parkway, north on Kino Parkway to the 22nd Street overpass off-ramp, north on the ramp to 22nd Street, east on 22nd Street to Cherry Avenue, north on Cherry Avenue and across the Union Pacific Railroad (UPRR) tracks and Aviation Parkway to Kino Parkway and 17th Street, north on Kino Parkway and then Campbell Avenue to Elm Street, then west on Elm Street to the UA North Substation.

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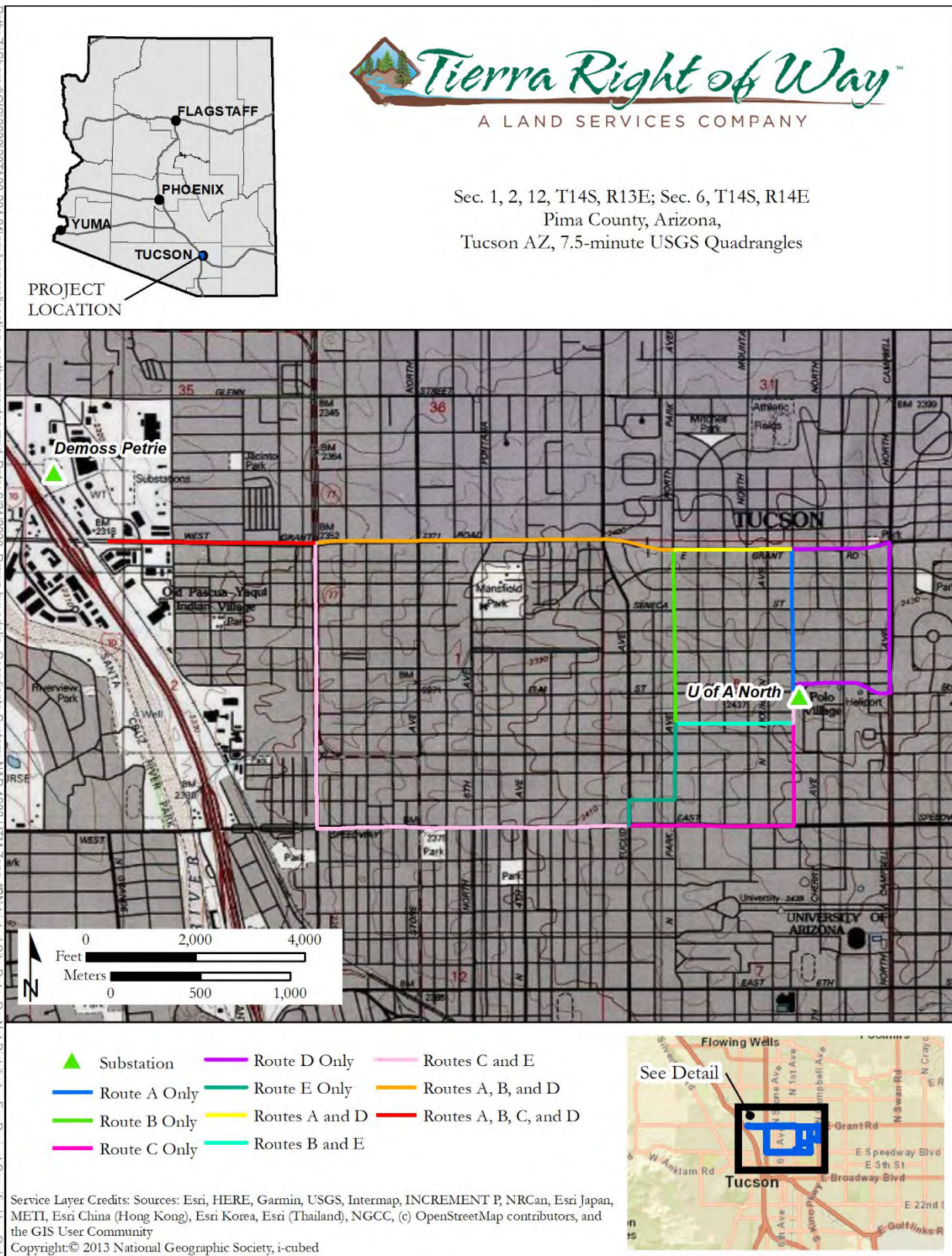


Figure 1. Project location, Alternatives A–E.

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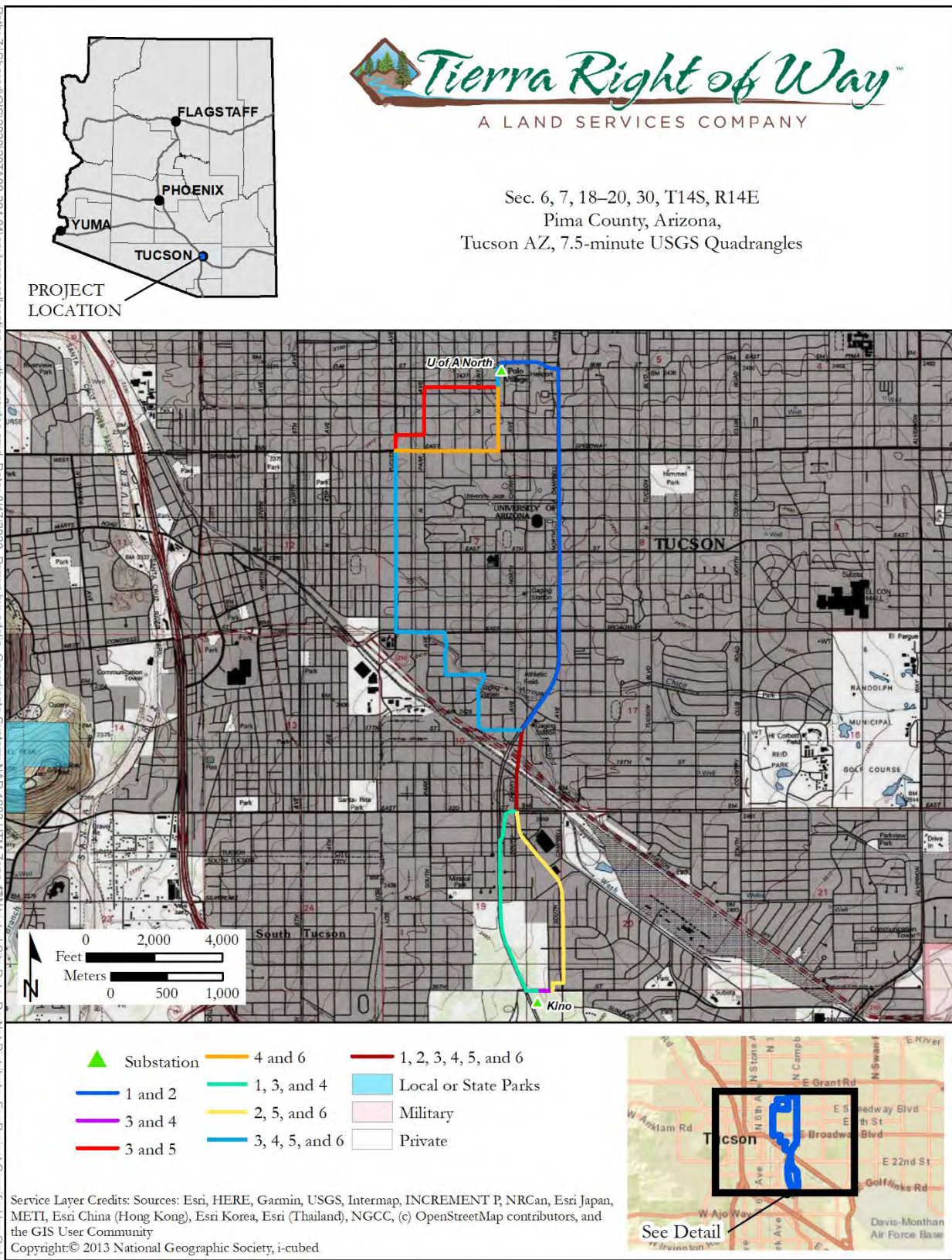


Figure 2. Project location, Alternatives 1-6.

Alternative 2 is approximately 6.45 km (4.00 miles) long and extends east from the Kino Substation along 36th Street to Campbell Avenue, north on Campbell Avenue and Cherrybell Stravenue to 22nd Street, then north on Cherry Avenue across the UPRR tracks and Aviation Parkway and continuing north to the UA North Substation identically to Alternative 1.

Alternative 3 is approximately 8.05 km (5.00 miles) long and is identical to Alternative 1 going north from the Kino Substation to Kino Parkway and 17th Street. The route then continues west on 17th Street to Highland Avenue, north on Highland Avenue crossing Arroyo Chico, west along Manlove Street to Fremont Avenue, north on Fremont Avenue to Broadway Boulevard, west on Broadway to Euclid Avenue, north on Euclid Avenue to Helen Street, east on Helen Street to Park Avenue, north on Park Avenue to the alley between Lee and Adams Streets, east along the alley to Vine Avenue, then north on Vine Avenue to the UA North Substation.

Alternative 4 is approximately 8.07 km (5.01 miles) long and is identical to Alternative 3 from the Kino Substation north to Euclid Avenue and Speedway Boulevard. The route continues east on Speedway to Vine Avenue and then north on Vine Avenue to the UA North Substation.

Alternative 5 is approximately 7.95 km (4.94 miles) long and is identical to Alternative 2 going north from the Kino Substation to Cherrybell Stravenue and 22nd Street and identical to Alternative 3 going north from Cherrybell Stravenue and 22nd Street to the UA North Substation.

Alternative 6 is approximately 7.96 km (4.95 miles) long and is identical to Alternative 2 going north from the Kino Substation to Cherrybell Stravenue and 22nd Street and identical to Alternative 4 going north from Cherrybell Stravenue and 22nd Street to the UA North Substation.

1.2.2 Alternatives A–E (UA North Substation–DMP Substation)

Alternative A is approximately 4.62 km (2.87 miles) long and extends east from the DMP Substation along Grant Road to Vine Avenue and then south on Vine Avenue to the UA North Substation.

Alternative B is approximately 4.79 km (2.98 miles) long and extends east from the DMP Substation along Grant Road to Park Avenue, south on Park Avenue to the alley between Lee and Adams Streets, then east along the alley to the UA North Substation.

Alternative C is approximately 6.15 km (3.82 miles) long and extends east from the DMP Substation along Grant Road to Oracle Road, south on Oracle Road to Speedway Boulevard, east on Speedway to Vine Avenue, then north on Vine Avenue to the UA North Substation.

Alternative D is approximately 5.74 km (3.57 miles) long and extends east from the DMP Substation along Grant Road to Campbell Avenue, south on Campbell Avenue to Elm Street, then west on Elm Street to the UA North Substation.

Alternative E is approximately 6.14 km (3.82 miles) long and is identical to Alternative C east from the DMP Substation to the intersection of Speedway Boulevard and Euclid Avenue, and it continues to the UA Substation from that intersection along the same route as Alternatives 3 and 5.

1.2.3 Functional Combinations of Alternatives

During their initial alternatives analysis, TEP added Alternative E and removed Alternatives 4, 6, and C from further consideration because they discovered that the University of Arizona is planning to construct two new buildings on Vine Avenue that would be incompatible with the construction of a new transmission line. In addition, TEP found that certain combinations of the alternatives were not viable due to construction concerns with parallel lines; for example, Alternatives 3 and 5 cannot be combined with Alternative D, and Route 5 cannot be combined with Route B or E. Therefore, 12 viable combinations of the alternatives remain that could serve to functionally connect the Kino Substation through the planned UA North Substation to the DMP Substation. These alternative combinations and their overall lengths are summarized in Table 1.2.

Table 1.2. Functional Alternative Route Combinations

Alternative Combination	Length
1, A	11.08 km (6.88 miles)
1, B	11.25 km (6.99 miles)
1, D	12.20 km (7.58 miles)
1, E	12.60 km (7.83 miles)
2, A	11.07 km (6.88 miles)
2, B	11.24 km (6.98 miles)
2, D	12.19 km (7.57 miles)
2, E	12.59 km (7.82 miles)
3, A	12.67 km (7.87 miles)
3, D	13.79 km (8.57 miles)
5, A	12.57 km (7.81 miles)
5, D	13.69 km (8.51 miles)

2.0 METHODS

Prior to conducting fieldwork, Tierra performed background “desktop” research, including a review of the U.S. Fish and Wildlife Service (FWS) Information, Planning, and Conservation System (IPAC) and the Arizona Game and Fish Department (AZGFD) Heritage Data Management System (HDMS), to obtain information on sensitive biological resources that may be present in the study area. After compiling a list of special status species potentially occurring in the study area, Senior Biologist Tim Jordan conducted a reconnaissance site visit of the study area on August 18, 2020. Site reconnaissance consisted of driving all the alternative corridors and stopping frequently to note plant species present, inspect areas with potentially suitable habitat for special status species, and to photographically document the study area. The assessed corridor width during the site visit included the entire right-of-way (ROW) of each road and utility corridor associated with the alternatives. Following the site visit, special status species listed in Section 4.1 were assessed for their potential to occur in the study area based on the existing characteristics of the area. Representative photographs of the alternative transmission line corridors in the study area can be found in Appendix B.

3.0 DESCRIPTION OF EXISTING CONDITIONS

3.1 General Overview

The 11 alternative corridors within the study area are located in built-up urban areas of Tucson, Arizona. All alternative corridors follow previously disturbed, existing road and utility ROWs, and land use in the vicinity consists of commercial, industrial, and residential areas. The topography of the study area is relatively flat with a slight northwestern aspect.

3.2 Biotic Community

The study area is located within the Arizona Upland subdivision of the Sonoran Desertscrub biotic community, as described and mapped by Brown (1994), at elevations ranging from approximately 707–756 m (2,320–2,480 feet) above mean sea level (AMSL). The Arizona Upland biotic community is often referred to as “the Arizona Desert.” It is the most watered and least desert-like desertscrub habitat in North America. Vegetation in this biotic community takes on the appearance of a scrubland or low woodland of leguminous trees with intervening spaces held by one or several open layers of shrubs and perennial succulents. Common tree species found in the Arizona Upland community include Velvet Mesquite (*Prosopis velutina*), Foothills and Blue Palo Verde (*Parkinsonia microphylla* and *P. florida*), Ironwood (*Olneya tesota*), and Desert Willow (*Chilopsis linearis*). Common shrubs include Whitethorn and Catclaw Acacia (*Acacia constricta* and *A. greggii*), Creosote (*Larrea tridentata*), Jojoba (*Simmondsia chinensis*), Four-wing Saltbush (*Atriplex canescens*), and Desert Broom (*Baccharis sarothroides*). Forb and grass species commonly seen include Brittlebush (*Encelia farinosa*), Jimmyweed (*Isocoma tenuisecta*), Broom Snakeweed (*Gutierrezia sarothrae*), Canyon Ragweed (*Ambrosia ambrosioides*), Desert Marigold (*Baileya multiradiata*), Desert Straw (*Stephanomeria pauciflora*), Triangle-leaf Bursage (*Ambrosia deltoidea*), Fluffgrass (*Dasyochloa pulchella*), Sixweeks Grama (*Bouteloua barbata*), and Bush Muhly (*Muhlenbergia porteri*). Cactus species common in the Arizona Upland community include Saguaro (*Carnegiea gigantea*), Fishhook Barrel (*Ferocactus wislizenii*), Pincushion (*Mammillaria microcarpa*), Desert Christmas Cactus (*Cylindropuntia leptocaulis*), Chainfruit Cholla (*Cylindropuntia fulgida*), Cane Cholla (*Cylindropuntia spinosior*), Buckhorn Cholla (*Cylindropuntia versicolor*), Engelmann’s Prickly Pear (*Opuntia engelmannii*), and hedgehog cactus (*Echinocereus* spp.). The lower contact of this subdivision is with the Lower Colorado River Valley biotic community at an elevation between 290–640 m (950–2,100 feet) AMSL. Over an elevation of approximately 1,000 m (3,300 feet) AMSL, the Arizona Desert merges with colder and wetter interior chaparral or semidesert grassland (Brown 1994).

The bimodal rainfall pattern of the Sonoran Desert allows for a greater structural diversity than in the Great Basin, Mohave, or Chihuahuan Deserts. The Sonoran Desert differs markedly from the other North American desert biotic communities, which are dominated by low shrubs, in its arboreal elements and its truly large cacti and succulent constituents. Even in its most arid parts, the Sonoran Desert exhibits tree, tall shrub, and succulent life-forms along drainages and other favored habitats (Brown 1994).

Wildlife in the Arizona Uplands is as diverse as the vegetation. Mammals well represented in this biotic community include Black-tailed Jackrabbits (*Lepus californicus*), ground squirrels (*Spermophilus* spp. and *Ammospermophilus* spp.), pocket mice (*Perognathus* spp.), kangaroo rats (*Dipodomys* spp.), Coyotes (*Canis latrans*), Javelinas (*Tayassu tajacu*), and numerous bat species (*Myotis* spp. and *Leptonycteris* spp., among others). The variety of birds is great and can include Harris’s Hawk (*Parabuteo unicinctus*), Mourning Dove (*Zenaida macroura*), Gambel’s Quail (*Callipepla gambelii*), Burrowing Owl (*Athene cunicularia*), Gila

Woodpecker (*Melanerpes uropygialis*), Verdin (*Auriparus flaviceps*), Cactus Wren (*Campylorhynchus brunneicapillus*), and Phainopepla (*Phainopepla nitens*) (Brown 1994).

Common reptiles found in the Arizona Upland include Desert Tortoise (*Gopherus agassizii*), Zebra-tailed Lizard (*Callisaurus draconoides*), Desert Iguana (*Dipsosaurus dorsalis*), gecko (*Coleonyx* spp.), horned lizard (*Phrynosoma* spp.), whiptail (*Cnemidophorus* spp.), Ground Snake (*Sonora semiannulata*), and rattlesnake (*Crotalus* spp.) (Brown 1994).

3.3 Vegetation in the Study Area

Several areas along the alternative corridors have been landscaped with a combination of native and non-native plants and most of the other vegetation present in the study area is ruderal, or that commonly found in disturbed areas. However, patches of native vegetation remain in two locations (see Table 3.1).

Table 3.1. Native Vegetation in the Study Area

Alternatives	Location	Approximate Length	Notes
2 and 5	Vicinity of main post office	135 m (443 feet)	Creosote, Velvet Mesquite
3 and 5	Vicinity of Arroyo Chico	158 m (520 feet)	Saltbush, Palo Verde, Velvet Mesquite

3.3.1 Native Plants

Native plants observed in the study area characteristic of the Arizona Upland biotic community described above include trees such as Velvet Mesquite and Blue Palo Verde. Other native species observed include Catclaw Acacia, Four-wing Saltbush, Creosote, Desert Broom, Desert Marigold, Globemallow (*Sphaeralcea ambigua*), Jimmyweed, Fluffgrass (*Dasyochloa pulchella*), and Sixweeks Threawn (*Aristida adscensionis*).

3.3.2 Riparian Vegetation

Review of Pima County GIS data indicates that none of the alternative corridors intersect Pima County regulated riparian habitat within the study area (Ordinance 2005-FC-2) (see Appendix A, Figures A.3 and A.4). This regulated habitat includes Xeroriparian A, B, C, and D areas, which are generally associated with ephemeral drainages and differ from the wetter types of riparian habitat by the lack of perennial water sources. Plants present in xeroriparian habitats are typical of those found in upland areas but are typically larger and occur at higher densities due to the presence of water.

3.3.3 Invasive and Non-native Plant Species

The Arizona Wildlands Invasive Plant Working Group (AZWIPWG) has developed categorized lists that are useful in assessing the varying degrees of invasiveness of plant species using ratings of High, Medium, and Low. These ratings are as follows.

High: These species have severe ecological impacts on ecosystems, plant and animal communities, and vegetational structure. Invasiveness attributes are conducive to moderate to high rates of dispersal and establishment. Species are usually widely distributed both among and within ecosystems/communities.

Medium: These species have substantial and apparent ecological impacts on ecosystems, plant and animal communities, and vegetational structure. Invasiveness attributes are conducive to moderate to high rates of dispersal and are often enhanced by disturbance. Ecological amplitude and distribution range from limited to widespread.

Low: These species have minor, yet detectable, ecological impacts. Invasiveness attributes result in low to moderate rates of invasion. Ecological amplitude and distribution are generally limited, but the species can be problematic locally (AZWIPWG 2005).

Three AZWIPWG-listed weed species, including the Medium-rated Bermuda Grass (*Cynodon dactylon*) and the High-rated Buffelgrass (*Pennisetum ciliare*) and Fountain Grass (*P. setaceum*), were identified in the study area at the time of the site visit. A summary of the locations where these weeds were observed is presented in Table 3.2.

One additional non-native plant species not on the AZWIPG list, the naturalized Mexican Palo Verde (*Parkinsonia aculeata*), was observed during the survey.

Table 3.2. AZWIPWG-listed Weed Species Locations

Species	Location	Alternatives
Bermuda Grass	Scattered throughout study area	All
Buffelgrass	Scattered along Campbell and Cherrybell from 36th north to 22nd	2 and 5
Fountain Grass	Scattered along Euclid from Broadway north to Speedway	3 and 5

3.4 General Wildlife in the Study Area

Wildlife species observed in the study area at the time of the survey was limited to Mourning Dove, Common Raven (*Corvus corax*), and whiptail. Some additional species expected to occur in urban areas such as the study area, but were not observed during the field visit, include Pigeon (*Columba livia*), House Sparrow (*Passer domesticus*), Red-tailed Hawk, (*Buteo jamaicensis*), Cooper’s Hawk (*Accipiter cooperii*), Desert Cottontail (*Sylvilagus audubonii*), and Coyote.

3.4.1 Wildlife Linkages

The AZGFD HDMS Online Review Tool Report (Appendix D) indicates that there are no designated wildlife connectivity areas present in the study area; however, the washes within the study area can serve as wildlife corridors for small urban species, such as Coyote and Javelina.

3.5 Water Resources in the Study Area

3.5.1 Waters of the U.S. including Wetlands

There are no perennial or intermittent waterways within the study area; however, several ephemeral drainages are present that would be crossed by the alternatives. Arroyo Chico is the major drainage in the study area, and it is crossed by Alternatives 1–6. The drainages in the study area are not considered jurisdictional because ephemeral features, including ephemeral streams, swales, gullies, and pools flowing or pooling only in direct response to precipitation, are no longer considered Waters of the U.S. (WUS) according to the Clean Water Rule, which took effect on June 22, 2020. A summary of

the drainage crossings for each of the alternatives is presented in Table 3.3 and indicated on Figures A.5 and A.6 in Appendix A.

Table 3.3. Drainages Crossings in the Study Area

Alternative	Number of Drainage Crossings
1 and 2	3: Arroyo Chico, two unnamed drainages
3 and 5	4: Arroyo Chico (three crossings), one unnamed drainage
A and B	none
D	1: unnamed drainage
E	1: unnamed drainage

Pre-field visit review of FWS National Wetland Inventory (NWI) GIS data indicated that there are no previously mapped wetlands in the study area. This absence of wetlands was confirmed during the reconnaissance survey.

3.5.2 Floodplains

Review of Federal Emergency Management Administration (FEMA) GIS data (see Appendix A, Figures A.5 and A.6) indicates that the alternative corridors cross FEMA Zone AE and X floodplains. Zone AE areas have a 1 percent annual chance of flooding, with established base flood elevations and areas mapped as Zone X having a minimal 0.2 percent annual chance of flooding. A summary of the floodplains present in the study area and their lengths intersected by the alternatives is presented in Table 3.4.

Table 3.4. Floodplains in the Study Area

Alternative	Floodplain	Intersected Length
1	Zone X	6.34 km (3.94 miles)
	Zone AE	0.13 km (0.08 miles)
2	Zone AE	0.13 km (0.08 miles)
	Zone X	6.32 km (3.93 miles)
3	Zone X	7.67 km (4.77 miles)
	Zone AE	0.37 km (0.23 miles)
5	Zone X	7.57 km (4.70 miles)
	Zone AE	0.37 km (0.23 miles)
A	Zone X	4.62 km (2.87 miles)
B	Zone X	4.79 km (2.98 miles)
D	Zone X	5.74 km (3.57 miles)
E	Zone X	5.95 km (3.70 miles)
	Zone AE	0.19 km (0.12 miles)

4.0 FINDINGS

4.1 Special Status Species

Special status species were determined through a review of data as managed by the following agencies:

- FWS IPAC Official Species List of Threatened and Endangered species for the study area vicinity in Pima County, Arizona (Appendix C).
- AZGFD HDMS Online Review Tool Report for State Wildlife Action Plan (SWAP) (AZGFD 2012) Tier 1A and 1B Species of Greatest Conservation Need (SGCN) documented within 4.8 km (3.0 miles) of the study area (Appendix D).

The FWS lists six wildlife species (three Endangered and three Threatened), one Endangered flowering plant species, and no critical habitats for the study area vicinity in Pima County, Arizona (see Appendix C). AZGFD HDMS indicates that 10 SGCN are known to occur within 4.8 km (3.0 miles) of the study area, including the Threatened Yellow-billed Cuckoo (*Coccyzus americanus*) (see Appendix D).

The determinations of a wildlife species' potential for occurring in the study area were performed after the field reconnaissance site visit by analyzing four aspects of what constitutes suitable habitat. Suitable habitat can contain one or more of the following: foraging habitat, residential habitat, resting habitat, and mating habitat. Foraging habitat for a species contains food items, such as prey species and plants, and can also contain a water source. Residential habitat is a species' home, such as a burrow, nest, or some other form of shelter. Resting habitat can include temporary shelters, such as shade under a tree, shrub, or rock, and for bird species, perches for roosting or casual use. Mating habitat can be as simple as an area where other same-species individuals can be found or can be more complicated, such as a lekking area or other area used for mating displays.

Suitable habitat for plant species is determined by whether or not a suitable combination of soils, moisture, exposure, elevation, and other factors required by a given plant species is present within the area of concern. The biotic community of an area in question is also important; for example, a desert obligate plant is extremely unlikely to occur in a Montane Conifer Forest biotic community.

Special status species were assessed for their potential to occur in the study area (Table 4.1). Potential to occur is ranked from lowest to highest using the ratings "0," "1," "2," "3," and "Present." A rating of "0" is assigned when there is no potential for a species to occur in the study area, such as when there is unsuitable habitat present or the range of the species in question is completely out of the study area. A rating of "1" is assigned when there is a low potential for a species to occur in the study area, such as when there is low-quality habitat (containing only one of the four aspects that make up suitable habitat) present in the study area. The species under consideration may occur in an area with a rating of "1," but is not common. A rating of "2" is assigned when there is medium potential for a species to occur in the study area (the study area contains marginal habitat, two or three aspects of suitable habitat may be present, and the species is likely to occur). A rating of "3" is assigned when there is a high potential for a species to occur in the study area; all of the suitable habitat aspects are present, and the species is most likely to occur. A rating of "present" is given if the species was observed in the study area during the survey.

After analysis of the data, 15 of the 16 special status species were removed from further consideration because the study area either is outside their known range or suitable habitat is not present in the study area (potential = “0”). The remaining species is discussed below in Section 4.2. Appendix E lists the species removed from further consideration and the justification for the determination.

Table 4.1. Listed Species and Their Potential for Occurrence in the Study Area

Scientific Name	Common Name	Status	Potential to Occur
AMPHIBIANS			
<i>Lithobates yavapaiensis</i>	Lowland Leopard Frog	1A ^a	0
BIRDS			
<i>Athene cunicularia hypugaea</i>	Western Burrowing Owl	1B ^a	0
<i>Coccyzus americanus</i>	Yellow-billed Cuckoo	T, 1A ^a	0
<i>Falco peregrinus anatum</i>	American Peregrine Falcon	1A ^a	0
<i>Sterna antillarum browni</i>	California Least Tern	E	0
<i>Strix occidentalis lucida</i>	Mexican Spotted Owl	T, 1A ^a	0
MAMMALS			
<i>Leptonycteris curasoae yerbabuena</i>	Lesser Long-nosed Bat	1A ^a	1
<i>Myotis occultus</i>	Arizona Myotis	1B	0
<i>Panthera onca</i>	Jaguar	E	0
<i>Tadarida brasiliensis</i>	Brazilian Free-tailed Bat	1B ^a	0
REPTILES			
<i>Aspidoscelis stictogramma</i>	Giant Spotted Whiptail	1B ^a	0
<i>Heloderma suspectum</i>	Gila Monster	1A ^a	0
<i>Heloderma suspectum suspectum</i>	Reticulate Gila Monster	1A ^a	0
<i>Kinosternon sonoriense longifemorale</i>	Sonoyta Mud Turtle	E	0
<i>Thamnophis eques megalops</i>	Northern Mexican Gartersnake	T	0
PLANTS			
<i>Coryphantha scheeri</i> var. <i>robustispina</i>	Pima Pineapple Cactus	E	0

^a Documented within 4.8 km (3.0 miles) of the study area (Arizona Game and Fish Department Heritage Data Management System).

Key: E = Endangered (U.S. Fish and Wildlife Service); T = Threatened (U.S. Fish and Wildlife Service); 1A, B = Species of Greatest Conservation Need Tier (Arizona Game and Fish Department).

4.2 Special Status Species Assessment

4.2.1 Lesser Long-nosed Bat (*Leptonycteris curasoae yerbabuena*)

Distribution and Habitat

In Arizona, Lesser Long-nosed Bat's known distribution is from the Picacho Mountains southwest to the Agua Dulce Mountains and southeast to the Chiricahua Mountains. It is a seasonal visitor to Arizona, usually arriving in early April and departing in mid- to late September. It also has been seen visiting hummingbird feeders in Tucson during January and February. There are nine major roost sites in Arizona (AZGFD 1998). Known Lesser Long-nosed Bat post-maternity roost sites are located in the Patagonia, Huachuca, and Chiricahua Mountains in central Santa Cruz and southwestern and east-central Cochise Counties. Known maternity roosts are located in south-central Pinal County and eastern Pima County (FWS 2007). The Lesser Long-nosed Bat recovery plan states that "protection of all known roost sites and food plants within a 50-mile radius around known roost sites will help to prevent this species from going extinct" (FWS 1995).

Habitat requirements of the Lesser Long-nosed Bat are two-fold. Both suitable day roosts and suitable concentrations of food plants are critical to the survival of the Lesser Long-nosed Bat. Day roosts can be found in both caves and mines, but the criteria for suitable caves and mines have yet to be identified. In addition to roosting requirements, this species needs adequate numbers of flowers or fruit within foraging range of day roosts and along migration routes to support large numbers. In Arizona, this bat feeds on Saguaro and Organ Pipe Cactus (*Cereus thurberi*) in early summer, and on agaves from later in the summer into early fall. Locations of good feeding sites therefore play an important role in determining the availability of potential roosting sites, and roost and food requirements must be considered jointly when discussing the habitat requirements of this bat (FWS 1995).

Results and Recommendations

No potential Lesser Long-nosed Bat roost sites were observed in the study area at the time of Tierra's survey; however, a cluster of Saguaros was observed in the landscaped median of Campbell Avenue at 33rd Street in the Alternative 2 and 5 corridors that could be potentially used by this species as forage. These Saguaros can easily be spanned by the proposed transmission line; therefore, it is extremely unlikely that construction of the proposed transmission line in the Alternative 2 and 5 corridors would result in indirect impacts to Lesser Long-nosed Bat through removal of potential forage species. Transmission line construction in the remaining five corridors would have no impact on Lesser Long-nosed Bat because forage species are not present along these corridors.

5.0 CONCLUSIONS

Each of the alternatives was assigned a score based on its individual potential to impact five general biological resource areas, including special status species, water resources, wildlife linkages, riparian habitat, and native plants. Alternatives 4, 6, and C were not assigned resource impact scores because these three alternatives were removed from further consideration by TEP.

A score of "3" indicated that no impacts to the resource area in question would occur due to selection of the alternative. A score of "2" was given to those alternatives that may impact a resource, but the impact can be mitigated, or if a specific alternative intersected a greater quantity of a resource relative to the other alternatives (see below). A score of "1" was given to those alternatives that would likely impact a resource and the impact either could not be mitigated or would likely be cost-prohibitive.

Mitigation, for the purposes of this assessment, was considered to be avoidance of specific resource features, such as areas with occupied burrowing owl burrows; relocation of special status species (e.g., burrowing owls); and transplantation or revegetation of disturbed areas.

5.1 Native Plants Weighted Score Modifiers

To account for variations between the alternatives in the amount of native plants that may be impacted, a weighted modifier was applied to the score for each of the alternatives to aid in making a relative comparison between them. For example, if there are Alternatives X, Y, and Z; with 400, 1,200, and 800 units of native vegetation intersected and potentially impacted, respectively, the impact scores would be as follows:

- Alternative X: base score = 2, weighted modifier = 0, final score = $2 - 0 = 2$
- Alternative Y: base score = 2, weighted modifier = 1, final score = $2 - 1 = 1$
- Alternative Z: base score = 2, weighted modifier = $800/1200 = 0.67$, final score = $2 - 0.67 = 1.33$

In the example above, all three of the alternatives have a base score of 2 because they all intersect native vegetation; this would serve to set these alternatives apart from additional alternatives that do not intersect native vegetation (score = 3). Alternative X has a weighted modifier of zero because it intersects the least amount of native vegetation of the three alternatives, and Alternative Y has a modifier of 1 because it intersects the most. Alternative Z intersects native vegetation at an intermediate level in comparison to the other alternatives, so its amount of native vegetation intersected is compared relative to Alternative Y, which has the most, by dividing the 800 units of habitat for Alternative Z by the 1,200 units for Alternative Y, resulting in a weighted modifier of 0.67. This is subtracted from the base score of 2, yielding a final score of 1.33 for Alternative Z's native vegetation impacts. For the purposes of this analysis, length in meters was the unit used for the alternative weighted modifier values.

Table 5.1 below presents the combined impact scores for each alternative corridor and resource area evaluated in this report; a higher impact score indicates that the specific alternative would have correspondingly lower impacts on resources than an alternative with a lower score. Our evaluation found that Alternative 1 would result in the least amount of impacts to resources for the southern portion of the proposed transmission line between the Kino Substation and the planned UA North Substation, and that Alternatives A, B, D, and E would result in the least amount of impacts for the northern portion of the proposed line from the DMP Substation to UA North. The combined alternative corridor scores for the functional combinations of northern and southern routes are summarized in Table 5.2. Impact scores of the alternatives for each resource area analyzed in this report are summarized in Sections 5.2–5.6.

Table 5.1. Alternative Corridor Impact Score Summary

Resource Affected	Alt. 1	Alt. 2	Alt. 3	Alt. 5	Alt. A	Alt. B	Alt. D	Alt. E
Special Status Species	3	2	3	2	3	3	3	3
Water Resources	3	3	3	3	3	3	3	3
Wildlife Linkages	3	3	3	3	3	3	3	3
Riparian Habitat	3	3	3	3	3	3	3	3
Native Plants	3	2	1.46	1	3	3	3	3
Total	15	14	13.46	13	15	15	15	15

Table 5.2. Functional Alternative Route Combination Scores

Alternative Combination	Score
1, A	30
1, B	30
1, D	30
1, E	30
2, A	29
2, B	29
2, D	29
2, E	29
3, A	28.46
3, D	28.46
5, A	28
5, D	28

5.2 Special Status Species

The study area was assessed for 16 special status species listed by FWS and/or AZGFD. Of the 16 species, 7 are listed as Threatened or Endangered and therefore warrant full protection under the Endangered Species Act. It was determined that the study area either does not currently contain suitable habitat for, or is located outside the known range of, 15 of the 16 special status species assessed in this report.

Tierra determined that one or more of the alternative transmission line corridors in the study area contains suitable habitat for one State SGCN, Lesser Long-nosed Bat (Table 5.3).

Tierra recommends that construction of the proposed transmission line would have no impact on Lesser Long-nosed Bat. Tierra also recommends that a “No Effect” determination would be appropriate for the project regarding its potential impacts to species listed under the Endangered Species Act.

Table 5.3. Summary of Special Status Species Impact Scores

Resource Affected	Alt. 1	Alt. 2	Alt. 3	Alt. 5	Alt. A	Alt. B	Alt. D	Alt E.
Special Status Species	3	2	3	2	3	3	3	3

5.3 Water Resources

Construction of the proposed transmission line in any of the alternative corridors is not likely to have impacts on water resources (Table 5.3). Waters of the U.S. would not be impacted because none of the drainages crossed by the alternative corridors are considered jurisdictional. Similarly, construction of the proposed transmission line would have no impacts on wetlands because none are present along the alternative corridors. Finally, construction of the proposed transmission line in any of the alternative corridors would not result in impacts to floodplains because the topography of the area would not be substantially modified during construction and surface flows would not be altered.

Table 5.3. Summary of Water Resources Impact Scores

Resource Affected	Alt. 1	Alt. 2	Alt. 3	Alt. 5	Alt. A	Alt. B	Alt. D	Alt. E
Water Resources	3	3	3	3	3	3	3	3

5.4 Wildlife Linkages

Construction of aboveground linear utilities, such as the proposed transmission line in any of the alternative corridors, would not likely have any long-term impacts on urban wildlife movement or create barriers to wildlife (Table 5.4).

Table 5.4. Summary of Wildlife Linkages Impact Scores

Resource Affected	Alt. 1	Alt. 2	Alt. 3	Alt. 5	Alt. A	Alt. B	Alt. D	Alt. E
Wildlife Linkages	3	3	3	3	3	3	3	3

5.5 Riparian Habitat

Construction of the proposed transmission line in any of the alternative corridors would have no impacts on riparian habitat because none of the alternative corridors intersect this type of habitat (Table 5.5).

Table 5.5. Summary of Riparian Habitat Impact Scores

Resource Affected	Alt. 1	Alt. 2	Alt. 3	Alt. 5	Alt. A	Alt. B	Alt. D	Alt. E
Riparian Habitat	3	3	3	3	3	3	3	3

5.6 Native Plants

Native plants in the study area are protected by Arizona Native Plant Law (ANPL) and are also subject to additional local regulations within the City limits of Tucson and unincorporated Pima County. While it is anticipated that vegetation would mostly be spanned by the proposed transmission line, construction of the line may impact native plants through their removal to gain equipment access (Table 5.6). The Alternative 1, A, B, D, and E corridors intersect the least amount of native vegetation of the alternatives. Alternative 2 intersects native vegetation in the vicinity of the main post office on Cherrybell Stravenue, and Alternative 3 intersects native vegetation in the vicinity of Arroyo Chico south of Broadway; Alternative 5 intersects native vegetation at both of these locations. The City of Tucson and Pima County have standards (COT LUC 3.8.0 and Pima County Chapter 18.72) for native plant preservation within construction areas and guidance for mitigation of impacts.

Table 5.6. Summary of Native Plants Impact Scores

Resource Affected	Alt. 1	Alt. 2	Alt. 3	Alt. 5	Alt. A	Alt. B	Alt. D	Alt. E
Native Plants	3	2	1.46	1	3	3	3	3

6.0 REFERENCES

AZGFD (Arizona Game and Fish Department)

- 1998 *Leptonycteris curasoae yerbabuena*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix.

AZWIPG (Arizona Wildlands Invasive Plant Working Group)

- 2005 Invasive Non-native Plants that Threaten Wildlands in Arizona. Available at: <http://sbsc.wr.usgs.gov/research/projects/swepic/SWVMA/InvasiveNon-NativePlantsThatThreatenWildlandsInArizona.pdf>. Accessed on April 3, 2012.

Brown, David E. (editor)

- 1994 *Biotic Communities: Southwestern United States and Northwestern Mexico*. University of Utah Press, Salt Lake City. 341 pp.

Corman and Wise-Gervais (editors)

- 2005 *Arizona Breeding Bird Atlas*. University of New Mexico Press, Albuquerque.

FWS (U.S. Fish and Wildlife Service)

- 1995 *Lesser Long-nosed Bat Recovery Plan*. U.S. Fish and Wildlife Service, Albuquerque.
- 2007 *Lesser Long-nosed Bat 5-Year Review: Summary and Evaluation*. U.S. Fish and Wildlife Service, Phoenix.

APPENDIX A. ALTERNATIVE DETAIL AND RESOURCE MAPS

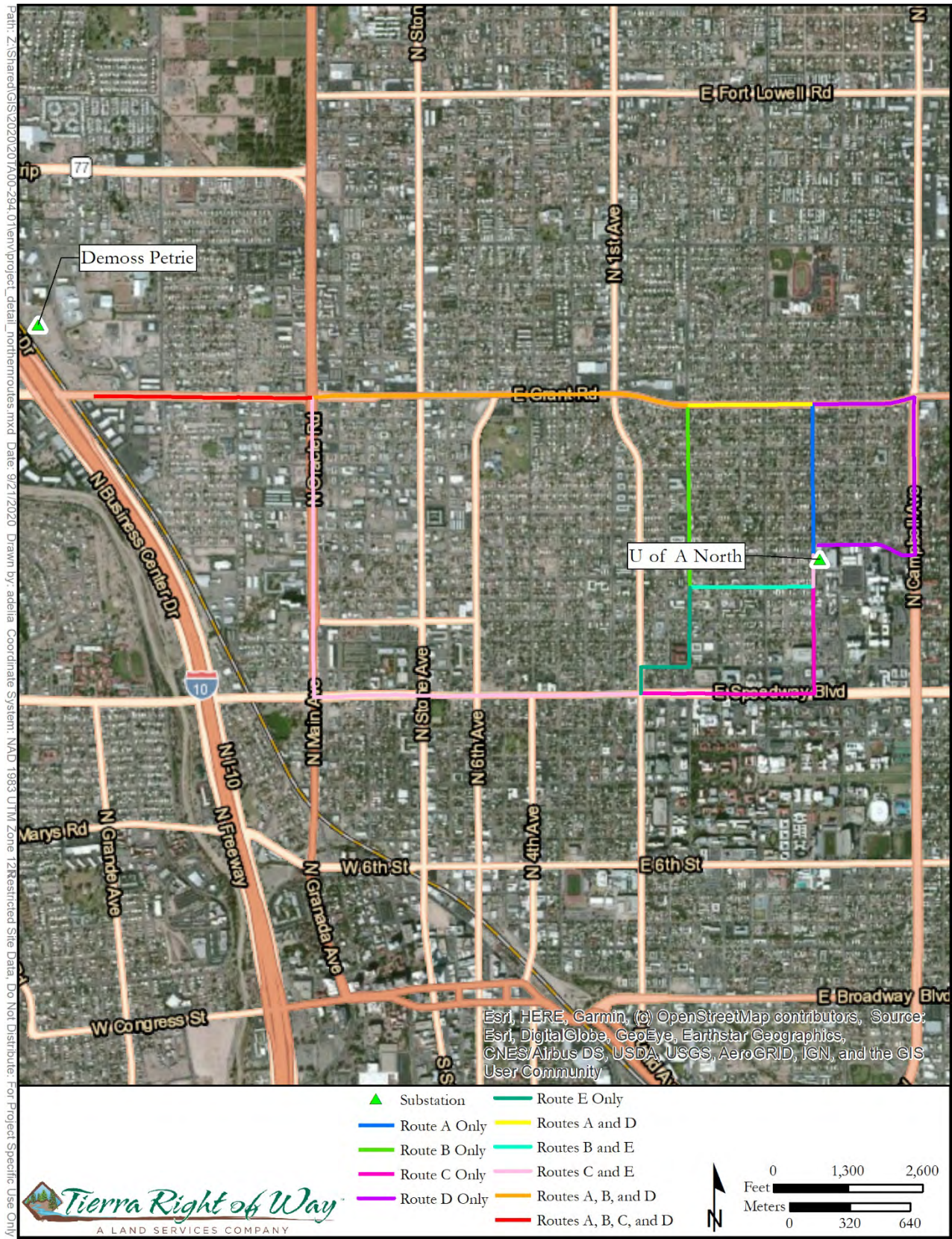


Figure A.1. Alternatives A–D Corridor Detail.

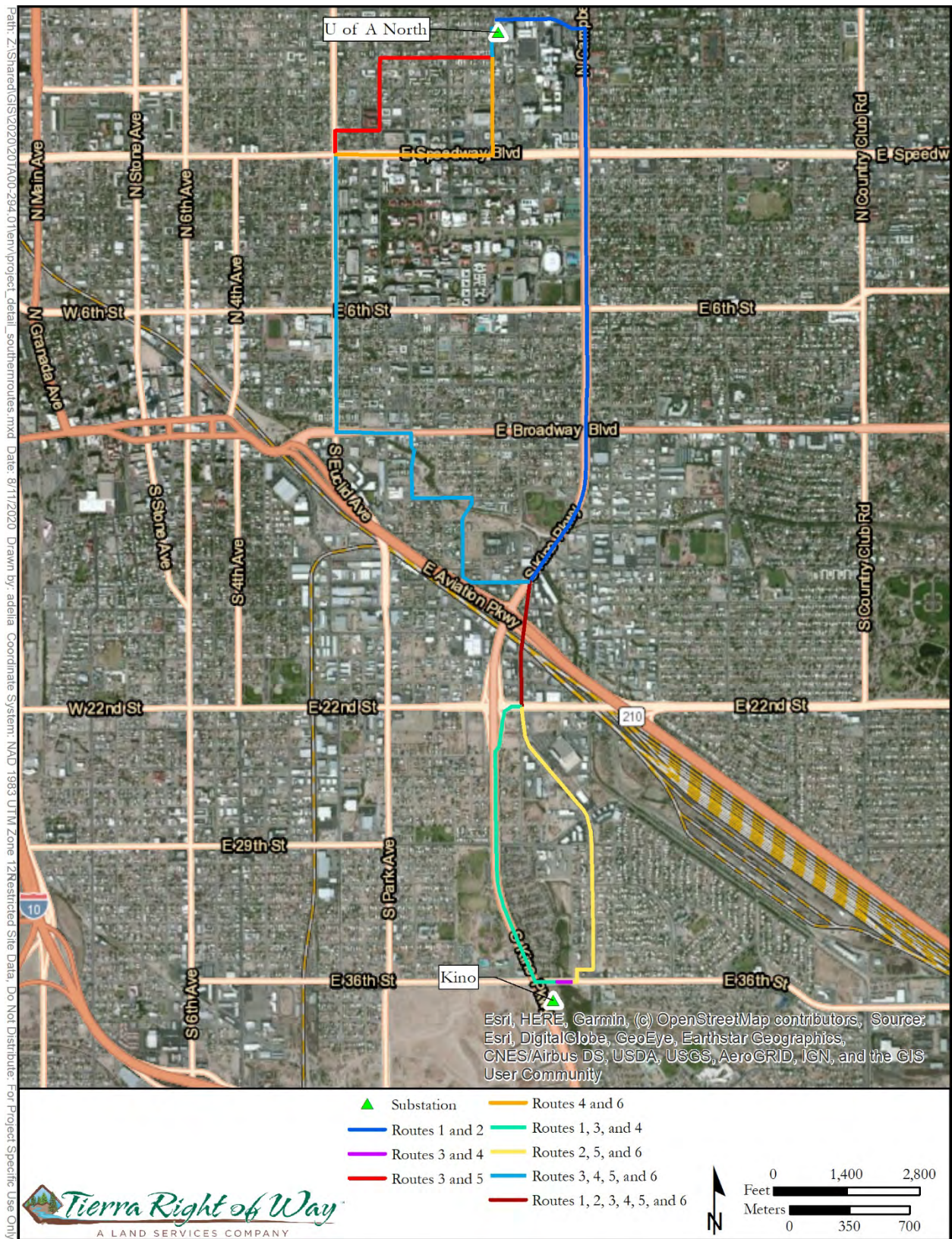


Figure A.2. Alternatives 1-6 Corridor Detail.

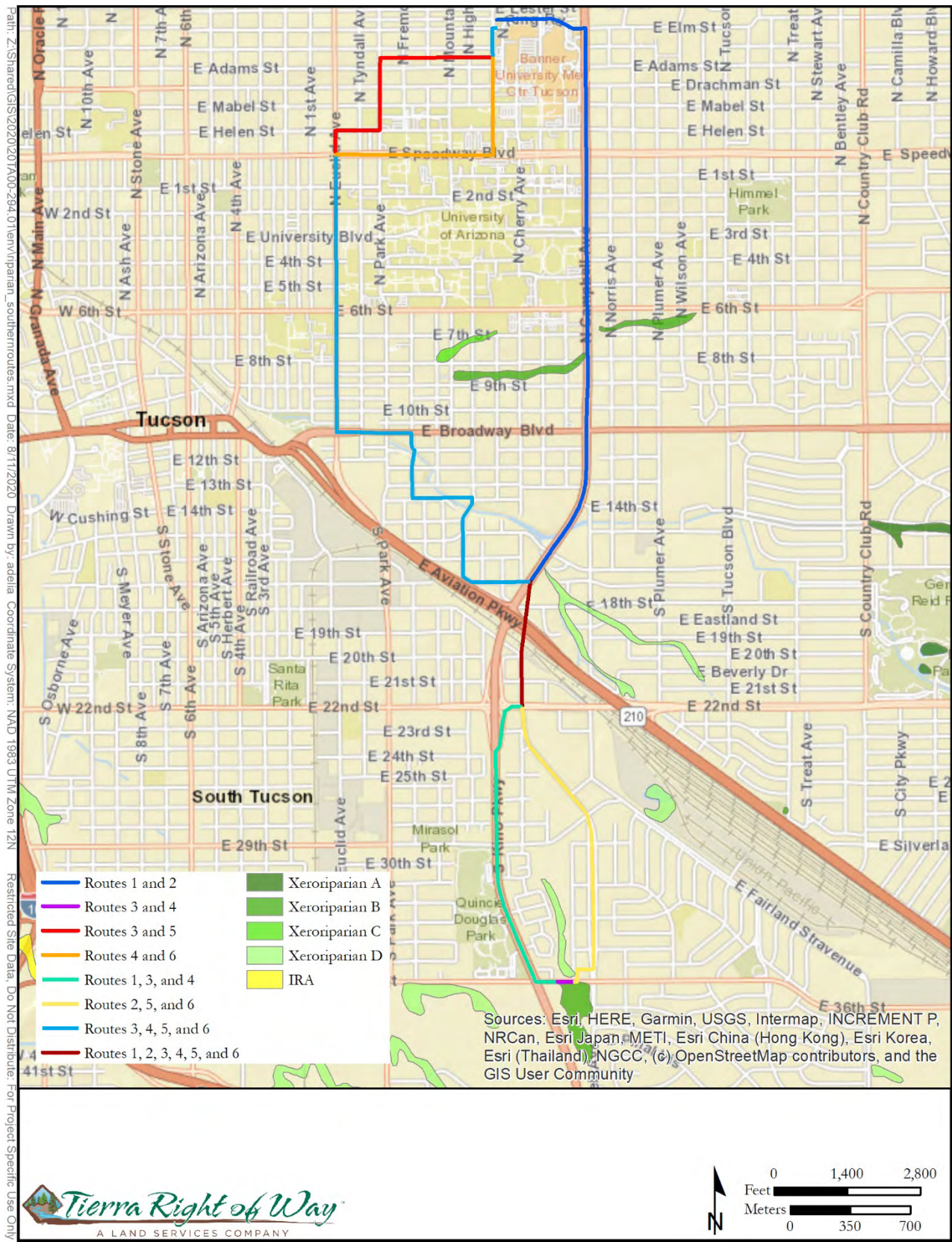


Figure A.4. Alternative 1–6 Riparian Habitat.

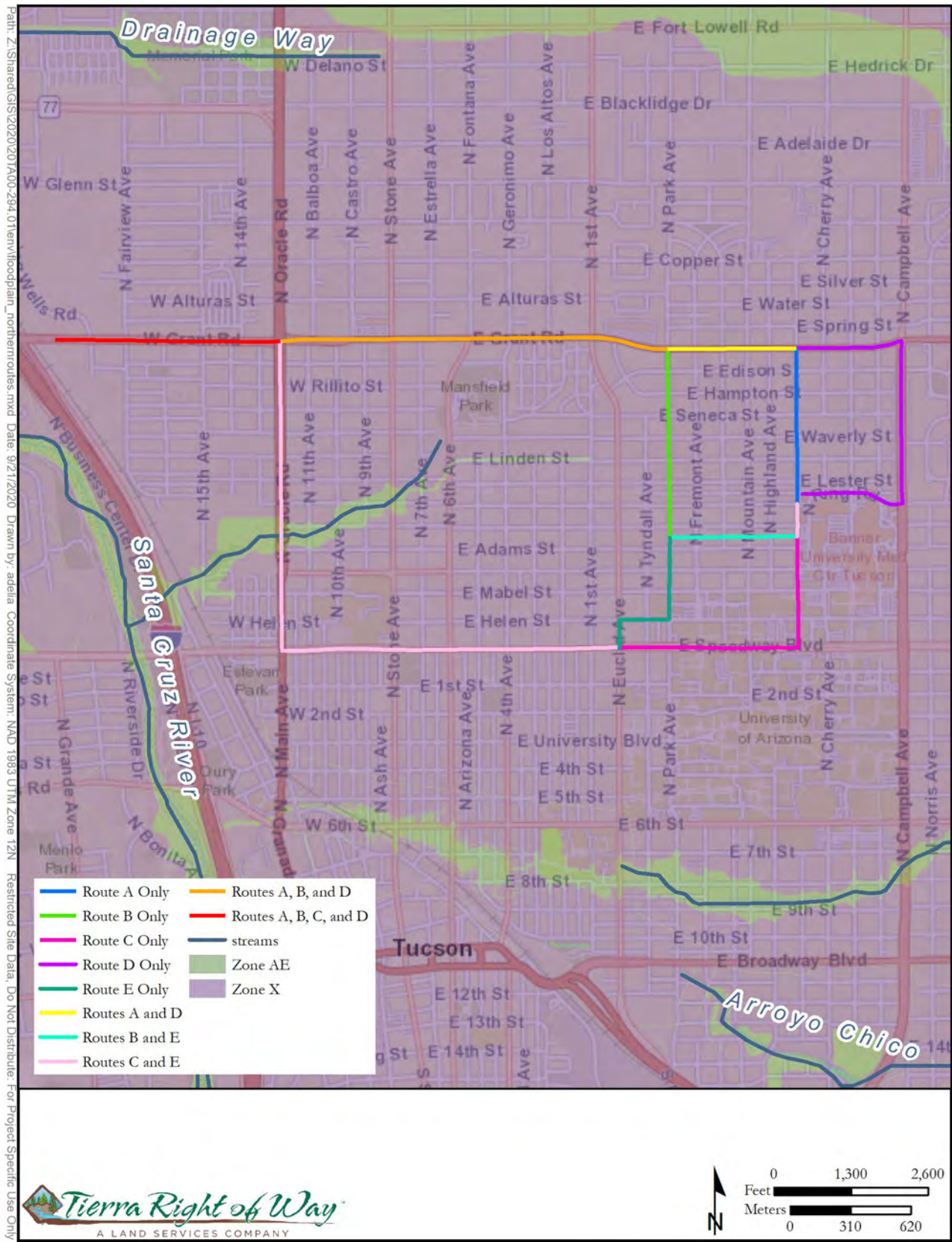


Figure A.5. Alternatives A–D waterways/floodplains.

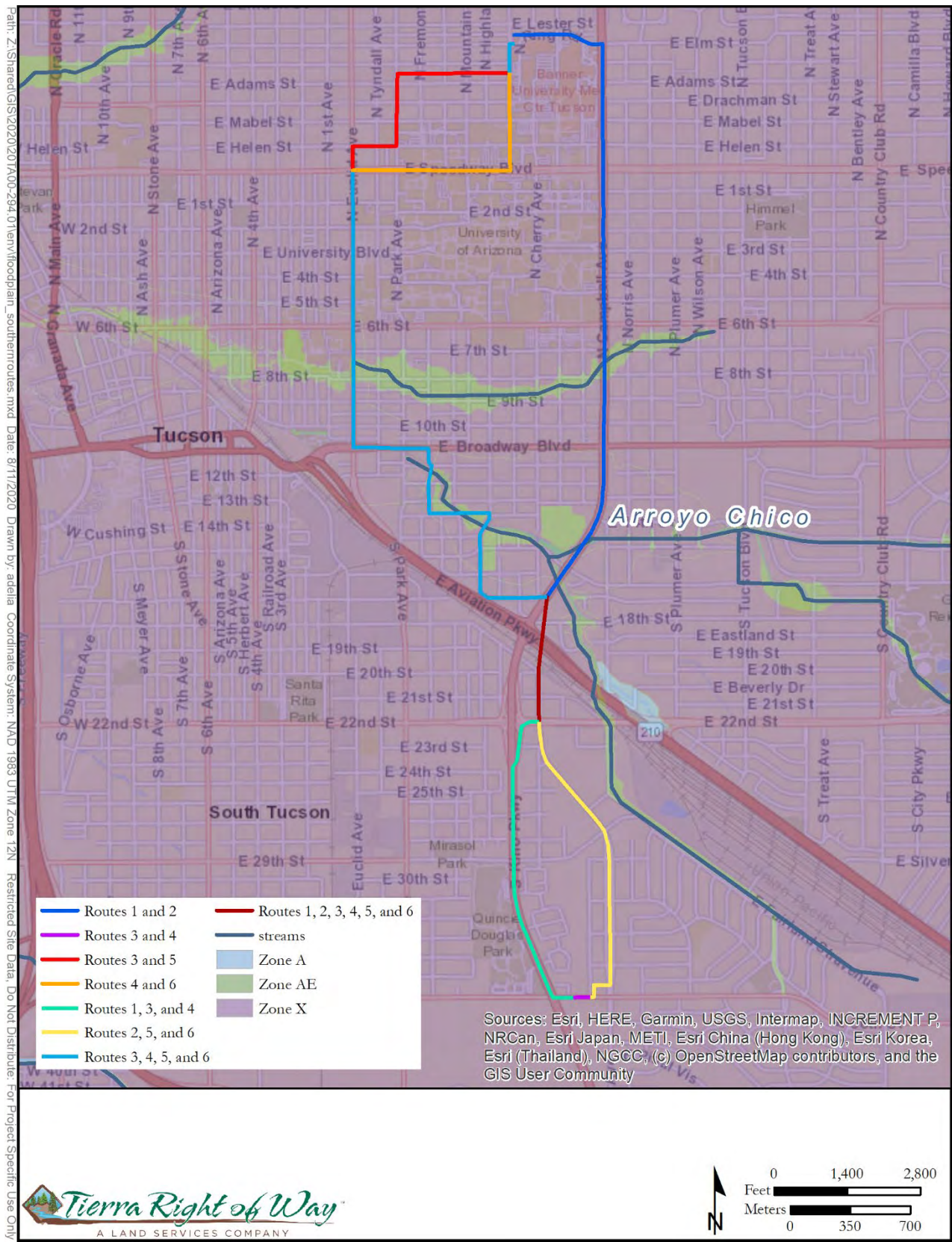


Figure A.6. Alternatives 1–6 waterways/floodplains.

APPENDIX B. REPRESENTATIVE STUDY AREA PHOTOGRAPHS



Photo 1. Alternative 1 and 3 corridor, view to north from 36th and Kino.



Photo 2. Alternative 2 and 5 corridor, view to west from 36th and Kino.



Photo 3. Alternative 2 and 5 corridor, view to north from 36th and Campbell.



Photo 4. Alternative 3 and 5 corridor, view to west from Highland and Manlove.



Photo 5. Alternative 3 and 5 corridor, view to south from Broadway and Fremont.



Photo 6. Alternative 3 and 5 corridor, view to south from Speedway and Helen.



Photo 7. Alternative 3, 5, and B corridor, view to east from Park and alley.



Photo 8. Alternative A, B, and D corridor, view to east from Grant and Oracle.



Photo 9. Alternative A, B, and D corridor, view to east from Grant and Flowing Wells.



Photo 10. Alternative B corridor, view to south from Grant and Park.



Photo 11. Alternative A corridor, view to south from Grant and Vine.



Photo 12. Alternative D corridor, view to south from Grant and Campbell.



Photo 13. Alternative D corridor, view to north from Elm and Campbell.



Photo 14. Alternative D, 3, and 5 corridor, view to west from Elm and Campbell.

APPENDIX C. FWS OFFICIAL SPECIES LIST



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Arizona Ecological Services Field Office

9828 North 31st Ave

#c3

Phoenix, AZ 85051-2517

Phone: (602) 242-0210 Fax: (602) 242-2513

<http://www.fws.gov/southwest/es/arizona/>

http://www.fws.gov/southwest/es/EndangeredSpecies_Main.html

In Reply Refer To:

August 07, 2020

Consultation Code: 02EAAZ00-2020-SLI-1278

Event Code: 02EAAZ00-2020-E-02811

Project Name: TEP Kino to DMP

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The Fish and Wildlife Service (Service) is providing this list under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). The list you have generated identifies threatened, endangered, proposed, and candidate species, and designated and proposed critical habitat, that may occur within one or more delineated United States Geological Survey 7.5 minute quadrangles with which your project polygon intersects. Each quadrangle covers, at minimum, 49 square miles. In some cases, a species does not currently occur within a quadrangle but occurs nearby and could be affected by a project. Please refer to the species information links found at:

http://www.fws.gov/southwest/es/arizona/Docs_Species.htm

<http://www.fws.gov/southwest/es/arizona/Documents/MiscDocs/AZSpeciesReference.pdf> .

The purpose of the Act is to provide a means whereby threatened and endangered species and the habitats upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of Federal trust resources and to consult with us if their projects may affect federally listed species and/or designated critical habitat. A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, we recommend preparing a biological evaluation similar to a Biological Assessment to determine whether the project may

affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If the Federal action agency determines that listed species or critical habitat may be affected by a federally funded, permitted or authorized activity, the agency must consult with us pursuant to 50 CFR 402. Note that a "may affect" determination includes effects that may not be adverse and that may be beneficial, insignificant, or discountable. You should request consultation with us even if only one individual or habitat segment may be affected. The effects analysis should include the entire action area, which often extends well outside the project boundary or "footprint." For example, projects that involve streams and river systems should consider downstream effects. If the Federal action agency determines that the action may jeopardize a proposed species or adversely modify proposed critical habitat, the agency must enter into a section 7 conference. The agency may choose to confer with us on an action that may affect proposed species or critical habitat.

Candidate species are those for which there is sufficient information to support a proposal for listing. Although candidate species have no legal protection under the Act, we recommend considering them in the planning process in the event they become proposed or listed prior to project completion. More information on the regulations (50 CFR 402) and procedures for section 7 consultation, including the role of permit or license applicants, can be found in our Endangered Species Consultation Handbook at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>.

We also advise you to consider species protected under the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703-712) and the Bald and Golden Eagle Protection Act (Eagle Act) (16 U.S.C. 668 et seq.). The MBTA prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when authorized by the Service. The Eagle Act prohibits anyone, without a permit, from taking (including disturbing) eagles, and their parts, nests, or eggs. Currently 1026 species of birds are protected by the MBTA, including species such as the western burrowing owl (*Athene cunicularia hypugea*). Protected western burrowing owls are often found in urban areas and may use their nest/burrows year-round; destruction of the burrow may result in the unpermitted take of the owl or their eggs.

If a bald eagle (or golden eagle) nest occurs in or near the proposed project area, you should evaluate your project to determine whether it is likely to disturb or harm eagles. The National Bald Eagle Management Guidelines provide recommendations to minimize potential project impacts to bald eagles:

<https://www.fws.gov/migratorybirds/pdf/management/nationalbaldeaglenanagementguidelines.pdf>

<https://www.fws.gov/birds/management/managed-species/eagle-management.php>.

The Division of Migratory Birds (505/248-7882) administers and issues permits under the MBTA and Eagle Act, while our office can provide guidance and Technical Assistance. For more information regarding the MBTA, BGEPA, and permitting processes, please visit the following: <https://www.fws.gov/birds/policies-and-regulations/incidental-take.php>. Guidance for minimizing impacts to migratory birds for communication tower projects (e.g. cellular, digital television, radio, and emergency broadcast) can be found at:

<https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds/collisions/communication-towers.php>.

Activities that involve streams (including intermittent streams) and/or wetlands are regulated by the U.S. Army Corps of Engineers (Corps). We recommend that you contact the Corps to determine their interest in proposed projects in these areas. For activities within a National Wildlife Refuge, we recommend that you contact refuge staff for specific information about refuge resources.

If your action is on tribal land or has implications for off-reservation tribal interests, we encourage you to contact the tribe(s) and the Bureau of Indian Affairs (BIA) to discuss potential tribal concerns, and to invite any affected tribe and the BIA to participate in the section 7 consultation. In keeping with our tribal trust responsibility, we will notify tribes that may be affected by proposed actions when section 7 consultation is initiated.

We also recommend you seek additional information and coordinate your project with the Arizona Game and Fish Department. Information on known species detections, special status species, and Arizona species of greatest conservation need, such as the western burrowing owl and the Sonoran desert tortoise (*Gopherus morafkai*) can be found by using their Online Environmental Review Tool, administered through the Heritage Data Management System and Project Evaluation Program <https://www.azgfd.com/Wildlife/HeritageFund/>.

For additional communications regarding this project, please refer to the consultation Tracking Number in the header of this letter. We appreciate your concern for threatened and endangered species. If we may be of further assistance, please contact our following offices for projects in these areas:

Northern Arizona: Flagstaff Office 928/556-2001

Central Arizona: Phoenix office 602/242-0210

Southern Arizona: Tucson Office 520/670-6144

Sincerely,

/s/ Jeff Humphrey Field Supervisor

Attachment

Attachment(s):

- Official Species List
-

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Arizona Ecological Services Field Office

9828 North 31st Ave

#c3

Phoenix, AZ 85051-2517

(602) 242-0210

Project Summary

Consultation Code: 02EAAZ00-2020-SLI-1278

Event Code: 02EAAZ00-2020-E-02811

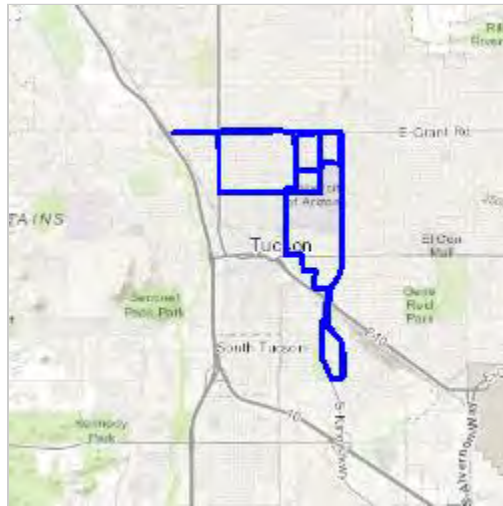
Project Name: TEP Kino to DMP

Project Type: TRANSMISSION LINE

Project Description: The proposed project involves an alternative corridor analysis for a proposed aerial electrical transmission line.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/32.22139553686219N110.95711875644591W>



Counties: Pima, AZ

Endangered Species Act Species

There is a total of 7 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Jaguar <i>Panthera onca</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3944	Endangered

Birds

NAME	STATUS
California Least Tern <i>Sterna antillarum browni</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8104	Endangered
Mexican Spotted Owl <i>Strix occidentalis lucida</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8196 Species survey guidelines: https://ecos.fws.gov/ipac/guideline/survey/population/129/office/22410.pdf	Threatened
Yellow-billed Cuckoo <i>Coccyzus americanus</i> Population: Western U.S. DPS There is proposed critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

NAME	STATUS
Northern Mexican Gartersnake <i>Thamnophis eques megalops</i> There is proposed critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7655	Threatened
Sonoyta Mud Turtle <i>Kinosternon sonoriense longifemorale</i> There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7276	Endangered

Flowering Plants

NAME	STATUS
Pima Pineapple Cactus <i>Coryphantha scheeri var. robustispina</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4919	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

**APPENDIX D. AZGFD HDMS 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.

Project Name:

TEP Kino to DMP Transmission Line

User Project Number:

20TA00-294.01

Project Description:

The proposed project involves an alternative corridor analysis for a proposed aerial electrical transmission line.

Project Type:

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

Contact Person:

Tim Jordan

Organization:

Tierra ROW Services, Ltd.

On Behalf Of:

CONSULTING

Project ID:

HGIS-11788

Please review the entire report for project type and/or species recommendations for the location information entered. Please retain a copy for future reference.

Disclaimer:

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

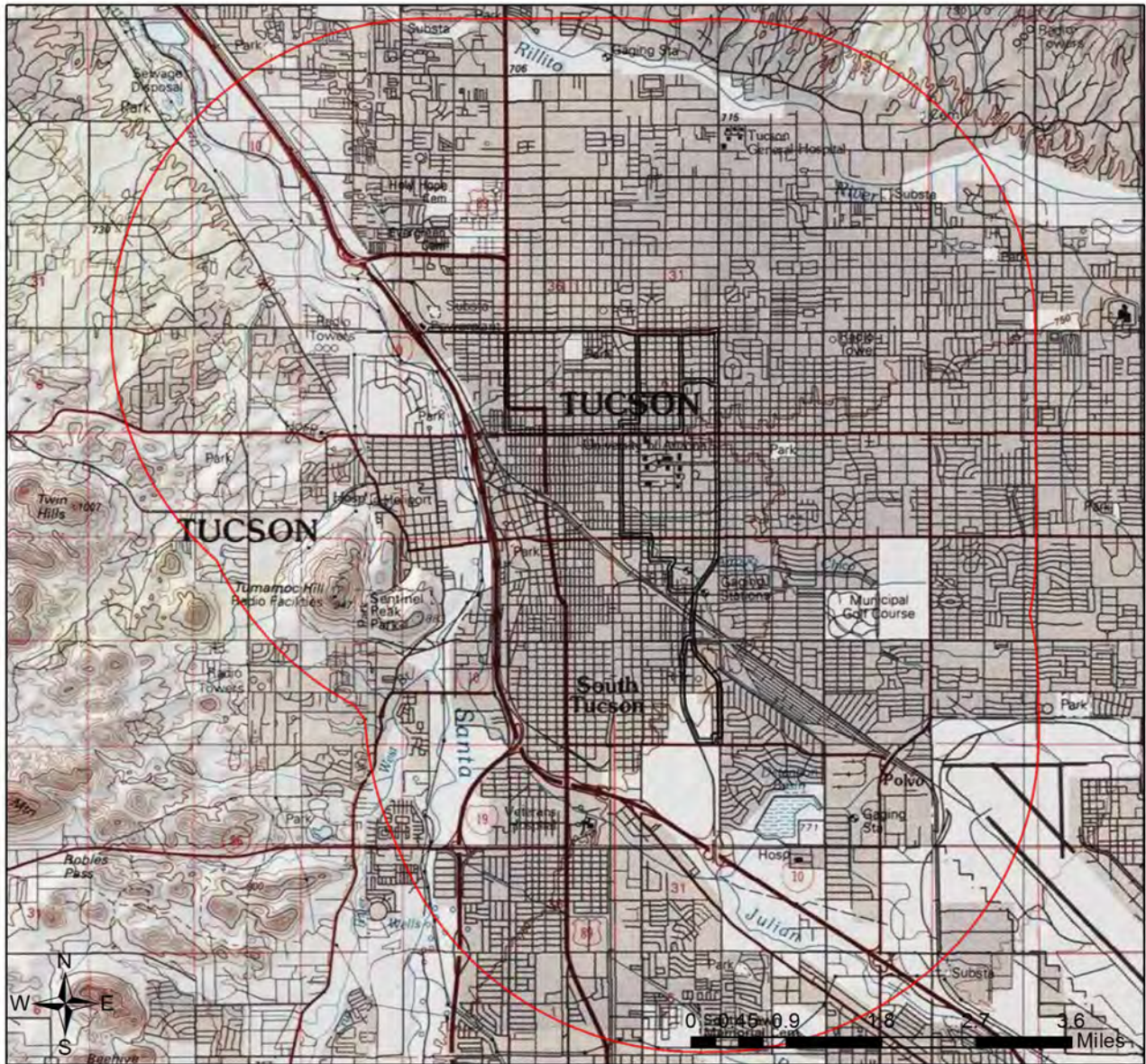
Locations Accuracy Disclaimer:



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

Recommendations Disclaimer:

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

TEP Kino to DMP Transmission Line USA Topo Basemap With Locator Map



-  Project Boundary
-  Buffered Project Boundary

Project Size (acres): 380.10

Lat/Long (DD): 32.2359 / -110.9669

County(s): Pima

AGFD Region(s): Tucson

Township/Range(s): T13S, R13E; T13S, R14E; T14S, R13E +

USGS Quad(s): TUCSON; TUCSON NORTH

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap



TEP Kino to DMP Transmission Line

Web Map As Submitted By User



- Project Boundary
- Buffered Project Boundary

Project Size (acres): 380.10
Lat/Long (DD): 32.2359 / -110.9669
County(s): Pima
AGFD Region(s): Tucson
Township/Range(s): T13S, R13E; T13S, R14E; T14S, R13
USGS Quad(s): TUCSON; TUCSON NORTH

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

TEP Kino to DMP Transmission Line

Important Areas

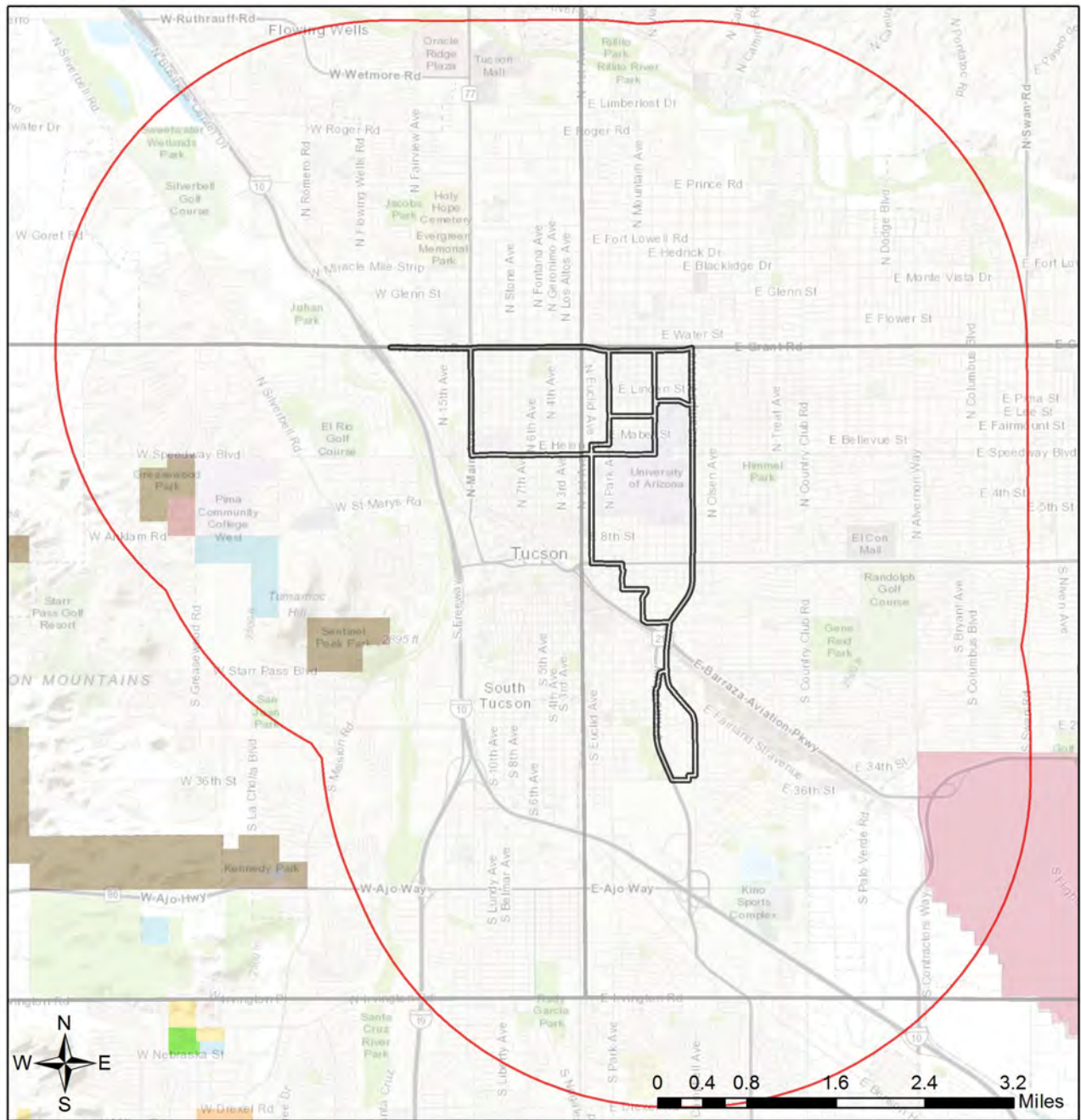


- Project Boundary
- Buffered Project Boundary
- Wildlife Connectivity
- Important Connectivity Zones
- Pinal County Riparian
- Critical Habitat
- Important Bird Areas

Project Size (acres): 380.10
 Lat/Long (DD): 32.2359 / -110.9669
 County(s): Pima
 AGFD Region(s): Tucson
 Township/Range(s): T13S, R13E; T13S, R14E; T14S, R13
 USGS Quad(s): TUCSON; TUCSON NORTH

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

TEP Kino to DMP Transmission Line Township/Ranges and Land Ownership



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

Project Size (acres): 380.10
 Lat/Long (DD): 32.2359 / -110.9669
 County(s): Pima
 AGFD Region(s): Tucson
 Township/Range(s): T13S, R13E; T13S, R14E; T14S, R13
 USGS Quad(s): TUCSON; TUCSON NORTH

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Special Status Species Documented within 3 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Aspidoscelis stictogramma	Giant Spotted Whiptail	SC	S			1B
Athene cunicularia hypugaea	Western Burrowing Owl	SC	S	S		1B
Bat Colony						
Capsicum annuum var. glabriusculum	Chiltepin		S			
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S			1A
Falco peregrinus anatum	American Peregrine Falcon	SC	S	S		1A
Gastrophryne olivacea	Western Narrow-mouthed Toad			S		1C
Gopherus morafkai	Sonoran Desert Tortoise	CCA	S	S		1A
Heloderma suspectum suspectum	Reticulate Gila Monster					1A
Heloderma suspectum	Gila Monster					1A
Leptonycteris yerbabuenae	Lesser Long-nosed Bat	SC				1A
Lithobates yavapaiensis	Lowland Leopard Frog	SC	S	S		1A
Mammillaria thornberi	Thornber Fishhook Cactus				SR	
Myotis occultus	Arizona Myotis	SC		S		1B
Opuntia versicolor	Stag-horn Cholla				SR	
Tadarida brasiliensis	Brazilian Free-tailed Bat					1B
Tumamoca macdougalii	Tumamoc Globeberry		S	S	SR	

Note: Status code definitions can be found at <https://www.azgfd.com/wildlife/planning/wildlifeguidelines/statusdefinitions/>

Special Areas Documented within the Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Santa Cruz River	Pima County Wildlife Movement Area - Riparian/Wash					

Note: Status code definitions can be found at <https://www.azgfd.com/wildlife/planning/wildlifeguidelines/statusdefinitions/>

Species of Greatest Conservation Need Predicted within the Project Vicinity based on Predicted Range Models

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Aix sponsa	Wood Duck					1B
Ammospermophilus harrisii	Harris' Antelope Squirrel					1B
Anaxyrus retiformis	Sonoran Green Toad			S		1B
Anthus spragueii	Sprague's Pipit	SC				1A
Antrostomus ridgwayi	Buff-collared Nightjar		S			1B
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Aspidoscelis stictogramma	Giant Spotted Whiptail	SC	S			1B
Aspidoscelis xanthonota	Red-backed Whiptail	SC	S			1B
Athene cunicularia hypugaea	Western Burrowing Owl	SC	S	S		1B

Species of Greatest Conservation Need Predicted within the Project Vicinity based on Predicted Range Models

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Botaurus lentiginosus</i>	American Bittern					1B
<i>Calypte costae</i>	Costa's Hummingbird					1C
<i>Chilomeniscus stramineus</i>	Variable Sandsnake					1B
<i>Colaptes chrysoides</i>	Gilded Flicker			S		1B
<i>Coluber bilineatus</i>	Sonoran Whipsnake					1B
<i>Corynorhinus townsendii pallescens</i>	Pale Townsend's Big-eared Bat	SC	S	S		1B
<i>Crotalus tigris</i>	Tiger Rattlesnake					1B
<i>Cynanthus latirostris</i>	Broad-billed Hummingbird		S			1B
<i>Cyprinodon macularius</i>	Desert Pupfish	LE				1A
<i>Dipodomys spectabilis</i>	Banner-tailed Kangaroo Rat			S		1B
<i>Euderma maculatum</i>	Spotted Bat	SC	S	S		1B
<i>Eumops perotis californicus</i>	Greater Western Bonneted Bat	SC		S		1B
<i>Falco peregrinus anatum</i>	American Peregrine Falcon	SC	S	S		1A
<i>Glaucidium brasilianum cactorum</i>	Cactus Ferruginous Pygmy-owl	SC	S	S		1B
<i>Gopherus morafkai</i>	Sonoran Desert Tortoise	CCA	S	S		1A
<i>Haliaeetus leucocephalus</i>	Bald Eagle	SC, BGA	S	S		1A
<i>Heloderma suspectum</i>	Gila Monster					1A
<i>Incilius alvarius</i>	Sonoran Desert Toad					1B
<i>Kinosternon sonoriense sonoriense</i>	Desert Mud Turtle			S		1B
<i>Lasiurus xanthinus</i>	Western Yellow Bat		S			1B
<i>Leopardus pardalis</i>	Ocelot	LE				1A
<i>Leptonycteris yerbabuenae</i>	Lesser Long-nosed Bat	SC				1A
<i>Lepus alleni</i>	Antelope Jackrabbit					1B
<i>Lithobates yavapaiensis</i>	Lowland Leopard Frog	SC	S	S		1A
<i>Macrotus californicus</i>	California Leaf-nosed Bat	SC		S		1B
<i>Melanerpes uropygialis</i>	Gila Woodpecker					1B
<i>Melospiza lincolni</i>	Lincoln's Sparrow					1B
<i>Melospiza aberti</i>	Abert's Towhee		S			1B
<i>Micrathene whitneyi</i>	Elf Owl					1C
<i>Micruroides euryxanthus</i>	Sonoran Coralsnake					1B
<i>Myiarchus tyrannulus</i>	Brown-crested Flycatcher					1C
<i>Myotis occultus</i>	Arizona Myotis	SC		S		1B
<i>Myotis velifer</i>	Cave Myotis	SC		S		1B
<i>Myotis yumanensis</i>	Yuma Myotis	SC				1B
<i>Nyctinomops femorosaccus</i>	Pocketed Free-tailed Bat					1B
<i>Oreoscoptes montanus</i>	Sage Thrasher					1C
<i>Oreothlypis luciae</i>	Lucy's Warbler					1C
<i>Panthera onca</i>	Jaguar	LE				1A
<i>Peucaea carpalis</i>	Rufous-winged Sparrow					1B

Species of Greatest Conservation Need Predicted within the Project Vicinity based on Predicted Range Models

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Phrynosoma solare	Regal Horned Lizard					1B
Phyllorhynchus browni	Saddled Leaf-nosed Snake					1B
Poeciliopsis occidentalis occidentalis	Gila Topminnow	LE				1A
Progne subis hesperia	Desert Purple Martin			S		1B
Setophaga petechia	Yellow Warbler					1B
Sphyrapicus nuchalis	Red-naped Sapsucker					1C
Spizella breweri	Brewer's Sparrow					1C
Tadarida brasiliensis	Brazilian Free-tailed Bat					1B
Toxostoma lecontei	LeConte's Thrasher			S		1B
Troglodytes pacificus	Pacific Wren					1B
Vireo bellii arizonae	Arizona Bell's Vireo					1B
Vulpes macrotis	Kit Fox	No Status				1B

Species of Economic and Recreation Importance Predicted within the Project Vicinity

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

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

Project Type Recommendations:

Minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g., microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g., livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before leaving the site. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants, <https://agriculture.az.gov/>. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control, <https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/water/quality/?cid=stelprdb1044769> The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information <https://www.azgfd.com/hunting/regulations>.

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

For any powerlines built, proper design and construction of the transmission line is necessary to prevent or minimize risk of electrocution of raptors, owls, vultures, and golden or bald eagles, which are protected under state and federal laws. Limit project activities during the breeding season for birds, generally March through late August, depending on species in the local area (raptors breed in early February through May). Conduct avian surveys to determine bird species that may be utilizing the area and develop a plan to avoid disturbance during the nesting season. For underground powerlines, trenches should be covered or back-filled as soon as possible. Incorporate escape ramps in ditches or fencing along the perimeter to deter small mammals and herptefauna (snakes, lizards, tortoise) from entering ditches. In addition, indirect affects to wildlife due to construction (timing of activity, clearing of rights-of-way, associated bridges and culverts, affects to wetlands, fences) should also be considered and mitigated.

Based on the project type entered, coordination with State Historic Preservation Office may be required (<http://azstateparks.com/SHPO/index.html>).

Based on the project type entered, coordination with U.S. Fish and Wildlife Service (Migratory Bird Treaty Act) may be required (<http://www.fws.gov/southwest/es/arizona/>).

Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement 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

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

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

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

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

HDMS records indicate that **Western Burrowing Owls** have been documented within the vicinity of your project area. Please review the western burrowing owl resource page at: <https://www.azgfd.com/wildlife/speciesofgreatestconservneed/burrowingowlmanagement/>.

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://www.azgfd.com/wildlife/nongamemanagement/tortoise/>

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

to: <https://www.azgfd.com/wildlife/planning/habitatconnectivity/identifying-corridors/>.

Please contact the Project Evaluation Program (pep@azgfd.gov) for specific project recommendations.



**APPENDIX E. SPECIAL STATUS SPECIES EXCLUDED FROM
FURTHER CONSIDERATION**

Scientific Name	Common Name	Status	Habitat	Exclusion Justification
<i>Aspidoscelis stictogramma</i>	Giant Spotted Whiptail	1B		
<i>Coccyzus americanus</i>	Yellow-billed Cuckoo	T, 1A	Streamside cottonwood, willow groves, or larger mesquite bosques mixed with tall isolated cottonwoods.	No suitable riparian habitat present in study area.
<i>Coryphantha scheeri v. robustispina</i>	Pima Pineapple Cactus	E	Ridges and alluvial hillsides in rocky, sandy soils.	No suitable habitat present in study area and study area is outside the range of this species.
<i>Falco peregrinus anatum</i>	American Peregrine Falcon	1A	Steep, sheer cliffs overlooking woodlands, riparian areas or other habitats supporting avian prey species in abundance.	No suitable habitat present in study area.
<i>Heloderma suspectum</i>	Gila Monster	1A	Desert and mesquite grassland, but can also be found in pine-oak and tropical deciduous forests. Usually found in rocky foothill regions and not in open flats.	No suitable habitat present in study area.
<i>Heloderma suspectum suspectum</i>	Reticulate Gila Monster	1A		
<i>Kinosternon sonoriense longifemorale</i>	Sonoyta Mud Turtle	E	Ponds and streams. In the United States, only known from Quitobaquito Springs.	No suitable aquatic habitat present in study area.
<i>Lithobates yavapaiensis</i>	Lowland Leopard Frog	1A	Aquatic systems in desert grasslands and pinyon-juniper woodland at elevations of 146–2,500 m (480–6,200 feet).	No suitable habitat present in study area.
<i>Myotis occultus</i>	Arizona Myotis	1B	Ponderosa pine and oak-pine woodland near water. Also found along permanent water or in riparian forests in desert areas. Roosts in tree snags.	No suitable habitat present in study area.
<i>Panthera onca</i>	Jaguar	E	Wet lowlands and oak/pine woodland.	No suitable habitat present in study area.
<i>Sterna antillarum browni</i>	California Least Tern	E	Open or sparsely vegetated sand, sandbars, gravel pits, or exposed flats along shorelines of inland rivers, lakes, reservoirs, or drainage systems.	No suitable habitat present in study area.

Scientific Name	Common Name	Status	Habitat	Exclusion Justification
<i>Strix occidentalis lucida</i>	Mexican Spotted Owl	T, 1A	Old growth mixed conifer, pine-oak, and evergreen oak forests with high canopy closure, high stand density, a multiple layered canopy, uneven-aged stands, numerous snags, and downed woody matter.	No suitable habitat present in study area.
<i>Tadarida brasiliensis</i>	Brazilian Free-tailed Bat	1B	Primarily found in lowland desertscrub, but sometimes ranges into coniferous forest and woodlands. Roosts in caves, mine tunnels, crevices in bridges, parking garages and buildings, and in attics.	No suitable roosting habitat present in study area.
<i>Thamnophis eques megalops</i>	Northern Mexican Gartersnake	T	Cienegas, stock tanks, riparian woodlands and forests, and streamside gallery forests.	No suitable habitat present in study area.

Key: E = Endangered (U.S. Fish and Wildlife Service); T = Threatened (U.S. Fish and Wildlife Service); 1A, B = Species of Greatest Conservation Need Tier (Arizona Game and Fish Department); HS = Highly Safeguarded (Arizona Department of Agriculture).

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EXHIBIT D

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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.3 Effects of the Proposed Project	D-3
D.4 Conclusion	D-3
D.5 References	D-4

D.1 Introduction

The Project will consist of building a new 138 kV transmission line totaling 7.2 to 8.1 miles in length, depending on the alternative approved, to connect the existing Kino Substation to the existing DMP Substation. The Project will interconnect to the planned Vine 138 kV Substation. The Project will cross private, USPS, COT, Arizona Board of Regents, and Pima County (Alternative Route 5A only) owned land, as well as COT road ROW. Seven preliminary route alternatives have been identified, resulting from line siting studies, analysis, and a public participation process that began in 2019. The proposed alternative routes are identified as Alternative Routes 1A, 1B, 1D, 2A, 2B, 2D, and 5A, and are described in Section B.1-4 of the application. Alternative Route 1B is the preferred route. The new line will be built with a combination of galvanized (36th Street to Grant Road) and self-weathering steel (Grant Road to DMP Substation) monopoles ranging from 75 to 120 feet above ground, with the taller structures required for site specific clearance issues.

This exhibit includes a description of biological resources within the Biological Study Area, which is one mile on either side of the route centerlines analyzed for the Project (two miles wide in total for each route). The Project will be constructed in a largely urban area within the COT. Approximate elevations within the Biological Study Area range from 2,560 to 2,800 feet above mean sea level, sloping from southeast down to the northwest. The Biological Study Area consists mostly of disturbed and landscaped areas, with a combination of native and non-native plants.

Annual precipitation recorded in Tucson, Arizona is 11.62 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 just over 100 degrees Fahrenheit (°F), with winter

highs approximately 68 °F (WRCC, 2018). Terrain is low profile valley floor. Soils in the Biological Study Area are unconsolidated to strongly consolidated alluvial and aeolian deposits. Storm water runoff generally drains in a west-northwest direction.

D.2 Existing Conditions

Alternative route corridors within the Biological Study Area are located in built-up urban areas of Tucson, Arizona. All alternative route corridors follow previously disturbed, existing road and utility ROWs, and land use in the vicinity consists of commercial, industrial, and residential areas. The topography of the study area is relatively flat with a slight northwestern aspect. A brief discussion of vegetation and wildlife resources potentially occurring within the study area and the potential impacts to them from the Project are outlined below and described in more detail in the BE, Exhibit C-2.

Vegetation

Native plants observed in the study area are characteristic of the Arizona Upland biotic community described above, and include trees such as velvet mesquite and blue palo verde. Other native species observed include catclaw acacia (*Senegalia greggii*), four-wing saltbush (*Atriplex canescens*), creosote (*Larrea tridentata*), desertbroom (*Baccharis sarothroides*), desert marigold (*Baileya multiradiata*), globemallow (*Sphaeralcea* spp.), Jimmy weed (*Haplopappus heterophyllus*), fluff grass (*Dasyochloa pulchella*), and sixweeks threeawn (*Aristida adscensionis*). Several areas along the alternative route corridors have been landscaped with a combination of native and non-native plants and most of the other vegetation present in the study area is ruderal, commonly found in disturbed areas. However, patches of native vegetation are present in two locations (see Table 8).

Table 8. Native Plants Observed in the Study Area

Alternative Routes	Location	Approximate Length	Notes
2 and 5	Vicinity of main post office	135 m (443 feet)	creosote, velvet mesquite (<i>Prosopis velutina</i>)
3 and 5	Vicinity of Arroyo Chico	158 m (520 feet)	four-wing saltbush, palo verde (<i>Parkinson asp.</i>), velvet mesquite

Note: From (Tierra , 2020), Table 3.1

Three Arizona Wildlands Invasive Plant Working Group (AZWIPWG) listed weed species, including Bermuda grass (*Cynodon dactylon*), buffelgrass (*Pennisetum ciliare*), and fountain grass (*Pennisetum setaceum*) were identified in the study area at the time of the site visit. A summary of the locations where these weeds were observed is presented in Table 9.

Table 9. Invasive, Non-native Plant Species Observed in the Project Area

Species	Location	Alternative Routes
Bermuda grass	Scattered throughout study area	All
buffelgrass	Scattered along Campbell and Cherrybell from 36th north to 22nd	2 and 5
fountain grass	Scattered along Euclid from Broadway north to Speedway	3 and 5

Note: From (Tierra , 2020), Table 3.2

Wildlife

Wildlife species observed in the study area at the time of the survey was limited to mourning dove, common raven (*Corvus corax*), and whiptail. Some additional species expected to occur in urban areas such as the study area, but were not observed during the field visit, include pigeon (*Columba livia*), house sparrow (*Passer domesticus*), red-tailed hawk, (*Buteo jamaicensis*), Cooper’s hawk (*Accipiter cooperii*), desert cottontail (*Sylvilagus audubonii*), and coyote.

Wildlife Linkages

Wildlife movement areas are present in the biological study area, and can serve as wildlife corridors for small, urban species, such as coyote (*Canis latrans*) and javelina (*Tayassu tajacu*). Construction of any of the alternative routes would not likely create barriers to wildlife or have any long-term impacts on urban wildlife movement.

D.3 Effects of the Proposed Project

Removal of vegetation associated with clearing and grading has the potential to impact nesting birds protected under the MBTA. In the event construction is scheduled during nesting/breeding seasons, TEP will conduct pre-construction bird surveys and avoid nesting birds until fledging is complete. Vegetation will be checked prior to construction to ensure there would be no impacts to protected species.

Native plants in the study area are protected by Arizona Native Plant Law (ANPL) and subject to standards included in COT Unified Development Code Section 3.8.0 for native plant preservation within construction areas and guidance for mitigation of impacts, which TEP will follow. Some native vegetation and riparian habitat would be trimmed or removed to allow for equipment access during construction. Although, as stated above, construction of the transmission line in the wildlife corridors is not anticipated to create barriers to wildlife movement or likely have any long-term impacts on urban wildlife movement.

D.4 Conclusion

Impacts to general wildlife and vegetation along the alternative routes are anticipated to be minor given the urban development in the study area and planned use of existing roads for access. Potential impacts to plants and animals will be addressed through pre-construction surveys, timing of work, and compliance with all applicable statutes, ordinances, and regulations of any local, state, or federal agency having jurisdiction.

D.5 References

- ADOT. (2021). *2021-2025 Five-Year Transportation Facilities Construction Program*. Retrieved from Arizona Department of Transportation Current Five-Year Program: <https://azdot.gov/planning/transportation-programming/current-five-year-program>
- Brown, J. (2020). COT Historic Preservation Officer.
- COT. (2013). *Plan Tucson: City of Tucson General & Sustainability Plan 2013*. Tucson, AZ: City of Tucson.
- 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>
- Palmer. (2021). *Kino to DeMoss Petrie 138kV Transmission Line Project Visual Simulation Package*. Kingman, AZ: Palmer Graphics.
- POWER. (2019). *Irvington to East Loop 138 kV transmission line EMF study*. Phoenix: Power Engineers.
- TAC/Tierra. (2020). *Kino to DeMoss-Petrie 138 Kilovolt Transmission Line Project Historic District Analysis*. Tucson, AZ: The Architecture Company, Tierra ROW Services.
- TDOT. (2020, March 31). Meeting notes. Tucson, AZ.
- TDOT. (2020). Personal Communication.
- Tierra . (2020). *Biological Evaluation and Alternatives Analysis TEP Kino-DeMoss-Petrie Transmission Line Project*. Tucson, AZ: Tierra Right of Way Services.
- UArizona. (2021). *Campus Map*. Retrieved from University of Arizona: <https://map.arizona.edu>
- WestLand. (2020). *Visual Impacts Assessment 138kV Transmission Line Kino Substation to DeMoss-Petrie Substation in Tucson Arizona*. Tucson, AZ: WestLand Resources, Inc.
- WHO. (2021). *Electromagnetic Fields*. Retrieved from World Health Organization: www.who.int/peh-emf/en/
- WRCC. (2018, August). *Arizona Climate Summaries: Tucson Univ of Arizona, Arizona: NCDC 1981-2010 Monthly Normals*. Retrieved from Western Region Climate Center: <http://wrcc.dri.edu/summary/clismaz.html>
- 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

EXHIBIT E

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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-2
E.2.1 Overview	E-2
E.2.2 Visual Impact Assessment.....	E-2
E.2.3 Landscape Setting	E-2
E.2.4 Visual Impact Assessment Results	E-3
E.3 Historic Sites and Structures, and Archaeological Sites	E-7
E.3.1 Overview	E-7
E.3.2 Inventory Methods and Results	E-7
E.3.3 Recommendations	E-8
E.4 Historic District Analysis.....	E-8
E.4.1 Overview	E-8
E.4.2 Inventory Methods	E-8
E.5 Conclusion.....	E-9
E.6 References.....	E-10

E.1 Introduction

The Project will consist of building a new 138 kV transmission line totaling 7.2 to 8.1 miles in length, depending on the alternative approved, to connect the existing Kino Substation to the existing DMP Substation. The Project will interconnect to the planned Vine 138 kV Substation. The Project will cross private, USPS, COT, Arizona Board of Regents, and Pima County (Alternative Route 5A only) owned land, as well as COT road ROW. Seven preliminary route alternatives have been identified, resulting from line siting studies, analysis, and a public participation process that began in 2019. The proposed alternative routes are identified as Alternative Routes 1A, 1B, 1D, 2A, 2B, 2D, and 5A, and are described in Section B.1-4 of the application. Alternative Route 1B is the preferred route. The new line will be built with a

combination of galvanized (36th Street to Grant Road) and self-weathering steel (Grant Road to DMP Substation) monopoles ranging from 75 to 120 feet above ground, with the taller structures required for site specific clearance issues.

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 proposed Project may have on each resource.

E.2 Scenic Areas and Visual Resources

E.2.1 Overview

This section of Exhibit E addresses scenic areas and visual resources in the Project area. The Project study area does not contain designated national, state, or local scenic areas.

A Visual Impact Assessment was conducted by WestLand Resources, Inc. (WestLand) for the Project (WestLand, 2020), Exhibit E-1. The visual impact assessment reflects a combination of objective and subjective evaluations of the existing landscape characteristics and potential changes to the landscape as a result of the Project and assesses the level of viewer sensitivity to different segments of the alternative routes.

E.2.2 Visual Impact Assessment

The visual impact assessment conducted by WestLand for the Project determined the potential impacts of each alternative on viewsheds. Viewsheds associated with the Project Alternative Routes 1A, 1B, 1D and 2A, 2B, 2D, and 5A were measured by the number of viewers and the type of viewing experience (i.e., commuter, recreationist, resident). Each alternative route was scored based on the relative level of impact to existing versus future landscape, gateway routes, types of viewers, and degree of impact to visual resources.

Identification of potential visual impacts involved a review of drawings of the preliminary transmission line designs and review of local planning documents, aerial photos, geographic information system (GIS) data maps, site visits, photos taken in the project area, and use of Google Earth Pro.

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 route and characterization of impacts that were 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 transmission lines, streetlight structures).

E.2.3 Landscape Setting

The landscape setting for the Project study area is associated with urban or developed land within the COT. The Project study area delineated by TEP, that encompasses the evaluated alternative routes, is comprised of urban settings, including: residential, commercial, industrial, park/recreation and open space. For each category of land use within the Project study area, expectations of viewers for the character of the landscape varies. Residential viewers, that is viewers located within a home or private yard and recreational viewers are typically associated with longer and more frequent views of the

surrounding environment; therefore, viewer sensitivity in these settings is anticipated to be high. Similarly, viewers associated with tourist settings are also anticipated to have greater than average attention to their surroundings. Viewers associated with commercial business settings are anticipated to have a moderate sensitivity, due to a shorter duration. Sensitivity is anticipated to be relatively low for commuters and from within industrial settings because these developments are associated with views who are focused on work-related activities, and may not be as sensitive to changes in the landscape.

Viewer sensitivity to changes to the landscape resulting from installation of the proposed facilities will also depend on the character of the existing landscape. It is assumed that if the existing landscape incorporates features which are similar in form, line, scale and/ or color to the proposed transmission structures, viewer sensitivity to the resulting changes will be less than when compared to an existing landscape in which there are no similar features.

E.2.4 Visual Impact Assessment Results

Visual impacts are defined as the change to the visual environment resulting from the introduction of modifications to the landscape. The degree of visual contrast resulting from a modification is directly related to the amount of attention that is drawn to that modification.

Visual impacts were first rated by the degree to which alternative routes would conflict with anticipated viewer sensitivities. Visual impacts were rated as follows:

- Low: the Project is adjacent or parallel to similar features and/or is within a more industrial setting, and viewer sensitivity to changes to the landscape resulting from the Project is low.
- Moderate: the Project is adjacent or parallel to similar features and viewer sensitivity to changes to the landscape resulting from the Project is moderate or high.
- High: the Project introduces new visual forms that contrast with the existing landscape, the setting is residential or recreational, and viewer sensitivity is high.

Impacts are anticipated to be low for the proposed Project when it is adjacent to or parallel with similar developed settings or features, such as industrial settings, because visual change would be reduced. Residential and park/recreation settings, which are typically characterized by open space and developed recreational facilities, typically result in greater impacts when adjacent to the Project, because it differs in form and line. Commercial and urban settings are characterized by large to moderate sized structures and/or open space; here, impacts are anticipated to be lower because form and line are similar to the proposed Project.

Visual impacts resulting from the Project would typically be reduced where: (1) the proposed route occurs within an industrial setting that is similar in form and line, and (2) the route is within a corridor that has existing overhead electric lines.

Once the differing route segments were rated from Low to High, each alternative route was then ranked from 1-3 in order to weight and score the results within the Multi-objective Decision Model (see Exhibit B.2.2). In order to rank the alignment alternatives with respect to visual impacts, a value was assigned to each segment as follows:

- High Visual Impact: A value of 1 was assigned to segments in which the installation of proposed TEP facilities would attract significant negative viewer attention.
- Moderate Visual Impact: A value of 2 was assigned to segments in which the installation of proposed TEP facilities would attract moderate negative viewer attention.
- Low Visual Impact: A value of 3 was assigned to segments in which the installation of proposed TEP facilities would attract little to no negative viewer attention.

Many of the segments are utilized and enjoyed by a diverse population, from commuters to local residents. To reflect this diversity, values assigned to each segment were rarely whole numbers. More frequently, they were of intermediate value, between 1 and 2 or between 2 and 3. The value of an alternative route was determined by calculating the average value of the contributing segments. The value of an overall alternative route was determined by calculating the average value of the contributing southern and northern routes.

The assignment of these values is based on the professional opinion of the landscape architect regarding the characterization of the existing landscape, the anticipated visual impacts to the landscape resulting from construction of the alternative route, and the anticipated reactions of viewers to these facilities. No formal attempt was made to assign values based on numbers of viewers nor was any formal attempt made to solicit the opinions of possible viewers.

Potential visual impacts for each of the alternative routes are described as:

- 1A: 2.26
- 1B: 2.48 (Preferred)
- 1D: 2.25
- 2A: 2.31
- 2B: 2.53
- 2D: 2.30
- 5A: 2.51

The weighted comparison score, found in the Final Siting Study Report (June 2021), assigns additional weight to each visual assessment score based on comments from the public and the CWG indicating the importance of viewshed in the alternative route analysis.

This analysis yields a weighted result of each alternative route of:

- 1A: 1.13
- 1B: 1.24 (Preferred)
- 1D: 1.13
- 2A: 1.16
- 2B: 1.27
- 2D: 1.15
- 5A: 1.26

WestLand defines Route 1 of Preferred Alternative Route 1B, as a heavily travelled four- to six- lane transmission corridor. Kino/Campbell (Route 1) is also considered by the COT to be a Gateway Arterial. As

such, it's "appearance in contributing to a pleasant driving experience is important to the overall image of Tucson" (City of Tucson Major Streets and Routes Plan, 1982). Viewer sensitivity of sightseeing motorists is anticipated to range from moderate to high depending on the segment.

Due to stretches of park open space adjacent to the southern portion (36th to 22nd) of Alternative Route 1, relatively low roof heights in area neighborhoods that may allow for some long views from backyards to the north and south, allowing for views of multiple poles. The homes are set back and partially screened from the right-of-way by existing trees and masonry walls. Therefore, many views of the preferred alternative route would be limited to the upper portions of the poles. Also visible in this direction are existing streetlights, which are of similar form as the proposed facilities. There are no existing overhead electric lines within this reach of the S. Kino Pkwy. right-of-way. Visual impacts to views from residences within these neighborhoods are expected to be moderate.

The middle portion (22nd to Broadway) of the Alternative Route 1 is located in an area characterized by undeveloped properties, the El Rio Community Health Center, industrial development, UPRR, Aviation Parkway, commercial businesses, and a small single-story residential area closer to Broadway. Existing features include galvanized metal streetlights, traffic signals and wood distribution poles with underbuild both parallel and perpendicular to the roadway. Visual impacts are anticipated to be mainly low to moderate (for the residential area).

The northern portion (Broadway to Elm) includes commercial businesses associated with heavily utilized, major intersections, residential use abutting the right of way on the east side of Campbell, as well as on the west side of Campbell south of 6th Street. Use also includes the UArizona Campus and Banner. These segments include landscaped medians and street lighting similarly organized as transmission poles in the streetscape. Northern portions of Route 1 follow the commercial corridor of North Campbell past open space and low roof heights of the UArizona Campus area and neighborhoods surrounding the campus, while traversing what is, visually, a highly diverse segment of the route. UArizona Campus includes multi-story buildings associated with Banner Medical Center, and metal streetlights, wooden distribution poles, and additional infrastructure underbuilds persist along the road alignment. As a side note, numerous wooden distribution poles will be cleared from the ROW where the transmission line is proposed. Visual impacts are anticipated to be moderate to high.

Alternative Route B, analyzed as part of Alternative Route 1B, Preferred Route, parallels Grant Road, a heavily travelled, six-lane arterial road leading into the city from the I-10 corridor, before following N Park Ave., a two-lane commuter collector road, toward the Vine Substation. Park Ave. is dominated by one-story and two-story residential homes and apartments. There are existing electric facilities on Park Ave. that would either be retired or relocated if Alternative Route B were selected. The 138kV line would utilize an existing neighborhood utility alley to cross from Park Ave. further into a residential neighborhood adjacent to the UArizona Campus. Existing facilities occupying this alley will either be relocated or retired. Where the 138kV line would meet the Vine Substation, there are numerous existing electric lines in that area, located on both sides of the road ROW. Visual impacts are anticipated to be low.

Alternative Route 1B scored slightly higher than four of the alternative routes and slightly lower than Alternative Route 2B and Alternative Route 5A, due to instances of visibility of the proposed line near open spaces such as low roof lines or landscaped portions of recreational public spaces.

Kino to DMP 138 kV Transmission Line Project

Key Observation Point (KOP) - Key Map

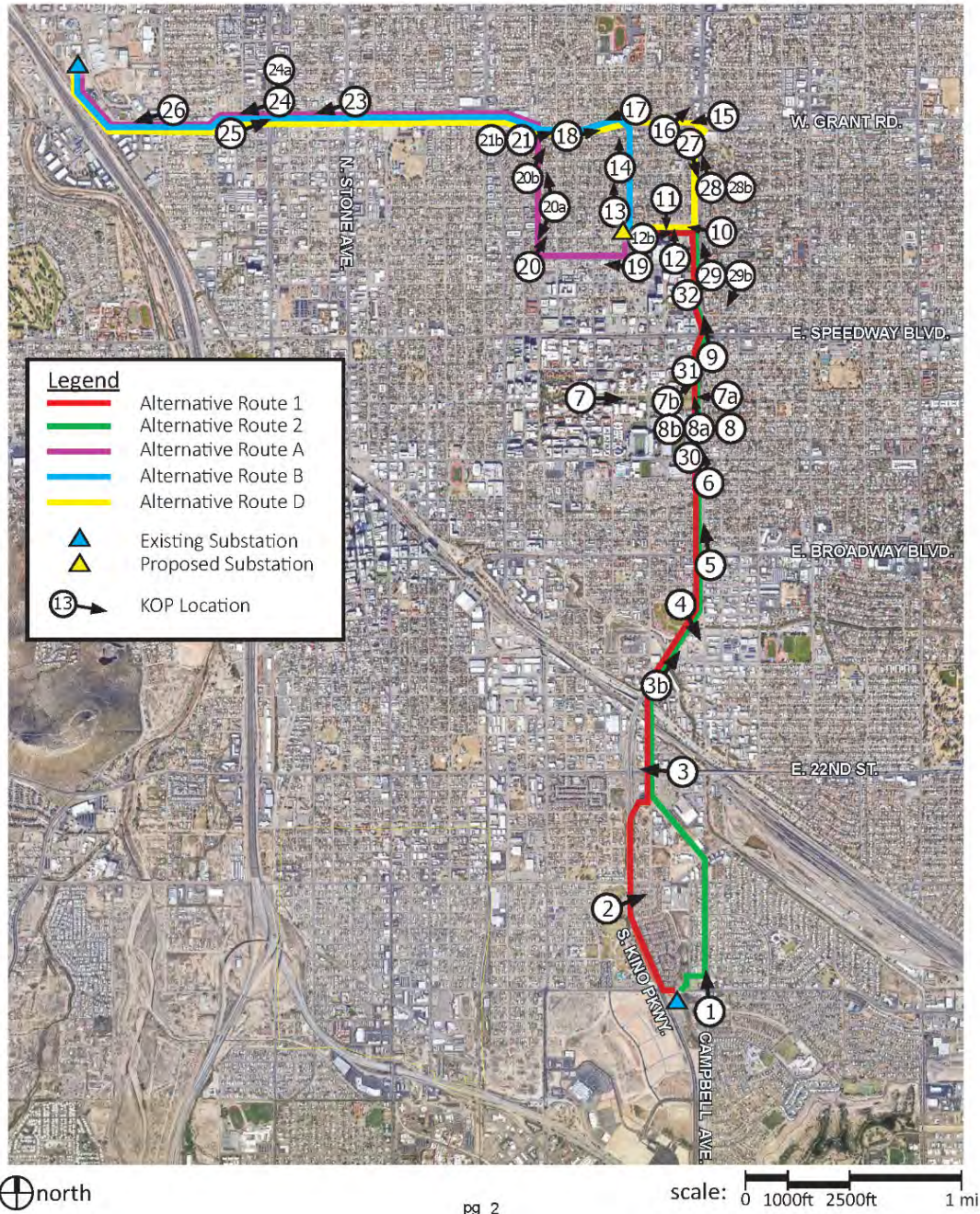


Figure 5. Key Observation Points for the Visual Simulation

E.3 Historic Sites and Structures, and Archaeological Sites

E.3.1 Overview

A Class I records review was conducted by Tierra Right of Way Services (Tierra), to determine the extent of existing archaeological survey work performed along an initially ten proposed alternative routes, and whether any sites were found to intersect with each alternative's corridor (Tierra, 2021; Exhibit E-2). During the course of the study, three of the ten alternative routes were determined not viable by TEP and were removed from consideration, and one alternative route was added.

In addition, Alternative Route 5A runs through the West University Historic Preservation Zone (see Exhibit E-3 for a map of Historic Preservation Zones (HPZ) in the Project area.) The neighborhood was designated an HPZ in 1984 as a COT zoning overlay to protect the West University National Register Historic District (listed 1980) located between downtown Tucson and UArizona. The HPZ established Historic District Design Guidelines (completed 1986) and the West University Historic Zone Advisory Board (WUZHAB). A 2015 updated version of the Design Guidelines acknowledges societal and economic changes that have affected development in the approximately thirty years since the initial document. Euclid corridor has become a thoroughfare on the western edge of the UArizona, comprised of high-rise residential towers and mixed-use commercial centers in the area of Euclid and Speedway.

E.3.2 Inventory Methods and Results

The Class I study included a records search of the Arizona State Museum's (ASM's) online database, AZSITE. All previously recorded sites within 300 feet of the Project study area, and all previous projects intersecting the alternative routes were reported to TEP. The records search identified 59 cultural resource studies conducted within the Class I Study Area (Exhibit E-2), which is defined as a 0.5-mile buffer around each alternative route. Of these studies, 8 were conducted within the past 10 years. The findings included a total of 7 previously recorded sites. A total of 2 sites are along or within an alternative route. National Register Historic Districts or buildings listed on the National Register of Historic Places (NRHP) were also included in the study in case a listed archaeological property was present; however, none were found. The remainder of Historic Districts and properties have been evaluated as part of a Historic District Analysis (Exhibit E-4). No historic roads are present in the Project study area.

All alternative routes were scored in number/letter combination, with a score of 3 requiring minimal cultural resources monitoring within COT sensitivity zones and no cultural resources anticipated. Alternative route combinations receiving a score of 3 were Alternative Routes 1 and 2 with Alternative Routes A, B or D. Alternative Route 5 in combination with Alternative Route A received a score of 2, because it would require monitoring within previously recorded archaeological sites. No data recovery or other extensive mitigation measures are anticipated for any route combinations, and no alternative routes received a score of 1.

The Summary of the Route Analysis is shown in Table 10. The scores for the combined routes are in Table 11.

Table 10. Summary of Route Analysis from Class I Study

Alternative Route	Length (Miles)	% Surveyed	% Surveyed Past 10 Years	# Sites in Buffer	In Sensitivity Zone	Requires Monitoring
1	4	55	4	1	n/a	n/a
2	4	46	4	1	n/a	n/a
5	5	60	24	2	n/a	yes
A	2.9	78	67	1	Stone Pipe	yes
B	3	82	70	1	Stone Pipe	yes
D	3.6	82	64	1	Stone Pipe	yes

Table 11. Class I Study Combined Alternative Route Analysis Scores

Alternative Route Combination	Score
1A	3
1B	3
1D	3
2A	3
2B	3
2D	3
5A	2

E.3.3 Recommendations

Each alternative route follows existing developed road ROW, and no significant prehistoric or historic archaeological sites have been identified in this part of Tucson. Tierra reported that there is little potential for the survey to identify significant archaeological sites within any of the project corridors. Tierra recommends that TEP utilize any combination of these routes to minimize any archaeological mitigation.

E.4 Historic District Analysis

E.4.1 Overview

In 2019, TEP began holding public meetings and receiving comments on potential effects to historic properties. TEP worked regularly with the CWG and consulted with the COT’s Historic Preservation Officer (HPO). COT HPO confirmed that no historic contributing property, individually listed property or historic district would be removed or delisted as a result of any power pole location, and potential routes bordering historic districts would be favorable to those that bisect those districts. To further investigate alternative routes for the Project that would have some of the least potential effects to historic properties, TEP contracted Tierra and The Architecture Company to review the proposed alternative routes and perform a Historic District Analysis (Exhibit E-4).

E.4.2 Inventory Methods

The Historic District Analysis (TAC/Tierra, 2020) analyzed and ranked measurable data using GIS and aerial imagery. Measurable criteria included: bisecting versus bordering historic districts; street designation;

historic districts with 1 versus 2 sides of the route; existing power poles located on route; historic light fixtures within 800-ft route buffer; historic contributing properties in 800-ft route buffer; and access of historic contributing properties along the route. Routes were ranked on each of the criteria on a scale from zero to ten with zero meaning no impact and ten being the greatest impacts, with each evaluated separately. Only portions of alternative routes containing historic districts of individually listed historic properties within an 800-ft buffer of the alternative routes were studied.

The Measurable Criteria Analysis includes the Historic Architectural Analysis, developed by performing windshield survey along each potential route, for Alternative Routes 1, 2, 3, 5, A, B, and D. The final seven alternative routes to be evaluated were identified as Alternative Routes 1A, 1B, 1D, 2A, 2B, 2D, and 5A. For this analysis, criteria were comprised of: historic district integrity; scale of the adjacent street to historic district; scale of the adjacent historic and non-historic structures along a route; size of the historic district; and general impression of historic district architecture. These criteria were also rated on a scale from zero to ten with ten representing the greatest potential effect.

E.5 Conclusion

Findings of the study resulted in the recommendation that Alternative Routes 1 or 2 for the section from Kino Substation to Vine Substation would be comparable in potential effects. In the event that Alternative Route D is not viable for combination with 1 or 2, the next route recommended would be Alternative Route B in combination with Alternative Routes 1 or 2. These recommendations are based on the fact that, for Alternative Routes 1 and 2, Sunshine Mile is the only historic district bisected, with all other districts bordered. Alternative Routes 1 and 2 have the least number of contributing historic properties directly on the route and the least number of contributing historic properties that face the route. In conjunction with Alternative Route B, Alternative Route 1 is preferred as it has only a small section of the route on Vine Street, a residential street; of all the routes, has the shortest route length of historic district affected; has no historic light fixtures; has the least number of contributing properties in the 800-ft buffer; and has the least number of contributing properties facing or directly on the route. (For more details, refer to Table 12 and Table 13, and the tables in Exhibit E-4.)

