

PICTURE ROCKS

MULTIMODAL TRANSPORTATION STUDY

Final Report

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PREPARED FOR: **ADOT** AND



PREPARED BY:
Kimley»Horn

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1. Introduction

1.1 STUDY BACKGROUND AND PURPOSE

Citizens for Picture Rocks is a community advocacy group representing the Picture Rocks Fire Department, Pima County Sheriff's Department, Picture Rocks American Association of Retired Persons (AARP), Picture Rocks Elder Initiative, and other community stakeholders. The group approached Pima County representatives to express concerns regarding transportation issues in the community. These concerns related to lack of transit service, safety-related issues, and the need for pedestrian and bicycle facilities. As a result, with a letter of support from the Citizens for Picture Rocks, Pima County submitted an application to the Arizona Department of Transportation (ADOT) Planning Assistance for Rural Areas (PARA) Program to conduct a multimodal transportation study to address transportation issues in the community.

The purpose of the Picture Rocks Multimodal Transportation Study is to identify the most critical multimodal transportation infrastructure and service needs within the Picture Rocks study area and recommend a program of short-range (0-5 years), mid-range (6-10 years), and long-range (11-20 years) improvements that address:

- Roadway safety: improve safety through recommendations for shoulder improvements, geometric improvements, and traffic control;
- Regional access and mobility: address the identified needs and deficiencies that improve local and regional mobility and circulation;
- Bicycle and pedestrian safety and mobility: projects for sidewalks, paths, and shoulders to accommodate bicyclists and pedestrians; and
- Rural transit service: confirm the need for and provide recommendations for transit service.

1.2 STUDY OBJECTIVES

The study findings will serve as a guide for community and economic development, project funding applications and grants, and project implementation. Study activities include the following:

- Collect and review existing and future conditions related to traffic volumes, crashes, socioeconomic and demographic conditions, and roadway conditions;
- Evaluate the performance of the transportation system and document needs and deficiencies;
- Project future transportation needs for 5-, 10-, and 20-year planning horizons;
- Evaluate the need and opportunities for providing rural transit service; and
- Recommend improvements that address the identified needs and deficiencies.

1.3 STUDY AREA

Picture Rocks, Arizona is located in unincorporated Pima County approximately 20 miles northwest of the City of Tucson. The community is located west of the Tucson Mountains. The study area borders the southern town limits of Marana and is adjacent to Saguaro National Park (SNP). A vicinity map is shown in **Figure 1** and a study area map is shown in **Figure 2**.

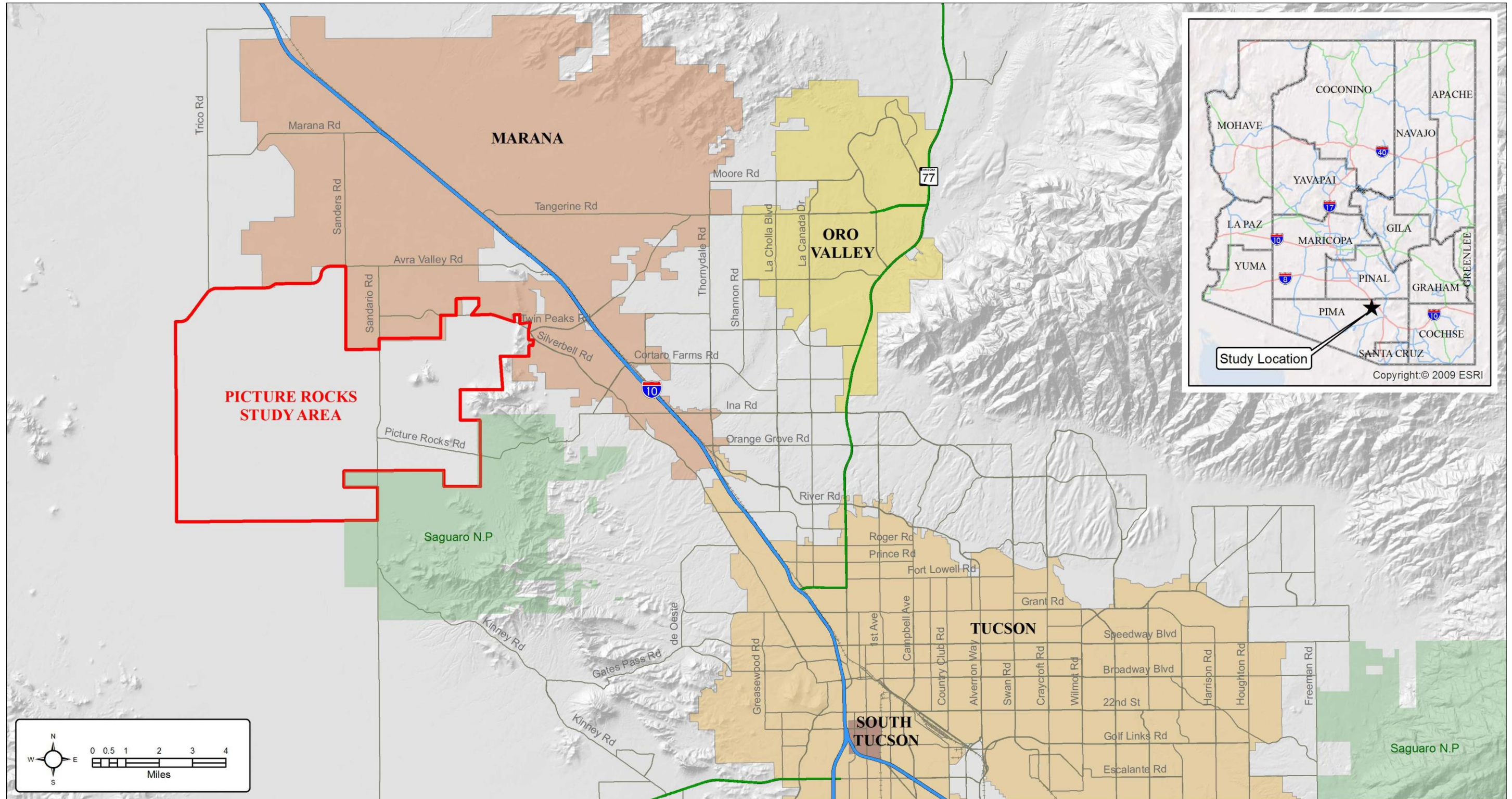


Figure 1 – Vicinity Map

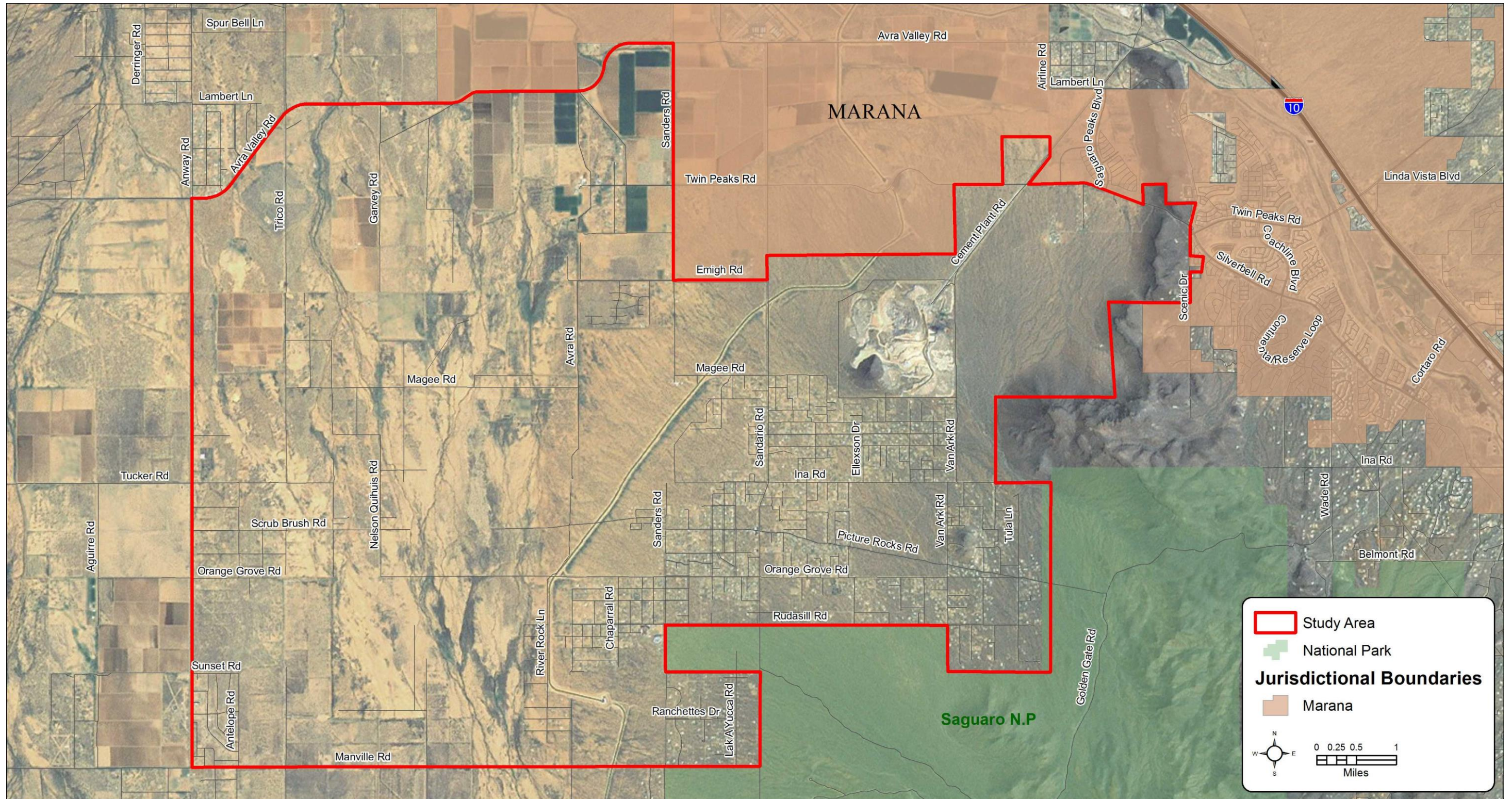


Figure 2 – Study Area Map

2. Project Area Description

This chapter provides information on environmental, land use, demographic, and economic characteristics of the Picture Rocks area.

2.1 ENVIRONMENTAL SETTING

This section provides a brief overview of the environmental features of the Picture Rocks area. More detail on environmental considerations is provided in **Appendix A**. This appendix also includes information consistent with ADOT's requirements for Planning and Environmental Linkages (PEL) for Transportation Studies.

2.1.1 BIOLOGICAL COMMUNITY

According to *Biotic Communities: Southwestern United States and Northwestern Mexico*, the western portion of the study area is within the Lower Colorado River subdivision of the Sonoran Desertscrub biotic community; the eastern portion of the study area is located within the Arizona Upland subdivision of the Sonoran Desertscrub biotic community.¹

2.1.2 TOPOGRAPHY

According to the *Marana, Arizona 7.5-Minute United States Geological Survey (USGS) 7.5' Quadrangle Map*, the study area elevation generally ranges from 2,640 feet above mean sea level (MSL) in the southeast corner of the study area to 2,000 feet above MSL in the northern portion of the study area. Mountains in the study area generally range from 2,510 feet above MSL to 2,765 feet above MSL and are located in the eastern portion of the study area. The eastern portion of the study area drains to the north/northwest and the western portion of the study area primarily drains to the north.

2.1.3 THREATENED AND ENDANGERED SPECIES

The U.S. Fish and Wildlife Service (USFWS) threatened, endangered, proposed, and candidate species list for Pima County, Arizona (dated October 30, 2013) was reviewed by a qualified biologist to determine species that may occur in the project vicinity based on readily available information.

Suitable habitat for one federally endangered species (lesser long-nosed bat) and two candidate species (Sonoran Desert tortoise and Tucson shovel-nosed snake) is present in the study area. Potential impacts to these species (and those potentially listed in the future) should be evaluated during the environmental clearance process. Coordination with the USFWS and Arizona Game and Fish Department (AGFD) should also occur during the environmental clearance process. More detailed information on special status species known to occur in the study area is provided in **Appendix A (Table 34)**.

2.1.4 IMPORTANT RIPARIAN AREA (IRA)

Portions of the study area are classified as an Important Riparian Area (IRA) regulated under Pima County Ordinance PC2005-FC2 and Chapter 16.30.050. As described in the Regulated Riparian Habitat Mitigation Standards and Implementation Guidelines, riparian habitat is a valuable resource and river

¹ Brown, David E. 1994. *Biotic Communities: Southwestern United States and Northwestern Mexico*. University of Utah Press. Salt Lake City.

systems are important corridors for resident and migratory birds, along with providing wildlife with the resources necessary to maintain their populations. IRAs occur along the major river systems and washes that provide critical watershed and water resource management functions as well as providing a framework for landscape linkages and biological corridors.

2.1.5 WILDLIFE MOVEMENT CORRIDORS

Wilderness areas and wildlife areas are important natural resources because they provide food, shelter, and other habitat requirements (including connectivity) to sustain many species of wildlife. Numerous wildlife species utilize the washes and undeveloped uplands within the study area to move between wildland blocks. Multiple species utilize the open spaces and undeveloped areas for foraging and/or shelter. Conversion of these lands into other uses may impact wildlife movement patterns and population maintenance processes (immigration/emigration/genetics), as well as the local availability of food resources. Future wildlife habitat fragmentation and loss will contribute to reduced biodiversity and population sizes in the region.

The Arizona Wildlife Linkages Assessment identified one potential linkage zone (PLZ) within or adjacent to the study area (PLZ152 Central Arizona Project Canal, **Appendix A, Figure 31**). PLZs are area of land between the wildland blocks, where current and future urbanization, roads, and other human activities threaten to prevent wildlife movement between the wildland blocks. Wildland blocks are defined as areas of land that consist of important wildlife habitat and can be expected to remain wild for at least 50 years.²

The Coyote - Ironwood - Tucson Linkage extends through the western portion of the study area along Brawley Wash and along the eastern portion of the study area overlapping the Tucson - Tortolita - Santa Catalina Mountains Linkage and extending into a wildland block that connects to SNP. These linkages and potential linkage zones should be considered during project planning.

2.1.6 MIGRATORY BIRD TREATY ACT

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. §§ 703-712) statute makes it unlawful without a waiver to pursue, hunt, take, capture, kill, or sell migratory birds. Migratory birds may nest on the ground, on structures, or in trees, shrubs, or other vegetation within the project limits. In accordance with the MBTA, a pre-construction bird nesting survey must be conducted to survey active migratory bird nests in potentially impacted trees and shrubs prior to the beginning of construction.

2.1.7 SECTION 4(F) RESOURCES

Section 4(f) refers to the original section in the Department of Transportation Act of 1996. The 4(f) requirement, originally set forth in Title 49 United States Code (U.S.C.), Section 1653(f), considers publicly owned park and recreational lands, publicly owned wildlife and waterfowl refuges, and historic sites in transportation project development. Section 4(f) states that the FHWA "...may approve a transportation program or project requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or land of an historic site of national, state, or local significance (as determined by the federal, state, or local officials having jurisdiction over the park, area, refuge, or site) only if...there is prudent planning to minimize

² Nordhaugen, S.E., Erlandsen, E., Beier, P., Eilerts, B.D., Schweinburg, R., Brennan, T., Cordery, T., Dodd, N., Maiefski, M., Przybyl, J., Thomas, S., Vacariu, K., Wells, S., 2006. Arizona's Wildlife Linkages Assessment. The Arizona Wildlife Linkages Workgroup, Phoenix, AZ.

harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.” (49 U.S.C. 303[c]). Section 4(f) also establishes criteria by which public parks and recreation lands, wildlife, and waterfowl refuges and historic sites can be evaluated for consideration as 4(f) resources.

Section 4(f) properties within the study area include the following (also shown in **Figure 3**):

1. SNP
 - Located at 2700 N. Kinney Road, Tucson, AZ 85743
 - Saguaro National Park (SNP) is under the jurisdiction of the National Park Service. The park offers numerous trails and recreation activities and is open to the general public affording it Section 4(f) protection.
2. Picture Rocks Park and Community Center
 - Located at 5615 N. Sanders Road, Tucson, AZ 85743
 - Picture Rocks Park and Community Center is under the jurisdiction of Pima County. The park and community center is open to the general public and as such is protected under Section 4(f).
3. Central Arizona Project (CAP) National Recreational Trail
 - This trail is adjacent to the CAP Canal throughout the study area.

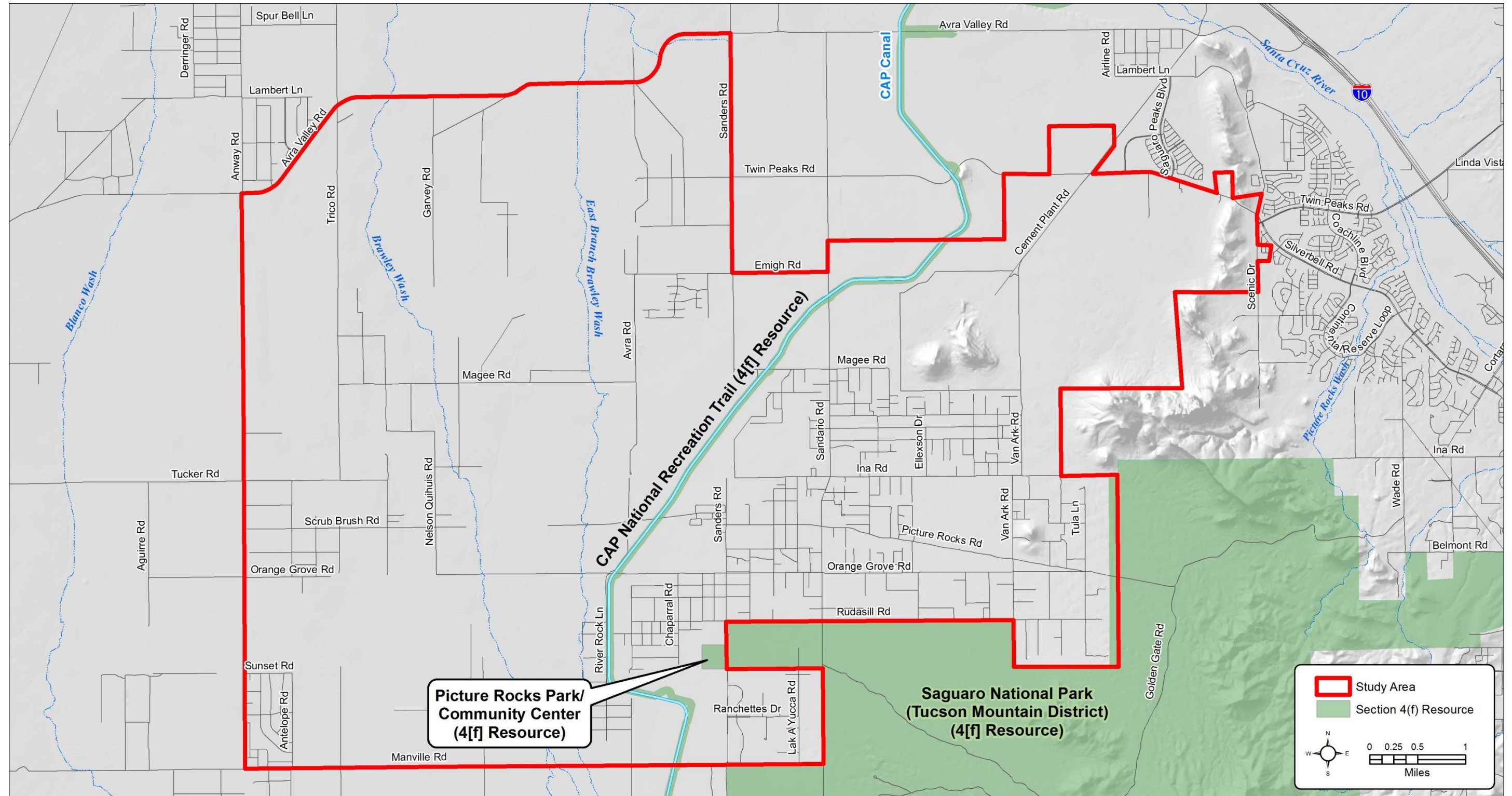


Figure 3 – Section 4(f) Resources

2.1.8 WATER QUALITY

Sections 404 and 401 of the Clean Water Act

The U.S. Army Corps of Engineers (Corps) regulates the discharge of dredge and/or fill material into waters of the U.S. (Waters) under Section 404 of the Clean Water Act (CWA). Any activity that will discharge dredge or fill material into jurisdictional waters, including wetlands, will require a CWA Section 404 Permit. Projects proposed under this study may potentially include these activities.

A preliminary desktop evaluation for the presence of potential jurisdictional Waters was conducted in the study area through a review of USGS topographical maps. The following named washes are included in the study area: Brawley Wash, East Branch of Brawley Wash, West Branch of Brawley Wash, and Los Robles Wash. Numerous unnamed features are also located within the project area and could potentially be considered Waters.

National Pollutant Discharge Elimination System/Storm Water Pollution Prevention Plan

The National Pollutant Discharge Elimination System (NPDES) is a national permit program under Section 402 of the CWA that regulates discharges of pollutants from point sources into jurisdictional Waters, including sediment and pollutants that can be generated during ground-disturbing activities and transported by stormwater runoff. The U.S. Environmental Protection Agency (EPA) has delegated to the Arizona Department of Environmental Quality (ADEQ) the authority to operate the permit program within Arizona. The state's version of the NPDES permit program is referred to as the Arizona Pollutant Discharge Elimination System (AZPDES). The AZPDES permit program requires a general permit for construction activities that disturb one or more acres of land as well as for construction activities that disturb Waters (Section 401 Certification). A Stormwater Pollution Prevention Plan (SWPPP) must be prepared as a part of the permit. If impacts are greater than one acre of land and/or Waters, a Section 401 Certification permit and SWPPP will be required during future project development.

2.2 LAND OWNERSHIP AND LAND USE

Land use and transportation are inextricably connected. Understanding how land use decisions affect the transportation system can improve the development of viable options for people to access goods and services to improve their quality of life. Furthermore, the design of transportation facilities (roads, transit service, and pedestrian facilities) has a defining impact on a community's development patterns, economic vitality, and character.

The following subsections provide an overview of land ownership and existing and planned land use in the Picture Rocks area.

2.2.1 LAND JURISDICTION AND OWNERSHIP

Land ownership within the study area is primarily under private ownership, the Bureau of Reclamation, and the Arizona State Land Department. SNP is located southeast of the study area.

Roadways connecting to and from Picture Rocks traverse lands under the jurisdiction of SNP and the Town of Marana. The Town of Marana is located to the north and comprises the northern portion of the study area boundary. Land ownership is shown in **Figure 4**.

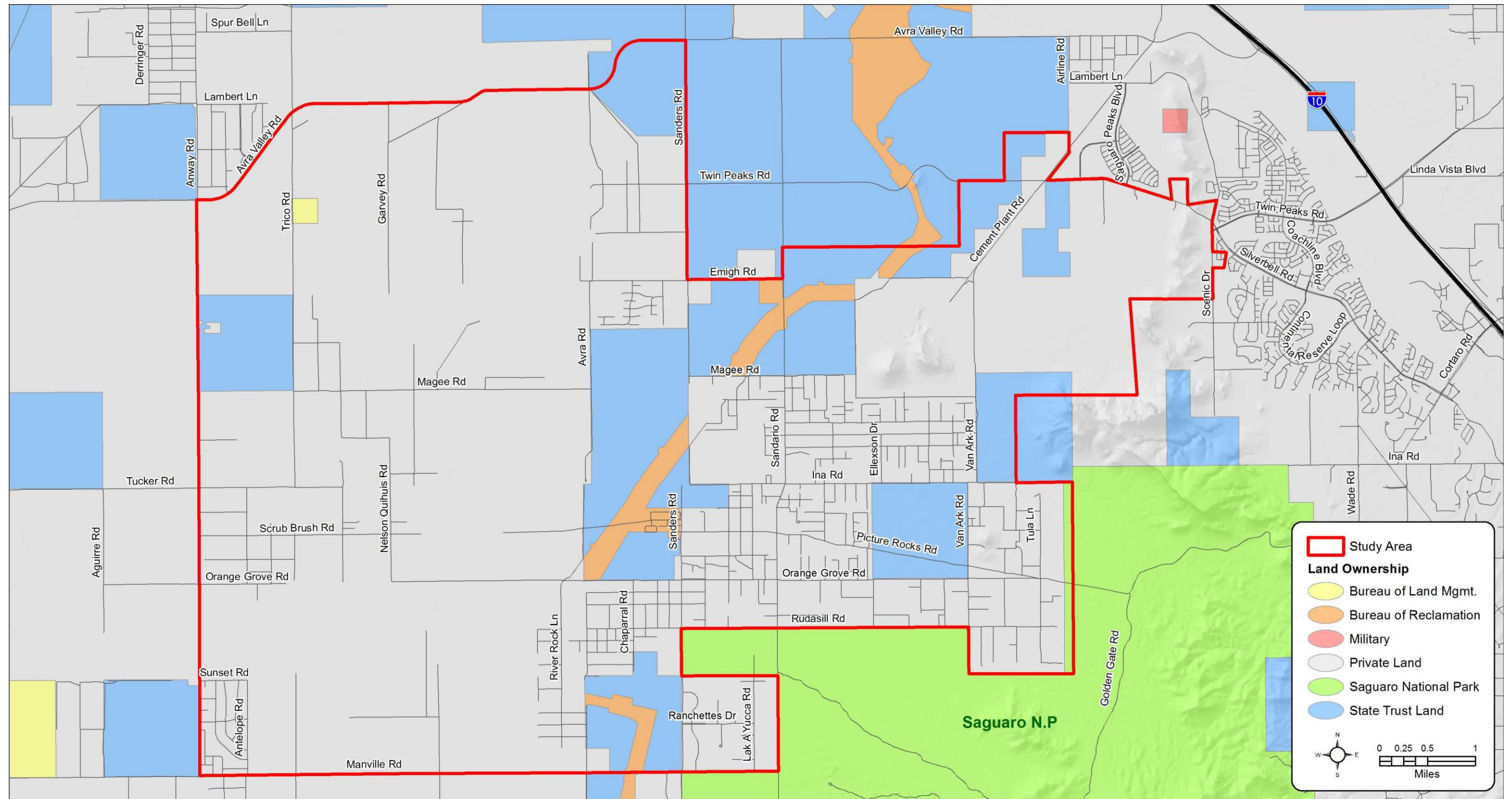


Figure 4 – Land Ownership

2.2.2 CURRENT LAND USE

This section describes current land use and zoning in the Picture Rocks area.

Zoning

Zoning in the Picture Rocks area was reviewed based on information from the Pima County Mapguide and Pima County Development Services. In general, zoning is primarily lower-density residential zoning. A zoning map is shown in **Figure 5**.

Residential

The Picture Rocks area is primarily zoned Rural Homestead Zone (RH). The principal uses allowed in this zoning are low-density residential, limited conditional commercial use, and agriculture use. The minimum lot area for this zoning is 180,000 square feet or approximately 4.13 acres.

The area roughly bounded by Magee Road to the north, Rudasill Road to the south, Avra Road to the west, and Tula Lane to the east is primarily zoned Rural Residential (GR-1). The principal uses allowed in this zoning are residential, agricultural, and limited conditional commercial use. The minimum lot area is 36,000 square feet or 0.83 acres. Single-family homes are scattered throughout Picture Rocks with the majority concentrated within a three-mile radius of the Picture Rocks Road and Sandario Road intersection. The study area includes approximately 3,689 households according to the 2010 Census.

Commercial

In the area in and around the vicinity of the Sandario Road/Picture Rocks Road intersection, the zoning is commercial, either Local Business (CB-1) or General Business (CB-2). CB-1 zoning also occurs at the northeast corner of Anway Road and Avra Valley Road.

CB-2 zoning also exists at the intersection of Manville Road and Anway Road.

General Industrial (C1-2 zoning) covers the area at the Arizona Portland Cement Company. An area south of Avra Valley Road and east of Anway Road is zoned Heavy Industrial (C1-3) and appears to be undeveloped.

Special Area Policies

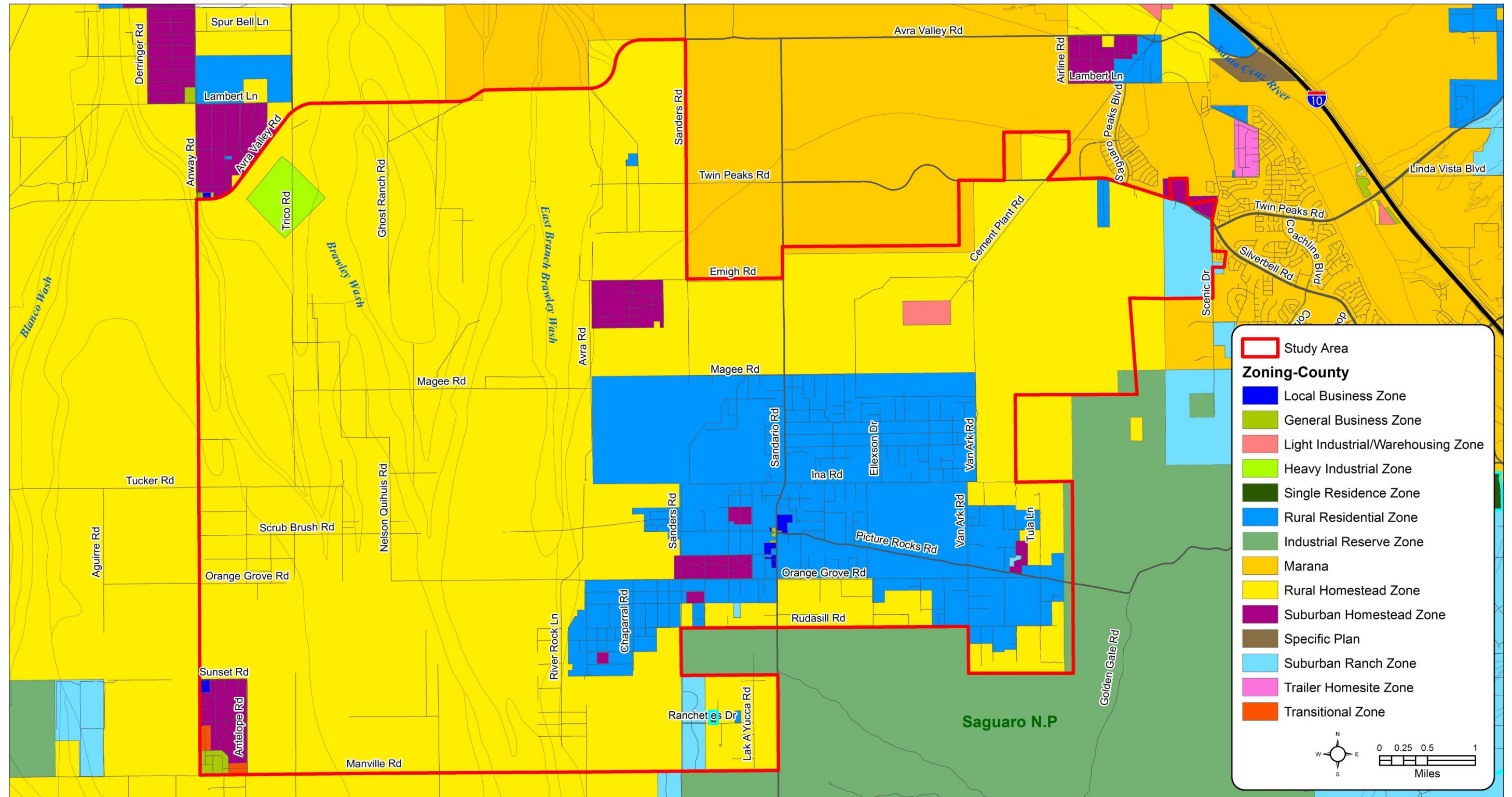
The Pima County Comprehensive Plan contains Special Area Policies for part of the Picture Rocks area that apply to sites typically composed of multiple parcels that share a unique physical feature or location over a relatively large area. Excerpts relating to transportation-related policies include:

S-6 Picture Rocks Rural Activity Center (TM/AV)

General location: T13S, R11E, portions of Sections 3 & 4.

Policies

- A. In order to create a pedestrian and equestrian scale streetscape, the development of unique street standards for Sandario Road will be encouraged. Such standards, to be developed by the Pima County Department of Transportation, in cooperation with the Picture Rocks Business Association, will result in slower traffic speeds and more attention to the street's relation to parking, sidewalks, and buildings. Examples of street design features include provision for on-street parking, sidewalks, and planters and street trees;



Source: Pima County

Figure 5 – Zoning

- B. Development shall enhance this pedestrian scale environment, avoid strip auto-oriented commercial, and support through site planning and development the traditional western “main street.” The following development guidelines should be considered:
1. Buildings shall have reduced front setbacks, with parking lots located to the rear or side of buildings;
 2. Access to parking lots shall be off side roads rather than directly off Sandario Road; and
 3. Hitching areas and access to local businesses shall be provided for equestrians.

2.2.3 ACTIVITY CENTERS

This section provides an overview of current land uses and activity centers. Community features within Picture Rocks are shown in **Figure 6**, and are further described as follows.

Education Facilities

Two schools in the Marana Unified School District are located within the study area. Desert Winds Elementary School and Picture Rocks Intermediate School are located at the southwest corner of Sanders Road/Rudasill Road. Marana High School is just outside the study area to the north on Sandario Road. Three other elementary schools and a private school are located to the west of the study area on Silverbell Road.

Recreation Facilities

Two parks are located within the Picture Rocks study area. The largest is SNP, which makes up the southwest corner of the study area. The other park and recreation area is Picture Rocks Park located on Sanders Road next to Picture Rocks Intermediate School.

Community Facilities

The Picture Rocks Community Center is located on Sanders Road, south of Rudasill Road, at 5615 Sanders Road.

Picture Rocks Community Center, Inc. Information and Services (PRCCI) is a locally-run, all-volunteer non-profit organization that specializes in helping others with food and low-cost clothing. It is located just south of the Minit Market at 6691 Sanders Road.

Three churches are located in the study area near the Picture Rocks Road and Sandario Road intersection: Praise Center Assembly of God, Sandario Baptist Church, and the Chapel of Life.

Pima County Sheriff Substation is located at 6261 N. Sandario Road. Picture Rocks Fire District is located at 6625 N. Sandario Road.

Commercial

The Minit Market is located at the southwest corner of Picture Rocks Road/Sandario Road.

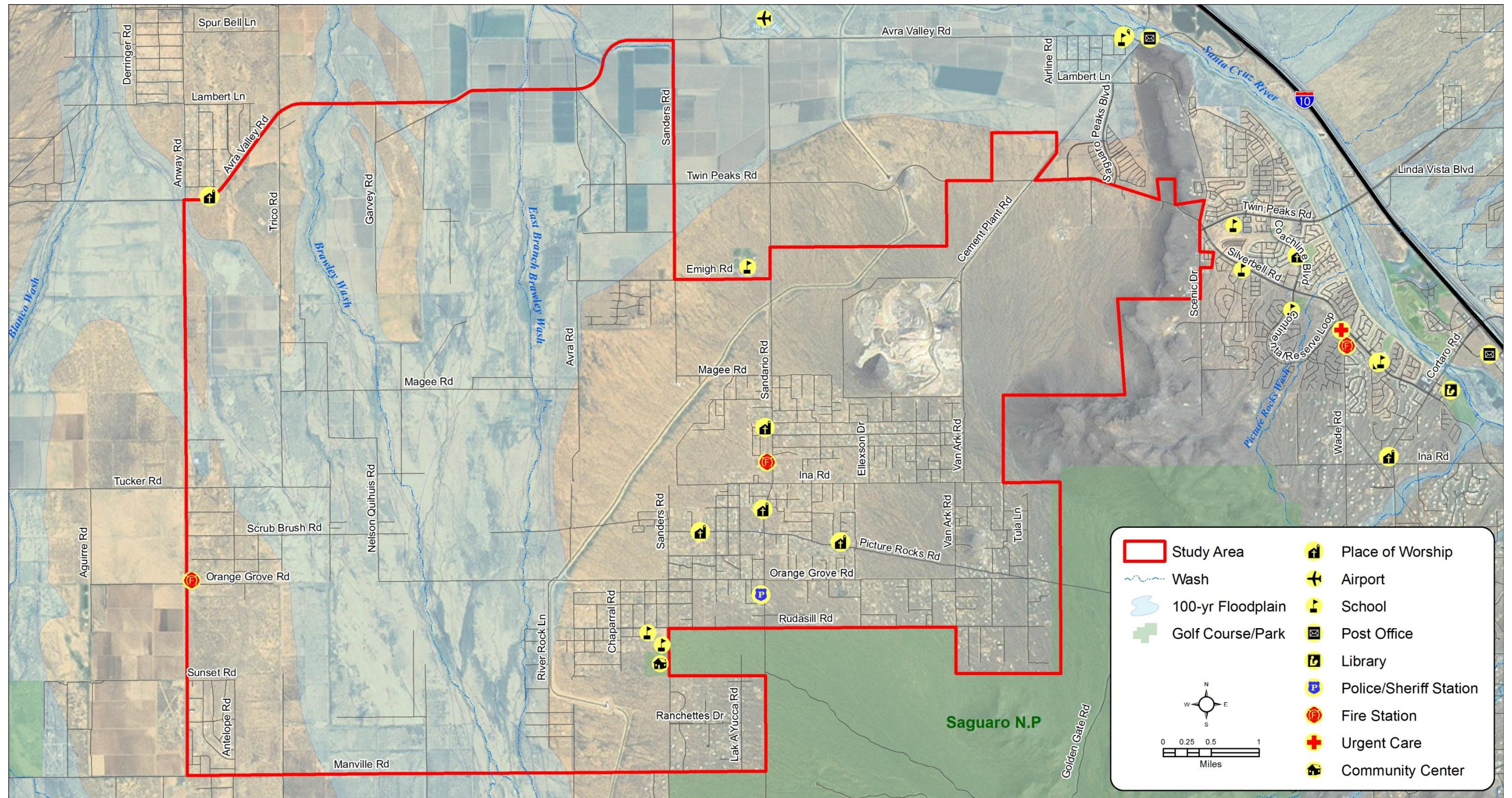


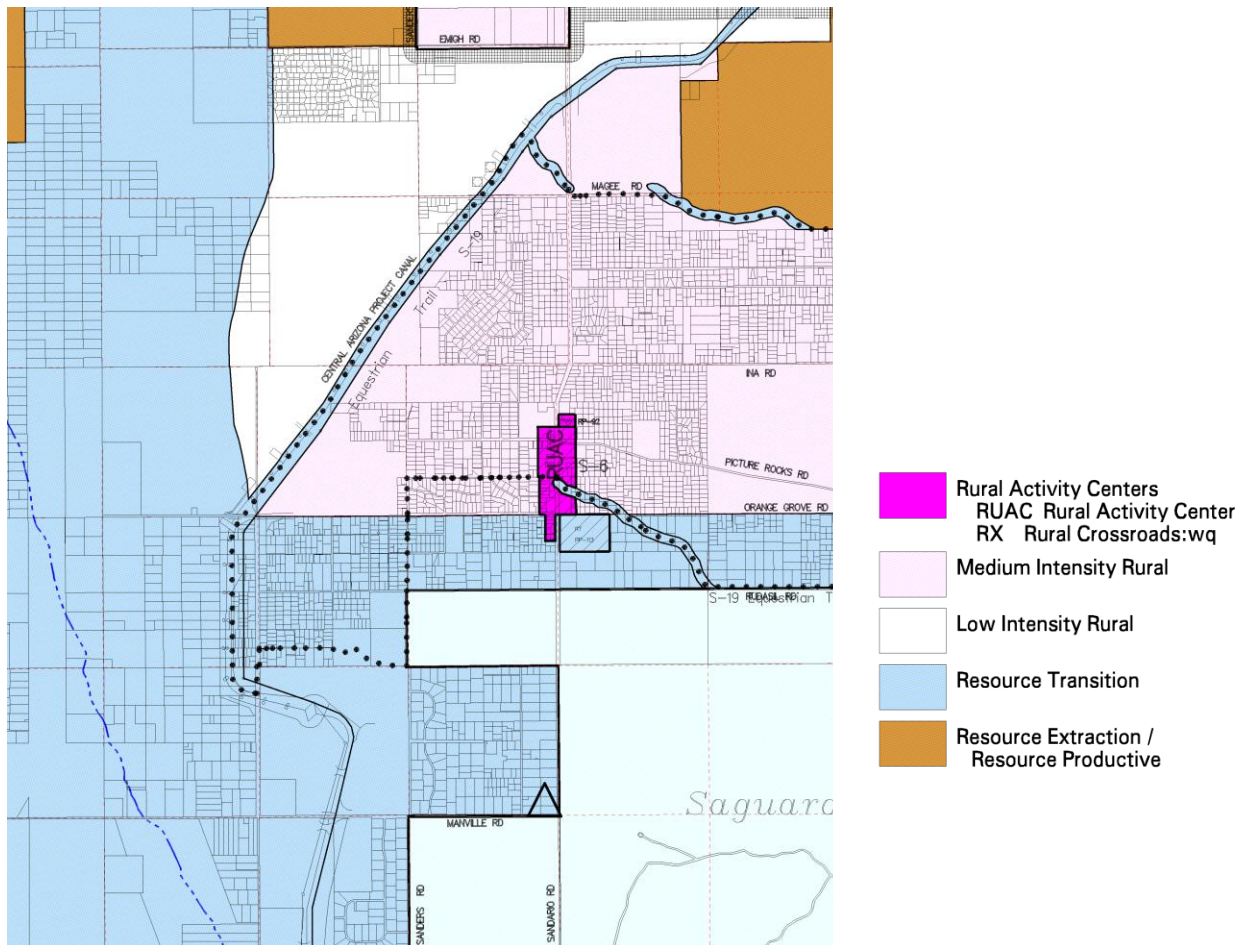
Figure 6 – Community Features

2.2.4 FUTURE LAND USE

Future land use for the Picture Rocks study area was obtained from the *Pima County Comprehensive Land Use Plan*. In general, land use is not planned to change significantly with the time-frame of this plan. Future land use is medium-density residential within the area approximately bounded by the CAP Canal to the north and west, Van Ark Road to the east, and Orange Grove Road to the south.

The western portion of the study area (west of the CAP Canal) will remain low-density residential and resource transition areas. There is no anticipated change to State Trust land in the foreseeable future. Planned land uses are shown in **Figure 7**.

The *Pima County Comprehensive Land Use Plan* is currently being updated. The state deadline for adoption of the update is July 15, 2015.



Source: Pima County Comprehensive Land Use Plan, Planned Land Use, Northwest Subregion, December 18, 2001

Figure 7 – Planned Land Use

2.3 DEMOGRAPHICS AND SOCIOECONOMICS

An analysis of population and employment data was conducted and is summarized below.

2.3.1 POPULATION AND EMPLOYMENT

Population data was obtained from the 2000 and 2010 United States Census and is shown in **Table 1**. Picture Rocks is a census-designated place (CDP) as defined by the United States Census Bureau. The most recent data shows that there were 9,563 residents in 2010 compared to 8,139 residents in 2000. This represents a 17.5% increase in population and a 1.63% compound annual growth rate over the 10-year period.

The growth rate within Picture Rocks is similar to Pima County and the State of Arizona. The compounded annual growth rate for Pima County and the State of Arizona are 1.51% and 2.22%, respectively.

Table 1 – Current Study Area Population

Area	2000 Population	2010 Population	Compound Annual Growth Rate, 2000-2010
Picture Rocks	8,139	9,563	1.63%
Pima County	843,746	980,263	1.51%
State of Arizona	5,130,632	6,392,017	2.22%

Source: 2000 & 2010 United States Census Bureau

Population densities within the study area are shown in **Figure 8**. Higher areas of population are located near Sandario Road, Ina Road, Magee Road, and Picture Rocks Road.

Figure 9 shows the density of residents 65 and older from the 2010 Census, which is very similar to the general population.

