



Old Vail Connection Road Study

FINAL REPORT

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Prepared for:

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EXECUTIVE SUMMARY

The primary purpose of this study is to determine what transportation improvements would be needed to accommodate future growth and development of the Raytheon Missile Systems facility located south of Tucson International Airport on Hermans Road. A secondary purpose of this study is to consider longer-term roadway and transit improvements that will improve access to Tucson International Airport and associated airport property planned for future development. Specifically, the study analyzed the effects of closing Hughes Access Road/Alvernon Way to non-Raytheon traffic and recommends alternative roadway improvements that would be needed to accommodate this closure. Study findings are summarized below.

- It is estimated that the proposed closure of Hughes Access Road to non-Raytheon traffic would displace approximately 10,600 vehicles per day by the year 2015 that are not associated with Raytheon Missile Systems.
- To provide an alternate route to Hughes Access Road, it is recommended that Old Vail Connection Road be developed from Nogales Highway east to Alvernon Way, and that Alvernon Way be extended south from Hughes Access Road to Old Vail Connection Road. These improvements are estimated to cost \$12.7 million for two-lane facilities. Right of way would need to be acquired from Tucson Airport Authority, City of Tucson, State of Arizona, and private land owners.
- Extending Old Vail Connection Road from Alvernon Way to Rita Road as a second phase of improvements is estimated to cost \$15.6 million for a two-lane facility.
- To accommodate the planned third runway at Tucson International Airport, Alvernon Way would need to be closed and realigned to Swan Road, as recommended in the *Alvernon Way/Swan Road Realignment Study* from 2008.
- To improve access to Tucson International Airport from the north, the Alvernon Way/Swan Road realignment could be aligned with Country Club north of Los Reales Road. Further consultation with Tucson Airport Authority is needed to determine long term airport needs in this vicinity and a preferred alignment that minimizes impacts.
- Sun Tran currently provides bus service to TIA and Raytheon Missile Systems. Long term plans include additional express bus service and the development of bus rapid transit (BRT) service along the Sixth Avenue/Nogales Highway corridor and serving the airport. A longer term goal is to connect the towns of Marana, Sahuarita, Vail and Tucson with commuter rail along the Nogales Highway corridor which could serve the Raytheon facility.

Next Steps

Further discussions with Raytheon, Tucson Airport Authority, City of Tucson, Pima County and other stakeholders are needed to evaluate the recommendations of this study and determine a course of action. If Hughes Access Road is to be closed to the public, many details remain to be discussed to minimize impacts and maximize economic development potential. If a decision is made to close Hughes Access Road, the next step would be to identify and secure funding.

1. INTRODUCTION

1.1 Purpose and Need

The primary purpose of this study is to determine what transportation improvements would be needed to accommodate future growth and development of the Raytheon Missile Systems facility located south of Tucson International Airport on Hermans Road. More specifically, Raytheon management has stated that future operations in the vicinity of Hughes Access Road are impacted by public traffic along this roadway. To assure the longevity of their ability to operate their Final Assembly and Check Out (FACO) operations, Raytheon management has recommended relocation of public traffic off of Hughes Access Road. Whether Hughes Access Road is closed and how this might occur will require future discussions between Pima County, Raytheon Missile Systems, Tucson Airport Authority, City of Tucson and other affected parties. The purpose of this study is simply to analyze the effects of closing Hughes Access Road/Alvernon Way to non-Raytheon traffic and recommend alternative roadway improvements that would be needed to accommodate this closure.

A secondary purpose of this study is to consider longer-term roadway and transit improvements that will improve surface transportation access to Tucson International Airport and associated airport property planned for future development.

1.2 Scope of Work

The scope of this study is to document existing conditions, analyze how closing Hughes Access Road/Alvernon Way to non-Raytheon traffic would impact the roadway network, and recommend alternative roadway improvements that would be needed to accommodate this closure. This study assumes that Old Vail Connection Road would be developed as a substitute east-west route to replace Hughes Access Road. This study assesses the extension of Old Vail Connection Road between Nogales Highway and I-10 and associated north-south routes and recommends improvements to accommodate the closure of Hughes Access Road and planned future expansion of Tucson International Airport. The study identifies:

- Required laneage to meet future travel demands;
- Opportunities and constraints for roadway design;
- Drainage requirements;
- Environmental considerations;
- Planning level costs, including right-of-way costs; and
- Transit and light rail considerations

1.3 Study Area

The study area is roughly bounded by Rita Road to the east, Nogales Highway to the west, Valencia Road to the north, and Old Vail Connection Road to the south. The study area is shown in Figure 1. The primary focus of this study is the Old Vail Connection Road corridor between Nogales Highway and I-10 (at Rita Road), and north-south routes to this corridor, particularly at Country Club Road and Alvernon Way. Old Vail Connection Road is located in the southeast area of Tucson, Pima County, Arizona along the township line of T15S/R14E, T15AS/R15E, T16S/R14E, and T16S/R15E.

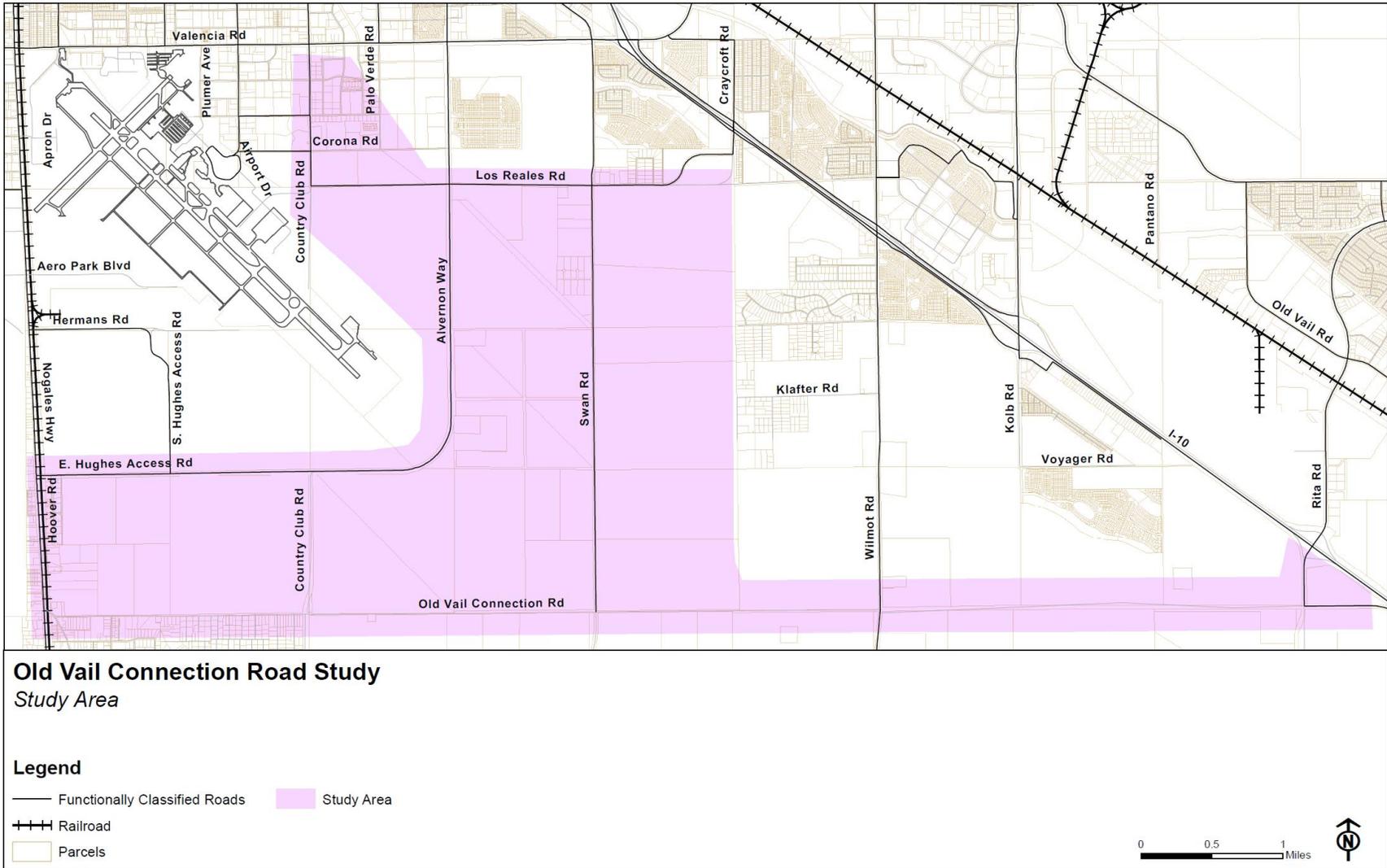


Figure 1 - Study Area

2. EXISTING CONDITIONS

2.1 Land Use and Ownership

Much of the land in the study area is undeveloped and zoned industrial and commercial. North of Hughes Access Road, Tucson International Airport (TIA) is the primary land use with other aerospace and defense related uses. The main Raytheon Missile Systems facility, located on Hermans Road north of Hughes Access Road and south of TIA, leases this property from the federal government. South of Old Vail Connection Road, approximately 800 residences are located in an unsubdivided area between Nogales Highway and Country Club Road. Several surface mining businesses are also located throughout the study area.

Several government agencies control and manage the lands and roadways within the study area. The land area is a patchwork of City of Tucson and unincorporated Pima County lands, with parcels owned by Tucson Airport Authority, City of Tucson, the federal government and the Arizona State Land Department, and several private landholders including Granite Construction Company, Diamond Ventures and First Tucson Airport investors. Land ownership is shown in Figure 2. Two of the main land owners in the study area are described below.

Raytheon Missile Systems

Raytheon Missile Systems leases from the federal government the three large parcels north of Hughes Access Road between Nogales Highway to the west and Alvernon Way to the east. Access to this facility is provided via Nogales Highway on the west, Hughes Access Road on the south, and Alvernon Way on the east. Raytheon management has stated that future operations in the vicinity of Hughes Access Road are impacted by public traffic along this roadway. To assure the longevity of Raytheon's ability to operate its Final Assembly and Check Out (FACO) operations, relocation of public traffic off of Hughes Access Road is recommended.

Tucson Airport Authority

The Tucson Airport Authority (TAA) owns the largest amount of land south of Hughes Access Road and east of Alvernon Way. This property includes land leased to others as well as undeveloped land designated for utility scale renewable energy development. The main runway is positioned northwest to southwest and Pima County restricts land use development in airport environs zones that extend south of Old Vail Connection Road and east of Swan Road.

2.2 Active Land Development

The only known active land development within the study area is the Swan Solar Power Generation Station 1, located at 9301 South Swan Road on the Granite Construction Company owned and operated Swan Road Sand and Gravel Mine property, parcel number 140-53-001B. The project will encompass approximately 79 acres of the 316 acre current mine site. The project will involve construction and operation of 146 high concentration solar power generators, and a 200 square foot equipment building, 8 concrete transformer pads, and a fire access road.

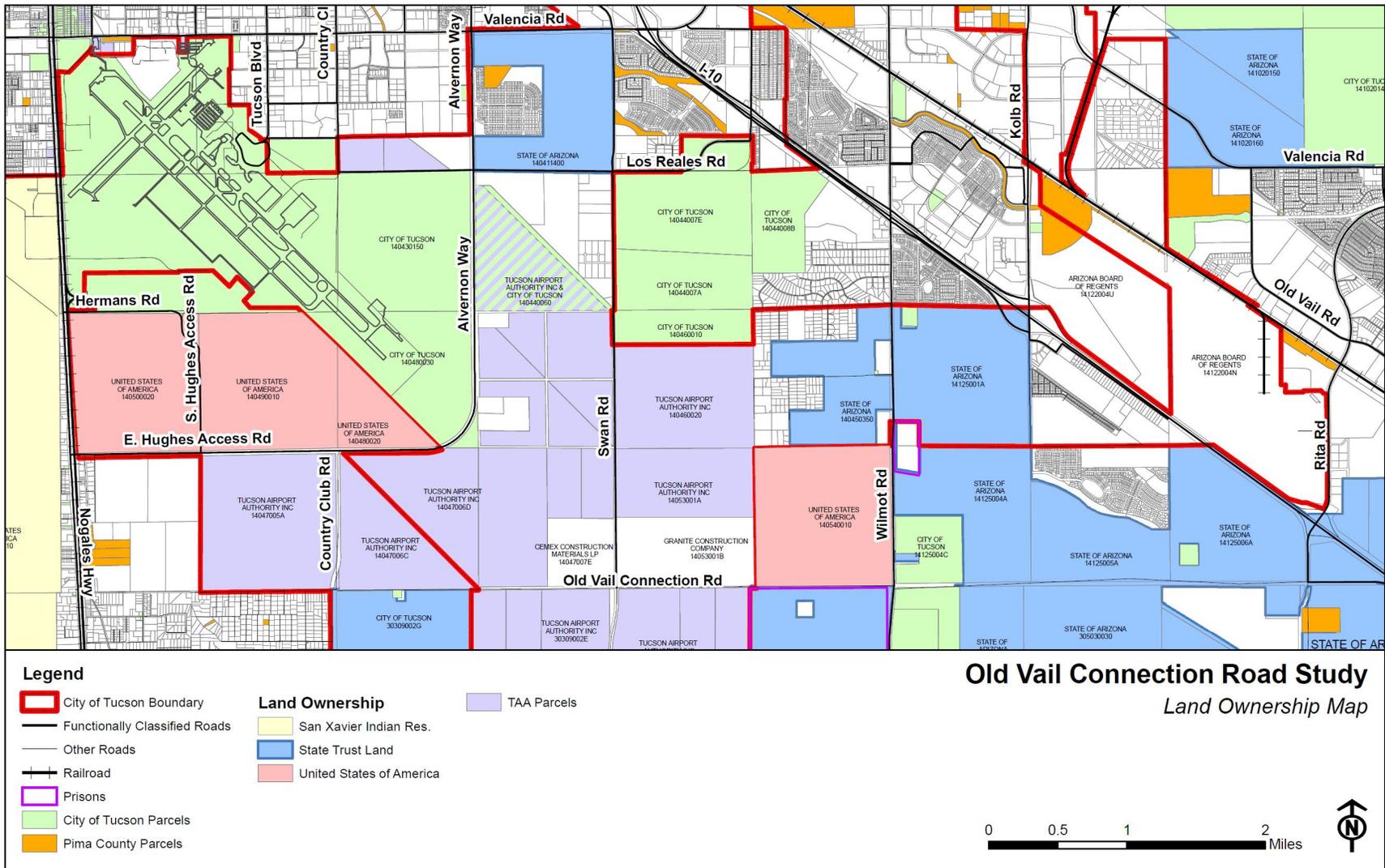


Figure 2 - Land Ownership and Jurisdiction

2.3 Existing Roadway System

Roadways in the study area are described below and shown in Figure 3.

East Hughes Access Road

East Hughes Access Road is a paved 2-lane arterial roadway that begins at Nogales Highway on the west, continues east for approximately 3 miles, then turns north to become Alvernon Way past the Tucson International Airport runway. This roadway provides access to the Raytheon Missile Systems facility via South Hughes Access Road the intersection of which is located approximately 1 mile east of Nogales Highway. The posted speed limit is 55 miles per hour (MPH) and traffic counts indicate approximately 9,300 vehicles per day. The East Hughes Access Road right of way is entirely within the City of Tucson limits, but the roadway is maintained by Pima County.



East Hughes Access Road, looking east



East Hughes Access Road, looking east at South Access Road

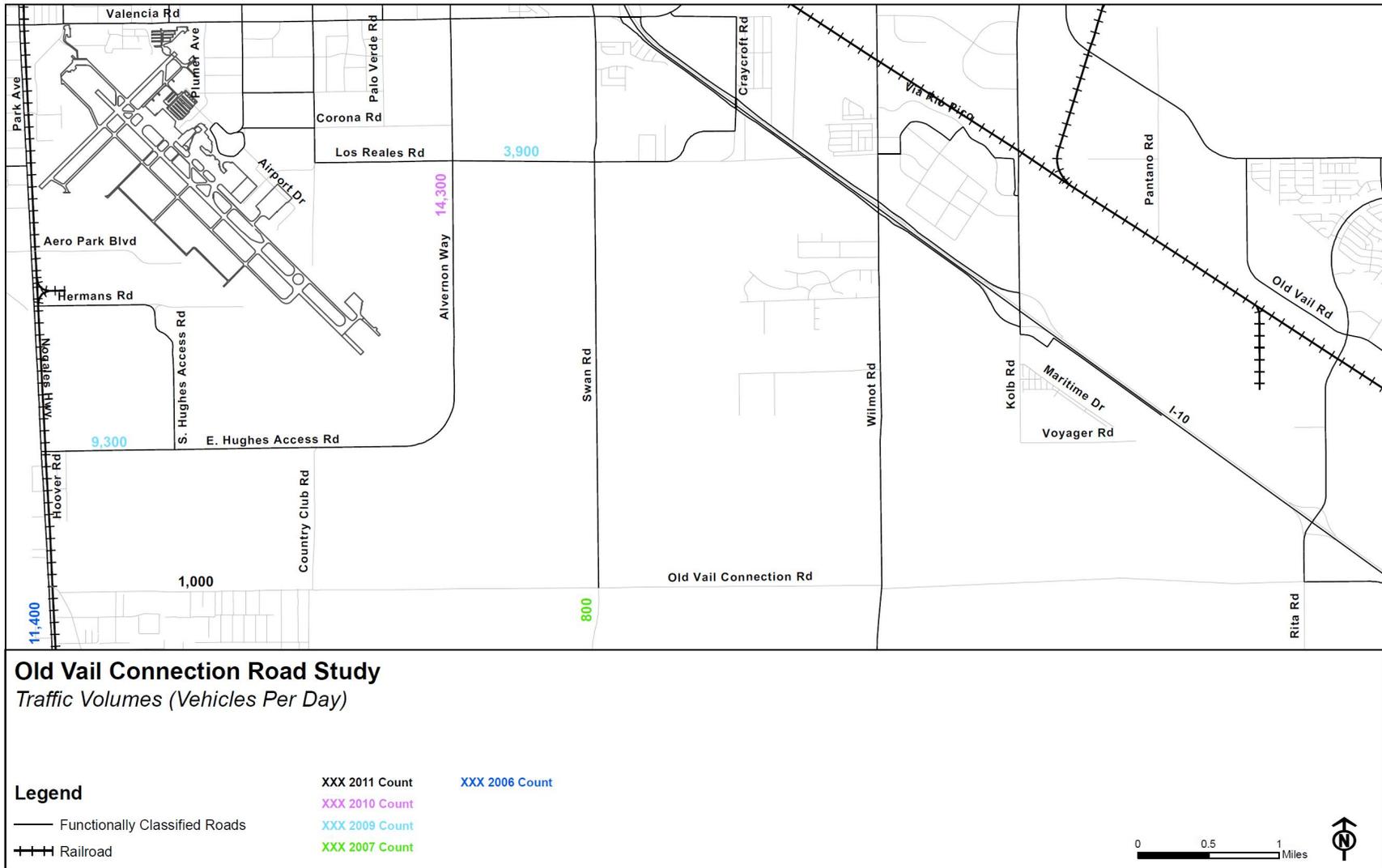


Figure 3 - Roadways and Traffic Volumes

Alvernon Way

Alvernon Way is a county-maintained, paved 2-lane arterial road that continues south of Los Reales Road for approximately 2 miles before turning west and becoming East Hughes Access Road. This roadway provides access to the Raytheon Missile Systems facility as described above, but it also provides access to the Hughes Sand and Gravel mining operations located approximately 2 miles south of Los Reales Road. It also provides access, via Country Club Road, to approximately 800 residences located in the unsubdivided area south of Old Vail Connection Road and west of Country Club Road. The posted speed limit is 55 MPH and traffic counts indicate approximately 14,300 vehicles per day, many of which are Raytheon employees.