Table 12. Historic District Analysis Alternative Route Ranking

Alternative Route Combination	1A	1B	1D	2A	2B	2D	5A
Bisecting vs Bordering Historic Districts	57	49	47	57	49	47	80
Street Designation	26	24	26	26	24	26	29
Historic Districts with 1 vs 2 sides of the Route	28	17	22	28	17	22	34
Existing Power Poles located on Route	45	47	33	45	47	33	49
Historic Light fixtures within 800' Route Buffer	4	4	4	4	4	4	10
Historic Contributing Properties in 800' Route Buffer	99	98	108	99	98	108	140
Access of Historic Contributing Properties along Route	26	21	26	26	21	26	73
Historic Architectural Impact Rank	153	153	144	153	153	144	201
Total Alternative Route Combination Rank	438	413	410	438	413	410	616

Table 13. Historic District Analysis Combined Alternative Route Analysis Scores*

Alternative Route Combination	Score
1A	0.67
1B	0.75
1D	0.83
2A	0.67
2B	0.75
2D	0.83
5A	.33

*weighted score

E.6 References

- ADOT. (2021). *2021-2025 Five-Year Transportation Facilities Construction Program*. Retrieved from Arizona Department of Transportation Current Five-Year Program: <https://azdot.gov/planning/transportation-programming/current-five-year-program>
- Brown, J. (2020). COT Historic Preservation Officer.
- COT. (2013). *Plan Tucson: City of Tucson General & Sustainability Plan 2013*. Tucson, AZ: City of Tucson.
- 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>
- Palmer. (2021). *Kino to DeMoss Petrie 138kV Transmission Line Project Visual Simulation Package*. Kingman, AZ: Palmer Graphics.
- POWER. (2019). *Irvington to East Loop 138 kV transmission line EMF study*. Phoenix: Power Engineers.
- TAC/Tierra. (2020). *Kino to DeMoss-Petrie 138 Kilovolt Transmission Line Project Historic District Analysis*. Tucson, AZ: The Architecture Company, Tierra ROW Services.
- TDOT. (2020, March 31). Meeting notes. Tucson, AZ.
- TDOT. (2020). Personal Communication.
- Tierra. (2020). *Biological Evaluation and Alternatives Analysis TEP Kino-DeMoss-Petrie Transmission Line Project*. Tucson, AZ: Tierra Right of Way Services.
- UArizona. (2021). *Campus Map*. Retrieved from University of Arizona: <https://map.arizona.edu>
- WestLand. (2020). *Visual Impacts Assessment 138kV Transmission Line Kino Substation to DeMoss-Petrie Substation in Tucson Arizona*. Tucson, AZ: WestLand Resources, Inc.
- WHO. (2021). *Electromagnetic Fields*. Retrieved from World Health Organization: www.who.int/peh-emf/en/

WRCC. (2018, August). *Arizona Climate Summaries: Tucson Univ of Arizona, Arizona: NCDC 1981-2010 Monthly Normals*. Retrieved from Western Region Climate Center: <http://wrcc.dri.edu/summary/clismaz.html>

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

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Application for a Certificate of Environmental Compatibility

**Kino to DeMoss-Petrie
138 Kilovolt Transmission Line Project**

Exhibit E-1

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**VISUAL IMPACTS ASSESSMENT
138kV TRANSMISSION LINE KINO SUBSTATION TO DEMOSS-PETRIE
SUBSTATION IN TUCSON ARIZONA**

Prepared for: Tucson Electric Power
Prepared by: WestLand Resources, Inc.
Date: October 5, 2020
Project No.: 1610.265

TABLE OF CONTENTS

1.	INTRODUCTION.....	1
2.	PROJECT DESCRIPTION.....	1
3.	METHODS.....	3
3.1.	Overview.....	3
3.2.	Proposed Project Features	3
3.3.	Alternative Routes	3
3.3.1.	Southern Routes: Kino Substation to the Planned UA North Substation.....	4
3.3.2.	Northern Routes: Planned UA North Substation to DeMoss-Petrie Substation.....	4
3.4.	Viewer Sensitivity.....	5
3.5.	Mitigation of Visual Impacts.....	6
3.6.	Visual Impacts Ratings.....	6
4.	VISUAL ASSESSMENTS	7
4.1.	Southern Routes: Kino Substation to the Planned UA North Substation.....	7
4.1.1.	Route 1 (Figure 3)	7
4.1.1.1.	Segment S-1: Kino Substation to 22 nd St. (via S. Kino Pkwy.) (Photos 1, 2, and 3).....	7
4.1.1.2.	Segment S-2: 22 nd St. to Union Pacific Railroad (Photo 4)	8
4.1.1.3.	Segment S-3: Aviation Blvd. to E. Broadway Blvd.	8
4.1.1.4.	Segment S-4: E. Broadway Blvd. to 6 th St. (Photo 5).....	9
4.1.1.5.	Segment S-5: 6 th St. to East Speedway Blvd. (Photo 6)	10
4.1.1.6.	Segment S-6: E. Speedway Blvd. to E. Elm St. (Photo 7).....	11
4.1.1.7.	Segment S-7: N. Campbell Ave. to the Planned UA North Substation (Photo 8).....	11
4.1.2.	Route 2 (Figure 4).....	12
4.1.2.1.	Segments S-8: Kino Substation to Silverlake Rd. (Photos 9-10)	12
4.1.2.2.	Segments S-9: Silverlake Rd. to 22 nd St. (Photo 11).....	12
4.1.3.	Route 3 (Figure 5).....	12
4.1.3.1.	Segments S-1 and S-2: S. Kino Pkwy. to E. 22 nd to S Kino at E. 17 th St.....	12
4.1.3.2.	Segment S-10: S. Kino Pkwy. to E. Broadway Blvd. (Photos 12-15)	12
4.1.3.3.	Segment S-11: N. Fremont Ave. to N. Euclid Ave.	13
4.1.3.4.	Segment 12: E. Broadway Blvd. to E. 6 th St. (Photos 16-17).....	13

4.1.3.5.	Segment 13 (cont.): 6 th St. to University Blvd. (Photo 18)	14
4.1.3.6.	Segment 14 (cont.): University Blvd. to E. Speedway Blvd. to E. Helen St.	14
4.1.3.7.	Segment S-15: E. Euclid Ave. to N. Park Ave. (Photo 19).....	14
4.1.3.8.	Segment S-16: Helen St. to the alley between E. Adams St. and E. Lee St. (Photo 20)	15
4.1.3.9.	Segment S-17: N. Park Ave. to N. Vine Ave. (Photos 21-22)	15
4.1.3.10.	Segment S-18: N. Park Ave. to Planned UA North Substation (Photos 23)	15
4.1.4.	Route 5 (Figure 6)	15
4.1.4.1.	Segments S-8, S-9, S-2 and S-10 through S-18.....	15
4.2.	Northern Routes: Planned UA North Substation to the DeMoss-Petrie Substation.....	16
4.2.1.	Route A (Figure 7)	16
4.2.1.1.	Segment N-1: E. Elm St. to E. Grant Rd. (Photo 23)	16
4.2.1.2.	Segment N-2: N. Vine Ave. to N. Park Ave. (Photo 24)	16
4.2.1.3.	Segment N-3: N. Park Ave. to N. Oracle Rd. (Photo 25).....	17
4.2.1.4.	Segment N-4: N. Oracle Rd. to DeMoss-Petrie Substation (Photos 26-28).....	17
4.2.2.	Route B (Figure 8)	17
4.2.2.1.	Segment N-5: Planned UA North Substation to N. Park Ave. (Photos 21 and 22).....	17
4.2.2.2.	Segment N-6: Alley between E. Lee St. and E. Adams St. to E. Grant Rd. (Photo 20).....	18
4.2.2.3.	Segments N-3 and N-4: N. Park Ave. to the DeMoss-Petrie Substation ...	18
4.2.3.	Route D (Figure 9).....	18
4.2.3.1.	Segment N-7: Planned UA North Substation to N. Campbell Ave. (Photo 8).....	18
4.2.3.2.	Segment N-8: E. Elm St. to E. Grant Rd. (Photo 29)	19
4.2.3.3.	Segment N-9: N. Campbell Ave. to N. Vine Ave.....	19
4.2.3.4.	Segments N-2, N-3, and N-4: North Vine Avenue to DeMoss-Petrie Substation	20
4.2.4.	Route E (Figure 10)	20
4.2.4.1.	Segment N-5: E. Elm St. (planned UA North Substation) to N. Park Ave.....	20
4.2.4.2.	Segment N-10: Alley between E. Lee St. and E. Adams St. to E. Helen St. (Photo 20).....	20
4.2.4.3.	Segment N-11: N. Park Ave. to N. Euclid Ave. (Photo 19)	20
4.2.4.4.	Segment N-12 N. E. Helen St. to E. Speedway Blvd.....	20
4.2.4.5.	Segment N-13: N. Euclid Ave. to N. Stone Ave. (Photos 30-32).....	21
4.2.4.6.	Segment N-14: N. Stone Ave. to N. Main Ave.....	21
4.2.4.7.	Segment N-15: W. Speedway Blvd. to E. Drachman St. (Photo 33).....	21
4.2.4.8.	Segment N-16: E. Drachman St. to E. Grant Rd (Photos 34 and 35)	21
4.2.4.9.	Segment N-4: Oracle Road to DeMoss-Petrie Substation	22
5.	RANKING VISUAL IMPACT ASSESSMENTS.....	22
5.1.	Methods	22
5.2.	Results	23

TABLES

Table 1.	Alternative Routes for the 138kV Line to Connect the Kino Substation to Planned UA North Substation (Southern Routes).....	4
Table 2.	Alternative Routes for the 138kV Line to Connect the Planned UA North Substation to the DeMoss-Petrie Substation	5
Table 3.	Visual Impact Values for Possible Alternative Routes for Kino Substation to Planned UA North Substation to DeMoss-Petrie Substation 138kV Line	23

FIGURES

(follow text)

Figure 1.	Vicinity Map
Figure 2.	Project Overview
Figure 3.	Kino Substation to North UA Proposed Substation: Route 1
Figure 4.	Kino Substation to North UA Proposed Substation: Route 2
Figure 5.	Kino Substation to North UA Proposed Substation: Route 3
Figure 6.	Kino Substation to North UA Proposed Substation: Route 5
Figure 7.	North UA Proposed Substation to DeMoss-Petrie Substation: Route A
Figure 8.	North UA Proposed Substation to DeMoss-Petrie Substation: Route B
Figure 9.	North UA Proposed Substation to DeMoss-Petrie Substation: Route D
Figure 10.	North UA Proposed Substation to DeMoss-Petrie Substation: Route E

EXHIBITS

Exhibit 1.	Visual Impacts by Segment
Exhibit 2.	Typical 138kV Transmission Line Monopole

ATTACHMENTS

Attachment 1.	Representative Photographs of Each Alternative Routes
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I. INTRODUCTION

Tucson Electric Power (TEP) is developing plans for a new transmission line to strengthen electric reliability for customers in central Tucson and help satisfy increased demands for power within the community. The Kino to DeMoss-Petrie 138-kilovolt (kV) Transmission Line (the Project) will connect the existing Kino Substation to the existing DeMoss-Petrie Substation and interconnect with the planned University of Arizona (UA) North Substation (**Figure 1**). An Interim Siting Study was conducted by TEP and several alternative alignments have been identified based on selection criteria including the presence/absence of an existing corridor, residential use adjacent to the corridor, listed historic properties and districts adjacent to the corridor, sensitive receptors adjacent to the corridor, and room for separation from existing utilities in the corridor. The purpose of this Visual Resource Assessment is to describe visual impacts resulting from construction the Project.

Public outreach is a key component of TEP's planning process. TEP has held numerous community working group/stakeholder meetings for the Project since October 2019. TEP has set up a webpage¹ to provide the public with information about the project including virtual (due to COVID-19) public open houses, figures depicting the various alternatives, and virtual "tours" along each route. The webpage also allows community members to provide comments on the Project. A review of the comments provided to date indicates that potential visual impacts of the Project are of interest to the community. Comments focus on potential impacts to visual resources including blocking views to the mountains and scenic vistas, creating an industrial feel to the area, affecting overall quality of life, affecting the experience along the S. Kino Pkwy./N. Campbell Ave. route, a designated Gateway /Scenic Route from the airport into the City, as well as, on the other roads designated as such.

The study area delineated by TEP, that encompasses the evaluated alternative alignments, is located within the City of Tucson and landscapes are associated with urban settings consisting of residential, commercial, industrial, and park/recreation areas. Assessing visual impacts requires an understanding of the existing character of an area, the nature of the infrastructure project, and the type and sensitivity of viewers. Balancing the visual impacts with other factors such as the need for reliable energy presents a challenge. This visual assessment reflects a combination of objective and subjective evaluations of the existing landscape characteristics and potential changes to the landscape as a result of the Project.

2. PROJECT DESCRIPTION

TEP is evaluating eight potential transmission line routes within a defined study area to interconnect existing and planned substations that include:

¹ TEP's website can be accessed at: <https://www.tep.com/kino-to-demoss-petrie/>

Kino Substation: A new substation at the southeast corner of South Kino Parkway (S. Kino Pkwy.) and East 36th Street (E. 36th St.) to accommodate growing energy demands and support expected economic development in the area will go in to service by early October 2020. The substation occupies about 4.5 acres. Construction began in September 2019.

UA North Substation: This planned substation will tie into TEP's 138kV transmission system to accommodate increased energy demands in the area. It also will help maintain reliable service by supporting the eventual retirement of aging, lower capacity 46kV substations.

DeMoss-Petrie (DMP) Substation: Located near Interstate 10 (I-10) and West Grant Road (W. Grant Rd.), the substation serves as the point of interconnection for several high-voltage transmission lines and natural gas generating resources and an energy storage system.

The Kino to DeMoss-Petrie line will cross private property and utilize road right-of-way within the City of Tucson. Interconnecting the Kino Substation and planned UA North Substation to the existing DeMoss-Petrie Substation will strengthen reliability by adding redundancy, allowing TEP to deliver energy from more than one direction.

The eight alternative routes evaluated in this visual assessment are depicted in **Figure 2** and are described as follows:

- Southern alternatives: Southern alternative routes are identified numerically. There are four possible routes between the Kino Substation and the UA North Substation. Initially, TEP had identified six alternative routes; alternatives 4 and 6 were dropped from further analysis. The four remaining alternative routes, numbered 1, 2, 3, and 5 are evaluated in this analysis and are depicted in **Figures 3 through 6**, respectively.
- Northern alternatives: Northern alternative routes are identified by letters. There are four possible routes between the UA North Substation and the DMP Substation. Five alternative routes were initially identified between the planned UA North Substation and DMP Substation. Alternative C was dropped from further evaluation. The four remaining alternatives, A, B, D, and E are evaluated in this analysis and are depicted in **Figures 7 through 10**, respectively. A summary table of the visual assessment is presented in **Exhibit 1**.

To complete construction of the project, one of the southern alternatives will be combined with one of the northern alternatives.

3. METHODS

3.1. OVERVIEW

Visual impacts are defined as the change to the visual environment resulting from the introduction of modifications to the landscape. The degree of visual contrast resulting from a modification is directly related to the amount of attention that is drawn to that modification. This report analyzes the impacts to visual resources resulting from construction of the Project. It does so for each alternative route by the following criteria:

- (a) describing the proposed project features,
- (b) characterizing the existing landscape,
- (c) characterizing the visual impacts that the proposed project would have on the landscape,
- (d) identifying the viewers who will be affected by the project, and
- (e) anticipating the degree to which the project would negatively impact these viewers.

Aerial photographs were reviewed and each route was visited by a registered landscape architect to gather data regarding the existing character of the area. As noted above, there are two sets of alternatives: four alternative routes from Kino Substation to the planned UA North Substation (collectively, the southern routes), and four alternative routes from the planned UA North Substation to the DMP Substation (the northern routes).

3.2. PROPOSED PROJECT FEATURES

TEP is proposing to construct the 138kV line using tubular self-weathering steel monopoles that would typically stand between 75-85 feet (ft.) tall; up to 100 ft. tall may be required at major road or utility line crossings. The distance (span) between poles would be determined by local conditions and would range from 600 to 1,000 ft., averaging five to nine structures per mile. The intent is to use existing road rights-of-way when possible. **Exhibit 2** presents a typical 138kV monopole structure.

3.3. ALTERNATIVE ROUTES

The landscape setting for the proposed project is associated with urban land within the City of Tucson. Since the proposed alternatives are typically located within existing rights-of-way, the most common land use type is roadway. In addition, there are four land use types that adjoin the rights-of-way: residential, commercial/institutional, industrial, and park/university campus.

For the purposes of this assessment, the alternatives were divided into segments of similar landscape character. These segments are of varying lengths; therefore, the number of possible viewers of these segments varies.

3.3.1. Southern Routes: Kino Substation to the Planned UA North Substation

The southern segments are identified with an “S”. **Table 1** lists the 18 segments, their locations and the alternative routes of which they are a part.

Table 1. Alternative Routes for the 138kV Line to Connect the Kino Substation to Planned UA North Substation (Southern Routes)

Description of the Segment			Alternative Route			
Number	Segment	Location	1	2	3	5
S-1	S. Kino Pkwy.	Kino Substation to 22 nd St.	x		x	
S-2	S. Cherry Ave.	22 nd St. to UPRR	x	x	x	x
S-3	S. Kino Pkwy.	Aviation Pkwy. to E. Broadway Blvd.	x	x		
S-4	N. Campbell Ave.	E. Broadway Blvd. to E. 6 th St.	x	x		
S-5	N. Campbell Ave.	6 th St. to E. Speedway Blvd.	x	x		
S-6	N. Campbell – Elm – Vine	E. Speedway Blvd. to E. Elm St.	x	x		
S-7	E. Elm St.	N. Campbell Ave. to Planned UA North Substation	x	x		
S-8	S. Campbell Ave.	Kino Substation to E Silverlake		x		x
S-9	Cherrybelle Strav	E. Silverlake to 22 nd St.		x		x
S-10	17 th St. – West & North	S. Kino Ave. to Broadway Blvd.			x	x
S-11	E. Broadway Blvd.	S. Freemont to N. Euclid Ave.			x	x
S-12	N. Euclid Ave.	E. Broadway to E. 6 th St.			x	x
S-13	N. Euclid Ave.	E. 6 th St to University Blvd.			x	x
S-14	N. Euclid	University Blvd. to E Helen St.			x	x
S-15	E. Helen St.	N. Euclid Ave. to N Park Ave.			x	x
S-16	N. Park Ave.	Helen St to the alley between E Adams St. and E. Lee St.			x	x
S-17	Alley between E. Adams St. & E. Lee St.	N. Park Ave. to N Vine Ave.			x	x
S-18	N. Vine Ave.	Alley to Planned UA North Substation			x	x

3.3.2. Northern Routes: Planned UA North Substation to DeMoss-Petrie Substation

The northern segments are identified with an “N”. **Table 2** lists the 16 segments, their locations, and the alternative routes of which they are a part.

Table 2. Alternative Routes for the 138kV Line to Connect the Planned UA North Substation to the DeMoss-Petrie Substation

Number	Description of the Segment		Alternative Route			
	Segment	Location	A	B	D	E
N-1	N. Vine Ave.	E. Elm to E Grant Rd.	x			
N-2	E. Grant Rd.	N. Vine Ave. to N. Park Ave.	x		x	
N-3	E. Grant Rd.	N. Park Ave. to N. Oracle Rd.	x	x	x	
N-4	E. Grant Rd.	N. Oracle Rd. to DeMoss-Petrie Substation	x	x	x	x
N-5	Alley between E Lee St. & E. Adams St.	Planned UA North Substation to N. Park Ave.		x		x
N-6	N. Park Ave.	Alley between E. Lee St & E. Adams St. to E. Grant Rd.		x		
N-7	E. Elm St.	Planned UA North Substation to N. Campbell Ave.			x	
N-8	N. Campbell Ave.	E. Elm St. to E. Grant Rd.			x	
N-9	E. Grant Rd.	N. Campbell Ave. to N. Vine Ave.			x	
N-10	N. Park Ave.	Alley between Lee and Adams to E. Helen St.				x
N-11	E. Helen St.	N. Park to N. Euclid Ave.				x
N-12	N. Euclid Ave.	E. Helen St. to E. Speedway Blvd.				x
N-13	E. Speedway Blvd.	N. Euclid Ave. to N. Stone Ave.				x
N-14	W. Speedway Blvd.	N. Stone Ave. to N. Main Ave.				x
N-15	N. Main Ave.	W. Speedway to Drachman St.				x
N-16	N. Oracle Rd.	W. Drachman St. to E. Grant Rd.				x

3.4. VIEWER SENSITIVITY

For each category of land use within the study area, the expectations of the casual observer for the visual character of the landscape varies. Accordingly, the level of concern and the degree of sensitivity for changes to that landscape also vary. Residential viewers, that is viewers located within a home or private yard, and viewers in parks are typically associated with longer and more frequent views of the surrounding environment. Therefore, viewer sensitivity in these settings is anticipated to be higher than in other settings. Similarly, sightseeing motorists are anticipated to pay greater than Average attention to their surroundings. Viewers associated with commercial business settings are anticipated to have moderate sensitivity, due to a shorter viewing duration. Sensitivity is anticipated to be relatively low for commuting motorists and from within industrial settings because these developments are associated with viewers who are focused on work-related activities and may not be as sensitive to changes in the landscape.

Viewer sensitivity to changes to the landscape resulting from installation of the proposed facilities will also depend on the character of the existing landscape. It is assumed that if the existing landscape incorporates features which are similar in form, line, scale and/ or color to the proposed transmission structures, viewer sensitivity to the resulting changes will be less than when compared to an existing landscape in which there are no similar features.

3.5. MITIGATION OF VISUAL IMPACTS

It will be possible to reduce the visual impacts of portions of some alignments. Mitigation techniques include:

- Pole spacing and location: New poles can be placed to span particularly sensitive views. In some instances, they can be placed closer to similar structures or to taller buildings.
- Materials: New poles can be fabricated using galvanized steel where existing facilities such as streetlights or playfield lighting are also fabricated with galvanized finishes.

3.6. VISUAL IMPACTS RATINGS

This report describes the degree to which proposed routes of new transmission lines would conflict with anticipated viewer sensitivities. It does so by noting the presence or absence of similar structures or other features that might attenuate or exacerbate the visual impacts resulting from construction of the new transmission line.

It is worth noting that the average heights of the proposed new poles will be between 75 and 85 ft. tall. The average height of existing transmission poles within the same rights of way as the proposed alternatives is estimated to be between 50 and 60 ft. tall. The average distance between proposed new poles will be 600 to 1,000 ft. The average distance between existing distribution and sub-transmission line poles is estimated at 120 to 160 ft. Therefore, if new poles are installed, they would be approximately 25 percent taller than existing transmission poles and approximately 75 percent fewer new poles would be required than existing poles over similar distances. In some areas, existing poles would be removed and replaced. These areas can be reviewed in TEP's project website in the Interim Siting Study.

It is also worth noting that streetlighting associated with arterial roadway typically average approximately 30 ft. in height. They typically line both sides of thoroughfares and are more closely spaced than would be the proposed new poles. They are typically constructed of galvanized steel and most of them are not connected by overhead electrical lines.

Visual impacts are rated by the degree to which the project conforms to viewer expectations and sensitivity. Visual impacts were rated as follows:

- Low: the proposed project is adjacent or parallel to similar features and/or is within a more industrial setting, and viewer sensitivity to changes to the landscape resulting from the project is low.
- Moderate: the proposed project is adjacent or parallel to similar features and viewer sensitivity to proposed changes is moderate or high.
- High: the proposed project introduces new visual forms that contrast with the existing landscape, the setting is residential or recreational, and viewer sensitivity is high.

4. VISUAL ASSESSMENTS

4.1. SOUTHERN ROUTES: KINO SUBSTATION TO THE PLANNED UA NORTH SUBSTATION

4.1.1. Route 1 (Figure 3)

In general, Route 1 parallels South Kino Parkway (S. Kino Pkwy.) and North Campbell Avenue (N. Campbell Ave.), a heavily travelled four- to six-lane transportation corridor. As discussed above, viewer sensitivity of commuters is anticipated to be **low**. Kino/Campbell is also considered by the City of Tucson to be a Gateway Arterial. As such, its “appearance in contributing to a pleasant driving experience is important to the overall image of Tucson” (City of Tucson Major Streets and Routes Plan, 1982). As described in greater detail below, the existing visual character of the Route 1 alternative when viewed from the roadway varies considerably. Viewer sensitivity of sightseeing motorists is anticipated to range from **moderate to high** depending on the segment.

Visual impacts to the individual segments for non-motorists are characterized below:

4.1.1.1. Segment S-1: Kino Substation to 22nd St. (via S. Kino Pkwy.) (Photos 1, 2, and 3)

Route 1 begins at the Kino Substation at the southeast corner of S. Kino Pkwy. and E. 36th St., then runs north within the Kino right-of-way. S. Kino Pkwy. is a 40 mph, four-lane road with a landscaped median. On the west side of S. Kino Pkwy. is the Quincie Douglas Library, Recreation Center and Park interspersed with undeveloped land. Further north is Silverlake Park. Both Quincie-Douglas and Silverlake Park incorporate space for organized team sports, free play and passive recreation. Team sport participants and spectators are assumed to be primarily focused on the game. Park visitors engaged in free play and passive recreation are assumed to be more aware of the surrounding environment. Due to the open nature of the park landscape, longer views toward the north and south are possible; therefore, multiple poles could be visible.

Currently, there are no overhead distribution lines that parallel the roadway within this segment of Route 1. If existing trees that line much of the western right-of-way are preserved, many views of the new facilities would be limited to the upper portions of the poles. Where existing vegetation is absent and the viewer is close to the roadway, the heavy traffic associated with S. Kino Pkwy. is assumed to

be more distracting than the proposed transmission facilities because traffic is in motion and generates considerable noise. Also, visible when looking toward S. Kino Pkwy. are existing streetlights and, from some locations within the park, existing playfield lights. Both types of structures are of similar visual character as the proposed facilities. Visual impacts to all park user types are anticipated to be **moderate**.

Single story residential development characterizes the landscape east of S. Kino Pkwy. opposite Silverlake Park and on both sides of S. Kino Pkwy. north of the park. Long views from backyards to the north and south appear to be possible, allowing for views of multiple poles. The homes are set back and partially screened from the right-of-way by existing trees and masonry walls. Therefore, many views of the new facilities would be limited to the upper portions of the poles. Also visible in this direction are existing streetlights, which are of similar form as the proposed facilities. There are no existing overhead electric lines within this reach of the S. Kino Pkwy. right-of-way. Visual impacts to views from residences within these neighborhoods are expected to be **moderate**.

At the northern reach of this segment, the land use transitions into undeveloped properties on the west side of N. Campbell Ave. and both undeveloped properties and the El Rio Community Health Clinic (El Rio) on the east side of and N. Campbell Ave. The S. Kino Pkwy. roadway is increasingly elevated from south to north as it crosses over 22nd St. Heavy traffic and the existing public art installations within the right-of-way are anticipated to be greater visual distractions to the casual viewer than the proposed facilities. Visual impacts of the project to El Rio staff and visitors are anticipated to be **low**.

4.1.1.2. Segment S-2: 22nd St. to Union Pacific Railroad (Photo 4)

The proposed alignment would be installed parallel to South Cherry Avenue (S. Cherry Ave.) up to the Union Pacific Railroad. Land use is characterized by industrial development on the east and west sides of S. Cherry Ave., which is a two-lane local road. Viewers are expected to primarily be employees of these businesses. Existing features include wood distribution poles with underbuild, and chain-link with barbed wire fencing. Little-to-no vegetation is present. Visual impacts are anticipated to be **low**.

4.1.1.3. Segment S-3: Aviation Blvd. to E. Broadway Blvd.

The proposed alignment would be installed parallel to South Cherry Avenue (S. Cherry Ave.) up to the Union Pacific Railroad (UPRR), then across the UPRR and Highway 210 (Aviation Parkway) rights-of-way before connecting back to S. Kino Pkwy. just north of 18th Street. On the south side of the railroad right-of-way, land use is characterized by industrial development on the east and west sides of S. Cherry Ave., which is a two-lane local road. Viewers are expected to primarily be employees of these businesses. Existing features include wood distribution poles with underbuild, and chain-link with barbed wire fencing. Little-to-no vegetation is present. Visual impacts are anticipated to be **low**.

After crossing the UPRR and Aviation Parkway rights-of-way, the alignment reconnects with S. Kino Pkwy. just north of 18th Street (18th St.). Land use to the east of S. Campbell Ave. appears to be industrial transitioning to commercial development. Beginning at 13th Street (13th St.), an existing distribution transmission line is located within the S. Kino Pkwy. right-of-way and extends north. This existing line would be of similar visual character as the proposed facilities. Other existing features include galvanized metal streetlights, traffic signals and wood distribution poles with underbuild both parallel and perpendicular to the roadway. For both land use types, visual impacts are anticipated to be **low**.

On the west side of the right-of-way is Cherry Field, which is dedicated to organized baseball. Visual impacts to park users are anticipated to be **low**. It is assumed that most park users are focused on a game or practice. Furthermore, the fields are lit by overhead light fixtures, which are of a similar visual character as the proposed facilities.

North of Cherry Field is a small single-story residential area. Visual impacts to residents of this neighborhood are anticipated to be **low to moderate**. Long views of multiple poles to the north or south appear to be possible from the yards of some homes. Also visible are existing east to west distribution lines within the development. If existing trees that line much of the western right-of-way are preserved, many views of the new facilities could be limited to the upper portions of the poles. Visible when looking west toward Kino are existing streetlights and the existing distribution line within the eastern right-of-way described above. Both types of structures are of similar visual character as the proposed facilities.

Commercial businesses occupy the southeast corner of E. Broadway Blvd. and S. Kino Pkwy. and visual impacts are anticipated to be **low**. Of much greater visual impact in this area is the heavy traffic associated with this major intersection.

4.1.1.4. Segment S-4: E. Broadway Blvd. to 6th St. (Photo 5)

At the E. Broadway Blvd. intersection, S. Kino Pkwy. transitions into N. Campbell Ave., a six-lane road with a landscaped median. There are commercial properties within the southern portion, but the dominant land use is single-story residential development. Development on both sides abut the backs of right-of-way, thereby limiting the possible distances from proposed structures to adjacent properties. An existing overhead transmission line with underbuild is located within the east right-of-way, as are three east to west wooden distribution poles. Galvanized metal streetlights are located on both sides of the right-of-way. These features are both parallel and perpendicular to the roadway and traffic signals. Both types of structures are of similar visual character as the proposed facilities. Walls, fences and mature vegetation line much of both sides of the roadway, so that views of the proposed facility from numerous residences would be limited or entirely blocked. Long views of multiple poles to the north or south do not appear to be possible from most homes. Conversely, if it is necessary to remove existing mature vegetation, increased visual impacts to residents are anticipated. Since the

existing distribution line lies within the east right-of-way, it is anticipated that the visual impact of constructing the proposed facilities within that right-of-way would be less than the impact of constructing within the west right-of-way. Limiting overhead facilities to one side of the right-of-way would reduce overall visual clutter in this area. Visual impacts to residents are anticipated to be **moderate to high**, depending on the degree to which existing vegetation is removed.

4.1.1.5. Segment S-5: 6th St. to East Speedway Blvd. (Photo 6)

This segment continues within the N. Campbell Ave. right-of-way. The dominant land use on the east side of this reach of N. Campbell Ave. is single story residential development.

Development abuts the back of right-of-way, thereby limiting the possible distances from proposed structures to adjacent properties. Existing wood distribution poles with underbuild are located within the east right-of-way and galvanized metal streetlights are located on both sides of the right-of-way, both parallel and perpendicular to the roadway, and traffic signals. Both types of structures are of similar visual character as the proposed facilities. Walls, fences, and mature vegetation are associated with many of the residences, so that many views of the proposed facility from the residences would be limited to the upper portions of the poles or entirely blocked. Long views of multiple poles to the north or south do not appear to be possible from most homes. Conversely, if it is necessary to remove existing mature vegetation, increased visual impacts to residents are anticipated. Visual impacts to residents are anticipated to be **moderate to high**, depending on the degree to which existing vegetation is removed.

The dominant land use on the west side of this reach of N. Campbell Ave. is the UA campus. The campus is atypical of the surrounding city because of the high volume of pedestrian and bicycle traffic, which allow for longer view times. Like some park settings, the portion of the campus immediately west of Campbell is largely open, allowing for longer views. Therefore, multiple poles would be visible from within this area. As stated above, there are existing wood distribution poles and galvanized streetlights, which are of similar visual character as the proposed facilities. The visibility from campus of many of the existing transmission poles is reduced by the presence of tall mature trees within the neighborhood to the east. These trees reduce the silhouette effect of the existing poles. It is assumed that these trees would have a similar mitigating effect on the visibility of the lower portions of the proposed poles. Given the possible span distances described above, it is also possible that it would not be necessary to install new poles within the open campus areas. The heavy traffic associated with N. Campbell Ave. is assumed to be a considerable visual distraction to the casual viewer when near the roadway. Visual impacts to university students, staff and visitors are anticipated to be **moderate to high**, depending on the degree to which existing vegetation and existing structures would reduce the silhouette effect of the proposed new facilities.

4.1.1.6. Segment S-6: E. Speedway Blvd. to E. Elm St. (Photo 7)

This segment continues within the N. Campbell Ave. right-of-way, a six-lane roadway with a landscaped median. Land use within this reach of N. Campbell Ave. is highly diverse and includes on the east side commercial businesses, private residences, Saints Peter & Paul Catholic Church and Our Savior's Lutheran Church, and a school. Land use on the west side is dominated by multi-story buildings associated with the UA and Banner University Medical Center. Galvanized metal streetlights are located on both sides of the roadway and wood distribution poles with underbuild both parallel and perpendicular to the roadway, located within most of the length of the east right-of-way. Both types of structures are of similar visual character as the proposed facilities.

Although set back from the roadway and visually "softened" by semi-mature trees that line much of the west right-of-way, the multi-story university and medical buildings dominate the visual character of this reach of Campbell due to their mass and height. It is assumed that unlike the main campus described above, pedestrians and bicyclists do not typically frequent the area adjacent to the right-of-way. Mature vegetation on the east side of N. Campbell Ave. appears to be mostly associated with private residences. In combination with walls that surround these properties, it is anticipated that views of the proposed structures from these residences would be limited. Similarly, long views of multiple poles to the north or south do not appear to be possible from most homes. Since the existing distribution line is within the east right-of-way, it is anticipated that the visual impact of constructing the proposed facilities within that right-of-way would be less than the impact of constructing within the west right-of-way. Limiting overhead facilities to one side of the right-of-way would reduce overall visual clutter in this area. Visual impacts to the highly diverse population who live in, work, or visit these various homes and institutions are anticipated to be **low to moderate**.

4.1.1.7. Segment S-7: N. Campbell Ave. to the Planned UA North Substation (Photo 8)

Route 1 leaves the Campbell Ave. right-of-way and turns west onto E. Elm St. are, a two-lane road servicing functions associated with the UA and Banner University Medical Center. (Elm transitions into N. Ring Rd. and then into E. Chauncy Ln. All are referred to as E. Elm St. in this report.) The route ends at the planned UA North Substation. Land use to either side of Elm within the area is entirely dedicated to the University of Arizona and Banner University Medical Center. Visual impacts are anticipated to primarily affect residents to the north, though this road is also used by hospital staff, patients, and visitors. As discussed above, the multi-story buildings associated with Banner dominate the visual character of the area due to their mass and height. Most of the area between Elm and residences to the north consists of detention basins lined with immature trees. Consequently, views from these residences toward Elm and Banner are unbroken. Streetlights are located on both sides of the roadway. Visual impacts to employees, visitors and nearby residents are anticipated to be **low**.

4.1.2. Route 2 (Figure 4)

Route 2 would be constructed within a portion of the S. Campbell Ave. right-of-way and within the S. Cherrybelle Stravenue right-of-way. Commuting motorists are not anticipated to utilize either of these two-lane roads. North of 22nd St., the proposed route would follow the same alignment as **Route 1**, segments S-3 to S-7. From E. 18th St. to the planned UA North Substation discussed above. Visual impacts to the undescribed individual segments are characterized below:

4.1.2.1. Segments S-8: Kino Substation to Silverlake Rd. (Photos 9-10)

Route 2 bears east along E. 36th St., then north along S. Campbell Ave., which consists of two one-way roads separated by a wide landscaped median (approximately 100 ft. wide). The proposed alignment would be located within the median. Residential development characterizes the land use on both sides of the right-of-way. Visual impacts to views from residences within this neighborhood are expected to be **high**. The right-of-way is unusually wide for a residential neighborhood. Coupled with the single story architecture, the uneven distribution of mature trees and the fact that the majority of trees are relatively short native mesquites (with a typical maximum height of 25 to 30 ft.), long views from residential yards appear to be possible, allowing for views of multiple poles. There are no overhead transmission facilities parallel to the right-of-way and relatively few streetlights. The visual impact of the new poles would be somewhat attenuated by the groups of mature palm trees (approximate heights of 40 ft.) within the median. The forms of the poles would repeat the vertical habit of these trees.

4.1.2.2. Segments S-9: Silverlake Rd. to 22nd St. (Photo 11)

This segment is located within the S. Cherrybelle Stravenue right-of-way, a two-lane road. Existing land use development associated with Cherrybelle can be characterized as institutional, including the main U.S. Post Office for the City of Tucson and the El Rio Health Clinic, as well as industrial. Impacts to viewers within this area are anticipated to be **low**.

4.1.3. Route 3 (Figure 5)

Visual impacts associated with the **Route 3** alternative are characterized below:

4.1.3.1. Segments S-1 and S-2: S. Kino Pkwy. to E. 22nd to S Kino at E. 17th St

The route would follow the **Route 1** alignment, segments S-1 and S-2, until Kino intersects with E. 17th St.

4.1.3.2. Segment S-10: S. Kino Pkwy. to E. Broadway Blvd. (Photos 12-15)

From S. Kino Pkwy., the proposed alignment would parallel rights-of-way associated with E. 17th St., S. Highland Ave., E. Manlove St., and S. Fremont Ave., all of which are two-lane local roads. It would

cross a highly eclectic blend of land uses including industrial, commercial, single- and two-story residential, dispersed recreation, a small park, and a school. Of these, the dominant land use is dispersed recreation: there exists a network of multi-use paths associated with a network of detention basins constructed for flood control for the Arroyo Chico drainage. These basins create open space that allows for long views from the paths and from the adjacent properties and roadways. The dominant land use surrounding the network of basins is residential. Distribution lines exist within a southern portion of the basin complex and within several local rights-of-way. There are a limited number of streetlights. The structures associated with the distribution lines are of similar visual character as the proposed facilities. Visual impacts to the variety of residents, recreationalists, employees are anticipated to be **moderate to high**.

4.1.3.3. Segment S-11: N. Fremont Ave. to N. Euclid Ave.

This section is within the Broadway Blvd. right-of-way. Broadway is currently under construction to create a six-lane arterial. Primary viewers are assumed to be commuters. Similar to S. Kino Blvd. and Campbell Ave., Broadway Blvd. is considered by the City of Tucson to be a Gateway Arterial. Therefore, the aesthetics of the driving experience are considered important. Visual impacts associated with this segment of the route are anticipated to be **moderate to low**. Commercial businesses dominate the south side of the right-of-way. Multi-story apartment buildings predominate on the north. There are no overhead transmission lines that parallel the right-of-way. Streetlights are located on both sides of the road and are of a similar visual character as the proposed facilities.

4.1.3.4. Segment 12: E. Broadway Blvd. to E. 6th St. (Photos 16-17)

From E. Broadway Blvd., the route heads north adjacent to North Euclid Avenue (N. Euclid Ave.), a heavily travelled four-lane arterial. Euclid Ave. is a heavily used four-lane arterial. Land use to either side of this reach of Euclid Ave. is dominated by one-story single- and multi-family housing. Beginning at 8th Street (8th St.), land use west of the right-of-way is associated with Tucson High School. Development on both sides, including Tucson High School, abuts the back of right-of-way, thereby limiting the possible distances from proposed structures to adjacent properties. North of 8th St., the scale of the high school architecture, combined with its proximity to the right-of-way, dominates the landscape. Where vegetation is absent, views to the north or south of proposed new poles from residential properties seems be likely. Currently visible from these same properties are existing distribution lines with underbuild that are located the full length of the west right-of-way and about half the length of the east right-of-way. Four wood distribution poles with underbuild and a 46kV sub-transmission line cross the N. Euclid Ave. roadway. Traffic signals are installed at the halfway point of this segment at the 9th Street intersection. Streetlights are located on the east right-of-way. Approximately 200 ft. to the south of the intersection at 6th St., there exists in the west right-of-way a painted steel transmission pole with an approximate height of 75 ft. All of these structures are similar in visual character as the proposed facilities. The heavy traffic associated with Euclid is assumed to be a visual distraction to the casual viewer when near the roadway. Visual impacts resulting from

construction of this segment of the proposed facilities are anticipated to be **low to moderate**, depending on the degree to which existing transmission facilities can be incorporated into the proposed facilities, thereby minimizing overall visual clutter.

4.1.3.5. Segment 13 (cont.): 6th St. to University Blvd. (Photo 18)

North of 6th St, the alignment continues adjacent to N. Euclid Ave. Multi-story buildings associated with the UA dominate the east side of the right-of-way, giving this segment an urban feel. Single-story residences dominate the west side. Viewers are anticipated to be residents. Development on both sides is marked by reduced setbacks from the right-of-way. Where vegetation is absent, views to the north or south of proposed new poles from residential properties seem be likely. Distribution lines with underbuild are located the full length of the west right-of-way and are currently visible from these same residences. Two distribution lines cross the E. Euclid Ave. roadway. Traffic signals are installed at the 5th Street (5th St.) intersection. Galvanized metal streetlights are located on the east right-of-way. All of these structures are similar in visual character as the proposed facilities. It is anticipated that installing the new facilities in the east right-of-way would reduce visual impacts since they would contrast less with the multi-story university architecture than they would with the single-story residential architecture that dominates the west right-of-way. Visual impacts resulting from construction of this segment of the proposed facilities are anticipated to be **low to moderate**.

4.1.3.6. Segment 14 (cont.): University Blvd. to E. Speedway Blvd. to E. Helen St.

The alignment continues adjacent to N. Euclid Ave. From University Boulevard to 1st Street (1st St.), the adjacent landscape is dominated by multi-story residential, university or hotel structures on both sides of the right-of-way. North of 1st St., the landscape is characterized by one-story university buildings to the east of the roadway. Land west of the roadway is occupied by a small residential development and a church. Development on both sides is marked by reduced setbacks from the right-of-way. As a result, the southern portion of this segment appears urban in character, possibly reducing the visual impact caused by the proposed facilities. Pedestrian and bicycle use are estimated to be heaviest at the intersection with University Boulevard. Overhead power lines associated with the Tucson streetcar follow the space immediately above that same roadway. An overhead transmission line crosses E. Euclid Ave. at 1st Ave. Galvanized metal streetlights and vegetation are located on both sides of the right-of-way. These structures are similar in visual character as the proposed facilities. Impacts resulting from construction of this segment of the proposed facilities are anticipated to be **low to moderate**.

4.1.3.7. Segment S-15: E. Euclid Ave. to N. Park Ave. (Photo 19)

The route would be located adjacent to E. Helen St., a two-lane local road. Land use to either side of Helen St. appears to be mostly residential. Half of the land use north of the right-of-way is dedicated to one- and two-story student housing and the viewer sensitivity of residents of this housing is

assumed to be low. Visual impacts to all residents in this portion of the proposed route are anticipated to be **moderate**. An existing distribution line with underbuild is located within the south right-of-way and is similar in visual character to the proposed facilities.

4.1.3.8. Segment S-16: Helen St. to the alley between E. Adams St. and E. Lee St. (Photo 20)

The proposed route would be located within the N. Park Ave. right-of-way. N. Park Ave. is a two-lane collector street in a residential area, mainly consisting of apartment and multi-family housing. It appears to be frequently used by university students walking and cycling to the university and viewers are expected to be residents. Land use on both sides of the right-of-way is dominated by two-story apartment buildings and the viewer sensitivity of residents is assumed to be low. An existing distribution line with underbuild is located within the east right-of-way and is similar in visual character to the proposed facilities. Vegetation is found on both sides of the route. Visual impacts resulting from construction of this segment of the proposed facilities are anticipated to be **low**.

4.1.3.9. Segment S-17: N. Park Ave. to N. Vine Ave. (Photos 21-22)

The proposed route would be located within an east to west alley between E. Adams St. and E. Lee St. Most land use to either side appears to be residential. The visual impacts resulting from construction of this segment of the proposed facilities are anticipated to be **low**. An existing 46kV sub-transmission line with underbuild runs the full length of the proposed alignment. In addition, there are numerous distribution lines perpendicular to the orientation of the alley. These structures are similar in visual character as the proposed facilities.

4.1.3.10. Segment S-18: N. Park Ave. to Planned UA North Substation (Photos 23)

This segment continues north within the N. Vine Ave. right-of-way. Land use to the east side of the of way is dedicated to facilities management for the UA and two existing 46 kV substations. To the west are three residences. Existing distribution lines and 46kV sub-transmission with underbuild are located on both sides of the right-of-way. The poles on the east side are approximately 75 ft. tall and are constructed of painted or weathered steel. These structures are similar in visual character as the proposed facilities. Visual impacts resulting from construction of this segment of the proposed facilities are anticipated to be **low**.

4.1.4. Route 5 (Figure 6)

4.1.4.1. Segments S-8, S-9, S-2 and S-10 through S-18

The route would follow the **Route 2 (S-8, S-9, S-2, S-10)** alignment between E. 36th St. and E. 22nd St. and the **Route 3 (S-10 to S-16)** alignment north of E. 22nd St. to the planned UA North Substation. All segments from these routes have been discussed earlier in this report. Visual impacts associated with the **Route 5** alternative are anticipated to be **moderate**.

4.2. NORTHERN ROUTES: PLANNED UA NORTH SUBSTATION TO THE DEMOSS-PETRIE SUBSTATION

4.2.1. Route A (Figure 7)

The majority of **Route A** parallels Grant Road, a heavily travelled four- to six-lane arterial. Most viewers are anticipated to be commuters for whom visual impacts are anticipated to be **low**. Visual impacts associated with **Route A** individual segments for non-motorists are described below:

4.2.1.1. Segment N-1: E. Elm St. to E. Grant Rd. (Photo 23)

Route A begins at the planned UA North Substation and would be located within the N. Vine Ave. right-of-way, a two-lane local road. The dominant land use on both sides of the road is residential, buildings associated with the UA and a church. Viewers along this route include residents. The right-of-way width limits the possible distances from proposed structures to adjacent properties. Existing weathered steel 46kV sub-transmission utility poles with underbuild are located on the east side of the right-of-way between E. Elm St. and the alley between E. Lester and E. Linden St. These are both perpendicular and parallel to the roadway. The poles are approximately 75 ft. tall. There are no electric lines parallel to N. Vine north of E. Linden St. and very few streetlights. Numerous east to west transmission lines with underbuild cross the roadway and are of similar visual character as the proposed facilities. Many of the residential yards contain mature vegetation or are fenced or walled. Therefore, some views of the new facilities would be limited to the upper portions of the poles or blocked entirely. Where vegetation is absent, it is likely that longer views of several poles will be possible. Some of these views would also include views of the existing overhead distribution lines. Visual impacts resulting from construction of this segment of the proposed facilities are anticipated to be **moderate to high**.

4.2.1.2. Segment N-2: N. Vine Ave. to N. Park Ave. (Photo 24)

Route A continues west within the E. Grant Rd. right-of-way. E. Grant Rd. is a heavily travelled, four-lane arterial. The dominant land use is residential. There are no existing overhead utilities within the right-of-way; some mature vegetation is present. Traffic signals and galvanized metal streetlights line one or both sides of the roadway and are of similar visual character as the proposed facilities. When viewed from adjacent residences, the heavy traffic associated with E. Grant Rd. is assumed to attract greater visual attention than the proposed transmission facilities because traffic is in motion and generates considerable noise. Visual impacts resulting from construction of this segment of the proposed facilities are anticipated to be **moderate**. The right-of-way width limits the possible distances from proposed structures to adjacent properties. (It is worth noting that construction plans for the widening of both the roadway and right-of-way associated with E. Grant Rd., are currently in development).

4.2.1.3. Segment N-3: N. Park Ave. to N. Oracle Rd. (Photo 25)

The route continues within the N. Grant Rd. right-of-way, which transitions into a six-lane roadway with a landscaped median. Land use consists of a mix of commercial businesses (McDonalds, Farmers Insurance, 99 Cent Store, CVS, Fry's Food, etc.) and private residences. An existing 46kV sub-transmission distribution line with underbuild is located the length of the south right-of-way. The poles range from about 82 to 100 ft. tall and are constructed of weathered steel. Traffic signals are located at several intersections, as are commercial signs, and galvanized metal streetlights are located on both sides of the roadway. Several wood distribution utility poles with lines cross the roadway. These structures are similar in visual character as the proposed facilities. The road alignment has rolling terrain, which allows for occasional open views to the east and the north. On the west side of the alignment at North Stone Avenue (N. Stone Ave.), the building setbacks decrease, which constrains views. Visual impacts resulting from construction of this segment of the proposed facilities are anticipated to be **low**.

4.2.1.4. Segment N-4: N. Oracle Rd. to DeMoss-Petrie Substation (Photos 26-28)

The route continues west within the N. Grant Rd. right-of-way west to the DeMoss-Petrie Substation, east of I-10. The dominant land use is commercial. Existing self-weathering 46kV sub-transmission lines and wood distribution poles with underbuild are located much of the length of the south right-of-way and for a portion of the north right-of-way. Most poles are 75 to 80 ft. tall. Traffic signals are located at several intersections and streetlights are located on both sides of the roadway. Several utility lines cross the roadway. These structures are similar in visual character as the proposed facilities. There is also an art sculpture at the intersection of E. Grant Rd. and North Oracle Road (N. Oracle Rd.) and open views of the Tucson Mountains when travelling west. Little vegetation is present. Visual impacts resulting from construction of this segment of the proposed facilities are anticipated to be **low**.

4.2.2. Route B (Figure 8)

Similar to **Route A** described above, the majority of **Route B** parallels E. Grant Rd., a heavily travelled six-lane arterial. Most viewers are expected to be commuters for whom visual impacts are anticipated to be **low**. Visual impacts associated with **Route B** individual segments for non-motorists are described below:

4.2.2.1. Segment N-5: Planned UA North Substation to N. Park Ave. (Photos 21 and 22)

The first part of this segment would be located within the N. Vine Ave. right-of-way. Land use to the east side of the right-of-way is dedicated to facilities management for the University of Arizona. To the west are three residences. Visual impacts resulting from construction of this segment of the proposed facilities are anticipated to be **low**. Existing transmission lines are located on both sides of the right-of-way. The poles on the east side are approximately 70 ft. tall at the south end and are

constructed of painted or weathered steel; smaller poles to the north are constructed of wood. The utilities on the west side of the roadway appear to be non-electrical in nature and are attached to wood poles. These structures are similar in visual character as the proposed facilities.

The segment would continue west from N. Vine Ave. to N. Park Ave. within an east to west alley between Adams St. and Lee St. Most land use to either side appears to be residential. The visual impacts resulting from construction of this segment of the proposed facilities are anticipated to be **low**. An existing 46kV sub-transmission line with underbuild runs the full length of the proposed alignment. In addition, there are numerous distribution lines perpendicular to the orientation of the alley. These structures are similar in visual character as the proposed facilities.

4.2.2.2. Segment N-6: Alley between E. Lee St. and E. Adams St. to E. Grant Rd. (Photo 20)

The proposed route would be located within the Park Ave. right-of-way. Park Ave. is a two-lane collector street. It appears to be frequently used by university students walking and cycling to the university. Land use on both sides of the right-of-way is dominated by one-story residences with several two-story apartment buildings. Visual impacts resulting from construction of this segment of the proposed facilities are anticipated to be **low**. An existing 46 kV sub-transmission line with underbuild is located within the east right-of-way. Numerous distribution lines cross the roadway. These structures are similar in visual character to the proposed facilities.

4.2.2.3. Segments N-3 and N-4: N. Park Ave. to the DeMoss-Petrie Substation

From N. Park Ave., this route follows **Route A** west to the DeMoss-Petrie Substation within the E. Grant Rd. right-of-way and visual impacts are described in that section.

4.2.3. Route D (Figure 9)

The majority of **Route D** parallels N. Campbell Avenue and E. Grant Ed, both of which are heavily travelled arterials. Most viewers are expected to be commuters for whom visual impacts are anticipated to be **low**. As discussed earlier, N. Campbell Rd. is considered by the City of Tucson to be a Gateway Arterial. Therefore, the aesthetics of the driving experience are considered important. Viewer sensitivity of sightseeing motorists is anticipated to be **moderate to high**. Visual impacts associated with **Route D** individual segments for non-motorists are described below:

4.2.3.1. Segment N-7: Planned UA North Substation to N. Campbell Ave. (Photo 8)

Route D is parallel to E. Elm St, following the same as alignment as **Routes 1 and 2 (S-7)**. As discussed earlier, Elm is a two-lane road and land use to either side is entirely dedicated to the University of Arizona and Banner University Medical Center. (From east to west, E. Elm St. transitions into N. Ring Rd. and then into E. Chauncy Ln. All are referred to as E. Elm St. in this report.) Visual impacts are anticipated to primarily affect residents to the north, though the road is also used by hospital staff,

patients and visitors. The multi-story buildings associated with Banner dominate the visual character of the area due to their mass and height. Most of the area between Elm and residences to the north consists of detention basins lined with immature trees. Consequently, views from these residences toward Elm and Banner are unbroken. Streetlights are located on both sides of the roadway. Visual impacts to employees, visitors and nearby residents are anticipated to be **low**.

To complete the project, one of the southern alignment alternatives will be combined with one of the northern alignment alternatives. Two possible combinations of alternatives include **Route 1D** and **Route 2D**. If one of these combinations of alternatives is constructed, two transmission lines would be installed parallel to E. Elm St., one on each side of the road. The southern route would be going west to the planned UA North Substation; the northern route would be going east from the planned UA North Substation to Campbell Ave.

4.2.3.2. Segment N-8: E. Elm St. to E. Grant Rd. (Photo 29)

The proposed route would be located within the Campbell Ave. right-of-way. There are no existing overhead utility lines immediately adjacent to this reach of Campbell. An existing distribution line is located adjacent to the west frontage road. Streetlights are located on both sides of the road and there are traffic signals at one pedestrian crossing. These structures are similar in visual character to the proposed facilities. The dominant land use on both sides of the road is residential. Frontage roads and six-foot walls line most of both sides of the roadway, allowing for separation between the road and adjacent residences. Both sides are also lined with mature native trees. Multiple poles could be visible from some residences within this segment. It seems likely that the walls and vegetation would limit these views to the upper portions of the facilities. Visual impacts resulting from construction of this segment of the proposed facilities are anticipated to be **moderate**.

4.2.3.3. Segment N-9: N. Campbell Ave. to N. Vine Ave.

The route heads west within the E. Grant Rd. right-of-way, a four-lane arterial. The dominant land use on both sides of the road is residential. Visual impacts to non-commuters resulting from construction of this segment of the proposed facilities are anticipated to be **moderate**. The right-of-way width limits the possible distances from proposed structures to adjacent properties (however, see discussion above regarding ongoing plans for right-of-way improvements). There are no existing overhead utilities within the right-of-way. One north to south 46kV sub-transmission lines crosses the roadway and streetlights are located in the north right-of-way. Both are of similar visual character as the proposed facilities. Many of the front yards of adjacent residences have mature vegetation and/or are surrounded by walls, which will limit views of the proposed facilities. Where visible, the heavy traffic associated with Grant Rd. is assumed to attract greater attention than the proposed transmission facilities because traffic is in motion and generates considerable noise.

4.2.3.4. Segments N-2, N-3, and N-4: North Vine Avenue to DeMoss-Petrie Substation

Visual impacts associated with the remainder of this route (to the DeMoss-Petrie Substation) are described above under **Route A**.

4.2.4. Route E (Figure 10)

Visual impacts to individual segments resulting from construction of this route are characterized below:

4.2.4.1. Segment N-5: E. Elm St. (planned UA North Substation) to N. Park Ave.

Visual impacts resulting from this route are described above under **Route B**.

4.2.4.2. Segment N-10: Alley between E. Lee St. and E. Adams St. to E. Helen St. (Photo 20)

From the alleyway between Adams and Lee, the route turns south parallel to N. Park Ave. N. Park Ave. is a two-lane collector street in a residential area, mainly consisting of apartment and multi-family housing. It appears to be frequently used by university students walking and cycling to the university and viewers are expected to be residents. Land use on both sides of the right-of-way is dominated by two-story apartment buildings and the viewer sensitivity of residents is assumed to be low. An existing distribution line with underbuild is located within the east right-of-way and is similar in visual character to the proposed facilities. Vegetation is found on both sides of the route. Visual impacts resulting from construction of this segment of the proposed facilities are anticipated to be **low**.

4.2.4.3. Segment N-11: N. Park Ave. to N. Euclid Ave. (Photo 19)

From N. Park Ave. the route turns east parallel to E. Helen St., a local two-lane road. Land use to either side of Helen St. appears to be mostly residential. Approximately half of the land use north of the right-of-way is dedicated to one- and two-story student housing and the viewer sensitivity of residents of this housing is assumed to be low. An existing distribution line with underbuild is located within the south right-of-way and is similar in visual character to the proposed facilities. Visual impacts to all residents in this portion of the proposed route are anticipated to be **moderate**.

4.2.4.4. Segment N-12 N. E. Helen St. to E. Speedway Blvd.

From Helen St, the alignment follows N. Euclid Ave. for one block south to E. Speedway Blvd. As discussed earlier, Euclid is a four-lane road. Adjacent land uses include residential and commercial. Streetlights line both sides of the road. There are no other overhead utilities. Visual impacts resulting from construction of this segment of the proposed facilities are anticipated to be **moderate**.

4.2.4.5. Segment N-13: N. Euclid Ave. to N. Stone Ave. (Photos 30-32)

This portion of the alignment would be located within the E. Speedway Blvd. right-of-way. Speedway is a heavily travelled four-lane arterial. The dominant land use on both sides of the road is mostly residential, although commercial businesses are located at major intersections and there are two large church properties. Anza Park is located at the southeast corner of N. Stone Ave. Development abuts the back of right-of-way, thereby limiting the possible distances from proposed structures to adjacent properties. There are no existing overhead utilities parallel to the right-of-way. Two north to south distribution lines cross the roadway at the western end of the segment, there are traffic signals at major intersections and galvanized metal streetlights are located on both sides of the road. These structures are of similar visual character as the proposed facilities. Many if not most residences face onto W. Speedway Blvd. and relatively few have walls or mature vegetation of sufficient height to block views into the roadway. The heavy traffic associated with W. Speedway Blvd. is assumed to be a greater visual distraction than the proposed transmission facilities. Visual impacts to non-commuters resulting from construction of this segment of the proposed facilities are anticipated to be **moderate**.

4.2.4.6. Segment N-14: N. Stone Ave. to N. Main Ave.

The proposed alignment continues east parallel to W. Speedway Blvd., a four- to six-lane arterial. Land use to either side of Speedway in this segment is mixed. About half of the properties are private residences. Other uses include commercial, several undeveloped properties or parking lots and Pima Community College. Several distribution and sub-transmission lines perpendicular to the roadway are located within this segment. A pedestrian crossing signal is located near the middle of this segment and both sides of the road are lined with streetlights. These structures are of similar visual character as the proposed facilities. Pedestrian traffic associated with the college is assumed to be high but limited to the Stone Ave. intersection. Visual impacts to non-commuters resulting from construction of this segment of the proposed facilities are anticipated to be **low to moderate**.

4.2.4.7. Segment N-15: W. Speedway Blvd. to E. Drachman St. (Photo 33)

This portion of the alignment would be located within the N. Main Ave. right-of-way. Main is a major four-lane roadway and most viewers are expected to be commuters. The dominant land use on both sides of the road is commercial. Visual impacts to non-commuters resulting from construction of this segment of the proposed facilities are anticipated to be **low**. There are no overhead transmission lines within the right-of-way parallel to the roadway. A distribution and a 46kV sub-transmission line cross the road and streetlights are located on both sides of the road. These structures are of similar visual character as the proposed facilities.

4.2.4.8. Segment N-16: E. Drachman St. to E. Grant Rd (Photos 34 and 35)

This portion of the alignment would be located within the N. Oracle Rd right-of-way. Oracle is a six-lane transportation corridor and most viewers are anticipated to be commuters. It is also considered

by the City of Tucson to be a Gateway Arterial. Therefore, the aesthetics of the driving experience are considered important. Viewer sensitivity of sightseeing motorists is anticipated to be **moderate to high**. Land use on both sides of the right-of-way are dominated by commercial businesses. Visual impacts to non-commuters resulting from construction of this segment of the proposed facilities are anticipated to be **moderate to high**. There are no overhead transmission lines that parallel the road and a limited number that cross it. Streetlights are located on both sides of the roadway. Perhaps the most striking visual characteristic are the signs advertising motels in the southern section of this portion of the alignment. The historic character of these signs might conflict with the visual character of the proposed facilities. Other advertising signs and billboards further north up Oracle Rd. have a more modern character and are not anticipated to conflict with the proposed facilities.

4.2.4.9. Segment N-4: Oracle Road to DeMoss-Petrie Substation

Visual impacts resulting from this segment along E. Grant Rd are described above under **Route A, Segment N-4**.

5. RANKING VISUAL IMPACT ASSESSMENTS

5.1. METHODS

Visual impacts are defined as changes to the visual environment resulting from the introduction of modifications to the landscape. The degree of visual contrast resulting from a modification is directly related to the amount of attention that is drawn to that modification.

In order to rank the alignment alternatives with respect to visual impacts, a value was assigned to each segment as follows:

- **High Visual Impact** A value of 1 was assigned to segments in which the installation of proposed TEP facilities would attract significant negative viewer attention.
- **Moderate Visual Impact** A value of 2 was assigned to segments in which the installation of proposed TEP facilities would attract moderate negative viewer attention.
- **Low Visual Impact** A value of 3 was assigned to segments in which the installation of proposed TEP facilities would attract little to no negative viewer attention.

As discussed in Section 4 of this report, many of the segments are utilized and enjoyed by a diverse population, from commuters to local residents. To reflect this diversity, values assigned to each segment were rarely whole numbers. More frequently, they were of intermediate value, between 1 and 2 or between 2 and 3.

The value of a proposed route was determined by calculating the average value of the contributing segments. The value of an overall project alternative was determined by calculating the average value of the contributing southern and northern routes.

The assignment of these values is based on the professional opinion of the landscape architect regarding the characterization of the existing landscape, the anticipated visual impacts to the landscape resulting from construction of the proposed TEP facilities, and the anticipated reactions of viewers to these facilities. No formal attempt was made to assign values based on numbers of viewers nor was any formal attempt made to solicit the opinions of possible viewers.

5.2. RESULTS

The values assigned to each segment can be seen in **Exhibit 1**.

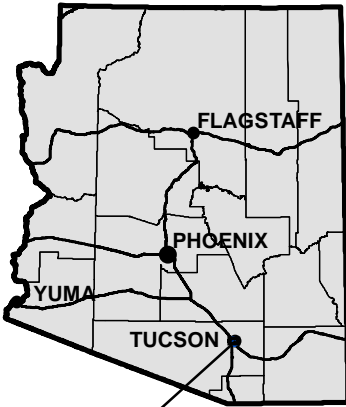
As discussed earlier, to complete construction of the project, one of the southern alternatives will be combined with one of the northern alternatives. The possible north-south alternative route combinations and their respective visual impact values are shown below in **Table 3**.

Table 3. Visual Impact Values for Possible Alternative Routes for Kino Substation to Planned UA North Substation to DeMoss-Petrie Substation 138kV Line

	Alternative											
	1A	1B	1D	1E	2A	2B	2D	2E	3A	3D	5A	5D
Visual Impact Value	2.26	2.48	2.25	2.20	2.31	2.53	2.30	2.25	2.50	2.49	2.51	2.50

FIGURES

ARIZONA

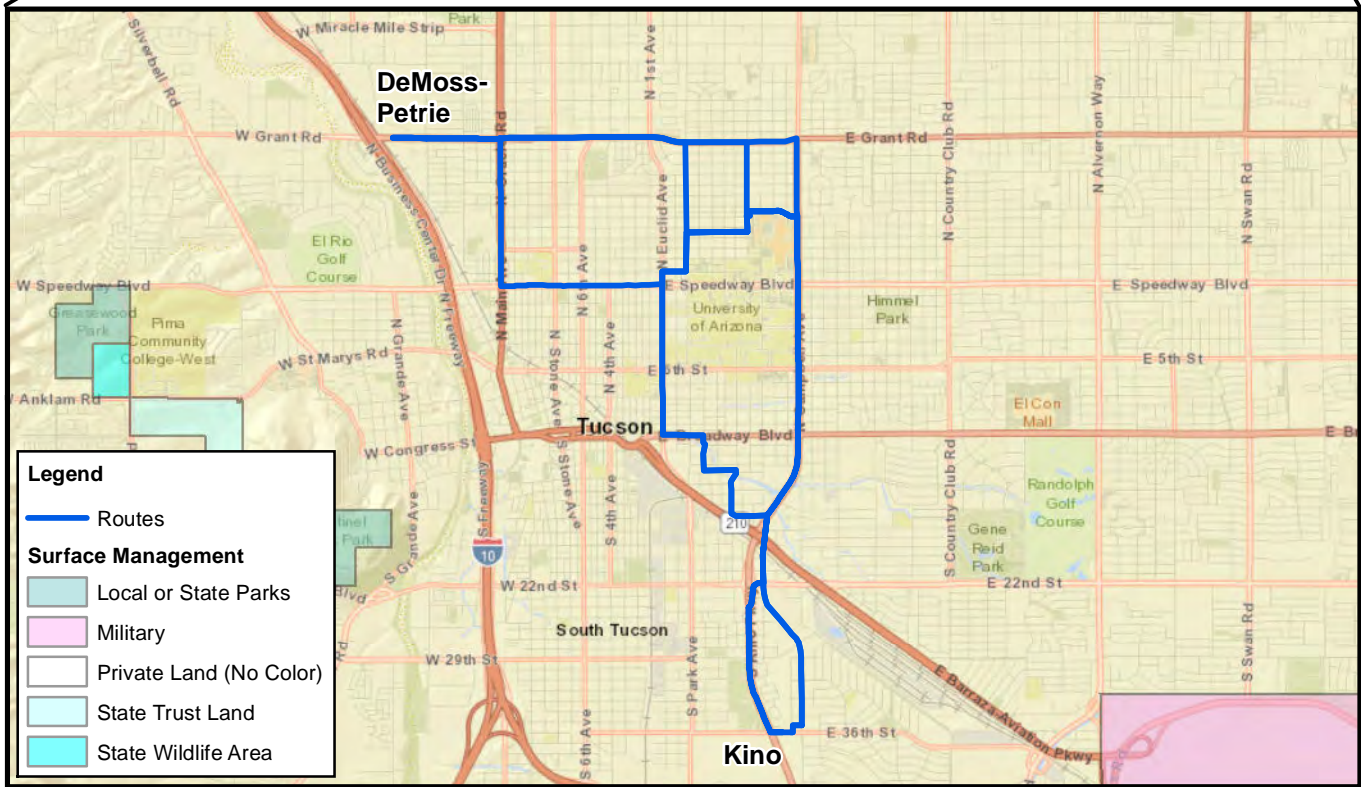


PROJECT LOCATION

PROJECT VICINITY



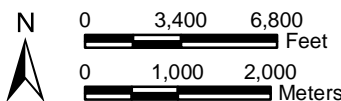
Approximate Scale 1 Inch = 10 Miles

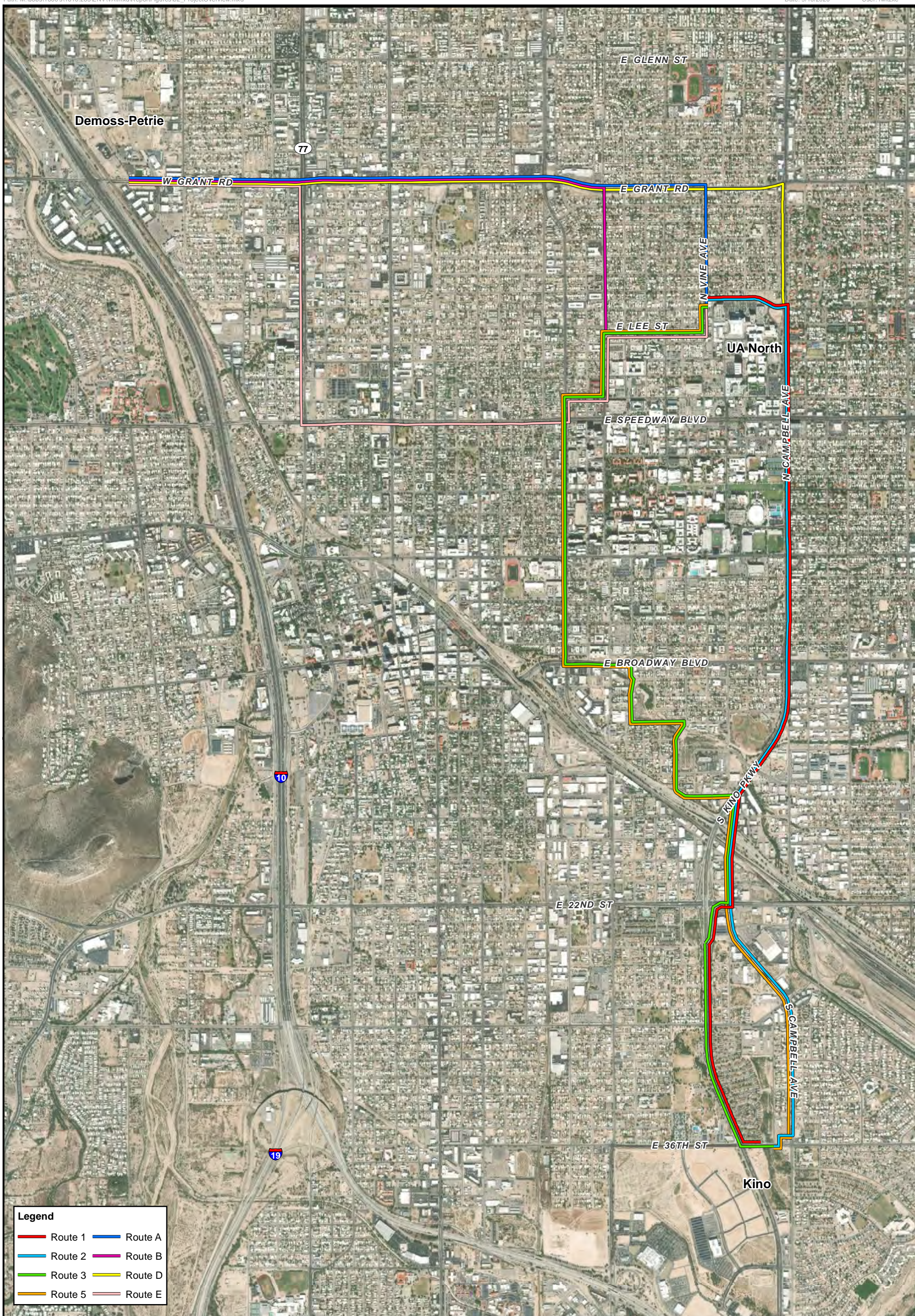


T14S, R13E, Portions of Sections 1 and 2,
 T14S, R14E, Portions of Sections 6, 7, 18 and 19,
 Pima County, Arizona
 Data Source: TEP
 Surface Management: BLM 2019, WRI modified 2019
 Image Source: ArcGIS Online, World Street Map

TUCSON ELECTRIC POWER CO.
 Kino to DeMoss-Petrie 138-Kilovolt (kV)
 Transmission Line Project
 Visual Assessment

VICINITY MAP
 Figure 1



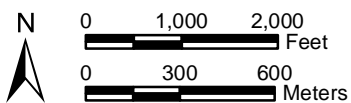


Legend

Route 1	Route A
Route 2	Route B
Route 3	Route D
Route 5	Route E

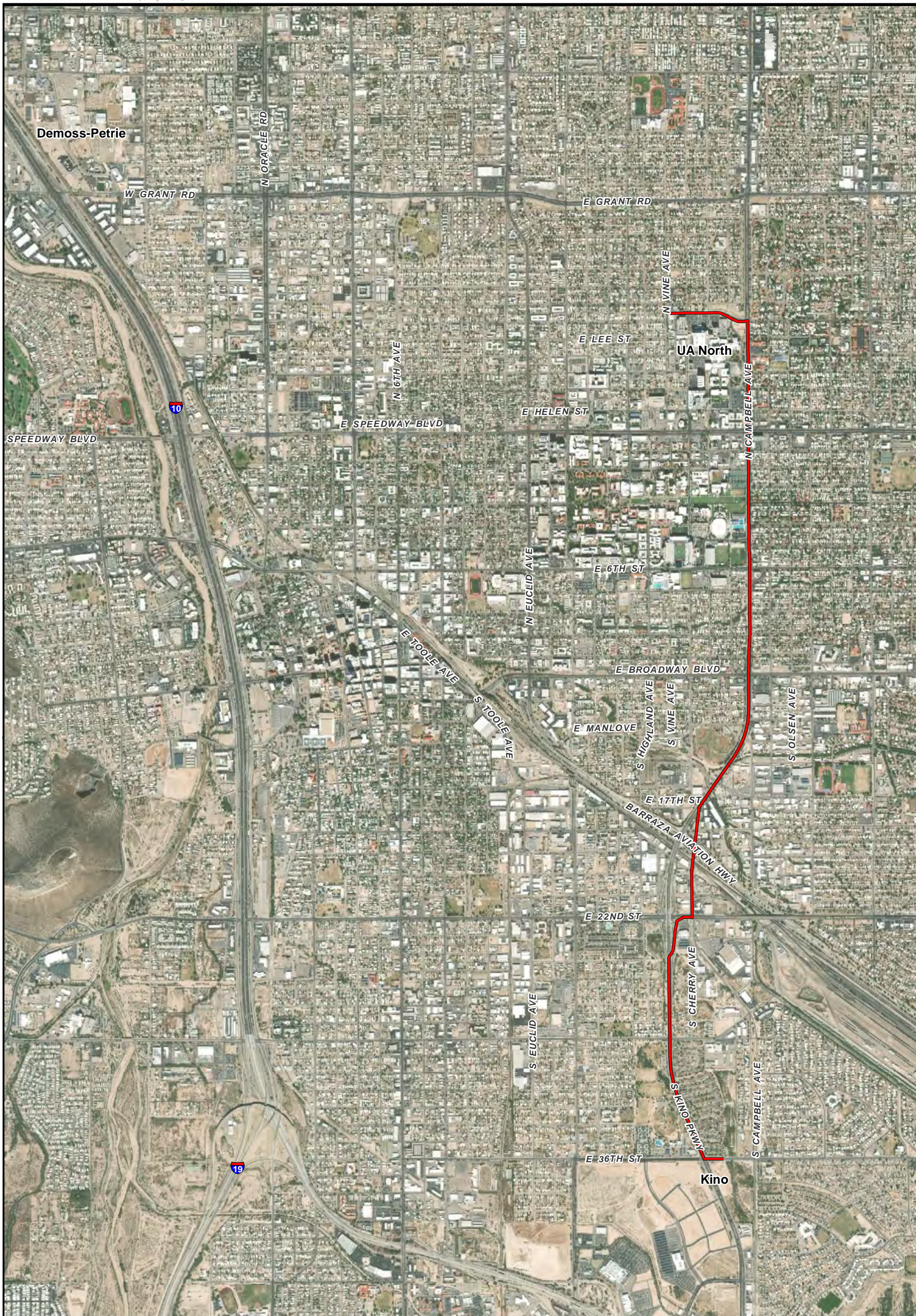
T14S, R13E, Portions of Sections 1 and 2,
 T14S, R14E, Portions of Sections 6, 7, 18 and 19,
 Pima County, Arizona
 Data Source: TEP
 Image Source: ArcGIS Online, World Imagery 7-10-2019

Note: Routes moved for spatial clarity, Not to Scale



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 Transmission Line Project
 Visual Assessment

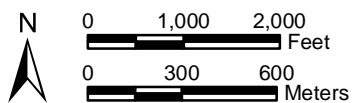
PROJECT OVERVIEW
 Figure 2



T14S, R14E, Portions of Sections 6, 7, 18 and 19,
 Pima County, Arizona
 Data Source: TEP
 Image Source: ArcGIS Online, World Imagery 7-10-2019

Legend

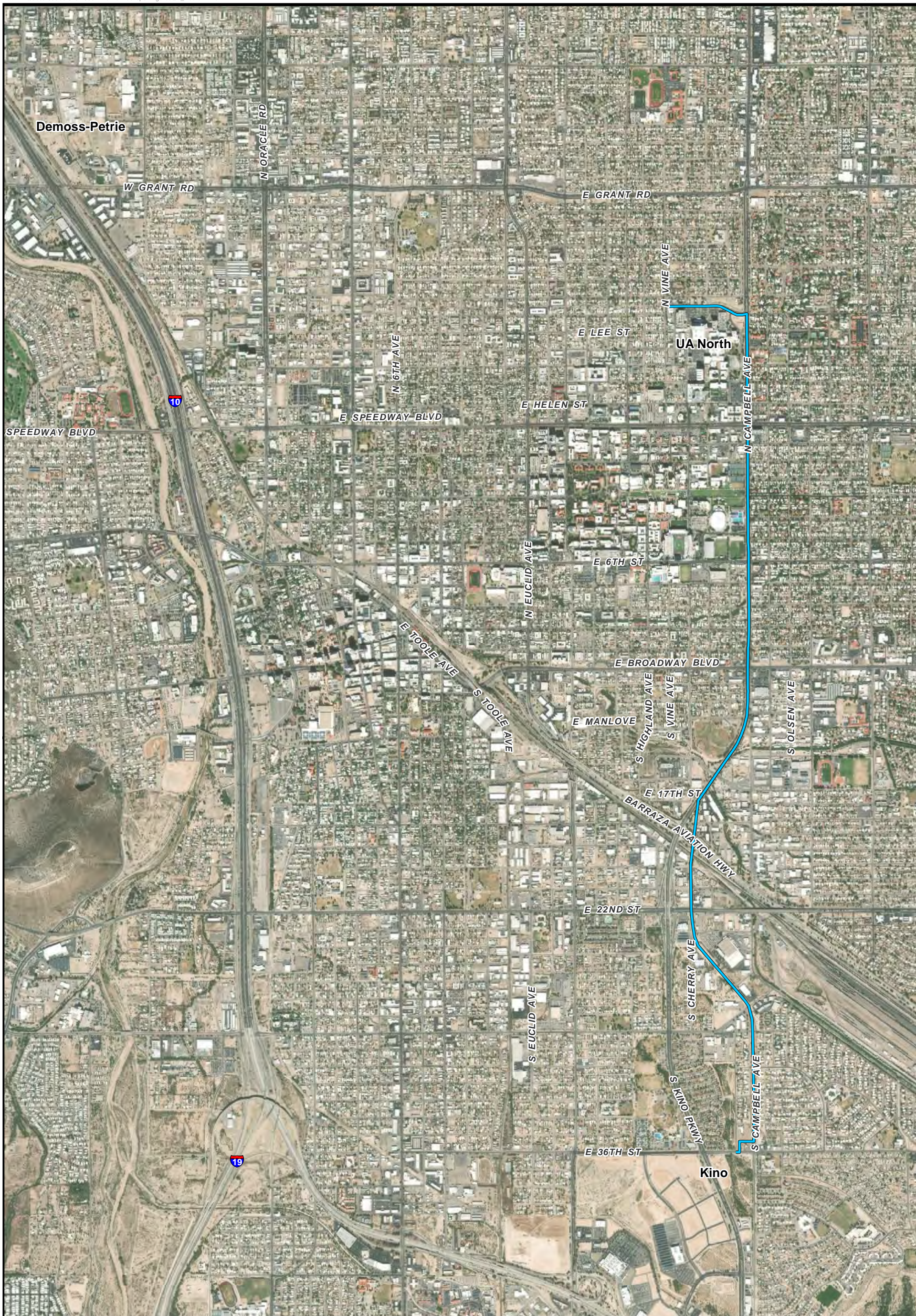
— Route 1



TUCSON ELECTRIC POWER CO.
 Kino to DeMoss-Petrie 138-Kilovolt (kV)
 Transmission Line Project
 Visual Assessment

KINO SUBSTATION TO
 NORTH UA PROPOSED SUBSTATION:
 ROUTE 1

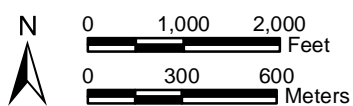
Figure 3



T14S, R14E, Portions of Sections 6, 7, 18 and 19,
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 Image Source: ArcGIS Online, World Imagery 7-10-2019

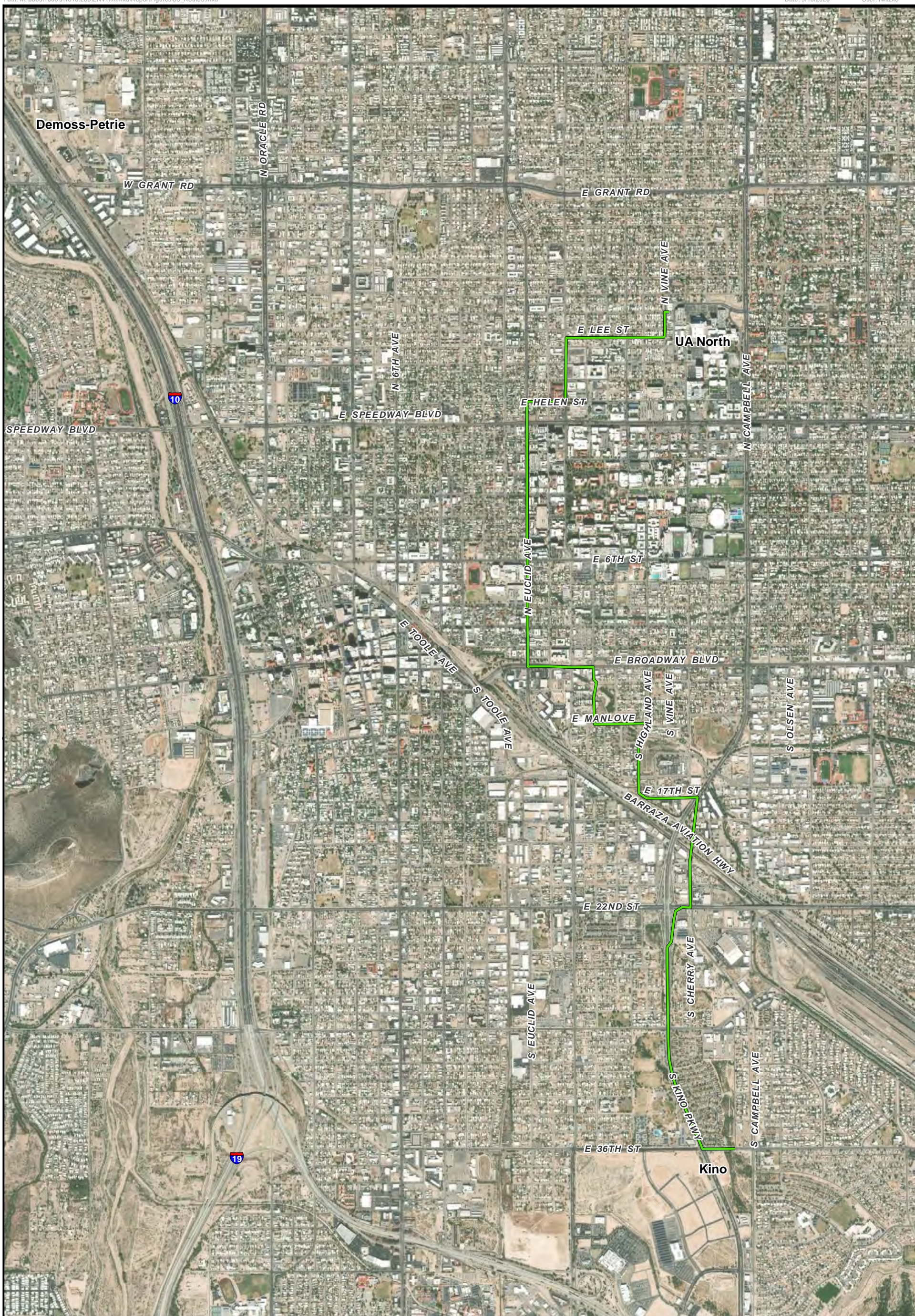
Legend

Route 2

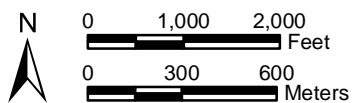
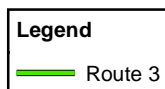


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 Transmission Line Project
 Visual Assessment

KINO SUBSTATION TO
 NORTH UA PROPOSED SUBSTATION:
 ROUTE 2
 Figure 4

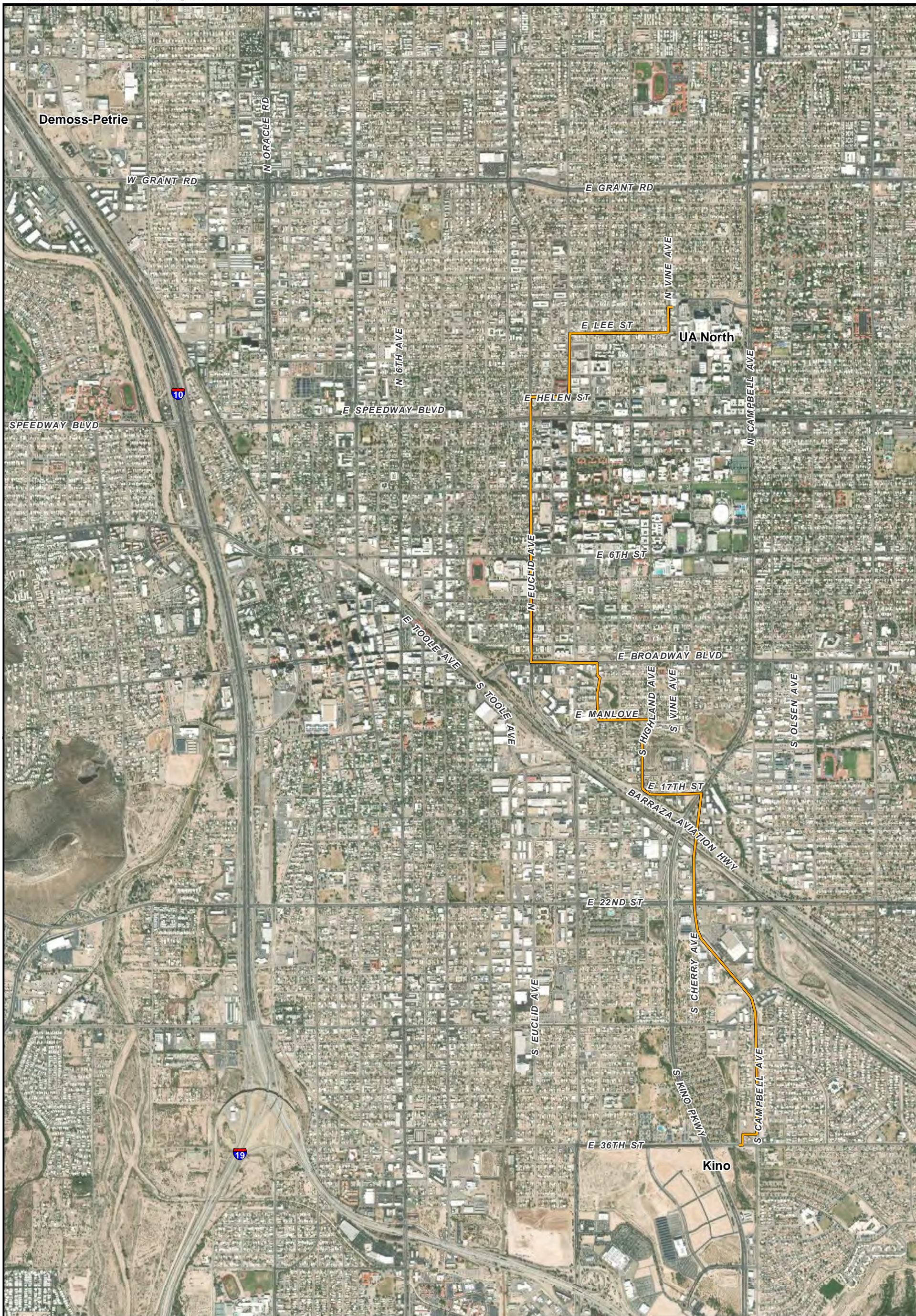


T14S, R14E, Portions of Sections 6, 7, 18 and 19,
 Pima County, Arizona
 Data Source: TEP
 Image Source: ArcGIS Online, World Imagery 7-10-2019



TUCSON ELECTRIC POWER CO.
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 Transmission Line Project
 Visual Assessment

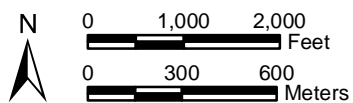
KINO SUBSTATION TO
 NORTH UA PROPOSED SUBSTATION:
 ROUTE 3
 Figure 5



T14S, R14E, Portions of Sections 6, 7, 18 and 19,
 Pima County, Arizona
 Data Source: TEP
 Image Source: ArcGIS Online, World Imagery 7-10-2019

Legend

— Route 5

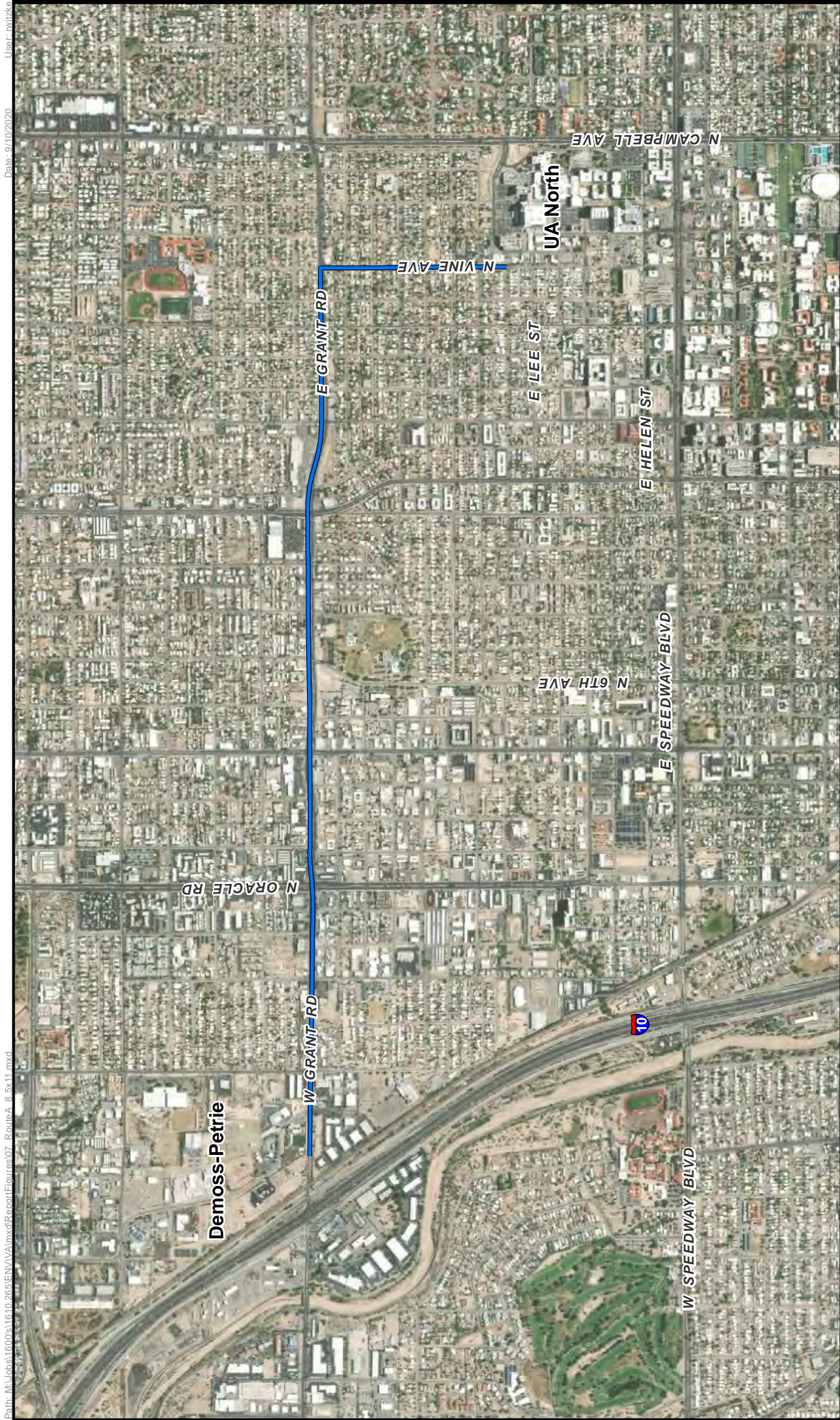


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 Kino to DeMoss-Petrie 138-Kilovolt (kV)
 Transmission Line Project
 Visual Assessment

KINO SUBSTATION TO
 NORTH UA PROPOSED SUBSTATION:
 ROUTE 5

Figure 6

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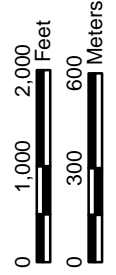


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 T14S, R14E, Portion of Section 6,
 Pima County, Arizona
 Data Source: TEP
 Image Source: ArcGIS Online, World Imagery 7-10-2019

Legend

Route A



TUCSON ELECTRIC POWER CO.
 Kino to DeMoss-Petrie 138-Kilovolt (kV)
 Transmission Line Project
 Visual Assessment

NORTH UA PROPOSED SUBSTATION
 TO DEMOSS-PETRIE SUBSTATION:
 ROUTE A



WestLand Resources

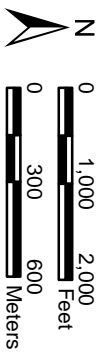
Figure 7



T14S, R13E, Portions of Sections 1 and 2,
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Legend

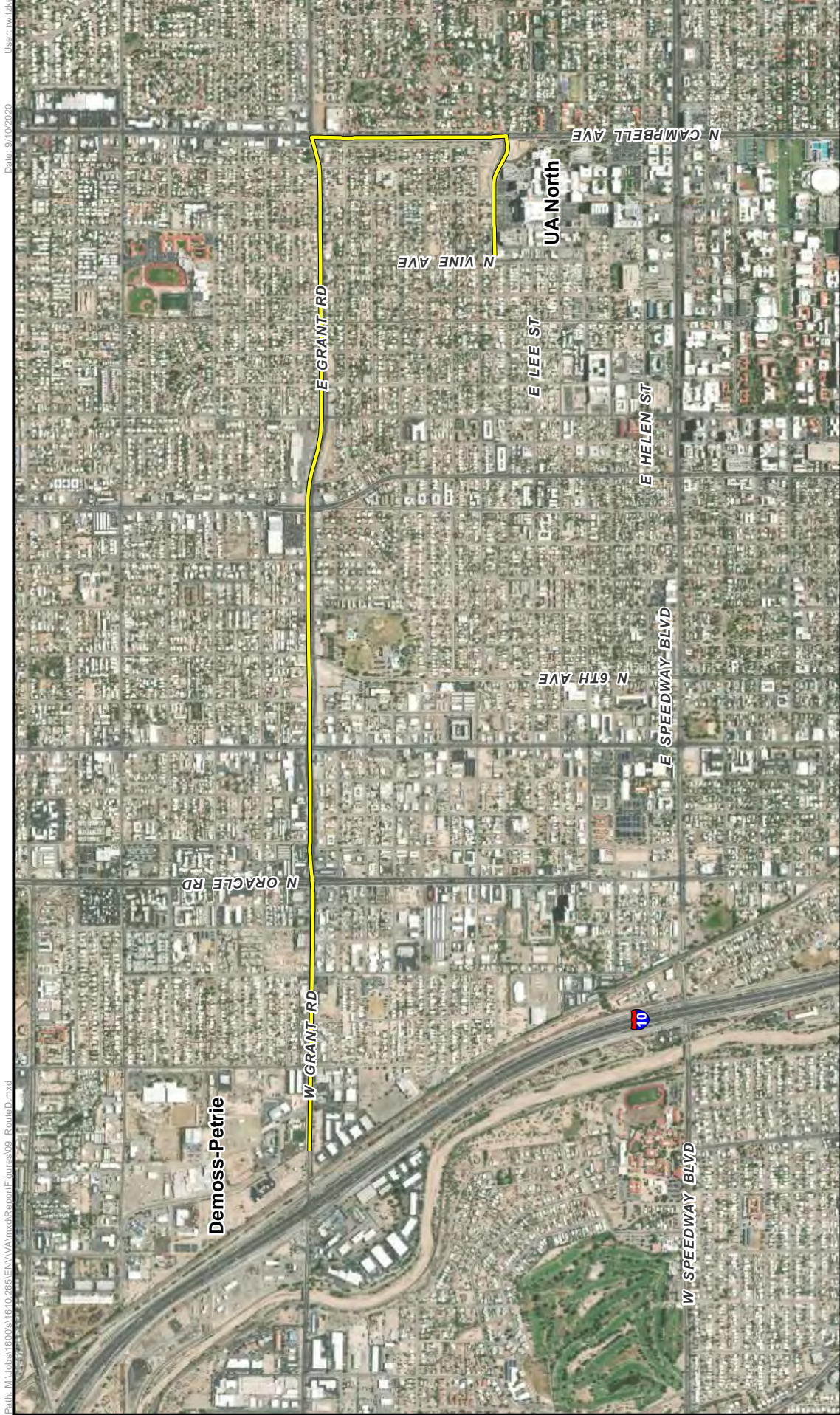
- Route B



Westland Resources

TUCSON ELECTRIC POWER CO.
 Kino to DeMoss-Petrie 138-Kilovolt (KV)
 Transmission Line Project
 Visual Assessment

NORTH UA PROPOSED SUBSTATION
 TO DEMOSS-PETRIE SUBSTATION:
 ROUTE B
 Figure 8

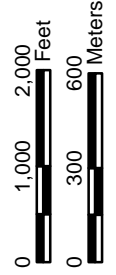


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Legend

Route D

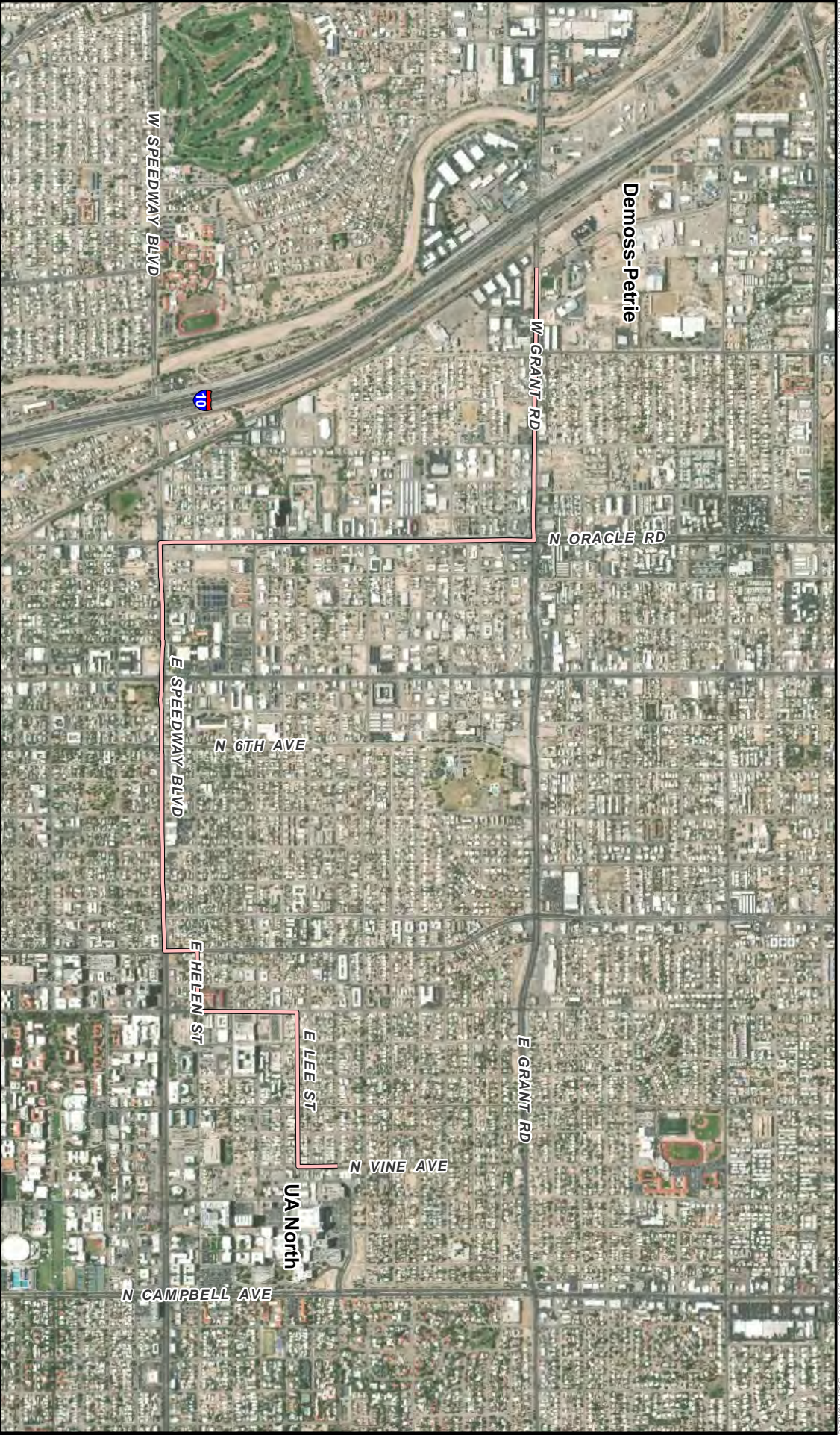


TUCSON ELECTRIC POWER CO.
 Kino to DeMoss-Petrie 138-Kilovolt (kV)
 Transmission Line Project
 Visual Assessment

NORTH UA PROPOSED SUBSTATION
 TO DEMOSS-PETRIE SUBSTATION:
 ROUTE D

Figure 9

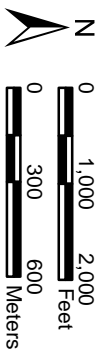




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 Pima County, Arizona
 Data Source: TEP
 Image Source: ArcGIS Online, World Imagery 7-10-2019

Legend

Route E



Westland Resources

TUCSON ELECTRIC POWER CO.
 Kino to DeMoss-Petrie 138-Kilovolt (KV)
 Transmission Line Project
 Visual Assessment

NORTH UA PROPOSED SUBSTATION
 TO DEMOSS-PETRIE SUBSTATION:
 ROUTE E
 Figure 10

EXHIBITS

Kino to DeMoss-Petrie Transmission Line Project



Pole Characteristics

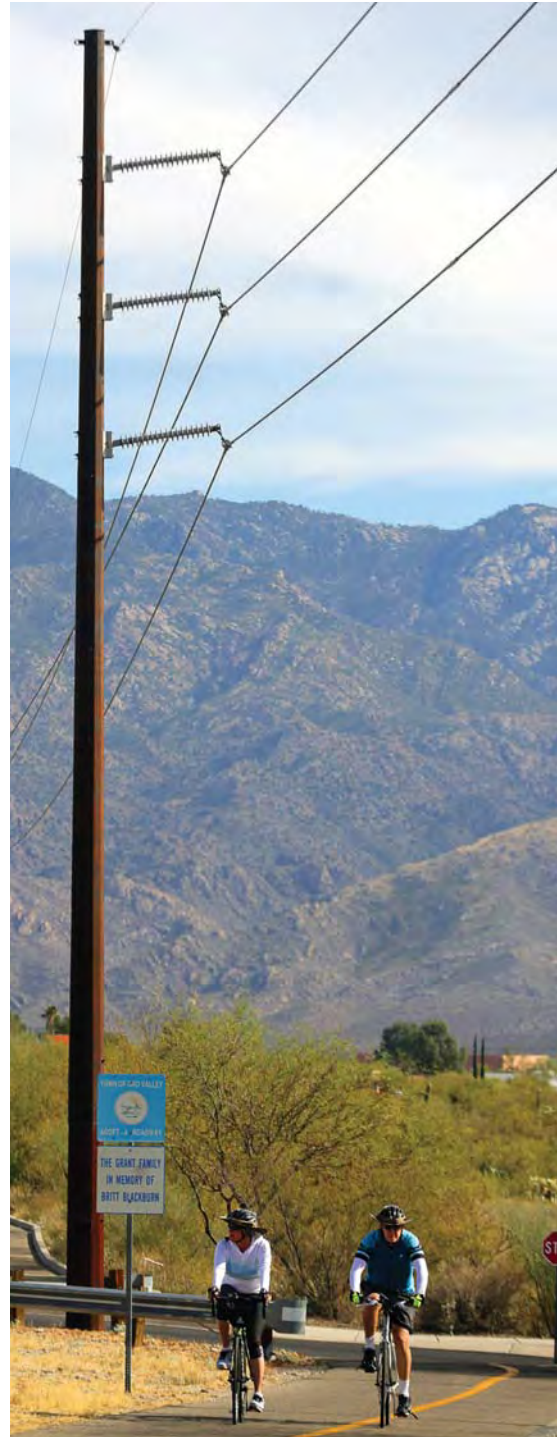
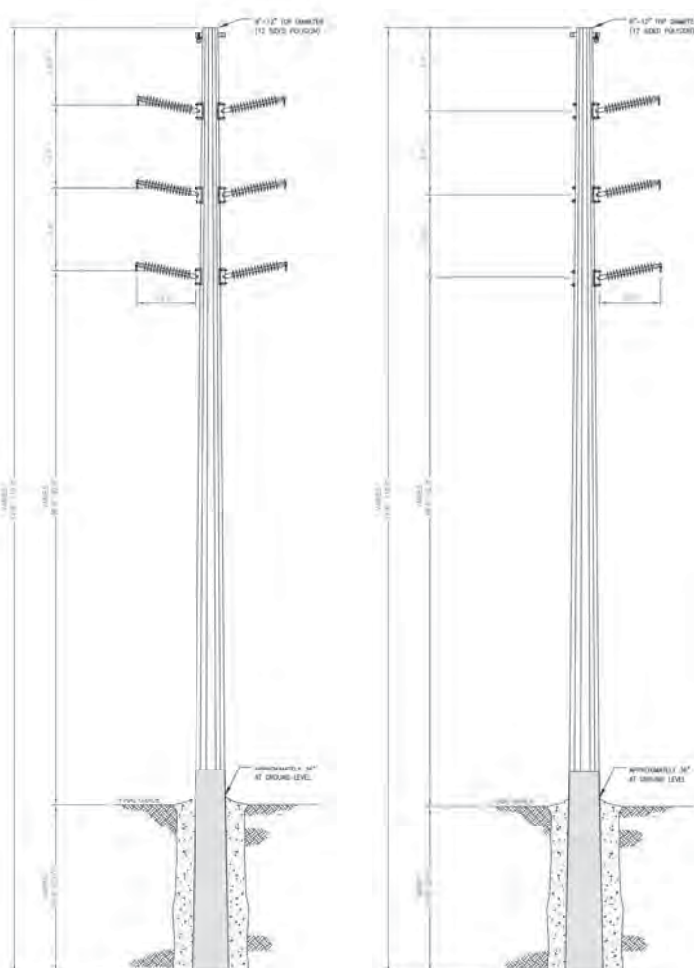
Type: Tubular weathering steel monopoles

Pole height: Typically 75-110 feet

Span length: 600-1,000 feet
(distance between poles)

Poles per mile: 5-9 Structures

Right of way width: Up to 100 feet



A typical weathering steel monopole supporting a 138 kilovolt transmission line

**ATTACHMENT I
Representative
Photographs of
Each Alternative
Routes**



Photo 1. View north on S. Kino Blvd from E. 36th St. (Segment S-1)



Photo 3. View north on S. Kino Blvd across E. Silverlake Rd. (Segment S-1)



Photo 2. View south on S. Kino Blvd from E. Silverlake Rd. (Segment S-1)



Photo 4. View north on S. Cherry Ave. from E. 21st St. (Segment S-2)



Photo 5. View north on Campbell Ave. from E. Broadway Blvd (Segment S-4)



Photo 7. View north on Campbell Ave. from Speedway Blvd (Segment S-6)



Photo 6. View north on Campbell Ave. from E 6th St. (Segment S-6)



Photo 8. View east on Elm St. from approx. location of planned UA North Substation (Segments S-7 and N-7)



Photo 9. View north on northbound S. Campbell Ave from E. 36th St. (Segment S-8)



Photo 11. View northwest on S. Cherrybelle Strav. from E. Silverlake Rd. (Segment S-9)



Photo 10. View south on northbound S. Campbell Ave from E Silverlake Rd. (Segment S-8)



Photo 12. View east on E. 17th St. from Highland Ave. (Segment S-10)



Photo 13. View north on S. Highland Ave. from 17th St. (Segment S-10)



Photo 14. View southwest on Highland Ave. from Manlove St. (Segment S-10)



Photo 15. View west from Highland at the end of Manlove St. (Segment S-10)



Photo 16. View north on N. Euclid Ave. from Broadway Blvd (Segment S-12)



Photo 17. View north on Euclid Ave. from 6th St. toward Tucson High School (Segment S-12)



Photo 18. View south on Euclid Ave. from University Blvd (Segment S-13)



Photo 19. View west on Helen St. from Park Ave. (Segment S-15 and N-11)



Photo 20. View north on Park Ave. from just south of Lee St. (Segments S-16, N-6 and N-10)



Photo 21. View west on alley between E. Adams St. and E. Lee St. from N. Vine Ave. (Segment S-17 and N-5)



Photo 22. View west on alley between E. Adams St. and E. Lee St. (Segment S-17 and N-5)



Photo 23. View north on N. Vine Ave., north of E. Adams St. (Segments S-18 and N-1)



Photo 24. View east on E. Grant Rd. from N. Park Ave. (Segment N-2)



Photo 25. View west on E. Grant Rd. at N. Park Ave. (Segment N-3)



Photo 27. View east on E. Grant Rd. at N. Flowing Wells Rd. (Segment N-4)



Photo 26. View east on E. Grant Rd. and N. Stone Ave. (Segment N-4)



Photo 28. View west on E. Grant Rd. near I-10 and Demoss-Petrie Substation (Segment N-4)



Photo 29. View south on N. Campbell Ave. from E Grant Rd. (Segment N-8)



Photo 31. View east on Speedway Blvd. from N 6th Ave. (Segment N-13)



Photo 30. View west on E. Speedway Blvd from N. Euclid Ave. (Segment N-13)



Photo 32. View west on E. Speedway Blvd from N 6th Ave. (Segment N-13)



Photo 33. View north on N. Main Ave. at W Speedway Blvd (Segment N-15)



Photo 35. View south on N. Oracle Rd. from W. Grant Rd. (Segment N-16)



Photo 34. View north on N. Oracle Rd. north of W Drachman St. (Segment N-16)

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**Application for a Certificate of Environmental
Compatibility**

**Kino to DeMoss-Petrie
138 Kilovolt Transmission Line Project**

Exhibit E-2

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Revised September 21, 2020

Tucson Electric Power Company
Attn: Renee Darling
3950 East Irvington Road
Tucson, Arizona 85714-2114

RE: Cultural Resources Records Search for the TEP Kino to DMP 138kV Transmission Line Project (Tierra Archaeological Report No. 2020-107)

Dear Ms. Darling,

At your request, Tierra Right of Way Services, Ltd. (Tierra), performed a records search of the Arizona State Museum's (ASM's) online database, AZSITE, to determine the extent of archaeological survey work performed along the 10 proposed route alternatives (Alternatives A, B, C, D, 1, 2, 3, 4, 5, 6) and whether any sites intersect the project corridors. During the course of the study, Routes C, 4, and 6 were determined by Tucson Electric Power (TEP) to not be viable and have been removed from consideration. An additional route, Route E, was later added as an option.

The records search began by identifying all previously recorded sites within 91 m (300 feet) of the project area, and all previous projects that intersect the 10 proposed route alternatives. The search identified a total of 59 projects conducted within the study area. Of these, 8 have been completed within the past 10 years. Areas covered by surveys older than 10 years may require an updated, current survey. In addition, the study area contains a total of 7 previously recorded sites. A total of two sites are along or within a proposed route. National Register Historic Districts or buildings listed on the National Register of Historic Places (NRHP) were also included in the study in case a listed archaeological property was present; however, no such properties are present in the project area, and the remainder of the historic districts and properties are being evaluated as part of a Built Environment Analysis and will not be discussed in further detail in this report. In addition, General Land Office (GLO) maps covering the entire project area were checked for historic properties, but only roads are present on any of the maps, and none of those roads are present in the project area as mapped.

The results of the search by each proposed alternative route (Alternatives 1, 2, 3, 5, A, B, D, and E) and information on archaeological sites within the project area are presented below.

Alternative 1

Alternative 1 is approximately 6.4 km (4.0 miles) in length. Approximately 55 percent (3.5 km [2.2 miles]) of the route has been previously surveyed. Only 4 percent of Alternative 1 has been surveyed in the past 10 years (Figure 1; Table 1). No known archaeological sites are present within this proposed corridor, but one site is present within the 91-m (300-foot) buffer area (Table 2).

Alternative 2

Alternative 2 is approximately 6.4 km (4.0 miles) in length. Approximately 46 percent of the route (3.0 km [1.9 miles]) has been previously surveyed. Only 4 percent of Alternative 2 has been surveyed in the past 10 years (Figure 2, Table 3). No known archaeological sites are present within this proposed corridor, but one site is present in the buffer area (Table 4).

Alternative 3

Alternative 3 is approximately 8 km (5 miles) in length. Approximately 67 percent of the route (5.5 km [3.4 miles]) has been previously surveyed. Only 19 percent of Alternative 3 has been surveyed within the past 10 years (Figure 3; Table 5). The proposed route passes within 30.5 m (100.0 feet) of two archaeological sites, AZ AA:13:445(ASM) and AZ AA:13:648(ASM) (Table 6). Both sites are historic residential areas with buried deposits and should be monitored during ground-disturbing construction within 30.5 m (100.0 feet) of each of the sites.

Alternative 5

Alternative 5 is 8 km (5 miles) in length. Approximately 60 percent of the route (4.8 km [3.0 miles]) has been previously surveyed. Only 24 percent of Alternative 5 has been surveyed within the past 10 years (Figure 4; Table 7). The proposed route passes within 30.5 m (100.0 feet) of two archaeological sites, AZ AA:13:445(ASM) and AZ AA:13:648(ASM) (Table 8). Both sites are historic residential areas with buried deposits, and a monitor should be present during ground-disturbing construction within 30.5 m (100.0 feet) of each of the sites.

Alternative A

Alternative A is approximately 4.7 km (2.9 miles) in length. Approximately 78 percent (3.59 km [2.23 miles]) of the route has been previously surveyed. Just over 67 percent of the alternative has been surveyed within the past 10 years (Figure 5; Table 9). One archaeological site, AZ FF:9:17(ASM), the historic State Route 80, passes through the proposed route (Table 10). The road is considered in-use and therefore no longer qualifies as an archaeological site under the ASM site definition policy. It is unlikely that any mitigation will be necessary for the historic road. However, a portion of the proposed route falls within the City of Tucson's Stone Pipe Sensitivity Zone, and it is likely that the City will require monitoring of all ground disturbance in this area.

Alternative B

Alternative B is approximately 4.8 km (3.0 miles) in length. Approximately 82 percent (3.9 km [2.4 miles]) of the route has been previously surveyed. Seventy percent of the alternative has been surveyed within the past 10 years (Figure 6; Table 11). One archaeological site, AZ FF:9:17(ASM), the historic State Route 80, passes through the proposed route (Table 12). The road is considered in-use and therefore no longer qualifies as an archaeological site under the ASM site definition policy. It is unlikely that any mitigation will be necessary for the historic road. However, a portion of the proposed route falls within the City of Tucson's Stone Pipe Sensitivity Zone, and it is likely that the City will require monitoring of all ground disturbance in this area.

Alternative D

Alternative D is approximately 5.8 km (3.6 miles) in length. Approximately 82 percent (4.7 km [2.9 miles]) of the route has been surveyed while 64 percent of the alternative has been surveyed within the past 10 years (Figure 7; Table 13). One archaeological site, AZ FF:9:17(ASM), the historic State

Route 80, passes through the proposed route (Table 14). The road is considered in-use and therefore no longer qualifies as an archaeological site under the ASM site definition policy. It is unlikely that any mitigation will be necessary for the historic road. However, a portion of the proposed route falls within the City of Tucson's Stone Pipe Sensitivity Zone, and it is likely that the City will require monitoring of all ground disturbance in this area.

Alternative E

Alternative E is approximately 6.1 km (3.8 miles) in length. Approximately 61 percent (3.6 km [2.3 miles]) of the route has been surveyed, and 18 percent has been surveyed within the past 10 years (Figure 8; Table 15). One archaeological site, AZ FF:9:17(ASM), the historic State Route 80, passes through the proposed route (Table 16). The road is considered in-use and therefore no longer qualifies as an archaeological site under the ASM site definition policy. It is unlikely that any mitigation will be necessary for the historic road. However, the route passes along the northern edge of AZ BB:13:156(ASM), the historic Court Street Cemetery, and all ground disturbance within 30.5 m (100.0 feet) of the site will need to be monitored. If any ground disturbance occurs within the site, an Arizona Antiquities Act project-specific permit and a burial agreement will need to be acquired from the ASM. Additionally, the site is considered part of the City of Tucson's Court Street Cemetery Sensitivity Zone. A portion of the proposed route also falls within the City of Tucson's Stone Pipe Sensitivity Zone, and it is likely that the City will require monitoring of all ground disturbance in this area.

Alternatives Analysis

For consistency, Tierra evaluated the alternatives using the same methodology utilized for TEP's IRV-Kino project (Lyon 2018). For that project, TEP identified 11 criteria to be used in their alternatives analysis that are aligned to the Commission for a Certificate of Environmental Compatibility (CEC) decision factors (Arizona Revised Statute §40-360.06) and TEP's design philosophy and standards. Tierra was tasked with assessing Criterion 7, described as:

Known or potentially eligible cultural resources in the corridor as measured by documentation through previous survey effort and ranked by degree of mitigation required (Lyon 2018).

Using Criterion 7, each alternative was scored based on the results of the cultural resources literature and records review, in which locations of recorded cultural resources were overlaid on maps of the study area and the alternatives.

A score of 3 was given to alternatives where no impacts to known or potentially Eligible cultural resources would occur. A score of 2 was given to alternatives where known or potentially Eligible cultural resources would be impacted but could be easily mitigated. A score of 1 would have been given to those alternatives where impacts to known or potentially Eligible cultural resources would occur and could be mitigated, but mitigation could be cost-prohibitive. None of the routes still under consideration warranted a score of 1. Table 17 summarizes the findings.

Alternative E is scored a 2, as it falls within or near two City of Tucson Sensitivity Zones and along the edge of the historic Court Street Cemetery; therefore, extensive monitoring is expected for this route. Alternatives 3 and 5 run adjacent to two historic sites, AZ AA:13:445(ASM) and AZ AA:13:648(ASM), that will require monitoring within 30.5 m (100.0 feet) of their boundaries.

Therefore, those routes are scored a 2. The far western ends of routes A, B, and D fall within the City of Tucson's Stone Pipe Sensitivity Zone, so they will also require monitoring within that zone. AZ FF:9:17(ASM), historic State Route 80, passes through Routes A, B, and D, but the site is considered an in-use historic structure and no longer qualifies as an archaeological site in the State of Arizona. The historic road has been thoroughly documented, so it is unlikely that any further mitigation will be required. Those routes are scored a 3, though some monitoring will be necessary within the sensitivity zone. Alternatives 1 and 2 have no known cultural concerns, so they both score a 3.

In terms of survey needs, large portions of Alternatives 1–5 and E may require a Class III survey, while Routes A–D may require a more limited Class III survey. As each alternative is located in a completely developed area, it is unlikely that new sites will be found during the survey process. It is possible that the City of Tucson may not require additional survey because the area in question is entirely developed.

Route Combinations

All routes were also scored as viable combinations (Table 18). A combination of Routes 1 or 2 with Routes A and B are scored a 3, as they require minimal monitoring within COI sensitivity zones and no cultural resources are anticipated. In the event that TEP is able to combine Routes 1 or 2 with Route D, that combination is also scored a 3 for the same reason. All other route combinations score a 2, as they require monitoring within sensitivity zones as well as along or within previously recorded archaeological sites. As no data recovery or other extensive mitigation measures are anticipated for any of the route combinations, none received a score of 1.

Recommendations

Because none of the alternatives have been surveyed in their entirety within the past 10 years, Tierra recommends Class III surveys for the selected alternative(s) prior to construction to determine if sites are present and whether further mitigation is necessary. However, because each alternative follows existing developed road rights-of-way, and no significant prehistoric or historic archaeological sites have been identified in this part of Tucson, there is little potential for the survey to identify significant archaeological sites within any of the project corridors. As Alternatives A and B have been surveyed to a larger degree within the past 10 years, and Alternatives 1 and 2 have no known archaeological sites, Tierra recommends that TEP utilize any combination of these routes to minimize costs related to archaeological mitigation. A combination of Routes 1 or 2 with Route D would also be an equally preferred option, if that option becomes viable. However, none of the routes are considered prohibitive based on archaeological concerns. Tierra further recommends that TEP consult with the City of Tucson's Historic Preservation Officer to determine if the City will require additional survey for this proposed project.

If you have any questions, please feel free to contact me at (520) 319-2106.

Sincerely,



Chance Copperstone, M.A.
Project Manager
Environmental Planning and Cultural Resources Division

MAP REDACTED DUE TO SENSITIVE SITE LOCATIONS

Figure 1. Alternative 1 map showing proposed alternative routes with intersecting previous projects and sites within 91 m (300 feet) (CONFIDENTIAL, public disclosure is prohibited by ARS §39-125).

MAP REDACTED DUE TO SENSITIVE SITE LOCATIONS

Figure 2. Alternative 2 map showing proposed alternative routes with intersecting previous projects and sites within 91 m (300 feet) (CONFIDENTIAL, public disclosure is prohibited by ARS §39-125).

MAP REDACTED DUE TO SENSITIVE SITE LOCATIONS

Figure 3. Alternative 3 map showing proposed alternative routes with intersecting previous projects and sites within 91 m (300 feet) (CONFIDENTIAL, public disclosure is prohibited by ARS §39-125).

MAP REDACTED DUE TO SENSITIVE SITE LOCATIONS

Figure 4. Alternative 5 map showing proposed alternative routes with intersecting previous projects and sites within 91 m (300 feet) (CONFIDENTIAL, public disclosure is prohibited by ARS §39-125).

MAP REDACTED DUE TO SENSITIVE SITE LOCATIONS

Figure 5. Alternative A map showing proposed alternative routes with intersecting previous projects and sites within 91 m (300 feet) (CONFIDENTIAL, public disclosure is prohibited by ARS §39-125).

MAP REDACTED DUE TO SENSITIVE SITE LOCATIONS

Figure 6. Alternative B map showing proposed alternative routes with intersecting previous projects and sites within 91 m (300 feet) (CONFIDENTIAL, public disclosure is prohibited by ARS §39-125).

MAP REDACTED DUE TO SENSITIVE SITE LOCATIONS

Figure 7. Alternative D map showing proposed alternative routes with intersecting previous projects and sites within 91 m (300 feet) (CONFIDENTIAL, public disclosure is prohibited by ARS §39-125).

MAP REDACTED DUE TO SENSITIVE SITE LOCATIONS

Figure 8. Alternative E map showing proposed alternative routes with intersecting previous projects and sites within 91 m (300 feet) (CONFIDENTIAL, public disclosure is prohibited by ARS §39-125).

Table 1. Summary of Previous Projects That Intersect Proposed Alternative Route 1

ASM No.	Project Name	Company	Reference
1955-3.ASM	Southern Pacific Pipeline Survey	Southern Pacific	McConville and Holzkamper 1955
1970-9.ASM	Campbell T.I.—22nd Street	unknown	unknown
1987-141.ASM	Proposed CAP East, Phase I Design Water Pipeline Alignment, Pima County	Arizona State Museum	Euler 1987
1993-163.ASM	Plumer-22nd Street to Himmel Park Survey	Desert Archaeology, Inc.	Elson 1993
1994-323.ASM	Campbell-3rd St. Reclaimed Water Main Survey	Desert Archaeology, Inc.	Eppley 1995
1996-111.ASM	Kino and 36th Survey	Desert Archaeology, Inc.	Lindeman 1996
1997-105.ASM	Tucson Boulevard-Elm Street Main Replacement Project Survey	Desert Archaeology, Inc.	Eppley 1997a
1997-28.ASM	Kino Community Center Reclaimed Water Main Project	Desert Archaeology, Inc.	Eppley 1997b
1997-322.ASM	22nd Street/ Santa Rita Main Survey	Desert Archaeology, Inc.	Thiel 1998
1997-33.ASM	Kino-Silverlake Main Replacement Project Survey	Desert Archaeology, Inc.	Eppley 1997c
1997-34.ASM	Broadway-Campbell Main Replacement Project Survey	Desert Archaeology, Inc.	Eppley 1997d
1998-265.ASM	Speedway Campbell Survey	Desert Archaeology, Inc.	Diehl 1998a
1998-37.ASM	Cherry Avenue Main Survey	Desert Archaeology, Inc.	Vint 1998
1999-587.ASM	PBNS Level 3 Fiber Optic Line	SWCA	Doak 1999
2000-284.ASM	Moratorium Streets Survey	Desert Archaeology, Inc.	Diehl 2000
2002-372.ASM	18th Street/10th Ave Main Survey	Desert Archaeology, Inc.	Diehl 2002a
2003-398.ASM	Bus Pullouts, Phase I Survey	Desert Archaeology, Inc.	Diehl 2003a
2004-1035.ASM	Sidewalk Program Survey	Desert Archaeology, Inc.	Hall 2004
2006-767.ASM	Modern Streetcar Survey	Desert Archaeology, Inc.	Diehl 2006a
2009-832.ASM	22nd Street Survey	Tierra Right of Way Services	Jones 2009a
2016-425.ASM	COT #16-18 Broadway Blvd Between Euclid Ave. and Country Club Rd.	Westland Resources	King 2016

Note: Bolded survey numbers are those that occurred within the past 10 years.

Table 2. Previously Recorded Archaeological Sites within 91 m (300 feet) of Proposed Alternative Route 1

Site No.	Affiliation	Site Type	Eligibility Status	Reference
AZ BB:13:125(ASM)	Mexican-American, Euroamerican	well and artifact scatter	Not Eligible (SHPO)	unknown

Table 3. Summary of Previous Projects That Intersect Proposed Alternative Route 2

ASM No.	Project Name	Company	Reference
1955-3.ASM	Southern Pacific Pipeline Survey	Southern Pacific	McConville and Holzkomper 1955
1987-141.ASM	Proposed CAP East, Phase I Design Water Pipeline Alignment, Pima County	Arizona State Museum	Euler 1987
1993-163.ASM	Plumer-22nd Street to Himmel Park Survey	Desert Archaeology, Inc.	Elson 1993
1994-323.ASM	Campbell-3rd St. Reclaimed Water Main Survey	Desert Archaeology, Inc.	Eppley 1995
1997-105.ASM	Tucson Boulevard-Elm Street Main Replacement Project Survey	Desert Archaeology, Inc.	Eppley 1997a
1997-28.ASM	Kino Community Center Reclaimed Water Main Project	Desert Archaeology, Inc.	Eppley 1997b
1997-322.ASM	22nd Street/ Santa Rita Main Survey	Desert Archaeology, Inc.	Thiel 1998
1997-33.ASM	Kino-Silverlake Main Replacement Project Survey	Desert Archaeology, Inc.	Eppley 1997c
1997-34.ASM	Broadway-Campbell Main Replacement Project Survey	Desert Archaeology, Inc.	Eppley 1997d
1998-265.ASM	Speedway Campbell Survey	Desert Archaeology, Inc.	Diehl 1998a
1998-37.ASM	Cherry Avenue Main Survey	Desert Archaeology, Inc.	Vint 1998
1999-348.ASM	CAP Main Manhole Survey	Desert Archaeology, Inc.	Diehl 1999a
1999-587.ASM	PBNS Level 3 Fiber Optic Line	SWCA	Doak 1999
2000-284.ASM	Moratorium Streets Survey	Desert Archaeology, Inc.	Diehl 2000
2001-243.ASM	36th Street Housing Survey	Desert Archaeology, Inc.	Diehl 2001
2002-372.ASM	18th Street/10th Ave Main Survey	Desert Archaeology, Inc.	Diehl 2002a
2003-398.ASM	Bus Pullouts, Phase I Survey	Desert Archaeology, Inc.	Diehl 2003a
2004-1035.ASM	Sidewalk Program Survey	Desert Archaeology, Inc.	Hall 2004
2006-767.ASM	Modern Streetcar Survey	Desert Archaeology, Inc.	Diehl 2006a
2009-832.ASM	22nd Street Survey	Tierra Right of Way Services	Jones 2009a
2016-425.ASM	COT #16-18 Broadway Blvd Between Euclid Ave. and Country Club Rd.	Westland Resources	King 2016

Note: Bolded survey numbers are those that occurred within the past 10 years.

