Germann Road Corridor Improvement Study

Power Road to Ironwood Road

A Planning Assistance for Rural Areas Study

FINAL REPORT

Prepared for

ADOT MULTIMODAL PLANNING DIVISION

and the following Project Partners

Town of Queen Creek
City of Mesa
Town of Gilbert
Maricopa County Department of Transportation (MCDOT)
Flood Control District of Maricopa County (FCDMC)
Pinal County Department of Transportation (PCDOT)
Maricopa Association of Governments (MAG)
Central Arizona Governments (CAG)
Union Pacific Railroad (UPRR)

Prepared by
Wilson & Company
410 N. 44th Street, Suite 460
Phoenix, AZ 85008

WILSON & COMPANY ENGINEERS & ARCHITECTS

In association with
TRA, Inc.
3844 East Indian School Road
Phoenix, AZ 85018

TRA

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1.0 INTRODUCTION

A corridor improvement study (CIS) is a long-range transportation planning study aimed at identifying the ultimate needs for a particular roadway. The Germann Road CIS has been undertaken to examine the transportation demands and future right-of-way (ROW) requirements of a portion of East Germann Road located between South Power Road in the town of Queen Creek in Maricopa County, and North Ironwood Road in northern Pinal County (Figure 1-1). This chapter provides an overview of the project purpose, a statement of the problem being addressed, a discussion of key issues and challenges, and the study goals and objectives.

1.1 PROJECT OVERVIEW

The principal focus of this CIS is the determination of future travel demands and identification of transportation improvements needed to satisfy those demands. A CIS helps preserve corridors for future roadway development, thereby providing guidance to communities and developers as actual construction of new development occurs. The CIS establishes the facility type, number of lanes, ROW needs, and general alignment required to accommodate forecast traffic growth and enhance safety on Germann Road between Power and Ironwood roads. It also provides the Arizona Department of Transportation (ADOT), Maricopa County Department of Transportation (MCDOT), the town of Queen Creek, the city of Mesa, and other jurisdictions and major stakeholders with a general timeframe within which anticipated needs will manifest. Thus, the analyses address the long-range demands and future roadway improvements that ultimately are needed under buildout conditions. (Buildout assumes development fulfilling expectations of the general plans for communities in the study area that is likely to occur in the next 40 to 60 years.)

1.2 PURPOSE AND NEED

The planned extension of Germann Road to the east from Meridian Road to Ironwood Road, in concert with growth and development already projected to occur in and around the existing corridor, is anticipated to alter travel patterns. Although much of the study area is sparsely developed today, the zoning and land use plans of the town of Queen Creek and city of Mesa indicate a six-lane roadway is likely to be required to serve future travel demand when land adjacent to Germann Road is fully developed. Planning today for the future minimizes the potential effects of future roadway widening by ensuring that adequate public ROW is available.

Implementing improvements to accommodate expected growth requires a coordinated, cooperative effort involving state, regional, and local entities. Therefore, it is reasonable that an evaluation of potential future growth and attendant effects involve ADOT, the town of Queen Creek, the city of Mesa, the town of Gilbert, MCDOT, Pinal County Department of Transportation (PCDOT), Maricopa Association of Governments (MAG), Central Arizona

FIGURE 1-1 PROJECT LOCATION AND STUDY AREA

Map prepared by: Wilson & Company, September, 2011.

LEGEND

Study Area Boundary

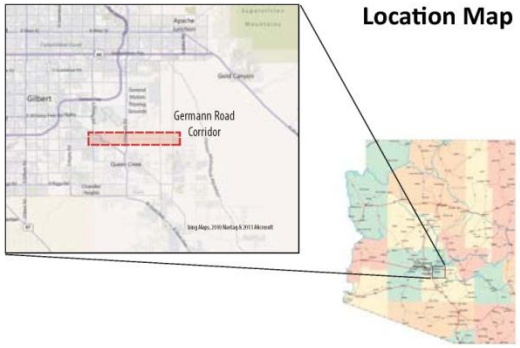
Jurisdictional Boundaries

- Town of Queen Creek
- City of Mesa
- Town of Gilbert
- County Boundary

0 1/2 1 Miles

NORTH

Location Map



Governments (CAG), and other agencies and developers, as required. Specific, identifiable issues already have been noted during previous planning studies, as described below.

1.2.1. Sossaman Road Grade Separation at the Union Pacific Railroad

A key corollary objective of this corridor study is the establishment of future ROW needs for the planned grade-separated crossing at South Sossaman Road and the Union Pacific Railroad (UPRR) (Figure 1-2). Conceptual design alternatives for improvement of the Germann Road/Sossaman Road intersection and potential grade separation from the UPRR track account for the geometrics of the two arterial roadways, the UPRR track, the Rittenhouse Road Drain, and proximity of a grade-separated intersection to East Rittenhouse Road.

FIGURE 1-2
GERMANN ROAD/SOSSAMAN ROAD INTERSECTION

The UPRR track has a southeast-by-northwest alignment. The presence of the track has dictated the current location and discontinuity of Germann Road. This track is part of the UPRR Phoenix Subdivision and is under consideration for future commuter rail service. Rail operations on the line are controlled through direct traffic control (DTC) and automatic block

signaling (ABS), permitting a maximum operating speed of 60 miles per hour (mph) for passenger trains and 40 mph for freight trains. UPRR ROW is 240 feet through this segment of its line, and becomes 285 feet in the immediate area of the Germann Road/Sossaman Road intersection. Figure 1-2 shows how Germann Road terminates at Rittenhouse Road west of the track.

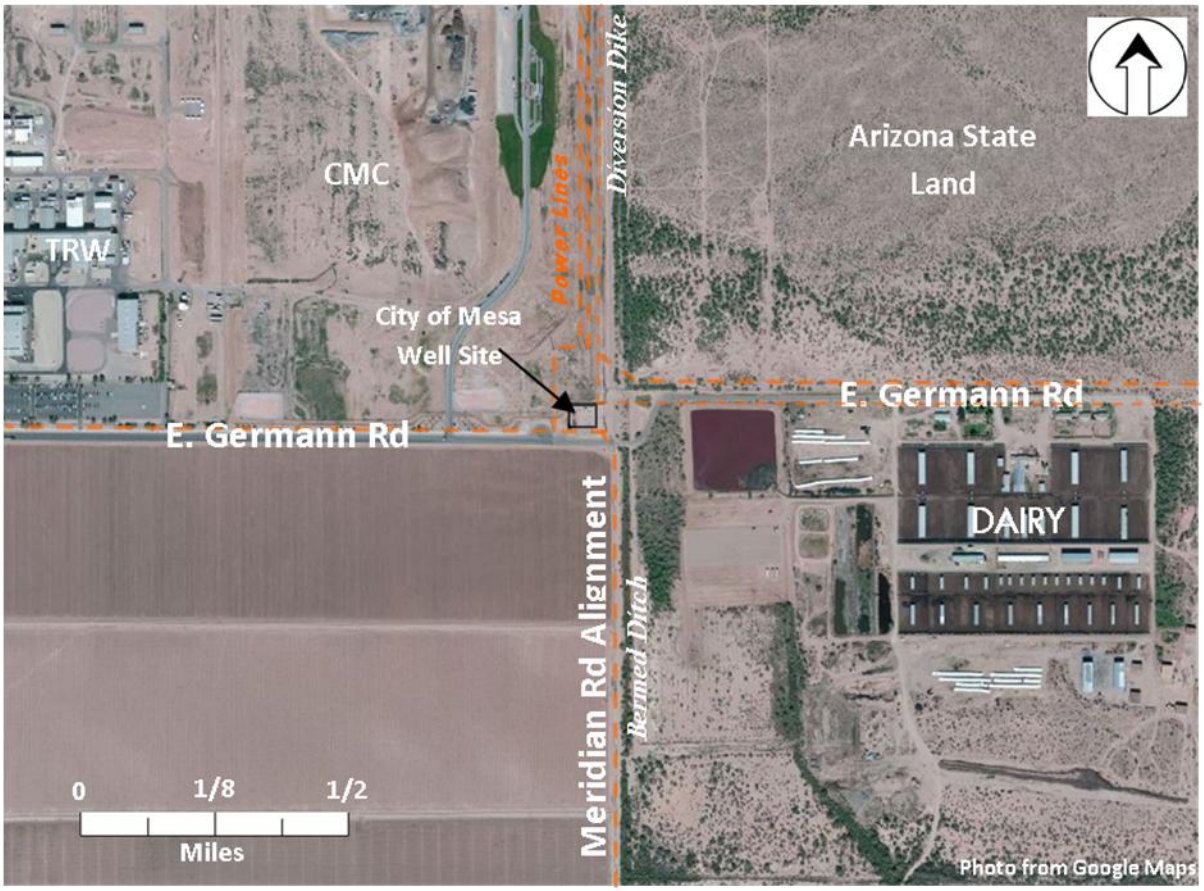
The Rittenhouse Road Drain runs parallel to the north side of the UPRR ROW. This facility was constructed by the Flood Control District of Maricopa County (FCDMC) based on a recommendation of the Queen Creek Area Drainage Master Study (ADMS) in 1990. The drain consists of an earthen channel running from just west of the Ellsworth Road/Queen Creek Road intersection to the East Maricopa Floodway west of Power Road. It provides 100-year flood protection to the Queen Creek School (east of Ellsworth Road) and reduces the floodplain on the north side of the railroad corridor. The FCDMC was the lead agency for project construction and is responsible for operation and maintenance of the drain. The drain was constructed to avoid impacting the Germann Road/Sossaman Road intersection; consequently, there is a bend in it at this location.

Rittenhouse Road intersects Germann Road 0.25 miles west of the intersection of Sossaman Road and the UPRR track. This roadway curves south and then east to intersect Sossaman Road south of its intersection with the UPRR track. A portion of the Cortina subdivision is located in the southeast quadrant of the Sossaman Road/UPRR intersection. Combined with the presence of the Rittenhouse Road Drain, this mosaic of development features needs to be carefully evaluated to determine the most effective and efficient means of extending Germann Road east to Sossaman Road.

1.2.2. Germann Road/Meridian Road Intersection

A second issue involving roadway geometrics in the Germann Road corridor is present at Meridian Road. Meridian Road is named for a north-south survey line established during the U.S. Coast and Geodetic Survey and identifies the boundary between Township 2 South/Range 7 East (T2S/R7E) and T2S/ Range 8 East (R8E). The Germann Road alignment shifts approximately 250 feet to the north, due to adjustments made during the survey (refer to Figure 1-3). In addition to the jog in the alignment, there is an established well and pump station belonging to the city of Mesa located in the northwest quadrant of the intersection of Germann Road with the Meridian Road alignment. A large settling pond for a nearby dairy is located in the southeast quadrant. The Maricopa County assessor records show the established Meridian Road ROW south of Germann Road as 55 feet whereas the ROW north of Germann Road is 75 feet. Added to these two matters of alignment and ROW is the convergence of major east-west and north-south, high-voltage power corridors at the intersection and two distribution lines. Also parallel to the Meridian Road alignment is a bermed drainage ditch on the east side, carrying runoff to a diversion dike at Moeur Road, approximately 0.5 miles north of Germann Road.

FIGURE 1-3
GERMANN ROAD/MERIDIAN INTERSECTION



1.3 STUDY GOALS AND OBJECTIVES

The ultimate goal of a CIS is to define the preferred roadway alignment so that sufficient ROW can be preserved to accommodate future roadway needs. Specific goals and objectives are adopted to define and guide the planning and engineering studies that support the Germann Road CIS. These goals and objectives are as follows:

- Document existing corridor characteristics to identify constraints that may affect roadway alignments.
- Determine future travel demands in the corridor.
- Identify the facility type/number of lanes needed to address travel demands.
- Make a determination of the regional basis, that is, functional classification, for the roadway.

- Identify and evaluate feasible roadway design/improvement alternatives;
- Determine a preferred alignment.
- Establish a roadway footprint and ROW requirement.
- Communicate findings and conclusions with the town of Queen Creek, the city of Mesa, MCDOT, stakeholders, and the public.
- Build consensus regarding the preferred roadway design/improvement alternative.
- Achieve a balanced access, mobility, and traffic management strategy that promotes safety and efficiency of travel for existing and future residents.
- Develop a phased implementation plan and recommendations for implementation actions by study participants geared to a timeline for integrating elements of the recommended design/improvement alternative within the corridor.

1.4 STUDY PROCESS

Several key issues, as referenced above, need to be understood, addressed, and resolved to successfully develop conceptual and candidate alignment alternatives and recommend a preferred corridor alignment. Therefore, the study process followed a two-phase approach, addressing general tasks discussed below. Review and feedback from the Technical Advisory Group (TAG) at key project milestones were essential in guiding the process.

1.4.1. Phase 1 – Develop Base Data

Existing and Future Corridor Conditions

The work effort began with comprehensive definitions of study area characteristics. Detailed data were gathered relative to existing and future land use and zoning, major physical features of the corridor study area (both natural and manmade), and operational characteristics of the existing and future roadway network. A large portion of the data and information required were obtained from review of relevant previous reports and studies. Available information and data were supplemented by interviews with key project stakeholders and field review, as necessary. The Project Team utilized assembled information and data to prepare base maps, identify corridor characteristics, and establish potential alignment constraints. These maps assisted in developing conceptual alignment alternatives and identifying potential fatal flaws. All information, data, analysis results, and findings associated with this phase of the study are contained herein.

Environmental Overview

An environmental overview (EO) was conducted early in the planning and design process to identify and define potential issues, concerns, and opportunities associated with sensitive environmental resources. The goal of this effort was to assist the Project Team and

stakeholders in determining environmental issues that may be encountered, the regulatory process regarding those issues, and potential mitigation requirements. The EO identifies notable constraints and opportunities, thereby contributing to development of a range of candidate alternatives. The EO includes a cultural resource inventory, a preliminary initial site assessment for a determination of the possible presence of hazardous materials, a biological review, identification of potential Clean Water Act jurisdictional waters and permitting requirements, identification of sensitive noise receptors, air quality, and a compilation of socioeconomic data to identify the presence of protected populations and the potential for Environmental Justice impacts.

Conceptual Drainage Report

A conceptual drainage analysis was conducted to provide an overview of drainage issues and constraints within the study area. The analysis maximized the use of existing hydrology and floodplain studies to establish estimates of 50-year and 100-year discharges. Detailed drainage data was available to assist the Project Team in reducing the number of cross drainage structures and avoiding complicated drainage conditions, where feasible.

1.4.2. Phase 2 – Develop Candidate Transportation Improvement Alternatives and Identify a Preferred Roadway Design

Information and data developed during Phase 1 was utilized to define conceptual transportation improvement alternatives for further study. Schematics were developed for each of the candidate transportation improvement alternatives and detailed conceptual engineering design drawings prepared. These planning tools were employed to develop detailed impact assessments for each alternative. During this phase of the study, travel demand modeling was conducted and a segment-based analysis of future levels of service was performed for future planning year horizons. As determined necessary, more detailed studies were conducted relative to focused analysis areas (e.g., intersections). Preliminary conceptual engineering cost estimates were developed.

A two-level screening process followed to assess the desirability and effectiveness of potential improvement alternatives. The first-level screening evaluated general connectivity issues and constraints, particularly as this matter related to the grade separation of Sossaman Road and the future intersection with Germann Road. Subsequent to agreement among project partners regarding study area and regional connectivity matters, the evaluation of project alternatives focused on the Germann Road/Sossaman Road intersection options and the matter of the jog in Germann Road at Meridian Road.

1.4.3. Public Involvement

Successful completion of this CIS required execution of a comprehensive public involvement process. Therefore, the Germann Road CIS involved a cooperative planning process including public agency staff from each of the planning partners, key stakeholders, and the

general public. The ADOT Multimodal Planning Division (MPD) and Communication Division worked collaboratively with affected jurisdictions and stakeholders to build consensus regarding study findings and recommendations. Information was presented to and feedback solicited from affected agencies and organizations, stakeholders, and the public.

1.5 ORGANIZATION OF THIS REPORT

This final report on the Germann Road CIS presents information and data supporting the identification, assessment, and selection of a preferred transportation improvement scenario for the Germann Road corridor between South Power Road in Queen Creek and North Ironwood Road in northern Pinal County. This report documents the general social, physical, and environmental conditions of the study area and presents information relating to special topics of interest to ADOT, the town of Queen Creek, the city of Mesa, and other jurisdictions with interests relating to actions in the study area, stakeholders, and the public. In addition, it presents an evaluation of the Germann Road corridor and connecting roadway network. The report also identifies current and expected future connectivity and mobility deficiencies and establishes the basis for determining future multimodal transportation needs that have been translated into conceptual engineering solutions.

Following this introductory chapter, the report contains the following chapters focused on presenting detailed information regarding existing and future conditions in the study area:

- Chapter 2.0 – "Corridor Features and Characteristics"

  Topics include: location and topography, existing and future socioeconomic data, existing land use, future land use, Environmental Justice

- Chapter 3.0 – "Existing Transportation Network"

  Topics include: existing corridor roadway network and intersections, posted speed limits, crash and safety issues, public transportation, pedestrian and bicycle facilities

- Chapter 4.0 – "Environmental Summary"

  Topics include: biological resources, water resources, air quality, noise, visual and aesthetic qualities, hazardous materials, cultural resources, Section 4(f) properties

- Chapter 5.0 – "Drainage Summary"

  Topics include: hydrology, existing drainage and floodplains, irrigation facilities, storm drainage facilities

- Chapter 6.0 – "Utilities Summary"

  Topics include: electric, gas, water, sewer, fiber optics, telephone

- Chapter 7.0 – "Committed, Programmed, and Planned Transportation Improvements"

Topics include: committed and programmed transportation improvements, planned improvements, travel demand analysis, bicycle and pedestrian facilities, proposed future roadway network, base future operating conditions

- Chapter 8.0 – "Alternatives Development and Evaluation"

  Topics include: connectivity analysis and first-level screening, conceptual intersection treatments and second-level screening of alternatives, Germann Road alignment

- Chapter 9.0 – "Access Management Considerations"

  Topics include: existing access, future access, MCDOT access guidelines, and Pinal County access guidelines

- Chapter 10.0 – "Public Involvement"

  Topics include: Technical Advisory Group, public meetings, outreach methods, public comments

2.0 CORRIDOR FEATURES AND CHARACTERISTICS

This chapter provides detailed information and data describing the physical features and characteristics of the Germann Road corridor between Power Road in eastern Maricopa County and Ironwood Road in northern Pinal County.

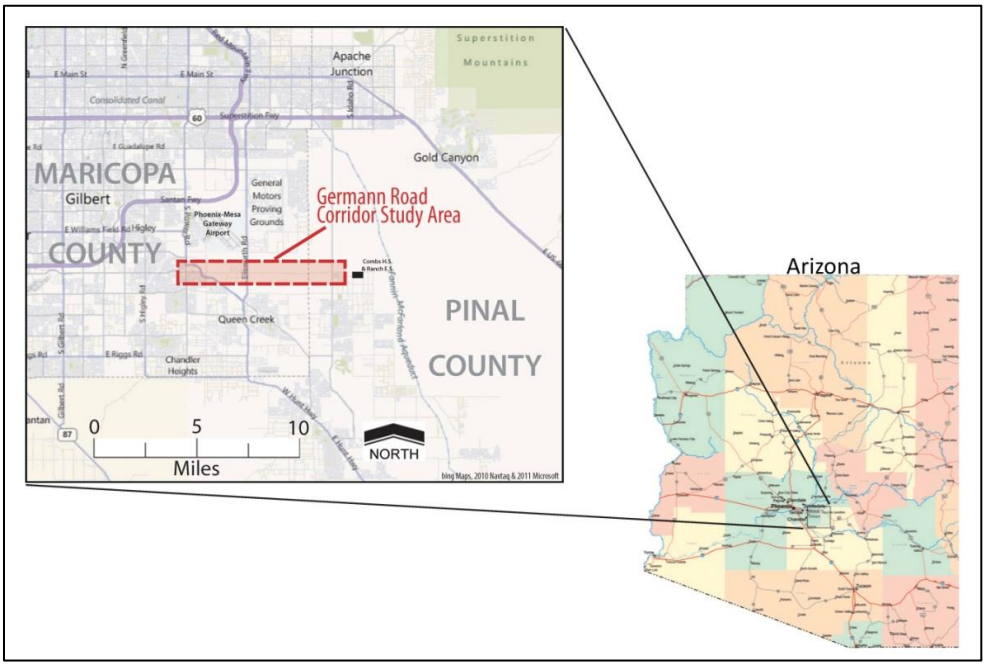
2.1 PHYSICAL FEATURES

This section highlights the physical features of the study area that define the characteristics of the land and its capacity for development, including topography, physiography, hydrology, and drainage conditions.

2.1.1. Location

The study area occupies an eight-square-mile portion of eastern Maricopa County, extending into north Pinal County (Figure 2-1). The corridor is one mile south of the Phoenix-Mesa Gateway Airport and the former General Motors Proving Grounds. The former is being developed to play a significant role in regional aviation needs, and the latter was purchased several years ago with the intent of creating a major mixed-use development. Two miles south of the Germann Road corridor is the Queen Creek Town Center at Ellsworth and Ocotillo roads. Directly west of the corridor are the rapidly growing town of Gilbert and community of Higley. Rural subdivisions characterize the area in Pinal County east of the corridor, although the new Combs High School and Ranch Elementary School, 0.5 miles east of Ironwood Road, indicate the area is poised for growth.

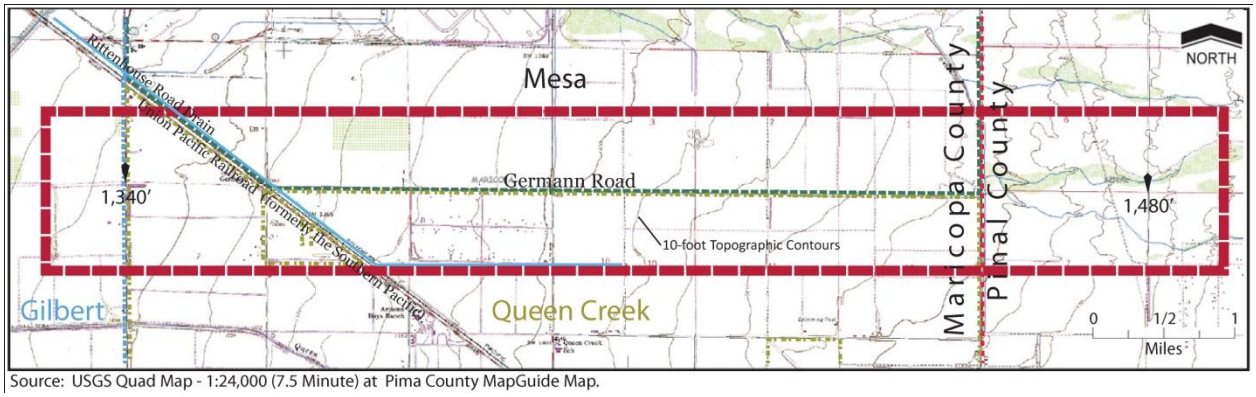
FIGURE 2-1 STUDY AREA GEOGRAPHICAL SETTING



2.1.2. Topography

The Germann Road project area is seven miles in length with a gentle slope from east to west (Figure 2-2). The local elevation is 1,480 feet above mean sea level (ABMS) at Ironwood Road, descending to 1,340 feet ABMS at Power Road. There are no significant topographic features within the corridor. Two physical features are prominent: Germann Road crosses the Rittenhouse Road Drain just east of Sossaman Road and will need to cross the UPRR corridor just west of Sossaman Road.

FIGURE 2-2 STUDY AREA TOPOGRAPHY



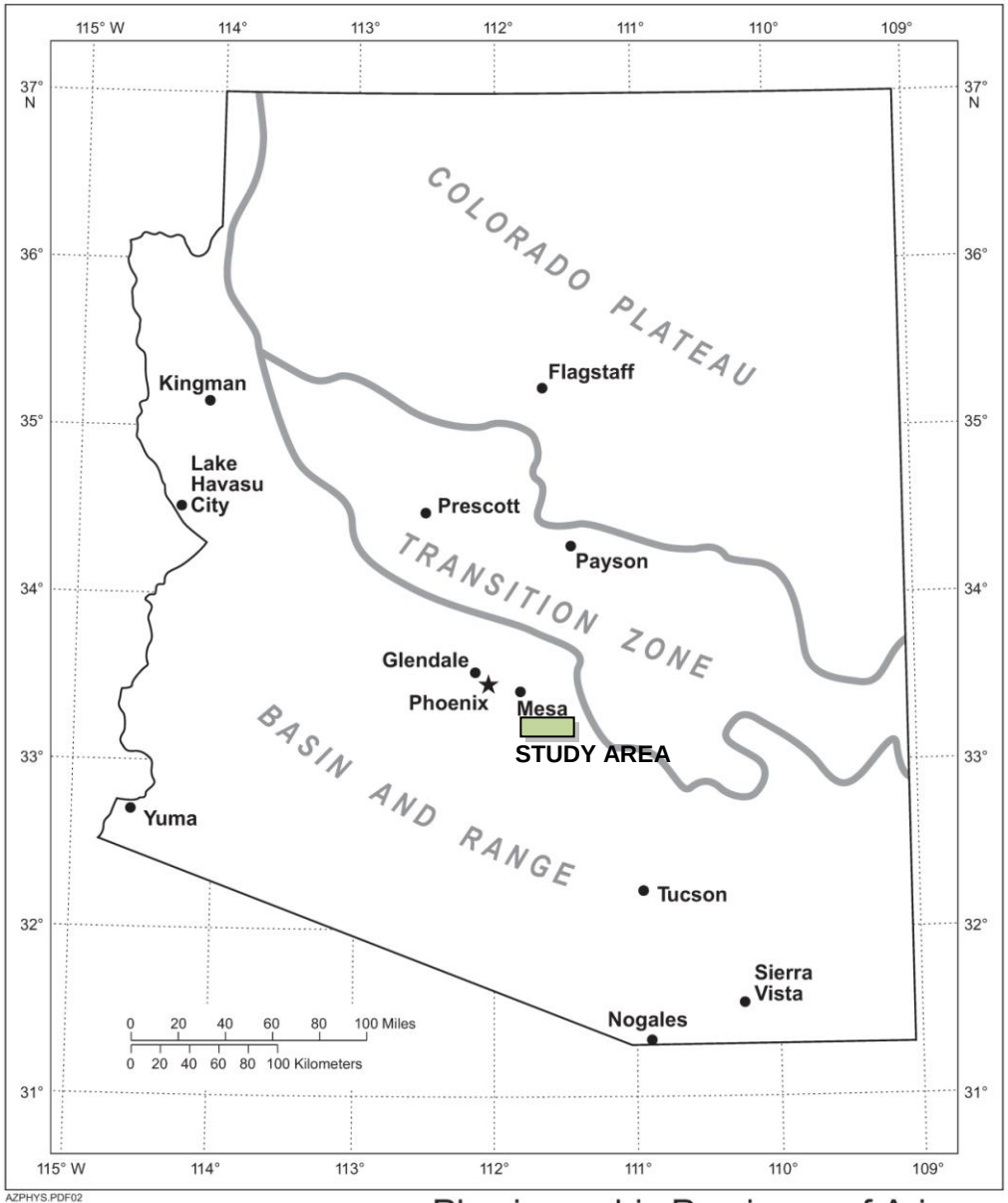
Source: USGS Quad Map - 1:24,000 (7.5 Minute) at Pima County MapGuide Map.

2.1.3. Physiography

Physiography may be considered the definition of broad-scale geographic subdivisions based on terrain texture, rock type, and geologic structure and history. Arizona is dominated by two physiographic regions–the Colorado Plateau and the Basin and Range Province–which are separated by a transition zone, a northwest-trending escarpment of mountainous terrain that includes the Rim Country (Figure 2-3). The study area is located in the southern Basin and Range Province, which is characterized by steep, linear mountain ranges rising up to heights greater than 9,000 feet (2,700 meters) interspersed with extensive desert basins. The biological islands with cool-climate plants and animals associated with some mountain ranges contrast sharply with the Sonoran Desert, although it also is home to a diverse population of flora and fauna due to the two rainy seasons.

The study area is situated on the southwest-trending alluvial fan of the Superstition Mountains to the east and northeast. Lands within the study area are flat, with small, shallow drainages flowing east to west through the study area. According to information developed for the Signal Butte Road corridor improvement study, two soil associations characterized the study area: Torrifluvents and Mohall-Vecont-Pinamt. These are well-drained soils on deep, nearly level to gently sloping lands. Torrifluvents are stratified and formed on floodplains and lower alluvial fans. Mohall-Vecont-Pinamt soils are moderately fine and fine-textured and gravely, moderately fine-textured, and formed on broad valley plains (Hendricks 1985).

FIGURE 2-3 MAJOR PHYSIOGRAPHIC REGIONS OF ARIZONA



2.2 SOCIOECONOMIC CHARACTERISTICS

This section provides information and data identifying land ownership, population and employment characteristics, and existing and future land use. The final section addresses concerns associated with the potential for disproportionate impacts on low-income, minority, and other sensitive population groups within the study area.

2.2.1. Land Ownership

The majority of land in the study area is privately controlled (Figure 2-4). Four public entities own scattered parcels. Maricopa County and the FCDMC own linear segments of land that cross or directly impact potential long-term roadway improvements along the Germann Road corridor.

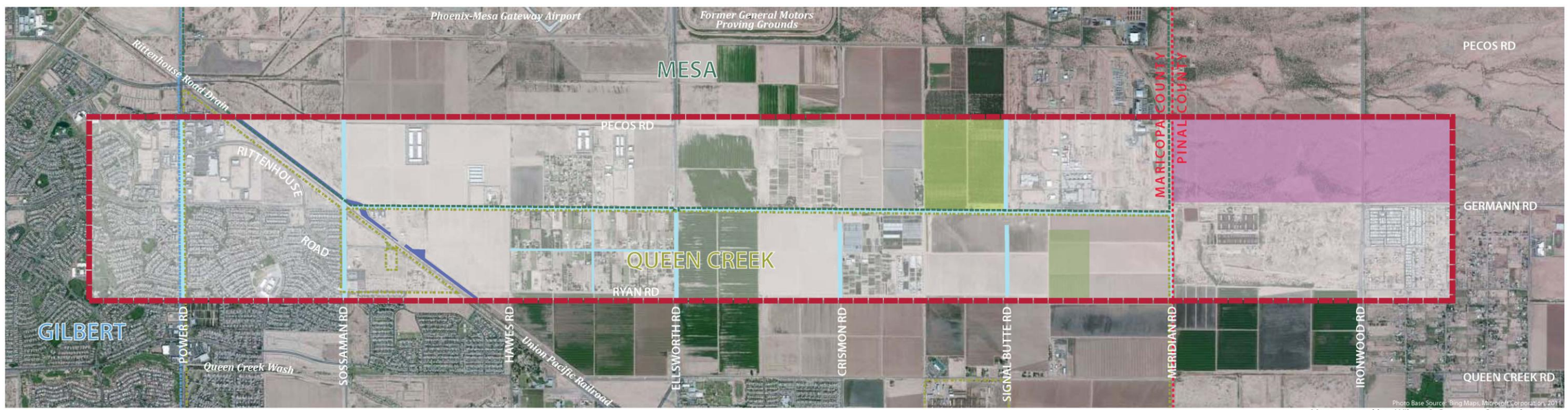
2.2.2. Population and Employment Data

Estimates of existing and future population and employment growth were developed by examining MAG 2007 projections for Maricopa County and portions of Pinal County. MAG identified 14 socioeconomic analysis zones (SAZs) that are coincident in part with the study area. Year 2005 and future Year 2035 population and employment figures values were determined from these sources for each transportation analysis zone (TAZ). Figures for Years 2010, 2015, and 2020 then were calculated through extrapolation of the Year 2005 through Year 2035 trend. Because only part of each TAZ lies within the study area, figures were apportioned to reflect the area of the TAZ within the study area. The extrapolated values for Year 2010 population and employment were then adjusted to reflect actual development in the study area at this time. This was accomplished through review of aerial imagery provided by MCDOT and available on the Internet through Bing Maps.

Table 2-1 shows the estimated existing (2010) and future population associated with the Germann Road corridor study area. It is readily apparent that limited residential growth is expected in the Mesa portion of the study area, which is slated in future land use plans to be devoted to industrial enterprises. In contrast, substantial residential growth is expected in portions of the study area in Queen Creek, Gilbert, and Pinal County, where the population is projected to more than double. The study area as a whole is projected to experience approximately a 50 percent increase in population.

Table 2-2 shows the estimated existing and future employment for the study area. A large portion of the study area is slated for industrial and commercial land uses; therefore, an employment increase of over 300 percent is projected.

FIGURE 2-4 LAND OWNERSHIP



Map prepared by: Wilson & Company, September, 2011.

LEGEND

Study Area Boundary

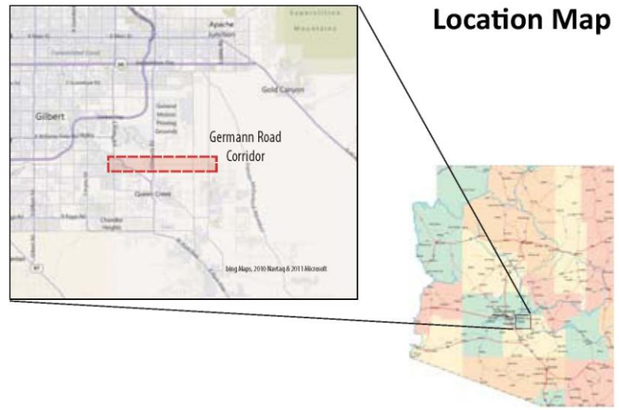
Jurisdictional Boundaries
- Town of Queen Creek
- City of Mesa
- Town of Gilbert
- County Boundary

Land Ownership
- Private Land
- Town of Queen Creek
- City of Mesa
- Maricopa County
- Flood Control District of Maricopa County
- Arizona State Land Department

0 1/2 1 Miles

NORTH

Location Map



Source: Maricopa County Assessor Parcel Visualization; 2007 Land Status Map of Pinal County, Pinal County Assessor; and City of Mesa Planning and Zoning GIS Mapping Portal.

TABLE 2-1
EXISTING AND FUTURE POPULATION

Jurisdiction	YEAR			
	2010	2015	2020	2035
Queen Creek	2,022	2,564	3,105	4,728
Mesa	236	237	239	242
Gilbert	1,724	2,104	2,484	3,623
Pinal County	844	n/a	n/a	n/a

Prepared by Wilson & Company, November 2011.