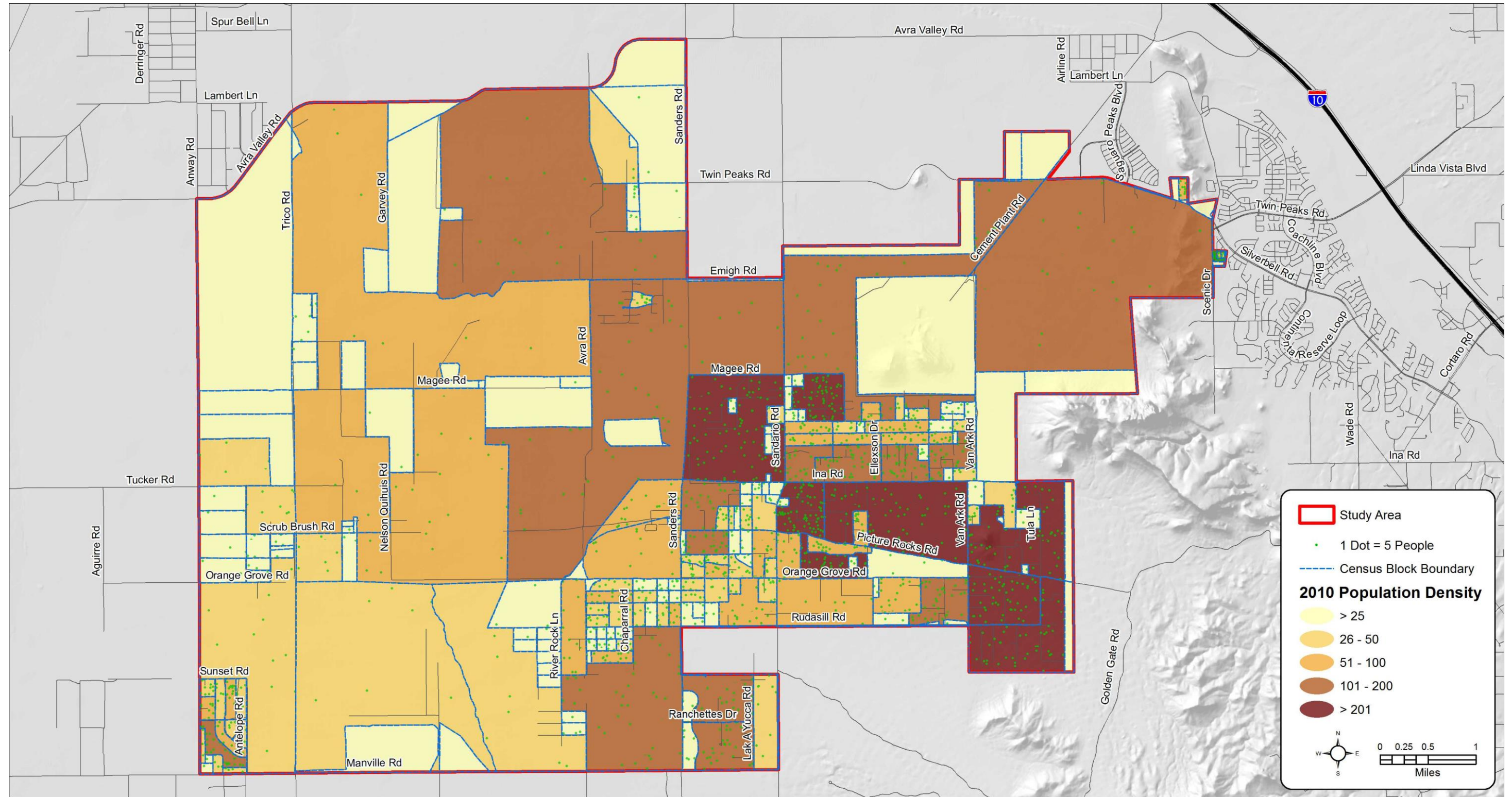


Figure 8 – 2010 Population Density

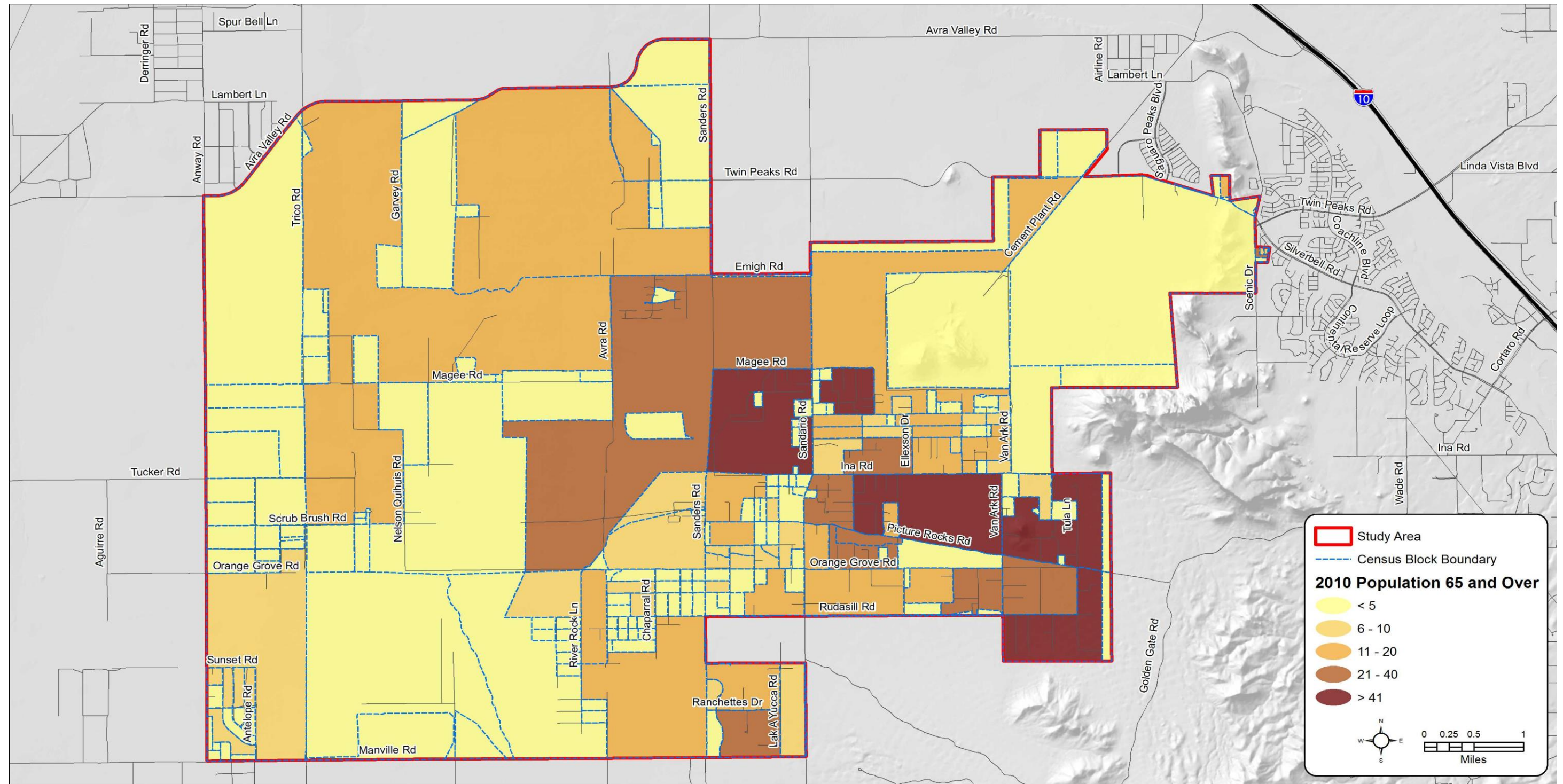


Figure 9 – Distribution of 2010 Populations 65 and Older

2.3.2 AGE DISTRIBUTION

The age distribution of residents from the 2010 Census is shown in **Table 2** and in **Figure 10**. As can be seen from these data, the largest segment of the population is residents between ages 49-54 which comprise 27% of the population. As these residents age into retirement, they may have additional needs for transportation services. Residents 65 and older comprise nearly 14% of the population.

Table 2 – Age Distribution

Age	Number of Persons	Percent
Under 5 years	517	5.4
5 to 9 years	563	5.9
10 to 14 years	636	6.7
15 to 19 years	697	7.3
20 to 24 years	485	5.1
25 to 29 years	400	4.2
30 to 34 years	444	4.6
35 to 39 years	489	5.1
40 to 44 years	684	7.2
45 to 49 years	892	9.3
50 to 54 years	881	9.2
55 to 59 years	848	8.9
60 to 64 years	698	7.3
65 to 69 years	544	5.7
70 to 74 years	371	3.9
75 to 79 years	209	2.2
80 to 84 years	126	1.3
85 years and over	79	0.8
Median age (years)	42.2	-

Source: U.S. 2010 Census

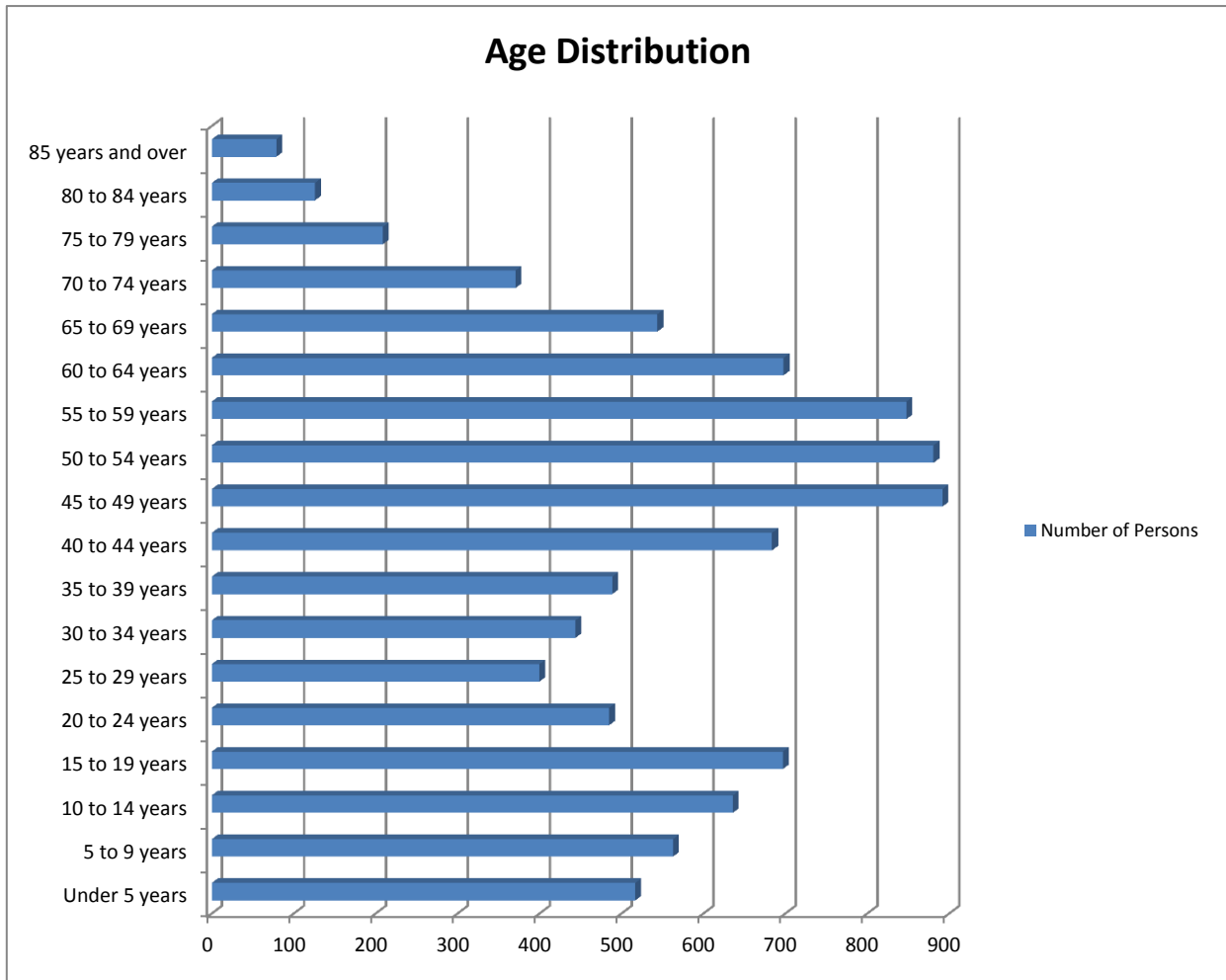


Figure 10 – Age Distribution

2.3.3 HOUSEHOLD SIZE AND VEHICLE AVAILABILITY

Household size and vehicle availability information is provided through the American Community Survey. Data for the Picture Rocks CDP is provided in **Table 3**.

The total number of households in the Picture Rocks study area estimated to be without a vehicle is 110 households, representing approximately 212 persons.

Table 3 – Households and Vehicle Availability, 2012

Picture Rocks CDP, 2011	Households
Total Households	3,320
No vehicle available	110
1 vehicle available	867
2 vehicles available	1,375
3 vehicles available	579
4 or more vehicles available	389
1 person household	794
No vehicle available	72
1 vehicle available	419
2 vehicles available	224
3 vehicles available	44
4 or more vehicles available	35
2 person household	1433
No vehicle available	0
1 vehicle available	245
2 vehicles available	736
3 vehicles available	255
4 or more vehicles available	197
3 person household	508
No vehicle available	12
1 vehicle available	119
2 vehicles available	200
3 vehicles available	129
4 or more vehicles available	48
4 person household	585
No vehicle available	26
1 vehicle available	84
2 vehicles available	215
3 vehicles available	151
4 or more vehicles available	109

Source: American Community Survey, 2011

2.3.4 EMPLOYMENT

Employment data was obtained from the 2010 United States Census Selected Economic Characteristics, DP03. **Table 4** provides a breakdown of the different types of employment sectors within the Picture Rocks study area. Major employment sectors include:

- Educational services, health care, and social assistance
- Retail Trade
- Professional, scientific, management, administrative and waste management
- Construction

These employment sectors are not available within the Picture Rocks area but require residents to travel to the metropolitan areas of Tucson and Marana for jobs.

Table 4 – Employers and Employment Sectors

Picture Rocks CDP Employees	Number of Employees	Percent of Employees
Civilian employed population 16 years and over	3,958	100
Agriculture, forestry, fishing and hunting, and mining	13	0.3
Construction	358	9.0
Manufacturing	108	2.7
Wholesale trade	91	2.3
Retail trade	659	16.6
Transportation and warehousing, and utilities	224	5.7
Information	86	2.2
Finance and insurance, and real estate and rental and leasing	156	3.9
Professional, scientific, and management, and administrative and waste management services	399	10.1
Educational services, and health care and social assistance	1,022	25.8
Arts, entertainment, and recreation, and accommodation and food services	322	8.1
Other services, except public administration	327	8.3
Public administration	193	4.9

Source: United States 2010 Census Table DP03

2.3.5 TOURISM

Tourism attractions include SNP, which is managed by the United States National Park Service. SNP is 143 square miles and makes up the southeast border of the study area.

According to the National Park Service, SNP received 364,287 visitors in 2012. This means that a significant amount of seasonal traffic on the roads leading to the SNP Visitors Center is unfamiliar with area roadways. Tourists also tend to drive more slowly, and tend to stop frequently to sight-see.

2.3.6 TRANSPORTATION MODES

Data that reflects how workers 16 years of age and older are traveling to work was obtained from the 2010 Census Selected Economic Characteristics Data. **Table 5** summarizes this information for the Picture Rocks area and shows how the modes of travel compare to the State of Arizona as a whole. The commuting data for Picture Rocks is similar to the State of Arizona in all but two categories. Picture Rocks has zero walking and public transportation commuters while Arizona as a whole is 2% higher in these categories.

Table 5 – Modes of Transportation for Workers 16 Years and Older

Mode of Transportation	Percent of Workers 16 and over	
	Picture Rocks	Arizona
Automobile – Drove Alone	80.4	75.8
Automobile – Carpooled	12.3	12.3
Public Transportation	0.0	2.0
Walked	0.0	2.1
Other Means (includes bicycling, other modes of transportation)	1.3	2.5
Worked at Home	6.0	5.4

Source: United States 2010 Census Table DP03

2.3.7 TITLE VI POPULATIONS AND ENVIRONMENTAL JUSTICE

Transportation projects that utilize United States federal aid are required to certify non-discrimination under the requirements of Title VI of the Civil Rights Act of 1964. Also, in 1997, the U.S. Department of Transportation issued the DOT Order to Address Environmental Justice in Minority Populations and Low-Income Populations to summarize and expand upon the requirements of Executive Order 12898 on Environmental Justice. In accordance with the intent of these federal requirements, analysis was completed to identify disadvantaged populations within the study area and any likely adverse impacts on those disadvantaged populations from proposed transportation improvements.

According to the 2010 U.S. Census, the racial composition of Picture Rocks is predominantly White (not Hispanic), as shown in **Table 6**, with a significant portion of Hispanic or Latinos. All other race percentages are insignificant.

Table 6 – 2010 Census Racial Demographic Percentages

Area	White Not Hispanic	African American	Native American	Asian	Native Hawaiian	Other	Two or More Races	Hispanic or Latino
Picture Rocks CDP	79.3%	0.7%	1.0%	0.5%	0.0%	0.3%	1.9%	16.3%

Source: 2010 Census Table DP-1

The Executive Order also requires the consideration of persons older than 60 years of age. According to the U.S. 2010 Census, approximately 21.2% of the population of Picture Rocks is 60 years or older. Title VI population data for the year 2010 for Picture Rocks is shown in **Table 7**.

Table 7 – 2010 Title VI Population Percentages

Population Category	Picture Rocks CDP
Females	49.4%
Males	50.6%
Minority Races	20.7%
Persons over age 60	21.2%
Persons with incomes below poverty level	9.2%

Source: 2010 Census Table DP-1, DP03

3. Traffic and Roadway Assessment

This chapter presents data on current and future transportation conditions to identify needs of the transportation system.

3.1 PREVIOUS PLANS AND STUDIES

The plans and studies listed in **Table 8** relating to transportation in the Picture Rocks area were reviewed. A summary of key information applicable to the Picture Rocks Multimodal Transportation Study is provided in **Table 8**.

Table 8 – Summary of Completed Plans and Studies

Document ID	Document Name	Organization/ Author	Key Information Applicable to Picture Rocks Multimodal Transportation Study
1	2014-2018 Transportation Improvement Program, adopted June 2013.	PAG	Short-range transportation projects planned in the study area or vicinity.
2	2040 Regional Transportation Plan, adopted July 1, 2010 and June 29, 2012 RTP Update	PAG	Long-range transportation projects planned in the study area or vicinity.
3	Tucson Regional Plan for Bicycling, September 2009	PAG	Bicycle routes and regional goals for bicycling.
4	Picture Rocks Road (Sandario to Wade) Sandario Road (Mile Wide to Picture Rocks) Road Safety Assessment, February 2012	ADOT – Arizona Road Safety Assessment Program	Identification of safety needs and potential projects on Picture Rocks Road and Sandario Road, in conjunction with Documents 5 and 6, below.
5	Traffic Safety Study – Picture Rocks Road, 7000 W – 11800 W, November 19, 2012	Pima County Department of Transportation – Traffic Engineering Division	Identification of safety needs and potential projects on this segment of Picture Rocks Road between Wade Road and Sandario Road.
6	Traffic Safety Study – Sandario Road, 2400 N – 8800 N	Pima County Department of Transportation – Traffic Engineering Division	Identification of safety needs and potential projects on this segment of Sandario Road north of Mile Wide Road and continuing northward to Emigh Road.
7	Intermountain West Corridor in Pima County – A Preliminary GIS-Based Roadway Alignment and Impact Study, June 21, 2013	Pima County Department of Transportation	This report describes an alternative roadway alignment for a theoretical new interstate route through Avra Valley. The route description was used as general reference in the study.

Document ID	Document Name	Organization/ Author	Key Information Applicable to Picture Rocks Multimodal Transportation Study
8	PAG Short Range Transit Program Implementation Plan, FY 2014-FY 2018	PAG	A future Route 411 transit route extension to Picture Rocks is included as a remaining RTA Expansion project in Appendix B of the report, which also describes prioritization process for programming regional transit funds (Appendix G). Note that funding is not available within the RTA to implement this project.

3.2 SUMMARY OF STAKEHOLDER INTERVIEWS/SURVEYS

Interviews with stakeholders were held to obtain information on transportation needs and improvement priorities.

Stakeholders were defined as persons whose jobs involve the transportation system. These persons have knowledge of the transportation system gained from on-the-job experience, knowledge, and expertise. Stakeholders include representatives from the following organizations:

- Pima County Sheriff’s Department
- Pima County Supervisor, District 3
- Picture Rocks Fire District
- Arizona State Land Department
- Picture Rocks Community Association (Citizens for Picture Rocks)
- Marana Unified School District
- National Park Service (SNP)
- Pima County Department of Transportation Traffic Engineering Division

Stakeholder interviews were conducted in November 2013. Typical stakeholder questions included the following:

1. Tell me about your organization and the clientele/constituency that you serve.
2. What are the primary transportation needs within the Picture Rocks study area?
 - a. Safety – needs in the areas of emergency response, crashes, traffic control needs, signing/stripping, speed, etc.)
 - b. Transit – needs regarding type of service, residents that would be served, destinations to be served, primary benefits to the community
 - c. Roadways – needs regarding lighting, temporary traffic control for flooding, geometry, capacity, access
 - d. Intersections – needs regarding traffic control, road and intersection capacity, currently uncontrolled intersections, crash experience at intersections
 - e. Pedestrians/Bicyclists – needs regarding safety improvements, sidewalks, paths, trails, crossings, school safety.

Table 9 summarizes the stakeholder discussions. Consistent comments made by the stakeholders include:

- Need for transit service and school bus pullouts
- Need for road maintenance (non-county-maintained roads)
- Need for safety improvements on Sandario Road and Picture Rocks Road
- Need for roadway shoulders for bicyclists and pedestrians
- Need for speed control measures

Table 9 – Summary of Stakeholder Input on Transportation Needs

Topic	Pima County Sheriff's Department	Pima County Supervisor – District 3	Picture Rocks Fire District	Arizona State Land Department	Picture Rocks Community Association	Marana Unified School District	National Park Service	Pima County Department of Transportation Traffic Engineering Division
Tell me about your organization	Picture Rocks is served by Pima County Sheriff Department, Tucson Mountain District.	The Picture Rocks area is part of District 3 of Pima County.	Picture Rocks Fire District provides emergency response (fire and paramedic) to the Picture Rocks area.	The Arizona State Land Department manages approximately 9.2 million acres of State Trust lands within Arizona. These lands are held in trust and managed for the sole purpose of generating revenues for the 13 State Trust land beneficiaries, the largest of which is Arizona's K-12 education. The Arizona State Land Department manages several sections of land in Picture Rocks (refer to Figure 4) encompassing approximately 5,754 acres.	Citizens For Picture Rocks is a non-profit all-volunteer community improvement organization incorporated as a 501(c) (4). It was founded in 2002 by a group of residents concerned with crime in the community.	The District is located in south central Arizona, approximately 16 miles northwest of downtown Tucson. The district comprises 11 elementary schools, one inter-mediate school, two middle schools, two high schools, and one alternative school.	SNP is located directly adjacent to the Picture Rocks area. The National Park Service owns lands adjacent to Picture Rocks Road, a primary access to and from the area from the Tucson metro area.	PCDOT Traffic Engineering Division has conducted several safety studies on area roadways including Picture Rocks Road and Sandario Road. Pima County owns and maintains roadways within the area.

Table 9 – Summary of Stakeholder Input on Transportation Needs, cont.

Topic	Pima County Sheriff's Department	Pima County Supervisor – District 3	Picture Rocks Fire District	Arizona State Land Department	Picture Rocks Community Association	Marana Unified School District	National Park Service	Pima County Department of Transportation Traffic Engineering Division
Safety Needs	<p>Vehicle speeds are an issue in general and in particular on major roadways such as Sandario Road.</p>	<p>Picture Rocks Road is currently of most concern; several serious injury and fatal crashes were experienced over the past few years (particularly in 2011 and 2012). Many involve motorcycles and speeding. DUI has also been identified as a concern on area roadways.</p> <p>A potential improvement is to install a variable message sign/boards to notify Picture Rocks residents when there are closures of Picture Rocks Road (e.g., due to a crash, etc.). These message boards would be placed on both sides of the Tucson Mountains, possibly at the Minit Market at Picture Rocks/Sandario Road, providing residents a choice to choose an alternative route.</p>	<p>There have been several crashes in Picture Rocks Road in 2011-2012. In 2012, there were 5 fatalities, in 2011 there were 4. In 2013, there is 1 crash year to date.</p> <p>There is a need for a center rumble strip on Picture Rocks Road. Almost every crash has been head-on to shave the corners to pick up speed.</p> <p>The Fire Station is located on Sandario Road, across from Cloud View. There is a need for a fire signal beacon to assist fire trucks entering Sandario Road.</p>		<p>Vehicle speeds and enforcement are key safety needs.</p>	<p>School buses use un-maintained county roads; following inclement weather, many of these roads are unpassable.</p>	<p>There have been several crashes on Picture Rocks Road through the areas with tight geometry. Picture Rocks Road is essentially a 'wagon road' that has been paved but never properly designed.</p> <p>There is an S-curve on Sandario Road that is a safety concern due to the geometry; in addition, this curve has a high rate of wildlife mortality.</p>	<p>A safety project is in the planning stages for Picture Rocks Road at the S-curve where Picture Rocks Wash crosses Picture Rocks Road; will also look at other S-curves where fatalities have occurred.</p> <p>The long-term desire is to install safety shoulders on sections of Sandario Road and Picture Rocks Road. These are currently unfunded projects.</p> <p>A contributing factor for crashes on Picture Rocks Road is local traffic using Orange Grove Road as an alternative, and then heading north to Picture Rocks Road; several crashes are at these intersections. PCDOT is going to initiate a study of the S-curve on Sandario Road near Kinney Road. They are also considering improving Sandario Road to three lanes from Picture Rocks Road to SNP (Rudasill Road).</p>

Table 9 – Summary of Stakeholder Input on Transportation Needs, cont.

Topic	Pima County Sheriff's Department	Pima County Supervisor – District 3	Picture Rocks Fire District	Arizona State Land Department	Picture Rocks Community Association	Marana Unified School District	National Park Service	Pima County Department of Transportation Traffic Engineering Division
Transit Needs	<p>Transit is the most important need in the Picture Rocks area to provide access to social services, medical services, food, etc. Transit service would allow people to be able to be more independent. The ideal scenario is a small bus that transports and connects to an existing transit service. It needs to run early enough and late enough to be useful for people to use to get to work. Route 411 (in Marana) offers a connection opportunity. There could also be a benefit to transit service running south to Ajo Way as an alternative route to connect to Tucson.</p>	<p>Transit is the top priority for Picture Rocks.</p> <p>Elderly, teens and younger people are in need of transit to access social services, medical care, and employment opportunities.</p> <p>The community has been focused on obtaining transit service for 10 years. They would like to apply for 5310/5311. Funds.</p> <p>A large response to the recent PAG/Sun Tran survey illustrates the need for transit service. Options include an extension of Route 411 (from Marana) to Picture Rocks.</p> <p>Potential key destinations for transit are the Walmart and Fry's near Cortaro Road. The Marana Health Care Clinic is also a potential important health destination.</p>	<p>There has been consistent conversation related to transit over the past several years.</p> <p>The Fire Department transports a lot of people every year because they can't access medical care; they call an ambulance as an alternative.</p> <p>A lot of hitchhikers going into town.</p> <p>The economic downturn has made the situation more difficult for seniors and those potentially dependent upon transit service; lack of employment makes it so they can't afford vehicles, but need to commute to Tucson for employment.</p>		<p>They have suggested and explored an extension of Route 411, which connects to commuter service at Arizona Pavilions (Cortaro Farms Road/I-10). PAG conducted a study of this which determined that while there is a need, it is a lower-priority need than other regional needs.</p> <p>Marana hasn't supported the extension. Land use density along the route makes the feasibility of this route questionable. This route would serve Marana High School and connect to Picture Rocks Community Center. Service could be am and pm only.</p> <p>The lack of transit service forces elderly people to move away because of a lack of transportation options as they age. Access is needed within the community as well and access to stores in Marana.</p> <p>Connecting to Marana (410) doesn't work well because it is a very long route and doesn't directly access the services needed.</p>	<p>School buses utilize bus stops on Picture Rocks Road and turnarounds.</p> <p>Bus turnouts and waiting areas are needed along Sandario Road to get kids off of the road.</p> <p>There are several county unmaintained roads that are unpassable following rain storms.</p>	<p>There is a need for transit stops at trailheads and the visitor center.</p> <p>Idea would be for SNP to have its own bus (branding/label).</p>	<p>Additional analysis of full-range of transit options is needed. PAG analysis focused on an evaluation of transit service as compared to other regional transit needs. The evaluation also just focused on an extension of Route 411, and did not fully evaluate transit needs in the community.</p>

Table 9 – Summary of Stakeholder Input on Transportation Needs, cont.

Topic	Pima County Sheriff's Department	Pima County Supervisor – District 3	Picture Rocks Fire District	Arizona State Land Department	Picture Rocks Community Association	Marana Unified School District	National Park Service	Pima County Department of Transportation Traffic Engineering Division
Roadway Needs	<p>Roadways in Picture Rocks lack curb and sidewalk. Narrow shoulders provide little recovery for vehicles. A lack of shoulders makes it difficult for bicyclists.</p> <p>For example, the S-curve on Picture Rocks Road has no shoulder and has an edge drop-off of about 6 inches; vehicles that cross the edge are not able to recover.</p> <p>There is not a need for roadway lighting (except perhaps at focused intersections).</p>	<p>Most development in the area is unregulated lot-splitting (Arizona law allows property owners to split lots into five or fewer parcel and sell them without adhering to subdivision standards). This results in subdivisions without basic infrastructure such as streets, sewer lines, storm drain, etc. A majority of local streets in Picture Rocks are unmaintained county roads. In order for the County to maintain them, they must first be improved to county standards. Efforts to organize and establish roadway improvement districts have not been successful.</p> <p>Manville Road and Anway Road have flooding problems. These are not all-weather roads.</p>	<p>NPS doesn't like pullouts, widening, etc.</p> <p>Shoulders are broken off (white strip and then dirt).</p> <p>Picture Rocks was developed primarily as unregulated subdivisions. Most roads are easements. County doesn't maintain them and they are awful roads. Fire trucks get stuck during rainy season. People will use railroad ties to stabilize the road.</p> <p>As we get closer to the mountain the access for fire vehicles gets more difficult.</p> <p>Unmaintained roads are a big issue. Ina Road east of Sandario and Mars Road off of Anthony are big issues.</p> <p>Gets to the point where underground utilities are exposed and kids have to walk out to the main roads.</p> <p>Avra Valley Road accident. Hauling acid to the mine, doing 55 mph and then hit a jog in the road.</p> <p>The changing speed limits on Avra Valley Road create an issue.</p> <p>National Monument has threatened to close Picture Rocks Road.</p>		<p>Want to see long-term plan to address the non-maintained county roads. At least address the roads that are relied upon by school busses and fire trucks.</p> <p>School buses use Ina Road and stir up dust and create air pollution.</p>	<p>Non-county-maintained roads present a challenge for school buses.</p> <p>Kids are unable to travel to the bus on Massingale Road east of Dessert Pass Road.</p> <p>Mars Road closes due to weather from Ellexson Drive to Lydia Ave.</p> <p>Buses cannot travel on Ina Road from Ellexson Drive to west of Desert Post Lane.</p> <p>Ina Road from Sandario Road to Ellexson Drive is closed in inclement weather.</p> <p>Drainage improvements are needed on Manville Road at wash crossing.</p> <p>Drainage improvements are also needed on Anway Road just south of Avra Valley Road.</p> <p>Scrub Brush Road between Anway Road and Saltbrush Road closes during inclement weather.</p>	<p>Picture Rocks Road was not engineered to accommodate the current traffic volumes and speeds. It is essentially a wagon road that has been paved.</p> <p>A minor project to improve sight lines, install centerline rumble strips and raised pavement markers (RPMs) is underway.</p> <p>30' right of way from centerline and 100' from centerline of road is designated Wilderness.</p> <p>Long-term plan is to close Golden Gate Road from Picture Rocks Road to Sandario/Esparanza Trailhead. This would be a great pick up/drop off for visitors.</p> <p>Need enforcement for the 15,000 lb limit on Picture Rocks Road.</p> <p>Most park visitors use Picture Rocks Road. Way-finding sign on Avra Valley Road needs to be repaired. Preferably people would use Twin Peaks Road/Sandario Road to access the park. Signage is needed on I-10 directing people to use Twin Peaks Road.</p> <p>This will benefit the Town of Marana and the Picture Rocks community.</p>	<p>S-curve on Picture Rocks road needs realignment. A study is being developed for this project. HSIP funding is anticipated.</p> <p>Study will evaluate improving Picture Rocks Road to 3-lane section from SNP to Sandario Road.</p> <p>S-curve on Kinney Road near Sandario Road will also be studied (high crash area).</p> <p>PCDOT has identified a need to add a left turn lane and shoulders on Sandario Road between Ina Road and Emigh Road.</p> <p>Ina Road needs drainage improvements. Sanders Road from Picture Rocks Road to south of the community center needs drainage improvements.</p> <p>There is not an identified safety issue with non-county-maintained roads (from crash perspective); they would be identified within SMS. Speeds and volumes are so low.</p> <p>PCDOT is seeking funding for advanced warning flashers on Manville Road at Brawley Wash. AGFD is reviewing wildlife crossings locations.</p>

Table 9 – Summary of Stakeholder Input on Transportation Needs, cont.

Topic	Pima County Sheriff's Department	Pima County Supervisor – District 3	Picture Rocks Fire District	Arizona State Land Department	Picture Rocks Community Association	Marana Unified School District	National Park Service	Pima County Department of Transportation Traffic Engineering Division
Intersection Needs		Lighting is a need at the intersections of Rudasill/Sandario, Manville/Sandario and Mile Wide/Sandario.	On the weekends there is a swap meet at the intersection of Picture Rocks Road and Sandario Road (two gas stations kitty corner). Pedestrians cross the intersection access the market, etc. There is a need for defined crosswalks. Need for sidewalks and streetlights at the major intersections. Rudasill Road/Sandario Road Intersection needs improved traffic control or enforcement.		People are not stopping at the intersection of Sandario Road and Rudasill Road.			The intersection of Orange Grove Road/Sandario Road needs to be improved due to poor geometry (however, there has not been a crash history at this intersection).
Pedestrian/Bicyclist Needs	Pedestrians are limited by how far they are going to walk and because of this very few people are walking. Pedestrian facilities would get minimal usage. Bicycle facilities within the community would get used. Limited shoulder width makes it uncomfortable for bicyclists to ride on major roadways. There are bicyclists in the community but they are not riding for inter-travel within the Picture Rocks area. There are lots of recreational cyclists who visit the community. Transit service would be a higher priority.	There are no shoulders or no room for pedestrians on major roads. This is a popular recreational riding area but there are no shoulders. Shoulder improvements would be a good transportation enhancement project. PCDOT added school bus stops. Focus on walking routes to the Community Center, Minit Market at Picture Rocks Road/Sandario Road, and from Marana High School to Rudasill Road. Rudasill Road needs improvements to the Community Center to accommodate pedestrians and bicyclists. There is a need for the Safe Routes to School program.	Very popular bike route		There are no bicycle and pedestrian facilities and people ride and walk at their own risk. Need for a complete streets with bike lane and sidewalk. In general there are no good places to walk and no safe route from the Community Center to Marana High School. Even though there are routes that could be followed, roads quickly change from county road to county unmaintained roads. When you get off the main roads you would need a mountain bike. Need for walking trails to bike paths. Picture Rocks Road does not have shoulders, etc. for bicyclists.	Extend path from schools to community center.	There is a trailhead on Sandario Road at Rudasill Road. There are currently no improvements and there is a need for modest parking areas to facilitate visitation to this trailhead. Contzen Pass at Box Canyon Wash: there are concerns with pedestrians and equestrians trying to cross Picture Rocks Road. Shoulders on Picture Rocks Road fits into the long-term perspective. Want to encourage bicycle use on Picture Rocks Road. Long term design would include bicycle use and access.	A long term effort would be to install shoulders on Picture Rocks Road and Sandario Road as part of safety improvements. There is a Central Arizona Project (CAP) Hiking and Equestrian Trail under development.

Table 9 – Summary of Stakeholder Input on Transportation Needs, cont.

Topic	Pima County Sheriff's Department	Pima County Supervisor – District 3	Picture Rocks Fire District	Arizona State Land Department	Picture Rocks Community Association	Marana Unified School District	National Park Service	Pima County Department of Transportation Traffic Engineering Division
Other Comments	<p>Most of the traffic is not associated with Picture Rocks Community.</p> <p>There are lots of retirees because housing is inexpensive and it is close enough to needed services.</p> <p>There are advantages and disadvantages living in Picture Rocks: lack of transit service is a disadvantage; lack of bicycle and pedestrian facilities is another.</p> <p>Most people who are employed commute into Tucson.</p>	<p>Coordinate with the Town of Marana and Marana School District.</p> <p>82% of residents in Picture Rocks are uninsured or on Medicare or Medicaid.</p> <p>It is hard to get home nurses to residents in Picture Rocks because they don't pay mileage.</p> <p>Demographics show that the community is aging; families with youth are not moving into the area.</p> <p>The NPS would prefer to deemphasize Picture Rocks Road and emphasize Twin Peaks Road.</p>	<p>Picture Rocks is an economically depressed area. 82% of people are on Medicare/Medicaid or AHCCSS. This is an indicator of transit dependence.</p> <p>Non-county-maintained roads are an issue: do roads resort to public infrastructure after so many years? Local residents have a grader, but it's impossible to keep up.</p> <p>There is a culture of "I don't want to be part of Tucson"</p> <p>There are lots of people who ride quads and horses.</p>	<p>State Land parcels are not likely to develop because of lack of access to sewer infrastructure.</p> <p>There are too many high priority parcels (e.g., Gladden Farms area). These areas have access to infrastructure.</p>	<p>This study needs to clarify whether Picture Rocks is part of the urban area or part of a rural area.</p>	<p>Need bus staging area at the school for combined use of K-3 and 4-6.</p>	<p>I-11 alignment thorough Sandino road will not be acceptable to the community or to the National Park Service.</p>	<p>Consider removing Orange Grove Road east of Sandario Road to the Tucson Mountains from the Pima County Major Streets and Routes Plan</p>

3.3 EXISTING ROADWAY NETWORK

The existing roadway network in the study area is composed of rural major collectors, rural minor collectors, urban collectors, and local streets. The functional classification of the major roadways is explained later in the report.

Traffic entering into Picture Rocks is limited to a few roadways due to the community's geographical location next to SNP and the Tucson Mountains to the east. No freeways connect Picture Rocks to the Tucson metropolitan area.

The main roadway into the Picture Rocks area from the east (Tucson metro area) is Picture Rocks Road. Picture Rocks Road is the most direct route into the community and it connects to Ina Road, Silverbell Road, and ultimately to the Interstate 10. Sandario Road and Twin Peaks Road provide access from Marana to the north. Kinney Road, Sanders Road, and Anway Road provide access from the south.

Paved and unpaved roads, as well as road maintenance responsibilities, are shown in **Figure 11**.

The limited number of paved roads and lack of all-weather crossings of these roadways limit travel options through the study area. This has been identified as an issue by emergency response stakeholders, as alternate routes are not available when primary routes are closed or impassable due to inclement weather.

A significant issue identified by stakeholders in the Picture Rocks area is road maintenance of non-county-maintained roads. In order for Pima County to bring non-county-maintained roads into the county-maintained road system, the roads need to be improved to County standards. Pima County Code of Ordinances, Section 10.04.030, Road Maintenance, states:

The board of supervisors, acting through the county engineer, shall expend public funds for such maintenance of public roads and streets located without the limits of an incorporated city or town in the county other than legally designated state and county highways as is vital to the public safety. In no event shall any maintenance be performed unless the road or street is laid out, opened and constructed as defined in this title without cost to the county, and in no event shall any rock products, cement or petroleum-product materials be purchased or used in performing such maintenance.

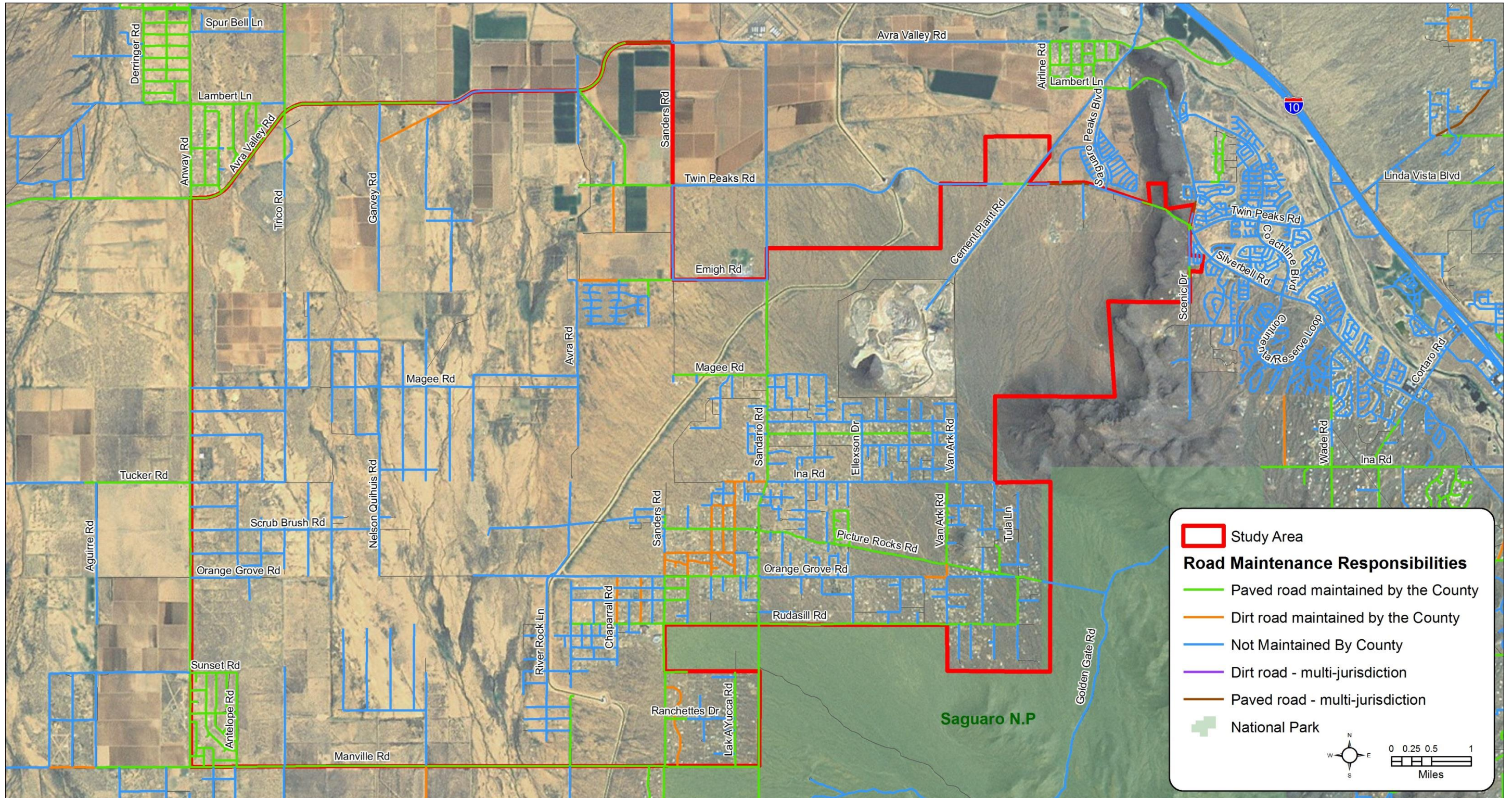


Figure 11 – Road Maintenance Responsibilities

3.4 FUNCTIONAL CLASSIFICATION

Functional classification is the process by which roadways are grouped according to the character of traffic service they are intended to provide. These classifications are used in transportation system planning, roadway design, and determining eligibility for federal roadway improvement funds.

The primary federal functional classifications are freeways, highways, arterials, collectors, and local roadways. These classifications are listed from highest to lowest as it relates to the degree of mobility provided and the degree to which access to adjacent land is restricted. The Federal Highway Administration (FHWA) determines the federal classification of roadways and seeks to maintain the distribution of the various classifications within a set range of percentages for urban and rural areas (where urban and rural areas are as defined by the U.S. Census Bureau). In order to utilize federal funding on roadway improvements, the roadway to be improved must have a federal functional classification. The study area roadways with federal functional classifications are shown graphically in **Figure 12**. The three main types of roadways within the Picture Rocks study area are rural minor collectors, rural major collectors, and urban collectors. The remaining roadways are classified as local streets.

Rural Minor Collector

Anway Road – Anway Road runs north-south starting from West Manville Road and ending at West El Tiro Road. The roadway is two lanes and the speed limit is 50 miles per hour (mph).

Manville Road – Manville Road starts at North Sandario Road and extends west outside of the study area. The portion of Manville Road in the study area is a six-mile-long segment from Sandario Road to Anway Road. Manville Road is a two-lane roadway and has a speed limit of 50 mph.

Twin Peaks Road – The rural minor collector portion of Twin Peaks Road is a one-mile stretch from North Sanders Road to North Avra Road. This portion of Twin Peaks Road is a two-lane roadway and the speed is reduced to 35 mph.

Rural Major Collector

Avra Valley Road – Avra Valley Road runs from I-10 near Marana to N. Pump Station Road and is a two-lane roadway with a speed limit of 55 mph. Avra Valley Road makes up the northwest border of the study area, which is about six miles long.

Twin Peaks Road – Twin Peaks Road is a two-lane east-west collector that runs from I-10 to North Avra Road. Twin Peaks Road is broken up into three segments and crosses the study area in two sections. The rural major collector section is a three-mile stretch from North Silverbell Road to west of Quarry Road. This segment has a speed limit of 45 mph and makes up the north-east border of the study area.

Picture Rocks Road – Picture Rocks Road runs east-west and spans from North Wade Road to North Sanders Road. This portion spans 1.5 miles starting at the east boundary of the study area and ending at North Van Ark Road. This portion of Picture Rocks Road is a two-lane roadway with a speed limit of 40 mph.

Urban Collector

Twin Peaks Road – The urban collector portion of Twin Peaks Road is about three miles long and runs from I-10 to the east side of the study area where it crosses Silverbell Road. The speed limit here is reduced to 35 mph due to crossing an urbanized area.

Picture Rocks Road – The urban segment is a three-mile stretch from North Van Ark Road to North Sanders Road. This portion of Picture Rocks Road is a two-lane roadway with a speed limit of 40 mph.

3.5 MAJOR ROUTES AND SCENIC ROADS

The Pima County Major Streets and Scenic Routes Plan (MSSRP) is both a map and an ordinance that establishes adequate future street widths and setback lines on certain "major" streets in the unincorporated areas of Pima County. Many of the major streets are already widened to their future right-of-way, but others do not have adequate right-of-way or may not have any right-of-way established yet. Major routes in the study area include Anway Road, Manville Road, Orange Grove Road, and portions of Picture Rocks Road, Avra Valley Road, Sandario Road, and Twin Peaks Road.

Scenic routes are designated to preserve and enhance the visual resources of the natural and built environment. The intent of scenic routes are to protect property values and the character of neighborhoods; protect and enhance the unique character of a community, including vegetation, architecture and geology; protect and enhance the economic value of tourism; and protect natural resources.

Scenic roads (also designated as major routes) are designated along sections of Twin Peaks Road, Sandario Road, and portions of Avra Valley Road.