Table 4. Previously Recorded Archaeological Sites within 91 m (300 feet) of Proposed Alternative Route 2

Site No.	Affiliation	Site Type	Eligibility Status	Reference
AZ BB:13:740(ASM)	Euroamerican	concrete foundation	Not Eligible (Recorder)	Doak 2007a

Table 5. Summary of Previous Projects That Intersect Proposed Alternative Route 3

ASM No.	Project Name	Company	Reference
1955-3.ASM	Southern Pacific Pipeline Survey	Southern Pacific	McConville and Holzkomper 1955
1970-9.ASM	Campbell T.I. - 22nd Street	unknown	unknown
1984-60.ASM	SR210 Detention Basin Survey	Arizona State Museum	Strand 1984
1987-141.ASM	Proposed CAP East, Phase I Design Water Pipeline Alignment, Pima County	Arizona State Museum	Euler 1987
1996-111.ASM	Kino and 36th Survey	Desert Archaeology, Inc.	Lindeman 1996
1997-116.ASM	Archaeological Survey for Tucson Mission Industries	Archaeological Consulting Services	Aguila 1997
1997-28.ASM	Kino Community Center Reclaimed Water Main Project	Desert Archaeology, Inc.	Eppley 1997a
1997-322.ASM	22nd Street/ Santa Rita Main Survey	Desert Archaeology, Inc.	Thiel 1998
1997-33.ASM	Kino-Silverlake Main Replacement Project Survey	Desert Archaeology, Inc.	Eppley 1997b
1997-34.ASM	Broadway-Campbell Main Replacement Project Survey	Desert Archaeology, Inc.	Eppley 1997c
1997-35.ASM	Speedway-Campbell Main Replacement Project Survey	Desert Archaeology, Inc.	Eppley 1997d
1998-265.ASM	Speedway Campbell Survey	Desert Archaeology, Inc.	Diehl 1998a
1998-311.ASM	Broadway/Park Pedestrian Survey	Desert Archaeology, Inc.	Diehl 1998b
1998-37.ASM	Cherry Avenue Main Survey	Desert Archaeology, Inc.	Vint 1998
1999-99.ASM	University Blvd./6th Ave. Main Survey	Desert Archaeology, Inc.	Diehl 1999a
1999-587.ASM	PBNS Level 3 Fiber Optic Line	SWCA	Doak 1999
2000-284.ASM	Moratorium Streets Survey	Desert Archaeology, Inc.	Diehl 2000
2001-139.ASM	Block 42 Buell's Addition Survey	Desert Archaeology, Inc.	Brack 2001
2002-325.ASM	Euclid and Speedway Improvements Survey	Desert Archaeology, Inc.	Diehl 2002b
2002-372.ASM	18th Street/10th Ave Main Survey	Desert Archaeology, Inc.	Diehl 2002a
2003-1318.ASM	Highland Avenue Survey	Harris Environmental Group	Fahrni 2003
2005-927.ASM	1099 East Broadway Survey	Desert Archaeology, Inc.	Diehl 2005
2006-36.ASM	Broadway Campbell Advance Acquisition Survey	Desert Archaeology, Inc.	Hall 2006
2006-734.ASM	Feldman's Neighborhood Survey	Desert Archaeology, Inc.	Diehl 2006b
2006-767.ASM	Modern Streetcar Survey	Desert Archaeology, Inc.	Diehl 2006a
2009-204.ASM	Euclid Ave Survey	Tierra Right of Way Services	Jones 2009b
2009-832.ASM	22nd Street Survey	Tierra Right of Way Services	Jones 2009c
2010-57.ASM	COT 09-53 San Antonio Neighborhood Reinvestment	SWCA	Tucker 2010a
2011-383.ASM	Park Avenue-Speedway to Fort Lowell Survey	Desert Archaeology, Inc.	Diehl 2012
2016-425.ASM	COT #16-18 Broadway Blvd Between Euclid Ave. and Country Club Rd.	Westland Resources	King 2016

Note: Bolded survey numbers are those that occurred within the past 10 years.

Table 6. Previously Recorded Archaeological Sites within 91 m (300 feet) of Proposed Alternative Route 3

Site No.	Affiliation	Site Type	Eligibility Status	Reference
AZ BB:13:648(ASM)	Euroamerican	habitation	Not Eligible (Recorder)	unknown
AZ BB:13:445(ASM)	Euroamerican	habitation	unknown	Sterner et al. 1997
AZ BB:13:125(ASM)	Mexican-American, Euroamerican	well and artifact scatter	Not Eligible (SHPO)	unknown
AZ BB:13:740(ASM)	Euroamerican	concrete foundation	Not Eligible (Recorder)	Doak 2007a

Table 7. Summary of Previous Projects That Intersect Proposed Alternative Route 5

ASM No.	Project Name	Company	Reference
1955-3.ASM	Southern Pacific Pipeline Survey	Southern Pacific	McConville and Holzkamper 1955
1984-60.ASM	SR210 Detention Basin Survey	Arizona State Museum	Strand 1984
1987-141.ASM	Proposed CAP East, Phase I Design Water Pipeline Alignment, Pima County	Arizona State Museum	Euler 1987
1997-116.ASM	Archaeological Survey for Tucson Mission Industries	Archaeological Consulting Services	Aguila 1997
1997-28.ASM	Kino Community Center Reclaimed Water Main Project	Desert Archaeology, Inc.	Eppley 1997a
1997-322.ASM	22nd Street/ Santa Rita Main Survey	Desert Archaeology, Inc.	Thiel 1998
1997-33.ASM	Kino-Silverlake Main Replacement Project Survey	Desert Archaeology, Inc.	Eppley 1997b
1997-34.ASM	Broadway-Campbell Main Replacement Project Survey	Desert Archaeology, Inc.	Eppley 1997c
1997-35.ASM	Speedway-Campbell Main Replacement Project Survey	Desert Archaeology, Inc.	Eppley 1997d
1998-265.ASM	Speedway Campbell Survey	Desert Archaeology, Inc.	Diehl 1998a
1998-311.ASM	Broadway/Park Pedx Survey	Desert Archaeology, Inc.	Diehl 1998b
1998-37.ASM	Cherry Avenue Main Survey	Desert Archaeology, Inc.	Vint 1998
1999-348.ASM	CAP Main Manhole Survey	Desert Archaeology, Inc.	Diehl 1999a
1999-587.ASM	PBNS Level 3 Fiber Optic Line	SWCA	Doak 1999
1999-99.ASM	University Blvd./6th Ave. Main Survey	Desert Archaeology, Inc.	Diehl 1999b
2000-284.ASM	Moratorium Streets Survey	Desert Archaeology, Inc.	Diehl 2000
2001-139.ASM	Block 42 Buell's Addition Survey	Desert Archaeology, Inc.	Brack 2001
2001-243.ASM	36th Street Housing Survey	Desert Archaeology, Inc.	Diehl 2001
2002-325.ASM	Euclid and Speedway Improvements Survey	Desert Archaeology, Inc.	Diehl 2002b
2002-372.ASM	18th Street/10th Ave Main Survey	Desert Archaeology, Inc.	Diehl 2002a
2003-1318.ASM	Highland Avenue Survey	Harris Environmental Group	Fahrni 2003

ASM No.	Project Name	Company	Reference
2005-927.ASM	1099 East Broadway Survey	Desert Archaeology, Inc.	Diehl 2005
2006-36.ASM	Broadway Campbell Advance Acquisition Survey	Desert Archaeology, Inc.	Hall 2006
2006-734.ASM	Feldman's Neighborhood Survey	Desert Archaeology, Inc.	Diehl 2006b
2006-767.ASM	Modern Streetcar Survey	Desert Archaeology, Inc.	Diehl 2006a
2009-204.ASM	Euclid Ave Survey	Tierra Right of Way Services	Jones 2009b
2009-832.ASM	22nd Street Survey	Tierra Right of Way Services	Jones 2009a
2010-57.ASM	COT 09-53 San Antonio Neighborhood Reinvestment	SWCA	Tucker 2010a
2011-383.ASM	Park Avenue-Speedway to Fort Lowell Survey	Desert Archaeology, Inc.	Diehl 2012
2016-425.ASM	COT #16-18 Broadway Blvd Between Euclid Ave. and Country Club Rd.	Westland Resources	King 2016

Note: Bolded survey numbers are those that occurred within the past 10 years.

Table 8. Previously Recorded Archaeological Sites within 91 m (300 feet) of Proposed Alternative Route 5

Site No.	Affiliation	Site Type	Eligibility Status	Reference
AZ BB:13:445(ASM)	Euroamerican	habitation	unknown	Sterner et al. 1997
AZ BB:13:648(ASM)	Euroamerican	habitation	Not Eligible (Recorder)	unknown

Table 9. Summary of Previous Projects That Intersect Proposed Alternative Route A

ASM No.	Project Name	Company	Reference
1980-155.ASM	Santa Cruz/SW Interceptor Project	Arizona State Museum	Adams et al. 1980
1991-88.ASM	Archaeological Survey of Glenn-Fairview Main Replacement	Desert Archaeology, Inc.	Eppley 1991a
1991-91.ASM	Archaeological Survey of Fairview Avenue - Grant Road to 15th Avenue Widening	Desert Archaeology, Inc.	Eppley 1991b
1995-323.ASM	MOUNTAIN/GRANT-FORT LOWELL	Desert Archaeology, Inc.	Swartz 1995
1998-267.ASM	Miracle Manor Survey	Desert Archaeology, Inc.	Diehl 1998c
2000-723.ASM	AT&T NexGen/Core Project Link 3 Class 3 Survey	Western Cultural Resource Management	Kearns et al. 2001
2004-1035.ASM	Sidewalk Program Survey	Desert Archaeology, Inc.	Hall 2004
2004-679.ASM	AT&T NexGen/Core Project	Western Cultural Resource Management	Baker 2004
2010-180.ASM	COT 10-08 Grant Road and Oracle Intersection	SWCA	Tucker 2010b

ASM No.	Project Name	Company	Reference
2010-208.ASM	COT 10-14 4th Avenue/Fontana Avenue Bike Boulevard Project	SWCA	Tucker 2010c
2011-341.ASM	Survey in Support of Grant Road Corridor Acquisition	Statistical Research, Inc.	White 2011
2011-383.ASM	Park Avenue-Speedway to Fort Lowell Survey	Desert Archaeology, Inc.	Diehl 2012
2014-323.ASM	Grant Road Survey from Oracle to Swan	William Self Associates	Wygant and Boley 2014

Note: Bolded survey numbers are those that occurred within the past 10 years.

Table 10. Previously Recorded Archaeological Sites within 91 m (300 feet) of Proposed Alternative Route A

Site No.	Affiliation	Site Type	Eligibility Status	Reference
AZ FF:9:17(ASM)	Euroamerican	road trail	Eligible (SHPO)	Fahrni 2005

Table 11. Summary of Previous Projects That Intersect Proposed Alternative Route B

ASM No.	Project Name	Company	Reference
1980-155.ASM	Santa Cruz/SW Interceptor Project	Arizona State Museum	Adams et al. 1980
1991-88.ASM	Glenn-Fairview Main Replacement Survey	Desert Archaeology, Inc.	Eppley 1991a
1991-91.ASM	Archaeological Survey of Fairview Avenue - Grant Road to 15th Avenue Widening	Desert Archaeology, Inc.	Eppley 1991b
1996-102.ASM	Grant-First Survey	Desert Archaeology, Inc.	Swartz 1996
1997-35.ASM	Speedway-Campbell Main Replacement Survey	Desert Archaeology, Inc.	Eppley 1997e
1998-267.ASM	Miracle Manor Survey	Desert Archaeology, Inc.	Diehl 1998
2000-284.ASM	Moratorium Streets Survey	Desert Archaeology, Inc.	Diehl 2000a
2000-723.ASM	AT&T NexGen/Core Project Link 3 Class 3 Survey	Western Cultural Resource Management	Kearns et al. 2001
2004-1035.ASM	Sidewalk Program Survey	Desert Archaeology, Inc.	Hall 2004
2004-679.ASM	AT&T NexGen/Core Project	Western Cultural Resource Management	Baker 2004
2007-774.ASM	Jefferson Park Sidewalks Survey	Tierra Right of Way	Doak 2007b
2010-180.ASM	COT 10-08 Grant Road and Oracle Intersection	SWCA	Tucker 2010b
2010-208.ASM	COT 10-14 4th Avenue/Fontana Avenue Bike Boulevard Project	SWCA	Tucker 2010c
2011-341.ASM	Survey for Grant Road Corridor Acquisition	Statistical Research, Inc.	White 2011
2011-383.ASM	Park Avenue-Speedway to Fort Lowell	Desert Archaeology, Inc.	Diehl 2012
2014-323.ASM	Grant Road Survey, Oracle to Swan	William Self Associates	Wygant and Boley 2014

Note: Bolded survey numbers are those that occurred within the past 10 years.

Table 12. Previously Recorded Archaeological Sites within 91 m (300 feet) of Proposed Alternative Route B

Site No.	Affiliation	Site Type	Eligibility Status	Reference
AZ FF:9:17(ASM)	Euroamerican	road trail	Eligible (SHPO)	Fahrni 2005

Table 13. Summary of Previous Projects That Intersect Proposed Alternative Route D

ASM No.	Project Name	Company	Reference
1980-155.ASM	Santa Cruz/SW Interceptor Project	Arizona State Museum	Adams et al. 1980
1991-88.ASM	Archaeological Survey of Glenn-Fairview Main Replacement	Desert Archaeology, Inc.	Eppley 1991a
1991-91.ASM	Archaeological Survey of Fairview Avenue—Grant Road to 15th Avenue Widening	Desert Archaeology, Inc.	Eppley 1991b
1994-47.ASM	Grant Road and Campbell Avenue Survey	Desert Archaeology, Inc.	Swartz 1994
1995-323.ASM	Mountain/Grant-Fort Lowell	Desert Archaeology, Inc.	Swartz 1995
1996-282.ASM	Archaeological Survey of Water Main Alignments in the Vicinity of Glenn and Mountain, Tucson	Desert Archaeology, Inc.	Sliva 1996
1997-105.ASM	Tucson Boulevard-Elm Street Main Replacement Project Survey	Desert Archaeology, Inc.	Eppley 1997d
1998-267.ASM	Miracle Manor Survey	Desert Archaeology, Inc.	Diehl 1998c
2000-723.ASM	AT&T NexGen/Core Project Link 3 Class 3 Survey	Western Cultural Resource Management	Kearns et al. 2001
2004-1035.ASM	Sidewalk Program Survey	Desert Archaeology, Inc.	Hall 2004
2004-679.ASM	AT&T NexGen/Core Project	Western Cultural Resource Management	Baker 2004
2010-180.ASM	COT 10-08 Grant Road and Oracle Intersection	SWCA	Tucker 20b0a
2010-208.ASM	COT 10-14 4th Avenue/Fontana Avenue Bike Boulevard Project	SWCA	Tucker 2010c
2011-341.ASM	Survey in Support of Grant Road Corridor Acquisition	Statistical Research, Inc.	White 2011
2011-383.ASM	Park Avenue-Speedway to Fort Lowell Survey	Desert Archaeology, Inc.	Diehl 2012
2014-323.ASM	Grant Road Survey from Oracle to Swan	William Self Associates	Wygant and Boley 2014

Note: Bolded survey numbers are those that occurred within the past 10 years.

Table 14. Previously Recorded Archaeological Sites within 91 m (300 feet) of Proposed Alternative Route D

Site No.	Affiliation	Site Type	Eligibility Status	Reference
AZ FF:9:17(ASM)	Euroamerican	road trail	Eligible (SHPO)	Fahrni 2005

Table 15. Summary of Previous Projects That Intersect Proposed Alternative Route E

ASM No.	Project Name	Company	Reference
1980-155.ASM	Santa Cruz/SW Interceptor Project	Arizona State Museum	Adams et al. 1980
1991-88.ASM	Archaeological Survey of Glenn-Fairview Main Replacement	Desert Archaeology, Inc.	Eppley 1991a
1991-91.ASM	Archaeological Survey of Fairview Avenue - Grant Road to 15th Avenue Widening	Desert Archaeology, Inc.	Eppley 1991b
1992-213.ASM	3rd Avenue 'A' Zone Transmission Main	Desert Archaeology, Inc.	Levi 1993
1997-35.ASM	Speedway-Campbell Main Replacement Project Survey	Desert Archaeology, Inc.	Eppley 1997a
1998-265.ASM	Speedway Campbell Survey	Desert Archaeology, Inc.	Diehl 1998a
1998-267.ASM	Miracle Manor Survey	Desert Archaeology, Inc.	Diehl 1998c
1998-38.ASM	Broadway Boulevard/6th Avenue Water Main Survey	Desert Archaeology, Inc.	Vint 1998
1999-99.ASM	University Blvd./6th Ave. Main Survey	Desert Archaeology, Inc.	Diehl 1999b
2000-284.ASM	Moratorium Streets Survey	Desert Archaeology, Inc.	Diehl 2000
2000-723.ASM	AT&T NexGen/Core Project Link 3 Class 3 Survey	Western Cultural Resource Management	Kearns et al. 2001
2001-628.ASM	Northwest Quadrant Main Survey	Desert Archaeology, Inc.	Cook 2001
2002-325.ASM	Euclid and Speedway Improvements Survey	Desert Archaeology, Inc.	Diehl 2002b
2003-1490.ASM	Aviation/3rd Manhole Survey	Desert Archaeology, Inc.	Diehl 2003b
2004-1035.ASM	Sidewalk Program Survey	Desert Archaeology, Inc.	Hall 2004
2004-324.ASM	Corrosion Prevention Project Assessment and Survey	Desert Archaeology, Inc.	Diehl 2004
2004-679.ASM	AT&T NexGen/Core Project	Western Cultural Resource Management	Baker 2004
2006-733.ASM	Oracle-Main-Drachman Survey	Desert Archaeology, Inc.	Diehl 2006c
2006-734.ASM	Feldman's Neighborhood Survey	Desert Archaeology, Inc.	Diehl 2006b
2010-180.ASM	COT 10-08 Grant Road and Oracle Intersection	SWCA	Tucker 2010b
2010-208.ASM	COT 10-14 4th Avenue/Fontana Avenue Bike Boulevard Project	SWCA	Tucker 2010c
2010-366.ASM	Stone Avenue Improvements Survey	Tierra Right of Way Services	Doak 2010
2011-383.ASM	Park Avenue-Speedway to Fort Lowell Survey	Desert Archaeology, Inc.	Diehl 2012
2012-469.ASM	6th Avenue Tucson	Northland Research, Inc.	Cox 2012

Table 16. Previously Recorded Archaeological Sites within 91 m (300 feet) of Proposed Alternative Route E

Site No.	Affiliation	Site Type	Eligibility Status	Reference
AZ BB:13:156(ASM)	Mexican-American, Euroamerican	Burial	Not Eligible (SHPO)	Thiel and Margolis 2007
AZ FF:9:17(ASM)	Euroamerican	Road Trail	Eligible (SHPO)	Fahrni 2005

Table 17. Summary of Route Analysis

Alternative	Length (Miles)	% Surveyed	% Surveyed Past 10 Years	# Sites in Buffer	In Sensitivity Zone	Requires Monitoring
1	4	55	4	1	n/a	n/a
2	4	46	4	1	n/a	n/a
3	5	67	19	4	n/a	yes
5	5	60	24	2	n/a	yes
A	2.9	78	67	1	Stone Pipe	yes
B	3	82	70	1	Stone Pipe	yes
D	3.6	82	64	1	Stone Pipe	yes
E	3.8	61	18	2	Stone Pipe and Court Street Cemetery	yes

Table 18. Route Combination Scores

Route Combination	Score
1A	3
1B	3
1D	3
1E	2
2A	3
2B	3
2D	3
2E	2
3A	2
3D	2
5A	2
5D	2

REFERENCES

- Adams, Rex, Lisa Huckell, and Susan Brew
1980 *Santa Cruz/SW Interceptor Project*. Arizona State Museum, University of Arizona, Tucson.
- Aguila, Lordes
1997 *Archaeological Survey for Tucson Mission Industries, Tucson, Pima County, Arizona*. Archaeological Consulting Services, Ltd., Tempe, Arizona.
- Baker, Kathleen A.
2004 *An Archaeological Survey of Link Three Ingress/Egress Routes: Addendum 8 to an Archaeological Survey of Link Three of the AT&T NexGen-Core Project, Arizona and California*. Report No. WCRM(F)273. Western Cultural Resource Management, Inc., Farmington, New Mexico.
- Brack, Michael L.
2001 *A Cultural Resources Assessment of Block 42 of Buell's Addition, Tucson, Pima County, Arizona*. Project Report No. 01-112. Desert Archaeology, Inc., Tucson.
- Cook, Patricia M.
2001 *An Archaeological Survey for the Northwest Quadrant Water Main Replacement Project, Tucson, Pima County, Arizona*. Project Report No. 01-146. Desert Archaeology, Inc., Tucson.
- Cox, Eric S.
2012 *Archaeological Survey of North 6th Avenue from Drachman Street to 5th Street, Tucson, Pima County, Arizona*. Technical Report No. 12-32. Northland Research, Inc., Tempe, Arizona.
- Diehl, Allison Cohen
1998a *Archaeological Survey of the Speedway Campbell Cast Iron Rehabilitation, Tucson, Arizona*. Letter Report No. 98-169. Desert Archaeology, Inc., Tucson.
- 1998b *An Archaeological Survey of the Intersection of Broadway Boulevard and Park Avenue, Tucson, Arizona*. Letter Report No. 98-202. Desert Archaeology, Inc., Tucson.
- 1998c *Archaeological Survey of Miracle Manor, Tucson, Arizona*. Letter Report No. 98-171. Desert Archaeology, Inc., Tucson.
- 1999a *Cultural Resources Survey for the CAP Transmission Main Access/Pumping Manhole Improvements, Tucson, Arizona*. Project Report No. 99-183. Desert Archaeology, Inc., Tucson.

-
- 1999b *Archaeological Survey for the University Boulevard/ Sixth Avenue Cast-Iron Main Rehabilitation Project, Tucson, Arizona.* Project Report No.99-128. Desert Archaeology, Inc., Tucson.
- 2000 *Cultural Resources Survey for the Moratorium Streets Cast Iron Main Rehabilitation Project, Tucson, Pima County, Arizona.* Project Report No. 00-134. Desert Archaeology, Inc., Tucson.
- 2001 *Cultural Resources Survey for the Thirty-Sixth Street Housing Project, Tucson, Pima County, Arizona.* Project Report No. 01-118. Desert Archaeology, Inc., Tucson.
- 2002a *Cultural Resources Survey on 17th and 18th Streets between Park and Plumer Avenues, Tucson, Pima County, Arizona.* Project Report No. 02-178. Desert Archaeology, Inc., Tucson.
- 2002b *Cultural Resources Survey for Right-of-Way Acquisition at the Intersection of Speedway Boulevard and Euclid Avenue, Tucson, Pima County, Arizona.* Project Report No. 02-154. Desert Archaeology, Inc., Tucson.
- 2003a *Cultural Resources Survey of Four Locations on Broadway Boulevard and 5th Street in Tucson, Pima County, Arizona.* Project Report No. 03-123. Desert Archaeology, Inc., Tucson.
- 2003b *Cultural Resources Survey for the 3rd Avenue Manhole Project, Tucson, Pima County, Arizona.* Project Report No. 03-212. Desert Archaeology, Inc., Tucson.
- 2004 *Cultural Resources Survey for the Corrosion Prevention project, Tucson, Pima County, Arizona.* Project Report No. 04-118. Desert Archaeology, Inc., Tucson.
- 2005 *Cultural Resources Survey for a Parcel on the Northwest Corner of Fremont Avenue and Broadway Boulevard, Tucson, Pima County, Arizona.* Project Report No. 05-190. Desert Archaeology, Inc., Tucson.
- 2006a *Cultural Resources Survey for the Modern Streetcar Project, Tucson, Pima County, Arizona.* Project Report No. 06-158. Desert Archaeology, Inc., Tucson.
- 2006b *Cultural Resources Survey for the Feldman's Neighborhood Reinvestment Project, Tucson, Pima County, Arizona.* Project Report No. 06-151. Desert Archaeology, Inc., Tucson.
- 2006c *Cultural Resources Survey for the Oracle Road-Drachman Avenue Intersection Improvement Project, Tucson, Pima County, Arizona.* Project Report No. 06-157. Desert Archaeology, Inc., Tucson.
- 2012 *Cultural Resources Survey along Park Avenue between Fort Lowell Road and Speedway Boulevard, Tucson, Pima County, Arizona.* Project Report No. 11-125. Desert Archaeology, Inc., Tucson.

-
- Doak, David
1999 *Archaeological Survey for a Proposed Fiber Optic Cable Line from Yuma to Phoenix, Arizona.* Cultural Resource Report No. 99-185. SWCA Environmental Consultants, Inc., Tucson.
- 2007a *A Class III Cultural Resources Survey of Two Parcels Constituting Part of the Sinclair Property, Tucson, Arizona.* Tierra Archaeological Report No. 2007-1. Tierra Right of Way Services, Ltd., Tucson.
- 2007b *A Class III Cultural Resource Survey of the Routes for Proposed Sidewalks along Both Side of Hampton and Seneca Streets between Park and Mountain Avenues, in Tucson, Pima County, Arizona.* Tierra Archaeological Report No. 2007-147. Tierra Right of Way Services, Ltd., Tucson.
- 2010 *A Class III Archaeological Survey of an Approximately 2,030-foot-long, 120-foot-wide Strip of the Right-of-Way for North Stone Avenue between Drachman and First Streets, in Tucson, Pima County, Arizona.* Archaeological Report No. 2010-102. Tierra Right of Way Services, Ltd., Tucson.
- Elson, Mark
1993 *An Archaeological Survey of Plumer Road from 22nd Street to 3rd Street, and 3rd Street from Campbell Avenue to Treat Avenue.* Letter Report 93-141. Desert Archaeology, Inc., Tucson.
- Eppley, Lisa G.
1991a *Archaeological Survey of Glenn-Fairview Main Replacement.* Letter Report No. 91-126. Desert Archaeology, Inc., Tucson.
- 1991b *Archaeological Survey of Fairview Avenue-Grant Road to 15th Avenue Road Widening.* Letter Report No. 91-124. Desert Archaeology, Inc., Tucson.
- 1995 *An Archaeological Survey for a Water Main Replacement along 3rd Street between Campbell and Treat Avenue.* Project No. 94-101R. Desert Archaeology, Inc., Tucson.
- 1997a *An Archaeological Survey for the Broadway-Campbell Main Replacement Project.* Letter Report No. 97-113. Desert Archaeology, Inc., Tucson.
- 1997b *An Archaeological Survey for Kino Community Center Reclaimed Water Main Project.* Letter Report No. 97-103. Desert Archaeology, Inc., Tucson.
- 1997c *An Archaeological Survey for the Kino-Silverlake Main Replacement Project.* Letter Report No. 97-111. Desert Archaeology, Inc., Tucson.
- 1997d *An Archaeological Survey for the Broadway-Campbell Main Replacement Project.* Letter Report No. 97-117. Desert Archaeology, Inc., Tucson.
- 1997e *An Archaeological Survey for the Speedway-Campbell Main Replacement Project.* Letter Report 97-114. Desert Archaeology, Inc., Tucson.

-
- Euler, R. Thomas
1987 *An Archaeological Clearance Survey of the Proposed Central Arizona Project East, Phase I Design Water Pipeline Alignment, Pima County, Arizona.* Arizona State Museum, University of Arizona, Tucson.
- Fahrni, Grant A.
2003 *A Class III Archaeological Survey along a 0.7-mile Segment of Highland Avenue from Sixth Street to Arroyo Chico, Tucson, Pima County, Arizona.* Harris Environmental Group, Tucson.
2005 *A Class III Cultural Resources Survey of Approximately Five Acres near the Intersection of East Hardy Road and North Oracle Road, Oro Valley, Pima County, Arizona.* Harris Environmental Group, Tucson.
- Hall, Susan D.
2004 *Cultural Resources Survey for the Sidewalk Program, Tucson, Pima County, Arizona.* Project Report No. 04-167. Desert Archaeology, Inc., Tucson.
- Jones, Jeffrey T.
2009a *A Class III Cultural Resource Survey for the Proposed Road Improvements along 22nd Street, from Fremont Avenue to Tucson Boulevard, and along Kino Parkway, from 28th Street of Warehouse Avenue, in Tucson, Pima County, Arizona.* Tierra Archaeological Report No. 2009-83. Tierra Right of Way Services, Ltd., Tucson.
2009b *A Class III Cultural Resource Survey of a Proposed 56.39-M-Long (185-Foot-Long), 6.10-M-Wide (20-Foot-Wide) Bus Pullout Along the Eastern Side of Euclid Avenue North of 6th Street in Tucson, Pima County, Arizona.* Tierra Archaeological Report No. 2009-27. Tierra Right of Way Services, Ltd., Tucson.
- Kearns, Timothy M., Thomas J. Lennon, Joshua Jones, and Steven F. Mehls
2001 *An Archaeological Survey of Link Three of the AT&T NexGen-Core project, Arizona and California.* Report No. WCRM(F)179. Western Cultural Resource Management, Farmington, New Mexico.
- King, Anna Martin
2016 *A Cultural Resources Inventory of 124.1 Acres along Broadway Boulevard from Euclid Avenue to Country Club Road, Tucson, Pima County, Arizona.* Cultural Resources Report No. 2016-54. Westland Resources, Inc., Tucson.
- Levi, Laura J.
1993 *Occupation History along Tucson's 3rd Avenue A Zone Transmission Main.* Letter Report No. 93-101. Desert Archaeology, Inc., Tucson.
- Lindeman, Michael W.
1996 *Archaeological Survey of a Parcel at the Northwest Corner of Kina Parkway and 36th Street in the City of Tucson, Arizona.* Project No. 96-116. Desert Archaeology, Inc., Tucson.

-
- Lyon, Jerry
2018 *RE: Cultural Resources Records Search for the Irvington-Kino 138kV Line Siting Project.* Letter Report for Tucson Electric Power. Tierra Right of Way Services, Ltd., Tucson.
- McConville, John T., and Frank M. Holzkamper
1955 *An Archaeological Survey of the Southern Pacific Pipeline Right-of-Way in Southeastern Arizona.* Department of Anthropology, University of Arizona, Tucson.
- Sliva, Jane
1996 *Glenn-Mountain Survey.* Letter Report No. 96-164. Desert Archaeology, Inc., Tucson.
- Sterner, Matthew A., James E. Ayres, David Maxwell, and Leslie E. Raymer
1997 *Archaeological Investigation of Historic Blocks 406 and 451: the Main Gate Monitoring and Data-Recovery Project, Tucson, Arizona.* Technical Series No. 64. Statistical Research, Inc., Tucson.
- Strand, Jennifer
1984 *An Archaeological Clearance Survey of the Three Proposed Detention Basins in Tucson, Pima County, Arizona.* Letter Report. Arizona State Museum, Tucson.
- Swartz, Deborah L.
1994 *An Archaeological Survey of the Intersection of Grant Road and Campbell Avenue.* Letter Report No. 94-114. Desert Archaeology, Inc., Tucson.
1995 *An Archaeological Survey along Mountain Avenue.* Letter Report No. 95-144. Desert Archaeology, Inc., Tucson.
1996 *Archaeological Surveys of Several Road Segments near First Avenue and Grant Road.* Letter Report No. 96-124. Desert Archaeology, Inc., Tucson.
- Thiel, J. Homer
1998 *Archaeological Survey for the 22nd Street/ Santa Rita Main Replacement Project.* Letter Report No. 97-159. Desert Archaeology, Inc., Tucson.
- Thiel, J. Homer, and Michael M. Margolis
2007 *Excavation and Analysis of Burials 13 and 14 from the Court Street Cemetery, AZ BB:13:156(ASM), Tucson, Pima County, Arizona.* Project Report No. 07-136. Desert Archaeology, Inc., Tucson.
- Tucker, David B.
2010a *Archaeological Records Search and Survey for the San Antonio Neighborhood Reinvestment Project, Tucson, Arizona.* Letter Report dated February 23, 2010. SWCA Environmental Consultants, Inc., Tucson.

-
- 2010b *Archaeological Records Search and Survey for Grant Road and Oracle Road Intersection Improvements, Tucson, Arizona, and Building Assessments for 225 and 201 West Grant Road.* Letter Report dated July 9, 2010. SWCA Environmental Consultants, Inc., Tucson.
- 2010c *Archaeological Records Search and Survey for the 4th Avenue/Fontana Avenue Bike Boulevard, Tucson, Arizona.* Letter Report dated May 14, 2010. SWCA Environmental Consultants, Inc., Tucson.
- Vint, James
1998 *Archaeological Survey for the 8th Street/Cherry Avenue Cast Iron Main Replacement.* Letter Report No. 98-114. Desert Archaeology, Inc., Tucson.
- White, William A.
2011 *An Archaeological Survey in Support of the Grant Road Corridor, Phase II, Advanced Acquisition (City Project #11-02).* Technical Report No. 11-20. Statistical Research, Inc., Tucson.
- Wygant, Lindsay M., and Michael J. Boley
2014 *An Archaeological Survey for the Grant Road, Oracle to Swan Roadway Construction Project, Pima County, Arizona.* Technical Report No. 2014-28. William Self Associates, Tucson.

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Application for a Certificate of Environmental Compatibility

**Kino to DeMoss-Petrie
138 Kilovolt Transmission Line Project**

Exhibit E-3

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**Application for a Certificate of Environmental
Compatibility**

**Kino to DeMoss-Petrie
138 Kilovolt Transmission Line Project**

Exhibit E-4

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Kino to DeMoss-Petrie 138 Kilovolt Transmission Line Project Historic District Analysis

for Tucson Electric Power Company

October 5, 2020

Revised October 16, 2020

the architecture company



 *Tierra Right of Way*
A LAND SERVICES COMPANY

Kino to DeMoss-Petrie 138 Kilovolt Transmission Line Project: Historic District Analysis

Table of Contents:

I.	Introduction	3
II.	Objective	4
III.	Methodology	5
IV.	Measurable Criteria Analysis / Historic Architectural Analysis	7-23
A.	Kino Table 1 / DMP Table A: Bisecting versus Bordering Historic Districts	7
B.	Kino Table 2 / DMP Table B: Street Designation	8
C.	Kino Table 3 / DMP Table C: Historic Districts with 1 versus 2 Sides of the Route	9
D.	Kino Table 4 / DMP Table D: Existing Power Poles Located on Route	10
E.	Kino Table 5 / DMP Table E: Historic Light Fixtures within 800' Route Buffer	11
F.	Kino Table 6 / DMP Table F: Historic Contributing Properties in 800' Route Buffer	11
G.	Kino Table 7 / DMP Table G: Access of Historic Contributing Properties along Route	13
H.	Kino Table 8 / DMP Table H: Historic Architectural Criteria	13
I.	Kino Table 9 / DMP Table I: Summary by Historic Districts	22
V.	UA North Substation to Kino Maps and Tables	24-60
A.	Route 1 Maps	25
B.	Route 2 Maps	30
C.	Route 3 Maps	36
D.	Route 5 Maps	44
E.	Routes 1, 2, 3 and 5 in Tables 1 to 9	52
VI.	UA North Substation to DeMoss-Petrie Maps and Tables	61-97
A.	Route A Maps	62
B.	Route B Maps	67
C.	Route D Maps	73
D.	Route E Maps	79
E.	Routes A, B, D and E in Tables A to I	89
VII.	Recommendations	98-101
VIII.	Appendix	102-108
A.	Definitions	103
B.	Abbreviations	105
C.	Resources	105
D.	Exhibit A: TEP Route Combination Map	108

I. Introduction

As part of Tucson Electric Power's (TEP) planning process for the Kino to DeMoss-Petrie 138 kilovolt transmission line, a project designed to strengthen electric reliability and satisfy growing energy needs into central Tucson, Tierra Right of Way (TROW) and The Architecture Company (TAC) were commissioned by TEP to review TEP's proposed transmission line routes to determine which routes would have the least negative impact on the historic districts directly affected by the new transmission lines.

Starting in 2019 TEP held two public meetings and presented information to several neighborhood organizations, stakeholder groups and government agencies. Two additional public meetings were scheduled in 2020, but were suspended due to COVID-19 concerns. TEP received comments from the public meetings and has continued to receive comments in writing and electronically from residents in potentially affected historic districts. Numerous comments reflect a concern with the visual appearance of the electrical poles and the surrounding vistas, the potential negative impact on their community, the potential loss of property value, a desire for underground utility, and the potential de-listing of a historic contributing property. It was confirmed with the City of Tucson Historic Preservation Officer that no historic contributing property, individually listed property or historic district will be removed or delisted as a result of any power pole location. TEP invited the City of Tucson's Historic Preservation Officer and neighborhood associations to join the project's community working group to help inform the siting process and identify route(s) that will have the lowest possible impact on historic neighborhoods.

The proposed electrical poles would typically be 75' - 85' high and spaced approximately 750 +/- lineal feet apart. Depending on structural requirements, some poles will be mounted to a concrete foundation and have a 2' +/- diameter base and taper to a 9" diameter top, while other poles will be mounted to a larger concrete foundation with metal bolts and have a 3' +/- diameter and taper to a 9" diameter top. Recommending specific power pole locations are not part of this analysis.

TEP provided TAC and TROW four (4) different route options to connect the existing Kino Substation to the new University of Arizona (UA) North Substation, Routes 1, 2, 3 and 5, and four (4) different route options to connect the existing DeMoss-Petrie (DMP) substation to the new UA North Substation, Routes A, B, D and E. Below are the historic districts that are part of the National Register of Historic Places that the routes will bisect, are adjacent to or within an 800' buffer of the route:

Route 1 and 2: Blenman Elm, Catalina Vista, Jefferson Park, Rincon Heights, Sam Hughes and Sunshine Mile Historic Districts.

Routes 3 and 5: Feldman's, Iron Horse, Jefferson Park, Pie Allen, Rincon Heights, Sunshine Mile and West University Historic Districts.

Route A: Jefferson Park and Miracle Mile Historic Districts.

Route B: Feldman's, Jefferson Park and Miracle Mile Historic Districts.

Route D: Blenman-Elm, Catalina Vista, Jefferson Park and Miracle Mile Historic Districts.

Route E: Feldman's, Jefferson Park, John Spring Neighborhood, Miracle Mile and West University Historic Districts.

Refer to the Appendix for definitions of historic architectural terminology and the resource section to find additional historic information on these historic districts.

TAC has over 35 years of providing historic architectural services on the local and national level, performed over a dozen historic architectural surveys on over a 1000 structures, developed neighborhood design guidelines for historic neighborhoods, assisted in major street expansion configuration along major streets affecting historic districts and commercial businesses and currently provides consultation to City of Tucson as a historic design professional for the review of Neighborhood Preservation Zone (NPZ) and Historic Preservation Zone (HPZ) projects.

Tierra Right of Way has nearly 30 years of experience creating maps and utilizing geospatial data for archaeological and environmental projects. Tierra's GIS team regularly develops and maintains GIS databases for archaeological and environmental projects, creates cartographic products for reports, performs analyses of spatial data, creates 3D models for visual simulations, and creates custom GIS and spatial models.

II. Objective

The objective of this phase of study is to analyze the impact to the historic districts that the proposed routes pass through, and to determine which route(s) has the least impact and which route(s) has the greatest impact to the historic district and neighborhood. TEP provided eight routes for TAC to analyze for historic architectural factors and recommend the best route combination options that connect the DMP and Kino Substations to the UA North Substation. TAC did not look at alternate streets or alleys outside the proposed TEP routes, but focused on the eight routes, an 800' buffer around the proposed routes and the possible route combinations between Kino Routes 1,2,3 and 5 and DMP Routes A,B,D and E.

Per TEP studies and research the following routes cannot be combined together:

1. Kino Routes 3 or 5 and DMP Route B
2. Kino Routes 3 or 5 and DMP Route E

III. Methodology

The information used to calculate the data in Kino Table 1 / DMP Table A through Kino Table 6 / DMP Table F and the maps in Sections V and VI were based on GIS data from Tucson Electric Power, City of Tucson and Pima County. Tierra Right of Way developed the maps and measurements from these resources. The data gathered from the GIS information was not visually verified.

To determine the best route options, the study area included an 800' buffer zone from the proposed transmission lines for each of the 12 route combinations. The study was comprised of collecting and analyzing a combination of GIS data and observations from a windshield survey of the neighborhoods. A list of measurable criteria, described below and in Section IV. Measurable Criteria Analysis, was developed to rank the different districts to determine which routes would least impact the surrounding historic districts and historic properties as a result of the new transmission line. The study maps depict the routes and these maps were used to develop a visual analysis along with a historic architectural analysis of the eight different routes.

1. Measurable Criteria Collection, Process and Analysis

In Section IV. Measurable Criteria Analysis, each measurable criteria using GIS and Google Earth was reviewed, analyzed and ranked. The measurable criteria include:

Kino Table 1 / DMP Table A: Bisecting versus Bordering Historic Districts

Kino Table 2 / DMP Table B: Street Designation

Kino Table 3 / DMP Table C: Historic Districts with 1 versus 2 Sides of the Route

Kino Table 4 / DMP Table D: Existing Power Poles Located on Route

Kino Table 5 / DMP Table E: Historic Light Fixtures within 800' Route Buffer

Kino Table 6 / DMP Table F: Historic Contributing Properties in 800' Route Buffer

Kino Table 7 / DMP Table G: Access of Historic Contributing Properties along Route

The routes were ranked on each of the criteria listed above based on a scale from zero to ten (0 to 10). A rank of zero (0) means that the historic district(s) are not impacted by that criteria; a ranking of one (1) represents the least degree of historic impact on the affected historic district(s); and a rank of ten (10) represents the greatest impact on the affected historic district(s). Each measurable criteria was evaluated as an independent criteria to determine the ranking. The Kino routes and DMP routes were evaluated separately and used the same measurable criteria and ranking system.

The measurable criteria ranking was subtalled for each district. The final ranking of the route is the sum total of the affected district's ranking. The routes with the lower sum totals will have the least degree of impact on the historic districts. The routes with the higher sum totals will have more impact on the historic districts based on the criteria developed in this report. These sum totals of the routes from criteria in Kino Table 1 / DMP Table A through Kino Table 7 / DMP Table G are taken into consideration when analyzing the historic architectural criteria in Table 8 / Table H.

Only those portions of the routes that have historic districts or individually listed historic properties located within the 800' buffer were included in this study. The transmission line pathway of Routes 1 and 2 that affect the historic districts of Blenman-Elm, Catalina Vista, Jefferson Park, Rincon Heights, Sam Hughes and Sunshine Mile, follow the same path through the neighborhoods, therefore these two routes were analyzed concurrently. The same method of analysis was applied to Routes 3 and 5 as they share the same pathway through the historic districts of Feldman's, Iron Horse Jefferson Park, Pie Allen, Sunshine Mile and West University.

The data collected from these criteria were developed into tables and maps shown in Section V UA North Substation to Kino and Section VI UA North Substation to DeMoss-Petrie. TROW and TAC developed maps of each of the eight routes to visually reflect the measurable criteria identified. Developed for each route, is a full route map, as well as enlarged maps when the route is adjacent or passes through historic districts. Data tables were created from the GIS maps to quantify the measurable criteria in Kino Table 1 / DMP Table A through Kino Table 7 / DMP Table G to allow ranking of the individual each measurable criteria.

In developing the maps we were able to visually see the location of the historic districts, density of the contributing properties, general age of the contributing properties, where individually listed properties occur, type of street classification and location and height of existing power poles.

2. Historic Architectural Process and Analysis

Section IV. Measurable Criteria Analysis also includes the Historic Architectural Analysis. To develop the Historic Architectural Analysis, a windshield survey was performed following the proposed transmission line and an 800' buffer on each side of the potential transmission line, for each of the Kino Routes 1,2,3 and 5 and the DMP Routes A,B,D and E. General observations on each district are presented, followed by specific comments and observations that are relevant due to the potential impact of the transmission line and power poles. These observations include current architectural, landscape and historic features of the historic district and how the power poles might affect the district as a whole and it's effect on the sense of place.

The following factors were considered in the ranking of each historic district and further discussion of each of the criteria is presented in Section IV:

- Historic district integrity
- Scale of the street adjacent to a historic district
- Scale of adjacent historic and non-historic structures along the route
- Size of historic district impacted
- Historic Architectural Impression.

These factors were rated based on a scale from zero to ten (0 to 10). A rank of zero (0) means that the historic district(s) are not impacted by that criteria; a ranking of one (1) represents the least degree of historic impact on the affected historic district(s); and a ranking of ten (10) represents the greatest impact on the affected historic district(s).

The results of this analysis are presented in:

Kino Table 8 / DMP Table H: Historic Architectural Criteria

3. Summary of Measurable Criteria and Historic Architectural Analysis

A summary of the total ranking by historic district reflects the sum total of each of the seven measurable criteria and the five historic architectural criteria for the Kino Routes 1,2,3,5 and DMP Routes A,B,D,E. A total of eight (8) Tables are summarized into Kino Table 9 or DMP Table I. Kino Tables 1-8/ DMP Tables A - H show a summary of each historic district organized by each measurable criteria and historic architectural impact. This is reflected in:

Kino Table 9 / DMP Table I: Summary by Historic Districts in Section V and VI, respectively.

4. Combination of Routes

Not only are the routes ranked on their measurable criteria, and historic analysis, but also ranked based on the combination of routes, as a route from Kino must be combined with a DMP route. For example Kino Route 1 combined with DMP Route A; Kino Route 1 combined with DMP Route B; Kino Route 1 combined with DMP Route D, etc. The results of the three main areas of evaluation are summarized by route combinations and historic districts in:

Kino Table 10/ DMP Table I that is located in Section VII. Recommendations

Refer to the Appendix for definitions, abbreviations and resources mentioned in this study.

IV. Measurable Criteria and Historic Architectural Impact

The components of each of the nine (9) tables for UA North Substation to Kino (Kino Routes 1,2,3,5) and the nine (9) tables for UA North Substation to DMP (DMP Routes A,B,D,E) are described below. The same data collection process, method of analysis and ranking were applied to all the routes. Refer to Sections V. and VII. for the tables and maps.

- 1. Objective:** This identifies the purpose of the criteria.
- 2. Measurable Data Collection Process:** This section identifies the data source, organization of data into tables and the process of analyzing and ranking the data. The data collected on each of the criteria were organized by district and by route, except for Tables 3 / C - Historic Districts with 1 vs 2 sides of the Route, where the total measurements per route were more indicative of the transmission power pole impact than by district.
- 3. Measurable Criteria Analysis & Results:** This section summarizes the results and rankings of each route. Tables reflecting the data and ranking of each criteria are organized by the UA North Substation to Kino for Routes 1, 2, 3 and 5, and UA North Substation to DMP for Routes A, B, D and E.
- 4. Historic Architectural Impact Analysis & Result:** This analysis addresses the impact to each historic district by the individual route. This is organized by the UA North substation to Kino, Routes 1, 2, 3 and 5, and UA North Substation to DMP, Routes A, B, D and E.

Kino Table 1 / DMP Table A: Length of Route Bisecting vs Bordering Historic Districts.

- 1. Objective:** To provide an objective comparison through a measurement of length, the impact a route would have on a historic district based on whether the transmission line 1) bisected a district, 2) bordered the side of a district, or 3) bisected and bordered a historic district.
- 2. Measurable Data Collection Process:**
 - i. **Data Source:** The lengths were measured through geospatial maps provided by PC, COT and TEP. A route length was considered “Bisecting” if the same historic district was on both sides of the street of the proposed route for the transmission line. If the historic district was only on one side of the route, the length was considered “Bordering.” For example, if a route had historic district “A” on one side and historic district “B” on the other side of the route, it would be considered “Bordering” a historic district. “Bisecting and Bordering” is the total length in feet within a historic district that is both Bisecting and Bordering. Any length of the route without any historic district directly bordering or bisecting the route was not included.
 - ii. **Organization of Data:** The lengths are broken down by each individual historic district by 1) total length of the route bisecting a district, 2) the total length bordering a district and 3) the total length bisecting and bordering the district. Refer to the legend on the maps in Sections VI. and VII. to graphically see where the route bisects and borders the affected historic districts.
 - iii. **Ranking Process:** A ranking of 10 (ten) is applied to the route with the longest bisecting length, as this places the greatest burden on an individual historic district. More favorable routes would have majority of the route bordering a historic district. In addition to analyzing the total length of bisecting and/ or bordering, a percentage was calculated to understand the degree of impact on each district. When a historic district does not have any portion of their district being bisected or bordered, they will have a ranking of 0. The higher the rank the greater the impact.

3. Measurable Criteria Analysis & Results:

- i. **UA North Substation to Kino, Routes 1, 2, 3 and 5**
 - a. The Sunshine Mile Historic district is bisected by all of the routes.
 - b. Routes 3 and 5 are bisected by the transmission line in Feldman’s, Sunshine Mile and West University Historic Districts.

- c. Routes 1 and 2 has 380.50' less of total length of bisecting and/or bordering than Routes 3 and 5.
- d. Route 1 and 2 are ranked as a 36. Route 3 and 5 are ranked as 59.

ii. **UA North Substation to DMP, Routes A, B, D and E**

- a. Route E has the greatest length that is bisecting a historic district in comparison to Routes A, B and D. Route E has the longest bisecting and bordering length of all of the DMP Routes.
- b. Route D has no historic districts that are bisected by the new transmission line. However four of the districts border Route D.
- c. Jefferson Park is the most impacted in Routes A, B and D where the transmission line both bisects and/ or borders it's neighborhood.
- d. Route B has the shortest distance of bisecting and bordering of the DMP routes.
- e. Route A is ranked as 21, Route B as 13, Route D as 11 and Route E as 33.

Kino Table 2 / DMP Table B: Street Designations

1. Objective: To provide an objective comparison through a measurement of length, the impact a route would have on a historic district based on whether the transmission line is along a 1) Gateway Arterial Street, 2) Arterial Street, 3) Collector Street or 4) Residential Street.

2. Measurable Data Collection Process:

- i. **Data Source:** The length of streets along the historic districts were measured through geospatial maps provided by PC, COT and TEP. The Gateway Arterial Streets, Arterial Streets and Collector Streets are as defined by the City of Tucson Major Streets and Routes Map. Gateway Arterial streets are defined by the City of Tucson as "A street or parkway that is a heavily traveled entrance to and through the City, and is designated as a Gateway Route on the Major Streets and Routes (MS&R) Plan map. These routes link major employment areas, shopping centers, and recreational areas used regularly by a large number of residents and visitors and present a visual impression of Tucson's character." An Arterial street is defined as "A street identified as an arterial or Interstate Route on the Major Streets and Routes (MS&R) Plan." A collector street is defined- as "A street identified as a collector on the Major Streets and Routes (MS&R) Plan" These definitions can be found in the City of Tucson Unified Development Code. The maps show additional route types that include Arizona Board of Regents, State Routes and Railroad. All other streets not identified as a Gateway Arterial, Arterial, Collector or Alley, are considered residential streets for the purpose of this study. The residential streets identified in this analysis are all streets that primarily have residences on both sides of the street. Where historic districts are on both sides of the street, the length of street is counted for each historic district. In the summary at the bottom of Kino Table 2 and DMP Table B, the total lengths reflects the total length of the street designation that occurs along each historic district.
- ii. **Organization of Data:** The streets are broken down by 1) Gateway Arterial Street, 2) Arterial Street, 3) Collector Street or 4) Residential Street per each Historic District.
- iii. **Ranking Process:** The route with the longest length along residential roads will have the highest rank of 10 as it will have a greater visual impact on residential homes and the scale would feel much more out of place than with any other type of street. Residential roads typically are narrower and have smaller, 1 or 2 story residential structures along their roads that are accessed directly from that road. A gateway arterial street will have a higher ranking than an arterial street as gateway streets reflect a visual impression of Tucson's Character. Arterial Streets are wider and have a mixture of residential and commercial structures. Lengths on Arterial Streets are given a ranking of 1. Although commercial roads are wider, more historically significant structures may occur on commercial streets. The scale the new transmission poles may have on a residential road in a historic district, can be measured objectively by knowing the length of transmission line by street category. Understanding which roads are Gateway Arterial streets also help to understand what the City of Tucson has identified as streets that are to provide a visual impression of Tucson's character.

3. Measurable Criteria Analysis & Results:

i. UA North Substation to Kino, Routes 1, 2, 3 and 5

- a. Blenman-Elm, Rincon Heights, Sam Hughes and Sunshine Mile Historic Districts are located along Campbell Boulevard, which is a Gateway Arterial Street for Routes 1 and 2. Although the gateway arterial street is meant to present a visual impression of Tucson's character, the width of Campbell is wider than the streets in Routes 3 and 5. We feel the width of Route 1 or 2 would allow the height of the power poles to have less of a negative impact on the historic districts. Refer to the City of Tucson Major Streets and Route Map in the appendix under resources for road width and type of street. Campbell Avenue is currently 6 lanes of traffic, with a landscaped median in the center and sidewalks on both sides of the street with bike lanes.
- b. Feldman's Historic District has the highest ranking than all other districts due to the route being on a residential street in Feldman's.
- c. Route 3 and 5 have most of their route along arterial streets.
- d. Sunshine Mile Historic District is located along Broadway Blvd, which is a Gateway Arterial Street for Routes 3 and 5. The route is wider along Broadway, however a portion of the route in Sunshine Mile also passes through a residential road.
- e. Routes 1 and 2 have a ranking of 19. Routes 3 and 5 have a ranking of 22.

ii. UA North Substation to DMP, Routes A, B, D and E

- a. Routes A, B and D primarily occur in Jefferson Park.
- b. Route A has the most length occurring on a residential route. This is followed by Route D.
- c. Route B has the greatest length of the route on a collector street
- d. Route D has some of the route on Campbell, a Gateway Arterial Street.
- e. Route E has some of the route on Oracle Road / Main Avenue, also a Gateway Arterial Street.
- f. Route A has a rank of 7, Route B has a rank of 5, Route D has a rank of 7 and Route E has a rank of 11

Kino Table 3 / DMP Table C: Historic Districts on 1 vs. 2 sides of the Route

1. Objective: To provide an objective comparison between the different routes, the length of each route that has a historic district on one side versus both sides of the street.

2. Measurable Data Collection Process:

- i. **Data Source:** The lengths were measured through geospatial maps provided by PC, COT and TEP. A route length was measured as one side having a historic district if the route was directly adjacent to a historic district and there was no other contributing, individually listed property or historic district on the opposite side of the road. If the route had contributing properties and/or historic districts on both sides of the street, this length was measured and noted as 2 sides. If there was no historic district directly adjacent to the route, that length of route was not included. Refer to the legend on the maps in Sections VI. and VII. to graphically see where the routes have historic districts on 1 side or 2 sides.
- ii. **Organization of Data:** The lengths are broken down by 1) Route with Historic District on 1 Side, 2) Route with Historic Districts on 2 sides of the route and 3) the total length with 1 or 2 sides. The lengths are all in feet and percentages were calculated based on the total length with 1 or 2 sides to understand how much of the total route with historic districts had 1 side versus 2 sides.
- iii. **Ranking Process:** The route with the greatest length with historic districts on 2 sides would be ranked as the least favorable as this would require the power pole to be located within a historic district. A route with a historic district on 1 side would be ranked lower as this allows the power pole to be located outside of a historic district. The total length was ranked based on the overall length, where the longer the route the higher the ranking.

3. Measurable Criteria Analysis & Results:

i. UA North Substation to Kino, Routes 1, 2, 3 and 5

- a. Routes 3 and 5 have 68% of the route with historic districts on both sides of the route and the longest total length of route, making Routes 3 and 5 the most impacted.
- b. Routes 1 and 2 have a ranking of 9. Routes 3 and 5 have a ranking of 15.

ii. UA North Substation to DMP, Routes A, B, D and E

- a. Route B had the least length of route with historic districts on 2 sides and the shortest length of Routes A, B, D and E.
- b. Route E had the longest total length of route with 1 or 2 sides with historic district as well as the longest length, with 2 sides of a historic district making Route E the least favorable route for this specific criteria.
- c. Route A is ranked as 19, Route B as 8, Route D as 13 and Route E as 22.

Kino Table 4 / DMP Table D: Existing Power Poles Located on the Route

1. Objective: Identifying existing power poles located in historic districts directly on the route as well as their height and average spacing will show which neighborhoods are already affected by power poles. While in some cases, new higher electrical poles might help the street appear less cluttered by reducing the number of poles, the new poles could make the street feel more out of scale due to the increased height of the proposed electrical poles.

2. Measurable Data Collection Process:

- i. **Data Source:** The height and spacing of the existing power poles were provided by TEP. Refer to the Power Pole Maps in Sections VI and VII for locations of all existing power poles and each pole's height along the route.
- ii. **Organization of Data:** Kino Table 4 / DMP Table D shows the height range of poles, the average spacing of the poles and the total number of poles in each historic district along specific sections of the route. Only the streets with existing power poles within or adjacent to historic districts are listed. The *Street* listed under each historic district identifies the street that the route would be on, followed by identifying the streets between which the current power poles are located. For example, in Blenman-Elm Historic District, the *Street* is shown as *Campbell Avenue: Elm to Helen*. Campbell Avenue is the street that the power poles are located on. From Elm to Helen on Campbell Avenue, there are 12 existing power poles that range in height from 35'-55' and have an average pole spacing of 141.7'. The maps provide a visual of the actual location of the poles so specific pole spacing can be measured from the maps if needed. Where a street is listed with no number entered, there are no existing power poles along that length of route.
- iii. **Ranking Process:** The streets that have the most existing power poles and poles that are closest to 75' tall will have the least impact from the new power poles. The streets where the majority of the route has less existing power poles or poles that are more spread out over the route, will have the greater impact and be ranked higher. The routes that have more power poles that are taller and closer together will have less impact and be ranked lower. The routes were ranked based on the total number of existing power poles and the pole height range, the lower the ranking the lower the impact of the new lines.

3. Measurable Criteria Analysis & Results:

i. UA North Substation to Kino, Routes 1, 2, 3 and 5

- a. Existing power poles occur in all of the Historic Districts that are directly on the route. There are no blocks of the routes that do not have any existing power poles.
- b. Routes 1 and 2 have poles that are slightly shorter than Routes 3 and 5.
- c. Routes 1 and 2 have 13 more power poles than Routes 3 and 5.
- d. Route 1 and 2 are ranked as a 24. Route 3 and 5 are ranked as 28.

ii. UA North Substation to DMP, Routes A, B, D and E

- a. Routes A, B and D have about the same range of pole height between 30' to 99'. Route E pole heights are between 35' to 55'.
- b. The power poles along Grant Road in the Jefferson Park Historic District are all over 82 feet with an average pole spacing of 237'. Jefferson Park has the most number of power poles, which mostly occur on Ring Road, in Routes A, B and D than the other DMP affected districts.
- c. Route D has the most number of poles, which are mostly occurring on Ring Road.
- d. For Routes A, B and D, most of the existing poles occur in Jefferson Park. For Routes A and D there are portions along Grant Road that do not have any existing power poles. The power poles in Jefferson Park tend to be shorter in height and more frequent.
- e. Route E has minimal power poles in the Miracle Mile Historic District. The majority of power poles occur in Feldman's Historic District. Speedway Boulevard and Oracle Road have very few existing power poles.
- f. Route B has 11, the least number of existing power poles.
- g. Route A is ranked as 21, Route B as 23, Route D as 9 and Route E as 18

Kino Table 5 / DMP Table E: Historic Light Fixtures within 800' Route Buffer

1. Objective: To identify where and how many historic light fixtures would be within the 800' buffer of the route. The historic light fixtures tend to be small and to have a nearby 75' - 85' electrical pole would make the historic light fixture feel out of scale.

2. Measurable Data Collection Process:

- i. **Data Source:** The number of historic fixtures were counted through geospatial maps provided by COT. Counts of historic light fixtures were not verified in person. It is assumed that the information provided by COT is up to date and reflecting the correct amounts and locations.
- ii. **Organization of Data:** The historic light fixtures are counted within their respective historic districts.
- iii. **Ranking Process:** The number of historic light fixtures were ranked based on the total number of light fixtures, where 1 to 5 light fixtures has a rank of 1, 6 to 10 light fixtures has a rank of 2 and etc.

3. Measurable Criteria Analysis & Results:

i. UA North Substation to Kino, Routes 1, 2, 3 and 5

- a. Routes 3 and 5 had the most historic light fixtures, more than double the amounts in Routes 1 and 2.
- b. Route 1 and 2 are ranked as a 4. Route 3 and 5 are ranked as 10.

ii. UA North Substation to DMP, Routes A, B, D and E

- a. No historic light fixtures are located along Routes A, B and D. Route E had 26 historic light fixtures.
- b. Route A is ranked as 0, Route B as 0, Route D as 0 and Route E as 6

Kino Table 6 / DMP Table F: Historic Contributing Properties within 800 feet from the Route and Age Range

1. Objective: To identify the total number of contributing properties that would be affected and if there are certain routes that have a greater number of contributing and older structures within the 800' buffer.

2. Measurable Data Collection Process:

- i. **Data Source:** The number of contributing properties to a historic district, individually listed properties and landmark properties were counted through geospatial maps provided by PC, COT and TEP. The location, age and general footprint of the contributing structures on the maps, were determined from the geospatial maps and not verified in person. It has been assumed that the information provided by PC and COT reflect the latest information on landmark, individually listed, contributing and non-contributing properties as well as the age of the historic structure and was not verified in person during the windshield survey or through individual research of each residence within the 800' buffer. The National Register of Historic Places defines these different types of historic properties as: a contributing property is a structure that is part of a historic district and is not eligible or has not been nominated to be an individually listed property; an individually listed property is a structure or site that has greater historic significance than a contributing property, Historic Landmark properties are structures or sites that are recognized as being critical to preserve statewide. Historic Landmark properties have a greater historic importance than contributing and individually listed properties. All of the properties within an 800 foot buffer from the centerline of the street at the route's location were included. The general age of the contributing structures were also counted. The years were broken down from pre-1919, 1920 to 1949, 1950 to 1969 and post 1970.
- ii. **Organization of Data:** The counts for the contributing properties are broken down by each individual historic district by 1) total number of historic contributing properties, 2) number of properties individually listed, 3) number of landmark properties, and 4) number of properties by the year as categorized above. Refer to the maps in Section VI for the locations and general age of the contributing structures and identification of individually listed structures.
- iii. **Ranking Process:** The route(s) with the greatest number of the above listed attributes are the least favorable as those districts would have a greater burden on more residents and the overall historic district and therefore would be assigned a higher rank. Routes with individual listed or landmark properties would also rank higher as those structures have been identified as having greater historical importance by the NRHP.

3. Measurable Criteria Analysis & Results: In all of the Kino and DMP routes there were no landmark properties located in the 800' buffer.

i. **UA North Substation to Kino, Routes 1, 2, 3 and 5**

- a. Routes 1 and 2 have the majority of their contributing properties in the Sam Hughes District. The Sam Hughes District also has the most number of contributing properties within the 800' buffer for all of the UA North Substation to Kino routes.
- b. Routes 3 and 5 have more contributing properties than Routes 1 and 2. Routes 3 and 5 also have older buildings and one (1) individually listed building, University Heights Elementary School, located at 1201 North Park Avenue.
- c. West University has the most number properties built pre-1919 and has the most number of contributing properties of the historic districts within routes 3 and 5.
- d. Routes 1 and 2 have a ranking of 66. Routes 3 and 5 have a ranking of 107.

ii. **UA North Substation to DMP, Routes A, B, D and E**

- a. Route E had the most total contributing properties and the most number of properties built pre-1919 and from 1920 to 1949. This is followed by Route D which has the most properties built between 1950 to 1969.
- b. Most of the contributing structures occur in Jefferson Park of these DMP routes.
- c. All of the routes have 2 individually listed structures, the Pascua Cultural Plaza and the Matus/Mesa House. Both properties are located in Old Pascua, the oldest of the Yaqui communities in Tucson, within the 800' buffer of the transmission routes.
- d. Route E has an additional individually listed structure, the Sabedra-Herta House located at 1036-38 N. 13 Avenue, located as part of the John Spring Historic District.
- e. Route A has a ranking of 33, Route B a ranking of 32, Route D a ranking of 42 and Route E a ranking of 70.

Kino Table 7 / DMP Table G: Direct Access of Historic Contributing Properties Along the Route

1. Objective: To identify how many structures would be directly affected with the transmission line by understanding how many contributing properties are located directly on the transmission line route and how many of those contributing properties have direct access from the route to their properties.

2. Measurable Data Collection Process:

- i. **Data Source:** The number of historic contributing properties and individually listed properties were identified through geospatial maps provided by PC, COT and TEP. Once the contributing structures were determined, TAC reviewed in-person, through COT aeriels and on Google Earth which structures were accessed directly from the street where the route would be located.
- ii. **Organization of Data:** The number of contributing properties are broken down by each individual historic district by 1) the total number of structures facing the street with the primary access to the property from the street, 2) the total number of structures whose sides or back are to the street where the primary access occurs from an adjacent residential street or alley and 3) the total number of contributing structures directly on the route, a sum of items 1 and 2.
- iii. **Ranking Process:** The route with the greatest number of residences facing the street will have the greatest negative impact, therefore assigned a higher ranking. The routes with the greatest total number of structures with direct access on the route are also assigned a higher ranking.

3. Measurable Criteria Analysis & Results:

i. UA North Substation to Kino, Routes 1, 2, 3 and 5

- a. Routes 3 and 5 have almost 7 times more contributing properties with their primary access off of the route than Routes 1 and 2. Routes 3 and 5 also have almost double the number of contributing properties directly on the route. Feldman's Historic District has the most number of contributing properties facing the route than the other historic districts. This is followed closely by West University with 20 properties.
- b. Sunshine Mile has all of the contributing properties along the route facing the route in Routes 3 and 5
- c. Routes 1 and 2 have a ranking of 15. Routes 3 and 5 have a ranking of 62.

ii. UA North Substation to DMP, Routes A, B, D and E

- a. Route E has the most contributing properties that face and are accessed directly from the route. The majority of these properties occurred in Feldman's, however a significant number are also in Miracle Mile and West University.
- b. Route D has the next most contributing properties that face and are accessed directly from the route, however the homes along Campbell Avenue have a landscaped median and residential street so they are not directly accessing their properties from Campbell Avenue. The properties in Catalina Vista and Jefferson Park are given lower rankings than other districts because they have a residential street off of Campbell Avenue that has landscaping and a site wall to protect their visibility from Campbell Avenue.
- c. Route B has the least amount of properties facing the route and being accessed directly from the route.
- d. Route A has a ranking of 11, Route B a ranking of 6, Route D a ranking of 11 and Route E a ranking of 50.

Kino Table 8 / DMP Table H: Historic Architectural Analysis

1. Objective: To analyze the routes based on a historic architectural viewpoint that takes into consideration all of the measurable criteria as well as the historic architect's observation from touring the historic districts.

2. Historic Architectural Analysis Process:

- i. **Data Source:** The Historic Architectural analysis was collected by 1) a visual survey of the route and his-

toric districts within the 800' buffer of the route by walking and driving and 2) research that included reviewing the historic guidelines and neighborhood design guidelines of the different historic neighborhoods where available, reviewing SHPO design requirements, reviewing the Historic District Nomination forms and reviewing individually listed properties. Refer to the resource section in the Appendix to find online sources for the information listed above. The placement of transmission lines along federally approved historic districts, individually listed and potentially historical structures will impact those who live, work and visit these structures. All of the contributing structures are a minimum of 50+ years old and many are twice that age, with some built as early as the mid-1870s. The Tucson community has previously identified these neighborhoods to be worthy of special attention by nominating these neighborhoods as historic districts to the National Register of Historic Places and by creating neighborhood preservation zones and historic preservation zones that requires any new designs or modifications to existing structures to be reviewed by the City. These historic districts contribute more value to our City's history with each passing year. The primary impact from the transmission poles to the historic structures adjacent to the route and within the 800' buffer of the neighborhood, from our observation, is the visual impact due to the height and size of the 75' - 85' power poles. The 75' - 85' tall poles will create a negative impact to the current scale of the historic districts with their surrounding city scape. The proposed 75' - 85' tall power poles will be visible to individuals that live in the structures or visitors walking or driving in the neighborhood. However, along the route or approaching neighborhood streets, and especially the homes that face the route will be the most impacted.

ii. **Organization of Data:** In the analysis, each route is organized by historic district. The historic district in each route was ranked by the factors described below.

iii. **Ranking Process:**

- a. **Historic District Integrity:** This is based on our visual analysis of the route and review of the original historic district nominations to determine if the historic district still maintained the historic fabric, scale and design integrity that was originally described in the district nomination. The historic district integrity can be affected by new infill, demolition of existing contributing structures, addition of site walls that block the visibility of the contributing structure and additions or modifications to contributing structures that don't follow SHPO guidelines. Contributing homes were not reviewed to determine if their status should be changed. The visual survey analysis was based on the overall feel of the historic district and not a house-by-house analysis. The historic districts that maintained their historic fabric and scale were ranked as 10 as these districts would have the greatest impact from the transmission poles. The historic districts that have already had significant impact to their original historic fabric due to the factors listed above such as new infill or changes that deviate from SHPO guidelines, were ranked as 1.
- b. **Scale of the Street Adjacent to Historic District:** This is based on our visual analysis of the route. This analyzed if the properties were located close to the road or had large front or side yards facing the route, if the road was narrow or wide at the location of the route, if the structures along the road were primarily residential or commercial, if there was mature landscape or no landscape and if there were existing utilities in the street or utilities creating a negative affect to the visual aesthetic of the neighborhood. For wide roads with contributing properties that had large front or side yards and mature landscaping, that were primarily used as commercial along the route, these historic districts were ranked as 1. For narrow roads with minimal landscaping, primarily residential use and no existing above ground utilities would receive a higher rank as these districts would be greatly impacted.
- c. **Scale of Adjacent Historic & Non-Historic Structures Along the Route:** This is based on the height and size of both contributing and non-contributing structures along the route. High rise structures along the route are ranked as 1 as these multi-story structures have changed the original district scale. Single story structures are ranked higher as the transmission poles would create a greater impact to the current sense of scale.
- d. **Size of Historic District Impacted:** This is based on the total area of the historic district. For historic districts where the 800' buffer encompasses most or all of the historic district, these districts were ranked as 10. For larger districts where a small percentage of the historic district would be affected were ranked as 1.
- e. **Historic Architectural Impression:** This is based on our overall professional impression as historic architects since recommendations of historic structures by SHPO, COT and specific neighborhood design guidelines do not address how public utilities should respond to historic districts or historic structures.

3. Historic Architectural Survey Results:

- i. **General Observations on each of the Historic Districts:** Below are general comments and observations on each historic district in this study area. Specific comments and observations that are route specific follows this section. Refer to the Appendix in the resource section for how the National Register of Historic Places defines the historic integrity of a property. These aspects identified to evaluate individual properties are the same for evaluating a historic district. The period of significance for each neighborhood described below is information from each historic district's nomination form to SHPO. Refer to the resource section in the Appendix to find web links to each district's nomination form for more information on the architectural, landscape and historic features of each historic district.
- a. **Blenman-Elm Historic District:** This historic district is located on the east side of Campbell Avenue, a gateway arterial street, between Speedway and Elm. The period of significance for this district is 1903 to 1952 and holds Tucson's earliest ranch style residential neighborhoods, with many houses designed by Josias Joesler, a prominent and well-known architect in Tucson. The historic district's integrity and scale are very much intact. The contributing homes within the 800' buffer of the route are well maintained and have kept many of the original historic features of the homes. The residences are primarily single story with well kept landscaping that helps to block some of the UA's Arizona Health Sciences Center buildings. The UA's campus to the west of Blenman-Elm has midrises and highrises that has formed a midrise scale. Over-time, Blenman-Elm has found a balance with the taller structures.
 - b. **Catalina Vista Historic District:** This historic district is located just north of the Blenman-Elm historic district. The period of significance for this district is 1924-1962. As described in this Historic District's nomination form, this was one of the first neighborhood developments to be designed based on the automobile and followed the City Beautiful movement, which is reflected in the small neighborhood parks, large roundabouts and landscaped medians. From Elm Street to Grant Road, the general architectural character is similar to Blenman-Elm with mostly one-story homes, larger homes, mature trees and miniparks. The architectural integrity and scale is very much intact. The view of taller buildings from the UA is farther south and less impactful.
 - c. **Feldman's Historic District:** This historic district is located north of Speedway Boulevard and west of Park Avenue. Feldman's is a Neighborhood Preservation Zone. The period of significance for this district is from 1901 to 1962. One of the key features of this district is the consistency in the size and setbacks of the residences. The contributing properties in the 800' buffer don't have as dense of vegetation as other historic districts reviewed for this report. The character of this neighborhood contains smaller homes on smaller lots. There are a few mature trees, but not enough to help block the view of some of the higher buildings surrounding Feldman's. The architectural integrity of the design period integrity is still intact.
 - d. **Iron Horse Historic District:** This is a very small historic district located on Euclid Avenue between 10th Street to 8th Street. The period of significance for this district is from 1880 to 1935, with the neighborhood starting with the arrival of the Southern Pacific railroad. The neighborhood consists of small homes built for the railroad workers. The mixed use neighborhood consists of homes, commercial use and multi-family housing. The mixed use has a nice scale. From this neighborhood, the surrounding neighborhoods and structures have a minimum impact to the historic integrity.
 - e. **Jefferson Park Historic District:** This historic district is located south of Grant Road to north of Chauncey Lane with Campbell Avenue on the east and Park Avenue on the west. Jefferson Park is a Neighborhood Preservation Zone. The period of significance for this district is from 1905 to 1945. Jefferson Park Historic District is notable as an independent rural subdivisions that was built out, one lot at a time. The type of development is reflected in the surrounding arterial streets that curve to incorporate the neighborhood. The homes have maintained their integrity. Many of the homes in the 800' buffer of this route are modest, single story residences. Much of Jefferson Park has been impacted along the edges of the district by the widening of Grant and the expansion of the UA Arizona Health Sciences Center Buildings. There are also been a number of minidorms that are typically 2 story, larger buildings. Most of the original minidorms did not take into consideration the scale, materials, siting and design features, such as the entrance to homes within the historic contributing properties of Jefferson Park. The development of these minidorms prompted the neighborhood to develop guidelines and become a neighborhood preservation zone. New developments are now required to be reviewed by the Tucson Pima County Historic Commission and the City of Tucson Design Review Board. In our visual analysis of Jefferson Park, much of the historic fabric has been impacted by these minidorms and site walls built by adjacent properties to create additional privacy from the minidorms. The walls in front of the residences in Jefferson Park have started to limit the

visibility of the historic structures in this neighborhood, which is starting to impact the overall historic fabric and representation of Jefferson Park. While it is not to the extent where the Historic District should be delisted, the residents of Jefferson Park and the City of Tucson should be cautious in how new buildings are located and how existing contributing properties are modified. Because of the stress that Jefferson Park has experienced in recent years due to many of their contributing properties being demolished or delisted, it is critical that the route taken through Jefferson Park have as little impact as possible. Several contributing structures in Jefferson Park have already been demolished in preparation for the Grant Road widening. Additional contributing structures have been demolished along Ring Road due to UA development. Although the installation of power poles will not remove any contributing property or delist a historic district, it is important to help this historic district remain a strong example of a historic district that shows independent rural subdivisions, slowly built over a span of 60 years.

- f. John Spring Neighborhood Historic District: The period of significance for this district is from 1896 to 1940. This small neighborhood has modest, 1-story homes with narrow streets and mature trees that help block the views of some of the downtown high rises. Many of the structures date pre-1920 and are of adobe construction. Many of the original uses of the structures besides residential home, included grocery stores, churches and commercial uses. Today, most of the structures are residential. The contributing properties still have many of their historic features intact. The area of John Spring is a narrow district in the area just adjacent to Speedway Boulevard.
- g. Miracle Mile Historic District: The period of significance for this district is from 1920 to 1963. Most of the contributing properties are comprised of commercial, industrial and motels that face the street. This historic district is unlike any other in Tucson, where it is based along specific routes rather than neighborhoods.
- h. Pie Allen Historic District: This small historic district is located along Euclid Avenue from 10th Street to 6th Street. The period of significance for this historic district is 1874 to 1945. Similar to Iron Horse Historic District, this neighborhood was mostly developed to serve the railroad works of the Southern Pacific Railroad. Most of the homes are 1-story. Many of the structures are older, with most built pre-1925. Many structures are still visible from the neighborhood and reflect their original design features. The contributing properties are mostly single story bungalow style residences however some of the homes are only in fair condition and need general maintenance. Many of the residences appear to be student housing. Most houses appear to have mature vegetation. The houses on the edge of the district don't appear as well maintained.
- i. Rincon Heights Historic District: The period of significance for this historic district is 1881-1962. This historic district is located along Campbell Avenue from Broadway Boulevard to 6th Street south of the UA campus. The character of this neighborhood is comprised of 1-story residences and some commercial and apartment buildings. This historic district is one of Tucson's earliest subdivisions that were developed without deed restrictions which allowed for a diverse group of middle class ethnic and social minorities.
- j. Sam Hughes Historic District. This large historic neighborhood is located on Campbell Avenue from Broadway Boulevard to Speedway Boulevard. The period of significance for this historic district is 1918 to 1953. The architectural integrity is very good in this district. The scale, historic fabric, landscape and the properties has been well maintained in the neighborhood. The mature trees are well kept and will help to block the visibility of the proposed power poles, just as many of the current poles are blocked or partially blocked. The neighborhood has a good visual of the U A mid-rises and high rises, including stadium lights that impact the neighborhood from time to time.
- k. Sunshine Mile Historic District: This historic district was recently registered as a historic district in May of 2020. The National Register of Historic Places Registration Form is not yet posted to the City of Tucson Historic Preservation website as of the date of this study. The City of Tucson Historic Preservation Officer provided a PDF of the final Sunshine Mile Registration Form for analysis for this study. The period of significance for this district is 1920 to 1973. The district is located primarily along Broadway Boulevard from Euclid Avenue to Country Club Road and is comprised mostly of commercial structures with some residential structures that now appear to have commercial uses. Broadway Boulevard is currently under construction to be widened and several of the contributing structures have been demolished or are in the process of being demolished. Several of the contributing existing residential structures have also been relocated to prevent the demolition of these contributing structures. The previous scale and architectural fabric will be substantially different once the widening of Broadway Boulevard is complete. Buildings in this district include structures designed by well-known architects including Josias Joesler, Friedman and Jobusch, Anne Rysdale, Roy Place and many others. The district represents a time period where design and planning were based on the car. The Sunshine Mile was one of the first auto-centric shopping districts in Tucson.

- i. **West University Historic District:** This historic neighborhood is located on Euclid Avenue from 6th Avenue to Speedway Boulevard and from Stone Avenue to Park Avenue. West University is a Historic Preservation Zone. The period of significance for this historic district is 1890 to 1930. Many of the contributing properties in this district are older than contributing properties in other historic districts that are affected by the new transmission line route. Because of the older historic significance of West University and its proximity to the university, this historic district also has many structures designed by prominent architects as well as notable citizens that reside(d) in this district. Many of the homes in this district continue to be well maintained with minimal alterations to their original historic design. There has been new construction located within this historic district, however much of the original historic fabric is still present. Most homes are still visible from the street with mature and well kept landscaping. New student housing high rise construction has occurred outside of West University, which does impede visually on the historic district and the scale creates an uneasy relationship between the high rises and 1-story homes, but does not cause the district to lose its historic significance.

ii. UA North Substation to Kino, Routes 1 and 2

- a. **General:** Many of the structures on Campbell Avenue from Broadway Boulevard to Elm Street are commercial structures that are not part of a historic district. The commercial and institutional structures range in height from small, single story structures to high rises. The style and materials of the architecture outside of the historic district range from typical stucco, strip mall to contemporary mid and high rise structures.
- b. **Blenman-Elm Historic District:** Two of the homes directly along Campbell Avenue have built site walls to help block the noise and provide privacy from Campbell Avenue, a highly travelled road, as indicated by being a Gateway Arterial Street. In building the site walls, the historic fabric of that portion of the neighborhood is no longer visible, however this doesn't detract from the overall historic significance of the Blenman-Elm District as there are not many residences directly on Campbell as shown in Table 7, Access of Historic Contributing Properties along the Route. There are contributing homes between Mabel Street and Drachman Street that are well maintained, still visible from the street and small, single story structures. Saints Peter and Paul Catholic Church and School is located off of Campbell and is a contributing property to Blenman-Elm. The church is a higher structure that has a prominent presence from Campbell Avenue. Between Mabel Street and Elm Street on Campbell Avenue, power poles should be located to avoid blocking Saints Peter and Paul Catholic Church, to not compete with the taller structure of the Church and located to minimize the impact to the small residential homes along that portion of street. The power poles are currently located on the east side of Campbell adjacent to many of the contributing properties. Most of the existing power poles are wood and 55' in height, with some shorter poles. If the new power poles are located on the west side of Campbell, where there are no historic districts, and the power poles currently located on the east side of Campbell are removed, this would help the historic visibility of the current contributing structures and reduce the negative visual impact. Routes 1 and 2 affect Blenman-Elm only along Campbell Avenue. Because this is already a wide street with mature landscaping, the transmission line would have less of an impact to Blenman-Elm's overall historic district than districts where the route is going through a residential street, collector street or a narrow arterial street.
- c. **Catalina Vista Historic District:** Route 1 and 2 has minimal impact on Catalina Vista as there are very few homes within the 800' buffer. The existing and mature landscaping within Catalina Vista will help to block the visibility of new power poles, especially if the poles are located on the west side of Campbell Avenue.
- d. **Jefferson Park Historic District:** Many of the homes in the 800' buffer of this route are small, single story residences with generous front yards. The Church of Latter Day Saints has a tall bell tower and a taller single story structure. The landscape varies with some areas having denser, older vegetation that would help block the visibility of the power poles from existing historic structures. Many of the homes directly adjacent to Ring Road, a narrow residential road, have been demolished. Very few structures still remain and those that remain do not face into Ring Road. Catch basins have been constructed in locations where historic contributing structures were previously located. New landscaping and sidewalks have recently been installed. Residences located along Ring Road now feel out of place as the structures that once surrounded them are now gone. The tall university buildings also contrast the scale of the single story homes. The addition of 75' - 85' power poles along this portion of Jefferson Park would not add a great deal more impact to this already affected portion of Jefferson Park. The narrow width of the Ring Road, however would locate the power poles close to the residences remaining on Ring Road and make those structures feel more out of place. There are several existing power poles adjacent to Jefferson Park. The poles are short in height, with most around 30' tall. Car access from Ring Road into the Jefferson Park Neighbor-

- hood have also been blocked to vehicles, so Jefferson Park can no longer be accessed from Ring Road by car. Only a short length, approximately 1,100 ft of the historic district would be affected by the route.
- e. Rincon Heights Historic District: The contributing homes within the 800' buffer of Route 1 and 2 are mostly maintained with some residences used for student housing. Many of the contributing properties are still visible from the streets. The residences are primarily single story, with some two story structures. The High School Wash that bisects the district has dense, natural vegetation, which will help block the visibility of the power poles to some of the contributing properties within the 800' buffer. Many of the residences along Campbell Avenue have built site walls to help block the noise and provide privacy from Campbell Avenue. In building the site walls, the historic fabric of that portion of the neighborhood is no longer visible from Campbell Avenue, however this doesn't detract from the overall historic significance of the Rincon Heights District. There are also several vacant lots that are part of this historic district, located along Campbell Avenue. These vacant lots help provide a buffer between Campbell Avenue and the contributing properties. Most of the existing power poles adjacent or in the Rincon Heights Historic District are smaller wood power poles, around 35' to 40' tall. These smaller poles are not as visible due to the landscaping along Campbell, however the landscaping in Rincon Heights is much less than Blenman-Elm and Sam Hughes. There are not many tall commercial or institutional structures in or directly adjacent to this district. Because this is already a wide street the transmission line would have less of an impact to Rincon Heights' overall historic district than districts where the route is going through a residential or collector street.
 - f. Sam Hughes Historic District: The contributing homes within the 800' buffer of Routes 1 and 2 are well maintained and have kept many of the original historic features of the homes. Many of the contributing properties are still visible from the residential streets. The residences are primarily single story, with some two story structures and well kept, mature landscaping that helps block some of the higher surrounding buildings and existing power poles. The intersection of 3rd Street and Campbell Avenue, is a critical intersection to maintain the vista from the tree lined 3rd Street into the UA's East Gateway entry, Campus Mall and Old Main. 3rd Street not only adds to the intent of the City of Tucson's definition of a gateway arterial street, it is also a key historic feature of the Sam Hughes Historic District as noted in their SHPO nomination form. This tree lined street starts directly off of Campbell Avenue and is one of the major historic features of Sam Hughes and Tucson. Very few homes along Campbell Avenue have walls, allowing many of the contributing properties to remain visible from Campbell. Many of the homes are also located close to the street, and will have the greatest negative impact within their district. If possible power poles should be located on the west side of the street to reduce the impact to the residences along Campbell Avenue. From 6th Street to 1st Street, power poles are currently located on the east side of Campbell, adjacent to contributing properties. Most of the existing power poles are 55' tall wood poles. If the existing power poles could be removed and located on the west side of Campbell Avenue, this might help the visual impact to this historic district. The current power poles are not equally spaced, and some are adjacent to other poles. If poles are able to be spaced farther apart, that will help reduce the visual impact to this district. The University also has tall lights that are used to help light up the practice field at the north west corner of 6th Street and Campbell Avenue. The lights have a negative impact when they are in use, however their diameter is smaller than the proposed power poles. The A Loft hotel, a 7 story structure, approximately 80' tall can be viewed from many of the homes near the Speedway, Campbell intersection, within the 800' buffer. The Sam Hughes historic district from 6th Street to Broadway Boulevard has 5 contributing properties along that block and the border of Sam Hughes jogs away from Campbell Avenue, reducing the length of district directly along Campbell Avenue. Because Sam Hughes is not bisected by the route, the impact to Sam Hughes is less than historic districts that are bisected.
 - g. Sunshine Mile Historic District: There are few contributing structures within the 800' buffer and no structures directly along the Routes 1 and 2. Existing contributing structures have been demolished within the 800' buffer. The route passes through a major intersection, Broadway Boulevard and Campbell Avenue which will become wider after the completion of the Broadway Boulevard street improvements. One of the structures within the 800' buffer is the Pima Plaza by Anne Rysdale, but this is towards the 800' buffer and not directly along the route. The width of Broadway Boulevard and Campbell Avenue, with their larger commercial structures, would have less of an impact than locations where the route is along residential and collector streets.
 - h. University of Arizona: Although this is not a designated historic district, the University of Arizona (UA) does have individual contributing properties and has identified a historic district on campus. Refer to the resources section for the University of Arizona Preservation Plan that has additional information on their preservation requirements and strategy. Although the UA mall is not part of the UA's historic district, the mall has been identified as a character defining feature of the UA. Key features at the UA mall is the open

space and clear vista that visitors have from Campbell and 3rd to Old Main and the mountains beyond looking west. One of the University of Arizona Preservation Plan Goal's is to "Refine the East gateway at Campbell Avenue" (p. 52). By locating the transmission line directly in front of the mall, the power lines will interrupt the current character-defining vista which looks west from the campus boundary. The location of the 75' - 85' power poles should coordinate with the UA's plan for the refining of the east gateway

iii. UA North Substation to Kino, Routes 3 and 5

- a. **Feldman's Historic District:** From the 800' buffer of Routes 3 and 5, the taller structures on and around the UA campus are visible. Many of the houses and apartment complexes appear to be student housing. Landscape and hardscape is not as well kept as in other historic districts. Most contributing structures are still visible from the street, allowing the historic fabric of the neighborhood to be expressed. Along Helen Street, a residential street where Routes 3 and 5 are being proposed, all of the homes are contributing and face the street. The landscape and hardscape along that street are a nice representation of that historic district. Most of the power poles on Helen Street are located on the south side of the street. To add 75' - 85' power poles along Helen Street would have a large negative impact on this district. Most of the route through this district has power poles around 45' tall and are of wood. The route borders Feldman's along Park Ave from Helen Street to Lee Street. Along Helen Street and Park Avenue was the University Heights Elementary School, which has been adaptively reused and is now part of the Campus Crossings at University Heights Apartments, and remains an individually listed structure. If power poles are located along this route, care should be taken in the placement of the new power poles to not detract from this individually listed building. There are a few blocks from Mabel Street to Adams Street between Park Avenue and Euclid Avenue that have more non-contributing structures than other portions of the route going through Feldman's, which reduces the quality of the historic district in that area of the district. Along these blocks there is also a multistory UA project that is currently under construction, which will change the scale of the street from the previous feel. No historic districts are across Feldman's on Park Avenue, which would allow the new power poles to be located on the east side of Park Avenue, away from the historic district.
- b. **Iron Horse Historic District:** Many of the structures in Iron horse were built pre-1925, with some of the oldest structures in comparison to the other historic districts that the proposed route passes through. The High School Wash passes through this district and provides dense vegetation that would help block the visibility of the power poles for certain contributing properties. Most of the structures are single story, with some two story structures. Some residences appear to be student housing, however most of the homes are still visible from the street and are in fair to good condition. The neighborhood has mature vegetation and the homes are densely located. Most of the existing power pole heights are unknown. They do not appear to be very tall, some of the power lines appear lower than the light poles and seem to be carrying cable only. A tall power pole is located in front of Tucson High School on the west side of Euclid Avenue. The pole is painted to match the color of Tucson High and is on a portion of the road that has more width between the faces of the buildings facing onto Euclid Avenue. This added width, painted color of the pole and height of the 3 story Tucson High building help detract from the visibility of the pole. Euclid Avenue is a narrow, arterial street with many of the contributing properties close to the street with minimal room to add landscaping. Many of the homes along Euclid Avenue are single story bungalow residences with low volcanic rock walls. Some of the homes have fences or walls that block the homes' visibility from the street. Most have their original designs intact, however some of the homes are only in fair condition and need general maintenance. This historic district spans from Hughes Street to 8th Street, however only a small portion directly borders the route. This is also a small historic district where almost half of the district is within the 800' buffer, resulting in a greater negative impact on the historic district than the larger historic districts.
- c. **Jefferson Park:** Very few homes are impacted in this route option. This route has the least impact to Jefferson Park and its contributing properties.
- d. **Pie Allen Historic District:** Many of the structures are older, with most built pre-1925. Many structures are still visible from the neighborhood and reflect their original design features. Many of the residences appear to be student housing. Most houses appear to have mature vegetation. The houses on the edge of the district don't appear as well maintained. Some of the homes have located fences or walls to block their visibility from the street. The contributing properties are mostly single story bungalow style residences. Most have their original designs intact, however some of the homes are only in fair condition and need general maintenance. Refer to Iron Horse Historic District above for description and impact of the existing power poles. The route borders Pie Allen from 10th Street to 6th Street on Euclid Avenue. A small portion from 10th Street to 9th Street that borders Pie Allen also borders Iron Horse Historic District on the opposite

side of the street. On 6th Street and Euclid Avenue, Pie Allen is catty-corner to West University. Although Pie Allen is only bordering the route, the impact to this historic district will have a bigger visual impact than the larger historic districts as the 800' buffer includes almost all of the Pie Allen Historic District.

- e. Sunshine Mile Historic District: All of the contributing structures along the transmission route face the Route 3 and 5, however all of the contributing structures are commercial use. With the increased width of Broadway Boulevard and the mid-rise multi-family housing in this area, the historic district is currently experiencing a change in scale and architectural fabric. The proposed route affects a small portion of the overall Sunshine Mile.
- f. West University: New high rise construction has occurred outside of West University, which does impede visually on the historic district, but does not cause the district to lose their historic significance. This neighborhood has had to adjust to views of the UA buildings and the student apartment high-rise buildings. Many of the contributing properties directly along the route are accessed from Euclid Avenue and located very close to the street. There is minimal front yards for these contributing structures. Existing power poles are located along Euclid Avenue and are mostly 40' tall wood poles. They occur more frequently from 6th Street to University on Euclid Avenue. The current power poles detract from the historic fabric in that portion of the route as they are more frequent. If the 75' - 85' tall poles were located here with their wider base, this could impede more on the visual fabric of the historic district. The street car lines are also visible on University and Euclid, which detracts from the historic district. Although the height of the surrounding buildings could help hide the height of the power poles, the diameter of the poles would impact the contributing structures directly along the route due to the narrow width of the current road and sidewalk. A portion of the route bisects West University from 4th Street to Speedway Boulevard on Euclid Avenue, however many of the contributing structures on the east side of Euclid Avenue have been demolished. There are also several noncontributing properties on the west side of the street. From 4th Street to University Boulevard, the entire block still has contributing properties where the route bisects the district. From 6th Street to 4th Street on Euclid Avenue, the historic district borders the proposed route.

iv. UA North Substation to DMP, Routes A

- a. Jefferson Park Historic District: Some of the homes face the route, however once Grant Road is modified, the number of homes facing the route may change. Many of the homes along Vine Avenue have their side to Vine Avenue, which helps reduce the impact to those homes. There are also many site walls constructed along Vine Avenue to provide privacy. Because this route cuts through the center of Jefferson Park, this route has the most impact on contributing properties directly on the route in this historic district. There are minimal existing power poles along Grant Road, however once the new road is completed along Jefferson Park, the new power poles will be similar to the current poles located in the newly widened portion of Grant Road. There are existing wood power poles around 30' to 40' going down Vine Avenue. Power poles are located on both sides of the street and are fairly close together. Although the 75' - 85' tall poles could help reduce the frequency of the existing power poles, the size would feel overwhelming to the current scale of the neighborhood. Because of the impact the scale would have to this residential street, with very little sidewalk and structures located close to the road, the historic architectural impact would have the greatest negative impact in comparison to the other routes.
- b. Miracle Mile Historic District: There are only 3 contributing properties that are within the 800' buffer and they are commercial structures, surrounded by commercial buildings. Grant Road already has tall power lines. As the new transmission line will have no additional impact to this historic district, the impact is negligible.

v. UA North Substation to DMP, Routes B

- a. Jefferson Park Historic District: Some of the homes face the route. Many of the homes along Park Avenue have their side to the street, which helps reduce the impact to those homes. There are also many site privacy walls constructed along Park Avenue. As this route has very few sidewalk and curb along the road, if new power poles were located along this route, adding curbs, sidewalk and landscape would help reduce the impact to the historic district. There are minimal power poles along Grant Road. Park Avenue has existing power poles that range in height and spacing and are located on both sides of the street. The 75' - 85' power poles will impact the scale of the historic structures, however there are few contributing structures that will be impacted due to the configuration of Jefferson Park. Only a short length of the route is bordering Jefferson Park on Grant Road. Most of the Route B length is along Park Avenue which

is a collector street. There is some sidewalk and curb near Grant Road, but most of the road has no curb or sidewalks. While Park Avenue is collector street, not a residential street, it is still a narrow road with mostly residential structures in the historic district along Park Avenue. Jefferson Park is bisected as the route goes down Park Avenue from Grant Road to Seneca Street. From Seneca Street to Chauncy Street on Park Avenue, the route is bordering Jefferson Park on the east side of the street. However, there is additional impact to the district within the 800' buffer on the west side of Park Avenue. This route bisects through the middle of the historic district, but it is not as severe as Route A. The portion along Park Avenue that is bordering Jefferson Park would be best if the new power poles were located along the west side of Park Avenue so that it is not immediately adjacent to the historic district.

- b. Miracle Mile Historic District: Refer to the comments on Miracle Mile in Route A

vi. UA North Substation to DMP, Routes D

- a. Blenman-Elm Historic District: The route turns from Campbell to Ring Road, in front of Blenman-Elm. Our assumption is this change in direction of the transmission line will require a larger power pole. If possible, the power pole should be located on the west side of Campbell Avenue so it is not directly in front of the single story contributing homes in Blenman-Elm and reduces the impact to the contributing homes within the 800' buffer of the route. If Route D is able to go down Lester Street, this will reduce the impact to Blenman-Elm, however it will increase the impact to Jefferson Park. Route D only has a minimal impact to Blenman-Elm due to the small length of route adjacent to Blenman-Elm.
- b. Catalina Vista Historic District: The existing and mature landscaping within Catalina Vista will help to block the visibility of new power poles, especially if the poles are located on the west side of Campbell Avenue. Many of the homes are on larger lots and face away from Campbell which will help reduce the impact of the power poles if they are located on this route. Although there is a high number of residences that face the route, there is a neighborhood street adjacent to Campbell Avenue that provides mature landscape and a stuccoed CMU site wall that blocks the sound from the traffic and creates privacy. This road and landscape configuration will also help to block some of the power poles. With the secondary neighborhood road off of Campbell Avenue, the impact of Campbell Avenue and having power poles along Campbell would have a minimal affect to this neighborhood. The neighborhood route also has large vegetation and walls that help block the noise and view of Campbell Avenue. From our observation and seeing the design and massing of the west edge of the district, we felt the impact to this district will be moderate.
- c. Jefferson Park Historic District: This route has the most length bordering Jefferson Park, it also has a high number of contributing properties adjacent to the route. Similar to Catalina Vista, the street configuration along Campbell Avenue helps to reduce the impact to Jefferson Park. Although it would be best to leave existing streets that don't have power poles without them, the overall width of Campbell allows for the tall poles to be less overpowering to the mostly single story structures in Jefferson Park than locating the poles on Vine Avenue or Park Avenue. Ring Road is a residential street, see comments in Jefferson Park under Routes 1 and 3. While Route D still has a negative affect to Jefferson Park, the affect is not as significant as Routes A and B to this district.
- d. Miracle Mile Historic District: Refer to the comments on Miracle Mile in Route A

vii. UA North Substation to DMP, Route E

- a. General: There are very few existing power poles along this route. Our preference would be to locate the route where there are already existing power poles that could be removed or reduced to help improve the visual impact to the historic districts.
- b. Feldman's Historic District: There are currently no existing power poles located directly on Speedway. Adding new power poles to streets that already have visible power poles would be preferred to adding power poles to streets that currently have no power poles. Refer to the Route 3 and 5 for the impact to Feldman's along Helen Street and Park Avenue. In addition to the impact to those streets, this route would also impact the district along Speedway Boulevard. Most of Speedway Boulevard has single story structures with primarily commercial uses. The structures tend to have small front yards and moderate landscaping. Part of Feldman's does step away from Speedway Boulevard from about 3rd Avenue to 6th Street, which helps reduce the number of contributing properties that this route impacts.
- c. John Spring Neighborhood Historic District: There are three contributing structures along the route and one with access directly from the route. The one contributing structure that has direct access is commer-

cial. The other two contributing structures are accessed by adjacent residential streets. The area of John Spring is a narrow district in the area just adjacent to Speedway Boulevard. The portion that is in the 800' buffer is minimal. Most of the residences are small, single story structures. Many of the structures date pre-1920 and are of adobe construction. The residential streets in the 800' buffer are narrow, with desert landscaping along the sides of the streets. Some of the residence have fences around their homes, but most residences are still visible. There are currently no power poles located on Speedway Boulevard in the area of this district.

- d. **Miracle Mile Historic District:** The Miracle Mile Historic District's intent is to retain the existing architecture and streetscape that was developed from 1920 to 1963 as design for the automobile started to emerge and change how cities were designed. Due to the configuration of the Miracle Mile Historic District, almost all of the district from Grant Road to Speedway Boulevard is in the 800' route buffer. Most of the contributing structures are large commercial, single story structures with low profile designs. The landscape is also minimal along the street. Although the width of the street is wide and there are primarily commercial structures along the route, adding power poles would have a negative affect to a historic district that is attempting to preserve the mid-century auto culture that existed along Oracle Road. The configuration of this district has many jogs creating locations where contributing properties are on one side of the street and the opposite side of the street does not have any contributing properties or is not part of the district. If this is the chosen route, care should be taken in locating the power poles away from the contributing structures. The tall power poles would be much more noticeable on this street than a street that is well landscaped.
- e. **West University Historic District:** While many of the contributing structures along Speedway Boulevard face the route, many are being used as offices or other commercial uses and student housing. Most of the homes along Speedway Boulevard remain visible, where the single story bungalow style homes can still be viewed as people walk and drive down Speedway Boulevard. Many of the structures are still well maintained. De Anza Park at the corner of Stone Avenue and Speedway Boulevard is a contributing property and has large trees and a low wall constructed of volcanic rock. If power poles were to be located at this intersection, it would be important to try to allow for this space to remain unincumbered to allow the park to maintain its visually open green space. There are currently no existing power poles located directly on Speedway Boulevard in the West University Historic District. Adding new power poles to streets that already have visible power poles, would be preferred than adding power poles to streets that currently do not have any power poles. The street is wider and most of the structures face toward Speedway Boulevard. The route borders West University from Tyndall Avenue to Stone Avenue on Euclid Avenue, however much of the route is opposite to Feldman's Historic District. The lack of power poles creates a very clean visual condition that should be maintained.

Kino Table 9 / DMP Table I: Summary Table by Historic District

1. **Objective:** To review in summary tables how each historic district is impacted by route.
2. **Measurable Data Collection Process:**
 - i. **Data Source:** The total ranking of each historic district are from Kino Tables 1 to 8 and DMP Tables A to H. .
 - ii. **Organization of Data:** A total of 9 Tables are part of this Summary Table. Kino Tables 1-8 show a summary of each historic district organized by each measurable criteria and historic architectural impact. Kino Table 9 and DMP Table I are summaries organized by historic district of the total of all the rankings from Kino Tables Kino Tables 1, 2, 4, 5, 6, 7 and 8 and DMP Tables A, B, D, E, F, G, H. Kino Table 3 and DMP Table C are added in the final total under DMP Table I since Kino Table 3 and DMP Table C are not categorized by historic district.
 - iii. **Ranking Process:** The total ranking for each district is shown in these summary tables. The historic district with the lowest total sum for all of the measurable criteria factors would experience the least impact from the transmission lines.

3. Analysis & Results:

i. UA North Substation to Kino, Routes 1, 2, 3 and 5

- a. Routes 3 and 5 have a total overall greater negative impact for all of the measurable criteria developed in Tables 1 through 7.
- b. The summary ranking by district shows that Feldman's and West University will have the most negative impact.
- c. Rincon Heights, Jefferson Park and Sunshine Mile are affected with Routes 1, 2 3 and 5.
- d. Routes 1 and 2 have a total ranking of 275. Routes 3 and 5 have a total ranking of 453.

ii. UA North Substation to DMP, Routes A, B, D and E

- a. Route E has the greatest total negative impact. West University and John Spring Neighborhood are only affected by route E.
- b. Jefferson Park Historic District is impacted by all four route options.
- c. Blenman-Elm and Catalina Vista are only affected by Route D. Route D has the least impact.
- d. Feldman's is only affected by Route B.
- e. Route A has a total ranking of 163, Route B a total ranking of 138, Route D a total ranking of 135 and Route E has a total ranking of 295.

V. UA North Substation to Kino Maps and Tables

TROW and TAC developed maps of each route to visually depict the measurable criteria identified in Section III Methodology. Each route has a map of the full route as well as enlarged maps where the route is adjacent or passes through historic districts.

A. Route 1 Maps: UA North Substation to Kino

1. Figure V.A.1. Full Route
2. Figure V.A.2. Mountain Avenue to Warren Avenue
3. Figure V.A.3. Waverly Street to Speedway Boulevard
4. Figure V.A.4. Speedway Boulevard to Sixth Street
5. Figure V.A.5. Sixth Street to Broadway Boulevard

B. Route 2 Maps: Kino to UA North Substation

1. Figure V.B.1. Full Route
2. Figure V.B.2. Mountain Avenue to Warren Avenue
3. Figure V.B.3. Waverly Street to Speedway Boulevard
4. Figure V.B.4. Speedway Boulevard to Sixth Street
5. Figure V.B.5. Sixth Street to Broadway Boulevard

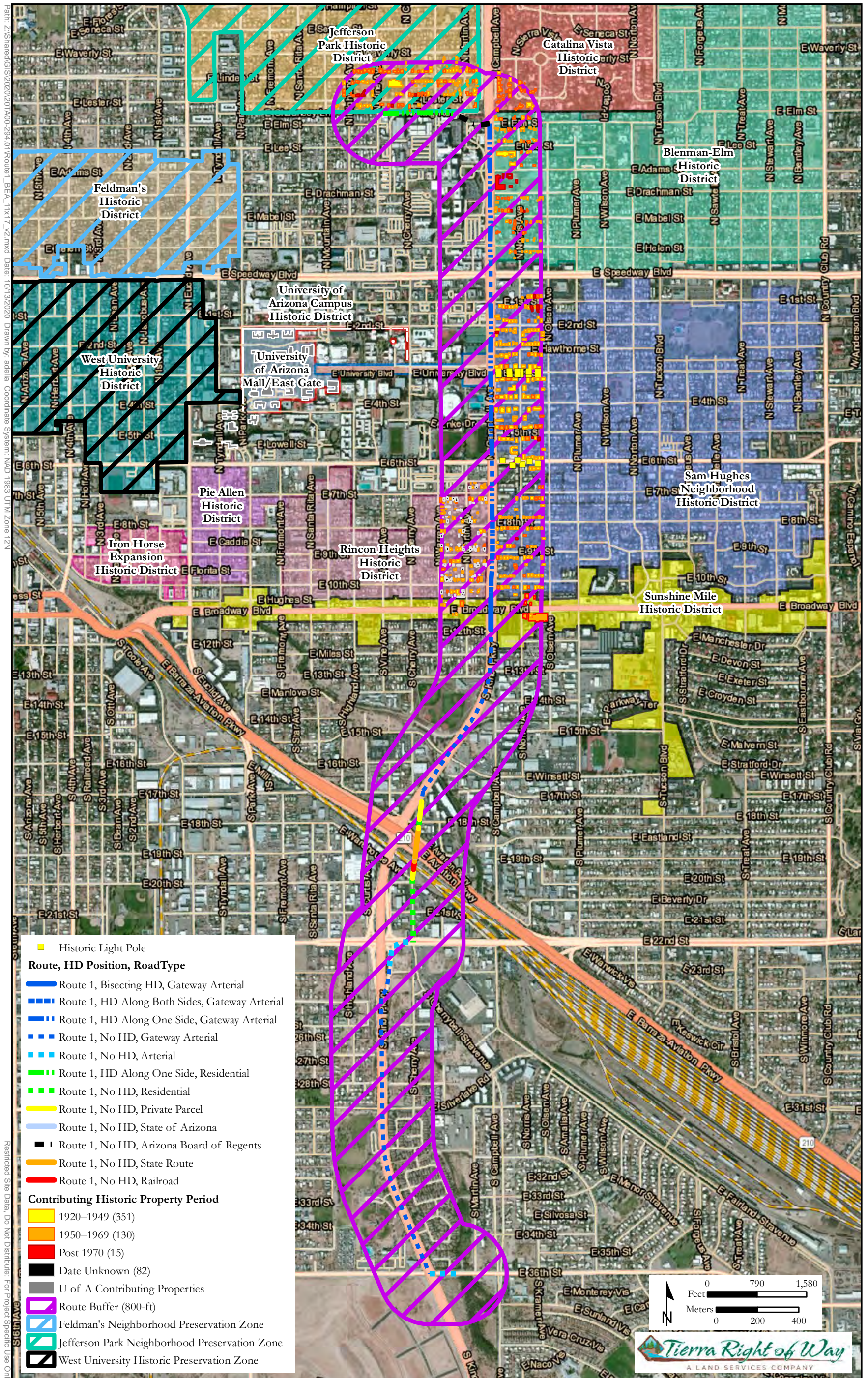
C. Route 3 Maps

1. Figure V.C.1. Full Route
2. Figure V.C.2. Warren Avenue to Santa Rita Ave
3. Figure V.C.3. Lester Street to Mabel Street
4. Figure V.C.4. Adams Street to 1st Street
5. Figure V.C.5. 1st Street to 5th Street
6. Figure V.C.6. 6th Street to Broadway Boulevard
7. Figure V.C.7. Euclid Avenue to Fremont Avenue

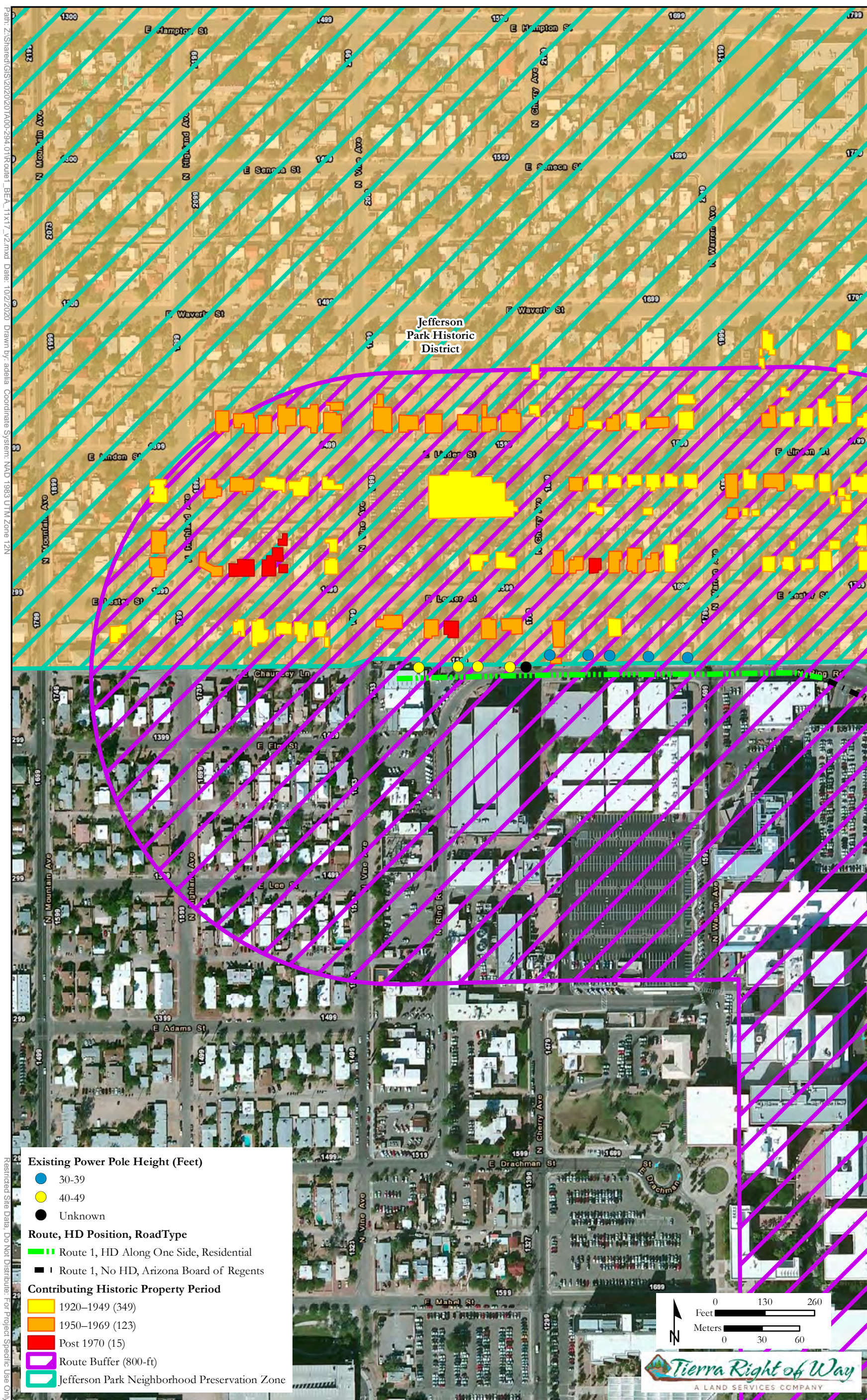
D. Route 5 Maps

1. Figure V.D.1. Full Route
2. Figure V.D.2. Warren Avenue to Santa Rita Ave
3. Figure V.D.3. Lester Street to Mabel Street
4. Figure V.D.4. Adams Street to 1st Street
5. Figure V.D.5. 1st Street to 5th Street
6. Figure V.D.6. 6th Street to Broadway Boulevard
7. Figure V.D.7. Euclid Avenue to Fremont Avenue

**Figure V.A.1: ROUTE 1
UA NORTH SUBSTATION TO KINO: FULL ROUTE**



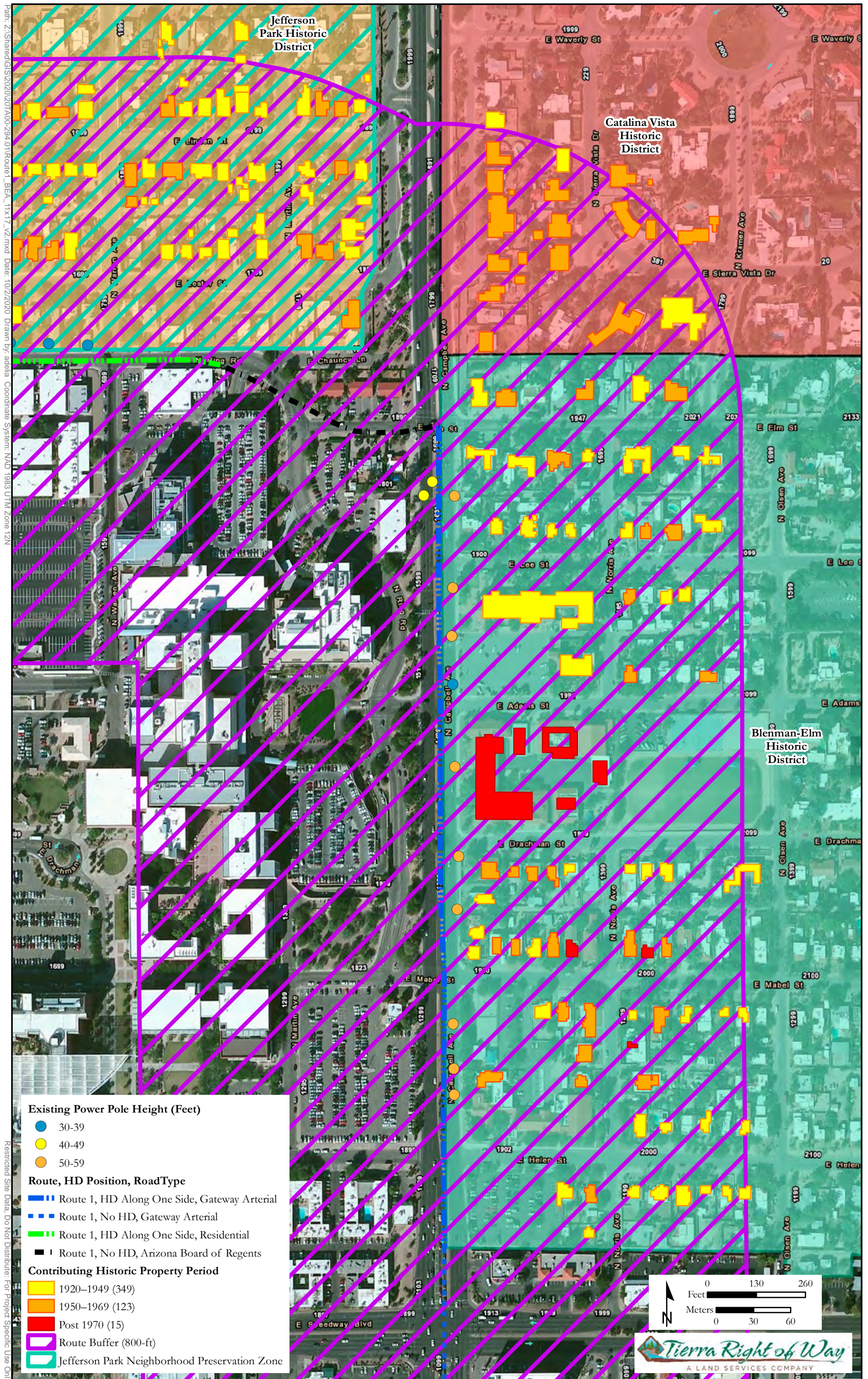
**Figure V.A.2: ROUTE 1
UA NORTH SUBSTATION TO KINO: MOUNTAIN AVE. TO WARREN AVE**



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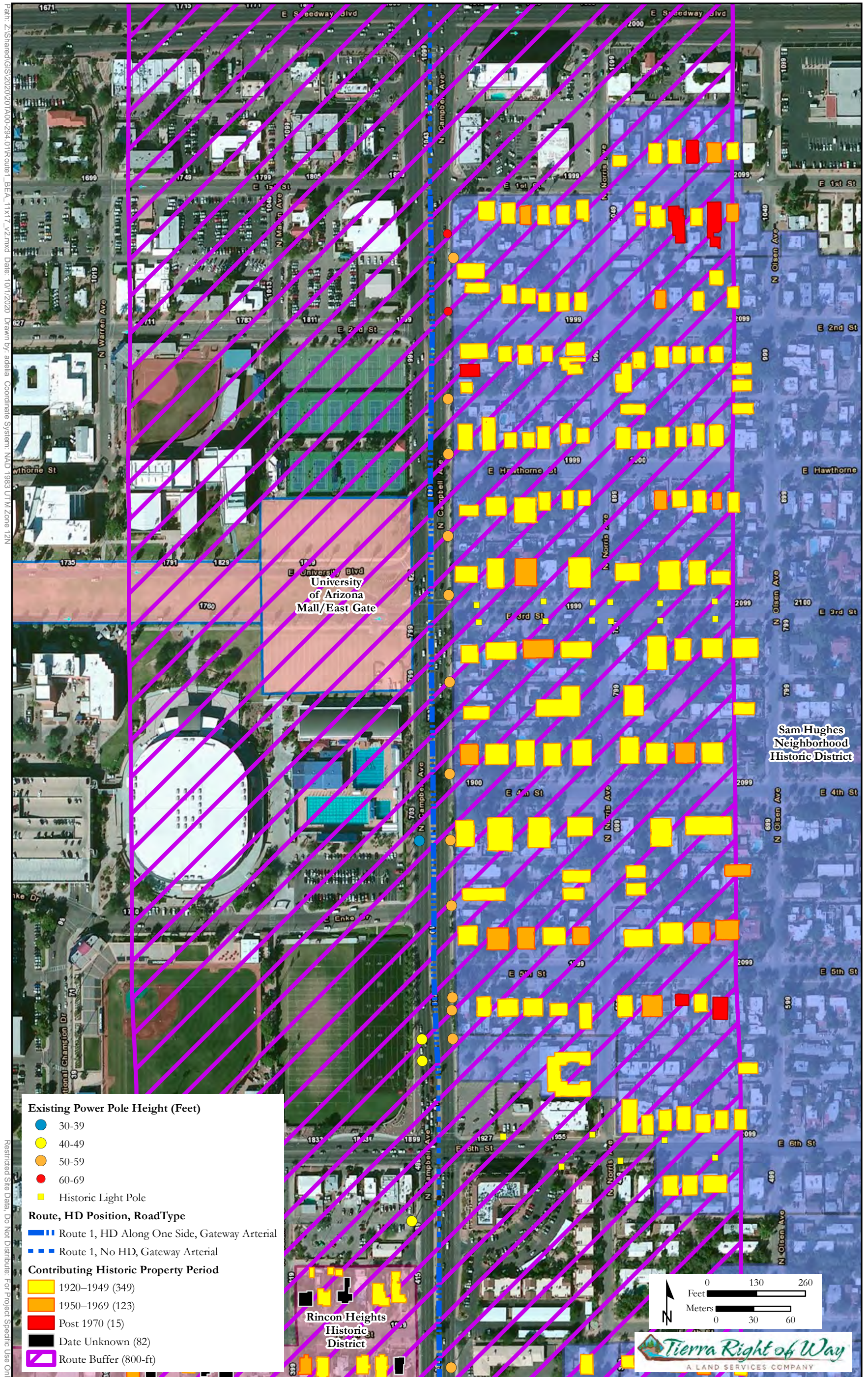
**Figure V.A.3: ROUTE 1
UA NORTH SUBSTATION TO KINO: WAVERLY ST. TO SPEEDWAY BLVD.**



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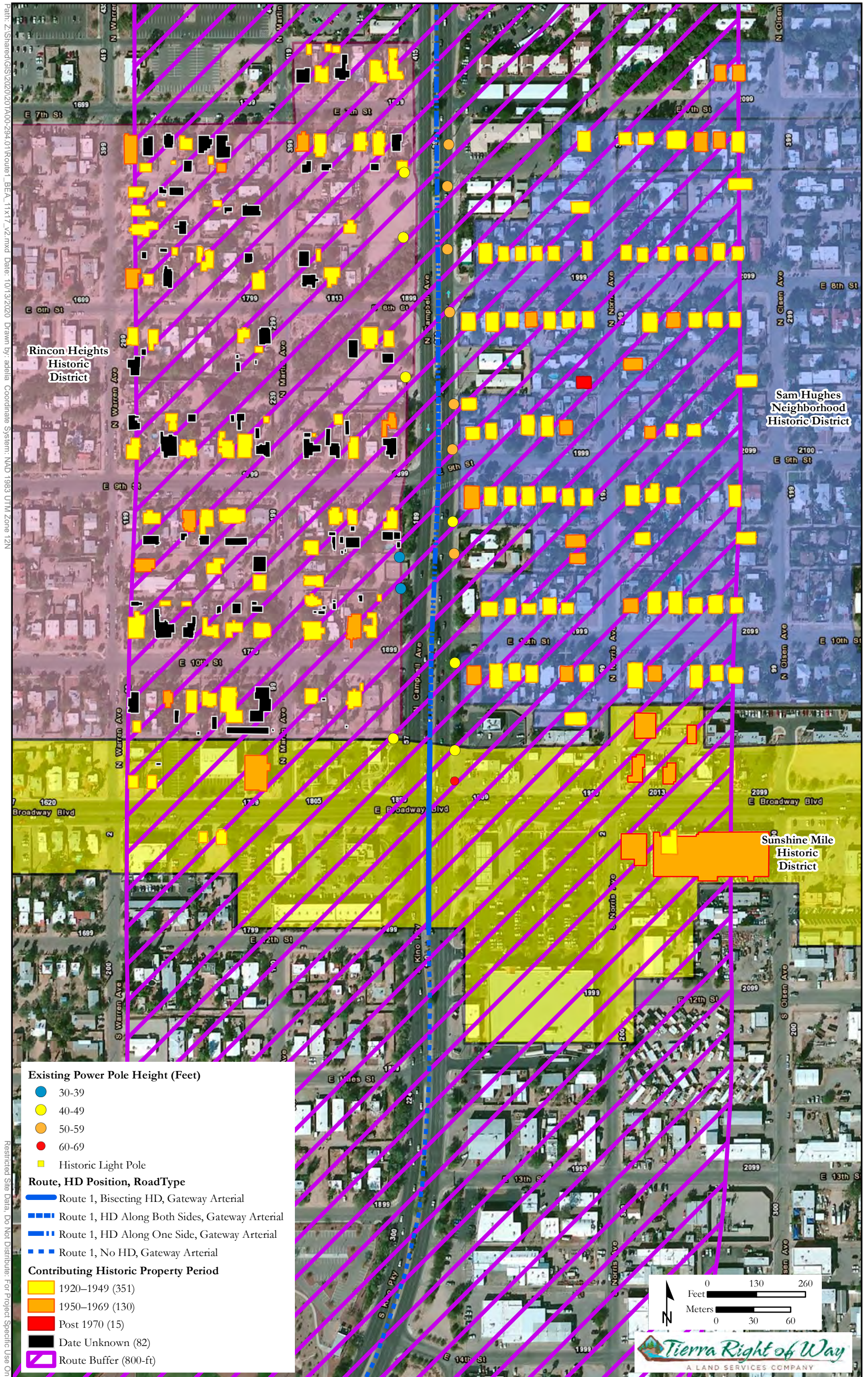
**Figure V.A.4: ROUTE 1
UA NORTH SUBSTATION TO KINO: SPEEDWAY BLVD TO SIXTH ST**