Alvernon Way, looking north, north of Hughes Access Road



Alvernon Way, looking south towards curved connection with Hughes Access Road

Country Club Road (south)

South of Hughes Access Road, Country Club Road is a city-maintained road that extends to Old Vail Connection Road and continues another mile south where it dead ends. The northernmost half-mile is paved and the remainder is unpaved. This road provides secondary access to approximately 800 residences located in the unsubdivided area south of Old Vail Connection Road and west of Country Club Road. This road provides access to undeveloped land in Sections 32 and 33 which are owned by Tucson Airport Authority.



Country Club Road (south), looking south, south of Hughes Access Road



Country Club Road (south), looking south, unpaved segment

Old Vail Connection Road

Old Vail Connection Road is a paved two-lane county-maintained road from Old Nogales Highway east to Creeger Road, a distance of approximately 2,100 feet. The posted speed limit on that section of road is 25 MPH. From Creeger Road, the road continues east as an unpaved city-maintained road for approximately 5.5 miles until it dead ends at Wilmot Road. Traffic counts taken close to Old Nogales Highway indicate traffic volumes are approximately 1000 vehicles per day. A short 500 ft section of Old Nogales Highway which crosses a railroad track at-grade connects Old Vail Connection Road to Nogales Highway.



Old Vail Connection Road, looking east from Old Nogales Highway



Unpaved section of Old Vail Connection Road, east of Creeger Road

2.4 Right of Way

Alvernon Way

Alvernon Way has 200 feet of right of way from Los Reales Road south to a point approximately 1 mile south of Los Reales Road. There, the right of way widens to approximately 280 feet for a little over one-half mile. The right of way then narrows back to 200 feet as the roadway turns west to become Hughes Access Road. South of the transition point, there is no right of way that would accommodate an extension of Alvernon Way.

Old Vail Connection Road

Right of way along Old Vail Connection Road varies from Old Nogales Highway on the west to Rita Road on the east.

- Nogales Highway to Country Club Road – 60 foot ROW
- Country Club Road to 1 mile east of Country Club Road – 150 foot ROW
- 1 mile east of Country Club Road to Swan Road – 105 foot ROW
- Swan Road to 1 mile east of Swan Road – 60 foot ROW
- 1 mile east of Swan Road to Wilmot Road – 75 foot ROW
- Wilmot Road to Rita Road – 150 foot ROW

There is one location, at 3468 E. Old Connection Road, where there is no right of way for approximately 325 lineal feet.

2.5 Utilities

Several utilities and associated infrastructure are located within the study area. The electric transmission lines located along Old Vail Connection Road appear to impact development of this corridor. Though not a utility, private tailings ponds and materials pits located on the north side of Old Vail Connection Road just east of Swan Road would also constrain the roadway alignment. More detailed maps of the proposed Old Vail Connection Road alignment and existing utilities are provided in Appendix A.

To obtain information on utilities, letters were sent to utility providers within the study area. A summary of utility responses are summarized in Table 1 and letters and correspondence received from utility providers are provided in Appendix D. Figure 4 summarizes GIS data regarding utility locations on the corridor.

Table 1- Existing Utility Provider Responses

Utility Owner	Utility Type	Location	Comments
AT&T	Transcontinental fiber optic cable	The cable is located on the north side of I-10 – probably not a conflict	
El Paso Natural Gas	Natural Gas pipeline	<ul style="list-style-type: none"> • A north- south pipeline located on the east side of Alvernon Way. Immediately north of Hughes Access Road • An east – west pipeline which crosses Old Vail Connection Road between Wilmot Road and Rita Road. • A north-south pipeline near Wilmot Road which runs to the prison and connects to the east-west pipeline 	Pipelines must be potholed to verify location
Pima County Traffic Engineering	Traffic signals, counter station	Traffic signals are located at: <ul style="list-style-type: none"> • Hughes Access Road/Nogales Highway • Alvernon Way / Los Reales • Alvernon Way / Valencia 	
Pima County Wastewater Management	Sewer Facilities	Sewer service areas are located west of Wilmot Road and on the south side of Old Vail Connection Road	
Qwest Local Networks	Telephone	Unknown	They deferred response until a more well defined area is chosen
Southwest Gas		Southwest Gas has high pressure distribution lines at Old Nogales Highway and Wilmot Road	The high pressure running parallel to Nogales Highway is located in easement.
Valley Telephone Cooperative	Telephone	Buried telephone conduit, 6 feet off east highway ROW line in T15S, S31 and T16S,R14E and S6	

Source: Utility Provider Responses

The following utility providers, which may have facilities in the study area, did not respond. Additional coordination will be needed with these providers:

- ADOT Tucson District
- Cox Communications
- Kinder Morgan
- La Casita Water Company
- Level 3 Communications
- Metropolitan Domestic Water Improvement District
- City of Tucson Facilities Design and Maintenance, Parks and Recreation, and Traffic Maintenance
- Sprint Communications
- Tucson Electric Power
- Tucson Water
- TW Telecon / Espedius
- S.W. Transmission Co-op, Inc.

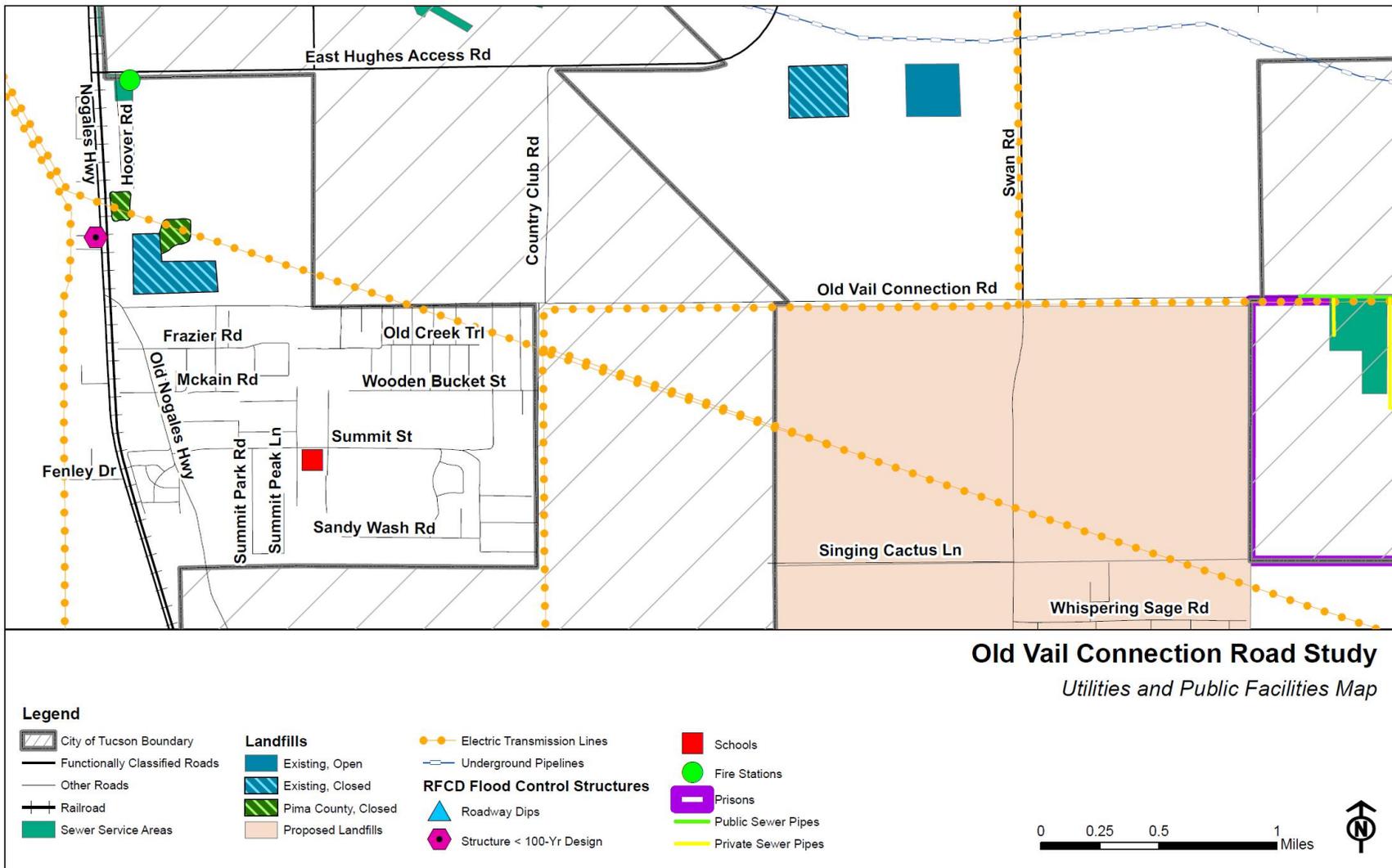


Figure 4 - Major Existing Utilities

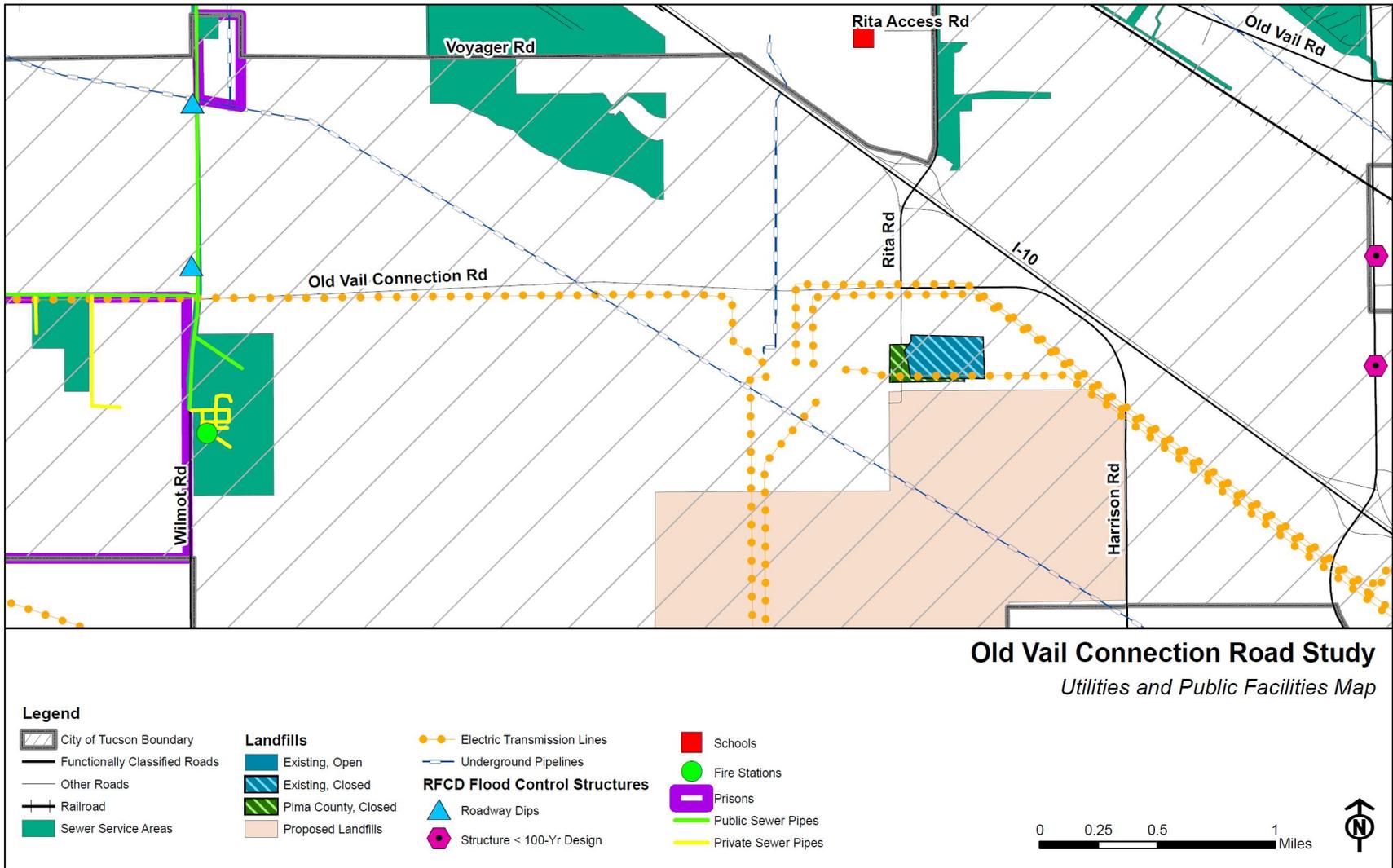


Figure 4 – Major Existing Utilities, Continued

2.6 Floodplains and Washes

The study area is characterized as an alluvial plain that generally drains from east-southeast to west-northwest, with all washes eventually feeding into the Santa Cruz River. Franco Wash crosses Old Vail Connection Road approximately one-half mile east of the intersection of Old Nogales Highway and is the most significant wash along that corridor. The Old Vail Connection Road alignment also crosses smaller tributaries of the Hughes Wash, South Fork of Airport Wash, and North Fork of Airport Wash. The Alvernon Way corridor south of Hughes Access Road crosses a tributary of the Hughes Wash and several smaller washes. Washes that impact the Old Vail Connection Road alignment, along with the 100-Year Franco Wash Floodplain boundaries, are shown in Figure 5.

Franco Wash

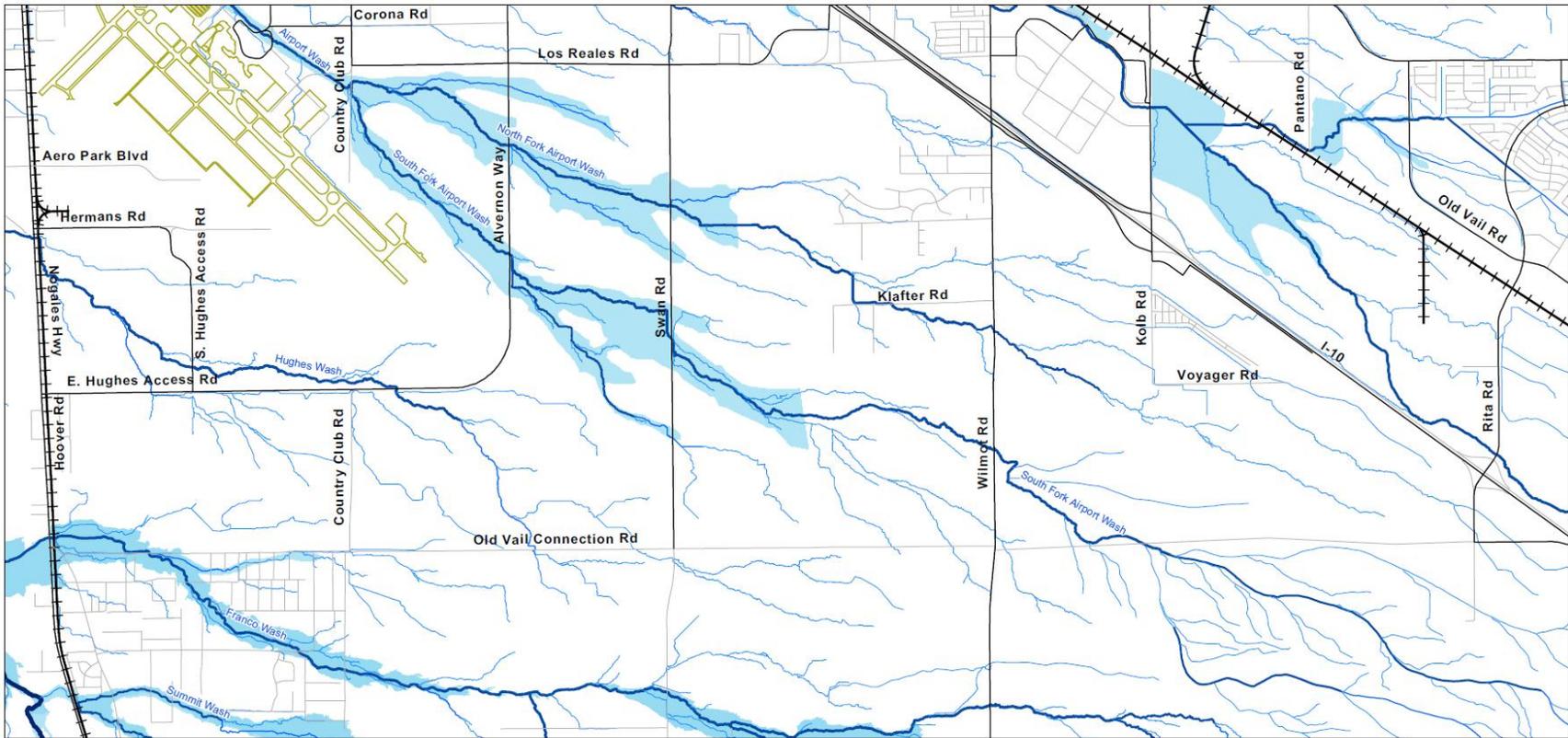
Franco Wash is currently the only wash within the study corridors that is mapped as a Special Flood Hazard Area on the Effective Flood Insurance Rate Maps (FIRMs). Digital FIRMs are planning to be published by FEMA for Pima County and surrounding communities on June 16, 2011 and no change is expected on the Franco Wash floodplain. However, Pima County has conducted the Lee Moore Wash Basin Management Study and delineated the Franco Wash floodplain in more detail. While this delineation will not affect flood insurance requirements, it is better information that the Flood Control District can utilize for planning and development in the region.

Wash Discharges

Certain discharges for washes impacting the study area were published in previous studies and utilized here for planning purposes. In cases where studies were not available discharge ranges from the Pima County Mapguide Server were identified and utilized to approximate drainage infrastructure requirements. Table 2 provides information on the location, name, and wash discharge (if available) in the study area.

Table 2 - Old Vail Connection Road Inventory of Existing Watercourse Crossings

Station East Of Nogales Highway (Ft)	Name Of Wash	Approximate Discharge (Cfs)
4+62	Unknown	500
7+08	Unknown	500
24+34	Unknown	500
32+49	Franco Wash	4449
76+00 – 114+00	Franco Wash Tributary Parallel Flow	500 - 2000
159+76	Hughes Wash	1260
192+77	Hughes Tributary	696
277+51	Unknown	500
297+05	Unknown	500
314+86	Hughes Tributary	457
337+03	Unknown	500
342+70	Unknown	500
360+27	South Fork Airport Wash	2659
469+45	Unknown	500
469+63	North Fork Airport Wash	604



Old Vail Connection Road Study
Floodplains and Washes

Legend

- Wash
- 100-yr Floodplain
- Functionally Classified Roads
- Railroad
- Airport Runways



Figure 5 - Floodplains and Washes

2.7 Environmental Conditions

The 9.2 mile long Old Vail Connection Road corridor is located at elevations of between approximately 2,590 and 2,940 feet above mean sea level, and occurs in the Basin and Range physiographic province of southern and central Arizona, an area characterized by low desert plains surrounded by fault-block mountain ranges. Vegetation is characteristic of the Sonoran Desertscrub (Arizona Uplands Subdivision) biotic community (Turner and Brown 1994), and includes saguaro, staghorn cholla, prickly pear, chain fruit cholla and fishhook barrel cacti, foothills paloverde, creosotebush, desert broom, triangle-leaf bursage, ocotillo, and mesquite.

Sensitive Species

According to data on file at the U.S. Fish and Wildlife Service and the Arizona Game and Fish Department, the project vicinity is likely inhabited by a number of Special Status Species, including the Pima Pineapple Cactus, Western Narrow-Mouthed Toad, Western Burrowing Owl and Cave Myotis.