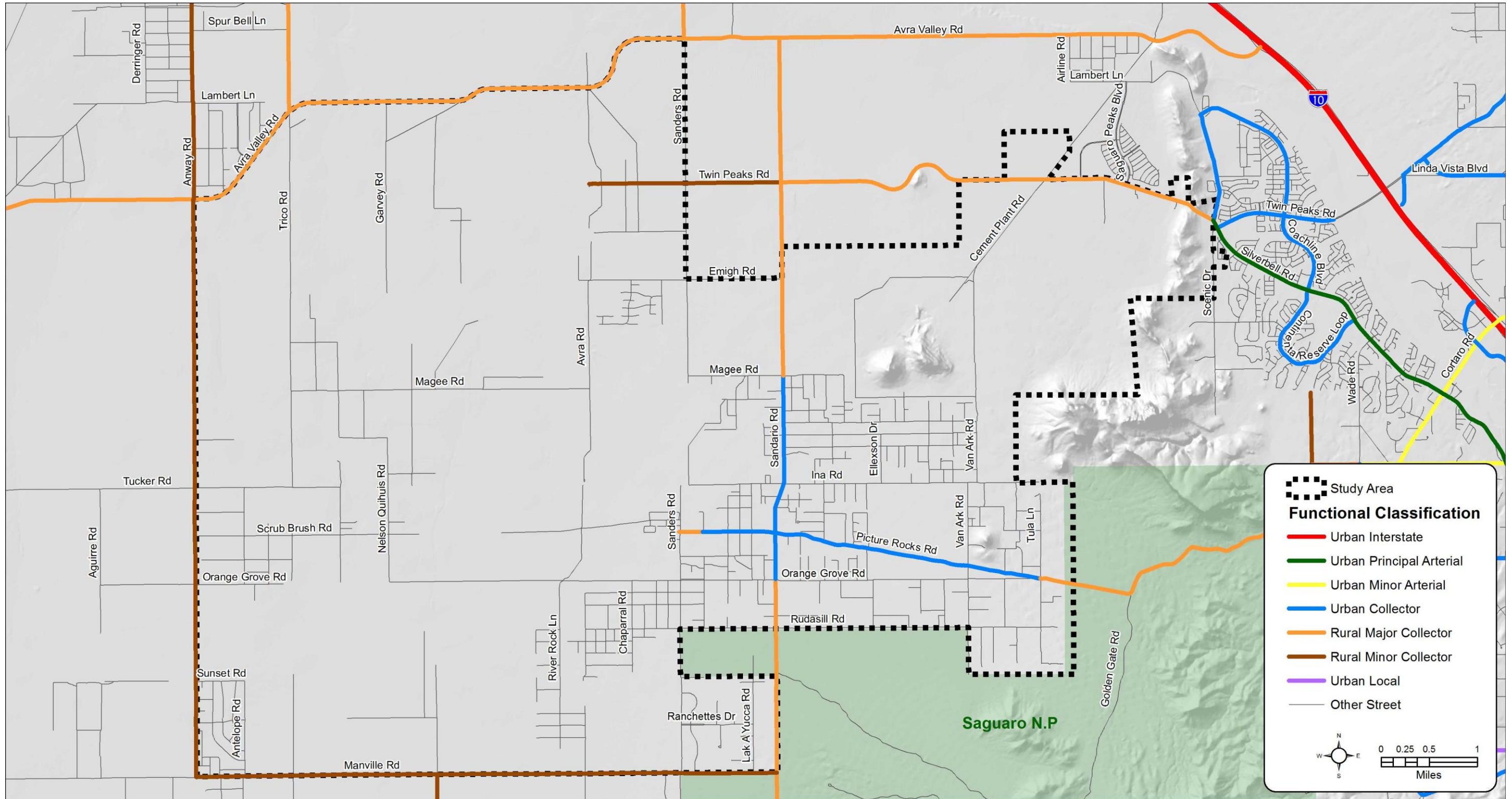
3.6 POSTED SPEED LIMITS

Posted speed limits vary throughout the study area and are summarized in **Table 10**.

Table 10 – Speed Limits

Road Name	From	To	Speed Limits (mph)
Picture Rocks Road	Sandario Road	Wade Road	40
Sandario Road	Manville Road	Picture Rocks Road	35
Sandario Road	Picture Rocks Road	Twin Peaks Road	45
Manville Road	Anway Road	Sandario Road	50
Anway Road	Manville Road	Avra Valley Road	50
Twin Peaks Road	Sandario Road	Silverbell Road	35/45
Avra Valley Road	Anway Road	Trico Road	55
Avra Valley Road	Trico Road	Sanders Road	55
Local Roads	N/A	N/A	20

Source: Visual inspection, Google Earth



Source: Pima County

Figure 12 – Roadway Functional Classification

3.7 PLANNED AND PROGRAMMED TRANSPORTATION PROJECTS

Planned and programmed projects were obtained from the following sources:

- PAG 2040 Regional Transportation Plan
- PAG Regional Transportation Plan Update (June 29, 2012)
- 2014-2018 Transportation Improvement Program, adopted June 2013.

Planned projects are described further as follows.

PAG 2040 Regional Transportation Plan

Future planned projects in the Picture Rocks area were obtained from the PAG 2040 Regional Transportation Plan and the June 29, 2012 Regional Transportation Plan Update. Recommended projects for the Picture Rocks area are summarized in **Table 11**.

Table 11 – Recommended Projects from PAG 2040 Regional Transportation Plan

Street Name	Project Name/Description	Time Period	Comment
Avra Valley Road	Avra Valley Corridor Project (Avra Valley Road #1), Anway Road to Sanders Road, 5.84 miles	Late	Widen to three-lane roadway and safety improvements, \$17,000,000, Pima County sponsorship
Avra Valley Road	Avra Valley Corridor Project (Avra Valley Road #2), Sanders Road to I-10, 6.40 miles	Middle	Widen to four-lane roadway, re-align, multi-purpose lanes and sidewalks, \$62,700,000, Marana sponsorship
Sandario Road	Ajo Way to Emigh Rd, 17.20 miles	Middle	Reconstruct two-lane roadway, \$78,100,000; Pima County sponsorship
Twin Peaks Road	Twin Peaks Corridor Project (Twin Peaks Road #1), Sidewinder Lane to Silverbell Road, 1.20 miles	Middle	Widen to four-lane roadway, \$30,000,000; Pima County sponsorship
Twin Peaks Road	Twin Peaks Corridor Project (Twin Peaks Road #2), Silverbell Road to new I-10 TI, 1.90 miles	Early	Construct four-lane roadway, bridge over Santa Cruz, \$21,456,000; Marana sponsorship
Sandario Road, Picture Rocks Road	Pima County Bicycle Improvements and Programs, Various Locations	Program	Bike lanes/paved shoulders/clear zones

Source: PAG 2040 Regional Transportation Program and the June 29, 2012 Regional Transportation Plan Update

PAG 2014-2018 Regional Transportation Improvement Program

Short-term future projects are identified in the 5-Year Regional TIP, which includes projects in the Picture Rocks study area. These projects are shown in **Table 12**.

Table 12 – Recommended Projects from PAG 2014-2018 5-Year Transportation Improvement Program

Street Name	Project Name/Description	Time Period	Comment
Rudasill Road, Sanders Road	Picture Rocks & Desert Winds Safe Routes to School, Rudasill Road to Sunset Road	Short-Range	Add bike lanes and sidewalks.
Picture Rocks Road	Picture Rocks Road: Sandario to SNP plus Sandario and Kinney, Picture Rocks Road from Sandario to SNP	Short-Range	Develop project scope and estimate

Source: PAG 2014-2018 Regional Transportation Improvement Program

3.8 EXISTING TRAFFIC VOLUMES AND LEVEL OF SERVICE

Traffic volume data is important because it shows the extent of use of a road and serves as a criterion and justification for transportation improvements. In the Picture Rocks study area, traffic volumes are generally low.

Daily traffic volumes were obtained from the PAG roadway segment traffic counts. Since traffic counts were available for different years depending on the specific road, the traffic count data was projected to 2013 by applying a growth rate (derived from the annualized average population growth rate) to the most recent daily traffic volumes. Traffic volume data is summarized in **Table 13**.

Table 13 – Annual Average Daily Traffic Volumes

Road Name	From	To	2009 Daily Traffic Volumes	2010 Daily Traffic Volumes	2011 Daily Traffic Volumes	2012 Daily Traffic Volumes	Estimated 2013 Traffic Volumes
Picture Rocks Road	Sandario Road	Wade Road	8,000		6,001		8,535
Sandario Road	Manville Road	Picture Rocks Road	4,000				4,267
Sandario Road	Picture Rocks Road	Twin Peaks Road		4,570			4,797
Manville Road	Anway Road	Sandario Road		993			1,042
Anway Road	Manville Road	Avra Valley Road		1,143		1,352	1,374

Table 13 – Annual Average Daily Traffic Volumes, continued

Road Name	From	To	2009 Daily Traffic Volumes	2010 Daily Traffic Volumes	2011 Daily Traffic Volumes	2012 Daily Traffic Volumes	Estimated 2013 Traffic Volumes
Twin Peaks Road	Sandario Road	Silverbell Road		4,057			4,259
Avra Valley Road	Anway Road	Trico Road			4,212		4,350
Avra Valley Road	Trico Road	Sanders Road			3,888		4,016

Source: Pima Association of Governments

3.8.1 EXISTING ROADWAY LEVEL OF SERVICE

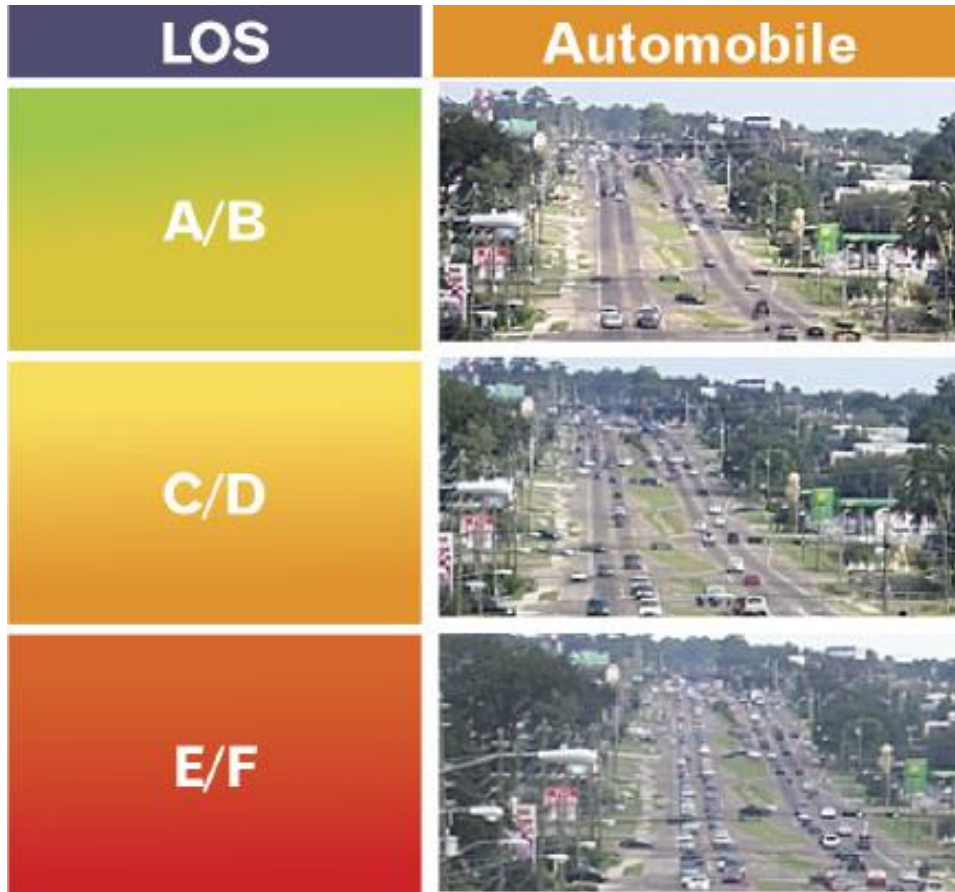
Roadway traffic operations are defined and categorized by the amount of delay experienced by an average driver. Delay is categorized by a grading system called Level of Service (LOS), which has a letter designation ranging from A (no delay) to F (severe congestion). LOS definitions and corresponding volume-to-capacity (v/c) ratios are given in **Table 14** as per the Transportation Research Board’s *Highway Capacity Manual 2000* (HCM). The LOS categories or levels are visually depicted in **Figure 13**.

Table 14 – LOS Definitions and V/C Ratios

Level of Service	Definition	V/C Ratio Range
A	Free flow conditions; virtually no delay	0.0 to 0.50
B	In the range of stable flow, but the presence of other users in the traffic stream begins to be noticeable	0.51 to 0.60
C	Still in the range of stable flow, but marks the beginning of the range in which the operation of individual users becomes significantly affected by others	0.61 to 0.72
D	High-density but still stable flow. Speed and freedom to maneuver are severely restricted, and the driver or pedestrian experiences a generally poor level of comfort and convenience	0.73 to 0.84
E	Represents operating conditions at or near the capacity level. All speeds are reduced to a low but relatively uniform value	0.85 to 1.00
F	Traffic stream is defined as forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse the point	> 1.00

Source: Highway Capacity Manual (2000)

LOS can be determined from the v/c ratio of a roadway. As defined in the HCM, the vehicle capacity of a roadway is “the maximum number of vehicles that can pass a given point during a specified period under prevailing roadway, traffic, and control conditions.” The roadway capacity thresholds for various facility types shown in **Table 15** are derived from the Florida DOT Quality Level of Service Handbook (2013).



Source: Florida DOT Quality/Level of Service Handbook (2013)

Figure 13 – Level of Service

Table 15 – Uninterrupted Flow Highways

Lanes	Median	LOS B Volume Threshold (vehicles per day)	C Volume Threshold (vehicles per day)	D Volume Threshold (vehicles per day)	E Volume Threshold (vehicles per day)
2	Undivided	*	14,400	16,200	**
4	Divided	*	34,000	35,500	**
6	Divided	*	52,100	53,500	**

*Cannot be achieved using table input value defaults

** Not applicable at that LOS letter grade

Source: Florida DOT Quality/Level of Service Handbook (2013)

A review of the estimated 2013 traffic volumes indicate that all of the road segments in the Picture Rocks area are operating at Level of Service A/B levels currently, as shown in **Table 16**.

Table 16 – 2013 Level of Service

Road Name	From	To	Estimated 2013 Traffic Volumes	LOS
Picture Rocks Road	Sandario Road	Wade Road	8,535	A/B
Sandario Road	Manville Road	Picture Rocks Road	4,267	A/B
Sandario Road	Picture Rocks Road	Twin Peaks Road	4,797	A/B
Manville Road	Anway Road	Sandario Road	1,042	A/B
Anway Road	Manville Road	Avra Valley Road	1,374	A/B
Twin Peaks Road	Sandario Road	Silverbell Road	4,259	A/B
Avra Valley Road	Anway Road	Trico Road	4,350	A/B
Avra Valley Road	Trico Road	Sanders Road	4,016	A/B

Source: Calculations by Kimley-Horn

3.9 FUTURE TRAFFIC VOLUMES AND LEVEL OF SERVICE

PAG maintains regional travel demand models and databases. Projected traffic volumes for 2018, 2030, and 2040 were obtained from the PAG regional travel demand model, which has been calibrated and validated using traffic counts, census and household survey data, and other transportation data available in the PAG area. The forecasted traffic volume maps produced by PAG’s travel demand model are largely based on the best estimate of the population and employment in the Tucson region at the time when the model was used.

A traffic analysis zone (TAZ) is the unit of geography most commonly used in conventional transportation planning models. Zones are constructed by census block information. Typically these blocks are used in transportation models by providing socioeconomic data. This information helps to further the understanding of trips that are produced and attracted within the zone. There are eight TAZs in the Picture Rocks area. Assumptions for population, employment, and occupied housing units in the TAZs that comprise the Picture Rocks area are summarized in **Table 17**.

Table 17 – Traffic Analysis Zone Data, 2040

TAZ	Area (Sq. Mi.)	Population (2040)	Occupied Housing Units (2040)	Total Employment (2040)
680	2.7	2003	544	62
684	7.1	4294	1603	138
705	9.1	108	43	65
724	2.3	1515	580	119
727	2.1	923	363	102

Table 17 – Traffic Analysis Zone Data, 2040, cont.

TAZ	Area (Sq. Mi.)	Population (2040)	Occupied Housing Units (2040)	Total Employment (2040)
739	7.8	355	143	509
741	9.1	1082	420	198
767	22.0	762	295	41
TOTAL	62.2	11,040	3,691	1,234

Source: Pima Association of Governments, 2013

The project traffic volumes from the regional travel demand volumes are summarized in **Table 18**.

The LOS for the future travel demand volumes were estimated using the procedures described in the previous section and are summarized in **Table 19**. Sandario Road is estimated to operate at level of Service D or worse in 2040.

Table 18 – Future Traffic Volumes

Road Name	From	To	2013 Estimated Daily Traffic Volumes	2018 Daily Traffic Volumes	2030 Daily Traffic Volumes	2040 Daily Traffic Volumes
Picture Rocks Road	Sandario	Van Ark	8,535	7,519	10,940	12,945
Picture Rocks Road	Van Ark	Golden Gate	8,535	9,316	11,725	12,806
Manville Road	Anway	Reservation	1,042	1,510	1,886	4,668
Manville Road	Reservation	Sanders	1,042	1,386	2,185	1,676
Manville Road	Sanders	Sandario	1,042	3,159	4,190	3,730
Anway Road	Manville	Sunset	1,374	1,459	1,815	4,915
Anway Road	Sunset	Tucker	1,374	761	986	4,698
Anway Road	Tucker	Magee	1,374	846	1,072	4,928
Anway Road	Magee	Avra Valley	1,374	1,418	1,847	5,838
Sandario Road	Twin Peaks	Emigh	4,797	6,834	13,303	18,976
Sandario Road	Emigh	Massingale	4,797	5,685	12,363	17,627
Sandario Road	Massingale	Picture Rocks	4,797	5,548	14,672	16,262
Sandario Road	Picture Rocks	Orange Grove	4,267	8,402	14,188	20,993
Sandario Road	Orange Grove	Rudasill	4,267	6,843	11,514	18,232
Sandario Road	Rudasill	Sunset	4,267	5,995	10,425	17,022
Sandario Road	Sunset	Manville	4,267	5,969	10,038	16,806
Twin Peaks Road	Clayton	Sanders	4,259	922	1,449	NA

Table 18 – Future Traffic Volumes, continued

Road Name	From	To	2013 Estimated Daily Traffic Volumes	2018 Daily Traffic Volumes	2030 Daily Traffic Volumes	2040 Daily Traffic Volumes
Twin Peaks Road	Sanders	Sandario	4,259	4,010	7,820	6,207
Twin Peaks Road	Sandario	Canal	4,259	4,055	8,180	7,080
Twin Peaks Road	Canal	Quarry	4,259	4,094	8,321	7,291
Twin Peaks Road	Quarry	Silverbell	4,259	4,566	8,567	7,686
Avra Valley Road	Anway	Trico	4,350	4,237	5,387	9,835
Avra Valley Road	Trico	Garvey	4,016	4,941	5,729	8,294
Avra Valley Road	Garvey	Clayton	4,016	5,590	7,389	10,255
Avra Valley Road	Clayton	Sanders	4,016	4,668	7,389	10,255

Source: Pima Association of Governments Travel Demand Model, 2013

Table 19 – Future Level of Service

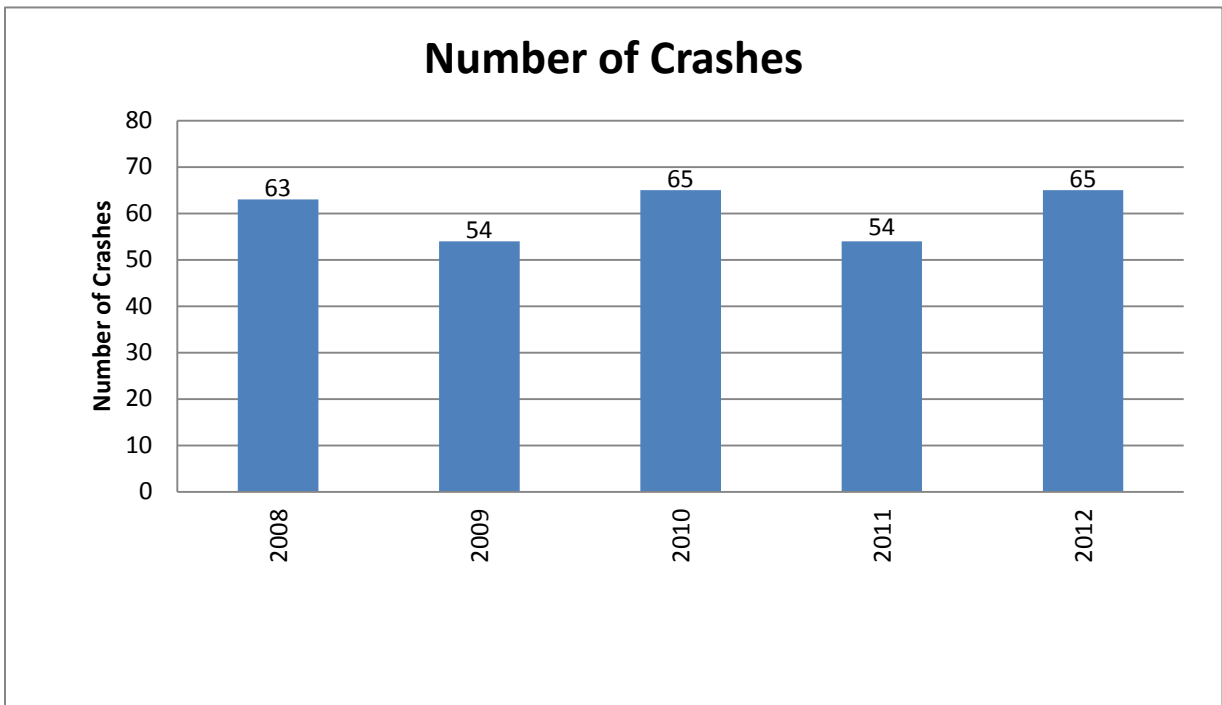
Road Name	From	To	2013 LOS	2018 LOS	2030 LOS	2040 LOS
Picture Rocks Road	Sandario	Van Ark	A/B	A/B	C	C
Picture Rocks Road	Van Ark	Golden Gate	A/B	C	C	C
Manville Road	Anway	Reservation	A/B	A/B	A/B	A/B
Manville Road	Reservation	Sanders	A/B	A/B	A/B	A/B
Manville Road	Sanders	Sandario	A/B	A/B	A/B	A/B
Anway Road	Manville	Sunset	A/B	A/B	A/B	A/B
Anway Road	Sunset	Tucker	A/B	A/B	A/B	A/B
Anway Road	Tucker	Magee	A/B	A/B	A/B	A/B
Anway Road	Magee	Avra Valley	A/B	A/B	A/B	A/B
Sandario Road	Twin Peaks	Emigh	A/B	A/B	C	D or worse
Sandario Road	Emigh	Massingale	A/B	A/B	C	D or worse
Sandario Road	Massingale	Picture Rocks	A/B	A/B	D	D or worse
Sandario Road	Picture Rocks	Orange Grove	A/B	A/B	C	D or worse
Sandario Road	Orange Grove	Rudasill	A/B	A/B	C	D or worse
Sandario Road	Rudasill	Sunset	A/B	A/B	C	D or worse
Sandario Road	Sunset	Manville	A/B	A/B	C	D or worse
Twin Peaks Road	Clayton	Sanders	A/B	A/B	A/B	A/B
Twin Peaks Road	Sanders	Sandario	A/B	A/B	A/B	A/B
Twin Peaks Road	Sandario	Canal	A/B	A/B	A/B	A/B
Twin Peaks Road	Canal	Quarry	A/B	A/B	A/B	A/B
Twin Peaks Road	Quarry	Silverbell	A/B	A/B	A/B	A/B
Avra Valley Road	Anway	Trico	A/B	A/B	A/B	C
Avra Valley Road	Trico	Garvey	A/B	A/B	A/B	A/B
Avra Valley Road	Garvey	Clayton	A/B	A/B	A/B	C
Avra Valley Road	Clayton	Sanders	A/B	A/B	A/B	C

Source: Pima Association of Governments Travel Demand Model, 2013 and calculations by Kimley-Horn and Associates

3.10 CRASH HISTORY

Crash data for the Picture Rocks area was obtained from ADOT’s Safety Data Mart for a five-year period from January 1, 2008 through December 31, 2013. A total of 301 motor vehicle crashes occurred on study area roadways within the analysis period. The highest number of crashes on roadways occurred in 2010 and 2012. The number of crashes per year is shown in **Figure 14**.

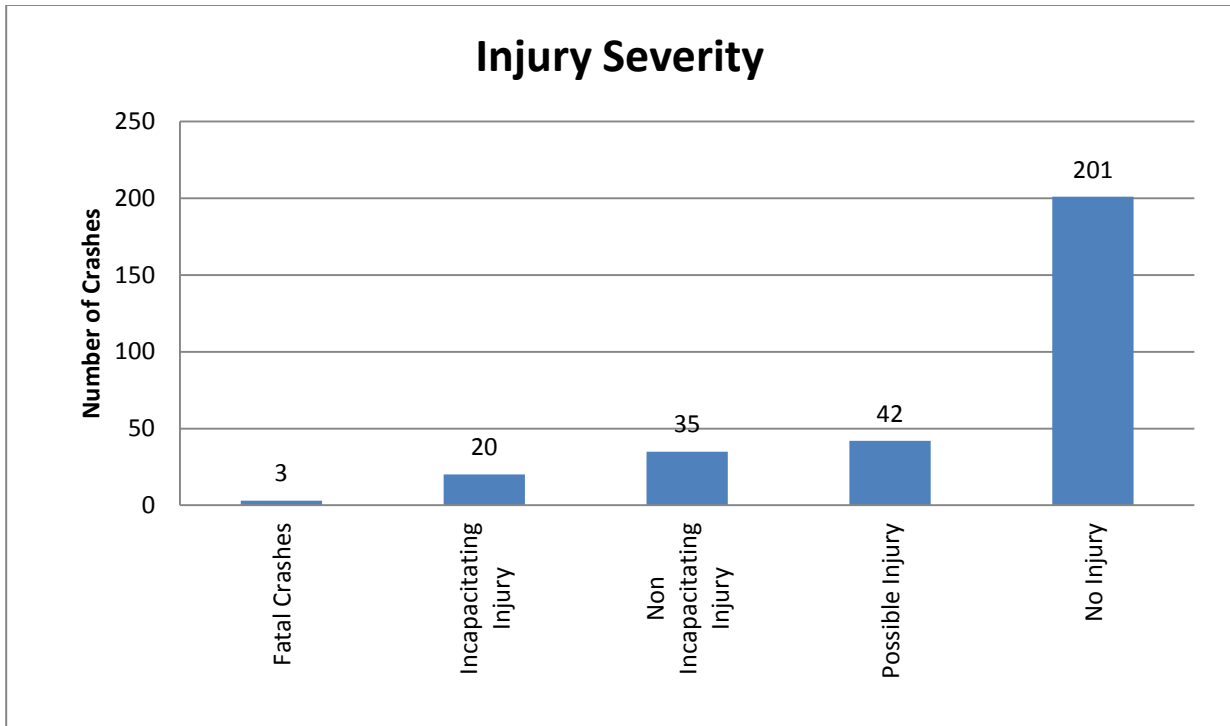
It should be noted that several crashes on Picture Rocks Road are not included in the crash statistics identified in **Figure 14**, as these crashes occurred outside of the study area for the Picture Rocks Multimodal Transportation Study. These crashes are depicted in the mapping on **Figure 16**. The Pima County Department of Transportation has conducted extensive analysis of crashes that occurred on Picture Rocks Road, which is summarized in this section.



Source: ADOT Safety Data Mart

Figure 14 – Number of Crashes, Picture Rocks Roadways, 2008 – 2012

Crash severity is shown in **Figure 15**. Of the 301 crashes, three fatal crashes and 97 injury crashes occurred within the study limits of Picture Rocks.



Source: ADOT Safety Data Mart

Figure 15 – Crash Severity, Picture Rocks Roadways, 2008 – 2012

Fatal crashes occurred at the following intersections:

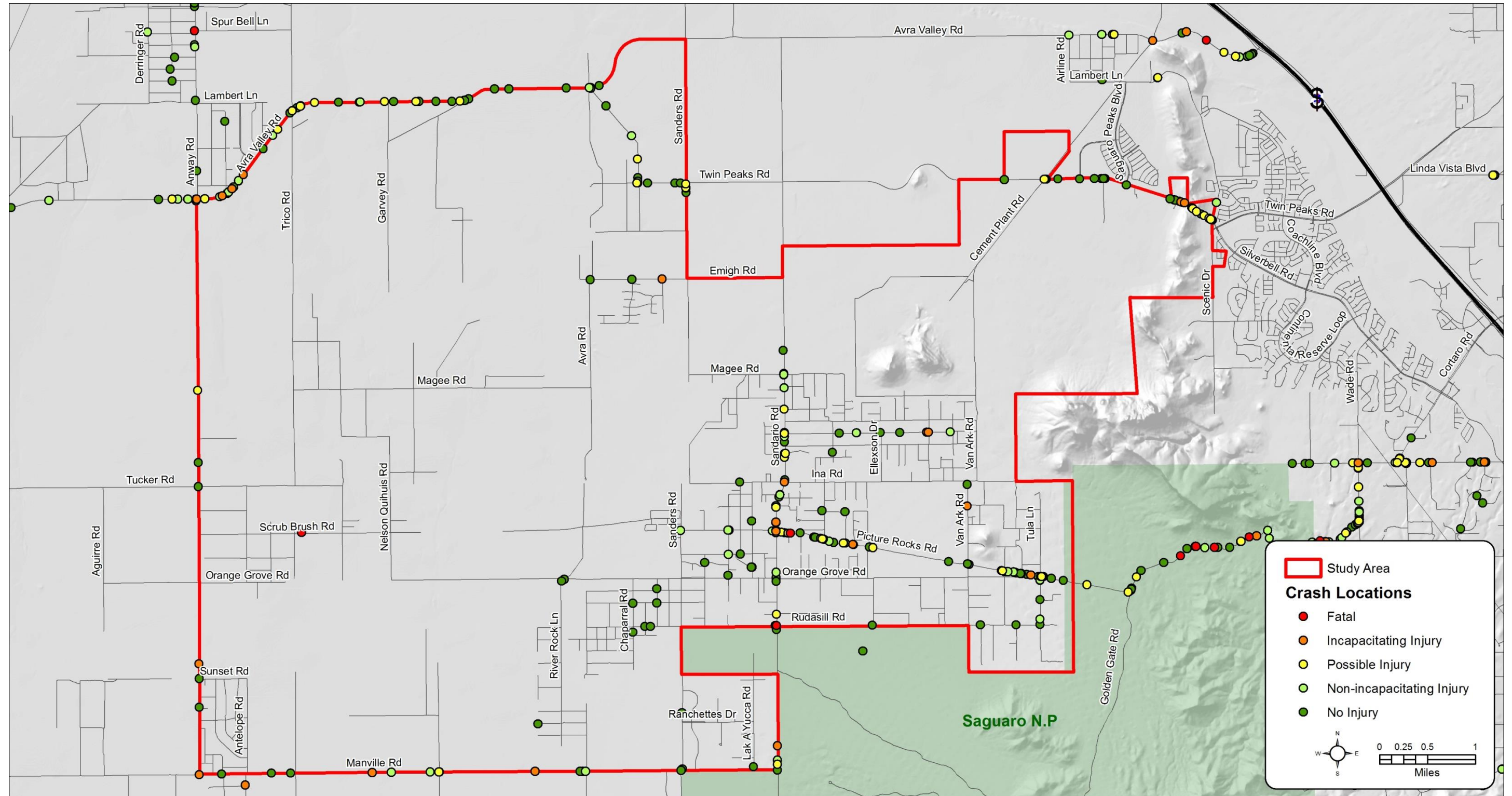
- Scrub Brush Road/Trico Road (2011): Passenger car (pickup), single vehicle rollover.
- Picture Rocks Road/Sandario Road (2012): Passenger car (station wagon), head-on collision from crossing center line.
- Sandario Road/Rudasill Road (2012): Passenger car (station wagon), angle collision from running a stop sign.

Two of the three fatal crashes within the Picture Rocks study area were drug related and the third involved failure to stop at a stop sign. All of the vehicles involved were passenger cars.

Of the 20 incapacitating crashes, seven were single-vehicle crashes. Alcohol was involved in four of the crashes, three involved distraction, and three were run-off-the-road crashes.

The locations of all 301 crashes are shown in **Figure 16**.

The collision manner of the crashes is shown in **Table 20**. The vast majority of crashes (44%) were single-vehicle crashes. Rear-end crashes accounted for 25% of crashes.



Source: ADOT Safety Data Mart

Figure 16 – Crash Locations

Table 20 – Crashes by Manner of Collision

Collision Manner	Crashes	Percentage of Crashes
Single Vehicle	133	44%
Rear End	74	25%
Angle (Front to Side-Other than Left Turn)	40	13%
Sideswipe Same Direction	16	5%
Left Turn	15	5%
Sideswipe Opposite Direction	9	3%
Other	6	2%
Head On	5	2%
Rear to Rear	2	1%
Rear to Side	1	0%
TOTAL	301	100%

Source: ADOT Safety Data Mart

Crash data for the study area segments with higher numbers of crashes per mile is presented in **Table 21**. Picture Rocks Road, between Sandario Road and the SNP boundary, had the highest number of crashes per mile over the five-year period—17 per mile. This segment had 69 crashes occurring in an approximately four-mile segment. Twenty of the 69 crashes were run-off-the-road crashes.

Safety studies conducted on Picture Rocks Road and Sandario Road are discussed in the following section.

Five pedestrian and bicycle crashes were recorded over the five-year period. Two of these crashes occurred at the intersection of Anthony Drive and Lydia Avenue.

3.10.1 PREVIOUS TRAFFIC SAFETY STUDIES

Three safety studies have been conducted in the Picture Rocks area over recent years:

1. Traffic Safety Study Picture Rocks Road: 7000W – 11800W (November 19, 2012), Pima County Department of Transportation Traffic Engineering Division
2. Traffic Safety Study Sandario Road: 2400N-8800N (October 12, 2012), Pima County Department of Transportation Traffic Engineering Division
3. Road Safety Assessment, Picture Rocks Road (Sandario to Wade Road) and Sandario Road (Mile Wide Road to Picture Rocks Road), February 2012, Pima County Department of Transportation Traffic Engineering Division

Key findings from these studies regarding improvement needs on county roads are summarized in **Table 22**.

Table 21 – High Crash Segments

Road Name	From	To	Segment Length (miles)	Number of Crashes	Crashes per mile	Comments
Picture Rocks Road	Sandario Road	SNP Border	4.06	69	17.00	Paved road 1 Fatal Crash 2 Incapacitating 9 Non-Incapacitating 11 Possible Injury 46 No Injury 20 Run Off Road Right
Sandario Road	Manville Road	Emigh Road	5.16	50	9.69	Paved road 1 Fatal Crash 4 Incapacitating 7 Non-Incapacitating 6 Possible Injury 32 No Injury 11 Inattention Distraction
Manville Road	Anway Road	Sandario Road	6.03	14	2.32	Paved road 2 Incapacitating 3 Non-Incapacitating 1 Possible Injury 8 No Injury
Anway Road	Manville Road	Avra Valley Road	6.02	8	1.33	Paved road 2 Incapacitating 6 No Injury
Twin Peaks Road	West Edge of Border	Silverbell Road	2.87	34	11.50	Paved road 2 Incapacitating 7 Possible Injury 25 No Injury
Twin Peaks Road	Clayton Road	Sanders Road	1.48	4	4.05	Paved road 1 Possible Injury 3 No Injury
Avra Valley Road	Anway Road	Sanders Road	6.83	52	7.61	Paved road 4 Incapacitating 8 Non-Incapacitating 10 Possible Injury 30 No Injury

Source: ADOT Safety Mart

Table 22 – Summary of Recommendations from Recent Safety Studies

Study Name	Recommendations
<p>Traffic Safety Study: Picture Rocks Road: 7000W – 11800 W (November 19, 2012)</p>	<p>Short-Term Recommendations</p>
	<p>Provide additional maintenance on vegetation overgrowth.</p>
	<p>Provide additional maintenance of shoulder within the drainage areas in the western area of Picture Rocks Road to stabilize shoulder surface, remove rutting, and sand/windrow buildup.</p>
	<p>Ball bank curves to determine proper curve, turn and advisory speeds.</p>
	<p>Review advance curve, turn, and winding road signs for consolidation and consistency of application, including possible addition of distance plaques.</p>
<p>Traffic Safety Study: Sandario Road: 2400N-8800N (October 12, 2012)</p>	<p>Review signing within the curves for consistency, spacing, and possible incorporation of speed advisories, night arrows, and/or all-directional markers. Minimum chevron size should be standardized to new PCDOT/Traffic Engineering Division standard, with upsized signs where needed.</p>
	<p>Upgrade school bus stop signs to new standard (fluorescent yellow-green S1-4). Consult Marana Unified School District for school bus stop locations and relocate signs as needed.</p>
	<p>Review signing in area of Tula Lane for consolidation of advance intersection and curve signing, including review of chevrons for need/removal.</p>
	<p>Install “Don’t Drive Impaired” signing for both directions of travel outside SNP.</p>
	<p>Remove left-side winding road sign in the 7200W block and install a second right-side advance sign.</p>
<p>Upgrades to signing and striping in the curve area (7300W-7400W) and supplement advance warning signs with solar-powered flashing hazard beacons.</p>	
<p>Conduct turn lane needs study for the west residential areas of Picture Rocks Road.</p>	
<p>Request additional speed enforcement.</p>	
<p>Install thermoplastic longline striping on Picture Rocks Road from the east SNP boundary to Wade Road when funding is available (note: outside of this study area).</p>	
<p>Long-Term Recommendations</p>	
<p>Reconstruct Picture Rocks Road in the 7300-7400 W block to remove hairpin curve and improve drainage. This project should be referred to the Safety Management System (SMS) group for application of safety funding and subsequent design/construction.</p>	
<p>Widen Picture Rocks Road from Sandario Road to SNP west boundary to include a six-foot multi-use lane and remove minor kinks in the roadway alignment. Intersection radii should be standardized for all intersecting streets. This project should be referred to the SMS group for prioritization and evaluation of funding alternatives.</p>	
<p>Traffic Safety Study: Sandario Road: 2400N-8800N (October 12, 2012)</p>	<p>Provide additional maintenance on vegetation overgrowth</p>
	<p>Upsize stop signs on cross streets to 36 inches at all intersections except those with existing 48 inch signs.</p>
	<p>Upsize street name signs to 9 inch on intersecting minor streets.</p>
	<p>Install or upgrade the curve signing on Camper Road to Ina Road vicinity (curve sign and larger chevrons).</p>
	<p>Relocate and upsize advance cross road signs on Sandario Road on the approaches to both Mile Wide Road and Rudasill Road.</p>
	<p>Install perforated post “solar” intersection beacons on stop sign assemblies at Mile Wide Road and Rudasill Road for both the east and west direction of travel.</p>
	<p>Relocate guide signs for SNP to provide greater advance notification and maneuvering time for slowing and turning into SNP at Mile Wide Road, Kinney Road, and Golden Gate Road.</p>
<p>Relocate guide signs for Picture Rocks School for greater advance notification at Rudasill Road.</p>	
<p>Close the northbound passing zone on Sandario Road between Picture Rocks Road and Camper Road in the vicinity of the convenience store and gas station driveways.</p>	

Table 22 – Summary of Recommendations from Recent Safety Studies (continued)

Study Name	Recommendations
<p>Traffic Safety Study: Sandario Road: 2400N-8800N (October 12, 2012) (continued)</p>	<p>At the Keogh Road intersection</p> <p>Regrade intersection to provide better drainage and remove rutting and sandy, drop-off area.</p> <p>Add asphalt apron on intersection radii for better intersection delineation, to improve alignment at intersection and to eliminate shoulder deterioration.</p> <p>Relocate stop and street name signs to standard intersection right-side location after realignment is complete.</p> <p>Review the stop bar locations at the Picture Rocks Road intersection for relocation further back from the intersection.</p> <p>Request additional speed enforcement between Mile Wide Road and Orange Grove Road.</p> <p>Expand the existing project for installation of TWLTL on Sandario Road from Ina Road to Magee Road to begin 900 feet south of Picture Rocks Road to address private property ingress and egress issues at this intersection.</p>
	<p>Sandario Road S- curve area recommendations in coordination with SNP</p> <p>Long-term recommendations include widening and realigning the road in the S-curve area.</p> <p>Short-term improvements include:</p> <ul style="list-style-type: none"> • Upgrading signing in advance of the curve • Removing vegetation on the inside of the curve • Reinstall increased width centerline • Remove existing centerline RPMs and install single centerline RPMs at 20 foot spacing from Kinney Rd to Golden Gate Road • Install rumble strips in advance of the curve
<p>Picture Rocks Road (Sandario to Wade) Sandario (Mile Wide to Picture Rocks) Road Safety Assessment</p>	<p>Sight Distance</p> <p>Remove or trim vegetation that limits sight distance at intersections and curves and that obstructs signs (Pima County and SNP).</p> <p>Long-term: evaluate crest vertical curves for lowering, especially at combination horizontal/vertical curves (SNP).</p>
	<p>Lane Departure Crashes</p> <p>Long-term: consideration should be given to improving the geometry of the roads, at high-crash locations including the S-curve north of Kinney Road and the combination crest/compound horizontal curve approximately 0.7 miles east of Golden Gate Road. Geometric improvements could include lowering crest curves, increasing horizontal curve radius, and reconstructing compound curves into simple curves (SNP).</p> <p>Long-term: consider constructing a wash crossing structure just east of Contzen Pass to address the crashes occurring in the 15 mph advisory speed curves (Pima County).</p> <p>Short-term/intermediate: install transverse rumble strips in advance of the sharpest curves and crest/horizontal curves, e.g., S-curves north of Kinney Road, curve approximately 0.7 miles east of Golden Gate Road, and curves just east of SNP east boundary.</p> <p>Short-term/intermediate: install center line rumble strips on the east end of Picture Rocks Road, west of Golden Gate Road to east of Contzen Pass (Pima County and SNP).</p> <p>Short-term/intermediate: install motorcycle use caution signs in advance of curves with high frequency of motorcycle crashes; e.g., S-curve north of Kinney Road, curve approximately 0.7 miles east of Golden Gate Road, and curves just east of SNP east boundary (Pima County and SNP).</p> <p>Short-term/intermediate: at high crash locations, install dynamic curve warning signs with beacons that flash if a vehicle approaches the curve in excess of the advisory speed; e.g., S-curves north of Kinney Road, curve approximately 0.7 miles east of Golden Gate Road, and curves just east of SNP east boundary (Pima County and SNP).</p> <p>Short-term/intermediate: install wider edge and centerline striping through curves (Pima County).</p> <p>Short-term/intermediate: install lower advisory speed plaques on curve warning signs as appropriate on Picture rocks Road (SNP).</p> <p>Short-term/intermediate: provide shoulder maintenance at edge drop-off locations, e.g., just north of Kinney Road, and 0.2 and 0.6 miles west of Wade Road (Pima County).</p> <p>Short-term/intermediate: evaluate the rock outcropping located approximately 0.8 miles east of Golden Gate Road for possible removal (SNP).</p>

Table 22 – Summary of Recommendations from Recent Safety Studies (continued)

Study Name	Recommendations
Picture Rocks Road (Sandario to Wade) Sandario (Mile Wide to Picture Rocks) Road Safety Assessment (continued)	Lack of Paved Shoulders
	Long-term: consideration should be given to providing paved shoulders 5 to 6 feet in width along Sandario Road and 4 to 5 feet in width along Picture Rocks Road (Pima County and SNP).
	Signing
	Conduct an evaluation of SNP signing and provide signs as needed: advance signing for trails, picnic areas, intersections, pull offs. Could include advance warning signing with “distance” plaque in addition to signs with arrows at the turn locations, e.g., Visitor Center/Kinney Road, Camboh picnic area (SNP).
	Evaluate the west end of Picture Rocks Road for the need for additional intersection warning signs (Pima County).
	Install Type 3 object markers on both sides of SNP sign at east boundary (SNP).
	Evaluate curve just west of Wade Road for the need for chevrons or delineators (Pima County).
	Replace curve signs with turn signs at 0.4 miles west of SNP east boundary and at Yuma Mine Road intersection (Pima County and SNP).
	Relocate westbound Picture Rocks Road 35 mph speed limit sign to the east side of the curve at Yuma Mine Road (Pima County).
	Install “Picture Rocks Road” plaque under the Sandario Road Southbound stop ahead sign (Pima County).
	Trail Crossings
	Install an eastbound advance equestrian crossing warning sign for the Roadrunner Trail (SNP).
	Install 25 mph advisory specs plaques beneath the advance equestrian crossing warning signs (SNP).
Install high visibility crosswalk markings at the three trail crossings (SNP).	
Crashes on West End of Picture Rocks Road	
Conduct left-turn lane warrant analysis for higher-volume side street intersections and construct turn lanes as needed; consider if two-way left-turn lane for this section is warranted (Pima County).	
Provide paved aprons as needed at the side street intersections (Pima County).	
Evaluate access management options for this section of Picture Rocks Road to determine if any intersections can be eliminated or combined into one intersection (Pima County).	
Additional Observations	
Evaluate strategies to discourage commuter traffic on Picture Rocks Road and/or encourage commuter traffic on other routes, e.g., Twin Peaks Road (Pima County and SNP).	
Improve park pull offs (paving, signing, relocate) to make them more visible to approaching drivers; this can also provide locations to conduct speed enforcement (SNP).	
Use mobile speed enforcement (Pima County and SNP).	
Install additional “speed enforcement by radar” signs (Pima County and SNP).	
Repair the broken traffic counter at Golden Gate Road (SNP).	
Install curbing on the northwest (Wagon Wheel store) and southwest (food trucks) corners for access control (Pima County).	

3.11 BICYCLE AND PEDESTRIAN FACILITIES

Bicycle and pedestrian facilities are an important part of the multimodal transportation network in that they provide various options for travel.

Elements that make up bicycle networks can include designated bike routes, striped bike lanes, paved shoulders along roadways, wide curb lanes, shared-use paths, and sidewalks.

The only streets within the study area with striped shoulders for bike use are Rudasill Road from Avra Road to Calvin Road and Sanders Road from Rudasill Road to Sunset Road. These bike routes allow access to and around residential areas, parks and recreation facilities and Desert Winds Elementary School.