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**Figure V.A.5: ROUTE 1
UA NORTH SUBSTATION TO KINO: SIXTH ST TO BROADWAY BLVD**



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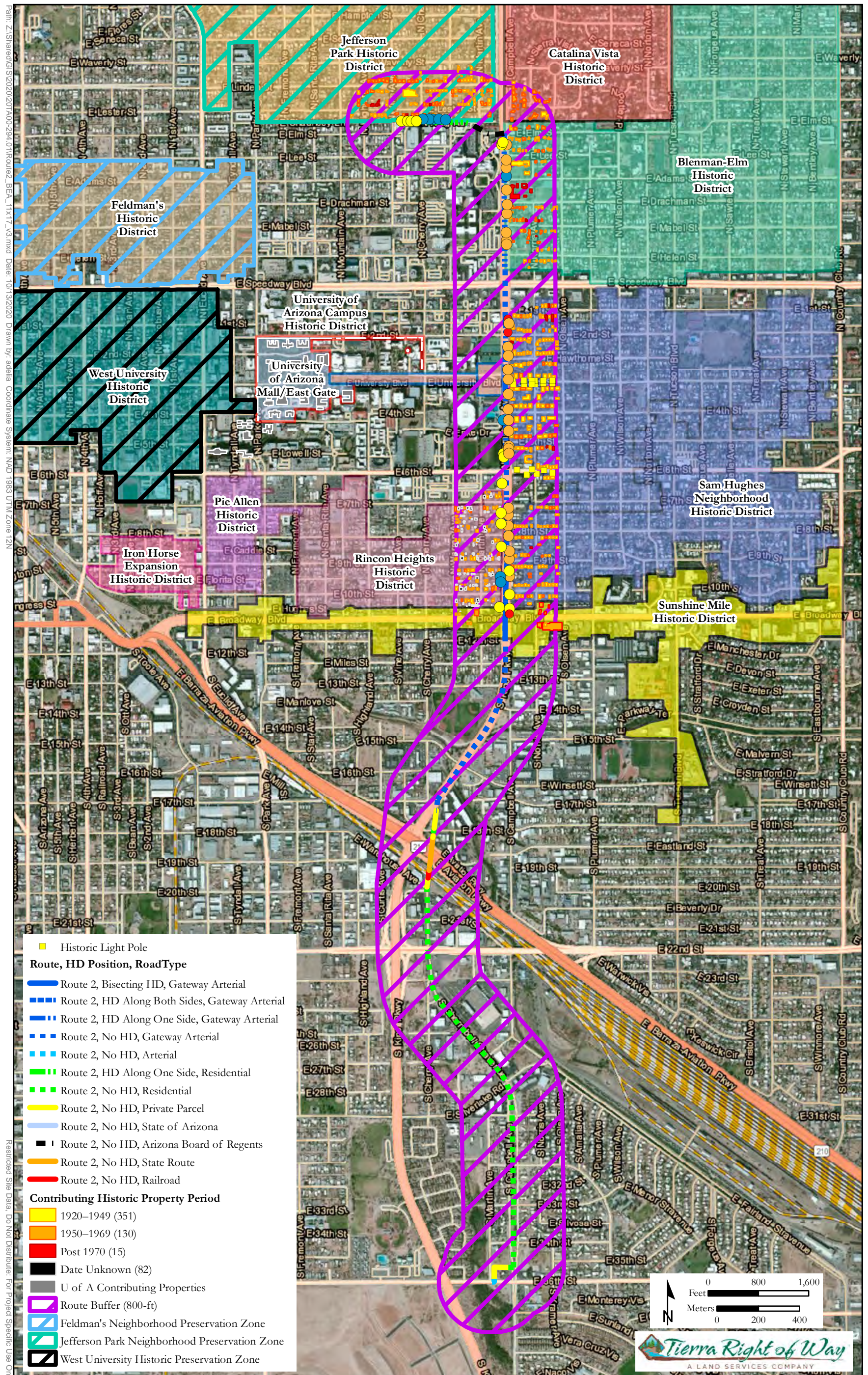
V. Kino to UA North Substation Maps and Tables

B. Route 2 Maps: Kino to UA North Substation

1. Figure V.B.1. Full Route
2. Figure V.B.2. Mountain Avenue to Warren Avenue
3. Figure V.B.3. Waverly Street to Speedway Boulevard
4. Figure V.B.4. Speedway Boulevard to Sixth Street
5. Figure V.B.5. Sixth Street to Broadway Boulevard

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**Figure V.B.1: ROUTE 2
UA NORTH SUBSTATION TO KINO: FULL ROUTE**



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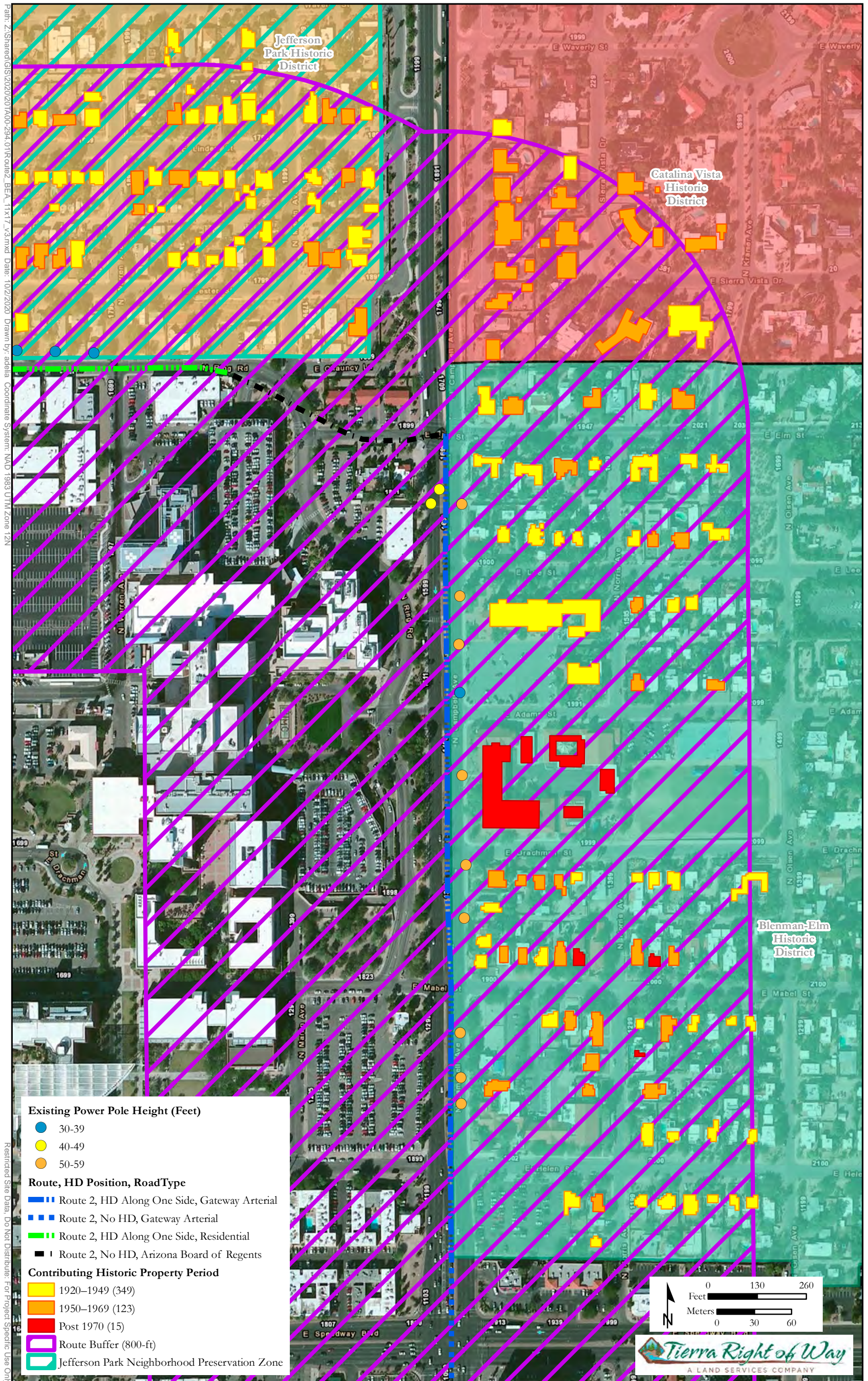
**Figure V.B.2: ROUTE 2
UA NORTH SUBSTATION TO KINO: MOUNTAIN AVE TO WARREN AVE**



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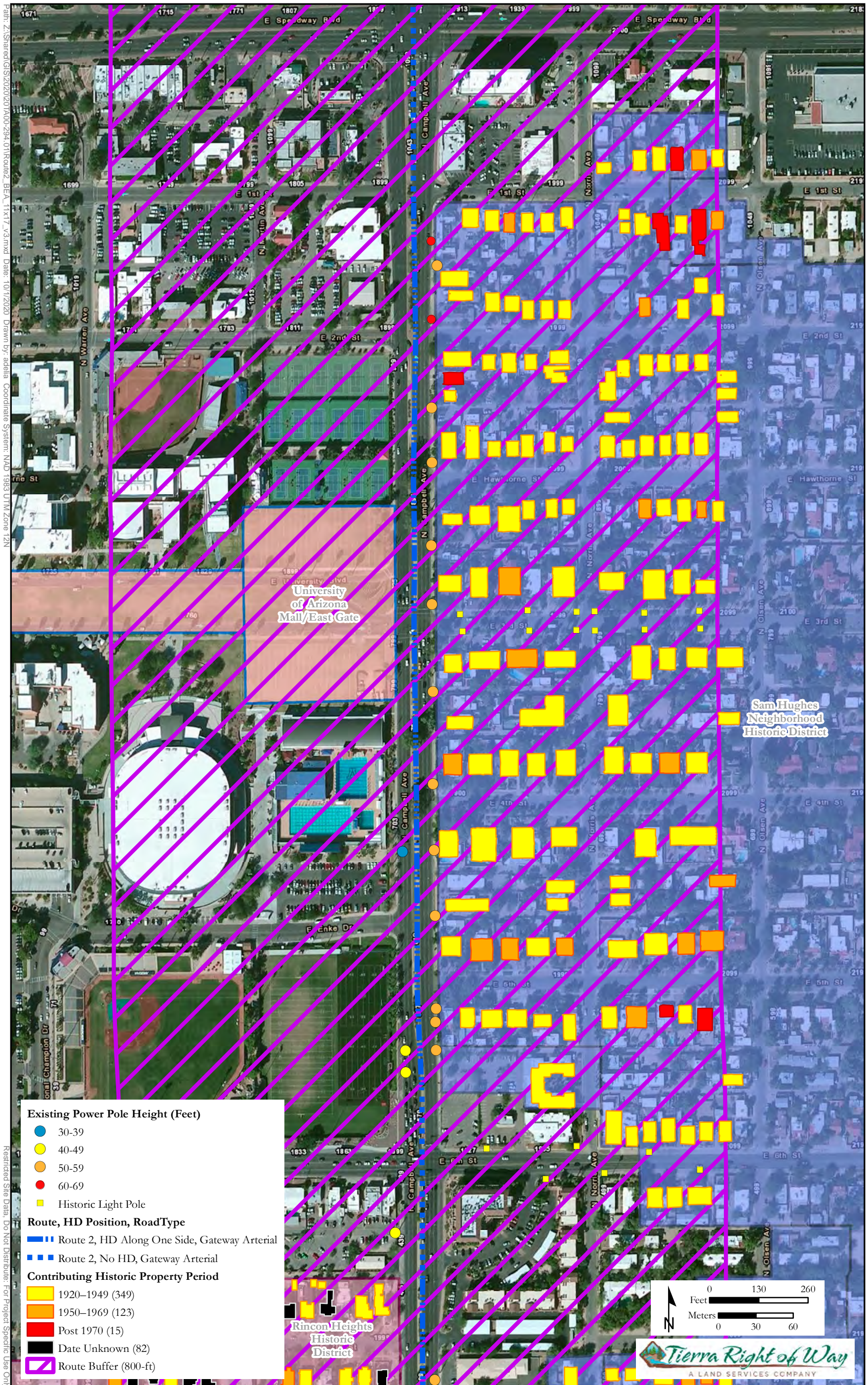
**Figure V.B.3: ROUTE 2
UA NORTH SUBSTATION TO KINO: WAVERLY ST TO SPEEDWAY BLVD**



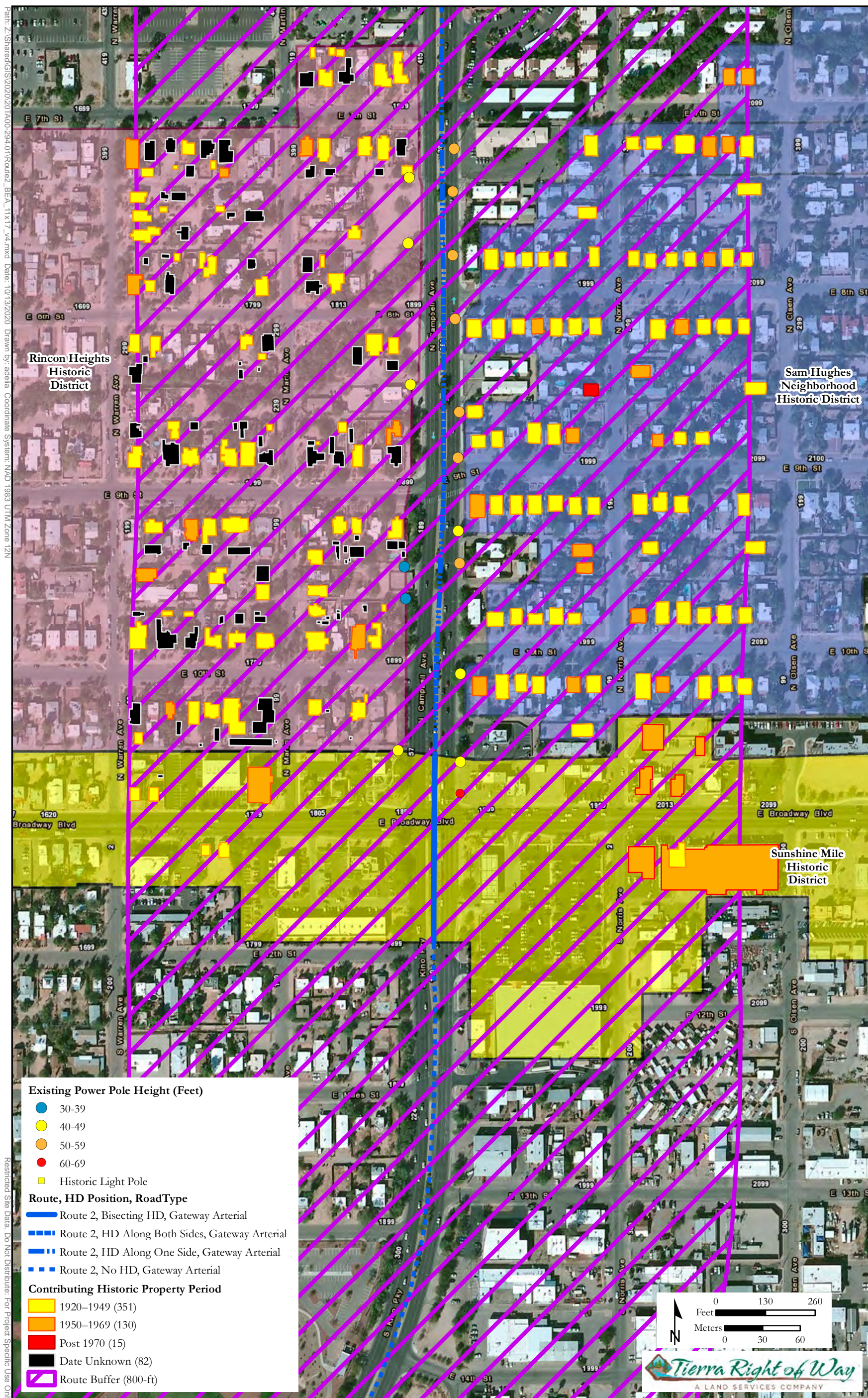
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**Figure V.B.4: ROUTE 2
UA NORTH SUBSTATION TO KINO: SPEEDWAY BLVD TO 6TH ST**



**Figure V.B.5: ROUTE 2
UA NORTH SUBSTATION TO KINO: 6TH ST TO BROADWAY BLVD**



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V. UA North Substation to Kino Maps and Tables

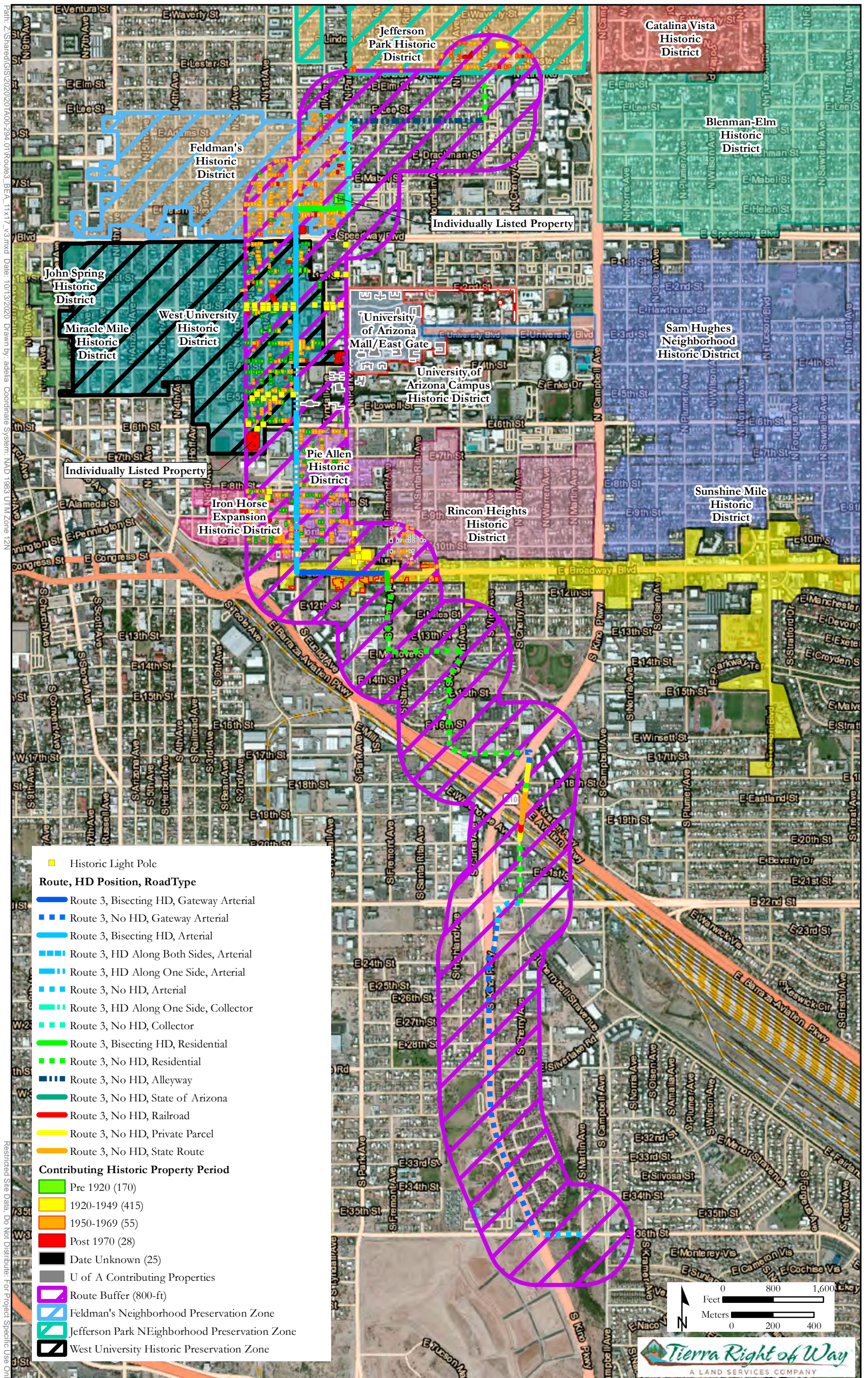
TROW and TAC developed maps of each route to visually show the measurable criteria identified in Section III Methodology. Each route has a map of the full route as well as enlarged maps where the route is adjacent or passes through historic districts.

C. Route 3 Maps

1. Figure V.C.1. Full Route
2. Figure V.C.2. Warren Avenue to Santa Rita Ave
3. Figure V.C.3. Lester Street to Mabel Street
4. Figure V.C.4. Adams Street to 1st Street
5. Figure V.C.5. 1st Street to 5th Street
6. Figure V.C.6. 6th Street to Broadway Boulevard
7. Figure V.C.7. Euclid Avenue to Fremont Avenue

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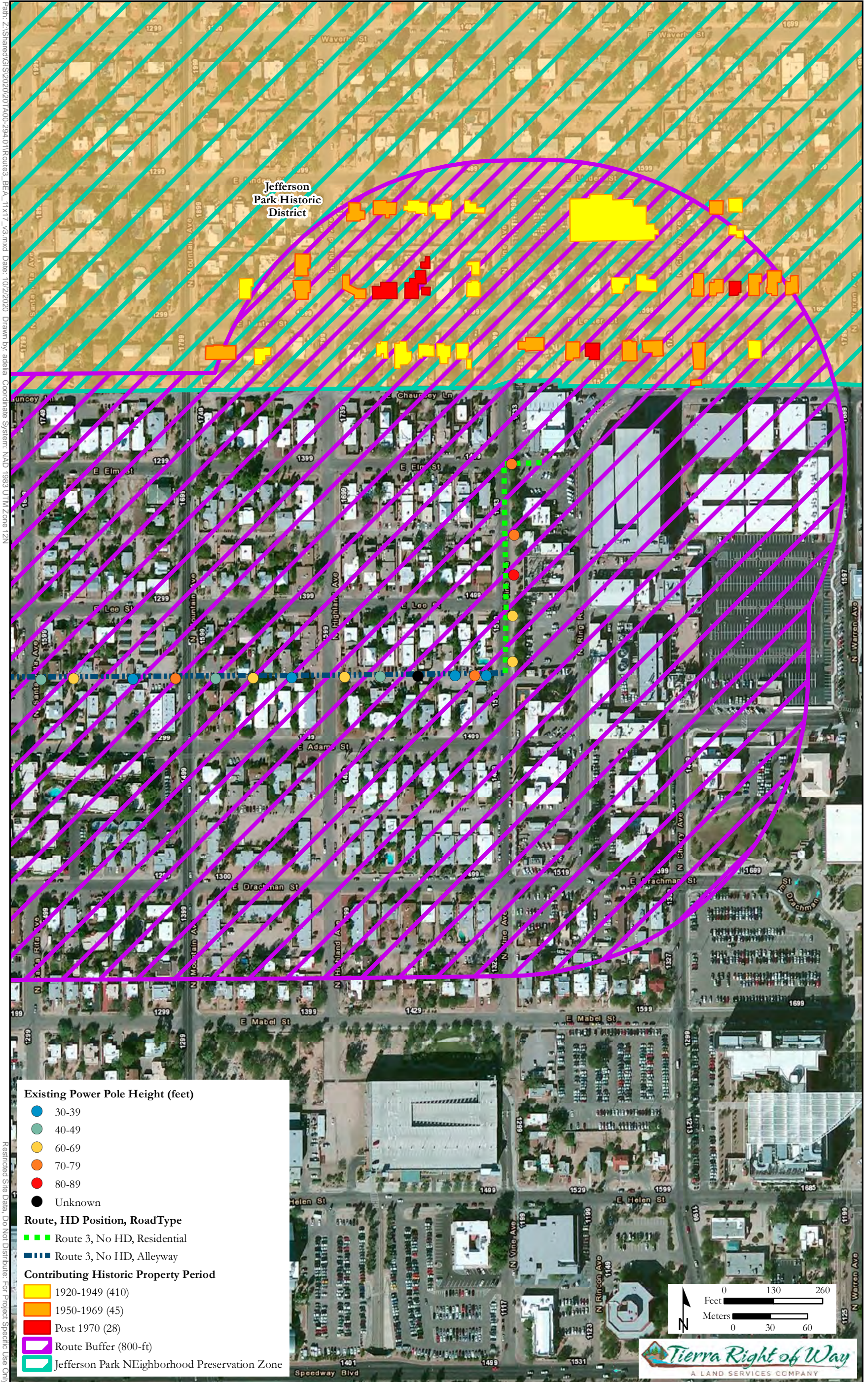
**Figure V.C.1: ROUTE 3
UA NORTH SUBSTATION TO KINO: FULL ROUTE**



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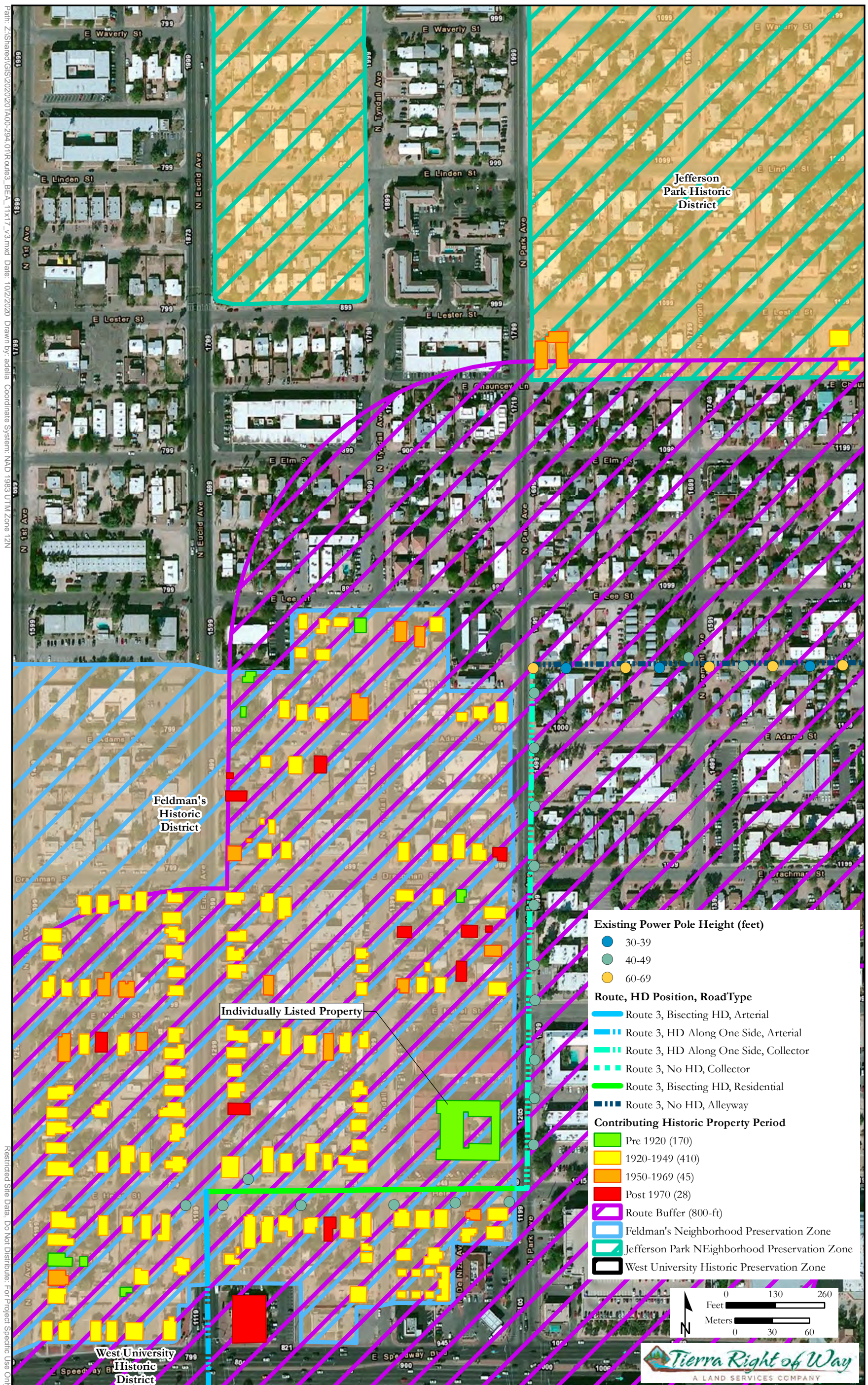
**Figure V.C.2: ROUTE 3
UA NORTH SUBSTATION TO KINO: WARREN AVE TO SANTA RITA AVE**



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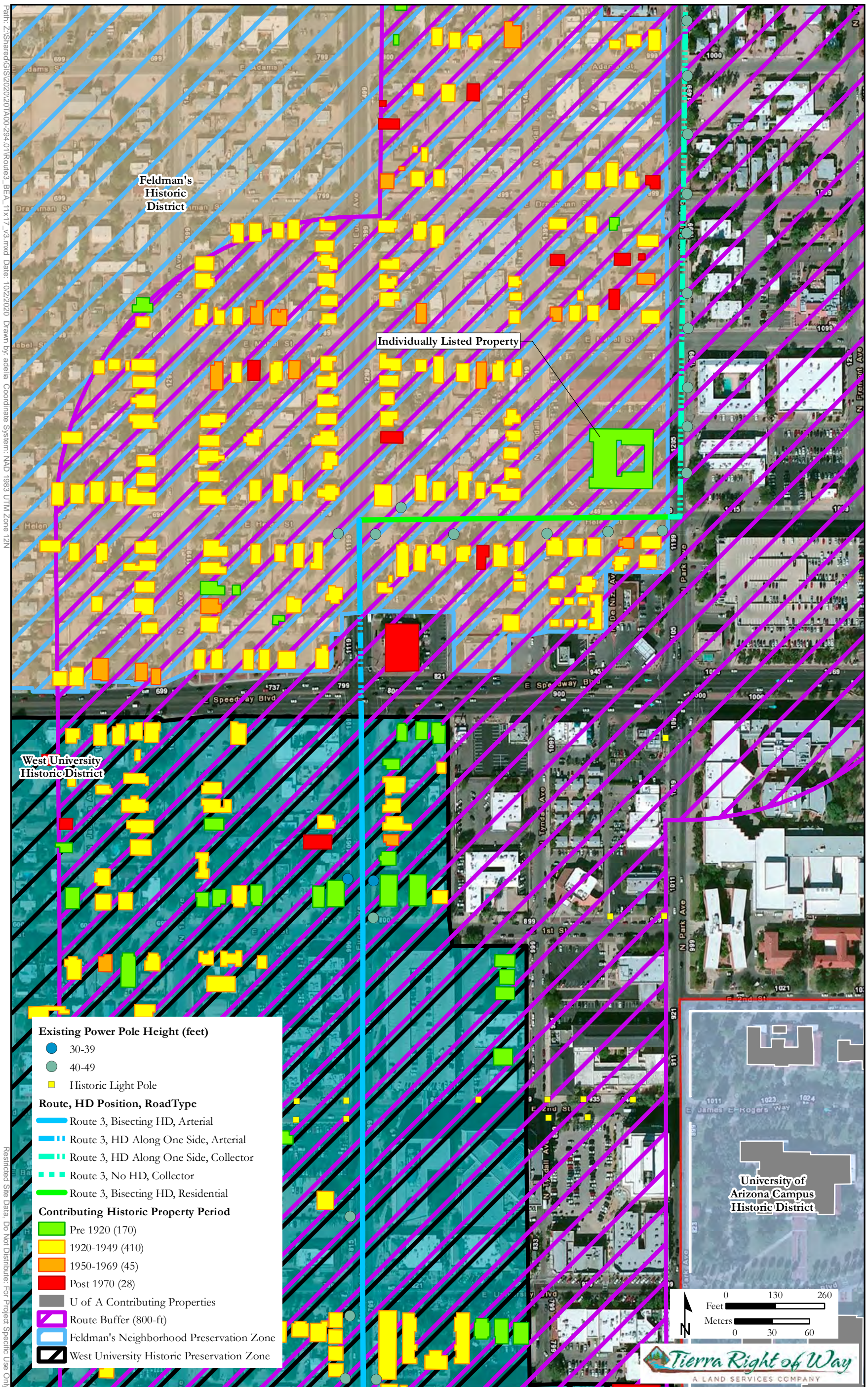
**Figure V.C.3: ROUTE 3
UA NORTH SUBSTATION TO KINO: LESTER ST TO MABEL ST**



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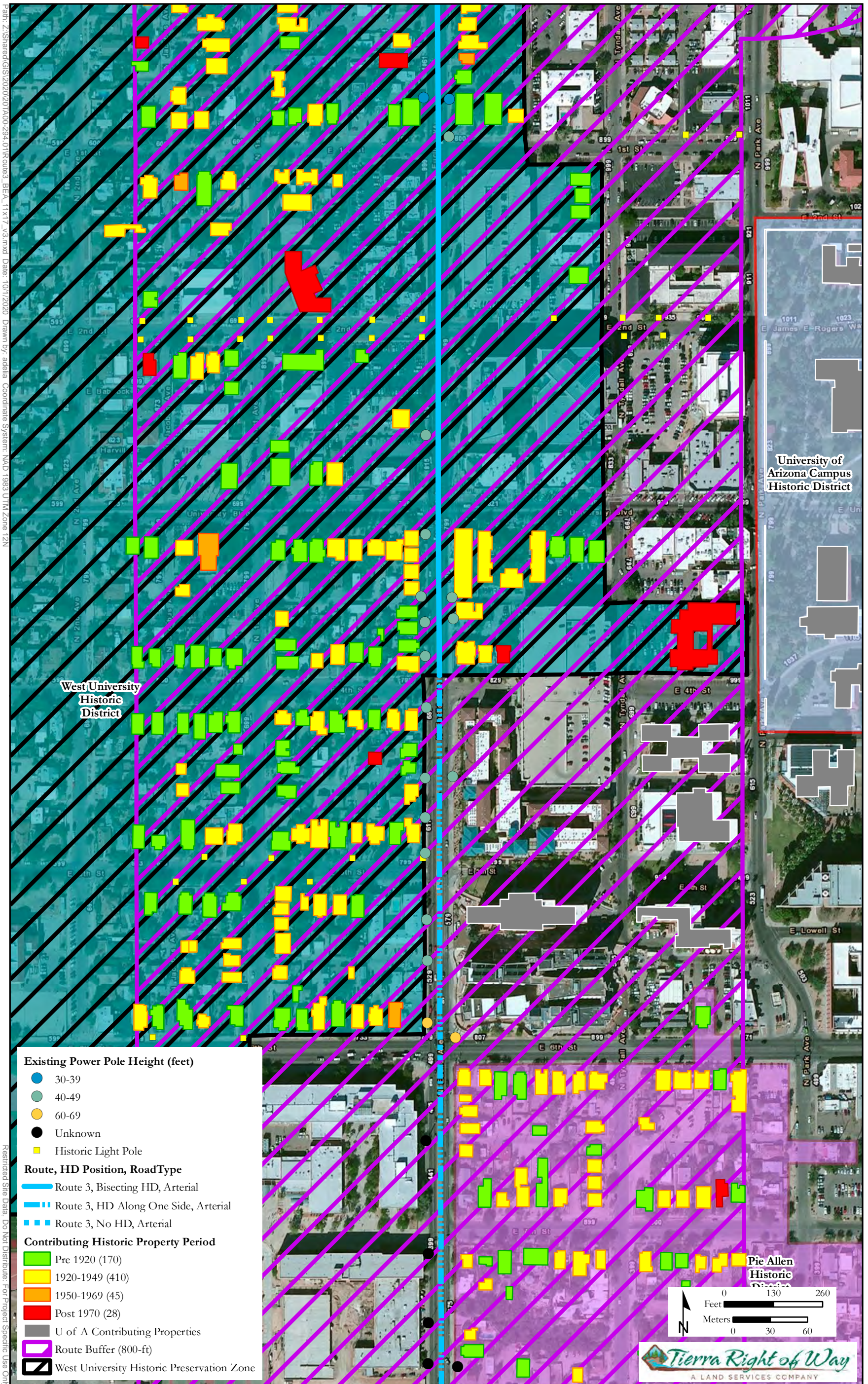
**Figure V.C.4: ROUTE 3
UA NORTH SUBSTATION TO KINO: ADAMS ST TO 1ST ST**



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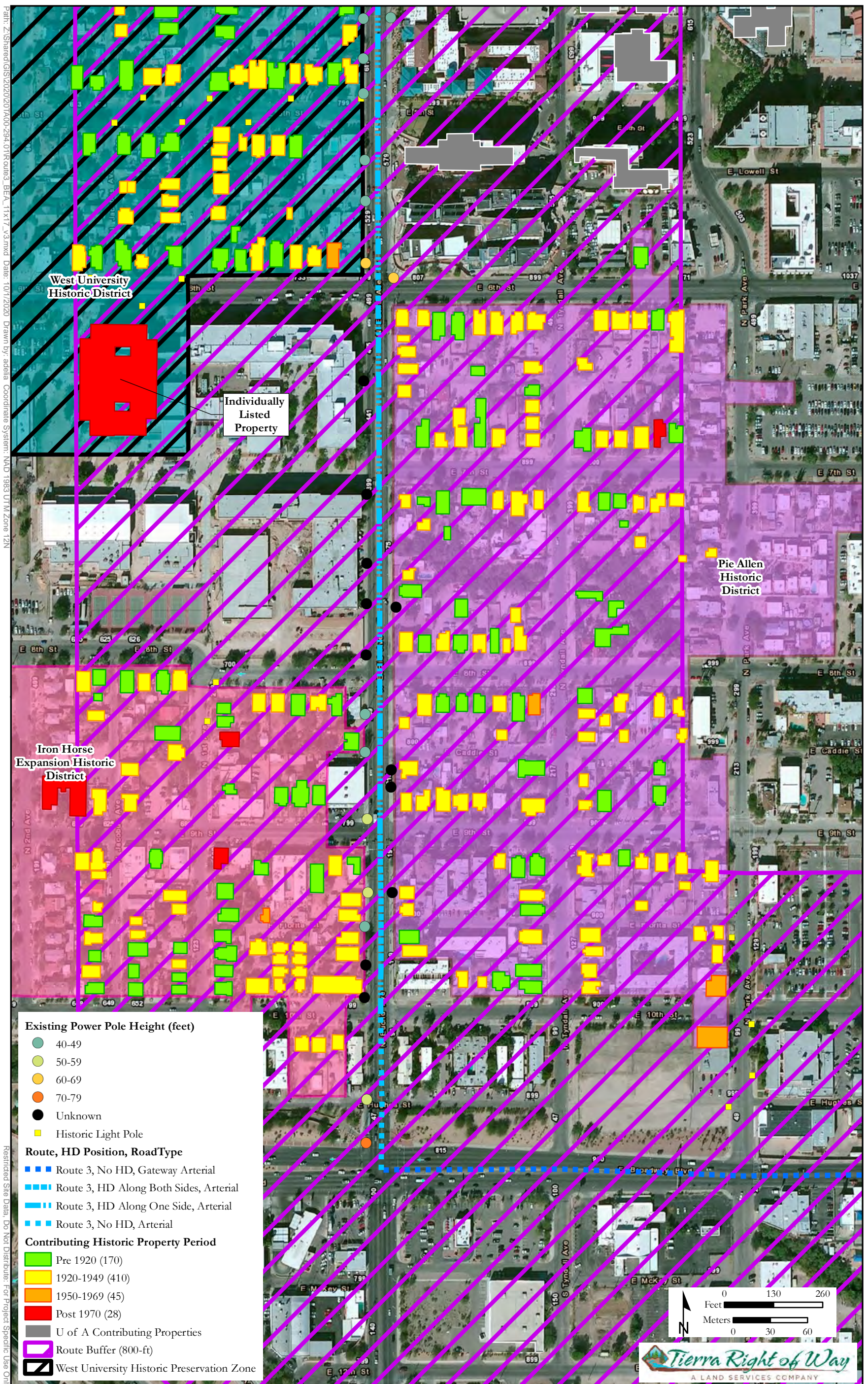
**Figure V.C.5: ROUTE 3
UA NORTH SUBSTATION TO KINO: 1ST ST TO 5TH ST**



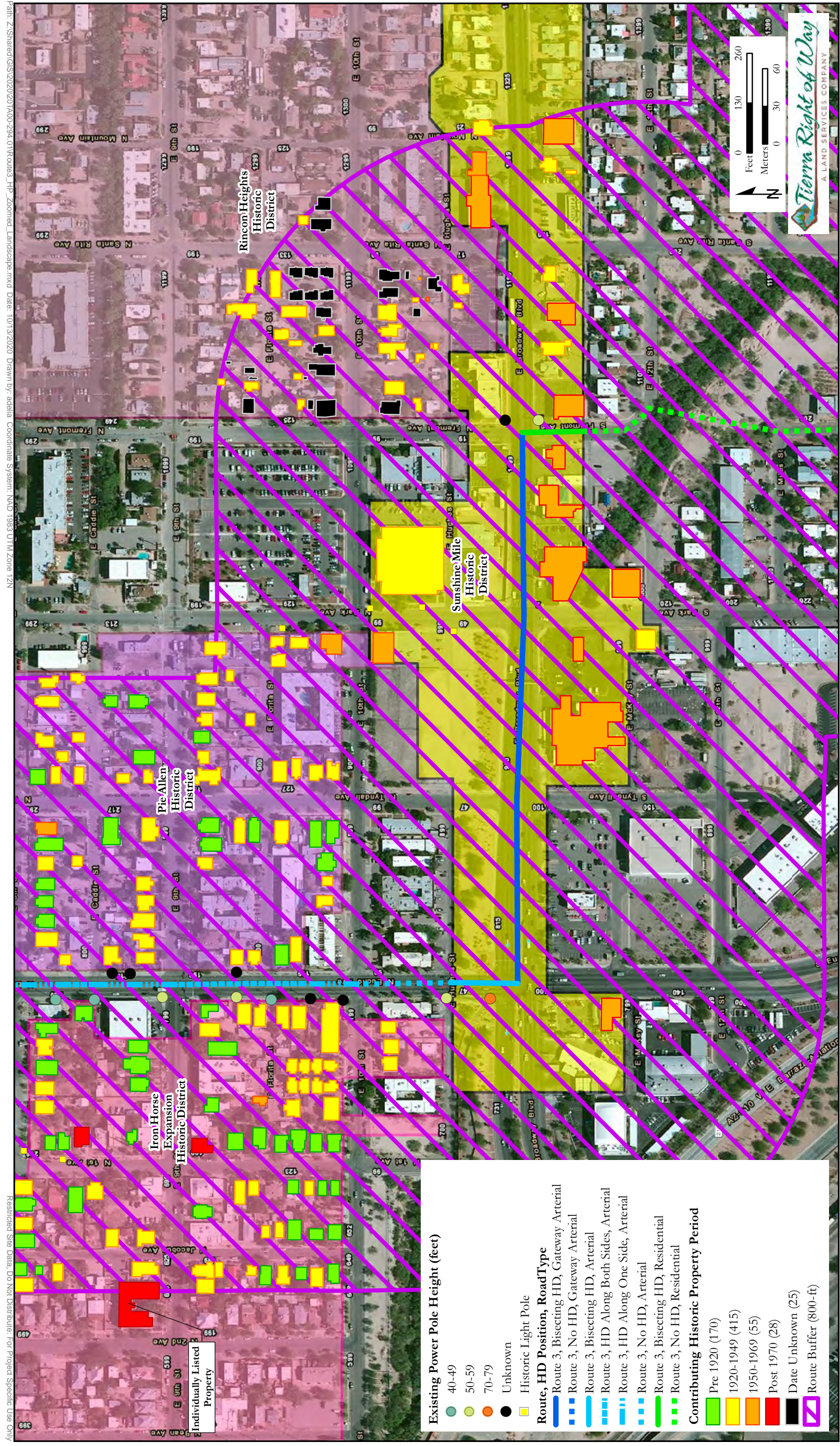
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**Figure V.C.6: ROUTE 3
UA NORTH SUBSTATION TO KINO: 6TH ST TO BROADWAY BLVD**



**Figure V.C.7: ROUTE 3
UA NORTH SUBSTATION TO KINO: EUCLID AVE TO FREMONT AVE**



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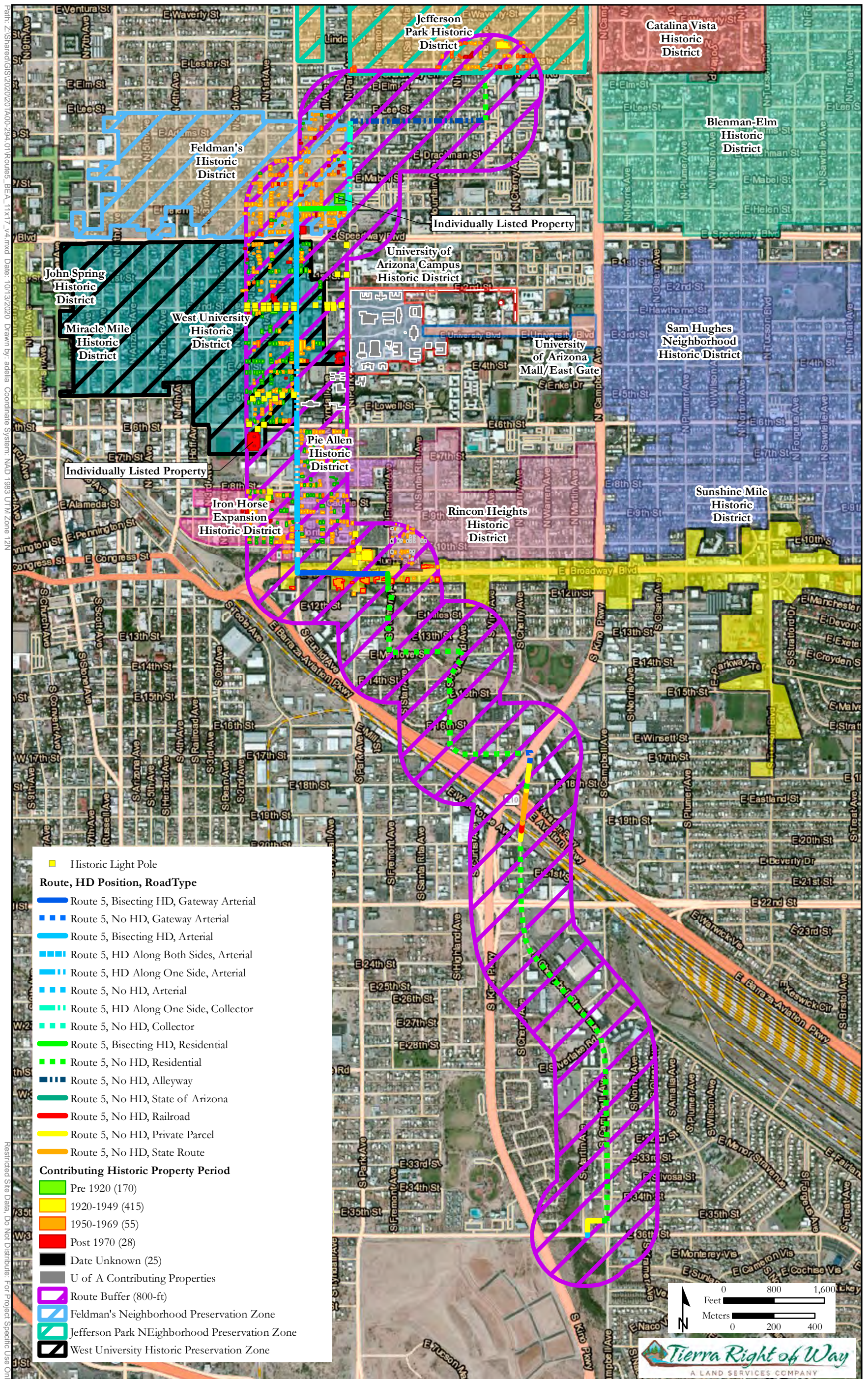
V. UA North Substation to Kino Maps and Tables

D. Route 5 Maps

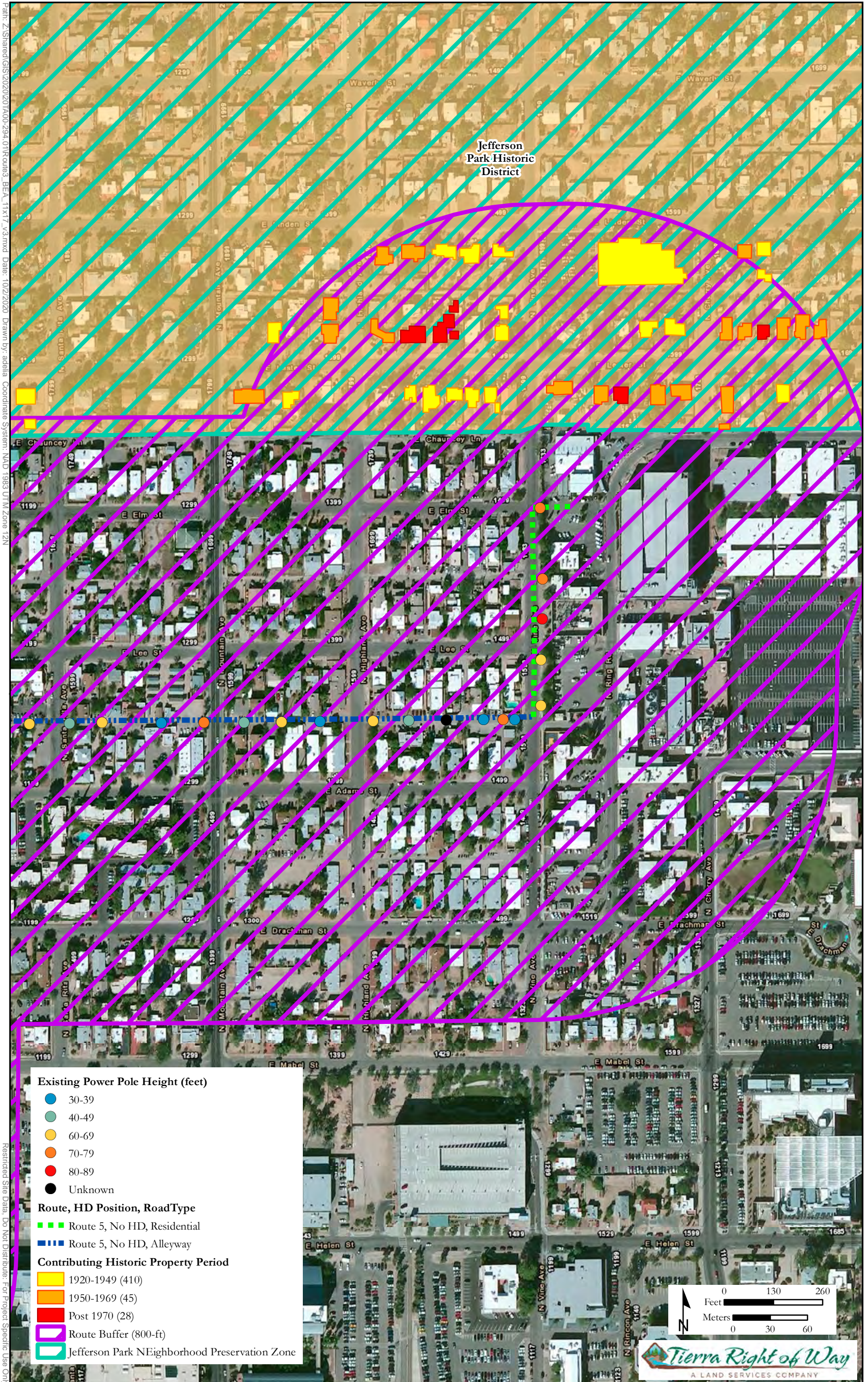
1. Figure V.D.1. Full Route
2. Figure V.D.2. Warren Avenue to Santa Rita Ave
3. Figure V.D.3. Lester Street to Mabel Street
4. Figure V.D.4. Adams Street to 1st Street
5. Figure V.D.5. 1st Street to 5th Street
6. Figure V.D.6. 6th Street to Broadway Boulevard
7. Figure V.D.7. Euclid Avenue to Fremont Avenue

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**Figure V.D.1: ROUTE 5
KINO TO UA NORTH SUBSTATION: FULL ROUTE**



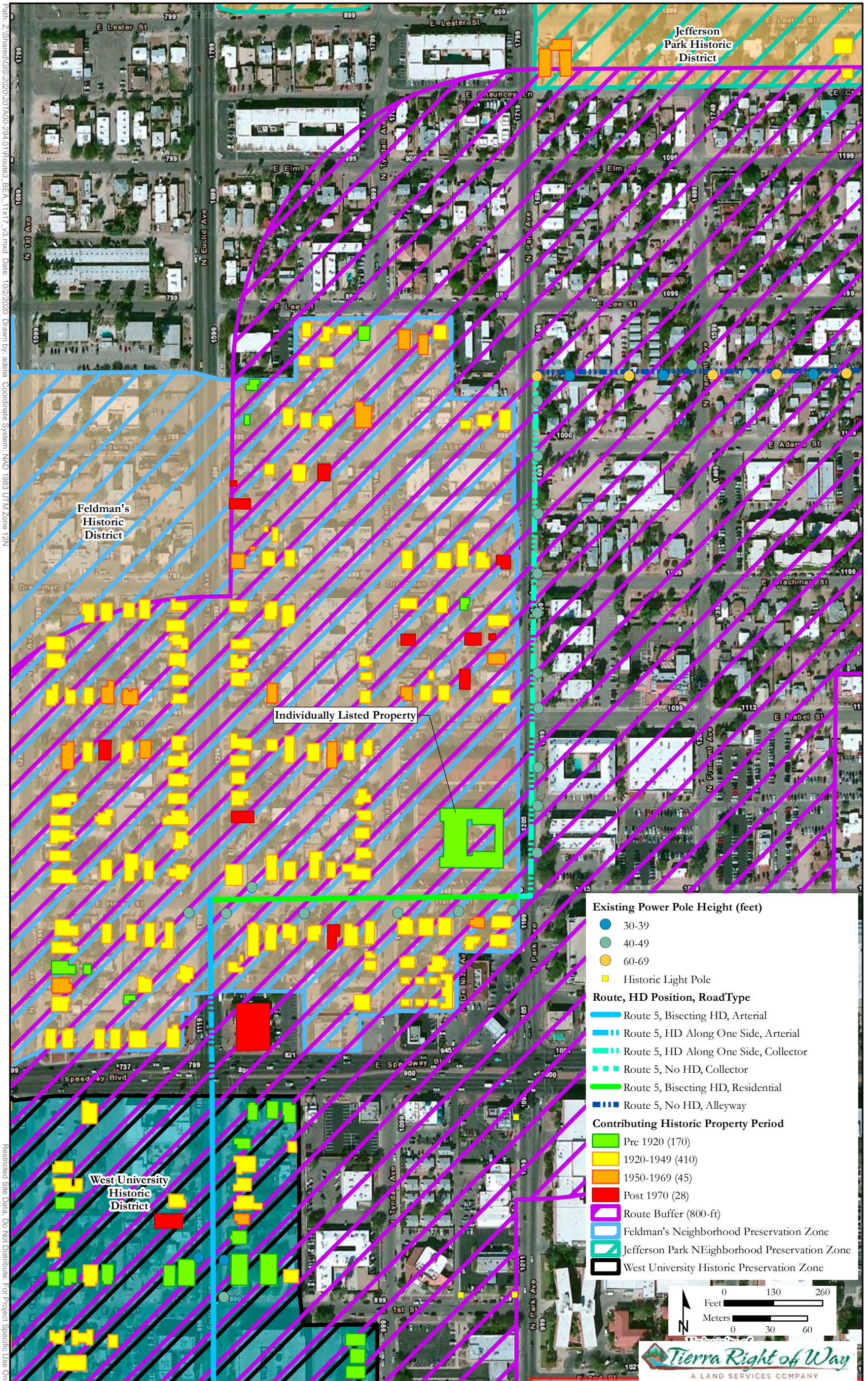
**Figure V.D.2: ROUTE 5
UA NORTH SUBSTATION TO KINO: WARREN AVE TO SANTA RITA AVE**



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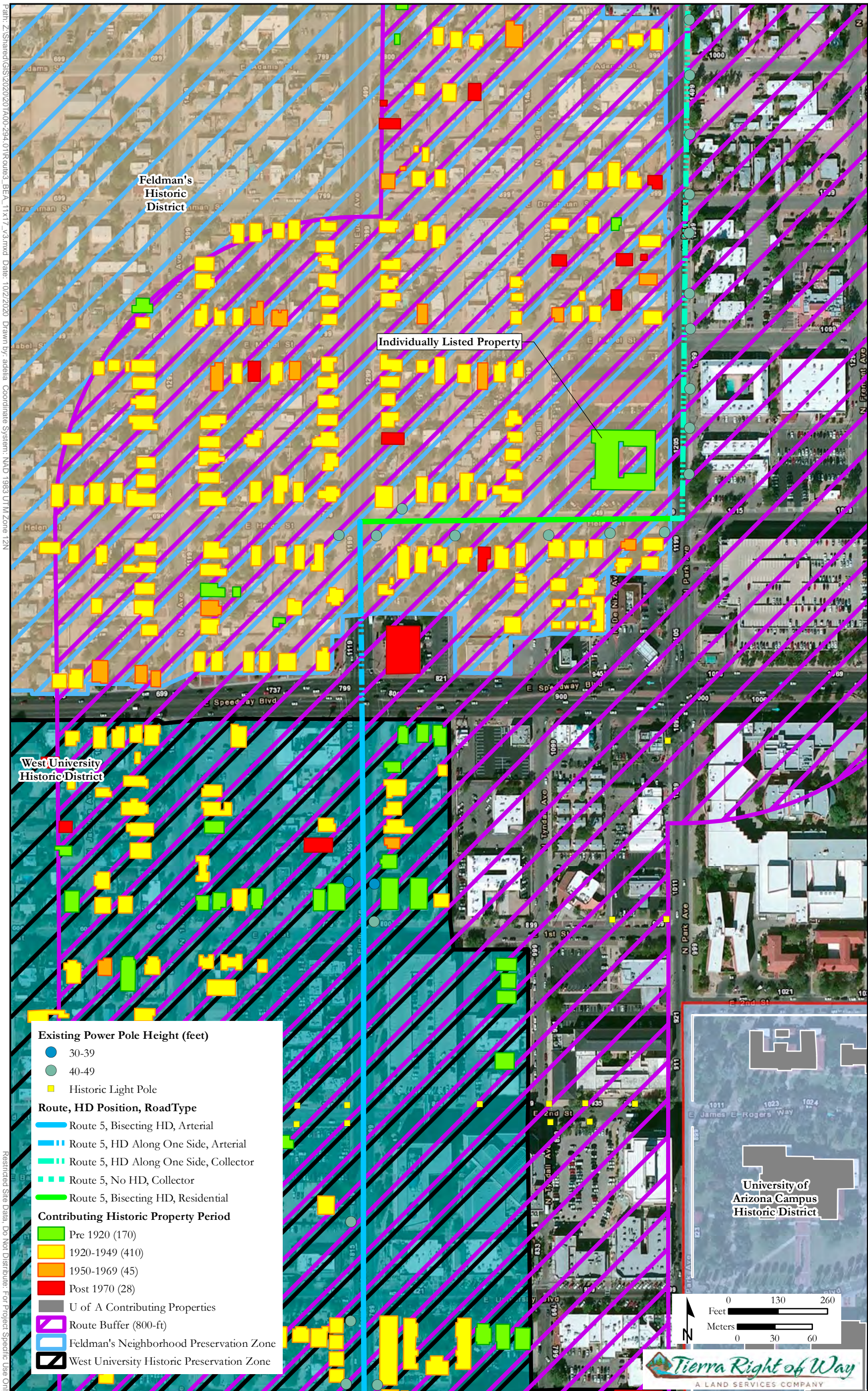
**Figure V.D.3: ROUTE 5
UA NORTH SUBSTATION TO KINO: LESTER ST TO MABEL ST**



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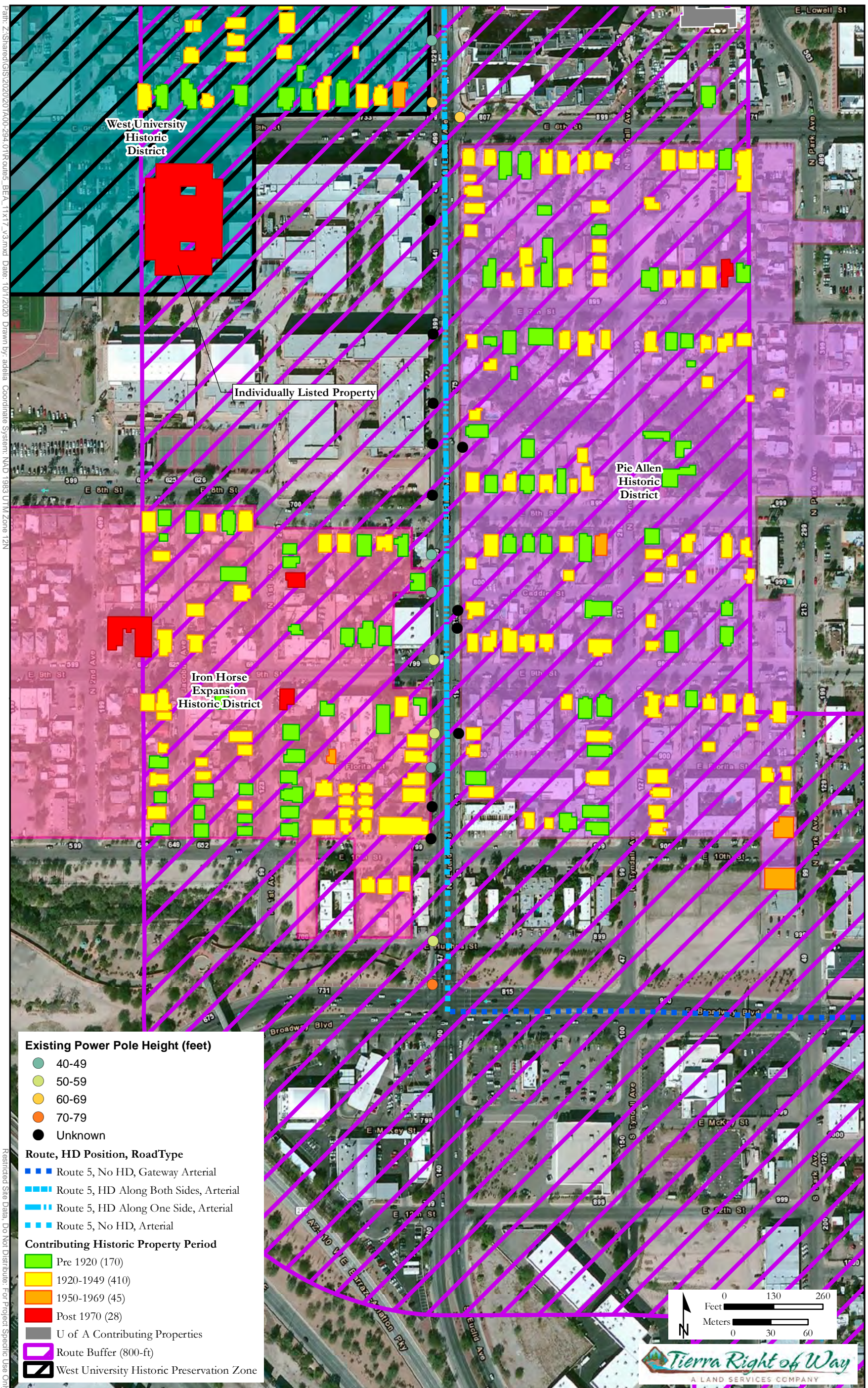
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**Figure V.D.4: ROUTE 5
UA NORTH SUBSTATION TO KINO: ADAMS ST TO 1ST S T**



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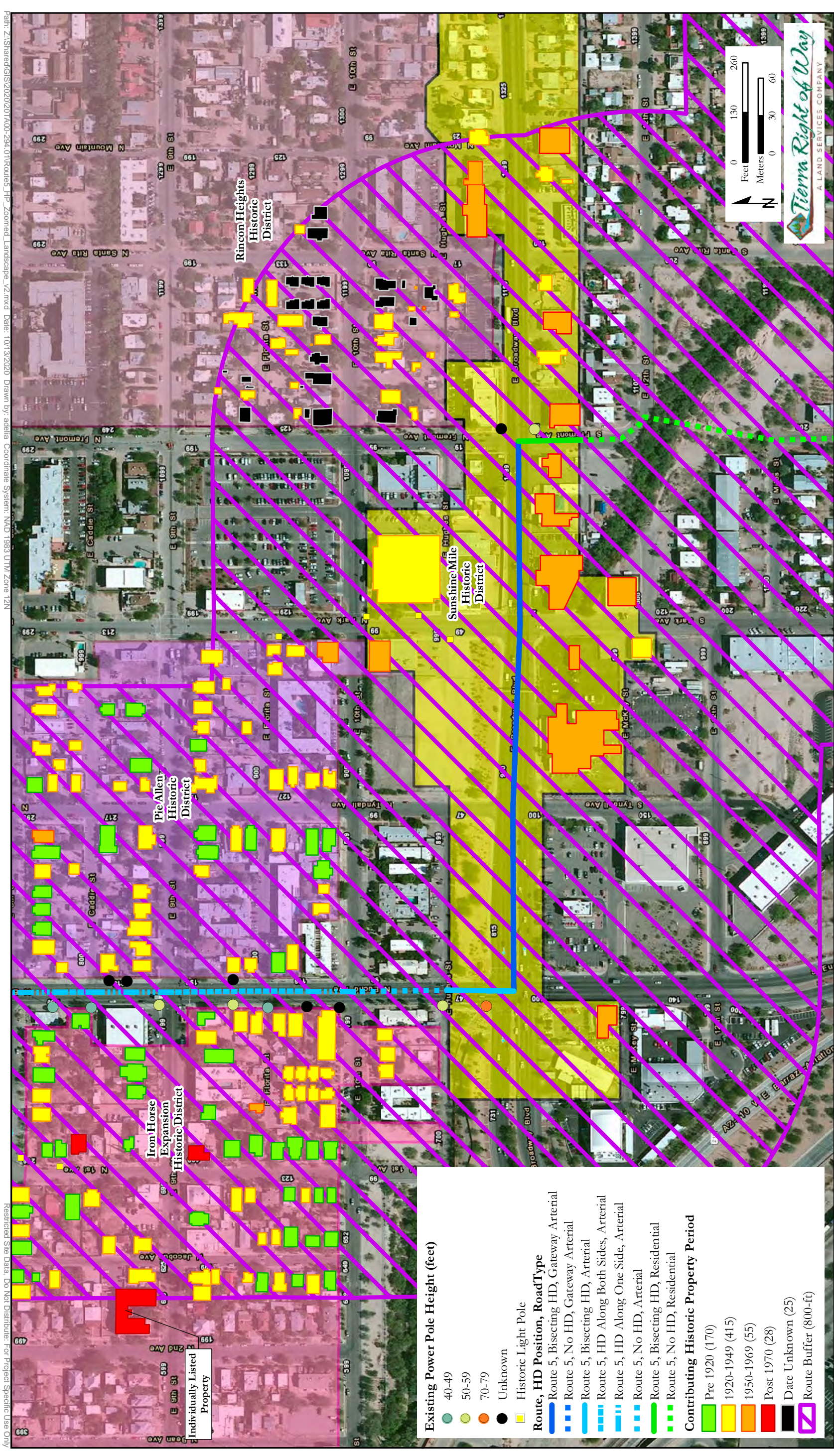
**Figure V.D.6: ROUTE 5
UA NORTH SUBSTATION TO KINO: 6TH ST TO BROADWAY BLVD**



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**Figure V.D.7: ROUTE 5
UA NORTH SUBSTATION TO KINO: EUCLID AVE TO FREMONT AVE**



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V. UA North Substation to Kino Maps and Tables

C. Routes 1, 2, 3 and 5 Tables

Kino Table 1: Bisecting versus Bordering Historic Districts

Kino Table 2: Street Designation

Kino Table 3: Historic Districts with 1 versus 2 Sides of the Route

Kino Table 4: Existing Power Poles Located on Route

Kino Table 5: Historic Light Fixtures within 800' Route Buffer

Kino Table 6: Historic Contributing Properties in 800' Route Buffer

Kino Table 7: Access of Historic Contributing Properties along Route

Kino Table 8: Historic Architectural Criteria

Kino Table 9: Summary by Historic Districts

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KINO TABLE 1

Bisecting vs Bordering Historic Districts	Routes from Kino											
	1			2			3			5		
	Feet	%	Rank	Feet	%	Rank	Feet	%	Rank	Feet	%	Rank
Blenman-Elm Historic District												
Bisecting Historic District	0.00	0%		0.00	0%		0.00	-		0.00	-	
Bordering Historic District	2178.88	100%	5	2178.88	100%	5	0.00	-		0.00	-	
Bisecting + Bordering	2178.88		1	2178.88		1	0.00			0.00		
District Rank Subtotal			6			6			0			0
Catalina Vista Historic District												
Bisecting Historic District	0.00	-		0.00	-		0.00	-		0.00	-	
Bordering Historic District	0.00	-		0.00	-		0.00	-		0.00	-	
Bisecting + Bordering	0.00			0.00			0.00			0.00		
District Rank Subtotal			0			0			0			0
Feldman's Historic District												
Bisecting Historic District	0.00	-		0.00	-		1085.81	40%	5	1085.81	40%	5
Bordering Historic District	0.00	-		0.00	-		1627.75	60%	4	1627.75	60%	4
Bisecting + Bordering	0.00			0.00			2713.56		7	2713.56		7
District Rank Subtotal			0			0			16			16
Iron Horse Expansion Historic District												
Bisecting Historic District	0.00	-		0.00	-		0.00	0%		0.00	0%	
Bordering Historic District	0.00	-		0.00	-		537.92	100%	1	537.92	100%	1
Bisecting + Bordering	0.00			0.00			537.92		1	537.92		1
District Rank Subtotal			0			0			2			2
Jefferson Park Historic District												
Bisecting Historic District	0.00	0%		0.00	0%		0.00	-		0.00	-	
Bordering Historic District	1115.18	100%	2	1115.18	100%	2	0.00	-		0.00	-	
Bisecting + Bordering	1115.18		2	1115.18		2	0.00			0.00		
District Rank Subtotal			4			4			0			0
Pie Allen Residential Historic District												
Bisecting Historic District	0.00	-		0.00	-		0.00	0%		0.00	0%	
Bordering Historic District	0.00	-		0.00	-		1158.68	100%	5	1158.68	100%	5
Bisecting + Bordering	0.00			0.00			1158.68		5	1158.68		5
District Rank Subtotal			0			0			10			10
Rincon Heights Historic District												
Bisecting Historic District	0.00	0%		0.00	0%		0.00	-		0.00	-	
Bordering Historic District	1856.22	100%	5	1856.22	100%	5	0.00	-		0.00	-	
Bisecting + Bordering	1856.22		5	1856.22		5	0.00			0.00		
District Rank Subtotal			10			10			0			0
Sam Hughes Residential Historic District												
Bisecting Historic District	0.00	0%		0.00	0%		0.00	-		0.00	-	
Bordering Historic District	3060.44	100%	7	3060.44	100%	7	0.00	-		0.00	-	
Bisecting + Bordering	3060.44		7	3060.44		7	0.00			0.00		
District Rank Subtotal			14			14			0			0
Sunshine Mile Historic District												
Bisecting Historic District	490.17	100%	1	490.17	100%	1	1771.73	100%	6	1771.73	100%	6
Bordering Historic District		0%		0.00	0%		0.00	0%		0.00	0%	
Bisecting + Bordering	490.17		1	490.17		1	1771.73		6	1771.73		6
District Rank Subtotal			2			2			12			12
West University Historic District												
Bisecting Historic District	0.00	-		0.00	-		1952.66	67%	10	1952.66	67%	10
Bordering Historic District	0.00	-		0.00	-		946.84	33%	1	946.84	33%	1
Bisecting + Bordering	0.00			0.00			2899.50		8	2899.50		8
District Rank Subtotal			0			0			19			19
SUMMARY OF BISECTING + BORDERING												
Bisecting Historic District	490.17	6%	1	490.17	6%	1	4810.20	53%	21	4810.20	53%	21
Bordering Historic District	8210.72	94%	19	8210.72	94%	19	4271.19	47%	11	4271.19	47%	11
Bisecting + Bordering	8700.89		16	8700.89		16	9081.39		27	9081.39		27
Route Rank Subtotal			36			36			59			59

KINO TABLE 2 Street Designation	Routes from Kino											
	1			2			3			5		
	Feet	%	Rank	Feet	%	Rank	Feet	%	Rank	Feet	%	Rank
Blenman-Elm Historic District												
Gateway Arterial Street (length in ft)	2178.88	100%	5	2178.88	100%	5	0.00	-		0.00	-	
Arterial Street	0.00	0%		0.00	0%		0.00	-		0.00	-	
Collector Street	0.00	0%		0.00	0%		0.00	-		0.00	-	
Residential Street	0.00	0%		0.00	0%		0.00	-		0.00	-	
District Rank Subtotal	2178.88		5	2178.88		5	0.00		0	0.00		0
Catalina Vista Historic District												
Gateway Arterial Street (length in ft)	0.00	-		0.00	-		0.00	-		0.00	-	
Arterial Street	0.00	-		0.00	-		0.00	-		0.00	-	
Collector Street	0.00	-		0.00	-		0.00	-		0.00	-	
Residential Street	0.00	-		0.00	-		0.00	-		0.00	-	
District Rank Subtotal	0.00		0	0.00		0	0.00		0	0.00		0
Feldman's Historic District												
Gateway Arterial Street (length in ft)	0.00	-		0.00	-		0.00	0%		0.00	0%	
Arterial Street	0.00	-		0.00	-		518.81	19%	1	518.81	19%	1
Collector Street	0.00	-		0.00	-		1350.20	50%	5	1350.20	50%	5
Residential Street	0.00	-		0.00	-		844.54	31%	7	844.54	31%	7
District Rank Subtotal	0.00		0	0.00		0	2713.55		13	2713.55		13
Iron Horse Expansion Historic District												
Gateway Arterial Street (length in ft)	0.00	-		0.00	-		0.00	0%		0.00	0%	
Arterial Street	0.00	-		0.00	-		537.92	100%	1	537.92	100%	1
Collector Street	0.00	-		0.00	-		0.00	0%		0.00	0%	
Residential Street	0.00	-		0.00	-		0.00	0%		0.00	0%	
District Rank Subtotal	0.00		0	0.00		0	537.92		1	537.92		1
Jefferson Park Historic District												
Gateway Arterial Street (length in ft)	0.00	0%		0.00	0%		0.00	-		0.00	-	
Arterial Street	0.00	0%		0.00	0%		0.00	-		0.00	-	
Collector Street	0.00	0%		0.00	0%		0.00	-		0.00	-	
Residential Street	1115.17	100%	8	1115.17	100%	8	0.00	-		0.00	-	
District Rank Subtotal	1115.17		8	1115.17		8	0.00		0	0.00		0
Pie Allen Residential Historic District												
Gateway Arterial Street (length in ft)	0.00	-		0.00	-		0.00	0%		0.00	0%	
Arterial Street	0.00	-		0.00	-		1158.68	100%	1	1158.68	100%	1
Collector Street	0.00	-		0.00	-		0.00	0%		0.00	0%	
Residential Street	0.00	-		0.00	-		0.00	0%		0.00	0%	
District Rank Subtotal	0.00		0	0.00		0	1158.68		1	1158.68		1
Rincon Heights Historic District												
Gateway Arterial Street (length in ft)	1856.22	100%	2	1856.22	100%	2	0.00	-		0.00	-	
Arterial Street	0.00	0%		0.00	0%		0.00	-		0.00	-	
Collector Street	0.00	0%		0.00	0%		0.00	-		0.00	-	
Residential Street	0.00	0%		0.00	0%		0.00	-		0.00	-	
District Rank Subtotal	1856.22		2	1856.22		2	0.00		0	0.00		0
Sam Hughes Residential Historic District												
Gateway Arterial Street (length in ft)	3060.44	100%	3	3060.44	100%	3	0.00	-		0.00	-	
Arterial Street	0.00	0%		0.00	0%		0.00	-		0.00	-	
Collector Street	0.00	0%		0.00	0%		0.00	-		0.00	-	
Residential Street	0.00	0%		0.00	0%		0.00	-		0.00	-	
District Rank Subtotal	3060.44		3	3060.44		3	0.00		0	0.00		0
Sunshine Mile Historic District												
Gateway Arterial Street (length in ft)	490.17	16%	1	490.17	16%	1	1437.17	81%	2	1437.17	81%	2
Arterial Street	0.00	0%		0.00	0%		175.70	10%	1	175.70	10%	1
Collector Street	0.00	0%		0.00	0%		0.00	0%		0.00	0%	
Residential Street	0.00	0%		0.00	0%		158.84	9%	3	158.84	9%	3
District Rank Subtotal	490.17		1	490.17		1	1771.71		6	1771.71		6
West University Historic District												
Gateway Arterial Street (length in ft)	0.00	-		0.00	-		0.00	0%		0.00	0%	
Arterial Street	0.00	-		0.00	-		2899.50	100%	1	2899.50	100%	1
Collector Street	0.00	-		0.00	-		0.00	0%		0.00	0%	
Residential Street	0.00	-		0.00	-		0.00	0%		0.00	0%	
District Rank Subtotal	0.00		0	0.00		0	2899.50		1	2899.50		1
SUMMARY OF STREET DESIGNATIONS												
Gateway Arterial Street (length in ft)	7585.71	87%	11	7585.71	87%	11	1437.17	16%	2	1437.17	16%	2
Arterial Street	0.00	0%	0	0.00	0%	0	5290.61	58%	5	5290.61	58%	5
Collector Street	0.00	0%	0	0.00	0%	0	1350.20	15%	5	1350.20	15%	5
Residential Street	1115.17	13%	8	1115.17	13%	8	1003.38	11%	10	1003.38	11%	10
Route Rank Subtotal	8700.88		19	8700.88		19	9081.36		22	9081.36		22

KINO TABLE 3 Historic Districts with 1 vs 2 sides of the Route	Routes from Kino											
	1			2			3			5		
	Feet	%	Rank	Feet	%	Rank	Feet	%	Rank	Feet	%	Rank
All Districts												
Length of Route with historic district on 1 side	6781.00	85%	6	6781.00	85%	6	3875.90	32%	4	3875.90	32%	4
Length of Route with historic district on 2 sides	1205.02	15%	1	1205.02	15%	1	8243.98	68%	8	8243.98	68%	8
Total Length of Route with historic district on 1 or 2 sides	7986.02		2	7986.02		2	12119.88		3	12119.88		3
Route Rank Subtotal			9			9			15			15

KINO TABLE 4

Existing Power Poles Located on Route

Blenman-Elm Historic District

Street	Pole Height Range (ft)	Routes from Kino					Avg. Pole Spacing (ft)	Number of Poles	Routes from Kino						
		1	2	3	4	5			1	2	3	4	5		
Campbell Ave: Elm to Helen	35'-55'		4				141.7	12							
	Data Rank		4				1	1							
	District Rank Subtotal	4	4	0	0	0	1	1	0	0	0	0	0	0	0

Catalina Vista Historic District

Street	Pole Height Range (ft)					Avg. Pole Spacing (ft)	Number of Poles
	Data Rank	0	0	0	0	0	0
	District Rank Subtotal	0	0	0	0	0	0

Feldman's Historic District

Street	Pole Height Range (ft)	40'-45'	40'-45'	40'-65'	122.0	122.0	Number of Poles
Helen St: Euclid to Park							7
Park Ave: Lee to Helen					141.3	141.3	11
	Data Rank	0	2	2	0	1	0
	District Rank Subtotal	0	2	2	0	1	1

Iron Horse Expansion Historic District

Street	Pole Height Range (ft)	0.00	0.00	1	116.8	116.8	Number of Poles
Euclid Ave: 6th to Broadway							10
	Data Rank	0	0	1	0	1	0
	District Rank Subtotal	0	0	1	0	1	2

Jefferson Park Historic District

Street	Pole Height Range (ft)	30'-45'	30'-45'	71.0	71.0	10	Number of Poles
Ring Dr: Vine to Campbell							10
	Data Rank	4	4	0	1	1	1
	District Rank Subtotal	4	4	0	1	1	1

Pie Allen Residential Historic District

Street	Pole Height Range (ft)	0	0	1	116.8	116.8	Number of Poles
Euclid Ave: 6th to Broadway							15
	Data Rank	0	0	1	0	1	0
	District Rank Subtotal	0	0	1	0	1	2

Rincon Heights Historic District

Street	Pole Height Range (ft)	65'-45'	65'-45'	280.0	280.0	6	Number of Poles
Campbell Ave: 6th to Broadway							6
Campbell Ave: 7th to Broadway*					153.4	153.4	11
Broadway Blvd & Fremont					86.0	86.0	1
	Data Rank	3	3	2	1	1	1
	District Rank Subtotal	3	3	2	1	1	6

Sam Hughes Residential Historic District

Street	Pole Height Range (ft)	30'-60'	30'-60'	165.8	165.8	17	Number of Poles
Campbell Ave: 1st st to 6th st							17
Campbell Ave: 7th to Broadway*					153.4	153.4	11
	Data Rank	1	0	0	1	0	0
	District Rank Subtotal	1	0	0	1	0	0

Sunshine Mile Historic District

Street	Pole Height Range (ft)	40'-68'	40'-68'	91	91	3	Number of Poles
Campbell Ave & Broadway							3
Broadway & Fremont						86	2
Euclid Ave: 6th to Broadway						116.8	1
	Data Rank	1	1	1	2	1	1
	District Rank Subtotal	1	1	1	2	1	1

West University Historic District

Street	Pole Height Range (ft)	30'-65'	30'-65'	130.0	130.0	10	Number of Poles
Euclid Ave: 1st to 6th							10
	Data Rank	0	0	1	1	0	0
	District Rank Subtotal	0	0	1	1	0	2

SUMMARY

Pole Height Range (ft)	30'-68'	30'-68'	30'-75'	30'-75'	71'-280'	71'-280'	86'-141.3'	86'-141.3'	Total # of Poles
	13	13	8	8	6	6	6	6	70
Data Rank Subtotal	13	13	8	8	6	6	6	6	57
Route Rank Subtotal	13	13	8	8	6	6	6	6	14
									5
									14
									24
									28

* Poles are located between Sam Hughes and Rincon Heights Historic Districts



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KINO TABLE 5

Historic Light fixtures within 800' Route Buffer	Routes from Kino											
	1			2			3			5		
	# of Lights	%	Rank	# of Lights	%	Rank	# of Lights	%	Rank	# of Lights	%	Rank
Blenman-Elm Historic District		0%			0%			0%			0%	
Catalina Vista Historic District		0%			0%			0%			0%	
Feldman's Historic District		0%			0%			0%			0%	
Iron Horse Expansion Historic District		0%			0%		1	3%	1	1	3%	1
Jefferson Park Historic District		0%			0%			0%			0%	
Pie Allen Residential Historic District		0%			0%			0%			0%	
Rincon Heights Historic District		0%			0%			0%			0%	
Sam Hughes Residential Historic District	14	78%	3	14	78%	3		0%			0%	
Sunshine Mile Historic District		0%			0%		3	8%	1	3	8%	1
West University Historic District		0%			0%		25	63%	5	25	63%	5
Outside of Historic District	4	22%	1	4	22%	1	11	28%	3	11	28%	3
Data Subtotal	18		4	18		4	40		10	40		10
Route Rank Subtotal			4			4			10			10

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KINO TABLE 6

Historic Contributing Properties in 800' Route Buffer	Routes from Kino											
	1			2			3			5		
	# of Prop	%	Rank	# of Prop	%	Rank	# of Prop	%	Rank	# of Prop	%	Rank
Blenman-Elm Historic District												
Number of properties Individually Listed		0%			0%			-			-	
Number of landmark properties		0%			0%			-			-	
Number of properties built between pre 1919		0%			0%			-			-	
Number of properties built between 1920 to 1949	43	62%	4	43	62%	4		-			-	
Number of properties built between 1950 to 1969	26	38%	3	26	38%	3		-			-	
Number of properties post 1970		0%			0%	0		-			-	
Total of all Contributing properties per District	69		3	69		3	0			0		
District Rank Subtotal			10			10				0		0
Catalina Vista Historic District												
Number of properties Individually Listed		0%			0%			-			-	
Number of landmark properties		0%			0%			-			-	
Number of properties built between pre 1919		0%			0%			-			-	
Number of properties built between 1920 to 1949	3	15%	1	3	15%	1		-			-	
Number of properties built between 1950 to 1969	13	65%	1	13	65%	1		-			-	
Number of properties post 1970	4	20%	1	4	20%	1		-			-	
Total of all Contributing properties per District	20		1	20		1	0			0		0
District Rank Subtotal			4			4				0		0
Feldman's Historic District												
Number of properties Individually Listed		-			-		1	1%	8	1	1%	8
Number of landmark properties		-			-			0%		0	0%	0
Number of properties built between pre 1919		-			-		8	4%	1	8	4%	1
Number of properties built between 1920 to 1949		-			-		148	80%	10	148	80%	10
Number of properties built between 1950 to 1969		-			-		17	9%	2	17	9%	2
Number of properties post 1970		-			-		10	5%	1	10	5%	1
Total of all Contributing properties per District	0		0	0		0	184		7	184		7
District Rank Subtotal			0			0			29			29
Iron Horse Expansion Historic District												
Number of properties Individually Listed		-			-			0%			0%	
Number of landmark properties		-			-			0%			0%	
Number of properties built between pre 1919		-			-		33	42%	3	33	42%	3
Number of properties built between 1920 to 1949		-			-		41	53%	4	41	53%	4
Number of properties built between 1950 to 1969		-			-		1	1%	1	1	1%	1
Number of properties post 1970		-			-		3	4%	1	3	4%	1
Total of all Contributing properties per District	0		0	0		0	78		3	78		3
District Rank Subtotal			0			0			12			12
Jefferson Park Historic District												
Number of properties Individually Listed		0%			0%			0%			0%	
Number of landmark properties		0%			0%			0%			0%	
Number of properties built between pre 1919		0%			0%			0%			0%	
Number of properties built between 1920 to 1949	48	52%	4	48	52%	4	17	44%	2	17	44%	2
Number of properties built between 1950 to 1969	40	43%	4	40	43%	4	18	46%	2	18	46%	2
Number of properties post 1970	4	4%	1	4	4%	1	4	10%	1	4	10%	1
Total of all Contributing properties per District	92		5	92		5	39		1	39		1
District Rank Subtotal			14			14			6			6
Pie Allen Residential Historic District												
Number of properties Individually Listed		-			-			0%			0%	
Number of landmark properties		-			-			0%			0%	
Number of properties built between pre 1919		-			-		42	32%	4	42	32%	4
Number of properties built between 1920 to 1949		-			-		87	65%	8	87	65%	8
Number of properties built between 1950 to 1969		-			-		3	2%	1	3	2%	1
Number of properties post 1970		-			-		1	1%	1	1	1%	1
Total of all Contributing properties per District	0		0	0		0	133		7	133		7
District Rank Subtotal			0			0			21			21
Rincon Heights Historic District												
Number of properties Individually Listed		0%			0%			0%			0%	
Number of landmark properties		0%			0%			0%			0%	
Number of properties built between pre 1919		0%			0%			0%			0%	
Number of properties built between 1920 to 1949	67	87%	6	67	87%	6	22	92%	3	22	92%	3
Number of properties built between 1950 to 1969	10	13%	1	10	13%	1	2	8%	1	2	8%	1
Number of properties post 1970		0%		0	0%	0		0%		0	0%	0
Total of all Contributing properties per District	77		4	77		4	24		1	24		1
District Rank Subtotal			11			11			5			5
Sam Hughes Residential Historic District												
Number of properties Individually Listed		0%			0%			-			-	
Number of landmark properties		0%			0%			-			-	
Number of properties built between pre 1919		0%			0%			-			-	
Number of properties built between 1920 to 1949	188	82%	10	188	82%	10		-			-	
Number of properties built between 1950 to 1969	34	15%	3	34	15%	3		-			-	
Number of properties post 1970	7	3%	1	7	3%	1		-			-	
Total of all Contributing properties per District	229		10	229		10	0			0		0
District Rank Subtotal			24			24			0			0
Sunshine Mile Historic District												
Number of properties Individually Listed		0%			0%			0%			0%	
Number of landmark properties		0%			0%			0%			0%	
Number of properties built between pre 1919		0%			0%			0%			0%	
Number of properties built between 1920 to 1949	3	33%	1	3	33%	1	7	39%	1	7	39%	1
Number of properties built between 1950 to 1969	6	67%	1	6	67%	1	11	61%	1	11	61%	1
Number of properties post 1970		0%			0%			0%			0%	
Total of all Contributing properties per District	9		1	9		1	18		1	18		1
District Rank Subtotal			3			3			3			3
West University Historic District												
Number of properties Individually Listed		-			-			0%			0%	
Number of landmark properties		-			-			0%			0%	
Number of properties built between pre 1919		-			-		87	45%	10	87	45%	10
Number of properties built between 1920 to 1949		-			-		95	49%	10	95	49%	10
Number of properties built between 1950 to 1969		-			-		4	2%	1	4	2%	1
Number of properties post 1970		-			-		9	5%	1	9	5%	1
Total of all Contributing properties per District	0		0	0		0	195		9	195		9
District Rank Subtotal			0			0			31			31
SUMMARY OF CONTRIBUTING PROPERTIES												
Number of properties Individually Listed	0	0%	0	0	0%	0	1	0%	8	1	0%	8
Number of landmark properties	0	0%	0	0	0%	0	0	0%	0	0	0%	0
Number of properties built between pre 1919	0	0%	0	0	0%	0	170	25%	18	170	25%	18
Number of properties built between 1920 to 1949	352	71%	26	352	71%	26	417	62%	38	417	62%	38
Number of properties built between 1950 to 1969	129	26%	13	129	26%	13	56	8%	9	56	8%	9
Number of properties post 1970	15	3%	3	15	3%	3	27	4%	5	27	4%	5
Total of all Contributing properties per District	496		24	496		24	671		29	671		29
Route Rank Subtotal			66			66			107			107

KINO TABLE 7

Access of Historic Contributing Properties along Route	Routes from Kino											
	1			2			3			5		
	# of Prop	%	Rank	# of Prop	%	Rank	# of Prop	%	Rank	# of Prop	%	Rank
Blenman-Elm Historic District												
Contributing properties: face the route & access directly from route	2	25%	1	2	25%	1		-			-	
Contributing properties whose side of the structure face the route	6	75%	1	6	75%	1		-			-	
Total Contributing properties directly on the route	8		1	8		1	0			0		
District Rank Subtotal			3			3			0			0
Catalina Vista Historic District												
Contributing properties: face the route & access directly from route		-			-			-			-	
Contributing properties whose side of the structure face the route		-			-			-			-	
Total Contributing properties directly on the route	0			0			0			0		
District Rank Subtotal			0			0			0			0
Feldman's Historic District												
Contributing properties: face the route & access directly from route		-			-		23	85%	10	23	85%	10
Contributing properties whose side of the structure face the route		-			-		4	15%	1	4	15%	1
Total Contributing properties directly on the route	0			0			27		10	27		10
District Rank Subtotal			0			0			21			21
Iron Horse Expansion Historic District												
Contributing properties: face the route & access directly from route		-			-		4	57%	2	4	57%	2
Contributing properties whose side of the structure face the route		-			-		3	43%	1	3	43%	1
Total Contributing properties directly on the route	0			0			7		1	7		1
District Rank Subtotal			0			0			4			4
Jefferson Park Historic District												
Contributing properties: face the route & access directly from route		0%			0%			-			-	
Contributing properties whose side of the structure face the route	6	100%	1	6	100%	1		-			-	
Total Contributing properties directly on the route	6		1	6		1	0			0		
District Rank Subtotal			2			2			0			0
Pie Allen Residential Historic District												
Contributing properties: face the route & access directly from route		-			-		12	75%	5	12	75%	5
Contributing properties whose side of the structure face the route		-			-		4	25%	1	4	25%	1
Total Contributing properties directly on the route	0			0			16		2	16		2
District Rank Subtotal			0			0			8			8
Rincon Heights Historic District												
Contributing properties: face the route & access directly from route		0%			0%			-			-	
Contributing properties whose side of the structure face the route	9	100%	2	9	100%	2		-			-	
Total Contributing properties directly on the route	9		1	9		1	0			0		
District Rank Subtotal			3			3			0			0
Sam Hughes Residential Historic District												
Contributing properties: face the route & access directly from route	8	42%	4	8	42%	4		-			-	
Contributing properties whose side of the structure face the route	11	58%	2	11	58%	2		-			-	
Total Contributing properties directly on the route	19		1	19		1	0			0		
District Rank Subtotal			7			7			0			0
Sunshine Mile Historic District												
Contributing properties: face the route & access directly from route		-			-		10	100%	4	10	100%	4
Contributing properties whose side of the structure face the route		-			-			0%			0%	
Total Contributing properties directly on the route	0			0			10		4	10		4
District Rank Subtotal			0			0			8			8
West University Historic District												
Contributing properties: face the route & access directly from route		-			-		20	74%	10	20	74%	10
Contributing properties whose side of the structure face the route		-			-		7	26%	1	7	26%	1
Total Contributing properties directly on the route	0			0			27		10	27		10
District Rank Subtotal			0			0			21			21
SUMMARY OF ACCESS DIRECTLY FROM ROUTE												
Contributing properties: face the route & access directly from route	10	24%	5	10	24%	5	69	79%	31	69	79%	31
Contributing properties whose side of the structure face the route	32	76%	6	32	76%	6	18	21%	4	18	21%	4
Total Contributing properties directly on the route	42		4	42		4	87		27	87		27
Route Rank Subtotal			15			15			62			62

KINO TABLE 8

Historic Architectural Criteria	Routes from Kino			
	1	2	3	5
	Rank	Rank	Rank	Rank
Blenman-Elm Historic District				
Historic district integrity	8	8		
Scale of the street adjacent to historic district	1	1		
Scale of adjacent historic & non-historic structures along route	3	3		
Size of historic district impacted	3	3		
Historic Architectural Impression	8	8		
District Rank Subtotal	23	23	0	0
Catalina Vista Historic District				
Historic district integrity	8	8		
Scale of the street adjacent to historic district	1	1		
Scale of adjacent historic & non-historic structures along route	2	2		
Size of historic district impacted	1	1		
Historic Architectural Impression	6	6		
District Rank Subtotal	18	18	0	0
Feldman's Historic District				
Historic district integrity			6	6
Scale of the street adjacent to historic district			6	6
Scale of adjacent historic & non-historic structures along route			7	7
Size of historic district impacted			6	6
Historic Architectural Impression			7	7
District Rank Subtotal	0	0	32	32
Iron Horse Expansion Historic District				
Historic district integrity			7	7
Scale of the street adjacent to historic district			5	5
Scale of adjacent historic & non-historic structures along route			6	6
Size of historic district impacted			6	6
Historic Architectural Impression			5	5
District Rank Subtotal	0	0	29	29
Jefferson Park Historic District				
Historic district integrity	1	1	1	1
Scale of the street adjacent to historic district	2	2	1	1
Scale of adjacent historic & non-historic structures along route	1	1	1	1
Size of historic district impacted	2	2	1	1
Historic Architectural Impression	2	2	1	1
District Rank Subtotal	8	8	5	5
Pie Allen Residential Historic District				
Historic district integrity			7	7
Scale of the street adjacent to historic district			6	6
Scale of adjacent historic & non-historic structures along route			7	7
Size of historic district impacted			10	10
Historic Architectural Impression			8	8
District Rank Subtotal	0	0	38	38
Rincon Heights Historic District				
Historic district integrity	3	3	3	3
Scale of the street adjacent to historic district	1	1	1	1
Scale of adjacent historic & non-historic structures along route	6	6	1	1
Size of historic district impacted	4	4	1	1
Historic Architectural Impression	5	5	1	1
District Rank Subtotal	19	19	7	7
Sam Hughes Residential Historic District				
Historic district integrity	8	8		
Scale of the street adjacent to historic district	1	1		
Scale of adjacent historic & non-historic structures along route	5	5		
Size of historic district impacted	4	4		
Historic Architectural Impression	7	7		
District Rank Subtotal	25	25	0	0
Sunshine Mile Historic District				
Historic district integrity	3	3	3	3
Scale of the street adjacent to historic district	1	1	1	1
Scale of adjacent historic & non-historic structures along route	3	3	3	3
Size of historic district impacted	1	1	2	2
Historic Architectural Impression	1	1	4	4
District Rank Subtotal	9	9	13	13
West University Historic District				
Historic district integrity			8	8
Scale of the street adjacent to historic district			5	5
Scale of adjacent historic & non-historic structures along route			1	1
Size of historic district impacted			7	7
Historic Architectural Impression			5	5
District Rank Subtotal	0	0	26	26
SUMMARY OF HISTORIC ARCHITECTURAL RANKING				
Historic district integrity	31	31	35	35
Scale of the street adjacent to historic district	7	7	25	25
Scale of adjacent historic & non-historic structures along route	20	20	26	26
Size of historic district impacted	15	15	33	33
Historic Architectural Impression	29	29	31	31
Route Rank Total	102	102	150	150

KINO SUMMARY TABLES 1 TO 8		Routes from Kino			
KINO TABLE 1		1	2	3	5
Bisecting vs Bordering Historic Districts		Rank	Rank	Rank	Rank
Blenman-Elm Historic District		6	6	0	0
Catalina Vista Historic District		0	0	0	0
Feldman's Historic District		0	0	16	16
Iron Horse Expansion Historic District		0	0	2	2
Jefferson Park Historic District		4	4	0	0
Pie Allen Residential Historic District		0	0	10	10
Rincon Heights Historic District		10	10	0	0
Sam Hughes Residential Historic District		14	14	0	0
Sunshine Mile Historic District		2	2	12	12
West University Historic District		0	0	19	19
Route Rank		36	36	59	59
KINO TABLE 2					
Street Designation					
Blenman-Elm Historic District		5	5	0	0
Catalina Vista Historic District		0	0	0	0
Feldman's Historic District		0	0	13	13
Iron Horse Expansion Historic District		0	0	1	1
Jefferson Park Historic District		8	8	0	0
Pie Allen Residential Historic District		0	0	1	1
Rincon Heights Historic District		2	2	0	0
Sam Hughes Residential Historic District		3	3	0	0
Sunshine Mile Historic District		1	1	6	6
West University Historic District		0	0	1	1
Route Rank		19	19	22	22
KINO TABLE 3					
Historic Districts with 1 vs 2 sides of the Route					
Route Rank		9	9	15	15
KINO TABLE 4					
Existing Power Poles located on Route					
Blenman-Elm Historic District		6	6	0	0
Catalina Vista Historic District		0	0	0	0
Feldman's Historic District		0	0	4	4
Iron Horse Expansion Historic District		0	0	4	4
Jefferson Park Historic District		6	6	0	0
Pie Allen Residential Historic District		0	0	4	4
Rincon Heights Historic District		5	5	9	9
Sam Hughes Residential Historic District		3	3	0	0
Sunshine Mile Historic District		4	4	3	3
West University Historic District		0	0	4	4
Route Rank		24	24	28	28
KINO TABLE 5					
Historic Light fixtures within 800' Route Buffer					
Blenman-Elm Historic District		0	0	0	0
Catalina Vista Historic District		0	0	0	0
Feldman's Historic District		0	0	0	0
Iron Horse Expansion Historic District		0	0	1	1
Jefferson Park Historic District		0	0	0	0
Pie Allen Residential Historic District		0	0	0	0
Rincon Heights Historic District		0	0	0	0
Sam Hughes Residential Historic District		3	3	0	0
Sunshine Mile Historic District		0	0	1	1
West University Historic District		0	0	5	5
Outside of Historic District		1	1	3	3
Route Rank		4	4	10	10
KINO TABLE 6					
Historic Contributing Properties in 800' Route Buffer					
Blenman-Elm Historic District		10	10	0	0
Catalina Vista Historic District		4	4	0	0
Feldman's Historic District		0	0	29	29
Iron Horse Expansion Historic District		0	0	12	12
Jefferson Park Historic District		14	14	6	6
Pie Allen Residential Historic District		0	0	21	21
Rincon Heights Historic District		11	11	5	5
Sam Hughes Residential Historic District		24	24	0	0
Sunshine Mile Historic District		3	3	3	3
West University Historic District		0	0	31	31
Route Rank		66	66	107	107
KINO TABLE 7					
Access of Historic Contributing Properties along Route					
Blenman-Elm Historic District		3	3	0	0
Catalina Vista Historic District		0	0	0	0
Feldman's Historic District		0	0	21	21
Iron Horse Expansion Historic District		0	0	4	4
Jefferson Park Historic District		2	2	0	0
Pie Allen Residential Historic District		0	0	8	8
Rincon Heights Historic District		3	3	0	0
Sam Hughes Residential Historic District		7	7	0	0
Sunshine Mile Historic District		0	0	8	8
West University Historic District		0	0	21	21
Route Rank		15	15	62	62
KINO TABLE 8					
Historic Architectural Criteria					
Blenman-Elm Historic District		23	23	0	0
Catalina Vista Historic District		18	18	0	0
Feldman's Historic District		0	0	32	32
Iron Horse Expansion Historic District		0	0	29	29
Jefferson Park Historic District		8	8	5	5
Pie Allen Residential Historic District		0	0	38	38
Rincon Heights Historic District		19	19	7	7
Sam Hughes Residential Historic District		25	25	0	0
Sunshine Mile Historic District		9	9	13	13
West University Historic District		0	0	26	26
Route Rank Total		102	102	150	150

KINO TABLE 9		Routes			
SUMMARY BY HISTORIC DISTRICTS FOR KINO ROUTES		1	2	3	5
Blenman-Elm Historic District		53	53	0	0
Catalina Vista Historic District		22	22	0	0
Feldman's Historic District		0	0	115	115
Iron Horse Expansion Historic District		0	0	53	53
Jefferson Park Historic District		42	42	11	11
Pie Allen Residential Historic District		0	0	82	82
Rincon Heights Historic District		50	50	21	21
Sam Hughes Residential Historic District		79	79	0	0
Sunshine Mile Historic District		19	19	46	46
West University Historic District		0	0	107	107
Outside of Historic District		1	1	3	3
Total by District: Tables 1,2,4,5,6,7,8		266	266	438	438
Total including Kino Table 3		275	275	453	453

VI. UA North Substation to DeMoss-Petrie Maps and Tables

TROW and TAC developed maps of each route to visually show the measurable criteria identified in Section III Methodology. Each route has a map of the full route as well as enlarged maps where the route is adjacent or passes through historic districts.

A. Route A Maps

1. Figure VI.A.1. Full route
2. Figure VI.A.2. Waverly Street to Adams Street
3. Figure VI.A.3. Grant Road to Waverly Street
4. Figure VI.A.4. 1st Avenue to Vine Avenue
5. Figure VI.A.5. Fairview Avenue to 10th Avenue

B. Route B Maps

1. Figure VI.B.1. Full Route
2. Figure VI.B.2. Lester Street to Mabel Street
3. Figure VI.B.3. Hampton Street to Elm Street
4. Figure VI.B.4. Grant Road to Seneca Street
5. Figure VI.B.5. Fairview Avenue to 10th Avenue

C. Route D Maps

1. Figure VI.C.1. Full route
2. Figure VI.C.2. Waverly Street to Adams Street
3. Figure VI.C.3. Grant Road to Waverly Street
4. Figure VI.C.4. 1st Avenue to Vine Avenue
5. Figure VI.C.5. Fairview Avenue to 10th Avenue

D. Route E Maps

1. Figure VI.D.1. Full route
2. Figure VI.D.2. Park Avenue to Warren Avenue
3. Figure VI.D.3. Elm Street to Helen Street
4. Figure VI.D.4. 2nd Avenue to Santa Rita Avenue
5. Figure VI.D.5. Stone Avenue to 2nd Avenue
6. Figure VI.D.6. 14th Avenue to Stone Avenue
7. Figure VI.D.7. Elm Street to Helen Street
8. Figure VI.D.8. Rillito Street to Elm Street
9. Figure VI.D.9. Fairview Avenue to Oracle Road

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**Figure VI.A.1: ROUTE A
UA NORTH SUBSTATION TO DMP: FULL ROUTE**

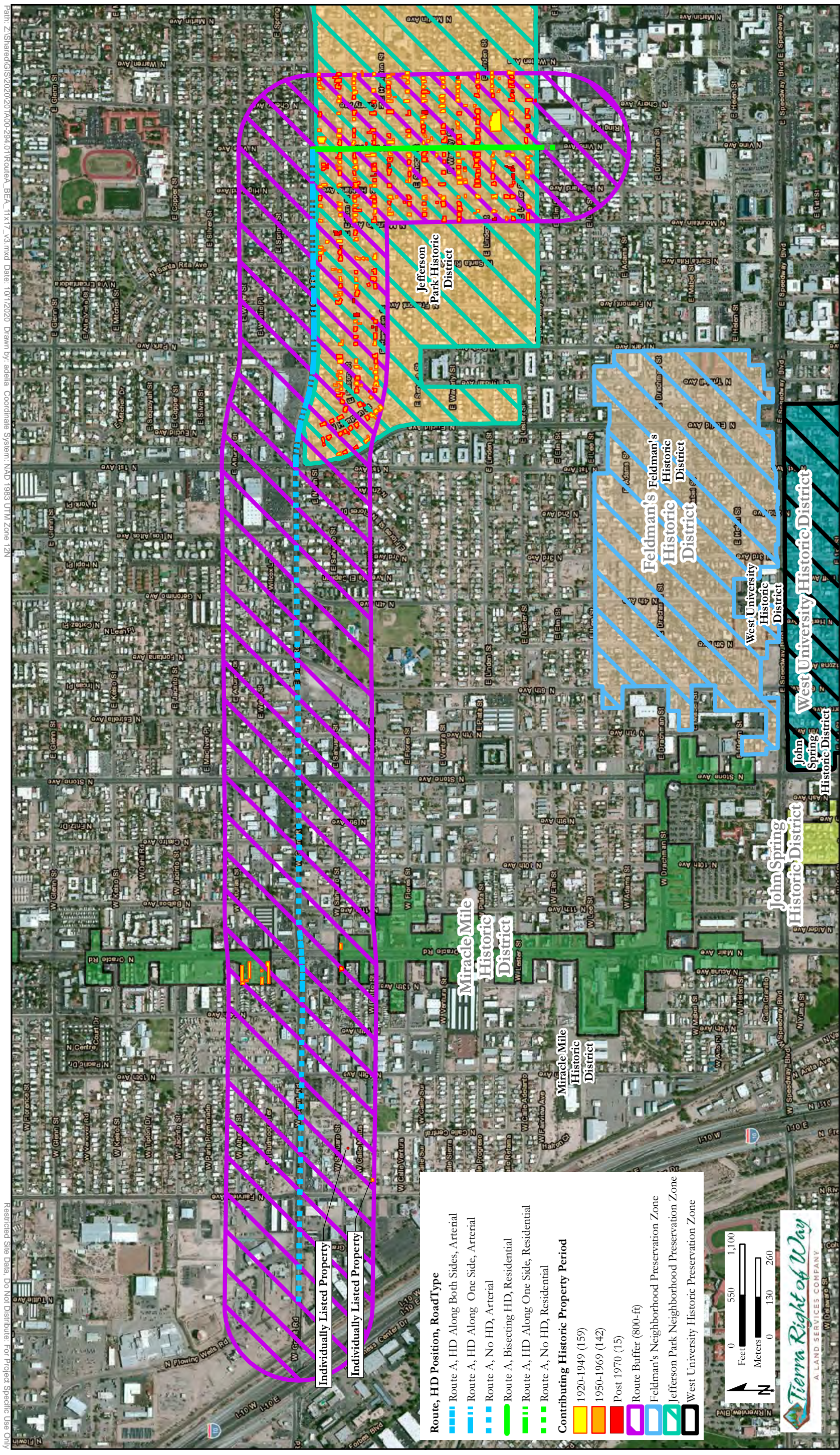
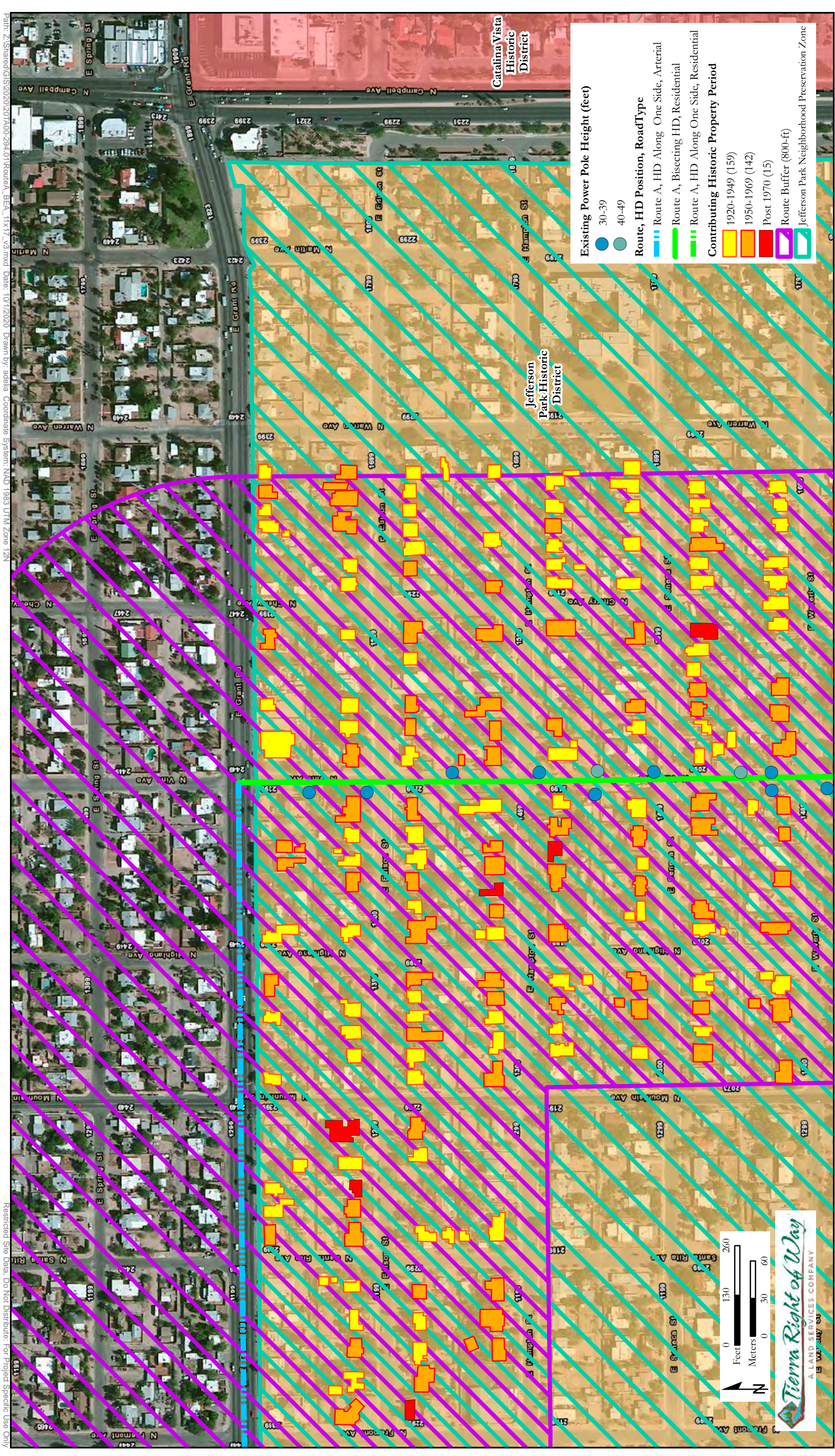


Figure VI.A.2: ROUTE A
 UA NORTH SUBSTATION TO DMP: WAVERLY ST TO ADAMS ST



**Figure VI.A.3: ROUTE A
UA NORTH SUBSTATION TO DMP: GRANT RD TO WAVERLY ST**

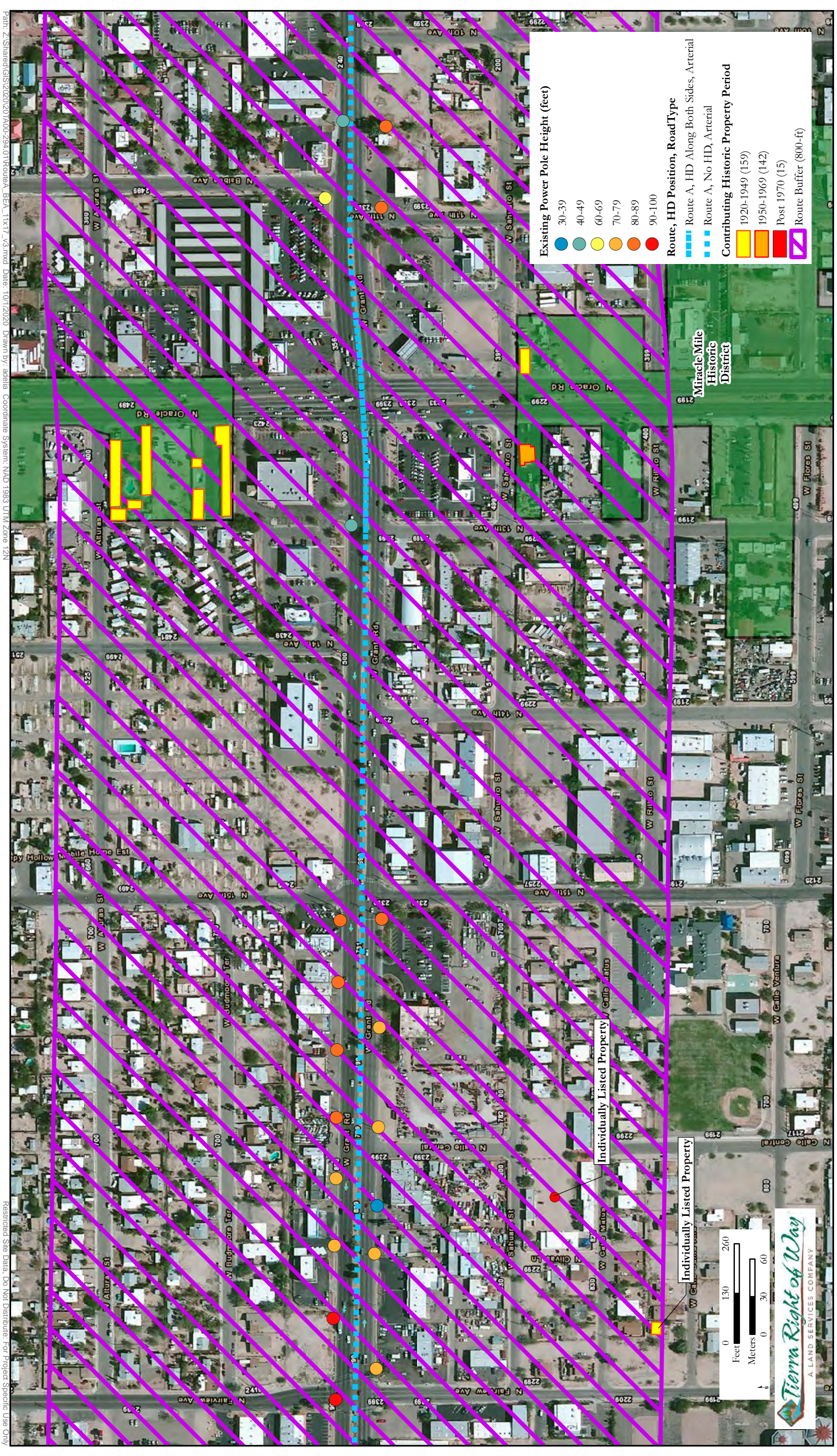


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Figure VI.A.4: ROUTE A
 UA NORTH SUBSTATION TO DMP: 1ST AVE TO VINE AVE



**Figure VI.A.5: ROUTE A
UA NORTH SUBSTATION TO DMP: FAIRVIEW AVE TO 10TH AVE**



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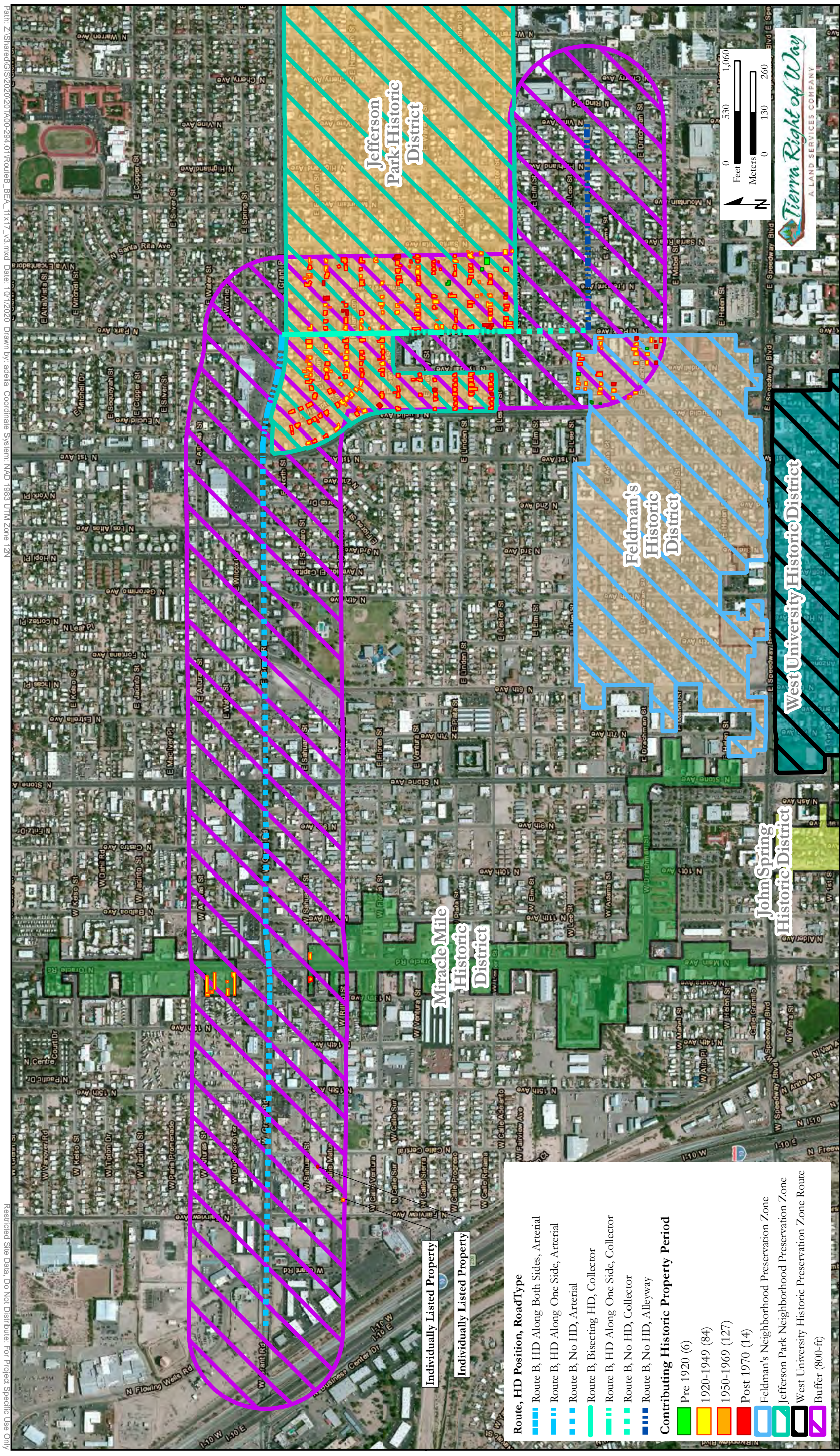
VI. UA North Substation to DeMoss-Petrie Maps and Tables

B. Route B Maps

1. Figure VI.B.1. Full Route
2. Figure VI.B.2. Lester Street to Mabel Street
3. Figure VI.B.3. Hampton Street to Elm Street
4. Figure VI.B.4. Grant Road to Seneca Street
5. Figure VI.B.5. Fairview Avenue to 10th Avenue

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**Figure VI.B.1: ROUTE B
UA NORTH SUBSTATION TO DMP: FULL ROUTE**



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**Figure VI.B.2: ROUTE B
UA NORTH SUBSTATION TO DMP: LESTER ST TO MABEL ST**