Section 404 Impacts

The corridor is bisected by numerous west-northwest trending ephemeral washes, including tributaries of the South Fork of Airport Wash; all drainages in the project vicinity drain into the Santa Cruz River, approximately one mile west of the intersection of Nogales Highway and Old Vail Connection Road. Several of these drainages are likely substantial enough to be considered Waters of the United States under Section 404 the Clean Water Act of 1972.

Hazardous Wastes

No hazardous material sources are listed on the Arizona Department of Environmental Quality Emaps database as occurring in the immediate vicinity of the alignment.

Archaeological Resources

Human habitation of the project area spans at least 4,000 years, and perhaps as much as 12,000 years. Thirty-two archaeological sites have been identified within one-half mile of the current Old Vail Connection Road alignment, and it is likely that others exist in areas that have not been professionally inventoried for the presence of cultural resources. Thirteen archaeological sites, which may be eligible for inclusion in the National Register of Historic Places (NRHP), or which have been determined to be eligible for the NRHP, are listed in the AZSITE cultural resource database. Of these, four sites are located within 75 feet of the Old Vail Connection Road centerline, and may require mitigation prior to the construction of the proposed project. Environmental features are summarized in Figure 6.

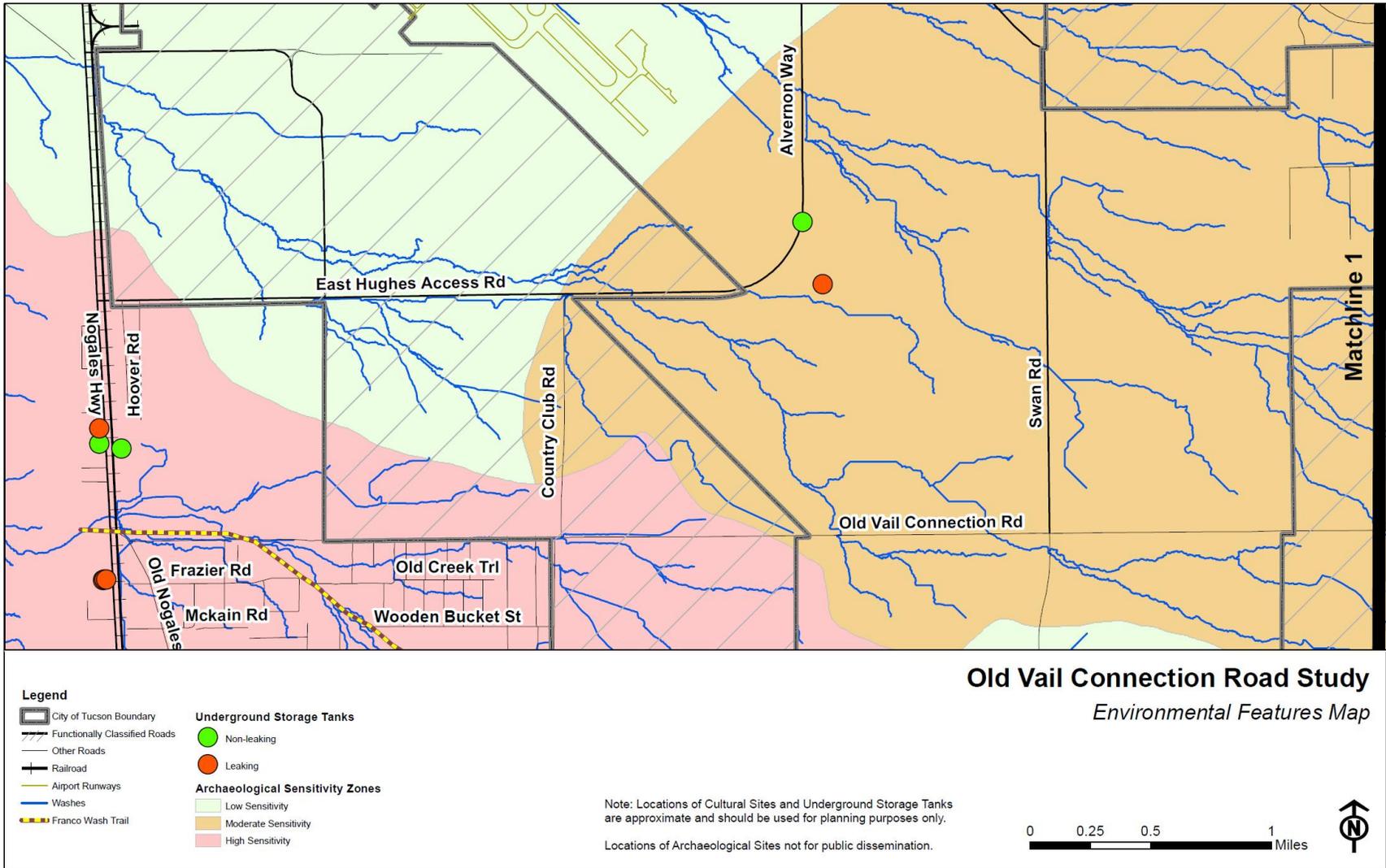


Figure 6 - Environmental Features

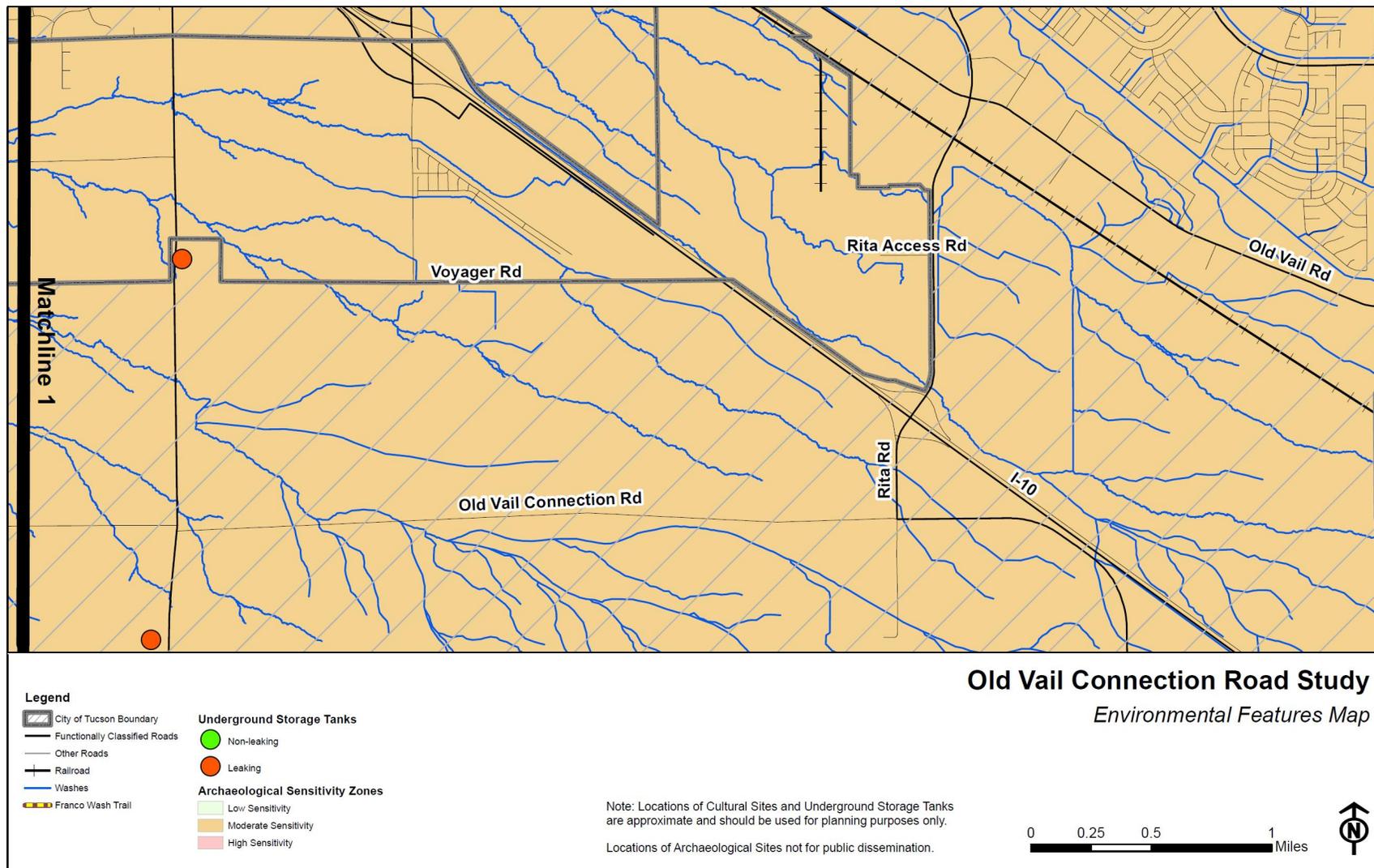


Figure 6 - Environmental Features (Continued)

2.8 Related Studies and Plans

In an effort to gather previous data, a review of readily available reports was made. The extension of Old Vail Connection Road as well as the realignment of Alvernon Way and Swan Road has been established in plans such as the *Southeast Area Arterial Study* and the *PAG 2040 Regional Transportation Plan*. A summary of related plans is shown in Table 3 below. A listing of planned and programmed projects from the *PAG 2011-2014 Transportation Improvement Plan* and *PAG 2040 Regional Transportation Plan* is provided in Appendix E.

Table 3 - Related Plans and Studies

Title	Date	Comments
Airport Environs Plan	1982 (updated 1991)	A key goal is to ensure compatibility of land uses in the Environs area with airport and aircraft operations.
I-19 Corridor Report and General Plan	2003	It was recommended that the I-19 / Papago interchange be reconstructed within current ADOT right-of-way to accommodate freeway widening. The Tohono O'odham Nation requested that this interchange be retained for access to agricultural lands near the interchange.
Davis-Monthan Air Force Base Joint Land Use Planning Study	2004	Addresses land use compatibility issues around Davis-Monthan Air Force Base and developed compatible land use plan zones and associated uses.
Tucson Airport Authority Master Plan Update Summary	2005	The Master Plan Update recommended that a third parallel runway be constructed to accommodate future demand, but did not stipulate when this would occur.
Los Reales Landfill Planned Area Development	2006	There is a triangle shaped Reserve District (approximately 61 acres) that provides Tucson Water with an adequate area to build a water reservoir and also results from the planned expansion of Alvernon Way and is reserved for industrial uses in conformance with the City's I-2 zoning classification.
Southeast Area Arterial Study	2006	Old Vail Connection Road is recommended to be extended to Rita Rd/I-10 as arterial facility on 150 feet of ROW. Alvernon Way is recommended to connect to Swan Road on a 150 foot parkway alignment.
Tucson Southlands Conceptual Planning Report	2008	Not reviewed.
Alvernon-Swan Realignment Study	2008	This study compared various alignment alternatives for the realignment of Alvernon Way and Swan Road south of Valencia Road.
Deficiency Assessment and Alternatives Recommendation Report-Old Tucson-Nogales Highway, Summit Neighborhood	2008	This report looked at three alternatives to reconstruct /relocate the Nogales Highway-Old Tucson/Nogales Highway intersection. One alternative involved extending Old Vail Connection Road west approximately 375 feet to create a 90 degree t-intersection with Nogales Highway. The Old Vail Connection Road/Old Nogales Highway Intersection would be converted from a 3 to 4-legged intersection. A new railroad crossing and traffic signal would be required.

Title	Date	Comments
Development Criteria for the Lee Moore Wash Basin Management Plan, Final Draft	2009	<p>This report defines criteria for road crossings in the Lee Moore Wash area. Key recommendations include:</p> <ul style="list-style-type: none"> ▪ Design roads so that runoff is conveyed to the historic flow path to the maximum extent possible. ▪ Design roads so the roadway alignment is perpendicular to watercourse ▪ Roadway crossings are discouraged where the watercourse is braided. ▪ Roadway crossings should minimize downstream scour. ▪ All crossings should be designed to minimize the disruption of sediment-transport balance upstream and downstream of the crossing.
PAG 2011 -2014 Transportation Improvement Plan	2010	Key related projects listed in the 2011 -2014 TIP include construction of a traffic interchange at I-10/Country Club Rd and new traffic signals at Alvernon Way/Los Reales Road and Nogales Road/Old Nogales Highway. Another project is construction of bike lanes on Hughes Access Road and Alvernon Way.
PAG 2040 Regional Transportation Plan	2010	The RTP includes extension of Old Vail Connection Road from Nogales Highway to Wilmot Road as a four lane facility. It also includes widening Alvernon Way from Los Reales Road to Valencia Rd from 2 to 4 lanes.
Pima County Major Street and Routes Plan	Version accessed 1/2011	Old Vail Connection Road is designated as a 150-foot major route. Alvernon and Swan Road south of Los Reales Road are also classified as major routes with 150 feet of ROW.

3. TRAFFIC IMPACT ANALYSIS

To determine the effects of closing Hughes Access Road to public travel, travel demand forecasts for 2015 were evaluated with the following assumptions:

1. Old Vail Connection Road is built from Old Nogales Highway to Alvernon Way;
2. Alvernon Way is extended south to Old Vail Connection Road;
3. Hughes Access Road is closed to through traffic.

Two methods were used to determine travel forecasts, one based on historic traffic counts to determine projected future traffic and the other using the Pima Association of Governments (PAG) travel forecast model. Both analyses are described below.

3.1 Historic Traffic Counts and Growth Rates

Historic traffic counts were obtained for Alvernon Way, Hughes Access Road, Hermans Road and Nogales Highway, but are not available for Old Vail Connection Road. Annual growth rates for these roadways vary from -2.1% on Nogales Highway to 5.1% on Hughes Access Road. Average daily traffic counts and rates are shown in Table 4 below.

Table 4 - Historic Traffic and Growth Rates

Street Name	2005 Volume (vehicles per day)	2006 vpd	2007 vpd	2008 vpd	2009 vpd	2010 vpd	Compound Annual Growth Percent
Alvernon Way	12,642	15,041	N/A	N/A	15,761	14,345	2.6%
Hughes Access Road	7,595	7,081	N/A	N/A	9,258		5.1%
Hermans Road	N/A	23,411	N/A	N/A	22,033		-2.0%
Nogales Hwy	N/A	19,297	N/A	N/A	19,055	17,713	-2.1%
Old Vail Connection Rd	N/A	N/A	N/A	N/A	N/A	N/A	N/A

N/A=Not available

3.2 Projected Base 2015 Traffic Volumes

Based on historic traffic counts, annual growth rates were assigned for each roadway, as shown in Column 2 in Table 5. Based on these rates, traffic volumes for 2015 were estimated for Alvernon Way, Hughes Access Road, and Old Vail Connection Road, assuming no changes to the roadway network. These projected volumes are shown in Column 3 in Table 5.

Table 5- Projected 2015 Traffic Volumes

	Column 1	Column 2	Column 3	Column 4
Street Name	Existing Traffic Volume	Annual Growth Rate	2015 Traffic (Hughes Open)	2015 Traffic (Hughes Closed)
Alvernon (N of Hughes)	14,300	2%	15,800	15,800
Alvernon (S of Hughes)	0	NA	0	10,600
Hughes Access Road*	9,300	3%	11,100	500
Old Vail Connection Road	1,000	2%	1,100	11,700

Note: traffic volumes are vehicles per day and rounded to the nearest 100 vehicles.

*Traffic Count pertains to East Hughes Access Road west of South Hughes Access Road

3.3 Projected New 2015 Traffic Volumes

Traffic volumes were then projected for 2015 assuming that Hughes Access Road was closed to the general public and traffic was rerouted to Old Vail Connection Road and the extension of Alvernon Way to Old Vail Connection Road. To determine how much traffic along Hughes Access Road is associated with Raytheon and how much is public through traffic, turning movement counts were analyzed for the intersection of East Hughes Access Road and South Hughes Access Road, at the southern entrance gate to Raytheon. The analysis indicates that approximately two-thirds of the traffic along Hughes Access Road (and Alvernon) is not related to Raytheon. If all the non-Raytheon traffic is rerouted to the southern extension of Alvernon Way and Old Vail Connection Road, the projected traffic volumes would be 10,600 vehicles per day (vpd) on Alvernon Way south of Hughes Access Road and 11,700 vpd on Old Vail Connection Road. Hughes Access Road would continue to be used by Raytheon as a private or access-restricted roadway as described in the following chapter of this report. A summary of projected traffic volumes assuming the closure of Hughes Access Road the non-Raytheon traffic is shown in Column 4 in Table 5 and Figure 7.

3.4 Level of Service Analysis

An analysis of the projected new 2015 traffic volumes using procedures from the Highway Capacity Manual indicates that Old Vail Connection Road could operate at level of service D as a two lane roadway (with turn lanes) if Hughes Access Road is closed to non-Raytheon traffic. Level of service would improve to LOS B if a four-lane roadway is assumed. Alvernon Way could operate at a level of service D with a two lane roadway, south of Hughes Access Road. North of Hughes Access Road, projected traffic volumes may warrant a four-lane facility for an acceptable level of service.

3.5 PAG Travel Forecast Model Analysis

The Pima Association of Governments (PAG) travel forecast model projects future traffic for the entire PAG region based on future population and employment growth assumptions. The model is not specifically designed to predict traffic on individual roads or even sub-areas, but it can be useful as an additional tool in travel forecasting. As part of this study, PAG developed future projections for both 2015 and 2040 with specific parameters to reflect existing and projected population, employment and travel patterns.

The PAG travel demand model indicates that in 2015 with Hughes Access Road closed to non-Raytheon traffic, Alvernon Way traffic will carry 16,200 vpd north of Hughes Access Road and 11,500 vpd south of Hughes Access Road. Old Vail Connection Road will carry 12,200 vpd near the intersection of Old Nogales Highway. These numbers, shown in Column 1 of Table 6, are very close to the calculated traffic volumes based on historic traffic counts. Both the estimated traffic counts and PAG travel forecasts are shown in Figure 7.

The PAG travel demand model is less reliable in predicting long-term future travel as assumptions may change. With that in mind, the travel demand was evaluated for 2040 assuming that Old Vail Connection Road is extended to the Rita Road-Interstate 10 interchange and that Alvernon Way is realigned to Swan as indicated in the Pima County Major Streets and Routes Plan and the PAG 2040 Regional Transportation Plan. The model indicates that in 2040 with Hughes Access Road closed, Alvernon Way traffic will carry 19,400 vpd north of Hughes Access Road and 18,000 vpd south of Hughes Access Road. Old Vail Connection Road will carry 46,200 vpd near the intersection of Old Nogales Highway. These numbers are shown in Column 2 of Table 6. Traffic volumes are also shown for 2040 assuming the Alvernon/Swan Road realignment is in place, closing both Hughes Access Road and Alvernon Way to all through traffic. The resulting volumes are shown in Column 3 in Table 6 and Figure 8.