Source: Socioeconomic Projections of Population, Housing and Employment by Municipal Planning Area and Regional Analysis Zone, TAZi03, Maricopa Association of Governments (MAG), May 2007.
Note: MAG projections by TAZ are adjusted to reflect the current level of development in the study area in 2010 and then extrapolated to 2015, 2020, and 2035 based on MAG original growth rates for each TAZ.

TABLE 2-2
EXISTING AND FUTURE EMPLOYMENT

Jurisdiction	YEAR			
	2010	2015	2020	2035
Queen Creek	719	1,068	1,432	2,502
Mesa	943	1,282	1,622	2,640
Gilbert	124	213	256	383
Pinal County	8	n/a	n/a	n/a

Prepared by Wilson & Company, November 2011.

Source: Socioeconomic Projections of Population, Housing and Employment by Municipal Planning Area and Regional Analysis Zone, TAZi03, Maricopa Association of Governments (MAG), May 2007.
Note: MAG projections by TAZ are adjusted to reflect the current level of development in the study area in 2010 and then extrapolated to 2015, 2020, and 2035 based on MAG original growth rates for each TAZ.

2.2.3. Zoning and Development

Zoning

Three separate municipal governments currently assert zoning authority in the study area. Figure 2-5 is a composite of the zoning maps created by these entities. Pinal County's zoning ordinance is currently being updated and , therefore no zoning map designating development types or categories is available. For this information, please refer to sections 2.2.4, "Existing Land Use "and 2.2.5., "Future Land Use" below.

Zoned land in the Maricopa County portion of the study area is almost equally divided between residential and commercial/industrial uses. Residential zoning dominates south of Germann Road and west of 220th Street/Merrill Road. Commercial zoning mostly is concentrated along Power Road, with two corner commercial centers zoned at the Ellsworth Road/Pecos Road intersection.

FIGURE 2-5 EXISTING ZONING

ZONING CODES: TOWN OF GILBERT

GC	General Commercial
MF/M	Multi-Family/Medium Density
NC	Neighborhood Commercial
PF/I	Public Facility/Institutional
SC	Shopping Center
SF-D	Single Family Detached
SF-6	Single Family-6 (Minimum lot size of 6,000 SqFt)
SF-7	Single Family-6 (Minimum lot size of 6,000 SqFt)
SF-8	Single Family-6 (Minimum lot size of 6,000 SqFt)

ZONING CODES: TOWN OF QUEEN CREEK

R-2	Urban Development Type B District - Townhouse
R1-6	Urban Development Type A District (Pre-August 1998)
R1-8	Urban Development Type A District (Pre-August 1998)
R1-9	Urban Development Type A District (9,000 SqFt/Dwelling Unit)
R1-18	Suburban Residential Type B District (18,000 SqFt/Dwelling Unit)
R1-43	Rural Estate District (1 Acre/Dwelling Unit)
C-1	Light Commercial District
C-2	General Commercial District
RC	Recreation and Conservation Zone District
I-1	Light Industrial District
I-2	Heavy Industrial District

ZONING CODES: CITY OF MESA

AG	Agricultural
GI	General Industrial
LI	Light Industrial
LC	Limited Commercial
NC	Neighborhood Commercial
OC	Office Commercial
PS	Public/Semi-Public
RS-43	Residential Single Dwelling District 43 (Minimum Lot Size of 43,560 SqFt)
XXXX	Aviation/Avigation Easement Boundary

ZONING CODES: MARICOPA COUNTY

RU-43	Rural Zoning District - 1 Acre per Dwelling Unit
C-3	General Commercial Zoning District

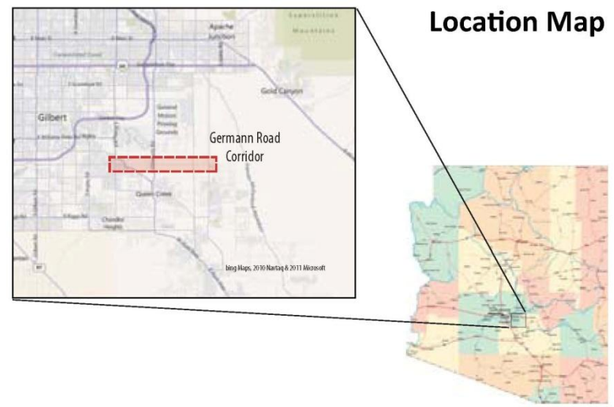
Jurisdictional Boundaries

- Town of Queen Creek
- City of Mesa
- Town of Gilbert
- County Boundary

0 1/4 1/2 Miles

NORTH

Location Map



Sources:
Town of Gilbert Zoning Map, 07/01/2010 & Land Development Code; Town of Queen Creek Zoning Map, 05/26/2009 & Article r, Zoning Distrcits, Zoning Ordinance; City of Mesa Interactive Planning/Zoning Map & Chapter 3, Designation of Zoning Districts, Zoning Map, and Boundaries, Mesa Zoning Ordinance.

Light industrial zoning and agriculture are the principal zones north of Germann Road west of Crismon Road. General and heavy industrial zones are located east of Crismon Road north of Germann Road and east of 220th Street/Merrill Road, south of Germann Road.

Known Active Developments

There are seven known housing developments in the study area. Future development activity is expected to be associated with two subdivisions located within the study area. The known status of each of the seven developments is cited below:

1. Power Ranch/Sunbelt Holdings-DMB Assoc.: 95 percent built out in study area
2. Cortina Subdivision by Fulton Homes: fully built out in study area
3. Remington Heights: 75 percent built out, south of study area
4. La Jara Farms: 96 lots platted: no construction to date
5. Ellsworth Suburban Mini-Farms: fully built out
6. Queens Park: fully built out
7. Barney Family Residential Development: planning stages (see discussion below)

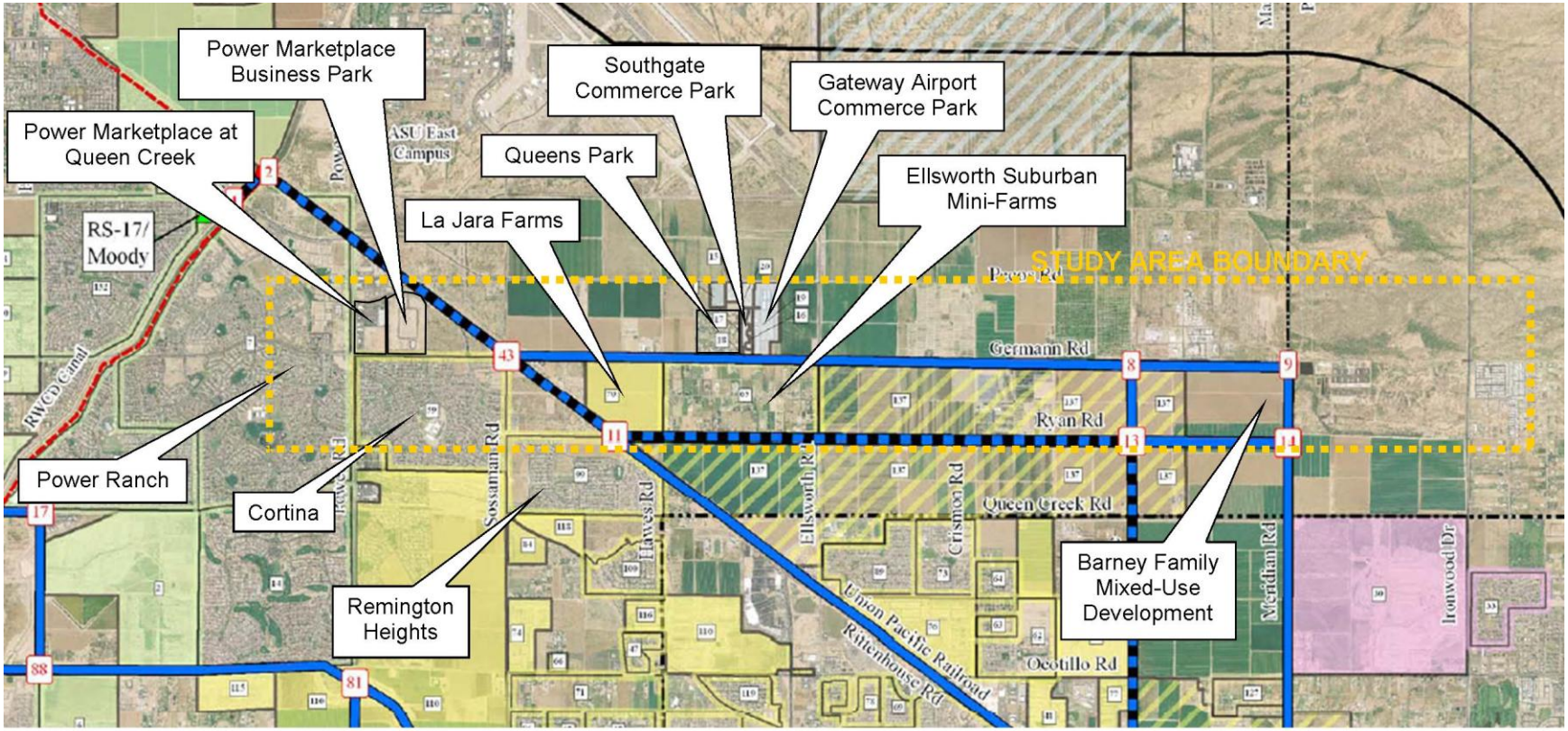
The majority of the land between 220th Street/Merrill Road and Meridian Road is under the control of the Barney family. A general plan amendment in 2009 changed the designation of 275 acres of land fronting Meridian Road between Germann and Queen Creek roads from heavy industrial uses to residential. The proposed development calls for 975 homes. In addition, a minor general plan amendment (GP 10-040) was proposed to amend the transportation element to incorporate realignment and connection of Signal Butte and Meridian roads to reflect this change in zoning associated with Barney Farms. Figure 2-6 shows the locations of these and other active developments in the study area.

2.2.4. Existing Land Use

Current land use within the study area is predominantly devoted to agriculture and silvaculture pursuits (Figure 2-7). The western end of the corridor largely comprises single- and multi-family residential developments. Commercial development is located along Power Road, primarily in the northeast quadrant of the Power Road/Germann Road intersection. Land along the UPRR, Rittenhouse Road Drain, is vacant to Sossaman Road, north of Germann Road. A high-voltage power line runs along the western side of the UPRR tracks.

East of Sossaman Road, there is a mixture of residential, commercial, and agricultural land uses. The UPRR and parallel high-voltage power line, along with the Rittenhouse Road Drain, bisect a one-quarter-mile-square area that is largely vacant. Isolated residential parcels and some commercial parcels are present near the Germann Road/Sossaman Road intersection. The power line runs south along the east side of Sossaman Road to a substation at the northeast corner of Sossaman and Ryan roads.

FIGURE 2-6 KNOWN ACTIVE AND POTENTIAL DEVELOPMENTS



Sources:

- Map, Exhibit H: Existing Plans, SRP Abel-Moody 230kV Transmission Project, Application for a Certificate of Environmental Compatibility.
- Barney Family Mixed-Use Development: Queen Creek General Plan and Map Web site and Gateway Airport, Mesa Oppose Queen Creek Housing Proposal, azcentral.com, April 21, 2010.
- Maricopa County Assessor Interactive Maps.

FIGURE 2-7 EXISTING LAND USE

Map Prepared By: Wilson & Company, September, 2011.

LEGEND

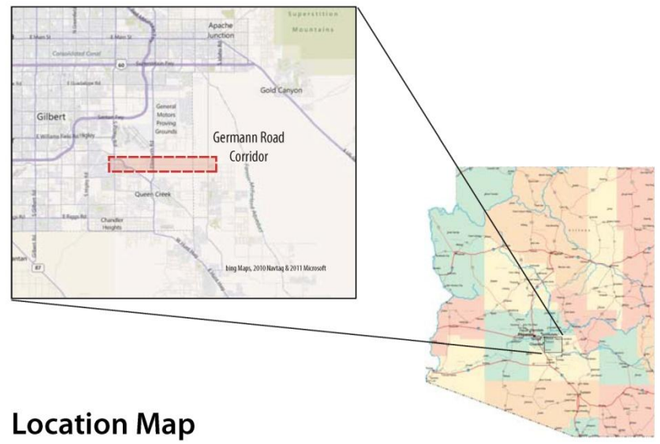
Study Area Boundary

Jurisdictional Boundaries
- Town of Queen Creek
- City of Mesa
- Town of Gilbert

Roadways
- 4-6 Lane Street
- 2-3 Lane Street
- Local Street

Infrastructure
- Railroad
- Drainage Facility
- High-Voltage Power Line
- Aviation Noise Contour Overlay

Generalized Land Use
- Very Low Density Residential
- Low Density Residential
- Medium Density Residential
- Commercial
- Industrial
- Public Facility/Institutional
- Utility
- Agriculture
- Commerical Nursery
- Vacant/Undeveloped/Underdeveloped



Location Map

Agriculture and silvaculture interests generally dominate land uses in the study area to the east of Sossaman Road to Meridian Road. There are isolated commercial parcels on the north side of Germann Road and south side of Pecos Road. The La Jara Farms subdivision is platted with 95 lots directly west of Hawes Road on the south side of Germann Road. Also on the south side of Germann Road between Hawes and Ellsworth roads is the 62-lot Ellsworth Suburban Mini-Farms, a residential development; to the north is Queens Park, a residential development of 49, one-acre lots. Between the Signal Butte Road alignment and Meridian Road on the north side of Germann Road is TRW Vehicle Safety Systems (TRW) and the Commercial Metals Company (CMC), representing the principle industrial activity in the study area.

The eastern end of the corridor (beyond Meridian Road) is mostly vacant. Undeveloped Arizona State Trust land flanks Germann Road on the north. A dairy occupies the southeastern quadrant of the Germann Road/Meridian Road intersection, but there is a one-quarter-mile-square vacant parcel between the dairy and Ironwood Road. Two mobile home communities and low-density suburban residential occupy the southeastern quadrant of Germann and Ironwood roads.

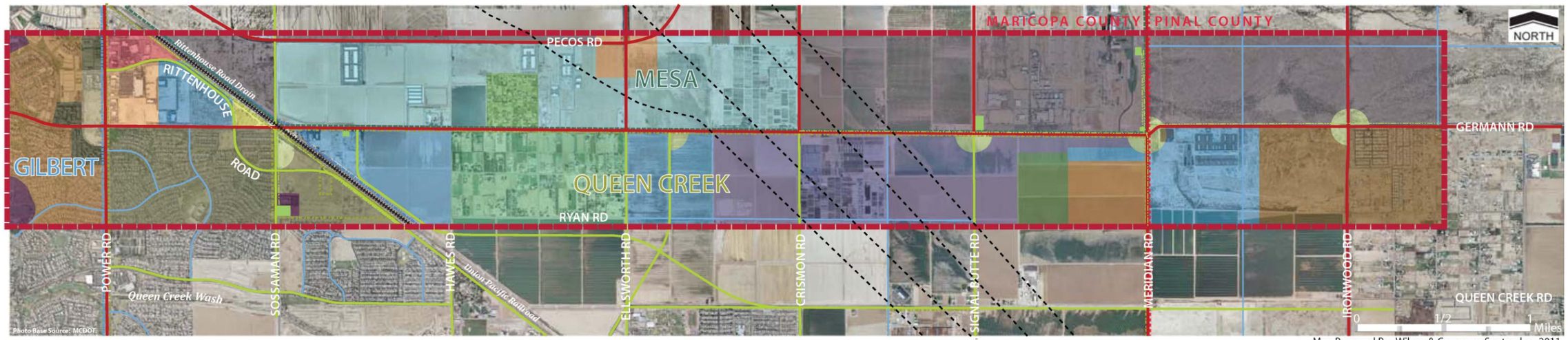
2.2.5. Future Land Use

Future land use, shown in Figure 2-8, was determined through examination of the general plans of the towns of Queen Creek and Gilbert and the city of Mesa. The adopted Municipal Planning Area (MPA) of Queen Creek extends east of Meridian Road to Ironwood Road and north of Germann Road. Therefore, the Queen Creek future land use plan identifies expected land use in this area of Pinal County.

Future land use in the Germann Road corridor study area reflects a mixture of residential- and employment-based activities. Land use north of Germann Road from the UPRR to Suburban Avenue in Pinal County is planned for light industrial and general industrial activities. The exceptions to this pattern are: a small low-density residential zone in a one-third-mile square in the northwest quadrant of Germann Road and 88th Street and a community commercial development planned for the southwest and southeast quadrants of Ellsworth Road at its intersection with Pecos Road.

West of the UPRR, the area of land served by Rittenhouse Road at the northwest quadrant of the Power Road/Germann Road intersection is planned to be fully devoted to employment-based activities. One regional commercial center zone and other commercial services zones already are established between Rittenhouse and Germann roads on the east side of Power Road.

FIGURE 2-8 FUTURE LAND USE



Map Prepared By: Wilson & Company, September, 2011.

LEGEND

Study Area Boundary

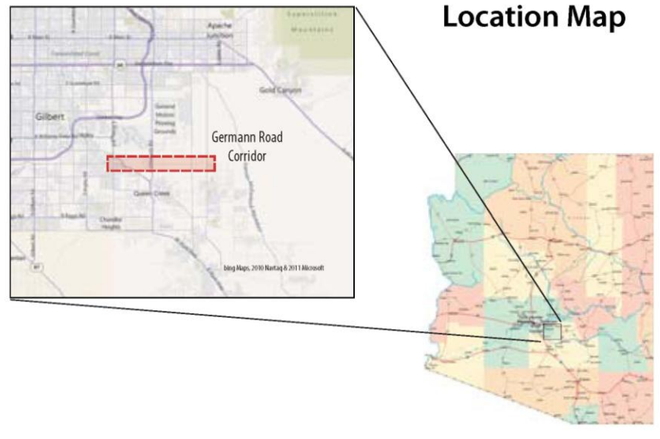
Jurisdictional Boundaries
- Town of Queen Creek
- City of Mesa
- Town of Gilbert
- County Boundary

Roadways
- 6-Lane Principal Arterial
- 4-Lane Arterial/Collector
- 2-3-Lane Collector

Infrastructure
- Railroad
- Drainage Facility
- Electric Substation/Utility
- High-Voltage Power Line
- Aviation Noise Contour Overlay

Land Use
- Very Low Density Residential (0-1 DU/AC)
- Low Density Residential
- Medium Density Residential (2-3 DU/AC)
- Medium High Density Residential Type A (3-5 DU/AC)
- Medium High Density Residential Type B (5-8 DU/AC)
- Residential > 8-14 DU/AC)
- Neighborhood Commercial
- Community Services
- Community Commercial
- Commercial Services
- General Commercial
- Regional Commercial Center
- Employment Type A
- Light Industrial
- Employment Type B
- General Industrial
- Public Facility/Institutional
- Recreation/Conservation/Parks

Location Map



Source: 2008 General Plan, Modified in 2010 by Resolutions 813-09 and 814-09, Town of Queen Creek (Note: Municipal Planning Area of Queen Creek extends to Ironwood Road); Mesa Gateway Strategic Development Plan, May 5, 2008; Town of Gilbert General Plan Land Use Map; Figure 2-6, Land Use Plan, City of Mesa General Plan 2025; Exhibit H, Existing Plans, SRP Abel-Moody 230kV Transmission Project Application for a Certificate of Environmental Comaptibility, June 2009.

A zone slated for Employment Type A fills out this area to the east, along with a small neighborhood commercial portion.[1] The northwest quadrant of the Power Road/Germann Road intersection already is developed with a predominance of medium density residential zones with a general commercial zone at the intersection flanked by higher density residential developments.

The plan includes a greater mix of land uses for the south side of Germann Road than for the north side, which mostly is in the city of Mesa and oriented to activities at the Phoenix-Mesa Gateway Airport. West of Power Road, the south side of Germann Road is fully developed with medium density and higher density residential land uses with a general commercial zone at the southeast corner of the Power Road/Germann Road intersection. Medium density residential development continues between Power Road and the UPRR with a small community services zone planned for the southeast corner of the Sossaman Road/Germann Road intersection.

Except for the one-half-mile-by-one-mile very low density Residential zone between Hawes and Ellsworth roads, the south side of Germann Road east of the UPRR to one-quarter mile east of Signal Butte Road is planned for employment-type activities. Employment type A is planned for the area between the UPRR and the residential area and the area directly east of the residential area. Half-way between Ellsworth Road and Crismon Road, planned land use changes to employment type B.[2] This more intensive employment zone gives way to a recreation/conservation/parks area and a medium density residential zone. A third area of employment type A, where currently there is a dairy farm, has been designated for the southeast quadrant of the Meridian Road/Germann Road intersection. The portion of the study area directly east to Ironwood Road is planned for medium density residential zoning. Between Ironwood Road and Suburban Avenue in Pinal County and outside the Queen Creek MPA, there is an established mix of high density mobile home parks and very low density rural residential zones, which is inferred to reflect the future land use condition.

2.3 ENVIRONMENTAL JUSTICE

2.3.1. Background

Title VI of the Civil Rights Act of 1964 and subsequent related statutes prohibit discrimination on the basis of race, color, national origin, age, sex, and disability in association with any program or activity receiving federal financial assistance. Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income

[1] The employment type A designation permits a range of employment uses from light manufacturing to light industrial and office uses and implements the Industrial I zoning district and, therefore, is comparable to the city of Mesa light industrial classification on the north side of Germann Road.

[2] The employment type B land use designation is intended to encourage general industrial uses that implement Industrial II zoning districts in the zoning ordinance and, therefore, is comparable to the city of Mesa general industrial classification on the north side of Germann Road.

Population," dated February 11, 1994, directs federal agencies (and programs and activities receiving federal financial assistance) to "…make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." "Disproportionately high and adverse" effects means the effect(s) of the proposed action:

"

(1) is (are) predominately borne by a minority population and/or a low-income population, or

(2) will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non-low-income population. "

There are three fundamental environmental justice principles:

1. Ensure full and fair participation by all potentially affected communities in the transportation decision-making process.
2. Avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations.
3. Prevent the denial of, reduction in, or significant delay in the receipt of benefits to minority and low-income populations.

USDOT Order 5610.2, "Environmental Justice in Minority and Low-Income Populations," defines minority and low-income populations as "any readily identifiable groups … who live in geographic proximity, and if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who will be similarly affected by a proposed DOT program, policy or activity." The order identifies four minority groups:

(1) Black (a person having origins in any of the black racial groups of Africa);

(2) Hispanic (a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race);

(3) Asian American (a person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands); and

(4) American Indian and Alaskan Native (a person having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition).

Additionally, the USDOT order specifies a low-income person as a person whose median household income is at or below the Department of Health and Human Services poverty

guidelines. It should be noted that ADOT guidance with respect to Environmental Justice clearly indicates that considerations of age, gender, and disability also should be incorporated in this assessment. Age specifically refers to person 60 years old and older. Gender is evaluated in terms of female heads of households.

2.3.2. Environmental Justice Considerations

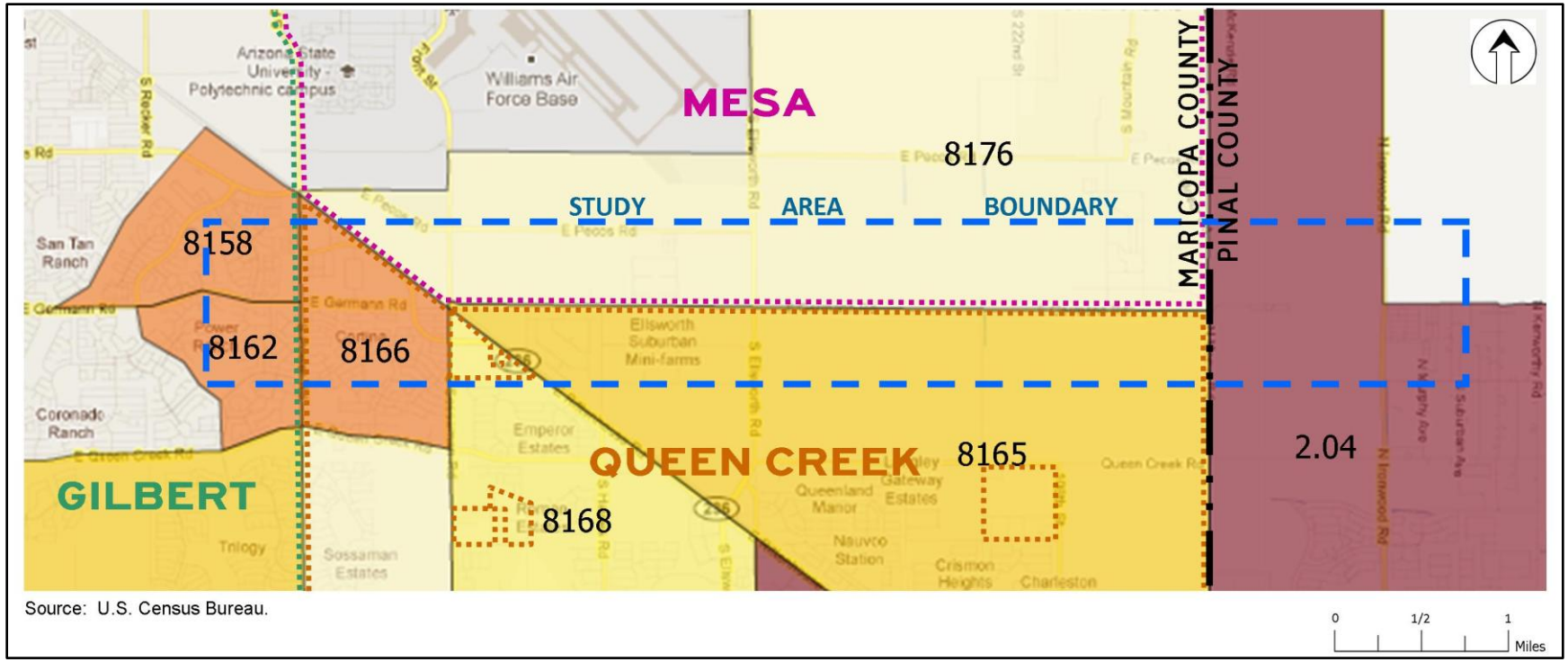
An assessment of the demographic composition of the study area was based on data available through the American Community Survey (ACS) published by the U.S. Census Bureau. Detailed information from the 2010 Census is available by tract only for population characteristics. Economic and income information is available only through the 2005-2009 ACS compilations. The 2010 data are reported for different Census Tract boundaries; however, the information provided for both periods is valid and adequate for assessing potential impacts on minority and low-income population characteristics of the study area.

Figure 2-9 graphically depicts the location of seven Census Tracts associated with the study area. Census Tracts not incidental with the study area are shown for reference only. The standard of disproportionate effects generally is examined by comparing the Census Tract representation of race/ethnicity with that of a larger political jurisdiction, such as a county. Population information for the seven Census Tracts displayed in Figure 2-10 is presented in tabular form in Table 2-3. Table 2-3 reveals that Maricopa and Pinal Counties together have a White population representing almost 59 percent of the total population of the two counties. Table 2-3 also reveals every Census Tract has some minority population groups that constitute a greater proportionate share than in the two counties combined. In all cases but one, this disproportionate share is very small and, therefore, not significant. However, where this occurs, there still is the potential that the population group could be disproportionately affected by proposed transportation improvements, depending on their location and concentration. The most notable sensitive condition is associated with Census Tract 8176, where the representative share of the Hispanic/Latino persons is almost 10 percentage points higher than the share of this group in the two counties combined.

Cells highlighted in Table 2-3 indicate proposed improvements could result in disproportionate impacts to the identified population groups, if such groups are concentrated in the immediate vicinity of proposed improvements. Depending on the location and concentration of the Hispanic/Latino population in Census Tract 8176, impacts could be disproportionately greater than potential impacts to other, nonminority persons living in the study area. Additional, more-detailed assessment of the location of these persons relative to preliminary design of proposed improvements is necessary to determine whether mitigating actions must be taken to adhere to the principles and objectives of Environmental Justice.

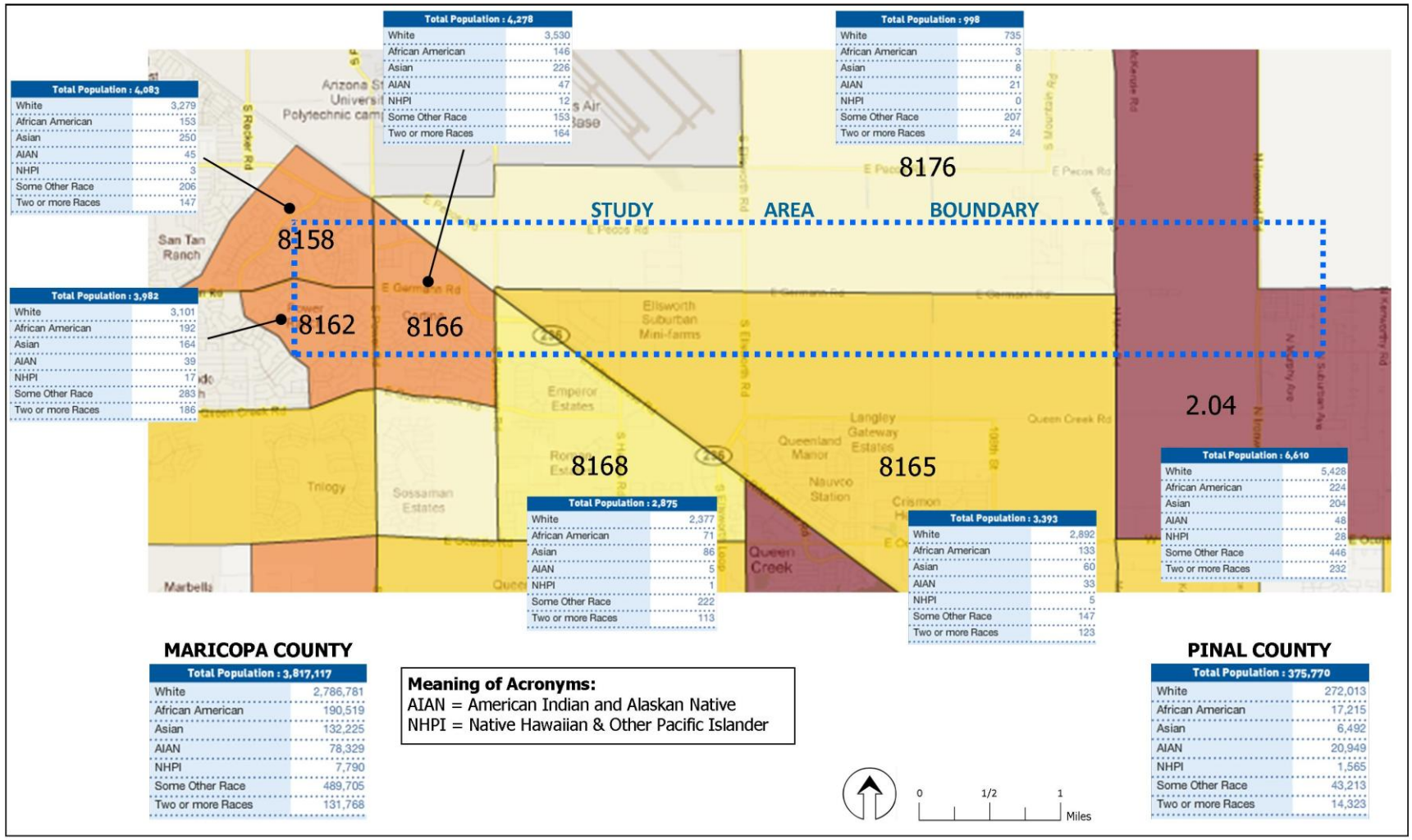
Arizona also considers potential impacts on elderly persons, female heads of households, and individuals with disabilities with regard to Environmental Justice. Elderly refers to

FIGURE 2-9 RELEVANT STUDY AREA CENSUS TRACTS



Source: U.S. Census Bureau.

FIGURE 2-10 POPULATION AND ETHNICITY BY CENSUS TRACT



Source: American Community Survey, U.S. Census Bureau at: http://2010.census.gov/2010census/popmap/.

TABLE 2-4
ENVIRONMENTAL JUSTICE POPULATION GROUPS BY CENSUS TRACT

Population Group	Maricopa & Pinal Counties	Share of Two-County Population	Tract 8158	Share of Tract Population	Tract 8162	Share of Tract Population	Tract 8165	Share of Tract Population	Tract 8166	Share of Tract Population	Tract 8168	Share of Tract Population	Tract 8176	Share of Tract Population	Tract 2.04	Share of Tract Population
White	2,460,541	58.68%	2,869	70.27%	2,771	69.59%	3,042	78.34%	3,077	71.93%	2,109	73.36%	570	57.11%	4,693	71.00%
African American	193,497	4.61%	144	3.53%	188	4.72%	80	2.06%	132	3.09%	69	2.40%	2	0.20%	214	3.24%
AIAN (1)	76,662	1.83%	42	1.03%	30	0.75%	26	0.67%	38	0.89%	5	0.17%	21	2.10%	34	0.51%
Asian	134,415	3.21%	235	5.76%	161	4.04%	96	2.47%	224	5.24%	86	2.99%	7	0.70%	199	3.01%
NHPI (2)	8,212	0.20%	3	0.07%	14	0.35%	2	0.05%	8	0.19%	1	0.03%	0	0.00%	23	0.35%
Some Other Race	5,995	0.14%	9	0.22%	1	0.03%	12	0.31%	1	0.02%	2	0.07%	0	0.00%	12	0.18%
Two or More Races	77,847	1.86%	95	2.33%	121	3.04%	55	1.42%	125	2.92%	55	1.91%	9	0.90%	130	1.97%
Hispanic or Latino (3)	1,235,718	29.47%	686	16.80%	696	17.48%	570	14.68%	673	15.73%	548	19.06%	389	38.98%	1,305	19.74%
Total Population	4,192,887	100%	4,083	100%	3,982	100%	3,883	100%	4,278	100%	2,875	100%	998	100%	6,610	100%

Differential Share Relative to Two Counties							
African American	-1.09%	0.11%	-2.55%	-1.53%	-2.21%	-4.41%	-1.38%
Asian	2.55%	0.84%	-0.73%	2.03%	-0.21%	-2.50%	-0.20%
AIAN	-0.80%	-1.07%	-1.16%	-0.94%	-1.65%	0.28%	-1.31%
NHPI	-0.12%	0.16%	-0.14%	-0.01%	-0.16%	-0.20%	0.15%
Some Other Race	0.08%	-0.12%	0.17%	-0.12%	-0.07%	-0.14%	0.04%
Two or More Races	0.47%	1.18%	-0.44%	1.07%	0.06%	-0.95%	0.11%
Hispanic or Latino	-12.67%	-11.99%	-14.79%	-13.74%	-10.41%	9.51%	-9.73%

Prepared by Wilson & Company, November 2011.