**Figure VI.B.3: ROUTE B
UA NORTH SUBSTATION TO DMP: HAMPTON ST TO ELM ST**

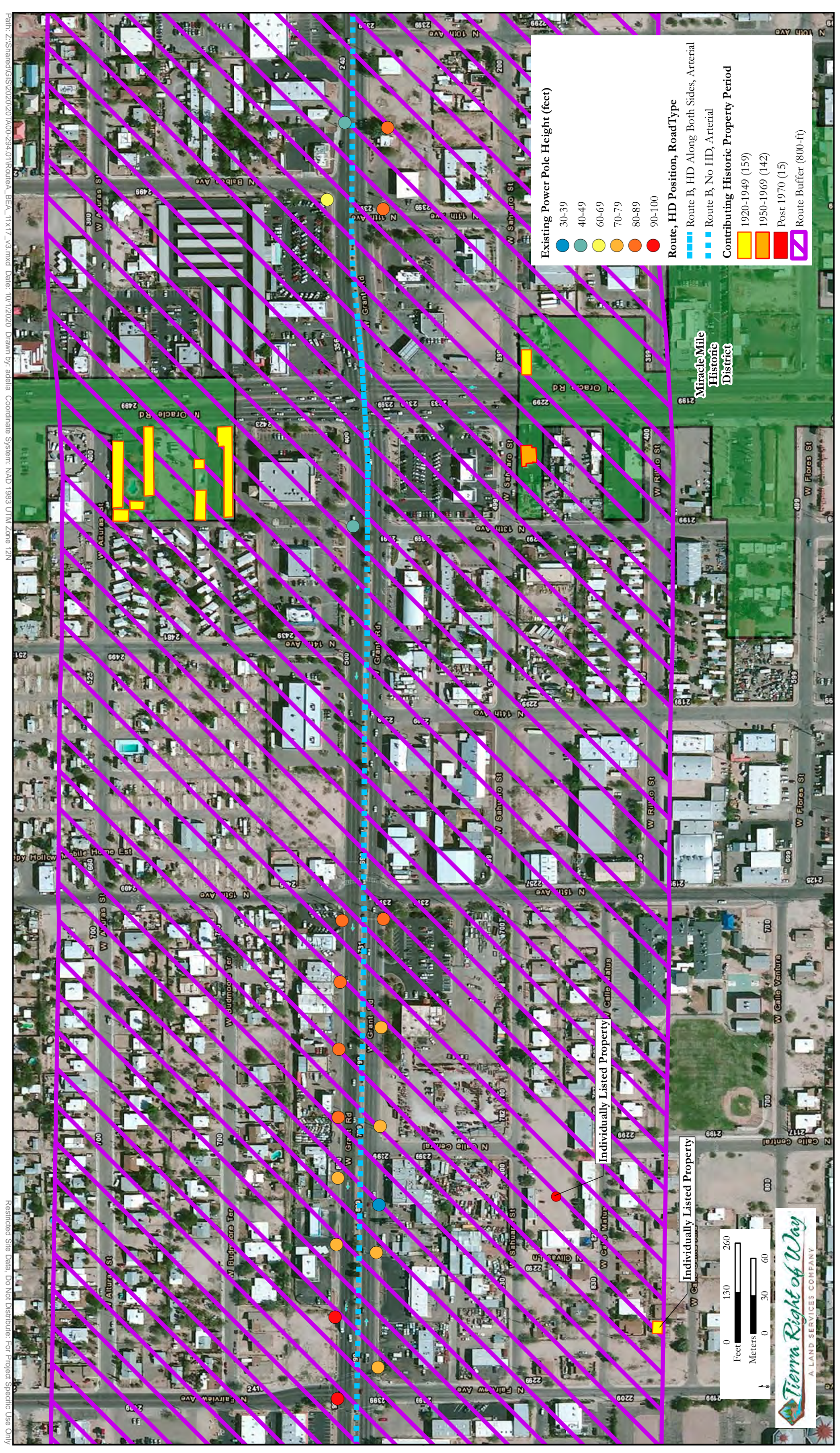


**Figure VI.B.4: ROUTE B
 UA NORTH SUBSTATION TO DMP: GRANT RD TO SENECA ST**



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**Figure VI.B.5: ROUTE D
UA NORTH SUBSTATION TO DMP: FAIRVIEW AVE TO 10TH AVE**



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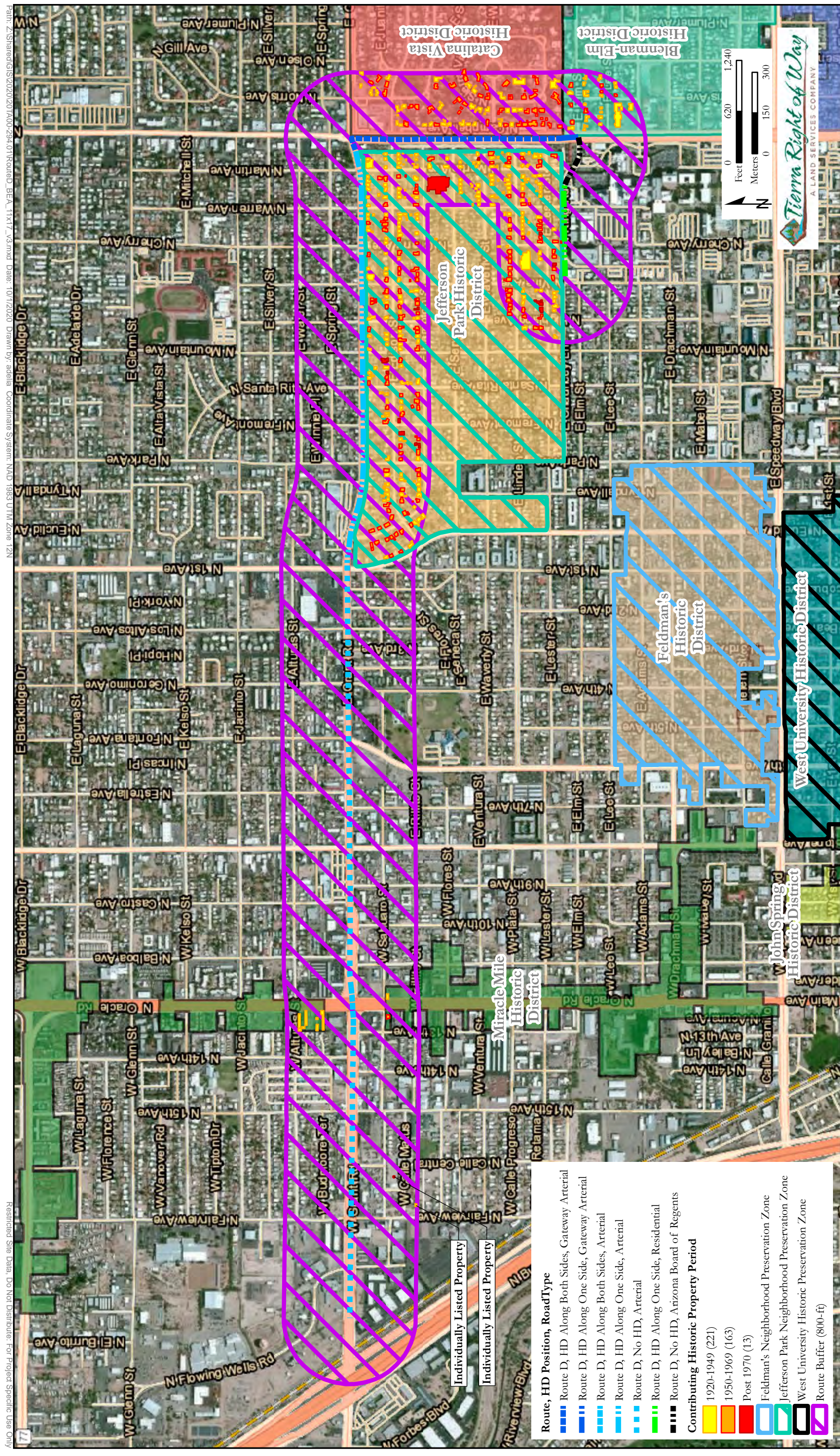
VI. UA North Substation to DeMoss-Petrie Maps and Tables

C. Route D Maps

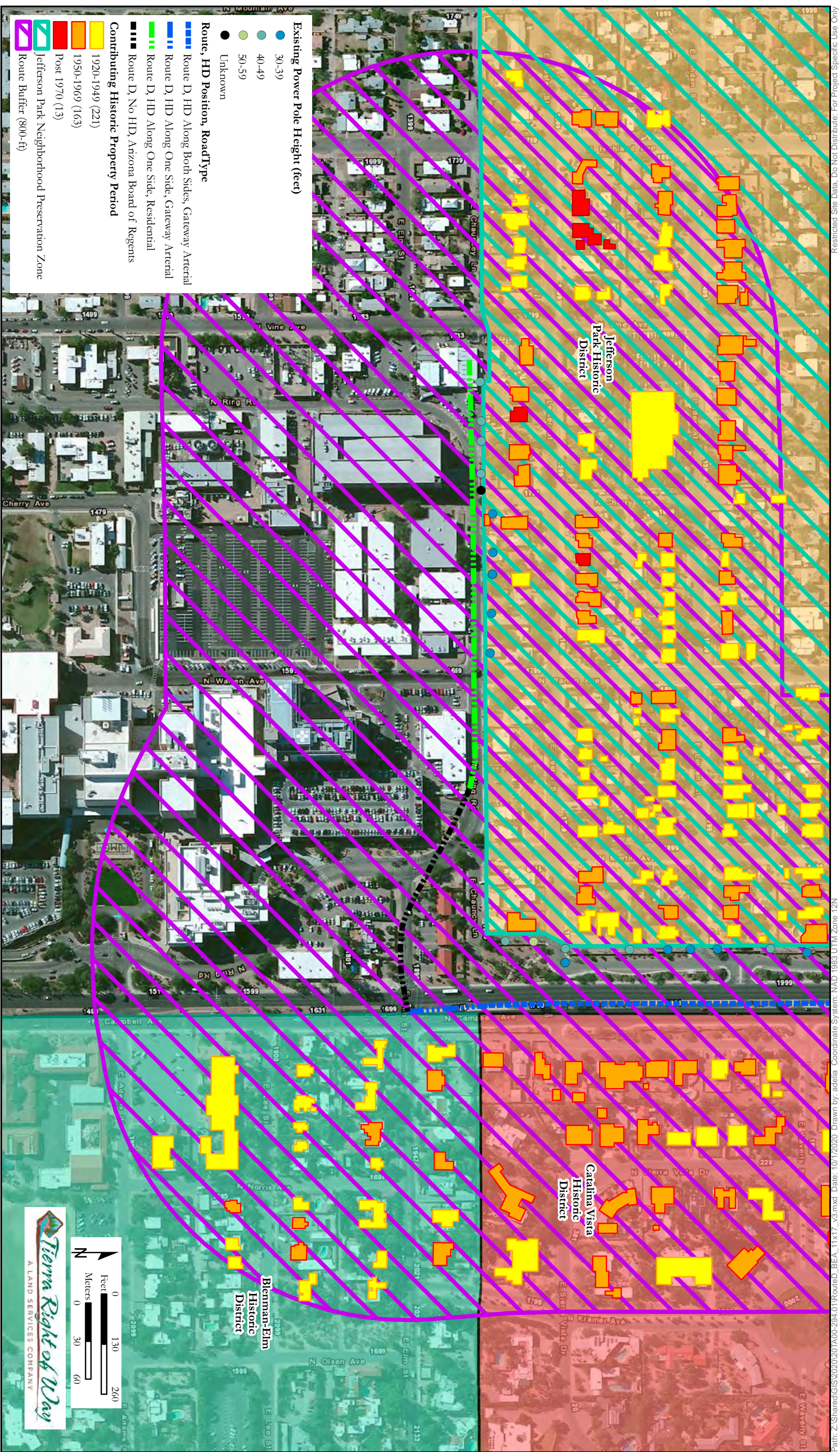
1. Figure VI.C.1. Full route
2. Figure VI.C.2. Waverly Street to Adams Street
3. Figure VI.C.3. Grant Road to Waverly Street
4. Figure VI.C.4. 1st Avenue to Vine Avenue
5. Figure VI.C.5. Fairview Avenue to 10th Avenue

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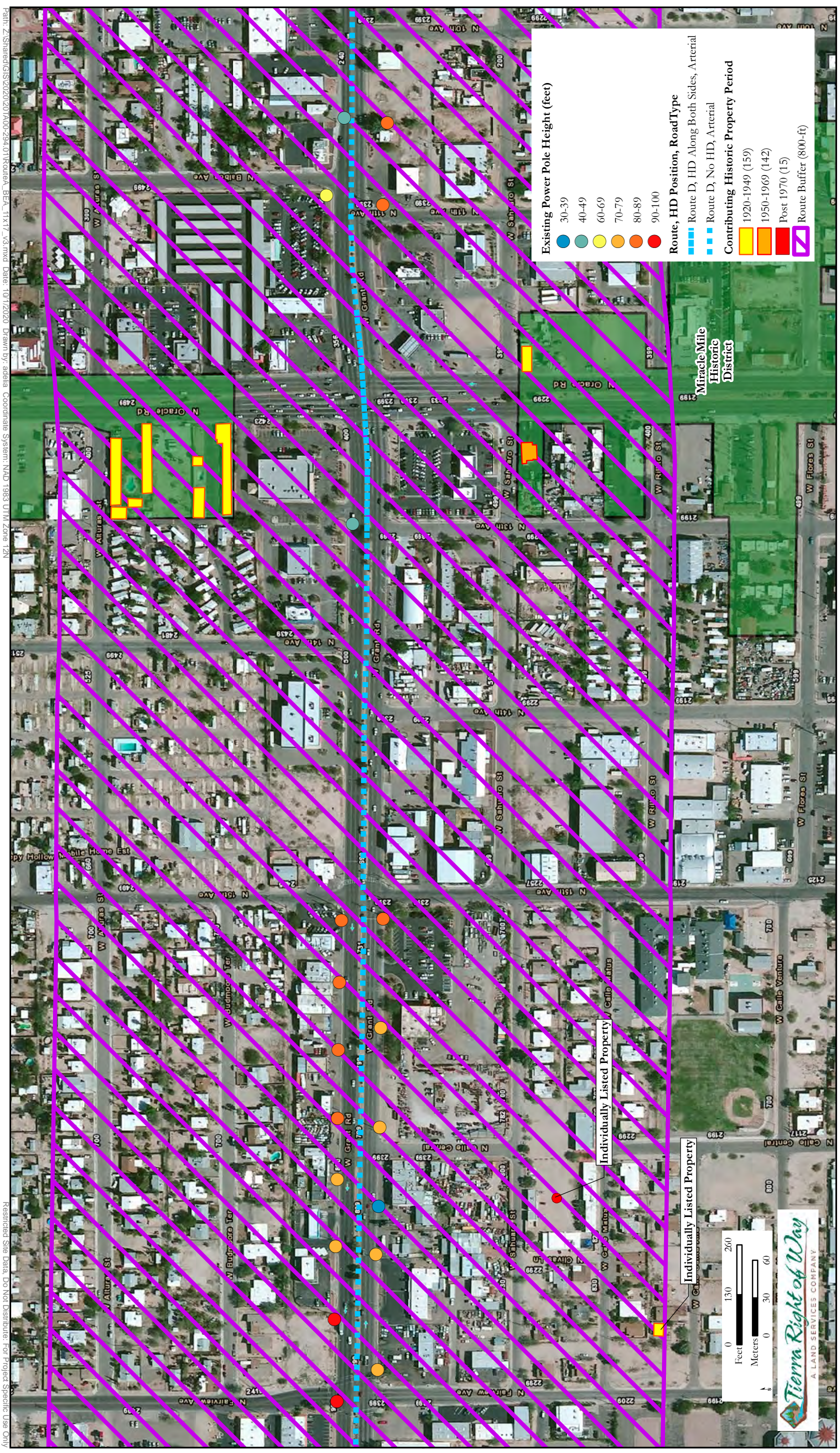
**Figure VI.C.1: ROUTE D
UA NORTH SUBSTATION TO DMP: FULL ROUTE**



**Figure VI.C.2: ROUTE D
UA NORTH SUBSTATION TO DMP: WAVERLY ST TO ADAMS ST**



**Figure VI.C.5: ROUTE D
UA NORTH SUBSTATION TO DMP: FAIRVIEW AVE TO 10TH AVE**



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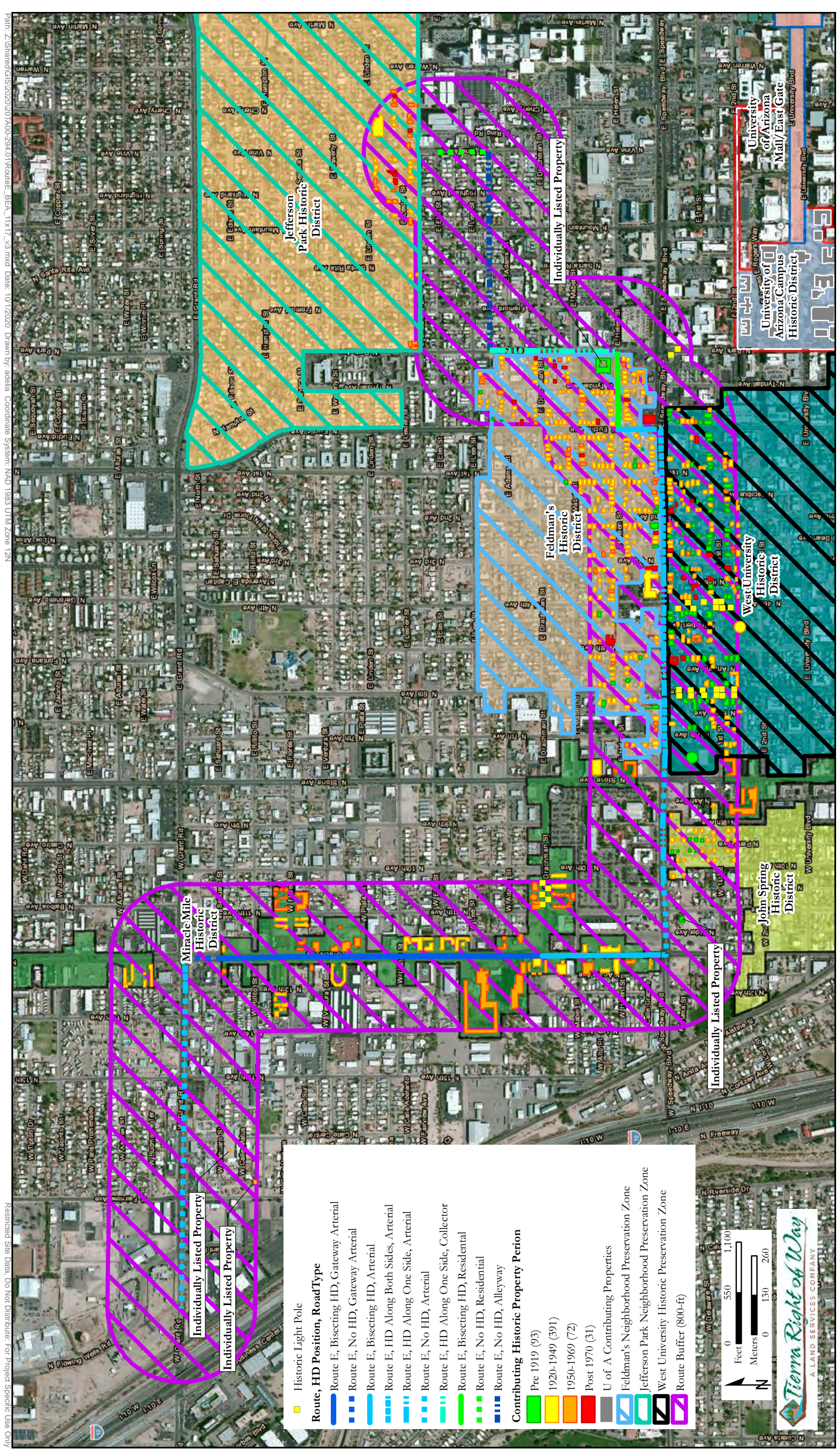
VI. UA North Substation to DeMoss-Petrie Maps and Tables

D. Route E Maps

1. Figure VI.D.1. Full route
2. Figure VI.D.2. Park Avenue to Warren Avenue
3. Figure VI.D.3. Elm Street to Helen Street
4. Figure VI.D.4. 2nd Avenue to Santa Rita Avenue
5. Figure VI.D.5. Stone Avenue to 2nd Avenue
6. Figure VI.D.6. 14th Avenue to Stone Avenue
7. Figure VI.D.7. Elm Street to Helen Street
8. Figure VI.D.8. Rillito Street to Elm Street
9. Figure VI.D.9. Fairview Avenue to Oracle Road

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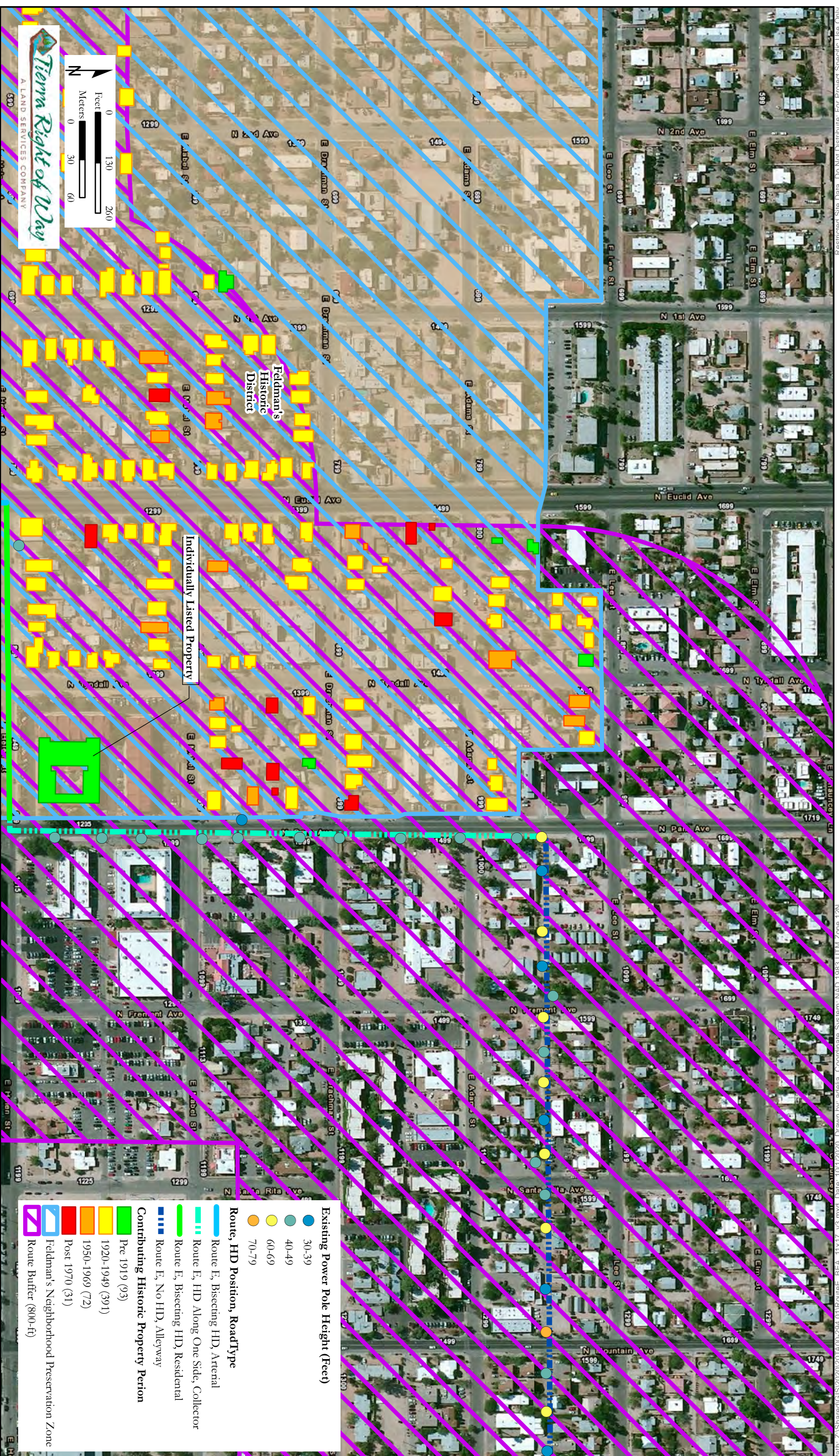
**Figure VI.D.1: ROUTE E
UA NORTH SUBSTATION TO DMP: FULL ROUTE**



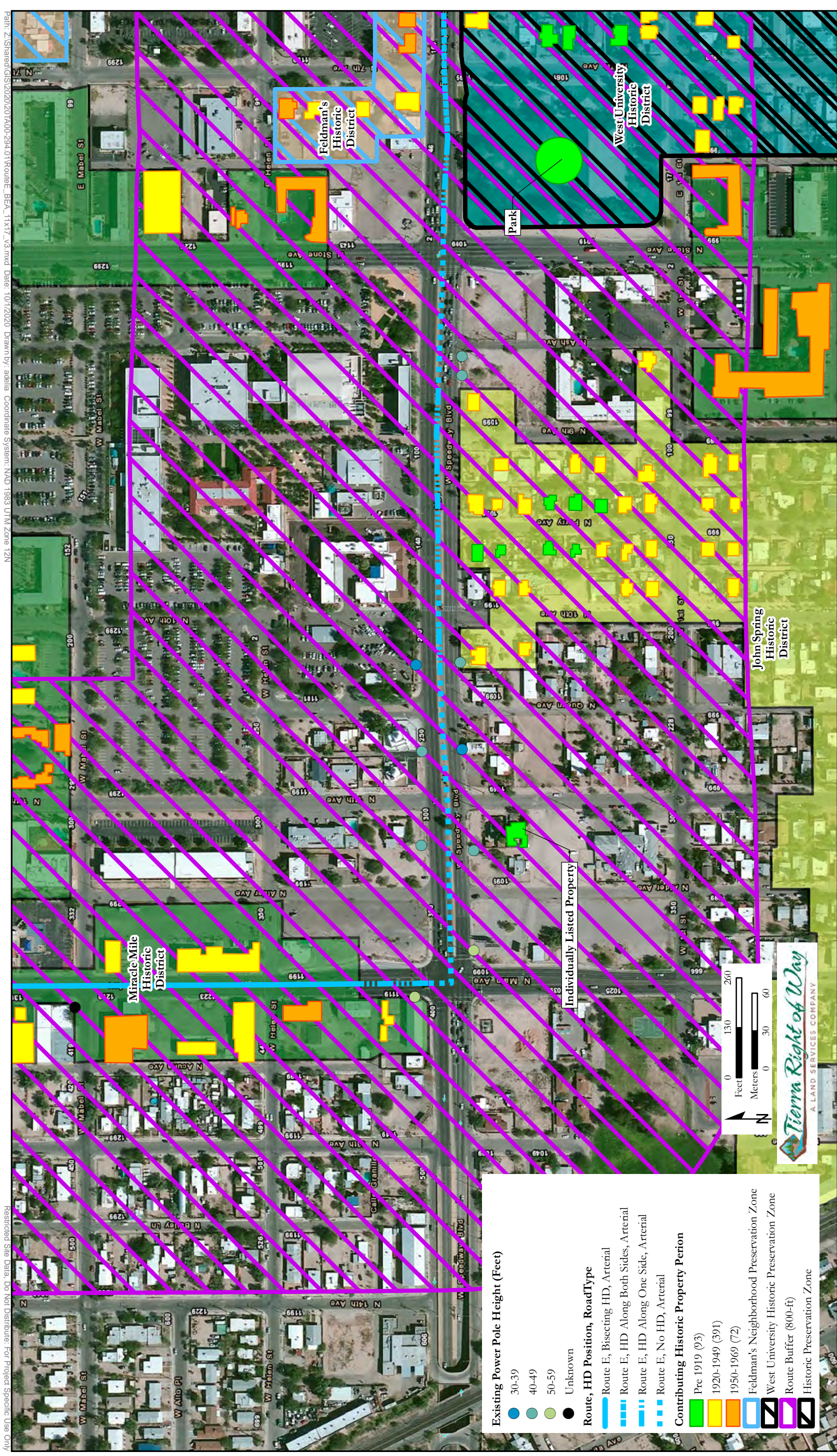
**Figure VI.D.2: ROUTE E
UA NORTH SUBSTATION TO DMP: PARK AVE TO WARREN AVE**



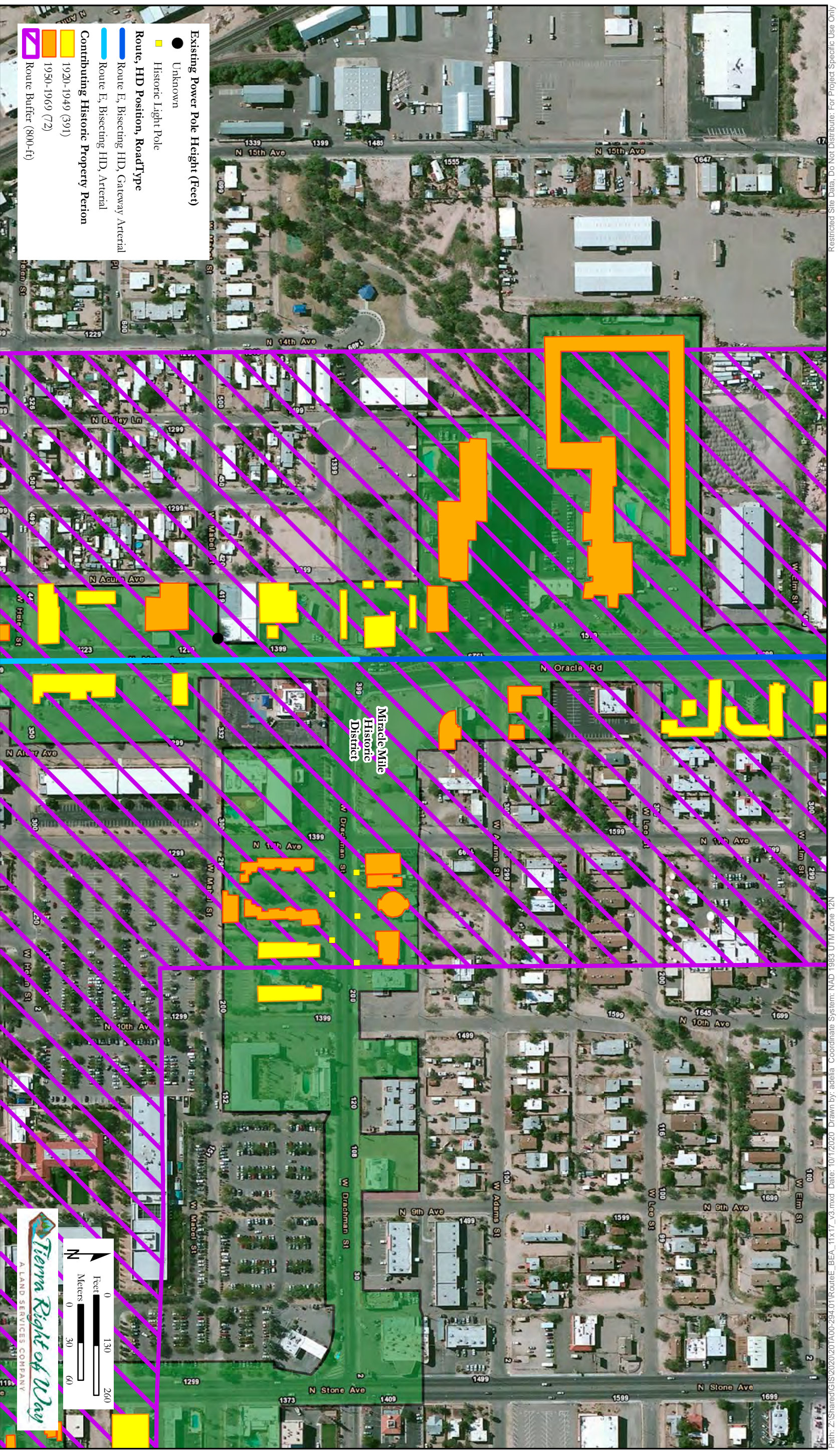
Figure VI.D.3: ROUTE E
 UA NORTH SUBSTATION TO DMP: ELM ST TO HELEN ST



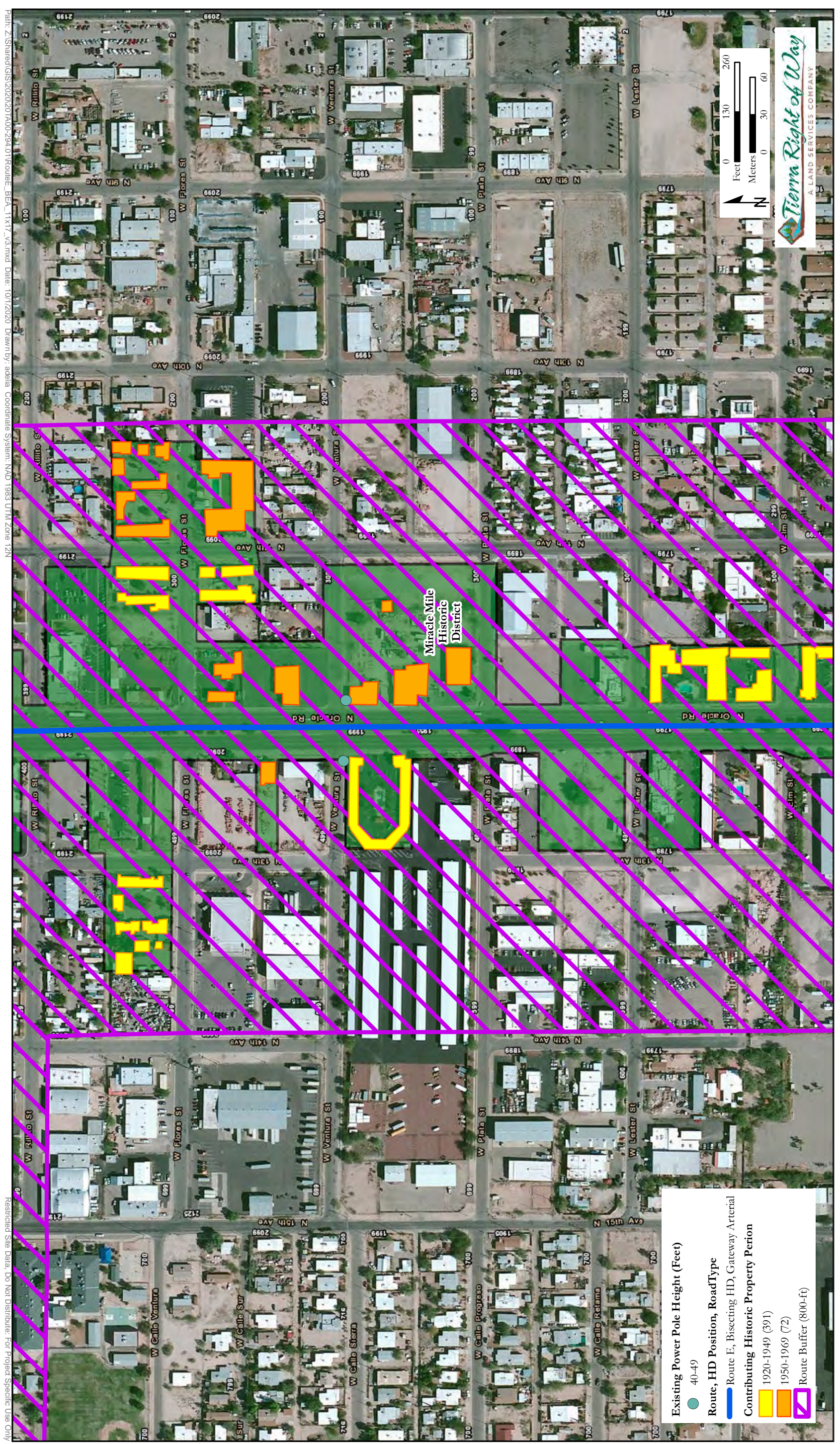
**Figure VI.D.6: ROUTE E POWER POLES
UA NORTH SUBSTATION TO DMP: 14TH AVE TO STONE AVE**



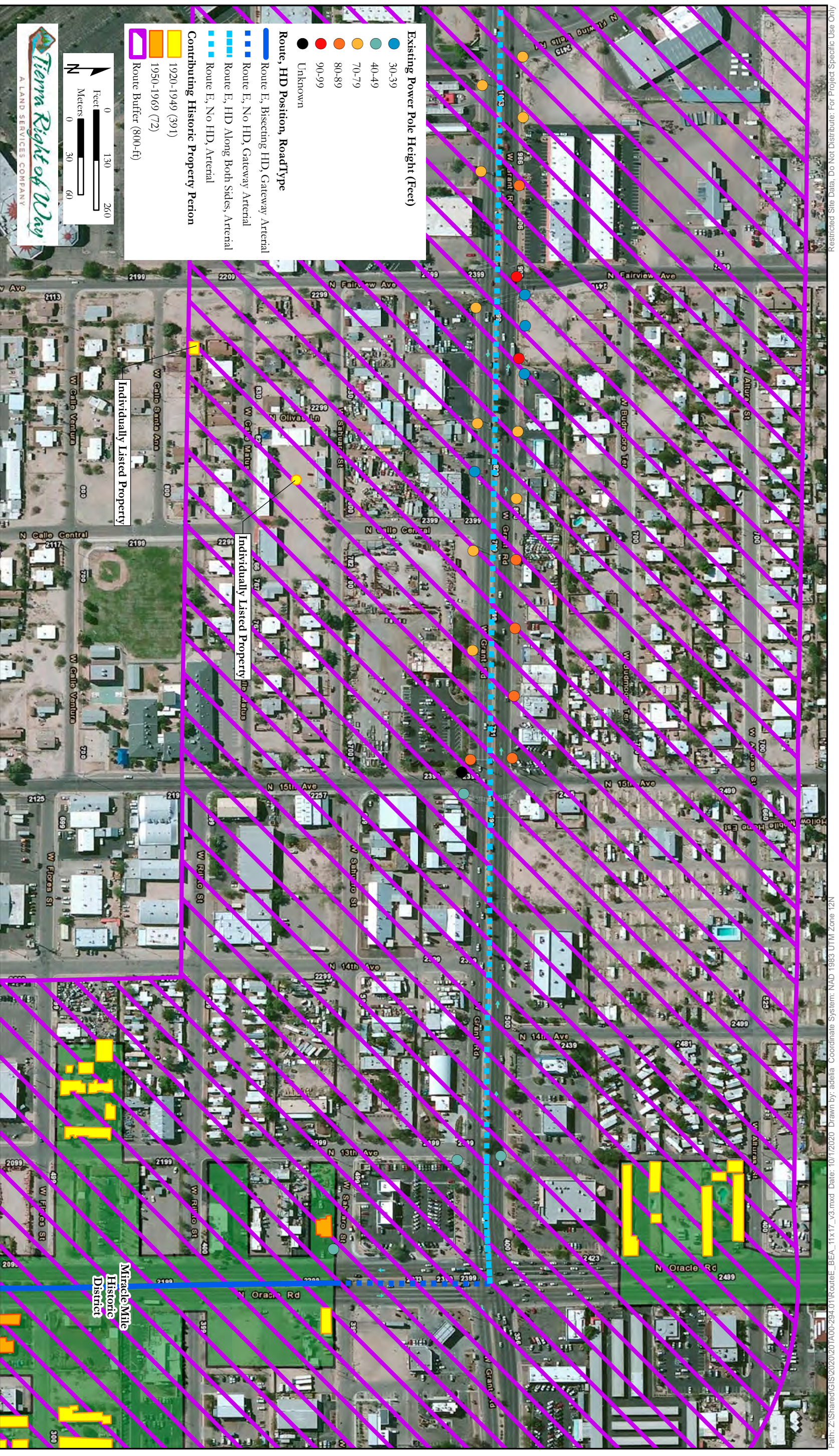
**Figure VI.D.7: ROUTE E POWER POLES
DMP TO UA NORTH SUBSTATION: ELM ST TO HELEN ST**



**Figure VI.D.8: ROUTE E
DMP TO UA NORTH SUBSTATION: RILLITO ST TO ELM ST**



**Figure VI.D.9: ROUTE E
DMP TO UA NORTH SUBSTATION: FAIRVIEW AVE TO ORACLE RD**



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VI. UA North Substation to DeMoss-Petrie Maps and Tables

E. Routes A, B, D and E Tables

DMP Table A: Bisecting versus Bordering Historic Districts

DMP Table B: Street Designation

DMP Table C: Historic Districts with 1 versus 2 Sides of the Route

DMP Table D: Existing Power Poles Located on Route

DMP Table E: Historic Light Fixtures within 800' Route Buffer

DMP Table F: Historic Contributing Properties in 800' Route Buffer

DMP Table G: Access of Historic Contributing Properties along Route

DMP Table H: Historic Architectural Criteria

DMP Table I: Summary by Historic Districts

DMP TABLE A

Bisecting vs Bordering Historic Districts	Routes from DeMoss-Petrie											
	A			B			D			E		
	Feet	%	Rank	Feet	%	Rank	Feet	%	Rank	Feet	%	Rank
Blenman-Elm Historic District												
Bisecting Historic District	0.00	-		0.00	-		0.00	0%		0.00	-	
Bordering Historic District	0.00	-		0.00	-		189.57	100%	1	0.00	-	
Bisecting + Bordering	0.00			0.00			189.57		0	0.00		
District Rank Subtotal			0			0			1			0
Catalina Vista Historic District												
Bisecting Historic District	0.00	-		0.00	-		0.00	0%		0.00	-	
Bordering Historic District	0.00	-		0.00	-		2720.33	100%	1	0.00	-	
Bisecting + Bordering	0.00			0.00			2720.33		1	0.00		
District Rank Subtotal			0			0			2			0
Feldman's Historic District												
Bisecting Historic District	0.00	-		0.00	-		0.00	-		1055.34	20%	4
Bordering Historic District	0.00	-		0.00	-		0.00	-		4155.20	80%	3
Bisecting + Bordering	0.00			0.00			0.00			5210.54		4
District Rank Subtotal			0			0			0			11
Jefferson Park Historic District												
Bisecting Historic District	4820.11	41%	10	1105.44	30%	4	0.00	0%		0.00	-	
Bordering Historic District	6985.35	59%	3	2616.87	70%	2	8936.52	100%	4	0.00	-	
Bisecting + Bordering	11805.46		8	3722.31		7	8936.52		4	0.00		
District Rank Subtotal			21			13			8			0
John Spring Neighborhood Historic District												
Bisecting Historic District	0.00	-		0.00	-		0.00	-		0.00	0%	
Bordering Historic District	0.00	-		0.00	-		0.00	-		575.34	100%	1
Bisecting + Bordering	0.00			0.00			0.00			575.34		0
District Rank Subtotal			0			0			0			1
Miracle Mile Historic District												
Bisecting Historic District	0.00	-		0.00	-		0.00	-		4587.61	96%	10
Bordering Historic District	0.00	-		0.00	-		0.00	-		175.85	4%	1
Bisecting + Bordering	0.00			0.00			0.00			4763.46		5
District Rank Subtotal			0			0			0			16
West University Historic District												
Bisecting Historic District	0.00	-		0.00	-		0.00	-		0.00	0%	
Bordering Historic District	0.00	-		0.00	-		0.00	-		3739.59	100%	4
Bisecting + Bordering	0.00			0.00			0.00			3739.59		1
District Rank Subtotal			0			0			0			5
SUMMARY OF BISECTING + BORDERING												
Bisecting Historic District	4820.11	41%	10	1105.44	30%	4	0.00	0%	0	5642.95	39%	14
Bordering Historic District	6985.35	59%	3	2616.87	70%	2	11846.42	100%	6	8645.98	61%	9
Bisecting + Bordering	11805.46		8	3722.31		7	11846.42		5	14288.93		10
Route Rank Subtotal			21			13			11			33

DMP TABLE B

Street Designation	Routes from DeMoss-Petrie											
	A			B			D			E		
	Feet	%	Rank	Feet	%	Rank	Feet	%	Rank	Feet	%	Rank
Blenman-Elm Historic District												
Gateway Arterial Street (length in ft)	0.00	-		0.00	-		189.57	100%	1	0.00	-	
Arterial Street	0.00	-		0.00	-		0.00	0%		0.00	-	
Collector Street	0.00	-		0.00	-		0.00	0%		0.00	-	
Residential Street	0.00	-		0.00	-		0.00	0%		0.00	-	
District Rank Subtotal	0.00		0	0.00		0	189.57		1	0.00		0
Catalina Vista Historic District												
Gateway Arterial Street (length in ft)	0.00	-		0.00	-		2720.32	100%	1	0.00	-	
Arterial Street	0.00	-		0.00	-		0.00	0%		0.00	-	
Collector Street	0.00	-		0.00	-		0.00	0%		0.00	-	
Residential Street	0.00	-		0.00	-		0.00	0%		0.00	-	
District Rank Subtotal	0.00		0	0.00		0	2720.32		1	0.00		0
Feldman's Historic District												
Gateway Arterial Street (length in ft)	0.00	-		0.00	-		0.00	-		0.00	0%	
Arterial Street	0.00	-		0.00	-		0.00	-		2940.60	57%	1
Collector Street	0.00	-		0.00	-		0.00	-		1415.86	27%	3
Residential Street	0.00	-		0.00	-		0.00	-		814.08	16%	1
District Rank Subtotal	0.00		0	0.00		0	0.00		0	5170.54		5
Jefferson Park Historic District												
Gateway Arterial Street (length in ft)	0.00	0%		0.00	0%		2720.62	30%	1	0.00	-	
Arterial Street	6937.98	59%	1	1289.63	35%	1	5101.01	57%	1	0.00	-	
Collector Street	0.00	0%		2432.67	65%	4	0.00	0%	0	0.00	-	
Residential Street	4867.47	41%	6	0.00	0%		1115.17	12%	3	0.00	-	
District Rank Subtotal	11805.45		7	3722.30		5	8936.80		5	0.00		0
John Spring Neighborhood Historic District												
Gateway Arterial Street (length in ft)	0.00	-		0.00	-		0.00	-		0.00	0%	
Arterial Street	0.00	-		0.00	-		0.00	-		575.34	100%	1
Collector Street	0.00	-		0.00	-		0.00	-		0.00	0%	
Residential Street	0.00	-		0.00	-		0.00	-		0.00	0%	
District Rank Subtotal	0.00		0	0.00		0	0.00		0	575.34		1
Miracle Mile Historic District												
Gateway Arterial Street (length in ft)	0.00	-		0.00	-		0.00	-		4587.61	90%	3
Arterial Street	0.00	-		0.00	-		0.00	-		500.46	10%	1
Collector Street	0.00	-		0.00	-		0.00	-		0.00	0%	
Residential Street	0.00	-		0.00	-		0.00	-		0.00	0%	
District Rank Subtotal	0.00		0	0.00		0	0.00		0	5088.07		4
West University Historic District												
Gateway Arterial Street (length in ft)	0.00	-		0.00	-		0.00	-		0.00	0%	
Arterial Street	0.00	-		0.00	-		0.00	-		1259.07	100%	1
Collector Street	0.00	-		0.00	-		0.00	-		0.00	0%	
Residential Street	0.00	-		0.00	-		0.00	-		0.00	0%	
District Rank Subtotal	0.00		0	0.00		0	0.00		0	1259.07		1
SUMMARY OF STREET DESIGNATIONS												
Gateway Arterial Street (length in ft)	0.00	0%	0	0.00	0%	0	5630.51	48%	3	4587.61	38%	3
Arterial Street	6937.98	59%	1	1289.63	35%	1	5101.01	43%	1	5275.47	44%	4
Collector Street	0.00	0%	0	2432.67	65%	4	0.00	0%	0	1415.86	12%	3
Residential Street	4867.47	41%	6	0.00	0%	0	1115.17	9%	3	814.08	7%	1
Route Rank Subtotal	11805.45		7	3722.30		5	11846.69		7	12093.02		11

DMP TABLE C

Historic Districts with 1 vs 2 sides of the Route	Routes from DeMoss-Petrie											
	A			B			D			E		
	Feet	%	Rank	Feet	%	Rank	Feet	%	Rank	Feet	%	Rank
All Districts												
Length of Route with historic district on 1 side	6985.35	59%	4	2616.87	70%	1	6405.76	66%	3	3644.95	30%	2
Length of Route with historic district on 2 sides	4820.11	41%	6	1105.46	30%	3	3284.43	34%	4	8448.12	70%	10
Total Length of Route with historic district on 1 or 2 sides	11805.46		9	3722.33		4	9690.19		6	12093.07		10
Route Rank Subtotal			19			8			13			22

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DMP TABLE D Existing Power Poles located on Route	Routes from DeMoss-Petrie					Routes from DeMoss-Petrie					Routes from DeMoss-Petrie									
	A	B	D	E		A	B	D	E		A	B	D	E		A	B	D	E	
Blenman-Elm Historic District																				
Street	Campbell Ave: Elm to Helen				Pole Height Range (ft)															Number of Poles
	Data Rank	0	0	0	0															0
	District Rank Subtotal	0	0	0	0															0
Catalina Vista Historic District																				
Street	Campbell Ave: Grant to Elm				Pole Height Range (ft)			40.00					82.0							Number of Poles
	Data Rank	0	0	1	0			1					1							0
	District Rank Subtotal	0	0	1	0			1					1							0
Feldman's Historic District																				
Street	Helen St. Park to Euclid				Pole Height Range (ft)					40-45										Number of Poles
Street	Park Ave: Adams to Helen				Pole Height Range (ft)					35-45										Number of Poles
	Speedway Blvd: Stone to Euclid				Pole Height Range (ft)					0.00										Number of Poles
	Data Rank	0	0	0	0			0		2										0
	District Rank Subtotal	0	0	0	0			0		2										1
Jefferson Park Historic District																				
Street	Grant Rd: 1st to Park				Pole Height Range (ft)	85'-95.5'	85'-99.5'	85-99.5												Number of Poles
Street	Grant Rd: Park to Vine				Pole Height Range (ft)	0.00		0.00												Number of Poles
Street	Grant Rd: Vine to Campbell				Pole Height Range (ft)			0.00												Number of Poles
Street	Vine Ave: Grant to Elm				Pole Height Range (ft)	30'-78'														Number of Poles
Street	Park Ave: Grant to Adams				Pole Height Range (ft)		50-82													Number of Poles
Street	Campbell Ave: Grant to Elm				Pole Height Range (ft)			30'-51'												Number of Poles
Street	Park Ave & Grant				Pole Height Range (ft)			82.00												Number of Poles
Street	Ring Dr: Vine to Campbell				Pole Height Range (ft)			Unknown, 40' - 45'												Number of Poles
	Data Rank	9	7	3	0			3												0
	District Rank Subtotal	9	7	3	0			3												0
John Spring Neighborhood Historic District																				
Street	Speedway Blvd 10th to Main				Pole Height Range (ft)					35-45										Number of Poles
	Data Rank	0	0	0	0			0		2										0
	District Rank Subtotal	0	0	0	0			0		2										0
Miracle Mile Historic District																				
Street	Main Ave & Speedway				Pole Height Range (ft)					55.00										Number of Poles
Street	Main Ave & Mabel St				Pole Height Range (ft)					unknown										Number of Poles
Street	Oracle & Sahuaro				Pole Height Range (ft)					45.00										Number of Poles
Street	Oracle & Ventrua				Pole Height Range (ft)					40.00										Number of Poles
	Data Rank	0	0	0	2			0		2										0
	District Rank Subtotal	0	0	0	2			0		2										0
West University Historic District																				
Street	Speedway Blvd Ferro to 9th				Pole Height Range (ft)					40.00										Number of Poles
	Data Rank	0	0	0	2			0		2										0
	District Rank Subtotal	0	0	0	2			0		2										0
SUMMARY																				
	Pole Height Range (ft)	30'-95.5'	50'-99.5'	30'-99.5'	35'-55'															Total # of Poles
	Data Rank Subtotal	9	7	4	8															22
	Route Rank Subtotal	9	7	4	8															11
																				35
																				27.00
																				2
																				6
																				6
																				6
																				9
																				18



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DMP TABLE E Historic Light fixtures within 800' Route Buffer	Routes from DMP											
	A			B			D			E		
	# of Lights	%	Rank	# of Lights	%	Rank	# of Lights	%	Rank	# of Lights	%	Rank
Blenman-Elm Historic District		-			-			-			0%	
Catalina Vista Historic District		-			-			-			0%	
Feldman's Historic District		-			-			-			0%	
Iron Horse Expansion Historic District		-			-			-			0%	
Jefferson Park Historic District		-			-			-			0%	
Miracle Mile Historic District		-			-			-		5	19%	1
West University Historic District		-			-			-		20	77%	4
OUTSIDE OF HISTORIC DISTRICT		-			-			-		1	4%	1
Data Subtotal	0		0	0		0	0		0	0		6
Route Rank Subtotal			0			0			0			6



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DMP TABLE F

Historic Contributing Properties in 800' Route Buffer	Routes from DeMoss-Petrie											
	A			B			D			E		
	# of Prop	%	Rank	# of Prop	%	Rank	# of Prop	%	Rank	# of Prop	%	Rank
Blenman-Elm Historic District												
Number of properties Individually Listed		-			-			0%			-	
Number of landmark properties		-			-			0%			-	
Number of properties built between pre 1919		-			-			0%			-	
Number of properties built between 1920 to 1949		-			-		17	71%	1		-	
Number of properties built between 1950 to 1969		-			-		7	29%	1		-	
Number of properties post 1970		-			-			0%			-	
Total of all Contributing properties per District	0			0			24		2	0		
District Rank Subtotal			0			0			4			0
Catalina Vista Historic District												
Number of properties Individually Listed		-			-			0%			-	
Number of landmark properties		-			-			0%			-	
Number of properties built between pre 1919		-			-			0%			-	
Number of properties built between 1920 to 1949		-			-		30	45%	2		-	
Number of properties built between 1950 to 1969		-			-		36	55%	1		-	
Number of properties post 1970		-			-			0%			-	
Total of all Contributing properties per District	0			0			66		3	0		
District Rank Subtotal			0			0			6			0
Feldman's Historic District												
Number of properties Individually Listed		-			0%			-			0%	
Number of landmark properties		-			0%			-			0%	
Number of properties built between pre 1919		-		4	12%	1		-		18	6%	2
Number of properties built between 1920 to 1949		-		21	64%	1		-		231	80%	6
Number of properties built between 1950 to 1969		-		4	12%	1		-		26	9%	2
Number of properties post 1970		-		4	12%	1		-		13	5%	1
Total of all Contributing properties per District	0			33		2	0			288		7
District Rank Subtotal			0			6			0			18
Jefferson Park Historic District												
Number of properties Individually Listed		0%			0%			0%			0%	
Number of landmark properties		0%			0%			0%			0%	
Number of properties built between pre 1919		0%		2	1%	1		0%			0%	
Number of properties built between 1920 to 1949	155	50%	7	59	31%	3	170	56%	7	16	46%	2
Number of properties built between 1950 to 1969	141	45%	6	122	64%	5	119	40%	5	15	43%	1
Number of properties post 1970	14	5%	1	9	5%	1	12	4%	1	4	11%	1
Total of all Contributing properties per District	310		8	192		5	301		8	35		2
District Rank Subtotal			22			15			21			6
John Spring Neighborhood Historic District												
Number of properties Individually Listed		-			-			-		1	3%	3
Number of landmark properties		-			-			-			0%	
Number of properties built between pre 1919		-			-			-		8	22%	1
Number of properties built between 1920 to 1949		-			-			-		27	75%	2
Number of properties built between 1950 to 1969		-			-			-			0%	
Number of properties post 1970		-			-			-			0%	
Total of all Contributing properties per District	0			0			0			36		2
District Rank Subtotal			0			0			0			8
Miracle Mile Historic District												
Number of properties Individually Listed		0%			0%			0%			0%	
Number of landmark properties		0%			0%			0%			0%	
Number of properties built between pre 1919		0%			0%			0%			0%	
Number of properties built between 1920 to 1949	3	75%	1	3	75%	1	3	75%	1	17	43%	2
Number of properties built between 1950 to 1969	1	25%	1	1	25%	1	1	25%	1	23	58%	2
Number of properties post 1970		0%			0%			0%			0%	
Total of all Contributing properties per District	4		1	4		1	4		1	40		2
District Rank Subtotal			3			3			3			6
West University Historic District												
Number of properties Individually Listed		-			-			-			0%	
Number of landmark properties		-			-			-			0%	
Number of properties built between pre 1919		-			-			-		67	36%	6
Number of properties built between 1920 to 1949		-			-			-		98	52%	10
Number of properties built between 1950 to 1969		-			-			-		8	4%	1
Number of properties post 1970		-			-			-		14	7%	1
Total of all Contributing properties per District	0			0			0			187		5
District Rank Subtotal			0			0			0			23
Outside of Historic District												
Number of properties Individually Listed	2	100%	7	2	100%	7	2	100%	7	2	50%	7
Number of landmark properties		0%			0%			0%			0%	
Number of properties built between pre 1919		0%			0%			0%			0%	
Number of properties built between 1920 to 1949		0%			0%			0%		2	50%	1
Number of properties built between 1950 to 1969		0%			0%			0%			0%	
Number of properties post 1970		0%			0%			0%			0%	
Total of all Contributing properties per District	2		1	2		1	2		1	4		1
District Rank Subtotal			8			8			8			9
SUMMARY OF CONTRIBUTING PROPERTIES ALONG THE ROUTE												
Number of properties Individually Listed	2	1%	7	2	1%	7	2	1%	7	3	1%	10
Number of landmark properties	0	0%	0	0	0%	0	0	0%	0	0	0%	0
Number of properties built between pre 1919	0	0%	0	6	3%	2	0	0%	0	93	16%	9
Number of properties built between 1920 to 1949	158	50%	8	83	36%	5	220	55%	11	391	66%	23
Number of properties built between 1950 to 1969	142	45%	7	127	55%	7	163	41%	8	72	12%	6
Number of properties post 1970	14	4%	1	13	6%	2	12	3%	1	31	5%	3
Total of all Contributing properties per District	316		10	231		9	397		15	590		19
Route Rank Subtotal			33			32			42			70

DMP TABLE G

Access of Historic Contributing Properties along Route	Routes from DeMoss-Petrie											
	A			B			D			E		
	# of Prop	%	Rank	# of Prop	%	Rank	# of Prop	%	Rank	# of Prop	%	Rank
Blenman-Elm Historic District												
Contributing properties: face the route & access directly from route		-			-			-			-	
Contributing properties whose side of the structure face the route		-			-			-			-	
Total Contributing properties directly on the route	0			0			0			0		
District Rank Subtotal			0			0			0			0
Catalina Vista Historic District												
Contributing properties: face the route & access directly from route		-			-		20	95%	3		-	
Contributing properties whose side of the structure face the route		-			-		1	5%	0		-	
Total Contributing properties directly on the route	0			0			21		1	0		
District Rank Subtotal			0			0			4			0
Feldman's Historic District												
Contributing properties: face the route & access directly from route		-			-			-		50	91%	10
Contributing properties whose side of the structure face the route		-			-			-		5	9%	1
Total Contributing properties directly on the route	0			0			0			55		7
District Rank Subtotal			0			0			0			18
Jefferson Park Historic District												
Contributing properties: face the route & access directly from route	15	43%	3	4	25%	1	24	77%	3		-	
Contributing properties whose side of the structure face the route	20	57%	3	12	75%	2	7	23%	1		-	
Total Contributing properties directly on the route	35		5	16		3	31		3	0		
District Rank Subtotal			11			6			7			0
John Spring Neighborhood Historic District												
Contributing properties: face the route & access directly from route		-			-			-			0%	
Contributing properties whose side of the structure face the route		-			-			-		4	100%	1
Total Contributing properties directly on the route	0			0			0			4		1
District Rank Subtotal			0			0			0			2
Miracle Mile Historic District												
Contributing properties: face the route & access directly from route		-			-			-		22	100%	5
Contributing properties whose side of the structure face the route		-			-			-			0%	
Total Contributing properties directly on the route	0			0			0			22		10
District Rank Subtotal			0			0			0			15
West University Historic District												
Contributing properties: face the route & access directly from route		-			-			-		25	100%	5
Contributing properties whose side of the structure face the route		-			-			-			0%	0
Total Contributing properties directly on the route	0			0			0			25		10
District Rank Subtotal			0			0			0			15
SUMMARY OF ACCESS DIRECTLY FROM ROUTE												
Contributing properties: face the route & access directly from route	15	43%	3	4	25%	1	44	85%	6	97	92%	20
Contributing properties whose side of the structure face the route	20	57%	3	12	75%	2	8	15%	1	9	8%	2
Total Contributing properties directly on the route	35		5	16		3	52		4	106		28
Route Rank Subtotal			11			6			11			50

DMP TABLE H

Historic Architectural Criteria	Routes from DMP			
	A	B	D	E
	Rank	Rank	Rank	Rank
Blenman-Elm Historic District				
Historic district integrity			8	
Scale of the street adjacent to historic district			1	
Scale of adjacent historic & non-historic structures along route			1	
Size of historic district impacted			1	
Historic Architectural Impression			1	
District Rank Subtotal	0	0	12	0
Catalina Vista Historic District				
Historic district integrity			8	
Scale of the street adjacent to historic district			1	
Scale of adjacent historic & non-historic structures along route			1	
Size of historic district impacted			1	
Historic Architectural Impression			1	
District Rank Subtotal	0	0	12	0
Feldman's Historic District				
Historic district integrity		6		6
Scale of the street adjacent to historic district		1		4
Scale of adjacent historic & non-historic structures along route		1		4
Size of historic district impacted		1		7
Historic Architectural Impression		2		7
District Rank Subtotal	0	11	0	28
Jefferson Park Historic District				
Historic district integrity	1	1	1	1
Scale of the street adjacent to historic district	10	6	1	1
Scale of adjacent historic & non-historic structures along route	10	6	1	1
Size of historic district impacted	10	8	4	1
Historic Architectural Impression	10	9	1	1
District Rank Subtotal	41	30	8	5
John Spring Neighborhood Historic District				
Historic district integrity				8
Scale of the street adjacent to historic district				1
Scale of adjacent historic & non-historic structures along route				2
Size of historic district impacted				2
Historic Architectural Impression				3
District Rank Subtotal	0	0	0	16
Miracle Mile Historic District				
Historic district integrity	6	6	6	6
Scale of the street adjacent to historic district	1	1	1	1
Scale of adjacent historic & non-historic structures along route	1	1	1	3
Size of historic district impacted	1	1	1	3
Historic Architectural Impression	1	1	1	3
District Rank Subtotal	10	10	10	16
West University Historic District				
Historic district integrity				8
Scale of the street adjacent to historic district				1
Scale of adjacent historic & non-historic structures along route				2
Size of historic district impacted				5
Historic Architectural Impression				4
District Rank Subtotal	0	0	0	20
SUMMARY OF HISTORIC ARCHITECTURAL RANKING				
Historic district integrity	7	13	23	29
Scale of the street adjacent to historic district	11	8	4	8
Scale of adjacent historic & non-historic structures along route	11	8	4	12
Size of historic district impacted	11	10	7	18
Historic Architectural Impression	11	12	4	18
Route Rank Total	51	51	42	85

DMP Summary Tables A to G	Routes from DMP			
DMP TABLE A	A	B	D	E
Bisecting vs Bordering Historic Districts	Rank	Rank	Rank	Rank
Blenman-Elm Historic District	0	0	1	0
Catalina Vista Historic District	0	0	2	0
Feldman's Historic District	0	0	0	11
Jefferson Park Historic District	21	13	8	0
John Spring Neighborhood Historic District	0	0	0	1
Miracle Mile Historic District	0	0	0	16
West University Historic District	0	0	0	5
Route Rank	21	13	11	33
DMP TABLE B				
Street Designation				
Blenman-Elm Historic District	0	0	1	0
Catalina Vista Historic District	0	0	1	0
Feldman's Historic District	0	0	0	5
Jefferson Park Historic District	7	5	5	0
John Spring Neighborhood Historic District	0	0	0	1
Miracle Mile Historic District	0	0	0	4
West University Historic District	0	0	0	1
Route Rank	7	5	7	11
DMP TABLE C				
Historic Districts with 1 vs 2 sides of the Route				
Route Rank	19	8	13	22
DMP TABLE D				
Existing Power Poles located on Route				
Blenman-Elm Historic District	0	0	0	0
Catalina Vista Historic District	0	0	3	0
Feldman's Historic District	0	0	0	4
Jefferson Park Historic District	21	23	6	0
John Spring Neighborhood Historic District	0	0	0	4
Miracle Mile Historic District	0	0	0	6
West University Historic District	0	0	0	4
Route Rank	21	23	9	18
DMP TABLE E				
Historic Light fixtures within 800' Route Buffer				
Blenman-Elm Historic District	0	0	0	0
Catalina Vista Historic District	0	0	0	0
Feldman's Historic District	0	0	0	0
Jefferson Park Historic District	0	0	0	0
John Spring Neighborhood Historic District	0	0	0	0
Miracle Mile Historic District	0	0	0	1
West University Historic District	0	0	0	4
Outside of Historic District	0	0	0	1
Route Rank	0	0	0	6
DMP TABLE F				
Historic Contributing Properties in 800' Route Buffer				
Blenman-Elm Historic District	0	0	4	0
Catalina Vista Historic District	0	0	6	0
Feldman's Historic District	0	6	0	18
Jefferson Park Historic District	22	15	21	6
John Spring Neighborhood Historic District	0	0	0	8
Miracle Mile Historic District	3	3	3	6
West University Historic District	0	0	0	23
Outside of Historic District	8	8	8	9
Route Rank	33	32	42	70
DMP TABLE G				
Access of Historic Contributing Properties along Route				
Blenman-Elm Historic District	0	0	0	0
Catalina Vista Historic District	0	0	4	0
Feldman's Historic District	0	0	0	18
Jefferson Park Historic District	11	6	7	0
John Spring Neighborhood Historic District	0	0	0	2
Miracle Mile Historic District	0	0	0	15
West University Historic District	0	0	0	15
Route Rank	11	6	11	50
DMP TABLE H				
SUMMARY OF HISTORIC ARCHITECTURAL RANKING				
Blenman-Elm Historic District	0	0	12	0
Catalina Vista Historic District	0	0	12	0
Feldman's Historic District	0	11	0	28
Jefferson Park Historic District	41	30	8	5
John Spring Neighborhood Historic District	0	0	0	16
Miracle Mile Historic District	10	10	10	16
West University Historic District	0	0	0	20
Route Rank Total	51	51	42	85

DMP TABLE I	Routes			
SUMMARY BY HISTORIC DISTRICTS FOR DMP ROUTES	A	B	D	E
Blenman-Elm Historic District	0	0	18	0
Catalina Vista Historic District	0	0	28	0
Feldman's Historic District	0	17	0	84
Jefferson Park Historic District	123	92	55	11
John Spring Neighborhood Historic District	0	0	0	32
Miracle Mile Historic District	13	13	13	64
West University Historic District	0	0	0	72
Outside of Historic District	8	8	8	10
Total by District: Tables A,B,D,E,F,G,H	144	130	122	273
Total including DMP Table C	163	138	135	295

VIII. Recommendations

We recommend that TEP locate the new transmission line following Route 1 or 2 for the UA North Substation to Kino and Route D for the UA North Substation to DMP over all of the other route combinations included in this study. If Route 1 or 2 are not able to be combined with Route D, our next recommendation would be Route 1 or 2 for the UA North Substation to Kino and Route B for the UA North Substation to DMP.

A. Rationale for Recommendations of Kino Route 1 or 2 with DMP Route D

1. Recommendation based on Measurable criteria:

- i. Per Kino Table 1 Length of Route Bisecting versus Bordering Historic Districts: Routes 1 and 2 only bisect Sunshine Mile Historic District, all other historic districts are bordered. If D is combined with Routes 1 or 2, Route D, TEP might locate the transmission line along Lester Street, one block north of Ring Road, instead of Ring Road to prevent Routes 1 or 2 and D from both occurring on Ring Road. If this occurs, Lester would bisect Jefferson Park, however very few contributing properties remain between Lester Street and Ring Road.
- ii. Per Kino Table 2 Street Designation: Routes 1 and 2 are primarily located along Campbell Avenue, a gateway arterial street, which means it is a wide street with additional landscape, hardscape, landscaped medians and other street functions such as bike routes and bus stops.
- iii. Per DMP Table B Street Designation: Route D is primarily located on Grant Road, an arterial street that is currently being widened and has new landscaping and sidewalks. Route D is also located on Campbell Avenue, between Jefferson Park and Catalina Vista where Campbell Avenue's width includes additional side streets to provide greater separation between the neighborhoods and Campbell Ave. The width of Campbell Avenue between these two neighborhoods is wider than Campbell Avenue between Sam Hughes and Rincon Heights due to these additional neighborhood side streets.
- iv. Per Kino Table 3 and DMP Table C Length of Route with Historic Districts on 1 Side versus 2 Sides: Routes 1 and 2 and D have the least length of transmission line where both sides of the route affect historic districts.
- v. Per Kino Table 4 and DMP Table D Existing Power Poles in Historic Districts Located Along the Route: Routes 1 and 2 and D have the greatest number of existing light poles, which means they have the least impact in terms of power poles already being visible along the route.
- vi. Per Kino Table 5 and DMP Table E Number of Historic Light Fixtures Located within 800' from the Route: Route 1 and 2 had the least number of historic light fixtures. Route D has no historic light fixtures.
- vii. Per Kino Table 6 Historic Contributing Properties within 800 feet from the Route and Age Range: Route 1 and 2 have the least number of contributing properties within the 800' buffer.
- viii. Per DMP Table F Historic Contributing Properties within 800 feet from the Route and Age Range: Route D has the second highest number of contributing properties within the 800' buffer. Although Route D was not the lowest ranking, based on the findings in Tables A through E and Table H, Route D offers the best solution of the DMP routes.
- ix. Per Kino Table 7 Direct Access of Historic Contributing Properties from the Route: Routes 1 and 2 have the least number of properties directly on the route and the least number of properties that face the route.
- x. Per Table G Direct Access of Historic Contributing Properties from the Route: Route D has the second highest number of contributing properties that face the route and that are directly on the route. However, much of Route D that borders Jefferson Park will be along Grant Road, and because this is an arterial street with high traffic along with the widening of this road, new taller poles have already been installed along Grant Road, we felt that most of the homes facing Grand Road in Jefferson Park will not have an additional negative impact from the new power poles to those contributing properties directly on Grant Road. On Campbell Avenue, both Catalina Vista and Jefferson Park have contributing properties directly along the route. Catalina Vista has most of their homes facing the route, however, the additional neighborhood side streets along Campbell Avenue, reduces the impact of the proposed power poles to those contributing structures directly on the route at Campbell Avenue.

2. Recommendations Based on Historic Architectural Analysis

- i. Routes 1, 2 and D have the lowest architectural ranking as shown on Kino Table 8 and DMP Table H Historic Architectural Analysis.
- ii. Grant Road and Campbell Avenue are wide streets with more room to absorb the impact of the 75' - 85' high power poles, especially in comparison to Route 3 and 5.
- iii. Both Routes 1 & 2 and 3 & 5 are adjacent to or have a view of the University of Arizona or nearby high rise structures. Route 1 & 2 with Route D seems to have more open space to take on the impact of the 75' - 85' tall power poles and would have less impact on the primarily single story historic structures.
- iv. Route 1 & 2 with D consists of larger historic districts than the neighborhoods along Route 3 & 5. From our observations, the smaller the historic districts will have a greater impact from the transmission line due to more of their district being affected.
- v. Perhaps the most important variable is the fact that Route 1 and 2 only bisect Sunshine Mile Historic District and in that district there are no contributing properties directly on the route.
- vi. By combining Route 1 or 2 with D, it reduces the impact to the areas that will be affected by the transmission line. Route 1 and 2 takes the transmission line north on Campbell Avenue to Elm Street. Route D takes the transmission line south on Campbell Avenue from Grant Road to Elm Street. This allows the transmission line to only affect Campbell Avenue. To combine Route D with Route 3, 5 or E would result in a greater number of historic districts to be affected and increase the locations of tall power poles.

B. Rationale for Recommendation of DMP Route B

We recommend Route B if TEP determines route D cannot be combined with Routes 1 or 2.

1. Recommendation based on Measurable criteria:

- i. Per Table A Length of Route Bisecting versus Bordering Historic Districts: Route B has the second least amount of historic districts being bisected. Jefferson Park is bisected in this option.
- ii. Per Table B Street Designations: Route B doesn't have any of the route on residential streets, where Routes A and E have routes that bisect historic districts on residential streets.
- iii. Per Table C Length of Route with Historic Districts on 1 Side versus 2 Sides: Route B has the shortest route length of historic district affected over the historic districts in Routes A, D and E.
- iv. Per Table D Existing Power Poles in Historic Districts Located Along the Route: Route B has the least number of power poles, however, Park Ave does have existing power poles, which could to reduce the impact to Jefferson Park if the existing power poles can be removed and replaced with fewer, taller power poles.
- v. Per Table E Number of Historic Light Fixtures Located within 800' from the Route: Route B has no historic light fixtures.
- vi. Per Table F Historic Contributing Properties within 800 feet from the Route and Age Range: Route B has the least number of contributing properties in the 800' buffer
- vii. Per Table G Direct Access of Historic Contributing Properties from the Route: Route B has the least number of contributing properties facing or directly on the route.

2. Recommendations Based on Historic Architectural Analysis

- i. Per Table H Historic Architectural Analysis: Route B has the same historic architectural ranking as Route A. It is our professional opinion that Route B is a better option than Route A because Route B does not bisect Jefferson Park on a residential street.

C. Table 10 Kino and DMP Route Combinations

This table compares the ranking of various route combination which formed the basis of the recommendation for Kino Route 1 or 2 with DMP Route D as the best recommendation. This is followed by the recommendation of Kino Route 1 or 2 with DMP Route B as the next recommendation.

Table 10 Kino and DMP Route Combination

Alternative Route Combination	1A	1B	1D	1E	2A	2B	2D	2E	3A	3D	5A	5D
Bisecting vs Bordering Historic Districts	57	49	47	69	57	49	47	69	80	70	80	70
Street Designation	26	24	26	30	26	24	26	30	29	29	29	29
Historic Districts with 1 vs 2 sides of the Route	28	17	22	31	28	17	22	31	34	28	34	28
Existing Power Poles located on Route	45	47	33	42	45	47	33	42	49	37	49	37
Historic Light fixtures within 800' Route Buffer	4	4	4	10	4	4	4	10	10	10	10	10
Historic Contributing Properties in 800' Route Buffer	99	98	108	136	99	98	108	136	140	149	140	149
Access of Historic Contributing Properties along Route	26	21	26	65	26	21	26	65	73	73	73	73
Historic Architectural Impact Rank	153	153	144	187	153	153	144	187	201	192	201	192
Total Alternative Route Combination Rank	438	413	410	570	438	413	410	570	616	588	616	588

Measurable Criteria & Historic Architectural Impact Ranking	Kino Routes				DMP Routes			
	1	2	3	5	A	B	D	E
Bisecting vs Bordering Historic Districts	36	36	59	59	21	13	11	33
Street Designation	19	19	22	22	7	5	7	11
Historic Districts with 1 vs 2 sides of the Route	9	9	15	15	19	8	13	22
Existing Power Poles located on Route	24	24	28	28	21	23	9	18
Historic Light fixtures within 800' Route Buffer	4	4	10	10	0	0	0	6
Historic Contributing Properties in 800' Route Buffer	66	66	107	107	33	32	42	70
Access of Historic Contributing Properties along Route	15	15	62	62	11	6	11	50
Historic Architectural Impact Ranking	102	102	150	150	51	51	42	85
Totals	275	275	453	453	163	138	135	295

D. General Recommendations for all routes:

We understand these 75' - 85' power poles will have a visual impact on any of the routes chosen, however our objective is to offer recommendations and ideas that could help decrease the visual impact to the residents of the historic neighborhoods and its visitors. Recommendations of historic structures by SHPO, COT and specific neighborhood design guidelines do not address how utilities need respond to historic districts or historic structures. The recommendations we have developed are based on our historic architectural experience and through our visual analysis of the routes.

For all of the routes we recommend the following:

- i. Locate power poles away from contributing commercial buildings that help create the street fabric.
- ii. Locate power poles away from residences that directly face the route.
- iii. Locate power poles away from locations with historic light fixtures.
- iv. Locate poles around existing landscape where possible to allow the pole base to be less visible.
- v. Provide additional landscaping along the route and into the historic districts to help hide the visibility of the power poles directly from the route and from within the 800' buffer.
- vi. Space poles as far apart from each other as possible.
- vii. Work with the arts and culture community groups to develop art projects around the transmission poles. Perhaps art that shares stories about the historic districts.
- viii. Although we suggest that painting the poles to create less contrast with the space around them would help reduce the visibility of the poles, TEP is unable to paint the poles due to future maintenance issues, such as having to de-energize power to the pole in order to repaint the pole. The rust colored power poles on Grant Road tend to have greater visibility than power poles that are painted tan or grey. If TEP is unable to paint the poles, we recommend using galvanized steel poles where historic districts occur.
- ix. Although TEP cannot control the schedule of other utilities that currently use their existing power poles, it is recommended that TEP coordinate with the other utility companies, possibly with the help of City of Tucson and Major and Council, to relocate their utilities when TEP installs the new power poles to allow the many existing power poles that TEP no longer needs to be removed from the route. By removing as many existing power poles as possible, it will help make the route cleaner and reduce the impact that the neighborhoods are feeling from the 75' -85' power poles.

E. Suggested Recommendations for Route 1 or 2 with Route D:

- i. Locate the power poles on the west side of the street on Campbell Avenue.
- ii. Locate the power poles to allow the UA Campus mall and 3rd Street to maintain as much of an open vista to Old Main as possible.
- iii. Use landscape elements to help reduce the impact and visibility of the pole bases by using walkability elements, such as trees for shade, artwork and landscape to develop islands of respite and help bring interest towards eye level.
- iv. Plant large trees that will grow to be tall, in the center median of Campbell Avenue to shield the power poles from Catalina Vista, Blenmen-Elm, Rincon Heights and Sam Hughes.
- v. Possibly locate the power poles in the center of the landscape median to treat the poles more as art rather than as a utility that is typically on the side of the street.
- vi. Add additional landscape, site walls, accessible sidewalks and if there is the space, neighborhood side streets on Campbell Avenue from Broadway boulevard to 6th Street, similar to the neighborhood streets along Campbell Avenue from Grant Road to Elm Street, to help reduce the impact to Rincon Heights Historic District and allow a more walkable path from Broadway Boulevard to Grant Road, as both streets are currently being widened with accessible sidewalks and increased landscape.
- vii. Although there is an additional cost to locate the transmission line underground, and we understand that it is not TEP's preference and may not be constructible or feasible, we strongly recommend locating the portion on Campbell Avenue from 6th Street to Speedway Boulevard, underground to maintain a clear air space, especially where the UA campus mall occurs at Campbell Avenue and 3rd Street.

F. Additional Recommendations for Route B:

- i. Locate the power poles on the east side of the street on Park Avenue so that they replace the existing wood power poles currently on the east side of the street.
- ii. Install sidewalks, curbs, accessible sidewalks and landscape for shade along Park Avenue to help improve the walkability of the street and to reduce the visual impact to the historic district.

IX. Appendix

- A. Definitions
- B. Abbreviations
- C. Resources
- D. Exhibit A: TEP Route Combination Map

A. Definitions

Arterial Street: An Arterial street is defined as “A street identified as an arterial or Interstate Route on the Major Streets and Routes (MS&R) Plan.” This definition can be found in the City of Tucson Unified Development Code.

City Historic Landmark: The City of Tucson has individual properties that the City has defined as locally historically significant that the Mayor and Council must approve. A City Historic Landmark is not necessarily a National Historic Landmark.

City of Tucson Historic Preservation Office: The City Historic Preservation Office works with City of Tucson departments and Arizona State Historic Preservation Office (AZSHPO) to determine requirements for structures that have been identified as having historic significance, such as be a contributing property, individually listed, or a historic landmark.

City of Tucson Historic Preservation Zone: Per the City of Tucson’s Unified Development Code, section 5.8.1, “The purpose of the Historic Preservation Zone (HPZ) and Historic Landmark (HL) designation is to promote the educational, cultural, economic, and general welfare of the community and to ensure the harmonious growth and development of the municipality by encouraging the preservation and rehabilitation of significant historic districts, neighborhoods, buildings, structures, sites, objects, and archaeological resources. These designations are intended to ensure the preservation of significant historic and archaeological resources, and to keep them in active use or management in their historic appearance, settings, and locations. It is also intended that new or remodeled buildings or structures located within HPZs or HL properties be designed and constructed to harmonize and be compatible with existing buildings and structures within the sites and development zones in order to preserve property values, provide for appropriate future development, and promote an awareness of the heritage of Tucson among both residents and visitors to the community.” The City of Tucson requires that a project within a HPZ, follow additional design standards and additional review processes by the Tucson Pima County Historic Commissions and City of Tucson Historic Preservation Office.

Collector Street: A collector street is define as “A street identified as a collector on the Major Streets and Routes (MS&R) Plan” This definition can be found in the City of Tucson Unified Development Code.

Contributing Property: The National Register of Historic Places defines a contributing property is a structure that is part of a historic district and is not eligible or has not been nominated to be an individually listed property. The City of Tucson defines contributing property as “A property within a Historic Preservation Zone, Neighborhood Preservation Zone, or National Register Historic District that contributes to the historic significance and visual character of the zone or district, and has sufficient integrity to convey that significance and those visual character defining features in terms of location, design, setting, material, workmanship, character, or association. Contributing Properties are historic sites or non-historic compatible properties.”

Gateway Arterial Street: defined by the City of Tucson in the City of Tucson Unified Development Code as “A street or parkway that is a heavily traveled entrance to and through the City, and is designated as a Gateway Route on the Major Streets and Routes (MS&R) Plan map. These routes link major employment areas, shopping centers, and recreational areas used regularly by a large number of residents and visitors and present a visual impression of Tucson’s character.”

Historic Districts: Historic Districts are listed in the National Register of Historic Places and identify a group of structures that represent a period of historic significance at the local, state or national level. The City of Tucson defines our National Register of Historic Districts as, “Tucson’s nationally designated historic districts meet the criteria for, and have been listed in, the National Register of Historic Places (NRHP). A NRHP historic district is composed of multiple contributing properties that—as a collective whole—convey significance in terms of one or more of the following aspects of American history: (A) Association with historic events or activities, (B) Association with an important person in history, (C) Distinctive design or physical character, or (D) Potential to provide important information about prehistory or history. Each contributing property in a NRHP historic district must maintain enough of its original qualities to visibly convey its significance. These qualities of integrity include: location, design, setting, materials, workmanship, feeling, and association. A National Register Historic District must contain a minimum of 51 percent contributing properties within its boundaries.”

Historic Landmarks Zone: Refer to Historic Preservation Zone

Historic Preservation Zone: Per the City of Tucson Unified Development Code section 5.8, “The purpose of the HPZ and HL designation is to promote the educational, cultural, economic, and general welfare of the community and

to ensure the harmonious growth and development of the municipality by encouraging the preservation and rehabilitation of significant historic districts, neighborhoods, buildings, structures, sites, objects, and archaeological resources. These designations are intended to ensure the preservation of significant historic and archaeological resources, and to keep them in active use or management in their historic appearance, settings, and locations. It is also intended that new or remodeled buildings or structures located within HPZs or HL properties be designed and constructed to harmonize and be compatible with existing buildings and structures within the sites and development zones in order to preserve property values, provide for appropriate future development, and promote an awareness of the heritage of Tucson among both residents and visitors to the community.”

Historic Site or Historic Structure: City of Tucson defines this in the Unified Development Code section 11.4.9 as “a building, structure, object, or site, including vegetation or signs located on the premises, that: Dates from a particular significant period in Tucson’s history, i.e., prehistoric, native indigenous, Pre-Colonial (before 1775), Spanish Frontier (Colonial) (1775-1821), Mexican Frontier (1821-1853), Territorial (1854-1912), Post-Territorial (1912-1920), or Post-World War I Development (1920-1945), or relates to events, personages, or architectural styles that are at least 50 years old; however, outstanding examples less than 50 years old should be evaluated on their own merits; Is associated with the lives of outstanding historic personages; Is associated with significant historic events or occurrences; Exemplifies the architectural period in which it was built and has distinguishing characteristics of an architectural style or method of construction or is the notable work of a master builder, designer, or architect whose individual genius influenced his/her age; Contributes information of archaeological, historic, cultural, or social importance relating to the heritage of the community; or, Relates positively to buildings in its immediate vicinity in terms of scale, size, massing, etc., such that its removal would be an irreparable loss to the setting.”

Individually Listed Property: The National Register of Historic Places defines an individually listed property as a structure or site that has greater historic significance than a contributing property and can be listed independently of a historic district. The City of Tucson defines this as, “Tucson’s individually designated historic properties meet the criteria for, and have been listed in, the National Register of Historic Places. An individually designated historic property derives its significance from one or more of the following aspects of American history: (A) Association with historic events or activities, (B) Association with an important person in history, (C) Distinctive design or physical character, or (D) Potential to provide important information about prehistory or history. An individually designated historic property also maintains enough of its original qualities that make it significant. These qualities of integrity include: location, design, setting, materials, workmanship, feeling, and association.”

National Historic Landmark Property: The National Register of Historic Places defines landmark properties as structures or sites that are recognized as being critical to preserve statewide. Landmark properties have a greater historic importance than contributing and individually listed properties. The City of Tucson defines Historic Landmarks as “A historic site or structure of the highest historic, cultural, architectural, or archaeological importance to Tucson that if demolished or significantly altered would constitute an irreplaceable loss to the quality and character of Tucson. A Historic Landmark is an outstanding or unique example of architectural style; is associated with a major historic event, activity, or person; or has unique visual quality and identification. A Historic Landmark may be located within the boundaries of or outside a historic district.”

National Register of Historic Places: The National Register of Historic Places as defined by the National Park Services, “is the official list of the Nation’s historic places worthy of preservation. Authorized by the National Historic Preservation Act of 1966, the National Park Service’s National Register of Historic Places is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect America’s historic and archaeological resources.” The National Park Services, under the US Department of Interior, manages and evaluates the National Register of Historic Places for all of the United States.

Neighborhood Preservation Zone: Per the City of Tucson’s Unified Development Code, section 5.10.1, “Preserving and enhancing Tucson’s established neighborhoods is critical to conserving the cultural and historic heritage of the City. The purposes of the Neighborhood Preservation Zone (NPZ) are: A. To provide a process for the establishment of NPZ districts to preserve, protect and enhance the unique character and historical resources of established City neighborhoods; and, B. To provide for the creation and establishment of a neighborhood-specific design manual for each NPZ district, containing architectural and design standards and guidelines to ensure that development is compatible with the neighborhood character overall, as well as with the character of the applicable Development Zone.” The City of Tucson requires that a project in a NPZ follow specific design requirements for that specific neighborhood and is required to follow additional review processes by the Tucson Pima County Historic Commission and City of Tucson Historic Preservation Office.

Non-Contributing Property: A once Contributing Property could be delisted due to alterations of the existing structure that causes a loss of integrity or character-defining features, based on the seven aspects of NRHP integrity, refer to the resource section in the appendix under Historic Architectural Integrity Definition and Explanation. This study did

not evaluate whether a Contributing property may have changed sufficiently to be considered Noncontributing or contributing.

State Historic Preservation Office: The Arizona State Historic Preservation Office is a division of the Arizona State Parks. The purpose of SHPO is to identify and evaluate historic structures and archaeological sites, nominate eligible historic and archaeological properties to the National Register of Historic Places, and to assist in preserving heritage resources for the benefit of Arizonans.

B. Abbreviations

AZSHPO: Arizona State Historic Preservation Office

COT: City of Tucson

DMP: DeMoss-Petrie

GIS: Geographic Information System

HL: Historic Landmark

NRHP: National Register of Historic Places

NPZ: Neighborhood Preservation Zone

HPZ: Historic Preservation Zone

PC: Pima County

SHPO: State Historic Preservation Office

TAC: The Architecture Company

TEP: Tucson Electric Power Company

TPCHC: Tucson-Pima County Historical Commission

TROW: Tierra Right of Way

UA: University of Arizona

C. Resources

General Resources

City of Tucson Major Street and Route Map: A PDF of the Major Streets and Routes developed by the City of Tucson. This map was used to determine street designations for Kino Table 2 / DMP Table B: Street Designations.

https://www.tucsonaz.gov/files/pdsd/plans/MSR_Map.pdf

City of Tucson Historic Preservation Office: For general information about the City of Tucson Historic Preservation Office

<https://www.tucsonaz.gov/historic-preservation>

City of Tucson Historic GIS Map: For an interactive map showing historic properties and districts within the City of Tucson

<https://maps2.tucsonaz.gov/html5viewer/?viewer=historicproperties>

National Register of Historic Places: For general information about the National Register of Historic Places

<https://www.nps.gov/subjects/nationalregister/index.htm>

State of Arizona Historic Preservation Office: For general information about the State of Arizona Historic Preservation Office

<https://azstateparks.com/shpo/>

City of Tucson Grant Road Improvement Project: For information on the Grant Road Improvements from Oracle Rd To Swan Road, including the Historic Properties Assessment and the Community Character and Vitality Corridor Vision

<http://www.grantrroad.info/documents>

City of Tucson Broadway Boulevard Improvement Project: For information on the Broadway Boulevard Improvements from Euclid to Country Club, including a Historic Buildings Inventory

<http://www.broadwayboulevard.info/planning>

Historic Architectural Terminology

Architectural Styles in Tucson's Historic Neighborhood: A publication by Drachman Institute with the University of Arizona:

http://www.downtowntucson.org/wp-content/uploads/2011/05/THS_map_FP.pdf

Historic Architectural Integrity Definition and Explanation: Refer to page 44. This pdf report also explains how criteria is evaluated by the National Park Services to be included on the National Register of Historic Places:

https://www.nps.gov/subjects/nationalregister/upload/NRB-15_web508.pdf

Historic District Nominations and SHPO Forms

City of Tucson National Register Historic Districts Nomination Applications: This website lists Tucson's nationally designated historic districts that meet the criteria for, and have been listed in, the National Register of Historic Places (NRHP). This lists the Map, Nomination Form which includes a brief description, detailed description of significance, inventory of contributing properties and photos.

<https://www.tucsonaz.gov/preservation/national-register-historic-districts>

Here you can find the information for the following historic districts in this study:

- Blenman-Elm Historic District
- Catalina Vista Historic District
- Feldman's Historic District
- Iron Horse Historic District
- Jefferson Park Historic District
- John Spring Neighborhood Historic District
- Miracle Mile Historic District
- Pie Allen Residential Historic District
- Rincon Heights Historic District
- Sam Hughes Residential Historic District
- West University Historic District

*Sunshine Mile Historic District is currently not available on this website as of the date of this report.

City of Tucson Map of National Register Historic Districts and Historic Zoning: A link to a PDF map showing all of the Nationally Registered Historic Districts in the City of Tucson as well as City of Tucson Historic Zoning

https://www.tucsonaz.gov/files/pdsd/Preservation/22x34_NRHDs_Zones_index_121917.pdf

Individually designated historic properties: This website links to the SHPO form for the individually designated historic properties in this study area.

<https://www.tucsonaz.gov/preservation/individually-designated-historic-properties>

Feldman's Historic District: University Heights Elementary School

John Spring Neighborhood: Sabedra-Huerta House

Near Grant Rd and Fair View Ave: Matus, Antonio, House and Property, 856 W. Calle Santa Ana; Pascua Cultural Plaza, 785 W. Sahuaro St.

National Archives: This website provides the instructions on how to search on the National Archives where the National Register of Historic Places has started to digitize their data.

<https://www.nps.gov/subjects/nationalregister/database-research.htm>

Design Guidelines

Neighborhood Design Guidelines: The following websites are links to the historic district's design guidelines or design manual, should they exist.

Blenman-Elm Historic District: <https://blenmanelm.wordpress.com/neighborhood/neighborhood-plan/>

Catalina Vista Historic District: <https://blenmanelm.wordpress.com/neighborhood/neighborhood-plan/>

Feldman's Historic District: <https://www.tucsonaz.gov/pdsd/feldman%E2%80%99s-neighborhood-preservation-zone>

Iron Horse Historic District: No Design Guidelines or Manuals identified

Jefferson Park Historic District: <http://www.jeffersonpark.info/neighborhood-manuals.html>

John Spring Neighborhood Historic District: <http://dunbarspring.org/documents/dunbarspring-community-development-plan-1995>

Miracle Mile Historic District: No Design Guidelines or Manuals identified

Pie Allen Residential Historic District: No Design Guidelines or Manuals identified

Rincon Heights Historic District: No Design Guidelines or Manuals identified

Sam Hughes Residential Historic District: No Design Guidelines or Manuals identified, only a Neighborhood Plan: <https://www.tucsonaz.gov/files/pdsd/plans/shughes.pdf>

Sunshine Mile Historic District: No Design Guidelines or Manuals identified

West University Historic District: <https://www.tucsonaz.gov/preservation/city-historic-designations-and-design-review>

SHPO Design Guidelines: All Contributing properties in historic districts and individually listed properties are required to follow SHPO design guidelines in order to maintain their contributing status. SHPO design guidelines can be found here:

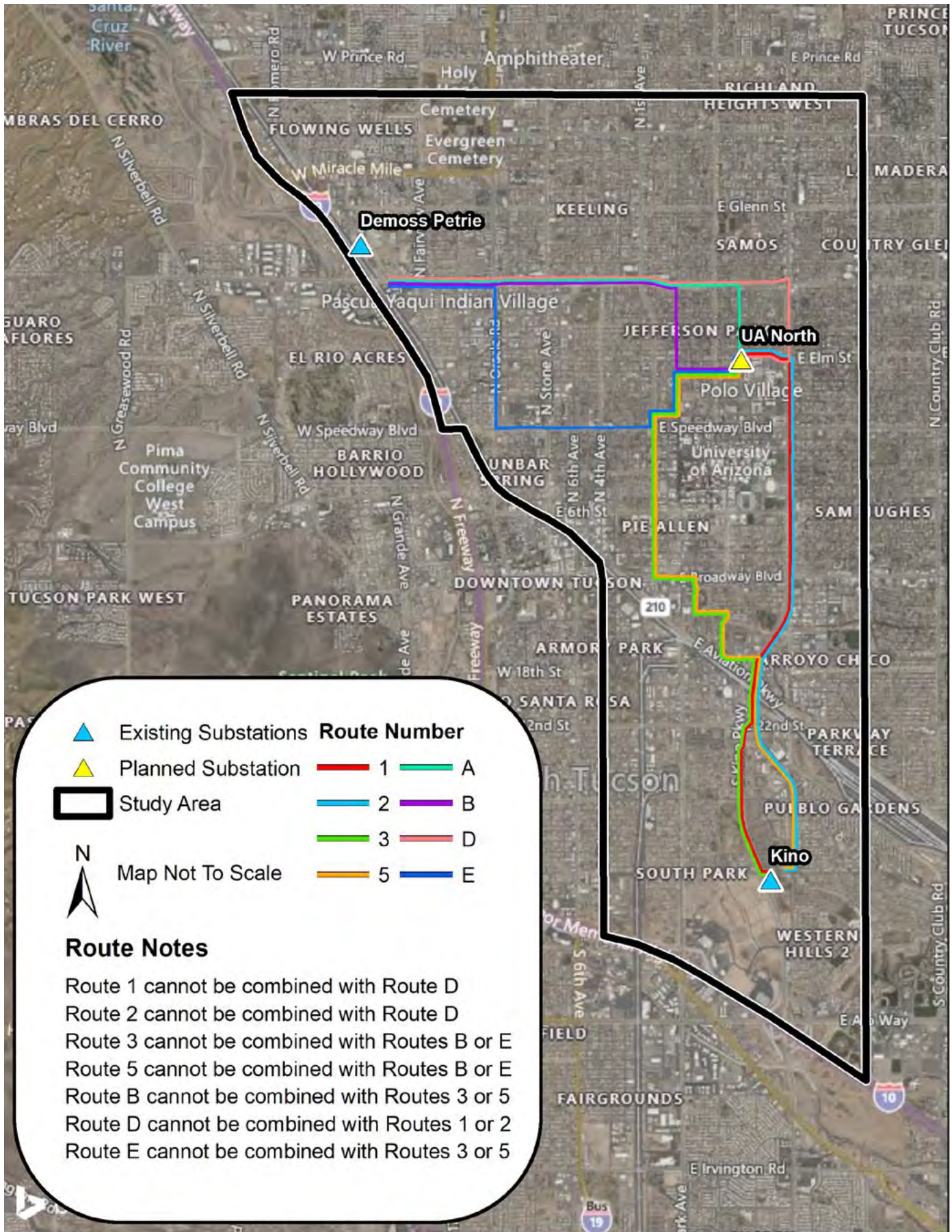
<https://www.nps.gov/tps/standards.htm>

University of Arizona Preservation Plan: For a PDF of the UA Preservation Plan

https://pdc.arizona.edu/file/UA_Preservation_Plan_June_2006_final_0.pdf

E. TEP ROUTE COMBINATION MAP

Map below provided by TEP to show current routes that cannot be combined.



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EXHIBIT F

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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-4
F.4 Conclusion	F-5

F.1 Introduction

The Project will consist of building a new 138 kV transmission line totaling 7.2 to 8.1 miles in length, depending on the alternative approved, to connect the existing Kino Substation to the existing DMP Substation. The Project will interconnect to the planned Vine 138 kV Substation. The Project will cross private, USPS, COT, Arizona Board of Regents, and Pima County (Alternative Route 5A only) owned land, as well as COT road ROW. Seven preliminary route alternatives have been identified, resulting from line siting studies, analysis, and a public participation process that began in 2019. The proposed alternative routes are identified as Alternative Routes 1A, 1B, 1D, 2A, 2B, 2D and 5A, and are described in Section B.1-4 of the application. Alternative Route 1B is the preferred route. The new line will be built with a combination of galvanized (36th Street to Grant Road) and self-weathering steel (Grant Road to DMP Substation) monopoles ranging from 75 to 120 feet above ground, with the taller structures required for site specific clearance issues.

The following analysis describes recreational settings and features, and potential impacts to them from the Project, within the Recreation Study Area, defined as a 1,000-foot buffer centered on the route alternatives. The entire Recreation Study Area is within the COT, Pima County, Arizona.

F.2 Affected Environment

Recreational opportunities in the Recreation Study Area are primarily associated with park facilities located adjacent to or in proximity to the alternative routes. These facilities include municipal parks that provide sport fields, playgrounds, walking paths, and other recreational opportunities to the public (Table 14, Exhibit F-1). Although these facilities are located in proximity to the alternative routes, the Project is not anticipated to preclude recreational uses or public enjoyment because the location of the facilities

would not result in closure of any recreational facilities. Other neighborhood parks and recreation centers are located greater than 1,000 feet from the alternative routes.

Table 14. Recreation Facilities Adjacent to Alternative Routes

Recreation Facility	Jurisdiction	Location	Adjacent to Alternative Route
Silverlake Park and Quincie Douglas Recreation Center and Pool	City of Tucson	Northwest of the intersection of South Kino Parkway and East 36th Street	West of 1, A, B, D
Mirasol Park	City of Tucson	North of East Silverlake Road, South of East 28 th Street	West of 1, A, B, D
Cherry Field baseball complex (rec.arizona.edu)	City of Tucson	Between South Kino Parkway and S Cherry Avenue, and between East 13 th Street and East 15 th Street	West of 1, 2, A, B, D
Arroyo Chico Urban Greenway	City of Tucson	North of East 16 th Street, West of South Highland Avenue to South of East Broadway	West of 1, 2, A, B, D
University of Arizona recreational facilities including McKale Memorial Center	University of Arizona	Between East 2 nd Street and East 6 th Street	West of 1, 2, A, B, D
Mansfield Park	City of Tucson	South of East Grant Road, East of North 6 th Avenue	South of 1, 2, A, B, D
Tahoe Park	City of Tucson	West of Campbell Avenue	West of 1, 2, D
Grant & Campbell Park	City of Tucson	Northwest corner of East Grant Road and North Campbell Avenue	North of 1, 2, D
Balboa Heights Park	City of Tucson	North of Grant Avenue	North of 1, 2, A, B, D
South Campbell Avenue Median Landscape	City of Tucson	South Campbell Avenue, between E 36 th to Cherrybell Stravenue	Along 2
San Antonio Park	City of Tucson	East 14 th Street and South Santa Rita Avenue	5, A
Aviation Greenway	City of Tucson	Parallel	5, A

Silverlake Park/Quincie Douglas Recreation Center

Silverlake Park is a Tucson Parks and Recreation facility that includes the Quincie Douglas Recreation Center and swimming pool. This park is approximately 50 acres, and includes amenities such as Multi-Purpose Fields, baseball and softball fields, soccer fields, walking trails, benches, grills, and picnic tables.

Mirasol Park

Mirasol Park is a small, approximately 5-acre rectangular shaped park located just to the northwest of Silverlake Park. Mirasol has a baseball diamond, basketball court and open space.

Cherry Field

Cherry field is a 20-acre parcel with four softball/baseball fields. This facility is owned by the Tucson Unified School District.

Arroyo Chico Urban Greenway

Arroyo Chico Greenway is a 2.9-mile asphalt trail located between South Santa Rita Ave., East 12th St., and David Bell Multi-Use Path at Reid Park. The project is a COT, Pima County Flood Control District, and US Army Corp of Engineers (USACE) project. The Project would span the greenway with no construction within the Greenway.

University of Arizona recreational facilities including McKale Memorial Center

The UArizona maintains multiple recreation facilities, primarily for students including the Robson Tennis Center, the Hillenbrand Aquatic Center, as well as various fields for a variety of recreational sports and activities.

Mansfield Park

Mansfield Park is a 20.8-acre Community Park operated by the COT Parks and Recreation Department. This park, located on North 4th Avenue, includes a number of amenities such as playgrounds, baseball field, basketball courts, swimming pool, multi-purpose fields, soccer field, sand volleyball courts, picnic tables, grills, and benches. Mansfield Park is south of Alternative Routes A, B, and D that run east to west along East Grant Road; there are several rows of houses north of Mansfield Park, between the park and the transmission line alternatives.

Tahoe Park

Tahoe Park is a 2.5-acre COT Park located west of Campbell Avenue. The park provides playgrounds, picnic tables, ramadas, and benches. This park is approximately one block west of Alternative Route D.

Grant & Campbell Park

Grant & Campbell Park is a 0.5-acre mini park operated by the COT Parks and Recreation Department. This park is located on the northwest corner of Grant Road and Campbell Avenue. The park has limited amenities including a picnic table and bench. Alternative Route D transitions from northerly routes on Campbell Avenue to Western Routes on Grant Road near this park.

Balboa Heights Park

Balboa Heights Park is a 1.7-acre park that offers playground facilities as well as half-court basketball, multipurpose field, picnic tables with grills, and ramadas.

South Campbell Avenue Median Landscape

This median landscape was developed in partnership with COT Department of Transportation and the Pueblo Gardens Neighborhood to improve open space available to residents and promote neighborhood walkability. The planned landscape includes specific native vegetation features such as a Saguaro Sundial, and other native vegetation with irrigation features.

San Antonio Park

San Antonio Park is a 0.7-acre Mini Park operated by the COT. Amenities include a playground, stage/amphitheater, picnic tables, and benches.

Aviation Median (Bike path)

Aviation Median is a paved greenway bike path that is approximately 9 miles long. The bike path is located parallel to East Aviation Parkway, and runs parallel to East 17th Street and Alternative Route 5A.

F.3 Potential Effects

Construction

Construction activities would create minor impacts to recreational area users in locations where the transmission line intersects those areas. Construction of the Project will not permanently impact the use of or access to any existing recreation opportunities or activities. Short-term impacts to these resources will occur during the construction phases of the Project. Dispersed recreation activities such as walking, biking, and bird watching may be temporarily affected by construction noises, visual disturbances, and/or the presence of equipment and construction personnel. Temporary, short-term closure of a lane of traffic and/or road shoulders or sidewalks may be required for safety during construction. Detours or alternate routes will be established as necessary to maintain access for public use and recreation.

Impacts to recreation areas and users during construction would be minor since the activities would be short-term in nature.

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.

Operation and Maintenance

Operation and maintenance activities are short-term and temporary in duration, and occur infrequently. Closures to areas required for maintenance would be short-term and temporary while the activity is conducted. Recreation opportunities and activities can continue as before construction, with only infrequent minor impacts during maintenance tasks.

F.4 Conclusion

The alternative routes 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 to recreational facilities and parks and maintains or improves public use and recreation along existing ROWs.

Following construction, all existing recreation facilities will remain available. Where the Project crosses existing roads or trails, permanent access to and along these features for recreation use will not be affected.

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Application for a Certificate of Environmental Compatibility

**Kino to DeMoss-Petrie
138 Kilovolt Transmission Line Project**

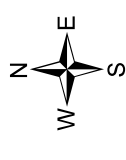
Exhibit F-1

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Exhibit F-1

Kino to DeMoss Petrie 138kV Transmission Line Project

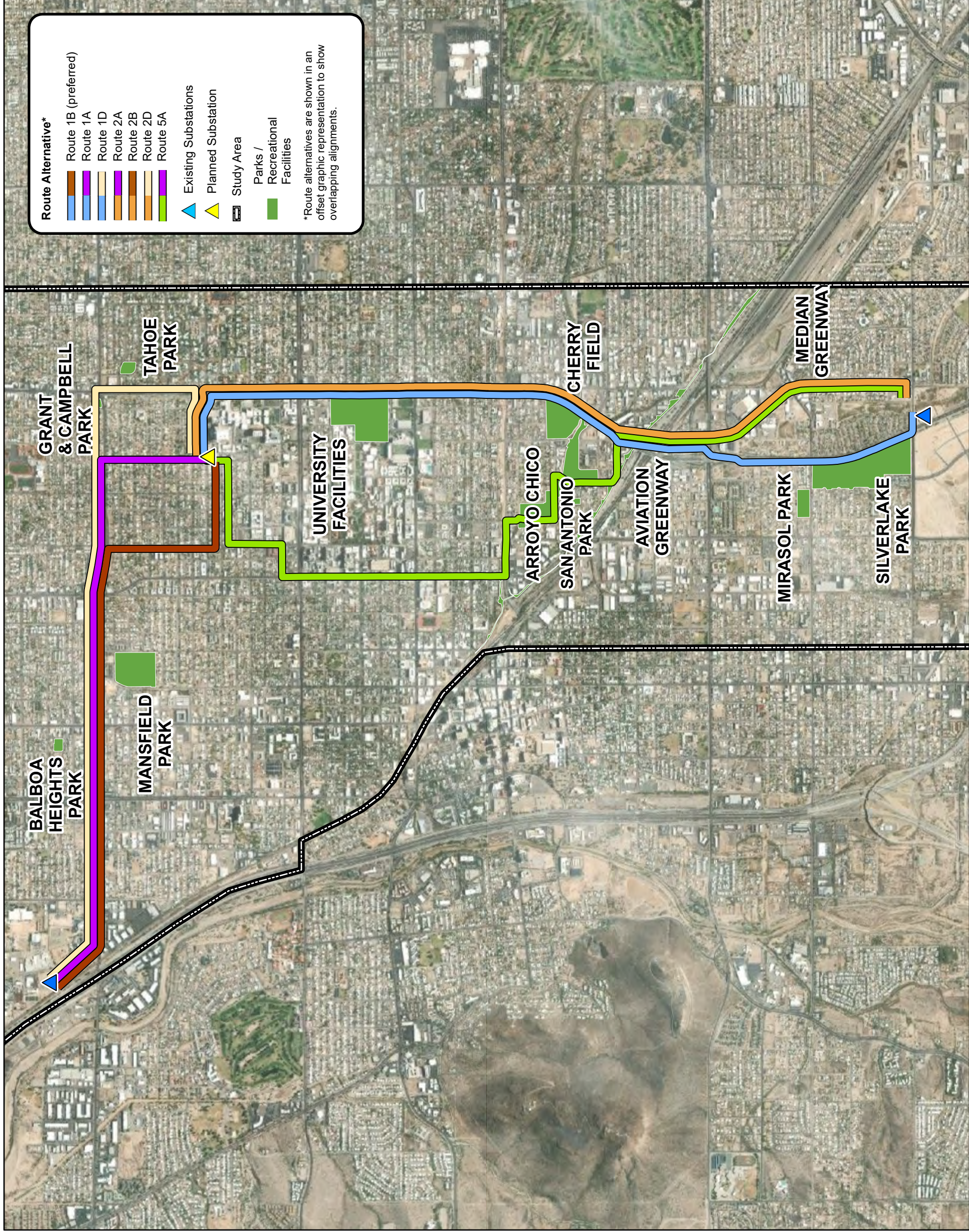
Recreation



1:30,000



Sources: ESRI, Tucson Electric Power, Pima County, City of Tucson, and Arizona State Land Department.
 Projection: NAD 1983 UTM Zone 12N
 Basemap: ESRI World Topographic Map
 This map is for planning purposes only. TEP and UNS Energy make no warranty of its accuracy.



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EXHIBIT G

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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	Single Circuit Tangent Structure
G-2	Single Circuit Turning Structure
G-3.1	Vine Substation Plan
G-3.2	Vine Substation Elevation
G-4.1	Visual Simulations KOP Map
G-4.2	Visual Simulation KOP #1
G-4.3	Visual Simulation KOP #2
G-4.4	Visual Simulation KOP #3
G-4.5	Visual Simulation KOP #4
G-4.6	Visual Simulation KOP #5
G-4.7	Visual Simulation KOP #6
G-4.8	Visual Simulation KOP #7
G-4.9	Visual Simulation KOP #8
G-4.10	Visual Simulation KOP #9
G-4.11	Visual Simulation KOP #10
G-4.12	Visual Simulation KOP #11
G-4.13	Visual Simulation KOP #12
G-4.14	Visual Simulation KOP #13
G-4.15	Visual Simulation KOP #14
G-4.16	Visual Simulation KOP #15
G-4.17	Visual Simulation KOP #16
G-4.18	Visual Simulation KOP #17
G-4.19	Visual Simulation KOP #18
G-4.20	Visual Simulation KOP #19
G-4.21	Visual Simulation KOP #20
G-4.22	Visual Simulation KOP #21
G-4.23	Visual Simulation KOP #22

G-4.24	Visual Simulation KOP #23
G-4.25	Visual Simulation KOP #24
G-4.26	Visual Simulation KOP #25
G-4.27	Visual Simulation KOP #26
G-4.28	Visual Simulation KOP #27
G-4.29	Visual Simulation KOP #28
G-4.30	Visual Simulation KOP #29
G-4.31	Visual Simulation KOP #30
G-4.32	Visual Simulation KOP #31
G-4.33	Visual Simulation KOP #32

Application for a Certificate of Environmental Compatibility

**Kino to DeMoss-Petrie
138 Kilovolt Transmission Line Project**

Exhibit G-1

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EXHIBIT G-1
SINGLE CIRCUIT 138 KV – TANGENT
TYPICAL CONFIGURATION



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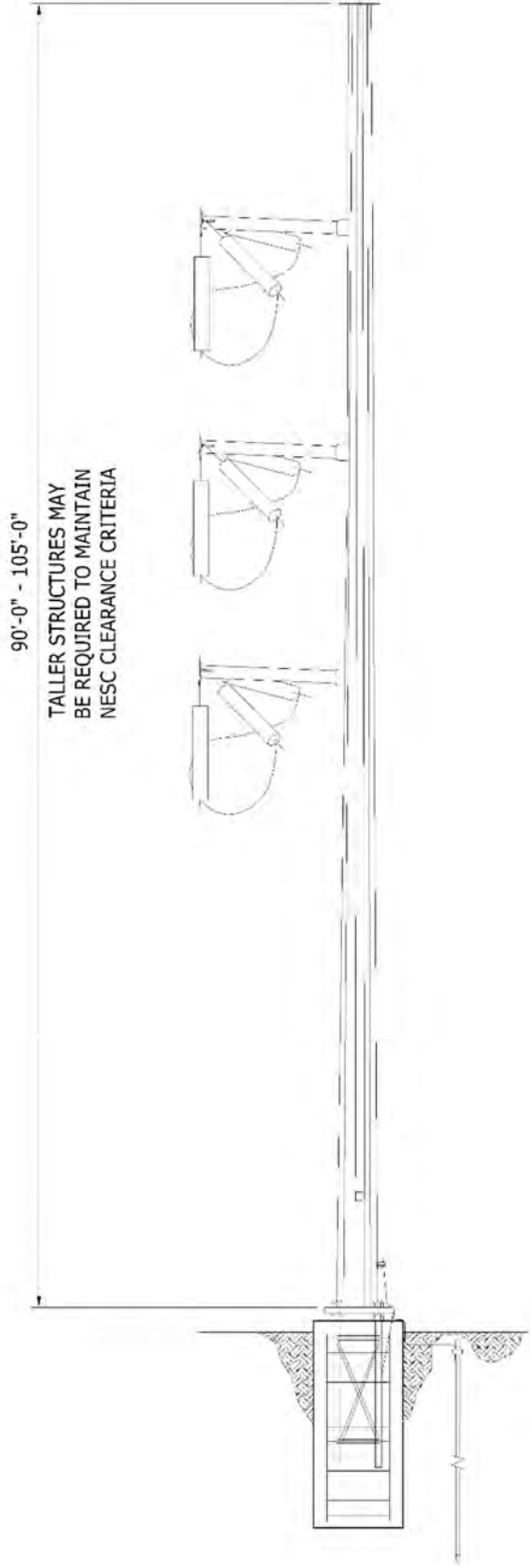
Application for a Certificate of Environmental Compatibility

**Kino to DeMoss-Petrie
138 Kilovolt Transmission Line Project**

Exhibit G-2

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EXHIBIT G-2
SINGLE CIRCUIT 138 KV – TURNING
TYPICAL CONFIGURATION



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Application for a Certificate of Environmental Compatibility

**Kino to DeMoss-Petrie
138 Kilovolt Transmission Line Project**

Exhibit G-3

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LEGEND

- EXISTING SLOPE/GRADING DIRECTIONAL ARROW
- DEVELOPED SLOPE/GRADING DIRECTIONAL ARROW
- 2435- EXISTING TOPO INDEX AND CONTOUR
- OHE — EXISTING OVERHEAD ELECTRIC
- UGE — EXISTING UNDERGROUND ELECTRIC

NOTES:

- * PERIMETER WALL TO MATCH THE UA SUBSTATION WALL TO THE SOUTH
- ALL EXISTING BUILDINGS WILL BE DEMOLISHED



**TEP UA NORTH
SUBSTATION SPECIAL
EXCEPTION LAND USE
PRELIMINARY DEVELOPMENT PLAN**

PROJ NO: 7UN170105
DATE: DECEMBER 2020
SCALE: HORIZ 1" = 30'
VERT N/A

PSOMAS

333 E. Wetmore Road, Suite 450
Tucson, AZ 85705
(520) 292-2300 (520) 292-1290 fax
www.psomas.com

Vine Substation

RENDERED PRELIMINARY DEVELOPMENT PLAN



Project:PSO-01\A\CD\Drawn:01\12/20/20\514144.dwg 7-C-TP-K2H-07_DEV.DWG CHS LWA ML 14 DEC 2020 10:24AM

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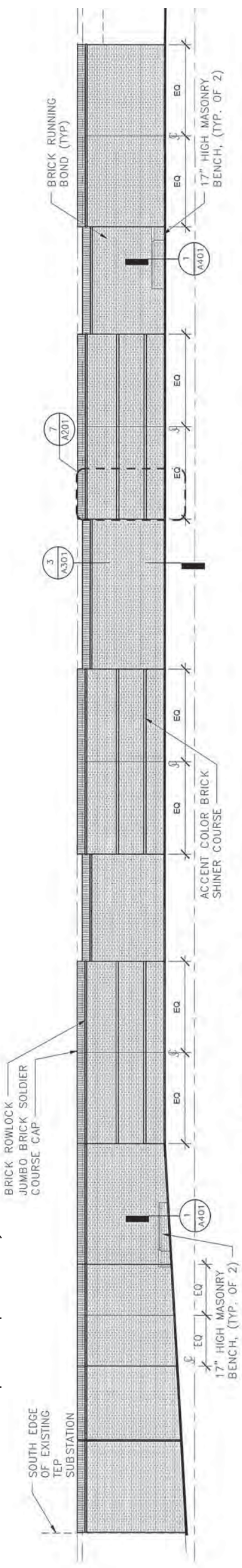
**Application for a Certificate of Environmental
Compatibility**

**Kino to DeMoss-Petrie
138 Kilovolt Transmission Line Project**

Exhibit G-4

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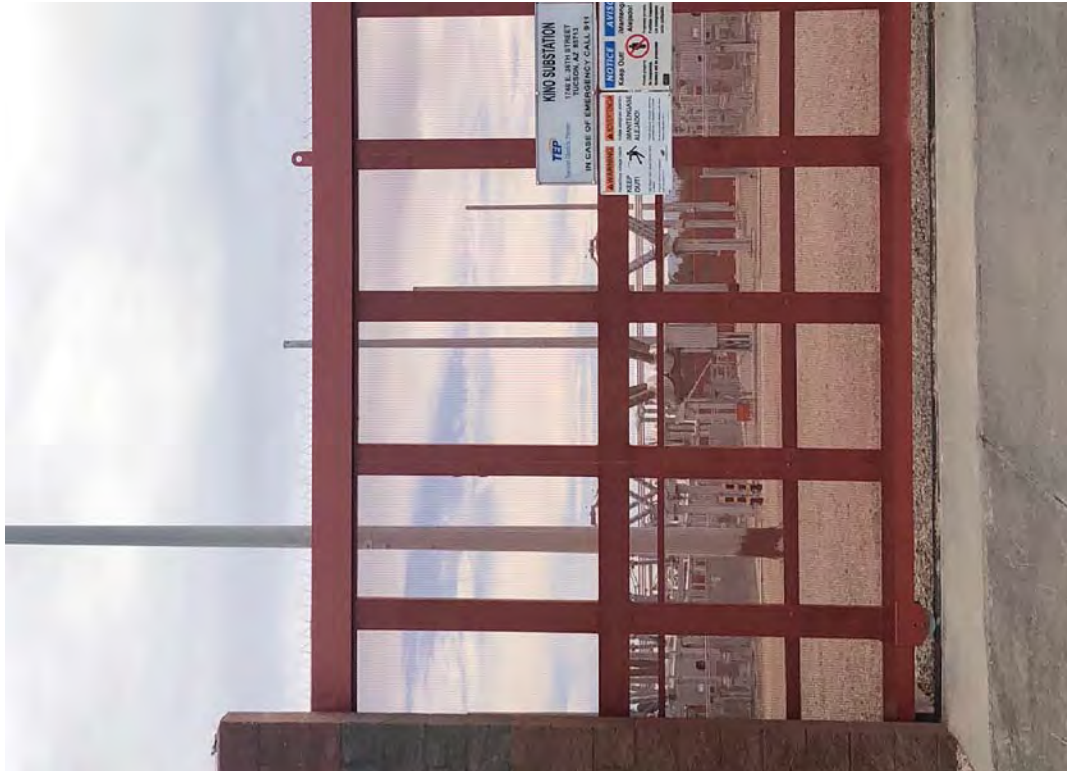
Elevation Shown for Graphic Purposes Only



6 WEST ELEVATION

1/2" = 1'-0"

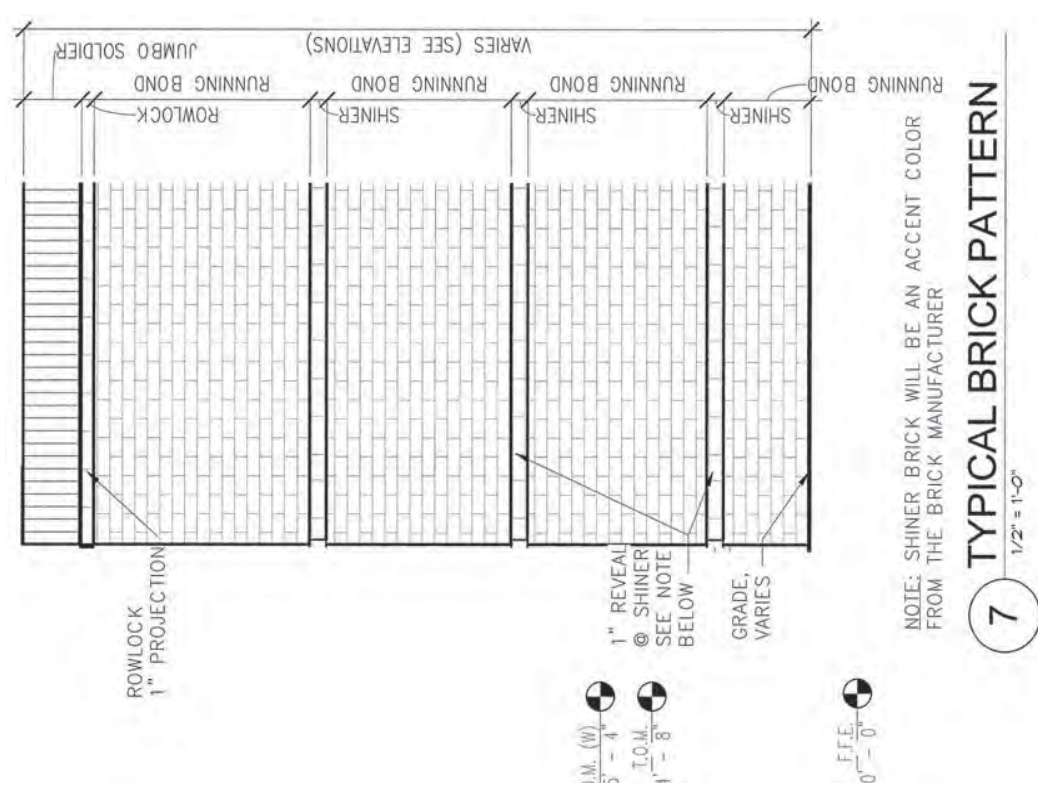
NOTE: TOP OF CMU/BRICK WALL IS REFERENCED FROM F.F.E. = 0'-0" AT STORAGE 101.



Proposed Gate to Match Example Imagery



Proposed Wall to Match Example Imagery



7 TYPICAL BRICK PATTERN

1/2" = 1'-0"

NOTE: SHINER BRICK WILL BE AN ACCENT COLOR FROM THE BRICK MANUFACTURER

Vine Substation

PROPOSED PERIMETER WALL & GATE

Note:
Wall details were provided by University of Arizona and were created by GLHN Architects in September of 2011 for the adjacent substation. The proposed wall for the Vine Substation will be similar to wall shown here. The proposed gate will be similar to gate shown and as present at the Kino Substation. Gate will be 13'-5" tall.



THE PLANNING CENTER
a division of TPC Group, Inc.