Table 6- PAG Travel Demand Model Forecasts

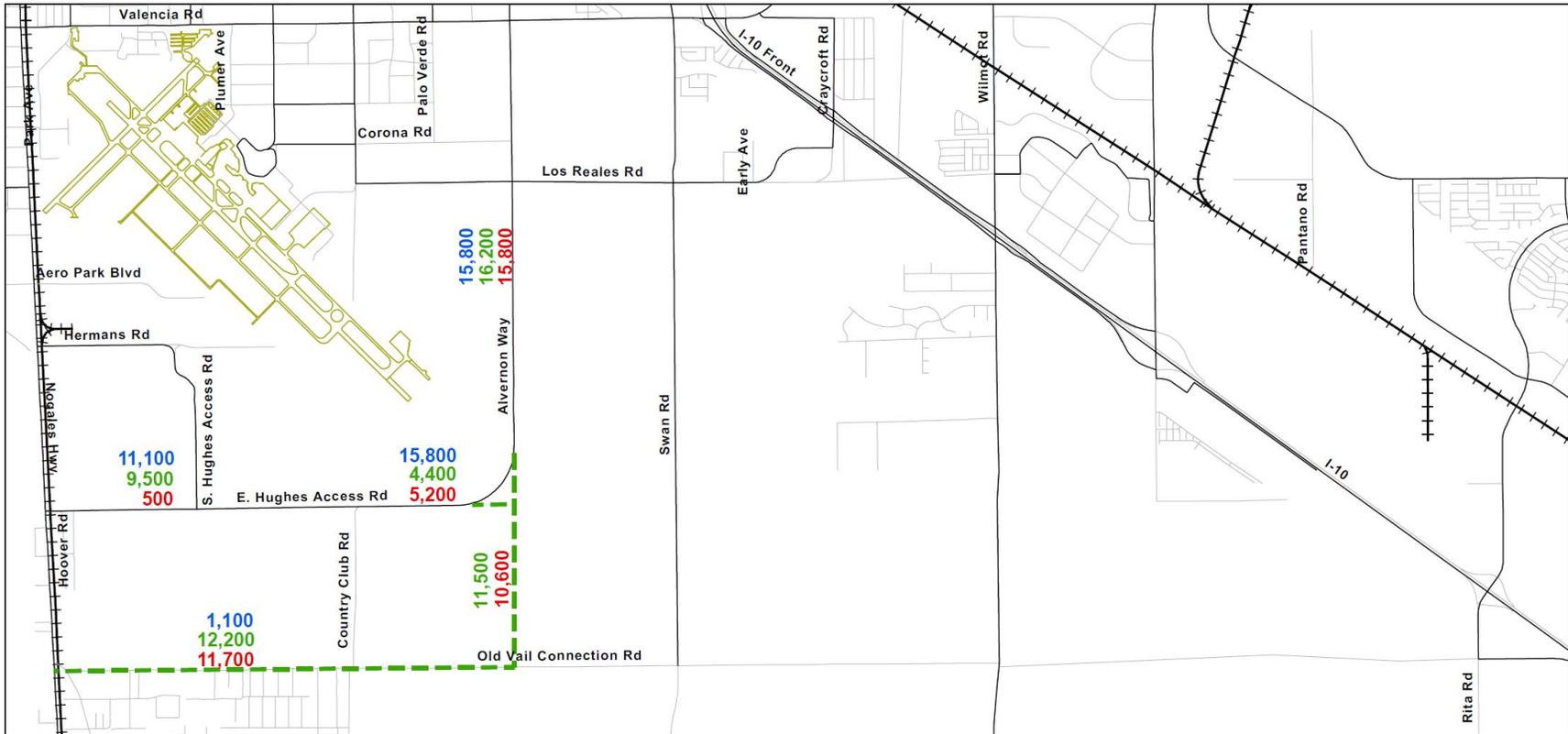
	Column 1	Column 2	Column 3
Street Name	2015 Traffic (Hughes Closed)	2040 Traffic (Hughes Closed)	2040 Traffic (Swan/Alvernon Realign)
Alvernon (N of Hughes)	16,200	19,400	900
Alvernon (S of Hughes)	11,500	18,000	0
Hughes Access Rd*	4,400	6,900	5,900
Old Vail Connection Road	12,200	46,200	40,400
Alvernon/Swan Road	NA	NA	70,000

Note: all traffic volumes are rounded to the nearest 100 vehicles.

*Traffic Count pertains to East Hughes Access Road east of South Hughes Access Road

3.6 Traffic Impact Analysis Conclusion

The two methods used to evaluate traffic impacts associated with closing Hughes Access Road to non-Raytheon traffic indicate that the extension of Alvernon Way south to Old Vail Connection and the construction of Old Vail Connection Road from Old Nogales Highway to Alvernon Way, both as 2-lane roadways, could accommodate the closure of Hughes Access Road to non-Raytheon traffic. The following section of the report describes the proposed new roadways and other modifications that would accomplish this closure.



Old Vail Connection Road Study
 2015 Estimated Traffic Volumes (Vehicles Per Day)

Legend

- Functionally Classified Roads
- +++ Railroad
- Airport Runways
- Proposed New Roadways
- XX, XXX 2015 Estimated traffic volumes with no changes to network
- XX, XXX 2015 PAG travel model forecast with Alvernon Way extended, Hughes Access Rd closed, Old Vail Connection Road built.
- XX, XXX 2015 Estimated Traffic volumes with Alvernon Way extended, Hughes Access Road closed, Old Vail Connection Road built



Figure 7 - 2015 Estimated Traffic Volumes

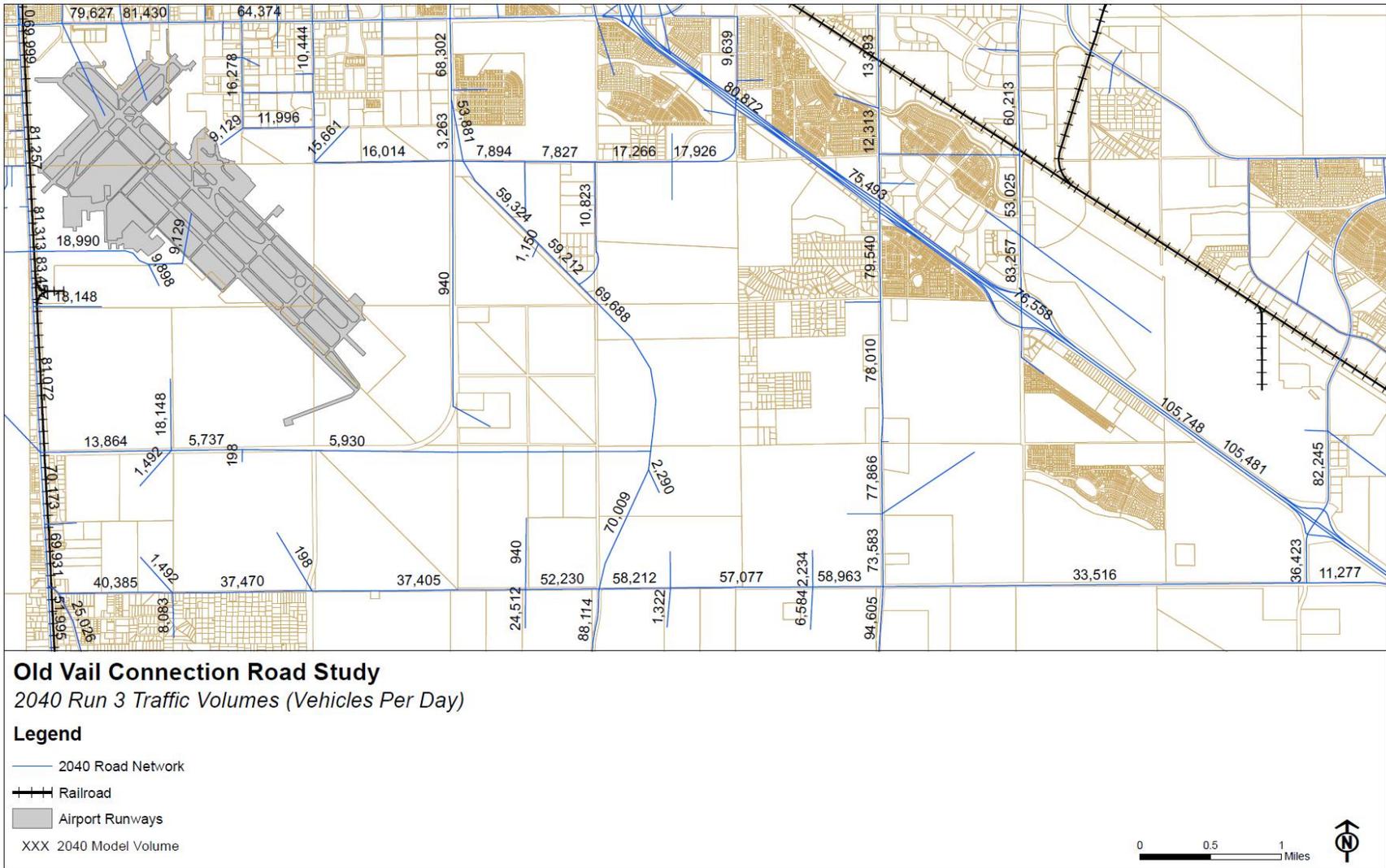


Figure 8 - 2040 Estimated Traffic Volumes with Swan /Alvernon Realignment

4. PROPOSED ROADWAYS

4.1 Future Roadway Descriptions

To accommodate the closure of Hughes Access Road, alternate east-west and north-south roadway configurations would be needed to carry public through traffic that currently uses Hughes Access Road/Alvernon Way. The needed roadway configurations are shown in Figure 9 and are described below.

Old Vail Connection Road

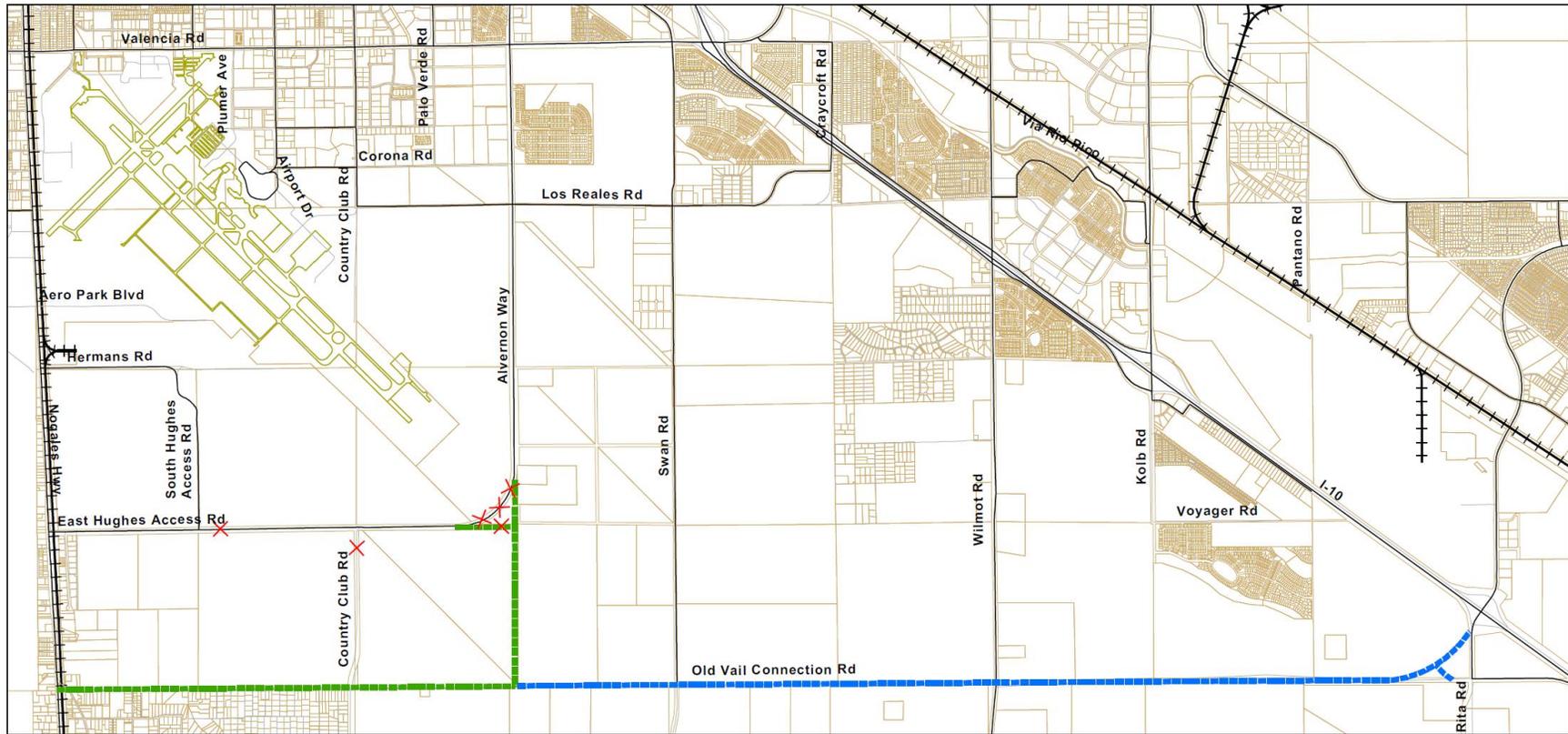
To accommodate the public traffic that presently uses Hughes Access Road, Old Vail Connection Road would be built as a two-lane roadway from Nogales Highway to the future extension of Alvernon Way, a distance of approximately 2.9 miles. A subsequent improvement would be the extension of Old Vail Connection Road from Alvernon Way to Rita Road, approximately 6.2 miles further. The west end of Old Vail Connection Road would be extended to Nogales Highway to create a new t-intersection that would replace the current skewed intersection of Old Nogales Highway. The intersection of Old Vail Connection Road and Old Nogales Highway would be converted from a three to a four-legged intersection, with the north-west leg of the intersection becoming a cul-de-sac. A new railroad crossing and traffic signal would be required at Nogales Highway. A future evaluation would determine the need for a grade-separated railroad crossing which in and of itself is estimated to cost \$25-\$30 million.

Alvernon Way

With the new Old Vail Connection Road carrying the through traffic that currently uses Hughes Access Road, a southward extension of Alvernon Way would replace the current Hughes/Alvernon loop road configuration. Alvernon Way would be extended south approximately 1 mile past Hughes Access Road to connect it with Old Vail Connection Road. As described below in more detail, Hughes Access Road would be built as a t-intersection with Alvernon Way, and the curving portion of the existing roadway could be retained or abandoned depending upon the final roadway and access configurations to be determined later.

Country Club Road (south)

If Hughes Access Road is entirely closed to public traffic, access to Hughes Access Road from Country Club Road would also need to be closed and/or restricted. This could be accomplished in a variety of ways, such as making Country Club Road a dead-end or cul-de-sac at the intersection of Hughes Access Road, installing a gate, or closing the roadway altogether at some point south of Hughes Access Road. This roadway does provide access to undeveloped land in Sections 32 and 33 which are owned by Tucson Airport Authority, so the final roadway configuration would be determined in consultation with Tucson Airport Authority.



Old Vail Connection Road Study

Legend

- Functionally Classified Roads
- +++ Railroad
- Airport Runways
- Phase 1
- Phase 2
- Close Road Connection



Figure 9 - Future Roadway System

Hughes Access Road

Once the new 2.9 miles of Old Vail Connection Road is built and Alvernon Way is extended south one mile, Hughes Access Road could be closed or restricted to Raytheon-related traffic only. This could be accommodated in a variety of ways, but for the purposes of this analysis, it is assumed that each end of Hughes Access Road would be gated to allow Raytheon traffic only. The west end of Hughes Access Road could be closed to the public just west of Hoover Road or at the intersection of South Hughes Access Road. The east end of Hughes Access Road could be closed to the public at Alvernon Way. The intersection of Country Club Road would also be closed. The east end of Hughes Access Road would be extended about ¼ mile to intersect with Alvernon Way in a t-intersection. Public through traffic that currently uses Hughes Access Road would alternatively use Old Vail Connection Road to travel east-west and the newly extended Alvernon Way to travel north-south.

4.2 Design Criteria

The following design criteria for Old Vail Connection Road and the extension of Alvernon Way were used in developing the costs and analysis:

Speed limit:	45 mph
Cross section:	Both 2-lane and 4-lane cross sections were analyzed for costs. Pima County Roadway Design Manual, Revised 2010 Typical sections Figures (2-4) and (2-7) were used for this analysis. See Appendix F for typical sections.
Design Right-of-Way:	200 feet
Right-of-way costs:	Developed in coordination with Pima County Real Property Division, Appraisal Section. The process for developing right-of-way costs involves developing acreage of right-of-way takes and applying a cost per acre. This cost varies, depending on the general land use. \$33,000 per acre: Arizona State Land Department land \$28,000 per acre: Commercial development or near Nogales Highway \$20,000 per acre: Non-commercial land
Design Assumptions:	Phase 1 length 4.6 miles Phase 2 length 6.2 miles long Pavement section is 5 inches AC/6 inches ABC Roadway grading assumed to estimate earthwork costs
Traffic Signals:	Old Vail Connection Road/Nogales Highway Old Vail Connection Road/Country Club Old Vail Connection Road/Alvernon Way

4.3 Cost Estimates

Based on the above design criteria, the following costs are estimated for the proposed roadways. More detailed cost information is provided in Appendix B. All costs are in 2011 dollars.

Phase 1 Cost Estimate:

Extend Alvernon Way to Old Vail Connection Road
Old Vail Connection Road from Nogales Highway to Alvernon Way

<u>Two-lane roadways</u>	<u>Four-lane roadways</u>
\$9.34M construction cost	\$24.24M construction cost
\$1.38M drainage cost	\$1.72M drainage cost
<u>\$2.01M right-of-way cost</u>	<u>\$2.01M right-of-way cost</u>
\$12.73 M Total Cost	\$27.98 M Total Cost

Phase 2 Cost Estimate:

Extend Old Vail Connection Road from Alvernon Way to Rita Road

<u>Two-lane roadway</u>	<u>Four-lane roadway</u>
\$12.05M construction	\$31.95M construction
\$1.47M drainage	\$2.19M drainage
<u>\$2.05M right-of-way</u>	<u>\$2.05M right-of-way</u>
\$15.57 M Total Cost	\$36.19 M Total Cost

4.4 Proposed Roadway Impacts

This section describes the impacts associated with the development of Old Vail Connection Road, the extension of Alvernon Way to Old Vail Connection Road, and the closure of Hughes Access Road. These impacts include right of way, drainage and floodplain, utilities, cultural resources, access, and future development impacts. These impacts are discussed below and shown in Appendix A.

Right of Way Impacts

Most of the right of way needed to build Old Vail Connection Road and extend of Alvernon Way would have to be acquired. As described in Section 2.1 and shown in Figure 2, the needed property is owned by Tucson Airport Authority (TAA), City of Tucson, State Trust Land and private landowners.

Fifty-three mostly residential parcels are located on the south side of Old Vail Connection Road, between Nogales Highway and Country Club Road. To avoid these parcels and to provide a perpendicular crossing for the Franco Wash, it is recommended that the alignment shift to the north. East of Country Club Road, the new roadway could shift back to the current centerline. East of Swan Road, the alignment may need to shift slightly south to avoid impacting the private tailings pond and mining operations on the north side of Old Vail Connection Road. The right of way needs to build Old Vail Connection Road and extend Alvernon Way are shown in Table 4 below.

Table 4 – Right-of-Way Needs

Segment	Existing ROW (ft)	Additional Required Right of way (ft)
Old Nogales Highway to Country Club Road	60'	140' to the north
Country Club Road to 1 mile east of Country Club Road	150'	25' to the north and south
1 mile east of Country Club Rd to Swan Rd	105'	25' to the north 70' to the south
Swan Road to 1 mile east of Swan Road	60' (centered)	70' to the north 70' to the south
1 mile east of Swan Road to Wilmot Road	75'	100' to the north 25' to the south
Wilmot Road to Rita Road TI approach	150'	25' to the north 25' to the south
Old Vail Connection Rd curve to Rita Rd/ I-10 TI	none	200'
Alvernon Way, from Hughes Access Rd to Old Vail Connection Road	None	200'

Drainage – Phase 1

The first phase of Old Vail Connection Road to Alvernon Way is impacted by Franco Wash and its tributaries. The extension of Alvernon Way south is impacted by the Hughes Wash and its tributaries. The offsite drainage generally flows from the southeast to the northwest with the exception of a good portion of the existing Old Vail Connection Road alignment which is impacted by parallel flow. Improvements along Old Vail Connection Road will require significant armoring of the road embankment which will encroach into much of the existing hydraulic waterways of the Franco Wash watershed. It is recommended that the proposed Old Vail Connection Road alignment shift north to be located on higher ground, maintain the existing hydraulic waterways, and provide an opportunity to cross the Franco Wash main channel in a perpendicular fashion. Table 5 identifies preliminary structures necessary to accommodate the drainage along Old Vail Connection Road from Nogales Highway to Alvernon Way.