NOTES:

(1) AIAN refers to American Indian and Alaskan Native.

(2) NHPI refers to Native Hawaiian & other Pacific Islander.

(3) Includes Hispanics or Latinos who also reported being part of the seven other groups. This number represents a separate reporting and these persons are not counted in the groups above.

Shading indicates representation of the Population Group within the Census Tract is greater than the proportionate share within the Maricopa and Pinal Counties combined.

Source: American FactFinder, DP-1, Profile of General Population and Housing Characteristics: 2010, U.S. Census Bureau.

individuals 60 years of age and over. Non-institutionalized civilians, who are 16 years of age and older, are considered to have a disability if they report a mobility disability, a self-care limitation, or work-related disability. Female heads of household are identified as females with no spouse present, regardless of whether any children younger than 18 years of age are present in the household. Table 2-5 shows the number of elderly persons and female heads of households associated with the 2010 Census Tracts. The data reveals that three Census Tracts (81528, 8162, 2.04) have a slightly greater proportion of female heads of households than is present among the three municipalities and the two counties. The differential from three municipal areas and the two counties is not significant; therefore, the potential for adverse disproportional impacts on these populations is unlikely.

TABLE 2-6
PRESENCE IN THE STUDY AREA OF ELDERLY AND FEMALE HEADS OF HOUSEHOLDS

Geographic Area	Total Population	Age 60 Years and Older				Female Head of Household			
		Number of Persons	Percent of Geographic Area	Difference from Three Municipal Areas	Difference from Two-County Area	Number of Persons	Percent of Geographic Area	Difference from Three Municipal Areas	Difference from Two-County Area
Census Tract 8158	4,083	165	4.04%	-11.75%	-13.29%	157	3.85%	1.28%	1.19%
Census Tract 8162	3,982	220	5.52%	-10.27%	-11.80%	189	4.75%	2.18%	2.09%
Census Tract 8165	3,883	451	11.61%	-4.18%	-5.71%	86	2.21%	-0.35%	-0.44%
Census Tract 8166	4,278	263	6.15%	-9.65%	-11.18%	87	2.03%	-0.53%	-0.62%
Census Tract 8168	2,875	199	6.92%	-8.87%	-10.41%	71	2.47%	-0.10%	-0.19%
Census Tract 8176	998	118	11.82%	-3.97%	-5.51%	25	2.51%	-0.06%	-0.15%
Census Tract 2.04	6,610	933	14.11%	-1.68%	-3.21%	211	3.19%	0.63%	0.54%
Three Municipality Total	673,855	106,427	15.79%			17,285	2.57%		
Maricopa & Pinal Counties	4,192,887	726,614	17.33%			111,377	2.66%		

Prepared by Wilson & Company, November 2011.

Source: American FactFinder, DP-1, Profile of General Population and Housing Characteristics: 2010, U.S. Census Bureau.

Table 2-5 provides information regarding the number and proportion of persons who have one or more disabilities. Information reported by Census Tract is from the 2000 Census, as more current information is not yet available at this level from the recent 2010 Census. Table 2-5 shows that Census Tract 2.02 in Pinal County had a slightly larger share of persons with disabilities than Maricopa and Pinal counties combined. Available data from the 2010 Census provides information at the municipal level. Compared to Maricopa and Pinal counties, the city of Mesa has a slightly greater share of persons with disabilities. In the case of both Census Tract 2.04 and the city of Mesa, the differential proportions are not sufficiently great to expect disproportionate impacts on persons with disabilities.

TABLE 2-7
PRESENCE IN THE STUDY AREA OF PERSONS WITH DISABILITIES (2010)

Geographic Area	Total Population	Disabled	Percent of Geographic Area	Difference from Two-County Area
2000 Census Information				
Census Tract 5227.45	4,305	521	12.1%	-6.17%
Census Tract 5227.46	2,464	241	9.8%	-8.50%
Census Tract 5227.57	455	62	13.6%	-4.65%
Census Tract 5228	892	65	7.3%	-10.99%
Census Tract 2.02	5,404	1,036	19.2%	0.89%
Maricopa & Pinal Counties	2,955,705	540,202	18.3%	
2010 Census Information				
Town of Gilbert	208,453	12,302	5.9%	-3.8%
City of Mesa	439,041	45,619	10.4%	0.72%
Town of Queen Creek	26,361	1,445	5.5%	-4.2%
Maricopa & Pinal Counties	4,192,887	405,589	9.7%	

Prepared by Wilson & Company, November 2011.

Source: American FactFinder, U.S. Census Bureau - PCT26. Sex by Age by Types of Disability for the Civilian Noninstitutinalzed Population 5 Years and Over; and DP-1, Profile of General Population and Housing Characteristics: 2010.

Income data through the U.S. Census Bureau is available only through ACS for the years 2005 through 2009.[3] Table 2-6 and Figure 2-11 shows the median household income in each of seven Census Tracts reported through the ACS. The weighted average median household income of Maricopa and Pinal Counties for 2009 was reported to be approximately $55,000 (Maricopa County reported $55,223 and Pinal County reported $49,301). The reported median household income of all but two Census Tracts – Tracts 5227.57 and 5228 –are significantly greater than the two-county average. Census Tract 5227.57 includes an area dominated by agricultural and industrial pursuits, as well as the former 5,000-acre General Motors Proving Ground. Only a few isolated residential units and one subdivision with one-acre lot home sites are present in the study area on the north side of Germann Road. Census Tract 5228 is associated with the Phoenix-Mesa Gateway Airport, Arizona State University Polytechnic Campus, and campus-related student housing. Only the southernmost tip of the Census Tract touches the northern boundary of the study area. The data and geography of these two Census Tracts indicate that it is unlikely projects undertaken to improve transportation systems and services in the study area will have a disproportionate impact on low-income populations.

[3] Conversation with US Census Technical Aide, October 6, 2011.

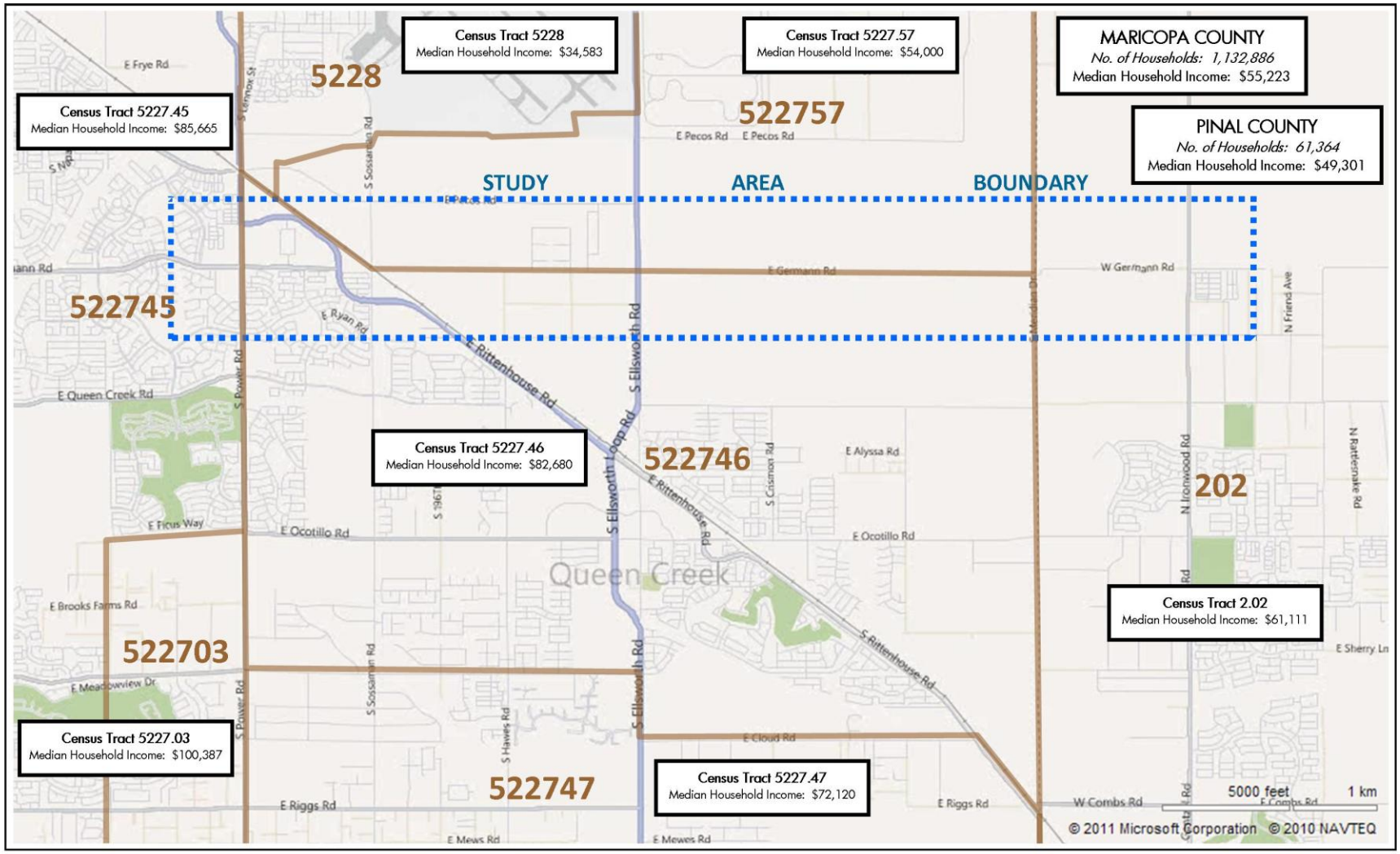
TABLE 2-8
MEDIAN HOUSEHOLD INCOME BY CENSUS TRACT

Geographic Unit	Median Household Income	Relative to Two County Average
Tract 5227.03	$100,387	182.79%
Tract 5227.45	$85,665	155.99%
Tract 5227.46	$82,680	150.55%
Tract 5227.47	$72,120	131.32%
Tract 5227.57	$54,000	98.33%
Tract 5228	$34,583	62.97%
Tract 2.02	$62,111	113.10%
Maricopa & Pinal Counties	$54,919*	

Prepared by Wilson & Company, October 2011.

* Weighted Average Household Income of the two counties.

FIGURE 2-11 MEDIAN HOUSEHOLD INCOME BY CENSUS TRACT



Source: Information derived from 2009 American Community Survey (ACS), U.S. Census Bureau.

3.0 EXISTING TRANSPORTATION NETWORK

This chapter discusses the existing and planned transportation network serving the study area. The first section provides an inventory of the roadway network integrated with the Germann Road corridor. The subsequent section identifies planned and committed transportation improvements expected to affect accessibility and mobility within the study area. This section also includes an assessment of the potential for future transit services.

3.1 CHARACTERISTICS OF EXISTING STUDY AREA ROADWAY NETWORK

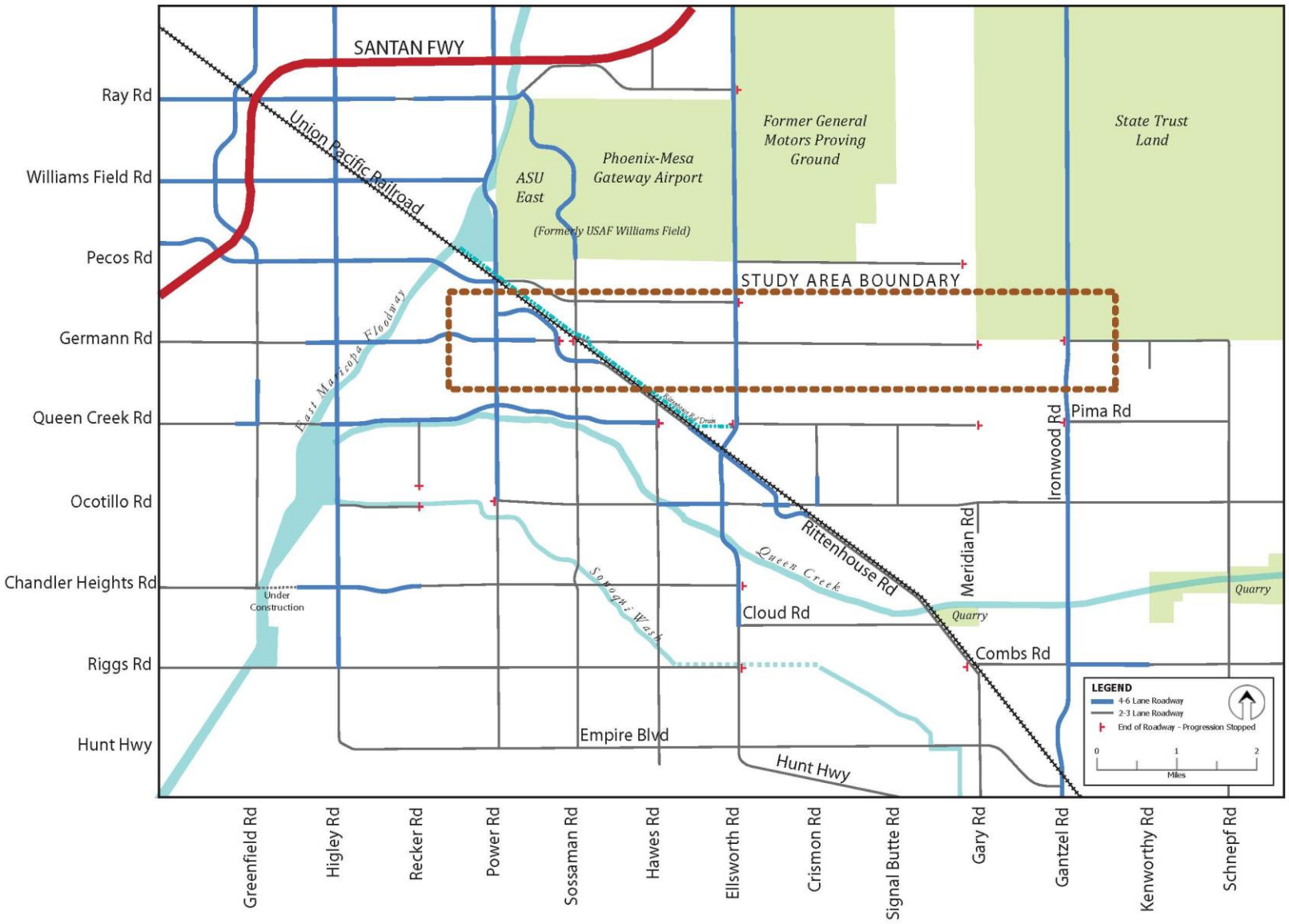
The existing corridor roadway network includes all roads within the study area and those critical for travel into and out of the study area. The inventory in this section includes: assessment of intersection operations, evaluation of access management along roadways, identification of major generators that impact traffic volumes and travel patterns, and examination of crash history and safety.

3.1.1. Existing Roadway Network

The existing study area roadway network consists of arterial, collector, and local street segments, most of which do not support through movements. Only three of the arterial streets with four to six lanes support movements into or through the study area relative to external origins/destinations: Power Road, Ellsworth Road, and Ironwood Road (Figure 3-1). Each of these facilities has a north-south travel orientation. Two other four- to six-lane arterial-type facilities (Germann Road and Rittenhouse Road) serve east-west travel but only at the western end of the study area, west of the UPRR corridor. Germann Road, the object of this study, is the only east-to-west mile-road alignment passing through the study area; however, Germann Road is currently not a continuous facility.

The discontinuity of Germann Road is particularly characteristic of the southeastern corner of Maricopa County. Figure 3-1 shows that between the newly constructed Loop 202 (Santan Freeway) and Hunt Highway/Empire Boulevard, a distance of 8.5 miles, there is no regional facility supporting east-west through movements. Particular to the study area, Pecos Road stops at Ellsworth Road going east. Germann Road is discontinuous at the UPRR and between Meridian Road and Ironwood Road. Queen Creek Road directly south of the study area also is discontinuous due to the presence of an educational institution campus, the UPRR, and the Rittenhouse Road Drain, and, like Germann Road, also between Meridian Road and Ironwood Road where it becomes Pima Road. The only continuous east-west facility from Power Road eastward is Ocotillo Road, which is two miles south of Germann Road. However, Ocotillo Road does not extend westward from Power Road, terminated (at least in the short-term) due to the presence of Sonoqui Wash. In the north-south direction, Hawes Road does not enter the study area: it terminates at Rittenhouse Road on the west side of the UPRR corridor and is blocked from the north by the airport.

FIGURE 3-1 EXISTING AREA ROADWAY NETWORK



Crismon Road, Signal Butte Road, and Meridian Road do not extend into the study area from the north or south. Table 3-1 identifies the key roadway facilities in the study area today and provides basic descriptive information.

TABLE 3-1
KEY EXISTING ROADWAY SEGMENTS

Roadway Name	Segment	No. of Lanes	Posted Speed (mph)
North-South Facilities			
Power Road	Queen Creek Rd. to Rittenhouse Rd.	6, divided	45
Power Road	Rittenhouse Rd. to Pecos Rd.	5, divided	45
Power Road	North of Pecos Rd.	2	45
Rittenhouse Road	Power Rd. to 650' east of 187th St.	4 w/center left-turn lane and bike lane	45
Rittenhouse Road	650' east of 187th St. to Sossaman Rd.	4, divided w/bike lane	45
Rittenhouse Road	Sossaman Rd. to 330' east of Sossaman Rd.	4 , divided	35
Rittenhouse Road	330' east of Sossaman Rd. to 1,000' east of Sossaman Rd.	3, divided	35
Rittenhouse Road	1,000' east of Sossaman Rd. to Hawes Rd.	2	35
Sossaman Road	Queen Creek Rd. to ¼ mile north of Queen Creek Rd.	2	None
Sossaman Road	¼ mile north of Queen Creek Rd. to 1/8 mile north of Rittenhouse Rd.	2 w/center left-turn lane	None
Sossaman Road	1/8 mile north of Rittenhouse Rd. to Germann Rd.	2	None
Sossaman Road	Germann Rd. to Pecos Rd.	2	45
Sossaman Road	North of Pecos Rd.	2	45
Hawes Road	Germann Rd. to Ryan Rd.	2, paved, unmarked	25
Ellsworth Road	Queen Creek Rd. to Germann Rd.	4	45
Ellsworth Road	Germann Rd. to Pecos Rd.	4, divided w/bike lane	45
Ironwood Road	Through the study area	4, divided	45
East-West Facilities			
Pecos Road	West of Power Rd.	6, divided	45
Pecos Road	Power Rd. to Ellsworth Rd.	2 w/paved shoulder	45
Germann Road	West of Power Rd. to 186th Dr.	6, divided	45
Germann Road	186th Dr. to 188th St.	5, divided	45
Germann Road	188th St. to Rittenhouse Rd.	3, divided	35
Germann Road	Sossaman Rd. to east of Signal Butte Rd.	2	45
Germann Road	East of Signal Butte Rd. to Commercial Access Rd.	2 w/center left-turn lane	45
Germann Road	Commercial Access Rd. to Meridian Rd.	2	45
Germann Road	Meridian Rd. to Half-Mile Rd.	2 (dairy farm access road)	Private drive
Ryan Road	Sossaman Rd. to Ellsworth Rd.	2, paved, unmarked	25

Prepared by Wilson & Company, October, 2011.

Germann Road Alignment

The alignment of Germann Road is an integral element of the surveyed mile grid based on the original Public Land Survey System (PLSS) that dominates the Phoenix metropolitan area. At the Meridian Road alignment, a survey adjustment was made; therefore,

Germann Road east of the Meridian Road alignment is offset to the north approximately 230 feet (refer to Figure 1-3).

Right of Way

The existing ROW along the alignment of Germann Road varies considerably. As development has occurred, ROW has been established. This has led to a scalloped roadway, which primarily is a two-lane roadway that has been widened on the north side to accommodate commercial and industrial developments. Table 3-2 provides a preliminary inventory of the Germann Road ROW for reference purposes.

Existing Roadway Cross section

Table 3-3 provides information regarding the characteristics of roadways in the study area and, particularly, Germann Road. Table 3-3 summarizes the cross sections associated with roadway segments of Germann Road.

Major Intersecting Roadways

Germann Road has traffic control at intersections with four major north-south arterial roadways. Three intersections are signalized.

Power Road: The two Germann Road approaches at this intersection have a six-lane cross section with bike lanes and left-turn lanes. The west approach incorporates a twelve-foot median island. The cross section of Power Road is similar to that of Germann Road with the addition of a dedicated right-turn lane at each approach.

Sossaman Road: Germann Road intersects Sossaman Road, a two-lane roadway, at a slight angle from the east. Germann Road also has a two-lane cross section at this intersection. A right-turn slip ramp has been constructed to facilitate movements from northbound Sossaman Road to eastbound Germann Road (refer to Figure 1-2). There is no connection at this intersection with Germann Road to the west, as the UPRR corridor has effectively blocked such a development. An at-grade railroad crossing of Sossaman Road at the UPRR exists less than 100 feet south of the intersection.

Ellsworth Road: Germann Road intersects Ellsworth Road three miles east of Power Road. Each approach of Germann Road includes a right-turn lane, a through lane, and a left-turn lane. Ellsworth Road has a four-lane cross section. The cross section north of Germann Road incorporates a bike lane. Both approaches have a left-turn lane, but only the north approach has a right-turn lane. Therefore, the geometry of this intersection is slightly skewed.

TABLE 3-2
RIGHT OF WAY OF GERMANN ROAD: AUTUMN DRIVE TO SUBURBAN AVENUE

Roadway Segment	Right of Way (1)	Pavement Width (2)
Autumn Dr. to Power Rd.	130', demarcated	102'
Power Rd. to 188th St.	140', demarcated	100'
188th St. to Pelican Ct.	70', demarcated	70'-60'
Pelican Ct. to Rittenhouse Rd.	70', demarcated	60'-54'
Germann Road./Rittenhouse Road. intersection	163'-164', demarcated	108' W. of intersection; 100' E. of Intersection
Intersection to Power/Railroad Corridor	70', demarcated	No roadway
Rittenhouse Rd. Drain ROW to 196th St.	66', demarcated, plus 22' easements on both sides	28' (3)
196th St. to W. side of 197th Pl. (center of La Jara Farms)	103', demarcated, plus 22' easement - north side	28'
Center of 197th Pl. to 513' feet to the east	135', demarcated	28'
513' to the east to 1,018' to the east	125', demarcated	28'
1,018' to the east to W. side of 201st Pl. (86th Pl., Mesa)	109', demarcated, plus 22' easement - north side	28'
201st Pl. (86th Pl., Mesa) to W. side of 204th St. (88th St., Mesa)	124'-126', demarcated	28'
204th St. (S. 88th St., Mesa) to 442' to the east	132', demarcated	56'
442' to the east to 1,038' to the east	135', demarcated	56'
1,038' to the east to 1,364' to the east	125'-130', demarcated	56'
1,364' to the east to 1,532' to the east	108', demarcated	30'
1,532' to the west to W. side of Ellsworth Rd.	130', demarcated	30'-68'
E. side of Ellsworth Rd. to 595' to the east	120', demarcated	68'
595' to the east to 837' to the east	88', demarcated, plus 22' easement - south side	48'
837' to the east to E. side of Crismon Rd.	66', demarcated, plus 22' easements - both sides	28'
E. side of Crismon Rd. to W. side of Signal Butte Rd.	34', demarcated, plus 54' easement - north side & 22' easement - south side	28'
E. side of Signal Butte Rd. to 560' to the east	108', demarcated, plus 22' easement - south side	28'-45'
560' to the east to 850' W. of W. side of Meridian Rd.	98', demarcated, plus 22' easement - south side	45'
E. side of Meridian Rd. to 2,744' to the east	Private road, no formal ROW	N/A
2,744' E. of Meridian Rd. to W. side of Ironwood Rd.	Private land, no roadway, no formal ROW	N/A
Ironwood Road/Germann Road Intersection	105' east & W. side of	72' W. of intersection, 45' E. of intersection
East of Ironwood Road/Germann Road intersection to 785' to the east	96' (Estimated)	45'
785' to the east to 1,272' to the east	96'-98' (Estimated)	45'-33'
1,272' to the east to 1,434' to the east	70'-76' (Estimated)	33'-30'
1,434' to the east to 1,924' to the east	104' (Estimated)	30'
1,924 to the east to W. side of Terrace View Ave.	84'-80'	30'
E. side of Terrace View Ave. to W. side of Suburban Ave.	70'	30'

Prepared by Wilson & Company, October 2011.

Source: Maricopa County Assessor Parcel Viewer Application.

(1) Demarcated means the ROW is clearly designated as belonging to the County. Easements have been identified by strips of land paralleling Germann Road, some of which include physical portions of the existing roadway, and when taken together with the demarcated dimension constitute the ROW of the road. In some cases, the strips are still identified as owned by a private party; in these cases, the total ROW is narrowed at these points.

(2) Pavement width has been determined through measurements from the source imagery for informational purposes only. More precise specifications of ROW will be established during the corridor roadway planning phase of this study.

(3) Germann Road departs from ROW approx. 575' east of Sossaman Road., passing through Maricopa County Flood Control District property, connecting to Sossaman Road approx. 100' north of UPRR and within UPRR ROW.

TABLE 3-3
GERMANN ROAD CROSS SECTION BY SEGMENT

Roadway Segment	Roadway Cross-Section(1)	Other Features
Autumn Dr. to Power Rd.	• 130': 6-lanes w/bike lanes, divided w/center island • Occasional right-turn lanes • Left-turn lane at Power Rd. on west approach	• 6' sidewalk separated by landscaped buffer • Curb and gutter
Power Rd. to 1,184' E. of Power Rd.	• 140': 6-lanes w/bike lanes, center left-turn lane • Left-turn lane at Power Rd. on east approach	• Curb and gutter
1,184' east of Power Rd. to 188th St.	• 140': 5-lanes (3 W; 2 E) w/bike lanes, Divided w/center island • Left-turn and right-turn lanes	• Curb and gutter
188th St. to Rittenhouse Rd.	• 86'-72': 5-lanes w/bike lane on the south side, divided w/striping • Left-turn and right-turn lanes	• Curb and gutter on south side • Unimproved shoulder on north side
Rittenhouse Rd. to Sossaman Rd.	• Roadway does not exist	N/A
Sossaman Rd. to S. 204th St. (S. 88th St., Mesa)	• 50'-60': 2-lanes	• Unimproved shoulders
S. 204th St. (S. 88th St., Mesa) to S. 206th St. alignment	• 92'-88': 2-lanes • Exaggerated right-turn lanes	• 6' sidewalk separated by landscaped buffer on north side • Curb and gutter on north side • Unimproved shoulder on south side
S. 206th St. alignment to Ellsworth Rd.	• 75'-110': 2-lanes to 4-lanes at Ellsworth • Right-turn and left-turn lanes on west approach	• Unimproved shoulders
Ellsworth Rd. to approx. 830' east of Ellsworth Rd.	• 94'-54': 4-lanes at Ellsworth to 2-lanes • Right-turn and left-turn lanes on east approach	• Unimproved shoulders
Approx. 830' east of Ellsworth Rd. to approx. 620' east of Signal Butte Rd.	• 54': 2-lanes	• Unimproved shoulders
Approx. 620' east of Signal Butte Rd. to approx. 300' west of Meridian Rd.	• 70': 2-lanes w/center left-turn lane	• 6' sidewalk separated by landscaped buffer on north side • Curb and gutter on north side • Unimproved shoulder on south side
E. side of Meridian Rd. to 2,744' to the east	• Private road, no formal ROW	N/A
2,744' east of Meridian Rd. to W. side of Ironwood Rd.	• Roadway does not exist	N/A
E. side of Ironwood to approx. 800' east of Ironwood	• 85': 3-lanes, divided w/striping • Left-turn lane on east approach to Ironwood Rd.	• Unimproved shoulders • Drainage channels on both sides
Approx. 800' east of Ironwood Rd. to Suburban Ave.	• 85-30: 2-lanes	• Unimproved shoulders • Drainage channel on north side

Prepared by Wilson & Company, October 2011.

Source: Field survey and review of aerial photography at http://www.bing.com/maps.
(1) Roadway cross-section has been determined through measurements from the source imagery for informational purpose only. More precise specifications will be established during the corridor roadway planning phase of this study.

Ironwood Road: Germann Road has an intersection with Ironwood Road, which is 1.15 miles east of the Meridian Road alignment and is boundary between Maricopa County and Pinal County. Ironwood Road is a four-lane, divided roadway with left-turn lanes installed for the north- and south-bound approaches. The Germann Road west approach has a four-lane cross section with a left-turn lane. The east approach has a left-turn lane and a through/right-lane. Although through movements are not blocked, Germann Road does not continue west from the intersection (there is only 150 feet of paved roadway west of the intersection).

Peak hour traffic volumes are highest in the western portion of the Germann Road corridor, particularly between Power Road and Ellsworth Road. Figure 3-2 shows the geometry and peak-hour traffic volumes for key intersections in this portion of the corridor.

3.1.2. Major Traffic Generators

The study area is largely undeveloped with agriculture and vacant activities the predominant land use. Thus, there are few social or economic functions that generate high volumes of traffic. Nevertheless, there are activities that attract significant levels of traffic, on a day-to-day basis, and have the potential to influence traffic levels in the study area. These activities are highlighted in Figure 3-3. Some estimates of traffic activity have been provided in the summaries below; however, this is only for reference purposes. A comprehensive analysis of travel demand is presented in chapter 4.

1. Santan Village Mall: This regional shopping attraction is located four miles to the northwest of the study area. It includes more than 100 stores and is described as the first super-regional shopping center in Arizona to combine department and specialty stores with a major cinema, indoor food court, and office and residential offerings.

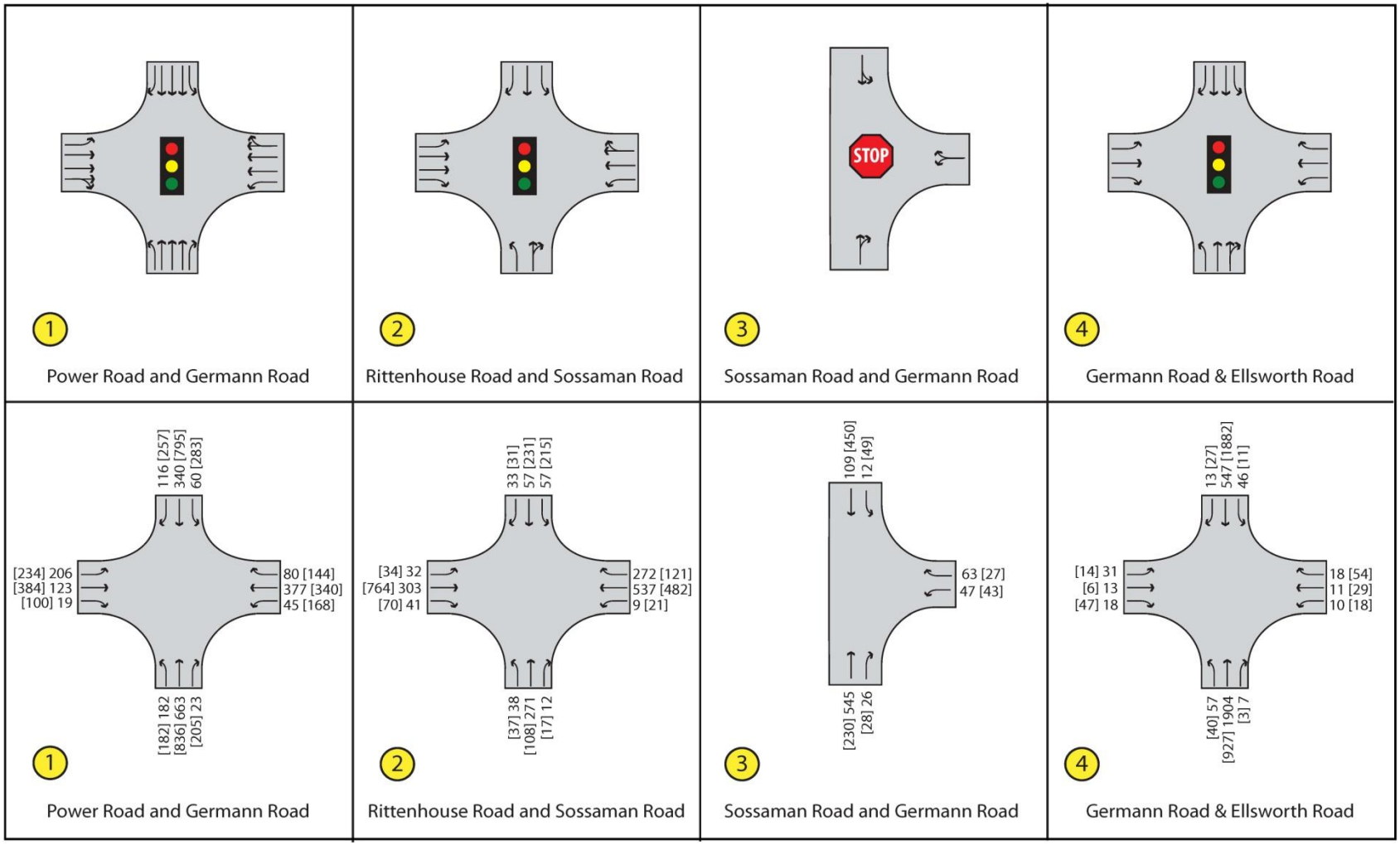
2. Arizona State University (ASU) Polytechnic Campus: This regional attraction is located directly north of the study area, occupying almost one square mile of the former Williams Field. Power Road and Sossaman Road provide direct access to ASU's growing east campus. In the area directly north of the study area, which includes this regional education complex and accounts for the majority of social and economic activity, employment was estimated at approximately 3,500 in 2005.[4]

3. Phoenix-Mesa Gateway Airport: This regional, reliever airport recently was cited as "the fastest growing commercial airport in the country."[5] Airport growth was on a course to reach one million passengers by the end of the 2011. Assuming the airport achieves this level of operation, airport ingress/egress travel associated with the daily average 2,700 passengers alone could range between 4,700 and 10,200 average daily trips. Power Road and Sossaman Road provide direct access to this regional airport/education

[4] Transportation Analysis Memorandum prepared in support of the Mesa Gateway Strategic Development Plan, January 23, 2009.