Elevation Shown for Graphic Purposes Only

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**Application for a Certificate of Environmental
Compatibility**

**Kino to DeMoss-Petrie
138 Kilovolt Transmission Line Project**

Exhibit G-5

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Tucson Electric Power

Kino to DeMoss Petrie 138 kV Transmission Line Project

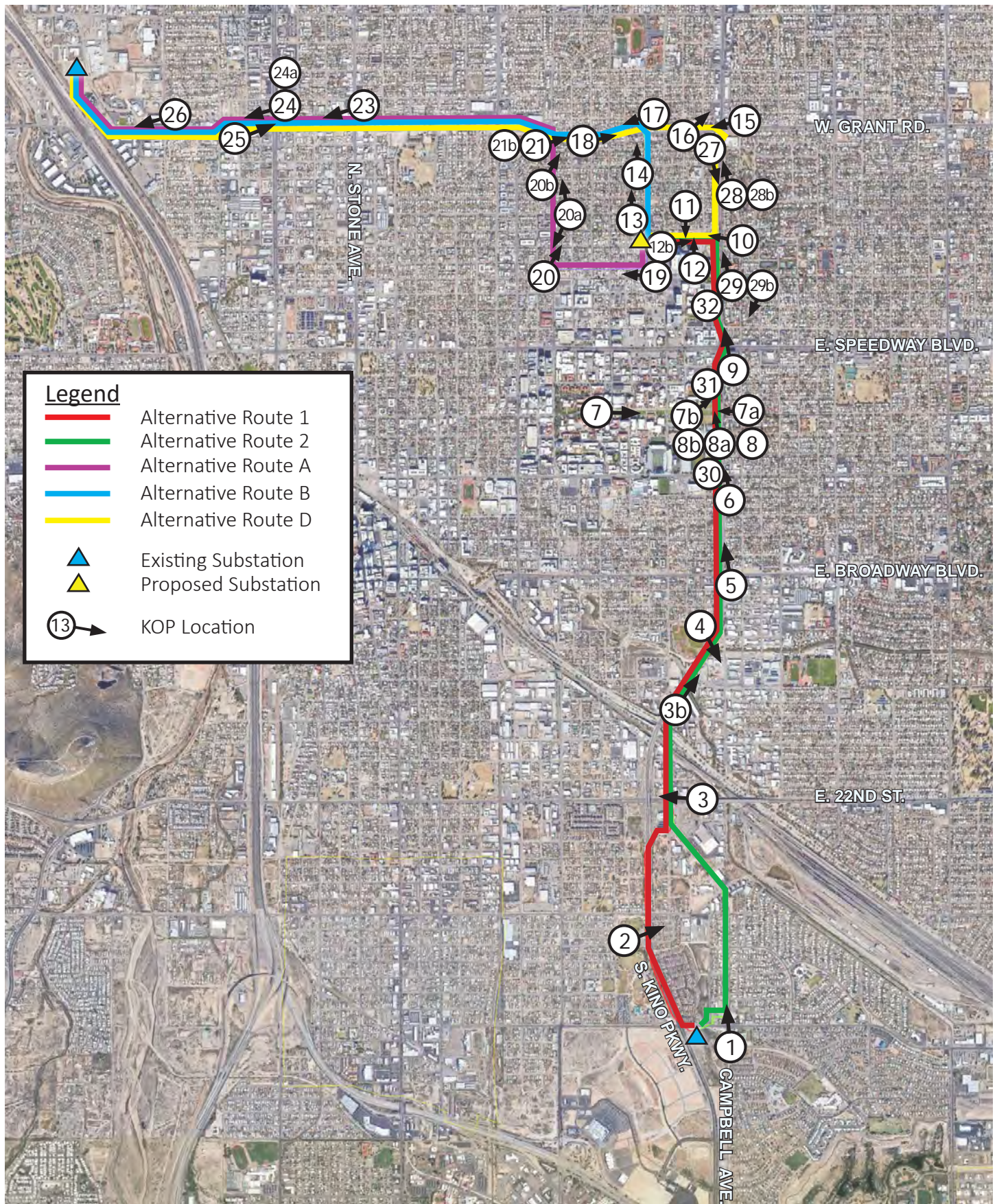
Visual Simulation Package

Prepared By:
Jeremy Palmer | Sole Proprietor

May 11, 2021

Kino to DMP 138 kV Transmission Line Project

Key Observation Point (KOP) - Key Map



Legend

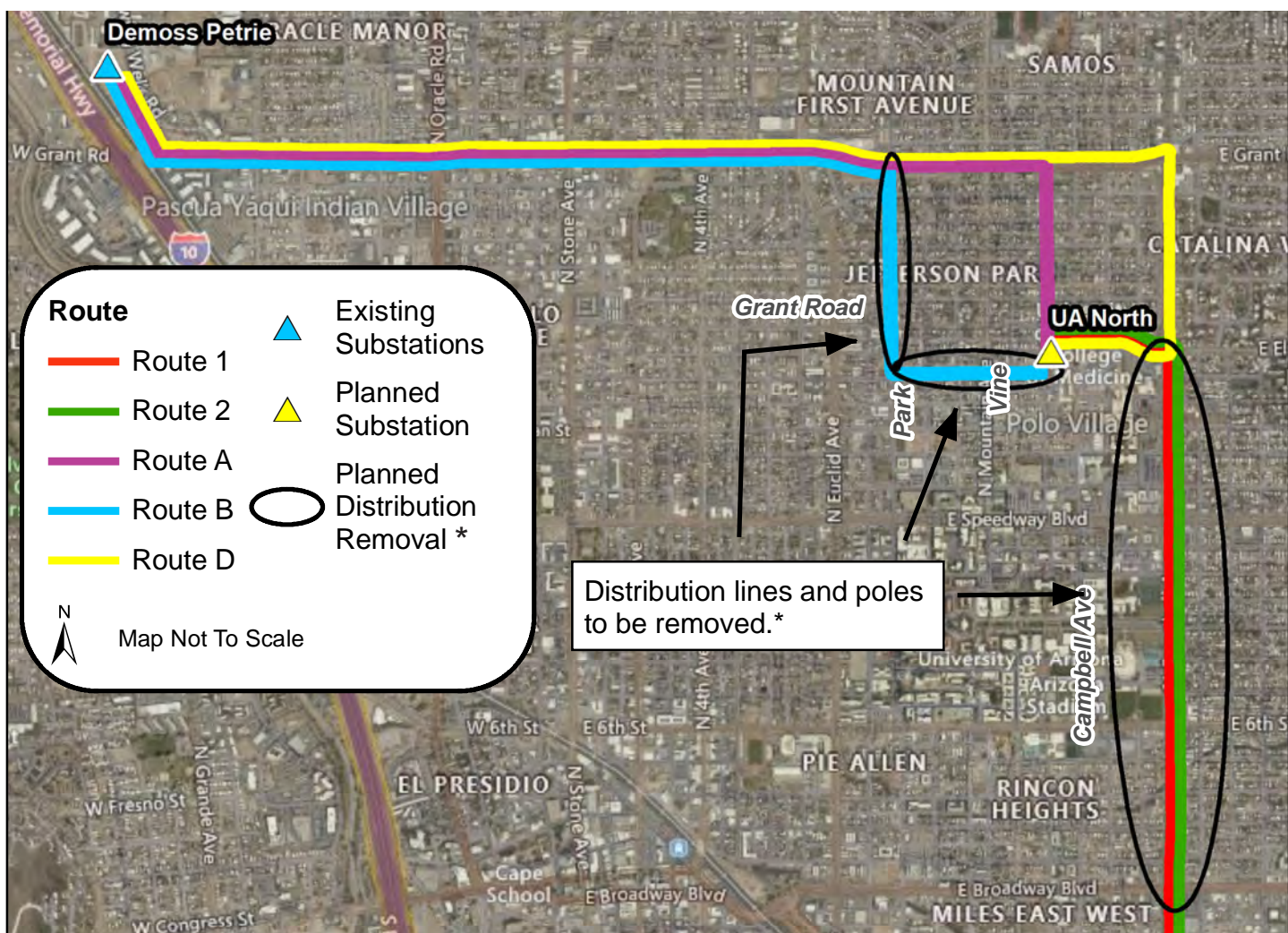
- Alternative Route 1
- Alternative Route 2
- Alternative Route A
- Alternative Route B
- Alternative Route D
- ▲ Existing Substation
- ▲ Proposed Substation
- 13 → KOP Location



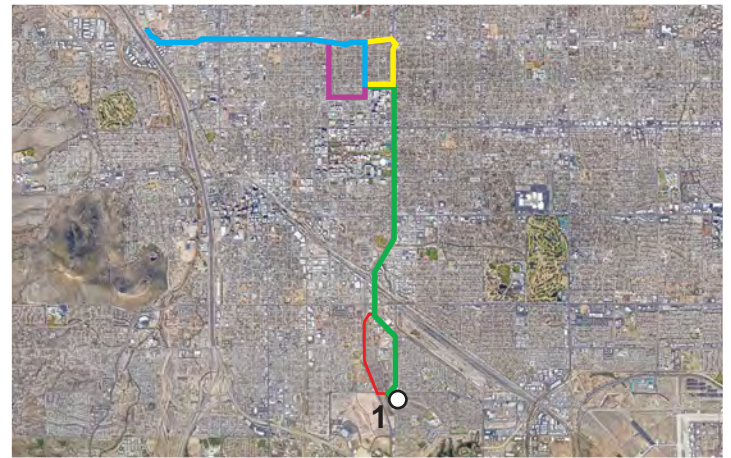
Kino to DMP 138 kV Transmission Line Project

General Project Notes

- Simulations shown do not represent a final design. All simulations are based on the best information available and are preliminary. Final alignment and structure locations are subject to change based on final engineering and other factors.
- Simulations along Grant Road, in the area of the Grant Road Widening Project are based on preliminary design plans provided by City of Tucson Department of Transportation.
- Possible distribution relocation as shown on the map below.
- Conductors and wires in “Enhanced Simulations” are shown thickened/darkened to indicate location and does not reflect real world conditions.
- * Relocation of existing distribution contingent upon available space, cooperation with landowners, cooperation with existing utility attachers and lack of conflicts with other utilities.



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/10 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: Residents, vehicle and pedestrian travelers looking north at Pueblo Gardens Neighborhood
- Location: Intersection of S. Campbell Ave./E. 36th St.
- Latitude: 32.192263° N; Longitude: 110.943711° W
- View Point Elevation at Eye Level: 2,486 ft.
- Looking: north

- Poles Visible: Route 2 Structures 35-39
- Image File Name: IMG_0178.JPG

Simulation Notes

- Photo Taken: Nov. 1st, 2020 at 12:55 pm
- The image is based on a single photo and represent approximately 39.5 degree horizontal field of view.
- This view is approximately 310 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



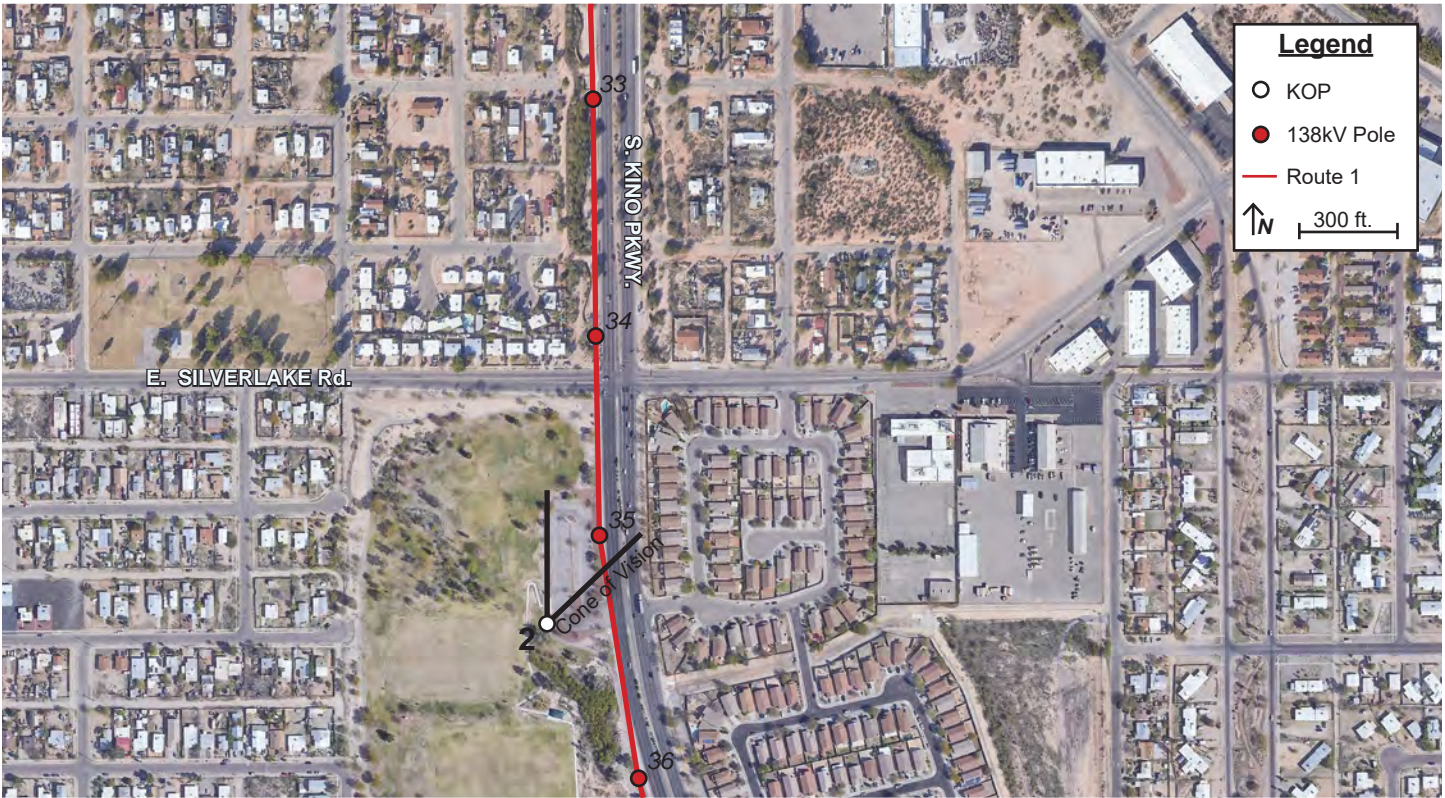
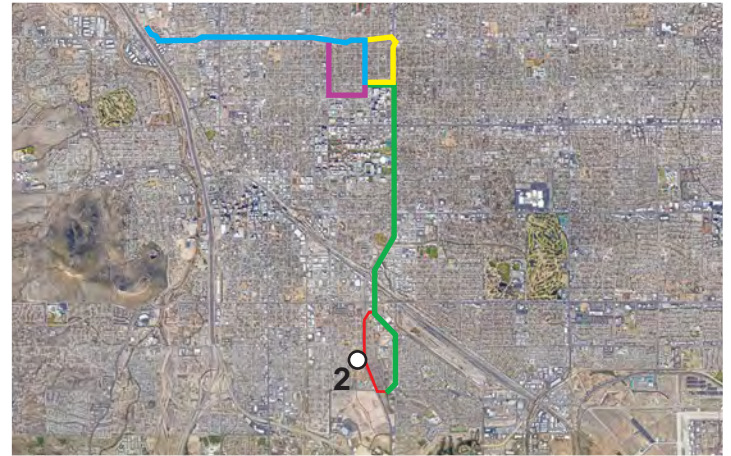
Current Condition



Simulated Condition

Route 2

Key Observation Point (KOP) # 2



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: Recreational users of Quincie Douglas/Silverlake Park.
- Location: 2420 S Kino Parkway
- Latitude: 32.197718° N; Longitude: 110.950203° W
- View Point Elevation at Eye Level: 2,460 ft.
- Looking: northeast

- Poles Visible: Route 1; Structures 33-35
- Image File Name: IMG_0168.jpg

Simulation Notes

- Photo Taken: Nov. 1st, 2020 at 12:46 pm
- The image is based on a single photo and represent approximately 39.5 degree horizontal field of view.
- This view is approximately 285 feet west 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



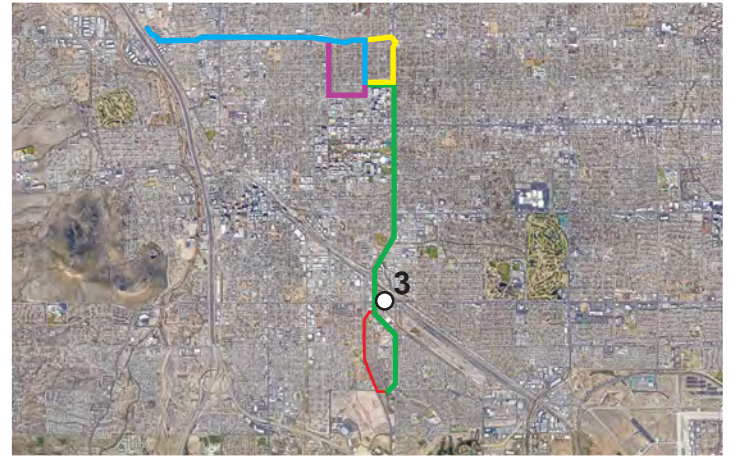
Current Condition



Simulated Condition

Route 1

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: 35mm | F-Stop: f/10 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: motorists traveling westbound on East 22nd Street.
- Location: 1621 E 22nd St.
- Latitude: 32.207072° N; Longitude: 110.947398° W
- View Point Elevation at Eye Level: 2,465 ft.
- Looking: west

- Poles Visible: Route 1 & 2; Structures: Lines overhead
- Image File Name: IMG_0189.jpg

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 1:17 pm
- The image is based on a single photo and represent approximately 54 degree horizontal field of view.
- This view is approximately 225 feet southeast 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



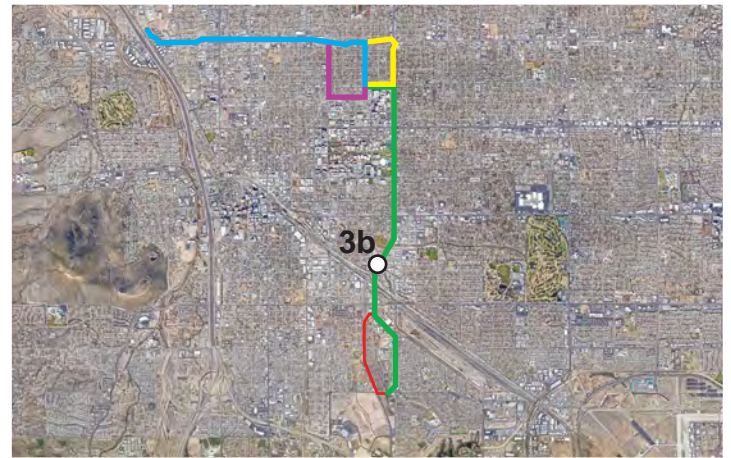
Current Condition



Simulated Condition

Route 1 & 2

Key Observation Point (KOP) # 3b



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/9 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: motorists traveling northbound on South Kino Pkwy.
- Location: 209 S. Kino Pkwy.
- Latitude: 32.212734° N; Longitude: 110.947897° W
- View Point Elevation at Eye Level: 2,458 ft.
- Looking: northeast

- Poles Visible: Route 1 & 2; Structures 21-25
- Image File Name: IMG_0195.jpg

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 1:28 pm
- The image is based on a single photo and represent approximately 54 degree horizontal field of view.
- This view is approximately 349 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) #3b



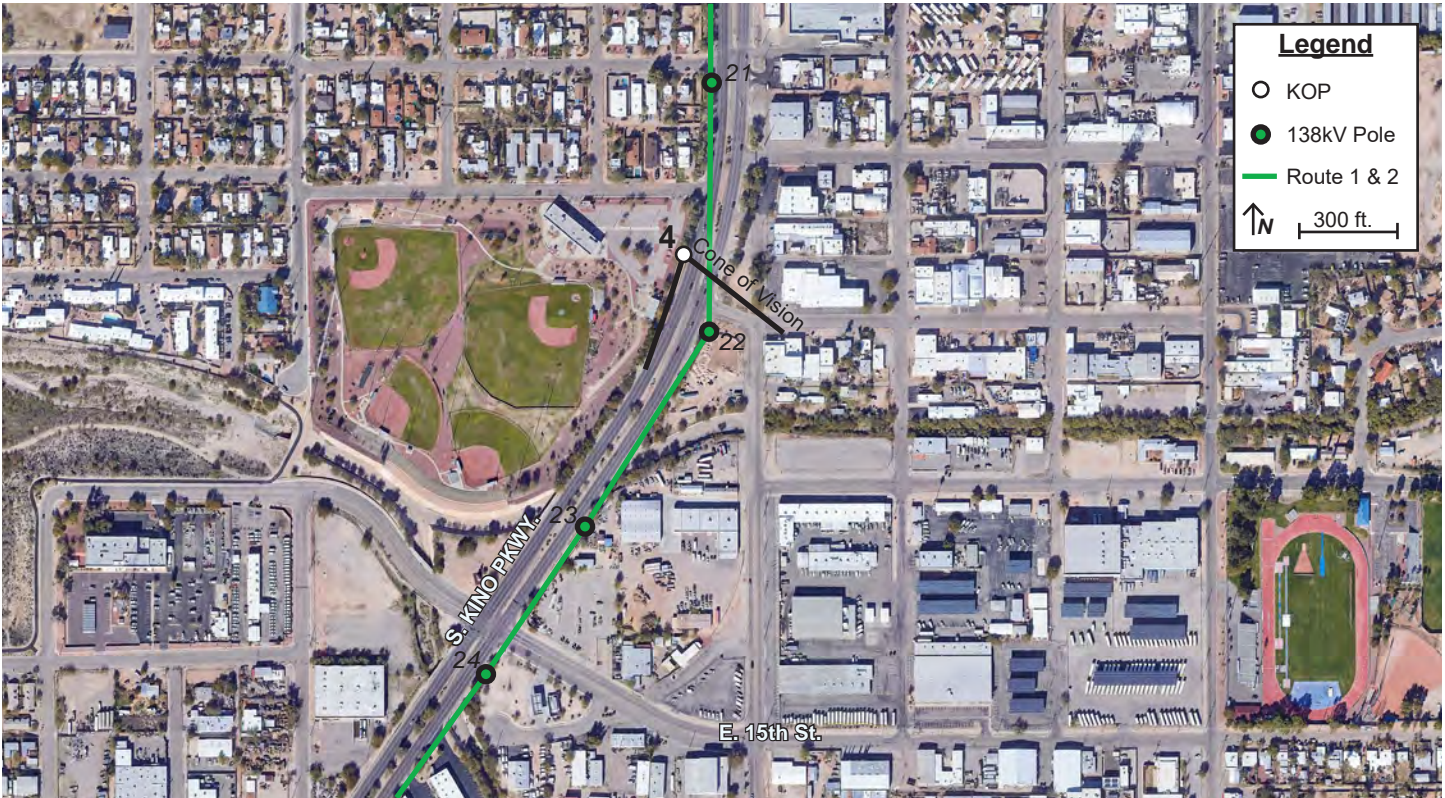
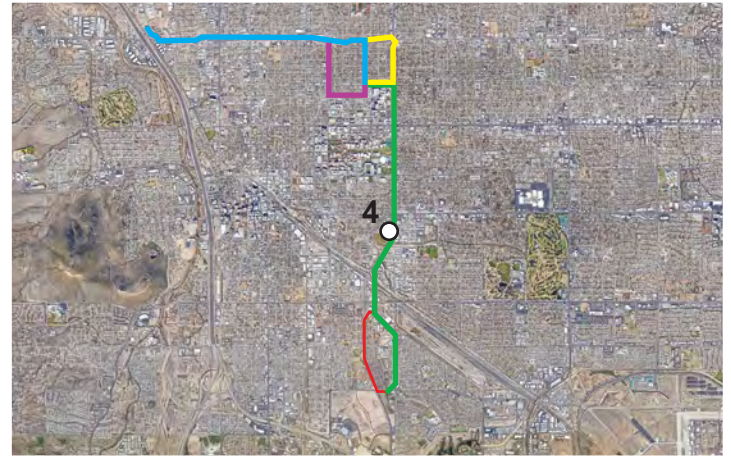
Current Condition



Simulated Condition

Route 1 & 2

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: 35mm | F-Stop: f/11 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: Recreational Users of Cherry Field
- Location: 327 South Kino Parkway
- Latitude: 32.218021° N; Longitude: 110.944415° W
- View Point Elevation at Eye Level: 2,450 ft.
- Looking: south
- Poles Visible: Route 1 & 2; Structures: 22

- Image File Name: IMG_0167.jpg

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 12:37 pm
- The image is based on a single photo and represent approximately 54 degree horizontal field of view.
- This view is approximately 253 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) #4



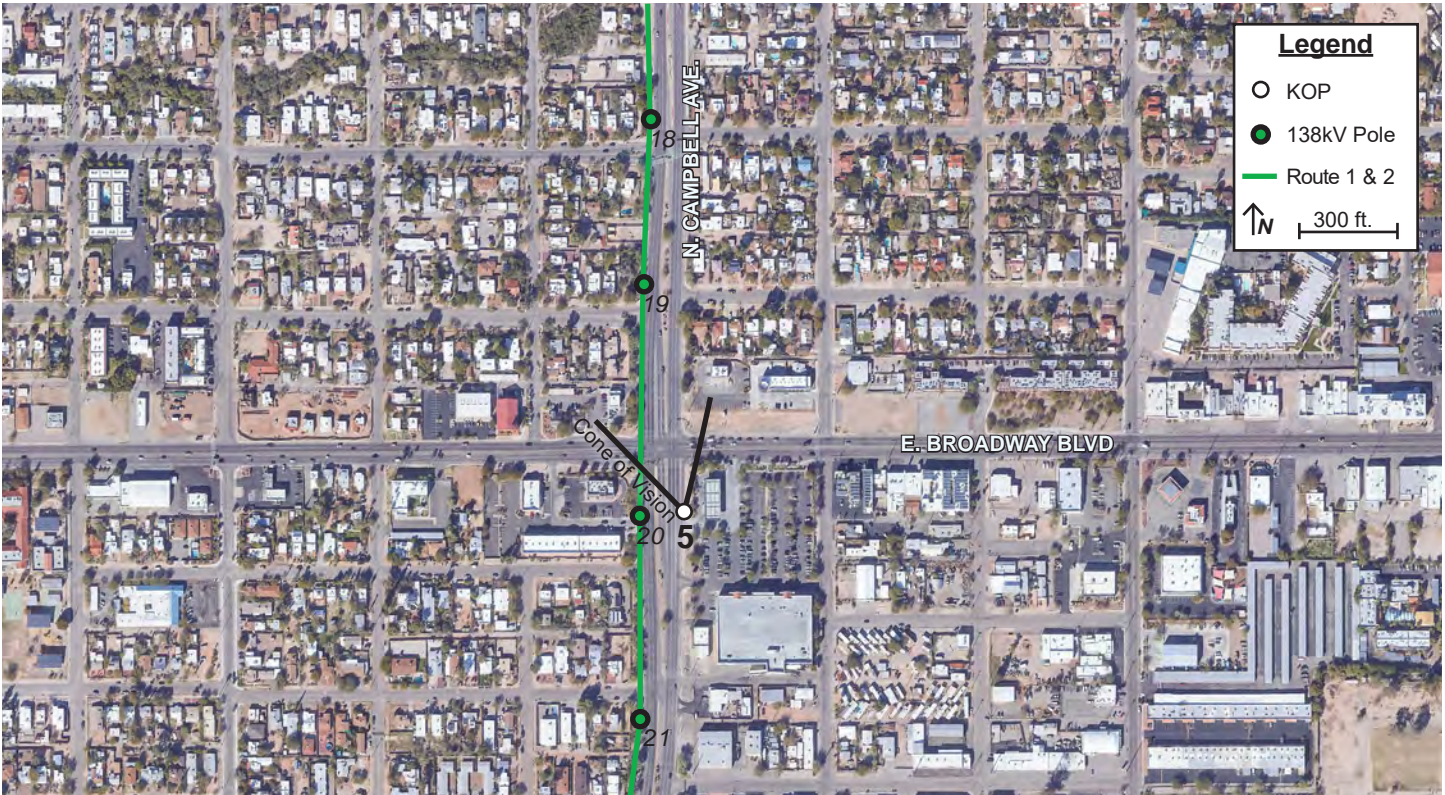
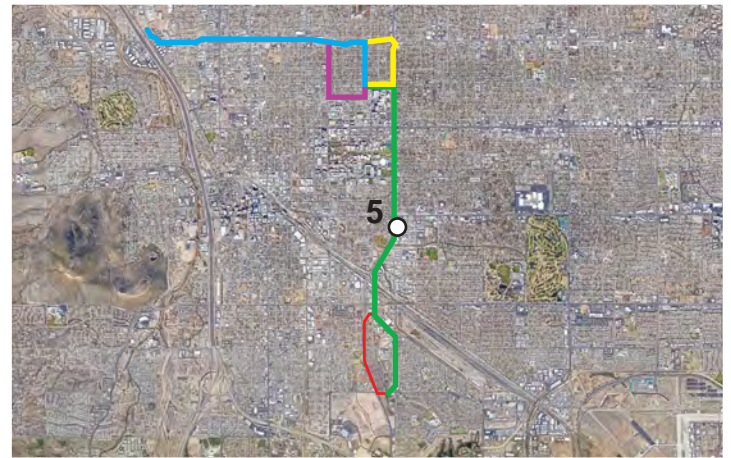
Current Condition



Simulated Condition

Route 1 & 2

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: 35mm | F-Stop: f/9 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: motorists traveling northbound on South Kino Pkwy
- Location: 127 S. Kino Pkwy.
- Latitude: 32.220950° N; Longitude: 110.943669° W
- View Point Elevation at Eye Level: 2,451 ft.
- Looking: northwest
- Poles Visible: Route 1 & 2; Structures: 17-19
- Image File Name: IMG_0204.jpg

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 1:39 pm
- The image is based on a single photo and represents approximately 53 degree horizontal field of view.
- This view is approximately 675 feet southeast 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.
- Two Simulations shown as distribution will be evaluated on an individual basis and may/may not be placed underground dependent upon existing constraints. Relocation of service drops will be reviewed on an individual basis to determine feasibility. Simulation shown does not represent a final design.

Key Observation Point (KOP) #5



Current Condition



Simulated Condition with existing distribution removed

Route 1 & 2

Key Observation Point (KOP) #5



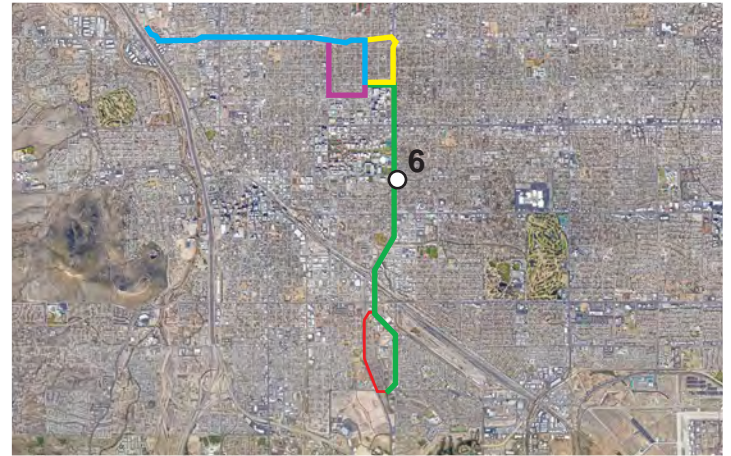
Current Condition



Simulated Condition with existing distribution

Route 1 & 2

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: 50mm | F-Stop: f/10 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: Motorists and pedestrians traveling northbound on South Campbell Avenue
- Location: 399 S Campbell Ave.
- Latitude: 32.227218° N; Longitude: 110.943693° W
- View Point Elevation at Eye Level: 2,451 ft.
- Looking: northwest
- Poles Visible: Route 1 & 2; Structures: 12-15
- Image File Name: IMG_0206.jpg

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 1:45 pm
- The image is based on a single photo and represent approximately 39 degree horizontal field of view.
- This view is approximately 562 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.
- Where distribution is removed, so have individual services; however services to individual residences may have to remain above ground if undergrounding cannot be coordinated with the landowner, requiring the distribution pole holding the individual service to remain in place.

Key Observation Point (KOP) #6



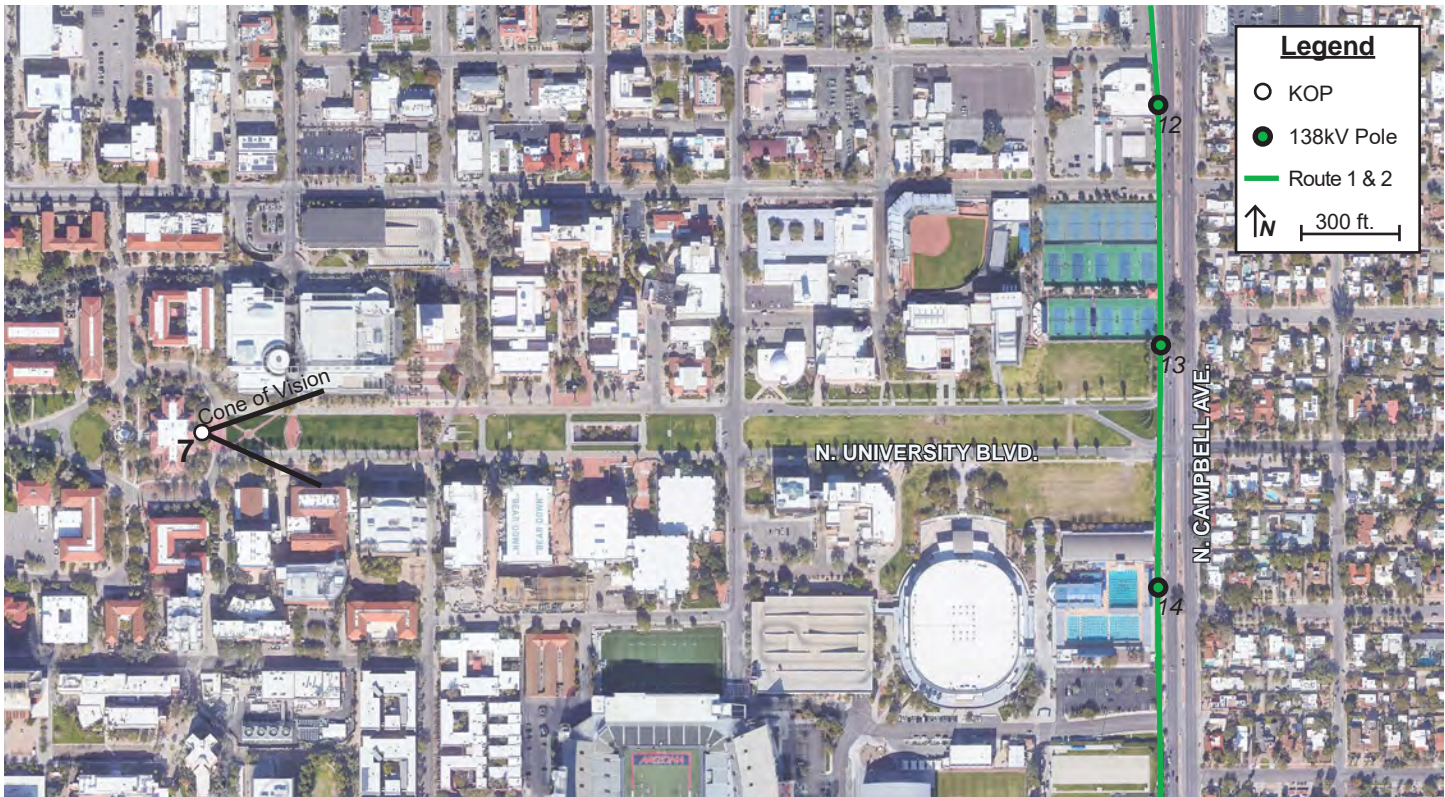
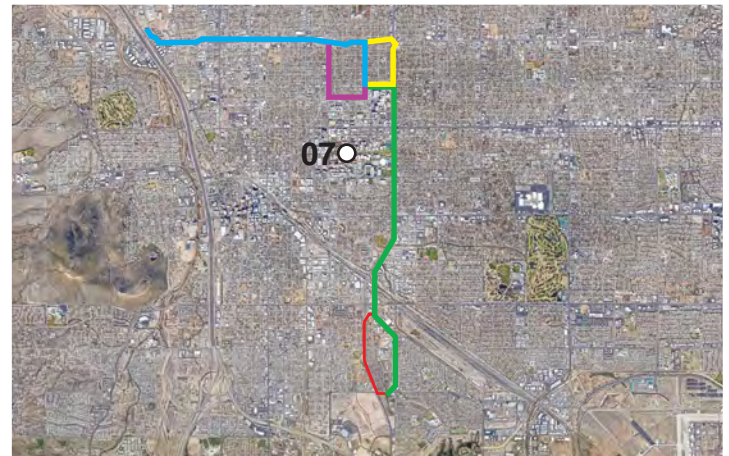
Current Condition



Simulated Condition with existing distribution removed

Route 1 & 2

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: Students/Staff of U of A at Old Main building, looking east across mall
- Location: Old Main on the campus of University of Arizona
- Latitude: 32.231910° N; Longitude: 110.953175° W

- View Point Elevation at Eye Level: 2,450 ft.
- Looking: east
- Poles Visible: Route 1 & 2; Structures: 13
- Image File Name: IMG_0313.jpg

Simulation Notes

- Photo Taken: Nov 2nd, 2020 at 12:26 pm
- The image is based on a single photo and represent approximately 35.2 degree horizontal field of view.
- This view is approximately 2,834 feet west 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



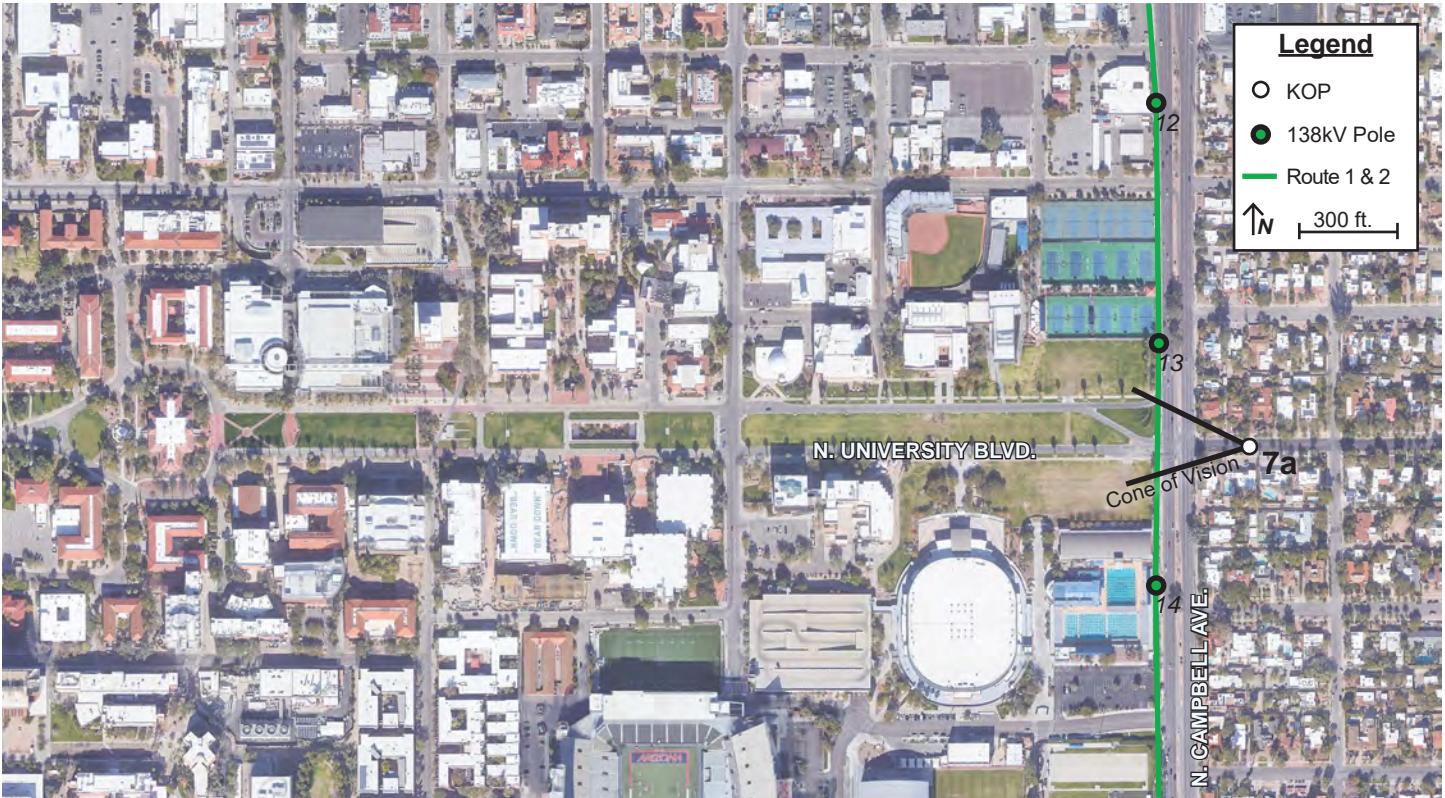
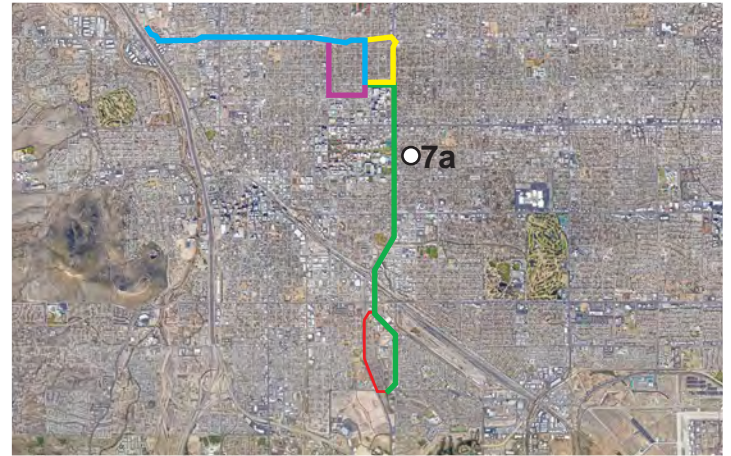
Current Condition



Simulated Condition

Route 1 & 2

Key Observation Point (KOP) # 7a



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/5.6 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: Residents, students, recreation users traveling west on East 3rd Street
- Location: 1919 E. 3rd St.
- Latitude: 32.231779° N; Longitude: 110.943153° W
- View Point Elevation at Eye Level: 2,464 ft.
- Looking: west
- Poles Visible: Route 1 & 2; overhead lines visible
- Image File Name: IMG_0341.JPG

Simulation Notes

- Photo Taken: Nov 2nd, 2020 at 12:40 pm
- The image is based on a single photo and represent approximately 74 degree horizontal field of view.
- This view is approximately 421 feet southeast 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.
- Where distribution is removed, so have individual services; however services to individual residences may have to remain above ground if undergrounding cannot be coordinated with the landowner, requiring the distribution pole holding the individual service to remain in place.

Key Observation Point (KOP) #7a



Current Condition



Simulated Condition with existing distribution removed

Simulated Condition Showing Existing Distribution Removed within 5 Years (when possible) of Transmission Line Construction

Route 1 & 2

Key Observation Point (KOP) #7a



Current Condition

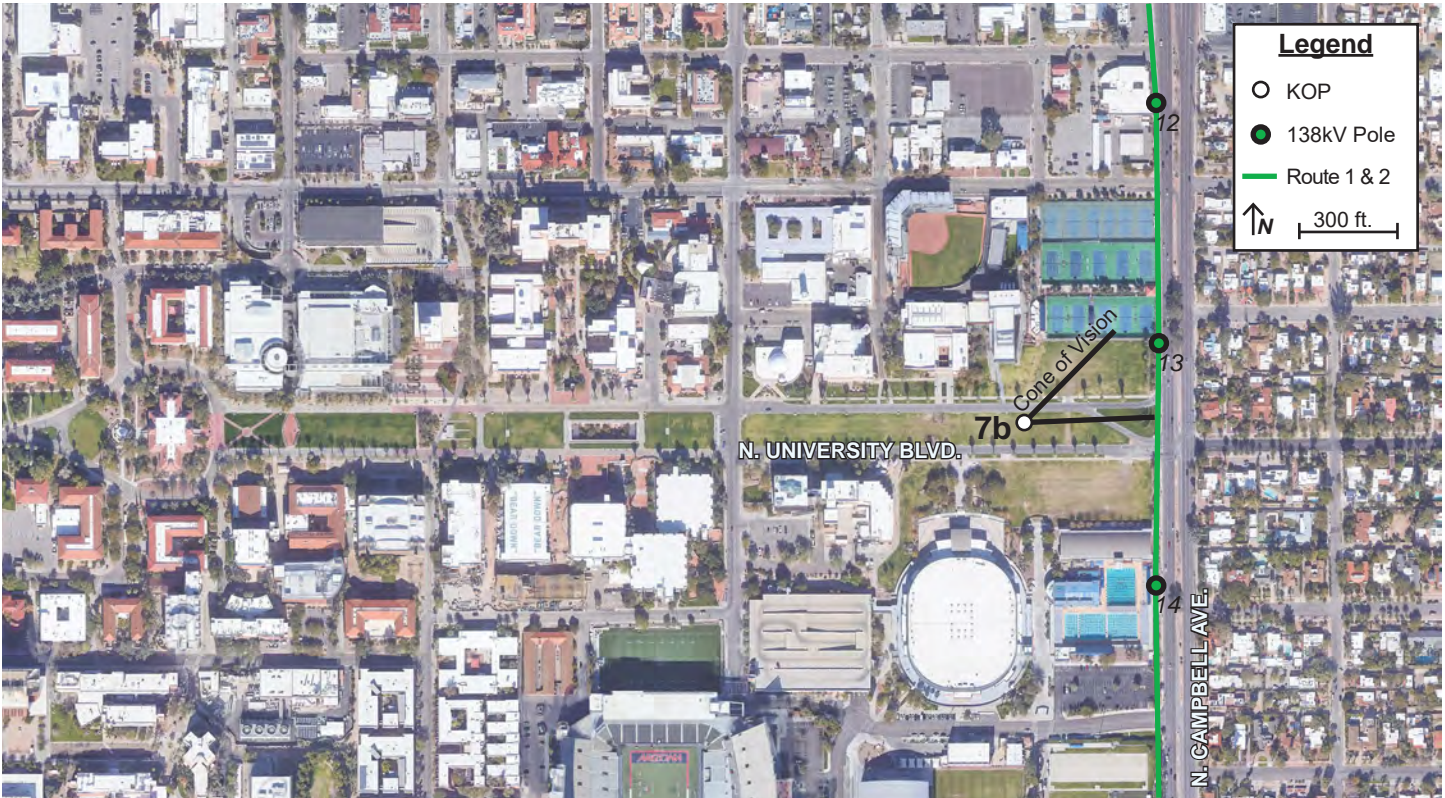
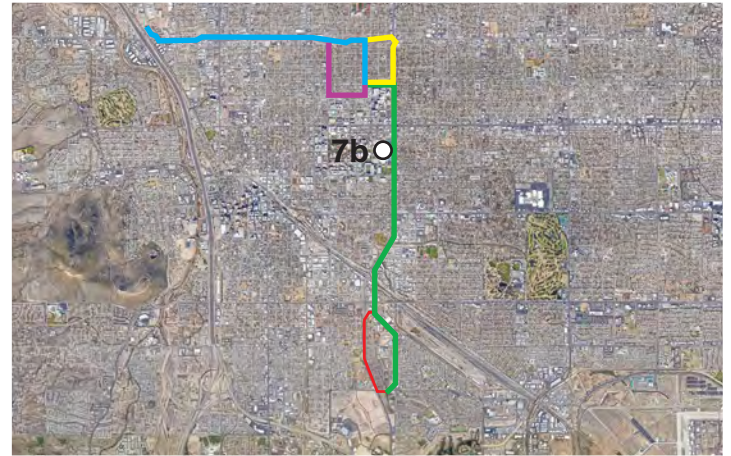


Simulated Condition Showing Existing Distribution Removed within 5 Years (when possible) of Transmission Line Construction

Enhanced Simulated Condition with existing distribution removed

Route 1 & 2

Key Observation Point (KOP) # 7b



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/9 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: Students/staff of U of A looking northeast across mall
- Location: 1768 E. University Blvd.
- Latitude: 32.231893° N; Longitude: 110.945282° W
- View Point Elevation at Eye Level: 2,456 ft.
- Looking: northeast
- Poles Visible: Route 1 & 2; Structures: 13
- Image File Name: IMG_0316.jpg

Simulation Notes

- Photo Taken: Nov 2nd, 2020 at 12:34 pm
- The image is based on a single photo and represent approximately 54 degree horizontal field of view.
- This view is approximately 441 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.
- Where distribution is removed, so have individual services; however services to individual residences may have to remain above ground if underground cannot be coordinated with the landowner, requiring the distribution pole holding the individual service to remain in place.

Key Observation Point (KOP) #7b



Current Condition



Simulated Condition Showing Existing Distribution Removed within 5 Years (when possible) of Transmission Line Construction

Simulated Condition with existing distribution removed

Route 1 & 2

Key Observation Point (KOP) #7b



Current Condition

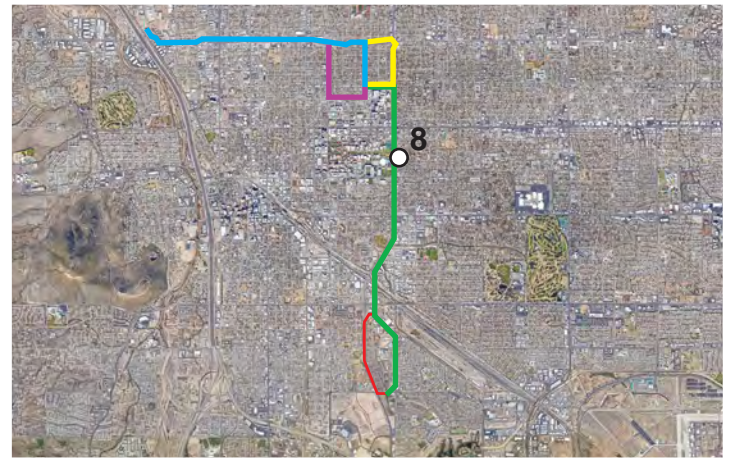


Simulated Condition Showing Existing Distribution Removed within 5 Years (when possible) of Transmission Line Construction

Enhanced Simulated Condition with existing distribution removed

Route 1 & 2

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: 50mm | F-Stop: f/9 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: motorists traveling northbound on North Campbell Avenue
- Location: 698 N. Campbell Ave.
- Latitude: 32.230403° N; Longitude: 110.943781° W
- View Point Elevation at Eye Level: 2,459 ft.
- Looking: northwest
- Poles Visible: Route 1 & 2; Structures: 12,13
- Image File Name: IMG_0211.jpg

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 1:52 pm
- The image is based on a single photo and represent approximately 39 degree horizontal field of view.
- This view is approximately 805 feet southeast 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.
- Where distribution is removed, so have individual services; however services to individual residences may have to remain above ground if undergrounding cannot be coordinated with the landowner, requiring the distribution pole holding the individual service to remain in place.

Key Observation Point (KOP) #8



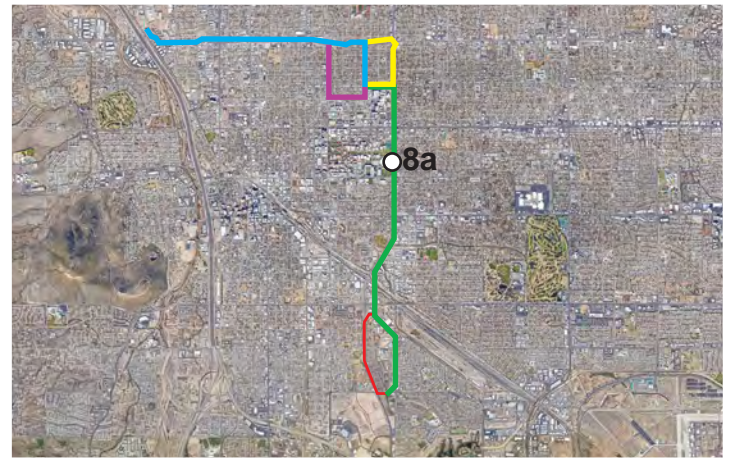
Current Condition



Simulated Condition with existing distribution removed

Route 1 & 2

Key Observation Point (KOP) # 8a



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/5.6 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: motorists traveling northbound on North Campbell Avenue
- Location: 751 N. Campbell Ave.
- Latitude: 32.230730° N; Longitude: 110.943951° W
- View Point Elevation at Eye Level: 2,457 ft.
- Looking: north
- Poles Visible: Route 1 & 2; Structures: 10-13
- Image File Name: IMG_0344.JPG

Simulation Notes

- Photo Taken: Nov 2nd, 2020 at 12:43 pm
- The image is based on a single photo and represent approximately 54 degree horizontal field of view.
- This view is approximately 685 feet southeast 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.
- Where distribution is removed, so have individual services; however services to individual residences may have to remain above ground if undergrounding cannot be coordinated with the landowner, requiring the distribution pole holding the individual service to remain in place.

Key Observation Point (KOP) #8a



Current Condition

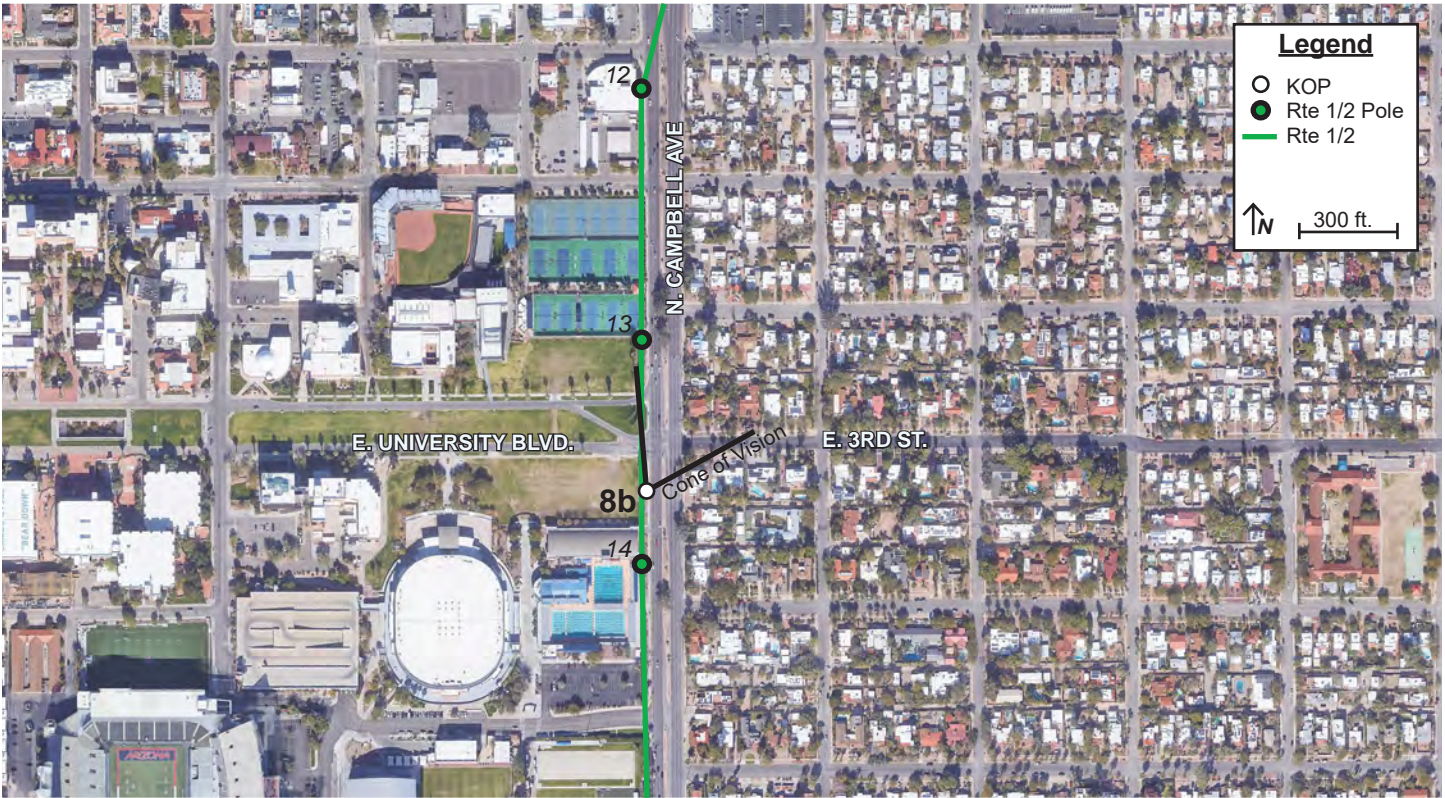
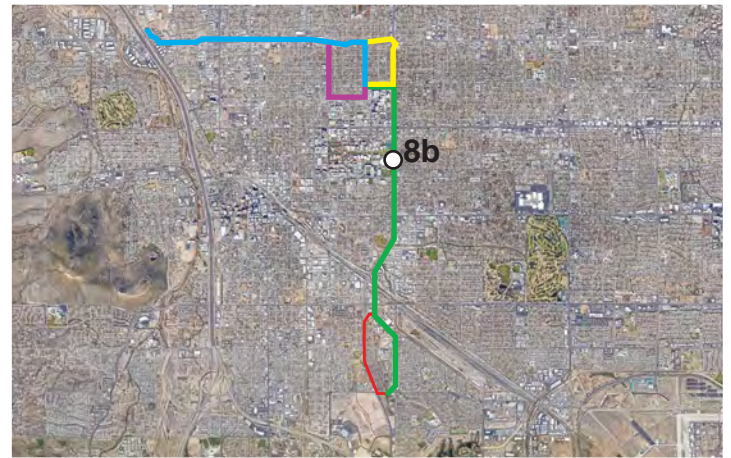


Simulated Condition with existing distribution removed

Simulated Condition Showing Existing Distribution Removed within 5 Years (when possible) of Transmission Line Construction

Route 1 & 2

Key Observation Point (KOP) # 8b



Notes:

Camera Information

- Type: Canon EOS Rebel T5
- Sensor: CMOS APS-C 22.3mm x 14.9mm
- Lens: Canon EF/EFS
- Focal Length: 18mm | F-Stop: f/11 | ISO:200
- Dimensions in pixel: 5184 x 3456

KOP

- Representative View for: Northbound pedestrians on North Campbell Avenue.
- Location: Intersection of E.University Blvd & N.Campbell Ave.
- Latitude: 32.231500° N; Longitude: 110.944100° W
- View Point Elevation at Eye Level: 2,460 ft.
- Looking: northeast
- Poles Visible: Route 1 & 2; Structures: 13-09
- Image File Name: 05.JPG

Simulation Notes

- Photo Taken: Feb. 1st, 2021 at 11:30 pm
- The image is based on a single photo and represent approximately 66 degree horizontal field of view.
- This view is approximately 398 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.
- Where distribution is removed, so have individual services; however services to individual residences may have to remain above ground if undergrounding cannot be coordinated with the landowner, requiring the distribution pole holding the individual service to remain in place.

Key Observation Point (KOP) #8b



Current Condition



Simulated Condition with existing distribution

Route 1 & 2

Key Observation Point (KOP) #8b



Current Condition

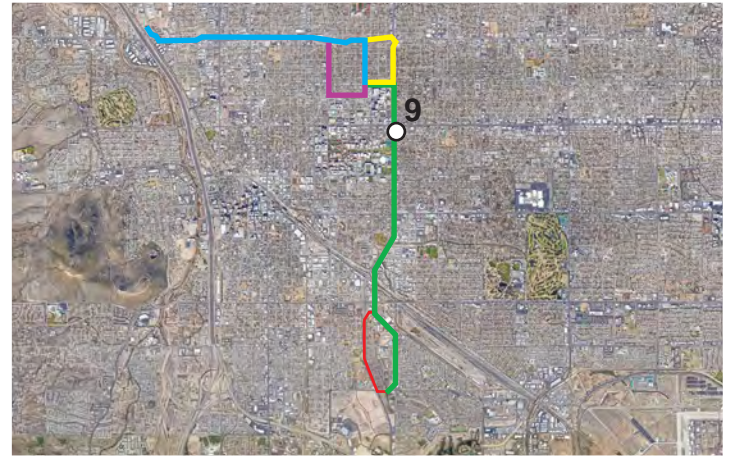


Simulated Condition with existing distribution removed

Simulated Condition Showing Existing Distribution Removed within 5 Years (when possible) of Transmission Line Construction

Route 1 & 2

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: 50mm | F-Stop: f/9 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: Motorists/pedestrians traveling north on North Campbell Avenue
- Location: 1062 N. Campbell Ave.
- Latitude: 32.235032° N; Longitude: 110.943743° W
- View Point Elevation at Eye Level: 2,475 ft.
- Looking: northwest
- Poles Visible: Route 1 & 2; Structures: 8-11
- Image File Name: IMG_0213.JPG

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 2:04 pm
- The image is based on a single photo and represent approximately 39 degree horizontal field of view.
- This view is approximately 490 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.
- Where distribution is removed, so have individual services; however services to individual residences may have to remain above ground if undergrounding cannot be coordinated with the landowner, requiring the distribution pole holding the individual service to remain in place.

Key Observation Point (KOP) #9



Current Condition

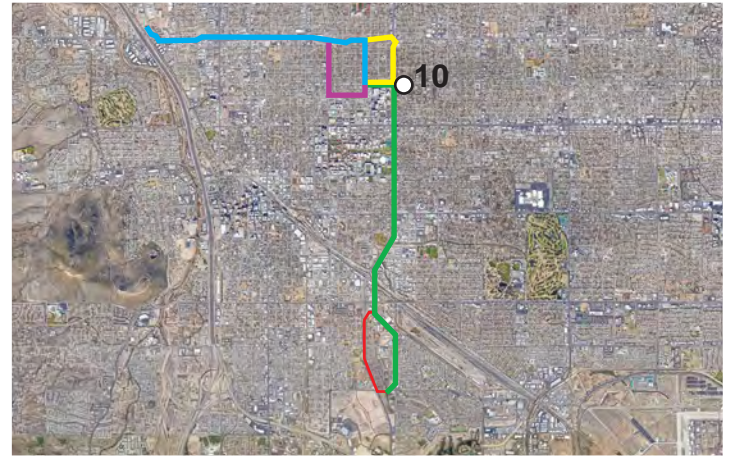


Simulated Condition with existing distribution removed

Simulated Condition Showing Existing Distribution Removed within 5 Years (when possible) of Transmission Line Construction

Route 1 & 2

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: 24mm | F-Stop: f/8 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: Westbound residents on E. Elm St
- Location: 1911 E. Elm St.
- Latitude: 32.242667° N; Longitude: 110.943418° W
- View Point Elevation at Eye Level: 2,451 ft.
- Looking: west
- Poles Visible: Route 1 & 2; Structures: 1-4,
- Image File Name: IMG_0217.JPG

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 2:15 pm
- The image is based on a single photo and represent approximately 74 degree horizontal field of view.
- This view is approximately 268 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) #10



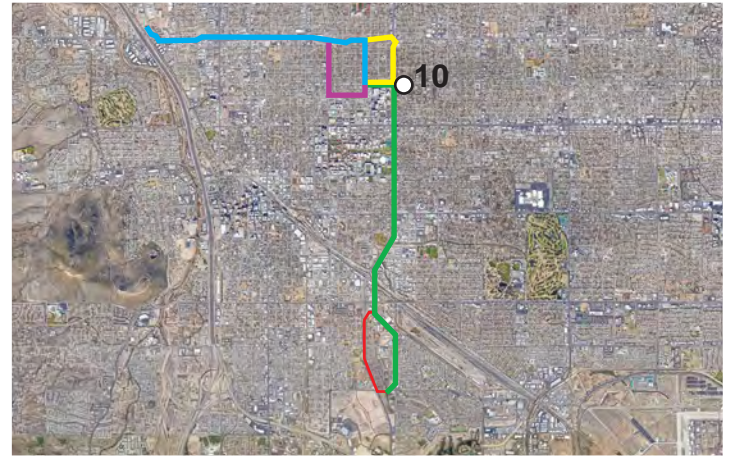
Current Condition



Simulated Condition

Route 1 & 2

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: 24mm | F-Stop: f/8 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: Westbound residents on E. Elm St
- Location: 1911 E. Elm St.
- Latitude: 32.242667° N; Longitude: 110.943418° W
- View Point Elevation at Eye Level: 2,451 ft.
- Looking: west
- Poles Visible: Route 1 & 2; Structures: 1-6, Route D; Structures: 36-39

- Image File Name: IMG_0217.JPG

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 2:15 pm
- The image is based on a single photo and represent approximately 74 degree horizontal field of view.
- This view is approximately 268 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) #10



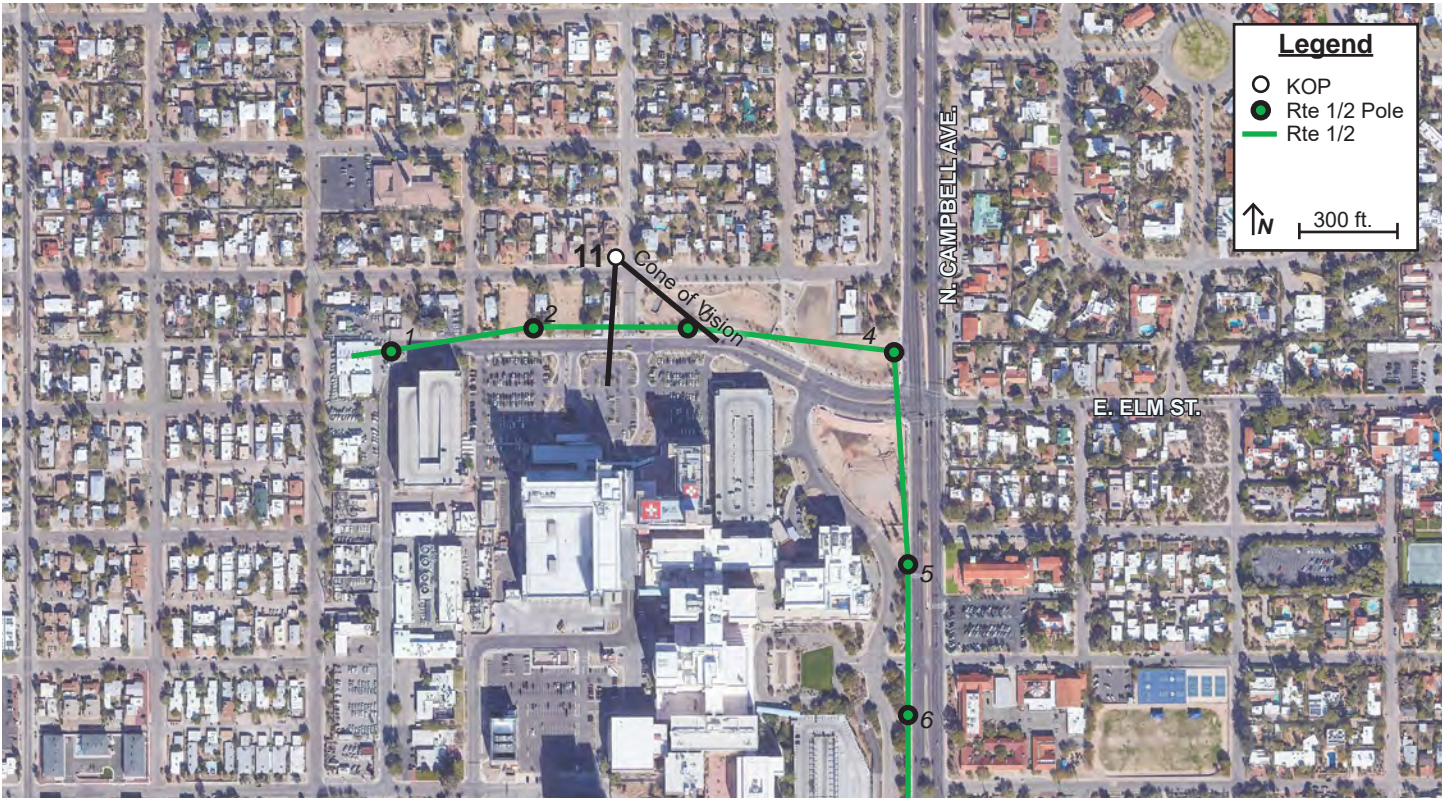
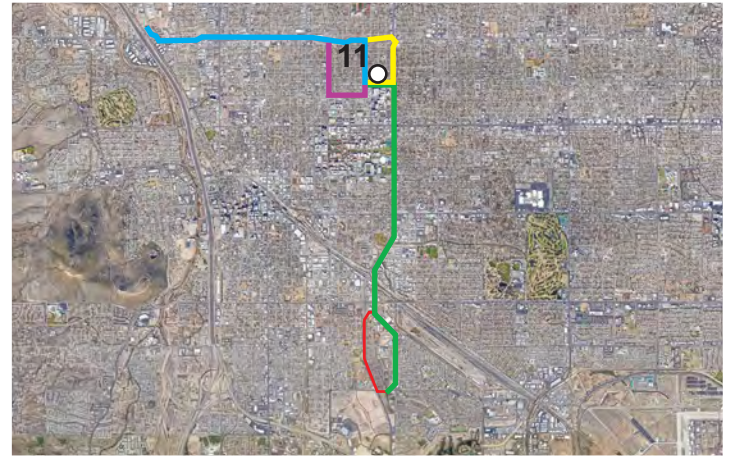
Current Condition



Simulated Condition

Route 1D & 2D

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: 35mm | F-Stop: f/11 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: Southbound residents on N Warren Ave
- Location: Intersection of N. Warren Ave. / E. Lester St.
- Latitude: 32.243800° N; Longitude: 110.946905° W
- View Point Elevation at Eye Level: 2,440 ft.
- Looking: south
- Poles Visible: Route 1 & 2; Structures: 3-5
- Image File Name: IMG_0134.jpg

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 12:02 pm
- The image is based on a single photo and represent approximately 54 degree horizontal field of view.
- This view is approximately 265 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) #11



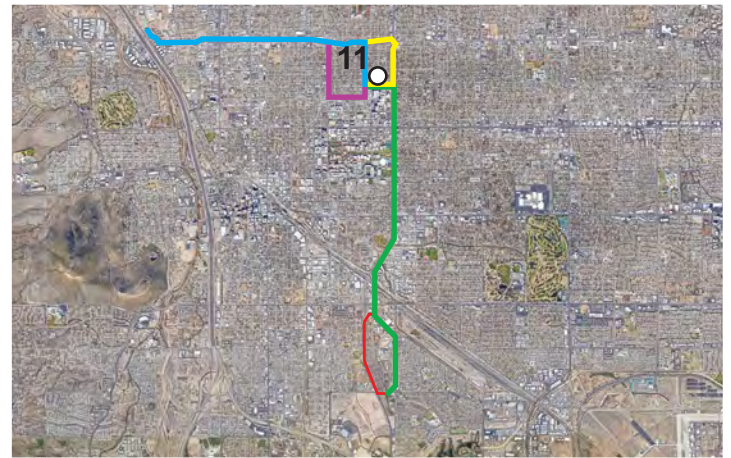
Current Condition



Simulated Condition

Route 1 & 2

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: 35mm | F-Stop: f/11 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: Southbound residents on N Warren Ave
- Location: Intersection of N. Warren Ave. / E. Lester St.
- Latitude: 32.243800° N; Longitude: 110.946905° W
- View Point Elevation at Eye Level: 2,440 ft.
- Looking: south
- Poles Visible: Route 1 & 2; Structures: 4,5, Route D; Structures: 37

- Image File Name: IMG_0134.jpg

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 12:02 pm
- The image is based on a single photo and represent approximately 54 degree horizontal field of view.
- This view is approximately 265 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) #11



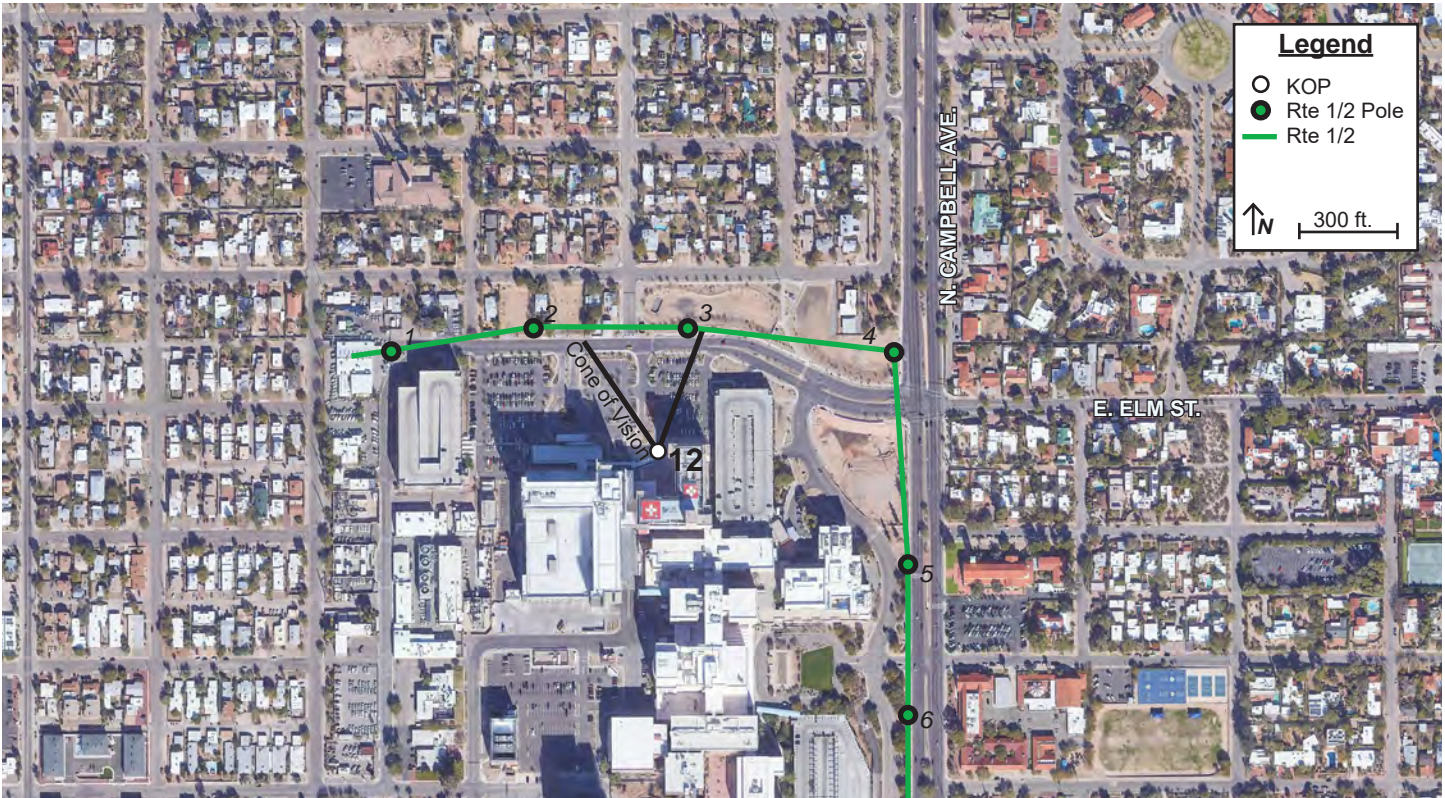
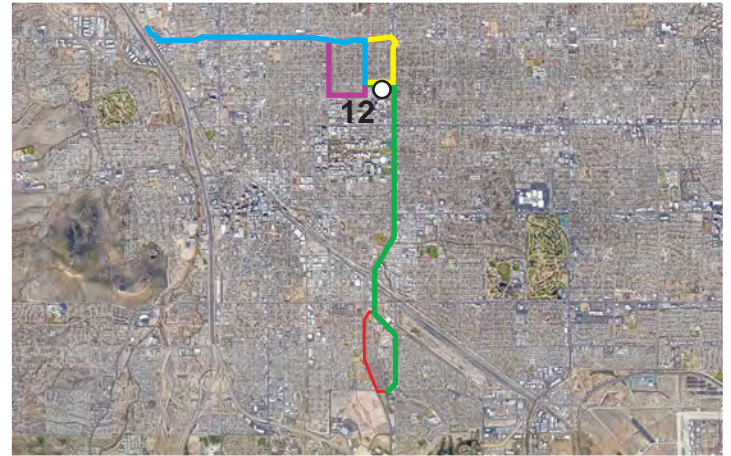
Current Condition



Simulated Condition

Route 1D & 2D

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: 35mm | F-Stop: f/10 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: Hospital visitors/staff at Main Entry
- Location: University Medical Center Hospital
- Latitude: 32.242359° N; Longitude: 110.946529° W
- View Point Elevation at Eye Level: 2,446 ft.
- Looking: north
- Poles Visible: Route 1 & 2; Structures: 3
- Image File Name: IMG_0155.JPG

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 12:13 pm
- The image is based on a single photo and represent approximately 54 degree horizontal field of view.
- This view is approximately 273 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) #12



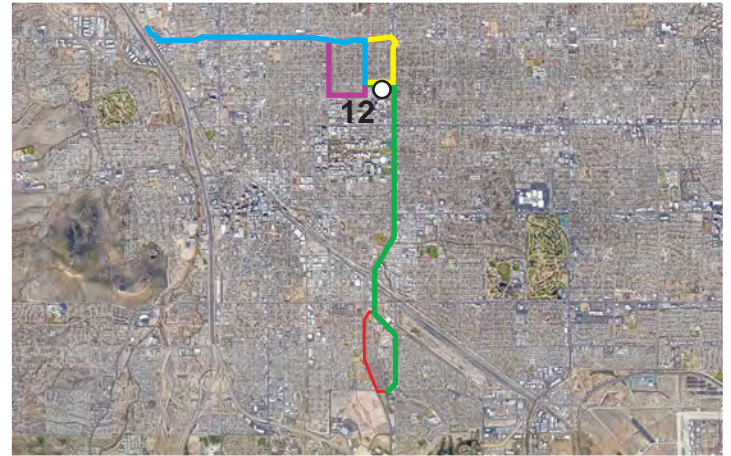
Current Condition



Simulated Condition

Route 1 & 2

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: 35mm | F-Stop: f/10 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: Hospital visitors/staff at Main Entry
- Location: University Medical Center Hospital
- Latitude: 32.242359° N; Longitude: 110.946529° W
- View Point Elevation at Eye Level: 2,446 ft.
- Looking: north
- Poles Visible: Route 1 & 2; Structures: 4, Route D; Structures: 37

- Image File Name: IMG_0155.JPG

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 12:13 pm
- The image is based on a single photo and represent approximately 54 degree horizontal field of view.
- This view is approximately 273 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) #12



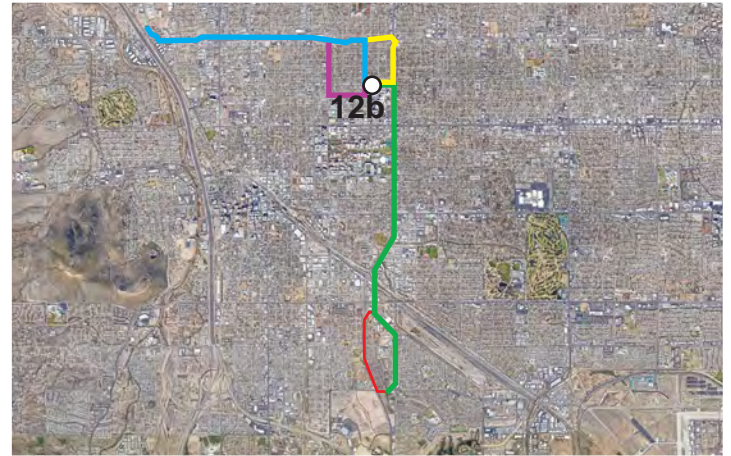
Current Condition



Simulated Condition

Route 1D & 2D

Key Observation Point (KOP) # 12b



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/9 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: Eastbound UMCH staff on N Ring Rd
- Location: North Ring Road
- Latitude: 32.243078° N; Longitude: 110.947283° W
- View Point Elevation at Eye Level: 2,443 ft.
- Looking: east
- Poles Visible: Route 1 & 2; Structures: 3-4
- Image File Name: IMG_0160.JPG

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 12:18 pm
- The image is based on a single photo and represent approximately 54 degree horizontal field of view.
- This view is approximately 304 feet west 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.
- Where distribution is removed, so have individual services; however services to individual residences may have to remain above ground if undergrounding cannot be coordinated with the landowner, requiring the distribution pole holding the individual service to remain in place.

Key Observation Point (KOP) #12b



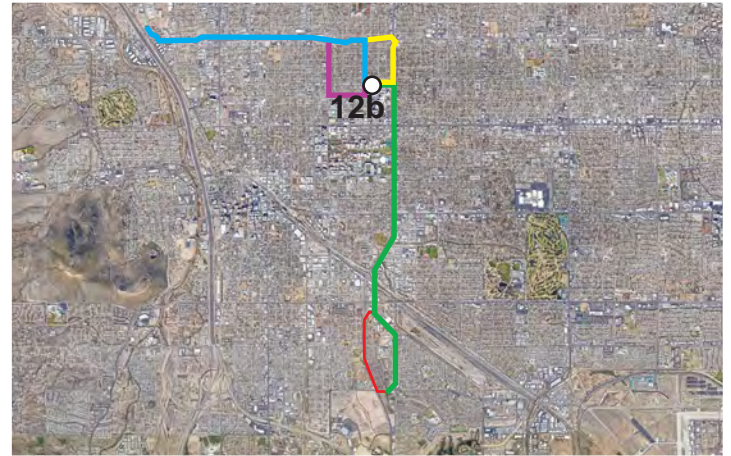
Current Condition



Simulated Condition

Route 1 & 2

Key Observation Point (KOP) # 12b



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/9 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: Eastbound UMCH staff on N Ring Rd
- Location: North Ring Road
- Latitude: 32.243078° N; Longitude: 110.947283° W
- View Point Elevation at Eye Level: 2,443 ft.
- Looking: east
- Poles Visible: Route 1 & 2; Structures: 4-6, Route D; Structures: 35-37
- Image File Name: IMG_0160.JPG

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 12:18 pm
- The image is based on a single photo and represent approximately 54 degree horizontal field of view.
- This view is approximately 304 feet west 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.
- Where distribution is removed, so have individual services; however services to individual residences may have to remain above ground if undergrounding cannot be coordinated with the landowner, requiring the distribution pole holding the individual service to remain in place.

Key Observation Point (KOP) #12b



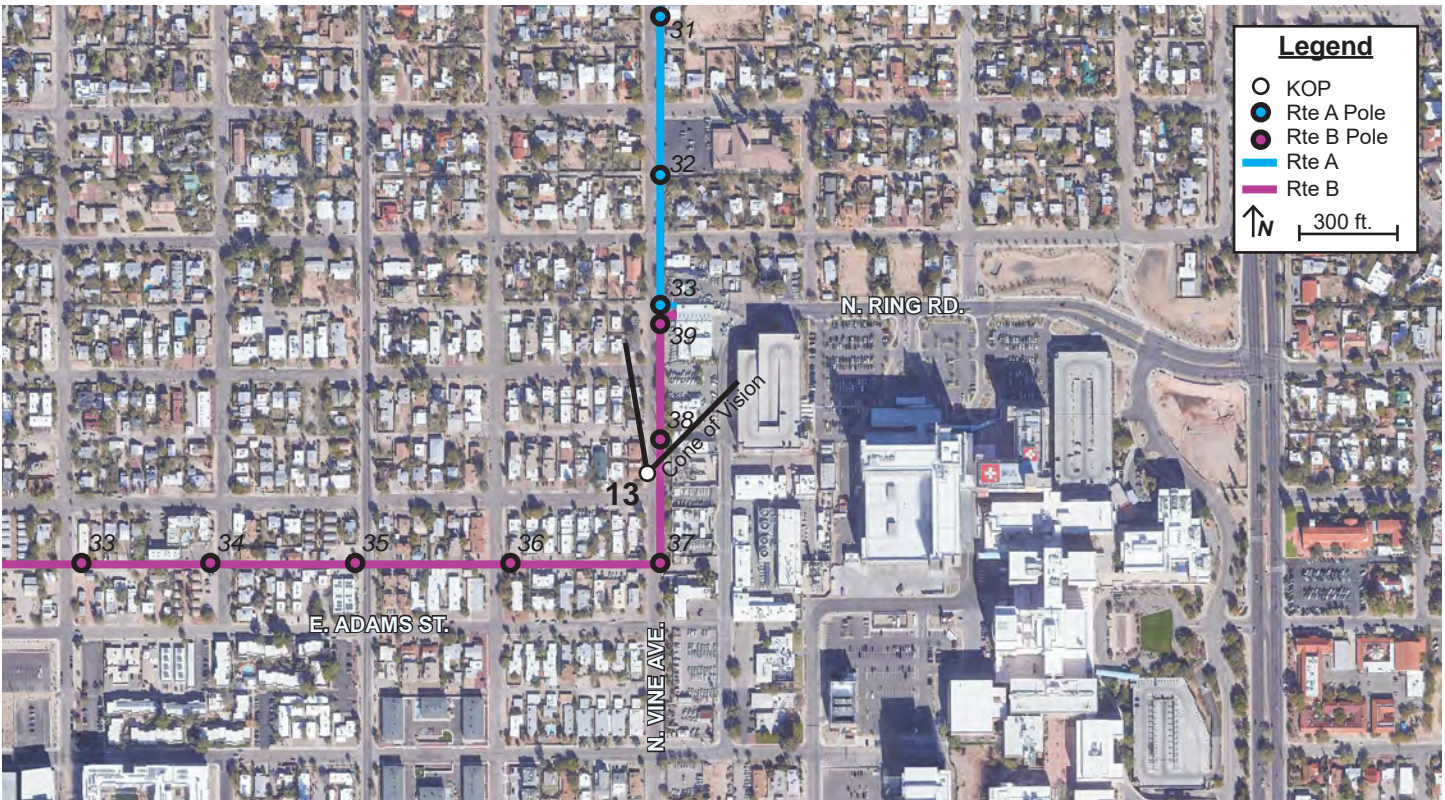
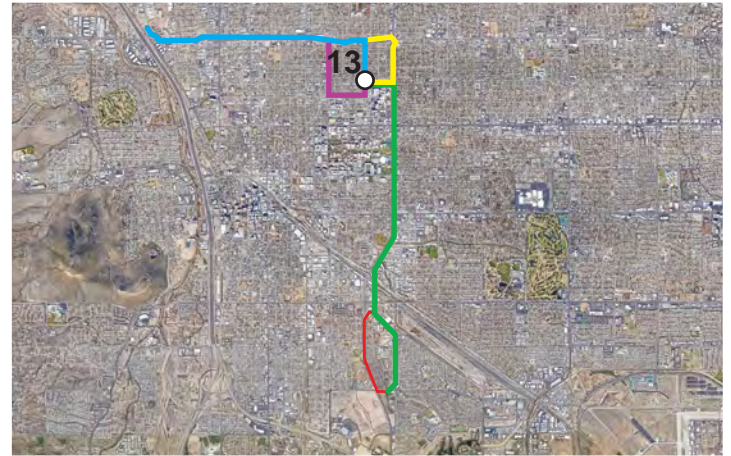
Current Condition



Simulated Condition

Route 1D & 2D

Key Observation Point (KOP) # 13



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: Residents/motorists traveling northbound on North Vine Avenue
- Location: 1601 N. Vine Ave.
- Latitude: 32.241843° N; Longitude: 110.949782° W
- View Point Elevation at Eye Level: 2,451 ft.
- Looking: north
- Poles Visible: Route A; Structures: 30-33, Route B;

- Structures: 38-39
- Image File Name: IMG_0108.JPG

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 11:21 am
- The image is based on a single photo and represent approximately 39 degree horizontal field of view.
- This view is approximately 112 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) #13



Current Condition



Simulated Condition Showing Existing Distribution Removed within 5 Years (when possible) of Transmission Line Construction

Simulated Condition with existing 46kV and distribution removed

Route A

Key Observation Point (KOP) #13



Current Condition

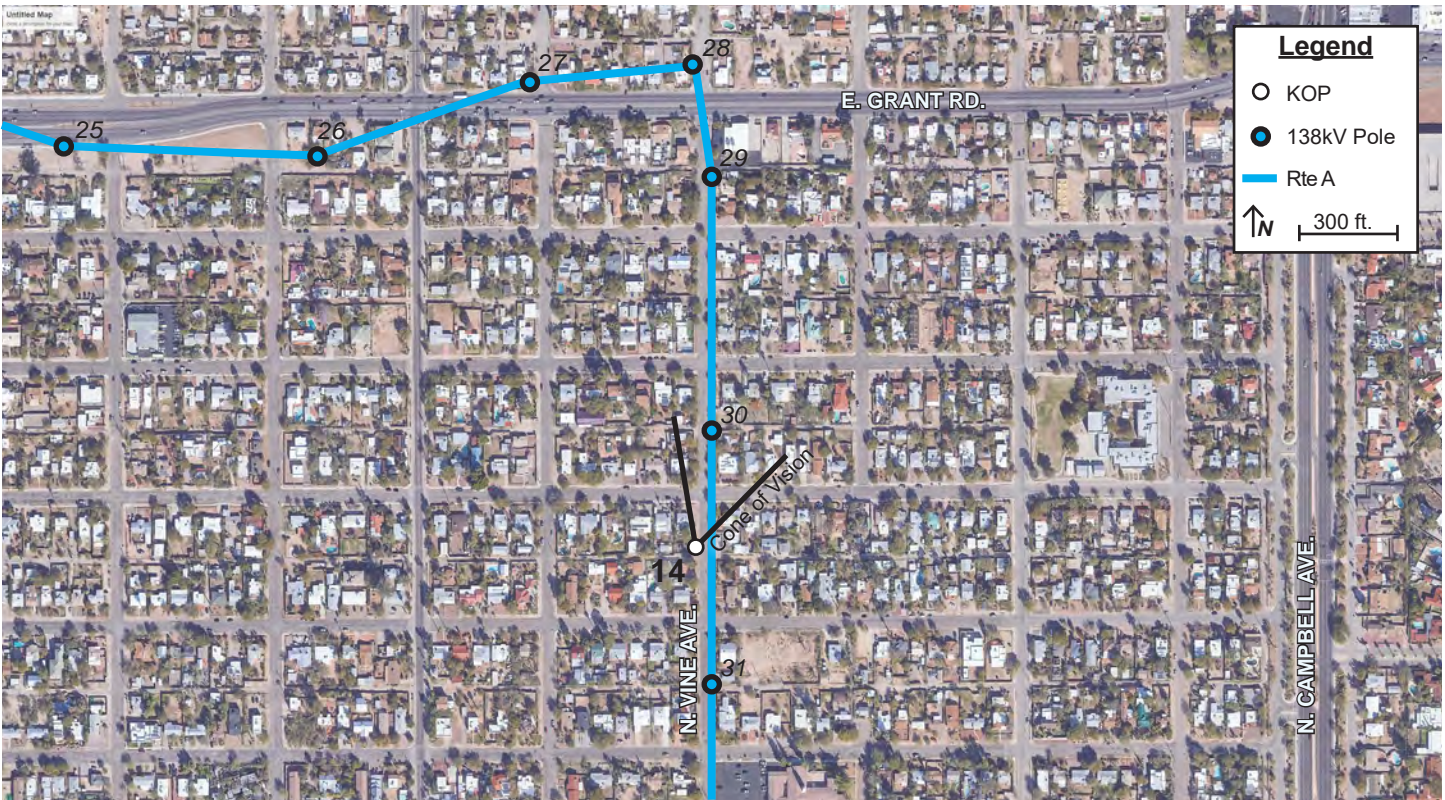
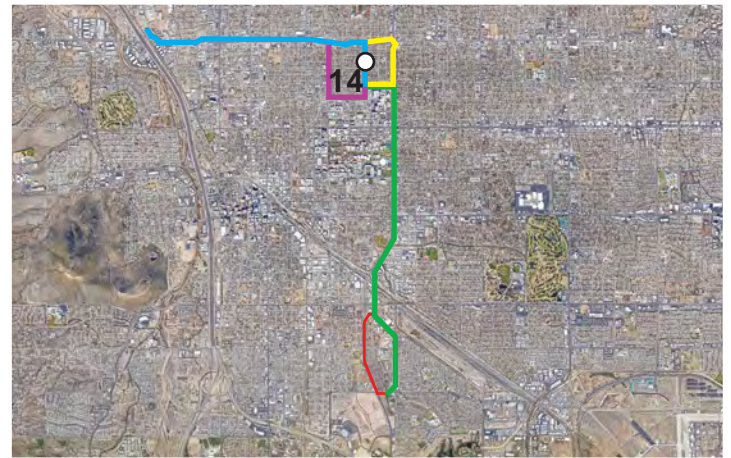


Simulated Condition Showing Existing Distribution Removed within 5 Years (when possible) of Transmission Line Construction

Simulated Condition with existing 46kV and distribution removed

Route B

Key Observation Point (KOP) # 14



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: Residents/motorists traveling northbound on North Vine Avenue
- Location: 2025 N. Vine Ave.
- Latitude: 32.246453° N; Longitude: 110.949855° W
- View Point Elevation at Eye Level: 2,427 ft.
- Looking: north

- Poles Visible: Route A; Structures: 28-30
- Image File Name: IMG_0110.JPG

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 11:32 am
- The image is based on a single photo and represent approximately 39 degree horizontal field of view.
- This view is approximately 345 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) #14



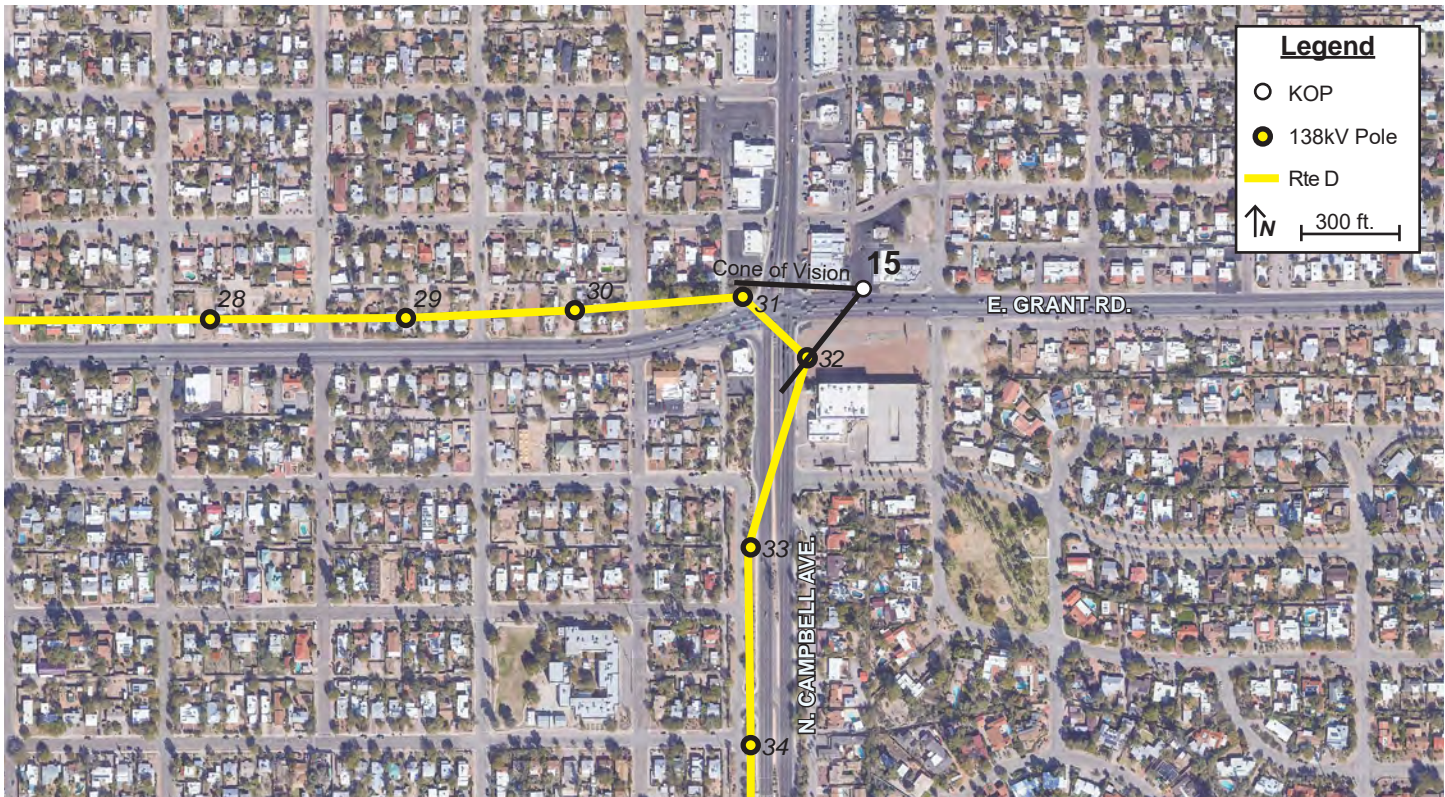
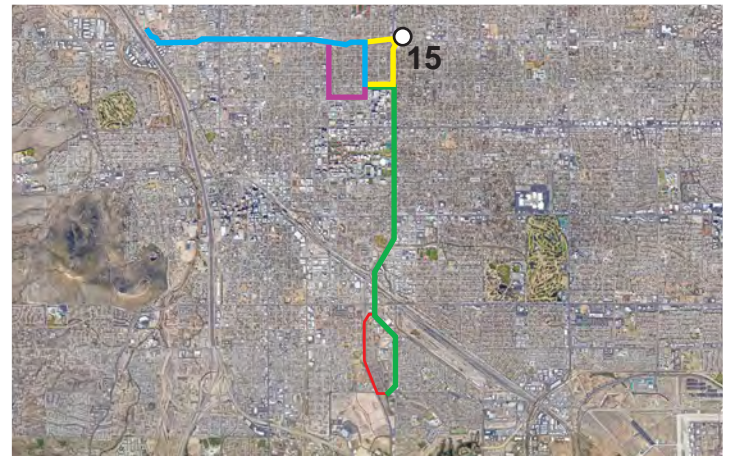
Current Condition



Simulated Condition

Route A

Key Observation Point (KOP) # 15



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/9 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: Motorists traveling westbound on East Grant Road
- Location: 1921 E. Grant Rd.
- Latitude: 32.250425° N; Longitude: 110.943245° W
- View Point Elevation at Eye Level: 2,428 ft.
- Looking: west
- Poles Visible: Route D Structures 28-31
- Image File Name: IMG_0016.JPG

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 9:33 pm
- The image is based on a single photo and represent approximately 54 degree horizontal field of view.
- This view is approximately 380 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.
- Preliminary design shown considered the Grant Road widening Project per the Preliminary Plan set as provided by City of Tucson Department of Transportation

Key Observation Point (KOP) #15



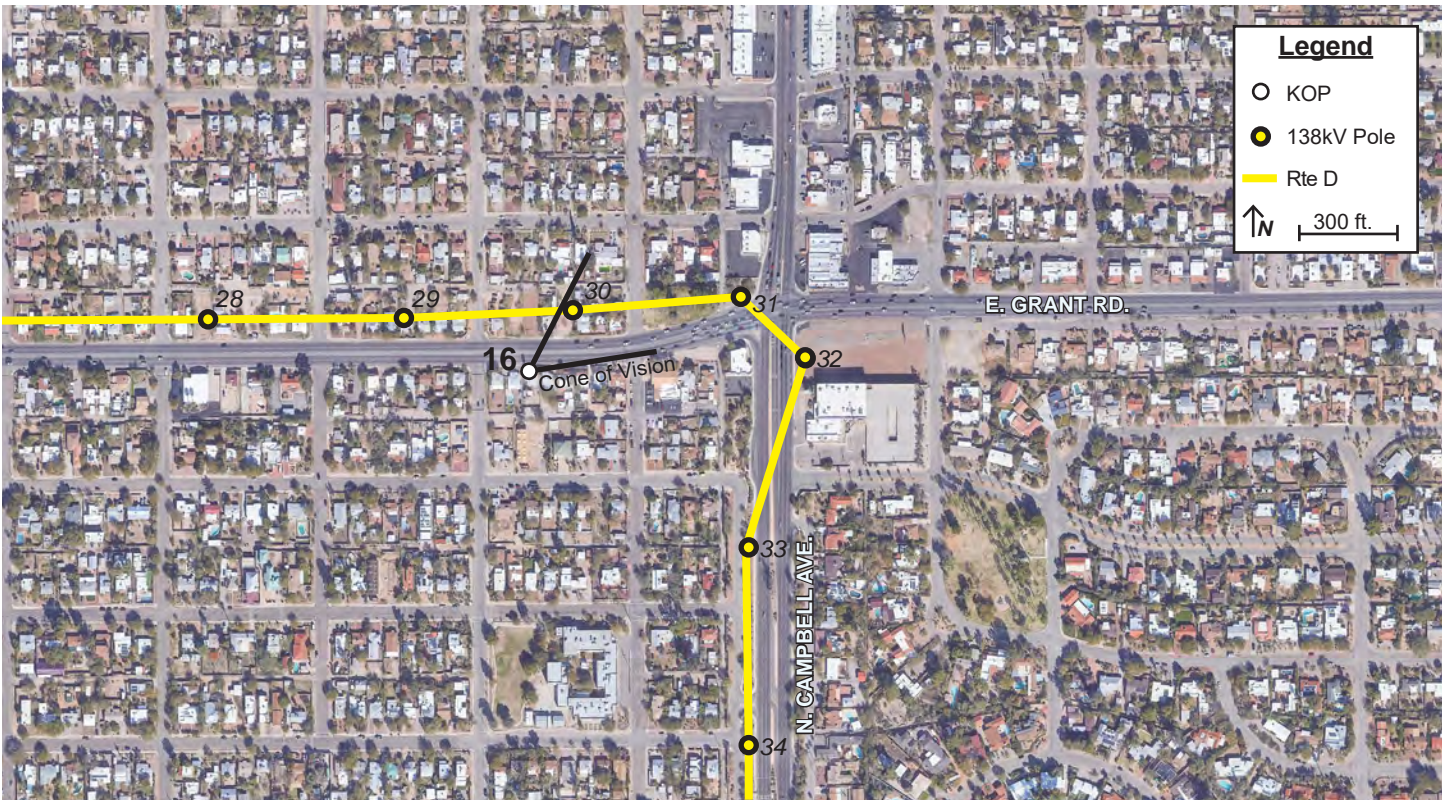
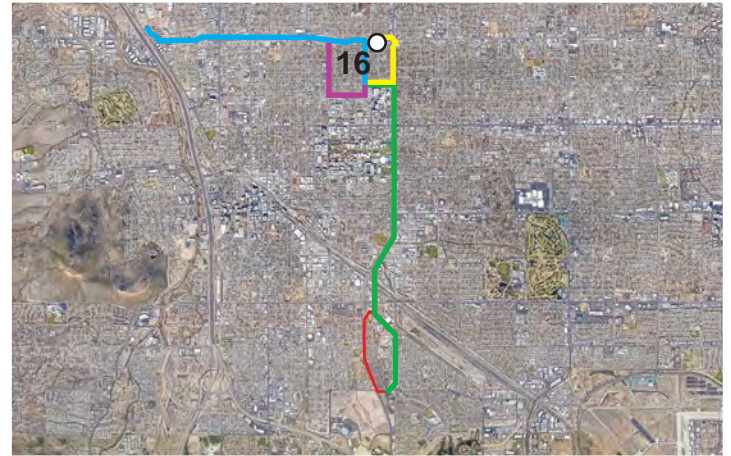
Current Condition



Simulated Condition

Route D

Key Observation Point (KOP) # 16



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: Motorists traveling eastbound on East Grant Road
- Location: 1710 E. Grant Rd.
- Latitude: 32.249795° N; Longitude: 110.946358° W
- View Point Elevation at Eye Level: 2,425 ft.
- Looking: east
- Poles Visible: Route D Structures 30-31

- Image File Name: IMG_0122.JPG

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 11:41 pm
- The image is based on a single photo and represent approximately 74 degree horizontal field of view.
- This view is approximately 212 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.
- Preliminary design shown considered the Grant Road widening Project per the Preliminary Plan set as provided by City of Tucson Department of Transportation

Key Observation Point (KOP) #16



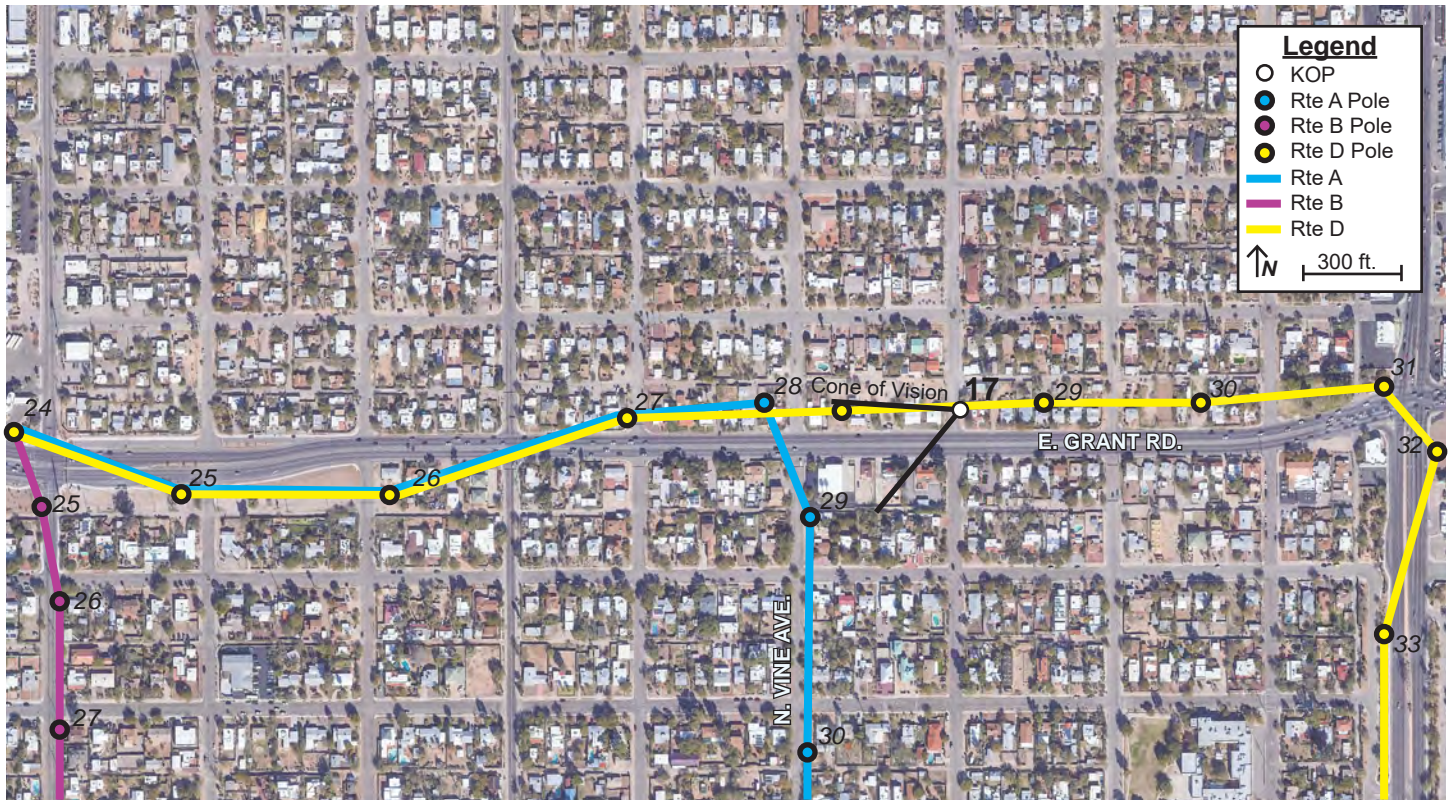
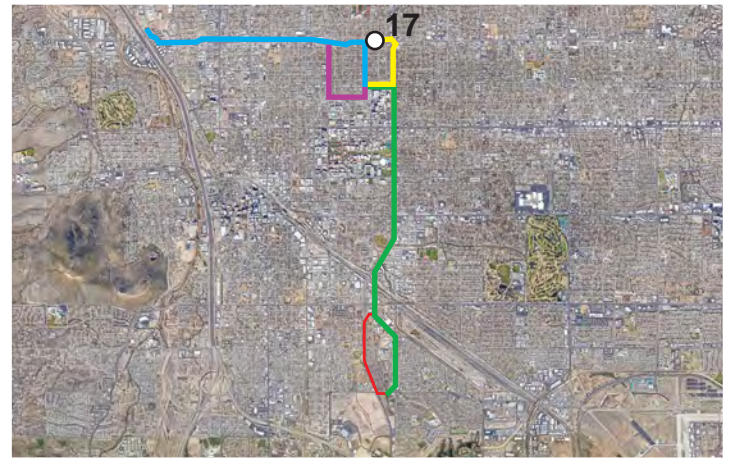
Current Condition



Simulated Condition

Route D

Key Observation Point (KOP) #17



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/9 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: Motorists and residents traveling westbound on East Grant Road
- Location: Intersection of E. Grant Rd./N. Cherry Ave.
- Latitude: 32.250217° N; Longitude: 110.948313° W
- View Point Elevation at Eye Level: 2,428 ft.
- Looking: west
- Poles Visible: Route A; Structures 24-29, Route D; Structures: 24-28

- Image File Name: IMG_0260.JPG

Simulation Notes

- Photo Taken: Nov 2nd, 2020 at 11:50 am
- The image is based on a single photo and represent approximately 54 degree horizontal field of view.
- This view is approximately 330 feet west 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.
- Preliminary design shown considered the Grant Road widening Project per the Preliminary Plan set as provided by City of Tucson Department of Transportation

Key Observation Point (KOP) #17



Current Condition



Simulated Condition

Route A

Key Observation Point (KOP) #17



Current Condition



Simulated Condition

Route B

Key Observation Point (KOP) #17



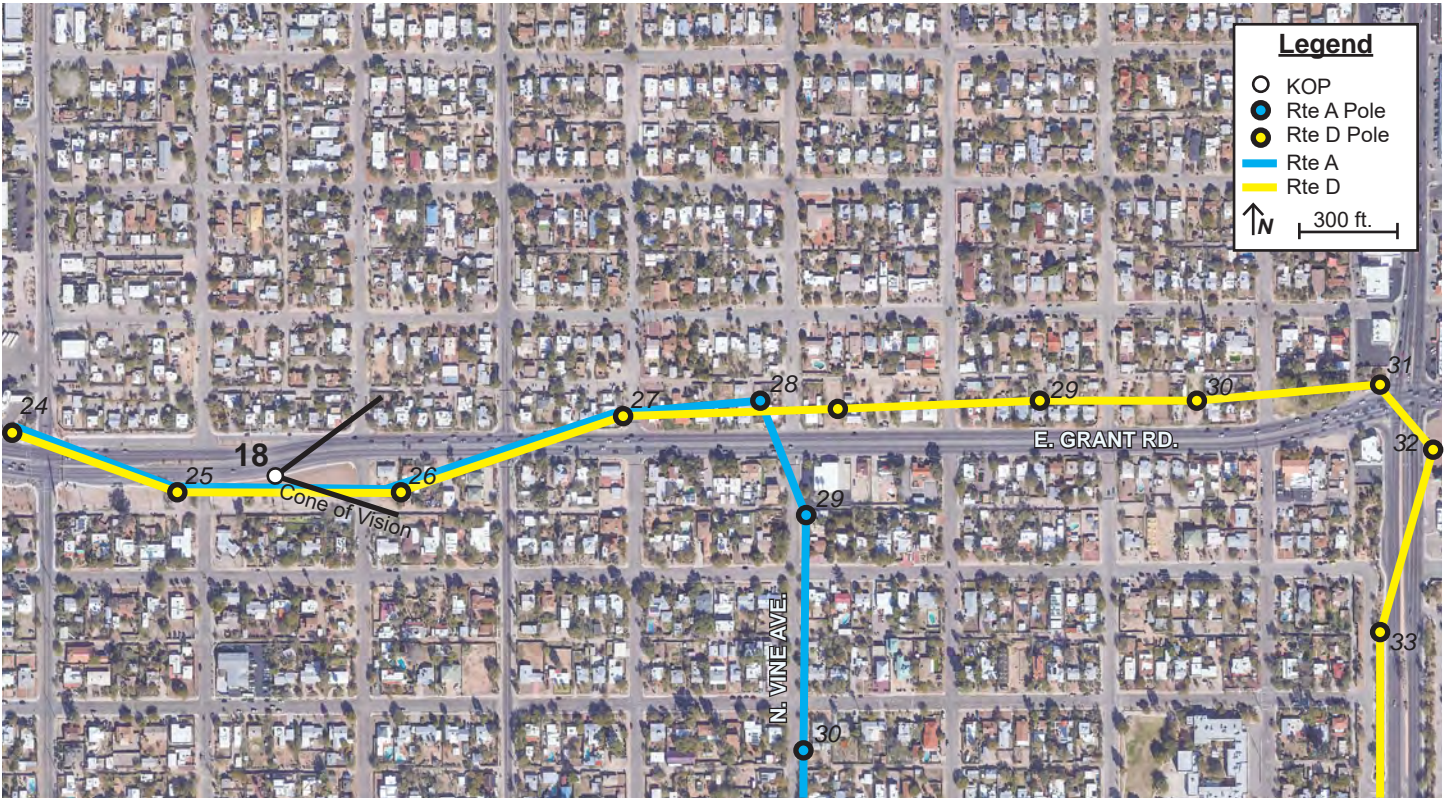
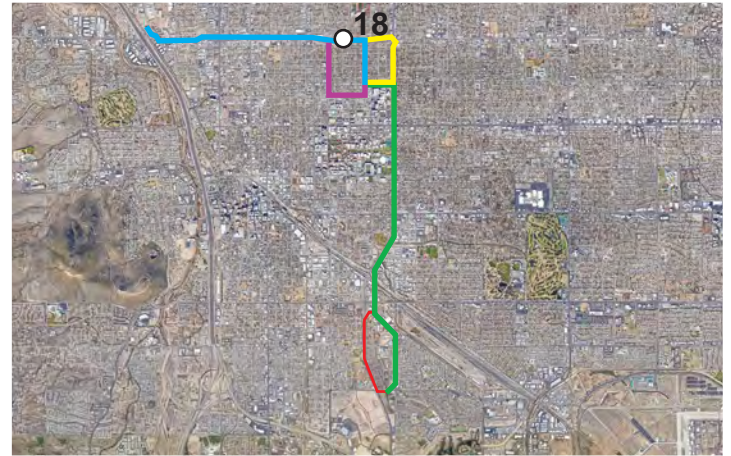
Current Condition



Simulated Condition

Route D

Key Observation Point (KOP) #18



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 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: Motorists and residents traveling eastbound on East Grant Road
- Location: 1140 E. Grant Rd.
- Latitude: 32.249671° N; Longitude: 110.954526° W
- View Point Elevation at Eye Level: 2,416 ft.
- Looking: east
- Poles Visible: Route A; Structures 26-29, Route D; Structures: 26-31

- Image File Name: IMG_0273.JPG

Simulation Notes

- Photo Taken: Nov 2nd, 2020 at 11:59 am
- The image is based on a single photo and represent approximately 39 degree horizontal field of view.
- This view is approximately 318 feet west 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.
- Preliminary design shown considered the Grant Road widening Project per the Preliminary Plan set as provided by City of Tucson Department of Transportation

Key Observation Point (KOP) #18



Current Condition



Simulated Condition

Route A

Key Observation Point (KOP) #18



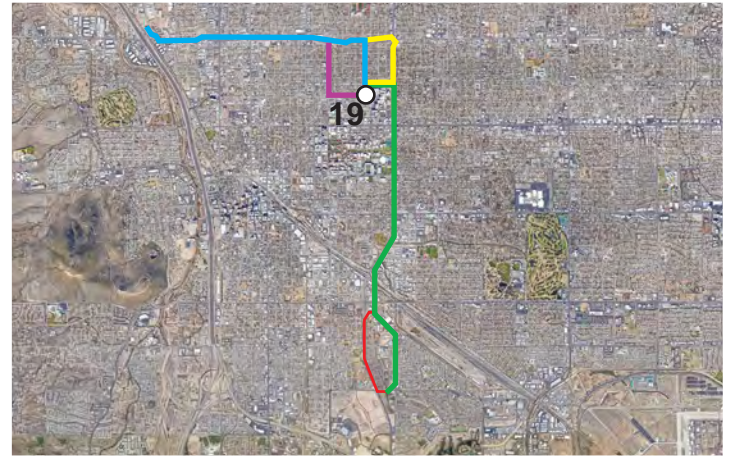
Current Condition



Simulated Condition

Route D

Key Observation Point (KOP) # 19



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/8 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: Residents/motorists traveling on North Vine Avenue, looking west down alley
- Location: 1505 N. Vine Ave.
- Latitude: 32.241126° N; Longitude: 110.949683° W
- View Point Elevation at Eye Level: 2,452 ft.
- Looking: west
- Poles Visible: Route B; Structures: 32-36

- Image File Name: IMG_0102.JPG

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 11:16 am
- The image is based on a single photo and represent approximately 39 degree horizontal field of view.
- This view is approximately 457 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.
- Two Simulations shown as distribution will be evaluated on an individual basis and may/may not be placed underground dependent upon existing constraints. Relocation of service drops will be reviewed on an individual basis to determine feasibility.

Key Observation Point (KOP) #19



Current Condition



Simulated Condition with existing 46kV and distribution removed

Route B

Key Observation Point (KOP) #19



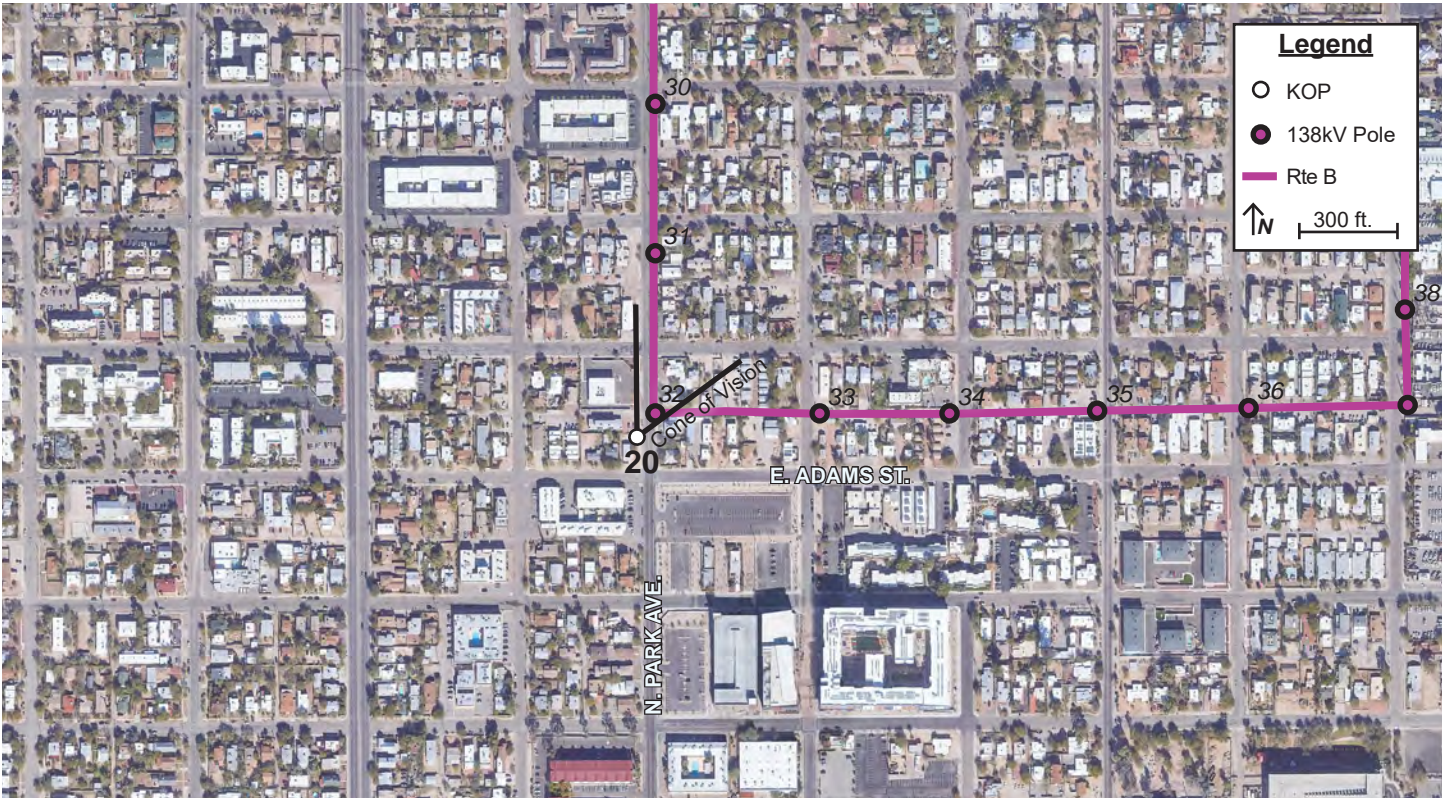
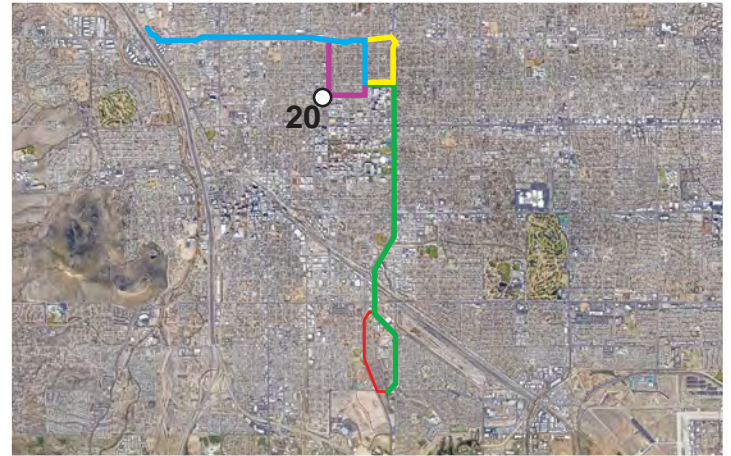
Current Condition



Simulated Condition with existing 46kV removed and distribution remaining

Route B

Key Observation Point (KOP) # 20



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: Residents/motorists traveling north on North Park Avenue, looking northeast
- Location: 1502 N. Park Ave.
- Latitude: 32.240899° N; Longitude: 110.956886° W
- View Point Elevation at Eye Level: 2,436 ft.
- Looking: northeast
- Poles Visible: Route B; Structures: 28-32
- Image File Name: IMG_0099.JPG

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 11:08 am
- The image is based on a single photo and represent approximately 54 degree horizontal field of view.
- This view is approximately 90 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.
- Two Simulations shown as distribution will be evaluated on an individual basis and may/may not be placed underground dependent upon existing constraints. Relocation of service drops will be reviewed on an individual basis to determine feasibility.