Table 5 - Preliminary Phase 1 Drainage Structure Assessment

Station East Of S Nogales Highway (Ft)	Name Of Wash	Proposed Structure
4+62	UNKNOWN	(5) 36" RCPs
7+08	UNKNOWN	(5) 36" RCPs
24+34	UNKNOWN	(5) 36" RCPs
32+49	FRANCO WASH	BRIDGE
76+00	UNKNOWN	RES (Begin)
114+00	UNKNOWN	RES (End)

RES = Road Embankment Stabilization

Drainage – Phase 2

The second phase of Old Vail Connection Road from Alvernon Way to Rita Road is impacted by the Hughes Wash and Airport Wash watersheds. The offsite drainage generally flows from the southeast to the northwest with the exception of tributary flow east of the Hughes Wash crossing and tributary flow east of the South Fork of Airport Wash crossing. Improvements along the existing alignment will require significant armoring of the road embankment which will encroach into much of the existing hydraulic waterways of the watersheds. It is recommended that the proposed alignment shift north to be located on higher ground, maintain the existing hydraulic waterways, and provide an opportunity to cross the larger main channels of the Hughes and South Fork Airport Washes in a perpendicular fashion. Table 6 identifies preliminary structures necessary to accommodate the drainage within the second phase of the project.

Table 6 - Preliminary Phase 2 Drainage Structure Assessment

Station East Of S Nogales Highway (Ft)	Name Of Wash	Proposed Structure
159+76	Hughes Wash	(3) 10' x 7' BOX
192+77	Unknown	(3) 10' x 4' BOX
277+51	Unknown	(5) 36" RCPs
297+05	Unknown	(5) 36" RCPs
314+86	Unknown	(2) 10' x 4' BOX
337+03	Unknown	(3) 48" RCPs
342+70	Unknown	(3) 48" RCPs
360+27	South Fork Airport Wash	(5) 10' x 8' BOX
361+70	Unknown	RES (Begin)
436+00	Unknown	RES (End)
469+45	Unknown	(5) 36" RCPs
469+63	North Fork Airport Wash	(2) 10' x 4' BOX

RES =Road Embankment Stabilization

Utilities

Potential utility impacts include impacts to overhead communication and electric utility lines, sewer lines, and underground pipelines. Specific utility relocations will be determined during the design phase of project development.

Environmental Considerations

A screening level analysis identified the following environmental considerations associated with the development and construction of Old Vail Connection Road from Old Nogales Highway to Alvernon Way:

- Project meets threshold criteria for Environmentally Sensitive Roadway design based on cultural resources sensitivity;
- Clean Water Act (Section 401 and 404) permits will likely be required;
- Xeroriparian C and D and Hydromesoriparian habitat is present;
- Project crosses Zone A and X floodplain according to FEMA Flood Insurance Rate Maps;
- Listed and special status species are likely to occur within the project corridor;
- Protected native plants are known to occur within the project corridor and will likely be affected;
- Project corridor occurs within a Carbon Monoxide maintenance area;
- Construction of the project will affect access to private residences and businesses;
- Archaeological sites which have been determined eligible, or which appear to be eligible, for inclusion in the National Register of Historic Places are located in the vicinity of the project corridor; and
- Visual and noise impacts are anticipated to occur as a result of the construction of this project.

None of these environmental considerations are anticipated to preclude the project. Additional technical documents needed may include, but are not limited to:

- A cultural resources survey (and associated report) of those segments of the alignment not previously inventoried;
- Hazardous materials assessment;
- Biological evaluation of the project corridor;
- Section 401/404 support documents and permits;
- National Pollutant Discharge Elimination System permit

Airport Access Impacts

Public and passenger access to Tucson International Airport (TIA) is not be expected to be significantly affected by the closure of Hughes Access Road because the public entrance to TIA is on the north side of the facility and primary access is via Tucson Boulevard. For the small percentage of those who may use Hughes Access Road and Alvernon Way to access the airport, the new Old Vail Connection Road and the extension of Alvernon Way would provide a comparable route to the airport. The extension of Old Vail Connection Road to Interstate 10 would provide an additional access route to TIA from the east including the Vail area and future residential development that will occur south and east of TIA.

Future Development Impacts

According to Tucson Airport Authority, a second parallel runway is planned to the south of the existing main runway. It is expected that closing Hughes Access Road to public traffic would be a positive enhancement to the buffer zones around the new runway. The closure could, however, impact access to undeveloped land in Sections 32 and 33 which are owned by Tucson Airport Authority. Future development plans and access requirements would need to be discussed with TAA to determine how best to accomplish closure of Hughes Access Road.

5. TUCSON INTERNATIONAL AIRPORT EXPANSION

The Tucson Airport Authority is currently updating the Tucson International Airport (TIA) Master Plan which will guide future development of the airport. Roadway and transit improvements will be required to accommodate long-term expansion plans and improve surface transportation access to TIA and associated airport property planned for future development. The following section describes longer-term roadway and transportation improvements that will support future expansion.

5.1 Alvernon Way/Swan Road Realignment

In addition to the planned second runway described in the previous section of this report, the TIA Master Plan includes the development of a third runway to the north and east of the existing runway and other associated land development around the airport. The third runway would bisect Alvernon Way between Los Reales Road and Hughes Access Road so it would therefore require the closure and realignment Alvernon Way.

Pima County Department of Transportation studied this realignment in 2008 and recommended that in order to accommodate the third runway, Alvernon Way could be diverted to the southeast just south of Los Reales Road and extend relatively parallel to, and north of, the planned third runway. The realignment would need to curve around the end of the proposed runway past Swan Road and then transitions back to Swan Road south of the runway extension but north of Old Vail Connection Road. The portion of Alvernon Way south of this new realignment would have to be closed and abandoned where the new runway is planned, but the portion of Alvernon Way south of the third runway could potentially remain open to provide access to TAA-owned property. Hughes Access Road could be extended east to meet with Swan Road to provide access to Raytheon. Swan Road just south of Los Reales Road would be realigned to intersect the new roadway in a t-intersection. The recommended roadway alignments from 2008 are shown in Figure 10, and more detailed information is available in the *Alvernon Way/Swan Road Realignment Study*.

5.2 Country Club Road (north)

Tucson Airport Authority (TAA) has indicated their desire to enhance access to TIA from the north via Country Club Road. In support of this enhancement, Arizona Department of Transportation (ADOT) is currently undergoing a Design Concept Report for Interstate 10 that includes recommendations for a new Country Club Road interchange and improvements to the Alvernon Way interchange. To further enhance access to TIA from the south and east, it has been suggested that the realignment of Alvernon Way/Swan Road, as described in Section 5.1 above, could also extend north of Los Reales Road to tie into Country Club Road.

Potential connections to Country Club Road north of the airport are shown in Figure 11. One conceptual alternative is for Country Club Road to turn southeast and align with realigned Alvernon Way near Los Reales Road. Several developed parcels would be impacted by this alignment although there is some undeveloped land owned by TAA north of Los Reales Road. Most of the affected parcels, including the Los Reales landfill, are located in the City of Tucson. A second less impactful alternative would connect the

Alvernon Way/Swan Road realignment to Country Club Road via Corona Road, with the potential closure of Los Reales Road west of the new Alvernon Way alignment to accommodate future development of TAA-owned parcels. Further study in collaboration with Tucson Airport Authority and City of Tucson is recommended to develop and evaluate all alignment options and potential impacts based on future airport expansion plans.

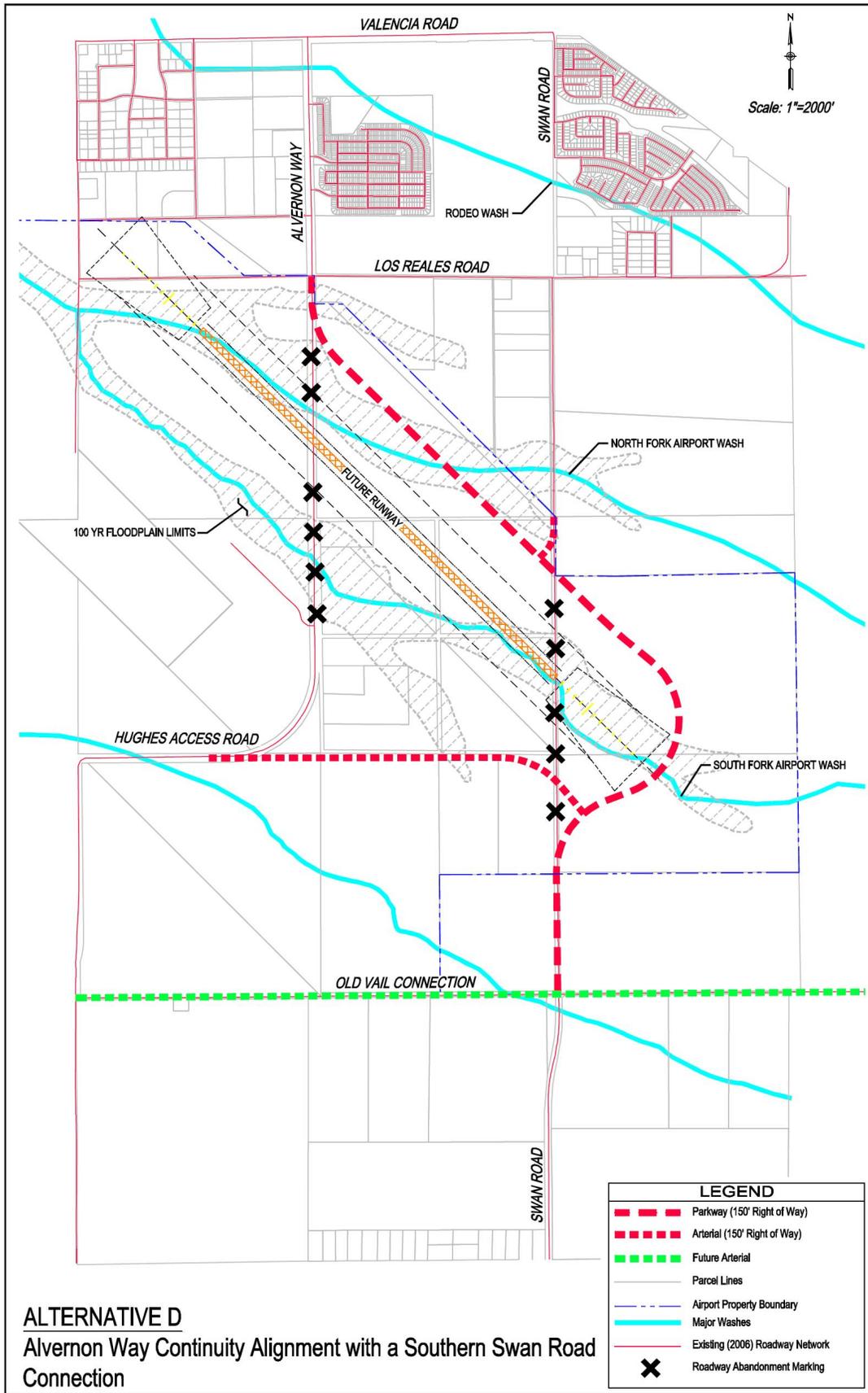


Figure 10 - Alternate D from Alvernon / Swan Realignment Study

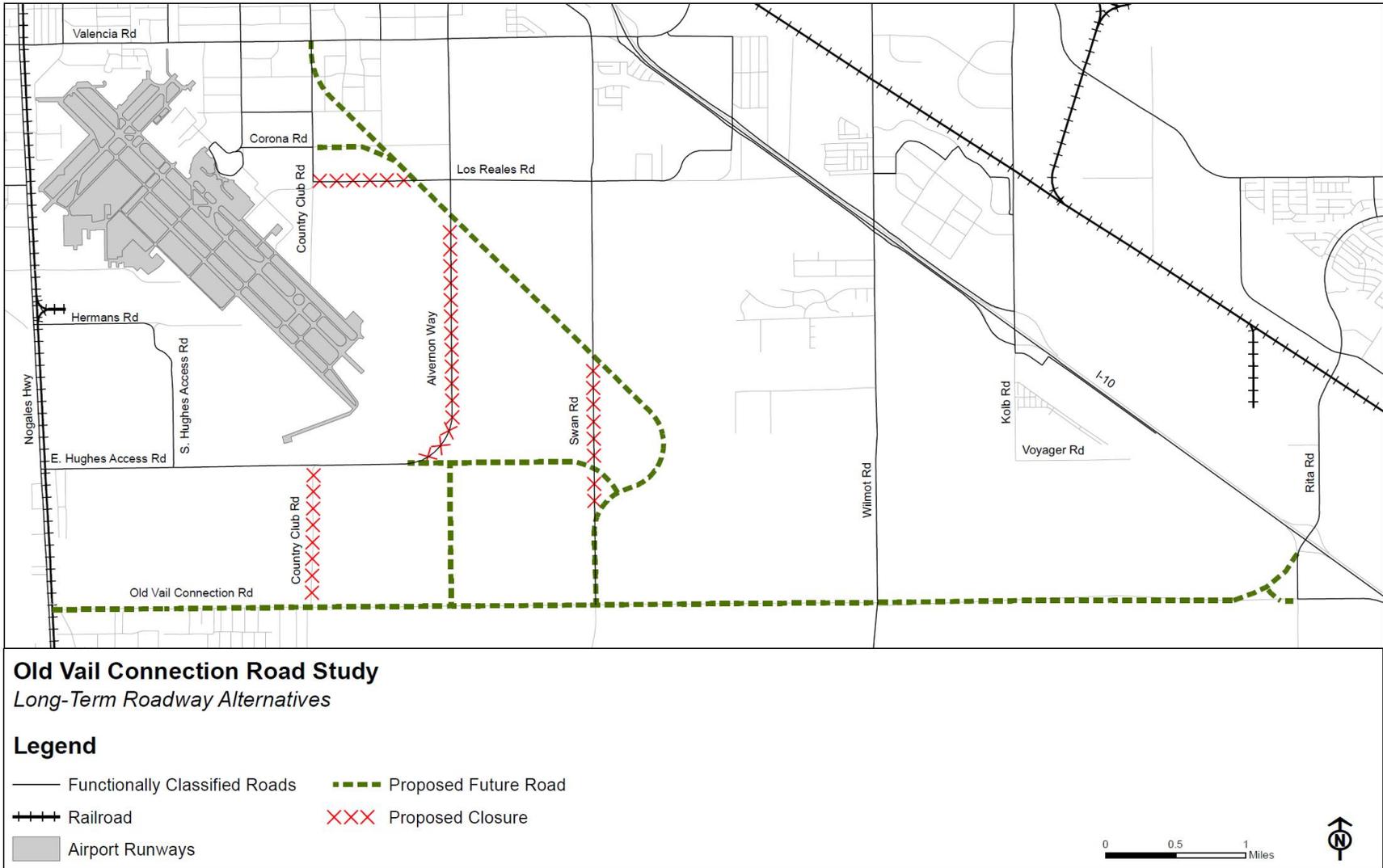


Figure 11 - Country Club Road Alternatives

5.3 Transit

Existing Transit Service

There are a number of Sun Tran transit routes which serve Raytheon, the Tucson International Airport, and Nogales Highway. There is no transit service along Old Vail Connection Road. A summary of these services, which are shown in Figure 12, include:

- Tucson International Airport – Sun Tran Routes 6 and 11 serve the airport.
- Raytheon – Sun Tran Routes 201X, 202X, and 203X all provide express bus service from the north to Raytheon. All three express routes use access Raytheon from the west via Nogales Highway and do not use Alvernon Way to the east.
- Sun Shuttle Route 421, which serves the Green Valley and Sahuarita area, also serves Raytheon during peak hours.

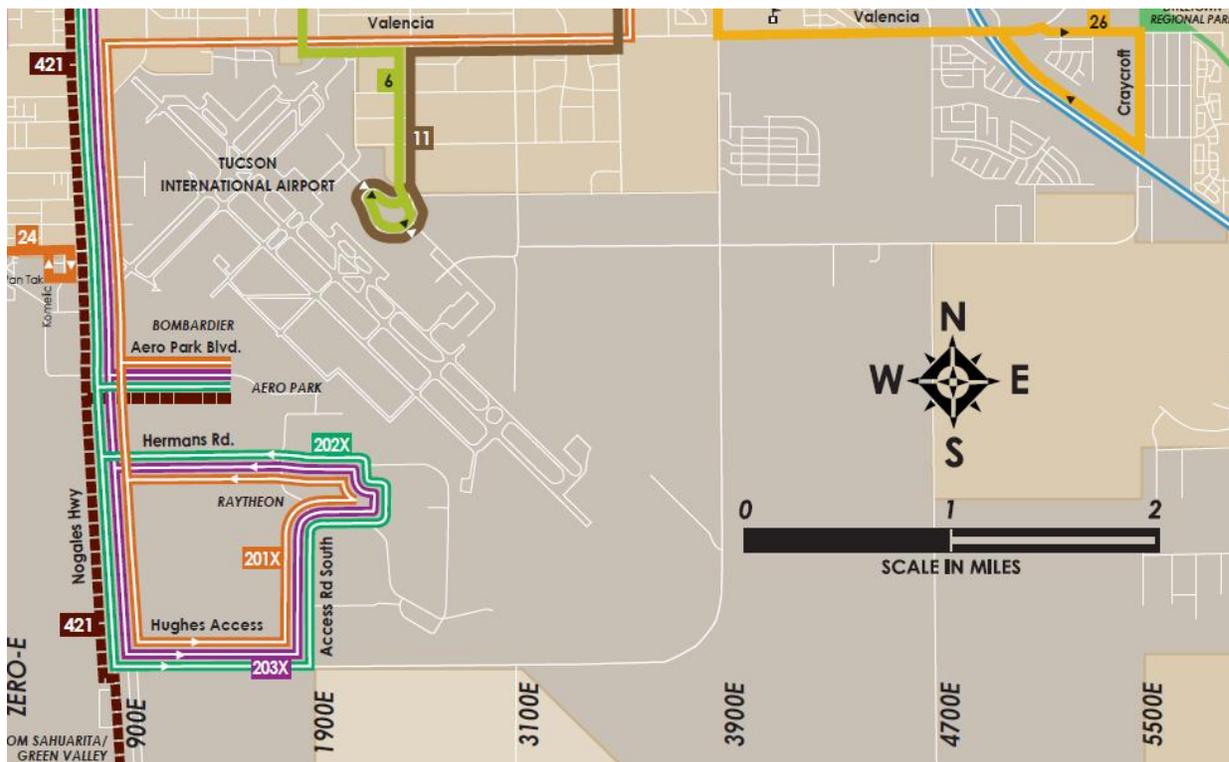


Figure 12 - Existing Transit Routes

Future Transit and Rail Services

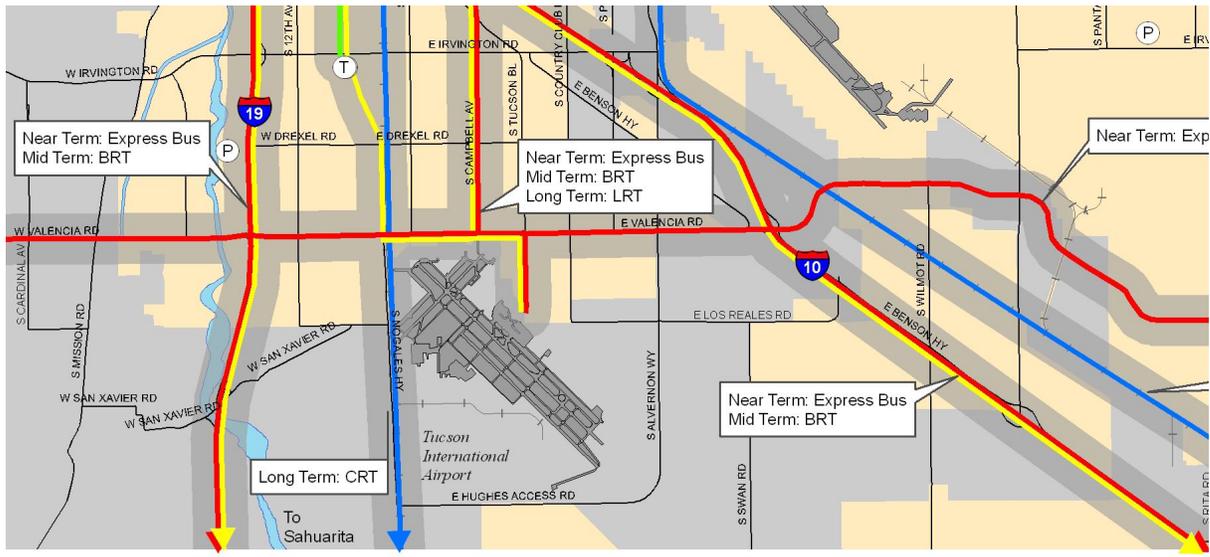
Pima Association of Governments conducted the High Capacity Transit System Study in 2009 to develop a high capacity transit system plan for the region. This plan was integrated into the 2040 Regional Transportation Plan. Recommendations for corridors affecting the Old Vail Connection Road Study area are shown in Figure 13 and listed below.