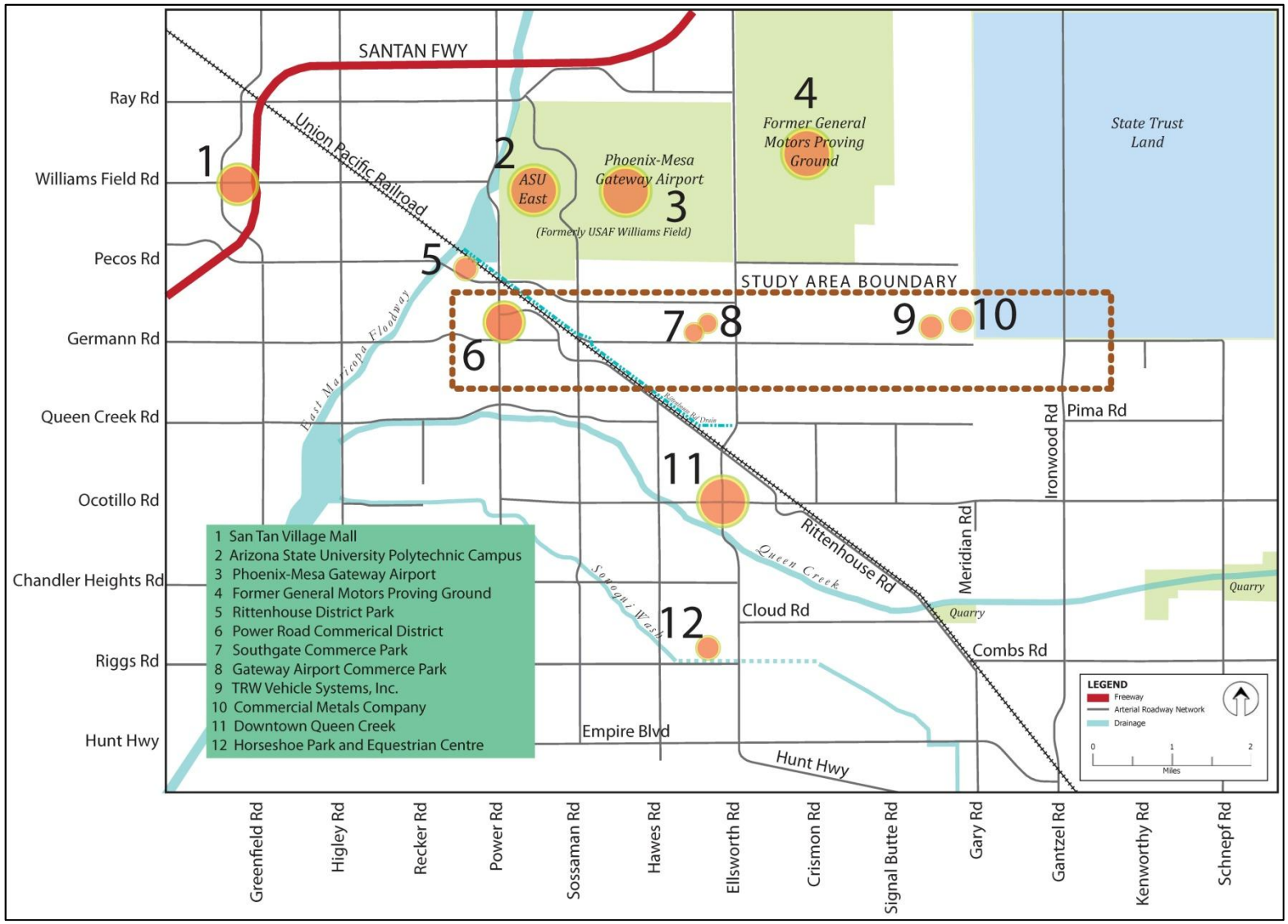
[5] *Economic Reporter*, city of Mesa Office of Economic Development, Third Quarter 2011.

FIGURE 3-2 EXISTING INTERSECTION GEOMETRICS AND TURNING-MOVEMENT VOLUMES



XXX = AM PEAK-HOUR TURNING MOVEMENT VOLUMES
[XXX] = PM PEAK-HOUR TURNING MOVEMENT VOLUMES

FIGURE 3-3 MAJOR TRAFFIC GENERATORS



complex. Sossaman Road directly serves the passenger terminal. Therefore, a share of these trips occurs on roadways in the study area.

4. Former General Motors Proving Ground: This 5,000-acre property has been turned over the private marketplace and plans are being formulated to create a major regional, mixed-use destination-type development.

5. Rittenhouse District Park (Planned): This 165-acre facility, being developed by the town of Gilbert in partnership with the FCDMC, is located directly north of Pecos Road and west of Power Road. The designated park area, flood control/storm water retention basin, is bordered by the East Maricopa Floodway (EMF), Power Road, and the UPRR/Rittenhouse Road Drain alignment. Park and recreation amenities are to include: 18 acres for high-intensity activities, 115 acres for medium-intensity activities, and 32 acres for low-intensity activities.

6. Power Road Commercial District: At the west end of the study area, the triangle formed by Power Road, Germann Road, and the UPRR corridor has become a focus of commercial activity, including The Home Depot, banking, retail stores, services, and professional offices. Although currently only partially developed north and south of Rittenhouse Road, this area today is a significant attraction, and the number of trips associated with retail, commercial, and office activities are expected to only increase as development occurs.

7 & 8. Southgate Commerce Park and Gateway Airport Commerce Park: These two commercial/office developments are located between Germann Road and Pecos Road east of 88th Street. Although only partially developed at this time, Southgate Commerce Park encompasses 27 platted lots for commercial development and Gateway Airport Commerce Park encompasses 32 separate pads for business development. It is not clear at this time the type of commercial activity that is planned to occupy these two parks. Assuming 5 to 10 employees per lot/pad, when fully developed, these two sites have the potential to support 300 to 600 employees, attracting/generating a significant number of daily trips.

9. TRW Vehicle Safety Systems, Inc. (TRW): TRW occupies a 0.6-square-mile site on the north side of Germann Road, which is contiguous on the west with the Signal Butte Road alignment and Pecos Road on the north. This commercial enterprise employs 400 persons, according to a list of Mesa Large Employers provided on the city's web site.

10. Commercial Metals Company (CMC), Arizona: CMC operates a micromill facility at a 0.3-square-mile site at the northwest corner of Germann Road, bordering the Maricopa County boundary and Meridian Road alignment. This facility at full operation employs approximately 200 persons.

11. Downtown Queen Creek: The town of Queen Creek adopted its first Town Center Plan in 1994, developed an update in 2002, and adopted a second update in March 2011. The plan is a challenging endeavor designed to create a downtown from "raw" land *–a mixed*

area with appropriate housing densities and with large- and small-scale commercial development planned to serve not only Queen Creek residents but also a community-wide and regional market.

12. Horseshoe Park and Equestrian Centre: This new facility developed by the town of Queen Creek offers opportunities for events of all sizes, including: English and Western equestrian meets, home shows, RV and car shows, concerts, and weddings. The facility has two arenas twice the size of a football field and seating for more than 3,500 spectators. The center is billed as a "community arena," but has hosted events drawing participants and spectators from neighboring communities, the Phoenix region, and the state.

3.1.3. Crash and Safety Issues

Analysis of the number of crashes and characteristics of crashes (e.g., time of occurrence, type of collision, etc.) aids in identifying how safe a roadway or intersection is for vehicle operations. Generally, when vehicular crashes are examined over several years, patterns may be revealed that identify geometric deficiencies, capacity issues, excessive access to the roadway, or traffic control issues. Data was obtained from ADOT's Accident Location Identification Surveillance System (ALISS) database for the period from 2008 through 2010. During this three-year period, a total of 55 crashes occurred in the study area. Figure 3-4 graphically displays the number of crashes by year for the reported period. The incident of crashes within the corridor remained relatively consistent during the analyzed period.

FIGURE 3-4 STUDY AREA CRASHES BETWEEN 2008 AND 2010

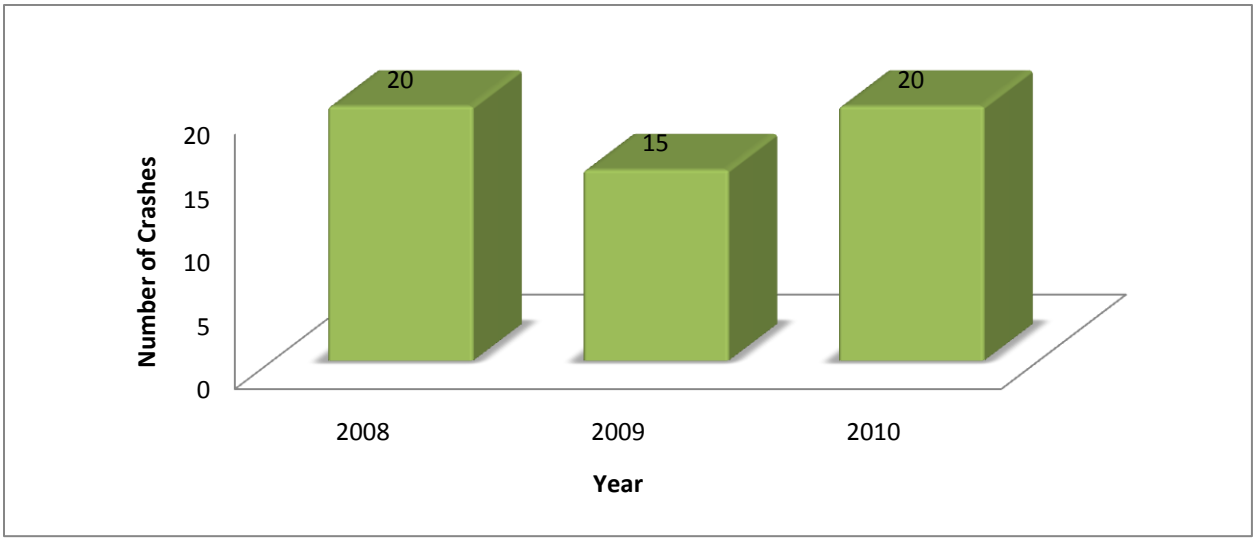
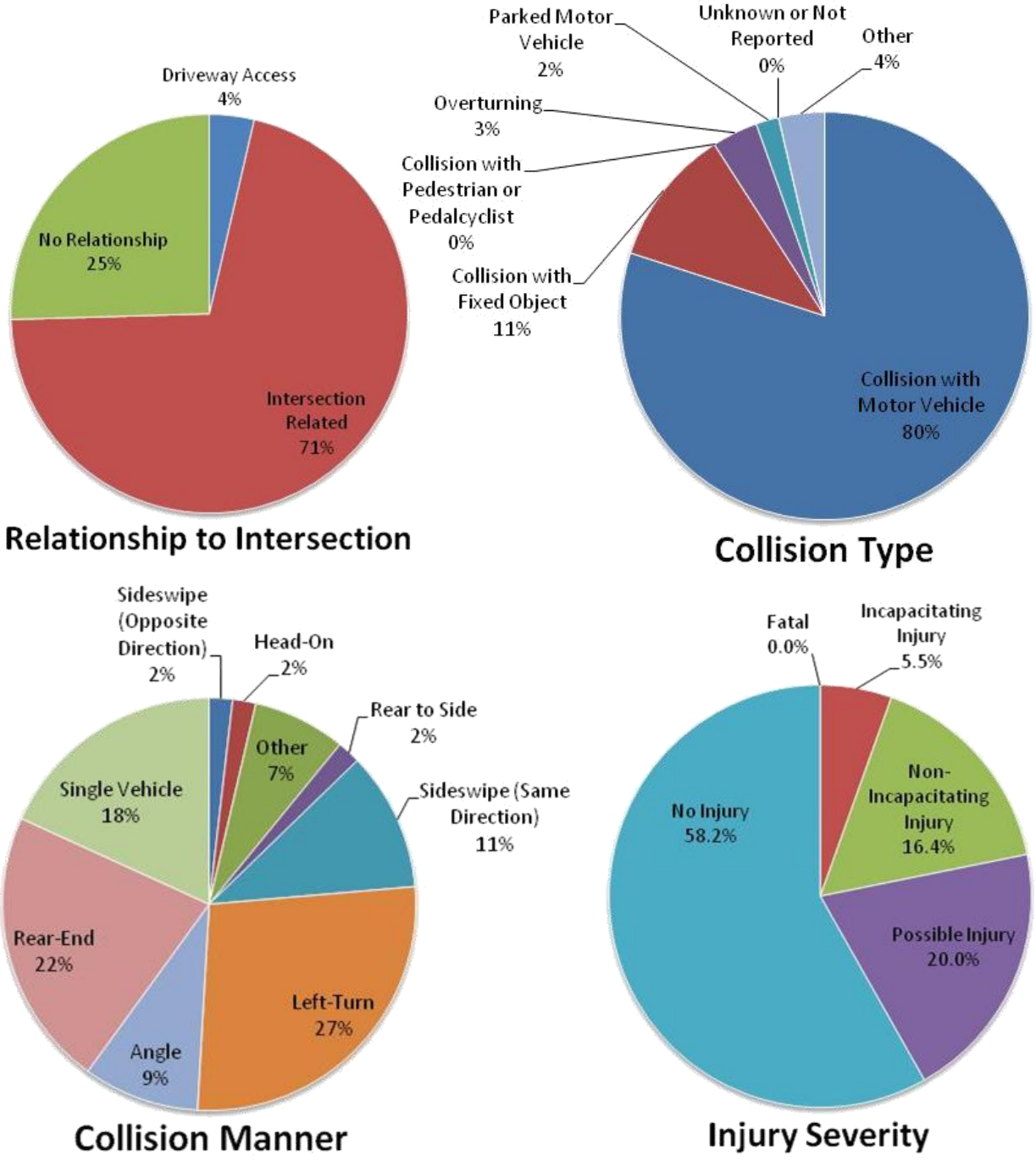


Figure 3-5 summarizes study area crashes during the same period by intersection type, collision type, collision manner, and injury severity. The charts show that 75 percent of all crashes occurred at an intersection or a driveway access.

FIGURE 3-5
STUDY AREA CRASH CHARACTERISTICS BETWEEN 2005 AND 2010



Source: Accident Location Information Surveillance System (ALISS), Arizona Department of Transportation (ADOT) Multimodal Planning Division, August 2005 through August 2010.

Most collisions (80 percent) involved two or more motor vehicles; however, single-vehicle crashes represented 18 percent of all crashes. Less than 1 percent of reported motor vehicle collisions involved a pedestrian or bicyclist.

3.2 PUBLIC TRANSPORTATION AND ALTERNATIVE TRAVEL MODES

Public transportation takes the form of scheduled, fixed-route transit services provided in the Valley by light rail transit (LRT) and buses. Alternative travel modes of interest are pedestrian facilities, such as sidewalks and trails/paths, and bicycle facilities, such as bike lanes on roadways, bike paths, and multiuse paths.

3.2.1. Existing Public Transit Service

There is no public transit service available in the study area, but there are opportunities to access regional transit services.

Fixed-Route Bus Service: The closest fixed-route transit service is located at Power Road and Williams Field Road. Route 156, Chandler Boulevard/Willliams Field Road, and Route 184, Power Road, converge to serve the ASU Polytechnic Campus.

Express Bus Service: The closest access to regional express bus service is located 8.5 miles away at a park-and-ride (P&R) at the southwest corner of Germann Road and Hamilton Street.

Metro LINK Bus Service: Valley Metro LINK –– Main Street can be accessed at the Superstition Springs Transit Center, which is located at the northwest corner of Power Road and US 60. This service provides direct access to the METRO Light Rail route at Main Street and Sycamore in downtown Mesa. METRO Light Rail provides service to Arizona State University (ASU), downtown Tempe, Sky Harbor International Airport (via the Sky Train), downtown and uptown Phoenix, and the north central Phoenix/Camelback Corridor.

East Valley Ride Choice: This program provides direct, door-to-door transit service through a variety of options. East Valley Dial-a-Ride (EVDAR) provides transit service to residents and employees in the East Valley, including Mesa and Gilbert. EVDAR service in Mesa and Gilbert specifically is available to those residents qualifying under the Americans with Disabilities Act (ADA). Advance reservations are required. Therefore, persons residing in portions of the study in Mesa and Gilbert may avail themselves of this service.

3.2.2. Pedestrian and Bicycle Facilities

A survey of the study area revealed a limited number of pedestrian and bicycle facilities have been developed in the study area.

Pedestrian Facilities

Pedestrian facilities primarily are limited to sidewalks in the developed commercial and residential areas at the eastern and western ends of the study area. Eight-foot sidewalks

with linear buffer have been installed along the north and south side of Germann Road west of Power Road and on the north side between Power Road and 188th Street in Queen Creek. They also have been installed on the south side between Power Road and Rittenhouse Road. Eight-foot sidewalks with linear buffer have been installed along the majority of Power Road on both sides. There is a six-foot sidewalk along the west side of Sossaman Road from Seagull Drive (approximately 300 feet south of the Germann Road alignment) south to Queen Creek Road. Portions have a buffer on the roadway side. Approximately 370 feet of sidewalk with buffer was installed on the east side with the widening of Sossaman Road, when a church was constructed.

There are intermittent accommodations for pedestrian traffic on Germann Road between Sossaman and Ironwood roads. Slightly more than 1,200 feet of six-foot sidewalk with buffer has been installed on the north side of Germann Road, where it was widened for commercial development between 88th and 90th streets (in Mesa). Approximately 4,000 linear feet of six-foot sidewalk with buffer has been installed along the north side of Germann Road between the alignments of Signal Butte and Meridian roads. Corner sidewalks with accommodations for wheelchairs have been installed at the following signalized intersection along the Germann Road corridor: Power, Sossaman, Ellsworth, and Ironwood roads.

Bicycle Facilities

Bicycle traffic can be accommodated by bike lanes or bike paths on the edge of roadways, multiuse paths designed for nonmotorized travel modes, and trails.

Bicycle Lanes/Paths

Bicycle lanes/paths have been established along three roadway segments within the study, as identified in Table 3-4.

TABLE 3-4
LOCATION OF BICYCLE LANES IN THE STUDY AREA

Roadway Segment	Location	Facility Description
Rittenhouse Rd	Power Rd. to 650' east of 187th St.	4 lanes, center left-turn lane
Rittenhouse Rd	650' east of 187th St. to Sossaman Rd.	4 lanes, divided w/center island
Germann Rd	Autumn Dr. to Power Rd.	6 lanes, divided w/center island
Germann Rd	Power Rd. to 1,184' east of Power Rd.	6 lanes, center left-turn lane
Germann Rd	1,184' east of Power Rd. to 188th St.	5 lanes (3 w; 2 e), divided w/center island
Germann Rd	188th St. to Rittenhouse Rd.	5 lanes, divided w/striping
Sossaman Rd	Rittenhouse Rd. to Queen Creek Rd. and south of study area	3 lanes, center left-turn lane
Ellsworth Rd	Germann Rd. to Pecos Rd. and north of study area	4 lanes, divided w/center island

Prepared by Wilson & Company, October 2011.

Multiuse Paths

An eight-foot multiuse path, separated from the roadway by a landscaped buffer, exists along both sides of Germann Road: west of Rittenhouse Road on the south side and west of 188th Street on the north side (see discussion of sidewalks previously). These connect at various points with paths constructed within residential and commercial areas developed north and south of Germann Road. A similar multiuse path has been established on both sides of Rittenhouse Road, as abutting parcels along this roadway have been developed. Wider, eight-foot buffered multiuse paths have been developed along both sides of Power Road, where abutting parcels have been developed (see discussion of sidewalks previously). No other paths are apparent within the study area.

Rittenhouse Trail

The town of Gilbert has a long-range plan to construct a multiuse trail from Power Road to Williams Field Road along the former alignment of Rittenhouse Road, which parallels the UPRR corridor. Current thinking anticipates a trail consisting of a ten-foot wide concrete walk, six-foot landscaped area, and ten-foot wide decomposed granite path as well as benches, kiosks, and interpretive signage.

4.0 ENVIRONMENTAL SUMMARY

This section identifies and discusses the potential presence within the study area of sensitive biological and natural resources; highlights potential concerns regarding air quality, noise aesthetics, and hazardous materials (HazMats); and addresses potential effects on historical and cultural resources.

4.1 BIOLOGICAL RESOURCES

4.1.1. Biotic Communities

The purpose of the biotic overview is to summarize existing biological communities and determine whether the study area supports —or potentially supports —species that are subject to regulatory oversight by agencies at the federal, state, and/or local governmental level. The dominant native vegetation community found in the study area is the Lower Colorado River Valley subdivision of the Sonoran Desert Scrub Community. Native Sonoran Desert Scrub Community is primarily found on the eastern end of the study area. This native desert vegetation is dominated by creosote (*Larrea tridentate*), and other species commonly found in this community include desert broom (*Baccharis sarothroides*), velvet mesquite (*Prosopis velutina*), and wolfberry (*Lycium spp.*).

However, this native vegetation community has been greatly reduced by agricultural, residential, and commercial development. Agricultural land is the predominant type of land use found in the study area. These lands are either currently farmed or were previously farmed. Agricultural lands typically lack native vegetation, and their disturbed soils result in favorable growing conditions for noxious weeds. Developed lands include both residential and commercial uses. These areas have expanded in recent years, resulting in the loss of some native Sonoran Desert Scrub Community and natural habitat for wildlife.

4.1.2. Wildlife

Despite the loss of natural habitat in the study area due to agricultural and development practices, avian, mammal, and reptile wildlife species associated with the Sonoran Desert Scrub Community have been able to take advantage of the rural agricultural lands and remaining native desert habitats.

- Avian species found in the study area include: cactus wren (Campylorhynchus brunneicapillus), mourning dove (*Zenaida asiatica*), white-winged dove (*Zenaida aisatica*), Gambel's quail (*Callipepla gambelii*), roadrunner (*Gecoccyz californicus*), and Costa's hummingbird (*Calypte costae*).
- Mammals likely to be present in the study area include: coyote (*Canis latrans*), black-tailed jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audubonii*), Harris antelope squirrel (*Ammospermophilus harrisii*), and pocket mice (*Perognathus spp.*).

- Reptiles likely to occupy the study area include: western diamond-backed rattlesnake (*Crotalus atrox*), common side-blotched lizard (*Uta stansburiana*), tiger whiptail (*Aspidoscelia tigris*), and gopher snake (*Pituophis catenifer*).

4.1.3. Sensitive Species and Habitat

The U.S. Fish and Wildlife Service (USFWS) list of candidate, threatened, and endangered species occurring in Maricopa and Pinal counties was reviewed to determine their potential for occurrence within the study area. Table 3.1 identifies USFWS-listed species for Maricopa and Pinal counties and provides a study area habitat assessment for each species. Seventeen species were identified during the review; none of the species currently are known to be present in the study area. No species habitat or critical habitat on the USFWS listing occurs within the study area.

A list of sensitive species known to occupy the study area was requested from the Arizona Game and Fish Department (AZGFD) Natural Heritage Program. In response to this request, AZGFD identified only the western burrowing owl as occurring in close proximity to the study area (Figure 4-1). The western burrowing owl is one of the many bird species that is protected by the Migratory Bird Treaty Act. Western burrowing owls inhabit open and sparsely vegetated desert habitats. They nest in burrows associated with mammals and prefer flat terrain that allows for good visibility.

FIGURE 4-1 WESTERN BURROWING OWL

The Germann Road study area has suitable burrowing owl habitat, such as agricultural lands (especially fallow agricultural lands that have not been recently farmed and, therefore, provide foraging habitat). Nevertheless, as stated previously, the majority of the study area's native desert habitat has been converted to active agricultural and residential uses. Converted lands are seldom occupied by sensitive species. Therefore, the potential risk of impacting a sensitive species or species habitat within the study area is very low. A listing of potential federal candidate, threatened, and endangered species, as well as Arizona species of concern, may be referenced in Draft Working Paper No. 2, Environmental Overview.

4.2 NATURAL RESOURCES

Natural resources take many forms and are considered at various levels of attention and concern. This section addresses issues, concerns, and potential impacts regarding water resources, air quality, ambient noise environment, and the visual/aesthetic values of the study area.

4.2.1. Water Resources

Waters of the United States

Waters of the United States (WOUS) are protected under Section 404 of the Federal Clean Water Act of 1972, as amended. WOUS fall under the jurisdiction of the United States Army Corps of Engineers (USACE). Section 404 requires issuances of a permit for the discharge of dredged or fill material into navigable waters.

The state of Arizona interprets its surface water quality standards to apply to "intermittent, non-navaigable tributaries." The state also assigns water quality standard rules to intermittent surface waters. The state regulates these hydrologic features as WOUS, because it is estimated that approximately 95 percent of surface waters in Arizona are intermittent or ephemeral. Generally, WOUS in Arizona includes: rivers/streams, dry washes/arroyos, ponds/lakes, wetlands, and constructed canals/laterals fed by or conveying natural drainage flows.

There is a potential dry wash within the study area and two drainage channels crossing the project corridor (Figure 4-2). The potential dry wash shows up as a blue line on topographic maps prepared by the U.S. Geologic Service (USGS). The main tributary is located north of the Germann Road alignment in undeveloped land controlled by the ASLD. It drains from a point east of Ironwood Road to the Diversion Dike at the Meridian Road alignment. As dry washes/arroyos are considered WOUS under Arizona's interpretation, this drainage feature would be regulated under the jurisdiction of USACE in accordance with the Clean Water Act, as amended. Therefore, a jurisdictional delineation will need to be prepared for the potential dry wash as proposed improvements to Germann Road proceed. A southern tributary south of the Germann Road alignment has been significantly disrupted by residential development east of Ironwood Road and rerouted/displaced by a major dairy operation in the southeast quadrant of the Meridian Road/Germann Road intersection.

In addition, there are two man-made drainage features within the study area that may be considered WOUS candidates: the drainage channel (an informal ditch and containment berm) located on the east side of the Meridian Road alignment, and the Rittenhouse Road Drain. Based on the interpretation established by Arizona, there is the potential that these three water courses may be considered WOUS. Thus, additional, more detailed review of these features will be necessary to determine whether they qualify as WOUS and what type of Section 404 permit will be required, if any, based on the potential for project-related impacts. Modifications to these water courses will likely be allowed even if they are determined to be jurisdictional, but permitting may be needed. Therefore, project development actions should involve early coordination with USACE to assess jurisdictional status of these water courses prior to detailed design of transportation improvements for the corridor.

FIGURE 4-12 POTENTIAL DRY WASH IN STUDY AREA

Unique Waters

Arizona's Outstanding Natural Resource Waters (ONRWs) are called "Unique Waters." Rules governing unique waters are outlined in the *Arizona Administrative Code* at section R18-11-112. The director of the Arizona Department of Environmental Quality (ADEQ) classifies surface waters as unique through a finding that the river or stream is an "outstanding state resource water," based on the application of specific criteria. Currently, there are 18 unique waters identified within the state, none of which are located within or proximate to the study area. The ADEQ has not identified any impaired or outstanding Arizona waters within or adjacent to the project corridor.

Wetlands

For regulatory purposes under the Clean Water Act and Arizona regulations, wetlands refer to areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. There are a few locations in the study area that show evidence of wet conditions for extended periods of time and, thus, could have potential to support some species of wetland vegetation. These locations include flat areas associated with the Rittenhouse Road Drain and some roadside ditch sections that appear to receive seepage from nearby irrigation ditches. A more detailed examination and evaluation of these potential wetlands will be necessary through early coordination with the ADEQ to determine the need for a Section 404 permit for any project-related impacts.

Water Quality

No specific identification of water quality issues associated with the study area was found in a search of the ADEQ website. It is anticipated that runoff from improvements constructed in the Germann Road corridor ultimately will discharge to FCDMC facilities and will be subject to their regulations. Temporary measures to control discharges of sediment and other pollutants will be required during construction. Permanent storm water pollution control measures also likely will be required. The FCDMC regulations encourage the use of natural processes in the treatment of storm water. Treatment is commonly accomplished in retention basins, which also help to mitigate potential negative effects from increased storm water runoff associated with the construction of impervious surfaces, associated with roadway facilities.

4.2.2. Air Quality

The Clean Air Act of 1970 established National Ambient Air Quality Standards (NAAQS) for six pollutants. These pollutants, referred to as the "Criteria Pollutants," are: carbon monoxide (CO), nitrogen dioxide (NO_x), ozone (O_3), particulate matter (PM), sulfur dioxide (SO_x), and lead (Pb). Details associated with these standards, as promulgated by the U.S. Environmental Protection Agency (EPA) are presented Draft Working Paper No. 2, Environmental Overview. The state of Arizona standards are identical to NAAQS. Motor vehicle use is a key emissions source for the three pollutants. In the past, the Phoenix metropolitan area was in violation of CO. Currently, the metro area is experiencing violations of the O_3 and PM standards.

Status of the Study Area

The Germann Road study area is located within three different, overlapping areas with air quality regulatory requirements. The relationship of the study area to these requirements is summarized below:

- CO Maintenance Area —The CO maintenance area boundary encompasses 1,814 square miles (approximately 20 percent) of Maricopa County, including that portion of the study area in Maricopa County. The portion of the study area in Pinal County is not included in the official CO maintenance area. However, Arizona House Bill 2538 specifically defines an area outside Maricopa County within Pinal County surrounding the town of Queen Creek that must create and enforce a CO Maintenance Area, which requires certain actions to reduce CO emissions.
- 8-Hour Ozone Nonattainment Area —The 8-hour ozone nonattainment area covers approximately 4,880 square miles of Maricopa County, including that portion of the study area in Maricopa County. The official nonattainment area does not include the Pinal County portion of the study area. However, Arizona House Bill 2538 specifically defines an area outside Maricopa County within Pinal County

surrounding the town of Queen Creek that must create and enforce an ozone maintenance area, which requires certain actions to reduce ozone emissions.

- PM-10 Nonattainment Area —The PM-10 nonattainment area encompasses 2,916 square miles, a portion of the study area in Maricopa County and a six-mile square of Pinal County concerning Apache Junction. The portion of the study area in Pinal County does not fall under the boundary of the PM-10 nonattainment area.

Conformity

The Clean Air Act Amendments (CAAA) enacted in 1990 and published in the *Federal Register* on November 30, 1993, defined conformity as meaning "conformity to a SIP's [State Implementation Plans] purpose of eliminating or reducing the severity and number of violations of the NAAQS." Conformity determinations for federal actions related to transportation projects must meet the requirements of 40 CFR Parts 51 and 93, Transportation Conformity Rule Amendments to Implement Provisions Contained in the 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA–LU).

Transportation control measures (TCMs) have been adopted as part of the SIPs and Federal Implementation Plans (FIPs). The portion of the Germann Road study area in Maricopa County is in air quality nonattainment areas for O_3 and PM_{10}. Therefore, any given individual project will need to be included in an approved Transportation Improvement Program (TIP) for at least one year, and no more than three years, prior to construction. That TIP will have to be approved by the Federal Highway Administration (FHWA) and EPA as conforming to the SIP and the FIP. Thus, future transportation improvements must follow, to the extent possible, recommendations established in MAG's Regional Transportation Plan (RTP).

The MAG RTP indentifies Germann Road as a new/improved arterial between Ellsworth Road and the Signal Butte Road alignment. Meridian Road, north of Germann Road, has been similarly identified. To ensure improvements to Germann Road remain in conformance with regional air quality goals, improvements extending from Power Road to Ironwood Road, once defined by this study, must be considered for inclusion in the RTP and accounted for in the Conformity Analysis.

The MAG RTP and the Conformity Analysis ensure additional roadways do not cause or contribute to new violations of the air quality standards and assists in maintaining the conformity of existing air quality improvement plans. Construction activities have a high potential to result in deterioration of existing air quality on a temporary basis. Such impacts will be localized. Dust generated by construction activities will be controlled in accordance with Maricopa County Air Pollution Regulations (MCAQD Rule 310) and as stipulated in the required Dust Control Permit.

4.2.3. Noise

Existing Noise Receptors

Noise attributes of the study area are typical of an area in transition from rural agrarian lifestyle to an urban lifestyle. There is very little regular traffic operating over the majority of Germann Road at this time; therefore, traffic noise is not an issue. There are higher levels of traffic present west of Sossaman Road, where intensive residential developments and commercial activity is present. Traffic speeds are 45 mph and less. FHWA has established Noise Abatement Criteria (NAC) in 23 CFR § 772 for various categories of social interaction. These criteria have been adopted as part of the ADOT Noise Abatement Policy, effective July 23, 2011. The NAC specify an allowable hourly traffic noise level for the different categories of land uses and activities. Additional detail regarding FHWA and ADOT policies is available for review in Draft Working Paper No. 2, Environmental Overview.

There are few particularly noise-sensitive receptors in the study area. Much of the land within the study area falls under Activity Categories F and G, which include agricultural land, industrial facilities, and undeveloped lands that are not permitted. Category B, Residential, receptors are concentrated in three areas: between Power Road and Sossaman Road south of Germann Road; between Hawes Road and Ellsworth Road north and south of Germann Road; and, east of Ironwood Road south of Germann Road. There also are a few scattered individual residences fronting Germann Road. Category C includes locations requiring a certain degree of quiet for the reasonable conduct of activities, such as schools, amphitheaters, and parks. There are two schools associated with the master-planned residential communities at the western end of the study area. A church is located on the east side of Sossaman Road, south of Rittenhouse Road.

Noise Impact Assessment

The principal noise issue in the study area is aircraft operations associated with Phoenix-Mesa Gateway Airport, located one mile north of Germann Road. The latest available interpretation of noise conditions associated with Phoenix-Mesa Gateway Airport is presented in the Strategic Development Plan prepared by the city of Mesa in 2008. The *Preferred Concept: Study Area Land Uses* map indicates the 60 decibel (dBA) noise contour intersects Germann Road between Ellsworth and Signal Butte roads. The town of Queen Creek General Plan depicts the 60 dBA noise contour extending south beyond Ocotillo Road. The 65 dBA noise also cross Germann Road, extending to a point between Queen Creek and Ocotillo roads. Refer to the Draft Working Paper No. 2, Environmental Overview for graphic representations of airport-related noise contours as defined by these two sources.

4.2.4. Visual and Aesthetic Character

The viewshed of the Germann Corridor varies by location, but includes a mixture of areas of undeveloped desert landscape, residential land use, agriculture, and transportation infrastructure. Based on aerial photographs, the majority of the study area is devoted to agricultural consisting of field crops and nursery products (e.g., shrubs and trees). A large area in the eastern portion of the corridor remains in its natural state; however, it is bordered to the west by two large industrial complexes. Modern disturbances, such as high-voltage power lines, irrigation canals, drainage channels, intensive residential development, and commercial and industrial facilities create a visual contrast with the natural setting of mountains in the distance.