Key Observation Point (KOP) #20



Current Condition

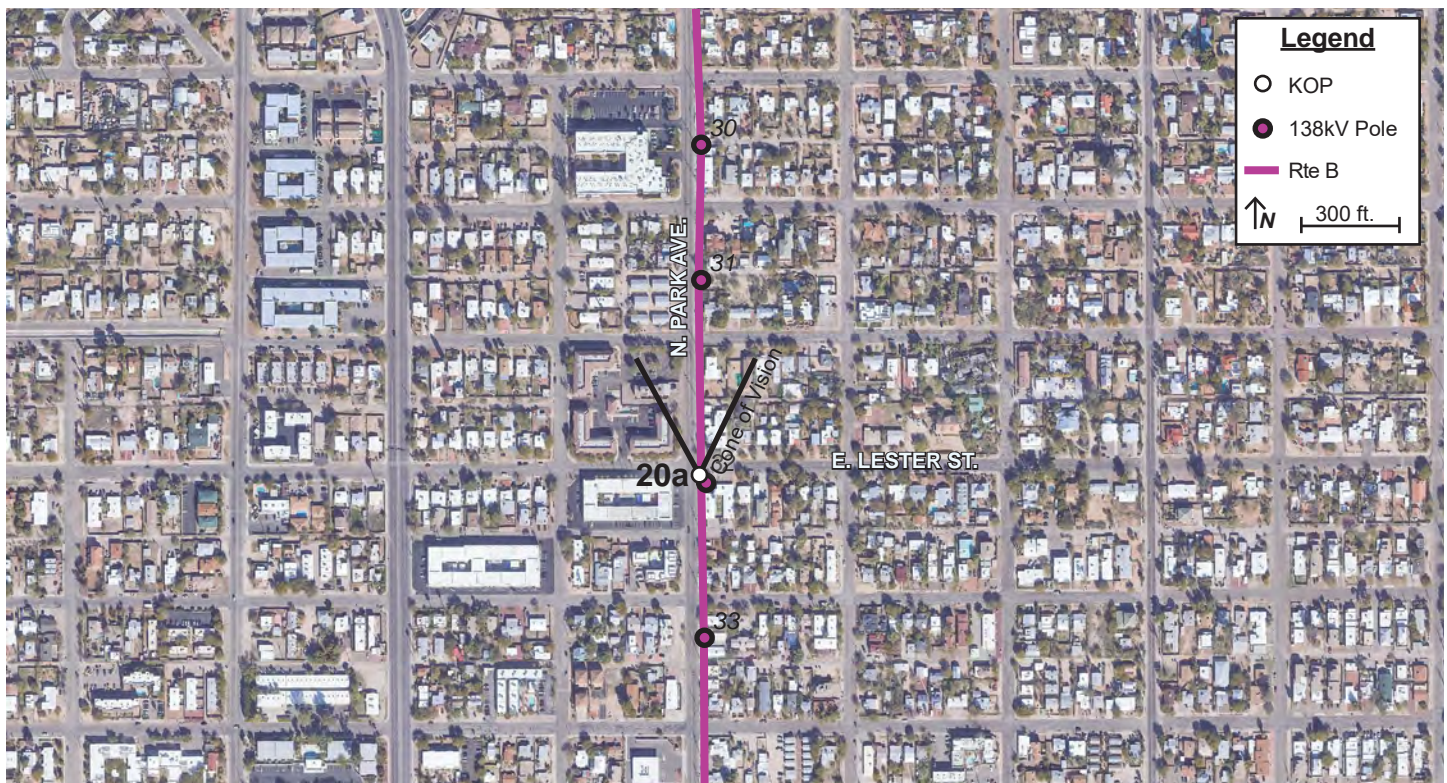
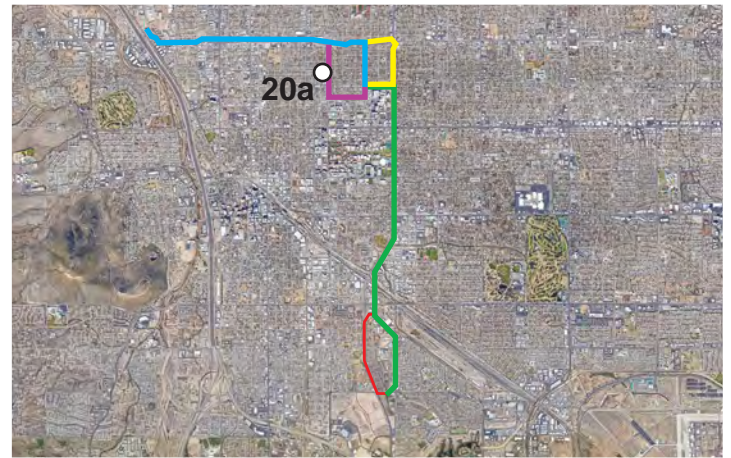


Simulated Condition with 46kV and distribution removed

Simulated Condition Showing Existing Distribution Removed within 5 Years (when possible) of Transmission Line Construction

Route B

Key Observation Point (KOP) # 20a - North



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: Residents/motorists traveling north on North Park Avenue, looking north
- Location: Intersection of N. Park Ave./E. Lester St.
- Latitude: 32.243653° N; Longitude: 110.956761° W
- View Point Elevation at Eye Level: 2,428 ft.
- Looking: north
- Poles Visible: Route B; Structures: 28-31
- Image File Name: IMG_0082.JPG

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 10:56 am
- The image is based on a single photo and represent approximately 39 degree horizontal field of view.
- This view is approximately 540 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.
- Two Simulations shown as distribution will be evaluated on an individual basis and may/may not be placed underground dependent upon existing constraints. Relocation of service drops will be reviewed on an individual basis to determine feasibility.

Key Observation Point (KOP) #20a - North



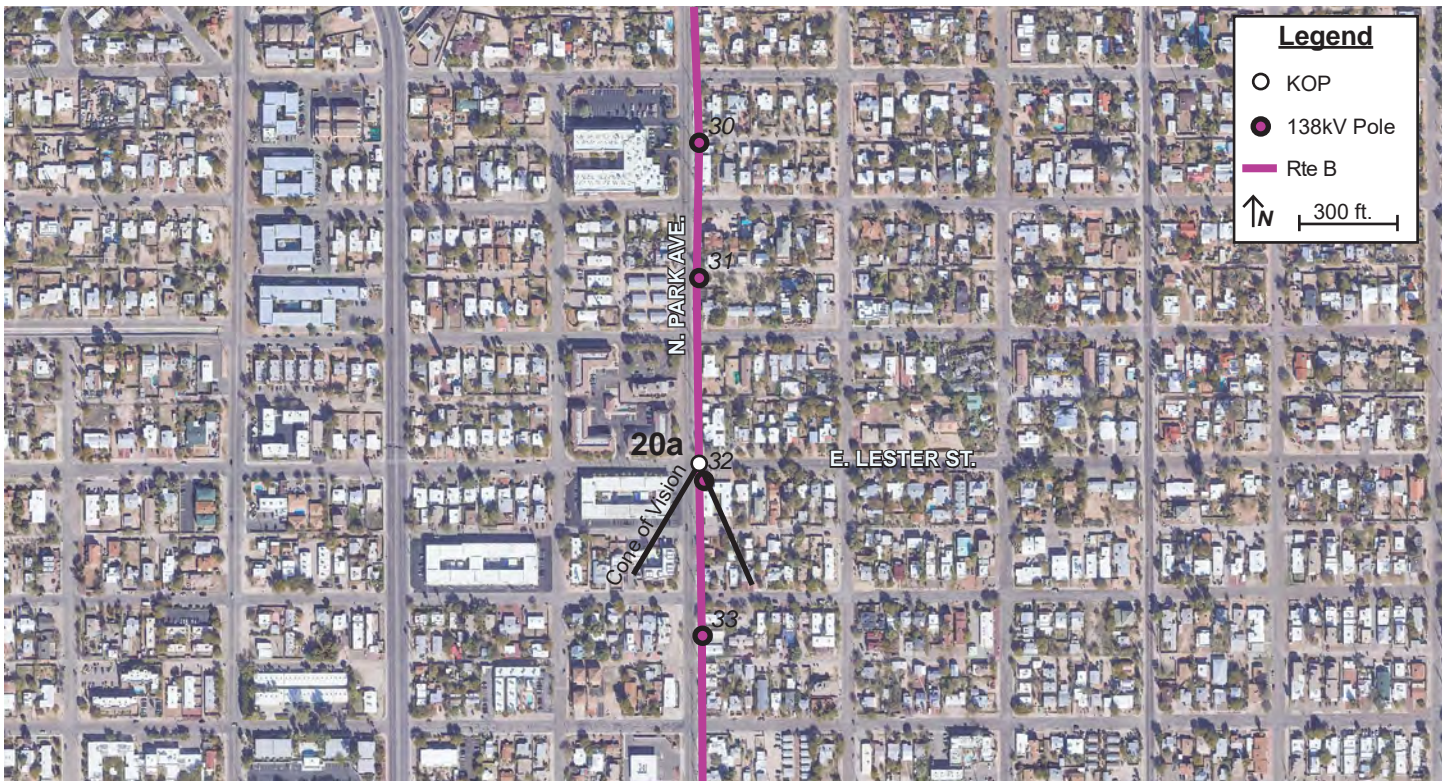
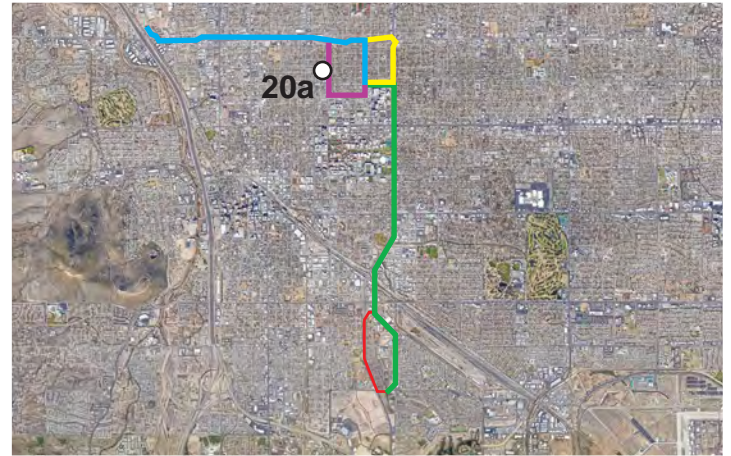
Current Condition



Simulated Condition with existing 46kV and distribution removed

Route B

Key Observation Point (KOP) # 20a - South



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: Residents/motorists traveling south on North Park Avenue, looking south
- Location: Intersection of N. Park Ave./E. Lester St.
- Latitude: 32.243653° N; Longitude: 110.956761° W
- View Point Elevation at Eye Level: 2,428 ft.
- Looking: south
- Poles Visible: Route B; Structures: 33-34
- Image File Name: IMG_0090.JPG

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 10:58 am
- The image is based on a single photo and represent approximately 39 degree horizontal field of view.
- This view is approximately 480 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.
- Two Simulations shown as distribution will be evaluated on an individual basis and may/may not be placed underground dependent upon existing constraints. Relocation of service drops will be reviewed on an individual basis to determine feasibility.

Key Observation Point (KOP) #20a - South



Current Condition

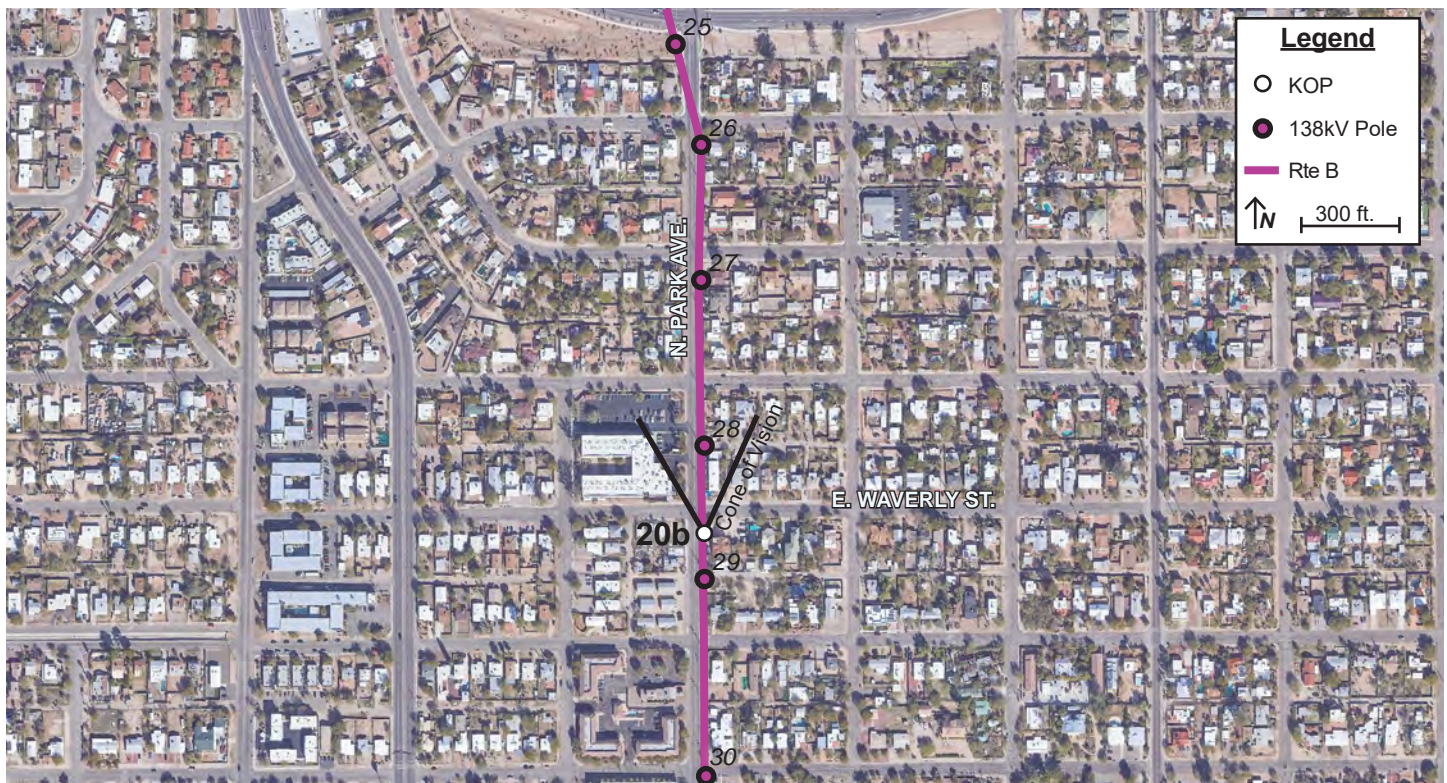
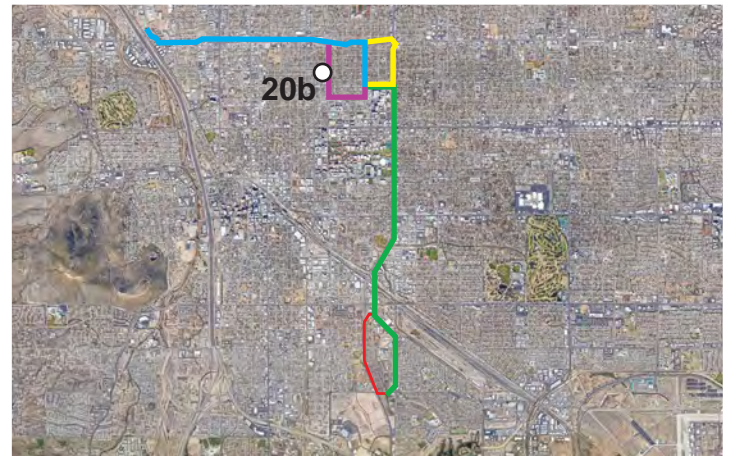


Simulated Condition Showing Existing Distribution Removed within 5 Years (when possible) of Transmission Line Construction

Simulated Condition with existing 46kV and distribution removed in the same ROW

Route B

Key Observation Point (KOP) # 20b



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: Residents/motorists traveling north on North Park Avenue, looking north near Casa
- Location: 1998 N. Park Ave.
- Latitude: 32.245622° N; Longitude: 110.956798° W
- View Point Elevation at Eye Level: 2,440 ft.
- Looking: north
- Poles Visible: Route B; Structures: 25-28
- Image File Name: IMG_0076.JPG

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 10:46 am
- The image is based on a single photo and represent approximately 39 degree horizontal field of view.
- This view is approximately 220 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.
- Two Simulations shown as distribution will be evaluated on an individual basis and may/may not be placed underground dependent upon existing constraints. Relocation of service drops will be reviewed on an individual basis to determine feasibility.

Key Observation Point (KOP) #20b



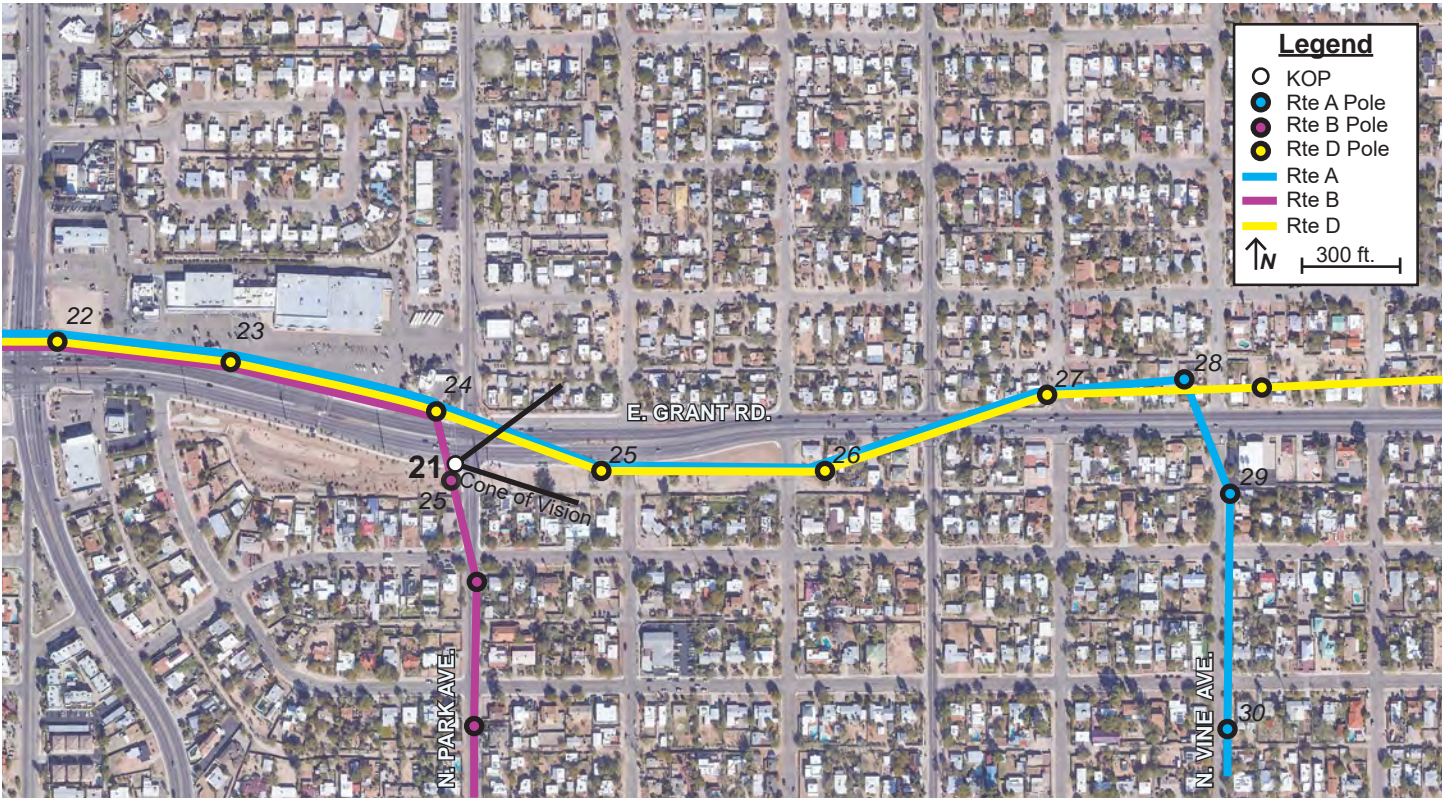
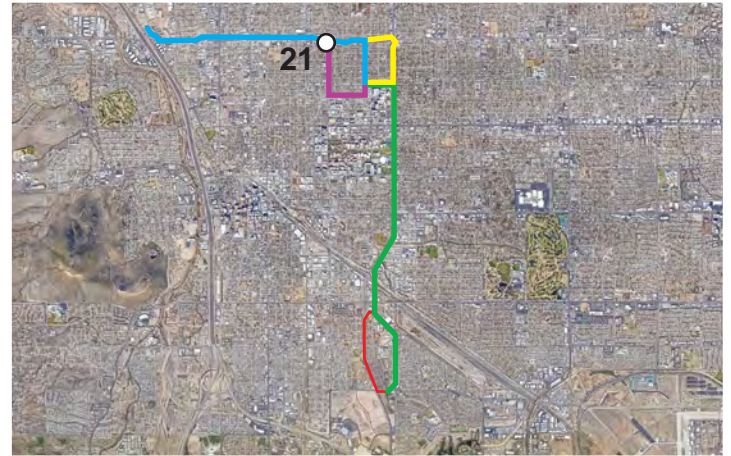
Current Condition



Simulated Condition with existing 46kV and distribution removed

Route B

Key Observation Point (KOP) #21



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: Motorists and residents traveling eastbound on East Grant Road
- Location: Intersection of E. Grant Rd./N. Park Ave.
- Latitude: 32.249571° N; Longitude: 110.957043° W
- View Point Elevation at Eye Level: 2,425 ft.
- Looking: east
- Poles Visible: Route A; Structures 25-29, Route D; Structures: 25-31 ; Route B is not visible at this KOP.

- Image File Name: IMG_0073.JPG

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 10:39 am
- The image is based on a single photo and represent approximately 54 degree horizontal field of view.
- This view is approximately 456 feet west 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.
- Preliminary design shown considered the Grant Road widening Project per the Preliminary Plan set as provided by City of Tucson Department of Transportation

Key Observation Point (KOP) #21



Current Condition



Simulated Condition

Route A

Key Observation Point (KOP) #21

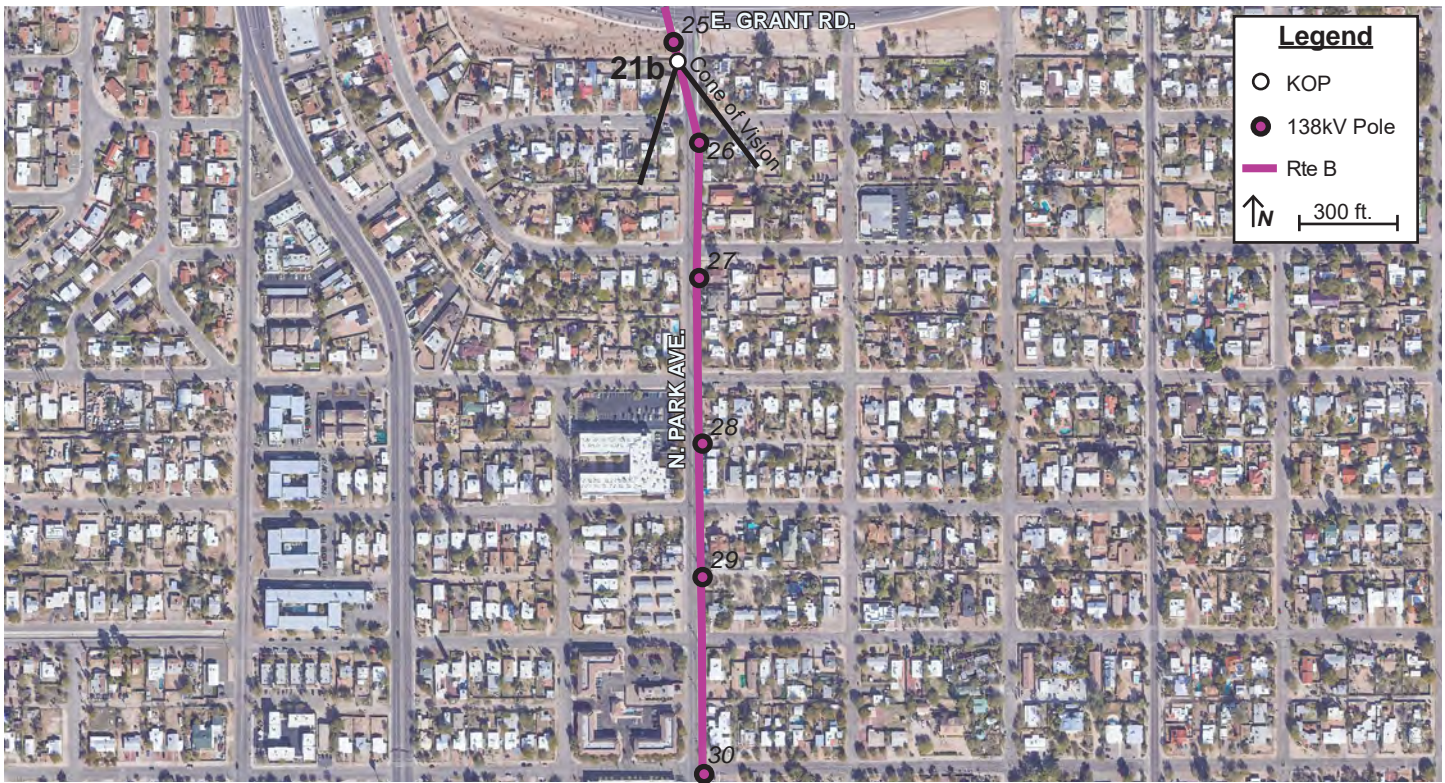
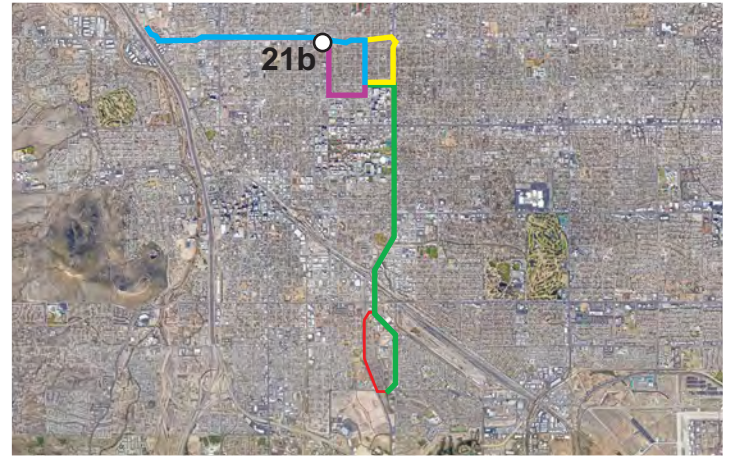


Current Condition



Simulated Condition

Key Observation Point (KOP) # 21b



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/11 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: Residents/motorists traveling south on North Park Avenue
- Location: 2359 N. Park Ave.
- Latitude: 32.249405° N; Longitude: 110.956935° W
- View Point Elevation at Eye Level: 2,426 ft.
- Looking: south
- Poles Visible: Route B; Structures: 26-30
- Image File Name: IMG_0074.JPG

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 10:40 am
- The image is based on a single photo and represent approximately 54 degree horizontal field of view.
- This view is approximately 253 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.
- Where distribution is removed, so have individual services; however services to individual residences may have to remain above ground if undergrounding cannot be coordinated with the landowner, requiring the distribution pole holding the individual service to remain in place.

Key Observation Point (KOP) #21b



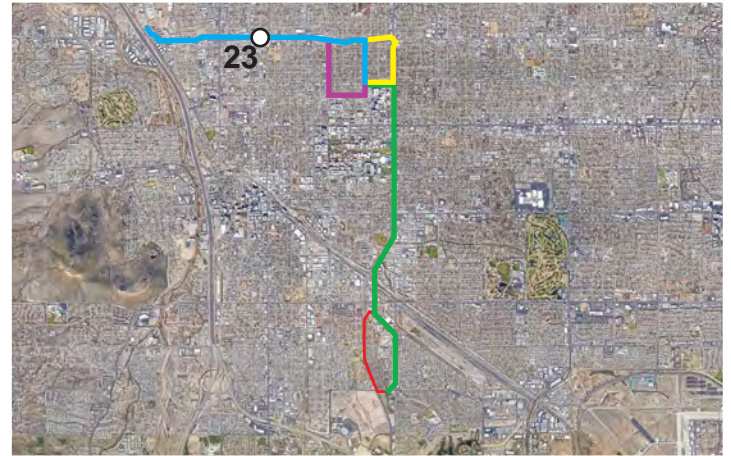
Current Condition



Simulated Condition with existing 46kV and distribution removed

Route B

Key Observation Point (KOP) # 23



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: 32mm | F-Stop: f/9 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: Residents/motorists traveling westbound on East Grant Road
- Location: 38 E. Grant Rd.
- Latitude: 32.250490° N; Longitude: 110.971409° W
- View Point Elevation at Eye Level: 2,385 ft.
- Looking: west
- Poles Visible: Route A & B & D; Structures: 12-16

- Image File Name: IMG_0035.JPG

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 9:47 am
- The image is based on a single photo and represent approximately 59 degree horizontal field of view.
- This view is approximately 250 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) #23



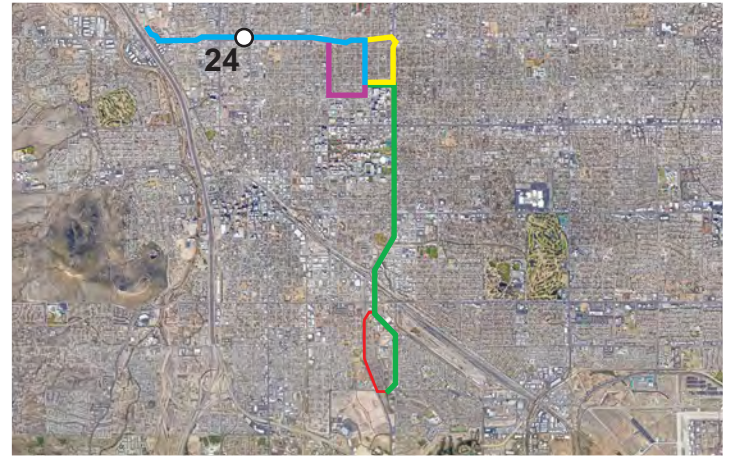
Current Condition



Simulated Condition

Route A & B & D

Key Observation Point (KOP) # 24



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: Residents/motorists traveling westbound on West Grant Road
- Location: 333 W. Grant Rd.
- Latitude: 32.250488° N; Longitude: 110.977385° W
- View Point Elevation at Eye Level: 2,364 ft.
- Looking: west
- Poles Visible: Route A & B & D; Structures: 08-12
- Image File Name: IMG_0043.JPG

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 9:59 am
- The image is based on a single photo and represent approximately 39 degree horizontal field of view.
- This view is approximately 546 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) #24



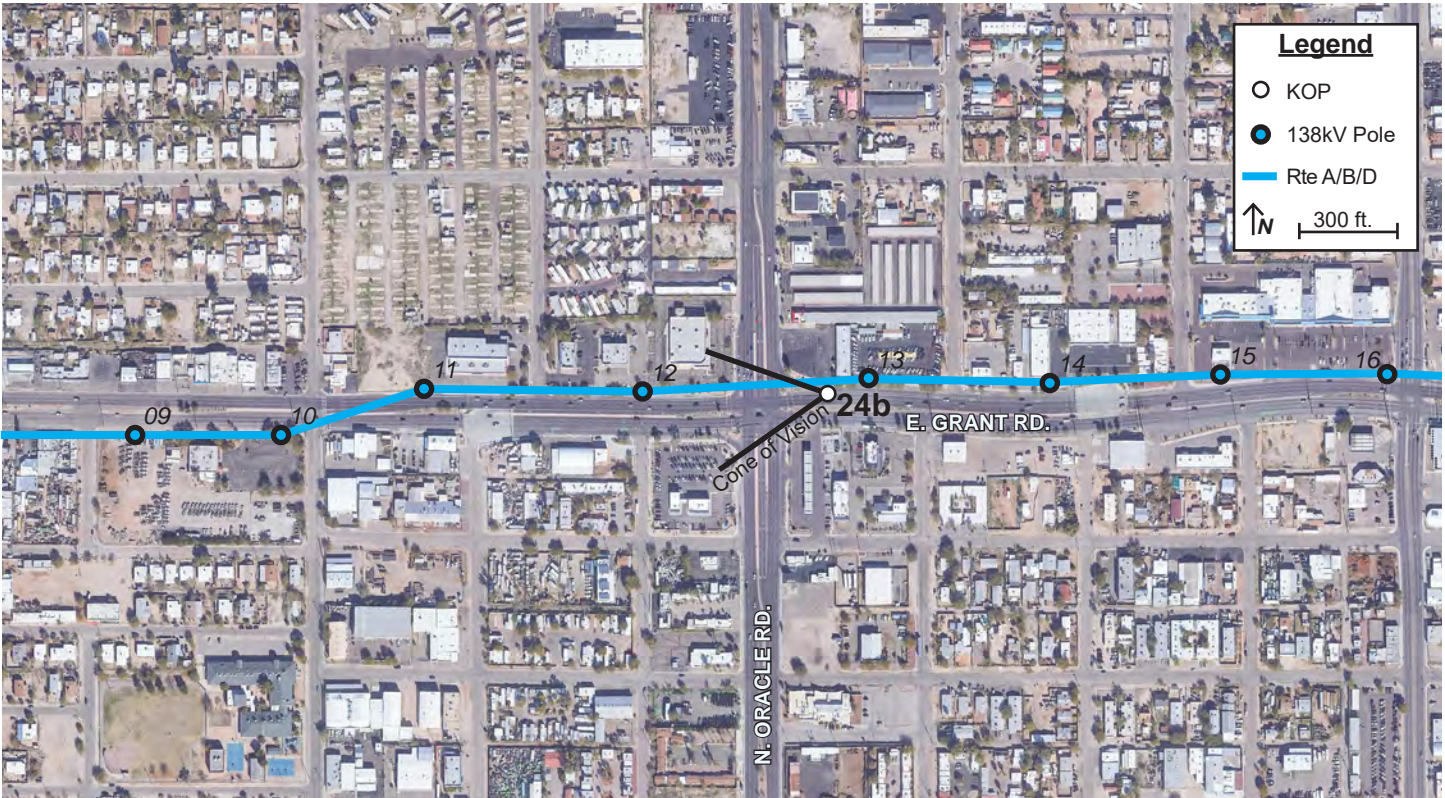
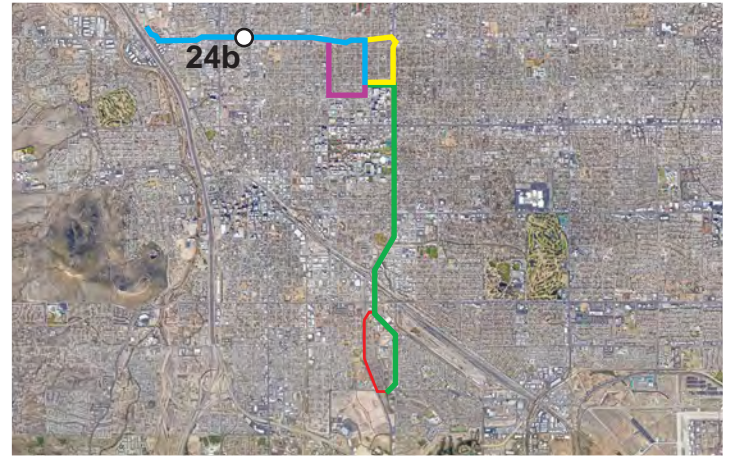
Current Condition



Simulated Condition

Route A & B & D

Key Observation Point (KOP) # 24b



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/7.1 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: Residents/motorists traveling westbound on West Grant Road- focus on median art
- Location: 333 W. Grant Rd.
- Latitude: 32.250416° N; Longitude: 110.977659° W
- View Point Elevation at Eye Level: 2,364 ft.
- Looking: west
- Poles Visible: Route A & B & D; Structures: 08-12

- Image File Name: IMG_0052.JPG

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 10:02 am
- The image is based on a single photo and represent approximately 54 degree horizontal field of view.
- This view is approximately 461 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) #24b



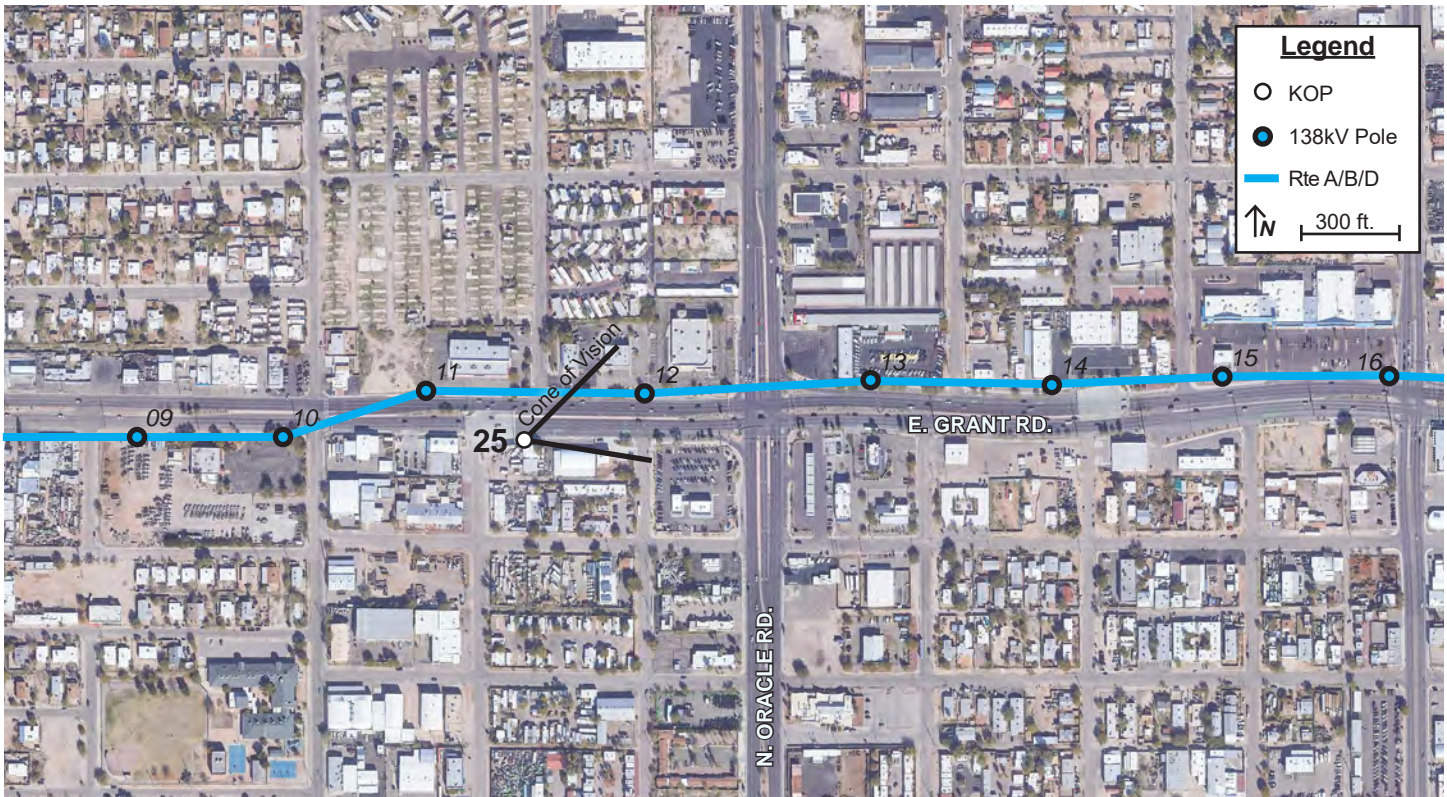
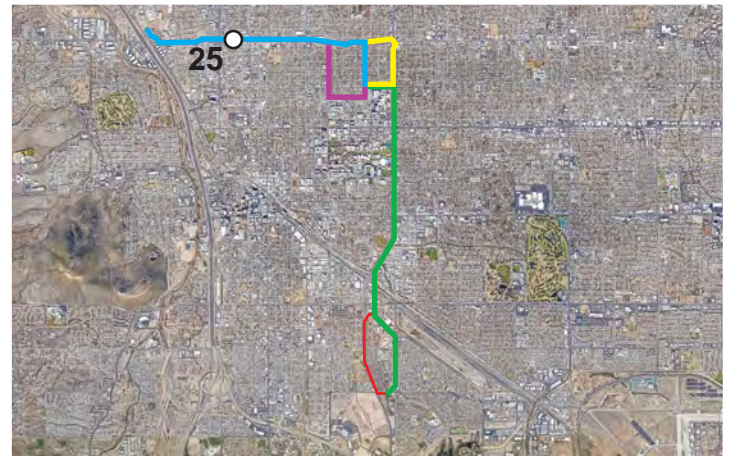
Current Condition



Simulated Condition

Route A & B & D

Key Observation Point (KOP) # 25



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/8 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: Residents/motorists traveling eastbound on West Grant Road
- Location: 537 W. Grant Rd.
- Latitude: 32.250039° N; Longitude: 110.980231° W
- View Point Elevation at Eye Level: 2,354 ft.
- Looking: east
- Poles Visible: Route A & B & D; Structures: 12-16
- Image File Name: IMG_0063.JPG

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 10:19 am
- The image is based on a single photo and represent approximately 39 degree horizontal field of view.
- This view is approximately 352 feet west 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) #25



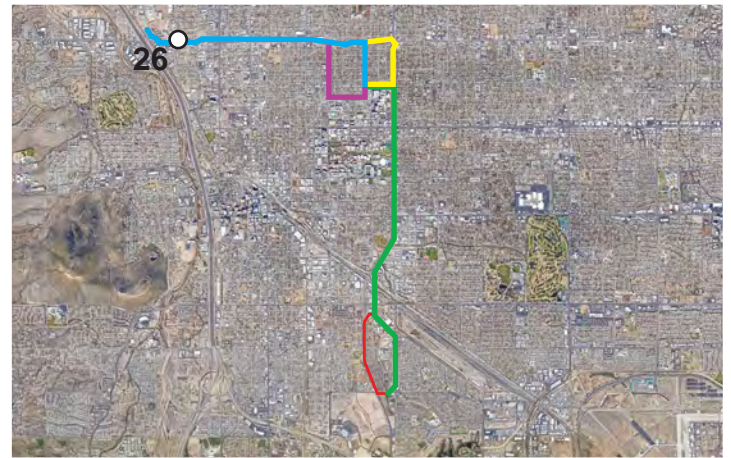
Current Condition



Simulated Condition

Route A & B & D

Key Observation Point (KOP) # 26



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/8 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: Residents/motorists traveling westbound on West Grant Road
- Location: 895 W. Grant Rd.
- Latitude: 32.250482° N; Longitude: 110.986018° W
- View Point Elevation at Eye Level: 2,339 ft.
- Looking: west
- Poles Visible: Route A & B & D; Structures: 03-07
- Image File Name: IMG_0056.JPG

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 10:09 am
- The image is based on a single photo and represent approximately 39 degree horizontal field of view.
- This view is approximately 435 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) #26



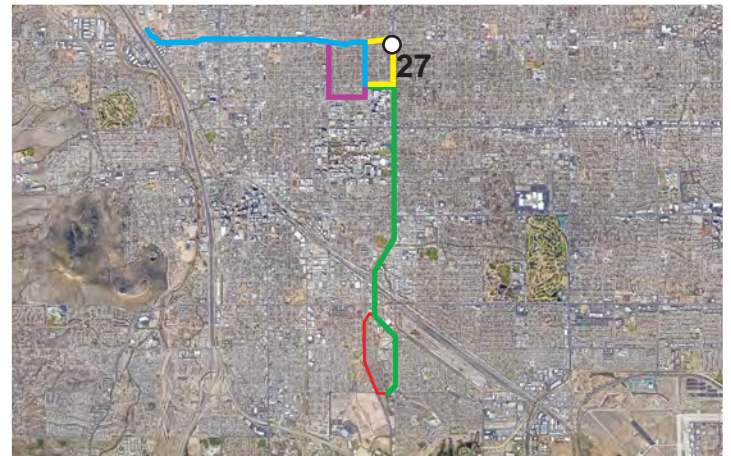
Current Condition



Simulated Condition

Route A & B & D

Key Observation Point (KOP) # 27



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/11 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: Motorists traveling southbound on North Campbell Avenue
- Location: Intersection of E. Grant Rd. & N. Campbell Ave.
- Latitude: 32.250060° N; Longitude: 110.944240° W
- View Point Elevation at Eye Level: 2,432 ft.
- Looking: south
- Poles Visible: Route D; Structures 33-37
- Image File Name: IMG_0128.JPG

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 11:51 pm
- The image is based on a single photo and represent approximately 39 degree horizontal field of view.
- This view is approximately 620 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.
- Preliminary design shown considered the Grant Road widening Project per the Preliminary Plan set as provided by City of Tucson Department of Transportation

Key Observation Point (KOP) #27



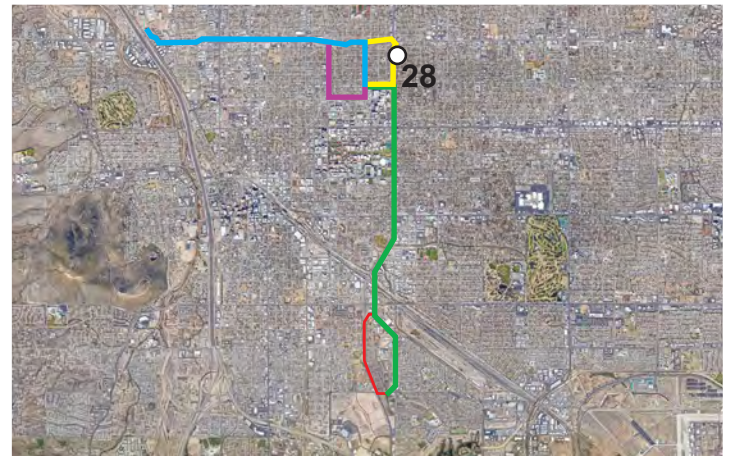
Current Condition



Simulated Condition

Route D

Key Observation Point (KOP) # 28



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: Residents of Catalina Vista Neighborhood looking west
- Location: 2060 N. Campbell Ave.
- Latitude: 32.246706° N; Longitude: 110.943713° W
- View Point Elevation at Eye Level: 2,440 ft.
- Looking: west
- Poles Visible: Route D; Structure: 34
- Image File Name: IMG_0230.JPG

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 2:27 pm
- The image is based on a single photo and represent approximately 54 degree horizontal field of view.
- This view is approximately 189 feet east of the nearest pole represented in the simulation.
- Preliminary design shown considered the Grant Road widening Project per the Preliminary Plan set as provided by City of Tucson Department of Transportation

Key Observation Point (KOP) #28



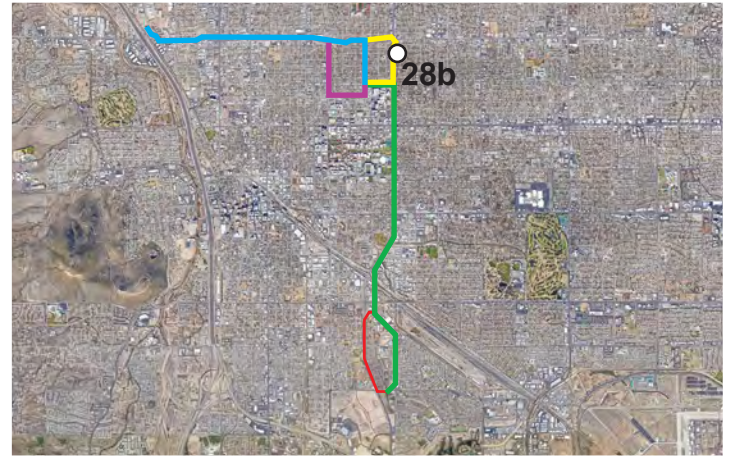
Current Condition



Simulated Condition

Route D

Key Observation Point (KOP) # 28b



Legend

- KOP
- 138kV Pole
- Rte D

↑ N
| 300 ft. |

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/8 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: Pedestrians/residents of Catalina Vista Neighborhood looking northwest at mid-block crossing
- Location: 2098 N. Campbell Ave.
- Latitude: 32.246254° N; Longitude: 110.943889° W
- View Point Elevation at Eye Level: 2,440 ft.
- Looking: northwest
- Poles Visible: Route D; Structures: 31-34
- Image File Name: IMG_0232.JPG

Simulation Notes

- Photo Taken: Nov 1st, 2020 at 2:25 pm
- The image is based on a single photo and represent approximately 39 degree horizontal field of view.
- This view is approximately 210 feet southeast 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.
- Preliminary design shown considered the Grant Road widening Project per the Preliminary Plan set as provided by City of Tucson Department of Transportation

Key Observation Point (KOP) #28b



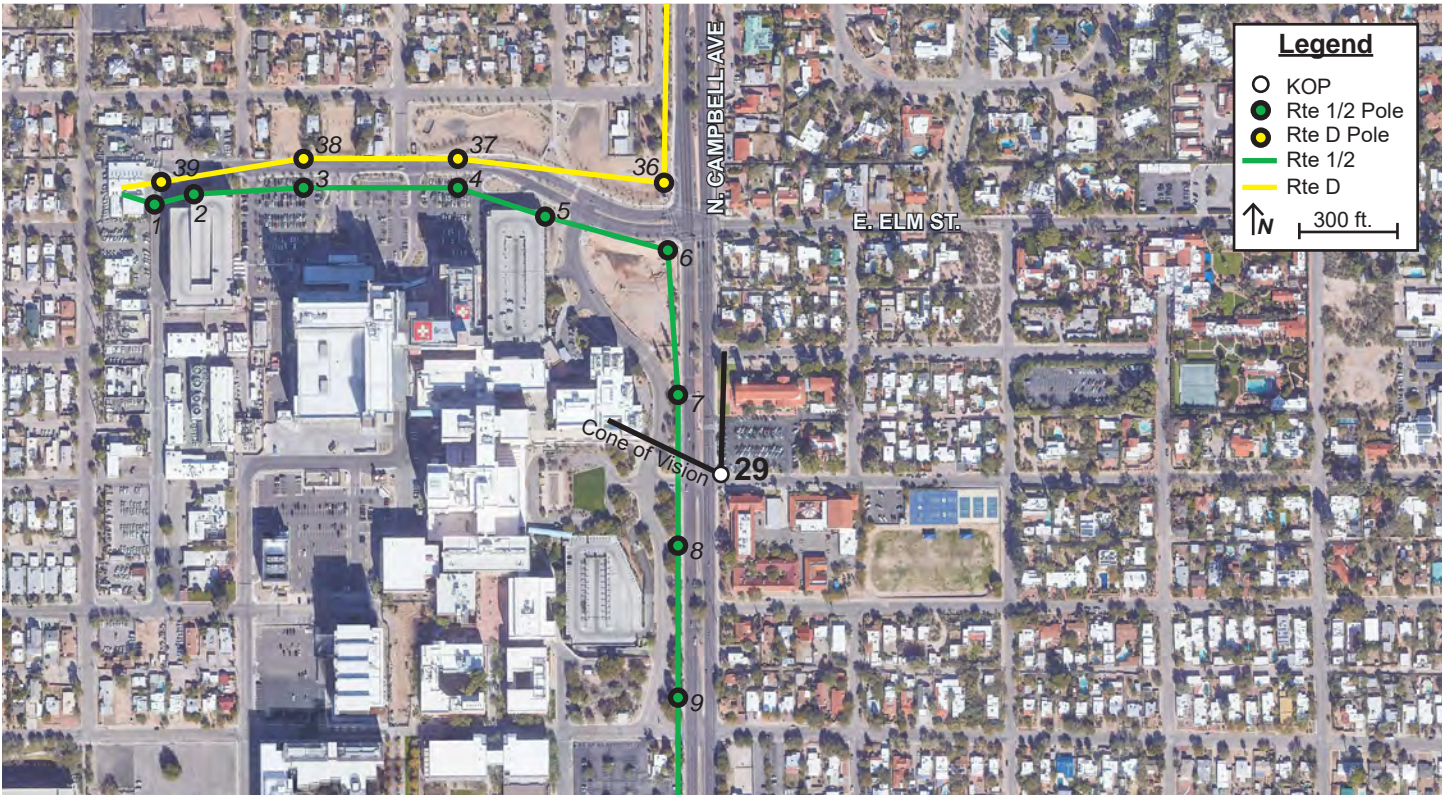
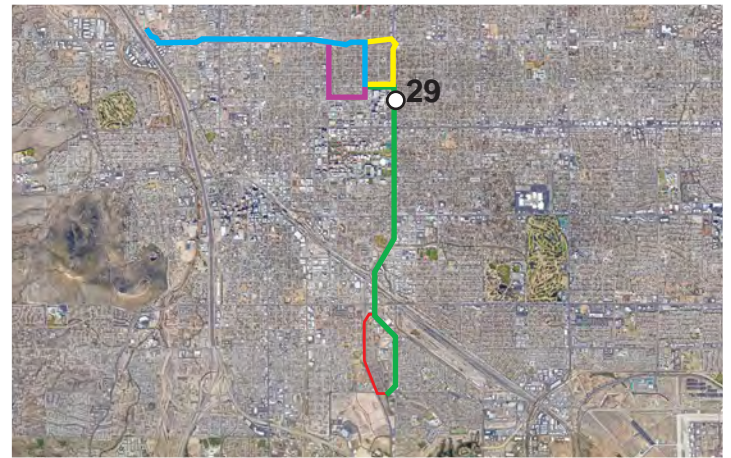
Current Condition



Simulated Condition

Route D

Key Observation Point (KOP) # 29



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/9 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: Northbound motorists/pedestrians on North Campbell Avenue.
- Location: Intersection of N. Campbell Ave. & E. Adams St.
- Latitude: 32.240734° N; Longitude: 110.943823° W
- View Point Elevation at Eye Level: 2,453 ft.
- Looking: northwest
- Poles Visible: Route 1 & 2; Structures: 5-7, Route D; Structures: 36-39
- Image File Name: IMG_0280.JPG

Simulation Notes

- Photo Taken: Nov 2nd, 2020 at 12:07 pm
- The image is based on a single photo and represent approximately 54 degree horizontal field of view.
- This view is approximately 261 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.
- Preliminary design shown considered the Grant Road widening Project per the Preliminary Plan set as provided by City of Tucson Department of Transportation
- Where distribution is removed, so have individual services; however services to individual residences may have to remain above ground if undergrounding cannot be coordinated with the landowner, requiring the distribution pole holding the individual service to remain in place.

Key Observation Point (KOP) #29



Current Condition



Simulated Condition with existing distribution removed

Simulated Condition Showing Existing Distribution Removed within 5 Years (when possible) of Transmission Line Construction

Route 1 & 2

Key Observation Point (KOP) #29



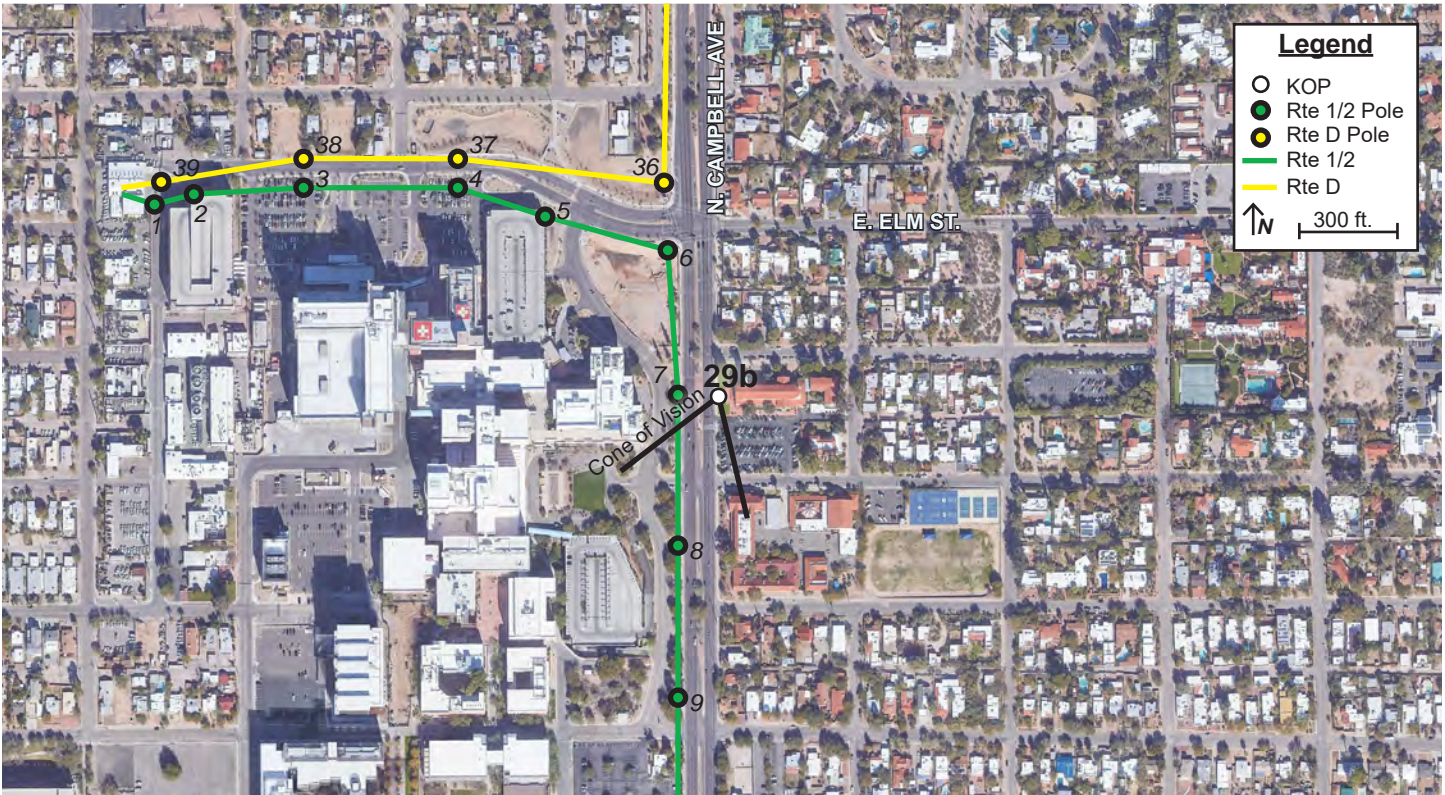
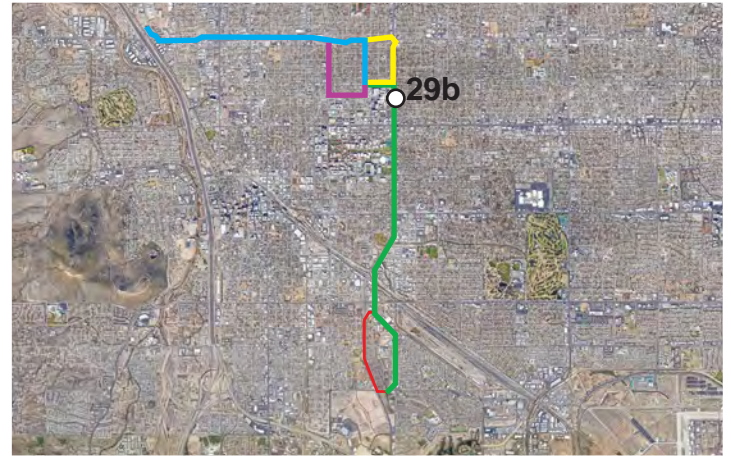
Current Condition



Simulated Condition with existing distribution removed

Route 1D & 2D

Key Observation Point (KOP) # 29b



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/9 | ISO:100
- Dimensions in pixel: 6240 x 4160

KOP

- Representative View for: Southbound motorists/pedestrians on North Campbell Avenue.
- Location: 1514 N. Campbell Ave.
- Latitude: 32.241343° N; Longitude: 110.943845° W
- View Point Elevation at Eye Level: 2,453 ft.
- Looking: southwest
- Poles Visible: Route 1 & 2; Structures: 8-11
- Image File Name: IMG_0293.JPG

Simulation Notes

- Photo Taken: Nov 2nd, 2020 at 12:10 pm
- The image is based on a single photo and represent approximately 54 degree horizontal field of view.
- This view is approximately 418 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.
- Where distribution is removed, so have individual services; however services to individual residences may have to remain above ground if undergrounding cannot be coordinated with the landowner, requiring the distribution pole holding the individual service to remain in place.

Key Observation Point (KOP) #29b



Current Condition

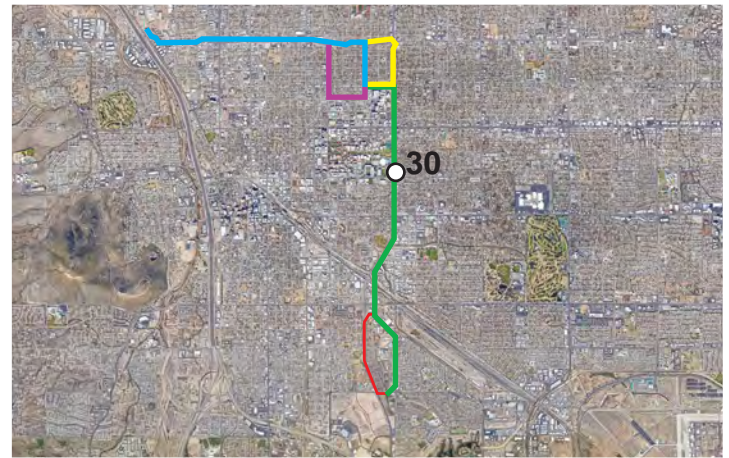


Simulated Condition Showing Existing Distribution Removed within 5 Years (when possible) of Transmission Line Construction

Simulated Condition with existing distribution removed

Route 1 & 2

Key Observation Point (KOP) # 30



Notes:

Camera Information

- Type: Canon EOS Rebel T5
- Sensor: CMOS APS-C 22.3mm x 14.9mm
- Lens: Canon EF/EFS
- Focal Length: 18mm | F-Stop: f/11 | ISO:200
- Dimensions in pixel: 5184 x 3456

KOP

- Representative View for: Northbound pedestrians on North Campbell Avenue.
- Location: 570 N. Campbell Ave.
- Latitude: 32.228681° N; Longitude: 110.944094° W
- View Point Elevation at Eye Level: 2,457 ft.
- Looking: northeast
- Poles Visible: Route 1 & 2; Structures: 15-12
- Image File Name: 01.JPG

Simulation Notes

- Photo Taken: Feb. 1st, 2021 at 11:16 pm
- The image is based on a single photo and represent approximately 66 degree horizontal field of view.
- This view is approximately 15 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.
- Where distribution is removed, so have individual services; however services to individual residences may have to remain above ground if undergrounding cannot be coordinated with the landowner, requiring the distribution pole holding the individual service to remain in place.

Key Observation Point (KOP) #30



Current Condition



Simulated Condition with existing distribution

Route 1 & 2

Key Observation Point (KOP) #30



Current Condition

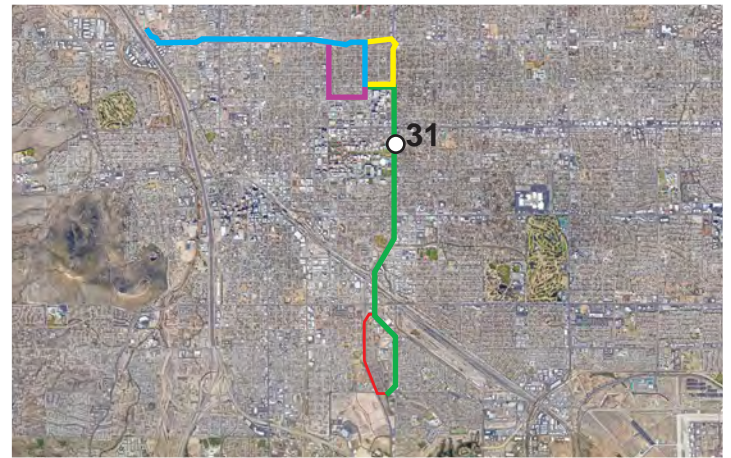


Simulated Condition Showing Existing Distribution Removed within 5 Years (when possible) of Transmission Line Construction

Simulated Condition with existing distribution removed

Route 1 & 2

Key Observation Point (KOP) # 31



Notes:

Camera Information

- Type: Canon EOS Rebel T5
- Sensor: CMOS APS-C 22.3mm x 14.9mm
- Lens: Canon EF/EFS
- Focal Length: 18mm | F-Stop: f/11 | ISO:200
- Dimensions in pixel: 5184 x 3456

KOP

- Representative View for: Northbound pedestrians on North Campbell Avenue.
- Location: 900 N. Campbell Ave.
- Latitude: 32.232833° N; Longitude: 110.944139° W
- View Point Elevation at Eye Level: 2,463 ft.
- Looking: northeast
- Poles Visible: Route 1 & 2; Structures: 12-10
- Image File Name: 06.JPG

Simulation Notes

- Photo Taken: Feb. 1st, 2021 at 11:33 pm
- The image is based on a single photo and represent approximately 66 degree horizontal field of view.
- This view is approximately 622 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.
- Where distribution is removed, so have individual services; however services to individual residences may have to remain above ground if undergrounding cannot be coordinated with the landowner, requiring the distribution pole holding the individual service to remain in place.

Key Observation Point (KOP) #31



Current Condition



Simulated Condition with existing distribution

Route 1 & 2

Key Observation Point (KOP) #31



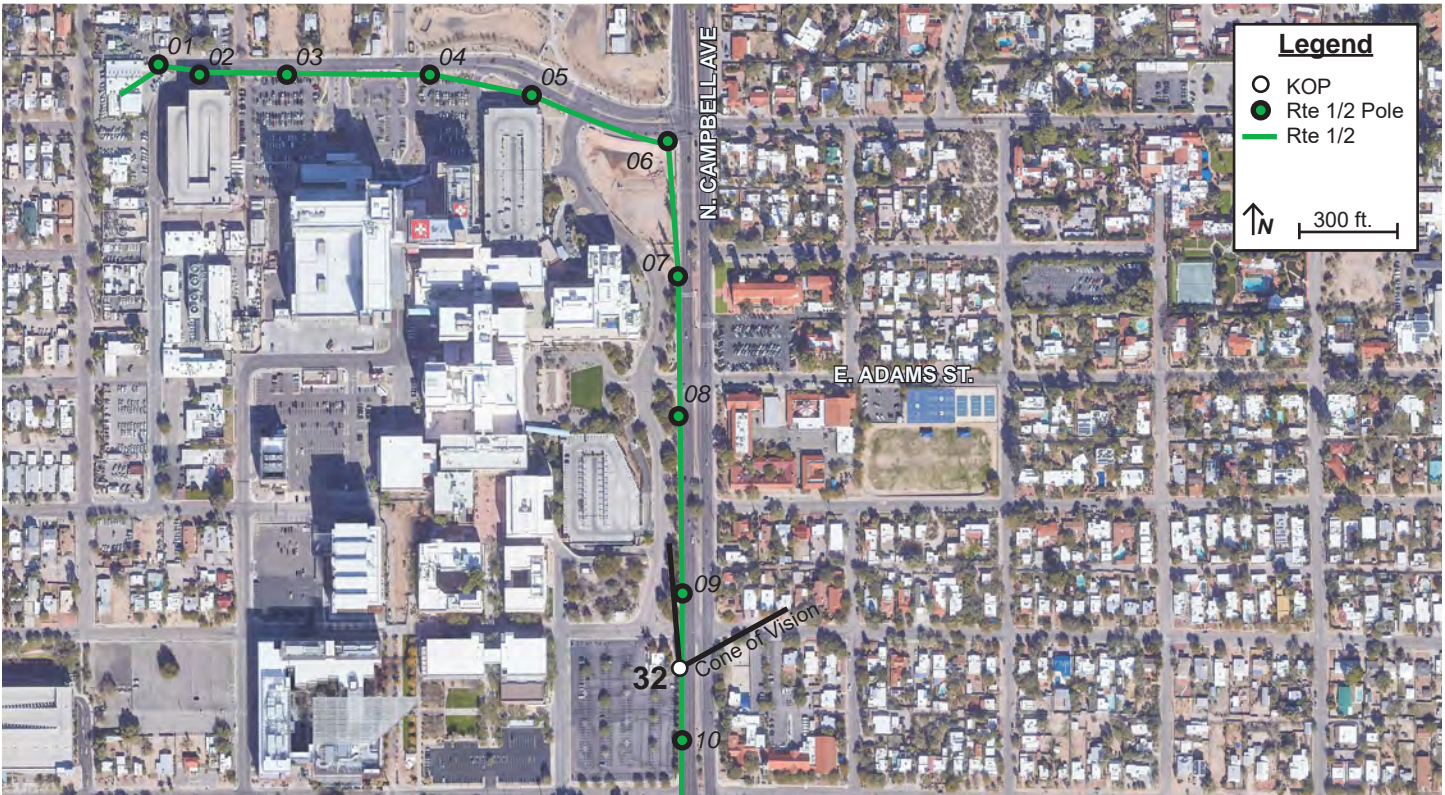
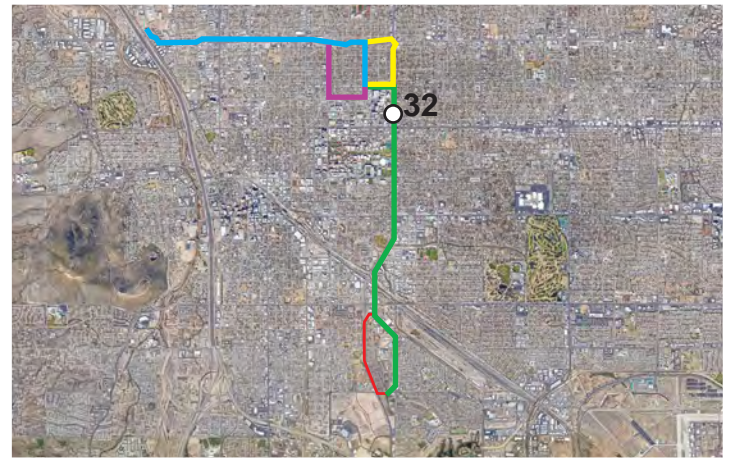
Current Condition



Simulated Condition with existing distribution removed

Route 1 & 2

Key Observation Point (KOP) # 32



Notes:

Camera Information

- Type: Canon EOS Rebel T5
- Sensor: CMOS APS-C 22.3mm x 14.9mm
- Lens: Canon EF/EFS
- Focal Length: 18mm | F-Stop: f/11 | ISO:200
- Dimensions in pixel: 5184 x 3456

KOP

- Representative View for: Northbound pedestrians on North Campbell Avenue.
- Location: 1242 N. Campbell Ave.
- Latitude: 32.238278° N; Longitude: 110.944139° W
- View Point Elevation at Eye Level: 2,475 ft.
- Looking: northeast
- Poles Visible: Route 1 & 2; Structures: 09-07
- Image File Name: 13.JPG

Simulation Notes

- Photo Taken: Feb. 1st, 2021 at 11:48 pm
- The image is based on a single photo and represent approximately 66 degree horizontal field of view.
- This view is approximately 232 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.
- Where distribution is removed, so have individual services; however services to individual residences may have to remain above ground if undergrounding cannot be coordinated with the landowner, requiring the distribution pole holding the individual service to remain in place.

Key Observation Point (KOP) #32



Current Condition



Simulated Condition with existing distribution

Route 1 & 2

Key Observation Point (KOP) #32



Current Condition



Simulated Condition with existing distribution removed

Route 1 & 2

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EXHIBIT H

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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 Existing Plan Review	H-2
H.2.1 Land Ownership and Jurisdiction	H-2
H.2.2 Land Use Plans and Development Plans.....	H-3
H.3 Local Government Plans.....	H-3
H.3.1 Pima County Comprehensive Plan	H-3
H.3.2 Pima County Sonoran Desert Conservation Plan	H-3
H.3.3 Pima County Regional Flood Control District	H-4
H.3.4 Other Pima County Plans in Project Study Area.....	H-4
H.3.5 City of Tucson Plans and Unified Development Code	H-4
H.4 State (including Agencies) Government Plans.....	H-16
H.4.1 Arizona Board of Regents	H-16
H.4.2 Arizona Department of Transportation (ADOT)	H-16
H.4.3 Arizona State Land Department	H-16
H.5 Federal	H-17
H.5.1 Military	H-17
H.5.2 Federal Aviation Administration (FAA).....	H-17
H.5.3 US Army Corps of Engineers	H-17
H.5.4 Tribal	H-17
H.6 Private.....	H-18
H.7 Existing Land Use	H-18
H.8 Proposed Land Uses and Developments	H-20
H.9 Potential Effects.....	H-22

H.10 Conclusion H-25
H.11 References H-26

H.1 Introduction

The Project will consist of building a new 138 kV transmission line totaling 7.2 to 8.1 miles in length, depending on the alternative approved, to connect the existing Kino Substation to the existing DMP Substation. The Project will interconnect to the planned Vine 138 kV Substation. The Project will cross private, USPS, COT, Arizona Board of Regents, and Pima County (Alternative Route 5A only) owned land, as well as COT road ROW. Seven preliminary route alternatives have been identified, resulting from line siting studies, analysis, and a public participation process that began in 2019. The proposed alternative routes are identified as Alternative Routes 1A, 1B, 1D, 2A, 2B, 2D, and 5A, and are described in Section B.1-4 of the application. Alternative Route 1B is the preferred route. The new line will be built with a combination of galvanized (36th Street to Grant Road) and self-weathering steel (Grant Road to DMP Substation) monopoles ranging from 75 to 120 feet above ground, with the taller structures required for site specific clearance issues.

An analysis was conducted of the anticipated impacts of the Project on the existing land uses, land use plans, and any known development plans in the Project study area. Existing land use for the Project is mapped in Exhibit A-4.1 and A-4.2, and future land use is mapped in Exhibit H-1. The entire study area is within the COT, Pima County, Arizona.

H.2 Existing Plan Review

The following review describes the current landscape and existing land use and land use plan goals and policies within the Project study area.

H.2.1 Land Ownership and Jurisdiction

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 Project is under local agency jurisdiction with existing land use plans and policies within the COT. The Project may also cross USPS and/or Arizona Board of Regents owned land, where additional Federal and State laws could apply to the Project.

The majority of Alternative Routes are 1A, 1B, 1D, 2A, 2B, 2D, and 5A are within COT public ROW, and would be installed per TEP’s franchise agreement with the COT. Small portions of any alternative route would require additional acquisition of new easements from private landowners, UArizona, and possibly USPS.

During Project outreach, TEP consulted with local agencies, government representatives, and stakeholders within the project area and along the alternative routes. Outreach and public participation activities are detailed in Exhibit J.

H.2.2 Land Use Plans and Development Plans

Local agency jurisdictions that will be traversed by the Project have adopted land use plans and regulations that guide the type, time, 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 study area include Pima County and the COT.

H.3 Local Government Plans

H.3.1 Pima County Comprehensive Plan

The Pima County Comprehensive Plan (Plan) (2009, as amended 2015) was updated via the “Pima Prospers: Pima County Comprehensive Plan Initiative.” 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 municipalities’ general plan is applicable. The 2015 plan, as amended, is the current guiding plan. The Pima County Zoning Ordinance, Chapter 18.05, designates zoning districts and establishes land use intensity.

H.3.2 Pima County Sonoran Desert Conservation Plan

Pima County maintains important biological, ecological, and natural resources under their 2012 Sonoran Desert Comprehensive Plan (SDCP). The 2012 SDCP is guiding regional efforts to conserve the best lands and most precious resources for future generations of Pima County residents to enjoy. As part of the SDCP, the associated Pima County Multi-species Conservation Plan (MSCP) combines short-term actions with long-range land-use decisions in Pima County, to avoid, minimize, and mitigate impacts to species protected under the ESA and their habitats. Further discussion of the SDCP and MSCP can be found in Exhibit B.

The SDCP designates a Conservation Lands System (CLS), which identifies lands within Pima County necessary to achieve the SDCP goals, while delineating areas suitable for development. The CLS land-use policies apply only to discretionary actions of, and lands owned and/or managed by Pima County and the Pima County Regional Flood Control District (PCRFCD). CLS policies do not apply to privately owned lands unless the landowners take it upon themselves to adopt CLS land-use policies. CLS lands include important riparian areas, biological core management areas, special species management areas, multiple use management areas, scientific research areas, agricultural in-holdings, and critical landscape connection corridors. The Project and construction activities, while adjacent to, do not impact these sensitive lands.

The project area is outside the CLS.

Three Pima County Capital Improvement Projects (CIP)/Federal Section 10 impact project areas exist within or adjacent to the Project Study Area (see Table 15). The Project and construction activities, while adjacent to, do not impact these CIP project areas.

Table 15. Pima County CIP Project Areas in Project Area

Name	Location	Description
Desert Haven Natural Resource Park	36 th and Campbell	14.8-acre CIP of community open space and habitat
22nd St I-10 to Tucson Blvd Improvements	22 nd St and Kino Pkwy Interchange	33.47-acre CIP
Portion of the Broadway Improvement Project	Broadway Blvd between Euclid and Campbell Ave	72.55-acre CIP

H.3.3 Pima County Regional Flood Control District

United States Army Corps of Engineers (USACE) Park Avenue Basins and Arroyo Chico Phase 2B Increment 3 Project is sponsored locally by the PCRFC. The project is known by the COT and Pima County as Arroyo Chico Multi-Use Project, and is known by USACE as the Tucson Drainage Area Project (TDAP). For reference it will be referred to as the TDAP throughout the application.

The TDAP encompasses about 4.8 miles of the Tucson Arroyo/Arroyo Chico Wash, from Alvernon Way to its confluence with the Santa Cruz River near W. St. Mary’s Road. The project was initiated to increase capacity for conveying peak flows, reconstruct aging infrastructure, and alleviate residential flooding in the area. The project includes environmental restoration of the wash’s riparian ecosystem, preservation of native habitats, adjacent neighborhood recreational improvements, and the Arroyo Chico Greenway, a 2.9-mile, paved Pima County Trail and multi-use path. TDAP intersects the proposed new 138kV line Alternative Routes 1 and 2 at South Kino Parkway with the Greenway running to the east and Cherry Field Basin on the west of the parkway. Alternative Route 5A follows along streets bordering TDAP and also spans across TDAP in some areas.

Phase 2B, Increment 3 of TDAP is currently scheduled for construction by the USACE. The Project, while adjacent to, and possibly spanning, is not anticipated to impact the TDAP project areas because the Project activities remain in the road ROW or PDAP project areas. PCRFC indicated that their concern lies in potential impacts to the jurisdictional dams or Park Avenue/Cherry Field basins, with permitting dependent on the placement of poles or underground portions. No portion will be undergrounded in the TDAP area, and no poles will be constructed within basins or existing dams or structures,

H.3.4 Other Pima County Plans in Project Study Area

Pima County plans to expand the Kino Sports Complex to the undeveloped lands south of I-10, between Kino Parkway and Country Club Road, as well as to encourage new development along Benson Highway.

Pima County is also in the process of developing the Desert Haven Natural Resource Park, the natural open space park located at 36th Street and Campbell Avenue, adjacent to the Kino Substation.

H.3.5 City of Tucson Plans and Unified Development Code

Plan Tucson, the COT’s General Plan, adopted in November 2013, presents a series of policies and recommendations for COT and, in some cases, all of eastern Pima County. It is in effect only within the corporate limits of the COT. The policies establish a basic direction and approach to guide the future

growth and development of COT. The plan does not include management prescriptions for transmission line construction.

The policies also provide guidance for the preparation of more detailed environmental, land use, and transportation proposals; the refinement of community facility and service plans; and the development or amendment of subregional, area, neighborhood, and other specific plans.

The COT Unified Development Code (UDC), formerly the Land Use Code, was developed to protect and promote the general health, safety, and welfare of all present and future residents of the COT. More specifically, the UDC implements Plan Tucson, the Major Streets and Routes Plan (MS&RP), and other COT plans.

Scenarios and definitions offered in Plan Tucson are supported by chapter and section 3.129 entitled Land Use, Transportation, & Urban Policies, that guide COT's desire for growth. Policies for land use mentioned in this plan include supporting development opportunities where "existing or upgraded public facilities and infrastructure provide required levels of service" (COT, 2013).

Plan Tucson Chapter 3, the Built Environment, contains a section entitled Future Growth, which provides a map for a Future Growth Scenario which highlights campus areas, mixed use centers and corridors along the alternative routes (see references). Mixed Use Centers are projected to expand in the 36th and Kino area, along north Oracle Rd at Grant Rd, and at the Kino Parkway and 22nd Street area. The identified Mixed Use Centers are expected to combine housing, retail, services, office, and public spaces in a dense, urban environment with access to goods, services, and transit options. Mixed Use Corridors, such as the future growth corridor along North Campbell at Grant Rd extending north of Grant Rd, include higher-intensity mixed use of jobs, services, and housing along major roads. Campus areas, such as along Alternative Routes 1, 2, and D, the UArizona Campus, are defined by Plan Tucson as including and surrounding large educations, medical, and business facilities which serve the local workforce. Campus areas are also comprised of housing, retail, transit options, and exemplify economic development opportunities (Exhibit A-4.1 and A-4.2 for Planned Area Developments, and Exhibit H-1, Future Land Use).

The COT Office of Economic Initiatives offers business owners and developers ways to become part of Tucson's future growth by offering incentives such as the Government Property Lease Excise Tax (GPLET), available for projects within COT-defined boundaries of the CBD. The existing CBD boundaries lie along sections of Alternative Routes A, B, and D, from I-10 along Grant Road to Fairview Avenue, an area along Grant Road at Oracle Road and also at Stone Avenue; as well as along a section of Alternative Routes 1, 2, and 5 at the Kino Parkway and Aviation Parkway intersection and south to 22nd Street. CBD boundaries are currently under proposal and going through public process to expand along the I-10 corridor, expand to include additional portions of Grant Road, and other corridors in the COT, as seen in the map exhibits in the CBD expansion document authored by the COT Office of Economic Initiatives in June 2021, Findings of Conditions in the Proposed Modified COT CBD. It was just renewed by COT Mayor and Council in 2020, for an additional ten years, to specifically revitalize those areas "with the private development, financing, construction and management of urban and mixed-use development and redevelopment projects..."

City of Tucson Zoning

In the COT, the proposed ROWs for the Project’s alternate routes cross multiple zoning classes as shown in Table 16. A description of zones follows the tables. To further examine residential, commercial and industrial zoning within the 300’ buffer along the alternative transmission line routes, the percentages in Table 16 were calculated. Figure 6 illustrates the data in Table 16, and compares the percentages of Residential, Commercial, and Industrial among the alternatives. Alternative Routes 1A, 1D, and 5A are 49 percent residential zoning. Along Alternative Route 1B, TEP’s preferred route, residential zoning is 40 percent, the lowest of all alternative routes. Alternative Route 1 travels along road corridors of four lanes and larger while Alternative Route 2 follows the same route as Alternative Route 1 but includes travel along road corridors of two lanes and larger in the southern portion of the route. Generally, residential areas along Alternative Route 1 are positioned adjacent to, or bordered by, the proposed transmission line on one side only, while the southern portion of Alternative Route 2 bisects a residential area.

Alternative Route A follows the Grant Road corridor (4 to 6 lanes width) and Vine, an un-striped two-lane street, and bisects a residential area for about 7 city blocks. Alternative Route B also follows the Grant Road corridor, as well as Park (a two-lane, striped roadway with bike lanes), bisecting a residential zone for about 6 city blocks. Route B also follows an alley that is entirely residential. Alternative Route D also follows the Grant Road corridor, and the Campbell Avenue Corridor, a two lane, striped roadway. It is noted that Alternative Route D follows road alignments that include roughly 35 percent of the public art installations in the project area directly associated with roadway viewing (Table 18).

Table 16. COT Zoning for Alternate Routes (% of acres in the route)

	1A	1B	1D	2A	2B	2D	5A
COMMERCIAL	30%	39%	31%	31%	31%	33%	28%
RESIDENTIAL	49%	40%	49%	43%	43%	42%	49%
INDUSTRIAL	21%	20%	20%	26%	26%	25%	23%
	100%	100%	100%	100%	100%	100%	100%

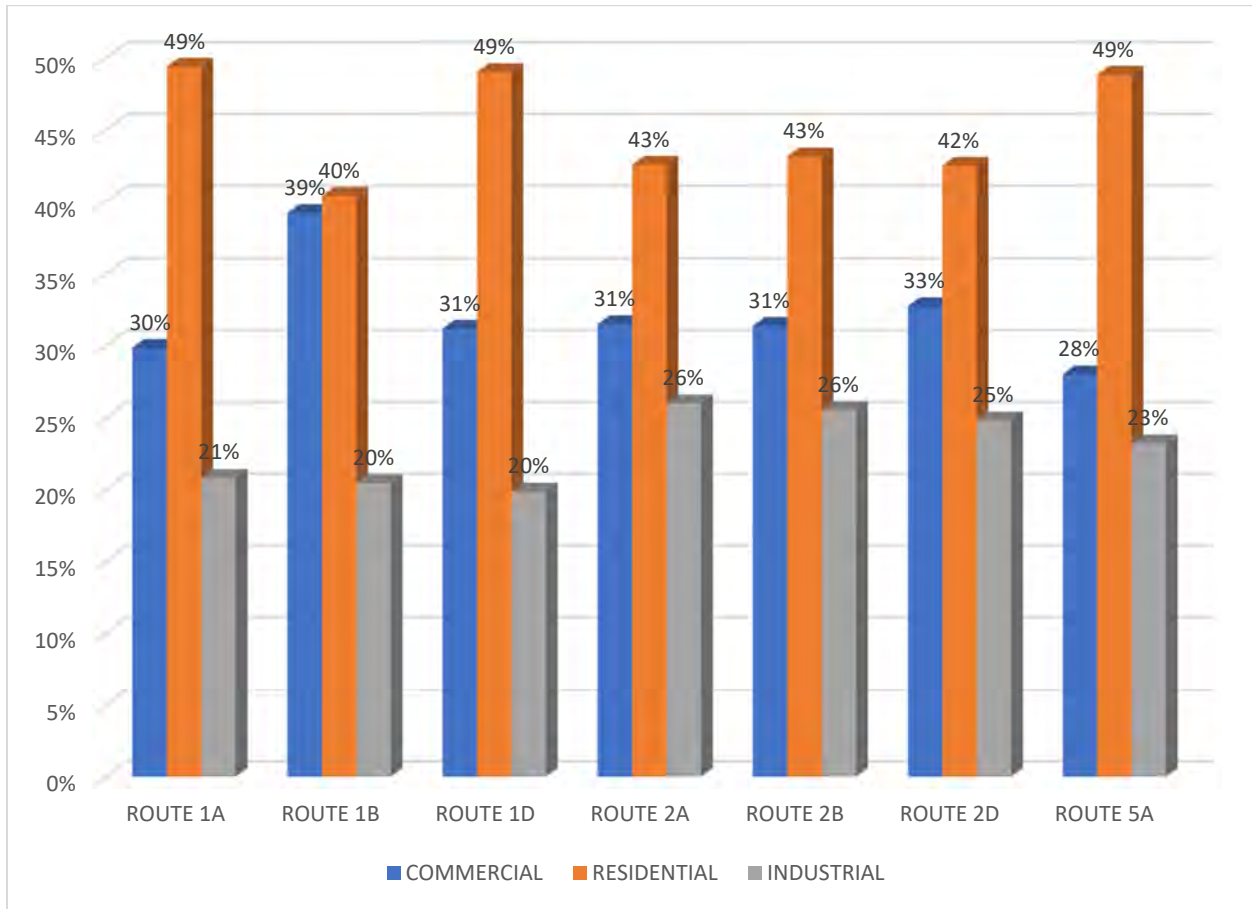


Figure 6. COT Zoning by Alternative Route

City of Tucson Habitat Conservation Plan

The COT is preparing a Habitat Conservation Plan (HCP) to support the COT’s Incidental Take Permit to minimize and mitigate the impacts of take of species listed under the ESA related to planned urban development, water supply and CIP. The Project is not anticipated to impact the HCP Planning Area.

City of Tucson Planned Area Developments, Overlay Districts, and Other Zones

Table 17 lists the COT PADs, Overlay Districts, and other COT zones within the Project study area. PADs allow for stand-alone zoning regulations for a specific project. The following table lists zoning and overlay designations along alternative routes in the project area. Overlay Districts set parameters for what is allowable for new development in order to preserve or incentivize. No conflict exists between the alternative routes and the PADs or overlays.

Table 17. COT Overlay Districts and Planned Area Developments in Project Study Area

Name	PAD / Overlay	Location
1. The Bridges	PAD 15	The largest portion of the Bridges (approximately 284 acres) lies between Park Avenue and Kino Parkway south of 36th Street and north of Interstate 10. East of Kino, the remaining 26 acres is bounded by 36th Street on the north, Campbell Avenue on the east, and Duval Vista Road on the south (Alternative Routes 1, 2, 5)
2. Salpointe-Glenn St.	PAD 17	Salpointe PAD is within 33.5 acres in the SAMOS neighborhood, between Copper and Glenn Streets and Cherry and Mountain Avenues. (Not adjacent to alternative routes.)
3. Kino Campus	PAD 18	Kino Campus PAD boundaries lie within 167 acres south of I-10, east of Campbell Avenue, north of Benson Highway, and west of Treat Avenue. (Not adjacent to alternative routes.)
4. Casa de Los Ninos	PAD 20	3.45 acres at the northwest corner of Speedway Blvd and Fourth Avenue. (Not adjacent to alternative routes.)
5. Banner University Medical Center, Tucson Campus	PAD 28	BUMC PAD District is comprised of approximately thirty-three (33) acres located on the west side of Campbell Avenue, approximately one-half mile north of Speedway Boulevard (Alternative Routes 1, 2, D)
6. Trinity	PAD 31	Trinity Church PAD is between Third and Fourth Avenues and University Blvd. It's designation as part of the Historic Preservation Zone was updated to reflect allowable height increase over 36 feet. (Not adjacent to alternative routes.)
7. Partners on Fourth	PAD 33	Within approximately 1.68 acres at the southwest corner of N. Fourth Avenue at E. Eighth Street, bordered on the west by N. Stevens Ave. (Not adjacent to alternative routes.)
8. Speedway & Campbell Gateway	PAD 35	Northwest quadrant of the Speedway Boulevard/Campbell Avenue intersection (Alternative Routes 1, 2)
9. Welcome Broadway	PAD 39	Southwest corner of Broadway Boulevard and Park Avenue, on 3.8 acres (Alternative Route 5)
Grant Road Investment District Urban Overlay District	Overlay	Along Grant Ave: West of 14 th Ave, east to N Park Ave (Alternative Routes A, B, D)

Name	PAD / Overlay	Location
Gateway Corridor Zone	Overlay	Broadway Blvd Gateway Arterial, between Euclid and Country Club (Alternative Routes 1, 2, 5) Kino Parkway/Campbell Ave Gateway Arterial, between Benson Highway and River Rd (Alternative Routes 1, 2) Oracle Road, between Drachman Street and just north of River Road (Alternative Routes A, B, D)
Sunshine Mile Overlay Zone	Overlay	Broadway Boulevard between Euclid and Country Club (Alternative Routes 1, 2, 5)
Jefferson Park NPZ	Overlay	The Jefferson Park NPZ Overlay coincides with the residential zone boundaries for Jefferson Park Neighborhood and are subject to change in the future if properties within the study area are rezoned either to or from residential. (Alternative Routes A, B, D)
West University Historic Preservation Zone	Overlay	West University HPZ lies within a 60-block area between the University of Arizona and downtown Tucson, bounded by Speedway Boulevard (north), Park Avenue (east), Sixth Street (south), and Stone Avenue (west). (Alternative Route 5)
Armory Park Historic Preservation Zone	Overlay	Armory Park HPZ is bounded on the north by Broadway Blvd, Tool Ave., and 12 th street; on the east by Third Ave., Union Pacific Ave., Southern Pacific Ave., and 2 nd Ave; on the west by Stone Ave. and Sixth Avenue; and on the south by 19 th street. (Not adjacent to alternative routes.)
Stone Pipe Zone Archaeological Sensitivity Zone	Zone	Between Grant Road and Speedway Boulevard, bounded by N 15 th Ave on the east and aligned with N Cuesta Ave on the West side of I-10/Santa Cruz River corridor. See Section H.5.4. (Alternatives A, B, D)
Thrive in the 05 Initiative: Choice Neighborhoods and Community-Based Crime Reduction		Relevant to TEP alternative routes: Grant Road between I-10 and N 6 th Ave (Alternative Routes A, B, D)
Greater Infill Incentive Subdistrict		City-wide Infill Incentive District: Grant Road from N 15th Av to N 11 th Av; Grant Rd from N 9 th Av to N 7 th Av (Alternatives A, B, D)

The Project is also subject to the Major Streets and Routes Plan (MSRP) (Resolution No. 12045, dated November 15, 1982) and the UDC. 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. Alternative Routes 1 and 2, where located on Kino Boulevard and Campbell Avenue (north of Broadway Boulevard) are within a designated gateway route. The MSRP provides the following guideline for Public Improvements of Gateway Routes (Policy 5.A):

“Utilities in the right-of-way or visible from the street should be placed underground, wherever possible (Policy 5, Section A.2.4.)” The MSRP also provides guidelines for Development Guidelines for Properties along Gateway Routes (Policy 5.B), which states that all properties along gateway routes (not ROW) are subject to gateway route requirements in the Zoning Code (Policy 5.B.1). Of note, this Project is not a public improvement project, and therefore should not be subject to MSRP Policy 5.

The UDC (last revised April 6, 2021), Article 5.5 Gateway Corridor Zone (GCZ) outlines the policies for gateway corridors. The applicability of Article 5.5 is stated in section 5.5.2 as “the GCZ standards apply to the following uses on all property, any portions of which abuts or is adjacent to a street designated on the City’s or county’s MS&R Plan.”

Section 5.5.4.B provides the development standards for Utilities. This section reads:

“In addition to other applicable standards in other sections of the UDC, such as landscaping and screening, the following development standards are required of projects in the GCZ:

A. Signs

Signs as permitted by Article 7A, Sign Standards, are allowed within the required landscaped area with the exception of billboards. Billboards are not permitted within 400 feet of the MS&R right-of-way line.

B. Utilities

1. New Utilities

a. New utilities for development on private and on public right-of-way along Gateway Routes shall be underground.

b. Existing poles shall be used to provide the required transition to underground service to new development adjacent to Gateway Routes. When necessary to serve new development, a new pole set in line with, but not extending, an existing overhead system used to serve new development is not considered a new utility.

c. Upgrades and reinforcements of existing overhead facilities are allowed to the extent that the total number of electrical circuits or communication cables is not increased.

2. Existing Utilities

Where an existing development is expanded in floor area or land area to any degree, new and existing utilities to all portions of the development shall be located underground. Additions to single-family dwellings are exempt from this provision.

3. Relocation of Utilities

Relocation of overhead utility facilities required by public improvement districts along Gateway Routes shall conform with existing franchise requirements.”

(Am. Ord. 11803, 12/8/2020)

TEP’s position is that there is no portion of Sections 5.5.2 or 5.5.4.B of the UDC that applies to the Project that would require underground installation of those portions of the Project located within a Gateway Route. This conclusion is also consistent with other TEP transmission line projects that have been through

the same line siting process in which portions of those transmission lines were located in Gateway Routes and were not required to be undergrounded by the COT.

City of Tucson Neighborhood Plans Along Alternative Routes 1A, 1B, 1D, 2A, 2B, 2D, and 5A

Arroyo Chico Area Plan, 1986 (Alternative Routes 1 and 2)

The Arroyo Chico Area Plan was adopted by COT Mayor and Council in 1986, and provides guidance for development within the boundaries of the plan area, which is defined by Southern Pacific Railroad, Fairland Stravenue, 36th Street, and Aviation Highway on the south, Alvernon Way on the east, and Broadway Blvd on the north. Alternative Routes 1 and 2 cross a portion of the plan area at Campbell Avenue south of Broadway to the 22nd Street interchange. Arroyo Chico Area Plan includes the Reid Park/Randolph Recreation Center regional facility and is a mix of residential and industrial uses. General goals of the Arroyo Chico Area Plan are to promote preservation of linear open space along Arroyo Chico; encourage a compatible mix of land uses; and to protect neighborhoods from roadway improvement impacts while allowing access to key routes.

Blenman Vista Neighborhood Plan, 1986 (Alternative Routes 1, 2, and D)

The Blenman Vista Neighborhood Plan was adopted by COT Mayor and Council in 1986, with the expressed goal of maintaining the viable low-density character of the historic neighborhood homes in relation to compatible future development. This area is comprised of two distinct, but adjacent neighborhoods, Catalina Vista and Blenman-Elm, both of which are Single Family Residential neighborhoods. Alternative Routes 1, 2, and D run adjacent and parallel to the area along North Campbell Ave from Grant Road to Speedway Boulevard.

Cragin-Keeling Area Plan, 1994 (Alternative Routes A, B, and D)

The Cragin-Keeling area is defined by two distinct areas of residential development, north and adjacent to Alternative Routes A, B, and D, from Stone Avenue, on either side of North Campbell Ave, and bounded on the south by Grant Road. Along the major streets, the area consists of office, commercial, and high-density residential uses while interior neighborhood streets consist of low- to medium-density residential uses. Future land use guidance in this area plan focuses on compatibility of new development with existing land uses, and impacts from planned higher intensity uses designed in harmony with existing uses by keeping higher intensity uses along major corridors as a buffer for the interior neighborhood.

Feldman's Neighborhood Preservation Zone, 2009 (Alternative Route 5)

Feldman's Neighborhood is a National Register Historic District (1989, expanded 2008) with a Neighborhood Preservation Zone (NPZ) design manual as development guidance. This neighborhood intersects Alternative Route 5 in a two-block area of the southeast corner of the Historic District and NPZ of Feldman's Neighborhood, along Euclid from Speedway Blvd to Helen Street and then traveling east on Helen Street to Park Avenue which is the Feldman's boundary. This area of the neighborhood reflects the expansion of UArizona campus, mixed use commercial development, and student housing seen along Speedway Boulevard, which includes both historic single-family homes and large commercial development.

Jefferson Park Neighborhood Plan, 2008, and Neighborhood Preservation Zone, 2008, (Alternative Routes 1, 2, A, B, and D)

The Jefferson Park Neighborhood Plan is defined by three major goals: low-density residential neighborhood preservation and preservation of architectural styles. NPZ Design Guidelines, published in 2010 after the 2008 approval of the NPZ by Mayor and Council, define alley as a place for utilities; neighborhood landscape and streetscape revitalization and beautification using designed landscapes along neighborhood interior and border corridors; and development of community quality of life, safety and stewardship by partnering with adjacent jurisdictional agencies on community projects and outreach. Alternative Routes 1, 2, and D lie adjacent to the Jefferson Park Neighborhood along North Campbell Ave to Grant Road and along Grant Road from Campbell Ave. headed west. Alternative Routes A and B intersect the neighborhood by way of Park Ave. to Chauncy Lane (Alternative Route B) and Park Ave. to Vine Ave. to Ring Road (Alternative Route A).

Kino Area Plan, 1980 (Alternative Routes 1 and 2)

Alternative Routes 1 and 2 intersect the Kino Area at Kino Parkway and 36th Street, where the proposed transmission line meets the Kino Substation. The plan discusses the appropriateness of the Kino Area for industrial facilities as a result of existing zoning and large amount of vacant land available.

Miles Neighborhood Plan, 2009 (Alternative Routes 1 and 2)

Miles Neighborhood meets the Project on the south side of Broadway Blvd, along South Kino Parkway past Cherry Field to 15th Street. Alternative Routes 1 and 2 border a section of single-family residential and the open space of Cherry Field, which conjoins with Arroyo Chico Greenway at South Kino Parkway vicinity. Commercial development is concentrated at the corner of Broadway Blvd and South Kino Parkway. The Miles Plan emphasizes neighborhood stability, compatible infill, and supporting outdoor recreational facilities.

Oracle Area Revitalization Project (OARP), 2011 (Alternative Routes A, B, D)

The OARP includes Grant Road alignment (Alternative Routes A, B, and D) from Fairview Ave. to Stone Ave., encompassing Grant-bordering neighborhoods San Ignacio Yaqui, Miracle Manor, Balboa Heights, and Ocotillo Oracle, among others within the OARP area. This project's focus has been to redirect traffic, increase room for public transit and pedestrians, visual improvements through public art, and to prepare the major traffic corridors for improved commercial districts and growth.

Sam Hughes Neighborhood Plan, 1985 (Alternative Routes 1 and 2)

Alternative Routes 1 and 2 run parallel to the west boundary of Sam Hughes Neighborhood along North Campbell Avenue. The neighborhood is predominantly single-family residential with commercial concentrated along corridors Speedway Blvd., Broadway Blvd., and 6th Street, with the UArizona along the west side of the neighborhood boundary at North Campbell Ave. Goals in the Neighborhood Plan include preservation of the neighborhood character, improved traffic regulation, and safety.

University Area Plan, 1989 (Alternative Routes 1, 2, A, B, and D)

This Plan is an update of the original University District Plan (1980) as a response to UArizona campus growth in the 1980s, and includes the Neighborhoods and Historic Districts that surround the UArizona. Guidance for compatible campus growth and development is the focus of this document. As the Plan is dated 1989, two discrete areas recommended for mixed use, commercial, and industrial uses have now expanded widely along major traffic routes in the area surrounding the University.

West University Neighborhood Plan, 1981 (Alternative Route 5)

West University Plan area is bounded by Speedway Boulevard on the north, Park Avenue on the east, Sixth Street on the south, and Stone Avenue on the west, with proximity to Historic Fourth Avenue and commercial merchant's district, Tucson Downtown District, and is immediately west of the UArizona. West University Plan also intersects with the West University Historic Preservation Zone overlay, which defines Design Guidelines for development (updated in 2015). Alternative Route 5 travels along Euclid Avenue at the westernmost edge of UA campus development and expanding student housing and mixed-use commercial area.

City of Tucson Department of Transportation (TDOT) Plans

Existing roadway designations in the final study area include the Kino Parkway Gateway Arterial, Broadway Boulevard Gateway Arterial, and Oracle Road Gateway Arterial.

Tucson Delivers: Better Streets

COT is currently in the planning phase for improvement projects along the entirety of 6th / 5th Street, from Ferro Ave. to N. Wilmot Rd., which will intersect Alternative Routes 1 and 2 at Campbell Ave. This improvement project will not be initiated until the completion of the ongoing Broadway Improvement Project (TDOT, 2020).

City of Tucson Complete Streets Policy

The COT Complete Streets Policy was approved by COT Mayor and Council in 2019 to preserve and protect COT's environment and enhance mobility options through flexible design that is interconnected with land use and community needs.

Americans with Disabilities Act (ADA) Compliance

TDOT requires ADA compliance and accessibility for all sidewalks, which per COT UDC are required to be 4 feet wide (Sec. 25-6. City of Tucson Code of Ordinances).

Broadway Improvement Project & the Sunshine Mile District

Alternative Routes 1 and 2 will intersect the Broadway Improvement Project (ongoing) at Campbell Avenue and Broadway Boulevard. Broadway is undergoing a widening with improved underground drainage beneath the east/west roadway. There are no historic properties within an 800-ft buffer of the proposed routes.

The Sunshine Mile District along Broadway Blvd from Euclid to Country Club achieved status as an NRHP historic district in June 2020, as part of the Rio Nuevo improvements overlay zone. Pedestrian and bike

route improvement, improved signalization, and streetscape improvements are some of the planned implementations at this location, in coordination with the Broadway Improvement Project (TDOT).

Grant Road Improvement Project is currently in Phase III and IV. A segment along Grant Road from Palo Verde Boulevard to Venice Place and temporarily extending to Edith Boulevard is outside the range of TEP alternative routes. Phase I, Oracle Intersection, was completed in 2013; Phase II, Stone and Park, was completed in 2018; Phases V and VI, Campbell and Country Club, are anticipated to begin in 2026. Other plans associated with the Grant Road Improvement Project are the Public Art Master Plan, which provides for planning and funding of public art installations within or adjacent to the public ROW along the Grant Road project, and the 2016 Columbus Wash Drainage Improvement which does not occur near TEP alternative routes.

Phase 2 of the 22nd Street project (RTA# 19) is the section of 22nd Street roadway between Kino Parkway and Tucson Blvd. that will undergo a bridge re-design and reconstruction, widening to 3 lanes in both directions to align with the 2015 completed intersection at Kino Parkway and 22nd Street. No construction time frame has been determined, but will require coordination with Union Pacific Railroad (UPRR).

Phase 3 of the 22nd Street project (RTA# 19) is expected to advance in the fourth period (FY 2022-2026) of the RTA plan schedule. This section will extend from the 2015 Kino Parkway redesigned intersection with 22nd Street to I-10, and widen 22nd Street to 3 lanes in both directions.

Bicycle Boulevard Master Plan

Alternative Routes 1 and 2 will intersect RTA fully funded future road and infrastructure improvements for a bicycle boulevard on 9th Street at Campbell Blvd. as described in the Bicycle Boulevard Master Plan.

Alternative Routes A, B, and D will intersect RTA fully funded future road and infrastructure improvements for a bicycle boulevard on 9th Avenue at Grant Road which continues along Castro Avenue at Grant Road.

The Green Stormwater Infrastructure (GSI) Proposal

The Green Stormwater Infrastructure (GSI) proposal was approved by COT Mayor and Council September 4, 2019, Ordinance 11726, and funds city-wide GSI projects in coordination with TDOT or other COT departments. The Neighborhood Scale Stormwater Harvesting Program assists neighborhoods with grants for implementing sustainable stormwater infrastructure projects within their neighborhood boundaries. The program may coordinate with COT Council Ward offices, TDOT, and COT Parks and Recreation.

Tucson Water

Tucson Water coordinates locally with the USACE Park Avenue Basins/Arroyo Chico Phase 2B Increment 3 project, sponsored by the PCRFC. The project is known by the COT and Pima County as Arroyo Chico, and is known by USACE as the TDAP. Related comments are included in the County section of this report.

City of Tucson Parks and Recreation

See Exhibit F for a full description of Parks and Recreation Areas in the project area.

Tucson Delivers: Parks and Connections current and planned projects include:

- 6th Ave and Sahuaro St, Mansfield Park; Phases 1 and 3

- 1110 E Grant, Health and Heritage Park, Jefferson Park Neighborhood Park, Phase 1
- Silverlake and S. Mountain Ave, Mirasol Park, Phase 2
- 36th and S. Kino Pkwy, Silverlake Park and Quincie Douglas Center, Phases 1 and 2
-

COT Parks adjacent to alternative routes within the final study area include:

- Pascua Park at 785 W Sahuaro St
- Grant and Campbell Park at Martin and Grant
- Tahoe Park at Norris and Edison
- Waverly Circle Park at Kramer and Waverly
- Feld Davis Pocket Park at 8th St/High School Wash and Campbell Ave
- Arroyo Chico; Aviation Greenway
- Mirasol Park at Silverlake and S. Mountain
- South Campbell Avenue Median Landscape in Pueblo Gardens Neighborhood
- Quincie Douglas/Silverlake Park 36th St and S Kino South Campbell Avenue Median Landscape

City of Tucson Public Art

The COT coordinates with the Arts Foundation for Tucson and Southern Arizona in the Percent for Public Art program, which allocates 1% of capital improvement project budgets toward public art. Current public art installations along the six alternative routes are listed in Table 18.

Table 18. Public Art Installations Adjacent to Alternative Routes

Public Art/Title	Adjacent Alternative Route(s)	Location	Artist	Collection	Year Completed
Oracle Blossom	A, B, D	Grant Rd. & Oracle Rd.	Hank Saxe, Cynthia Patterson	City of Tucson	2013
Unity	A, B, D	3d Ave & Grant Rd.	Simon Donovan & Ben Olmstead	City of Tucson (as part of the Grant Road Improvement Project)	2017
Agave/Fan Palm Relief	D	2040 N Campbell (Campbell Ave, Elm to Grant)	Kevin Osborn	City of Tucson	2004
Cicada Song	D	E. Elm & N. Campbell Ave	Zach Lihatsch	City of Tucson	2012
State Fair	A, B, D; 1 & 2	1501 N Campbell Ave (U of A Cancer Center)	Scott Wallace	University of Arizona	1986
Solace	A, B, D; 1 & 2	1501 N Campbell Ave (U of A Cancer Center)	Dennis Jones	University of Arizona	1987
Curving Arcades (Homage to Bernini)	1 & 2	Campbell Ave and 3d Street (U of A Mall)	Athena Tacha	University of Arizona	1981

Public Art/Title	Adjacent Alternative Route(s)	Location	Artist	Collection	Year Completed
17 Portraits	1 & 2	1400 E 15 th St (Park Avenue Detention Basin)	Chris Rush	City of Tucson	2007
Father Kino Martinez	1 & 2	NW corner of Kino Parkway and Winsett Street	Julian Martinez	City of Tucson	1989
Sonoran Passage	1 & 2	Kino Parkway at 22 nd Street Interchange	Barbara Grygutis	City of Tucson	2015
Welcome Waves	1	1575 East 36 th Street, Quince Douglas Pool	Mary Lucking	City of Tucson	2006

H.4 State (including Agencies) Government Plans

H.4.1 Arizona Board of Regents

Alternative Routes 1 and 2 border the eastern boundary of the ASLD trust beneficiary, UArizona, Arizona Board of Regents property at the intersection of 36th Street and South Kino Parkway and the eastern boundary of the UArizona along Campbell Ave. between 6th Street and Elm Road.

Alternative Routes A and B abut the UArizona campus on the north and west, respectively, where those routes terminate at the site of the Vine Substation.

Alternative Routes A and B do not impact Arizona Board of Regents. Alternative Route D would travel along the southern boundary of an Arizona Board of Regents single parcel of land (UArizona, 2021).

The UArizona 2020 Master Plan, currently on hold, has determined preliminary planning objectives that include campus future growth strategies, infrastructure, and gateways. A University Area Plan was developed in 1989 in coordination with University area neighborhood associations, to address these and other issues pertaining to quality of life in the University neighborhoods.

H.4.2 Arizona Department of Transportation (ADOT)

ADOT plans to extend SR 210 along Alvernon Way to I-10, as well as rebuild sections of the I-10 corridor. As a result, TEP excluded the ADOT I-10 ROW, the existing SR 210 corridor (future SR 210 alignment) from the alternatives analysis. However, all alternative routes do cross ADOT's existing and future facilities. None of the alternative routes intersect with ADOT projects currently, or as tentatively planned by ADOT for the 2021 to 2025 period of improvements (ADOT, 2021). TEP will obtain necessary permits, if facilities are located in or cross and ADOT ROW.

H.4.3 Arizona State Land Department

There are no lands managed by ASLD in the final study area.

H.5 Federal

H.5.1 Military

The Project is in the vicinity of Department of Defense (DOD) Lands, Military Training Routes (MTR), and Military Operations Areas (MOA). FAA policies (discussed below) that generally relate to MTR and MOA 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. Davis-Monthan Air Force Base (DMAFB) proximity to the Project study area is illustrated in Exhibit A-4.1 Land Use Map. DMAFB and UMC Heliport (Emergency Medical Services) maintain coordination within shared airspace (Exhibit J-13).

H.5.2 Federal Aviation Administration (FAA)

FAA jurisdiction within the southern portion of the study area extends out from DMAFB within a 3- to 5-mile radius, requiring obstruction evaluation based on height for new poles within that radius, as well as notice of construction. FAA jurisdiction also extends out a 1-mile radius from the University Medical Center Hospital Heliport on North Campbell Avenue. The same obstruction evaluation was completed for the UMC Heliport, noting that the FAA has collaborated extensively with Banner Hospital and adjacent neighborhoods to establish flight corridors as part of a “Fly Friendly” Zone. Fly Friendly flight paths, used most often, but with exceptions for extenuating circumstances including safety, are detailed in Banner’s most recent annual Helipad Report 2016-2017.

H.5.3 US Army Corps of Engineers

TDAP is a joint USACE and PCRFCO project. TDAP is under a Federal Nexus established by USACE’s local partnerships and may constitute a basis for environmental review required under National Environmental Policy Act (NEPA), as defined by 40 CFR 1508.1; may require a Section 106 of the National Historic Preservation Act (NHPA) review in the case that Federal permitting is extended to TEP; and, if impacted, may require Section 408 permitting from the USACE in the case of alterations to a Civil Works project. An individual Section 404 permit is obtainable from the USACE, if required after their review of environmental criteria defined by the Clean Water Act (CWA) Section 404 (b)(1) Guidelines for regulation of dredge or fill discharge into Waters of the United States, including wetlands.

H.5.4 Tribal

No tribal lands exist along the alternative routes for this Project. The San Ignacio Yaqui Council, Pascua Park, and the Pascua Neighborhood Center (785 W. Saguaro St.) are recognized historic Pascua Yaqui properties located in COT Ward 3, in the area south of Grant Road between I-10 and Oracle Road, within an 800-ft buffer of Alternative Routes A, B, and D. This COT neighborhood is known as the Adelanto Neighborhood and as Old Pascua Community, and was an original area of settlement for Pascua Yaqui tribal members in the early 1900s. The neighborhood is located within the Archaeological Sensitivity Zone, Stone Pipe Zone, in the I-10 corridor area, between Grant Road and Speedway Blvd. Alternative Routes A, B, and D align with the Stone Pipe Zone Archaeological Sensitivity Zone from the intersection with Grant Road near N. Flowing Wells Rd, east to N. 15th Ave. Only poles located on the south side of Grant Road

would be within the Sensitivity Zone boundary, and would require archaeological monitoring during ground disturbing activities.

H.6 Private

No private entity land use or other plans were identified on private lands in study area. Developments initiated by COT may include private-public partnerships (see above for COT projects). Private development plans are discussed in Section H.8.

H.7 Existing Land Use

TEP conducted a land use inventory and an assessment of potential impacts that may occur as a result of construction and operation of the Project. The study area is a mix of undeveloped land and heavy to moderate land uses (commercial and residential).

This land use was analyzed as part of the Project Siting Study (Exhibit B-1).

Criteria considered during the Siting Study (Exhibit B-1) include availability of a suitable corridor; compatible use; residential use near the corridor and planned future development; historic properties adjacent to the corridor; presence of sensitive receptors (e.g., schools, hospitals, parks) and proximity to corridor; mitigation required to separate from other existing utilities; viewshed and impact to viewing experience; cultural resources reported through survey and ranked by required mitigation; species habitat status; floodplain; ability to construct and maintain the line; and cost of construction.

Sensitive receptors were analyzed in the line siting study using point data from Pima County GIS data and additional locations provided by Project stakeholders and the CWG. Schools, hospitals, skilled nursing facilities, daycare centers, and rehabilitation facilities were each given a 300-foot buffer from the parcel boundary and then analyzed using a Weighted Sum Analysis. Alternative routes intersecting with Sensitive Receptor buffers were scored lower than those links that did not intersect. Sensitive receptor buffers were identified to respond to areas where the occupants of that area may be more susceptible to any perceived and potential adverse effects by the project.

Existing land uses are mapped in Exhibit A-4-1. Overall, the Project study area is a developed urban area with all land uses present. The land use categories identified in Exhibit A-4.1 are described below and include the locations of identified sensitive receptors.

Residential: Residential land uses (which differs from residential zoning designations discussed previously) primarily include medium to high density single-family residential areas and apartment complexes throughout the study area. Exhibit H-2 depicts the locations of all residential use (as determined through Google aerial photo analysis). The percentages of residential use along the alternative routes are shown in Table 19. As can be seen, residential use comprises a large portion of the Project study area and ranges from 41.6 to 48.1 % across the alternative routes. The Preferred Alternative Route 1B percent of residential use is slightly higher than Alternative Routes 1A and 2.

Table 19. Percentage of Residential Use Along Alternative Routes

Alternative Route	Percent Residential Use
1A	45.81
1B	47.31
1D	47.6
2A	41.6
2B	43.2
2D	43.58
5A	48.14

One comment often received from those living within a transmission line study area is that transmission lines have no place in a residential setting. It is important to note that TEP's 138 kV voltage is one of the lower voltages to be considered transmission and slightly lower voltages would be considered sub-transmission or distribution. Exhibit H-3 depicts that 16% of TEP's 138 kV and 345 kV transmission lines are within residential settings.

Commercial: Commercial businesses including office/business parks, retail, motel, etc. are located throughout the study area, with concentrations of commercial development along major arterial routes including Campbell Ave., Kino Parkway, and Grant Road.

Industry/Light Industry: A few industrial locations are located in the study area in the vicinity of, and south of, Aviation Parkway and Kino.

Utilities: Electrical generating stations, substations, transmission and distribution lines, as well as telephone and cable lines are present in the study area.

Southwest Gas has active gas lines in the study area.

COT has active water lines and Pima County has active wastewater lines in the study area.

There are active cell towers in the study area, referenced in Exhibit I.

Public/Quasi-public:

The International School of Tucson (Charter) is located at E Seneca St and N Martin Ave., within 400 feet of Alternative Routes 1 and 2. St. Peter and Paul Catholic School (Private) is located at Campbell Ave and E Adams St, within 400 feet of Alternative Routes 1 and 2. TUSD Facilities Buildings are at E 15th St and S Campbell Ave, within 50 feet of Alternative Route 2. Highland Free Elementary School (Charter) is located at S Highland Ave and E 16th St, within 1,300 feet of the Aviation Parkway and Kino Parkway interchange. YouthWorks Charter High School is located at S Campbell and E 36th St, within 200 feet of Alternative

Route 2. Southside Community School (Charter) is located at S Campbell and E 36th St, within 100 feet of Alternative Route 2.

Diamond Children’s Medical Center and Banner University Medical Center are located on E Elm St/N Ring Road and Campbell Avenue, on the UArizona campus, adjacent to Alternative D and to the proposed UArizona North Substation location accessed by Alternative Routes A, B, and D.

Transportation: Major arterials in the study area include Aviation Parkway, Kino Parkway, Campbell Ave., 36th Street, Broadway Blvd., Speedway Blvd., and Grant Road. A UPRR line is located along the SR 210/Aviation Parkway corridor.

Vacant/Undeveloped Land: Vacant land within the study area is sparse, mainly located south of SR 210/Aviation Parkway, near the UPRR Railyard. The Bridges development, at 36th St and Kino Parkway, is not yet fully developed. Other, small, vacant lots are scattered throughout the study area.

Municipal Parks/Recreation Complex: See Exhibit F.

H.8 Proposed Land Uses and Developments

Proposed “future” land uses (Exhibit H-1) within the study area are expected to be similar to existing land uses, as the study area is nearly fully developed. Future development on privately owned lands under county or municipality planning jurisdiction will require approval by the respective jurisdiction’s planning and development departments.

Known proposed land uses in the study area were identified through discussions with Pima County, COT, and other stakeholders, and include:

- Completion of the Grant Road Improvement Project phases 3 through 6
- Build out of the Bridges, which includes a UArizona biotech park, hotel, commercial and residential development
- Kino/Campbell is planned to hold an expansion of the streetcar, as part of the Move Tucson: Delivering Mobility Choices long-range transportation master plan. Since Spring 2020, COT Transportation Department has participated with the Tucson public in community conversations and online interactive visioning to identify where Tucson citizens would like to improve transportation options. The public has weighed in on the need for central to east side light rail. There is currently a light rail, Sun Link, terminus on the UArizona campus near Campbell Ave. and Helen Street at Warren Ave., UMC College of Medicine. Move Tucson outreach and planning is currently being analyzed for recommendations, after which implementation phases will begin. It is possible that within the next decade, Sun Link may determine a route through midtown from the UMC College of Medicine on Campbell Ave., however no plan for that exists at this time. In an April 2, 2020, communication from TDOT (Exhibit J-11) director Diana Alarcon stated there would be no update on streetcar plans through Move Tucson until after December 2020.
- UArizona planning provided TEP with a list four new construction projects planned for the UArizona campus: a Facilities Management Replacement Building is planned near Drachman Street and Cherry Avenue; a construction at Helen Street and Highland Avenue; a new Center for

Integrative Medicine at Cherry Avenue and Mabel Street; and the Grand Challenges building at Cherry Avenue and 4th Street.

- ADOT extension and rebuild of SR 210 from Downtown Links to Alvernon Way to I-10.

Additional proposed land uses and developments are listed in Table 20, and mapped on Exhibit H-1.

Table 20. Proposed Land Uses and Developments in the Final Study Area

Jurisdiction	Adjacent Alternative Routes	Parcel Number	Description	Type	Permit/Activity #
City of Tucson; University of Arizona	1, 2	12310001H	Block Plat/Final Plat	Banner University Medical Center Tucson	T20CM02241/Permit # S20-057
City of Tucson	1, 2	12307294C	Renovation	Commercial	T20CM03234
City of Tucson	1, 2	124031660	Rezoning to PAD; New construction	Mixed Use Development: Comm/Res	Permit #C9-20-12
City of Tucson	1, 2	12409047A	Alteration	Commercial	T20CM01939
City of Tucson	1, 2	12904103A	SFR - Addition	Residential	T20CM03874
City of Tucson	1, 2	12409156B	Broadway and Campbell Restaurant – Broadway Improvements Remediation	Commercial	DP20-0209
City of Tucson	1, 2	129041290	New construction	Commercial	DP18-0089
City of Tucson	1, 2	12411021G	Smith-Broadway – Alteration	Commercial	T20CM02738
City of Tucson	1, 2	12419040H	Cherry Lofts LLC – Cherry & Kino; Rezoning from I-1 to C-1	Mixed Use – Residential/Commercial	DP19-0175/Permit # C9-19-11
City of Tucson	1, 2	12418053C	17 th St Facility	Commercial	DP17-0128
City of Tucson	1, 2	12419022B	Addition	Commercial	T19CM04911
City of Tucson	1	12418162F	Alteration	Commercial	T19CM08883
City of Tucson	1	12910129A	Alteration, El Rio Health	Commercial	T19CM07371
City of Tucson	1	12417233A	Demolition	Commercial	T19BU00544
City of Tucson	1	12907006V	Addition Parks and Recreation	Commercial; Municipality	DP20-0105
City of Tucson	1	132130660	Infill; University of Arizona PAD	Commercial	DP19-0081

Jurisdiction	Adjacent Alternative Routes	Parcel Number	Description	Type	Permit/Activity #
City of Tucson	2	12419069C	Office	Commercial	T19CM02859
City of Tucson	2	129080230	Storage facility construction	Commercial	T17CM00618
City of Tucson	2	12908060D	Addition	Residential	T20CM05693
City of Tucson	2	13005029a	Addition	Residential	T21CM01208
City of Tucson	2	130052600	Addition	Residential	T20CM04838
City of Tucson	2	13211001A	PV System Southside Community School	Commercial	DP20-0059
City of Tucson	5	12413147C	Barricade for Sidewalk Installation	Residential	T21RW00232
City of Tucson	5	124130280	Addition	Residential	T20CM05847
City of Tucson	5	124-07-212A to 124-12-132A (14 parcels)	Rezoning for PAD	Mixed Use-Residential/Commercial	RZ19-003
City of Tucson	5	11504445C	Renovation	Commercial	T20CM03123
City of Tucson	5	12317201E	Site Grading	Residential	DP18-0206
City of Tucson	A, B	10707015 A	UNS DeMoss-Petrie Substation	Utility	DP16-0137
City of Tucson	A, B	10704002 C	Demo/Renovation	Commercial	T20BU00234
City of Tucson	A, B	10707018 B	The Slaughterhouse – Reconstruction	Commercial	DP17-0055
City of Tucson	A, B	10714257F	Grant Road Widening	Transportation	DP15-0159
City of Tucson	A, B	11501155 V	Alborada Apartments – Construct 64 Units	Residential	DP19-0240
City of Tucson	A, B	11309227 A	Commercial Repaving and Parking Reconstruction	Commercial	DP20-0042
City of Tucson	A, B	12312206 O	Jefferson Park Health and Heritage Neighborhood Park	Parks and Recreation	DP19-0235

H.9 Potential Effects

Land use impacts may be defined primarily as 1) incompatibility with existing plans or proposed land uses, plans, or developments or 2) restrictions on a land use that would result from the construction or

operation of the Project. Potential effects on future or planned land use are generally associated with Project construction rather than operation, as once construction is completed, no further land use changes are anticipated. Potential effects of the Project on adjacent land use within the study area would be negligible, as the Project is compatible with existing land use plans.