Pedestrian networks typically comprise sidewalks, trails, and shared-use paths. Sidewalks, crossings, and paths are limited within the Picture Rocks study area. Currently, the only sidewalks present run along Rudasill Road and Sanders Road where Desert Winds Elementary School and Picture Rocks Intermediate School are located. The sidewalks extend from Chaparral Road to Sanders Road on Rudasill Road and from Rudasill Road to Sunset Road on Sanders Road. A pedestrian crossing is located north of Desert Winds Elementary School.

One shared-use path crosses the entire study area along the CAP Canal from Manville Road to Twin Peaks Road (outside of the study area). The path is designed for hiking, mountain biking, and equestrian activities. Bicycle routes and trails are shown in **Figure 17**.

There are a few sections of key connecting streets in the study area, which are defined as streets that provide connectivity on popular bicycling routes which may be appropriate for experienced riders. These streets have more traffic, higher speeds and less width. The key connecting streets in the Picture Rocks study area are Sandario Road from Manville Road to Twin Peaks Road and Twin Peaks Road from east of Twin Peaks Road to Silverbell Road. These key connecting streets connect to bike routes with striped shoulders and shared-use paths in the North-East portion of the study area.

Stakeholders have indicated that needs for bike and pedestrian facilities include:

- Bicycle-accessible paved shoulders and/or bike lanes along Sandario Road, Picture Rocks Road and portions of Rudasill Road.
- Crosswalks are needed at the intersection of Picture Rocks Road/Sandario Road.
- Potential trailhead pedestrian and bicycle facilities at Manville Road/Sanders Road and Rudasill Road/Sanders Road.
- Route to the Picture Rocks Community Center.

3.12 AIRPORTS

The Palm Valley Tucson Airport is located just outside of the southwest corner of the study area near Anway Road and Manville Road. No information was available on this airport.

Taylor Field is a closed publicly owned airport near the study area boundary, at 5301 North Anway Road.

The closest regional airport is Marana Regional Airport just outside the study area at the corner of Avra Valley Road and Sanders Road.

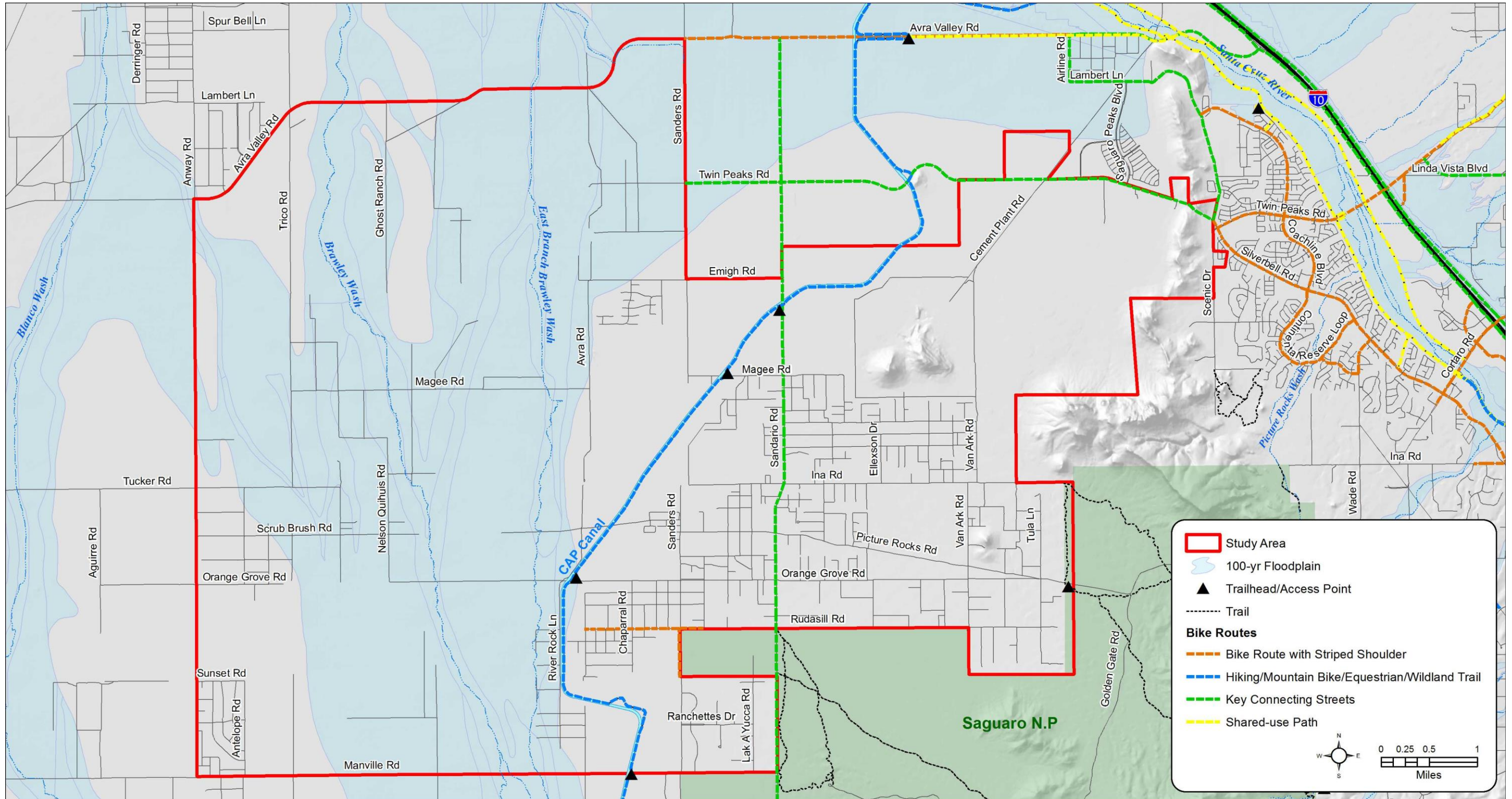


Figure 17 – Bike Routes and Trails

4. Transit Assessment

The provision of transit services to the Picture Rocks area has been identified by numerous stakeholders and residents as a key need to be addressed by this study. This section provides information on transit and rideshare services located near the Picture Rocks area, previous studies that have been conducted regarding transit, a transit survey that was conducted in the Picture Rocks area, demographic data relating to transit needs, and potential demand for service and destinations that could potentially be served by a transit system.

4.1 TRANSIT SERVICES NEAR THE PICTURE ROCKS AREA

Currently, no transit routes or stops are located within the Picture Rocks study area. Sun Tran is the region's public transportation system. Sun Tran serves approximately 20 million passenger trips per year and has 40 fixed routes. The majority of the transit routes and facilities are in the City of Tucson. Sun Shuttle routes serve more rural areas such as Marana, Oro Valley, Catalina, Sahuarita, Rita Ranch, Green Valley, San Xavier, Tucson Estates, and Ajo. Sun Van is also available for individuals unable to use Sun Trans's fixed-route service due to their disability. Sun Shuttle and Sun Tran routes are shown in **Figure 18**.

Sun Shuttle Route 410 – Anway/Trico serves the northwest corner of the study area with a bus stop at the corner of Anway Road and Avra Valley Road. This route runs on approximately two-hour headways from 5:50 am to 5:30 pm Monday through Friday and from 9:00 am to 1:00 pm on Saturday. Other destinations on this route include the Marana Health Center and the Marana Municipal Complex.

Sun Shuttle Route 411 – Cortaro/Silverbell provides transit service along Silverbell Road, Twin Peaks Road, and Cortaro Road. The closest stop to the study area is at the intersection of Silverbell Road and Twin Peaks Road. Service operates every hour from 6:30 am to 6:30 pm on weekdays and from 9:00 am to 2:30 pm on Saturdays. Key destinations that this route serves include Arizona Pavilions Shopping Plaza near Cortaro Road/ Arizona Pavilions Road, Northwest Medical Center on Continental Reserve Drive, Sunflower Village Center near Twin Peaks Road and Regency Plaza near the Ina Road/ Thornydale Road intersection.

Sun Shuttle Route 413 – Marana/I-10 provides transit service to the key destinations of the Marana Health Center, the Marana Municipal Complex, Arizona Pavilions Shopping Center, and Regency Plaza Shopping Center at Ina Road/Thornydale Road. This route connects to routes 410 and 411 described above.

These services offer deviated service, where a passenger can schedule a pick up or drop off within $\frac{3}{4}$ -mile of Sun Shuttle Routes 410, 411, and 413. For deviated services on a Monday, requests must be scheduled prior to 3:00 pm Saturday. Other deviated requests must be scheduled by 6:00 pm the previous day.

Fares for the Sun Shuttle routes are \$1.50 for a one-way trip, with discounted fares available for seniors, persons with disabilities, Medicare cardholders, low income, or children under five. The discounted fare is \$0.50. One-way fare for the deviated service is \$3.00.

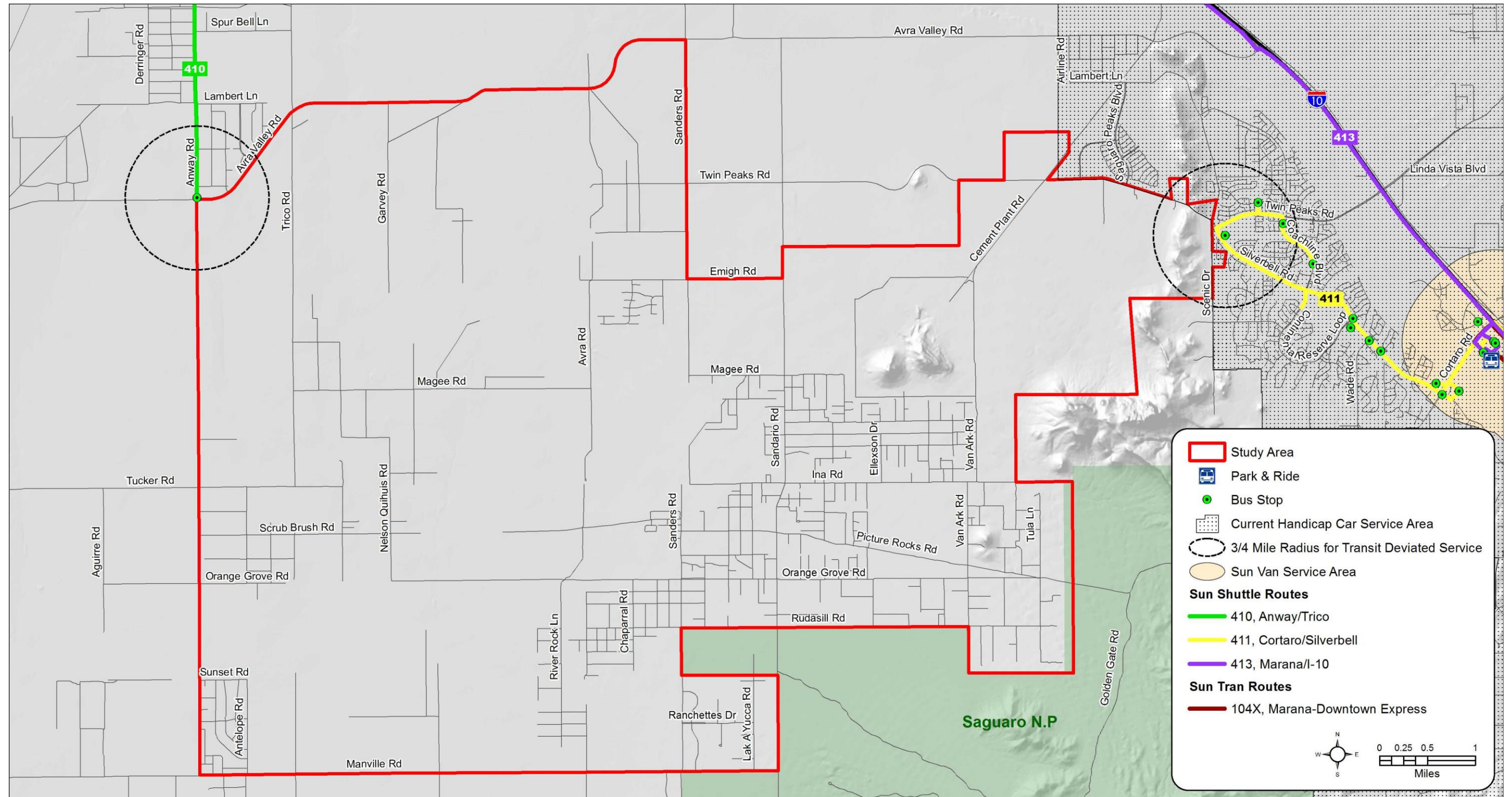


Figure 18 – Existing Transit Routes

4.1 RIDESHARE MATCHING SERVICE

PAG operates Sun Rideshare, a regional commuter assistance program that provides commuter services through a free, online matching database for people interested in sharing rides. Commuters sharing the ride may be eligible for the Guaranteed Ride Home program, which provides free taxi rides home from work when there is a family emergency or unscheduled overtime. Currently 143 persons are registered with PAG's online rideshare database with a home address that includes a Picture Rocks zip code (85743). No information was available on whether persons registered with the rideshare matching service used the service, or were matched with rideshares or vanpools. PAG also works with employers to build a rideshare program for their employees.

4.2 OTHER TRANSPORTATION SERVICES

The Neighbors Care Alliance (NCA) is a volunteer program of "neighbors helping neighbors" in the Picture Rocks area. The Pima Council on Aging provides consultation and training to neighborhood areas that want to set up this volunteer program. A main focus of NCA is transportation services for elderly and disabled clients. In the Picture Rocks area, this service was established in 2014. There is a mileage reimbursement for volunteer drivers. Each NCA program may offer these services:

- Ride to doctor
- Friendly phone call, visit
- Grocery shopping
- Meal preparation
- Light house or yard work
- Minor house repairs
- Caregiver respite assistance

4.3 SCHOOL TRANSPORTATION SERVICES AND STOPS

The Picture Rocks area is served by the Marana Unified School District. School bus stops are located throughout the Picture Rocks study area, with the majority of school bus stops located in the more densely populated areas within a 2.5-mile radius of the Picture Rocks Road and Sandario Road intersection. Two other areas with a number of bus stops include the subdivision at the northeast corner of Manville Road/Anway Road and near Twin Peaks Road/Sanders Road. School bus stops are primarily located on major roadways and residential areas where students are more densely concentrated. The roads with a large amount of bus stops (eight or more) include Sandario Road, Picture Rocks Road, Ina Road, Orange Grove Road, Rudasill Road, and Chaparral Road.

Transportation needs expressed by the Marana Unified School District include:

- In general, some county unmaintained roads are difficult to access by school bus and the road condition worsens when the weather is poor.
- Some county-maintained roads cannot be accessed by school buses due to poor weather; for example, Manville Road at the Brawley Wash and Anway Road at the Blanco Wash.

- School bus turnouts are needed along Sandario Road and Picture Rocks Road.
- A combined school bus stop is needed at the corner of Rudasill Road and Sanders Road for Desert Winds Elementary School and Picture Rocks Intermediate School.

4.4 PICTURE ROCKS TRANSPORTATION SURVEY

The Picture Rocks Transportation Survey was conducted by Sun Tran in conjunction with The Picture Rocks Community Conversation Transportation Committee, the Regional Transportation Authority (RTA), the Pictures Rocks AARP Community Group, and the Elder Initiative. The purpose of the survey was to gather information regarding the transportation needs of the Picture Rocks community and examine how the groups listed above might best meet those needs. The survey began on May 17th, 2013 and ended June 30th, 2013.

Survey notifications were mailed to households with zip codes in the Picture Rocks area. Participants were invited to take the survey in either Spanish or English on paper, online via surveymonkey.com, or by phone. A total of 425 valid responses were analyzed. Not every respondent answered every question.

Volunteers collected responses from individuals at the Picture Rocks Community Center, meetings of the Citizens for Picture Rocks group, meetings of the Senior Group, the food distribution line run by the Picture Rocks Community Center, Inc., and the local Community Garden. Each survey contained the questions in either English or Spanish:

1. *How many people currently live in your household?*
2. *Please indicate your age range.*
3. *How many working vehicles are available in your household?*
4. *Do you have a valid driver's license? How do you currently get to the places you need to go? (check all that apply)*
5. *In general, how many times per week do you currently travel from home to locations outside the Picture Rocks community?*
6. *On average, how often do you currently depend on someone else (family, friend, neighbor, taxi or shuttle) for your transportation needs beyond the Picture Rocks community?*
7. *How many times have you been unable to reach a destination in the past 30 days because of a lack of transportation?*
8. *Please choose three geographic areas that you most often need to travel to.*
9. *What is your top purpose for local travel?*
10. *What time of day (Monday through Friday) do you most frequently need to travel TO your most common destination?*
11. *What time of day (Monday through Friday) do you most frequently need to travel FROM your most common destination back to the Picture Rocks area?*
12. *Would you be willing to participate in a carpool with neighbors to connect to existing transit services such as Sun Shuttle or a Sun Express Bus?*
13. *If you answered "yes" to the previous question, would you be willing to drive your own vehicle for a carpool?*
14. *If a new service were to become available in Picture Rocks, what is the maximum distance you would be willing/able to walk, ride a bicycle or drive to access public transportation?*
15. *If a Park and Ride area for carpooling or vanpooling was made available in Picture Rocks, how often do you think you would use it?*
16. *How much would you be willing to spend per ROUND TRIP on a new transportation option that would better meet your needs?*

17. Please estimate the *CURRENT MONTHLY COST* for your individual local transportation needs (including car payment, gas, insurance, maintenance and taxi or shuttle costs).
18. *OPTIONAL*: Please indicate your estimated total annual household income (before taxes).
19. *OPTIONAL*: Please provide any comments or ideas you have about transportation in the community of Picture Rocks.

A further summary of survey responses is provided in **Appendix B**. Some key findings of the survey were:

- The predominant age of survey respondents is 55-64. Survey respondents that were 55 years of age or older comprised 53% of survey respondents.
- 15% of the 422 respondents indicated they can't always get to where they need to go. An additional 35% of respondents catch a ride with friends or family, which may indicate potential need for additional transportation options.
- Survey responses indicated that the majority of respondents traveled outside of the Picture Rocks community three or more times per week. The largest response was "3-5 times per week."
- Approximately 47% of respondents indicated they depended on someone else for transportation outside of the Picture Rocks Community once a week or more.
- A significant number of respondents (48%) reported that they were unable to reach a destination in the past 30 days because of a lack of transportation.
- The survey responses indicated that top destinations were the Cortaro Road and I-10 area, followed by the Ina and Thornydale area. Downtown Tucson was another significant destination choice.
- The top purposes for local travel were shopping, followed by work trips and medical or social service related trips.
- The most frequent response to the question regarding the time of day the survey respondent needs to travel to their most common destination on a weekday was between the hours of 6:00 AM and 9:00 AM. A significant number of respondents, 39%, indicated the hours between 9:00 AM to 12:00 PM. In the afternoon/evening, the most frequent travel times were between the hours of 3:00 PM and 6:00 PM.
- A large number (51%) of respondents indicated they would be willing to participate in a carpool with neighbors to connect to an existing transit service.
- 35% of respondents to this question said they would be willing to drive their vehicle for a carpool. The majority of respondents to this question indicated they would not be willing to drive their own vehicle.
- The responses to the question of how far one would be willing to travel to access public transportation varied considerably. Only a small percentage of respondents indicated they would be unable to access public transportation by walking, driving, or riding a bicycle.
- The responses to the question regarding how often one would use a park-and-ride area indicated that most respondents (68%) would use it once a week or more.

212 persons provided comments or ideas about transportation in the community of Picture Rocks. The comments focused primarily about the need for transit services. The main responses included:

- Need for transportation options for the elderly and disabled. These individuals expressed concerns about not being able to get to doctor appointments.
- Need for transportation for youth to get to community services and to jobs in and out of the Picture Rocks area.
- Need for transportation options for individuals without personal automobiles or in case personal automobiles break down. These individuals expressed concerns about getting to work or other important personal errands.

4.5 TRANSIT STUDIES

The 20-year RTA plan calls for improved and expanded transit service throughout the region over the 20-year life of the plan. Transit expansion projects identified as regional priorities during development of the RTA plan are reviewed annually and ranked according to weighted transit performance metrics.

The *PAG Short Range Transit Implementation Plan* (November 2013) describes a five-year schedule of regional transit capital and operating expenditures. It also describes transit policies and processes used by regional leadership to reach consensus-oriented transit decisions.

Jurisdictional and community requests for transit improvements are also evaluated, and if warranted, included in the ranking process. Service expansions that fall under this goal include service enhancements to existing routes, new service to underserved areas, and paratransit service expansion.

The extension of Route 411 was evaluated during the 2012 regional process to rank service expansions, but is yet to be implemented. The extension was estimated to require one additional van at a cost of \$151,622.

4.6 POTENTIAL TRANSIT DEMAND

Procedures as described in *Transit Cooperative Research (TCR) Program Report 161 – Method for Forecasting Demand and Quantifying Need for Rural Passenger Transportation: Final Workbook* was applied to available socioeconomic data and information in the Picture Rocks area in order to estimate potential transit needs. According to this procedure transit needs are defined in two ways:

1. The number of people in a given area likely to need passenger transportation, and
2. The number of trips required to provide individuals without personal vehicles with a level of mobility equal to those having personal vehicles.

Estimates of need for passenger transit service are represented by the number of persons residing in households with income below the poverty level plus the number of persons residing in households with no vehicles. This data for the Picture Rocks area is summarized in **Table 23**. It is estimated that approximately 1,293 persons in Picture Rocks have unmet transportation needs.

Table 23 – Estimate of Persons with Transportation Needs

	Number of Persons
Persons residing in households with income below the poverty level	1081
Persons residing in households owning no automobile	212
Total Persons in Need of Passenger Transportation Services	1,293

Sources: U.S Census American Community Survey Tables B17001 and B08201

The **need for trips** is also estimated using a factor called the mobility gap. The mobility gap is the total number of trips not taken because members of zero vehicle households do not have the ease of mobility available to members of households with ready access to a vehicle. The need for trips is estimated using the formula:

Need (one-way trips per day) = Number of households having no car x mobility gap

The mobility gap has been estimated for different Census Divisions. The Mountain Division mobility gap was estimated by the TCR Report 161 to be 0.8.

Using this formula, the need in trips is estimated to be 110 x 0.8 = 90 one-way trips per day or 26,400 annual 1 way passenger trips.

Another consideration, not taken into account by this procedure, is the number of persons that are near the poverty level. It should also be noted that transit needs have also been demonstrated through the response to the Picture Rocks Transportation Survey.

4.7 KEY DESTINATIONS FOR POTENTIAL TRANSIT SERVICE

Key activity centers within the region that could be potential destinations for transit service are summarized in **Table 24**. These locations were mentioned by stakeholders, listed on surveys, and identified through visual inspection.

Table 24 – Potential Transit Destinations

Destination Type	Tucson	Marana	Picture Rocks
Commercial, shopping	Foothills Mall Tucson Mall	Arizona Pavilions Continental Ranch Retail Center	
Community Services			Picture Rocks Community Center
Work	Tucson, government offices and commercial businesses in downtown	Marana Municipal Complex	
Schools	Pima Community College	Marana High School	Picture Rocks Intermediate Desert Winds Elementary
Worship			Sandario Baptist Church Praise Center Assembly of God Chapel of Light
Medical	Northwest Medical Center	Marana Health Center Northwest Medical Center	Ortiz Community Health Center
Transit Stations	Tohono Tadaí Transit Center		
Recreation		Ted Walker Park Silverbell-Cortaro Park The Pines Golf Course	SNP

5. Summary of Multimodal Transportation Needs

This chapter summarizes multimodal transportation needs within the study area, based on information presented in the previous chapters. Needs resulted from assessments of the following information and analyses:

- Stakeholder input from the Technical Advisory Committee (TAC), civic groups, and the general public;
- Completed and ongoing plans and studies;
- Traffic data analysis;
- Crash data analysis;
- Transit ridership analysis;
- Community and environmental resources; and
- Field review of road and pavement conditions.

The needs have been organized to inform the development of projects. Needs have been organized into the following categories:

- Planning and engineering studies;
- Transportation infrastructure;
- Roadway-flooding mitigation;
- Alternate transportation modes; and
- Roadway maintenance.

5.1 NEEDED PLANNING AND ENGINEERING STUDIES

Field observations and limited data analysis were performed to support development of project recommendations. Detailed planning and engineering studies and design analysis are needed to confirm the presence of deficiencies that can be addressed through improvement projects and to provide input to project scoping. Typical studies include hydrological studies, diagnostic crash studies, and traffic studies.

5.1.1 HYDROLOGICAL STUDIES

Mitigation of flood-prone areas to reduce road closures for area residents and improve accessibility for emergency service providers are among the highest priority needs expressed by stakeholders. Roadway locations that are prone to flooding, as documented in Working Paper No. 1, are shown in **Figure 19**. Hydrological studies should review past drainage studies (Brawley Wash drainage studies) to confirm roadway locations that are prone to flooding and to estimate project limits, depths of flow, and flow rates. These studies should determine priorities and implementation strategies that minimize flooding impacts on access.

5.1.2 DIAGNOSTIC SAFETY STUDIES

A review of crash locations in the study area identified a number of road segments and intersections with high concentrations of total and injury crashes (see **Figure 20**). Limited crash analyses and field visits were conducted in support of project recommendations.

5.1.3 TRAFFIC STUDIES

A number of locations in the study area were identified by stakeholders as needing operational, traffic control, and/or safety improvements. Traffic studies are needed to confirm the need for changes in traffic control or to supplement diagnostic crash studies. Stakeholder input on traffic studies are listed below.

- Review the passing zone on Sandario Road, north of Picture Rocks Road to determine the safety benefits of a no-passing zone;
- Review need to upgrade bus stop advance warning signs (S3-1) and other school signs to current Manual on Uniform Traffic Control Device (MUTCD) standards;
- Review need to upgrade and increase the size for cross-street name signs at intersections and on approaches to major intersections;
- Review the need to upgrade curve advance warning signs on Sandario Road from Camper Road to Ina Road;
- Coordinate with the National Park Service on the need to inform and direct traffic destined to the SNP to Twin Peaks Road and Sandario Road to reduce traffic on Picture Rocks Road;
- Review the need for variable message signs to redirect traffic during flooding events and crashes;
- Review the need for changes in posted speed limits, speed enforcement, or speed message signs to reduce travel speeds on Sandario Road, Picture Rocks Road, and Orange Grove Road; and
- Review the need for additional enforcement of weight limits on Picture Rocks Road.

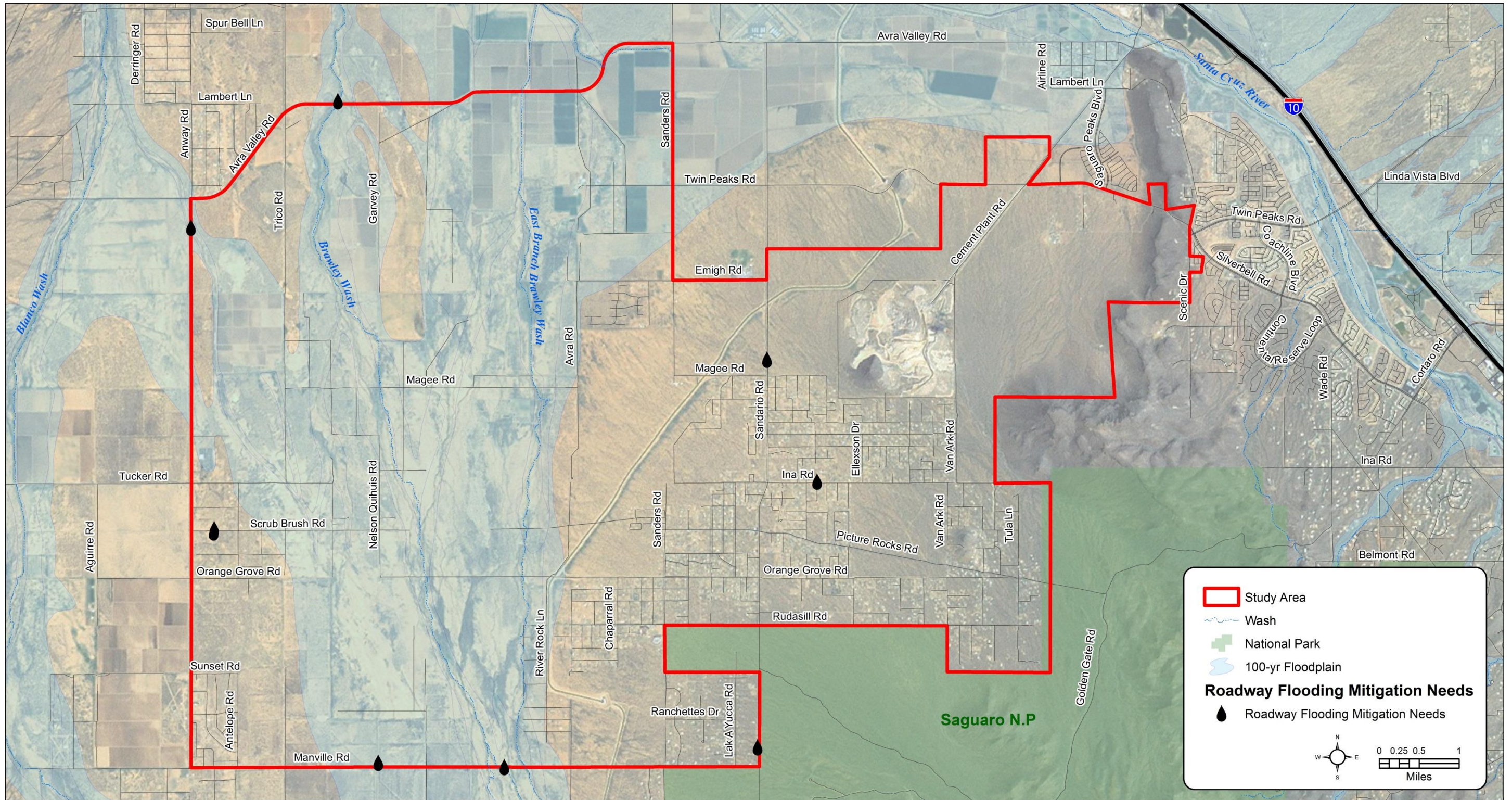
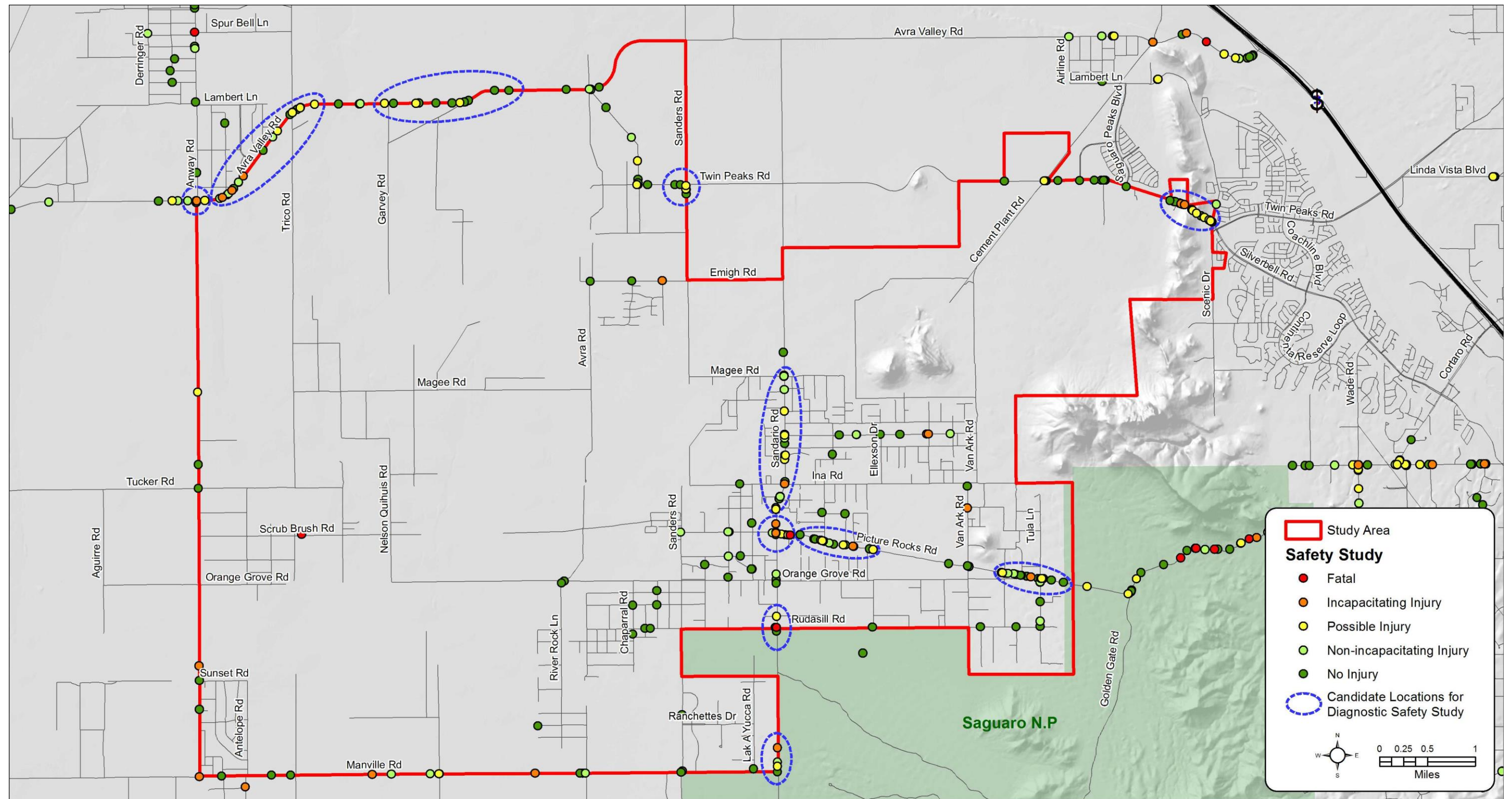


Figure 19 – Roadway Flooding Areas



Source: ADOT Safety Data Mart

Figure 20 – Diagnostic Safety Study Locations

5.2 TRANSPORTATION INFRASTRUCTURE NEEDS

5.2.1 ROADWAY SEGMENTS

Sandario Road – Rudasill Road to Emigh Road

Sandario Road is a county-maintained paved roadway and is the major north-south corridor in the study area with daily traffic volumes of 4,500 vehicles per day (vpd). Development along Sandario Road has resulted in residential and business driveways near the Picture Rocks Road intersection. The intersection improvements and future development should be compatible with a land use planning framework developed in accordance with Pima County special area policies to accommodate all transportation modes and parking in rural activity areas.

Stakeholder interviews documented road maintenance, traffic operational, safety, alternate modes, and traffic control needs for Sandario Road. According to stakeholders, the fire station located on Sandario Road, north of Picture Rocks Road needs a preemptive traffic signal to warn motorists of emergency vehicles entering the roadway (note: these types of signals typically do not meet warrant criteria used by Pima County; however, Pima County does work with fire districts to install preemptive traffic signals using fire district funding sources). There is also a need for bicycle facilities along Sandario Road for recreational bicyclists and residents. Other needs recommended in road safety assessments (RSAs) conducted by Pima County on Sandario Road in 2012 included new or upgraded signage to improve night-time visibility of street signs, and road widening to three lanes (one lane in each direction with a two-way left-turn lane) with paved shoulders as the principle strategy for reducing crash potential associated with vehicles entering and exiting driveways in areas with limited sight visibility.

Stakeholder input was received on the need for intersection improvements and increased enforcement on Sandario Road which is supported by the crash history over the last five years that includes a fatal crash. Field visits were made to the intersections at Picture Rocks Road, Orange Grove Road, and Rudasill Road, as well as the segment of Sandario Road, north of Picture Rocks Road to determine safety improvement issues that need to be addressed. The field visits resulted in the following observations:

- The posted speed limit of 40 mph may be incompatible with the Picture Rocks rural community area. Speed studies should be conducted to investigate the need for a lower speed limit on Sandario Road in and approaching the Picture Rocks community area.
- The passing zone on Sandario Road north of Picture Rocks Road should be reviewed by Pima County to determine the need for a no-passing zone approaching the Picture Rocks community area.
- The combination of vehicular speed, limited sight distance, and vehicles entering and exiting at driveways on Sandario Road, contribute to crashes on Sandario Road, north and south of Picture Rocks Road. A preemptive traffic signal at the fire station is needed to reduce the potential for crashes with emergency vehicles.
- Significant safety issues were not observed at the intersection of Sandario Road and Rudasill Road.

Sandario Road is not an all-weather road in the vicinity of low-flow crossings of the Brawley Wash. Stakeholders identified the need for drainage improvements at the Brawley Wash crossing on Sandario Road north of Magee Road.

The Pima County Comprehensive Plan contains Special Area Policies for the Picture Rocks rural activity center (refer to **Figure 21**). The Special Area Policy describes the goal of using streetscape to encourage slower traffic speeds. Potential streetscape elements include on-street parking, sidewalks, planters, and street trees. The Special Area Policies describe that development should enhance the pedestrian-scale environment and enhance the area as a “main street” for the Picture Rocks community.

Illustrative three-lane cross-sections that reflect these policies are shown in **Figure 22** and are described in more detail in the project recommendations in Chapter 6.

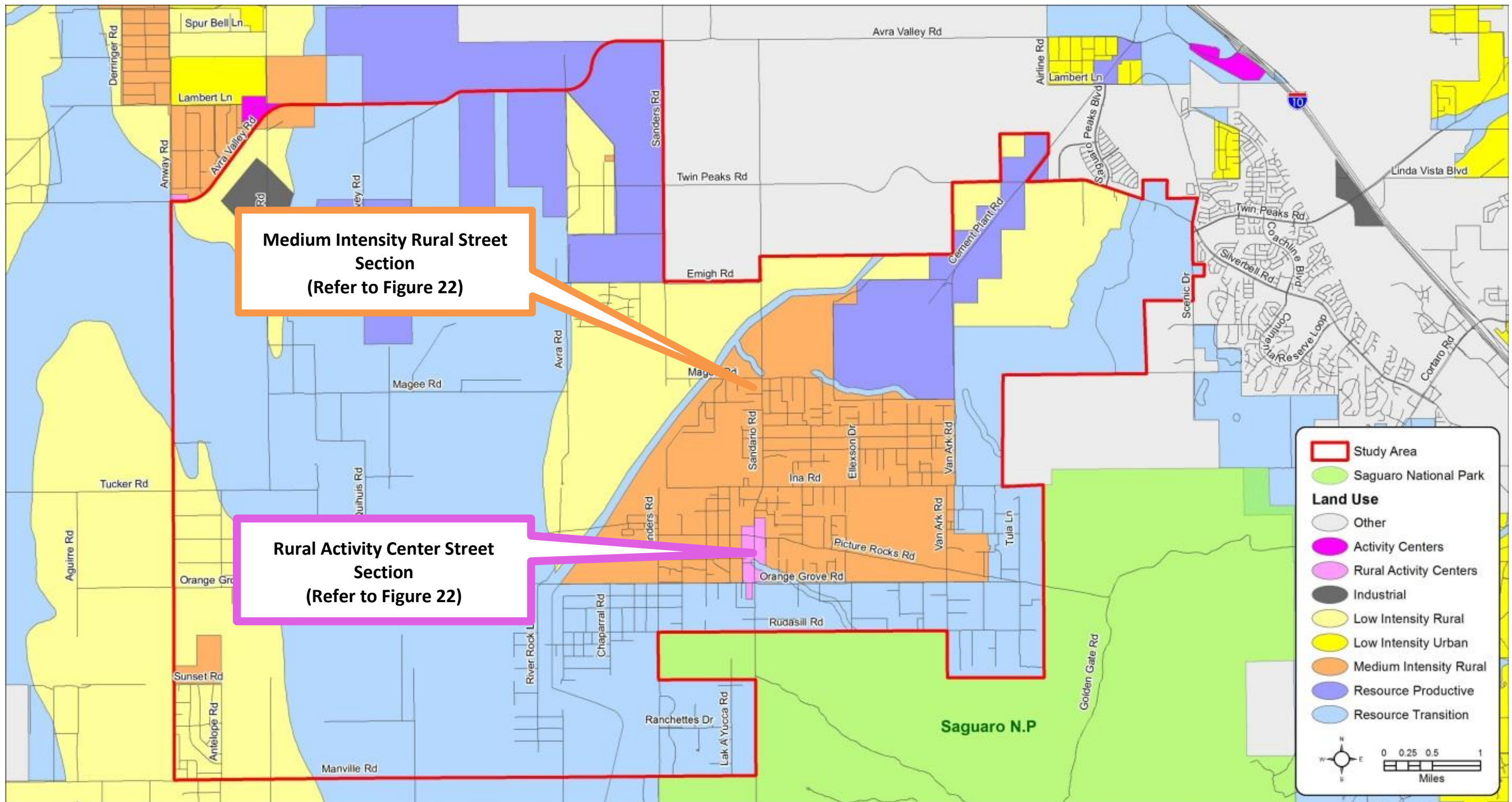


Figure 21 – Study Area Land Use

Source: Pima County GIS

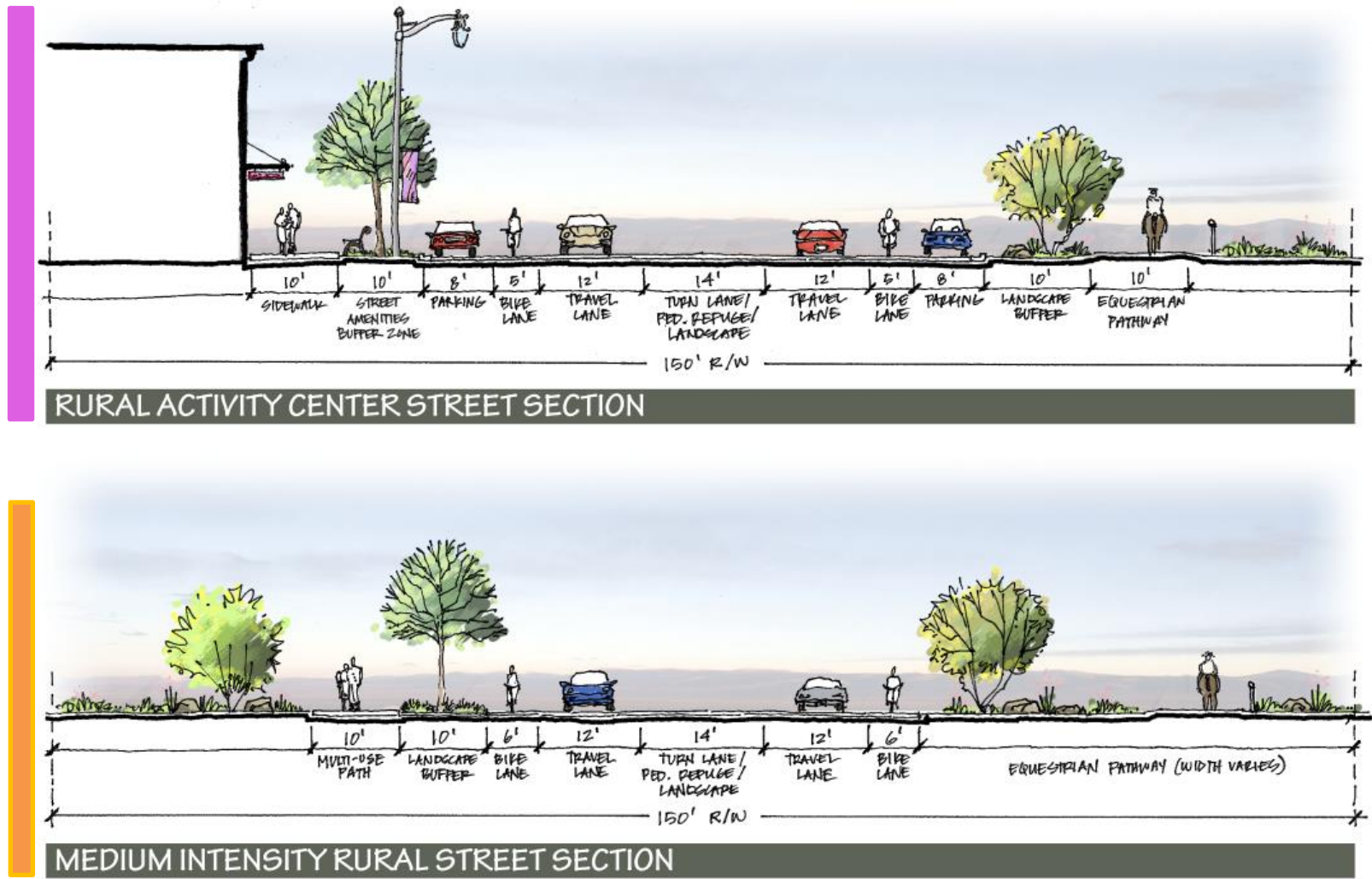


Figure 22 – Rural Activity Center and Medium Intensity Street Sections

Picture Rocks Road – Guthrie Road to SNP

Picture Rocks Road is a county-maintained paved road providing east-west access to Picture Rocks from SNP and I-10 via Wade Road and Ina Road. Picture Rocks Road within the study area is classified as a two-lane scenic collector with average daily traffic volumes of 8,000 to 9,000 vpd.

Pima County is currently conducting a scoping study for this segment of Picture Rocks Road that will review alternatives including shoulder improvements and intersection turn lanes, and widening to a three-lane cross-section with two-way left-turn lanes and with shoulder improvements. The study is to be completed by August 2014.

Field visits to review safety conditions confirmed that the combination of traffic volumes, travel speeds, unpaved shoulders, the presence of bicycle and pedestrian traffic, limited sight distance in areas of driveways and intersections,

and road maintenance contribute to the concentration of crashes along this roadway segment. Field visits supported the recommendations from the Pima County Department of Traffic Safety Study on Picture Rocks Road (geometric roadway realignment in the vicinity of the Picture Rocks Wash and roadway widening to three lanes with paved shoulders). Improvements to Picture Rocks Road are in addition to improvements at the Sandario/Picture Rocks intersection. Federal Highway Safety Improvement Program (HSIP) funding is being considered as a funding resource for improvements to Picture Rocks Road.

During the field visit, improvements were observed on Picture Rocks Road by the National Park Service to manage vehicle speeds and warn motorists in advance of curves (refer to the photo images to the right). If effective, these speed management and warning strategies may be applicable for other locations in the study area.