4.3 HAZARDOUS MATERIAL CONCERNS

A review of the various state and federal databases for hazardous materials was conducted for the study area; a review of aerial photographs and a detailed search of these databases were not performed. According to information available from the above named sources, there are no currently known Superfund, Water Quality Assurance Revolving Fund (WQARF), Underground Storage Tank (UST), Leaking Underground Storage Tank (LUST), inactive landfill, septic haulers, or drywell sites present in the study area.

A search of the Arizona Targeted Site Investigation (TSIS) Program, Toxic Substance Control Act (TSCA), ADEQ Hazardous Material Incident Logbook, and National Response Center databases did reveal two TSCA facilities in the study area:

- TRW Vehicle Safety System at 11202 East Germann Road; and
- CMC Rebar Arizona at 11444 East Germann Road.

There have been reports of four releases at these sites in the past 20 years.

Germann Road is one mile south of the property boundary line of Phoenix-Mesa Gateway Airport, which formerly was Williams Air Force Base. This facility is listed on the National Priority List (NPL) as a federal Superfund site. Conditions at this site are being addressed by the United States Air Force (USAF) through a Federal Facilities Agreement with the EPA, ADEQ, and the Arizona Department of Water Resources (ADWR).

4.4 CULTURAL RESOURCES

Several federal, state, and local laws have been enacted to preserve cultural resources. Section 106 of the National Historic Preservation Act (NHPA) of 1966 (16 U.S.C. § 470 et seq.) requires federal agencies to take into account the effects of proposed undertakings on historic properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. The "Section 106" process by which this Council review must occur is defined in 36 CFR § 800 16 (y), Protection of Historic Properties. The National Environmental Protection Act (NEPA) of 1969

(40 CFR § 1500) requires projects involving a significant federal action to be evaluated for impacts to the human and natural environment. Other acts, including the Archaeological Resources Protection Act of 1979 (16 U.S.C. § 70aa-mm), the Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. § 3001-3013), the American Indian Religious Freedom Act (42 U.S.C. § 1996 and 1996a), and Section 4(f) of the Department of Transportation Act of 1966 (23 U.S.C. § 138) also ensure review and evaluation of potential impacts on cultural resources relative to projects proposed on federal lands, funded by federal monies, or requiring a federally-issued permit. Similarly, Arizona Revised Statutes (ARS), Sections 41-841 through 41-847 and 41-861 through 41-881, require protection of cultural resources and Native American graves during undertakings in Arizona that do not fall under federal jurisdiction. The Arizona State Historic Preservation Act of 1982 directs state agencies to consider impacts that agency sponsored or funded projects may have on historic properties owned or controlled by the agency.

Cultural resource considerations within the study area were identified from information gathered from AZSite, Arizona's electronic inventory of cultural resources maintained by the Arizona State Museum (ASM) at the University of Arizona. Information also was gathered from the State Historic Preservation Office (SHPO) in Phoenix, and the National Park Service's National Register Information System (NRIS) was used to determine if any NRHP-listed properties are located in the study area. In addition, historic cadastral survey maps available from the Bureau of Land Management (BLM) were reviewed. A detailed assessment of cultural resources is presented in Draft Working Paper No.2, Environmental Overview. Findings associated with this review are discussed in the following subsections.

4.4.1. Archaeological and Prehistoric Sites

Surveys have been performed for a variety of projects, including development, road construction, fiber optic, power, and gas lines, a cellular tower, a power substation, and an irrigation canal. These studies have revealed three sites of interest within the Germann Road corridor: two segments of the Southern Pacific Railroad (historic), and a large Hohokam ballcourt village (prehistoric).

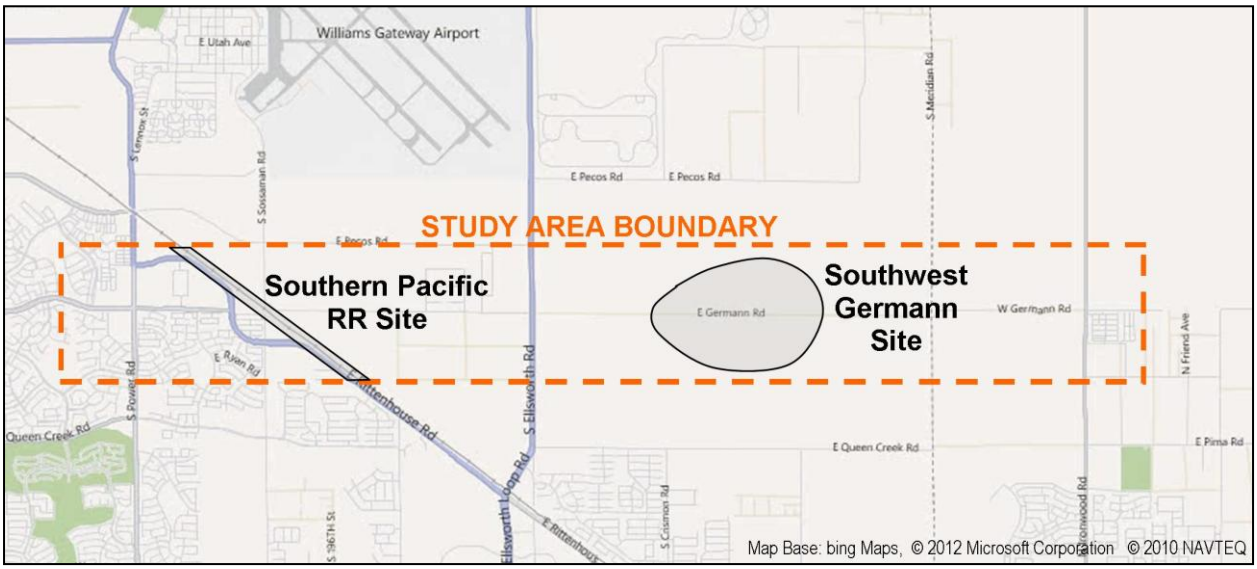
Southern Pacific Railroad Segments

The two railroad alignments passing through the western portion of the study area are both segments of the former Southern Pacific Railroad (SPRR), which was acquired in 1996 by the current operator of the line, the Union Pacific Railroad (UPRR). The historic rail line includes the Wellton to Phoenix to Eloy spur and the Mesa to Winkelman spur. Segments of both railroad alignments have been determined eligible for the NRHP by SHPO under criterion A (for association with a significant event).

Southwest Germann Site – Prehistoric Hohokam Ballcourt Village

A large Hohokam ballcourt village, referred to as the Southwest Germann Site, is a prehistoric cultural resource considered eligible for listing on the NRHP under criterion D (for potential to provide cultural information). This settlement area, shown in Figure 4-3, was likely developed and used between the years A.D. 775 (the start of the Hohokam "Pioneer Period") and A.D. 1450 (end of the Hohokam "Classic Period"). The site has been documented since the 1930s, by which time substantial disturbance had already occurred. Numerous archaeological investigations since 2000 have confirmed that surface and subsurface features still exist.

FIGURE 4-23
GENERAL LOCATION OF CULTURAL RESOURCE SITES



Source: Exhibit E, Scenic Areas, Historic Sites, and Archaeological Sites in Application for a Certificate of Environmental Compatibility, SRP Abel-Moody 230kV Transmission Project, June 2009.

Complete studies relating to this site indicate several investigators have concluded the Southwest Germann Site should be viewed not as one site, but as an archaeological district that reflects a settlement system composed of closely related residential areas. This archaeological site is not unique, as there are ballcourt villages and other Hohokam ruins nearby and outside of the study area. Additional details regarding this site are included in Appendix B of Draft Working Paper No. 2, Environmental Overview.

4.4.2. Historic Sites

Historical materials provide evidence of the presence of Queen Creek Road, one unnamed road, and the Arizona Eastern Railroad (AZER) in Sections 25 and 26 in Township 2 South, Range 7 East. The AZER operated lines in the late 1800s serving the mining districts. The AZER still operates today, with active lines from Globe and Clifton south to the UPRR

east-west Sunset Route. Nevertheless, these features are south of the study area and would not be directly impacted by any improvements in the Germann Road Corridor. Additional information regarding historic sites is included in Appendix B of Draft Working Paper No. 2, Environmental Overview.

4.5 SECTION 4(f) RESOURCES

Section 4(f) of the U.S. Department of Transportation Act (DOT Act) of 1966 directs federal transportation agencies to avoid use of land from public park and recreation lands, wildlife and waterfowl refuges, and historic sites (publicly or privately owned). Federal transportation funds cannot be approved for projects with such uses unless there is no feasible and prudent alternative, and all possible planning must be done to minimize harm to the resource. Section 4(f) restrictions apply to historic sites that are listed or eligible for listing on the NRHP, if any funding or other approval by a USDOT agency is associated with implementing Germann Road improvements. Accordingly, the restrictions would apply to the historic railroad segments and the archaeological Southwest Germann Site discussed previously in Section 2.6.1.

With regard to other potential Section 4(f) resources, land use plans for the town of Queen Creek indicate a parcel of land owned by the town has been designated for recreation/conservation/parks uses (refer to Figure 4-3). This parcel is located one-quarter mile east of the Signal Butte Road alignment; its northern extent is approximately 700 feet south of Germann Road.

5.0 DRAINAGE SUMMARY

This section provides a summary of the existing drainage conditions in the study area and specifically along the Germann Road corridor.

5.1 NATURAL DRAINAGE AND FLOODPLAINS

Natural drainage tendencies largely have been controlled with systems of channels, canals, and ditches. There are no natural perennial water courses, wetlands, or bodies of water present in the study area; all drainage events are seasonal in nature. Figure 5-1 shows the existing drainage pattern along the project corridor. The figure shows the presence of a 100-year floodplain identified by the Federal Emergency Management Agency (FEMA) along the east side of the Meridian Road alignment and just north of the study area.

5.2 EXISTING DRAINAGE IMPROVEMENTS

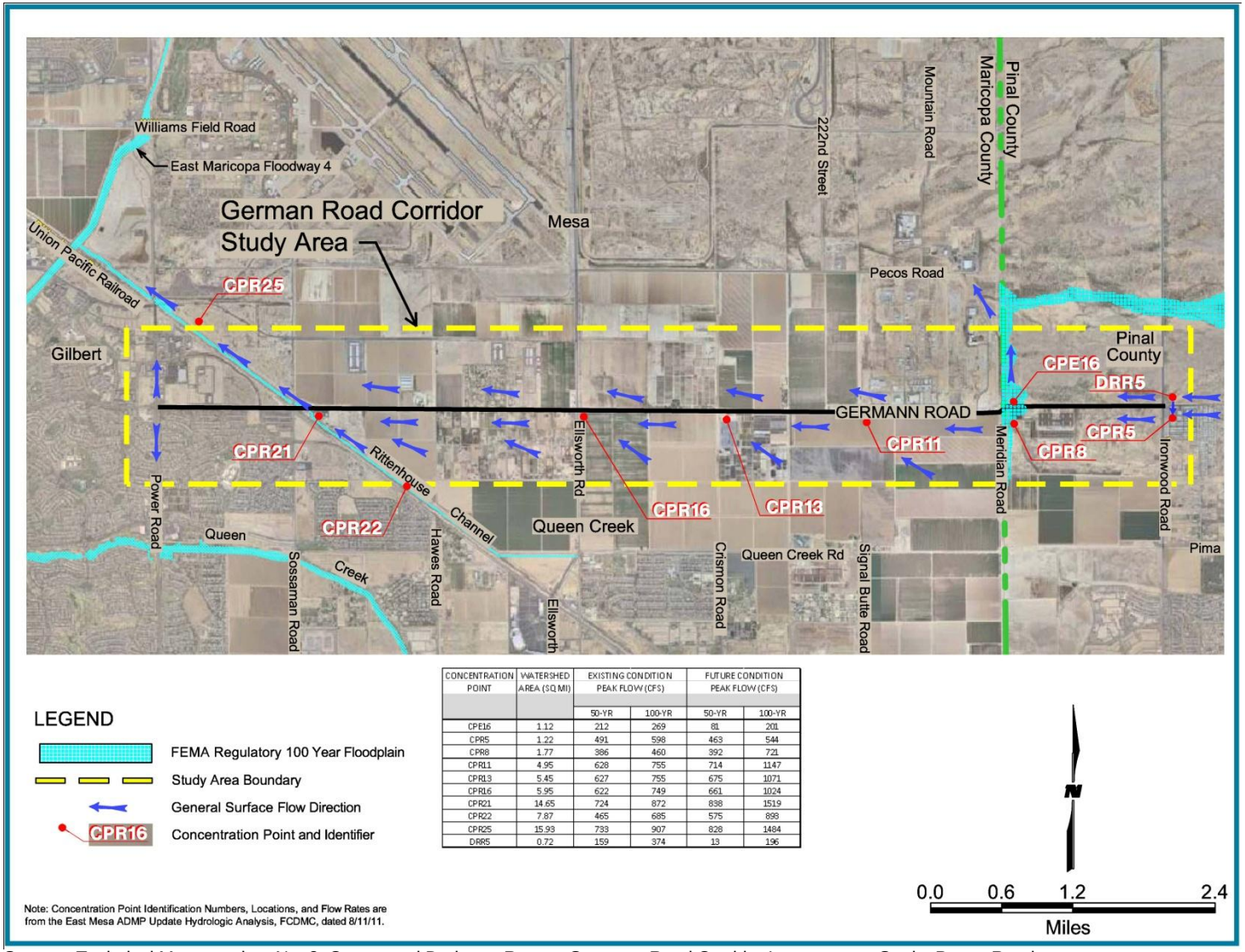
The majority of the existing Germann Road has a rural cross-section without curbs. In areas where curbs have been constructed, drainage inlets or chases also have been constructed at various intervals to remove storm water from the roadway. The inlets typically discharge runoff to adjacent retention ponds through short segments of storm sewer. Chases typically discharge either directly to retention ponds or to drainage channels that lead to retention ponds. The more significant facilities are discussed in subsequent sections.

5.2.1. East Mesa Area Drainage Master Plan Update

The majority of the Germann Road corridor is located within the study area of the East Mesa AMDP. The original East Mesa AMDP was completed by the FCDMC in 1998. Since that time several of the recommended drainage features identified in the ADMP have been constructed, and others are in development or construction stages (Figure 5-2). Significant development also has occurred in the watershed since 1998. The FCDMC currently is preparing the ADMP Update to reflect the existing condition and current land use planning for the future condition in the designated plan area.

The first step associated with the AMDP Update was preparation of a Hydrologic Analysis Report. The Hydrologic Analysis Report establishes for the Germann Road Corridor study area the assumption that runoff from areas upstream (i.e., east) of Meridian Road and adjacent to the south side of Germann Road will be conveyed west along the south side of Germann Road to the Rittenhouse Road Drain, also referred to as the Rittenhouse Channel. This assumption derives from the breech of a dike and channel along the east side of the Meridian Road alignment in the early 1990s. Given the failure of this dike, it was concluded the dike will breech in significant runoff events and, therefore, is not worthy of consideration as a flood control facility.

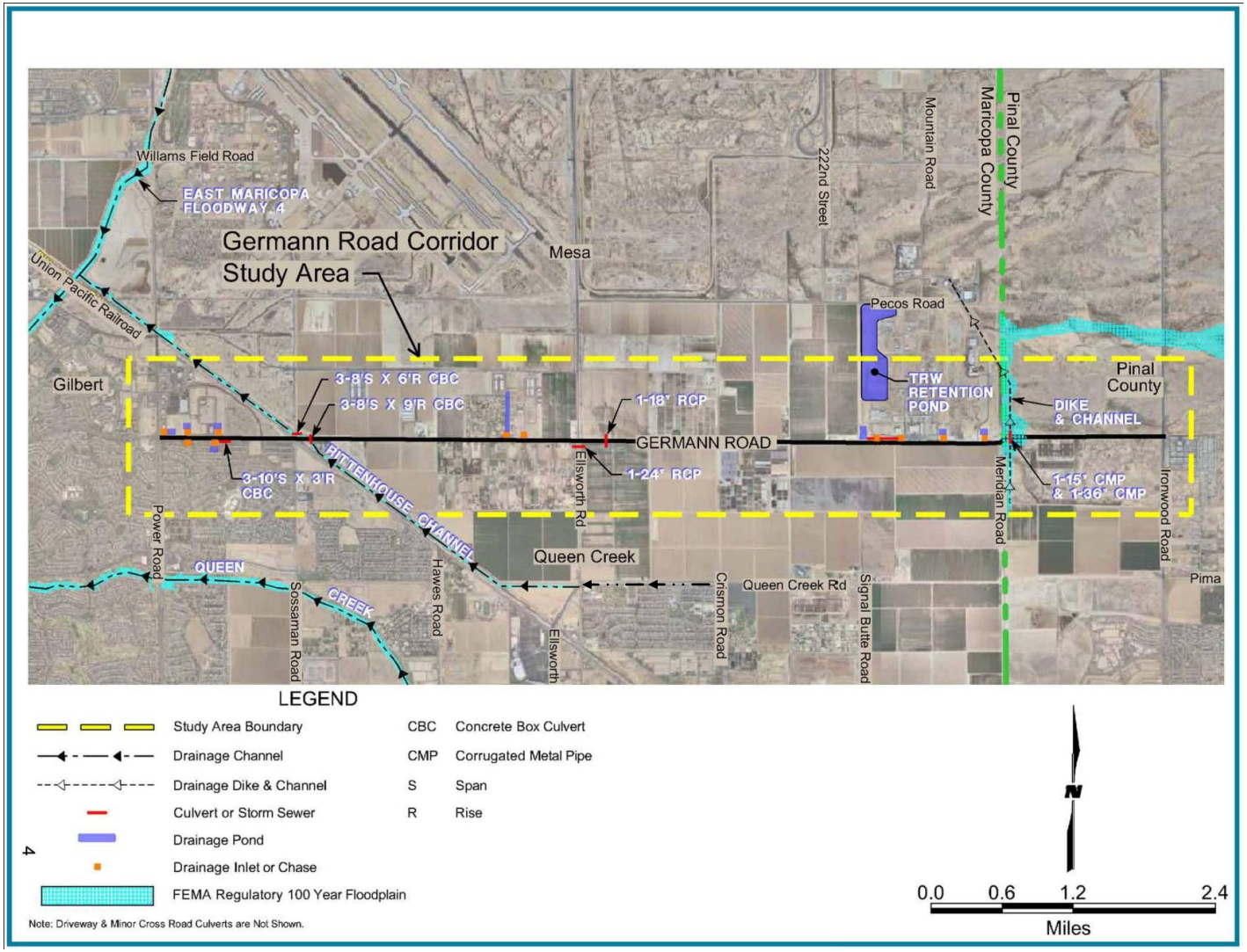
FIGURE 5-1 NATURAL DRAINAGE AND FLOODPLAINS



CONCENTRATION POINT	WATERSHED AREA (SQ MI)	EXISTING CONDITION PEAK FLOW (CFS)		FUTURE CONDITION PEAK FLOW (CFS)	
		50-YR	100-YR	50-YR	100-YR
CPE16	1.12	212	269	81	201
CPR5	1.22	491	598	463	544
CPR8	1.77	386	460	392	721
CPR11	4.95	628	755	714	1147
CPR13	5.45	627	755	675	1071
CPR16	5.95	622	749	661	1024
CPR21	14.65	724	872	838	1519
CPR22	7.87	465	685	575	898
CPR25	15.93	733	907	828	1484
DRR5	0.72	159	374	13	196

Source: Technical Memorandum No. 2, Conceptual Drainage Report, Germann Road Corridor Improvement Study, Power Road to Ironwood Road, March, 2012.

FIGURE 5-2 EXISTING GERMANN ROAD CORRIDOR DRAINAGE IMPROVEMENTS



Source: Technical Memorandum No. 2, Conceptual Drainage Report, Germann Road Corridor Improvement Study, Power Road to Ironwood Road, March, 2012.

Preliminary alternatives developed in conjunction with the ADMP Update considered a future regional drainage channel along the south side of Germann Road between Meridian Road and the Rittenhouse Road Drain. However, the town of Queen Creek expressed the preference to not include any major drainage channels in the corridor, and so other conveyance schemes for this flow will be investigated as the study proceeds toward recommendations.

5.2.2. Rittenhouse Road Drain

The Rittenhouse Road Drain (or Rittenhouse Channel), which intersects Germann Road just east of Sossaman Road, is a facility developed and maintained by the FCDMC. Its primary function is to mitigate capacity problems associated with the EMF west of the study area. The EMF's design capacity of 8,000 cubic feet per second (cfs) was determined to be inadequate for supporting the existing condition 100-year flows of 16,000 cfs for the drainage area. In the study area, the Rittenhouse Road Drain consists of an earthen channel that runs along Ryan Road from Crismon Road to the UPRR, where it turns to run parallel with the railroad corridor to the EMF. It mitigates the capacity problem of the EMF by providing a large, off-line detention basin and associated channel and structure improvements and provides 100-year flood protection to the school. The channel also reduced the floodplain on the north side of the railroad.

The Hydrologic Analysis Report prepared for the ADMP Update indicates existing channel capacity is capable of conveying the 100-year existing condition discharge with some slight freeboard deficiencies in the reach upstream of Germann Road. Freeboard in this case pertains to the vertical distance between the calculated water surface elevation in the channel at the design flow rate and the elevation that the channel banks would overflow.

Freeboard is required by agency criteria to provide a factor of safety. The Hydrologic Analysis Report also indicates that future condition peak rates will be higher, and channel containment issues are likely in the area upstream (i.e. east and south respectively) of the Sossaman and Germann road crossings. The report further indicates that freeboard deficiencies will be widespread along the channel in the future condition. It is anticipated that the ADMP Update will result in development of a solution to mitigate expected freeboard deficiencies. Potential solutions could include: modifications to the existing structures under Sossaman and Germann roads and adjacent deficient channel sections; upstream diversion of flows to other outfall; or additional detention or retention of runoff to reduce peak flow rates in the channel.

5.2.3. Dike and Channel along Meridian Road Alignment

This earthen facility is located along the east side of the Meridian Road alignment as it crosses the study area. There is some indication that this facility was constructed to protect

downstream farmland. As noted previously, the dike was breeched in the 1990s. No other definitive documentation of this facility was discovered.

5.2.4. Drainage Inlets and Chases

The majority of the existing Germann Road has a rural cross-section without curbs. In areas where curbs have been constructed, drainage inlets or chases also have been constructed at various intervals to remove storm water from the roadway. The inlets typically discharge runoff to adjacent retention ponds though short segments of storm sewer. Chases typically discharge either directly to retention ponds or to drainage channels that lead to retention ponds.

6.0 UTILITIES SUMMARY

There are several types of physical, man-made features in the study area reflecting growth and development actions. Since the early 19th Century, when the earliest homesteaders started farming and ranching along Queen Creek Wash, developers and residents have been creating roadways, building homes, establishing places of commerce, and constructing utilities to support a growing population. Table 6-1 provides a summary of utility stakeholders identified with facilities in the study area and the type of utility. This section describes the most significant utility facilities that could influence the identification and implementation of transportation improvements in the study area.

TABLE 6-1
UTILITIES CONTACTED

Utility/Agency	Service Provided
City of Mesa Gas	Natural Gas
City of Mesa Water	Water
Salt River Project (SRP)	Water, Gas, Electric
Cox Communications	Cable TV, Telephone, Internet
CenturyLink	Telephone, Internet
ADOT Utility Coordinator	Traffic Signal Operations

6.1 ELECTRIC

6.1.1. Underground Electrical Lines

Electric lines are underground west of Sossaman Road, having become the standard for newer developments. Primary 12 kV underground electrical (UGE) lines run down the center of Power Road and along the east side of the roadway ROW. Similar electrical service lines also run along the north side of Germann Road from Power Road to 188th Street and along the south side from Power Road to Sossaman Road. 12 kV UGE lines also have been installed along both sides of Rittenhouse Road north and south of Germann Road. There are small sections of 12 kV UGE lines east of Sossaman Road associated with newer commercial and industrial developments and certain residential properties. A 69 kV UGE line extends north to Pecos Road from the substation at the northeast corner of Germann Road and the Signal Butte Road alignment.

6.1.2. Overhead Electrical Lines

Overhead electrical (OHE) lines are prominent at the intersection of Germann and Sossaman roads. A 12 kV OHE line follows the west side of the UPRR corridor and former alignment of Rittenhouse Road, crossing Sossaman Road and the Germann Road alignment. This utility corridor once supported a 69 kV OHE line for its full length through the study area. With realignment of Rittenhouse Road north of Germann Road, the 69 kV line was truncated

approximately 0.7 miles north of Germann Road and 0.4 miles south of Germann Road. Two other OHE lines in this area follow Sossaman Road: a 12 kV line runs north along the west side of the roadway from the Germann Road/Sossaman Road intersection; a second line runs along the east side of the roadway from a connection with the lines in the UPRR corridor to a substation approximately one-half mile south.

A 12 kV OHE line runs the full length of existing Germann Road between Sossaman Road and the Meridian Road alignment along the north side. Branching lines exist at the following locations:

- Hawes Road
- Ellsworth Road
- Crismon Road alignment
- 220th Street alignment (Queen Creek) – 0.5 miles west of Signal Butte Road alignment
- 226th Street alignment (Queen Creek) – 0.25 miles east of Signal Butte Road alignment
- Meridian Road alignment
- Ironwood Road

In addition, there are numerous local (i.e., residential and commercial) service lines extending from the Germann Road line and branching lines.

There are three other 69 kV lines in the eastern portion of the study area. A 69 kV OHE line extends south from the substation to the line running along the north side of Germann Road. A second 69 kV OHE line is located along the west side of the Meridian Road alignment, extending south from a substation approximately 0.5 miles north of Germann Road to the 12 kV OHE line running along the north side of Germann Road. The third 69 kV OHE line parallels the other 69 kV OHE line west of the Meridian Road alignment to the north side of the Germann Road alignment, then turns east and continues out of the study area.

A 12 kV line also parallels the Meridian Road alignment from a substation just north of the 69 kV substation. This line connects with the 12 kV OHE line running along the north side of Germann Road. The 12 kV line continues south following the Meridian Road alignment and turns east along the south side of the Germann Road alignment, which shifts to the north approximately 250 feet to Ironwood Road. A separate 12 kV OHE line on the west side of Ironwood Road terminates at the Germann Road/Ironwood Road intersection, and there is a second line on the east side of Ironwood Road between Germann Road and Pheasant Run Road.

6.2 NATURAL GAS

There are three natural gas providers serving the study area: SRP, city of Mesa, and Southwest Gas.

6.2.1. SRP

SRP gas lines run along the north and south side of Germann Road from the western edge of the study area boundary (Autumn Drive) to Power Road. East of Power Road, there is only a single 12" steel line on the south side of the street for 0.5 miles. A second 4" plastic gas line sporadically joins and leaves the main line. The main gas line runs under Sossaman Road and continues along the north side of Germann Road to Hawes Road, where a second line begins on the south side of the street. The secondary line continues to Ellsworth Road, while the high pressure line continues 1.5 miles to 220th Street/Merrill Road.

6.2.2. City of Mesa

The city of Mesa has a high pressure gas main that runs from Signal Butte Road to the Meridian Road alignment along the south side of the Germann Road. This line includes intermittent crossings to serve facilities on the north side of the street.

A gas line is located in the middle of Power Road north of Germann Road. South of Germann Road, the gas line shifts to the east side of Power Road.

6.2.3. Southwest Gas

There is a Southwest Gas (SWG) high-pressure gas line running along a sixty- foot offset to the southwest of the UPRR in the same utility corridor used by SRP for its OHE electrical lines. In this same area, there also is a SWG line located 60 feet east of the center of the ROW between Germann Road and Sossaman Road.

There is a second SWG high-pressure gas line that parallels the eastern side of the UPRR corridor and Rittenhouse Road Drain. As it crosses Sossaman Road, it follows the flood control channel to the north side of Germann Road, following Germann Road for approximately 0.25 miles before turning south and rejoining the path parallel to the UPRR corridor and Rittenhouse Road Drain. A SWG substation is located at the southeast corner of the intersection of Germann Road and 195th Street (in Queen Creek).

6.3 WATER

6.3.1. Town of Queen Creek

The town of Queen Creek has located a 12" water line under the outside travel lane of Germann Road between Power and Rittenhouse roads. The water line follows Rittenhouse Road to Sossaman Road, crossing perpendicular to the UPRR tracks to rejoin Germann Road. The line drops down to an 8" diameter approximately 500 feet after crossing the

UPRR tracks and continues along the southern side of Germann Road. One-half mile east of Hawes Road, it drops in size again to a 6" pipe, terminating at Ellsworth Road.

There are several places where the Germann Road water line branches off to feed residential and commercial developments. In all but one instance, the branches are a smaller size than the main water line, (e.g., 12" to 8" or 8" to 6"). The one exception is a branch that goes north at a point 0.25 miles to the east of Power Road; this water line remains a 12" pipe. There are 12" branches extending north on Power Road, north and south along Rittenhouse Road, and south along Sossaman Road. Six-inch water lines run south along Hawes Road and Ellsworth Road.

6.3.2. City of Mesa

Mesa has a 16" water line running along the Hawes Road alignment from a 20" transmission main between Pecos Road and Germann Road. The line turns west for 0.25 miles to serve a residence and public storage business on the north side of the roadway. This transmission main also serves the commercial development on the south side of Pecos Road 0.5 miles east of Sossaman Road. The city also has a 12" line that runs for approximately 0.25 miles east of 88th Street (between Hawes and Ellsworth roads) under the southern edge of the road. All distribution lines that connect to it are 8" pipes.

In addition, there are two city of Mesa well sites located along the Meridian Road alignment: one at the northwest corner of its intersection with Germann Road and the other 0.5 miles north on the west side of the Meridian Road alignment. These sites are connected with a 12" line owned by Mesa that starts several hundred feet west of Signal Butte Road and runs along the north side of Germann Road to the Meridian Road alignment, where it turns north expanding to 16" approaching Pecos Road.

6.4 SEWER

6.4.1. Town of Queen Creek

The town of Queen Creek has a temporary force main running along Power Road from Queen Creek Road to Germann Road. The force main extends approximately 0.33 miles along the north edge of Germann Road from Power Road. There are two other areas that have sewers installed, but these lines are not yet connected into the larger system. This is sewer service installed by developers in anticipation of future connection when the system is extended to the development by the town. One area is a small system installed to serve the public storage business and residence located along the north side of Germann Road directly west of Hawes Road. The other installed but not connected sewer system is located between the Signal Butte Road and Meridian Road alignments. In both cases, the sewer runs underneath the existing roadway.

6.4.2. City of Mesa

The city of Mesa has installed and maintains a sewer line along Pecos Road. This line serves commercial developments with access to Pecos Road, including Pecos Sossaman Commerce Center, Pecos Gateway, Gateway Airport Commerce Park, and Southgate Commerce Park. The latter two developments front the north side of Germann Road 0.25 miles west of Ellsworth Road. An extension of this sewer service is present under Germann Road for 0.125 miles east of Atwood Road.

6.4.3. Town of Gilbert

The town of Gilbert has a sewer main running south under Power Road to Germann Road, where it turns west, exiting the study area.

6.5 FIBER OPTICS

ATT, MCI, Will Tell, and CenturyLink all have fiber-optic cables running along the UPRR corridor with a ninety-foot offset to the southwest. L3 Communications has a line that appears to cross the railroad tracks just south of the Germann Road alignment. There also is a fiber-optic conduit owned by the city for traffic signal connections located 3 feet north of the northern edge of pavement at the Germann Road/Sossaman Road intersection.

6.6 TELEPHONE

CenturyLink has telephone lines running along both sides of Germann Road for its entire length.

7.0 COMMITTED, PROGRAMMED, AND PLANNED TRANSPORTATION IMPROVEMENTS

Prior to developing concepts for future transportation improvements in the Germann Road corridor, adopted plans must be reviewed and other research conducted to identify committed and planned roadway and transit improvements. Committed improvement projects are those identified in a Capital Improvement Program (CIP) or the State Transportation Improvement Plan (STIP). These projects have been approved for implementation and a funding source(s) has been identified. Only projects in the current fiscal year (FY) are considered committed, because funding has been allocated for implementation. Programmed improvements constitute projects identified for implementation during the remaining years of the CIP or STIP, normally four years.

Planned improvement projects are those incorporated in mid- to long-term plans (10 to 20 years and beyond) adopted by various jurisdictions with the authority to identify and develop transportation projects in the study area. Planned projects are likely to be initiated; however, because funding commitments have not been established, these projects may not occur or could be implemented in an altered form, depending on timing and availability of funding. Still, they are relevant to the future conditions of the Germann Road corridor, as they reflect current thinking about projects that should be implemented to respond to both existing and future transportation needs.

The following sections summarize the results of this review/research of adopted planning documents of the town of Queen Creek, Maricopa County, Pinal County, ADOT, city of Mesa, and town of Gilbert.

7.1 COMMITTED AND PROGRAMMED ROADWAY IMPROVEMENTS

Germann Road – Ironwood Road to Meridian Road: This is a new construction project to create a two-lane roadway, which has been designated a Regionally Significant Route (RSR). The Pinal County FY 2009-2013 Capital Improvement Program (CIP) included funding of $1.15 million toward this project, but the project was delayed. The Pinal County Five-Year Transportation Improvement & Maintenance Program (FY 2011-2016) identifies a commitment of $250,000 for right of way acquisition and utility relocation in FY 2011-2012. However, this facility is an integral element of this study supported by FY 2010-2011 funding of $150,000. It is assumed that the $250,000 will be moved forward with completion of this study to facilitate right of way acquisition and utility relocation. Construction of the facility is programmed for FY 2013-2014 with county funding of $350,000 and non-county funding sources providing $1 million.

Power Road – Loop 202(Santan Freeway) to Pecos Road: This project represents Phase III of the Power Road improvement action and includes widening the facility from four to six lanes

with raised median, street lighting, landscaping, bike lanes, curb and gutter. FY 2011-2012 funding of $5.2 million by the city of Mesa and $4.5 million by Maricopa County is supporting ROW acquisition, design, and various construction actions. This principal arterial will have dual left-turn lanes at arterial intersections and exclusive right-turn lanes at selected intersections where traffic volumes warrant such an improvement. It is being implemented in partnership with the town of Gilbert and Maricopa County and is eligible for reimbursement through MAG (refer to Section 7.2.4, MAG Arterial Life Cycle Program).

Power Road/Pecos Road UPRR Crossing: The town of Gilbert has expended $7.465 million thus far on improving this intersection directly north of the Germann Road corridor study area. The town has scheduled an additional $50,000 in its 2011-2016 CIP to complete construction actions association with this improvement. The crossing is programmed for $3 million of operating funding annually.