PAG High Capacity Transit System Study Recommendations:

- Bus Rapid Transit – BRT service is proposed along the 6th Avenue/Nogales Highway Corridor from downtown Tucson to the Tucson International Airport (TIA), a distance of approximately 8.5 miles. On 6th Avenue between downtown and Irvington Road, a streetcar is recommended as a long term objective. It was noted that the BRT connection to TIA is likely to have less impact on airport ground operations than a streetcar connection would. The 6th Avenue/Nogales Highway corridor was identified as a priority High Capacity Transit Corridor.

Bus rapid transit features include modern low-floor buses, signal priority at intersections, maximum off-vehicle fare collection, reduced headways, real-time information displays, and modern stations. This service typically provides fewer stops, more frequent service, and longer trips compared to local bus service.

- Commuter Rail - Commuter Rail is proposed as a long term goal to connect the Towns of Marana, Sahuarita, Vail and Tucson. Characteristics of this service are high operating speeds with few stops. Planning for this service is being carried out by ADOT as part of a larger rail planning effort that is looking at commuter rail between Tucson, Phoenix, and Flagstaff. As a precursor to rail, implementation of a BRT line between Sahuarita, Raytheon, and downtown Tucson could be implemented first.



Legend

Express Bus	Transit Station	Interstate	Implementation Period Near Term: 0 -10 yrs Mid Term: 10 - 20 yrs Long Term: > 20 yrs
Bus Rapid Transit (BRT)/ Light Rail Transit (LRT)	Park & Ride	Arterial Road	
Streetcar		Railroad	
Commuter Rail (CRT)			

Figure 13 - High Capacity Transit Implementation Plan

**APPENDIX A – OLD VAIL CONNECTION ROAD ALIGNMENT
SCHEMATICS
(UNDER SEPARATE COVER)**

APPENDIX B – CONSTRUCTION COST SUMMARIES

Phase 1 Construction Cost for 2-lane Roadway

ITEM No.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
	GENERAL CONSTRUCTION				
2010011	Clearing and Grubbing	AC	84	\$2,500.00	\$210,000.00
2050003	Roadway Grading	S.Y.	91,761	\$10.00	\$917,610.00
3030003	Aggregate Base	C.Y.	15,282	\$75.00	\$1,146,150.00
4060002	Asphaltic Concrete (No. 2)	TON	25,466	\$110.00	\$2,801,260.00
6070010	Traffic (Signs, Pavement Markings) Items	L.S.	1	\$368,000.00	\$368,000.00
6070011	Traffic (Signal) Items	L.S.	1	\$1,100,000.00	\$1,100,000.00
8100001	NPDES	L.S.	1	\$185,000.00	\$185,000.00
9010001	Mobilization	L.S.	1	\$150,000.00	\$150,000.00

CONSTRUCTION TOTAL	\$6,668,020.00
Contingencies (40%)	\$2,667,208.00

TOTAL PROJECT COST	\$9,336,000.00
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Phase 1 Construction Cost for 4-lane Divided Roadway

ITEM No.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
	GENERAL CONSTRUCTION				
2010011	Clearing and Grubbing	ACRE	84	\$2,500.00	\$210,000.00
2050003	Roadway Grading	S.Y.	216,000	\$10.00	\$2,160,000.00
3030003	Aggregate Base	C.Y.	26,000	\$75.00	\$1,950,000.00
4060002	Asphaltic Concrete (No. 2)	TON	43,500	\$110.00	\$4,785,000.00
6070010	Traffic (Signs, Pavement Markings) Items	L.S.	1	\$474,000.00	\$474,000.00
6070011	Traffic (Signal) Items	L.S.	1	\$1,300,000.00	\$1,300,000.00
8030020	Landscape Items	L.S.	1	\$690,000.00	\$690,000.00
8100001	NPDES	L.S.	1	\$230,000.00	\$230,000.00
9010001	Mobilization	L.S.	1	\$185,000.00	\$185,000.00
9080001	Concrete Curb (PC/COT Std. Dtl. 209) (Type 1)	L.F.	145,800	\$18.00	\$2,624,400.00
9080201	Concrete Sidewalk	S.F.	583,200	\$5.00	\$2,916,000.00

CONSTRUCTION TOTAL	\$17,314,400.00
Contingencies (40%)	\$6,925,760.00

TOTAL PROJECT COST	\$24,241,000.00
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Phase 1 - Right-of-Way Costs

Segment	Phase 1			
	Nogales Hwy to 1/3 mile East	1/3 mile East to Country Club	Country Club to 1 mile East	Alvernon/Hughes Extension
mile(s)	0.3	1.5	1.0	1.8
ADDT'L ROW NORTH	140	140	25	200
EXST ROW NORTH	30	30	75	0
CL				
EXST ROW SOUTH	30	30	75	0
ADDT'L ROW SOUTH	0	0	25	0
ASLD HIGH (33K per acre)	0	0	0	0
MISC. LAND HIGH (28K per acre)	\$168,000.00	0	0	0
ASLD LOW (20K per acre)	0	0	0	0
MISC. LAND LOW (20K PER acre)	0	\$509,090.91	0	\$872,727.27
			SUB-TOTAL	\$1,549,818.18
			W/30% Cont.	\$2,014,763.64

Phase 1 Drainage Structure Costs

STATION EAST OF S NOGALES HIGHWAY (FT)	NAME OF WASH	PROPOSED STRUCTURE	CONCEPTUAL COST 2-Lane(\$)	CONCEPTUAL COST 4-Lane(\$)
4+62	UNKNOWN	(5) 36" RCPs	\$31,500	\$54,000
7+08	UNKNOWN	(5) 36" RCPs	\$31,500	\$54,000
24+34	UNKNOWN	(5) 36" RCPs	\$31,500	\$54,000
32+49	FRANCO WASH	Bridge (120-ft)	\$720,000	\$900,000
76+00	UNKNOWN	RES	\$170,000	\$170,000
79+53	UNKNOWN	RES		
80+06	UNKNOWN	RES		
81+39	UNKNOWN	RES		
81+74	UNKNOWN	RES		
81+90	UNKNOWN	RES		
82+79	UNKNOWN	RES		
82+97	UNKNOWN	RES		
114+00	UNKNOWN	RES		
Total Costs			\$984,500	\$1,232,000
Total Costs with 40% Contingency			\$1,378,300	\$1,724,800

Phase 2 Construction Cost for 2-lane Roadway

ITEM No.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
	GENERAL CONSTRUCTION				
2010011	Clearing and Grubbing	ACRE	113	\$2,500.00	\$282,500.00
2050003	Roadway Grading	S.Y.	123,700	\$10.00	\$1,237,000.00
3030003	Aggregate Base	C.Y.	20,600	\$75.00	\$1,545,000.00
4060002	Asphaltic Concrete (No. 2)	TON	34,400	\$110.00	\$3,784,000.00
6070010	Traffic (Signs, Pavement Markings) Items	L.S.	1	\$496,000.00	\$496,000.00
6070011	Traffic (Signal) Items	L.S.	1	\$1,100,000.00	\$1,100,000.00
8100001	NPDES	L.S.	1	\$250,000.00	\$250,000.00
9010001	Mobilization	L.S.	1	\$195,000.00	\$195,000.00

CONSTRUCTION TOTAL	\$8,607,000.00
Contingencies (40%)	\$3,442,800.00

TOTAL PROJECT COST	\$12,050,000.00
--------------------	-----------------

Phase 2 Construction Cost for 4-lane Divided Roadway

ITEM No.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL
	GENERAL CONSTRUCTION				
2010011	Clearing and Grubbing	ACRE	113	\$2,500.00	\$282,500.00
2050003	Roadway Grading	S.Y.	291,000	\$10.00	\$2,910,000.00
3030003	Aggregate Base	C.Y.	35,160	\$75.00	\$2,637,000.00
4060002	Asphaltic Concrete (No. 2)	TON	58,600	\$110.00	\$6,446,000.00
6070010	Traffic (Signs, Pavement Markings) Items	L.S.	1	\$639,000.00	\$639,000.00
6070011	Traffic (Signal) Items	L.S.	1	\$1,250,000.00	\$1,250,000.00
8030020	Landscape Items	L.S.	1	\$930,000.00	\$930,000.00
8100001	NPDES	L.S.	1	\$310,000.00	\$310,000.00
9010001	Mobilization	L.S.	1	\$230,000.00	\$230,000.00
9080001	Concrete Curb (PC/COT Std. Dtl. 209) (Type 1)	L.F.	196,500	\$18.00	\$3,537,000.00
9080201	Concrete Sidewalk	S.F.	786,000	\$5.00	\$3,930,000.00

CONSTRUCTION TOTAL	\$22,819,000.00
Contingencies (40%)	\$9,127,600.00

TOTAL PROJECT COST	\$31,947,000.00
--------------------	-----------------

Phase 2 Right-of-Way Costs

Segment	1 mile East of Country Club to Swan	Swan to 1 mile East	1 mile East to Wilmot	Wilmot to 1/2 mile East	1/2 mile to Rita Approach	Rita Approach	Rita TI Curve
mile(s)	1.0	1.0	1.0	0.5	1.5	0.7	0.5
ADD'T'L ROW NORTH	25	70	100	25	25	25	100
EXST ROW NORTH	75	30	0	75	75	75	0
CL							
EXST ROW SOUTH	30	30	75	75	75	75	0
ADD'T'L ROW SOUTH	70	70	25	25	25	25	100
ASLD HIGH (33K per acre)	0	0	0	0	0	0	\$376,000.00
MISC. LAND HIGH (28K per acre)	0	0	0	0	0	0	0
ASLD LOW (20K per acre)	0	0	0	0	0	0	0
MISC. LAND LOW (20K PER acre)	\$230,303.03	\$339,393.94	\$303,030.30	\$60,606.06	\$181,818.18	\$88,484.85	0

SUB-TOTAL	\$1,579,636.36
W/30% Cont.	\$2,053,527.27

Phase 2 Drainage Structure Costs

STATION EAST OF S NOGALES HIGHWAY (FT)	NAME OF WASH	PROPOSED STRUCTURE	CONCEPTUAL COST 2-Lane(\$)	CONCEPTUAL COST 4-Lane(\$)
159+76	HUGHES WASH	(3) 10' x 4' BOX	\$105,000	\$180,000
192+77	UNKNOWN	(3) 10' x 4' BOX	\$105,000	\$180,000
277+51	UNKNOWN	(5) 36" RCPs	\$31,500	\$54,000
297+05	UNKNOWN	(5) 36" RCPs	\$31,500	\$54,000
314+86	UNKNOWN	(3) 48" RCPs	\$27,300	\$46,800
337+03	UNKNOWN	(3) 48" RCPs	\$27,300	\$46,800
342+70	UNKNOWN	(3) 48" RCPs	\$27,300	\$46,800
360+27	SOUTH FORK AIRPORT WASH	(6) 10' x 8' BOX	\$301,000	\$516,000
361+70	UNKNOWN	RES	\$333,000	\$333,000
436+00	UNKNOWN	RES		
469+45	UNKNOWN	(5) 36" RCPs	\$31,500	\$54,000
469+63	NORTH FORK AIRPORT WASH	(5) 36" RCPs	\$31,500	\$54,000
Total Costs			1,051,900	1,565,400
Total Costs with 40% Contingency			1,472,660	2,191,560

**APPENDIX C – ENVIRONMENTAL SCREENING
QUESTIONNAIRE**

INTRODUCTORY INFORMATION

Project Identification

- Project Name: Old Vail Connection Road Planning Study
- Pima County Project Manager: Jonathan Crowe

Project Location and Limits

- Location of project within Pima County: South of Interstate 10 east of Nogales Highway
- Limits of project:
From end to end: Nogales Highway to Interstate 10
From side to side: 150 feet

Funding Source

- Funding source anticipated for use in construction project?

County funding: Yes No

Federal funding: Yes No

Other:

Source: Pima County

Primary Project Purpose

- Primary purpose of project:

Modernize roadway (e.g., resurface, restore, rehabilitate, reconstruct, add shoulders, or add auxiliary lanes):

Increase capacity: Yes No

Add bicycle lanes: Yes No

Improve safety: Yes No

Other: Improve connectivity

Source: Pima County

Existing Conditions within Project Limits

- Roadway specifications?

Right-of-way: 150 feet

Pavement width: N/A t

Number of through lanes in each direction: N/A

- Number of turning lanes?

Right-turn lanes: N/A

Left-turn lanes: N/A

- Existing intersections?

Number of signalized intersections: N/A

Number of un-signalized intersections: N/A

- Existing parking (e.g., on-street)? Yes No

Existing bicycle lanes: Yes No Old Nogales Highway

- Existing sidewalk: Yes No

- Existing transit stops: Yes No

- Other:

- Note: If no existing roadway, describe site conditions (e.g., undeveloped land, etc.):

Source: Visual and aerial inspection

Project Components

- Anticipated specifications of the project?

Amount of additional right-of-way to be acquired:

Under 1 acre _____ 1 – 5 acres _____ 5 – 10 acres _____ Over 10 acres X

Change in the vertical or horizontal alignment: Yes No

New alignment: Yes No

Pavement width to be added: N/A
Number of through lanes to be added: N/A

Number of turn lanes to be added: N/A

Right-turn lanes: N/A

Left-turn lanes: N/A

Any associated parking (e.g., on-street): Yes No

Bicycles lanes to be added: Yes No

Sidewalk to be added: Yes No

Landscaping to be added: Yes No

- Number of intersections to be signalized: N/A

- Other:

Source:

Phasing

- Is the project:

A portion or phase of a unified development plan? Yes No

One of a series of projects that may result in a cumulative set of environmental impacts on an identifiable area? Yes No

Source: Pima County

Traffic:

- Existing average daily traffic (ADT) in the project area?

Street: Old Vail Connection Road *ADT:* 980

Street: _____ *ADT:* _____

Street: _____ *ADT:* _____

- Projected ADT in the project area for the build year? Build year to be determined

Street: _____ ADT: _____

Street: _____ ADT: _____

Source: Pima County and PAG

Land Uses

- Existing adjacent land uses? Check all that apply and circle primary uses.

Commercial (e.g. retail businesses, service businesses): Yes No

Institutional (e.g., schools, hospitals, social services agencies): Yes No

Residential (e.g., single family houses, apartments, townhouses): Yes No

Vacant lots: Yes No

Industrial: Yes No

Recreational (e.g., parks, sports fields): Yes No

Other: Arizona State Prison Complex - Tucson

Source: GIS, visual inspection

Property Ownership

- Existing land ownership:

Majority public: Yes No

Majority private: Yes No

About evenly divided between public and private: Yes No

Other:

Source: Pima County

ENVIRONMENTAL CATEGORIES

Drainage

- Will any storm water drain from the project discharge into detention or retentions basins on site?
 Yes No

Source: Pima County

Section 401/404

- Are any culverts likely to be installed, replaced, or extended? Yes No
- Are there any bridges being upgraded, extended, or replaced? Yes No
- Is there any bank protection required in the construction of this project Yes No To be determined during design
- Are there any wetlands within the project area? Yes No
- Are there any riparian areas within the project vicinity? Yes No
Xeroriparian C and D; Hydromesoriparian
- Is it anticipated that there will be any discharge of dredged or fill material into “waters of the United States”? Yes No

Source: Pima County Mapguide

Floodplain

- Is the project area within a 100-year floodplain delineated on the Federal Emergency Management Agency Flood Insurance Rate Map? Yes No If “Yes”, will the project substantially modify the topography of the floodplain either by placement or removal of materials within the floodplain?
 Yes No

Source: Federal Emergency Management Agency Flood Insurance Rate Maps 04019C2830K, 04019C2850K, 04019C2855K, 04019C2875K (<http://www.fema.gov/hazard/map/firm.shtm>)

Biological Resources

- Are there listed threatened, endangered, proposed, and/or candidate species likely to be found in the project vicinity? Yes No
- Are listed special status species likely to be found in the project vicinity? Yes No
- Are protected native plants likely to be found in the project vicinity? Yes No

- Are construction activities anticipated to remove/disturb any vegetation? Yes No
- Is the project within the Conservation Land System? Yes No

Is the project along a designated Scenic Route? Yes No

Air Quality

- Is the project in an:
 - Attainment area?* Yes No
 - Non-attainment area?* Yes No If “Yes”, what are the pollutants of concern?
 - Maintenance area?* Yes No If “Yes”, what are the pollutants of concern? Carbon Monoxide

Source: Arizona Department of Environmental Quality Emaps database

Noise

- Are there sensitive noise receptors in the area? Yes No If “Yes”, identify type of noise receptors and briefly describe:
 - Residences:* Residential neighborhood located immediately southeast of Old Vail Connection Road and Nogales Highway
 - Schools:* Summit View Head Start; Summit View Elementary School
 - Hospitals:* N/A
 - Churches:* N/A
 - Parks:* N/A
 - Other:* N/A
- When the project is completed and used as anticipated, is it likely to contribute to any exceedances of noise quality standards? Yes No

Source: Pima County Mapguide

Utilities:

- Will the construction include any utility involvement? Yes No
 - Utility relocation:* Yes
 - Temporary disconnection of service:* Yes

Utility replacement: Yes

Are there any scheduled plans for utility upgrades in the vicinity that are not related to the project?