Rudasill Road – Sanders Road to Van Ark Road

Rudasill Road is a county-maintained paved roadway providing east-west access within the study area and provides the principal access to the Picture Rocks Community Center located on Sanders Road. Documented stakeholder needs resulted from the combination of travel speeds, limited sight distance, lack of pedestrian and bicycle facilities, graded shoulders, and low light levels which create the potential for traffic crashes. However, there was not a significant concentration of crashes on this segment of Rudasill Road and field visits to the Rudasill-Sandario intersection did not observe significant safety issues.



Avra Valley Road – El Paso Road to Garvey Road

Avra Valley Road is a county-maintained two-way paved road providing east-west access in the northern part of the study area. The roadway lies in both Pima County and the Town of Marana. The County-owned roadway is designated as a scenic major route in the *Pima County Major Streets and Scenic Routes Plan* (2011 map amendment). This segment of Avra Valley Road was identified as a high-crash concentration segment based on five years of crash data. A field visit identified the following potential safety issues:

- The Avra Valley Road-El Paso Road T-intersection is located on a curve and the El Paso Road approach is angled. Observed travel speeds and posted speed limits appear to be high in relation to the existing intersection geometry and available sight distances on the approaches to the intersection.
- Sight distance is restricted on all approaches to the intersection of Avra Valley Road and Garvey Road due to roadway alignment and foliage.
- A predominant crash type at both intersections are rear-end collisions, many occurring during night time lighting conditions.

Near-term needs included improvements to existing advance warning signs on the Avra Valley Road (larger signs with warning beacons) approaches to the El Paso Road and Garvey Road intersections, increasing the size of existing stop signs at both intersections, removal of sight distance restrictions at both intersections, installation of roadway lighting, and speed studies to determine the need for reducing the posted speed limit. Longer term improvement needs include reconstruction of the El Paso Road approach to Avra Valley Road and construction of left-turn lanes on Avra Valley Road at both intersections.

Twin Peaks Road – Silverbell Road (North) to White Stallion Road

Twin Peaks Road is a county-maintained two-way paved road providing east-west access in the northeastern part of the study area (through Rattlesnake Pass). This roadway is designated as a scenic major route in the *Pima County Major Streets and Scenic Routes Plan* (2011 map amendment) and is a “transition roadway segment” from urban roadway design standards on Silverbell Road (South) and Twin Peaks Road in the Town of Marana to rural design standards in unincorporated Pima County. This segment of Twin Peaks Road was identified as a high-crash concentration segment based on five years of crash data. A field visit identified the following potential safety issues:

- The Twin Peaks - Silverbell Road (North) T-intersection is located on a horizontal and vertical curve on Twin Peaks Road and the intersection design promotes high vehicle speeds for vehicles travelling from urban design conditions to rural design conditions. Roadway curvature combined with pavement-shoulder differential creates crash potential for vehicles that leave the pavement surface. More traditional design of the T-intersection and advance warning signs would result in slower vehicle speeds in this transition area.
- Sight distance is restricted on all approaches to the intersection of Twin Peaks Road and White Stallion Road due to roadway alignment and foliage.

Near-term needs included improvements to existing advance warning signs on the Twin Peaks Road (larger signs with warning beacons) intersection, shoulder maintenance to remove pavement-shoulder differential, and removal of sight distance restrictions at the Twin Peaks Road-White Stallion Road intersection. Longer term improvement needs include reconstruction of the Twin Peaks Road-Silverbell

Road (North) T-intersection and curve geometry on Twin Peaks Road, and construction of a left-turn lane on Twin Peaks Road at White Stallion Road.

5.2.2 INTERSECTIONS NEEDS

The roadway segment needs described above include operational, safety, and traffic control needs at intersections. This section provides additional details for improvements to specific intersections based on a review of crash concentrations and the results of field visits to each of the following intersections.

Sandario Road / Manville Road

The Sandario Road / Manville Road intersection is currently a T-intersection with a stop sign on Manville Road. Manville Road and Sandario Road are both two-lane county-maintained paved roadways with Manville Road being a major route and Sandario Road being a scenic major route in the *Pima County Major Streets and Scenic Routes Plan* (2011 map amendment). According to residents and stakeholders, vehicle speeds, limited sight distance, and low lighting levels contribute to crashes at this intersection. Residents and stakeholders suggest that the construction of left-turn lanes at this intersection is needed. A review of crash data and field visits did not identify a significant crash concentration or safety issues; however, the need for all-way stop control or the need for a northbound left-turn lane on Sandario Road for vehicles turning onto Manville Road should be considered as traffic volumes increase or as crashes occur in the future.

Sandario Road / Orange Grove Road

The Sandario Road / Orange Grove Road intersection is currently a two-way stop controlled intersection with stop signs on Orange Grove Road. Orange Grove Road east of Sandario Road is a two-lane non-county-maintained unpaved roadway. Orange Grove Road west of Sandario Road is a two-lane county-maintained paved roadway. Sandario Road is classified as a scenic major route in the *Pima County Major Streets and Scenic Routes Plan* (2011 map amendment). The westbound approach of the intersection does not align with the eastbound approach. Residents and stakeholders suggest that the realignment of Orange Grove Road to form a typical four-legged intersection is needed. A review of crash data and field visits did not identify significant safety issues; however, the need for geometric realignment of Orange Grove Road should be considered as traffic volumes increase or as crashes occur in the future.

Sandario Road / Rudasill Road

The Sandario Road / Rudasill Road intersection is a two-way stop controlled intersection with stop signs on both approaches of Rudasill Road. Rudasill Road and Sandario Road are two-lane county-maintained roadways with Sandario Road being a rural major collector. Sandario Road is classified as a scenic route. According to stakeholders, vehicle speeds, limited sight distance, and low night time lighting levels have contributed to a concentration of crashes at this intersection. Residents and stakeholders suggest that roadway lighting, advance warning signs on the approaches to the intersection, and possibly all-way stop control are needed. A review of crash data and field visits did not identify significant safety issues; however, the need for roadway lighting, warning signs, and intersection control changes should be considered as traffic volumes increase or as crashes occur in the future.

Anway Road / Avra Valley Road

The Anway Road / Avra Valley Road intersection is currently a two-way stop controlled intersection with the Anway Road approaches controlled by stop signs. Avra Valley Road is designated as a scenic major road and Anway Road, south of the intersection is a major road according to the *Pima County*

Major Streets and Scenic Routes Plan (2011 map amendment). The intersection was identified as a location of high-crash concentration based on five years of crash data. A field visit identified the following potential safety issues:

- Observed travel speeds and posted speed limits appeared to be high in relation to the existing horizontal geometry and available sight distances on the approach to the intersection.
- Anway Road alignments approaching the intersection were off-set creating alignment discontinuity for north-south travel.
- Sight distance was restricted on all approaches to the intersections due to roadway alignment and foliage.

Near-term needs included improvements to existing advance warning signs on the Avra Valley Road (larger signs with warning beacons) approaches to the intersection, removal of sight distance restrictions, and speed studies to determine the need for reducing the posted speed limit. Longer term improvement needs include consideration of left-turn lanes on Avra Valley Road, transition an all-way stop control, and realignment of the Anway Road approaches to the intersection.

Avra Valley / Trico Road

The Avra Valley Road / Trico Road intersection is currently a two-way stop controlled intersection with the Trico Road approaches controlled by stop signs. Avra Valley Road is designated as a scenic, major road and Trico Road is a major road according to the *Pima County Major Streets and Scenic Routes Plan* (2011 map amendment). The intersection and its approaches on Avra Valley Road were identified as a location of high-crash concentration based on five years of crash data. A field visit identified the following potential safety issues:

- Observed travel speeds and posted speed limits appeared to be high in relation to the existing horizontal geometry and available sight distances on the approach to the intersection.
- Trico Road alignments approaching the intersection were off-set creating alignment discontinuity for north-south travel.
- Sight distance was restricted on all approaches to the intersections due to roadway alignment and foliage.
- The percentage of crashes occurring during night time conditions may suggest a need for roadway lighting at the Trico Road intersection.

Near-term needs included improvements to existing advance warning signs on the Avra Valley Road (larger signs with warning beacons and warning sign relocation further from the intersection) approaches to the intersection, placement of advance warning signs on Trico Road, removal of sight distance restrictions at the intersection, intersection lighting at the Trico Road intersection, and speed studies to determine the need for reducing the posted speed limit. Longer term improvement needs include construction of left-turn lanes on Avra Valley Road at Trico Road and Voak Road intersections, construction of a right-turn lane on Trico Road (southbound approach), transition an all-way stop control, and realignment of the Trico Road approaches to the intersection.

Sanders Road / Twin Peaks Road

The Sanders Road / Twin Peaks Road intersection is currently a T-intersection with stop control on the Sanders Road approach to the intersection. This intersection is located in the Town of Marana but

within the study area limits. The intersection was identified as a location of high-crash concentration based on five years of crash data. A field visit identified the following potential safety issues:

- Observed travel speeds and posted speed limits appeared to be high in relation to the existing vertical geometry associated with the wash on the east approach to the intersection.

Near-term needs included improvements to existing advance warning signs on the Twin Peaks Road (larger signs with warning beacons) approaches to the intersection, placement of advance warning signs on Sanders Road, and speed studies to determine the need for reducing the posted speed limit. Longer term improvement needs include improvements to vertical geometry associated with the wash located on Twin Peaks Road east of the intersection and transition an all-way stop control.

5.3 ROADWAY-FLOODING MITIGATION NEEDS

The roadway segment and intersection needs described above include mitigation of roadway flood-prone areas. This section includes justification for flood mitigation improvements to improve access for study area residents and emergency service providers. All improvement projects should be coordinated to leverage improvement costs.

Manville Road

Manville Road is a two-lane county-maintained rural minor collector that provides east-west access to the southern portion of the study area. The eastern end of Manville Road terminates at the SNP boundary where it intersects Sandario Road. Manville Road has a posted speed limit of 50 mph and has an average daily traffic volume of around 1,000 vpd. Brawley Wash crosses Manville Road just west of the CAP canal.

Hydrological studies and drainage improvements should be considered on Manville Road to mitigate road closures.

Anway Road

Anway Road is a two-lane county-maintained rural minor collector that provides north-south access in the western portion of the study area. Anway Road has a posted speed limit of 50 mph and an average daily traffic volume of around 1,400 vpd. Blanco Wash crosses Anway Road just south of Avra Valley Road. Road closures during flooding events create access issues for the Marana School District, fire department, police department, and other emergency providers.

Hydrological studies and drainage improvements should be considered on Anway Road to mitigate road closures.

Avra Valley Road

Avra Valley Road is a two-lane county-maintained rural major collector that provides east-west access in the northern portions of the study area. Avra Valley Road has a posted speed limit of 55 mph and an average daily traffic volume of around 4,000 vpd. Brawley Wash crosses Avra Valley Road east of Anway Road. Road closures during flooding events create access issues for the Marana School District, fire department, police department, and other emergency providers.

Hydrological studies and drainage improvements should be considered on Avra Valley Road to mitigate road closures.

Sandario Road

Sandario Road is a county-maintained roadway and is the major north-south access in the study area and has an average daily traffic volume of 4,500 vpd. There are two locations, north of Manville Road and north of Emigh Road, where hydrological studies and drainage improvements should be considered to mitigate road closures.

5.4 ALTERNATE MODES NEEDS

5.4.1 TRANSIT NEEDS

The need for transit service was first demonstrated in the Picture Rocks Transportation Survey conducted by Sun Tran in 2013. The purpose of the survey was to gather information regarding the transportation needs of the Picture Rocks community from civic groups including the Picture Rocks Community Conversation Transportation Committee, the Pictures Rocks AARP Community Group, and the Elder Initiative. The survey identified a potential location for a park-and-ride lot may be at the Sandario Baptist Church at 6971 North Sandario Road.

Key transit service destinations in the study area include:

- Picture Rocks Community Center
- Sandario Road / Picture Rocks Road intersection
- Arizona Pavilions Shopping area at the Cortaro Road/I-10 interchange

Procedures described in *Transit Cooperative Research (TCR) Program Report 161 – Method for Forecasting Demand and Quantifying Need for Rural Passenger Transportation: Final Workbook*, were used to estimate study area transit needs in two ways:

- The number of people in study area likely to need passenger transportation, and
- The number of person trips required by individuals without personal vehicles (at a level of mobility equal to those having personal vehicles).

Passenger Transportation Need

Estimates of passenger transportation need consider the number of persons residing in the study area with income below the poverty level, estimated to be 1,081 persons (source: US Census Bureau, Table B17001) plus the number of persons residing in households with no vehicles, estimated to be 212 persons (source: US Census Bureau, Table B08201).

Using this methodology, approximately 1,293 persons have passenger transportation needs in the study area.

Person Trips

A second measure of transit need, expressed in daily one-way person trips, was estimated using a factor called the mobility gap which is based on the total number of daily trips not taken by households with zero vehicle availability compared to the number of daily trips taken by households with access to a vehicle. The mobility gap for the Picture Rocks Census Division is 0.8 from TCR Program Report 161.

Using the following formula, with 110 study area households with no vehicles, the estimated transit need was calculated to be 90 one-way trips per day or 26,400 annual one-way passenger trips.

Need (one-way trips per day) = Number of households having no car x mobility gap

5.4.2 TRANSIT DEMAND

TCRP Report 161 states that the estimate of need using the mobility gap method is typically greater than the number of trips actually observed on rural passenger transportation systems and at best, only about 20 percent of the mobility gap trip-based needs are typically met.

Based on analysis of data reported to the Rural National Transit Database for 2009, TCRP Report 161 developed the following equation to estimate passenger transportation demand in rural areas:

$$\text{Demand} = (2.20 \times \text{Population age 60+}) + (5.21 \times \text{Mobility Limited Population age 18 to 64}) + (1.52 \times \text{Residents of Households having No Vehicle})$$

Using input data presented in **Table 25**, passenger transportation demand was estimated to be 5,638 trips per year for “non-program passenger transportation” (i.e., transportation demand not resulting from participation in a particular social-service transportation program).

Table 25 – Estimate of Reasonable Transit Demand

	Number of Persons – Picture Rocks Census Designated Place
Population Age 60+	2024
Mobility Limited Population age 18 to 64	176
Residents of Households having No Vehicle	212
Non-program related passenger transportation demand¹	5,638 Trips per Year

Sources: U.S Census American Community Survey Tables B101001, S1810, and B08201, 2008-2012 American Community Survey 5-Year Estimates

Transportation demand was addressed by considering daily and peak-period transit service options to determine the best “fit” for the Picture Rocks study area. Transit service options include fixed route service. Deviated fixed route service would be required to provide a complementary paratransit service to meet Americans with Disabilities Act (ADA) requirements, which is discussed in more detail on **Table 28** in Chapter 6.

- Fixed route service – a bus travels over an established route with fixed times for stops. It is assumed that paratransit service will be available to meet transportation services for those individuals unable to use the fixed route service due to their disability.
- Deviated fixed route service – a bus or van travels over an established fixed route and keeps to a timetable, but the vehicle can deviate from the route to go to a specific location.

Vanpool service which is currently operating in the Picture Rocks study area on a volunteer basis through the Neighbors Care Alliance (NCA) was not further evaluated as a transit service option for the Picture Rocks study area (the NCA is a program of “neighbors helping neighbors” and is a volunteer organization that is becoming established in the Picture Rocks study area).

The recommended transit service alternative is presented in **Chapter 6**.

5.4.3 PEDESTRIAN NEEDS

The roadway segment needs described above include pedestrian needs documented from input from stakeholders and the public. This section includes additional detail on pedestrian needs that should be addressed in the roadway segments. Pedestrian needs expressed by residents and stakeholders included:

- Pedestrian paths are needed to link the Community Center on Sanders Road, the Sandario Road / Picture Rocks Road intersection, and Marana High School;
- Pedestrian paths are needed along Rudasill Road;
- Conduct and implement a Safe Routes to School program;
- Construct school bus pullouts along Sandario Road and Picture Rocks Road;
- Install crosswalks at the Sandario Road / Picture Rocks Road intersection;
- Construct parking areas and pedestrian facilities at trail head locations at the Manville Road / Sanders Road intersection and at the Rudasill Road / Sanders Road intersection;
- Rudasill Road (Sandario Road to Tula Lane), has high volumes of recreational pedestrians with no pathways or roadway shoulders on which to walk;
- A walking trail along Picture Rocks Road from Sandario Road to Tula Lane;
- Some type of parking accessibility needs to be provided at intersection of Sandario Rd. and Rudasill Rd. to accommodate the Saguaro National Monument Trailhead at southeast corner of the intersection. Heavy usage by both hikes (especially large groups in multiple vehicles) and horse riders (often 4 or more vehicles with horse trailers); and
- Sidewalks are needed to and from the -cross walks at the intersection of Sandario Road and Picture Rocks Road. There needs to be a safe pedestrian route from high school to community center.

5.4.4 BICYCLE NEEDS

The roadway segment needs described above address bicycle needs documented from stakeholder and public input. Bicycle needs should be addressed in the roadway segments, including paved shoulders for bikes on Sandario Road, Picture Rocks Road, and sections of Rudasill Road to link the Community Center on Sanders Road, the Sandario Road / Picture Rocks Road intersection, and Marana High School. Bicycle needs expressed by residents and stakeholders included:

- Bike lanes (especially on Sandario Road). Stakeholders noted that bike lane should extend along Sandario Road to Twin Peaks to discourage bicyclists from using Picture Rocks.
- Separated trail/shared use path on Sandario Road, Picture Rocks Road, and Twin Peaks Road.
- Encourage completion of bicycle safety education course for all residents and visitors (these are taught by Pima County Department of Transportation).

5.5 ROADWAY MAINTENANCE NEEDS

5.5.1 NON-MAINTAINED COUNTY ROADS

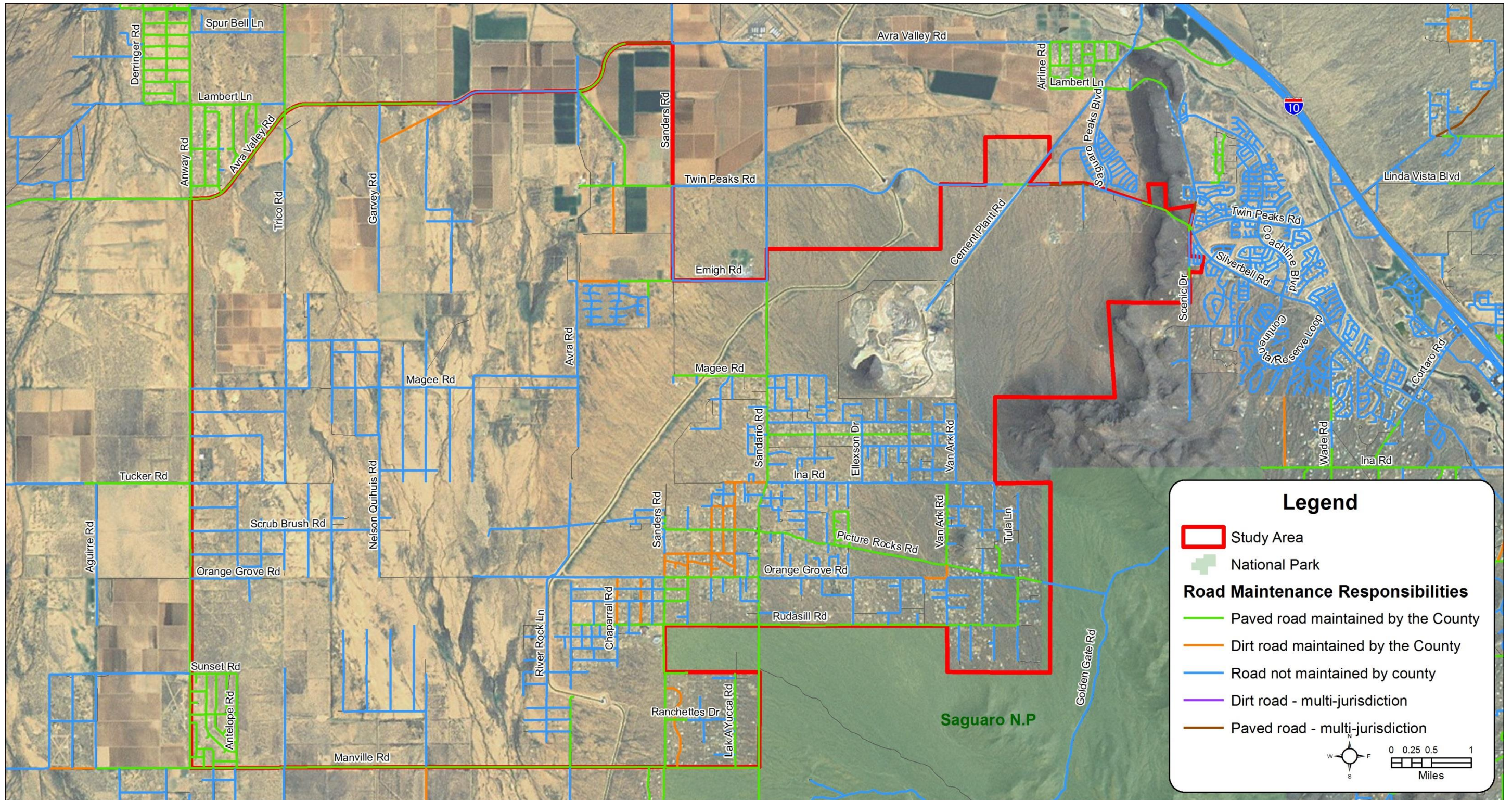
Maintenance of County roads was the highest priority roadway infrastructure need in 2013 surveys of Picture Rocks residents conducted as part of the Pima County Comprehensive Plan Update. Currently there are approximately 140 miles of roads in the study area that are not maintained by the County, many of which are unpaved. By comparison, there are approximately 46 miles of paved roads that are maintained by the County or other jurisdictions in the study area, and approximately nine miles of dirt roads that are maintained by the County.

Pima County is responsible for maintaining paved and unpaved roads on the Pima County Maintenance System (refer to **Figure 23**). The County is authorized to spend public funds to maintain only the County Maintenance System. Roads that are not on the County Maintenance System may be placed on the Maintenance System by the Board of Supervisors if the roadway is constructed and opened in accordance with County roadway design standards at no cost to Pima County (Pima County Code of Ordinances, Section 10.04.030).

Stakeholder interviews recorded numerous requests for paving, maintaining, and improving roads that are not on the Maintenance System. The Marana Unified School District maintains a map of roads designated by the District as “not travelable” by school buses. All of the designated roads are not on the County Maintenance System except for Avra Road from Sunset Road to Yankee Ranch Road. Other roads in the study area such as Emigh Road are within the jurisdiction of and are maintained by the Town of Marana. Emergency service providers maintain similar maps of roads that become impassible during storm events. Stakeholder comments on road maintenance suggest that there is not a broad public understanding of the requirements for roads to be placed on the Maintenance System and be maintained by the County.

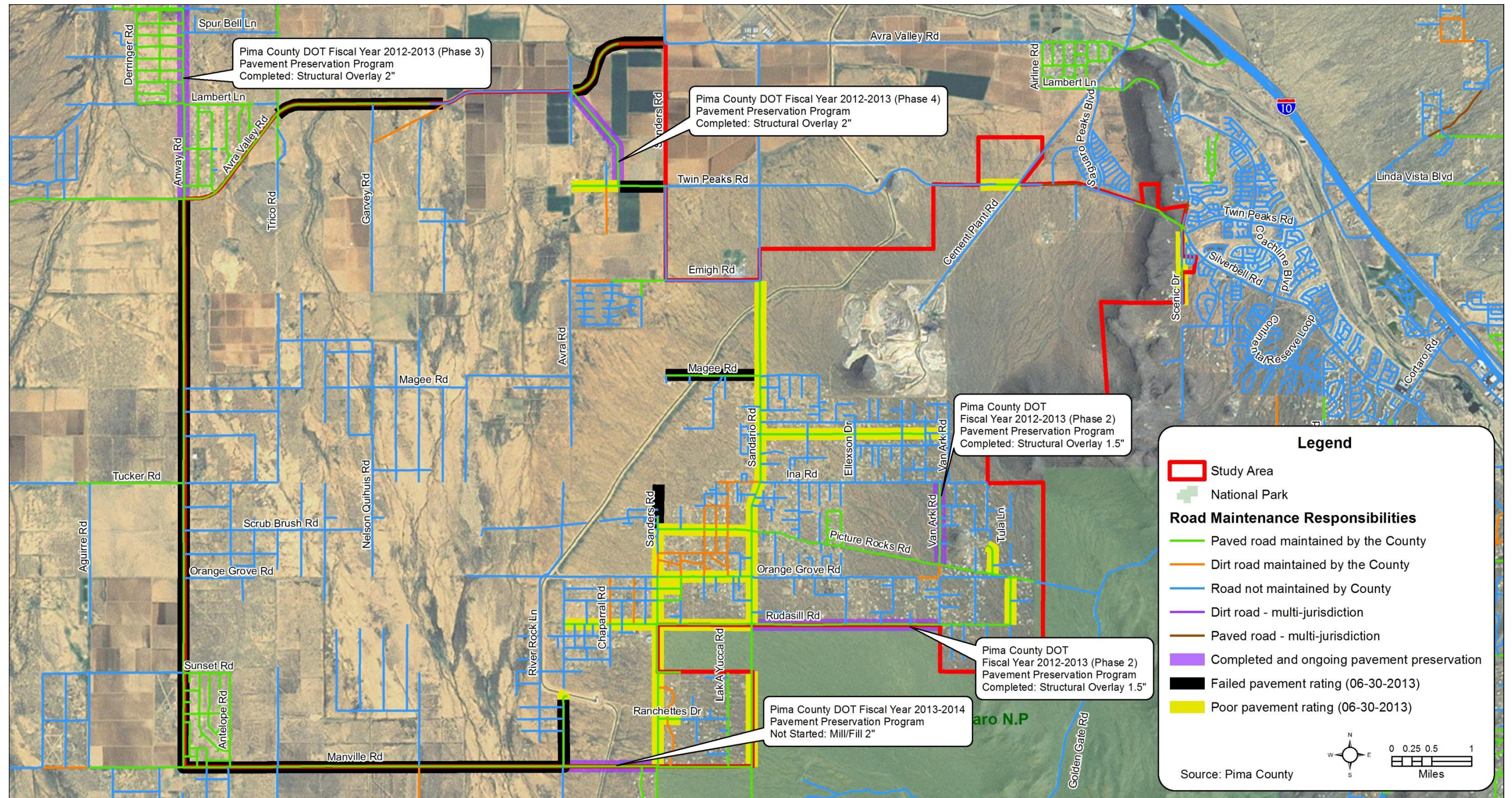
5.5.2 PAVEMENT PRESERVATION NEEDS

Pima County administers an annual pavement preservation and rehabilitation program. The program varies annually depending on funding availability. Completed and in-progress pavement preservation and rehabilitation projects within the study area since 2012 are shown in **Figure 24**. Also shown in **Figure 24** are roads with *Failed* and *Poor* pavement conditions as rated by Pima County in 2013. The County-maintained roadway listed as *Failed* and *Poor* in **Figure 24** are priorities for Pima County annual pavement preservation programs in the future.



Source: Pima County

Figure 23 – County Maintenance System



Source: Pima County

Figure 24 – Pavement Preservation Priorities

6. Recommended Projects

The projects recommended in this chapter address the transportation needs documented in Chapter 5 to improve roadway safety, regional access and mobility, bicycle and pedestrian safety and mobility, and rural transit service.

Pima County has performed safety studies and recommended improvements that should be integrated with the projects recommended in this report. Initial project scoping was developed by a multidisciplinary engineering team to determine project features and planning-level cost estimates. The planning-level cost estimates include general costs for items typically associated with similar types of projects.

6.1 ROADWAY INFRASTRUCTURE PROJECTS

6.1.1 ROADWAY INFRASTRUCTURE PROJECT DESCRIPTION

Eleven roadway infrastructure projects along with related planning and engineering studies were developed to address the infrastructure needs documented in Chapter 5. Project features are provided in **Table 26** and shown geographically in **Figure 25**.

Preliminary project costs are subject to further refinement in future scoping and design analysis. Project phasing as listed in **Table 26** was determined considering project prioritization (described below) and project complexity/cost. Using the results of project priority matrix, projects were assigned to short-range, mid-range, and long-range time frames to maximize benefit to the Picture Rocks Community.

Table C1 (Appendix C) lists projects by phase (short-range, mid-range, and long-range).

6.1.2 ROADWAY INFRASTRUCTURE PROJECT PRIORITIZATION

Project performance criteria were developed to provide a basis for establishing infrastructure project priorities. Long-term projects which require higher construction costs will be dependent on funding availability and to the outcome of studies that are recommended for project scoping. The performance criteria include measurable factors representing the goals of the Picture Rocks Study. These criteria cover three categories—study area multimodal mobility and safety, regional multimodal accessibility, and study area economic development and quality of life. The performance criteria are defined below and included in the project priority matrix in **Table 27**.

Study Area Multimodal Mobility and Safety

- **Improved Multimodal Mobility within the Picture Rocks Community** – Each improvement project was evaluated on how well it improved multimodal connectivity within the Picture Rocks Community and the study area in general. Projects that address mobility and accessibility between Community facilities and neighborhoods for all modes rated very high for this criterion.
- **Improved Multimodal Safety** – Each improvement project was evaluated on how well it improved multimodal safety in the study area with a focus on crash concentration locations. Projects that address safety improvement for all roadway users rated very high for this criterion.
- **Improved Traffic Operations** – Each improvement project was evaluated on how well it improved multimodal capacity and operations. Projects that improve traffic operations through improved traffic control and added capacity rated very high for this criterion.

Regional Multimodal Accessibility

- **Improved Regional Multimodal Connections** – Each improvement project was evaluated on how well it improves multimodal Community accessibility with regional transportation features and destinations. Projects that address connectivity to Marana, I-10, and regional employment centers and destinations rated very high for this criterion.
- **Increased Travel Choices** – Each improvement project was evaluated on how well it increased multimodal transportation choices for the Community. Projects that address multimodal and transit service needs rated very high for this criterion.

Study Area Economic Development and Quality of Life

- **Improved Potential for Community Development** – Each improvement project was evaluated on its contribution to community-scale development. Projects that improve aesthetics, land use controls, and sustainable community development rated very high for this criterion.
- **Improve Quality of Life/Air Quality** – Each improvement project was evaluated on how well it improves quality of life and air quality. Projects that increase the use of alternate modes of transportation and address pavement condition needs rated very high for this criterion.

Performance criteria were rated for each infrastructure project on the following quantitative rating scale to illustrate the benefits of each project.

- Significant Benefit (with a value of 5 points)
- Moderate Benefit (with a value of 3 points)
- Limited Benefit (with a value of 1 point)

Rating scores were used to establish a relative priority for each roadway infrastructure improvement project.

6.2 PAVEMENT MAINTENANCE AND REHABILITATION PROJECTS

Pavement preservation priorities for future updates of the annual pavement preservation and rehabilitation program were identified from 2013 pavement conditions data collected by Pima County as part of the Annual Pavement Preservation and Rehabilitation Program. Pavement priorities include County maintained roadway segments with predominant pavement rating of “poor” or “fair.” These priority segments will require further scoping to determine the preservation techniques such as structural overlay or mill/fill. The estimated cost is \$140,000/mile for structural overlay and \$200,000/mile for mill/fill. These costs were determined from similar completed and planned pavement preservation projects in the study area. Because the County Pavement Preservation and Rehabilitation Program is dependent on the availability of funds, pavement preservation priorities shown in **Figure 24** should be considered in future annual programs.

Table 26 – Summary of Infrastructure Projects

Project Number	Project Name	Project Features	Preliminary Project Cost (\$)	Project Phasing
1	Sandario Road, Rudasill Road to North of Emigh Road	Studies <ul style="list-style-type: none"> Conduct planning and engineering studies to evaluate the need for left-turn lanes at intersections on Sandario Road-Picture Rocks Road. 	\$5,000	Short-range (0 to 5 years)
		<ul style="list-style-type: none"> Conduct planning and engineering studies to evaluate need for intersection operations, geometric, traffic control, and lighting improvements at Sandario Road / Picture Rocks Road intersection. 	\$5,000	
		<ul style="list-style-type: none"> Conduct hydrology study to evaluate the need, feasibility, and preliminary concepts plans for improvements to wash crossing on Sandario Road; Consider placement of near-term warning and detour signs in advance of roadway reconstruction. 	\$50,000	
		<ul style="list-style-type: none"> Conduct a study to develop a planning framework for street design and land use zoning along Sandario Road from Ina Road to Orange Grove Road. The street design framework should include pedestrian and equestrian-scale streetscape consistent with Pima County Comprehensive Plan Special Area Policies. Street elements should encourage slower traffic speeds and may include on-street parking, sidewalks, planters, and street trees. Potential cross-sections are shown in Figure 22. 	\$50,000	
		<ul style="list-style-type: none"> Monitor crash history and traffic operations at the Orange Grove Road and Rudasill Road intersections to determine the need for geometric, operational, traffic control, and roadway lighting improvements. 	-	
		Improvements <ul style="list-style-type: none"> Construct shared-use path from Sandario Road / Picture Rocks Road intersection to Emigh Road (Marana High School). Coordinate with fire district on funding to install a pre-emption traffic signal at fire station. Upgrade traffic control signs and markings; implement speed control devices and/or speed enforcement. 	\$2,500,000	Mid-Range (6 to 10 years)

Table 26 – Summary of Infrastructure Projects (continued)

Project Number	Project Name	Project Features	Preliminary Project Cost (\$)	Project Phasing
1 (con't)	Sandario Road, Rudasill Road to North of Emigh Road (continued)	<ul style="list-style-type: none"> Construct all-weather three-lane roadway with paved (bikeable) shoulders from Ina Road to Orange Grove Road. Design should include intersection and drainage improvements as determined by planning and engineering studies. 	\$3,500,000	Long-Range (11 to 20 years)
2	Picture Rocks Road, Guthrie Road to SNP West Boundary	<p>Studies</p> <ul style="list-style-type: none"> Conduct Road Safety Assessment (RSA) and engineering study to evaluate the need for left-turn lanes and operations, geometric, traffic control, and lighting improvements at Sandario Road / Picture Rocks Road intersection and other intersections with the corridor between Stone Mountain Road and SNP boundary. 	\$30,000	Short-Range (0 to 5 years)
		<ul style="list-style-type: none"> Conduct hydrology studies to evaluate the need for improvements to wash crossing on Picture Rocks Road including placement of near-term warning and detour signs in advance of roadway reconstruction. 	\$50,000	
		<ul style="list-style-type: none"> Conduct a study to develop a planning framework for street design and land use zoning along Picture Rocks Road from Guthrie Road to Stone Mountain Road. The street design framework should include pedestrian and equestrian-scale streetscape consistent with Pima County Comprehensive Plan Special Area Policies. Street elements should encourage slower traffic speeds and may include on-street parking, sidewalks, planters, and street trees. 	\$50,000	
		<p>Improvements</p> <ul style="list-style-type: none"> Upgrade traffic control signs and markings. Implement speed control devices and/or speed enforcement. 	\$20,000	
		<ul style="list-style-type: none"> Construct all-weather three-lane roadway with paved (bikeable) shoulders from Guthrie Road to Stone Mountain Road. Design should include intersection and drainage improvements as determined by planning and engineering studies. 	\$3,500,000	Long-Range (11 to 20 years)

Table 26 – Summary of Infrastructure Projects (continued)

Project Number	Project Name	Project Features	Preliminary Project Cost (\$)	Project Phasing
3	Avra Valley Road—El Paso Road to Garvey Road	Studies <ul style="list-style-type: none"> Conduct Road Safety Assessment (RSA) to determine the need and feasibility to install roadway lighting, reduce the posted speed limit, and other improvements required to improve safety of this roadway segment. 	\$20,000	Short-Range (0 to 5 years)
		Improvements <ul style="list-style-type: none"> Upgrade existing advance warning signs on Avra Valley Road with larger signs and warning beacons on approaches to the El Paso Road and Garvey Road intersections. Relocate sign placement on approaches to intersections and curves. Increase the size of existing stop signs at the El Paso Road and Garvey Road intersections. Remove sight distance restrictions at the El Paso Road and Garvey Road intersections. 	\$300,000	
		<ul style="list-style-type: none"> Reconstruct the El Paso Road approach to Avra Valley Road. Construct left-turn lanes on Avra Valley Road at El Paso Road and Garvey Road intersections. 	\$1,500,000	Mid-Range (6 to 10 years)
4	Twin Peaks Road—Silverbell Road (North) to White Stallion Road	Study <ul style="list-style-type: none"> Conduct Road Safety Assessment (RSA) to identify other improvements required to improve safety of this corridor segment. 	\$20,000	Short-Range (0 to 5 years)
		Improvements <ul style="list-style-type: none"> Upgrade existing advance warning signs on the Twin Peaks Road with larger signs and warning beacons on approaches to the Silverbell Road (north). Relocate sign placement on approaches to intersections and curves. Grade shoulders to remove pavement-shoulder differential. Remove sight distance restrictions at the Twin Peaks Road-White Stallion Road intersection. 	\$400,000	

Table 26 – Summary of Infrastructure Projects (continued)

Project Number	Project Name	Project Features	Preliminary Project Cost (\$)	Project Phasing
4	Twin Peaks Road—Silverbell Road (North) to White Stallion Road	Improvements <ul style="list-style-type: none"> Reconstruct the Twin Peaks Road-Silverbell Road (North) T-intersection and curve geometry on Twin Peaks Road. Construct a left-turn lane on Twin Peaks Road at White Stallion Road. 	\$2,000,000	Mid-Range (6 to 10 years)
5	Anway Road / Avra Valley Road	Studies <ul style="list-style-type: none"> Conduct Road Safety Assessment (RSA) of Avra Valley Road from Anway Road to Trico Road to determine the need for reducing the posted speed limit and other improvements required to improve safety at this intersection. 	\$20,000	Short-Range (0 to 5 years)
		Improvements <ul style="list-style-type: none"> Upgrade existing advance warning signs on the Avra Valley Road with larger signs and warning beacons on approaches to Anway Road. Relocate sign placement on approaches to intersection. Remove sight distance restrictions. 	\$300,000	
		<ul style="list-style-type: none"> Construct left-turn lanes on Avra Valley Road or conduct studies to determine the need to transition to all-way stop control. Realign the Anway Road approaches to the intersection. 	\$2,500,000	Mid-Range (6 to 10 years)
6	Avra Valley / Trico Road	Studies <ul style="list-style-type: none"> Conduct Road Safety Assessment (RSA) of Avra Valley Road from Anway Road to Trico Road to determine the need for intersection lighting and reducing speed limit 	See Project #5	Short-Range (0 to 5 years)
		<ul style="list-style-type: none"> Conduct flood mitigation study to identify improvements required to mitigate flood-prone areas to reduce road closures for area residents and improve accessibility for emergency service providers. 	\$50,000	
		Improvements <ul style="list-style-type: none"> Upgrade existing advance warning signs on Avra Valley Road with larger signs and warning beacons on approaches to Avra Valley Road. Relocate sign placement on approaches to intersection; remove sight distance restrictions at the intersection. 	\$20,000	

Table 26 – Summary of Infrastructure Projects (continued)

Project Number	Project Name	Project Features	Preliminary Project Cost (\$)	Project Phasing
6 (continued)	Avra Valley / Trico Road (continued)	<ul style="list-style-type: none"> Construct left-turn lanes on Avra Valley Road at Trico Road and Voak Road intersections and construct a right-turn lane on Trico Road (southbound approach) or conduct studies to determine the need to transition to all-way stop control. Realign the Trico Road approaches to the intersection. 	\$2,000,000	Mid-Range (6 to 10 years)
7	Sanders Road / Twin Peaks Road	Studies <ul style="list-style-type: none"> Conduct Road Safety Assessment (RSA) to identify improvements required to improve safety at this intersection; determine the need for reducing the posted speed limit; evaluate need to transition to all-way stop control 	\$20,000	Short-Range (0 to 5 years)
		Improvements <ul style="list-style-type: none"> Upgrade existing advance warning signs on the Twin Peaks Road with larger signs with warning beacons approaches to the intersection. Relocate sign placement on approaches to intersection. 	\$10,000	
		<ul style="list-style-type: none"> Reconstruct vertical geometry associated with the wash located on Twin Peaks Road east of the intersection. 	Additional study required	Mid-Range (6 to 10 years)
8	Manville Road Drainage Mitigation Project	Study <ul style="list-style-type: none"> Conduct hydrology study to evaluate the need for improvements to wash crossing on Picture Rocks Road including placement of near-term warning and detour signs in advance of roadway reconstruction. 	\$50,000	Short-Range (0 to 5 years)
		Improvement <ul style="list-style-type: none"> Construct all-weather crossing. 	\$4,500,000	Long-Range (11 to 20 years)

Table 26 – Summary of Infrastructure Projects (continued)

Project Number	Project Name	Project Features	Preliminary Project Cost (\$)	Project Phasing
9	Anway Road Drainage Mitigation Project	Study <ul style="list-style-type: none"> Conduct hydrology studies to evaluate the need for improvements to wash crossing on Picture Rocks Road including placement of near-term warning and detour signs in advance of roadway reconstruction. 	\$50,000	Short-Range (0 to 5 years)
		Improvement <ul style="list-style-type: none"> Construct all-weather crossing. 	\$1,500,000	Long-Range (11 to 20 years)
10	Avra Valley Road Drainage Mitigation Project	Study <ul style="list-style-type: none"> Conduct hydrology studies to evaluate the need for improvements to wash crossing on Picture Rocks Road including placement of near-term warning and detour signs in advance of roadway reconstruction. 	\$50,000	Short-Range (0 to 5 years)
		Improvement <ul style="list-style-type: none"> Construct all-weather crossing. 	\$1,500,000	Long-Range (11 to 20 years)
11	Sandario Road Drainage Mitigation Project	Study <p>Conduct hydrology studies to evaluate the need for improvements to wash crossing on Picture Rocks Road including placement of near-term warning and detour signs in advance of roadway reconstruction.</p>	\$50,000	Short-Range (0 to 5 years)
		Improvement <p>Construct all-weather crossing.</p>	\$1,500,000	Long-Range (11 to 20 years)

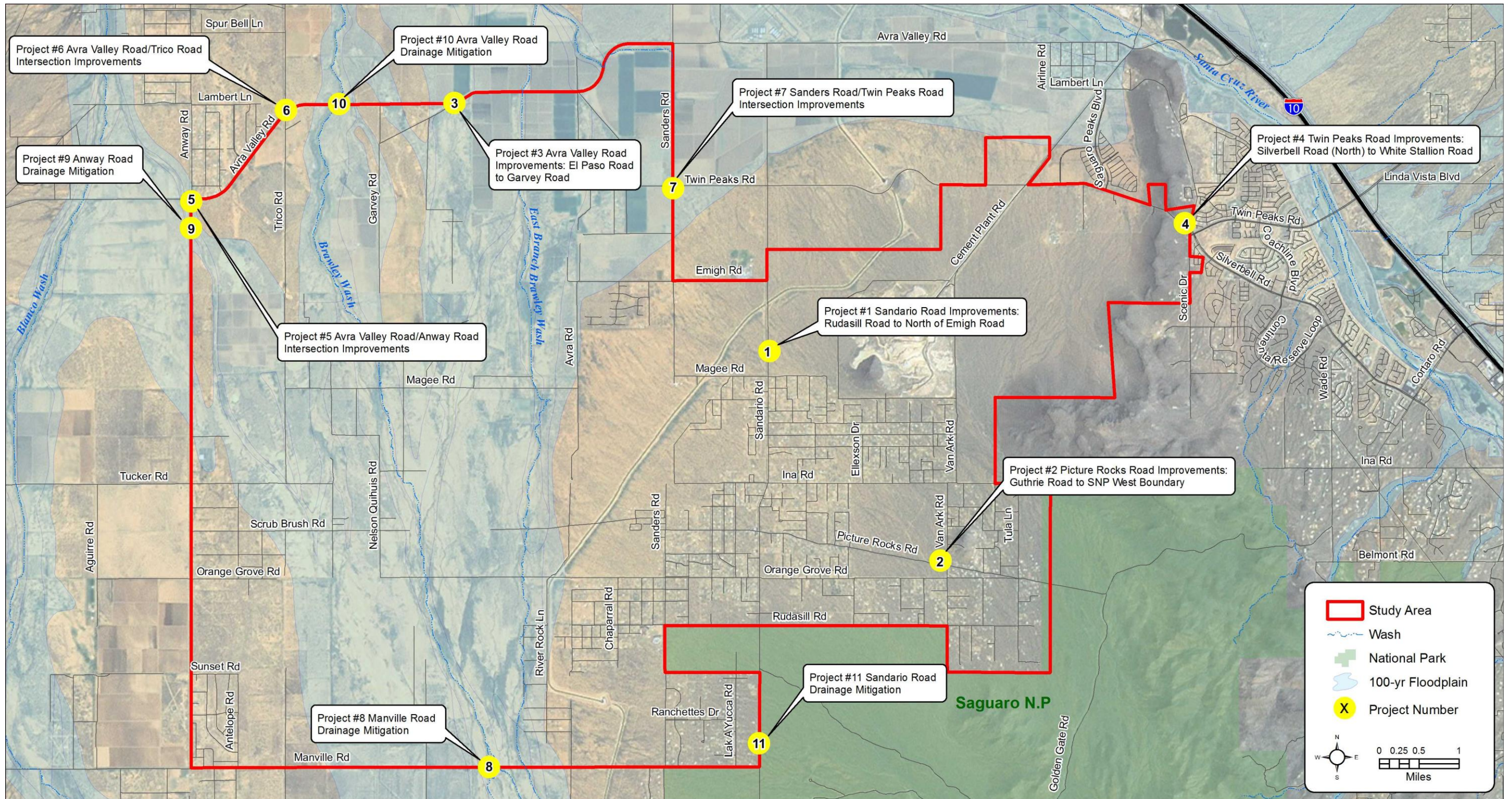


Figure 25 – Recommended Infrastructure Projects

Table 27 – Roadway Infrastructure Project Prioritization Matrix

				Performance Criteria						
				Study Area Multimodal Mobility and Safety			Regional Multimodal Accessibility		Economic Development and Quality of Life	
Project No.	Name	Location	Project Ranking	Improved Multimodal Community Mobility	Improved Multimodal Safety	Improved Traffic Operations	Improved Regional Multimodal Connections	Increased Travel Choices	Improved Potential for Community Development	Improve Quality of Life/Air Quality
			Score							
1	Sandario Road Improvement Project	Sandario Road, Rudasill Road to Emigh Road	1	5	5	5	5	5	5	3
			33							
2	Picture Rocks Road Improvement Project	Picture Rocks Road, Guthrie Road to SNP West Boundary	1	5	5	5	5	5	5	3
			33							
3	Avra Valley Road Improvement Project	Avra Valley Road—El Paso Road to Garvey Road	3	3	5	5	1	3	1	3
			21							
4	Twin Peaks Road Improvement Project	Twin Peaks Road—Silverbell Road (North) to White Stallion Road	2	3	5	5	3	3	1	3
			21							
5	Anway Road / Avra Valley Road Improvement Project	Anway Road / Avra Valley Road Intersection	3	3	5	5	1	3	1	3
			21							

Table 27 – Roadway Infrastructure Project Prioritization Matrix, continued

				Performance Criteria						
				Study Area Multimodal Mobility and Safety			Regional Multimodal Accessibility		Economic Development and Quality of Life	
Project No.	Name	Location	Project Ranking	Improved Multimodal Community Mobility	Improved Multimodal Safety	Improved Traffic Operations	Improved Regional Multimodal Connections	Increased Travel Choices	Improved Potential for Community Development	Improve Quality of Life/Air Quality
			Score							
6	Avra Valley / Trico Road Improvement Project	Avra Valley / Trico Road Intersection	3	3	5	5	1	3	1	3
			21							
7	Sanders Road / Twin Peaks Road Improvement Project	Sanders Road / Twin Peaks Road Intersection	3	3	5	5	1	3	1	3
			21							
8	Manville Road Drainage Mitigation Project	Manville Road	4	5	3	3	1	1	1	5
			19							
9	Anway Road Drainage Mitigation Project	Anway Road	4	5	3	3	1	1	1	5
			19							
10	Avra Valley Road Drainage Mitigation Project	Avra Valley Road	4	5	3	3	1	1	1	5
			19							
11	Sandario Road Drainage Mitigation Project	Sandario Road	4	5	3	3	1	1	1	5
			19							

Rating scale: 5 = Significant Benefit; 3 = Moderate Benefit; 1 = Limited Benefit

6.3 TRANSIT RECOMMENDATION

This section documents the development and evaluation of transit service and route alternatives to meet the transit service needs in the study area.