188th Street at Germann Road: The town of Queen Creek CIP includes $383,500 in funding for intersection improvements at this location for FY 2011-2012. Operations and maintenance funding also has been provided to support intersection improvements at this location in the CIP. Funding at the level of $5,202 is scheduled for FY 2011-2012.

State Route 24 (Gateway Freeway): ADOT is working with the FHWA to develop a high-capacity, east-west, access-controlled transportation facility to serve projected Buildout of eastern Maricopa County and northern Pinal County (Figure 7-1). Initial design plans for the segment of SR 24 (formerly SR 802) between Loop 202/Santan Freeway and Ellsworth Road are being prepared for this new freeway, which runs north of the Phoenix-Mesa Gateway Airport; construction is scheduled for 2016. Alternatives to the east have been considered to complete the link with US 60 or SR 79 in the vicinity of Florence Junction. The study, design, and eventual construction of this facility are included in the MAG RTP for Maricopa County and funded through the voter-approved half-cent sales tax. Full implementation of this transportation improvement is anticipated in the period 2016-2020. The portion of SR 24 proposed to continue east into Pinal County has been suspended, awaiting advancement by ADOT of the *North-South Corridor Study*.

7.2 PLANNED ROADWAY IMPROVEMENTS

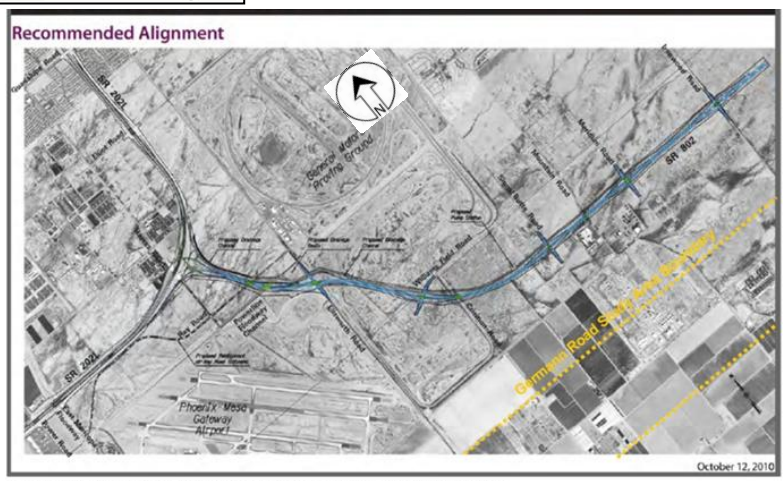
7.2.1. Maricopa County Plans

Maricopa County owns and maintains Germann Road between Sossaman Road and the Meridian Road alignment, which is the boundary with Pinal County. The County also owns and maintains Power Road within the study area as well as other roads that have not been turned over to municipal jurisdictions.

FIGURE 7-1 RECOMMENDED ALIGNMENT OF SR 24 (FORMERLY SR 802): LOOP 202 TO IRONWOOD ROAD

Source: State Route 24 (Gateway Freeway) Project Overview at www.valleyfreeways.com, July

NOTE: The initial phase of State Route 24 (previously SR 802) will be a one-mile stretch beginning at Loop 202 (Santan Freeway) near the Phoenix-Mesa Gateway Airport and ending at Ellsworth Road. The image below shows the potential alignment for SR 24 (SR 802) relative to the Germann Road Corridor study area, and is provided for reference only. Additional phases of this project and final alignment of this facility have been suspended by ADOT until the North-South Corridor Study in Pinal County advances.



Source: Project Overview and Map, State Route 802 at Valley Freeways www.adot.gov.

Potential transportation improvements previously identified in the County include:

Queen Creek Road/Germann Road Connector: Queen Creek Road will be extended from Ellsworth Road along the north side of the UPRR/Rittenhouse Road Drain corridor, connecting with Germann Road between Sossaman and Hawes roads.

Hawes Road: Hawes Road, which will tie into Pecos Road one-half mile north of Germann Road (established prior to 2020), is planned to be widened from two to four lanes.

Crismon Road, North of Germann Road: This new roadway construction calls for widening of a four-lane roadway (established prior to 2020) to six lanes.

Crismon Road, South of Germann Road: This improvement would involve widening Crismon Road south of Germann Road (established prior to 2020) from two to six lanes.

Signal Butte Road: This improvement project is a planned widening of Signal Butte Road south of Germann Road (established prior to 2020) from two to six lanes.

Meridian Road: This new roadway construction calls for widening of a four-lane roadway (established prior to 2020) to six lanes.

In addition to the six roadway improvements cited above, improvements to Power Road from the Germann Road Corridor study area north to the Loop 202 (Santan Freeway) represents a major enhancement of regional mobility.

Power Road – Loop 202 (Santan Freeway) to Pecos Road (underway): The Maricopa County TIP for FY 2011-2015 includes this project that could influence travel in the study area. "This project is Phase III of the Power Road Corridor and will improve Power Road to a six-lane urban principal arterial with raised medians, bike lanes, curb and gutter, driveways, landscape and street lighting. The city of Mesa has completed the alignment study and is beginning the design phase. Mesa will be the lead for right-of-way acquisition. The town of Gilbert will be the lead agency for utilities and construction."[6] Funding of $4.5 million for ROW acquisition has been programmed for FY 2013 - 2014. The project is included in the current MAG RTP for Maricopa County (refer to MAG Arterial Life Cycle Program -section 7.2.4).

7.2.2. Pinal County Plans

Previous capital improvement projects adopted by Pinal County have included improvements yet to be implemented.

Germann Road – Ironwood Road to Meridian Road: This construction project has been initiated to create a two-lane roadway, which has been designated a RSR. Funding of $250,000 was identified for FY 2011-2012 to move forward with ROW acquisition and utility relocations. An additional $1.35 million was programmed in FY 2013-2014 for construction. Recent information from Pinal County indicates that the roadway is still in the design phase, and anticipated date of construction is not known at this time.

Pima Road (Queen Creek Road) – Meridian Road to Ironwood Road: This is a new construction project to create a two-lane roadway. A funding level of $850,000 was identified for 2010; however, this facility has yet to be constructed.

7.2.3. ADOT Plans

The 2011 - 2015 Five-Year Transportation Facilities Construction Program published by ADOT contains no projects within the study area. However, there are two projects just outside the study area that would influence travel demand and traffic levels within the study area.

State Route 24 (Gateway Freeway): As noted previously, designs are being prepared for the portion of this facility between Loop 202 (Santan Freeway) and Ellsworth Road with

[6] Project Listings FY 2011-2015, Transportation Improvement Program, Fiscal Year 2011-2015, Maricopa County Department of Transportation, Approved by the Board of Supervisors, June 21, 2010.

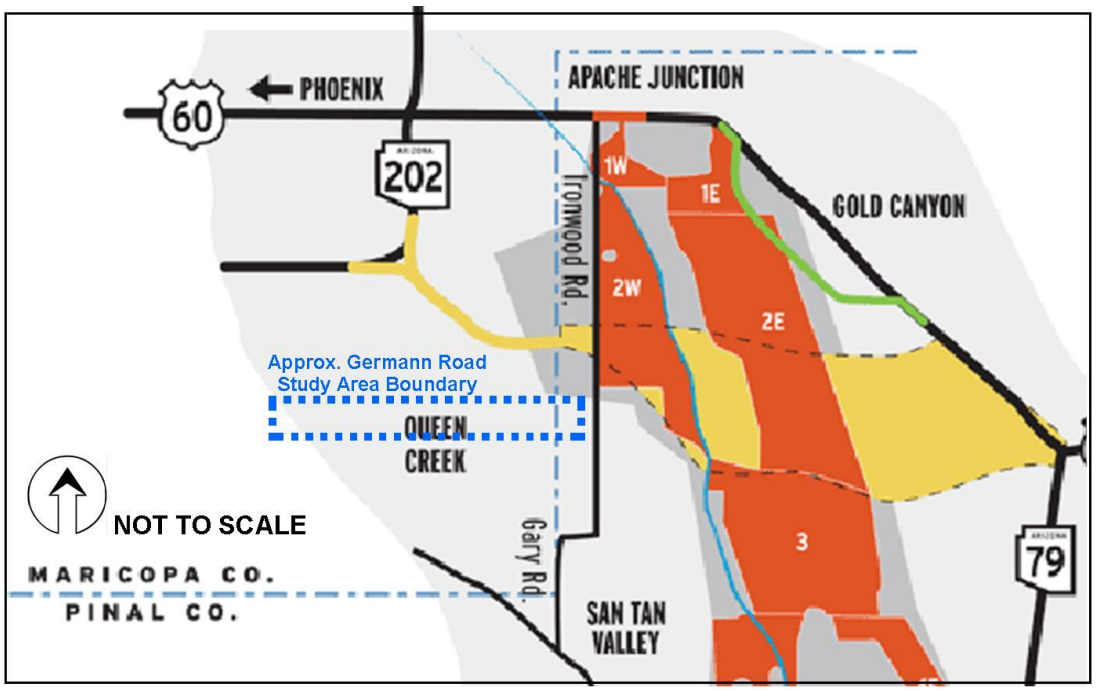
anticipated construction in 2016. The recommended alignment (refer to Figure 7-2) includes extension to Meridian Road in Maricopa County. As shown in Figure 7-2, funding has not been obtained for the segment between Meridian Road and Ironwood Road in Pinal County and the portion of SR 24 proposed to continue east into Pinal County has been suspended until advancement by ADOT of the *North-South Corridor Regional Study*.

FIGURE 7-2 CONSTRUCTION TIMELINE: SR 24 (FORMERLY SR 802) – LOOP 202 TO IRONWOOD ROAD

Source: SR 802 Loop 202 to Ironwood Road Design Concept Report & Environmental Study, Public Hearing, November 9, 2010, Arizona Department of Transportation at http://www.azdot.gov/Highways/Valley_Freeways/SR24/pdf/2010-1109-SR802Nov.pdf.

North-South Corridor Regional Study (Ongoing): This study is directed toward evaluating a range of possible route alternatives. The study also involves evaluation of a no build option that would result in no improvements at the scale of a freeway corridor. An initial 900-sqaure-mile study area has been refined to 300 square miles, and the study area has been divided into multiple segments for detailed analysis and evaluation. Figure 7-3 shows the portion of the study area and study segments nearest the Germann Road corridor study area. Potentially an alignment for this north-south, high-capacity facility linking I-10 to the south with US 60 to the north could be located within a few miles of the study area. Depending on the final location and linkages to the study area, this project could influence traffic levels in the Germann Road corridor study area.

FIGURE 7-3 RELATION OF NORTH-SOUTH CORRIDOR ROUTE SEGMENTS TO STUDY AREA



Source: Extracted from Study Map, North-South Corridor Study, Intermodal Transportation Division at http://www.azdot.gov/Highways/Projects/NorthSouthCorridorStudy/Study_Map.asp.

7.2.4. MAG Arterial Life Cycle Program

The MAG Arterial Street Life Cycle Program (ALCP) implements arterial street projects identified in the MAG RTP and represents current thinking for the region. Funding to widen existing streets, improve intersections, and construct new arterial segments is derived from federal, state, and regional sources. The current ALCP for FY 2012 provides project information spanning a 20-year period or life cycle and identifies location, level of regional funding, year of work, type of work, status of project, and the lead agency.[7] As a result of the national and global economic downturn that began in 2007, the ALCP experienced a deficit of program funds.

In response to the economic recession and to maintain the fiscal balance of the program, the MAG Transportation Policy Committee (TPC) in February, 2011, recommended a proportional reduction of remaining reimbursements based on each agency's original allocation of regional funds. "Due to the deficit and the extent of the reprogramming effort, Lead Agencies were provided the opportunity to delete, consolidate, and/or reprioritize programmed reimbursements as well as increase/decrease the regional budgets based on

[7] FY 2012 Arterial Life Cycle Program, Maricopa Association of Governments (MAG), September 21, 2011.

local priorities."[8] Table 7-1 summarizes the projects anticipated for the Germann Road Corridor study area contained in the MAG ALCP.

TABLE 7-1
PROGRAMMED AND PLANNED IMPROVEMENTS: MAG ARTERIAL LIFE CYCLE PROGRAM

Location	Work Phase	Year	Funding	Cost ($000)
Power Rd: Loop 202/Santan Freeway to Pecos Rd [Mesa]	Design	2010-12	RARF	1,280
	Acquire ROW	2010-12		2,210
	Construction	2012-14		11,957
Power Rd: Pecos Rd to Chandler Heights [Gilbert]	Design	2012	RARF	1,266
	Acquire ROW	2012-13		4,459
	Construction	2013-14		9,954
Pecos Rd: Ellsworth Rd to Meridian Rd	Design	2019	STP-MAG	1,425
	Acquire ROW	2020		6,140
	Construction	2021		7,816
Signal Butte Rd: Elliot Rd to Pecos Rd	Design	2023	STP-MAG	1,688
	Acquire ROW	2024		5,064
	Construction	2025-26		9,824

Prepared by Wilson & Company, July 2013.

Note: RARF = Regional Area Road Funds
STP = Federal Surface Transportation Program Funds

Sources: Arterial Life Cycle Program (ALCP), Fiscal Year 2014, Maricopa Association of Governments (MAG).

7.2.5. Town of Queen Creek Plans

188th Street at Germann Road: The town of Queen Creek has funded operations and maintenance in the CIP to support intersection improvements at this location. Funding at the level of $5,306 is scheduled for FY 2011-2012, increasing to $5,521 in FY 2014-2015.

7.2.6. Town of Gilbert Plans

Power Road – Loop 202 (Santan Freeway) to Pecos Road (underway): The town of Gilbert is contributing to the widening of Power Road from four to six lanes between Pecos Road, directly north of the study area, to Loop 202 (Santan Freeway). This project is part of the 2011-2015 MAG RTP and the town has scheduled expenditures totaling $4.1 million for FY 2012-2013. The town has identified funding of $190,000 in operating expenses for Power Road in its 2011-2016 CIP for FY 2014-2015 and FY 2015-2016.

[8] Ibid.

Power Road/Pecos Road UPRR Crossing: This crossing is programmed in the town's 2011-2016 CIP for $3 million of operating funding in FY 2012-2013 through FY 2015-2016.

7.2.7. City of Mesa Plans

Power Road-Loop 202 (Santan Freeway) Regional Park-and-Ride: The city of Mesa is planning to construct a regional P&R in the vicinity of Power Road and Loop 202 (Santan Freeway). Total cost of the project is $1.8 million, which includes FY 2009 5309-FGM (Fixed Guideway Modernization) funds.

Power Road – Loop 202 (Santan Freeway) to Pecos Road (underway): The city of Mesa is contributing to the widening of Power Road from four to six lanes between Pecos Road, directly north of the study area, to Loop 202 (Santan Freeway). This project is part of the 2011-2015 MAG RTP and the city has scheduled expenditures totaling $5.2 for FY 2012-2013 through FY 2013-2014.

7.3 PLANNED PUBLIC TRANSIT SERVICE

The Queen Creek Small Area Transportation Study (SATS) published May, 2007, introduced concepts for transit service. Consideration has been given to local circulator service; however, a potential or probable route for this service was not defined. Express bus service between Queen Creek and Tempe was initiated in 2007; however, this route has been discontinued. The MAG High Capacity Transit Study and Commuter Rail Strategic Plan have concluded that a commuter rail line along the UPRR Southeast line of the Phoenix Subdivision with service to Queen Creek and Pinal County would be a feasible enterprise. The commuter rail station likely would be located in downtown Queen Creek, which is associated with the intersection of Ellsworth and Ocotillo roads two miles south of the Germann Road corridor.

Transit Concepts presented in The Mesa Gateway Strategic Development Plan (December, 2008) include "…transit connections from external locations as well as an internal circulation component to provide direct access between major activity centers within the area." The concept plan identifies local transit routes serving Pecos Road at the northern edge of the Germann Road corridor study area with intersecting north-south routes on Power, Sossaman, Ellsworth, and Signal Butte roads. All routes, except the Power Road route, are shown passing through the study area. The Mesa plan anticipates high-capacity regional transit service on Power and Ellsworth roads, also passing through the study area. In addition, the Transit Concepts map shows commuter rail service on the UPRR line, although a station is not identified.

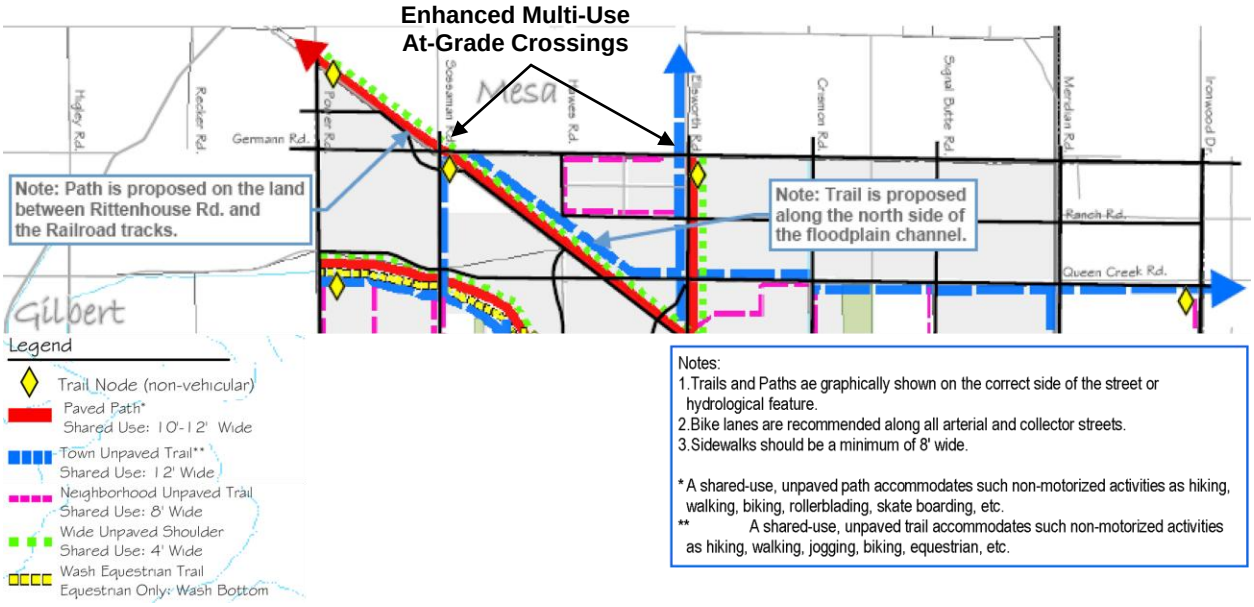
7.4 BICYCLE AND PEDESTRIAN FACILITIES

The Queen Creek *Parks, Trails and Open Space Master Plan* includes a trails and paths plan map. The portion relevant to the Germann Road corridor study area has been extracted and included as Figure 7-4. The plan identifies four different types of facilities within the study area:

- Paved path, shared use, (10-12 feet wide);
- Town unpaved trail, shared use, (12 feet wide);
- Wide, unpaved shoulder, shared use, (4 feet wide); and
- Neighborhood unpaved trail, shared use, (8 feet wide).

There are no trails or paths proposed within the study area by the town of Gilbert, city of Mesa, or Pinal County. The availability and development of future facilities such as these will be guided by roadway design guidelines.

FIGURE 7-4 QUEEN CREEK TRAILS AND PATHS PLAN



Source: Trails and Paths Plan, Queen Creek Parks, Trails and Open Space Master Plan, November, 2005.

7.5 BASE FUTURE TRAVEL CONDITIONS

Base future travel conditions represent travel facilities, connections, and opportunities potentially available in the future based on the combination of existing roadways defined by the committed, programmed, and planned projects discussed in the previous section.

7.5.1. Travel Demand Analysis Methodology

To better define future ROW requirements to accommodate geometric needs at key intersections and the proposed grade separation of Sossaman Road at the UPRR track, it is necessary to understand anticipated travel demand in the corridor. Several travel demand forecasts have been developed that include the Germann Road corridor and are available for review, including:

- Year 2035 forecasts adopted by MAG for the RTP;
- Year 2035 forecasts derived from a sketch model prepared in conjunction with the Phoenix-Mesa Gateway Eastside Transportation Study; and
- Year 2020 forecasts documented in the Southeast Mesa Queen Creek Area Traffic Study.

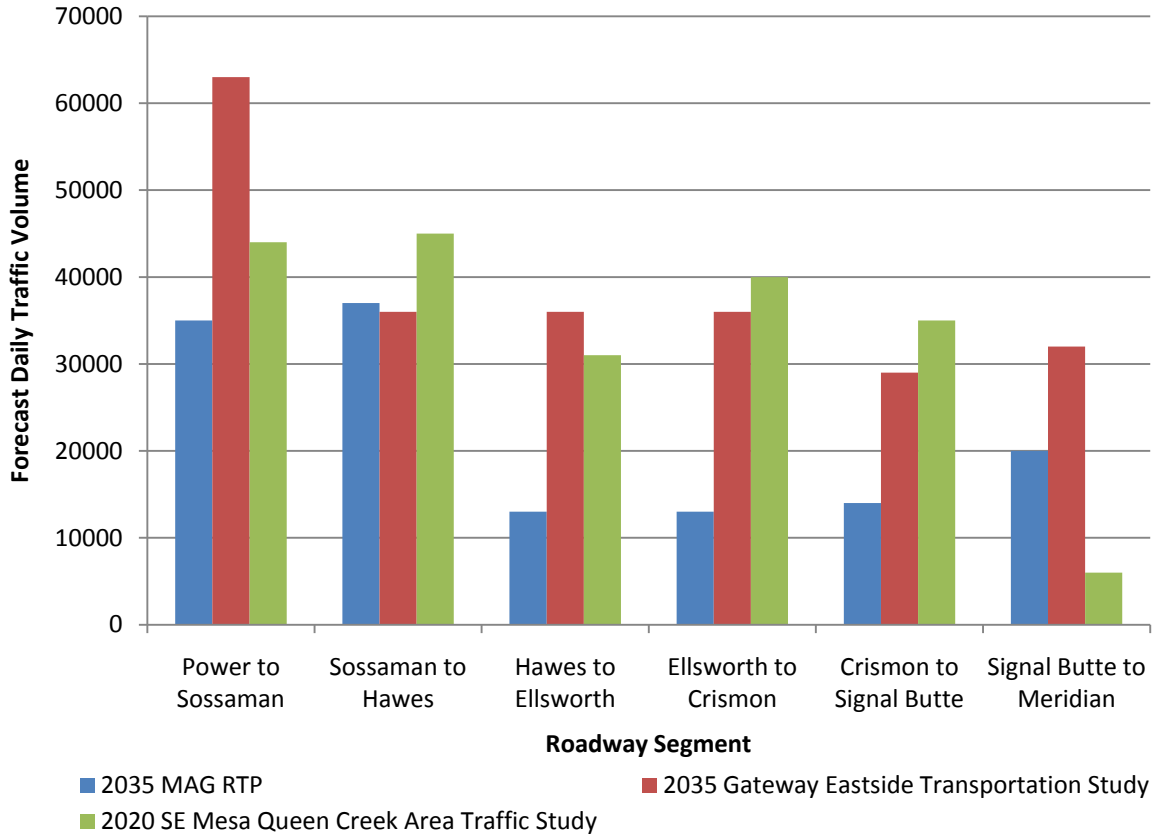
Figure 7-5 provides a comparison of forecast traffic volumes derived from each of these three models for various segments of the corridor. It is clear from the graph that there is considerable variation among the forecasts.

Model results were presented to the TAG earlier in the project process, at which point it was agreed that the most appropriate forecasting tool was the travel demand model currently being utilized in conjunction with the *Phoenix-Mesa Gateway Eastside Transportation Study*. This model was acquired by the Germann Road CIS project team and modified to better reflect the proposed roadway network within the project study area.

7.5.2. Proposed Base Future Roadway Network

Sections 7.1 and 7.2 presented various committed and planned roadway improvements within and influential to the project study area. In order to best reflect anticipated effects of these expected improvements on the study area roadway network, the travel demand model was modified to include each of the anticipated changes to the base roadway network identified in these sections. In addition to improvements discussed previously, recommendations from the Signal Butte CIS also were incorporated in the project travel demand model.

FIGURE 7-5 COMPARISON OF AVAILABLE SOURCES FOR CORRIDOR FORECAST TRAVEL DEMAND



7.5.3. Analysis of Base Future Conditions at Buildout

Future improvements resulted in a shift in travel patterns in the eastern portion of the study area associated with realignment of Signal Butte and Meridian roads. Forecasted daily traffic volumes were compared to roadway segment capacities to determine anticipated long-range performance of the roadway network (Table 7-2). Potential impacts on future base roadway network level of service (LOS) for the buildout condition are depicted in Figure 7-6. This analysis confirms the need for the six-lane arterial cross section on Germann Road to support anticipated future travel demands.

TABLE 7-2
SUMMARY OF FORECAST DAILY TRAVEL DEMAND AND NETWORK PERFORMANCE UNDER BUILDOUT CONDITIONS

Street	From (West/North)	To (East/South)	Volume	Lanes	Lane Capacity	Capacity	V/C Ratio	Relation to Capacity	LOS
Germann	West	Power	68,000	6	7,800	46,800	1.45	Over Capacity	F
Germann	Power	Rittenhouse	57,000	6	7,800	46,800	1.22	Over Capacity	F
Germann	Rittenhouse	Sossman	47,000	6	7,800	46,800	1.00	Over Capacity	F
Germann	Sossman	Queen Creek Parkway	50,000	6	7,800	46,800	1.07	Over Capacity	F
Germann	Queen Creek Parkway	Ellsworth	43,000	6	7,800	46,800	0.92	At Capacity	E
Germann	Ellsworth	Crismon	46,000	6	7,800	46,800	0.98	At Capacity	E
Germann	Crismon	Signal Butte	36,000	6	7,800	46,800	0.77	Under Capacity	D
Germann	Signal Butte	Meridian	31,000	6	7,800	46,800	0.66	Under Capacity	C
Germann	Meridian	East	28,000	6	7,800	46,800	0.60	Under Capacity	B
Power	North	Pecos	44,000	6	7,800	46,800	0.94	At Capacity	E
Power	Pecos	Rittenhouse	53,000	6	7,800	46,800	1.13	Over Capacity	F
Power	Rittenhouse	Germann	37,000	6	7,800	46,800	0.79	Under Capacity	D
Power	Germann	South	44,000	6	7,800	46,800	0.94	At Capacity	E
Sossman	North	Pecos	31,000	4	7,800	31,200	0.99	At Capacity	E
Sossman	Pecos	Germann	39,000	6	7,800	46,800	0.83	Under Capacity	D
Sossman	Germann	Rittenhouse	35,000	6	7,800	46,800	0.75	Under Capacity	D
Sossman	Rittenhouse	South	32,000	6	7,800	46,800	0.68	Under Capacity	C
Ellsworth	North	Pecos	54,000	6	7,800	46,800	1.15	Over Capacity	F
Ellsworth	Pecos	Germann	55,000	6	7,800	46,800	1.18	Over Capacity	F
Ellsworth	Germann	South	53,000	6	7,800	46,800	1.13	Over Capacity	F
Crismon	North	Pecos	34,000	4	7,800	31,200	1.09	Over Capacity	F
Crismon	Pecos	Germann	25,000	4	7,800	31,200	0.80	Under Capacity	D
Crismon	Germann	South	26,000	4	7,800	31,200	0.83	Under Capacity	D
Signal Butte	North	Pecos	57,000	6	7,800	46,800	1.22	Over Capacity	F
Signal Butte	Pecos	Germann	41,000	6	7,800	46,800	0.88	At Capacity	E
Signal Butte	Germann	South	48,000	6	7,800	46,800	1.03	Over Capacity	F
Meridian	North	Pecos	58,000	6	7,800	46,800	1.24	Over Capacity	F
Meridian	Pecos	Germann	40,000	6	7,800	46,800	0.85	At Capacity	E
Meridian	Germann	South	32,000	6	7,800	46,800	0.68	Under Capacity	C
Rittenhouse	North	Germann	27,000	4	7,800	31,200	0.87	At Capacity	E
Rittenhouse	Germann	Sossman	31,000	4	7,800	31,200	0.99	At Capacity	E
Rittenhouse	Sossman	East	41,000	4	7,800	31,200	1.31	Over Capacity	F
QC Parkway	Germann	Ellsworth	11,000	4	7,800	31,200	0.35	Under Capacity	A
80th Street	Germann	Pecos	27,000	4	7,800	31,200	0.87	At Capacity	E

Prepared by Wilson & Company, June 2013.

FIGURE 7-6 FUTURE BASE ROADWAY NETWORK DEFICIENCIES UNDER BUILDOUT CONDITIONS

Map Prepared By: Wilson & Company, September, 2011.

Roadways

- 6-Lane Principal Arterial
- 4-Lane Arterial/Collector
- 2-3-Lane Collector
- Existing Traffic Signal
- Potential Future Traffic Signal
- Future Grade Separation

- Indicates segments operating over capacity (LOS F)
- Indicates segments operating at capacity (LOS E)

As illustrated in Figure 7-6, forecast travel demand on the majority of the Germann Road corridor and arterial crossing facilities within the study area is anticipated to approach or exceed available capacity, particularly in the western portion of the study area. Preliminary analysis of corresponding peak hour traffic volumes, documented in Appendix B, confirms this finding, indicating that expansion of the footprint of major intersections to include dual left-turn lanes and a right-turn lane on all approaches may provide sufficient capacity in the eastern portion of the corridor, but intersections west of Crismon Road may still operate with unacceptable delays during peak travel periods.

7.5.4. Analysis of Base Future Conditions – Year 2020

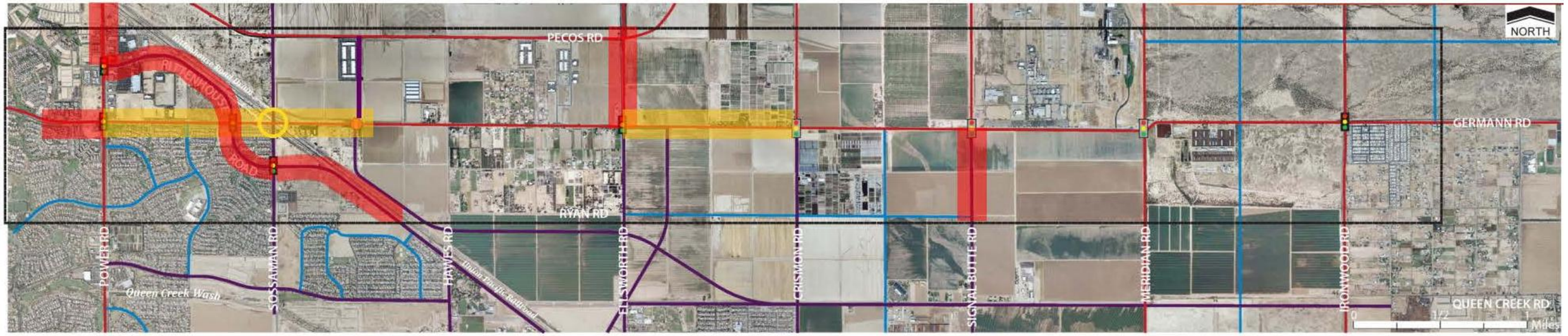
An analysis of Year 2020 traffic conditions was conducted to identify potential deficiencies in the near-term. Forecasted daily traffic volumes from the Southeast Mesa Queen Creek Area Traffic Study were compared to roadway segment capacities to determine anticipated performance of the Year 2020 roadway network. The results are summarized in Table 7-3. Figure 7-7 illustrates those facilities expected to be operating at LOS E and F.

TABLE 7-3
SUMMARY OF FORECAST DAILY TRAVEL DEMAND AND NETWORK PERFORMANCE: YEAR 2020

Street	From (West/North)	To (East/South)	Volume	Lanes	Lane Capacity	Capacity	V/C Ratio	Relation to Capacity	LOS
Germann	West	Power	49,800	6	7,800	46,800	1.06	Over Capacity	F
Germann	Power	Rittenhouse	44,300	6	7,800	46,800	0.95	At Capacity	E
Germann	Rittenhouse	Sossman	44,800	6	7,800	46,800	0.96	At Capacity	E
Germann	Sossman	Queen Creek Parkway	44,800	6	7,800	46,800	0.96	At Capacity	E
Germann	Queen Creek Parkway	Ellsworth	30,700	6	7,800	46,800	0.66	Under Capacity	C
Germann	Ellsworth	Crismon	40,100	6	7,800	46,800	0.86	At Capacity	E
Germann	Crismon	Signal Butte	34,600	6	7,800	46,800	0.74	Under Capacity	D
Germann	Signal Butte	Meridian	6,100	6	7,800	46,800	0.13	Under Capacity	A
Germann	Meridian	East	0	6	7,800	46,800	0.00	Under Capacity	A
Power	North	Pecos	48,900	6	7,800	46,800	1.04	Over Capacity	F
Power	Pecos	Rittenhouse	49,100	6	7,800	46,800	1.05	Over Capacity	F
Power	Rittenhouse	Germann	15,900	6	7,800	46,800	0.34	Under Capacity	A
Power	Germann	South	32,100	6	7,800	46,800	0.69	Under Capacity	C
Sossman	North	Pecos	21,500	4	7,800	31,200	0.69	Under Capacity	C
Sossman	Pecos	Germann	29,500	6	7,800	46,800	0.63	Under Capacity	C
Sossman	Germann	Rittenhouse	29,500	6	7,800	46,800	0.63	Under Capacity	C
Sossman	Rittenhouse	South	20,900	6	7,800	46,800	0.45	Under Capacity	A
Ellsworth	North	Pecos	46,400	6	7,800	46,800	0.99	At Capacity	E
Ellsworth	Pecos	Germann	49,500	6	7,800	46,800	1.06	Over Capacity	F
Ellsworth	Germann	South	31,900	6	7,800	46,800	0.68	Under Capacity	C
Crismon	North	Pecos	0	4	7,800	31,200	0.00	Under Capacity	A
Crismon	Pecos	Germann	9,100	4	7,800	31,200	0.29	Under Capacity	A
Crismon	Germann	South	9,100	4	7,800	31,200	0.29	Under Capacity	A
Signal Butte	North	Pecos	30,800	6	7,800	46,800	0.66	Under Capacity	C
Signal Butte	Pecos	Germann	2,300	6	7,800	46,800	0.05	Under Capacity	A
Signal Butte	Germann	South	49,800	6	7,800	46,800	1.06	Over Capacity	F
Meridian	North	Pecos	7,700	6	7,800	46,800	0.16	Under Capacity	A
Meridian	Pecos	Germann	13,400	6	7,800	46,800	0.29	Under Capacity	A
Meridian	Germann	South	8,800	6	7,800	46,800	0.19	Under Capacity	A
Rittenhouse	North	Germann	33,900	4	7,800	31,200	1.09	Over Capacity	F
Rittenhouse	Germann	Sossman	34,800	4	7,800	31,200	1.12	Over Capacity	F
Rittenhouse	Sossman	East	36,400	4	7,800	31,200	1.17	Over Capacity	F
QC Parkway	Germann	Ellsworth	32,100	4	7,800	31,200	1.03	Over Capacity	F
80th Street	Germann	Pecos	17,600	4	7,800	31,200	0.56	Under Capacity	B

Prepared by Wilson & Company, June 2013.