Typically, restrictions on land use would result from ROW or easement acquisition across a property. The project has existing fixed termini at Kino Substation (south) and DMP Substation (north) with a planned interconnection at the planned Vine Substation. The majority of this Project would be built within existing road ROW, with a variety of existing infrastructure corridors available to co-locate with the new transmission line. These corridors include Gateway arterial, arterial and collector streets, and existing TEP 46 kV transmission line corridors.

Potential effects from this project on residential land use and historic properties are not anticipated to be direct, except in the case of Alternative Routes 5 or D, which could require the acquisition of historic property(s) due to narrower ROW width and/or utility conflicts. Other impacts are those to viewsheds, as well as unsubstantiated or perceived impacts from EMF and potential decrease in property values.

Pima County Regional Flood Control District

Impacts on PCRFCDD plans are not anticipated and the need for PCRFCDD permits would be dependent upon the pole placement regardless of which alternative route is constructed.

PCRFCDD stakeholder comments include the following concerns:

- Any impacts to habitat require a Facility Impact Permit from PCRFCDD.
- Any impacts to basin footprint or Increment 3 of the TDAP require review and approval by USACE.
- The basin locations serve as the restoration and mitigation for the TDAP in its entirety.
- Inlet/outlet structures for the basins are regulated by Arizona Department of Water Resources (ADWR) as Jurisdictional Dams, and will require review and approval by ADWR.
- Alternative Routes 1, 2, and 5 may potentially (although unlikely) impact the jurisdictional dams or Park/Cherry Field basins, and would require permitting through ADWR, USACE, and PCRFCDD.
- Phase 2B Increment 3 of TDAP is imminent.
- Phase 2B Increment 3 includes reconstruction of the culverts at Campbell Ave. and addition of a culvert at Plumer Ave.
- Any transmission line alignment requires coordination with Increment 3 construction plans.

City of Tucson

TEP has coordinated with the COT Planning and Development Services (PDSD), Historic Preservation Office, Transportation, and Water departments. TEP has communicated with these departments and avoided COT facilities to the extent practical. Where impacts are unavoidable, TEP will further coordinate any required studies and mitigation necessary to minimize impacts. PDSD indicated that TEP would need to apply for a Special Exception Land Use Permit (SELUP) from the COT for the Vine Substation.

Planning and Development Services (PDSD)

PDSD staff attended Stakeholder/CWG meetings. Exhibit H-1 illustrates future development currently planned in the City of Tucson along the alternative routes.

Historic Preservation Office

The COT HPO has provided comments related to local, state, and federal guidance for historic properties and districts, which are addressed in TEP's Historic District Analysis (Brown, 2020). Related concerns from that office are:

- Scope of Historic District Analysis ability to integrate data driven decisions with holistic analysis of historic and architectural factors of the historic districts
- Impacts to current and future NRHP eligibility, including potential demolitions as a direct result of a TEP transmission alternative route
- Maintaining integrity of historic district contributing properties

There are COT archaeological sensitivity zones and Historic Districts within the final study area. An archaeological Class I Survey was conducted by Tierra Right-of Way Services to identify known or potentially eligible cultural resources within the study area and review the potential to impact resources within these sensitivity zones and Districts (Exhibit E). Alternative Routes A, B, and D were found to fall within the COT's Stone Pipe Sensitivity Zone, and would require archaeological monitoring within that zone during construction. No impacts to Old Pascua Community/Adelante Neighborhood are anticipated.

Historic Route 80 passes through Alternative Routes A, B, and D, but as an in-use structure, the road does not qualify as an archaeological site in the State of Arizona.

All alternative routes require cultural monitoring only within COT sensitivity zones, and Alternative 5 would also require monitoring at known cultural site locations. No cultural resources impacts are anticipated.

City of Tucson Department of Transportation

TDOT commented during a November 5, 2020, meeting that Move Tucson project design was on track by the end of 2020, and a concern was expressed for streetcar extension along Campbell Avenue toward UArizona/Banner Hospital (TDOT, 2020). TDOT also commented in the same meeting that there would be no impact to local designation of Kino/Campbell as a Major Gateway Route. In a follow up communication March 8, 2021, TDOT confirmed the ability to site both the streetcar and the transmission line in the Kino/Campbell corridor. The streetcar will likely be in the west outside lane south of Broadway Boulevard and in the median north of Broadway Boulevard. Additionally, it was agreed that the OH transmission line could be built in the same corridor as the streetcar, but TDOT expressed that it was achievable with close collaboration during the design phase for both. TDOT expressed that COT will work with TEP on the placement of the OH transmission lines so as not to affect future development of the streetcar (personal communication, Diana Alarcon, TDOT Director, March 8, 2021).

On May 5, 2020, TDOT sent a follow up to an April 2, 2020, meeting with TEP which included answers to questions presented in writing to the Department from TEP on March 31, 2020, (Exhibit J-11) and plans for future TDOT projects (Table 20). TDOT responded to questions related to Kino/Campbell as a Major Gateway Route by stating that the "City of Tucson does not have an ordinance precluding specific items due to the Gateway designation." TDOT stated that in general, they must follow the franchise agreement for anything in the ROW.

Tucson Water/Pima County Wastewater

Tucson Water's main concerns are related to cathodic protection for water mains and buried wastewater lines that are susceptible to disturbance. TEP has obtained the locations of these facilities and avoided them to the extent practical. Where impacts are unavoidable, Pima County Wastewater has indicated, and TEP agreed, that TEP will further coordinate any required studies and mitigation necessary prior to final design and construction.

US Army Corps of Engineers

USACE has submitted comments related to the Arroyo Chico Project (TDAP), in partnership with PCRFCO and the COT (Section 0). The Federal Nexus established by USACE's local partnerships may constitute a basis for environmental review required under NEPA, as defined by 40 CFR 1508.1; may require a Section 106 of the NHPA review in the case that Federal permitting is extended to TEP; and may require Section 408 permitting from the USACE in the case of alterations to a Civil Works project. TEP does not anticipate building the Project within the TDAP project boundaries.

U. S. Air Force Davis-Monthan Air Force Base

DMAFB communicated to TEP that no adverse effects are anticipated to helicopter flight paths in to Banner Medical Center from any alternative route (email communication, Major Joel Borgan, August 17, 2020, Exhibit J-13).

Union Pacific Railroad

An active UPRR line is within the Project study area and all alternative routes cross the railroad. TEP does not anticipate any impacts to the railroad and will obtain required crossing permits (See Exhibit J-13). UPRR describes a crossing as a line that enters the RR trackage from one side of the ROW to the other side of the ROW, taking the most direct path.

UPRR's highest concern during Project scoping was the risk associated with high voltage power lines crossing their rail yard. Power lines crossing the yard may pose a risk in the event of a downed line emergency. Links that were proposed early on in siting were removed from consideration. Alternative Routes 1, 2, and 5 (South Kino Parkway at Aviation Parkway) are located west of the rail yard.

Comments from UPRR request a 90-degree crossing of the tracks; all crossings stay west of the railyard (which is a less populated area of the facility); and provide an additional three feet of clearance beyond what is required by the National Electrical Safety Code (NESC) Guidelines for this type of span.

H.10 Conclusion

All alternative routes are consistent with local, state, and federal land use plans. The majority of all alternative routes can be constructed within road ROW. Land use impacts are anticipated to be none to minor depending on the alternative route selected. As mentioned previously Alternative Route 5A or D could require the acquisition of historic properties.

Plan Tucson includes Land Use, Transportation, & Urban Policies that guide COT's desire for growth. Policies for land use mentioned in this plan include supporting development opportunities where "existing or upgraded public facilities and infrastructure provide required levels of service" (COT, 2013).

The Project supports the COTs land use plans, benefits all existing land uses in the study area, as well as future land uses, and further supports UArizona and Banner – UArizona Medical Center Tucson campus and emergency room.

H.11 **References**

22nd Street Kino Parkway to I-10 Widening Project. <https://www.tucsonaz.gov/tdot/22nd-street-i-10-kino-parkway-widening>.

22nd Street Kino Parkway to Tucson Boulevard Improvements. <https://www.tucsonaz.gov/tdot/22nd-street-kino-parkway-tucson-boulevard>.

Arizona Department of Transportation, 2020. 2021-2025 Five Year Transportation Facilities Construction Program, Tentative.

Arts Foundation for Tucson and Southern Arizona, 2020. Public Art Map, <https://artsfoundtucson.org/arts/public-art/>.

Banner University Medical Center, Tucson Campus. 08/2016:

https://www.tucsonaz.gov/files/pdsd/plans/PAD/2016-0816_BANNER_UAMC_PAD_-_Reduced.pdf.

Banner University Medical Center, 2017: 2016-2017 Helipad Annual Report.

The Bridges PAD. 02/2007: Ordinance 10383 PAD Amendment for Sub-Areas B: 04/2018

https://www.tucsonaz.gov/files/pdsd/plans/Bridges_PAD_Amendment-MayorCouncil-May_2018.pdf.

City of Tucson, 2017: City of Tucson Habitat Conservation Plan. <https://www.tucsonaz.gov/pdsd/city-tucson-habitat-conservation-plan-hcp>.

City of Tucson, 2017: Grant Road Improvement Project. Public Art Master Plan. http://www.grantroad.info/pdf/pamp_final.pdf.

City of Tucson Jefferson Park Neighborhood Preservation Zone (NPZ). 06/2011:

https://www.tucsonaz.gov/files/pdsd/codes/Jefferson_Park_Design_Manual_final.pdf.

City of Tucson Neighborhood Plans

Arroyo Chico Area Plan, 1986. https://www.tucsonaz.gov/files/pdsd/plans/Arroyo_Chico.pdf.

Blenman Vista Neighborhood Plan, 1986. <https://www.tucsonaz.gov/files/pdsd/plans/bv.pdf>.

Cragin-Keeling Area Plan, 1994. <https://www.tucsonaz.gov/files/pdsd/plans/ckap.pdf>.

Jefferson Park Neighborhood Plan, 2008. https://www.tucsonaz.gov/files/pdsd/plans/jefferson_park.pdf.

Kino Area Plan, 1980. <https://www.tucsonaz.gov/files/pdsd/plans/kino.pdf>.

Miles Neighborhood Plan, 2009.

https://www.tucsonaz.gov/files/pdsd/pdfs/MilesNeighborhoodPlan/1Miles_Neigh_Plan_111709.pdf

Oracle Area Revitalization Project, 2011.

https://www.tucsonaz.gov/files/pdsd/plans/OARP_091311.pdf.

Sam Hughes Neighborhood Plan, 1985. <https://www.tucsonaz.gov/files/pdsd/plans/shughes.pdf>.

University Area Plan, 1989. https://www.tucsonaz.gov/files/pdsd/plans/University_Area_Plan.pdf.

City of Tucson, 2020: Map Tucson. <https://maps2.tucsonaz.gov/Html5Viewer/?viewer=maptucson>.

City of Tucson, 2020: PDS Development Activity Map.

<https://cotgis.maps.arcgis.com/apps/webappviewer/index.html?id=f21a20733c2c4c56ba036ba5c6dfa2ec>.

City of Tucson, Office of Economic Initiatives. Findings of Conditions in the Proposed Modified City of Tucson Central Business District (CBD). June 2021. <http://connecttucson.com/wp-content/uploads/2021/06/Findings-of-Conditions-in-the-Proposed-Modified-CBD-06.22.21-reduced.pdf>.

City of Tucson, Office of Economic Initiatives. GPLET and CBD Incentives

<https://www.tucsonaz.gov/business/incentives>.

City of Tucson, 2020: Move Tucson. <https://movetucson.org/>

City of Tucson, 2020: Department of Transportation. Future projects and Streetcar potential. Personal communication, Diana Alarcon, March 8, 2020.

City of Tucson, 2020: Department of Transportation Projects.

<https://www.tucsonaz.gov/tdot/transportation-projects>.

City of Tucson, 2020: Department of Transportation Bicycle Boulevard Master Plan.

<https://www.tucsonaz.gov/files/transportation/files/BBMP-2-22-17.pdf>.

City of Tucson, 2020: Ordinance No. 11726. Green Stormwater Infrastructure (GSI) Program and Fees.

https://www.tucsonaz.gov/files/water/GSI_Ordinance_Final_2020.02.04_0.PDF.

City of Tucson, 2013, Plan Tucson. Chapter 3 and Future Growth Scenario Map,

https://www.tucsonaz.gov/files/integrated-planning/Chapter3-The_Built_Environment_11-13-13.pdf.

City of Tucson Unified Development Code. Gateway Route (Am. Ord. 11803, 12/8/2020)

https://codelibrary.amlegal.com/codes/tucson/latest/tucson_az_udc/0-0-0-3549.

City of Tucson Unified Development Code. Zone Codes.

https://codelibrary.amlegal.com/codes/tucson/latest/tucson_az_udc/0-0-0-1785.

Davis Monthan Air Force Base. 2020, personal communication, Major Joel Borgan. October 27.

Grant Road Investment District Urban Overlay District. City of Tucson Ordinance 11581.

https://www.tucsonaz.gov/files/pdsd/boards-committees-commissions/DRB/Adopted_Ordinance_11581_and_Exhibit_A.pdf.

Greater Infill Incentive Subdistrict. City of Tucson Ordinance 11246.

<https://www.tucsonaz.gov/files/pdsd/codes/IID.pdf>.

Kino South Sports and Entertainment Complex. 03/2021:

Kino South Sports & Entertainment Complex – Project Update.pdf (pima.gov).

Major Streets and Routes Plan. 01/2016: Res. 22518, 01/2009: Res. 21190, 11/1982: Res. 12045

<https://www.tucsonaz.gov/files/pdsd/plans/MSR.pdf>.

Pima County, 2017: Geographic Information Systems: PimaMaps Main.

Pima County, Arroyo Chico Multi-Use Project.

<https://webcms.pima.gov/cms/one.aspx?portalId=169&pageId=68741>, website updated 2020.

Pima County, 1998: The Sonoran Desert Conservation Plan.

http://webcms.pima.gov/government/sustainability_and_conservation/conservation_science/the_sonoran_desert_conservation_plan/.

Pima County, 2016. Multi-species Conservation Plan for Pima County, Arizona: Final. Submitted to the Arizona Ecological Services office of the U.S. Fish and Wildlife Service, Tucson, Arizona.

Pima County, 2017. Pima Prospers, Pima County Comprehensive Plan Initiative.

<http://www.pimaprospers.com/>.

Pima County Regional Flood Control District, 2020. South Campbell Avenue Median Landscape

<https://www.tucsonaz.gov/apps/maps-and-records/construction-plans/details/8127> (Pueblo Gardens Neighborhood in cooperation with Parks and Recreation Department, COT).

Pima County Regional Flood Control District, 2020. Arroyo Chico Increment 3 Channel. Personal communications, Janice Hughes, June 30, 2020.

Speedway + Campbell Gateway Project. 05/2018:

https://www.tucsonaz.gov/files/pdsd/plans/PAD/180521_Speedway_Campbell_PAD_For_Print.pdf.

Speedway + Campbell PAD, 2018: Section IV.C.3 Helicopter Flight Path Impacts Study, Exhibit No. 36

Existing Helicopter Flight Patterns (Excerpt from MOU), 103-105.

Stone Pipe Zone. City of Tucson Archaeological Sensitivity Zone Map.

https://www.tucsonaz.gov/files/plan-tucson/archaeological_sensitivity_zones.pdf.

Sunshine Mile Overlay Zone. 10/2020:

http://rionuevo.org/wpcontent/uploads/2020/10/1_overlay_zone_101520.pdf.

http://rionuevo.org/wp-content/uploads/2020/07/SMD_map.pdf.

Thrive in the 05 Initiative: Choice Neighborhoods and Community-Based Crime Reduction.

<https://www.thriveinthe05.com/>.

UMC North Medical Park PAD. 08/2005: <https://www.tucsonaz.gov/files/pdsd/plans/umcnorthpad.pdf>.

Union Pacific Railroad, 2020. Personal Communication.

United States Army Corps of Engineers, <https://www.usace.army.mil/Missions/Civil-Works/Section408/>.

United States Army Corps of Engineers, Los Angeles District. Tucson Drainage Area Project – Phase 2B Increment 3- Channel Improvement Along Arroyo Chico, City of Tucson, Pima County, Arizona. Report W912PL-15-D-0007. Tetra Tech, Inc, CA. 2020.

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Application for a Certificate of Environmental Compatibility

**Kino to DeMoss-Petrie
138 Kilovolt Transmission Line Project**

Exhibit H-1

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Exhibit H-1

Kino to DeMoss Petrie 138kV Transmission Line Project

Proposed Land Uses and Developments in the Final Study Area



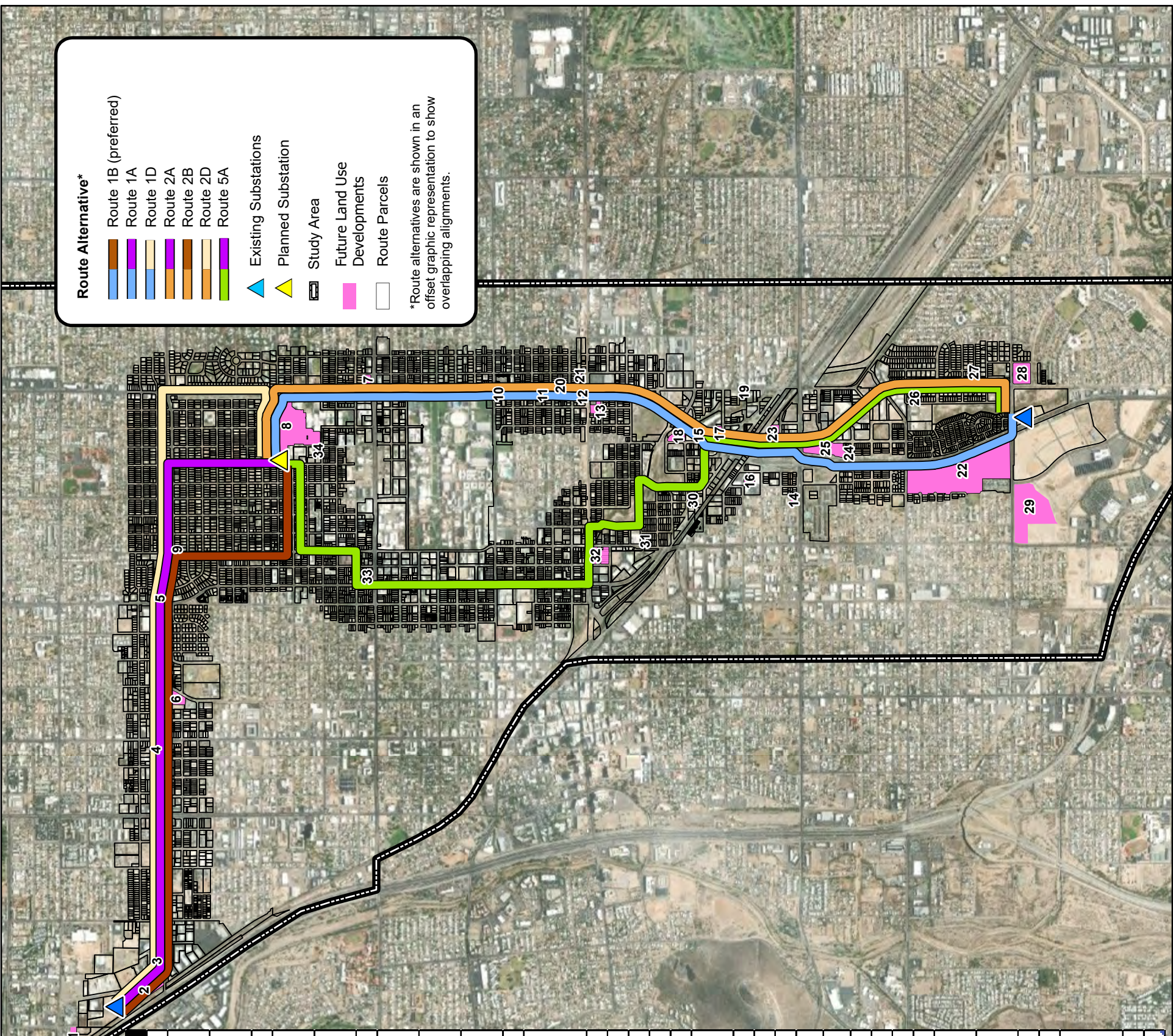
Sources: ESRI, Tucson Electric Power, Pima County, City of Tucson, and Arizona State Land Department.
Projection: NAD 1983 UTM Zone 12N
Basemap: ESRI World Topographic Map
This map is for planning purposes only. TEP and UNS Energy make no warranty of its accuracy.

Route Alternative*

- Route 1B (preferred)
- Route 1A
- Route 1D
- Route 2A
- Route 2B
- Route 2D
- Route 5A

Existing Substations
Planned Substation
Study Area
Future Land Use Developments
Route Parcels

*Route alternatives are shown in an offset graphic representation to show overlapping alignments.



Map ID	Project Name	Project Type
1	Demo/Renovation	Commercial
2	UNS DeMoss-Petrie Substation	Utility
3	The Slaughterhouse -- Reconstruction	Commercial
4	Grant Road Widening	Transportation
5	Commercial Repaving and Parking Reconstruction	Commercial
6	Alborada Apartments -- Construct 64 Units	Residential
7	Renovation	Commercial
8	Block Plat/Final Plat	Banner University Medical Center Tucson
9	Jefferson Park Health and Heritage Neighborhood Park	Parks and Recreation
10	Rezoning to PAD; New construction	Mixed Use Development: Comm/Res
11	Alteration	Commercial
12	Broadway and Campbell Restaurant -- Broadway	Commercial
13	Improvements Remediation	Commercial
14	Smith-Broadway--Alteration	Commercial
15	Demolition	Commercial
16	17th St Facility	Commercial
17	Alteration	Commercial
18	Cherry Lofts LLC -- Cherry & Kino; Rezoning from I-1 to C-1	Mixed Use -- Residential/Commercial
19	Office	Commercial
20	SFR - Addition	Residential
21	New construction	Commercial
22	Addition Parks and Recreation	Commercial; Municipality
23	Storage facility construction	Commercial
24	Addition	Residential
25	Alteration, El Rio Health	Commercial
26	Addition	Residential
27	Addition	Residential
28	PV System Southside Community School	Commercial
29	Infill; University of Arizona PAD	Commercial
30	Sidewalk Construction	Residential
31	Addition	Residential
32	Welcome PAD - Broadway & Euclid; Rezoning 14 parcels into PAD	Mixed Use - Residential/Commercial
33	Renovation	Commercial
34	Site Grading	Residential

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Application for a Certificate of Environmental Compatibility

**Kino to DeMoss-Petrie
138 Kilovolt Transmission Line Project**

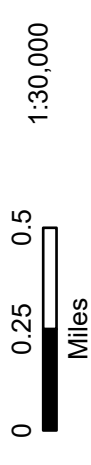
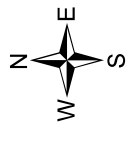
Exhibit H-2

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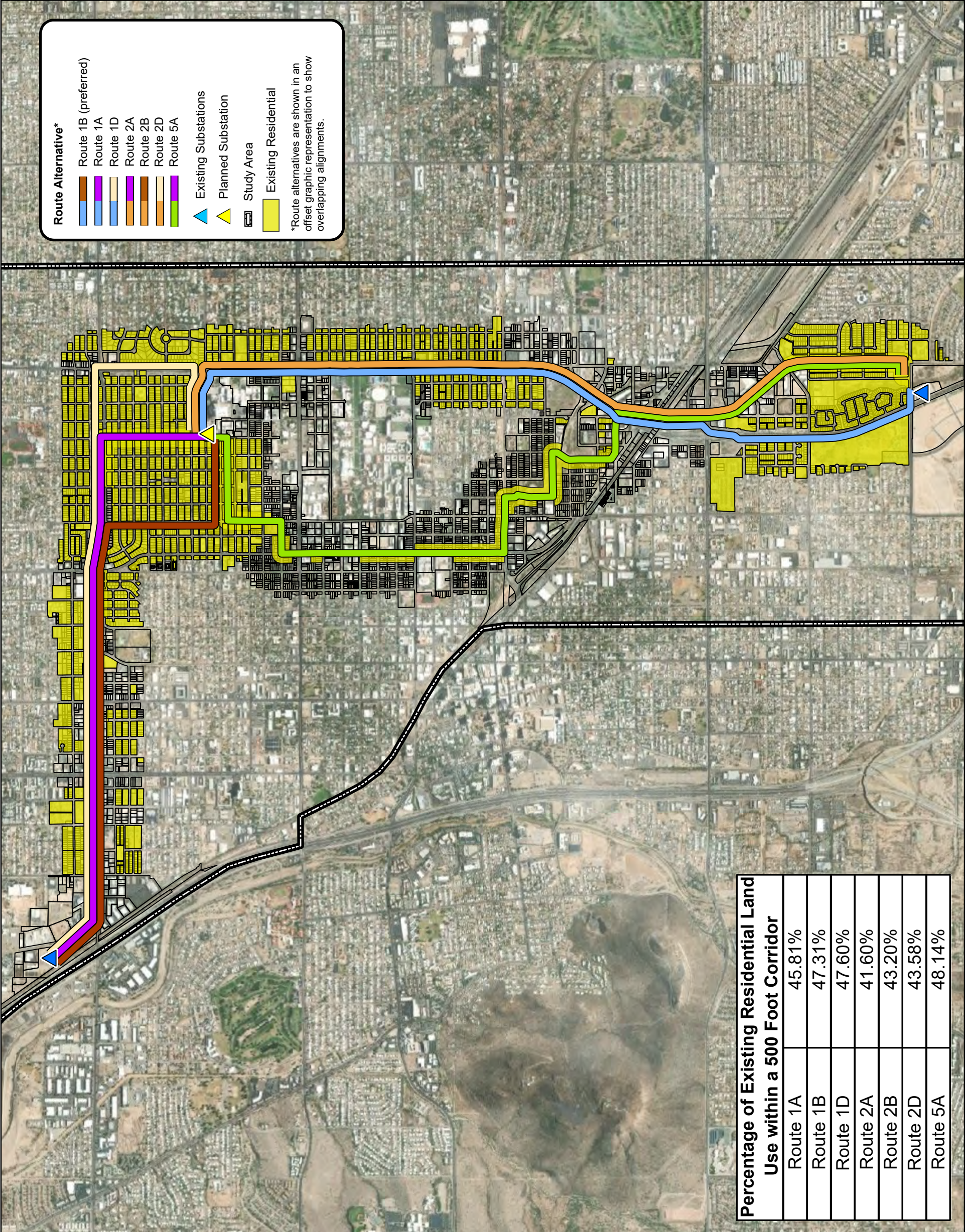
Exhibit H-2

Kino to DeMoss Petrie 138kV Transmission Line Project

Residential Use



Sources: ESRI, Tucson Electric Power, Pima County, City of Tucson, and Arizona State Land Department.
 Projection: NAD 1983 UTM Zone 12N
 Basemap: ESRI World Topographic Map
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Route Alternative*

- Route 1B (preferred)
- Route 1A
- Route 1D
- Route 2A
- Route 2B
- Route 2D
- Route 5A

Existing Substations
 Planned Substation
 Study Area
 Existing Residential

*Route alternatives are shown in an offset graphic representation to show overlapping alignments.

Percentage of Existing Residential Land Use within a 500 Foot Corridor	
Route 1A	45.81%
Route 1B	47.31%
Route 1D	47.60%
Route 2A	41.60%
Route 2B	43.20%
Route 2D	43.58%
Route 5A	48.14%

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Application for a Certificate of Environmental Compatibility

**Kino to DeMoss-Petrie
138 Kilovolt Transmission Line Project**

Exhibit H-3

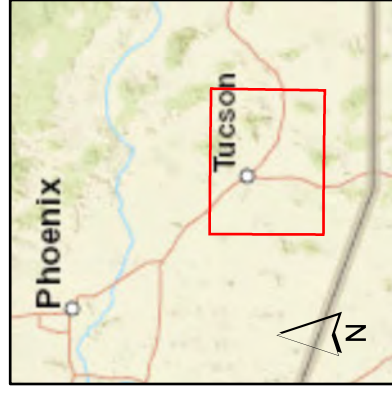
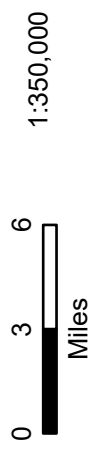
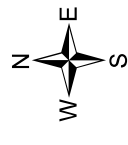
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Exhibit H-3

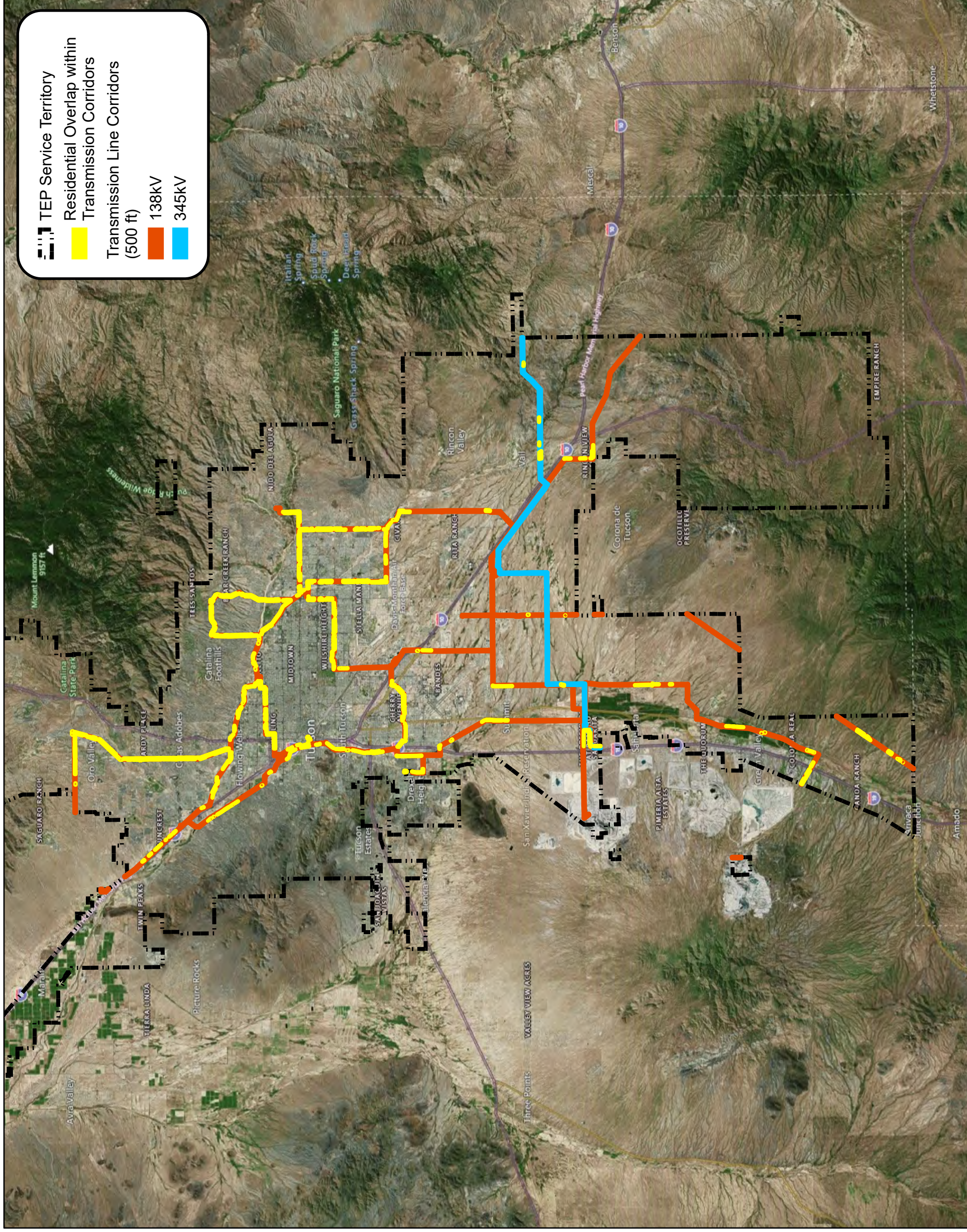
Kino to DeMoss Petrie 138kV Transmission Line Project

Residential Overlap With Transmission Line Corridors



Sources: ESRI, Tucson Electric Power, Pima County, City of Tucson, and Arizona State Land Department.
Projection: NAD 1983 UTM Zone 12N
Basemap: ESRI World Topographic Map

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EXHIBIT I

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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-2
I.3 Corona Noise.....	I-4
I.4 Radio Interference	I-6
I.5 Television Interference	I-6
I.6 Electric and Magnetic Field Effects	I-6
I.7 Conclusion	I-8
I.8 References	I-9

I.1 Introduction

The Project will consist of building a new 138 kV transmission line totaling 7.2 to 8.1 miles in length, depending on the alternative approved, to connect the existing Kino Substation to the existing DMP Substation. The Project will interconnect to the planned Vine 138 kV Substation. The Project will cross private, USPS, COT, Arizona Board of Regents, and Pima County (Alternative Route 5A only) owned land, as well as COT road ROW. Seven preliminary route alternatives have been identified, resulting from line siting studies, analysis, and a public participation process that began in 2019. The proposed alternative routes are identified as Route 1A, 1B, 1D, 2A, 2B, 2D, and 5A and are described in Section B.1-4 of the application. Route 1B is the preferred route. The new line will be built with a combination of galvanized (36th Street to Grant Road) and self-weathering steel (Grant Road to DMP Substation) monopoles ranging from 75 to 120 feet above ground, with the taller structures required for site specific clearance issues.

The following analysis describes the anticipated noise impacts and interference with communication signals within the study area. The study area for noise is 1 mile on either side of the Project centerline (2 miles in total width). The entire study area is within COT, Pima County, Arizona. The Project will generate both audible noise during the construction and maintenance phases, and minor corona noise during operation.

I.2 Audible Noise

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 urban, with a population density of 1,000 to 6,000+ people per square mile. Typical ambient noise levels for these population densities range from 40 to 70 A-weighted decibels (dBA). Sources of noise along the alternative routes primarily relate to transportation sources and include local access traffic, aircraft from DMAFB and Tucson International Airport, and noise from UPRR. Existing land use also contributes to noise levels. Sensitive noise receptors such as schools, libraries, parks, sports facilities, and hospital/health care facilities are located in the study area and discussed in more detail in Exhibit H.

Some level of audible noise will result from transmission line construction, operation, and maintenance. During construction, equipment used for assembly and erection of structures, wire pulling and splicing activities, as well as construction equipment and vehicles used to transport crews and materials will generate noise. Noise from construction activities would be audible, particularly to the closest residents. This construction noise, however, would not be considered to be a major impact because construction would occur during daytime hours when tolerance to noise is higher, and would be temporary, lasting only a few days at a time in any one location. Long-term audible noise impacts from transmission line operation and maintenance activities are expected to be minimal.

Uncontrolled noise levels for typical construction equipment are displayed in Table 21. The maximum noise levels will range between 80 to 85 dBA at 50 feet from construction equipment. As a general rule of thumb, noise levels drop 6 dBA every time the distance from a point source is doubled.

Table 21. 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
Crane (movable)	85
Pump	77
Generator	82
Compressor (air)	80
Pneumatic tools	85
Compactor (ground)	80
Auger drill rig	85
Source: FHWA 2017	

Construction criteria for acceptable noise limits for nearby residents as established by the U.S. Department of Transportation (USDOT) were used to assess impacts from construction noise due to the Project (Table 22). These criteria are not standardized, but they are considered reasonable guidelines for determining construction noise impacts (USDOT 2012). The acceptability standards are given in terms of the 1-hour equivalent noise level (Leq), the 8-hour equivalent noise level (Leq), and the weighted day night average (Ldn) noise level.

Table 22. General Construction Noise Assessment Criteria Acceptable Limits

Land use	One-hour Leq (dBA)		8-hour Leq (dBA)		Weighted Ldn (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 (Ldn>65 dBA), Ldn from construction should not exceed existing ambient plus-10 decibels.					
** Note: 24 hour Leq, not Ldn					
Source: USDOT 2012					

Based on typical usage factors, the average construction noise level is conservatively estimated to be 83 dBA at 50 feet from the centerline of the transmission line. Thus, from 0 to approximately 75 feet from the transmission line, construction noise levels would slightly exceed the USDOT 8-hour Leq standards for construction in residential areas. Construction in some areas will be occurring in commercial areas and areas that experience one-hour traffic volumes that can exceed 2,000 cars per hour (Table 23). Traffic volumes of 2,000 cars per hour can generate 70.4 dBA at 40 miles per hour traffic speed (Table 24) (PAG, 2021).

Table 23. Traffic on Roads in the Project Area

ROAD	SPEED LIMIT (mph)	Average vehicles/hour mid-day
Campbell	35	2138
Grant	35/40	2716

(PAG, 2021)

Table 24. Noise Generated by Traffic (dBA) at 50 feet

Vehicles /hour	SPEED (MILES/HOUR)				
	35	40	45	50	55
500	63.2	64.4	65.6	66.8	67.9

1000	66.2	67.4	68.6	69.8	70.9
2000	69.2	70.4	71.6	72.8	73.9
3000	71.0	72.2	73.4	74.6	75.7

(WSDOT, 2020)

Noise levels associated with the transmission line construction are anticipated to decrease according to typical point source distance attenuation (Table 25). As such, at a distance of approximately 75 feet and beyond noise is expected to be within suitable limits. Construction noise impacts will be temporary, and construction is focused around structure location, not spread along the length of the transmission line.

Construction activity related to one transmission line structure with a concrete foundation is typically completed in three days total. One to two consecutive days to drill the foundation and pour the concrete, and another day at a later time to set the pole. It takes less than a day to erect a typical direct embed pole. This makes the duration of noise impacts within 100 feet of noise receptors brief and therefore direct impacts are expected to be temporary. To reduce noise impacts whenever a receptor is within approximately 100 feet of the active transmission construction area, any idling equipment should be parked as far away from the receptor as possible and turned off when possible.

Table 25. 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.

The majority of construction noise impacts (i.e., those beyond 100 feet) are expected to have minor short-term impacts. Typical noise levels for construction beyond 100 feet are below the USDOT acceptable limits. The majority of the work is planned to occur during the daytime period in accordance with local guidelines. No nighttime work is planned, but in the event nighttime work is necessary TEP will notify residents who would be affected in advance. In order to further limit construction noise impacts in general, equipment not in use for a reasonable amount of time would be turned off when possible.

1.3 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 OH 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. Results presented in this exhibit are based on consideration of the various possible construction configurations along the alternative routes. Corona may result in AN being produced by a transmission line. Corona noise levels are typically 40 to 50 A-weighted decibels (dBA) at the edge of the ROW. In comparison, a vacuum cleaner typically produces 60 to 80 dBA.

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 Kino to DeMoss-Petrie 138 kV transmission line.

The electric field gradient is greatest at the surface of the conductor. Large-diameter conductors have lower electric field gradients at the conductor surface; hence, lower corona than smaller conductors, everything else being equal. The conductors for the Project will be selected to have large diameters, and thus a reduced potential to create audible noise. Irregularities (such as nicks and scrapes on the conductor surface or sharp edges on suspension hardware) concentrate the electric field at these locations, increasing the electric field gradient and the resulting corona at these spots. Similarly, foreign objects on the conductor surface, such as dust or debris can cause irregularities on the surface that are a source for corona.

Corona also increases at higher elevations where the density of the atmosphere is less than at sea level. AN varies with elevation with the relationship of $A/300$, where A is the elevation of the line above sea level measured in meters (EPRI 2005). AN at a 600-meter (1,968.5 feet) elevation would be twice the AN at 300 meters (984.25 feet) all other things being equal.

Raindrops, snow, fog, hoarfrost, and condensation accumulated on the conductor surface are also sources of surface irregularities that can increase corona. During fair weather, the number of these condensed water droplets or ice crystals is usually small and the corona effect is also small. However, during wet weather, the number of these sources increases (e.g., due to rain drops standing on the conductor) and corona effects are therefore greater. During wet or foul weather conditions, the conductor would produce the greatest amount of corona noise; yet noise generated by heavy rain hitting the ground would typically be greater than the noise generated by corona, thus masking the AN from the transmission line.

Corona produced on a transmission line can be reduced by the design of the transmission line and the selection of hardware and conductors used for the construction of the line; for instance, the conductor hardware used to support the conductors have rounded rather than sharp edges and recessed bolts to reduce sharp edges that can contribute to corona. The conductors themselves will be installed under tension to prevent damage to the conductor and retain a smooth surface without causing nicks, burrs, or scrapes in the conductor strands.

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, but 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 16 active communications towers previously licensed by the FCC within 1,000 feet of the alternative routes (Exhibit I-1). TEP has notified the tower owners of the Project via 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

Interference with traditional television reception affects only over-the-air signals of local television stations and does not impact Cable or satellite stations. Any impacts from the transmission line's corona effects may occur during periods of bad weather, but is usually only a concern for transmission lines of 345 kV or greater and only for receivers within 500 feet of the line. Because the voltage would not exceed 138 kV, television interference is not expected.

I.6 Electric and Magnetic Field Effects

Existing EMFs within the Preferred Alternative Route

There are existing electrical facilities within the preferred alternative route. For the preferred Alternative Route 1B, the following electrical facilities exist:

- On the east side of Campbell Avenue, there is an existing distribution line.
- In the alleyway between Lee and Adams Street, there is an existing 46 kV and distribution line
- On the east side of Park Avenue, there is an existing 46 kV and distribution line

Two devices were used to record measurements of existing EMFs directly under the existing electrical facilities. The two devices used were:

- Latnex model MG-2000 TD Triple Axis Pro EMF Meter with Datalogger
- Magnum 310 Triple Axis Digital Gaussmeter

Measurements were taken at the centerline of the existing electrical facilities. They were taken on July 9, 2021, at 1:30 pm with a city load of approximately 2100MW and a temperature of 100°F. At the time the measurements were taken the city load does not represent a peak load and therefore the EMF readings taken do not represent the maximum EMFs produced by the existing electrical facilities. The measured values EMFs was measured as:

- 46-kv & 13.8-kv on Park Avenue / Alleyway: Ranged between 10.2mG and 13.4mG
- 4-kV on Campbell Avenue: 0.56mG

Electric and Magnetic Fields Background

EMFs are 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 would 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 OH 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 26 displays the magnetic field strength from various electrical sources. This information was provided in both a poster and a handout available to the public at the Open House Meetings (see Exhibit J-49). It is general practice to consider both electric and magnetic fields together in assessing the amount of effect at the outer edge of a transmission line’s ROW.

Table 26. 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 (NIEHS) 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.”

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). A hair dryer or microwave oven from a half foot away can be found to produce stronger magnetic fields than were calculated at any of the locations analyzed along similar routes (POWER, 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

Based upon past studies for 138 kV transmission lines similar to the Project, it is expected that the EMF values associated with this Project are expected to be comparable to other 138 kV transmission lines in the state, and are expected to have EMF values at the edge of right-of-way that are less than or equal

common household appliances. Furthermore, using engineering judgement, the EMFs emitted by the Project will be comparable to some corridors with existing facilities.

I.8 References

American Cancer Society: www.cancer.org/cancer/cancer-causes/radiation-exposure/extremely-low-frequencyradiation.html.

Environmental Protection Agency: www3.epa.gov/radtown/electricmagnetic-fields.html.

Federal Highway Administration (FHWA). 2017. Construction Noise Handbook. http://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/handbook09.cfm. Accessed January 2017.

IEEE/ANSI Standard C2-2007. National Electrical Safety Code.

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.

U.S. National Institutes of Health, National Institute of Environmental Health Sciences: www.niehs.nih.gov/health/topics/agents/emf/.

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.

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Application for a Certificate of Environmental Compatibility

**Kino to DeMoss-Petrie
138 Kilovolt Transmission Line Project**

Exhibit I-1

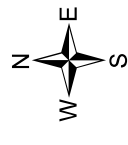
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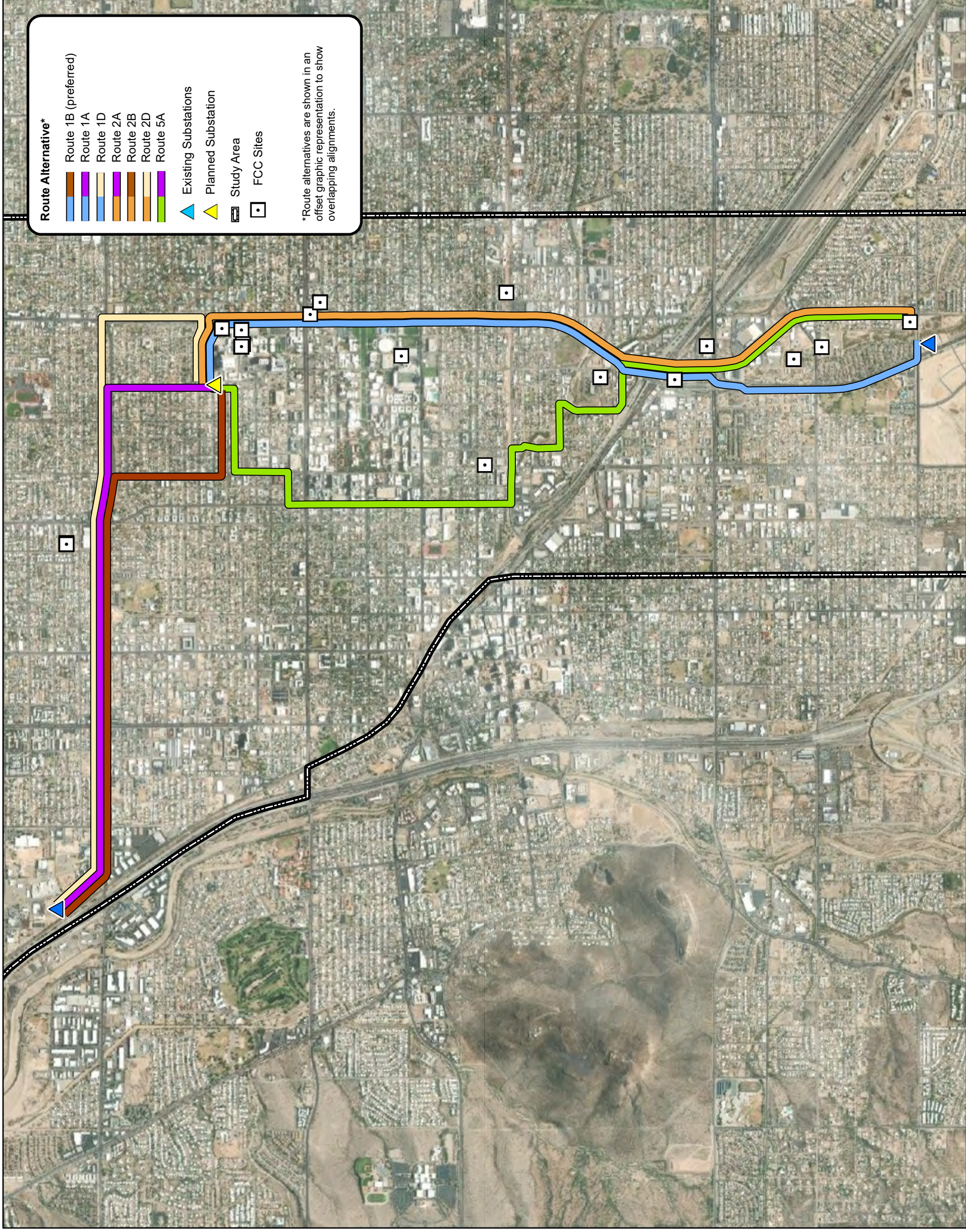
Exhibit I-1

Kino to DeMoss Petrie 138kV Transmission Line Project

FCC Tower Locations



Sources: ESRI, Tucson Electric Power, Pima County, City of Tucson, and Arizona State Land Department.
 Projection: NAD 1983 UTM Zone 12N
 Basemap: ESRI World Topographic Map
 This map is for planning purposes only. TEP and UNS Energy make no warranty of its accuracy.



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Application for a Certificate of Environmental Compatibility

**Kino to DeMoss-Petrie
138 Kilovolt Transmission Line Project**

Exhibit I-2

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Tucson Electric Power

Land Resources – RC131
3950 E. Irvington Road
Tucson, AZ. 85714-2114

Telephone: 520-305-6090

October 30, 2020

ALLTEL COMMUNICATIONS SOUTHWEST HOLDINGS, INC.
1120 Sanctuary Pkwy #150
Alpharetta GA 30009-7630

Subject: Kino to DeMoss-Petrie (DMP) 138-Kilovolt (kV) Transmission Line Project

Dear ALLTEL COMMUNICATIONS SOUTHWEST HOLDINGS, INC.,

Tucson Electric Power (TEP) is developing plans for a new transmission line that will strengthen electric reliability for customers in central Tucson, and help satisfy growing energy needs in our community. The Kino to DeMoss-Petrie (DMP) 138-Kilovolt (kV) Transmission Line (Project) will connect the existing Kino Substation to the existing DMP Substation and interconnect with the planned UA North Substation. Additional information about the project is available on TEP's website at the following location:

<https://www.tep.com/kino-to-demoss-petrie/>

TEP has identified you as a potential stakeholder in the Project. The Federal Communications Commission website or other source indicates that your organization owns an antenna structure or other communications equipment 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.

You are welcome to provide comments via email, to Kevin O'Brien at kevin.obrien@tep.com, or via letter addressed to:

Kevin O'Brien
Land Resources – RC131
3950 E. Irvington Road
Tucson, AZ. 85714-2114

Respectfully,

A handwritten signature in cursive script that reads "Kevin O'Brien".

Kevin O'Brien
Environmental and Land Use Planner
Tucson Electric Power Company, a Fortis Company

Enclosure: Map of preliminary route alternatives for the Project



Telephone: 520-305-6090

October 30, 2020

iHeartMedia Entertainment, Inc.
7136 S. Yale Avenue #501
Tulsa OK 74136

Subject: Kino to DeMoss-Petrie (DMP) 138-Kilovolt (kV) Transmission Line Project

Dear iHeartMedia Entertainment, Inc.,

Tucson Electric Power (TEP) is developing plans for a new transmission line that will strengthen electric reliability for customers in central Tucson, and help satisfy growing energy needs in our community. The Kino to DeMoss-Petrie (DMP) 138-Kilovolt (kV) Transmission Line (Project) will connect the existing Kino Substation to the existing DMP Substation and interconnect with the planned UA North Substation. Additional information about the project is available on TEP's website at the following location:

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Tucson, AZ. 85714-2114

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Environmental and Land Use Planner
Tucson Electric Power Company, a Fortis Company

Enclosure: Map of preliminary route alternatives for the Project



Tucson Electric Power

Land Resources – RC131
3950 E. Irvington Road
Tucson, AZ. 85714-2114

Telephone: 520-305-6090

October 30, 2020

CITY OF TUCSON IT DEPARTMENT
P.O. Box 27210
Tucson AZ 85727-7210

Subject: Kino to DeMoss-Petrie (DMP) 138-Kilovolt (kV) Transmission Line Project

Dear CITY OF TUCSON IT DEPARTMENT,

Tucson Electric Power (TEP) is developing plans for a new transmission line that will strengthen electric reliability for customers in central Tucson, and help satisfy growing energy needs in our community. The Kino to DeMoss-Petrie (DMP) 138-Kilovolt (kV) Transmission Line (Project) will connect the existing Kino Substation to the existing DMP Substation and interconnect with the planned UA North Substation. Additional information about the project is available on TEP's website at the following location:

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Tucson Electric Power Company, a Fortis Company

Enclosure: Map of preliminary route alternatives for the Project



Tucson Electric Power

Land Resources – RC131
3950 E. Irvington Road
Tucson, AZ. 85714-2114

Telephone: 520-305-6090

October 30, 2020

CRICKET LICENSE COMPANY, LLC
5887 Copley Drive
San Diego CA 92111

Subject: Kino to DeMoss-Petrie (DMP) 138-Kilovolt (kV) Transmission Line Project

Dear CRICKET LICENSE COMPANY, LLC,

Tucson Electric Power (TEP) is developing plans for a new transmission line that will strengthen electric reliability for customers in central Tucson, and help satisfy growing energy needs in our community. The Kino to DeMoss-Petrie (DMP) 138-Kilovolt (kV) Transmission Line (Project) will connect the existing Kino Substation to the existing DMP Substation and interconnect with the planned UA North Substation. Additional information about the project is available on TEP's website at the following location:

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Tucson, AZ. 85714-2114

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Environmental and Land Use Planner
Tucson Electric Power Company, a Fortis Company

Enclosure: Map of preliminary route alternatives for the Project



Tucson Electric Power

Land Resources – RC131
3950 E. Irvington Road
Tucson, AZ. 85714-2114

Telephone: 520-305-6090

October 30, 2020

GOOD NEWS BROADCASTING, INC.
7604 N La Cholla Blvd
Tucson AZ 85741

Subject: Kino to DeMoss-Petrie (DMP) 138-Kilovolt (kV) Transmission Line Project

Dear GOOD NEWS BROADCASTING, INC.,

Tucson Electric Power (TEP) is developing plans for a new transmission line that will strengthen electric reliability for customers in central Tucson, and help satisfy growing energy needs in our community. The Kino to DeMoss-Petrie (DMP) 138-Kilovolt (kV) Transmission Line (Project) will connect the existing Kino Substation to the existing DMP Substation and interconnect with the planned UA North Substation. Additional information about the project is available on TEP's website at the following location:

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Tucson, AZ. 85714-2114

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Environmental and Land Use Planner
Tucson Electric Power Company, a Fortis Company

Enclosure: Map of preliminary route alternatives for the Project



Tucson Electric Power

Land Resources – RC131
3950 E. Irvington Road
Tucson, AZ. 85714-2114

Telephone: 520-305-6090

October 30, 2020

ATT / NEW CINGULAR WIRELESS PCS, LLC
208 S. Akard St., RM 1015
Dallas TX 75202

Subject: Kino to DeMoss-Petrie (DMP) 138-Kilovolt (kV) Transmission Line Project

Dear ATT / NEW CINGULAR WIRELESS PCS, LLC,

Tucson Electric Power (TEP) is developing plans for a new transmission line that will strengthen electric reliability for customers in central Tucson, and help satisfy growing energy needs in our community. The Kino to DeMoss-Petrie (DMP) 138-Kilovolt (kV) Transmission Line (Project) will connect the existing Kino Substation to the existing DMP Substation and interconnect with the planned UA North Substation. Additional information about the project is available on TEP's website at the following location:

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Enclosure: Map of preliminary route alternatives for the Project



Tucson Electric Power

Land Resources – RC131
3950 E. Irvington Road
Tucson, AZ. 85714-2114

Telephone: 520-305-6090

October 30, 2020

SIMPLY BITS, LLC
5225 N Sabino Canyon Rd
Tucson AZ 85750

Subject: Kino to DeMoss-Petrie (DMP) 138-Kilovolt (kV) Transmission Line Project

Dear SIMPLY BITS, LLC,

Tucson Electric Power (TEP) is developing plans for a new transmission line that will strengthen electric reliability for customers in central Tucson, and help satisfy growing energy needs in our community. The Kino to DeMoss-Petrie (DMP) 138-Kilovolt (kV) Transmission Line (Project) will connect the existing Kino Substation to the existing DMP Substation and interconnect with the planned UA North Substation. Additional information about the project is available on TEP's website at the following location:

<https://www.tep.com/kino-to-demoss-petrie/>

TEP has identified you as a potential stakeholder in the Project. The Federal Communications Commission website or other source indicates that your organization owns an antenna structure or other communications equipment 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.

You are welcome to provide comments via email, to Kevin O'Brien at kevin.obrien@tep.com, or via letter addressed to:

Kevin O'Brien
Land Resources – RC131
3950 E. Irvington Road
Tucson, AZ. 85714-2114

Respectfully,

A handwritten signature in cursive script that reads "Kevin O'Brien".

Kevin O'Brien
Environmental and Land Use Planner
Tucson Electric Power Company, a Fortis Company

Enclosure: Map of preliminary route alternatives for the Project



Tucson Electric Power

Land Resources – RC131
3950 E. Irvington Road
Tucson, AZ. 85714-2114

Telephone: 520-305-6090

October 30, 2020

SBA Towers X, LLC
8051 Congress Avenue
Boca Raton FL 33487

Subject: Kino to DeMoss-Petrie (DMP) 138-Kilovolt (kV) Transmission Line Project

Dear SBA Towers X, LLC,

Tucson Electric Power (TEP) is developing plans for a new transmission line that will strengthen electric reliability for customers in central Tucson, and help satisfy growing energy needs in our community. The Kino to DeMoss-Petrie (DMP) 138-Kilovolt (kV) Transmission Line (Project) will connect the existing Kino Substation to the existing DMP Substation and interconnect with the planned UA North Substation. Additional information about the project is available on TEP's website at the following location:

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Environmental and Land Use Planner
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Enclosure: Map of preliminary route alternatives for the Project



Tucson Electric Power

Land Resources – RC131
3950 E. Irvington Road
Tucson, AZ. 85714-2114

Telephone: 520-305-6090

October 30, 2020

T-MOBILE WEST CORPORATION
12920 SE 38th Street
Bellevue WA 98006

Subject: Kino to DeMoss-Petrie (DMP) 138-Kilovolt (kV) Transmission Line Project

Dear T-MOBILE WEST CORPORATION,

Tucson Electric Power (TEP) is developing plans for a new transmission line that will strengthen electric reliability for customers in central Tucson, and help satisfy growing energy needs in our community. The Kino to DeMoss-Petrie (DMP) 138-Kilovolt (kV) Transmission Line (Project) will connect the existing Kino Substation to the existing DMP Substation and interconnect with the planned UA North Substation. Additional information about the project is available on TEP's website at the following location:

<https://www.tep.com/kino-to-demoss-petrie/>

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Kevin O'Brien
Land Resources – RC131
3950 E. Irvington Road
Tucson, AZ. 85714-2114

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Kevin O'Brien
Environmental and Land Use Planner
Tucson Electric Power Company, a Fortis Company

Enclosure: Map of preliminary route alternatives for the Project



Tucson Electric Power

Land Resources – RC131
3950 E. Irvington Road
Tucson, AZ. 85714-2114

Telephone: 520-305-6090

October 30, 2020

UNIVERSITY OF ARIZONA - UITS
1077 N. Highland Ave.
Tucson AZ 85721

Subject: Kino to DeMoss-Petrie (DMP) 138-Kilovolt (kV) Transmission Line Project

Dear UNIVERSITY OF ARIZONA - UITS,

Tucson Electric Power (TEP) is developing plans for a new transmission line that will strengthen electric reliability for customers in central Tucson, and help satisfy growing energy needs in our community. The Kino to DeMoss-Petrie (DMP) 138-Kilovolt (kV) Transmission Line (Project) will connect the existing Kino Substation to the existing DMP Substation and interconnect with the planned UA North Substation. Additional information about the project is available on TEP's website at the following location:

<https://www.tep.com/kino-to-demoss-petrie/>

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You are welcome to provide comments via email, to Kevin O'Brien at kevin.obrien@tep.com, or via letter addressed to:

Kevin O'Brien
Land Resources – RC131
3950 E. Irvington Road
Tucson, AZ. 85714-2114

Respectfully,

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Kevin O'Brien
Environmental and Land Use Planner
Tucson Electric Power Company, a Fortis Company

Enclosure: Map of preliminary route alternatives for the Project



Tucson Electric Power

Land Resources – RC131
3950 E. Irvington Road
Tucson, AZ. 85714-2114

July 19, 2021

Telephone: 520-305-6090

APC Towers, LLC
Attention To: Daniel C. Agresta, III
8601 Six Forks Road
Suite 250
RALEIGH , NC 27615

Subject: Kino to DeMoss-Petrie (DMP) 138-Kilovolt (kV) Transmission Line Project

Dear Mr. Agresta,

Tucson Electric Power (TEP) is developing plans for a new transmission line that will strengthen electric reliability for customers in central Tucson, and help satisfy growing energy needs in our community. The Kino to DeMoss-Petrie (DMP) 138-Kilovolt (kV) Transmission Line (Project) will connect the existing Kino Substation to the existing DMP Substation and interconnect with the planned UA North Substation. Additional information about the project is available on TEP's website at the following location:

<https://www.tep.com/kino-to-demoss-petrie/>

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3950 E. Irvington Road
Tucson, AZ. 85714-2114

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Kevin O'Brien
Environmental and Land Use Planner
Tucson Electric Power Company, a Fortis Company

Enclosure: Map of preliminary route alternatives for the Project

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EXHIBIT J

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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-2
J.2.1 Jurisdictional and Other Stakeholder Briefings and Workshops	J-3
J.2.2 Jurisdictional and Other Stakeholder Summaries	J-11
J.2.2.1 Federal	J-11
J.2.2.2 State	J-11
J.2.2.3 Local	J-12
J.2.2.4 Other Stakeholders	J-15
J.2.3 Community Working Group.....	J-16
J.2.4 News Media	J-21
J.2.5 Newsletters/Postcards/Fact Sheets.....	J-22
J.2.6 Public Open House.....	J-23
J.2.7 Telephone Information Line	J-23
J.2.8 Internet Website.....	J-24
J.2.9 Comment Tracking Database.....	J-24
J.3 Comments Received	J-24
J.4 Social Media.....	J-26

J.1 Introduction

The Project will consist of building a new 138 kV transmission line totaling 7.2 to 8.1 miles in length, depending on the alternative approved, to connect the existing Kino Substation to the existing DMP Substation. The Project will interconnect to the planned Vine 138 kV Substation. The Project will cross private, USPS, COT, Arizona Board of Regents, and Pima County (Alternative Route 5A only) owned land, as well as COT road ROW. Seven preliminary route alternatives have been identified, resulting from line siting studies, analysis, and a public participation process that began in 2019. The proposed alternative routes are identified as Route 1A, 1B, 1D, 2A, 2B, 2D, and 5A and are described in Section B.1-4 of the application. Route 1B is the preferred route. The new line will be built with a combination of galvanized

(36th Street to Grant Road) and self-weathering steel (Grant Road to DMP Substation) monopoles ranging from 75 to 120 feet above ground, with the taller structures required for site specific clearance issues.

A public involvement program was initiated in September 2019 and continued beyond the filing of this application in August 2021 to notify and inform the public, agencies, public officials, community leaders, and other affected stakeholders about the Project.

J.2 Public Involvement Program Summary

Public participation is an important part of TEP's environmental planning and siting process. Public involvement and communications activities were conducted to inform the public of the need and benefits of the Project and to solicit public input.

The public planning process was intended to ensure effective and timely communication among TEP staff, the public, agencies, and stakeholders. TEP used several different public outreach efforts to inform affected members of the community in the study area. Those efforts included:

- Briefings with public officials, community leaders, agencies, and jurisdictions
- Two stakeholder workshops and ongoing email correspondence
- Individual stakeholder meetings with UArizona, Banner Hospital, Pima County Wastewater, TDOT
- Six CWG Meetings (October 9, 2019; December 19, 2019; February 12, 2020; August 20, 2020; October 5, 2020, June 23, 2021)
- Two In- Person Public Open House Meetings (October 22, 2019; October 23, 2019) (same meeting held at two different locations; north and south)
- Online Project Update (April 17, 2020)
- Three Virtual Public Open House Meetings (August 13, 2020; October 6, 2020; June 24, 2021)
- Tools:
 - Two newsletter mailings, including comment forms, four postcards, and a mailer
 - Project telephone information line in English and Spanish
 - Project email address
 - Project-specific webpage on TEP's Internet website <https://www.tep.com/kino-to-demoss-petrie/> including an online comment form
 - Facebook and Instagram advertisements were posted preceding two of the public Open Houses (Section J.4)

The outreach effort was designed to offer interested parties an opportunity to gain information and provide input. Throughout the planning process, the public was provided the opportunity to review and comment on the Project. The various methods of communication and public interaction listed above are explained in detail below.

As a result of the COVID-19 pandemic, TEP had to adjust its outreach process from in-person meetings to a virtual setting. From March 2020 on, all stakeholder interactions were conducted via email and Teams meetings. CWG meetings switched to a Zoom meeting format.

The August 13, 2020, and October 6, 2020, Public Virtual Open House meetings were broadcast live on YouTube and through the Project webpage using a professional broadcasting company.

J.2.1 Jurisdictional and Other Stakeholder Briefings and Workshops

In order to introduce the Project, provide project updates, and gauge the level of stakeholder concern, individual briefings were conducted with key individuals representing the local jurisdictions and various agencies. TEP developed a Master List of Stakeholders (jurisdictions, agencies, utilities, etc.) that received all Project meeting invitations, notices, and updates (Exhibit J-1). At Stakeholder briefings, TEP representatives explained the purpose and need of the Project, provided the Project’s description and the environmental siting process, and asked for suggestions and opinions. In return, the stakeholders provided TEP with concerns and input on sensitive resources within the Project study area.

In addition, TEP offered two workshops with stakeholders. The first stakeholder meeting was held in conjunction with the first CWG meeting on October 9, 2019, at TEP’s Headquarters (HQ) in Tucson at 88 E. Broadway Boulevard. TEP invited 172 representatives from jurisdictions, agencies, organizations, and the CWG. Thirty-seven individuals attended (see Exhibit J-2 for the Stakeholder/CWG Meeting #1 sign-in sheets). The first stakeholder/CWG meeting covered an overview of the Project, the preliminary study area, the role of the Arizona Corporation Commission and Line Siting Committee in the process, and the results of TEP’s initial analysis that established a purpose and need for the Project. The group received a meeting package with a copy of the PPT and additional handouts (Exhibit J-3), and discussed opportunities and constraints for the Project.

The second stakeholder meeting was held on December 4, 2019, at HQ. TEP invited 37 agency and organizational stakeholders, and 13 individuals attended (see Exhibit J-4 for sign-in sheets). TEP representatives provided an overview of the Project, the stakeholder role, and preliminary alternative links (see Exhibit J-5); responded to questions posed after the first meeting; and reviewed next steps (see Exhibit J-6 for the PowerPoint presentation, and Exhibit J-7 for notes from Stakeholder Meeting #2).

Jurisdictional and Other Stakeholder notifications and their level of participation are listed in Table 27.

Table 27. Stakeholder List and Participation Level

Agency/Organization	Name	Areas of Interest/Title	Level of Participation
US Elected Officials/Staff			
U.S. Senator	Hector Reyes	Constituent Affairs Representative for Senator Kyrsten Sinema	Briefed, Stakeholder Meeting 1 & 2
U.S. Senator	Meghann Tatz	Staffer for Senator Sinema	Briefed, Stakeholder Meeting 1 & 2
U.S. Senator	Michelle Davidson	Chief of Staff for Senator Sinema	Noticed
U.S. Senator	CJ Karamargin	District Director for Senator McSally	Noticed

Agency/Organization	Name	Areas of Interest/Title	Level of Participation
U.S. Representative	Ruben Reyes	Senior District Advisor to Congressman Raúl Grijalva/ District 3	Briefed; Noticed; See Congressman Grijalva's response letter in Exh J-8
U.S. Representative	Ron Barber	Congresswoman Ann Kirkpatrick/ District 2	Noticed
State Elected Officials/Staff			
Arizona Governor's Office	Becky Barry, Southern Arizona Deputy Director for Governor Ducey	Governor Doug Ducey	Noticed
Arizona Corporation Commissioners and Policy Staff	Elijah Abinah	Utilities Director	Noticed
Arizona Senator	Andrea Dalessandro	District 2	Briefed; Noticed
Arizona Representative	Daniel Hernandez	District 2	Noticed
Arizona Representative	Rosanna Gabaldón	District 2	Noticed
Arizona Senator	Sally Ann Gonzales	District 3	Noticed
Arizona Representative	Andres Cano	District 3	Noticed
Arizona Representative	Alma Hernandez	District 3	Noticed
Arizona Senator	Victoria Steele	District 9	Briefed; RSVP Stakeholder Meeting 1; Noticed
Arizona Representative	Randall Friese	District 9	Noticed
Arizona Representative	Pamela Powers Hannley	District 9	Noticed
Arizona Senator	Dave Bradley	District 10	Noticed
Arizona Representative	Domingo DeGrazia	District 10	Noticed
Arizona Representative	Kirsten Engel	District 10	Noticed
County Officials/Staff			
Pima County	Chuck Huckelberry	County Administrator	Noticed
Pima County	Carmine DeBonis, Jr.	Deputy County Administrator	Noticed

Agency/Organization	Name	Areas of Interest/Title	Level of Participation
Pima County	Tom Burke	Deputy County Administrator	Noticed
Pima County	Jan Leshar	Chief Deputy County Administrator	Noticed
Pima County	Ana Olivares	Director, Pima County Department of Transportation	Noticed
Pima County	Carla Blackwell	Director, Development Services	Noticed
Pima County	Ramon Valadez	Supervisor, District 2	Noticed
Pima County	Sharon Bronson	Supervisor, District 3	Noticed. Exh J-9
Pima County	Steve Christy	Supervisor, District 4	Noticed
Pima County	Betty Villegas	Supervisor, District 5	Noticed; Briefed
Pima County	Nahrin Jabro	Aide, District 5	Noticed; Stakeholder Meeting 1
Pima County	Amanda Monroy	Aide, District 5	Noticed; Stakeholder Meeting 1
Pima County	Keith Bagwell	Aide, District 5	Noticed; Stakeholder Meeting 1
Pima County	Diana Durazo	County Administrator Staff	Noticed
Pima County	Caroline Vargas	Community Relations Pima County Regional Wastewater Reclamation Department	Noticed
Pima County	Greg Hitt	Program Manager for Planning and Utility Coordination	Noticed
Pima County	Karen Simms	Natural Resources, Parks, and Recreation	Noticed
Pima County	Sherry Ruther	Environmental Planning Manager	Stakeholder Meeting 1
Pima County	Kent McRae	Regional Wastewater Reclamation Department	Noticed
Pima County	Sandi Garrick	Utility Liasion	Noticed; Briefed; Stakeholder Meeting 1&2
Pima County	Gerald Thomas Coyle	Program Manager	Stakeholder Meeting 1
Pima County	Robert Johnson	Pima County Dept of Transportation	Stakeholder Meeting 1
Pima County	Janice Hughes	Pima County Regional Flood Control District	Email correspondence Exh J-10

Agency/Organization	Name	Areas of Interest/Title	Level of Participation
<i>City Elected Officials/Staff</i>			
City of Tucson	Michael Ortega	City Manager	Noticed
City of Tucson	Regina Romero	Mayor	Noticed
City of Tucson	Fatima Luna	Environmental and Sustainability Policy Advisor for Mayor Romero	Noticed
City of Tucson	Diana Alarcon	Director, Dept of Transportation	Noticed, TDOT Meetings Exh J-11
City of Tucson	Michael Catanzaro	Energy Manager	Noticed; Stakeholder Meeting 1
City of Tucson	Jaimie Galayda	Lead Planner, Tucson Water Public Information and Conservation Office	Noticed
City of Tucson	Mike Graham	Public Information Officer, Dept of Transportation	Noticed
City of Tucson	Scott Clark	Director, Planning and Development Services Department	Noticed
City of Tucson	John Beall	Senior Planner, Planning and Development Services Dept	
City of Tucson	Brent Dennis	Parks & Recreation	Noticed
City of Tucson	Tom Fisher	Project Manager –formerly, Dept of Transportation; currently, Parks and Recreation	Stakeholder Meeting 1
City of Tucson – Ward 1	Lane Santa Cruz	Councilmember, Ward 1	Noticed
City of Tucson – Ward 1	Andres Portela	Councilmember, Ward 1	Noticed
City of Tucson – Ward 1	Jasmine Rucker	Director of Planning and Community Development	Noticed
City of Tucson – Ward 1	Antonio Ramirez	Chief of Staff	Noticed
City of Tucson – Ward 2	Paul Cunningham	Councilmember, Ward 2	Noticed
City of Tucson – Ward 2	Katie Bolger	Chief of Staff	Noticed
City of Tucson – Ward 3	Paul Durham	Councilmember, Ward 3	Noticed
City of Tucson – Ward 3	Matt Kopec	Staff	Noticed; Stakeholder Meeting 1

Agency/Organization	Name	Areas of Interest/Title	Level of Participation
City of Tucson – Ward 4	Nikki Lee	Councilmember, Ward 4	Noticed
City of Tucson – Ward 4	Teresa Smith	Chief of Staff	Noticed
City of Tucson – Ward 5	Richard Fimbres	Councilmember, Ward 5	Noticed
City of Tucson – Ward 5	Mark Kerr	Chief of Staff	Noticed
City of Tucson – Ward 6	Ann Charles	Chief of Staff	Noticed
City of Tucson – Ward 6	Steve Kozachik	Councilmember, Ward 6	Noticed, Ward Newsletters
City of Tucson – Ward 6	Crystal Dillahunt	Ward 6 Council Staff	Noticed; CWG Meetings
City of Tucson	Claire Kaufman	Ward 6 Council Staff	Noticed; Stakeholder Meeting 1
City of Tucson	Jodie Brown	Historic Preservation Officer, Planning and Development Services	Noticed
Tucson Water	Dean Trammel	Civil Engineer	Noticed
Tucson Water	James MacAdam	Public Information and Conservation Superintendent	Noticed
Stakeholder Organizations			
Arizona Dept. of Transportation	Rod Lane	District Engineer	Noticed
Arizona Department of Transportation	Priscilla Thompson	Utility Engineering Coordinator	Noticed
Banner Health	Herman Johannsmeyer	Area Director-Facilities Operations	
Banner Health	Steve Eiss	Design and Construction Project Executive Senior Director	Noticed; Briefed
Banner Health	Kristian Watkins	Design and Construction Project Executive Senior Manager	Noticed
Banner Health	Dan Dupaix	Design and Construction Project Executive Senior Consultant	Noticed; Stakeholder Meeting 1
Banner Health	Todd Mencke	Facilities Ops, Senior Manager	Noticed
DMAFB-355 CES/CENP	Joel Borgan	Major USAF ACC 55 ROS/OGV	Noticed, Email Corr. Exh J-12

Agency/Organization	Name	Areas of Interest/Title	Level of Participation
El Paso Natural Gas	Kelley Sims	Land Department	
Kinder Morgan	Randall Kimball		Noticed; RSVP Stakeholder Mtg. 1
Kinder-Morgan Energy Partners	A. Dianne Sidorewicz	Engineering Administrator	Noticed
Kinder Morgan	Brice Box	Right of Way Specialist	Noticed
Kinder Morgan	Glen Reed	Operator	Noticed
Kinder Morgan	Scott Ward	Manager	Noticed
Kinder Morgan	Kevin Otto	Corrosion Supervisor	Noticed
Kinder Morgan	Jeremiah Nickless		Noticed
Kinder Morgan	Milo Francese	Line Rider	Noticed
Metropolitan Pima Alliance	Allyson Solomon	Director	Noticed
Union Pacific Railroad	Renay Robison	Real Estate Manager	Noticed
Union Pacific Railroad	Bradley Givens	Manager, Track Maintenance	Noticed
Union Pacific Railroad	Gunner Fowler	Superintendent of Transportation and Train Operations	Noticed
Union Pacific Railroad	Casey Moore	Public Projects Manager II	Email Correspondence Exh J-13
University of Arizona	Christopher Kopach	Assistant Vice President	Noticed
University of Arizona	Robert R. Smith	Vice President for University Planning, Design and Operations	Noticed, Support Letter Exh J-14
University of Arizona	Mark St. Onge	Director, Utility Services	Noticed; Stakeholder Meeting 1
University of Arizona	Chris Sigurdson	Vice President Communications	Noticed; Stakeholder Meeting 1
University of Arizona	Pam Scott	Associate Vice President, Communications	Noticed
Pima Association of Governments	Sheila Storm	Communications Director	Noticed
Southwest Gas	Steve Sousa	Right of Way Analyst	Noticed; Stakeholder Meeting 1
Southwest Gas	Hector Rivas Cabrera	Engineer II	Noticed; Stakeholder Meeting 1, Letters Exh J-15
Southwest Gas	Randy Cheney	Franchise Engineer	Noticed; RSVP Stakeholder Meeting 1
Community Working Group (confirmed)*			

Agency/Organization	Name	Areas of Interest/Title	Level of Participation
Barrio Blue Moon	Tina Cole	President	Email newsletters; CWG in-person and virtual meetings
Barrio San Antonio	Grady Bautista	President	Email newsletters; CWG in-person and virtual meetings
Blenman Elm	Dale Keyes	Representative	Email newsletters; CWG in-person and virtual meetings
Catalina Vista	Dave Sunderman	Representative	Email newsletters; CWG in-person and virtual meetings
Dunbar Springs	Karen Greene	President	Email newsletters; CWG in-person and virtual meetings
Feldman's	Sarah Harris		Email newsletters; CWG in-person and virtual meetings
Hedrick Acres	Glenn Perkins	Co-Chair	Email newsletters; CWG in-person and virtual meetings
Iron Horse	Dan Dempsey	Representative	Email newsletters; CWG in-person and virtual meetings
Jefferson Park	Colleen Nichols	President	Email newsletters; CWG in-person and virtual meetings
Jefferson Park	Joan Daniels	Alternate	Email newsletters; CWG in-person and virtual meetings
Pueblo Gardens	Cindy Ayala	President	Email newsletters; CWG in-person and virtual meetings
Pueblo Gardens	Robert Ayala	Alternate	Email newsletters; CWG in-person and virtual meetings
Rincon Heights	Barbara Homan	Representative	Email newsletters; CWG in-person and virtual meetings
Sugar Hill	Armando Vargas Jr	Treasurer	Email newsletters; CWG in-person and virtual meetings
Sugar Hill	Leona Davis	Alternate	Email newsletters; CWG in-person and virtual meetings

Agency/Organization	Name	Areas of Interest/Title	Level of Participation
Sam Hughes	Penny Simms	Representative	Email newsletters; CWG in-person and virtual meetings
Sam Hughes	Nancy DeFeo	Alternate	Email newsletters; CWG in-person and virtual meetings
Samos	Barbara (Bam) Miller	President	Email newsletters; CWG in-person and virtual meetings
Santa Rita Park (Barrios Santa Rita)	Angela M. Quiroz	President	Email newsletters; CWG in-person and virtual meetings
South Park	Sara L. O'Neil	Co-Chair	Email newsletters; CWG in-person and virtual meetings
South Park	Earl O'Neil	Alternate	Email newsletters; CWG in-person and virtual meetings
West University	Judy Sensibar	President	Email newsletters; CWG in-person and virtual meetings
West University	Rick McDonnell	Alternate	Email newsletters; CWG in-person and virtual meetings
City of Tucson	John Beall	Senior Planner	Email newsletters; CWG in-person and virtual meetings
City of Tucson	Matt Kopec	Ward 3	Email newsletters; CWG in-person and virtual meetings
City of Tucson	Crystal Dillahunt	Ward 6	Email newsletters; CWG in-person and virtual meetings
City of Tucson	Jodie Brown	Historic Preservation Officer	Email newsletters; CWG in-person and virtual meetings
Banner Health	Todd Mencke	Facilities Ops, Senior Manager	Email newsletters; CWG in-person and virtual meetings
Pima Community College	David Davis	Energy Resource Manager	Email newsletters; CWG in-person and virtual meetings; Exh J-16

Agency/Organization	Name	Areas of Interest/Title	Level of Participation
University of Arizona	Chris Kopach	Asst. Vice President	Email newsletters; CWG in-person and virtual meetings
University of Arizona	Mark St. Onge	Alternate	Email newsletters; CWG in-person and virtual meetings
Tucson Historic Preservation Foundation	Demion Clinco	President	Email newsletters; CWG in-person and virtual meetings
Tucson Unified School District	Tina Cook	Energy Project Manager	Email newsletters; CWG in-person and virtual meetings

* Attendance at Stakeholder meetings reflected information gathering for respective agencies, from which they could form a response to TEP. Attendance at the CWG meetings remained strong throughout, reflecting the continued interest of neighborhoods in representing residential voices from their areas and the ability to take new information and responses back to their neighborhoods from TEP.

J.2.2 Jurisdictional and Other Stakeholder Summaries

J.2.2.1 Federal

Department of Defense Davis Monthan Air Force Base

TEP discussed the Project with DMAFB on August 10, August 17, and August 24, 2020. DMAFB indicated that new transmission lines would not adversely affect helicopter operations at DMAFB. Their initial concern was whether the Project would impact helicopter emergency medical services. They later determined there would be no impact (see correspondence in Exhibit J-12).

United States Congress, Arizona 3rd Congressional District, Congressman Raul Grijalva

Congressman Grijalva commented to TEP by letter (Exhibit J-8) on September 21, 2020, expressing concerns about the line siting process and alternative routes for public review. He stated that if the project were to move forward, the least intrusive route with fewest impacts should be favored. Grijalva expressed a concern about the cost of undergrounding and who might bear that cost.

J.2.2.2 State

Arizona Board of Regents

ASLD holds land in trust for the Arizona Board of Regents, which administers land for UArizona. ASLD did not comment on the project. See UArizona comments below for any comments related to the Arizona Board of Regents.

University of Arizona

On September 18, 2020, a letter from VP Smith was submitted to TEP, stating UArizona's neutral position on routes serving the Vine Substation, deferring to the TEP Line-Siting route evaluation criteria (Exhibit J-14).

J.2.2.3 Local

Pima County

TEP has engaged in discussions with Pima County by email regarding the Project starting in September 2019. A number of Pima County staff have attended stakeholder workshops. At the second Stakeholder meeting (December 4, 2019) Pima County voiced concerns regarding visual impacts to Kino Parkway. Pima County Wastewater Management expressed concerns regarding the need to avoid impacts to Quincie Douglas Center and developments nearby. After a review of alternative routes, the Pima County Regional Flood Control District (PCRFCDD) engaged TEP by email on June 8, 2020, and June 9, 2020. PCRFCDD expressed concern for potential impacts to the Pima County/Army Corps of Engineers TDAP Project including potential impacts to Jurisdictional Dams or the Park Avenue/Cherry Field basins. Any potential impacts would be dependent upon the placement of poles. Construction within the Arroyo Chico boundaries will require a USACE Section 408 permit and may require a habitat restoration plan per Pima County (see correspondence in Exhibit J-10).

District 2

Supervisor Dr. Matt Heinz and staff met with TEP on February 1, 2021, to be briefed on the Project. TEP representatives provided a Project overview, which included: purpose and need, project scope, public outreach and next steps.

District 3

Chair Sharon Bronson and staff met virtually with TEP on November 9, 2020, to be briefed on the Project. TEP representatives provided a Project overview, which included: purpose and need, project scope, public outreach and next steps. The Supervisor expressed concern for passing undergrounding cost differentials to TEP ratepayers. Prior to this meeting, the Supervisor and staff were briefed by TEP email notification on September 12, 2019. Ms. Bronson also provided a letter on July 22, 2021, indicating her support for the Project and expressing her concerns that cost of undergrounding the line would be passed on to low-income families, small businesses and other customers who would not directly benefit from the underground installation of this Project (Exhibit J-9).

District 5

(Then) Chairman Richard Elias met with TEP on October 3, 2019, to be briefed on the Project. TEP representatives provided a Project overview, which included: purpose and need, project scope, the public outreach process, and next steps. Prior to this meeting, the Supervisor and staff were briefed by TEP email notification on September 12, 2019.

Newly elected Supervisor Adelita Grijalva and staff met with TEP in March 2021 to be briefed on the Project. TEP representatives provided a Project overview, which included: purpose and need, project scope, the TEP underground study, public outreach, and next steps.

City of Tucson

COT Manager Michael Ortega was briefed by email on all Project stakeholder/CWG updates since September 11, 2019. Subsequent follow-up included the City Manager's appointment of John Beall from

the COT Planning and Development Services Department (PDS) to the CWG, as an expert in the Special Exception permitting process.

COT Planning and Development Services was a member of the CWG. PDS indicated that TEP would need to apply for ROW use permits for new transmission line construction, individually approved site permits as needed (e.g., Floodplain Use), as well as a special exception land use permit for a proposed substation. They indicated no concern related to any of the Project alternative routes.

COT Department of Transportation responded on March 31, 2020, to questions from TEP, stating the following concerns:

- A possible Move Tucson streetcar extension route connecting to Campbell may be in initial design phase after December 2020
- TEP may need to attain sidewalk easements on adjacent properties
- ADA compliance and accessibility is required for sidewalks
- Requesting continued coordination with TEP regarding multiple current and future roadway improvement projects

Tucson Water indicated the need for the transmission line to remain as distant as possible from their 48" water main

Tucson Unified School District (TUSD) is part of the CWG, and has attended CWG meetings. TUSD institutions make up a portion of the thirty-nine educational stakeholders within the project area, some of whom sent comments to TUSD Administration to add to TUSD response to TEP's proposed Kino to DeMoss Petrie transmission line project. Tucson High School commented that they were not in favor of the proposed Alternative Route along Euclid Avenue because of space limitation along school property on that street. Euclid has been eliminated from consideration. Miles Elementary and Middle School presented concerns for space limitation of school property along Broadway Boulevard and Highland Ave, although there is no proposed alternative route in that area. Borton Elementary School commented that there was a concern for limited space along school property at 22nd Street and Tyndall Avenue, however, no proposed alternative route was carried forward at that location.

COT Mayor and Council

All COT Mayor and Ward Offices 1, 3, 5, and 6 were briefed by email on all Project stakeholder/CWG updates since September 11, 2019. The COT Mayor's Office and Ward Offices 1, 3, 5, and 6 are stakeholders and participants in the CWG. Mayor and Council have received ongoing briefings and project updates from the Project team and have publicly discussed the Project at two Mayor and Council Study Session meetings. Council members (CM) Kozachik and Uhlisch have also written about the Project in their newsletters, and CM Kozachik has commented on the Project via various news outlets.

Mayor and Council Study Sessions to discuss the Project were held on March 3, 2020 (Exhibit J-18), and November 4, 2020 (Exhibit J-18). At the March 3, 2020, Study Session, TEP Local Affairs Representative Adriana Mariñez and Director of Transmission Development Ed Beck presented to the COT Mayor and Council to provide an overview of the project and public outreach processes. The November 4, 2020, Study Session included a presentation from TEP CEO Susan Gray, who provided a project overview, reviewed the project's purpose and need, the route selection process, public outreach, and next steps. Ms. Gray

also answered questions related to undergrounding the transmission line, Vine Substation, and UArizona's clean energy plan.

COT Mayor Romero and staff were briefed by TEP in meetings and by email. A briefing occurred on Sept. 10, 2019, in which (then Ward 1 Council Member Romero) was briefed on the Project purpose and need, project scope, public outreach, and next steps. Council Member Romero recommended TEP solicit feedback and include neighborhood coalitions in TEP's CWG, instead of individual neighborhood associations, in order to keep the CWG small and productive.

On October 15, 2020, Mayor Romero met with TEP's Dave Hutchens and Susan Gray. A project update was provided on public outreach and above-ground alternative routes. Mayor Romero invited Susan Gray to present at the November 4, 2020, Mayor and Council Study Session meeting. On May 26, 2021, Mayor Romero met with TEP's Susan Gray and Steven Eddy. A project update was provided on TEP's preferred route, undergrounding options, visual simulations and public outreach efforts.

At the request of Mayor Romero's staff, TEP created a Spanish webpage for the Project. TEP also translated other Project communication into Spanish and provided a phone line for Spanish speakers with questions or comments concerning the project.

Note: Ward offices 1, 3, 5, and 6 were briefed by email on all Project stakeholder/CWG updates since September 11, 2019. Ward offices 2 and 4 (outside the Study Area) received more infrequent Project updates.

Ward 1

Council Member Lane Santa Cruz and staff were briefed on August 6, 2020. A project overview was provided including a description of the Project and the purpose and need. The project scope and public outreach process were discussed along with next steps.

Ward 2

Ward 2 mentioned the project in newsletters on September 27, 2019, and in January 2020.

Ward 3

Council Member Paul Durham was briefed on September 23, 2019. A project overview was provided and included information on the Project's purpose and need, study area, public outreach process, and next steps. Council Member Durham requested the CWG member list and that TEP attend an upcoming Grant Road Coalition meeting in order to brief the Coalition group on the Project. TEP also received an email from Council Member Durham on March 6, 2020, stating his disappointment that potential links had been removed that would make the transmission line "most certainly" traverse the Jefferson Park Neighborhood (Exhibit J-19). On June 24, 2021, Ward 3 Council Aide and CWG Member Matt Kopec met with TEP to be briefed on TEP's preferred route, visual simulations, the CEC Application process, and next steps.

Ward 3 newsletters mentioned the Project on March 6, 2020, August 7, 2020, and October 2, 2020.

Ward 4

Council Member Nikki Lee and staff were briefed on February 12, 2020. A project overview was provided and included the purpose and need, project study area, and public outreach process, along with next steps. On June 23, 2021, Ward 4 Chief of Staff Teresa Olson and Community Engagement Project Manager Martha Cantrell met with TEP for project updates related to TEP's preferred route, visual simulations, the CEC application process, and next steps.

Ward 5

Council Member Richard Fimbres and staff were briefed on September 19, 2019. A project overview was provided and included the purpose and need, project study area, and public outreach process, along with next steps. On June 25, 2021, Council Member Fimbres and staff met again with TEP to receive project updates and be briefed on TEP's preferred route, visual simulations, undergrounding options, and the CEC Application process.

Ward 6

Council Member Steve Kozachik and staff were briefed on September 10, 2019. A project overview was provided and included the purpose and need. The project study area, public outreach process, and next steps were discussed. Council Member Kozachik requested a map of TEP 46 kV substations that were nearing retirement, and also requested that the public meeting in the north portion of the study area be held at Ward 6. On June 23, 2021, TEP briefed Council Member Kozachik and staff and provided TEP's preferred route, visual simulations, undergrounding discussions, and the CEC application process.

Ward 6 Tucson City Council Member Steve Kozachik regularly published information about his opinions of the Project in his newsletters dated September 23, 2019, October 21, 2019, January 21, 2020, January 27, 2020, March 2, 2020, August 10, 2020, October 5, 2020, October 12, 2020, November 9, 2020, December 28, 2020, June 21, 2021, and June 28, 2021.

Additional briefings offered

Briefings were also offered but declined by (then) Mayor Rothschild, Council Member Cunningham (Ward 2) and (then) Council Member Scott (Ward 4), project information provided via email (September 2019).

J.2.2.4 Other Stakeholders

Pima Community College

Pima Community College (PCC) is a stakeholder, and part of the CWG. A summary of correspondence is in Exhibit J-16.

Southwest Gas

Southwest Gas Corporation (SWGAs) has indicated in a letter dated March 9, 2020, and another on October 26, 2020, that their main concern is focused on potential for impacts from design voltage on corrosion protection of the SWGas steel system. SWGas stated, similarly in their letters, that they would not conduct studies as they do not recognize the reference area to be seismic, and that they will expect to receive future submittals and final plans to continue verification of their finding (Exhibit J-15).

Banner – University Medical Center (UMC)

TEP met with Banner representatives several times over the course of the Project. TEP has provided project updates, and the topics of these conversations included:

- The “Banner beautification project” along Ring Road’s entrance corridor to the Children’s Center and Emergency Room. The beautification included the undergrounding of existing utilities and landscaping.
- The location of the existing and future UMS heliports.
- Access to the hospital, and more specifically, the emergency room during construction.
- Potential and cost to underground the transmission line.

As stated in Section H.5.2, FAA jurisdiction also extends in about a 1-mile radius from the existing UMC Heliport on North Campbell Avenue, and an obstruction evaluation was conducted. The same obstruction evaluation was completed for the UMC Heliport, noting that the FAA has collaborated extensively with Banner Hospital and adjacent neighborhoods to establish flight corridors as part of a “Fly Friendly” Zone. Fly Friendly flight paths, used most often, but with exceptions for extenuating circumstances including safety, are detailed in Banner’s most recent annual Helipad Report 2016-2017. TEP met with Banner UMC and their Emergency Medical Service providers and discussed the helicopter paths and any concerns. It was determined that the height of the poles would not be an issue, but that lighting and/or markers were warranted. As a result, Banner Hospital representative Joaquin Amaro submitted a comment by email on August 31, 2020, stating that the hospital defers to the Neighborhood Association partners’ recommendation for pole location with the request that overhead poles be equipped with safety lights and reflectors because of the proximity to Emergency Services Helipad (Exhibit J-55). TEP is continuing to coordinate with Banner and has proposed FAA Marker Balls in-lieu of safety lights.

TEP also provided Banner UMC with a draft construction schedule that showed length of time and locations of partial lane closures along Campbell and Elm/Ring Roads in order to demonstrate that no total road closures would be required.

Union Pacific Railroad

UPRR responded by email to TEP on March 31, 2020, with the concern for crossing the railyard, and guidance on a better location option for TEP line crossing the railroad as well as updated contact information for UPRR planning coordination (Exhibit J-13).

J.2.3 Community Working Group

The CWG is comprised of COT Mayor and Council and staff, COT Historic Preservation Officer, Historic Preservation Foundation, Pima County Board of Supervisors and aides, neighborhood association representatives, educational organizations, and U.S. Congress and staff. An email database for CWG members is compiled and kept up to date by TEP staff (Exhibit J-21). All email notices regarding updates to the project, meeting summaries, and meeting reminders were sent to CWG members, including neighborhood association representatives who were encouraged to share that information with their respective neighbors and Neighborhood Associations (NAs). To TEP’s knowledge, NAs that have shared

information and opinions regarding the Project through published newsletters or their website are: Jefferson Park NA, Sam Hughes NA, Rincon Heights NA, and West University NA.

The CWG Handbook and meeting informational handouts are located in Exhibit J-20. These were compiled for the December 19, 2019, meeting. Each meeting included a question and answer (Q&A) session, questions not answered during the meeting were compiled and posted on the Project website. All Q&A can be found in Exhibit J-21.

The Community Working Group met eight times:

- #1: October 9, 2019
- #2: December 19, 2019
- #3a & b: February 12, 2020, and March 11, 2020
- #4a & b: August 6, 2020, and August 20, 2020
- #5: October 5, 2020
- #6: June 23, 2021

CWG #1: The October 9, 2019, joint stakeholder/CWG meeting was the initial meeting for the group. The meeting covered an overview of the Project, the preliminary study area, the role of the Arizona Corporation Commission and Line Siting Committee in the process, and the results of TEP's initial research. TEP invited 172 representatives from jurisdictions, agencies, organizations, and the CWG. Thirty-seven individuals attended (see Exhibit J-2 for the Stakeholder/CWG Meeting #1 sign-in sheets). The group received a meeting package with project maps and information (Exhibit J-3), and discussed opportunities and constraints for the project (see Exhibit J-4 for the PowerPoint presentation).

CWG #2: The December 19, 2019, meeting was the second meeting for the CWG. Roles, responsibilities, and expectations for the members were highlighted, and members were introduced to one another and to the project. Project overview and purpose began the meeting, followed by more detailed descriptions of the project, line siting process, and project schedule. Opportunities and constraints were presented to the CWG members for discussion and next steps for continued participation were reviewed before the meeting adjourned. TEP invited 135 agency and community representatives, and 40 individuals attended (see Exhibit J-22 for sign-in sheets). The presentation can be viewed in Exhibit J-23, the CWG comments on individual links is Exhibit J-24.

CWG #3: The third CWG meeting occurred in two parts, the first on February 12, 2020, (Note: Meeting 3a was heavily attended >50 individuals, however the sign-in sheets were not scanned correctly and TEP has no documentation of who attended), and the second on March 11, 2020 (attendance 29) (see Exhibit J-25 for meeting 3b sign in sheets). The presentation for these meetings was used on both dates and is provided as Exhibit J-26. Part A of the meeting focused on reviewing member roles, TEP's line siting and data gathering process, geospatial analysis, and other studies. A summary of the Underground Cost Analysis Report was reviewed with the group, along with Q&A sessions related to EMF and property values (see Exhibit J-27 for meeting notes). Part B focused on reviewing the preliminary links in detail and obtaining and documenting feedback from the group. The group also participated in setting the next meeting's agenda. Materials provided prior to CWG Meeting 3 are included in Exhibit J-28.

CWG #4: The fourth CWG meeting also occurred in two parts, the first (Meeting 4A) on August 6, 2020, and the second (meeting 4B) on August 20, 2020, as virtual meetings. They were the first CWG meetings to take place after the national pandemic shutdown (see Exhibit J-29 for the Meeting 4A presentation). Due to the delay in meetings as a result of the shutdown, the first meeting began with a review of the CWG's purpose and member roles. Meeting 4A had 33 people in attendance. The focus of this meeting was to further delve into line siting studies, discuss undergrounding and the ACC CEC process, and provide an update on the route analysis. Concerns about sensitive receptor locations were also discussed. The recording for Meeting 4A is available at <https://youtu.be/fNlyVBs5qYo>.

Meeting 4B had 27 participants, and focused mainly on additional route analysis and alternative route discussions. The Meeting 4B presentation is Exhibit J-30. The recording for this meeting is available at <https://www.youtube.com/watch?v=GI8n6FhEXLE>.

CWG #5: The fifth CWG meeting was held virtually on October 14, 2020, as an online Open House format, and focused on Project updates regarding the route selection process and Q&A (see Exhibit J-31 for the presentation. Meeting 5 had 28 participants. Note: this is the same presentation (Exhibit J-31) that was provided to the public on October 6, 2020). The recording for this meeting is available at <https://youtu.be/QaYji1JAsrE>.

CWG #6: The sixth CWG meeting was held virtually on June 23, 2021, as an online Open House format, and focused on Project updates. Meeting 6 had 10 participants. The Project team presented visual simulations of alternative routes and presented TEP's preferred route, Route 1B (Exhibit J-32). Note: this is the same presentation (Exhibit J-32) that was provided to the public on June 24, 2021. The recording for this meeting is available at <https://youtu.be/3EfMztb0xws>.

Criteria Survey

A survey was sent to the CWG to rate criteria in order of importance. The 12 criteria provided to the neighborhoods are those that are used during the route evaluation process. The 12 criteria are aligned to the ACC CEC decision factors (A.R.S. § 40-360.06) and TEP's design philosophy and standards and include the following:

1. Presence/ absence of an existing corridor and ability to use.
2. Existing and planned land use that is compatible with use as a transmission line corridor.
3. Residential use adjacent to the corridor, as measured by distance to existing residences and planned future development.
4. Listed historic properties and districts adjacent to the corridor, as measured by distance to existing listed historic properties.
5. Presence/absence of Sensitive Receptors as measured by distance to existing Sensitive Receptors and distance from corridor.
6. Room for separation from existing utilities in the corridor as measured by existing and planned utilities and ranked by degree of mitigation required.
7. Viewshed associated with the corridor as measured by number of people viewing and type of viewing experience (i.e., commuter, recreationist, resident).

8. Known or potentially eligible cultural resources in the corridor as measured by documentation through previous survey effort and ranked by degree of mitigation required.
9. Special status species and/or habitat as measured by the presence/ absence of potentially suitable habitat.
10. 100-Year floodplain as measured by location and engineering design.
11. Ability to construct and maintain the transmission line.
12. Cost of construction.

Eight neighborhoods responded. These NAs rated these criteria in order of importance and can be found in Exhibit J-33.

Summaries of Neighborhood Association and Other Organization Letters

Feldman's Neighborhood Association

Feldman's NA expressed concerns related to the Project in a December 2019 newsletter, including the integrity of their historic district status, streetscape viewshed, sensitive receptors, safety during emergency situations in relation to the size of transmission poles, potential rate increases, and potential health impacts related to EMFs (Exhibit J-34).

Grant Road Coalition Central Segments

On September 23, 2019, TEP attended a regular meeting of the Grant Road Coalition 'Central Segments', comprised of Samos, Jefferson Park, Catalina Vista, Mountain/First, Campbell/Grant, and El Cortez NAs. TEP made a presentation, as requested by Council Member Durham, and responded to questions at the meeting and later by email (Exhibit J-35). Neighborhood representatives expressed concerns over Vine substation's proximity to residences, the use of gas-insulated technology, and EMFs. They also inquired about the substation's permitting process. TEP provided fact sheets related to the GIS Substation and EMFs, provided in Exhibit J-36.

Iron Horse Neighborhood Association

Iron Horse Neighborhood Association sent a letter to the Mayor and Council on March 25, 2020 (Exhibit J-37), expressing concerns related to the Project including opposition to a potential Euclid Route, adjacency of a 138kV transmission line to historic districts, and the potential impact to integrity of historic properties.

Jefferson Park Neighborhood Association

TEP presented to the Jefferson Park Neighborhood association (Exhibit J-38) on February 26, 2020, to provide a Project overview and answer neighborhood questions. Jefferson Park NA submitted letters on November 4, 2019, December 22, 2019, February 26, 2020, April 29, 2020, and April 30, 2020, and November 19, 2020 (Exhibit J-39). Jefferson Park expressed concerns related to the Project including the construction of the Vine Substation, health risks, and potential physical and visual impacts to the Jefferson Park historic neighborhood.

Pueblo Gardens Neighborhood Association

Pueblo Gardens Neighborhood Association provided comment by email on September 11, 2020, expressing concerns about preserving the South Campbell Median Landscape. They also expressed support for Alternative Routes 1, 3, or 4 (Alternative Routes 3 and 4 have been removed by the analysis process). The NA also commented on July 6, 2021, that they prefer Alternative Route 1 and remain frustrated with ongoing power brown-outs in their area (letters are in Exhibit J-40).

Richland Heights Neighborhood Association

Richland Heights Neighborhood commented by letter to TEP on January 21, 2020, that while they acknowledge the growth and development in Tucson, they oppose any construction of the transmission line (Exhibit J-54).

Rincon Heights

A letter dated March 2, 2020, from Rincon Heights Neighborhood to TEP states their position as opposing 138kV near residential areas and a preference for undergrounding transmission lines unless located in industrial or commercial thoroughfares. Both letters are located in Exhibit J-41.

Sam Hughes Neighborhood Association

Sam Hughes Neighborhood expressed concerns intermittently through their neighborhood newsletters and online through their webpage blog and neighborhood Facebook page as early as October 23, 2019. Neighborhood concerns focused on potential impacts to property values, historic properties, viewshed, and neighborhood aesthetics. Ultimately, a multi-neighborhood coalition, named the Underground Coalition, was formed to compel TEP to underground the line along Kino and Campbell Avenues. A list of questions directed to TEP from the NA prior to the October CWG meeting is located in Exhibit J-42.

Tucson Historic Preservation Foundation

Demion Clinco, CEO of the Tucson Historic Preservation Foundation expressed by letter to TEP and COT Councilmembers concerns related to the Historic District Analysis methodology used by TEP as part of line siting studies. The letter focused on the importance of including the Sunshine Mile Historic District in the Historic District Analysis; utilizing the Historic Properties Assessment for the Grant Road Improvement Project; and analyzing direct and indirect impacts to historic district neighborhoods. The letter and TEP's response are Exhibit J-43.

West University-Feldman's-Pie Allen-Iron Horse Neighborhood Associations

West University, Feldman's, Pie Allen, and Iron Horse Neighborhoods co-wrote a letter to Mayor and Council on September 9, 2020 (Exhibit J-44). The letter outlined concerns related to the route preferences, and identified Campbell Avenue as a preferred route to Euclid.

Underground Coalition

This Coalition is comprised of Catalina Vista NA, Feldman's NA, Iron Horse NA, Jefferson Park NA, Mountain/1st Avenue Neighborhood, Pie Allen NA, Rincon Heights NA, Samos NA, Sam Hughes NA, Sugar Hill Neighborhood, West University NA, Tucson Historic Preservation Foundation, Fourth Avenue

Merchants, and the Grant Road Coalition. The Coalition's drive is to advocate for the underground placement of the proposed Project. The Coalition maintains a website that shares TEP materials and NA comments related to the materials (<http://www.grantroadcoalition.com/underground-tep.html>).

TEP received an email on September 19, 2020, from the Coalition with a proposal and justification from the Coalition to underground Alternative Routes 1 or 2 along Kino Parkway and Campbell Avenue (Exhibit J-45). An update to this proposal and Justification discussing the possible impact to property values was received on September 28, 2020, and is included also in Exhibit J-45.

In addition, the Coalition, represented by residents Dan Dempsey and John Schwartz, sent a response to the October 14, 2020, CWG virtual meeting opposing an overhead transmission line route and stating that TEP has not effectively answered their questions (Exhibit J-46). A letter dated November 19, 2020 to TEP from Jefferson Park, references the Coalition's letter and also requests that any preferred routes be undergrounded. It also expressed concerns related to the Vine Substation location (Exhibit J-39).

J.2.4 News Media

Extensive media coverage of the Project has occurred, including:

KVOA News 4 Tucson (7/9/21)

Homeowners urge TEP to reconsider high-voltage powerline project

Link: <https://kvoa.com/news/2021/07/09/homeowners-urge-tep-to-reconsider-high-voltage-powerline-project/>

Arizona Daily Star (7/3/21)

Tucson Electric overhead power line plan runs afoul of neighbors, city

Link: https://tucson.com/news/local/tucson-electric-overhead-power-line-plan-runs-afoul-of-neighbors-city/article_4840c986-d852-11eb-865f-efdc3293a802.html

Arizona Public Media News (10/16/21)

Tucson Electric Power looks to expand renewables, raise customer rates

TEP's plans to raise rates and install a transmission line near historic neighborhoods are not without controversy.

Link: <https://news.azpm.org/p/news-splash/2020/10/16/182217-tucson-electric-power-looks-to-expand-renewables-raise-customer-rates/>

KGUN 9 News (8/28/20)

Power line plan worries UA area residents

TEP says lines needed for reliable service

Link: <https://www.kgun9.com/news/local-news/power-line-plan-worries-ua-area-residents>

Arizona Daily Star (8/13/2020)

Tucson Electric to hold virtual session on power line proposal

Link: https://tucson.com/business/tucson-electric-to-hold-virtual-session-on-power-line-proposal/article_6c412900-ddaa-11ea-93ae-6b127a5ea5d3.html

Arizona Daily Star (4/20/20)

Regulators approve new high voltage power lines stretching up Tucson's east side

Link: https://tucson.com/business/regulators-approve-new-high-voltage-power-lines-stretching-up-tucson-east-side/article_885c6f50-27b2-555b-b1a6-a69a787a8585.html

Arizona Daily Star (3/7/20)

Proposed Tucson Electric power line cutting through UA area draws concerns

https://tucson.com/news/local/proposed-tucson-electric-power-line-cutting-through-ua-area-draws-concerns/article_fcbf016e-bfdb-5e5d-93f8-a47872f88234.html

J.2.5 Newsletters/Postcards/Fact Sheets

TEP developed a mailing list that included all property owners, residents, and business owners in the Project study area. The mailing list was updated prior to each mailing. The average number of addresses notices was 40,000. All mailings are included in Exhibit J-47.

TEP prepared and mailed two newsletters that included comment forms throughout the course of the project. Newsletter #1 was dated October 2019 and was mailed to 46,423 residents, business owners, landowners, and agency/organization representatives in the study area. Newsletter #1 provided current project information regarding the study area, project benefits, project timelines, and plans for new substations associated with the Project.

Newsletter #2 was dated March 2020 and was mailed to 46,423 residents, business owners, landowners, and agency/organization representatives in the study area. Newsletter #2 provided public open house meetings information, restated project benefits, and emphasized ways TEP was receiving public responses. A map of potential line route links was provided on one side of the mailer.

Both newsletters provided information for public response in both English and Spanish, and five copies of each newsletter were sent to each University of Arizona dormitory for posting in residential common areas.

A Postcard was sent in May 2020 announcing the Project Update that was provided on the Project webpage in lieu of the March 2020 Public Open House Meetings that had been cancelled due to COVID.

A Postcard was sent in late July 2020 announcing the August 13, 2020, live virtual Public Open House Meeting.

A postcard was sent in September 2020 announcing updates to potential routes.

A postcard was sent in late September 2020 announcing the October 6, 2020, live virtual Public Open House Meeting.

A mailer was sent in June 2021 providing a Project update and announcing the June 24, 2021, Virtual Public Open House Meeting. The meeting was also noticed in the Arizona Daily Star.

A mailer was sent 7/28/2021 providing a Project update that explained the reintroduction of Alternative Route 5A and announced a virtual open house meeting explaining same.

J.2.6 Public Open House

All public open house events including the April 2020 Project Update were noticed to the public via a newsletter or postcard mailing and notice in the newspaper. Social media was also used in some cases (see Section J-3).

The first Public Open House Meetings were held in person on October 22 and October 23, 2019, to discuss Project purpose and benefits, timeline, present the Study Area, discuss the physical construction, and address preliminary public concerns. Nine individuals attended on October 22, 2019, and 32 individuals attended on October 23, 2019 (see Exhibit J-48 for sign-in sheets). A project fact sheet and an EMF fact sheet were prepared for additional distribution at the open houses and at stakeholder meetings (Exhibits J-36 and J-3 respectively). See Exhibit J-49 for copies of posters on display at the first open house meeting and for open house meeting posters.

An in person Public Open House planned for March 18, 2020, was suspended as a result of Covid-19 risks of exposure, and TEP instead updated the public by publishing an online project update which was posted to the Project webpage on April 17, 2020.

The second public outreach event, and TEP's first virtual Open House meeting was held live on August 13, 2020. Public questions and comments were received by TEP through the online participatory format (text or phone), and a recording and printed questions and answers provided on the TEP Project website. There was an average of 60.6 individual viewers during the virtual meeting. The recording of this meeting is available at: <https://youtube/DYzOqUroWSY>.

The third public outreach event and second live virtual Open House was held on October 6, 2020. The same format was used as on August 13, 2020. There was an average of 66.4 individual viewers during the virtual meeting. The recording of this meeting is available at: <https://youtube/z7OsGI2A2e0>.

The fourth public outreach event and third live virtual Open House was a Zoom meeting held on June 24, 2021. TEP provided a project update and answered the public's questions. There were 38 individuals viewing the meeting. This was a more informal format than the previous two, but still allowed for the meeting to be recorded and questions answered live. The recording of this meeting is available at <https://youtube/fdoT8xUFvyk>.

J.2.7 Telephone Information Line

A toll-free telephone information lines were established for the Project. The automated message, in either English or Spanish, encouraged callers to leave a message requesting more information or a return call. The telephone numbers were available in the newsletters, and postcards and on the Project website. The information line voicemails were checked regularly (and more frequently following newsletter mailings and public open houses); all messages that required a response were answered by one of the appropriate project team members. To date a total of 36 voicemails were received. All messages received were entered into the comment tracking database.

J.2.8 Internet Website

The Internet has evolved into a primary source of information, therefore TEP maintains a website featuring their various projects throughout southeastern Arizona. The site address is <http://www.tep.com>. A page devoted to the Project was added to the TEP website before other public participation activities commenced, and was updated throughout the planning process. The specific Project page is <https://www.tep.com/kino-to-demoss-petrie/>.

The Project webpage was updated regularly to include both general and specific information on the Project, including the latest maps and the Project newsletters. After the public open house, the displays and graphics presented were added to the Project webpage. The webpage also allowed people to submit comments or request more information via an online public comment form, and provided the toll-free project information line number. A snapshot into statistics for the website reveals that between September and November of 2020, the Project's webpage was viewed 2,762 times, with the Spanish version viewed 90 times within that same period of time. There were 1,852 unique visitors on the webpage, and visitors' average time spent on the webpage was 5 minutes and 36 seconds. During that time period, the peak day was October 6, 2020, with 509 viewers on that day.

Comments on the Project website were updated on the following dates: April 22, 2020; May 6, 2020; May 22, 2020; June 8, 2020; July 7, 2020; July 20, 2020; August 31, 2020; September 10, 2020; September 25, 2020; October 15, 2020; November 16, 2020; December 3, 2020; and June 23, 2021.

J.2.9 Comment Tracking Database

Comments were received via Wufoo, an online comment form tied to the Project webpage. Comments were also received by phone, mail and email. All CWG and Public comments received were entered into the comment database; areas of interest or concern, and/or route preferences, when stated, were noted and tracked. The tracked areas of interest included health and safety, cost, appearance, location, underground, historic, and other. This information was used to better understand the concerns of the community in regard to the Project and incorporate the concerns into TEP's plans where possible.

J.3 Comments Received

At the time of preparation of the application, a total of 80 CWG comments (Exhibit J-50) and 1005 public comments (Exhibit J-51) were received regarding the Project from the various sources discussed above (see Exhibit J-52 for map of location of comments received).

A grand total of 1085 comments were received and categorized. Figure 7 shows the percent of each type of comment received. Respondents indicated that health, cost, appearance, undergrounding, property devaluation, and other, were chief concerns with undergrounding and location making up 49% of the total comments received (Figure 8).

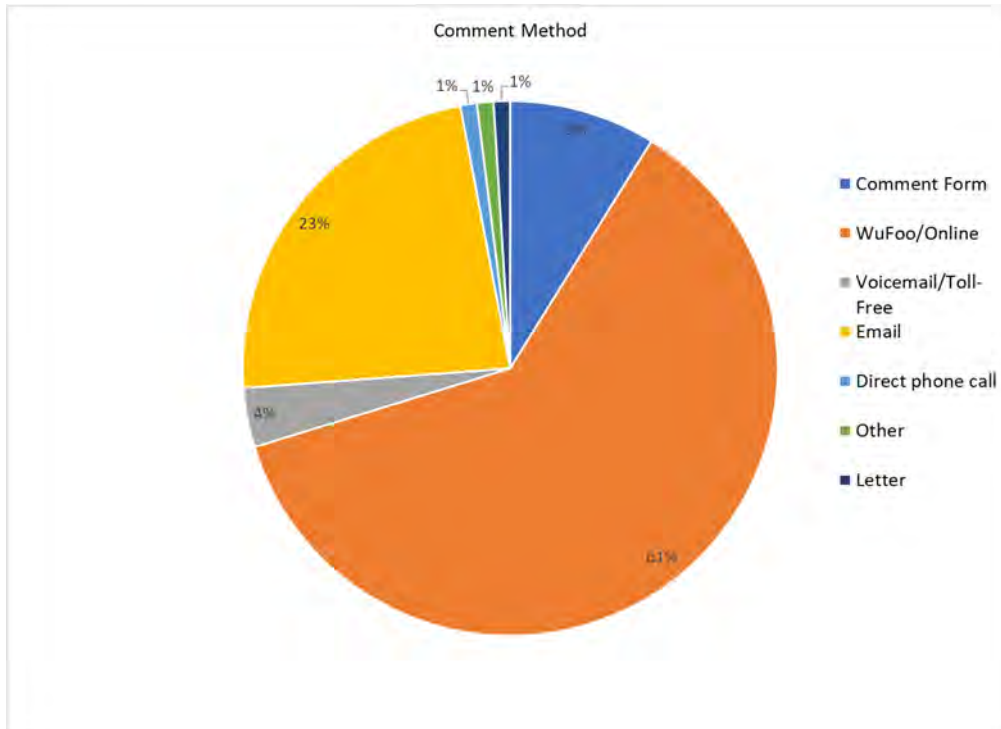


Figure 7. Comment Methods

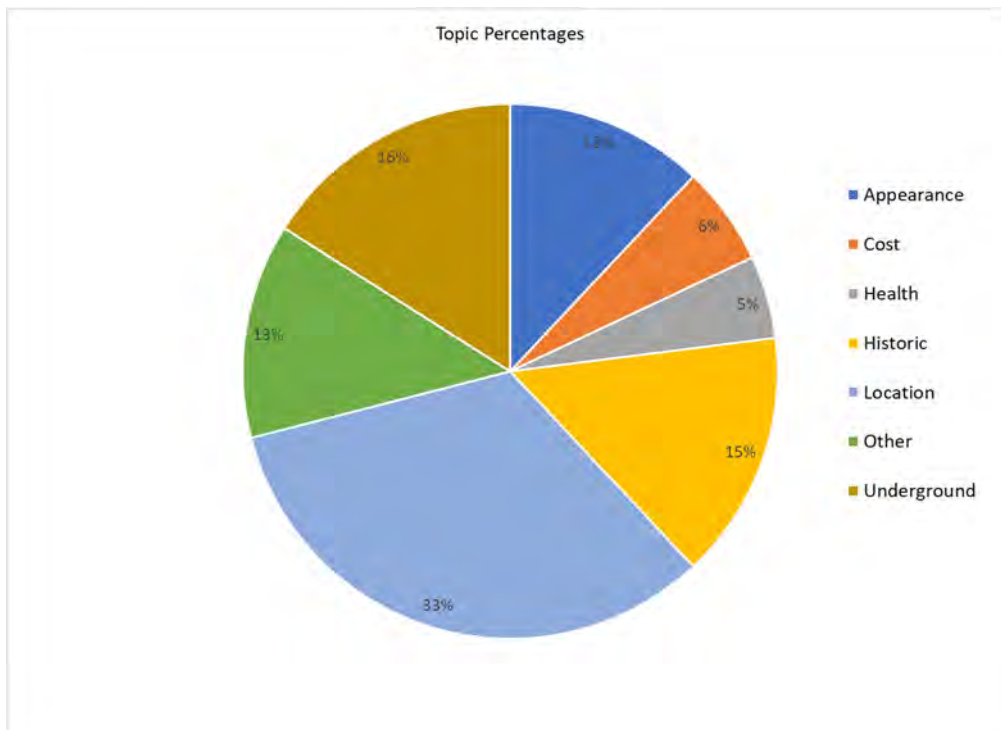


Figure 8. Public Comments and Concerns by Topic

Comments related to preference by alternative route were also tallied (Table 28). These totals do not include duplicate comments, and are based on mention in the comment of the route by name, route number, or road name (including “alley”). These comments were compiled only from comments received after August 2020. Table 28 depicts the alternative route preferences indicated by respondents. As can be seen for Alternative Routes 1, 2, and 5, preference is about equally split. There is clearly a preference for Alternative Route B over A, with Alternative Route D slightly less preferred than B.

Table 28. Comments by Alternative Route*

Alternative Route	Preferred	Disliked
1	89	107
2	85	106
5	45	45
A	5	10
B	58	11
D	34	34

***NOTES:**

- Includes comments received from 8/7/2020-7/28/2021. Does not include comments received prior to the development of alternative routes.
- Duplicate comments removed.
- Count based on mention in a comment of the route by name/number, or road name (including "alley").

J.4 Social Media

Two Facebook and Instagram advertisements were posted preceding Virtual Open Houses (Exhibit J-56). The first post targeted by location (estimated 68,000 potential Facebook Users) between September 27, 2020, to October 6, 2020, to highlight the October 6, 2020, Open House. This post reached 31,160 people, with 174,736 Impressions (the number of times your content is displayed), and 179 clicked links to the TEP project website from the post.

The second post targeted by location between June 14, 2021, and June 24, 2021, with a potential 72,000 Facebook Users, and by June 17, had reached 18,497 users; displayed 30,577 Impressions, and received 36 clicked links to the project website from the post.

J.5 Undergrounding Transmission Studies

TEP engaged an independent engineering firm, Sargent & Lundy, LLC, to conduct a study to determine the costs and constraints associated with undergrounding high voltage transmission line in an urban environment. The study went through a total of five iterations, each iteration attempting to investigate or address different concerns raised by the public.

All of the studies spoke to the disadvantages related to underground construction. Underground construction has additional operational, system loss, performance, maintenance, and reliability concerns when compared to overhead construction.

Underground installation would require that the transmission line and associated facilities be encased in a concrete duct-bank. This concrete encasement makes repairs to conductors lengthy and costly. Areas where the underground transmission are placed may also be disrupted which may cause disruption in traffic patterns.

Underground transmission lines have significant capacitance losses, due to the fact the cable has a thin layer of insulation to the ground versus overhead cables. Underground cables generally heat up more quickly, both by the fact that soil can thermally insulate the cables, and the sheath in the design of the underground cable which creates additional heat by induced current. Bonding methods can mitigate heating due to induced current in underground lines but, if not correctly managed, can result in damage to the cable jacket. The inability to remove heat from the transmission line in underground construction results in a reduced rating of the transmission line. For this study, 2 cables per phase were used to try and achieve the rating of overhead construction. The resulting rating is 2316.8 amperes which exceeds the rating of overhead construction. The 2 cable per phase requirement significantly increases the cost of underground construction as the conductor itself is one of the more costly components of underground construction.

Underground construction results in a greater EMF as calculated at the centerline of the alignment, 1 meter (3.28 ft) above the ground. The resulting calculated EMF is 208.837 mG. This is considerably greater than that of overhead construction calculated at the same height above the earth. As with overhead construction, the EMF dissipates as one moves away from the centerline of the alignment.

The first study, Rev. 0, was prepared for a 1.5-mile section of underground transmission in an urban environment. The study used existing available data to determine conflicts with existing utilities in the proposed alignment. The study considered a jack-and bore method of construction at all major intersections. This method of construction was considered to minimize disturbance to existing traffic patterns. Jack-and-bore construction would allow for the installation of the conduit and associated conductors without disturbing the ground in the existing alignment. The estimated cost for undergrounding a 1.5-mile section of transmission line was found to be \$16,367,404.80. This value includes a 20% contingency to account for unknowns. **This resulted in a per mile cost of \$10,911,603.20.**

The second study, Rev. 1, addressed some of the public comments as well as looked at ways in which costs could be reduced. Comments received by the public questioned the validity of the study. In order to address these comments, TEP requested that the study prepared be signed by a licensed professional engineer. In order to reduce the cost of underground construction, TEP requested that the jack-and-bore method be removed from the study. All other considerations from the first study (Rev. 0) were carried forth into the second study. The resulting cost estimate, with a 20% contingency for unknowns was \$14,839,250.40. **This resulted in a per mile cost of \$9,892,833.60.**

The third study, Rev. 2, was prepared to address comments received in the form of a letter from a group of neighborhoods. The letter requested that the Project be placed underground from the existing Kino

Substation north to where the Project intercepts Grant Rd. TEP requested the consulting engineer revise the study to address these comments. The revised study considered undergrounding 5.5 miles of transmission line, from the Kino Substation to Grant Rd. The estimated cost to underground 5.5 miles of transmission, with a 20% contingency for unknowns is \$82,329,668.21. **This resulted in an average per mile cost of \$14,882,930.98.**

The fourth study, Rev. 3, was prepared to determine the ampacity or rating of the facility given the preliminary design for the 5.5 miles of underground transmission. The resulting ampacity of the underground installation was calculated to be significantly less than that for aboveground construction. The estimated cost to underground 5.5 miles of transmission, with a 20% contingency for unknowns is \$82,329,668.21. **This resulted in an average per mile cost of \$14,882,930.98.**

The fifth study, Rev. 4, was prepared to try and match the ampacity of overhead construction. In order to keep the cost of the underground estimate comparable to or less than the previous study while still trying to achieve a higher ampacity, a load factor of 0.75 was used in the design. This load factor allowed the ampacity of the line to reach that of overhead construction. The estimated cost to underground 5.5 miles of transmission, with a 20% contingency for unknowns is \$74,218,134.18. **This resulted in an average per mile cost of \$13,494,206.21.**

The original estimate used for overhead construction were \$1 million per mile. This estimate was used to compare against the estimates prepared for the various undergrounding studies. This resulted in undergrounding transmission construction costs ranging between 10 and 15 times greater than OH construction. Since the completion of the undergrounding study, more accurate OH transmission construction cost estimates have been prepared for each alternative route considered in the application. Using these new OH construction cost estimates, it is estimated that the cost to underground one mile of transmission will be approximately 4.8 to 6.8 times greater than OH transmission construction. See Exhibit J-54 for the final underground cost study that was conducted for the Project.