6.3.1 TRANSIT SERVICE AND ROUTE ALTERNATIVES EVALUATION

Three transit service and route alternatives were examined for a potential fixed route service in the Picture Rocks area:

- **Alternative 1 - New Transit Route from Picture Rocks Community to Sun Shuttle Route 411 at Twin Peaks Road/ Silverbell Road** – This alternative provides a new transit route that would link to Sun Shuttle Route 411 at the Twin Peaks Road / Silverbell Road intersection. Options for this service are hourly (Alternative 1A) or peak period (2-hour period in the morning/evening) only (Alternative 1B). This route is shown in **Figure 26**. It is assumed that Alternative 1A would operate 12 hours per day, Monday through Friday, with 60-minute headways. It was assumed that this route would run a shortened six-hour schedule on Saturday. The length of the route is approximately 10.8 miles in one direction. Alternative 1B would provide express service for four hours per day, Monday through Friday with approximately 30-minute headways.
- **Alternative 2 - New Transit Route from Picture Rocks Community to Sun Shuttle Route 411 and Route 104X at Arizona Pavilions Shopping Area** – This alternative provides a new transit route that would link to Sun Shuttle Route 411 and Route 104X at the Arizona Pavilions Shopping area near the Cortaro Road /I-10 interchange. Options for this alternative are hourly (Alternative 2A) or peak period only (Alternative 2B). Peak period service assumes the transit route would provide weekday service for two hours in the morning and two hours in the afternoon. This route is shown in **Figure 27**. It was assumed that Alternative 2A would operate 12 hours per day, Monday through Friday, with 60-minute headways. It is assumed that this route would run a shortened six-hour schedule on Saturday. The length of the route is approximately 15.4 miles in one direction. Alternative 2B would operate four hours per day, Monday through Friday with approximately 30-minute headways.
- **Alternative 3 - New Transit Route from Picture Rocks Community to Regency Plaza transfer point on Ina Rd near Thornydale Road** – This alternative provides a new transit route that would link the Regency Plaza on Ina and Thornydale Road to the Picture Rocks Community Center via Picture Rocks Road. The Regency Plaza Transfer point serves a number of routes, including Sun Shuttle Routes 412 and 413 and Sun Tran Routes 16 and express route 104X. This route is shown in **Figure 28**. This route is approximately 13.7 miles in one direction. It was assumed that this route would run with 60-minute headways. This route has the disadvantage of not serving the Marana High School area and residential areas north of Picture Rocks Road. Impact of heavy vehicle traffic on SNP roadways (Picture Rocks Road through SNP) would need to be evaluated.

This route could be extended, in partnership with SNP, to serve the SNP Red Hills Visitor Center and other SNP access points such as the trail access points at Manville Road / Sandario Road and the Desert Discovery Nature Trail access on Kinney Road.

Additional features for each transit alternative are summarized in **Table 28**.

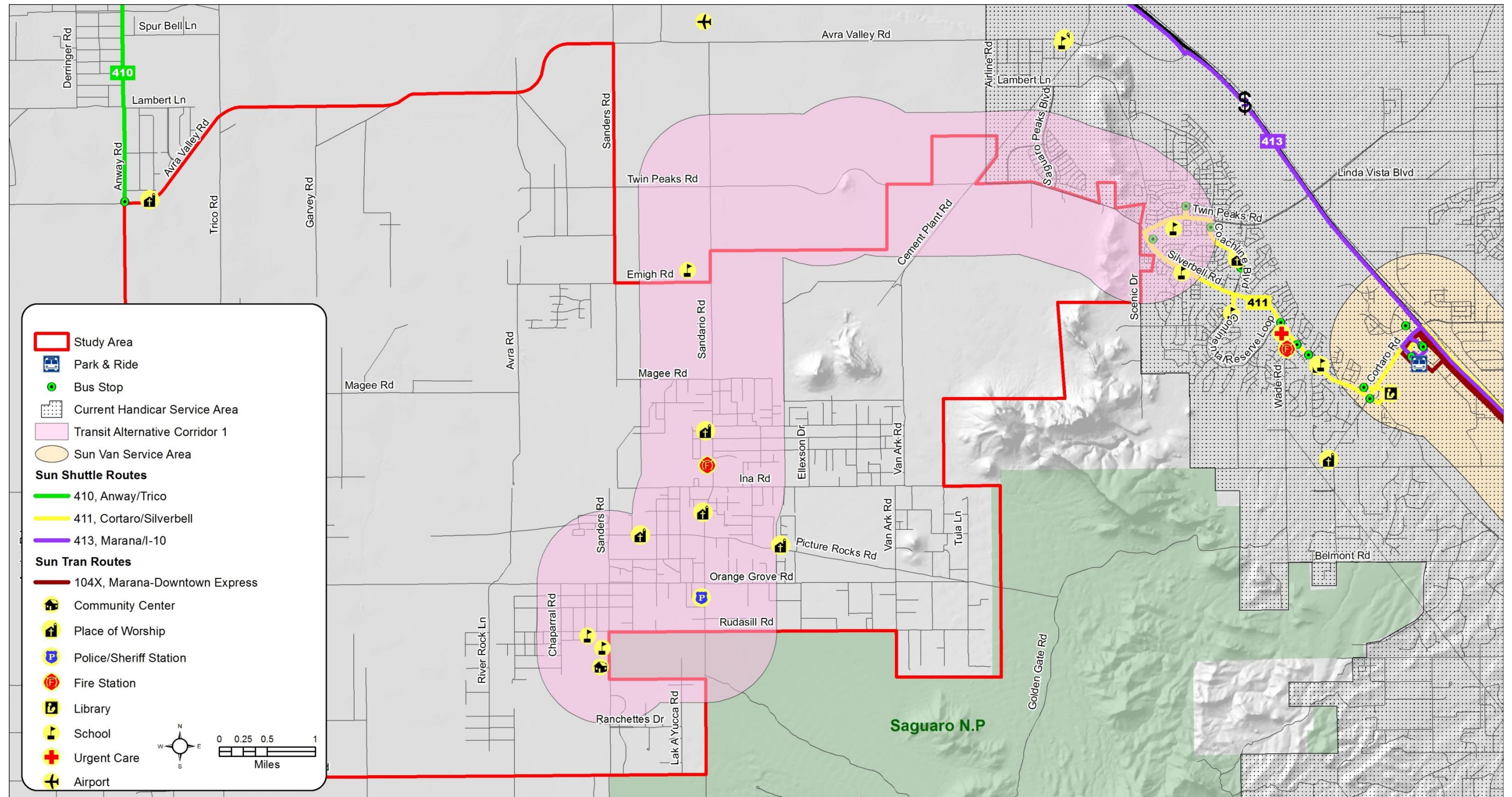


Figure 26 – Transit Alternatives 1A and 1B

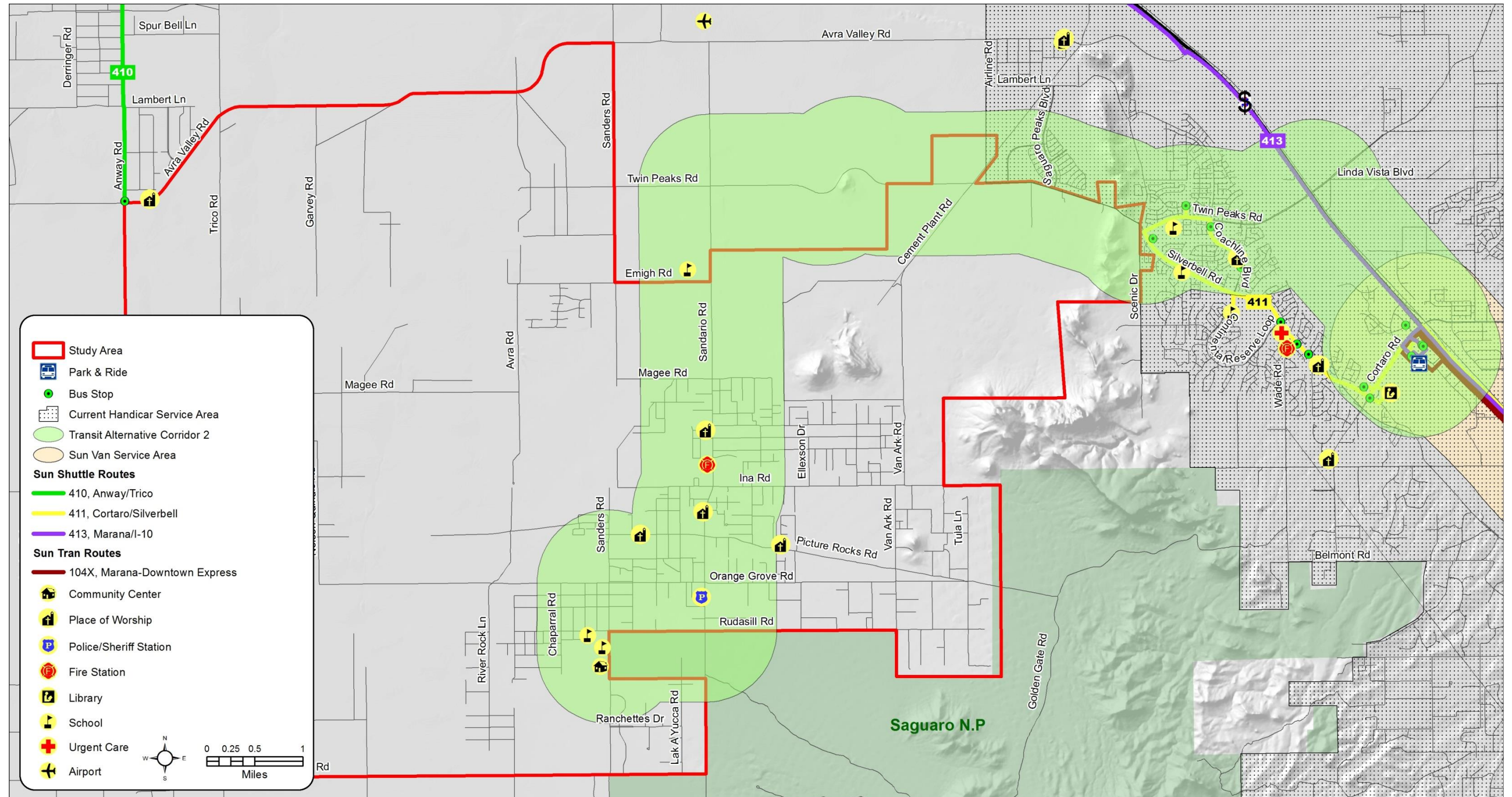


Figure 27 – Transit Alternatives 2A and 2B

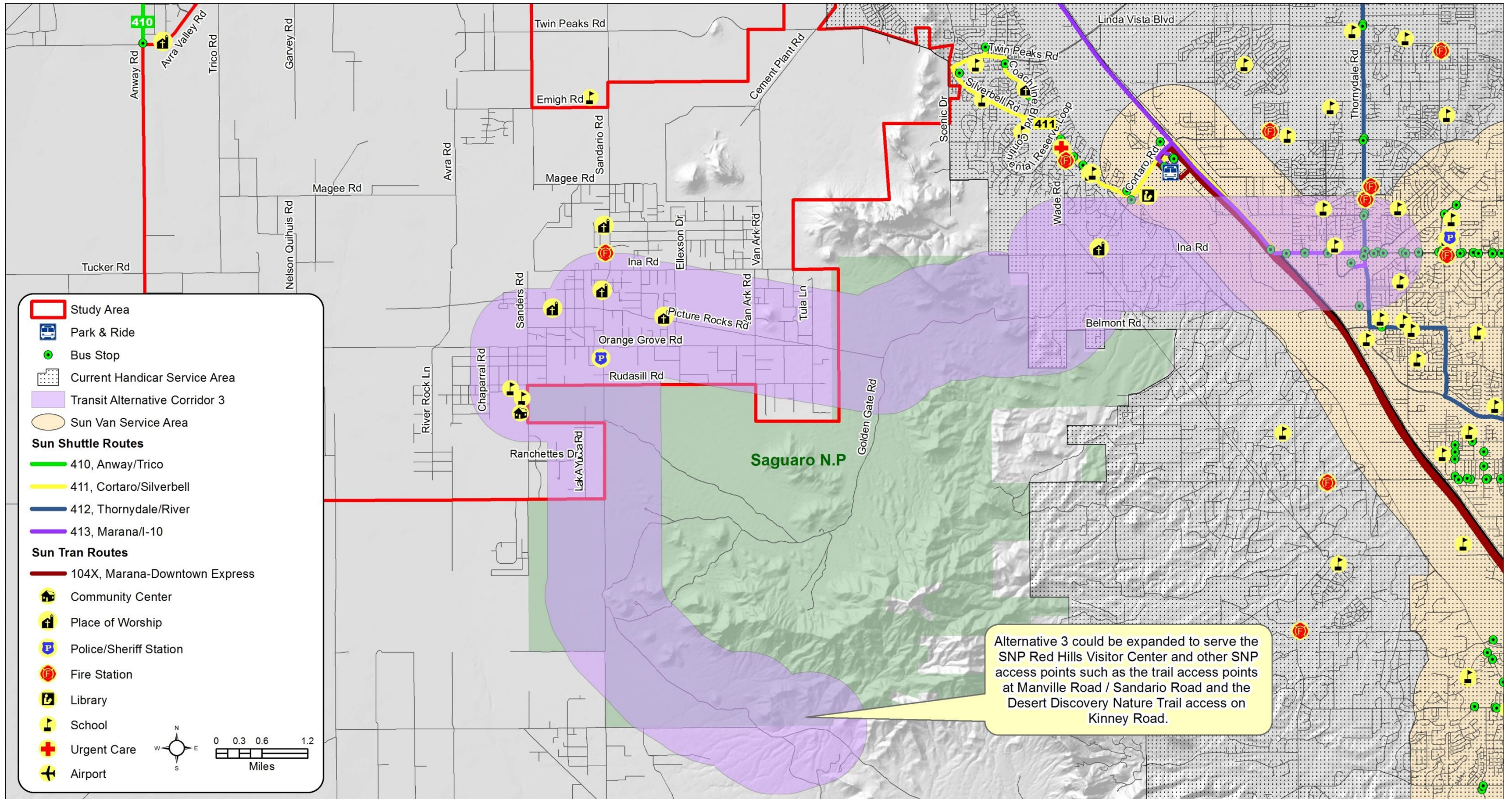


Figure 28 – Transit Alternative 3

Table 28 – Transit Alternatives

Service Alternative	Need for ADA Complementary Paratransit Service	Service Area Characteristics	Passenger Needs	Costs	Other Comments
Alternative 1A - New transit route to Route 411 at Twin Peaks Road / Silverbell Road – hourly service	Sun Shuttle vehicles are equipped with lifts. Typically each Sun Shuttle carries two personal mobility devices. ADA complementary paratransit service is required and would likely need to be provided through a route-deviated service.	Streets served: <ul style="list-style-type: none"> • Twin Peaks Road (Silverbell Road to Sandario Road) • Sandario Road (Twin Peaks Road to Rudasill Road) • Rudasill Road (Sandario Road to Sanders Road) • Sanders Road (Sunset Road to Picture Rocks Road) • Orange Grove Road (Sanders Road to Sandario Road) Key destinations: <ul style="list-style-type: none"> • Picture Rocks Community Center (Potential park-and-ride) • Commercial area at Picture Rocks Road/ Sandario Road intersection • Picture Rocks Baptist Church T 6971 North Sandario Road (potential site for park-and-ride lot) • Marana High School (within 0.2 miles of route) • Desert Winds Elementary School • Picture Rocks Elementary School • Safeway at Twin Peaks Road/Silverbell Road 	This route directly serves the Safeway at Twin Peaks Road/ Silverbell Road. A transfer would need to be made to Route 411 in order to travel to locations such as the Arizona Pavilions area.	Operating and administrative costs= \$162,162 Capital costs for system start up: \$213,900 - \$318,900	According to the PAG Short Range Transit Implementation Plan 2014-2018, Sun Shuttle fixed routes all follow a standard threshold of two passengers per revenue hour. This route is estimated to have 5,638 passengers / 3432 revenue hours = 1.64 passengers /revenue hours Assuming only weekday service, the route is estimated to carry 5,638/ 3,120=1.81 passengers/revenue hour
Alternative 1B - New transit route to Route 411 at Twin Peaks Road / Silverbell Road – peak period only.	Sun Shuttle vehicles are equipped with lifts. Typically each Sun Shuttle carries two personal mobility devices. ADA complementary paratransit service is required and would likely need to be provided through a route-deviated service.	Same as Alternative 1A	This express route provides service to the Marana-Downtown Express (Route 104X) at the Arizona Pavilions.	Operating and administrative costs=\$49,140 Capital costs for system start up: \$318,900 - \$423,900	Peak period service assumes the transit route would provide weekday service for two hours in the morning and two hours in the afternoon. According to the PAG Short Range Transit Implementation Plan 2014-2018, Sun Shuttle fixed routes all follow a standard threshold of two passengers per revenue hour. This route is estimated to have 5,638 passengers / 1,040 revenue hours = 5.42 passengers /revenue hour
Alternative 2A - New transit route to Route 411 and Route 104X at Arizona Pavilions Shopping Center - hourly service.	Sun Shuttle vehicles are equipped with lifts. Typically each Sun Shuttle carries two personal mobility devices. ADA complementary paratransit service is required and would likely need to be provided through a route-deviated service.	Added key destinations beyond 1A and 1B: <ul style="list-style-type: none"> • Arizona Pavilions area • Shopping plaza at Twin Peaks Road/ Coachline Road 	This route, although longer, serves the Arizona Pavilions area and provides service to more locations. This increases potential ridership.	Operating and administrative costs=\$162,162 Capital costs for system start up: \$213,900 – \$318,900	This route is estimated to have 5,638 passengers / 3,432 revenue hours = 1.64 passengers /revenue hours Assuming only weekday service, the route is estimated to carry 5,638/ 3,120=1.81 passengers/revenue hour

Table 27 – Transit Alternatives (continued)

Service Alternative	Need for ADA Complementary Paratransit Service	Service Area Characteristics	Passenger Needs	Costs	Other Comments
<p>Alternative 2B - Express transit route to Route 411 and Route 104X at Arizona Pavilions Shopping Center – peak period only.</p>	<p>Sun Shuttle vehicles are equipped with lifts. Typically each Sun Shuttle carries two personal mobility devices.</p> <p>ADA complementary paratransit service is required and would likely need to be provided through a route-deviated service.</p>	<p>Added key destinations beyond 1A and 1B:</p> <ul style="list-style-type: none"> • Arizona Pavilions area • Shopping plaza at Twin Peaks Road/Coachline Road 	<p>This express route provides service to the Marana-Downtown Express (Route 104X) at the Arizona Pavilions.</p>	<p>Operating and administrative costs=\$49,140</p> <p>Capital costs for system start up: \$318,900 - \$423,900</p>	<p>Peak period service assumes the transit route would provide weekday service for two hours in the morning and two hours in the afternoon.</p> <p>According to the PAG Short Range Transit Implementation Plan 2014-2018, Sun Shuttle fixed routes all follow a standard threshold of two passengers per revenue hour.</p> <p>This route is estimated to have 5,638 passengers / 1,040 revenue hours = 5.42 passengers /revenue hour.</p>
<p>Alternative 3 - New transit route from Picture Rocks Community to Regency Plaza on Ina and Thornydale Road. Regency Plaza Transfer point serves a number of routes, including Sun Shuttle Routes 412 and 413 and Sun Tran Routes 16 and express route 104X – peak period only.</p>	<p>Sun Shuttle vehicles are equipped with lifts. Typically each Sun Shuttle carries two personal mobility devices.</p> <p>ADA complementary paratransit service is required for portions of this route outside of the current Sun Shuttle service area (refer to Figure 13) and would likely need to be provided through a route-deviated service.</p>	<p>Streets served:</p> <ul style="list-style-type: none"> • Ina Road (Thornydale Road to Wade Road) • Wade Road (Ina Road to Picture Rocks Road) • Picture Rocks Road (Wade Road to Sandario Road) • Sandario Road (Picture Rocks Road to Rudasill Road) • Rudasill Road (Sandario Road to Sanders Road) • Sanders Road (Rudasill Road to Picture Rocks Community Center Road) <p>Key destinations:</p> <ul style="list-style-type: none"> • Picture Rocks Community Center (Potential park-and-ride) • Commercial area at Picture Rocks Road/ Sandario Road intersection • Picture Rocks Baptist Church T 6971 North Sandario Road (potential site for park-and-ride lot) • Desert Winds Elementary School • Regency Plaza Sun Shuttle Transfer Point 	<p>This route, although longer, serves the Regency Plaza Transfer Point which will increase potential ridership.</p>	<p>Operating and administrative costs=\$49,140</p> <p>Capital costs for system start up: \$318,900 - \$423,900</p>	<p>Peak period service assumes the transit route would provide weekday service for two hours in the morning and two hours in the afternoon.</p> <p>According to the PAG Short Range Transit Implementation Plan 2014-2018, Sun Shuttle fixed routes all follow a standard threshold of two passengers per revenue hour.</p> <p>This route is estimated to have 5,638 passengers / 1,040 revenue hours = 5.42 passengers /revenue hour.</p>

It should be noted that all transit options considered are required to have complementary paratransit service to meet standards set by ADA. The Sun Van service operates within a specific service area to provide transit service to individuals who, because of their disability, are unable to ride Sun Tran. The Sun Van Service operates within a specific service area, shown in **Figure 29**.

Since transit alternatives in Alternatives 1, 2, and 3 are outside of this service area, a route deviated service would be required if an expansion of the Sun Van service area is not feasible. For route-deviated service, passengers can schedule a pick-up or drop-off within 3/4 mile of Sun Shuttle routes.

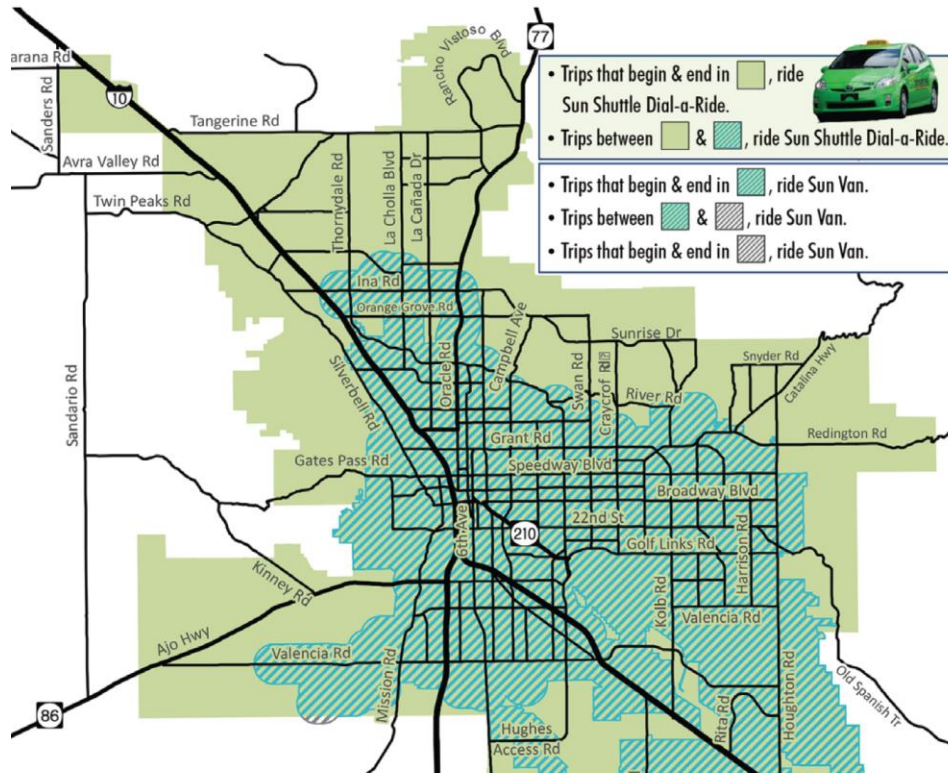


Figure 29 – Sun Shuttle Dial-a-Ride Service Area in Northwest Tucson

6.3.2 REVENUE HOURS, REVENUE MILES, AND COSTS

Revenue Hours and Revenue Miles

A key input to the evaluation of alternatives is the annual revenue hours and revenue miles for each alternative. These are provided in **Table 29**.

Revenue miles are higher for Alternative 2 options because this route is longer. However, it serves the key destination of Arizona Pavilions more directly.

Estimated Non-Capital Costs

Estimated system non-capital costs (administrative and operating) costs were developed using historic cost per revenue hour data from the Pima Association of Governments (PAG). Applying the average cost per revenue hour to the transit alternatives results in the estimated operating and administrative costs shown in **Table 30**.

Table 29 – Annual Revenue Hours and Revenue Miles for Transit Alternatives

Alternative	Revenue Hours				Revenue Miles				
	Revenue Hours per week	Weeks per year	Revenue Hours per Year	Number of vehicles	Route Miles per round trip	Number of trips per week	Revenue Miles per week	Number of vehicles	Total Vehicle Revenue Miles
Alternative 1A - New Transit Route to Sun Shuttle Route 411 at Twin Peaks Rd/ Silverbell Rd	66	52	3,432	1	21.6	73	1,577	1	1,577
Alternative 1B - Express Transit Route to Sun Shuttle Route 411 at Twin Peaks Rd/ Silverbell Rd	20	52	1,040	2	21.6	30	648	2	1,296
Alternative 2A - New Transit Route to Sun Shuttle Route 411 and Route 104X at Arizona Pavilions Shopping Center	66	52	3,432	1	30.8	73	2,248	1	2,248
Alternative 2B - Express Transit Route to Sun Shuttle Route 411 and Route 104X at Arizona Pavilions Shopping Center	20	52	1,040	2	30.8	30	924	2	1,848
Alternative 3 - New transit route to Regency Plaza on Ina Rd and Thornydale Rd	20	52	1,040	2	27.4	30	822	2	1644

Table 30 – Estimated System Non-Capital (Administrative and Operating) Costs

Alternative	Total Vehicle Revenue Hours	Estimated Cost per Revenue Hour*	Total Estimated Administrative and Operating Costs
Alternative 1A - New Transit Route to Sun Shuttle Route 411 at Twin Peaks Road/ Silverbell Road	3,432	\$47.25	\$162,162
Alternative 1B - Express Transit Route to Sun Shuttle Route 411 at Twin Peaks Road/ Silverbell Road	1,040	\$47.25	\$49,140
Alternative 2A - New Transit Route to Sun Shuttle Route 411 and Route 104X at Arizona Pavilions Shopping Center	3,432	\$47.25	\$162,162
Alternative 2B - Express Transit Route to Sun Shuttle Route 411 and Route 104X at Arizona Pavilions Shopping Center	1,040	\$47.25	\$49,140
Alternative 3 - New transit route to Regency Plaza on Ina and Thornydale Road Regency Plaza Transfer point serves a number of routes, including Sun Shuttle Routes 412 and 413 and Sun Tran Routes 16 and express route 104X – peak period only.	1,040	\$47.25	\$49,140

*Source: Pima Association of Governments, based on historic costs per revenue hour over the past three years

Estimated Capital Costs

Capital costs include the cost of buses, bus shelters, and bus stop signs. For this study a range of costs are provided for the number of buses required, as specific bus needs will be refined during detailed implementation planning that would define specific bus stops and route timing and headways.

Buses

The buses used for the Sun Shuttle service are light duty vehicles that are equipped with a lift and the ability to carry as many as two personal mobility devices. Based on costs for the Sun Shuttle fleet replacement, the average vehicle cost is \$105,000. Since the exact routing and number of bus stops is subject to more detailed analysis, a range of buses needed for each alternative is assumed.

Bus Stop Signs

Bus stop signs will need to be erected at all designated bus stop locations. At larger bus stop locations and locations where right-of-way is available to provide a bus shelter, these can encourage ridership particularly during the summer months.

Capital cost assumes bus stop signs and bus shelters at nine stop locations, which are:

- Picture Rocks Community Center (also could potentially serve as a park-and-ride location).
- Intersection of Sanders Road / Rudasill Road (two stops—inbound and outbound). This location serves a number of schools.
- Sandario Road / Picture Rocks Road (two stops—inbound and outbound). This stop location serves a commercial area.
- Sandario Road / Camper Road (two stops—inbound and outbound). This stop location is near the Sandario Baptist Church on Camper Road, which may serve as a potential park-and-ride location.
- Sandario Road / Emigh Road (two stops—inbound and outbound). This stop location serves Marana High School.

A summary of capital costs by alternative is provided in **Table 31**.

Table 31 – Capital Costs - Transit System Start up

Alternative	Buses	Bus Stop Signs	Bus Shelters	Total Capital Costs
Alternative 1A - New Transit Route to Sun Shuttle Route 411 at Twin Peaks Road / Silverbell Road	1*\$105,000=\$105,000 2*\$105,000=\$210,000	9*\$100=\$900	9*\$12,000=\$108,000	\$213,900 - \$318,900
Alternative 1B - Express Transit Route to Sun Shuttle Route 411 at Twin Peaks Road/ Silverbell Road	2*\$105,000=\$210,000 3*\$105,000=\$315,000	9*\$100=\$900	9*\$12,000=\$108,000	\$318,900 - \$423,900
Alternative 2A - New Transit Route to Sun Shuttle Route 411 and Route 104X at Arizona Pavilions Shopping Center	1*\$105,000=\$105,000 2*\$105,000=\$210,000	9*\$100=\$900	9*\$12,000=\$108,000	\$213,900- \$318,900
Alternative 2B - Express Transit Route to Sun Shuttle Route 411 and Route 104X at Arizona Pavilions Shopping Center	2*\$105,000=\$210,000 3*\$105,000=\$315,000	9*\$100=\$900	9*\$12,000=\$108,000	\$318,900- \$423,900
Alternative 3 - New transit route to Regency Plaza on Ina Rd and Thornydale Rd	1*\$105,000=\$105,000 2*\$105,000=\$210,000	9*\$100=\$900	9*\$12,000=\$108,000	\$213,900 - \$318,900

6.3.3 RECOMMENDED TRANSIT ALTERNATIVE

Future transit service in the Picture Rocks area is dependent upon funding. Commitment of local funding is decided by PAG and Pima County in consideration of regional needs and priorities. If funding can be identified, it is recommended that route Alternative 2B - Express Transit Route to Sun Shuttle Route 411 and Route 104X at Arizona Pavilions Shopping Center be initially implemented. Providing peak-hour service to the Arizona Pavilions area will help to encourage and grow ridership demand, while providing a cost-effective service. Peak hour service assumes the transit route would provide weekday service for two hours in the morning and two hours in the afternoon.

7. Funding Sources for Transportation Projects

7.1 HIGHWAY USER REVENUE FUND (HURF)

In Arizona, highway construction, operation, and maintenance are principally funded through state-shared revenues known as Highway User Revenue Funds (HURF). HURF revenues are generated by gasoline and use fuel taxes, motor carrier fees, vehicle license taxes, motor vehicle registration fees, and other miscellaneous fees. These revenues are distributed to the cities, towns, and counties of the state and to the State Highway Fund, which is administered by ADOT. These taxes and fees represent a source of revenues available for highway-related expenses.

HURF revenues increased steadily through Fiscal Year (FY) 2006/07. Decreases in HURF since FY 2006/07 placed 2012 HURF distributions of approximately \$45 million at a level similar the HURF distribution levels lower than 13 years ago.

HURF growth has declined, as well as the fund losses associated the State legislature's discretionary authority under ARS 28-6537 to divert up to \$20M of the fund each session. In addition, they also diverted other funds including the Vehicle Licensing Tax which sometimes supplements HURF Federal funding sources.

7.2 FEDERAL FUNDING SOURCES

Federal programs authorized under *Moving Ahead for Progress in the 21st Century* (MAP-21) include the Surface Transportation Program (STP), Highway Safety Improvement Program (HSIP), Federal Lands Transportation and Access Programs, Tribal Transportation Program, Railway-Highway Crossings (RHC), Transportation Alternatives (TA) Program, National Highway Performance (NHP) Program, and other relevant programs. Federal funding for transportation improvements is available through these programs, subject to eligibility requirements and approval by ADOT and the Federal Highway Administration (FHWA). Utilizing federal funds requires obtaining environmental, utility, and right-of-way clearances before proposed improvements can be implemented. The federal programs under MAP-21 are described in more detail in **Table 32**.

7.3 OTHER FUNDING SOURCES

The Roadway Development Impact Fee is assessed by Pima County for new or proposed developments to help pay for the arterial roadway capacity needs created by new development. Monies collected must be used to increase roadway traffic capacity (i.e. widening) on roadways specified for improvements. The fees are charged in eleven benefit areas. Picture Rocks is located in the Avra Valley Benefit area and the Silverbell- Tortolita Benefit area. Fees cannot be used for roadway maintenance or to improve local roads (or for transit). The fee is assessed at the time of development³. Other potential sources of funding are listed in Table 33.

³ Pima County website, <http://webcms.pima.gov/cms/one.aspx?portalId=169&pageId=54572>, referenced 8/7/2014

Table 32 – MAP-21 Federal Programs

Program Name	Description
National Highway Performance Program (NHPP)	Under MAP-21, the enhanced National Highway System (NHS) is composed of approximately 220,000 miles of rural and urban roads serving major population centers, international border crossings, intermodal transportation facilities, and major travel destinations. It includes the Interstate System, all principal arterials (including some not previously designated as part of the NHS) and border crossings on those routes, highways that provide motor vehicle access between the NHS and major intermodal transportation facilities, and the network of highways important to U.S. strategic defense (STRAHNET) and its connectors to major military installations. MAP-21 establishes a performance basis for maintaining and improving the NHS.
Surface Transportation Program (STP)	MAP-21 continues the STP, providing an annual average of \$10 billion in flexible funding that may be used by States and localities for projects to preserve or improve conditions and performance on any Federal-aid highway, bridge projects on any public road, facilities for non-motorized transportation, transit capital projects, and public bus terminals and facilities.
Highway Safety Improvement Program (HSIP)	Safety throughout all transportation programs remains the number one priority. MAP-21 continues HSIP, with average annual funding of \$2.4 billion, including \$220 million per year for the Rail-Highway Crossings program. HSIP emphasizes a data-driven, strategic approach to improving highway safety on all public roads that focuses on performance. The foundation for this approach is a safety data system, which each State is required to have to identify key safety problems, establish their relative severity, and then adopt strategic and performance-based goals to maximize safety.
Congestion Mitigation and Air Quality (CMAQ)	The CMAQ program provides a flexible funding source to State and local governments for transportation projects and programs to help meet the requirements of the Clean Air Act. CMAQ funding is currently restricted for use within Maricopa Association of Governments planning area, under ADOT’s discretionary powers.
Transportation Alternatives (TA)	MAP-21 establishes a new program to provide for a variety of alternative transportation projects that were previously eligible activities under separately funded programs. Eligible activities include: <ul style="list-style-type: none"> -Transportation alternatives (new definition incorporates many transportation enhancement activities and several new activities) -Recreational trails program (program remains unchanged) -Safe routes to schools program -Planning, designing, or constructing roadways within the right-of way of former Interstate routes or other divided highways.
Federal Lands and Tribal Transportation Programs	MAP-21 creates a unified program for Federal lands transportation facilities, Federal lands access transportation, and tribal facilities. The Federal Lands Transportation Program provides funding annually for projects that improve access within the Federal estate, such as national forests and national recreation areas, on infrastructure owned by the Federal government. This program combines the former Park Roads and Refuge Roads programs, and adds three new Federal land management agency (FLMA) partners. The Federal Lands Access Program provides funding annually for projects that improve access to Federal lands on infrastructure owned by States and local governments.
Emergency Relief	The Emergency Relief (ER) program assists Federal, State, tribal, and local governments with the expense of repairing serious damage to Federal-aid, tribal, and Federal Lands highways resulting from natural disasters or catastrophic failures.
Workforce Development and DBE	MAP-21 continues current law goals for use of small business concerns owned and controlled by socially and economically disadvantaged individuals. On-the-Job Training and Disadvantaged Business Enterprise (DBE) Supportive Services programs are continued without change.
Bridge and Tunnel Inspection	Provides for continued improvement to bridge and tunnel conditions essential to protect the safety of the traveling public and allow for the efficient movement of people and goods on which the U.S. economy relies, MAP-21 requires inspection and inventory of highway bridges and tunnels on public roads. No dedicated funds are provided for inspections, but it is an eligible use of NHPP, STP, HSIP, FHWA administrative, Tribal Transportation, and Research funds.
Projects of National and Regional Significance	MAP-21 authorizes funding in FY 2013 only, to fund critical high-cost surface transportation capital projects that will accomplish national goals. States, tribes, transit agencies, and multi-State or multi-jurisdictional groups of these entities are eligible to apply for competitive grant funding.

Source: FHWA, Kimley-Horn

Table 33 – Other Funding Sources

Program Name	Description
Bonds	Municipal bonds are securities that are issued for the purpose of financing the infrastructure needs of the issuing municipality. These needs vary greatly but can include schools, streets and highways, bridges, hospitals, public housing, sewer and water systems, power utilities, and various public projects. Municipal bonds may be general obligations of the issuer or secured by specified revenue.
General Funds	In public sector accounting, the primary or catchall fund of a government is called the general fund. It records all assets and liabilities of the entity that are not assigned to a special purpose fund. It provides the resources necessary to sustain the day-to-day activities and thus pays for all administrative and operating expenses. General funds generally receive revenue from sources such as state-shared income and sales taxes, local sales tax, and licensing fees.
Property Tax	A municipality or county can levy a property tax for general purposes or for a specific purpose that has a time limit or can extend until rescinded or revised. The property tax amount is based on a percentage of the assessed value of the property.
Sales Tax	A municipality or county can levy a sales tax for general purposes or for a specific purpose such as transportation, it can have a time limit or can extend until rescinded or revised. A sales tax is charged at the point of purchase for certain goods and services. The tax amount is usually calculated by applying a percentage rate to the taxable price of a sale and adding the tax to the price at the point of sale.
Impact Fees	A fee imposed on property developers by municipalities for the new infrastructure that must be built or increased due to new property development. These fees are designed to offset the impact of the additional development and residents on the municipality's infrastructure and services.
Community Facilities Districts	The Arizona Community Facilities District Act addresses a critical issue for developers: the financing of increasingly costly infrastructure requirements without unduly burdening the developer. The law authorizes bonds to be issued and repaid with a mechanism that taxes (or assesses) only the lands directly benefiting from the new infrastructure. This allows community development which would otherwise be unfeasible due to the prohibitive costs. All community facilities districts are required to be included within an incorporated city or town.
Improvement Districts	An improvement district allows a local government agency to levy and collect special assessments on property that is within the boundaries of the improvement district for the purpose of making infrastructure improvements within the improvement district.
Community Development Block Grant Program (CDBG)	<p>The Arizona Department of Housing administers the federal CDBG program for non-entitlement areas (i.e., communities with a population below 50,000). Communities receiving CDBG funds from the State may use the funds for many kinds of community development activities including, but not limited to acquisition of property for public purposes; construction or reconstruction of streets, sidewalks, pathways, water and sewer facilities, neighborhood centers, recreation facilities, and other public works; public services; and planning activities.</p> <p>A local funding match is typically required. http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment/programs</p>
Federal Emergency Management Agency (FEMA) Grant Program	<p>The Arizona Division of Emergency Management administers several FEMA pre-disaster and post-disaster grant programs. The goal of these programs is to prevent and mitigate hazards. Grant programs include the following:</p> <ul style="list-style-type: none"> • Pre-Disaster Mitigation Program; • Hazard Mitigation Grant Program; • Flood Mitigation Assistance Program; • Repetitive Flood Claims Program; and • Severe Repetitive Loss Program. <p>A local funding match is typically required.</p> <p>http://www.fema.gov/government/grant/index.shtm</p>
Governor's Office of Highway Safety	The Arizona Governor's Office of Highway Safety (GOHS) is the focal point for highway safety issues in Arizona. Funding is available for issues considered high priorities at a statewide level. Projects typically funded include public education and awareness campaigns.

Source: Kimley-Horn, ADOT, and FHWA

8. Implementation

This chapter provides an overview of the process to include transportation projects on the region's long range transportation plan and transportation improvement program.

8.1 REGIONAL TRANSPORTATION PLAN

The Pima Association of Governments regional transportation plan (RTP) identifies transportation projects that can be developed with federal, state and local funding and establishes long-range regional strategies to enhance the movement of people and goods across Pima County.

Pima Association of Governments updates its long-range regional transportation plan every four years. The next update to the plan will result in the 2045 Regional Transportation Plan. The plan, which has a 30-year horizon, provides a framework for transportation investments in the greater Tucson region. The plan is required to be financially constrained, meaning that projects that can be included in the Plan are limited to those which can reasonably be expected to be funded for the next 30 years. The plan does not commit funding to specific projects, but transportation projects that ultimately do receive funding must be consistent with the plan.

The 2045 RTP is expected to be completed in spring of 2016. The next opportunity to submit projects for consideration in the 2045 Regional Transportation Plan will be in late spring or early fall 2015. Projects for the Picture Rocks area would be submitted by Pima County staff.

8.2 TRANSPORTATION IMPROVEMENT PROGRAM

The Transportation Improvement Program (TIP), prepared by Pima Association of Governments, is a five-year schedule and budget of proposed transportation improvements within eastern Pima County. The current TIP covers the period 2015-2019. The TIP implements the RTP period and all projects included in the TIP must be drawn from the RTP.

The TIP is typically updated annually through a multi-step process in association with PAG's member jurisdictions and other implementing agencies. The goal of the process is to develop a TIP that makes optimum use of available federal, state and local funds and resources to serve the region's multi-modal transportation needs. The TIP must be financially constrained. All projects listed in the TIP must have an identified funding source consistent with regional revenue expectations. Every year tough choices are made about which transportation system improvements to carry out and which ones to defer.

8.3 PLANNING AND DIAGNOSTIC STUDIES

Several future project recommendations resulted from Road Safety Assessments (RSA) and other diagnostic studies that were previously conducted. The RSA is a federally recommended tool for safety that can be applied at the planning, design, or post construction phases of projects.

The study recommends conducting additional RSAs for several roadway segments within the Picture Rocks area through the PAG RSA program. Currently, there is no direct funding mechanism to

implement RSA recommendations – they compete with all other needs for operational or project funding programs.

The study recommends conducting several other diagnostic and preliminary engineering studies. These studies can be submitted to PAG for receipt of project development activity funds (PDAF). PAG established PDAF to facilitate development of transportation related projects in the region and to ensure that a pool of viable projects is available for future programming within the PAG region. PDAF projects can be used to develop scope and budget information to help a project compete for construction funding. Applicants for PDAF may include local governments, citizen and non-profit groups. However, all projects must have a local government project sponsor. Use of PDAF is limited to arterial roadways only (including bicycle and pedestrian) and is limited to \$50,000. Transit projects are not eligible. PDAF applications are traditionally due on October 1st of each year.

8.4 CONSIDERATIONS FOR TRANSIT SERVICE IMPLEMENTATION

Pima Association of Governments is responsible for regional transit planning activities as well as the coordination of several state and federal funding programs for public transit. PAG staff works with the Regional Transportation Authority Transit Working Group, which recommends transit service improvements. Recommendations are forwarded through the committee process to the Regional Transportation Authority Board for consideration to be included in the RTP and TIP. PAG works with local jurisdictions, the Arizona Department of Transportation (ADOT), the Federal Transit Administration (FTA), and several non-profit organizations to plan for a regional network of transit services. Long-range transit planning is also conducted as part of PAG's RTP.

It is anticipated that a new transit route in the Picture Rocks area would require funding with the Federal Transit Administration (FTA) Non-Urbanized Area Formula Program, commonly known as the Section 5311 Program or as the Rural Public Transit Program. The purpose of these funds is to address the mobility needs of Arizona's rural population. Grants are awarded through a competitive application process and require a local match of funds. The Section 5311 grant funds can be used to finance both capital and operating expenses for a transit route or system. PAG representatives would coordinate with the Arizona Department of Transportation Multimodal Planning Division which administers the Section 5311 Program, to determine the availability of grant funding.