FIGURE 7-7 FUTURE BASE ROADWAY NETWORK DEFICIENCIES UNDER YEAR 2020 CONDITIONS



Map Prepared By: Wilson & Company, September, 2011.

Roadways

- 6-Lane Principal Arterial
- 4-Lane Arterial/Collector
- 2-3-Lane Collector
- Existing Traffic Signal
- Potential Future Traffic Signal
- Future Grade Separation
- Indicates segments operating over capacity (LOS F)
- Indicates segments operating at capacity (LOS E)

8.0 ALTERNATIVES DEVELOPMENT AND EVALUATION

The development and assessment of alternative corridor improvement strategies was conducted through a tiered evaluation process. The initial evaluation of potential improvement scenarios for the Germann Road corridor involved an assessment of future connectivity options for both Germann Road and Sossaman Road to assure that the connectivity associated with any potential grade separation met long-term regional travel objectives of the town of Queen Creek and city of Mesa. Conceptual design solutions were then developed for the corridor, including the potential grade separation of the UPRR and the Germann Road alignment at Meridian Road.

8.1 GERMANN ROAD ALIGNMENT

The Germann Road alignment is established and has been established for a number of years. Therefore, alternatives for the main line were not investigated in great detail. Generally, the recommended roadway design follows the existing alignment, as shown in Figure 8-1. There are certain locations where the alignment shifts north or south to minimize impacts to existing structures or utilities.

Figure 8-2 shows the typical cross-section for a town of Queen Creek six-lane principal arterial roadway. This cross-section was selected by the TAG for use in developing the conceptual layout of Germann Road. Detailed conceptual engineering design drawings are presented in Appendix A.

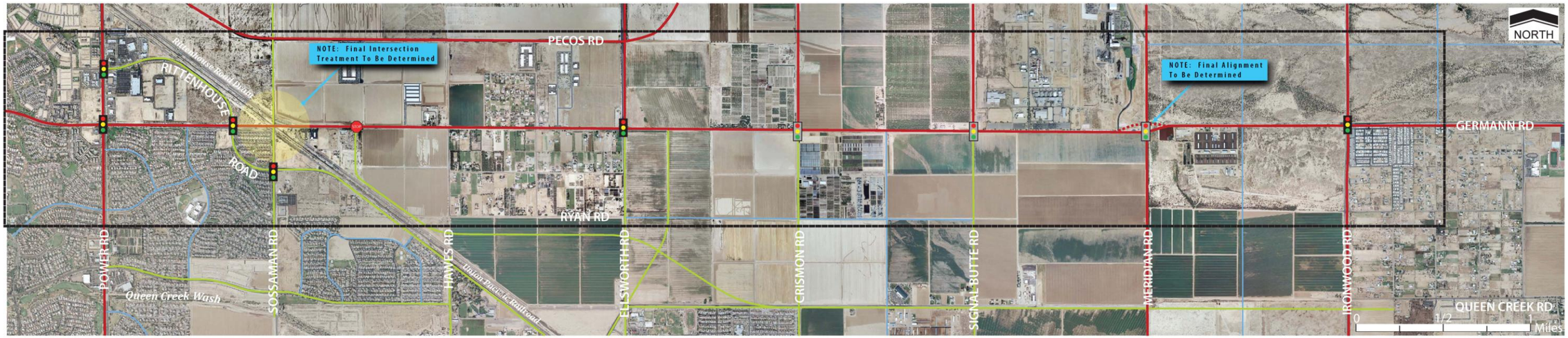
8.2 CONNECTIVITY ANALYSIS

The analysis of regional connectivity for the Germann Road corridor recognized that forecast traffic volumes (as discussed in Section 7.5) will greatly influence geometric requirements for any proposed grade-separated crossing at the UPRR. The issue was not simply grade separation of Germann Road at the UPRR track, but maintaining connectivity with Sossaman Road. The question of connectivity between Sossaman and Germann roads required a more complex solution. Therefore, five distinct connectivity scenarios were defined to resolve this overarching issue.

8.2.1. Network Connectivity Option 1: Grade Separation of Sossaman Road and Germann Road

Option 1 was a geometric design intended to accommodate through travel on both Germann Road and Sossaman Road commensurate with the forecast level of demand on both facilities. Figure 8-3 illustrates a conceptual solution that would provide the desired connectivity. This option calls for grade separation of both roadways at the UPRR track, resulting in two bridges spanning the UPRR ROW and the Rittenhouse Road Drain.

FIGURE 8-1 RECOMMENDED ALIGNMENT OF GERMANN ROAD: POWER ROAD TO IRONWOOD ROAD



Map Prepared By: Wilson & Company, September, 2011.

Roadways

- 6-Lane Principal Arterial
- 4-Lane Arterial/Collector
- 2-3-Lane Collector

- Existing Traffic Signal
- Potential Future Traffic Signal
- Future Grade Separation

FIGURE 8-2 RECOMMENDED CROSS-SECTION FOR GERMANN ROAD

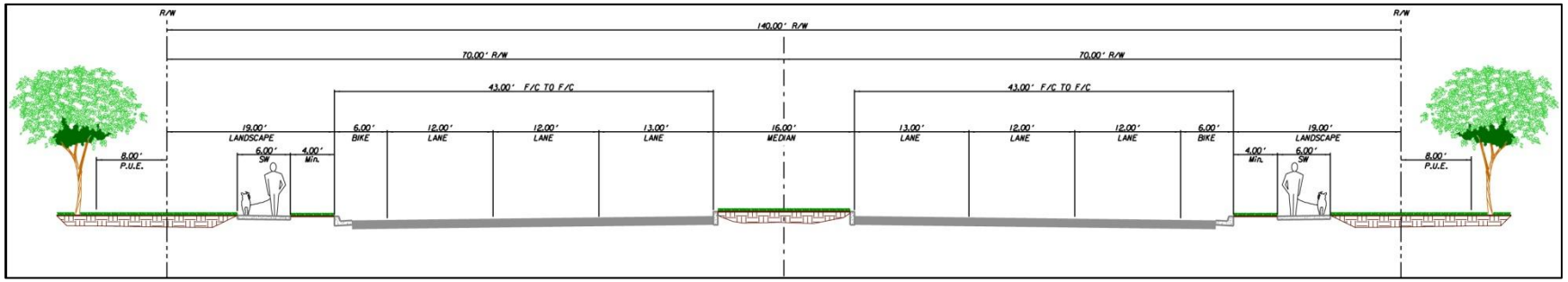
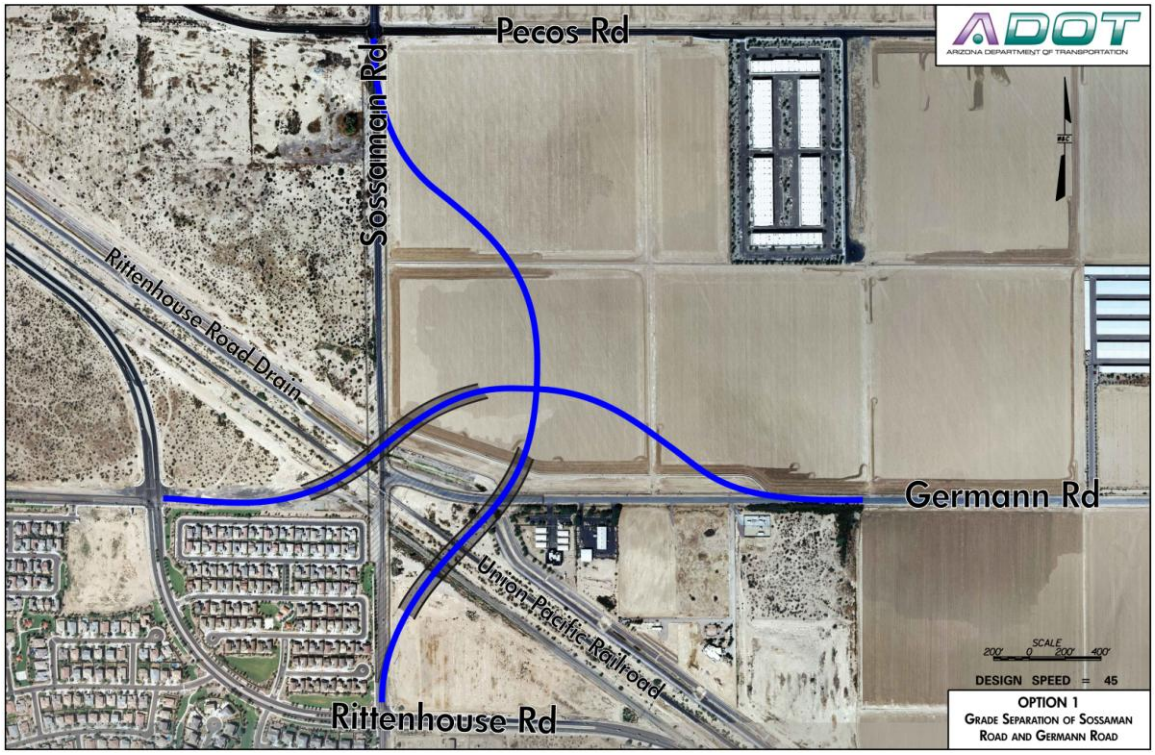


FIGURE 8-3 NETWORK CONNECTIVITY OPTION 1



8.2.2. Network Connectivity Option 2: Grade Separation of Sossaman Road Only with Germann Road T-Intersection at Sossaman Road

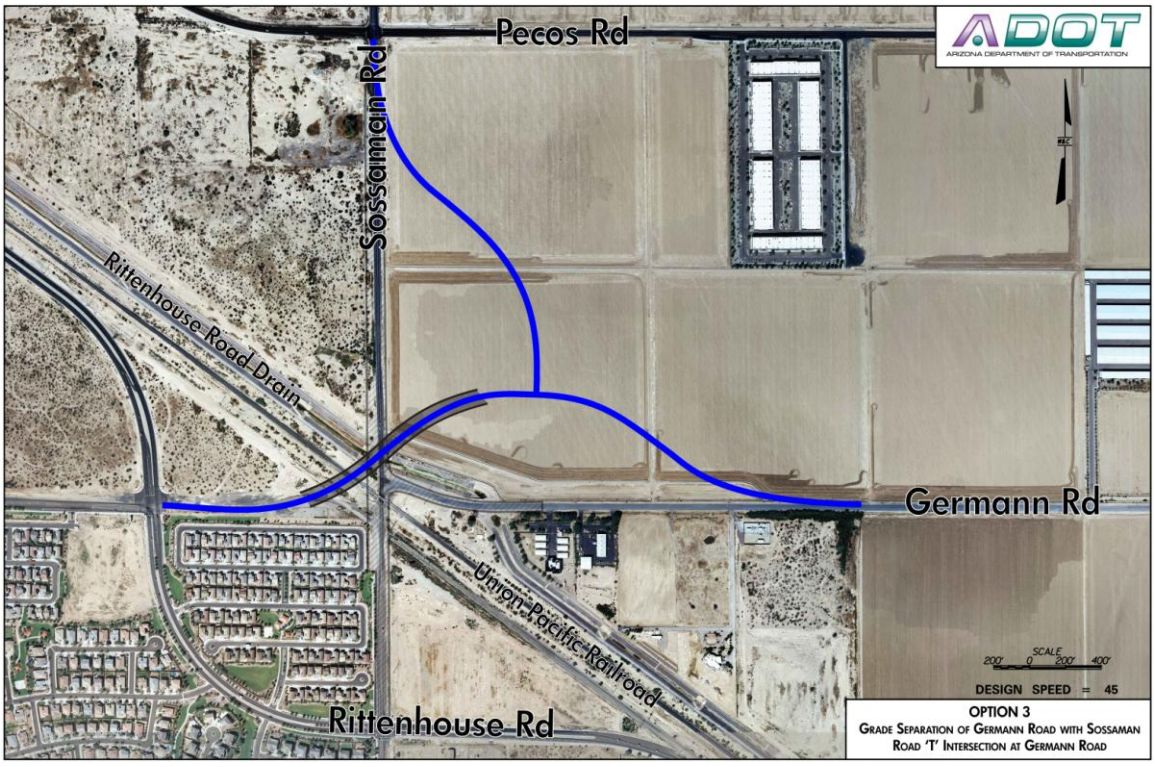
Option 2 was a geometric design intended to accommodate through travel on Sossaman Road with a new grade separation at the UPRR track on Sossaman Road only (Figure 8-4). Through travel on Germann Road would not be accommodated – however, option 2 essentially maintains the current at-grade connectivity north of the Sossaman Road bridge crossing of the UPRR. This option would require only a single bridge for the Sossaman Road grade separation. However, the alternative fails to address a primary goal of the Germann Road CIS to identify options that provide east-west connectivity across the UPRR.

8.2.3. Network Connectivity Option 3: Grade Separation of Germann Road Only with Sossaman Road T-Intersection at Germann Road

This option would consist of geometric alternatives to accommodate through travel on Germann Road with a grade separation at the UPRR track. However, there would be no through travel on Sossaman Road. Figure 8-5 illustrates a sample option that would provide this connectivity. As depicted in the figure, a single bridge would be required.

FIGURE 8-4 NETWORK CONNECTIVITY OPTION 2

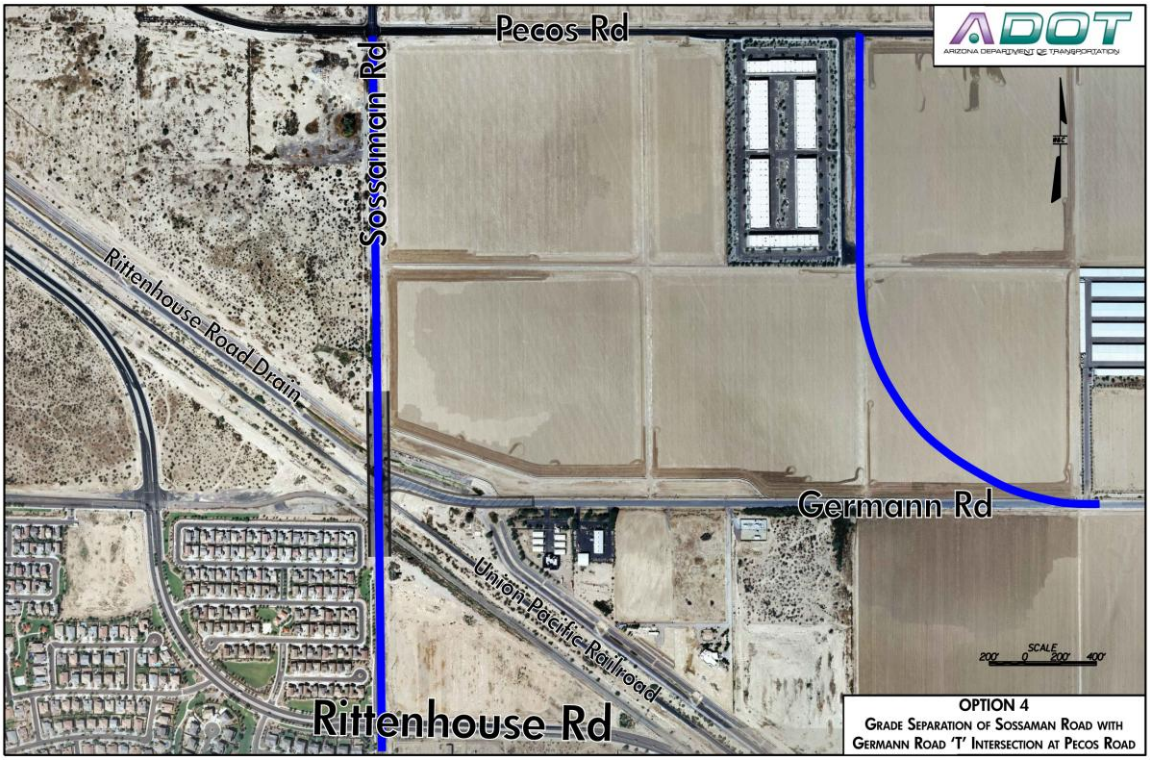
FIGURE 8-5 NETWORK CONNECTIVITY OPTION 3



8.2.4. Network Connectivity Option 4: Grade Separation of Sossaman Road with Germann Road T-Intersection at Pecos Road

This option would consist of geometric alternatives to realign Germann Road north making a connection directly to Pecos Road (Figure 8-6). It is anticipated that such an alignment would provide east-west connectivity, while decreasing travel demand on Germann Road between Power and Sossaman roads where substantial development already exists. This existing development limits opportunities to acquire additional ROW necessary to provide the unique geometric solutions required to accommodate forecast level of demand. It is anticipated that travel demand would shift to Pecos Road, placing a higher travel burden on this corridor, particularly west of Ellsworth Road. A review of available aerials, however, indicates the Pecos Road Corridor may provide more opportunities for acquiring additional ROW necessary to accommodate increased travel demand.

FIGURE 8-6 NETWORK CONNECTIVITY OPTION 4

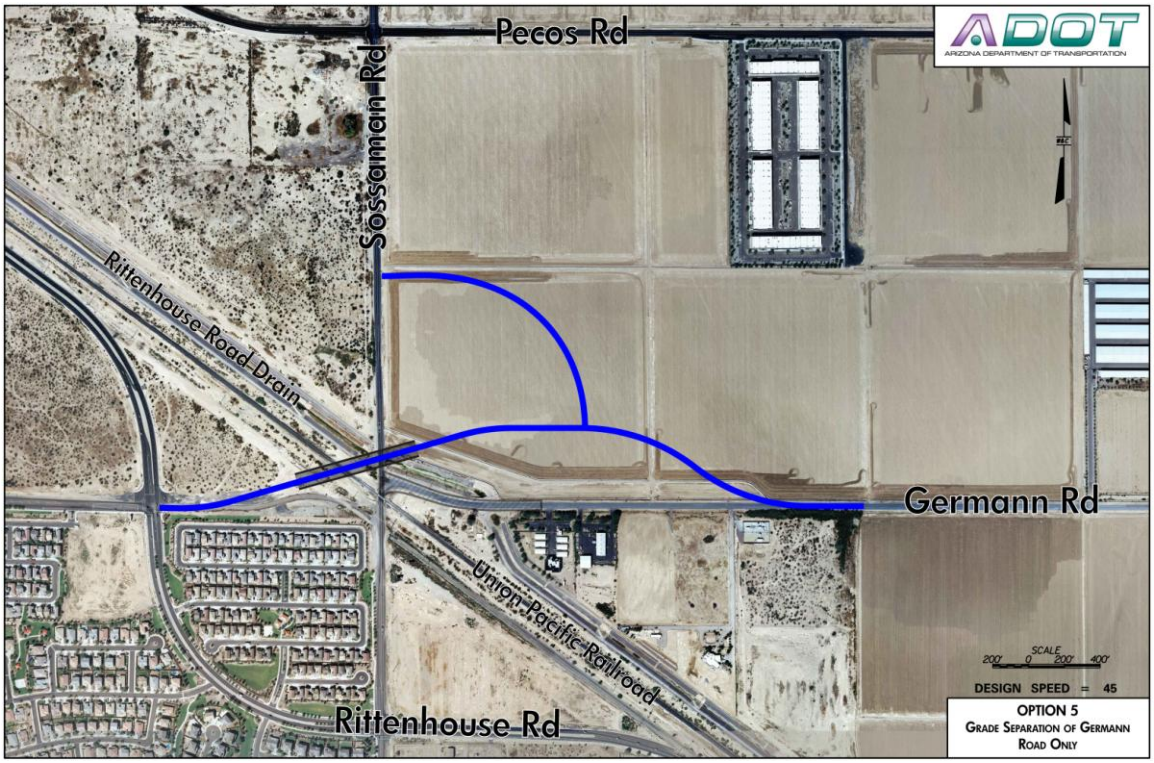


8.2.5. Network Connectivity Option 5: Grade Separation of Germann Road Only with Access to Sossaman Road

This option would consist of geometric alternatives to accommodate through travel on Germann Road with a grade separation at the UPRR track. It would maintain through travel on Sossaman Road and provide access to Sossaman Road from Germann Road. Figure 8-7

illustrates a sample option that would provide this connectivity. As depicted in the figure, a single bridge would be required.

FIGURE 8-7 NETWORK CONNECTIVITY OPTION 5



8.2.6. Findings and Conclusions from the First-Level Screening

Options 1 through 4 were submitted to the TAG for review. Following discussions with the TAG, the four network connectivity options were reviewed and discussed with appropriate representatives from the town of Queen Creek, city of Mesa, and town of Gilbert to obtain feedback on the feasibility of each scenario. The TAG indicated that if any connectivity scenario was deemed undesirable, that scenario would not be moved forward for consideration when developing geometric alternatives for the grade-separated crossing.

Based on discussions with the municipal jurisdictions, it was determined that only the connectivity presented as Option 1 was uniformly supported by both the town of Queen Creek and the city of Mesa. These discussions led to definition of an additional connectivity option. Option 5 (identified above) is similar to Option 3 - Grade Separation of Germann Road Only; however, the existing at-grade crossing of the UPRR at Sossaman Road would remain. The principal difference is that through movement would be retained for both Germann and Sossaman roads. A separate connector road is shown that would facilitate movements between Germann Road and Sossaman Road.

8.3 CONCEPTUAL ENGINEERING INTERSECTION DESIGN TREATMENTS

Subsequent to the 1st Level Screening and the results derived from discussions with project partners, attention was given to refining the potentially viable Options 1 and 5 for the Germann Road/Sossaman Road intersection. Important to this refining process was creation of feasible grade separation concepts at the UPRR track. This section provides additional details regarding the conceptual engineering required for this intersection. It also details similar concepts developed for addressing the jog at Meridian Road.

8.3.1. Germann Road/Sossaman Road Intersection

Two connectivity options (Options 1 and 5 discussed in the previous section) for the Germann Road/Sossaman Road intersection were carried forward from the 1st Level Screening. Each concept represents an attempt to enhance mobility in the Germann Road and Sossaman Road corridors.

Conceptual Design Alternatives

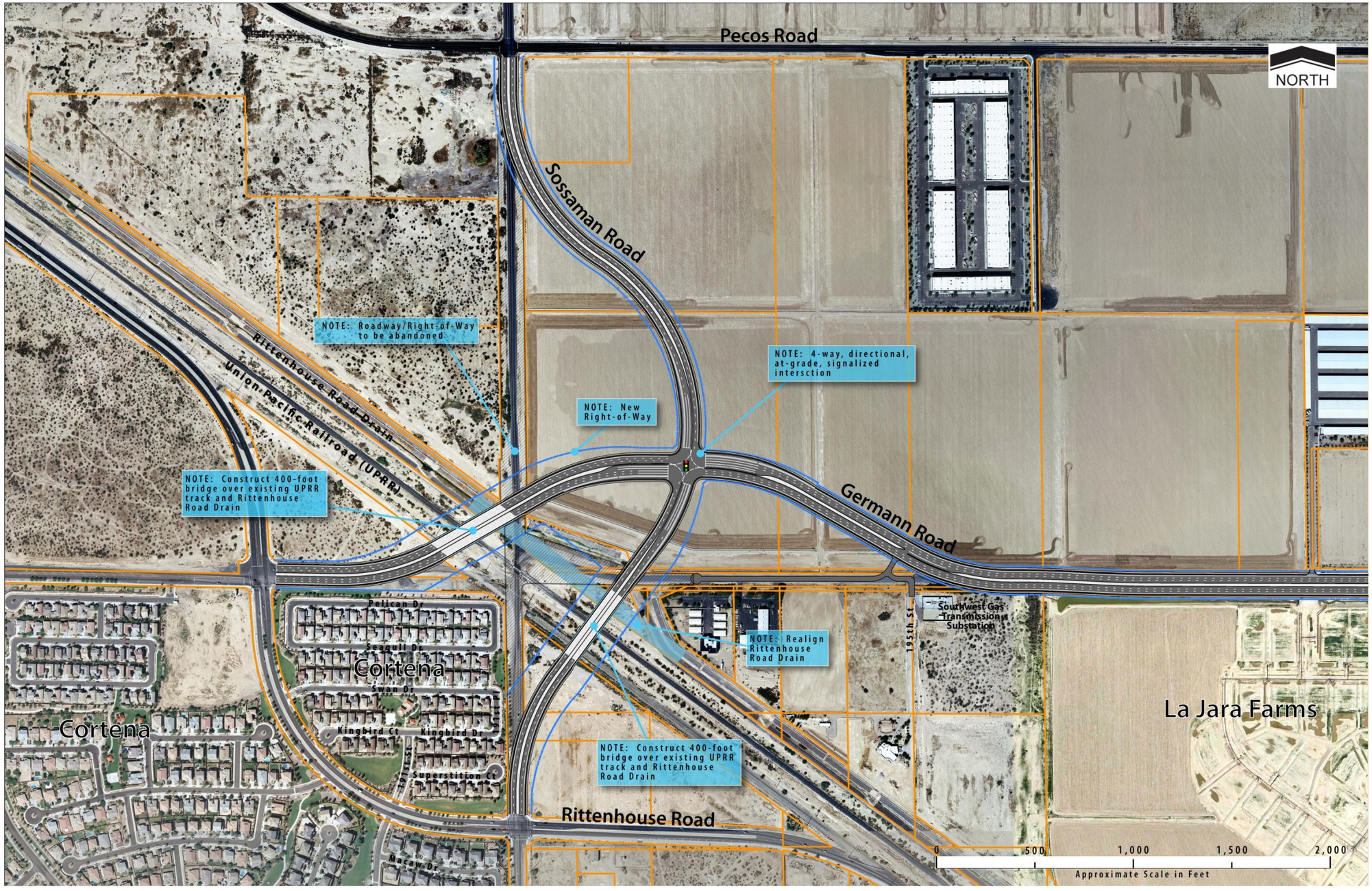
Alternative A – Grade Separation of Sossaman Road and Germann Road

This conceptual alternative flows directly from Connectivity Option 1 evaluated in the 1st Level Screening. Both Germann Road and Sossaman Road would be grade separated from the UPRR track (Figure 8-8). Engineering requirements include two bridges, each approximately 400 feet in length, spanning the UPRR ROW and the Rittenhouse Road Drain. The drain would be realigned to remove the jog constructed to avoid the original Germann Road/Sossaman Road intersection. East of its existing intersection with Sossaman Road, Germann Road would divert to the north in order to establish a more direct crossing of the UPRR and Drain and minimize the length of the bridge structure. Similarly, Sossaman Road would be rerouted to the east between Pecos and Rittenhouse roads.

This engineering concept would create an at-grade intersection of Germann Road with Sossaman Road approximately 1,000 feet northeast of the existing intersection. Germann Road would be a six-lane divided arterial roadway with left-turn and right-turn bays at the Sossaman Road intersection. Sossaman Road would be a four-lane divided arterial also with left- and right-turn bays.

Sossaman Road between Pecos and Rittenhouse roads would be abandoned, as would the section of Germann Road, approximately 1,000 feet in length, east of the existing intersection. Access to properties on the south side of Germann Road would be established in the vicinity of South 195th Street. New ROW would need to be acquired to implement this conceptual design treatment. Expanded ROW requirements are associated with the two crossings of the UPRR track and drain to accommodate the bridge structure.

FIGURE 8-8 ALTERNATIVE A – GRADE SEPARATION OF SOSSAMAN ROAD AND GERMANN ROAD



Alternative B – Grade Separation of Germann Road Only with Access to Sossaman Road

This conceptual alternative is intended to maintain through movements on both Germann and Sossaman roads. Germann Road would be grade separated across the UPRR track, Rittenhouse Road Drain, and Sossaman Road (Figure 8-9). This would require one bridge approximately 450 feet in length. The existing Sossaman Road crossing of the UPRR track would be improved and upgraded. East of its existing intersection with Sossaman Road, Germann Road would divert to the north in order to establish a more direct crossing of the UPRR and drain and minimize the length of the bridge structure. A connecting roadway would be constructed to facilitate northbound and southbound travel along Sossaman Road from Germann Road.

This engineering concept would create two at-grade intersections joined by the connector roadway. One intersection of the Germann Road/Sossaman Road connector would be approximately 1,200 feet east of the existing intersection. Germann Road would be a six-lane divided arterial roadway with two left-turn bays in the eastbound direction (to the connector) and one right-turn bay in the westbound direction (to the connector). The Germann Road/Sossaman Road connector would be a four-lane divided roadway with two right-turn bays for westbound Germann Road traffic and one left-turn bay for eastbound Germann Road traffic.

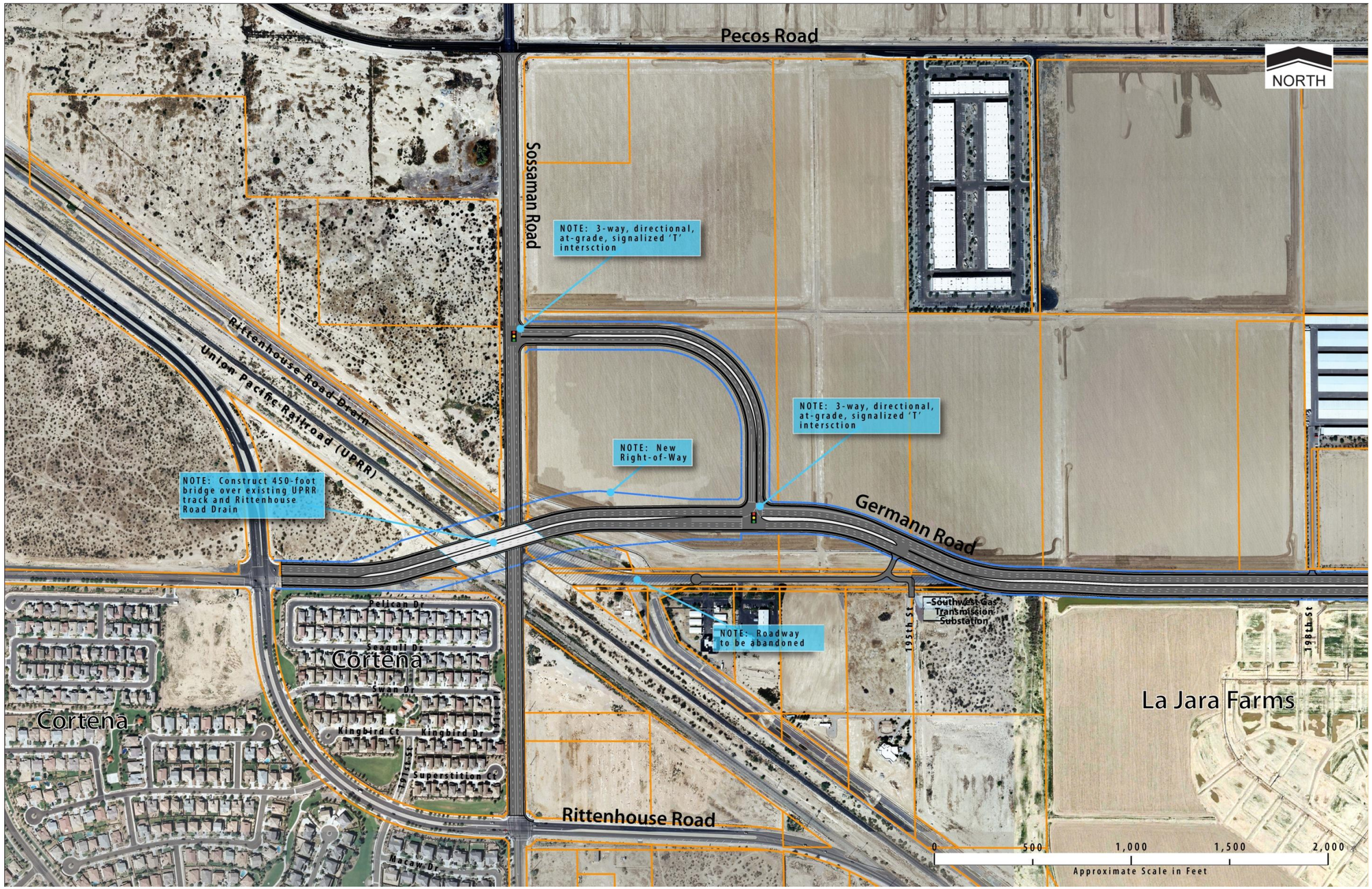
A second T-Intersection, where the connector roadway joins with Sossaman Road, would be constructed a similar distance to the north of the existing intersection. At this intersection, the traffic on the Germann Road/Sossaman Road connector would have a left- and right-turn lane for southbound and northbound movements, respectively, at Sossaman Road. Sossaman Road would be a five-lane arterial roadway with a center left-turn lane/left-turn bay in the southbound direction, permitting access to the Germann Road/Sossaman Road connector. Northbound traffic would have a through lane and a through/right-turn lane that would facilitate access to the connector.

The section of Germann Road, approximately 1,000 feet in length, east of the existing intersection would be abandoned. Access to properties on the south side of Germann Road would be established in the vicinity of South 195th Street. New ROW would need to be acquired to implement this conceptual design treatment. Expanded ROW requirements are associated with the crossing of the UPRR track and Drain to accommodate the bridge structure.

Alternative C – Grade Separation of Germann Road Only with Ramp to Northbound Sossaman Road and Connector to Sossaman Road

This alternative represents a variation of Alternative B and is intended to alleviate the need for the double left-turn at the Germann Road/Sossaman Road connector. A hybrid

FIGURE 8-9 ALTERNATIVE B – GRADE SEPARATION OF GERMANN ROAD ONLY WITH ACCESS TO SOSSAMAN ROAD



T-Intersection would be created where the connector joins Germann Road (Figure 8-10). Germann Road would be a six-lane divided arterial roadway. But, in the eastbound direction, there would be three through lanes, and no left turns would be accommodated. Access to northbound Sossaman Road, instead would be accommodated by a right-turn bay and direct ramp under Germann Road. Germann Road in the westbound direction would have three through lanes with a right-turn bay to the Germann Road/Sossaman Road connector. The Germann Road/Sossaman Road connector would be a two-lane divided road with a left- and right-turn lane for westbound and eastbound movements, respectively, at Germann Road.