Yes No

Source: Pima County Wastewater

Hazardous Materials

- Is it likely that any hazardous wastes or hazardous substances in the past have been generated, treated, stored, released, discarded or disposed of on site or are any such wastes now accumulated on site? Yes No Don't Know
- Have any test borings been performed? Yes No If "Yes", were any wastes discovered on the premises in the course of the test borings or excavation work for the project? Yes No

Source: Arizona Department of Environmental Quality Emaps database

Historic Preservation (Based on feedback from Pima County OCRHP)

Are there any cultural resources (archaeological or historic) in the vicinity of the project area that are listed on or eligible for the National Register of Historic Places? Yes No

Are any of these sites considered "Priority Cultural Resources"? Yes No

If the answer is "Yes", to either or both the questions above, please list the resource(s) /site(s):

The AZSITE cultural resource database was accessed on January 17, 2011 to determine if previously identified cultural resources, which may be eligible for inclusion in the National Register of Historic Places (NRHP), were located within one-half mile of the proposed project alignment. As of January 17, 2011, 13 previously identified cultural resource sites, which have been determined eligible for inclusion in the NRHP, or which appear to be eligible based on available data, have been identified in the project area. These sites consist primarily of prehistoric limited activity areas attributed to the Hohokam cultural tradition of southern Arizona, and historic transportation features (e.g., roads, railroads). These sites include:

AZ BB:13:618 (ASM)
AZ BB:13:622 (ASM)
AZ BB:13:671 (ASM)
AZ BB:13:301 (ASM)
AZ BB:13:300 (ASM)
AZ BB:13:302 (ASM)
AZ BB:13:126 (ASM)
AZ BB:13:315 (ASM)
AZ BB:13:653 (ASM)
AZ BB:13:620 (ASM)
AZ BB:13:616 (ASM)
AZ BB:13:617 (ASM)

AZ FF:9:17 (ASM)

Of those properties listed or eligible, are any located near enough to the project to be affected by the project location, construction, or anticipated future traffic? Yes No If "Yes", please specify the properties and very briefly the anticipated effect.

The properties listed below are indicated on the AZSITE cultural resources database as occurring within approximately 75 feet of the centerline of the existing alignment of Old Vail Connection Road (150 foot wide right-of-way):

AZ BB:13:620 (ASM), a NRHP-eligible Hohokam site which likely represents a resource procurement/processing locus. Site 620 (ASM) appears to have been subjected to archaeological testing, but available data regarding this is incomplete. The site is bisected by the current alignment of Old Vail Connection Road and would probably be destroyed should the proposed project eventuate.

AZ BB:13:653 (ASM), a historic alignment of the Tucson-Nogales Highway (now referred to as Old Nogales Highway) constructed prior to 1913. A portion of this probable NRHP-eligible site would be destroyed should the proposed project occur.

AZ FF:9:17 (ASM), a segment of historic U.S. Highway 80 which has been overlain in the project area by Interstate 10. Although a NRHP-eligible historic property as a whole, the segment of Site AZ FF:9:17 (ASM) within the study corridor has probably been obliterated by the construction of I-10, and would likely not be considered a contributing element to the site.

AZ BB:13:657 (ASM), the Nogales Branch of the Southern Pacific Railroad, constructed between 1905 and 1906. Although this site is likely eligible for inclusion in the NRHP, the project scope is not as yet sufficiently developed to determine if and how the site will be affected.

Are there any structures likely to be 50 years old or older within or adjacent to the project area?
Yes No If "Yes", please list addresses below:

Source: AZSITE cultural resources database

Visual Impact

- Is the project likely to affect noticeably the views from adjacent properties? Yes No If "Yes", briefly describe:
- Is the project likely to cause a noticeable change in the foreground, middle-ground, or background views from the road? Yes No

Source: Visual Inspection

Neighborhood/Social Impact:

Is there likely to be any commercial or residential displacement due to the construction of this project?
 Yes No -

Are there likely to be any temporary changes in:

Business access: Yes No

Parking: Yes No

Other:

- Are there likely to be any permanent changes in:

Traffic service? Yes No

Traffic circulation? Yes No

Parking: Yes No

Other:

- Is the project likely to affect continuity in neighborhoods in the vicinity? Yes No

Source: Visual Inspection

LOCAL JURISDICTION/AGENCY COORDINATION

- Are there local jurisdictions and governmental agencies with whom coordination is anticipated or has begun? Yes No If "Yes", who are they?

*City of South Tucson*_____

City of Tucson X

*Oro Valley*_____

Pascua Yaqui Tribe X

Tohono O'odham Nation _____

*Town of Marana*_____

*Town of Sahuarita*_____

Arizona Department of Environmental Quality X

Arizona Department of Transportation X

Arizona Game and Fish Department X

Arizona State Land Department X

U.S. Army Corps of Engineers X

*U.S. Bureau of Land Management*_____

U.S. Environmental Protection Agency X

U.S. Federal Highway Administration X

U.S. Fish and Wildlife Service X

Other: Arizona State Historic Preservation Office; Interstate Commerce Commission; Tucson Electric Power; Pima County Department of Transportation; U.S. Department of Justice, Federal Bureau of Prisons; Tucson Fire Department; Pima County Sheriff's Department; Tucson Airport Authority; CEMEX; Granite Construction Company; Unisource Energy; Union Pacific Railroad; Raytheon; Rural/Metro Fire Department

- Note any issues for coordination that have been identified to date: N/A
- Briefly describe coordination efforts planned or underway: N/A

Source: N/A

PUBLIC INVOLVEMENT

- Has a Public Involvement Plan been developed for the project? Yes No
- Has a Citizen Advisory Committee been formed, or is one being formed? Yes No
- Have any public meetings been scheduled? Yes No If "Yes", have any meetings been held to date? Yes No
- Has any information useful to project development been identified through any public interaction to date? Yes No If "Yes", briefly describe:
- Is there any known controversy over this project to date? Yes No If "Yes, briefly describe:

Source: Pima County

PERMITS

- Anticipated permits and/or approvals?

404 Permit: X

401 Certification: X

Sole Source Aquifer: X

State Historic Preservation Officer (SHPO) clearance: X

Nonpoint Pollutant Discharge Elimination System (NPDES): X

Other: Arizona Department of Environmental Quality; Environmental Protection Agency

APPENDIX D – UTILITY COMPANY RESPONSES

CONFLICT



22311 Brookhurst Street Suite 203
Huntington Beach Ca 92646

February 2, 2011

Kimley-Horn
Attn: Rick Solis
2210 E. Fort Lowell Rd Ste200
Tucson, AZ. 85719

Re: Pima County Dept. of Transportation OLD VAIL ROAD – South side of Tucson, AZ.

Dear Mr. Solis

This is in response to your Inquiry Letter dated January 25, 2011, regarding the above referenced project.

A review of your preliminary plans by AT&T Network Services (long distance) reveals there may be a **CONFLICT** with the above-mentioned project and the AT&T Transcontinental Fiber Optic Cable at this location. AT&T must review your current and/or proposed engineering drawings to insure the safety and maintenance of AT&T facilities. AT&T is willing to provide you with its as built drawings and any details AT&T has available to help avoid any conflicts with its facilities.

Locating of AT&T's facilities must be arranged by contacting your local One-Call Utility Notification Center (Blue Stake) at 1-800-782-5348 or AT&T's Cable Hazards Center at 1-800-252-1133 no less than 2 working days in advance of any activity within the defined easement area or 10' of cable. AT&T Plant Protection Services must be contacted, and be on site prior to any proposed activities on the AT&T easement or within 10' of cable. The AT&T Plant Protection Supervisor in charge of the cable locators for the AT&T cable facilities in the area of your proposed project above is Mr. Mike McNeal, AT&T OSP Supervisor at Phoenix AZ. (480) 827-6048.

All inquiries requesting AT&T Proprietary Information in Southern California, Southern Nevada and Arizona (i.e. engineering as-builts) must be forwarded with detailed engineering drawings associated with your project to:

AT&T INQUIRIES
22311 Brookhurst Street, Suite #203
Huntington Beach, CA 92646

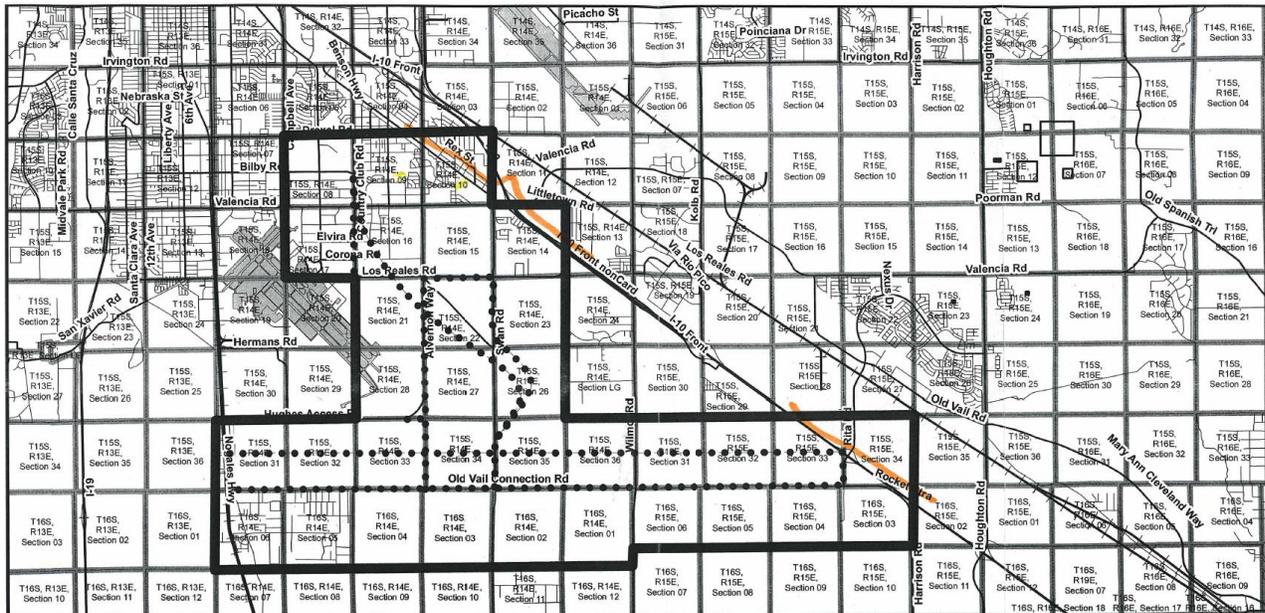
Enclosed is a copy of AT&T drawing that depicts the approximate location of the AT&T cable in the general vicinity of your preliminary drawing. These as-built drawings are for informational use only in determining the approximate location of the AT&T facility. These drawings are "Proprietary Information" and should be utilized in strict confidence. **I have drawn in ORANGE on your map the approximate location of two of AT&T active Cables**

Should you have any questions related to engineering as built, information, questions or concerns regarding your proposed project, please contact Mr. Walter Werstiuk at (714) 963-7964 or me at your earliest convenience.

Sincerely,

Walter Werstiuk for

Rosemary Hamill
AT&T Cable Maintenance Engineer
(925) 977-2413



Legend

- Functionally Classified Roads
- Other Roads
- +— Railroad
- ▭ Airport Runways
- ▭ Township, Range, Section
- Potential Alignments

Old Vail Connection

RECEIVED
7-31-10



February 2, 2011

Rick Solis, P.E.
Kimley-Horn and Associates, Inc.
2210 East Fort Lowell Road, Suite 200
Tucson, Arizona 85719

RE: El Paso Natural Gas Company Response
Old Vail Road Connection Study
PO No. 11023908

Dear Mr. Solis:

A map of El Paso Natural Gas Company's pipeline infrastructure in the Old Vail Road Connection Study area is enclosed. More details are shown on the on alignment sheets also enclosed.

The pipeline locations depicted on the map and alignment sheets are for general locations only. The pipelines must be surveyed and potholed to determine exact location. An authorized El Paso representative must be on site while work is performed on or across the right-of-way. Please notify El Paso's Tucson Area Operations (Rudy Marquez) at (520) 574-4929 at least 48 hours prior to commencing excavation or construction activity within the right of way or its immediate vicinity.

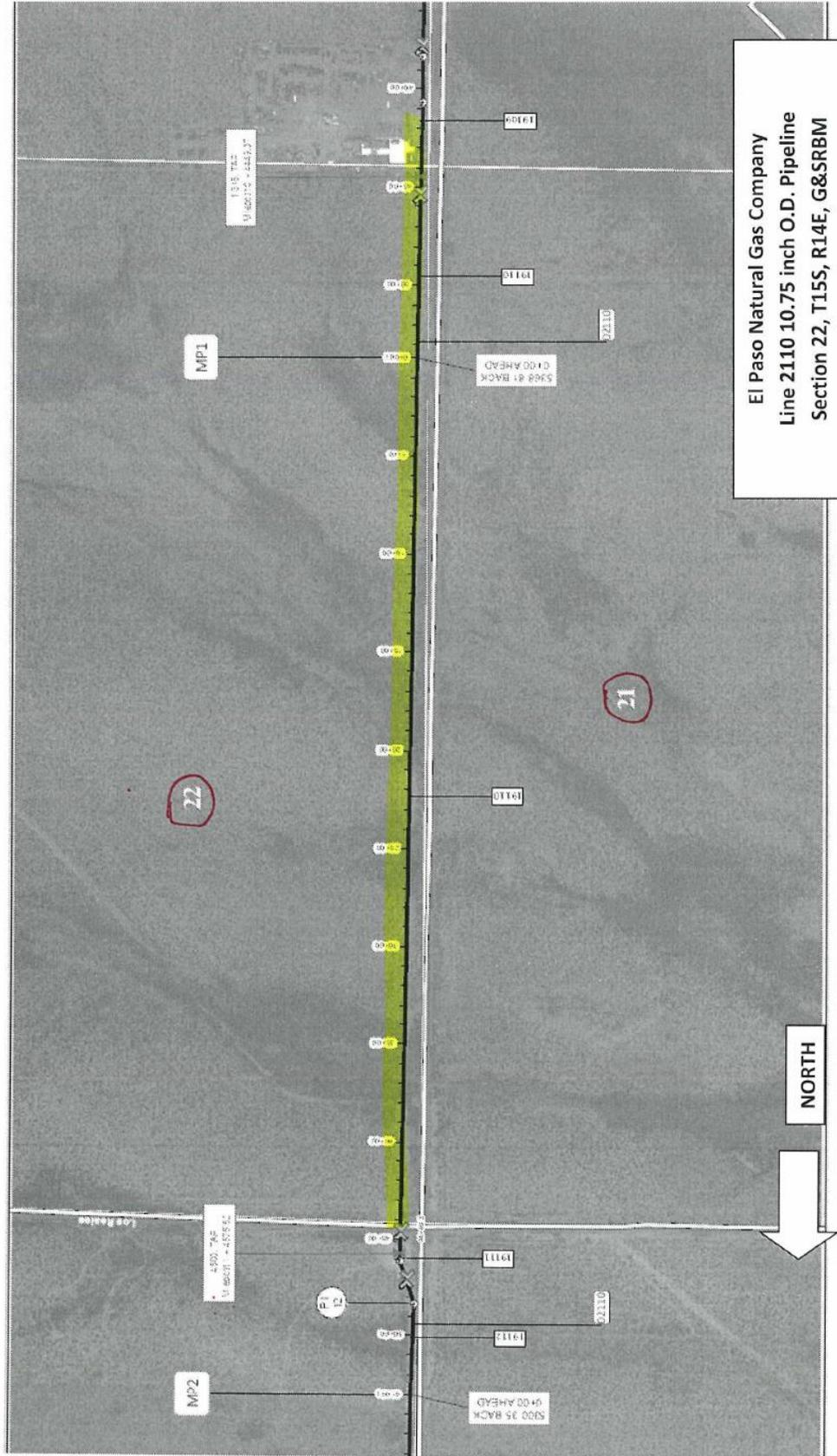
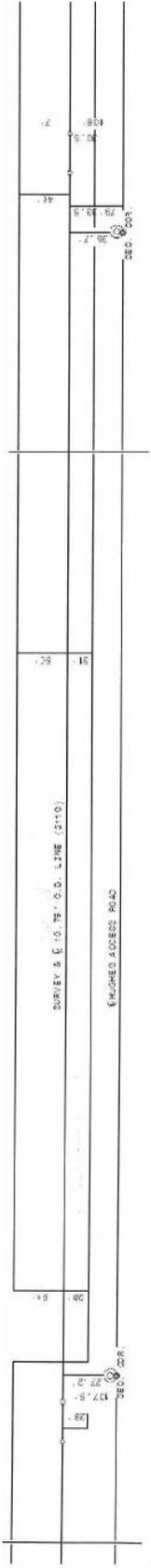
Please call Blue Stake at least two (2) days prior to conducting any excavation in the vicinity of the pipeline or other utilities. The Blue Stake number statewide (800) 782-5348 or dial 811.

Please call me at (520) 663-4260 if you have questions regarding this matter or need more information. Please send improvement plans and requests for information to me at my office or via email, william.biggs@elpaso.com.