The RTA Transit Working Group will be asked to support an application for Section 5311 grant funds, as these grant funds require a local match, which could be funded through the RTA program. The proposed transit service would be evaluated against other regional transit service needs to determine if local funds would be approved for this service.

9. Public Outreach

9.1 PUBLIC OPEN HOUSE 1

To inform and involve community members of the study, ADOT hosted a public open house at the Picture Rocks Community Center on Tuesday, February 18, 2014 from 5:00 pm to 7:00 p.m. The focus of this meeting was to obtain community input on needed transportation improvements.

In addition to the open house, a presentation about the project was given to the Citizens for Picture Rocks Community Association; there was an opportunity for questions and answers, comments and recommendations on areas for improvement. In total, 21 members of the community were in attendance. Public involvement Summary Report 1, which provides more details about Public Open House 1, is provided in **Appendix C**.

9.2 PUBLIC OPEN HOUSE 2

The second public open house for the project was held at the Picture Rocks Community Center on Tuesday, May 20, 2014 from 5:00 pm to 7:00 pm. The focus of this open house was to obtain public input on the recommended transportation improvement projects. In total, 16 members of the community were in attendance. Public involvement Summary Report 2, which provides more details about Public Open House 2, is provided in **Appendix C**.

Appendix A1 – Preliminary Purpose and Need Statement for ADOT Planning Environmental Linkages (PEL) for Transportation Studies

The information in this section is consistent with ADOT’s requirements for PEL for Transportation Studies.

PLANNING GOALS

RELEVANT FEDERAL AND STATE LEGISLATION

The PARA study process must comply with all federal, state and local laws, regulations and policies that apply to long range transportation planning. These include, but are not limited to: 23CFR parts 450 and 500, 25 CFR Part 170, Title VI of the 1964 Civil Rights Act, 42USC 2000, Federal-aid Highway Act of 1973, 23 USC 324, Section 504 of the Rehabilitation Act of 1973, 29 USC 794, The Age Discrimination Act of 1975, 42 USC 6101, the Civil Rights Restoration Act of 1987, PL 100-259, Fair Housing Act Amendments of 1988 (42 USC 3601-3631), Americans with Disability Act of 1990, PL 101-336, the Religious Freedom Restoration Act of 1993, and the Stafford Act, as amended in 2000.

SUMMARY OF RELEVANT STATEWIDE OR REGIONAL TRANSPORTATION PLANS AND STUDIES

Regional transportation plans and studies reviewed in the development of this project include the Pima Association of Governments Regional Transportation Plan and the Pima Association of Governments Transportation Improvement Program. Projects identified in the 2040 PAG Regional Transportation Plan within or near the study area include the following:

- Avra Valley Road, Anway Road to Sanders Road: widen to three-lane roadway and safety improvements, late period project (2030 – 2040).
- Avra Valley Road, Sanders Road to I-10: widen to four-lane roadway, re-align, multi-purpose lanes and sidewalks, middle period project (2020 – 2030).
- Sandario Road, Ajo Way to Emigh Road: reconstruct two-lane roadway, middle period project (2020 – 2030).
- Twin Peaks Road, Sidewinder Lane to Silverbell Road: widen to four-lane roadway, middle period project (2020 – 2030).
- Twin Peaks Road, Silverbell Road to new I-10 interchange: construct four-lane roadway, bridge over Santa Cruz, early period project (2010 – 2020).
- Sandario Road, Picture Rocks Road: construct bike lanes/paved shoulders, and clear zones, early, middle, and late-period projects.

PLANNING-LEVEL GOALS AND OBJECTIVES

Planning-level goals and objectives identified for this study include:

Goal

- The Picture Rocks Multimodal Transportation Study will result in a multimodal transportation plan containing recommendations for short-range (0-5 years), mid-range (6-10 years), and long-range (11-20 years) improvements that address identified needs for roadways, transit, and non-motorized modes.

Objectives

1. Improve safety through recommendations for shoulder improvements, geometric improvements, and traffic control;
2. Identify feasible alternatives and recommendations for non-county-maintained roads to improve drivability, reduce dust pollution, and reduce vehicle maintenance costs;
3. Confirm the need for and provide recommendations for transit service in the Picture Rocks area;
4. Improve mobility through identification of projects for sidewalks, paths, and shoulders to accommodate bicyclists and pedestrians; and
5. Recommend improvements that address the identified needs and deficiencies and improve local and regional mobility and circulation.

Planning Horizons

The planning horizons for this study are 2018, 2030, and 2040.

PROJECT NEEDS

Socioeconomic conditions, population data, employment and growth patterns

The 2010 population in the Picture Rocks Census Designated Place (CDP) is 9,563 persons. This represents 3,689 households. Comparisons with the 2000 Census indicated that growth is approximately 1.63% per year.

Employment opportunities are limited within the study area; most working residents commute to the urbanized area of Tucson or Marana. Residents must also travel outside of Picture Rocks to access services such as education and vocational training programs, elderly, medical care, and retail and commercial centers.

Land use and development patterns

Land use within the study area is primarily low-density residential, with limited commercial development. Commercial development is primarily located near the Picture Rocks Road/Sandario Road intersection.

Existing traffic volumes, travel time, and level of service

Traffic volumes are generally low within the study area; level of service (measure of delay) is generally at acceptable levels.

However, primary roadways within Picture Rocks have experienced a high frequency of severe and injury crashes. Transportation needs within the study area have been identified based on safety and multimodal considerations.

Future no-build traffic volumes, travel time, and level of service

PAG maintains the regional travel demand models and databases. Projected traffic volumes for 2040 were obtained from the PAG regional travel demand model. The road segment level of service (LOS) analysis indicated that all road segments will operate at LOS C or better in 2040 with the exception of

Sandario Road, for which traffic volumes are projected to exceed the planning-level threshold for LOS D in 2040.

Safety data and deficiencies

Crash data was reviewed for a five-year period. The vast majority of crashes (44%) were single-vehicle crashes. Rear-end crashes accounted for 25% of crashes. In addition, safety studies conducted on Picture Rocks Road and Sandario Road were reviewed and incorporated into the needs analysis and project development process.

MODES EVALUATED

Transportation modes evaluated for this project include bicycle, pedestrian, transit, and vehicular traffic.

- **Non-motorized circulation:** Needs for pedestrian and bicycle facilities were identified as project needs. Existing roadways within the study area generally do not have sidewalks or other pedestrian facilities. Existing shoulders on major roads are generally gravel and insufficient for use by bicyclists. Transit service has been identified as a critical need to improve access to employment, social services, and commercial and retail centers.
- **Design standards, policies, and guidelines:** Pima County and ADOT design standards and guidelines will be used as references in the development of proposed projects.
- **Deficiencies in existing facility conditions:** Key deficiencies for existing roadway facilities were identified with respect to paving needs, shoulder width, drainage, traffic control, street lighting, signing and striping, and specific intersection improvements.

SUMMARY OF PROJECT NEEDS

Project needs are described in detail in **Chapter 5** and include the following types of transportation needs:

Roadway needs

- Paving for non-county-maintained roads
- Road improvements on county-maintained roads
- Traffic control
- New street lighting
- Drainage improvements
- Intersection improvements
- Upgraded signage
- Upgraded striping

Safety needs

- Education measures such as improved signage.
- Emergency access

Transit needs

- A transit service or transit service expansion of Route 411
- Park and ride lot

Pedestrian needs

- Pedestrian paths to link Picture Rocks Community Center to the Minit Mart and Marana High School
- Safe Routes to School program
- School bus pullouts along Sandario Road and Picture Rocks Road
- Crosswalks at Picture Rocks Road/Sandario Road intersection
- Trailhead parking areas

Bicycle needs

- Paved shoulders on key routes

PROJECT PURPOSE

Based on identified goals and needs, the primary objectives of the study are to:

- Roadway safety: improve safety through recommendations for shoulder improvements, geometric improvements, and traffic control;
- Regional access and mobility: address the identified needs and deficiencies that improve local and regional mobility and circulation;
- Bicycle and pedestrian safety and mobility: projects for sidewalks, paths, and shoulders to accommodate bicyclists and pedestrians; and
- Rural transit service: confirm the need for and provide recommendations for transit service.

Appendix A2 – Environmental Overview

This section provides an environmental overview for the Picture Rocks study area.

BIOLOGICAL RESOURCES

According to *Biotic Communities: Southwestern United States and Northwestern Mexico*, the western portion of the study area is within the Lower Colorado River subdivision of the Sonoran Desertscrub biotic community and the eastern portion of the study area is located within the Arizona Upland subdivision of the Sonoran Desertscrub biotic community.⁴

TOPOGRAPHY

According to the *Marana, Arizona 7.5-Minute United States Geological Survey (USGS) 7.5' Quadrangle Map*, the study area elevation generally ranges from 2,640 feet above mean sea level (MSL) in the southeast corner of the study area to 2,000 feet above MSL in the northern portion of the study area. The mountains in the study area generally range from 2,510 feet above MSL to 2,765 feet above MSL and are located in the eastern portion of the study area. The eastern portion of the study area drains to the north/northwest and the western portion of the study area primarily drains to the north.

THREATENED AND ENDANGERED SPECIES

The U.S. Fish and Wildlife Service (USFWS) threatened, endangered, proposed, and candidate species list for Pima County, Arizona (dated October 30, 2013) was reviewed by a qualified biologist to determine species that may occur in the project vicinity based on readily available information.

Suitable habitat for one federally endangered species (lesser long-nosed bat) and two candidate species (Sonoran Desert tortoise and Tucson shovel-nosed snake) is present in the study area. Potential impacts to these species (and those potentially listed in the future) should be evaluated during the environmental clearance process. Coordination with the USFWS and AGFD should also occur during the environmental clearance process.

SPECIAL STATUS SPECIES OCCURRENCES/CRITICAL HABITAT/TRIBAL LANDS WITHIN THREE MILES OF PROJECT VICINITY

The AGFD Heritage Database Management System (HDMS) on-line environmental review tool was accessed to determine special status species known to occur in the project vicinity. The AGFD on-line environmental review tool included a list of special status species (federal and/or state protected) that are known to occur within three miles of the project vicinity. The species listed by the on-line environmental review tool that were addressed in **Table 34** include:

- Tucson shovel-nosed snake
- Sonoran Desert tortoise
- Yellow-billed cuckoo

⁴ Brown, David E. 1994. *Biotic Communities: Southwestern United States and Northwestern Mexico*. University of Utah Press. Salt Lake City.

Table 34 – USFWS Threatened, Endangered, Proposed, and Candidate Species for Pima County, Arizona⁵

Common Name	Scientific Name	Status*	Habitat	Notes
acuna cactus	<i>Echinomastus erectocentrus</i> var. <i>acunensis</i>	E	Elevation range: 1,198 – 3,773 feet Habitat: Well drained knolls and gravel ridges in Sonoran desertscrub. The range for this species in Arizona is western Pima, Maricopa, and Pinal counties. The plant community that this species is associated with is the Arizona Upland Subdivision of Sonoran desert scrub (Palo-Verde/ Sahuaro Association). Critical habitat is being proposed for a total of 18,921 acres in Maricopa, Pima, and Pinal counties.	A portion of the study area is within the Arizona Upland Subdivision; however, the study area is not within the distribution range for this species and proposed critical habitat is not in the vicinity of the study area. Therefore, the probability of this species being in the study area is low.
California least tern	<i>Sterna antillarum browni</i>	E	Elevation range: < 2,000 feet Habitat: Open, bare or sparsely vegetated sand, sandbars, gravel pits, or exposed flats along shorelines of inland rivers, lakes, reservoirs, or drainage systems. Nests in a simple scrape on sandy or gravelly soil.	Nesting habitat is not present in the study area and this species has not been documented by AGFD within three miles of the project vicinity.
Chiricahua leopard frog	<i>Lithobates chiricahuensis</i>	T	Elevation range: 3,281 – 8,890 feet Habitat: Restricted to springs, livestock tanks, and streams in upper portion of watersheds that are free from nonnative predators or where marginal habitat for nonnative predators exists. Critical habitat is designated for 10,346 acres in Apache, Cochise, Gila, Graham, Greenlee, Pima, Santa Cruz, and Yavapai counties in Arizona.	Suitable habitat for this species is not present in the study area and this species has not been documented by AGFD within three miles of the project vicinity. Critical habitat is not within three miles of the study area.
desert pupfish	<i>Cyprinodon macularius</i>	E	Elevation range: < 4,000 feet Habitat: Shallow springs, small streams, and marshes. Tolerates saline and warm water. Critical habitat includes Quitobaquito Springs, Pima County, portions of San Felipe Creek, Carrizo Wash, and Fish Creek Wash, Imperial County, California.	Suitable habitat for this species is not present in the study area and this species has not been documented by AGFD within three miles of the project vicinity.
Gila chub	<i>Gila intermedia</i>	E	Elevation range: 2,000 – 5,500 feet Habitat: Pools, springs, cienegas, and streams. Critical habitat	Suitable habitat for this species is not present in the study area and this species has not been documented by AGFD within three miles of the

⁵ U.S. Fish and Wildlife Service (USFWS) threatened, endangered, proposed, and candidate species list for Pima County, Arizona (dated October 30, 2013)

Common Name	Scientific Name	Status*	Habitat	Notes
			includes Cochise, Gila, Graham, Greenlee, Pima, Pinal, Santa Cruz, and Yavapai counties.	project vicinity.
Gila topminnow	<i>Poeciliopsis occidentalis</i>	E	Elevation range: < 4,500 feet Habitat: Small streams, springs, and cienegas vegetated shallows.	Suitable habitat for this species is not present in the study area and this species has not been documented by AGFD within three miles of the project vicinity.
Huachuca water umbel	<i>Lilaeopsis schaffneriana</i> ssp. <i>recurva</i>	E	Elevation range: 3,500 – 6,500 feet Habitat: Cienegas, perennial low gradient streams, wetlands. Critical habitat includes Cochise and Santa Cruz counties.	Suitable habitat for this species is not present in the study area and this species has not been documented by AGFD within three miles of the project vicinity.
jaguar	<i>Panthera onca</i>	E	Elevation range: 1,600 – 9,000 feet Habitat: Found in Sonoran desertscrub up through subalpine conifer forest. Critical habitat is being proposed for a total of 838,232 acres in Cochise, Pima, and Santa Cruz counties, Arizona.	Suitable habitat for this species is not present in the study area and this species has not been documented by AGFD within three miles of the project vicinity.
Kearney's blue star	<i>Amsonia kearneyana</i>	E	Elevation range: 3,600 – 3,800 feet Habitat: West-facing drainages in the Baboquivari Mountains. Plants grow in stable, partially shaded, coarse alluvium along a dry wash in the Baboquivari Mountains.	Suitable habitat for this species is not present in the study area and this species has not been documented by AGFD within three miles of the project vicinity. The Baboquivari Mountains are approximately 33 miles southwest of the study area.
lesser long-nosed bat	<i>Leptonycteris curasoae yerbabuena</i>	E	Elevation range: 1,600 – 7,500 feet Habitat: Desertscrub habitat with agave and columnar cacti present as food plants. The plant communities this species is typically associated with are Palo Verde/Saguaro, Semidesert Grassland, and Oak Woodland. Day roosts in caves and abandoned tunnels. Forages at night on nectar, pollen, and fruit of paniculate agaves and columnar cacti. This species is migratory and is present in Arizona usually from April to September and south of the border the remainder of the year.	This species has not been documented by AGFD within three miles of the project vicinity; however, the study area could provide suitable habitat for this species.

Common Name	Scientific Name	Status*	Habitat	Notes
masked bobwhite	<i>Colinus virginianus ridgewayi</i>	E	Elevation range: 1,000 – 4,000 feet Habitat: Desert grasslands with diversity of dense native grasses, forbs, and brush. Species is closely associated with Prairie acacia (<i>Acacia angustissima</i>). Formerly occurred in Altar and Santa Cruz valleys, as well as Sonora, Mexico. Presently only known from reintroduced populations on Buenos Aires National Wildlife Refuge.	Suitable habitat for this species is not present in the study area and this species has not been documented by AGFD within three miles of the project vicinity.
Mexican spotted owl	<i>Strix occidentalis lucida</i>	T	Elevation range: 4,100 – 9,000 feet Habitat: Nests in canyons and dense forests with multi-layered foliage structure. Generally nest in older forests of mixed conifer or ponderosa pine/gambel oak type, in canyons, and use variety of habitats for foraging. Sites with cool microclimates appear to be of importance or are preferred. Critical habitat was finalized on August 31, 2004 (69 FR 53182) in Arizona in Apache, Cochise, Coconino, Gila, Graham, Greenlee, Maricopa, Navajo, Pima, Pinal, Santa Cruz, and Yavapai counties.	Suitable habitat for this species is not present in the study area and this species has not been documented by AGFD within three miles of the project vicinity.
Nichol Turk's head cactus	<i>Echinocactus horizonthalonius</i> var. <i>nicholii</i>	E	Elevation range: 2,400 – 4,100 feet Habitat: Sonoran desertscrub. Found in unshaded microsites in Sonoran desertscrub on dissected alluvial fans at the foot of limestone mountains and on inclined terraces and saddles on limestone mountain sides. This species range is Koht Kohl Hill and the Waterman Mountains in Pima County and the plant community that this species is typically associated with is Paloverde-Cactus Shrub community in the Arizona Upland subdivision.	This species has not been documented by AGFD within three miles of the project vicinity. Koht Kohl Hill and the Waterman Mountains are approximately 9 miles west of the study area. Therefore, the probability of this species being in the study area is low.
northern Mexican gartersnake	<i>Thamnophis eques megalops</i>	PT	Elevation range: 130 – 8,497 feet Habitat: Cienegas, stock tanks, large-river riparian woodlands and forests, streamside gallery forests. Core population areas in Arizona include mid/upper Verde River drainage, mid/lower Tonto Creek, and the San Rafael Valley and surrounding area. Status on tribal lands unknown. Strongly associated with the presence of a native prey base including leopard frogs and native fish.	Suitable habitat for this species is not present in the study area and this species has not been documented by AGFD within three miles of the project vicinity.
ocelot	<i>Leopardus pardalis</i>	E	Elevation range: < 8,000 feet Habitat: Desert scrub in Arizona. Little is known about ocelot habitat use in Arizona; however, ocelots are typically associated with areas of dense cover. Four confirmed reports of ocelots have	Suitable habitat for this species is not present in the study area and this species has not been documented by AGFD within three miles of the project vicinity.

Common Name	Scientific Name	Status*	Habitat	Notes
			been received from Gila (one) and Cochise (three) counties since 2009. Based on photographic evidence, two of the reports from Cochise County were most likely of the same ocelot.	
Pima pineapple cactus	<i>Coryphantha scheeri</i> <i>var. robustispina</i>	E	Elevation range: 2,300 – 5,000 feet Habitat: Lower Sonoran Desertscrub and Semi-desert Grassland. Occurs in alluvial valleys or on hillsides in rocky to sandy or silty soils.	This species has not been documented by AGFD within three miles of the project vicinity. Although the study area contains Sonoran desertscrub, this area is located north of the known range of this species. Therefore, the probability of this species being in the study area is low.
Sonoran pronghorn	<i>Antilocapra americana sonoriensis</i>	E	Elevation range: 2,000 – 4,000 feet Habitat: Broad intermountain alluvial valleys with creosote-bursage and palo verde-mixed cacti associations. In Arizona, they are found on the Cabeza Prieta National Wildlife Refuge, the Organ Pipe Cactus National Monument, the Luke Air Force Barry M. Goldwater Gunnery Range, and possibly the Tohono O’odham Indian Reservation.	This species has not been documented by AGFD within three miles of the project vicinity. Although the study area contains Sonoran desertscrub, this area is located outside this species distribution range.
southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	E	Elevation range: < 8,500 feet Habitat: Cottonwood/willow and tamarisk vegetation communities along rivers and streams. A revised critical habitat designation was finalized on January 3, 2013, for areas in Apache, Cochise, Gila, Graham, Greenlee, La Paz, Maricopa, Mohave, Pima, Pinal, Santa Cruz, and Yavapai counties.	Suitable habitat for this species is not present in the study area and this species has not been documented by AGFD within three miles of the project vicinity.
yellow-billed cuckoo	<i>Coccyzus americanus</i>	PT	Elevation range: 6,500 feet Habitat: Large blocks of riparian woodlands (cottonwood, willow, or tamarisk galleries). Nesting cuckoos are associated with relatively dense, wooded, streamside riparian habitat, with varying combinations of Fremont cottonwood, willow, velvet ash, Arizona walnut, mesquite, and tamarisk. Some cuckoos have also been detected nesting in velvet mesquite, netleaf hackberry, Arizona sycamore, Arizona alder, and some exotic neighborhood shade trees.	Suitable habitat for this species is not present in the study area. This species has been documented by AGFD within three miles of the project vicinity (likely the Santa Cruz River).
Sonoran Desert tortoise	<i>Gopherus morafkai</i>	C	Elevation range: < 7,800 feet Habitat: Primarily rocky (often steep) hillsides and bajadas of	Suitable habitat for this species is present in the study area and this species has been

Common Name	Scientific Name	Status*	Habitat	Notes
			Mohave and Sonoran desertscrub but may encroach into desert grassland, juniper woodland, interior chaparral habitats, and even pine communities. Washes and valley bottoms may be used in dispersal.	documented by AGFD within three miles of the project vicinity.
Sonoyta mud turtle	<i>Kinosternon sonoriense longifemorale</i>	C	Elevation range: 1,100 feet Habitat: Ponds and streams. Found only in Quitobaquito Springs in Organ Pipe Cactus National Monument, Arizona.	Suitable habitat for this species is not present in the study area and this species has not been documented by AGFD within three miles of the project vicinity. Organ Pipe National Monument is approximately 88 miles southwest of the study area.
Tucson shovel-nosed snake	<i>Chionactis occipitalis klauberi</i>	C	Elevation range: 785 – 1,662 feet Habitat: Sonoran Desertscrub; associated with soft, sandy soils having sparse gravel. Found in creosote-mesquite floodplain environments, finds refuge under desert shrubs, active during crepuscular (dawn and dusk) and daylight hours.	Suitable habitat for this species is present in the study area and this species has been documented by AGFD within three miles of the project vicinity.

*C = Candidate for federal listing under the Endangered Species Act (ESA); E = Federally listed as Endangered under the ESA; T = Federally listed as Threatened under the ESA; PT = listed as Proposed Threatened under the ESA

Species listed that have not been previously addressed included:

Western burrowing owl (*Athene cunicularia hypugaea*)

Suitable habitat for this species is present within the study area. The burrowing owl is listed as a species of concern by the USFWS and they are also protected federally by the Migratory Bird Treaty Act (MBTA) and Arizona state law (ARS Title 17). According to the AGFD website the western burrowing owl utilizes well drained grasslands, steppes, deserts, prairies, and agricultural lands, often associated with burrowing mammals. Western burrowing owls are known to occupy vacant lots near human habitation, golf courses, or airports.⁶

Cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*)

Suitable habitat for this species is present within the study area. The pygmy-owl is listed as a species of concern by the USFWS and wildlife of special concern for the AGFD. This species is primarily found in Sonoran desertscrub and occasionally in riparian drainages and woodlands within semi-desert grassland communities. The pygmy-owl prefers to nest in cavities in saguaro cacti, but has been found in low-density suburban developments that include natural open spaces. The pygmy-owl is not recognized as a protected taxonomic entity under the ESA, but protected from direct take of individuals and nests/eggs under the MBTA. A 2006 petition for relisting under the ESA is currently being evaluated.⁷

California leaf-nosed bat (*Macrotus californicus*)

Suitable habitat for this species is present within the study area. The California leaf-nosed bat is listed as a species of concern by the USFWS and as wildlife of special concern by AGFD. Habitat for this species is described as Sonoran desertscrub. This bat primarily roosts in mines, caves, and rock shelters. This species prefers roost sites with large areas of ceiling and flying space. The bat feeds on large flying insects such as grasshoppers, moths, and flying beetles and may also feed on fruits, including those of cacti.⁸

Cave myotis (*Myotis velifer*)

Suitable habitat for this species is present within the study area. The cave myotis is listed as a species of concern by the USFWS. Habitat for this species is described as desertscrub: creosote, brittlebush, paloverde, and cacti. This bat roosts in caves, tunnels, and mineshafts, and under bridges, and sometimes in buildings within a few miles of water. There are a number of records of one or a few individuals roosting in cliff and barn swallow nests. Small moths are the most common prey item for this species, but they also eat weevils, ant lions, and small beetles.⁹

⁶AGFD. 2001. *Athene cunicularia*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. 6 pp.

⁷ U.S. Fish and Wildlife Service (USFWS) threatened, endangered, proposed, and candidate species list for Pima County, Arizona (dated October 30, 2013)

⁸ AGFD. 2001. *Macrotus californicus*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. 7 pp.

⁹AGFD. 2002. *Myotis velifer*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. 7 pp.

Fulvous whistling-duck (*Dendrocygna bicolor*)

Suitable habitat for this species is present within the study area (pastures). This species is listed as a species of concern by the USFWS and has become sporadic in occurrence eastward to Phoenix and Picacho Lake; most observations still being along the Colorado River south of Cibola. Breeding habitat for this species includes freshwater wetlands, marshes, and open-water zones vegetated with floating aquatic plants. Upland nesting occurs in pastures, haylands, and small grain fields adjacent to ricefields.¹⁰

Specific surveys to determine the presence or absence of this species and/or other species that may be protected at that time should be performed prior to construction of projects.

Texas horned lizard (*Phrynosoma cornutum*)

Suitable habitat for this species is not present within the study area and the study area is outside the species elevation range. This species is listed as a species of concern by the USFWS. Habitat for the Texas horned lizard is described as Chihuahuan Desert and desert-grassland; sandy to gravelly flat ground with or without rocky cover, usually with scattered desert and grassland shrubs or on mesquite dominated flats. This species is found at 3,580 – 4,940 feet above mean sea level (MSL) in Arizona.¹¹

The study area contains suitable habitat for the following protected native plants that are listed as salvage restricted by the Arizona Department of Agriculture (ADA). Pima Indian mallow is also considered a species of concern by the USFWS.

- Kelvin cholla (*Cylindropuntia x kelvinensis*)
- Pima Indian mallow (*Abutilon parishii*)
- Thornber fishhook cactus (*Mammillaria thornberi*)
- Staghorn cholla (*Opuntia versicolor*)
- Desert night-blooming cereus (*Peniocereus greggii* var. *transmontanus*)
- Tumamoc globeberry (*Tumamoca macdougalii*)

Prior to construction, a native plant survey should be conducted to determine if any protected native plant species would be impacted as a result of the project. Coordination with the ADA should be conducted if any protected native plants are identified. In addition, impacts to native plants may require a Notice of Intent and/or specific permitting prior to construction per Article 11: Arizona Native Plants. Also prior to construction, a presence/absence survey should be conducted to determine if any invasive/noxious weeds are present within the construction area and to determine if any mitigation measures are necessary per Executive Order 13112 and the Arizona Native Plant Law.

Important Riparian Area (IRA)

Portions of the study area are classified as an Important Riparian Area (IRA) regulated under Pima County Ordinance PC2005-FC2 and Chapter 16.30.050. As described in the Regulated Riparian Habitat Mitigation Standards and Implementation Guidelines, riparian habitat is a valuable resource and river

¹⁰ AGFD. 2001. *Dendrocygna bicolor*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. 6 pp.

¹¹ AGFD. 2002. *Phrynosoma cornutum*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. 5 pp.

systems are important corridors for resident and migratory birds, along with providing wildlife with the resources necessary to maintain their populations. IRAs occur along the major river systems and washes that provide critical watershed and water resource management functions as well as providing a framework for landscape linkages and biological corridors. They are valued for their higher water availability, vegetation density, and biological productivity, as compared to adjacent upland habitats. Mesoriparian habitats are generally associated with perennial or intermittent watercourses or shallow groundwater. Plant communities may be dominated by species that are also found in drier habitats (e.g., mesquite) but contain some preferential riparian plant species such as velvet ash (*Fraxinus velutina*) or netleaf hackberry (*Celtis laevigata*). Xeroriparian habitats (Classes A-D) are generally associated with an ephemeral water supply (see **Figure 30**). These plant communities typically contain species also found in upland habitats; however, these plants are typically larger and/or occur at higher densities than adjacent uplands.¹²

The study area contains Mesoriparian (337 acres), Xeroriparian B (95 acres), Xeroriparian C (1,235 acres), and Xeroriparian D (4,341 acres) habitats. Impacts to this habitat should be avoided to the extent practicable and mitigation will likely be required for unavoidable impacts. These areas are depicted in **Figure 30**.

WILDLIFE MOVEMENT CORRIDORS

Wilderness areas and wildlife areas are important natural resources because they provide food, shelter, and other habitat requirements (including connectivity) to sustain many species of wildlife. Numerous wildlife species utilize the washes and undeveloped uplands within the study area to move between wildland blocks. Multiple species utilize the open spaces and undeveloped areas for foraging and/or shelter. Conversion of these lands into other uses may impact wildlife movement patterns and population maintenance processes (immigration/emigration/genetics), as well as the local availability of food resources. Future wildlife habitat fragmentation and loss will contribute to reduced biodiversity and population sizes in the region.

The Arizona Wildlife Linkages Assessment identified one potential linkage zone (PLZ) within or adjacent to the study area (PLZ152 CAP Canal, **Figure 31**). PLZs are area of land between the wildland blocks, where current and future urbanization, roads, and other human activities threaten to prevent wildlife movement between the wildland blocks. Wildland blocks are defined as areas of land that consist of important wildlife habitat and can be expected to remain wild for at least 50 years.¹³

The Coyote - Ironwood - Tucson Linkage extends through the western portion of the study area along Brawley Wash and along the eastern portion of the study area overlapping the Tucson - Tortolita - Santa Catalina Mountains Linkage and extending into a wildland block that connects to SNP.

Coyote - Ironwood - Tucson Linkage

The Coyote - Ironwood - Tucson Linkage design includes a Coyote-Ironwood linkage strand and an Ironwood-Tucson linkage strand. The Coyote-Ironwood linkage runs between the Coyote wildland

¹²Pima County Regional Flood Control District. 2011. Regulated Riparian Habitat Mitigation Standards and Implementation Guidelines. Supplement to Title 16 Chapter 16.30 of the Watercourse and Riparian Habitat Protection and Mitigation Requirements Ordinance No. 2010 FC5.

¹³Nordhaugen, S.E., Erlandsen, E., Beier, P., Eilerts, B.D., Schweinburg, R., Brennan, T., Cordery, T., Dodd, N., Maiefski, M., Przybyl, J., Thomas, S., Vacariu, K., Wells, S., 2006. Arizona's Wildlife Linkages Assessment. Arizona Wildlife Linkages Workgroup, Phoenix, AZ.

block and the Ironwood wildland block, across State Route 86. It spans about 13 miles in a straight line between each wildland block used in this analysis. The Ironwood – Tucson linkage runs through Avra Valley from Ironwood Forest National Monument to the Tucson Mountains. The linkage spans approximately 8.5 miles in a straight-line between each wildland block used.¹⁴

Tucson - Tortolita - Santa Catalina Mountains Linkage

The Tucson - Tortolita - Santa Catalina Mountains Linkage includes a Tucson Mountains-Tortolita Mountains Linkage and a Tortolita Mountains-Santa Catalina Mountains Linkage. The Tucson Mountains-Tortolita Mountains Linkage runs from the Tucson Mountains, across Interstate 10, to the Tortolita Mountains. It is about 14.3 miles long. The Tortolita Mountains-Santa Catalina Mountains Linkage runs through the Oro Valley and across SR-77 between the Tortolita Mountains and the Santa Catalina Mountains. The linkage is approximately 8.7 miles long.¹⁵

These linkages and potential linkage zones should be considered during project planning.

MIGRATORY BIRD TREATY ACT

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. §§ 703-712) statute makes it unlawful without a waiver to pursue, hunt, take, capture, kill, or sell migratory birds. Migratory birds may nest on the ground, on structures, or in trees, shrubs, or other vegetation within the project limits. In accordance with the MBTA, a pre-construction bird nesting survey must be conducted to survey active migratory bird nests in potentially impacted trees and shrubs prior to the beginning of construction.

¹⁴ Arizona Game and Fish Department. 2012. Pima County Wildlife Connectivity Assessment: Detailed Linkages. Coyote – Ironwood – Tucson Linkage Design. Report to the Regional Transportation Authority of Pima County.

¹⁵ Beier, P., E. Garding, and D. Majka. 2006. Arizona Missing Linkages: Tucson – Tortolita – Santa Catalina Mountains Linkage Design. Report to Arizona Game and Fish Department. School of Forestry, Northern Arizona University.

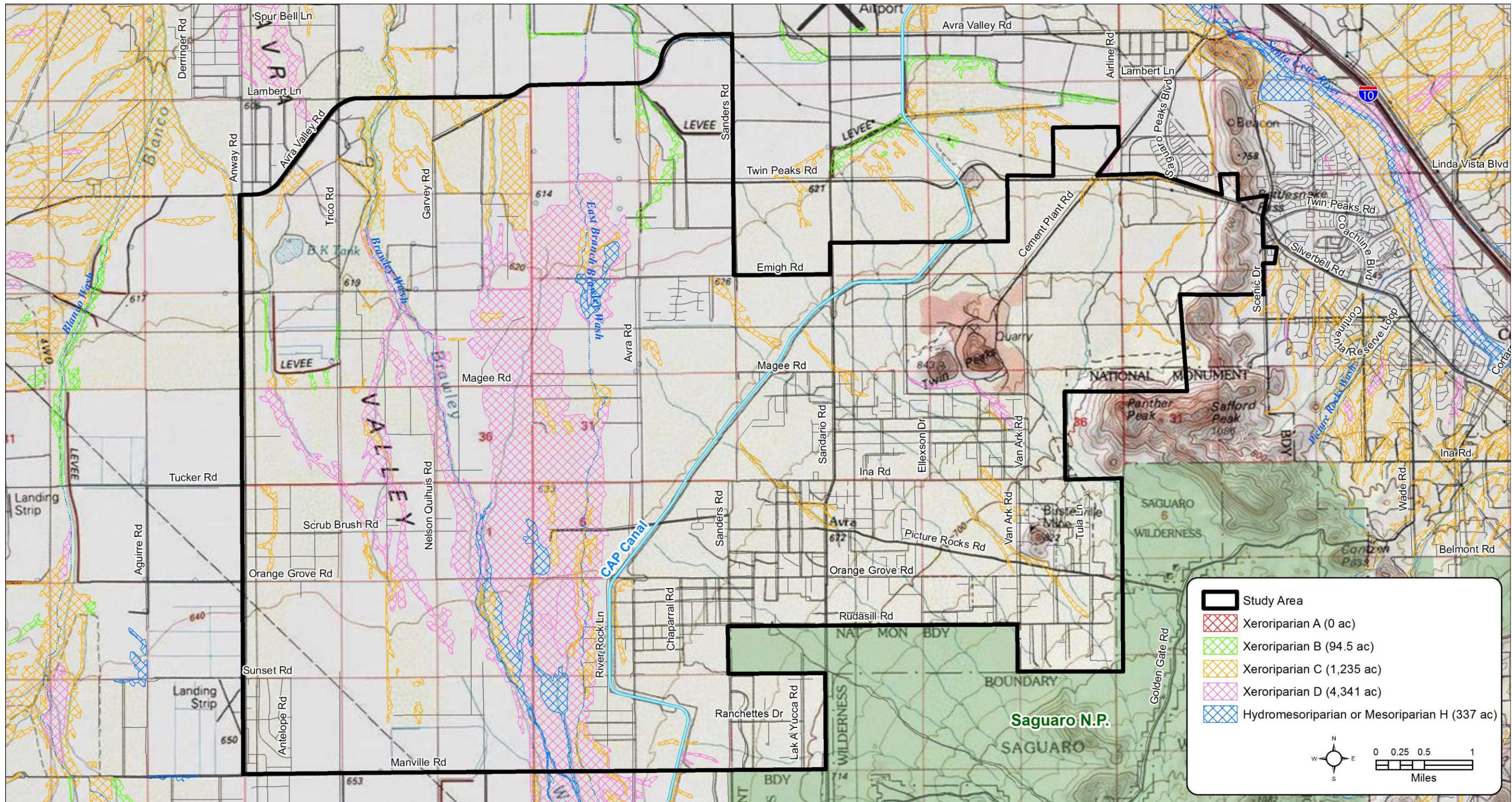


Figure 30 – Important Riparian Areas

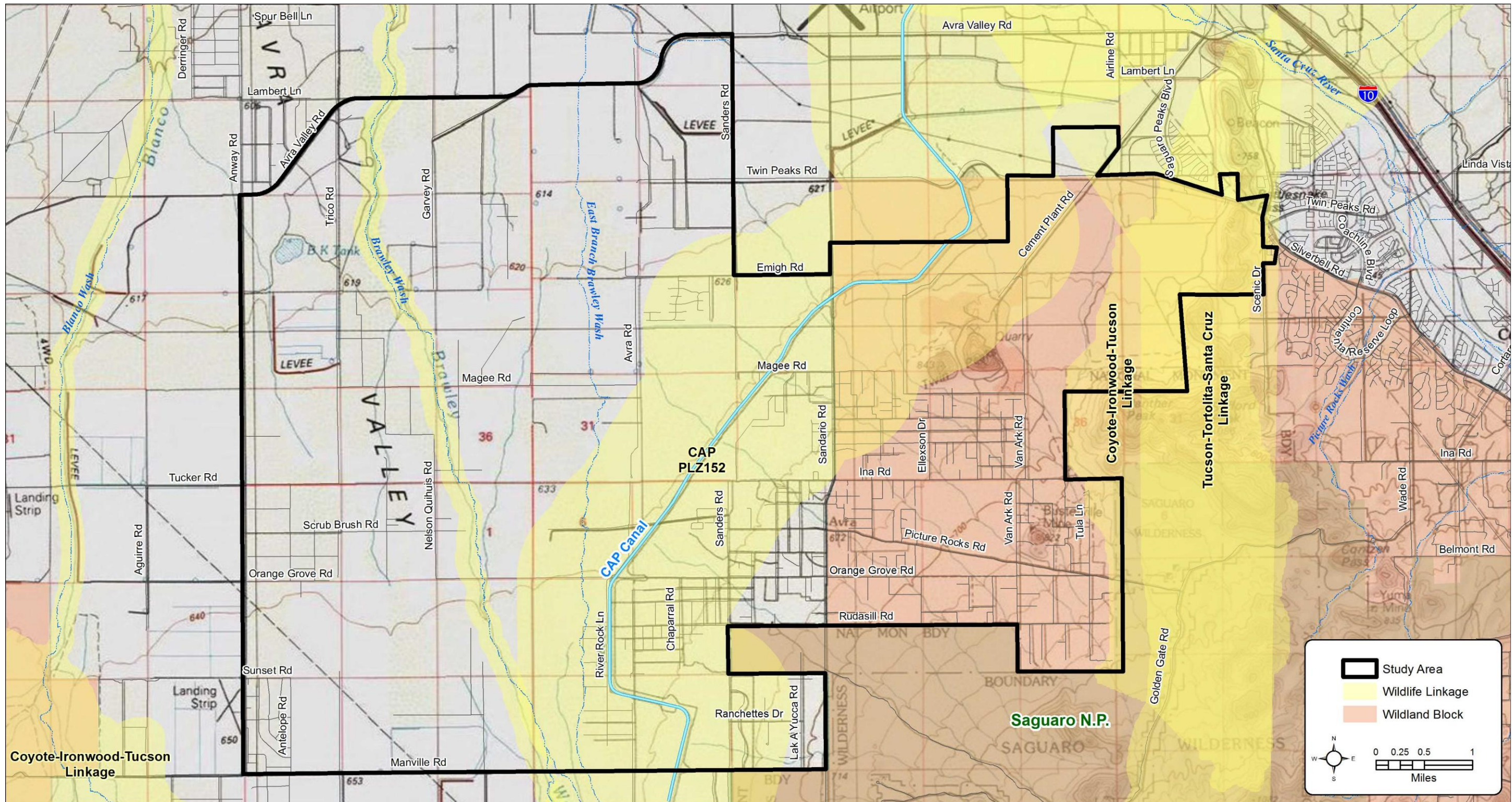


Figure 31 – Wildlife Linkages / Wildland Block

SECTION 4(F) RESOURCES

Section 4(f) refers to the original section in the Department of Transportation Act of 1996. The 4(f) requirement, originally set forth in Title 49 United States Code (U.S.C.), Section 1653(f), considers publicly owned park and recreational lands, publicly owned wildlife and waterfowl refuges, and historic sites in transportation project development. Section 4(f) states that the FHWA "...may approve a transportation program or project requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or land of an historic site of national, state, or local significance (as determined by the federal, state, or local officials having jurisdiction over the park, area, refuge, or site) only if...there is prudent planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use." (49 U.S.C. 303[c]). Section 4(f) also establishes criteria by which public parks and recreation lands, wildlife, and waterfowl refuges and historic sites can be evaluated for consideration as 4(f) resources.

A "use" of a Section 4(f) resource, as defined in Title 23, CFR, Part 771.135(p), "occurs: (1) when land is permanently incorporated into a transportation facility; (2) when there is a temporary occupancy of land that is adverse in terms of the statute's preservationist purposes; or (3) when there is a constructive use of land. A constructive use of a Section 4(f) resource occurs when the transportation project does not incorporate land from a Section 4(f) resource, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired."

A historic site, property, or resource means any prehistoric or historic district, site, building, structure or object included in or eligible for inclusion on the National Register of Historic Places (NRHP). Section 4(f) does not apply if archaeological resources are important chiefly because of what can be learned by data recovery (NRHP criterion D). Consequently, Section 4(f) applies to historic properties listed on or eligible for the NRHP under criteria A, B, and/or C.

Section 4(f) properties are often identified in two categories: Parks Plus (+) (parks, recreation areas, wildlife or waterfowl refuges) and Historic Sites. There are currently three protected 4(f) properties in the Parks+ category as depicted on **Figure 32**:

1. SNP
 - Located at 2700 N. Kinney Road, Tucson, AZ 85743.
 - SNP is under the jurisdiction of the National Park Service. The park offers numerous trails and recreation activities and is open to the general public affording it Section 4(f) protection.
2. Picture Rocks Park and Community Center
 - Located at 5615 N. Sanders Road, Tucson, AZ 85743.
 - Picture Ricks Park and Community Center is under the jurisdiction of Pima County. The park and community center is open to the general public and as such is protected under Section 4(f).
3. Central Arizona Project (CAP) National Recreational Trail
 - Adjacent to the CAP Canal throughout the study area.

The CAP is managed by the Central Arizona Water Conservation District (CAWCD), a quasi-governmental entity. The Pima County Natural Resources, Parks and Recreation Department has

executed a recreational development agreement with the federal Bureau of Reclamation, the developer of the canal. In addition, the County completed a CAP Trail Master Plan in 2009. Construction of the trail through the project area is expected to be complete in 2014. Because of the development agreement between Pima County and the Bureau of Reclamation and the fact that the trail is open to the general public for recreational purposes, the CAP National Recreational Trail is afforded protection under Section 4(f).

A recent review of the AZSITE database did not identify any cultural sites that would qualify for Section 4(f) protection.

The evaluation of sites identified in future cultural resource survey investigations for their potential as 4(f) resources must be considered should there be USDOT agency funding/involvement in the design or construction of the facility. In addition, the presence of publicly owned recreational lands and publicly owned wildlife and waterfowl refuges within the study area will require formal consultation with the managing agencies as to the disposition of these lands as Section 4(f) resources.

The FHWA has published a policy paper (FHWA Section 4(f) Policy Paper, 2005) that serves as a guide for the applicability of Section 4(f) and outlines an evaluation process and alternative analysis procedures. As this study progresses, early identification and evaluation of potential 4(f) resources and analysis of the facility's potential impact on them will be important to the effective and efficient planning of the study should FHWA involvement be anticipated.

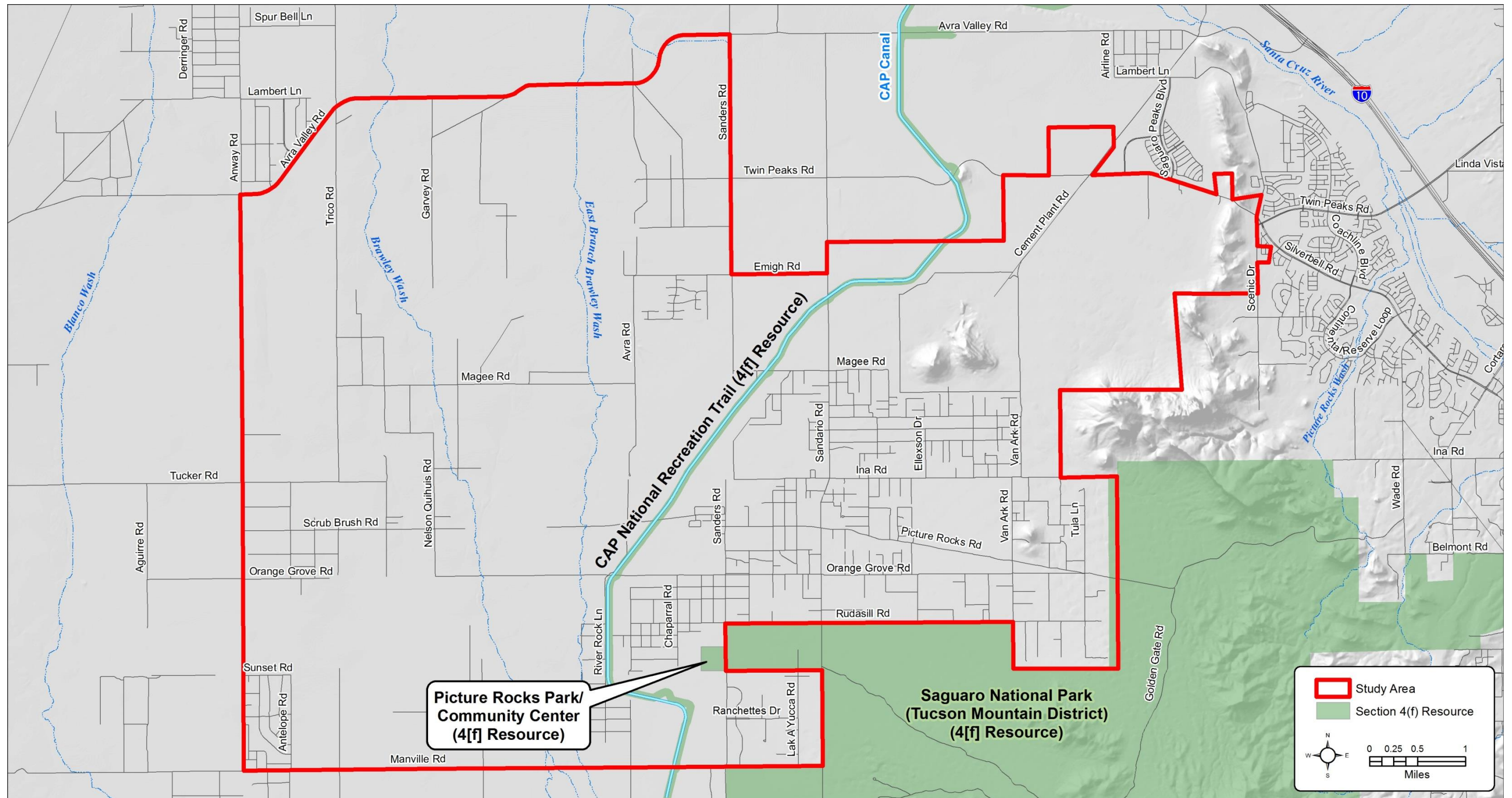


Figure 32 – Section 4(f) Resources

WATER QUALITY

SECTIONS 404 AND 401 OF THE CLEAN WATER ACT

The U.S. Army Corps of Engineers (Corps) regulates the discharge of dredge and/or fill material into waters of the U.S. (Waters) under Section 404 of the Clean Water Act (CWA) (33 U.S.C. §1251 et seq. (1972)).