The T-Intersection, where the Germann Road/Sossaman Road connector joins with Sossaman Road, would be constructed with a left- and right-turn lane for southbound and northbound movements, respectively, at Sossaman Road. Sossaman Road would be a five-lane arterial roadway with a center left-turn lane/left-turn bay in the southbound direction, permitting access to the Germann Road/Sossaman Road connector. Northbound traffic would have two through lanes and the auxiliary lane serving the ramp facilitating the eastbound Germann Road to northbound Sossaman Road movement. The auxiliary lane would extend to the Germann Road/Sossaman Road connector.

This alternative would include realignment of the Rittenhouse Road Drain to remove the jog created to circumvent the existing Germann Road/Sossaman Road intersection. The addition of the direct ramp to accommodate eastbound Germann Road to northbound Sossaman Road traffic requires that the bridge structure crossing over the UPRR track, Rittenhouse Road Drain, and Sossaman Road be approximately 560 feet in length.

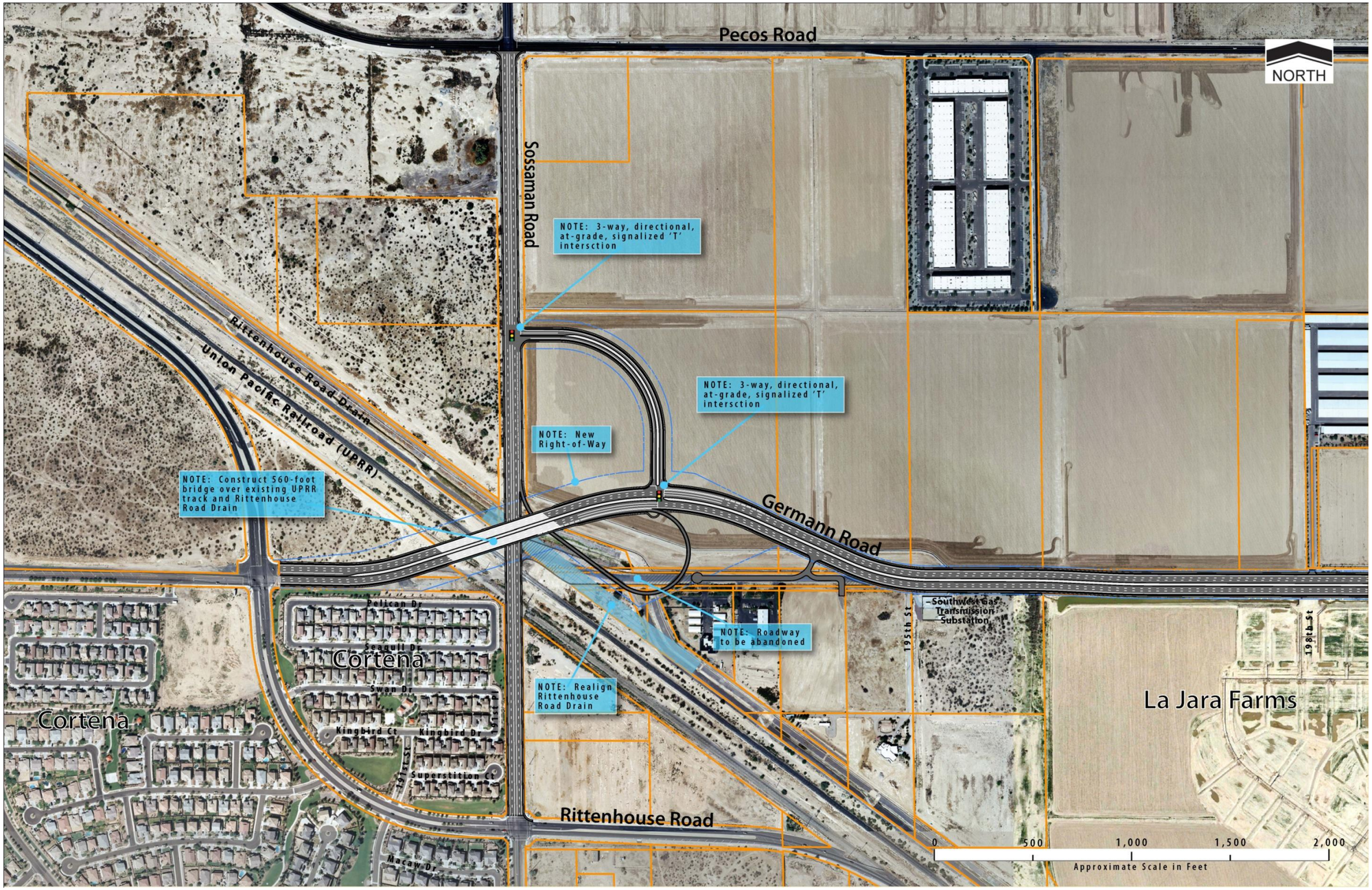
The section of Germann Road, approximately 1,000 feet in length, east of the existing intersection would be abandoned. Access to properties on the south side of Germann Road would be established in the vicinity of South 195th Street. New ROW would need to be acquired to implement this conceptual design treatment. Expanded ROW requirements are associated with the crossing of the UPRR track and drain to accommodate the bridge structure.

Evaluation of Alternatives

Due to the complexity of the Germann Road/Sossaman Road intersection, the alternative concepts described above were evaluated using a matrix incorporating the criteria identified below:

- Compatibility with existing/planned development
- Transportation system continuity
- Safety
- Environmental compatibility

FIGURE 8-10 ALTERNATIVE C – GRADE SEPARATION OF GERMANN ROAD ONLY WITH RAMP TO NORTHBOUND SOSSAMAN ROAD AND CONNECTOR TO SOSSAMAN ROAD



- Drainage/irrigation impacts
- Utility infrastructure impacts
- Building/property impacts
- Public acceptability
- Estimated cost.

The evaluation of conceptual transportation improvement alternatives at the Germann Road/Sossaman Road intersection is shown in Table 8-1. The three conceptual alternative engineering solutions are compared against the alternative of doing nothing, the "no-build alternative." Values, as shown in the table, were attached to the degree of compatibility of each alternative with respect to the evaluation criteria. Three points were awarded if the alternative fully satisfied the criteria. At the opposite end of the scale, an alternative completely, or almost completely incompatible, with the criteria received zero points.

Alternative B – Grade separation of Germann Road only with connector to Sossaman Road, which would provide a continuous, grade-separated Germann Road with a connector roadway to Sossaman Road, has the greatest potential for supporting *existing, expanding, or new development.* The connector roadway, in particular, provides direct access to large parcels that could benefit from access to a roadway connecting two arterials. In contrast, the no build alternative, although also providing access to adjacent parcels, must withstand the disadvantage of periodic traffic backups and delays associated with operations on the UPRR track.

Alternative A – grade separation of Germann and Sossaman roads clearly stands out as the best solution in terms of *transportation system continuity* and *safety*. Alternative A would assure full, unimpeded through movements on Germann and Sossaman roads and eliminate the delays associated with operations on the UPRR track. As development continues to occur in and adjacent to the study area, delays due to railroad operations will increase. The elimination of any railroad crossing also gives Alternative A a favorable evaluation.

All alternatives fair well with regard to *environmental compatibility*. However, the no build alternative with no elevated structures must be considered most favorable when general aesthetic and visual impacts are considered.

The no build alternative and Alternative B – grade separation of Germann Road with connector to Sossaman Road would have the fewest direct impacts on *drainage and irrigation* facilities in the study area. And, the no build alternative also would be considered most compatible with existing and future *utility infrastructure* and existing *buildings and property* uses; nevertheless, these features are relatively limited in presence and scope within the study area.

TABLE 8-1 EVALUATION OF CONCEPTUAL ENGINEERING ALTERNATIVES

Evaluation Criteria	No-Build Alternative	Grade Separation Alternative		
		Alternative A	Alternative B	Alternative C
Support existing, expanding, or new development	○	◉	●	◉
Compatibility with Existing /Planned Development	**0**	**2**	**3**	**1**
Minimize daily vehicle travel	○	●	◉	◉
Minimize number of vehicle stops at intersections	○	●	◉	◉
Maximize compatibility with pedestrian and bicycle facilities	○	●	◉	◉
Minimize travel delay due to RR crossing	○	●	◉	◉
Maximize continuity/connectivity of future roadway network	○	●	◉	◉
Transportation System Continuity	**0**	**15**	**5**	**8**
Minimize the number of RR/motor vehicle conflicts	○	●	◉	◉
Maximize emergency access	○	●	◉	◉
Safety	**0**	**6**	**2**	**3**
Minimize impacts to resources protected under Section 4(f) – Parks, and Section 6(f) – Historic & Archaeological Sites	●	●	●	●
Minimize impacts to known or likely habitat for Threatened, Endangered, and other Sensitive species	●	●	●	●
Minimize impacts to wildlife corridors	●	●	●	●
Minimize negative aesthetic and visual impacts	●	○	◉	◉
Environmental Compatibility	**12**	**9**	**11**	**10**
Minimize impacts on or disturbance of drainage features	●	◉	●	◉
Drainage & Irrigation Impacts	**3**	**1**	**3**	**2**
Minimize need to relocate major utilities	●	○	◉	◉
Utility Infrastructure Impacts	**3**	**0**	**2**	**1**
Minimize number of impacted parcels	●	○	◉	◉
Building & Property Impacts	**3**	**0**	**2**	**1**
Maximize ease of use/driver expectancy	○	●	◉	◉
Minimize community & traffic disruption associated with construction process	●	○	◉	◉
Public Acceptability	**3**	**3**	**4**	**2**
Minimize construction and maintenance cost	●	○	◉	◉
Minimize right of way costs	●	○	◉	◉
Minimize user costs (vehicle miles and delay)	○	●	◉	◉
Cost	**6**	**3**	**5**	**4**
GRAND TOTAL	**30**	**39**	**37**	**32**

Alternative A – Grade Separation of Germann and Sossaman Roads
Alternative B – Grade Separation of Germann Road Only with Connector to NB & SB Sossaman Road
Alternative C – Grade Separation of Germann Road with Ramp to NB Sossaman Road and Connector to NB & SB Sossaman Road

● Most compatible with specified criteria, 3 points
◉ More compatible with specified criteria, 2 point
◉ Less compatible with specified criteria, 1 point
○ Least compatible with specified criteria, 0 points

Alternative A would be the most desirable in terms of driver expectations and ease of use, as it would provide a standard 4-way, directional intersection. This factor is important when *public acceptability* is evaluated. In contrast, the no-build alternative would have high *public acceptability* with respect to the absence of construction activity and traffic disruptions. Nevertheless, there will be improvements in the area in the future, and travel disruptions are a fact of life, particularly in growing communities. As an example, Power Road is being reconstructed as a six-lane arterial north of Pecos Road to the Loop 202 (Santan Freeway). Thus, one could argue that ease of use and understanding of the roadway mechanics, which would be provided with Alternative A, should be given greater emphasis.

Finally, it is clear that doing nothing, called for by the no-build alternative, would be less costly than any of the other alternatives – a fact confirmed in Table 8-1. However, as noted above in the discussion of public acceptability, the *cost* of improvements in a growing community generally will be incurred; it will only be a matter of time. Thus, the fact that Alternative A would be more compatible with long-term costs incurred by drivers through reduced delay and fewer miles driven, may be viewed as having greater value.

The result of the evaluation, as displayed in the matrix, indicates Alternative A (39 points) and Alternative B (37 points) are superior to the No-Build Alternative (30 points) and Alternative C (32 points). As noted in the discussion above, there are perceptions and conditions that must be considered in interpreting the rating of the alternatives. Although all criteria are important, the fact that this is a transportation study aimed at creating a system that will serve the community and region long term might suggest that certain criteria necessarily should be given greater weight. In this case, transportation system continuity, safety, driver expectations, and user costs may be considered of greater import to the decision-making process. Adopting this frame of reference, the evaluation results point toward Alternative A as the most desirable, most feasible, and most compatible design treatment relative to the goals and objectives of the study and the project.

It should be noted that these three alternatives do not represent an exhaustive list of potential configurations for the grade separation of Germann and Sossaman roads, but rather feasible configuration options for connectivity of the roadway network. Additional detailed study and public and stakeholder vetting will be required before a preferred layout for the grade separation at this location will be defined.

8.3.2. Germann Road/Meridian Road Intersection

Study Area Conditions and Considerations

The offset of the ROW at Meridian Road is a key factor in determining the alignment for Germann Road. This offset or jog in the roadway alignment derives from official surveys of the area that created the standard Township and Range (T&R) system. In the Phoenix metropolitan area, the T&R grid often has been the determinant for roadway alignments.

Major mile roads and half-mile roads common in most communities are based on the T&R survey. The curvature of the earth requires that surveys be adjusted periodically or the north-south survey lines would converge, resulting in offsets like that at Meridian Road.

In addition to the offset, there are two land use features at this future intersection location that must be considered. In the northwest quadrant, there is a well site and pumping station that is part of the city of Mesa water supply. In addition there are two high-voltage OHE lines crossing through the intersection area. A dairy occupies the southeast quadrant of the intersection area. While the dairy itself is not a significant factor in the alignment of Germann Road (although access will need to be provided), there is a retention/settling pond directly in line with the alignment west of Meridian Road (refer to Figure 1-3). This pond contains on-site runoff from the feeding pens of the dairy. As general drainage in the area is east to west and south to north, relocating this facility essential to dairy operations may be problematic.

Conceptual Design Alternatives

Two conceptual designs were developed for the Germann Road/Meridian Road intersection. One alternative takes a direct jog from the alignment west of Meridian Road to the alignment east of Meridian Road. The other diverts Germann Road to the north prior to Meridian Road and ties back into the Germann Road alignment east of Meridian Road.

Alternative 1 – South Dog Leg

This alternative holds to the traditional connection between offset alignments by crossing Meridian Road through a slightly skewed intersection to tie into the Germann Road alignment 250 feet north on the east side of Meridian Road (Figure 8-11). Both roadways are six-lane arterials with dual left-turn and single right-turn lanes.

Alternative 2 – Northern Diversion

This alternative shifts Germann Road to the north 1,100-1,200 feet west of the Meridian Road alignment. It crosses Meridian Road through a right-angle intersection approximately 350 feet north of the Germann Road alignment west of Meridian Road (Figure 8-12). Germann Road then shifts south approximately 100 feet to the Germann Road alignment east of Meridian Road. The cross sections of the two roads are as described for Alternative 1.

FIGURE 8-11 GERMANN/MERIDIAN INTERSECTION ALTERNATIVE 1 – SOUTH DOG LEG

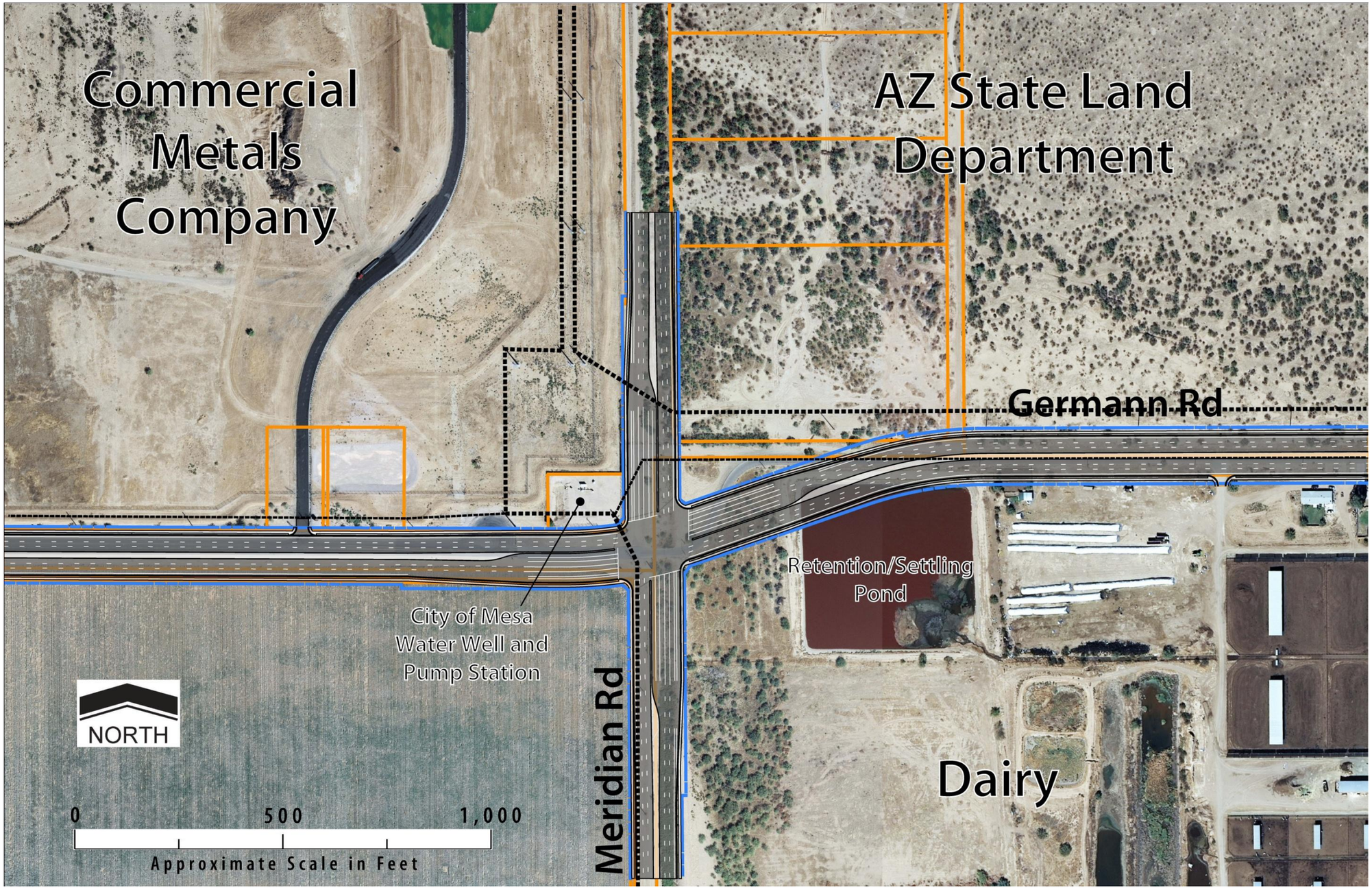
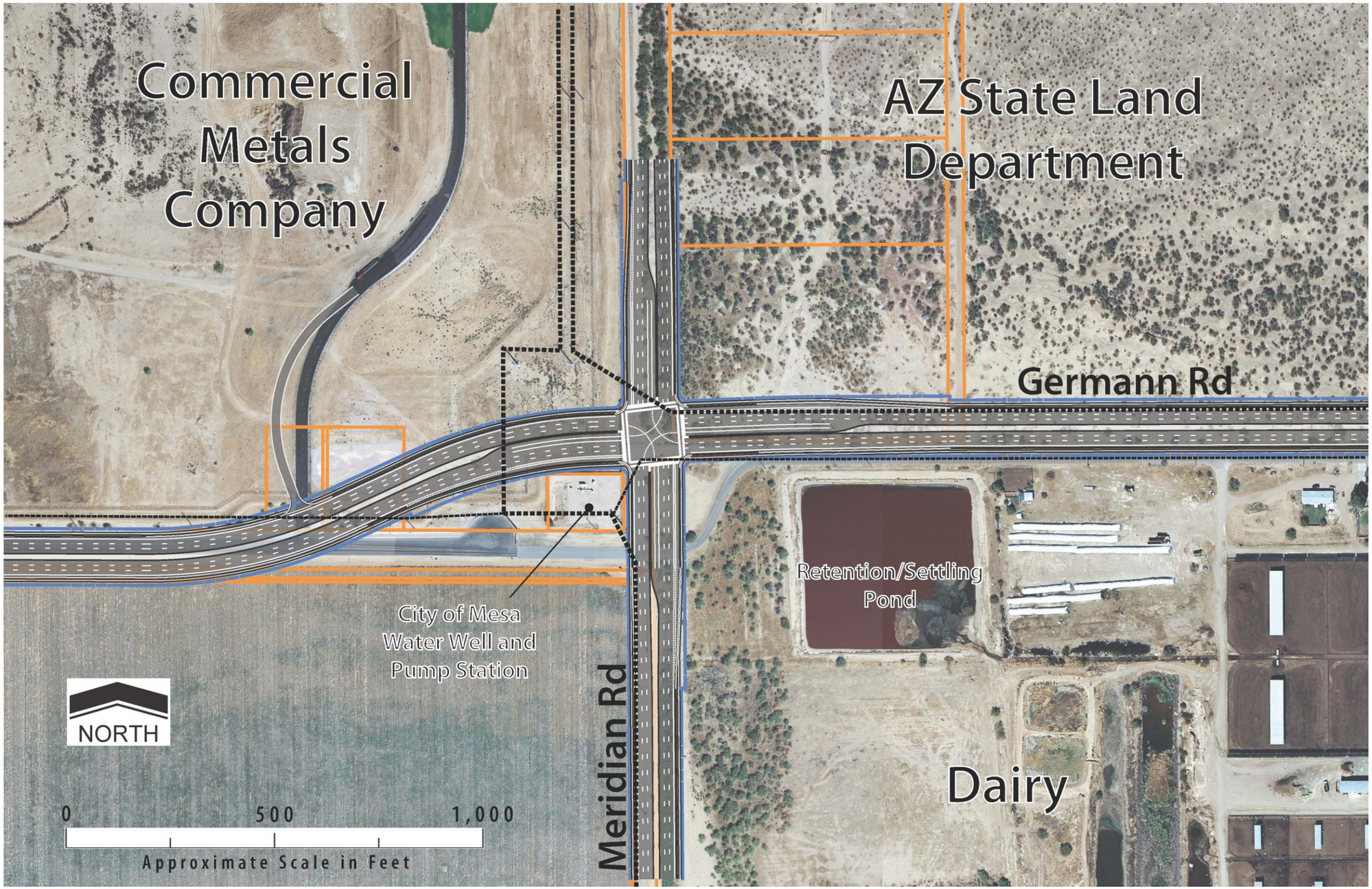


FIGURE 8-12 GERMANN/MERIDIAN INTERSECTION ALTERNATIVE 2 – NORTHERN DIVERSION



Evaluation of Alternatives

The two alternatives were reviewed for consistency with project goals and objectives and examined with regard to potential impacts on traffic flow and roadway geometrics, land use, environmental features, utilities, and drainage. These issues were the most prominent in the intersection study area and needed the greatest attention when engineering an alignment for Germann Road. Specific issues associated with each alternative are summarized in Figure 8-13. The magnitude of multiple potential effects favors Alternative 1 – South Dog Leg.

FIGURE 8-13 EVALUATION OF GERMANN/MERIDIAN INTERSECTION ALETRNATIVES

Alternative 1 – South Dog Leg	Alternative 2 – Northern Diversion
Skewed Intersection Geometrics	Right-Angle Intersection Geometrics
Relocation of Local Service Power Line (69kV) on South Side of the Germann Road Alignment east of Meridian Road	Relocation of OHE line on South Side of Germann east of Meridian Road
Relocation/Restructuring of Dairy Retention/Settling Pond (potential hazardous substances site)	Relocation of OHE line on North Side of Germann west of Meridian Road
Change of Access for Existing Land Uses	Minor (even avoidable) Impact on the Dairy Retention/Settling Pond
	Relocation of a Approximately 700 feet of the High-Voltage OHE Line on the North Side of the Germann Road Alignment east of Meridian Road
	Change of Access for Existing Land Uses with Alteration of Commercial Metals Company Drive

While the multiplicity of potential effects/impacts makes Alternative 2 look like the least favorable design treatment for this intersection, there are other advantages of favoring Alternative 2 over Alternative 1. The two primary disadvantages of Alternative 1 are the skewed intersection, which creates issues for traffic flow and sight distances that affect safety, and direct impact to the dairy retention/settling pond. This type of intersection has greater safety implications than Alternative 2, which can be developed with the approaches perpendicular creating right angles. The dairy retention/settling pond has been in place for some time and, no doubt, has a significant accumulation of animal waste carried by runoff from the feeding pens. While restructuring this facility is possible, doing so could be problematic, due to the special requirements that would be associated with the handling of wastes and other substances that could be in the pond.

Furthermore, Pinal County is currently designing an interim extension of Germann Road as a two-lane facility between Meridian and Ironwood roads. Plans indicate that the proposed alignment would follow that of Alternative 2. Thus, Alternative 2 presents the most efficient treatment for this intersection, as it would minimize throw away of constructed facilities.

Care should be taken when finalizing the design of the interim two-lane facility to assure that it is consistent with the ultimate six—lane facility footprint.

8.4 PROJECT COST ESTIMATE

Preliminary, planning-level cost estimates were developed to estimate the potential level of funds required to construct improvements in the corridor. Estimates were developed with the following assumptions:

- Total road reconstruction: Germann Road – six-lane arterial per the town of Queen Creek standards
- Signalized intersections at each major one mile intersection
- No street lighting costs were included
- Earthwork costs were assumed to be minimal along the corridor assuming the roadway would be at or near existing grade except for the area of the profile change for the UPRR grade separation (5 percent of new structure costs)
- Structure unit costs were $110/sq ft
- Removal costs of existing features were derived as a percentage (1 percent of new construction items)
- Drainage costs were derived as a percentage (8 percent of total new roadway items)
- Utility relocation costs were derived as a percentage of total construction costs
- Canal reconstruction unit costs were $35/sq yd
- New right of way was valued at $8/sq ft based on the *Signal Butte Road Corridor Improvement Study Final Report 2009*

The following tables presents the overall preliminary, planning-level project cost estimate which includes the construction costs for the preferred Germann Road alignment, as well as design costs (10 percent of the construction costs), construction management costs (15 percent of the construction costs), and administration costs (10 percent of the construction costs). Table 8-2 provides a summary of the costs associated with the majority of the corridor, excluding the area surrounding the potential grade separation of Germann and Sossaman roads at the UPRR. Separate planning-level cost estimates were developed for the three grade separation alternatives, as summarized in Table 8-3.

TABLE 8-2 PLANNING LEVEL COSTS FOR IMPROVEMENTS IN THE GERMANN ROAD CORRIDOR

Cost Category	Germann Road Power Road to Ironwood Road Cost ($)
Roadway and Traffic	18,531,000
Structures and Drainage	1,482,000
Total Construction Costs	**29,112,000**
Construction Management (15%)	4,366,800
Administration (10%)	2,911,200
Contingency (5%)	1,455,600
Right of Way	19,028,100
Utility Relocation (5%)	1,455,600
Final Design Costs (10%)	3,784,560
Total Alternative Costs	**62,113,860**

TABLE 8-3 COMPARISON OF PLANNING LEVEL COSTS FOR POTENTIAL GRADE SEPARATION

Cost Category	Alternative A Cost ($)	Alternative B Cost ($)	Alternative C Cost ($)
Roadway and Traffic	5,376,000	6,259,000	5,891,000
Structures and Drainage	10,362,000	6,669,000	8,549,000
Total Construction Costs	**22,893,000**	**18,805,000**	**21,005,000**
Construction Management (15%)	3,433,950	2,820,750	3,150,750
Administration (10%)	2,289,300	1,880,500	2,100,500
Contingency (5%)	1,144,650	940,250	1,050,250
Right of Way	9,409,500	6,482,100	7,492,750
Utility Relocation (5%)	1,144,650	940,250	1,050,250
Final Design Costs (10%)	2,976,090	2,444,650	2,730,650
Total Alternative Costs	**43,291,140**	**34,313,500**	**38,580,150**

8.5 RECOMMENDATIONS

Based on the preceding analyses, it is recommended that the following steps be taken to ensure that Germann Road will provide the necessary future capacity and connectivity to area residents and businesses:

- The town of Queen Creek and city of Mesa should work with developers to preserve the 140 feet of ROW required to accommodate the six-lane arterial cross section, as depicted in the conceptual alignment layouts contained in Appendix A.
- Maricopa County, the town of Queen Creek, and the city of Mesa should participate in conduct of a Design Concept Report to further define a recommended configuration and/or grade separation of Germann and Sossaman roads in the vicinity of the UPRR. This will allow further stakeholder and public vetting of potential alternatives prior to identification of a preferred configuration and associated ROW.

9.0 ACCESS MANAGEMENT CONSIDERATIONS

The efficiency and safety of a street or highway facility depends largely on the number and character of actions that interfere with the efficiency flow of traffic. Specifically, vehicles entering, leaving, or crossing the road, at intersecting streets and driveways interfere with or impede traffic flow. Access management (or access control) defines the practice of managing points of access along a roadway to minimize these occurrences. Access management aims to reduce the number of conflict areas and, thereby, increase the efficiency and safety of traffic flow. It attempts to balance the rights of roadway users and property owners, who have certain rights of access to abutting property, with other roadway users, who have the right to travel with relative safety and freedom from interference. When access rights/needs conflict with and mobility requirements of the roadway, access management principles are applied to reconcile the differences.

Access management addresses the basic question of when, where, and how access should be provided. It is achieved through design and regulatory practices that identify appropriate locations for driveways, median locations, intersections with other roads, and interchanges. The level of access provided along a roadway is dependent on its type and purpose. When access management is actively practiced, local roads generally have unlimited access, while regional highways generally have severe constraints on access. Thus, the appropriate degree of access to a roadway varies according to traffic characteristics and volume, the character of adjacent land uses, and long-term planning objectives for the area or region.

Germann Road, in Maricopa County, is a county roadway and will be developed in accordance with standards and guidelines established by the MCDOT. Germann Road also is a county roadway within Pinal County that will be developed by the county's public works department. As an arterial street in Maricopa County serving Queen Creek and Mesa and a RSR in Pinal County, Germann Road must be capable of accommodating moderate to high traffic volumes and a moderate level of property access. The following guidelines or principles of access management should be applied during final design of Germann Road.

9.1 EXISTING ACCESS

The matter of existing points of access is relevant only to Maricopa County. Existing access points, even if not in use, may not be relocated, altered, or reconstructed without approval from MCDOT and a permit issued by the department. When access to a roadway via a curb and gutter is abandoned, it must be replaced by a full height curb across the abandoned access and the depression behind must be filled. When access to a roadway via a shoulder and ditch is abandoned, it must be replaced by a matching existing shoulder and ditch.

9.2 FUTURE ACCESS

9.2.1. Maricopa County

The MCDOT *Roadway Design Manual* (Chapter 7, Access to Maricopa County Roadway System) adopts a relatively straight forward and strict access management posture for Maricopa County's roadway system. It states "all construction to connect or change driveways entering County roads must first be authorized by a valid MCDOT Permit." Noting that the number of access points should be kept to a minimum, the manual states "access points may not be approved without an acceptable project site plan."

The manual provides general guidelines identifying conditions that would result in a change of access points on public road. When these conditions occur, a new driveway, or access permit in the case of an intersecting street, maybe required. Five conditions are highlighted:

- When the use of the access increases in actual or proposed vehicular volume by 20 percent or more;
- When a particular directional characteristic (such as left turns) increases by 20 percent or more
- When a change in the use of a property causes the flow of entering vehicles to be restricted, or causes such vehicles to lineup or be otherwise delayed on a public road;
- When use of the access by vehicles exceeding 30,000 pounds gross vehicle weight increases by 20 percent or 10 vehicles per day; and
- When a direct access onto a public road has not been used for more than 4 years and improvements are needed.

Design of a six-lane roadway on the Germann Road alignment, as recommended, will result in changes in the conditions of access at many properties abutting the roadway and at intersecting streets. The guidance provided in this Manual will need to be followed to assure the new facility functions according to its intended classification and results in safe traffic movements.

Future commercial/industrial driveways on Germann and Sossaman roads, as a result of the recommended improvements, should adhere to guidelines set forth in the MCDOT *Roadway Design Manual*. This manual provides in Section 7.9 driveway spacing guidelines for arterial/collector roadways as measured from driveway centerline to driveway centerline (Table 9.1). Joint access to multiple abutting parcels may be approved when new access does not meet the spacing requirements. Section 7.9 also includes guidelines for driveway corner clearances and other design factors (e.g., driveway storage, sight distances, acceleration/deceleration lanes, driveway location coordination), which should be referenced during final design of recommended improvements.

TABLE 9-1
DRIVEWAY SPACING GUIDELINES

Land Use	Posted Speed	Driveway Type	Arterial/Collector Min. Spacing (ft.)
Multi-Family	(Low volume)	M-1	65
Multi-Family	High volume)	M-2	330
Commercial	All	CL-1	165
Commercial	All	CH-2	330
Industrial	All	CL-1	165

SOURCE: TABLE 7.2: DRIVEWAY SPACING, MCDOT ROADWAY DESIGN MANUAL, REVISED 2004.

9.2.2. Pinal County

It is assumed that Germann Road in Pinal County will be classified as a principal arterial. These are major roadways expected to support a high level of travel mobility (i.e., high traffic volumes), which calls for a low level of access to abutting land. Four to six lanes, two to three in each direction, are considered to be the minimum number of lanes for this class of roadway. Typically, ROW requirements will be 130 feet to 150 feet (refer to Figure 9.1 for the typical section of an RSR principal arterial). The primary characteristics of a Pinal County RSR are:

- High level of service for automobiles and transit, reducing travel times;
- High degree of access management;
- High level of safety;
- Connectivity between urban areas and major activity centers;
- Connectivity to state highway system and major urban arterials; and
- Continuity across the county and through urban areas.

Access management strategies to accomplish the intended purposes of the RSR principal arterial include:

- Continuous median barriers;
- Prohibition of left-out movements from driveways and minor side streets (i.e., right-in/right-out access only);
- Driveway consolidation; and
- Possibility of frontage roads.

10.0 PUBLIC INVOLVEMENT

Stakeholders and the public provided feedback at key milestones during the study.

A TAG consisting of key project stakeholders convened to provide feedback and direction at key project milestones. The group met on the following dates:

September 28, 2011

November 3, 2011

May 28, 2012

June 13, 2013

The study also included a public meeting on November 7, 2011 to present the study purpose and objectives. A second public meeting was held on June 18, 2013 to present the results and findings of the study.

Details regarding the project outreach are included in the Public Involvement Summary attached as Appendix C.

APPENDIXES

APPENDIX A

Conceptual Germann Road Corridor Plan Sheets

APPENDIX B

Level of Service Worksheets

APPENDIX C

Public Involvement Summary