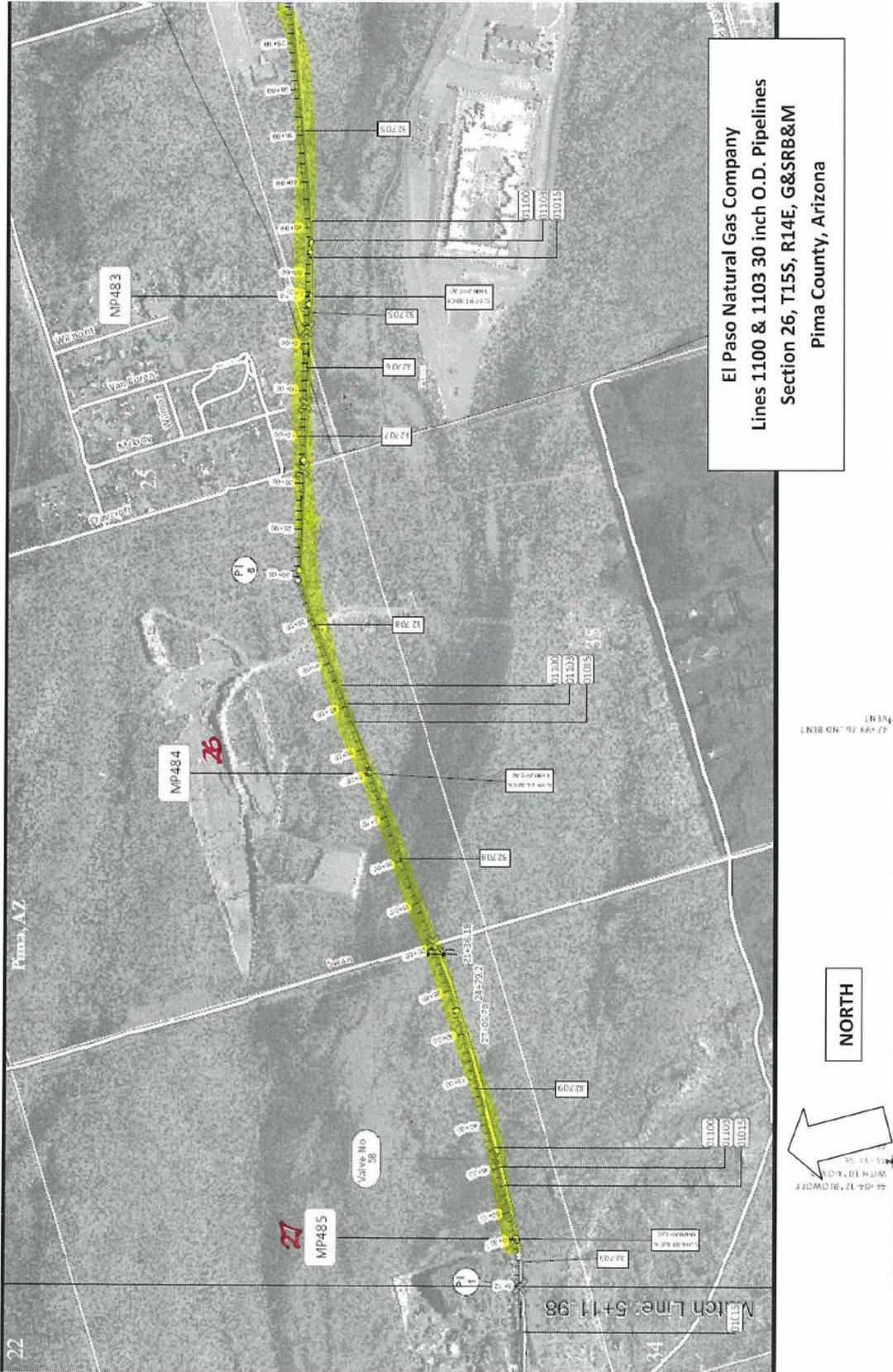
Regards,

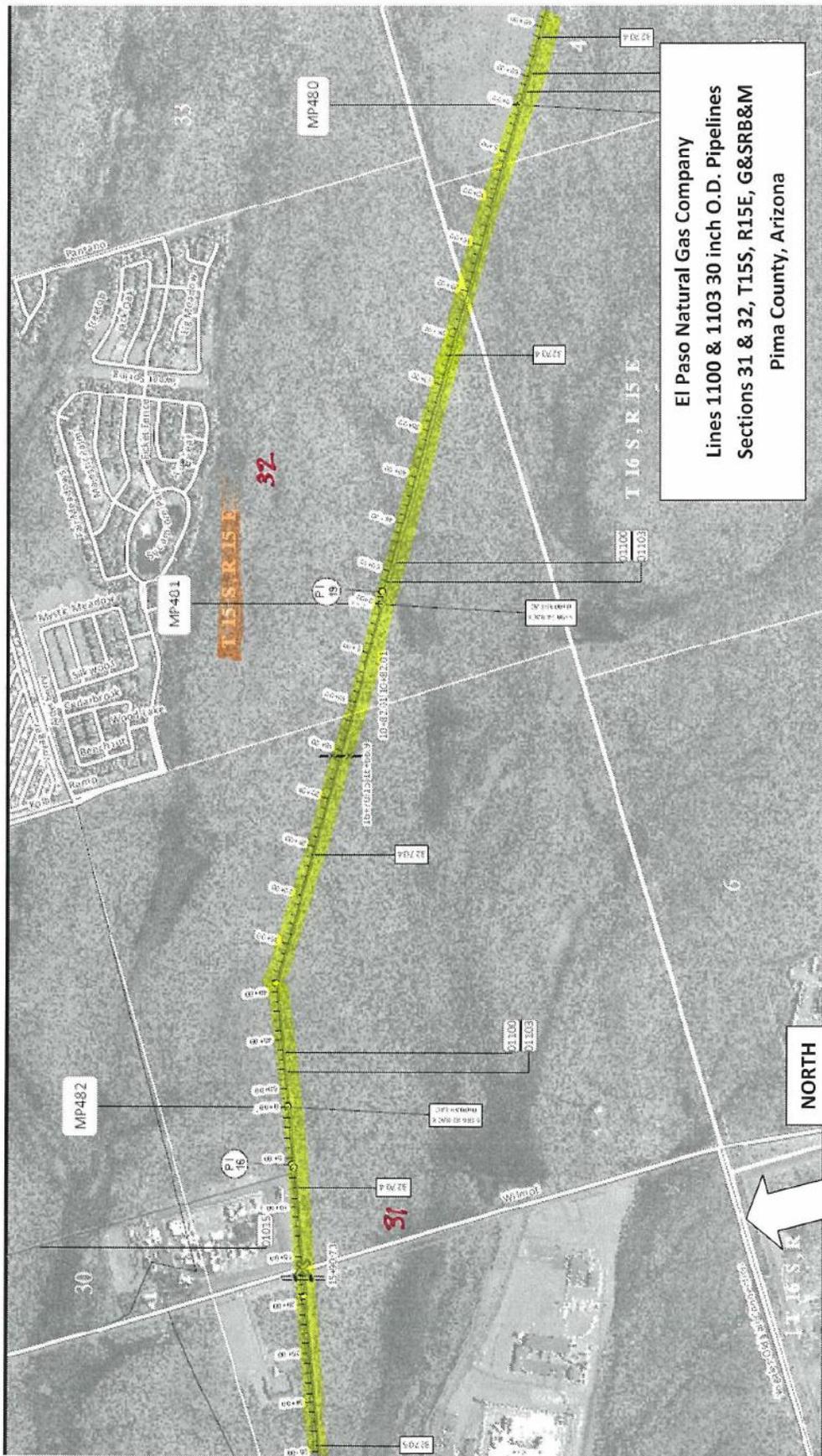
A handwritten signature in blue ink, appearing to read "Bill Biggs".

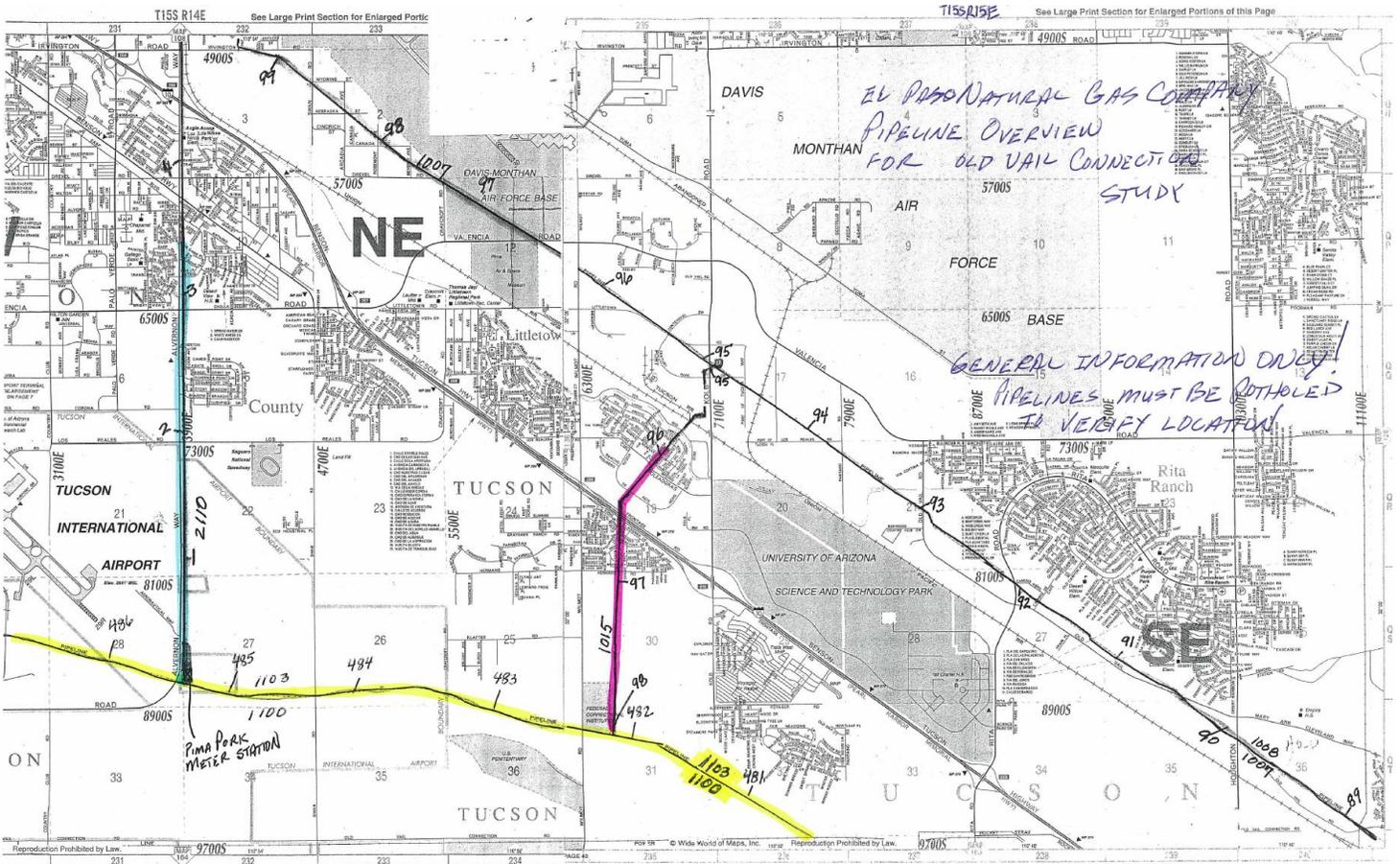
Bill Biggs, SR/WA
El Paso Natural Gas Company
Land Department – Tucson Division

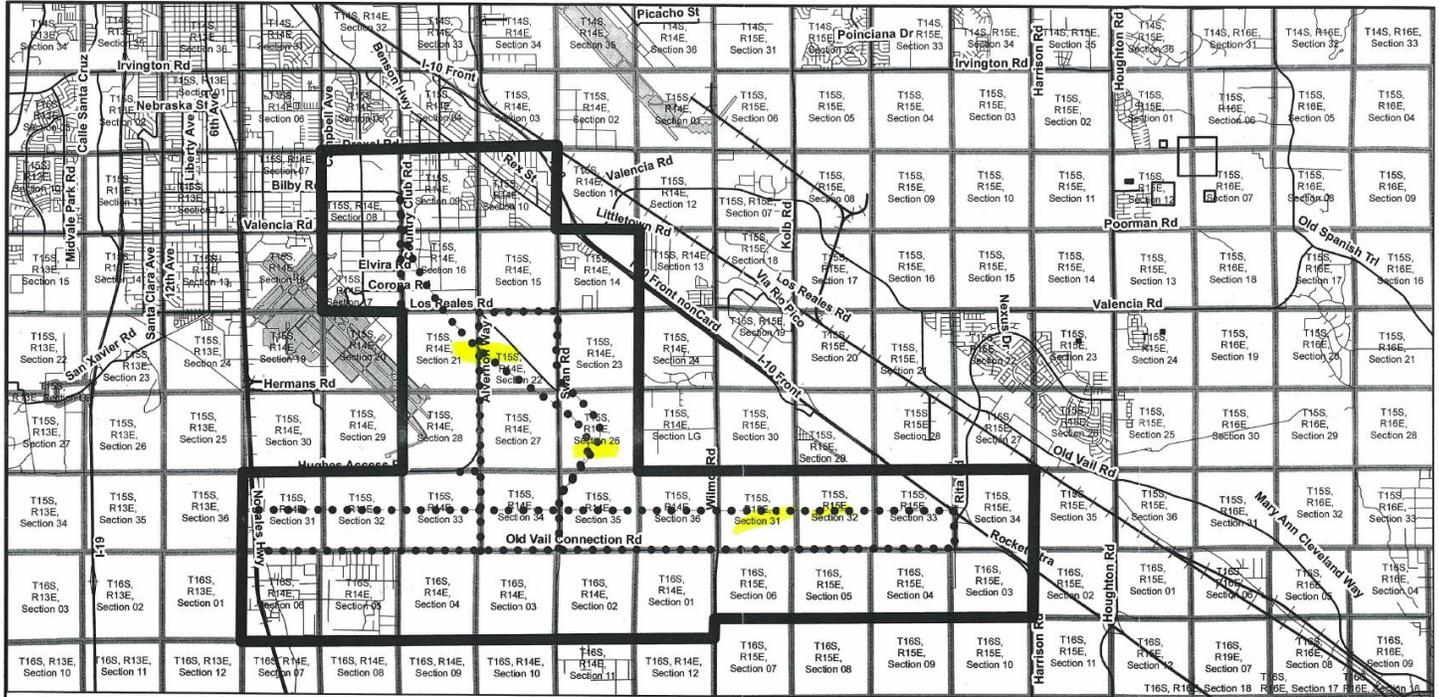


El Paso Natural Gas Company
 Line 2110 10.75 inch O.D. Pipeline
 Section 22, T15S, R14E, G&SRBM









Old Vail Connection

Legend

- Functionally Classified Roads
- Other Roads
- Railroad
- Airport Runways
- Township, Range, Section
- Potential Alignments





PIMA COUNTY
DEPARTMENT OF TRANSPORTATION
201 NORTH STONE AVENUE, THIRD FLOOR
TUCSON, ARIZONA 85701-1207



PRISCILLA S. CORNELIO, P. E.
DIRECTOR

(520) 740-6410
FAX (520) 838-7537

February 01, 2011

Mr. Rick Solis
Kimley-Horn and Associates, Inc.
2210 East Fort Lowell Road, Suite 20
Tucson AZ, 85719

RE: PO No. 11023908

Dear Mr. Solis:

Thank you for your letter.

Currently, within the given Township, Range, Section and Potential Alignments are the following:

EXISTING UTILITIES:

[7] Traffic Signals;

1. HUGHES ACCESS/NOGALES HWY-151430,151431,151325,151336
2. ALVERNON/LOS REALES-151416,151415,151422,151423
3. ALVERNON/VALENCIA-151409,151410,151416,151415
4. DESERT VIEW HIGH SCHOOL/VALENCIA-151410,151415
5. BENSON HWY/SWAN/VALENCIA-151415,151414,151410,151411
6. DREXEL/BENSON HWY-151409,151404
7. DREXEL/PALO VERDE-151409,151404

[1] Counter Station;

1. CS#21- [2050'+/-] W/BENSON HWY-151410,151415

[1] Arterial Street Lighting;

1. BENSON HWY – [1000' EAST AND WEST OF COLUMBUS]-151410

[1] Arterial Street Lighting & Miscellaneous Facilities

1. PALO VERDE- [MOSSMAN TO BENSON HWY]- -151409,151404

This is only informing you what is already present within your request.

Traffic Engineering Division
Albert G. Letzkus, P.E., PTOE, County Traffic Engineer
(520) 740-2601 • FAX (520) 740-2823
1313 S. Mission Road • Tucson, Arizona 85713-1398



PIMA COUNTY
DEPARTMENT OF TRANSPORTATION
201 NORTH STONE AVENUE, THIRD FLOOR
TUCSON, ARIZONA 85701-1207



PRISCILLA S. CORNELIO, P. E.
DIRECTOR

(520) 740-6410
FAX (520) 838-7537

Mr. Solis the following [2] individuals below, will be coordinating with you and/or the contractors if/any changes/concerns or alterations you may require with the EXISTING UTILITIES as well as information for any PROPOSED/FUTURE UTILITIES, after your study is complete and you commence with this project.

PROPOSED/FUTURE UTILITIES are handled by these [2] individuals

- * TRAFFIC SIGNALS AND FLASHING BEACONS
 - o Roger Woods – Trades Maintenance Supervisor –
Roger.Woods@dot.pima.gov
- * ARTERIAL STREET LIGHTING AND INTERSECTION LIGHTING AND MISCELLANEOUS FACILITIES AND COUNTER STATIONS
 - o Michelle Montagnino – Civil Engineer -
Michelle.Montagnino@dot.pima.gov

Any further questions you may have, feel free to contact me @ my email address below.

Sincerely,

Judiann Moralez
Senior Engineering Plans Technician
Judiann.moralez@dot.pima.gov

cc: Roger Woods – Trades Maintenance Supervisor, Traffic
Michelle Montagnino – Civil Engineer, Traffic
Tom Kelley – Civil Engineer, Manager, Traffic

Traffic Engineering Division
Albert G. Letzkus, P.E., PTOE, County Traffic Engineer
(520) 740-2601 • FAX (520) 740-2823
1313 S. Mission Road • Tucson, Arizona 85713-1398

Earl Winters
Senior Design Engineer
333 E. Wetmore Rd., 3rd Flr.
Tucson, AZ. 85705
(520) 292-7927
Earl.Winters@qwest.com



January 28, 2011

Rick Solis, P.E.
Kimley-Horn and Associates, Inc.
2210 East Fort Lowell Road, Suite 200
Tucson, AZ 85719

Re: Utility Information Request Letter – Old Vale Connection Road Study
PO No. 11023908

Dear Mr. Solis,

In response to your letter dated January 25, 2011, when a more defined area is chosen for this roadway Qwest will be better able to disclose what facilities are within the proposed roadway, any existing easements and any anticipated future Qwest facilities that will be needed within the proposed roadway.

If you should have any question, please contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Earl Winters", written over a light blue horizontal line.

Earl Winters
Senior Design Engineer
Qwest Corporation
333 E. Wetmore Rd., 3rd Flr.
Tucson, AZ 85705
Office: (520) 292-7927
e-mail: Earl.Winters@qwest.com



Valley Telephone Cooperative Copper Valley Telephone Valley Connections, LLC
Telephone Internet Digital Television Business Systems



January 31, 2011

Rick Solis, P.E.
Kimley-Horn and Associates, Inc.
2210 East Fort Lowell Road, Suite 200
Tucson, Arizona 85719

Re: **Utility Information Request Letter-Old Vail Connection Road Study**
PO No. 11023908

Mr. Solis,

Based on your realignment map, our facilities are currently located along the east side of Old Nogales Highway in T15S, R14E, S 31 & T16S, R14E, and S6. Valley Telephone's conduit system is buried at a depth of 48 inches, approximately 6 feet off the east highway right of way line. We have no future plans for placement of additional facilities within the proposed road alignment. If you have more questions or need more information, please let me know.

Thanks

A handwritten signature in black ink that reads "Danny Chastain".

Danny Chastain
Engineering/Construction Manager
Cell (520) 507-4309
Office (520) 384-8982
danny.chastain@vtc.net

752 E. Maley St. | Willcox, AZ 85643 | 1-800-421-5711 | www.vtc.net

APPENDIX E – PROGRAMMED AND PLANNED PROJECTS

2040 Regional Transportation Plan

The 2040 Regional Transportation Plan (2040 RTP) is the region’s long term transportation vision and it identifies transportation needs almost thirty years into the future. The 2040 RTP includes the following projects related to this study, summarized in Table E-1:

Table E-1 - Related 2040 Regional Transportation Plan Projects

Road	Section	Project Description	Time Period*
Roadway Projects			
Old Vail Connection Road	Nogales Highway to Wilmot Road	Widen to four-lane roadway	Late
Alvernon Way (part of the Alvernon Way corridor project – Hughes Access Rd to River Rd)	Los Reales Road to Valencia Road	Widen from 2 to 4 lanes	Middle
I-10 East Corridor	Country Club TI	Add traffic interchange and remove Palo Verde TI	Middle
I-10 East Corridor	Rita Road TI	Reconstruct traffic interchange	Late
Nogales Highway	Old Vail Connection Road to Los Reales Road	Widen from 2 to 6 lanes	Middle
Nogales Highway	Pima Mine Road to Old Vail Connection Road	Widen from 2 to 4 lanes	Middle
SR 210: Barraza-Aviation Parkway Extension	Palo Verde to I-10	Extend Barraza Parkway to I-10	Late
Nogales Spur Railroad Grade Crossings		Construct new grade-separated crossings	All periods
Transit Projects			
Park and Ride Lot	Old Vail Road/Rita Road	Construct park and ride lot	Early
Bus Rapid Transit – 6 th Avenue / Nogales	Downtown to TIA	BRT Downtown to TIA	Early

*Time periods are defined in the RTP as:
 Early (2010-2020)
 Middle (2020-2030)
 Late (2030-2040)

Pima Association of Governments 2011-2014 Transportation Improvement Plan

The Pima Association of Governments 2011 – 2015 Transportation Improvement Program lists funded projects by jurisdiction. Projects within the study area are:

Table E-2 2011-2015 TIP Projects

Project Name	Project Description	Date
Roadway Projects		
I-10 /Country Club TI	Construct TI	2014
I-10 Valencia Bypass	Construct new 4-lane roadway	2014-2015
Alvernon Way/Los Reales Traffic Signal	Construct new traffic signal	2011
Nogales/Old Nogales Intersection	Improve intersection (install traffic signal)	2012
Hughes Access/Alvernon Way	Construct bike lanes (6 miles)	2011-2012

APPENDIX F – CROSS SECTIONS

Figure 2-4 Typical Section for 2 Lane Road (Rural)