Any activity that will discharge dredge or fill material into jurisdictional waters, including wetlands, will require a CWA Section 404 Permit [Nationwide Permit (NWP), Individual Permit (IP), etc.]. These activities include, but are not limited to, the installation of riprap, channel maintenance activities, bank protection, new bridges or extensions of bridges, corrugated metal pipes, and box culverts.

A preliminary desktop evaluation for the presence of potential jurisdictional Waters was conducted in the study area through a review of U.S. Geological Survey topographical maps. The following named washes are included in the study area: Brawley Wash, East Branch of Brawley Wash, West Branch of Brawley Wash, and Los Robles Wash. Numerous unnamed features are also located within the project area and could potentially be considered Waters.

An evaluation to determine boundaries of Waters should be conducted during the design phase of the project through a Preliminary Jurisdictional Determination (PJD) or an Approved Jurisdictional Determination (AJD) to aid in avoiding and minimizing impacts to the regulated areas. A PJD is a non-binding delineation that is typically pursued in the planning and design phases of a project. An AJD is a delineation that is binding for five years that requires more data and processing time through the Corps. After the delineation is complete, the project should be designed to avoid and minimize impacts to Waters. If there are unavoidable impacts to Waters, a Section 404 permit will then be required along with compensatory mitigation activities for the proposed impacts to Waters. Water quality certifications under Section 401 of the Clean Water Act would be required from the Environmental Protection Agency (EPA).

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM/STORM WATER POLLUTION PREVENTION PLAN

The National Pollutant Discharge Elimination System (NPDES) is a national permit program under Section 402 of the CWA that regulates discharges of pollutants from point sources into Waters, including sediment and pollutants that can be generated during ground-disturbing activities and transported by stormwater runoff. The U.S. EPA has delegated to the Arizona Department of Environmental Protection (ADEQ) the authority to operate the permit program within Arizona. The state's version of the NPDES permit program is referred to as the Arizona Pollutant Discharge Elimination System (AZPDES). The AZPDES permit program requires a general permit for construction activities that disturb one or more acres of land as well as for construction activities that disturb Waters (Section 401 Certification). A Stormwater Pollution Prevention Plan (SWPPP) must be prepared as a part of the permit. If impacts are greater than one acre of land and/or Waters, a Section 401 Certification permit and SWPPP will be required during future project development.

Appendix B – Picture Rocks Transportation Survey Responses

A summary of the responses to each question is provided as follows. Questions on whether to take the survey in English or Spanish (Question 1), contact information (Questions 22), was not tabulated.

2. How many people currently live in your household?

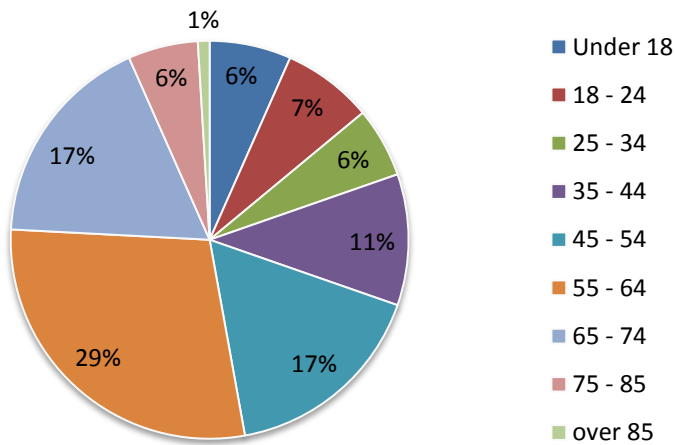
Answer Options	Number	Percent
1	80	19
2	154	36
3	59	14
4	59	14
5	34	8
More than 5 (please specify #)	36	9
<i>answered question</i>	422	100

The responses to Question 2 indicate that the majority of survey respondents live in two person households.

3. Please indicate your age range:

Answer Options	Number	Percent
Under 18	28	6
18 - 24	31	7
25 - 34	24	6
35 - 44	45	11
45 - 54	71	17
55 - 64	121	29
65 - 74	74	17
75 - 85	24	6
over 85	4	1
<i>answered question</i>	422	100

Age of Survey Respondents



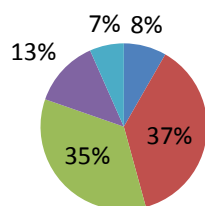
The predominant age of survey respondents is 55-64. Survey respondents that were 55 years of age or older comprised 53 percent of survey respondents.

4. How many working vehicles are available in your household?

Answer Options	Number	Percent
None	35	8
1	158	37
2	146	35
3	55	13
4 or more	28	7
<i>answered question</i>	422	100

How many working vehicles are in your household?

■ None ■ 1 ■ 2 ■ 3 ■ 4 or more



A review of responses regarding how many working vehicles available indicated that 7% of households had no working vehicle. These data, coupled with data on how many persons are in these households, indicate transit needs. Another indicator is the household size as compared to the number of vehicles available. For example, a two-person household may have potential transit needs when there is only one vehicle available. A review of census data will provide more information on these types of needs.

5. Do you have a valid driver’s license?

Answer Options	Number	Percent
Yes	362	86
No	57	14
<i>answered question</i>	419	100

The majority of survey respondents (86%) have a valid driver’s license.

6. How do you currently get to the places you need to go? (check all that apply)

Answer Options	Number	Percent
I drive myself	318	75
Take a taxi or shuttle	23	5
Catch a ride with friend or family member	148	35
Walk	57	14
Bike	34	8
Carpool	37	9
Other	23	5
I can't always get to where I need to go because... (please specify)	62	15
<i>answered question</i>	422	N/A

The responses to Question 6 are interesting because they indicate potential transportation needs. Fifteen percent of respondents indicated they can’t always get to where they need to go. An additional

thirty-five percent of respondents catch a ride with friends or family, which may indicate potential need for additional transportation options.

7. In general, how many times per week do you currently travel from home to locations outside the Picture Rocks community?

Answer Options	Number	Percent
Less than once a week	33	8
1 - 2 times per week	70	17
3 - 5 times per week	136	32
6 - 7 times per week	85	20
8 or more times per week	95	23
<i>answered question</i>	419	100

Survey responses indicated that the majority of respondents traveled outside of the Picture Rocks community three or more times per week. The largest response was “3-5 times per week.”

8. On average, how often do you currently depend on someone else (family, friend, neighbor, taxi or shuttle) for your transportation needs beyond the Picture Rocks community?

Answer Options	Number	Percent
Less than once a week	219	53
1 - 2 times per week	71	17
3 - 5 times per week	73	18
6 - 7 times per week	23	6
8 or more times per week	27	6
<i>answered question</i>	413	100

Approximately 47 percent of respondents indicated they depended on someone else for transportation outside of the Picture Rocks Community once a week or more.

9. How many times have you been unable to reach a destination in the past 30 days because of a lack of transportation?

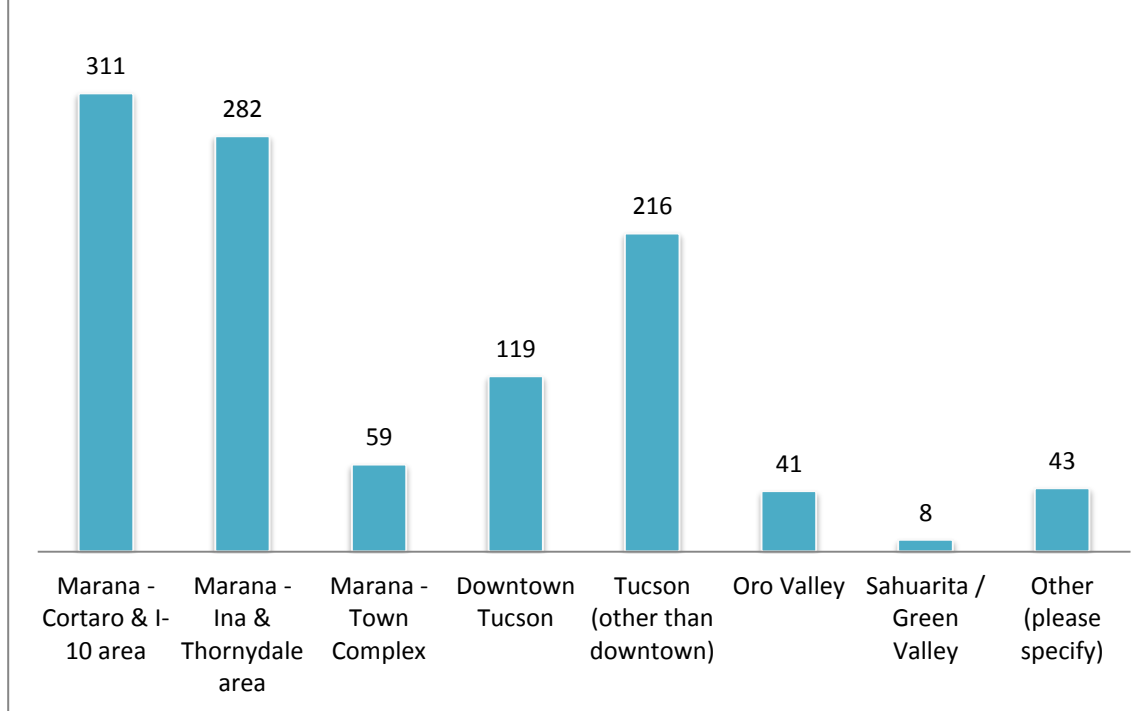
Answer Options	Number	Percent
None	220	52
1 - 3 times	118	28
4 - 6 times	46	11
7 or more times	36	9
<i>answered question</i>	420	100

A significant number of respondents (48%) reported that they were unable to reach a destination in the past 30 days because of a lack of transportation.

10. Please choose three geographic areas that you most often need to travel to:

Answer Options	Number
Marana - Cortaro & I-10 area	311
Marana - Ina & Thornydale area	282
Marana - Town Complex	59
Downtown Tucson	119
Tucson (other than downtown)	216
Oro Valley	41
Sahuarita / Green Valley	8
Other (please specify)	43
<i>answered question</i>	420

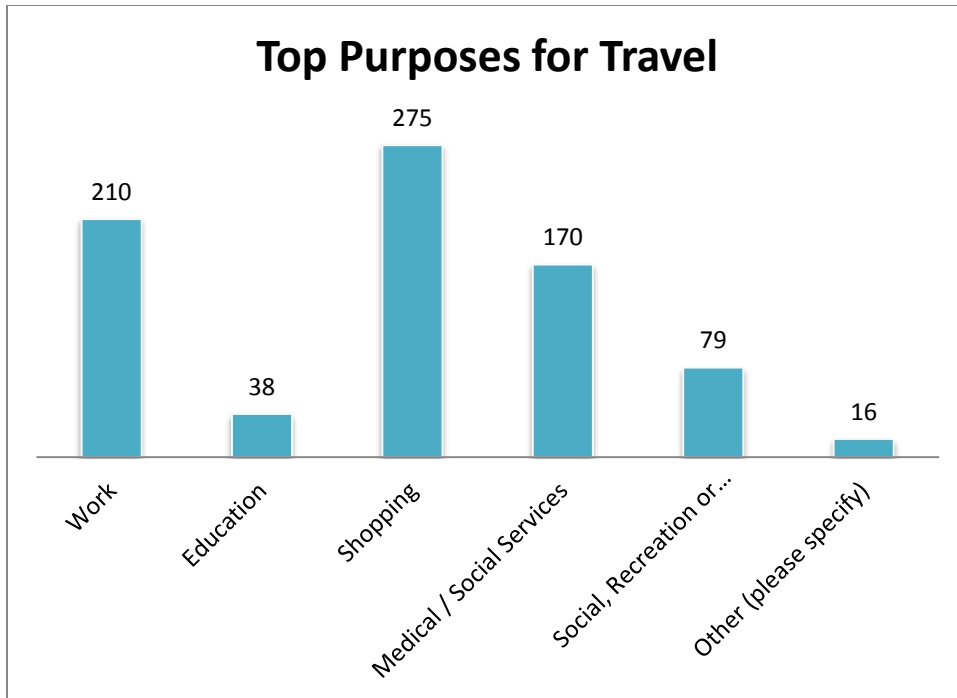
Geographic Travel Destinations



The survey responses indicated that top destinations were the Cortaro Road and I-10 area, followed by the Ina and Thornydale area. Downtown Tucson was another significant destination choice.

11. What is your top purpose for local travel? (Select no more than two)

Answer Options	Number
Work	210
Education	38
Shopping	275
Medical / Social Services	170
Social, Recreation or Entertainment	79
Other (please specify)	16
<i>answered question</i>	415



The top purposes for local travel were shopping, followed by work trips and medical or social service related trips.

12. What time of day (Monday through Friday) do you most frequently need to travel TO your most common destination?

Answer Options	Number	Percent
6 AM to 9 AM	186	45
9 AM to 12 PM	159	39
12 PM to 3 PM	36	9
3 PM to 6 PM	20	5
After 6 PM	8	2
<i>answered question</i>	409	100

The most frequent response to question 12 regarding the time of day the survey respondent needs to travel to their most common destination on a weekday was between the hours of 6 AM to 9 AM. A significant number of respondents (39%) indicated the hours between 9 AM to 12 PM.

13. What time of day (Monday through Friday) do you most frequently need to travel FROM your most common destination back to the Picture Rocks area?

Answer Options	Number	Percent
6 AM to 9 AM	16	4
9 AM to 12 PM	56	14
12 PM to 3 PM	82	20
3 PM to 6 PM	186	45
After 6 PM	69	17
<i>answered question</i>	409	100

The most frequent response to the Question 13 was the hours of 3 PM to 6 PM.

14. Would you be willing to participate in a carpool with neighbors to connect to existing transit services such as Sun Shuttle or a Sun Express Bus?

Answer Options	Number	Percent
Yes	208	51
No	198	49
<i>answered question</i>	406	100

There was a large level of support for willingness to participate in a carpool with neighbors to connect to existing transit services. 51% of respondents indicated they would be willing to participate in a carpool with neighbors to connect to an existing transit service.

15. If you answered "yes" to the previous question, would you be willing to drive your own vehicle for a carpool?

Answer Options	Number	Percent
Yes	100	35
No	190	65
<i>answered question</i>	290	100

35% of respondents to this question said they would be willing to drive their vehicle for a carpool. The majority of respondents to this question indicated they would not be willing to drive their own vehicle.

16. If a new service were to become available in Picture Rocks, what is the maximum distance you would be willing /able to walk, ride a bicycle or drive to access public transportation?

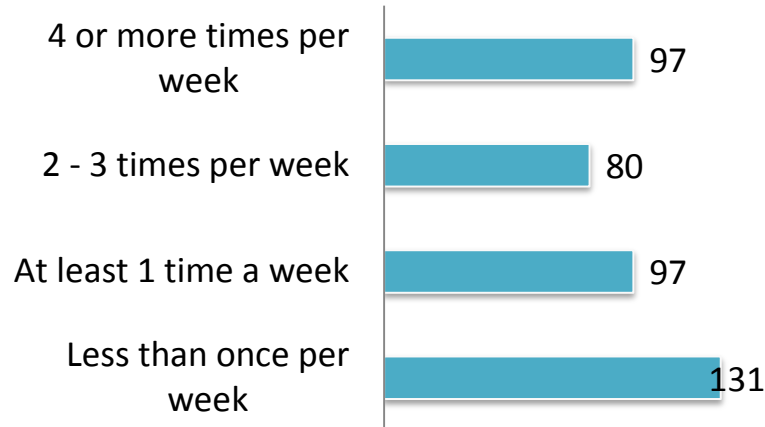
Answer Options	Number	Percent
Up to 1/4 mile	99	24
Up to 1/2 mile	79	19
Up to 1 mile	108	26
More than a mile	85	21
Unable to walk, drive or ride bike	29	7
<i>answered question</i>	400	100

The responses to the question of how far one would be willing to travel to access public transportation varied considerably. Only a small percentage of respondents indicated they would be unable to access public transportation by walking, driving, or riding a bicycle.

17. If a Park and Ride area for carpooling or vanpooling was made available in Picture Rocks, how often do you think you would use it?

Answer Options	Number	Percent
Less than once per week	131	32
At least 1 time a week	97	24
2 - 3 times per week	80	20
4 or more times per week	97	24
<i>answered question</i>	405	100

If a Park and Ride area for carpooling or vanpooling was available, how often would you use it?



The responses to the question regarding how often one would use a park and ride area indicated that most respondents (68%) would use it once a week or more.

18. How much would you be willing to spend per ROUND TRIP on a new transportation option that would better meet your needs?

<i>Answered question</i>	361

19. Please estimate the CURRENT MONTHLY COST for your individual local transportation needs (including car payment, gas, insurance, maintenance and taxi or shuttle costs).

<i>Answered question</i>	352

20. OPTIONAL: Please indicate your estimated total annual household income (before taxes):	
Answer Options	
Less than \$10,000	46
\$10,000 - \$15,000	50
\$15,000 - \$25,000	65
\$25,000 - \$35,000	51
\$35,000 - \$50,000	53
\$50,000 - \$75,000	40
More than \$75,000	26
<i>answered question</i>	331

21. Please provide any comments or ideas you have about transportation in the community of Picture Rocks.

212 persons provided comments or ideas about transportation in the community of Picture Rocks.

Appendix C – Infrastructure Projects by Phase (Short-range, Mid-range, Long-range)

Table C1 – Summary of Infrastructure Projects by Phase (Short-range)

Project Number	Project Name	Project Features	Preliminary Project Cost (\$)	Project Phasing
Short-range (0 to 5 years)				
1	Sandario Road, Rudasill Road to North of Emigh Road	Studies <ul style="list-style-type: none"> Conduct planning and engineering studies to evaluate the need for left-turn lanes at intersections on Sandario Road-Picture Rocks Road. 	\$5,000	Short-range (0 to 5 years)
		<ul style="list-style-type: none"> Conduct planning and engineering studies to evaluate need for intersection operations, geometric, traffic control, and lighting improvements at Sandario Road / Picture Rocks Road intersection. 	\$5,000	
		<ul style="list-style-type: none"> Conduct hydrology study to evaluate the need, feasibility, and preliminary concepts plans for improvements to wash crossing on Sandario Road; Consider placement of near-term warning and detour signs in advance of roadway reconstruction. 	\$50,000	
		<ul style="list-style-type: none"> Conduct a study to develop a planning framework for street design and land use zoning along Sandario Road from Ina Road to Orange Grove Road. The street design framework should include pedestrian and equestrian-scale streetscape consistent with Pima County Comprehensive Plan Special Area Policies. Street elements should encourage slower traffic speeds and may include on-street parking, sidewalks, planters, and street trees. Potential cross-sections are shown in Figure 22. 	\$50,000	
		<ul style="list-style-type: none"> Monitor crash history and traffic operations at the Orange Grove Road and Rudasill Road intersections to determine the need for geometric, operational, traffic control, and roadway lighting improvements. 	-	

Table C1 – Summary of Infrastructure Projects by Phase (Short-range) (continued)

Project Number	Project Name	Project Features	Preliminary Project Cost (\$)	Project Phasing
2	Picture Rocks Road, Guthrie Road to SNP West Boundary	Studies <ul style="list-style-type: none"> Conduct Road Safety Assessment (RSA) and engineering study to evaluate need for left-turn lanes and geometric, traffic control, and lighting improvements at Sandario Road / Picture Rocks Road intersection and other intersections with the corridor between Stone Mountain Road and SNP boundary. 	\$30,000	Short-Range (0 to 5 years)
		<ul style="list-style-type: none"> Conduct hydrology studies to evaluate the need for improvements to wash crossing on Picture Rocks Road including placement of near-term warning and detour signs in advance of roadway reconstruction. 	\$50,000	
		<ul style="list-style-type: none"> Conduct a study to develop a planning framework for street design and land use zoning along Picture Rocks Rd from Guthrie Road to Stone Mountain Road. The street design framework should include pedestrian and equestrian-scale streetscape consistent with Pima County Comprehensive Plan Special Area Policies. Street elements should encourage slower traffic speeds and may include on-street parking, sidewalks, planters, and street trees. 	\$50,000	
		Improvements <ul style="list-style-type: none"> Upgrade traffic control signs and markings. Implement speed control devices and/or speed enforcement. 	\$20,000	
3	Avra Valley Road—El Paso Road to Garvey Road	Studies <ul style="list-style-type: none"> Conduct Road Safety Assessment (RSA) to determine the need and feasibility to install roadway lighting, reduce the posted speed limit, and other improvements required to improve safety of this roadway segment. 	\$20,000	
		Improvements <ul style="list-style-type: none"> Upgrade existing advance warning signs on Avra Valley Road with larger signs and warning beacons on approaches to the El Paso Road and Garvey Road intersections. Relocate sign placement on approaches to intersections and curves. Increase the size of existing stop signs at the El Paso Road and Garvey Road intersections. Remove sight distance restrictions at the El Paso Road and Garvey Road intersections. 	\$25,000	

Table C1 – Summary of Infrastructure Projects by Phase (Short-range) (continued)

Project Number	Project Name	Project Features	Preliminary Project Cost (\$)	Project Phasing
4	Twin Peaks Road— Silverbell Road (North) to White Stallion Road	Study <ul style="list-style-type: none"> Conduct Road Safety Assessment (RSA) to identify other improvements required to improve safety of this corridor segment. 	\$20,000	Short-Range (0 to 5 years)
		Improvements <ul style="list-style-type: none"> Upgrade existing advance warning signs on the Twin Peaks Road with larger signs and warning beacons on approaches to the Silverbell Road (north). Relocate sign placement on approaches to intersections and curves. Grade shoulders to remove pavement-shoulder differential. Remove sight distance restrictions at the Twin Peaks Road-White Stallion Road intersection. 	\$25,000	
5	Anway Road / Avra Valley Road	Studies <ul style="list-style-type: none"> Conduct Road Safety Assessment (RSA) of Avra Valley Road from Anway Road to Trico Road to determine the need for reducing the posted speed limit and other improvements required to improve safety at this intersection. 	\$20,000	
		Improvements <ul style="list-style-type: none"> Upgrade existing advance warning signs on the Avra Valley Road with larger signs and warning beacons on approaches to Anway Road. Relocate sign placement on approaches to intersection. Remove sight distance restrictions. 	\$300,000	
6	Avra Valley / Trico Road	Improvements <ul style="list-style-type: none"> Upgrade existing advance warning signs on Avra Valley Road with larger signs and warning beacons on approaches to Avra Valley Road. Relocate sign placement on approaches to intersection; remove sight distance restrictions at the intersection. 	\$20,000	
		Studies <ul style="list-style-type: none"> Conduct flood mitigation study to identify improvements required to mitigate flood-prone areas to reduce road closures for area residents and improve accessibility for emergency service providers. 	\$50,000	
		<ul style="list-style-type: none"> Conduct Road Safety Assessment (RSA) of Avra Valley Rd from Anway Rd to Trico Rd to determine the need for intersection lighting and reducing speed limit 	See Project #5	

C1 – Summary of Infrastructure Projects by Phase (Short-range) (continued)

Project Number	Project Name	Project Features	Preliminary Project Cost (\$)	Project Phasing
7	Sanders Road / Twin Peaks Road	Studies <ul style="list-style-type: none"> Conduct Road Safety Assessment (RSA) to identify improvements required to improve safety at this intersection; determine the need for reducing the posted speed limit; evaluate need to transition to all-way stop control 	\$20,000	Short-Range (0 to 5 years)
		Improvements <ul style="list-style-type: none"> Upgrade existing advance warning signs on the Twin Peaks Road with larger signs with warning beacons approaches to the intersection. Relocate sign placement on approaches to intersection. 	\$10,000	
8	Manville Road Drainage Mitigation Project	Study <ul style="list-style-type: none"> Conduct hydrology study to evaluate the need for improvements to wash crossing on Picture Rocks Road including placement of near-term warning and detour signs in advance of roadway reconstruction. 	\$50,000	
9	Anway Road Drainage Mitigation Project	Study <ul style="list-style-type: none"> Conduct hydrology studies to evaluate the need for improvements to wash crossing on Picture Rocks Road including placement of near-term warning and detour signs in advance of roadway reconstruction. 	\$50,000	
10	Avra Valley Road Drainage Mitigation Project	Study <ul style="list-style-type: none"> Conduct hydrology studies to evaluate the need for improvements to wash crossing on Picture Rocks Road including placement of near-term warning and detour signs in advance of roadway reconstruction. 	\$50,000	
11	Sandario Road Drainage Mitigation Project	Study <p>Conduct hydrology studies to evaluate the need for improvements to wash crossing on Picture Rocks Road including placement of near-term warning and detour signs in advance of roadway reconstruction.</p>	\$50,000	

Table C2 – Summary of Infrastructure Projects by Phase (Mid-range)

Project Number	Project Name	Project Features	Preliminary Project Cost (\$)	Project Phasing
Mid-range (6 to 10 5 years)				
1	Sandario Road, Rudasill Road to North of Emigh Road	Improvements <ul style="list-style-type: none"> Construct shared-use path from Sandario Road / Picture Rocks Road intersection to Emigh Road (Marana High School). Coordinate with fire district on funding to install a pre-emption traffic signal at fire station. Upgrade traffic control signs and markings; implement speed control devices and/or speed enforcement. 	\$2,500,000	Mid-Range (6 to 10 years)
3	Avra Valley Road—El Paso Road to Garvey Road	<ul style="list-style-type: none"> Reconstruct the El Paso Road approach to Avra Valley Road. Construct left-turn lanes on Avra Valley Road at El Paso Road and Garvey Road intersections. 	\$1,500,000	
4	Twin Peaks Road—Silverbell Road (North) to White Stallion Road	Improvements <ul style="list-style-type: none"> Reconstruct the Twin Peaks Road-Silverbell Road (North) T-intersection and curve geometry on Twin Peaks Road. Construct a left-turn lane on Twin Peaks Road at White Stallion Road. 	\$2,000,000	
5	Anway Road / Avra Valley Road	<ul style="list-style-type: none"> Construct left-turn lanes on Avra Valley Road or conduct studies to determine the need to transition to all-way stop control. Realign the Anway Road approaches to the intersection. 	\$2,500,000	
6	Avra Valley / Trico Road (continued)	<ul style="list-style-type: none"> Construct left-turn lanes on Avra Valley Road at Trico Road and Voak Road intersections and construct a right-turn lane on Trico Road (southbound approach) or conduct studies to determine the need to transition to all-way stop control. Realign the Trico Road approaches to the intersection. 	\$2,000,000	
7	Sanders Road / Twin Peaks Road	<ul style="list-style-type: none"> Reconstruct vertical geometry associated with the wash located on Twin Peaks Road east of the intersection. 	Additional study required	

Table C3 – Summary of Infrastructure Projects by Phase (Long-range)

Project Number	Project Name	Project Features	Preliminary Project Cost (\$)	Project Phasing
Long-range (11 to 20 years)				
1	Sandario Road, Rudasill Road to North of Emigh Road	<ul style="list-style-type: none"> Construct all-weather three-lane roadway with paved (bikeable) shoulders from Ina Road to Orange Grove Road. Design should include intersection and drainage improvements as determined by planning and engineering studies. 	\$3,500,000	Long-Range (11 to 20 years)
2	Picture Rocks Road, Guthrie Road to SNP West Boundary	<ul style="list-style-type: none"> Construct all-weather three-lane roadway with paved (bikeable) shoulders from Guthrie Road to Stone Mountain Road. Design should include intersection and drainage improvements as determined by planning and engineering studies. 	\$3,500,000	
8	Manville Road Drainage Mitigation Project	Improvement <ul style="list-style-type: none"> Construct all-weather crossing. 	\$4,500,000	
9	Anway Road Drainage Mitigation Project	Improvement <ul style="list-style-type: none"> Construct all-weather crossing. 	\$1,500,000	
10	Avra Valley Road Drainage Mitigation Project	Improvement <ul style="list-style-type: none"> Construct all-weather crossing. 	\$1,500,000	
11	Sandario Road Drainage Mitigation Project	Improvement Construct all-weather crossing.	\$1,500,000	

Appendix D – Public Involvement Summaries

Picture Rocks Multimodal Transportation Study

March 2014

Prepared by
Arizona Department of Transportation

Introduction

The purpose of this project is to identify the most critical transportation infrastructure needs within the Picture Rocks study area limits and to recommend a program of improvement projects to address those needs. To do this, the project team will take into consideration roadway safety, regional access and mobility, bicycle and pedestrian safety and mobility and rural transit opportunities. The study will also serve as a guide for community and economic development, project funding applications and grants, and project implementation.

Public Meeting

To inform and involve community members of the study, ADOT hosted a public open house at the Picture Rocks Community Center on Tuesday, February 18, 2014 from 5-7 p.m. Staff present at the meeting included Brent Crowther (Kimley-Horn), Paki Rico and Matt Carpenter (ADOT), Pam Mosley, Artemio Hoyos and Sherryl Volpone (Pima County). In addition to the open house, a presentation was given to the Citizens for Picture Rocks Community Association; there was an opportunity for Q&A, comments and recommendations on areas for improvement. In total, 21 members of the community were in attendance.

Newspaper Advertisement

A newspaper advertisement providing the date and location of the public meeting was published in the following newspaper:

- Arizona Daily Star (Northwest Section- February 6 and 13, 2014)

A copy of the advertisement can be found in Appendix A.

Presentation and Meeting Materials

A presentation was given at the open house and a comment form was provided to each attendee of the meeting.

A copy of the comment form can be found in Appendix B of this report.

Comment Form Summary

The following comments were received and returned via the comment form that was provided at the public meeting. All comments received are included in this summary.

What are the highest priority transportation needs within the Picture Rocks area? Please consider:

Roadways

- More lighting and bike paths along roadways to make them safer.
- Shoulder improvements on Sandario.
- A dust abatement and maintenance need to be addressed.

Public Meeting One Summary

- Maintenance on all roads don't wait to do it very ten years.
- Better shoulders along Sandario make some attempt to organize residents to improve the roads or should I save pathways throughout the community.
- Manville Rd west of Avra is in very bad shape. It is dangerous please consider repaving!
- Seasonal road closures during rainy season need to be addressed.
- Manville- Avra Rd to Anway Rd this is a location that is constantly closed due to flooding with almost no way round. A simple bridge or bypass at each of the low level areas would resolve this permanently.
- Paving the whole road not patching. Patching is a waste of money and comes undone very quickly.
- Increase speed limit to 40 on Sandario from Manville to curve before community center.
- Anway Rd. from Manville to Anra Valley Rd. needs a bridge over the wash and repainting.
- Manville Rd from Cap Canal to end needs to be rebuilt with bridges over all washes.
- Trucker roads need rebuilding
- All named roads are a total disgrace for roads.
- Lighting on Sandario and Picture Rocks, Sandario and Rudasill and Sandario and Attorney.
- Shoulders done with used asphalt on major county roads
- Just maintain upkeep on county dirt roads.
- Sandario Road and Picture Rocks Road, heavy recreational bicycle usage year-round and neither roadway have adequate paved shoulders forcing bicyclists to use driving lanes. Very dangerous minimum 2 to 4 feet pavements shoulder needed.
- Sandario Rd. and Picture Rd. both roadways lack adequate cross drainage structures to provide year round all weather travel.
- Road maintenance of main roadways
- Major unmaintained roadways should be maintained if they are connecting to the major highways used.
- No I-11 through the Avra Valley double deck six miles of I-11 instead
- Maintenance of dirt roads/utility easements

Intersections

- Left-hand turn lanes need correcting at the following intersections Manville and Sandario, Rudasill and Sandario, Tula and Picture Rock Road, and Van Ark and Picture Rocks Road.
- Real street lights at Sandario and Picture Rocks. Timed at Tula and Picture Rocks Rd.
- Rudasill and Sandario are dangerous!
- Major intersections in the area need to have lighting including, Anra Valley, Sunset, Anway, Manville, and Sandario roads.
- Picture Rocks Rd. and Tula Lane intersection probably most unsafe intersection: a deadly accident just waiting to happen very poor horizontal and vertical geometrics on Picture Rocks

Public Meeting One Summary

Road at this location. Little to no sight-distance west of Tula due to poor geometrics. Night time illumination of intersections could help.

- Sandario Rd. and Rudasill Rd. night time illumination needed.
- Rudasill and Sandario roads place more warning of intersection to westbound Rudasill prior to Sandario stop sign.
- Bus route connecting to other routes in Cortaro/Ina/I-10 area.
- Picture Rocks and Sandario
- Mayu and Sandario
- Rudasill and Sandario
- Tula and Picture Rocks Rd. is very dangerous! Fix it please.
- Light at Rudasill and Sandario traffic from two schools goes there.

Pedestrian (Sidewalks, Pathways, Trails)

- Crosswalk at Sandario and Picture Rocks roads.
- Four way stop sign at intersection of Sandario and Rudasill roads.
- A walking trail along Picture Rocks Road from Sandario to Tula.
- If going to have non-motorized trails need to educate public about the laws.
- Pedestrian and bicycle routes in Picture Rocks
- Where businesses are sidewalks on Sandario and Pathways.
- Where ever possible on county maintained dirt roads and paved roads bike paths should be installed where as safe as possible.
- Rudasill Rd. (Sandario Rd. to Tula Lane) again, heavy recreational pedestrian activity with no roadway shoulders. Pedestrians walking in traffic lanes.
- Some type of parking accessibility needs to be provided at intersection of Sandario Rd. and Rudasill Rd. to accommodate the Saguaro National Monument Trailhead at southeast corner of the intersection. Heavy usage by both hikes (especially large groups in multiple vehicles) and horse riders (often 4 or more vehicles with horse trailers).
- Sandario Rd. bicycle and pedestrian pathway to connect MHS., stores and PRCC
- Sidewalks are needed along Sandario four way cross walk at Sandario and Picture Rocks. There needs to be a safe pedestrian route from high school to community center.

Bicycle (Bike Lanes, Shoulders, Paths, Trails)

- We need bike lanes especially on Sandario
- Bike paths on Sandario and Picture Rocks roads
- Sandario and Twin Peaks needs a bike trail.
- Paths separate from Picture Rocks Rd. and Sandario Rd.
- Get rid of bikes on Picture Rocks Road they are a Hazard and there are no bike paths for safety, and the bikers themselves are very irresponsible in riding.

Public Meeting One Summary

- Picture Rocks Rd is a dangerous road for any bicycle rider. Make the road safe for bikes and cars or keep bikes off the roadway until there is a safe route.
- Bicycle lanes- charge a 10 dollar annual bike permit.
- Have the sheriff stop and give tickets to bikers not riding single lane.
- Teach people courtesy for bikes and cars.
- Have less used roads be bike lanes and routes
- Bike lane should go along Sandario to Twin Peaks to discourage using Picture Rocks as a bike route. Picture Rocks through Saguaro Park is not a safe bike route and bicyclists should be discouraged from using it.
- Paved bike paths

Transit Service

- Regular bus services with multiple stops
- Need one for everyone to use.
- Picture Rocks to connecting services at Cortaro and Ina.
- Public transportation is needed so students can get to college. Workers can get to work and people looking for work can get into town to find jobs.
- Bus- high school, church and community. Service Anway and Manville, Anway and Avera Valley to Cortaro and Marana Health Center.
- Have existing route 411 be extended to AZ Pavilions rea to connect with other Suntran Route.
- Needed but citizen usage commitments are needed first.
- Transit service that connects to express routes and consider aging population too will be increasing significantly in the next ten years.
- Regular bus service connecting Picture Rocks Road with Arizona Pavilions, with connections to New Mexico medical center and Tucson downtown.

Do you have any other issues or topics relating to the study you would like to discuss?

- Lower speed limit on Sandario between Picture Rocks and Aura Valley roads.
- Lower the speed limits!
- The speed limit is too high on Rudasill Road.
- Make Sandario safer from Manville north to Twin Peaks.
- Federal, state, county and local governments need to all work together for a long range transportation plan.
- Many animals die on Picture Rocks Road and National Park.
- I suggest you only allow residential and charge park visitors a toll.
- This area (Picture Rocks) needs a detailed boundary, roadway, easement, topography street address and maps.

Public Meeting One Summary

- Study area needs to include Picture Rocks Road within Saguaro National Monument to be effective for issues regarding roadways, pedestrians, bicycles. Especially true for roadway shoulders, all weather cross drainage and bicycles.
- The study area boundaries make absolutely no sense for either Picture Rocks Rd or Sandario Rd. if you don't include those stretches of roadway within Saguaro National Monument. Don't understand how anyone could propose studying improvements to these two major travel conduits if nothing done within Saguaro National Monument. Sounds like ADOT of old!!!
- County unmaintained roads are used by county vehicles this needs o be changed.
- About 1/3 of the CYPR meeting would use about at least once a week. Assuming this is a cross-section that would be about 3000 rides per week, over 15,000 annual 2-way 30,000 one way trips.
- How do residents go about brining abandoned county roads back up to standard that have not been maintained by the county?

Appendix A

Picture Rocks Multimodal Transportation Study

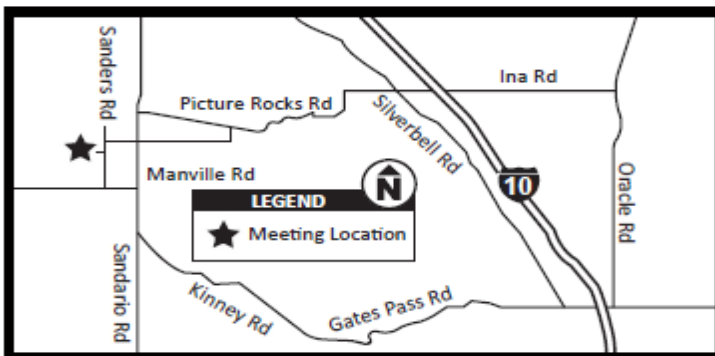
Public Open House

Pima County, in collaboration with the Arizona Department of Transportation (ADOT) Planning Assistance for Rural Areas Program, is conducting a study to identify the most critical transportation needs of the Picture Rocks community. The study will recommend a program of improvement projects to address those needs and to serve as a guide for community and economic development. Study recommendations will address multiple modes of transportation including roadways, bicyclists, pedestrians and transit service.

We want your input on the current conditions and future transportation needs within the Picture Rocks area

Join us on **Tuesday, Feb.18, 2014, from 5 to 7 p.m.** at a public open house to learn more about the study and share your ideas on Picture Rocks' transportation needs. A presentation to the Citizens for Picture Rocks Community Association will be made following the open house at 7 p.m.

Picture Rocks Community Center
5615 N Sanders Road, Tucson, AZ 85743



If you require special assistance in order to participate in the public meeting, please contact projects@azdot.gov or 855.712.8530. Requests should be made as soon as possible to allow time to arrange the accommodation.

14-019

ADOT

FOR MORE INFORMATION:
855.712.8530
azdot.gov/picturerocks

Appendix B



**Picture Rocks Multimodal Transportation Study
Comment Form**

What are the highest priority transportation needs within the Picture Rocks area? Please consider:

Roadways:

Intersections:

Pedestrian (Sidewalks, Pathways, Trails)



Bicycle (Bike Lanes, Shoulders, Paths, Trails)

Transit Service

Do you have any other issues or topics relating to the study you would like to discuss?

Thank you for filling out this comment Form. Your responses are important to help guide future transportation improvements. Please return this comment form to a project team representative, email your comments to: projects@azdot.gov, or mail to:

*Arizona Department of Transportation
Attention: Tony Staffaroni
1655 W Jackson St MD: 126F
Phoenix, AZ 85007*

Picture Rocks Multimodal Transportation Study

May 2014

Prepared by
Arizona Department of Transportation

Introduction

The purpose of this project is to identify the most critical transportation infrastructure needs within the Picture Rocks study area limits and to recommend a program of improvement projects to address those needs. To do this, the project team will take into consideration roadway safety, regional access and mobility, bicycle and pedestrian safety and mobility and rural transit opportunities. The study will also serve as a guide for community and economic development, project funding applications and grants, and project implementation.

Public Meeting

To inform and involve community members of the study, ADOT hosted a public open house at the Picture Rocks Community Center on Tuesday, May 20, 2014 from 5-7 p.m. Staff present at the meeting included Brent Crowther (Kimley-Horn), Matt Carpenter (ADOT) and Pam Mosley (Pima County). In addition to the open house, there was an opportunity for Q&A, and comments on the proposed improvement projects. In total, 16 members of the community were in attendance and signed-in.

Newspaper Advertisement

A newspaper advertisement providing the date and location of the public meeting was published in the following newspaper:

- Arizona Daily Star (Northwest Section- May 8 and 15, 2014)

A copy of the advertisement can be found in Appendix A.

Meeting Materials

Display boards were available for review at the open house and a comment form was provided to each attendee of the meeting.

A copy of the comment form can be found in Appendix B of this report.

Comment Form Summary

The following comments were received and returned via the comment form that was provided at the open house. All comments received are included in this summary.

Please provide your input and comments on the following as presented in the respective display boards:

Project #1: Sandario Road Improvements

- OK
- Shared use path from high school to Picture Rock intersection very important!

Public Meeting Two Summary

Project #2: Picture Rocks Road Improvements

- Biggest problem is east of SNP-that sharp dip where many accidents occur.
- Is there room for left-turn lanes? Any other alternative to creating safe turns off PR?

Project #3 Rudasill Road Improvements

- Van Ark does not go through to Rudasill. Would need to go to Tula. Part of Rudasill is very narrow and not striped.
- OK-especially need flashing light at Rudasill and Sandario.
- This needs to go up to Tula which is only road that goes through to Picture Rocks.

Project #4 Manville Road/Sandario Road Intersection Improvements

- OK

Project #5 Manville Road Drainage Mitigation Project

- I invite you out to the Brantley Wash on Manville Road at night after a good rain to see how dangerous it is for anyone to cross. Visibility is only what your headlights can provide. Many times I am not able to go home after work and have to turn around and take Avra Valley Road to Anway to get home which is way out of the way. A projection of 11-20 years to address this is inexcusable. This puts hundreds if not thousands of families that live at the end of Manville stranded. Every summer/winter you will find stranded cars on the side of the road. The fire dept. has rescued many people out of this wash. There have been casualties.

Project #6 Anway Road Drainage Mitigation Project

- No comments received

Project #7 Avra Valley Road Drainage Mitigation Project

- No comments received

Project #8 Sandario Road Drainage Mitigation Project

- No comments received

Do you have any other issues or topics relating to this study you would like to discuss?

- No comments received

Appendix A

Picture Rocks Multimodal Transportation Study

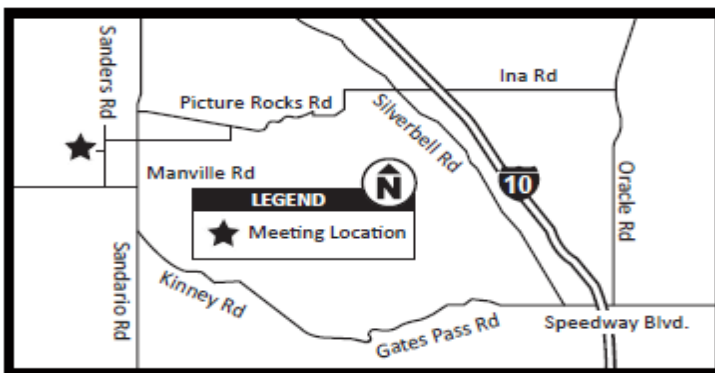
Public Open House

Pima County, in collaboration with the Arizona Department of Transportation (ADOT) Planning Assistance for Rural Areas (PARA) Program, is conducting a study to identify the most critical transportation needs of the Picture Rocks community. The study will recommend a program of improvement projects to address those needs and to serve as a guide for community and economic development. Study recommendations will address multiple modes of transportation including roadways, bicyclists, pedestrians and transit service.

We want your input on the recommended transportation improvements within the Picture Rocks area

Join us on **Tuesday, May 20, 2014, from 5 to 7 p.m.** at a public open house to learn more about the recommended improvement projects and to provide your feedback on those recommendations.

Picture Rocks Community Center
5615 N Sanders Road, Tucson, AZ 85743



If you require special assistance in order to participate in the public meeting, please contact projects@azdot.gov or 855.712.8530. Requests should be made as soon as possible to allow time to arrange the accommodation.

14-202



FOR MORE INFORMATION:
855.712.8530
azdot.gov/PictureRocks

Appendix B

Picture Rocks Multimodal Transportation Study

COMMENT FORM

Please provide your input and comments on the following as presented in the respective display boards:

- Project #1: Sandario Road Improvements

- Project #2: Picture Rocks Road Improvements

- Project #3: Rudasill Road Improvements

- Project #4: Manville Road/Sandario Road Intersection Improvements

- Project #5: Manville Road Drainage Mitigation Project

- Project #6: Anway Road Drainage Mitigation Project



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